MITSUBISHI ELECTRIC

Mitsubishi Electric Air-conditioner Network System

# Maintenance Tool

- Advanced –

for .NET

Operating Manual

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Before using Maintenance Tool, read this manual thoroughly to ensures correct operation.

**WT03939X88**

# 1 Foreword

## 1.1 Introduction of Maintenance Tool

The Maintenance Tool are comprised of the **On-Line Monitor** and the **Off-Line Monitor**.
The following four connection methods are available in the Online Monitoring.

(1) Monitoring by connecting the maintenance tool to MN converter (CMS-MNF,CMS-MNF-B,CMS-MNG-E) via RS-232C.
(2) Monitoring by connecting the maintenance tool to MN converter (CMS-MNG-E) via USB.
(3) Monitoring through the Centralized Controller by connecting the maintenance tool to LAN. A brief explanation of each of their function is provided here.Maintenance Tool is connectable to Centralized Controllers and Remote Monitoring Controllers(CMS-RMD) via the LAN.
(4) Monitoring by connecting the maintenance tool to USB via USB/Serial conversion cable for P/M series which is not connected to M-NET.

* “G(B)-50A / GB-24A / AG-150A / GB-50ADA / PAC-YG50ECA / EB-50GU / AE-200 / AE-50 / EW-50 / PAC-YG50ECA” is referred to as “Centralized Controller”.
* “G(B)-50A Web / GB-24A Web / AG-150A Web / GB-50ADA Web / EB-50GU Web / AE-200 Web / AE-50 Web / EW-50 Web” is referred to as “Centralized Controller Web”.

To use the maintenance tool via Centralized Controller(Network), license registration for the Centralized Controller to be used is necessary.
Purchasing the license No. for each Centralized Controller be used, conduct the license registration through the Web browser (http://[IP address of the Centralized Controller]/ administrator.html). After selecting "Maintenance tool" of the optional function on the Web Browser Screen displayed, enter the purchased license No.
Refer to the following chapters in the “Web Browser Operation Manual” for detailed information about license registration.
Centralized Controller G-50A, AG-150A or GB-50ADA:Cahpter4 [Registering a License for Optional Functions]
Centralized Controller EB-50GU, AE-200, AE-50 or EW-50:Cahpter10 [License registration for optional functions]
When connecting maintenance tool via Expansion Controller,register the license in AG-150A connected by the Expansion Controller. (Only when AG-150A that registers the license is normally connected, it is possible to connect via Expansion Controller.)

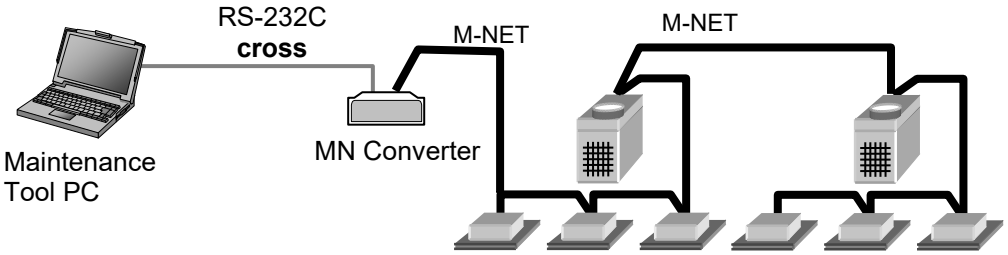
**Important:**
Only one Maintenance Tool can be connected to each M-NET centralized control system.
If more than one Maintenance Tool is connected to a system, communication error (Error codes 6603 or 6608) may occur with the air-conditioning and refrigeration equipment or with the centralized controller due to increased communication traffic.

### 1.1.1 On-Line Monitor(via MN converter)

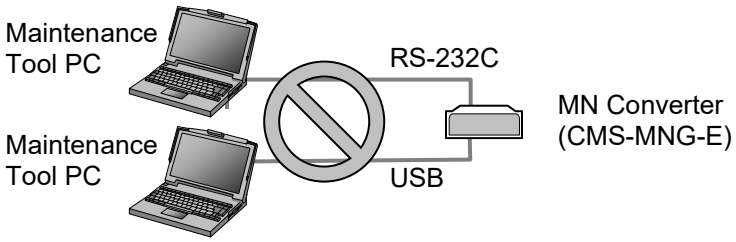
The **On-Line Monitor** is connected to the unit by a MN Converter (CMS-MNF,CMS-MNF-B,CMS-MNG-E) and can monitor such areas as system data, unit data and operating data.

#### (1) In case for local connection (via RS-232C)

Connecting PC installed with the maintenance tool to M-NET transmission line via MN Converter allows conducting various monitoring and setting from the Maintenance Tool.



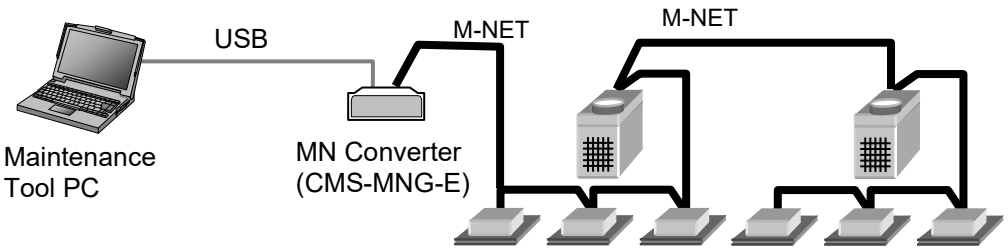

**NOTE:**
- When the MN Converter (CMS-MNG-E) is being used in Remote Error Notification mode (see section 3.13), you cannot connect to the MN Converter (CMS-MNG-E) via RS-232C. Connect via USB.




**NOTE:**
- You cannot connect to the MN Converter (CMS-MNG-E) via RS-232C and USB at the same time.Doing so may result in malfunctions.

#### (2) In case for local connection (via USB) (CMS-MNG-E)

Connecting PC installed with the Maintenance Tool to M-NET transmission line via MN Converter allows conducting various monitoring and setting from the Maintenance Tool.

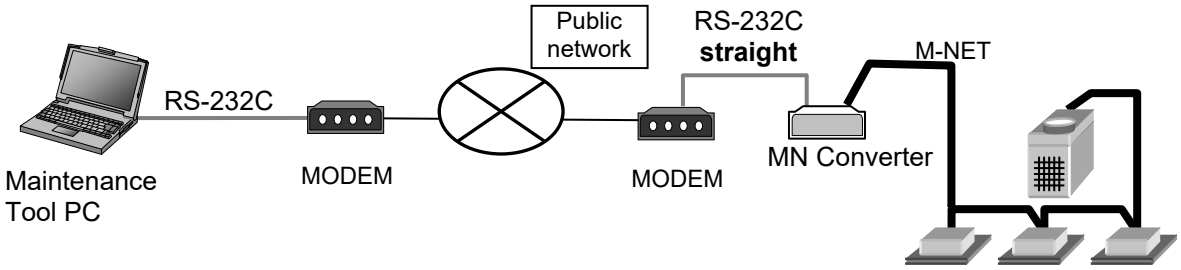



**NOTE:**
- To connect to the MN Converter via USB, the USB serial driver must be installed on the Maintenance Tool PC. [Refer to 1.3.4]

**NOTE:**
- You cannot connect to the MN Converter (CMS-MNG-E) via RS-232C and USB at the same time. Doing so may result in malfunctions.

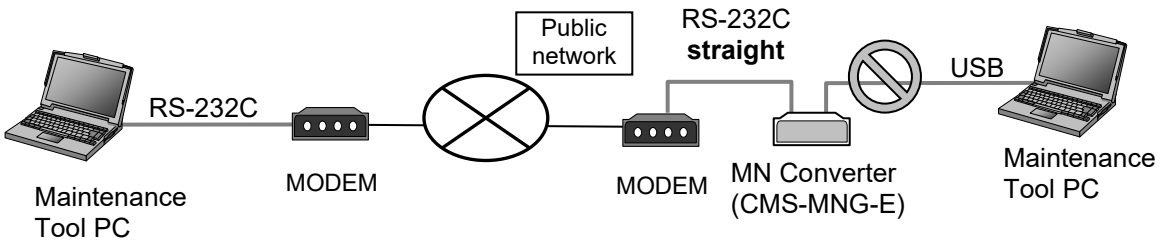
(3) In case for remote connection

Using a modem and remotely connecting PC installed with the Maintenance Tool to MN Converter via public telephone circuit allow conducting various monitoring and setting as same in the case of local connection.




*For the remote connection utilizing MN Converter, an isolator is required to be inserted between the modem and MN Converter.(except CMS-MNG-E)

**For detail, please see Installation Manual-annexing of MN Converter (CMS-MNF-B).**




**NOTE:**

- You cannot use the Maintenance Tool via RS-232C remote connection and via USB at the same time. Doing so may result in malfunctions.
  You can use the Maintenance Tool for error notification setting via USB when the Maintenance Tool is not used via RS-232C remote connection.
  (Used when connecting via MN converter CMS-MNG-E.)

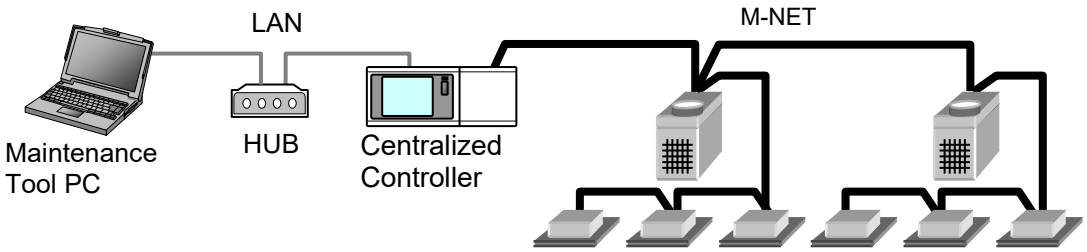
### 1.1.2 On-Line Monitor(via Centralized Controller)

The **On-Line Monitor** is connected to the unit by the Centralized Controller and can monitor areas as system data, unit data and operating data.

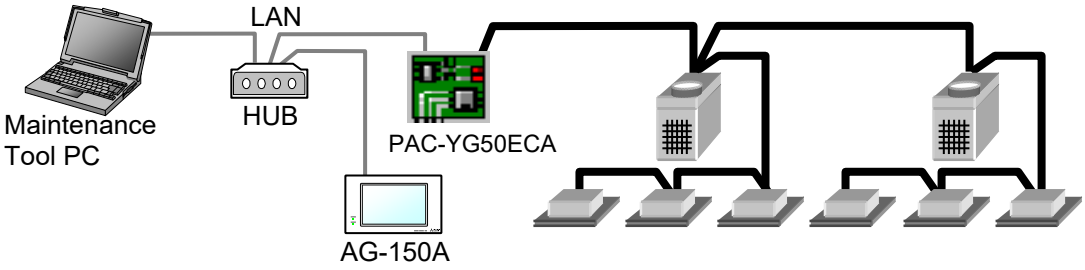
**NOTE:**
- When connecting AG-150A with Expansion Controller(PAC-YG50ECA), connect maintenance tool not AG-150A but via Expansion Controller.
- AG-150A Ver2.45 or more and Expansion Controller Ver1.45 or more are necessary for the connection via Expansion Controller.

(1) In case for local connection

By directly connecting the PC installed with Maintenance Tool and Centralized Controller through LAN, various monitoring/setting can be performed from the Maintenance Tool.

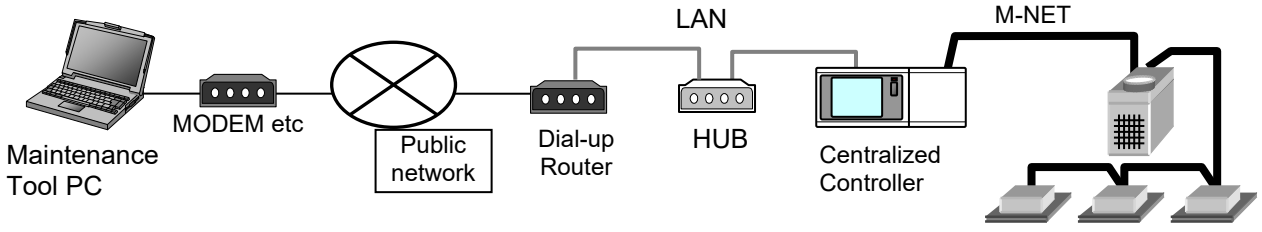



(1)-2 In case for local connection for AG-150A connection with the Expansion Controller (PAC-YG50ECA)



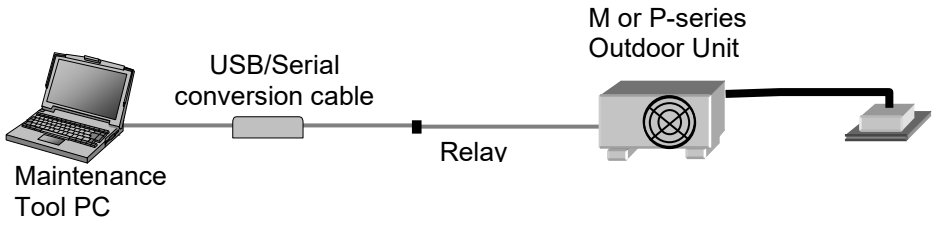

(2)-1 In case for remote connection (Dialup connection mode)

By connecting the PC installed with Maintenance Tool and Centralized Controller through public network remotely, various monitoring/setting can be performed from the Maintenance Tool.



### 1.1.3 On-Line Monitor(via USB/Serial conversion cable) for M or P-series

The On-Line Monitor is connected to the unit by the USB/Serial conversion cable and it can monitor unit data and operating data.



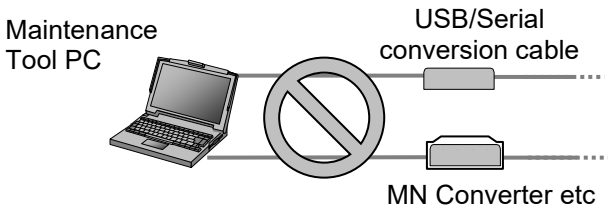

<Connectable Models and Relay cable correspondence table>

| Connectable Models | | Relay cable type | Connection point of Outdoor unit |
|---|---|---|---|
| P-series | PUY/PUZ etc | Type P | CNMNT |
| M-series *1 | MXZ-2～6 without Branch Box | Type AD/B/C *2 | CN605/606/806/861 *2 |
| | MUY/MUZ/MUFZ | | |
| | SUZ/SUHZ | | |

*1 Please refer to chapter 9 for detailed applicable models.

*2 Relay cable and Connection point are different to each model. [Refer to chapter 9]

**NOTE:**
- To connect to the USB/Serial conversion cable via USB, the USB serial driver must be installed on the Maintenance Tool PC. [Refer to 1.3.4.2]

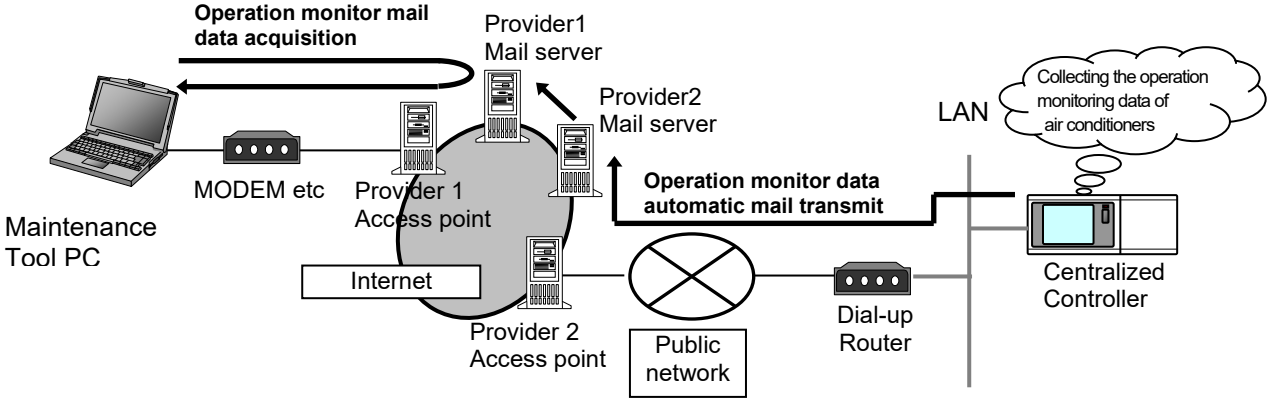



**NOTE:**
- You cannot use the Maintenance Tool via MN converter/Modem/HUB and USB/Serial conversion cable at the same time.

## 1.1.4 Off-Line Monitor

The **Off-Line Monitor** can display, print information obtained by the On-Line Monitor.
In the case of connection monitoring utilizing Centralized Controller, the operation monitor data collected by Centralized Controller will be transmitted to remote mail servers periodically if the [Operation monitor - mail communication mode] of online mode is adapted.
Using this function allows to collect and monitor the operation monitor data without continually connecting the maintenance tool.
*For the setting of the [Operation monitor - mail communication mode], refer to 3.7.1 and 4.3.2 description.

***Image of the [Operation monitor - mail communication mode]**




## 1.1.5 Wide area access mode

Under the "Wide area access mode," the access method for remote connection can be registered to the database of each customer enabling easy online connection with the air conditioning system of the customer desired to be accessed.

**[Remote access method]**

- **LAN** : Accessing by directly connecting Maintenance Tool PC and Centralized Controller with LAN (WAN).
- **Dialup** : Accessing by dialup connection to Centralized Controller via public network.
- **E-mail** : Accessing by E-mail communication to Centralized Controller via mail server.
- **Modem** (MN Converter) : Accessing by connecting Modem to MN Converter via public telephone circuit.

After the online connection performed by any of the above methods, you may use the similar function as that obtainable in the normal online connection.
While under the offline mode, customer information will be provided to the monitored data enabling only to select a specified customer for display.

## 1.2 Required Operating Environment

### 1.2.1 Hardware Requirements

- OS ..... Windows 8.1/10/11
  (Recommended English version *1)
- CPU ..... 2GHz or faster
- RAM ..... 4GB or more(at least 8GB recommended)
- HDD .....Available space 100GB or more *2
- LCD ..... Screen resolution:1024x768 or more
- Operating
  environment .....NET Framework 4.6.2 or later
- Serial port ..... 1 RS232C serial port (Used when connecting via MN converter)
- USB port ..... 1 USB port (Used when connecting via MN converter CMS-MNG-E) *3
- Pointing device..... Mouse or track ball or any other pointing device

***1 About OS**

Fundamentally, it corresponds to OS of each country. However, separators of time and date differ in each language. This separator may affect a maintenance tool.
It recommends using it by English OS and Regional options setup, changing into English area form. Or it recommends using it, changing date separator into [/] and time separator into [:].

***2 About Hard Disk Space**

The hard disk space recommended above is only the amount required for installing the maintenance application. Additional space will be required if the operating data is also to be stored on the hard disk. Accordingly, there may not be enough memory to store operating data if the maintenance system is installed in a computer with limited hard disk memory.

***3 About USB port**

USB port of MN Converter (CMS-MNG-E) and USB/Serial conversion cable are USB1.1.

**NOTE:**
TG-2000A and Maintenance Tool cannot operate with the same personal computer.

### 1.2.2 Required Materials

The following materials are needed for operating the Maintenance Tool :

(1) In case of routing via MN converter

MN Converter (CMS-MNF,CMS-MNF-B,CMS-MNG-E), Personal Computer, RS-232C **cross** cable, USB cable(CMS-MNG-E) and modem in the case of remote connection, are required. RS-232C is to be **straight** cable in this case.
For detail, please see Installation Manual-annexing of MN Converter.

(2) In case of routing via Centralized Controller

Centralized Controller, personal computer, LAN cable (Straight) and HUB.
A dial-up router is required for remote communication. For the dial-up router to be used, employ that allowing data communication by receiving external telephone transmission.

(3) In case of routing via USB/Serial conversion cable.

USB/Serial conversion cable and Relay cable【Service parts No: M21 EC0 397】,
and Personal Computer.

## 1.3 Installation

Ver5.** is not an upgrade, but a totally new version.
* Ver5.00 & Ver4.** can both be installed on the same PC
* The data of Ver4.** can be exported & then inported into Ver5.**
  However, Ver5.** data can't be used in Ver4.**.

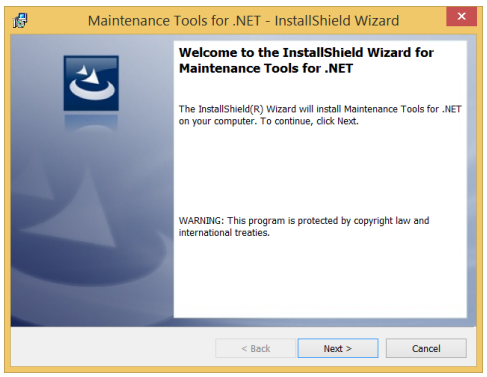
**Caution:**
Please refer to also 1.3.3 Change of computer name on PC.

### 1.3.1 Setting Up the Maintenance Tool (New setup)

**Caution:**
- Before setting up, be sure to login with the login name authorized as administrator.
- Before setting up, please confirm the following points.
  ・The check 'Compress drive to save disk space' of LocalDisk(C:) Properties must be removed.
  When not satisfying it, the error occurs when installing it and the installation is discontinued.

(1)Starting the setup program
Execute **"Setup.exe"** located in folder(It name is "New") on CD-ROM.(**Not click on any other files.**)
Double clicking on **"Setup.exe"** with the explorer displays the application install screen.

**NOTE:**
・The number of applications installed by the OS is different, but just click on **[install]** button.
(Right Figure is Screen of Windows 8.1.)

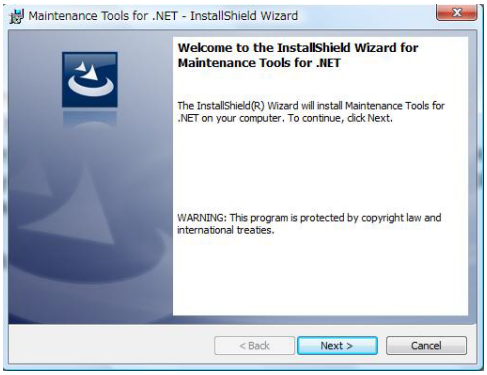



Caution:
- It takes 1 minutes to install the application.

(2)Installing the Maintenance Tool

When the installation of the application software is finished, the installation screen of the Maintenance Tool is displayed. Confirm the display contents, and if no problem was found on the content, click [**Next**] button.

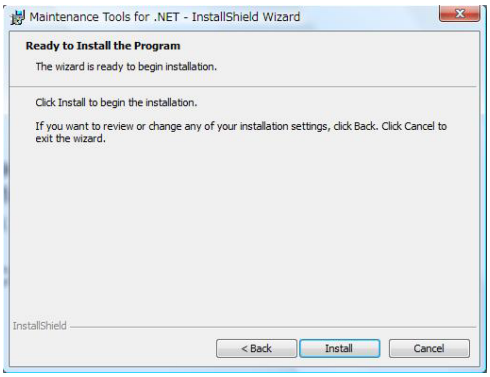
* To stop setting up, click on [**Cancel**] button.




(3)Ready to the installation start

Confirm the starting and select an [**Install**] button.
Click on [Install] button starts installation.

* Clicking on [**Cancel**] button stops installation.

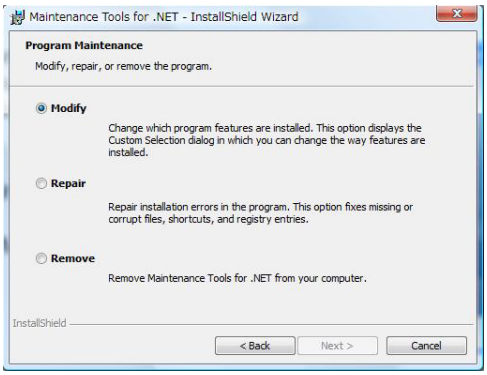



**Caution:**

・When a screen such as the right figure was displayed without installation start preparations screen being displayed, Select [Remove], and please click a [**Next**] button.

・Click [**Remove**] with the next screen, click on [**Finish**], and be completed.

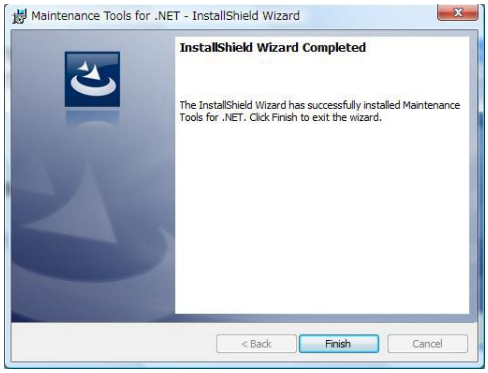
・Install the Maintenance Tool program.



(4)Confirming the completion of Maintenance Tool setup

1) Select [**Finish**] button.

Click on [**Finish**] button on the Installation Complete screen.




Now the installation of the Maintenance Tool is complete.

After completing installation, restart your computer.

Store the CD-ROM in a safe place.

**Caution:**
After installing Maintenance Tool, be sure to restart your computer.

(5)Setting up other software (Only using USB/Serial conversion cable)

When connecting to M / P-series via USB / Serial Conversion cable, you need to install the following software additionally.

1) Install rewriting software for USB/Serial conversion cable

Install the rewriting software (FT_PROG) from the following FTDI site.

http://www.ftdichip.com/Support/Utilities.htm

**NOTE**:
・The operation of FT_PROG requires Microsoft .NET Framework version 4.0 or later.

2) Install Microsoft Visual C++ Redistributable for Visual Studio 2015

Install the Microsoft Visual C++ Redistributable for Visual Studio 2015 from the following Microsoft site.

https://www.microsoft.com/en-US/download/details.aspx?id=48145

**NOTE**:
・Even for 64bit PC ,you need to install 32bit software (vc_redist.x86.exe).

3) Install USB driver

For the install method, refer to 1.3.4.2 “For USB/Serial conversion cable”.

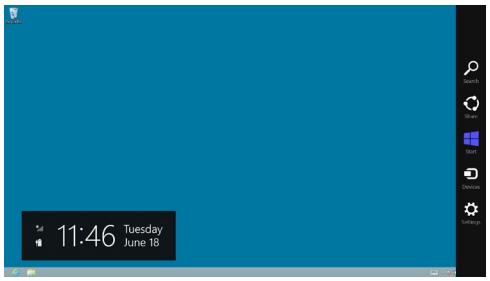
### 1.3.2 Uninstalling the Maintenance Tool

It explains the method of uninstalling the **Maintenance Tool** as follows.

**[ In the case of Windows8.1]**

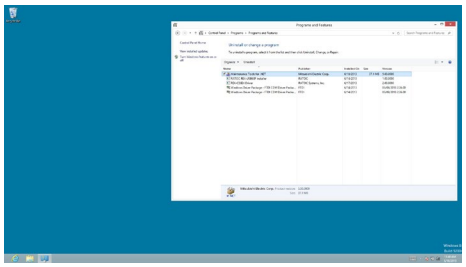
(1) Confirm the ending of **Maintenance Tool**.
Confirm that Maintenance Tool program has been ended.
If not, end the program.
***For the ending method, refer to Chapter 1.4.7.**

(2) Open [Uninstall a program]
(a) By using a mouse
Place the mouse pointer in the top or bottom right corner of the screen to access the Charm Bar.
Click [Settings] on the Charm Bar, click [Control Panel], and then click [Uninstall a program]




(b) From the touch panel
Swipe the screen from the right edge to access the Charm Bar.
Tap [Settings] on the Charm Bar, tap [Control Panel], and then tap [Uninstall a program]

(3) Select [Maintenance Tool for .NET]
Slelct [Maintenance Tool for .NET] from a list of applications that appears, and delete [Maintenance Tool for .NET]



(4) Exit [Uninstall a program].
When done deleting the program, exit the [Uninstall a program] window.

**NOTE:**
- Recommend not to delete the common components.
- There are folders and files that can not be deleted with this uninstalling.
  (Example:C:¥MnttoolNetEA)
- If you do not need the installed software to use USB / Serial conversion cable, please uninstall it.
  Please refer to each software manual for the uninstallation method.

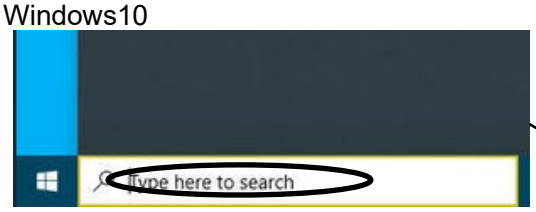
**Caution:**
- After uninstalling Maintenance Tool program, be sure to restart your computer.

**[ In the case of Windows10,11]**

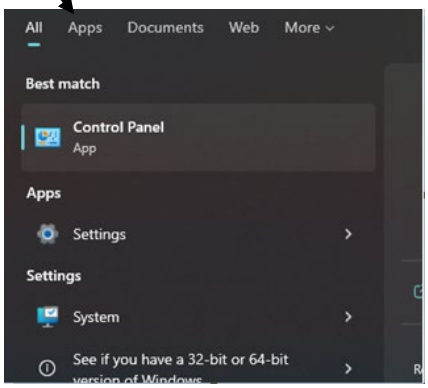
(1) Confirm the ending of **Maintenance Tool**.
Confirm that Maintenance Tool program has been ended.If not, end the program.
***For the ending method, refer to Chapter 1.4.7.**

(2) Open [Control Panel]
Click the [search box] from the taskbar. Then start typing “control panel” and click the “Control Panel” search result.

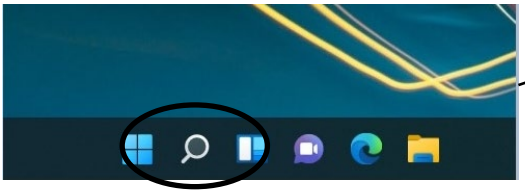
Windows10




Control Panel



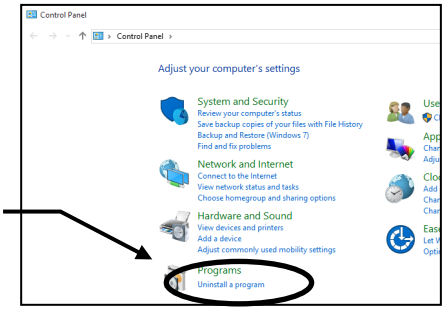

Windows11



Search box

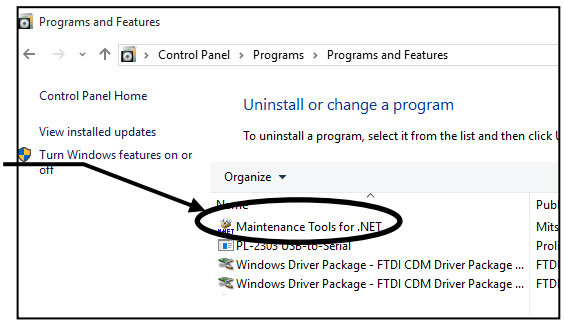
(3) Open [Uninstall a program]
The [Control Panel] window will appear.Click [Uninstall a program]

Uninstall a program




(4) Select [Maintenance Tool for .NET]
Select [Maintenance Tool for .NET] from a list of applications that appears, and delete [Maintenance Tool for .NET]

Maintenance Tool for .NET




(5) Exit [Uninstall a program].
When done deleting the program, exit the [Uninstall a program] window.

**NOTE:**
- Recommend not to delete the common components.
- There are folders and files that can not be deleted with this uninstalling.
  (Example:C:¥MnttoolNetEA)
- If you do not need the installed software to use USB / Serial conversion cable, please uninstall it.
  Please refer to each software manual for the uninstallation method.

### 1.3.3 Change of computer name on PC

Do not change the computer name after the Maintenance Tool has been setup.
Maintenance Tool will not run properly if changed, and may require the OS to be installed again.

### 1.3.4 USB Serial driver installation

#### 1.3.4.1 For MN Converter

To connect the Maintenance Tool to the MN Converter (CMS-MNG-E) via USB and then use the tool, the USB serial driver must be installed on the Maintenance Tool PC.

(1) Execute the batch file in the respective folder that corresponds to the OS of your PC. (See the table below.)

| | **Windows8.1** | **Windows10,11** |
|---|---|---|
| Driver folder | CMS-MNG_Driver (win8_x86_x64) | CMS-MNG_Driver (win10_x86_x64) |
| Driver file | Win8DriverInst.bat | Win10DriverInst.bat |

(2) Connect a USB cable to the USB port of the MN Converter (CMS-MNG-E).

This completes USB serial driver (CMS-MNG) installation.
Check that the driver is running correctly in the Device Manager window.

#### 1.3.4.2 For USB/Serial conversion cable

To connect the Maintenance Tool to the USB/Serial conversion cable via USB and then use the tool, the USB serial driver must be installed on the Maintenance Tool PC.

(1)Install the latest USB driver (D2XX) from the following FTDI site.

http://www.ftdichip.com/Drivers/Ds2XX.htm

・Please connect USB/Serial conversion cable and install from Device Maneger window etc.
・Check that the driver is running correctly in the Device Manager window.

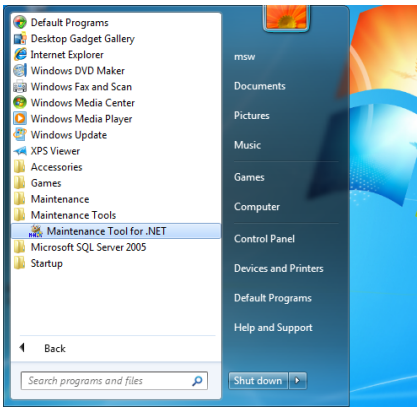
## 1.4 Starting and Ending the Application

### 1.4.1 Starting the Maintenance Tool

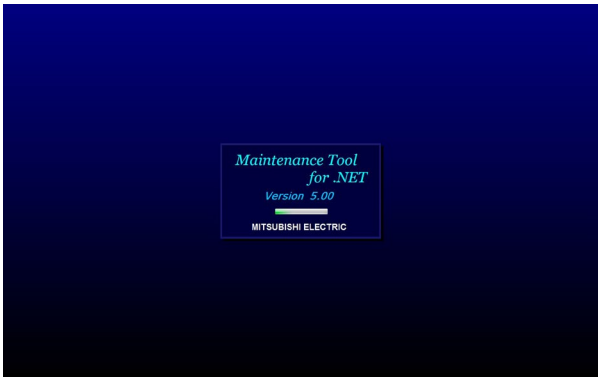
(1) Connect the computer and Centralized Controller and air conditioner.
* When using the USB / serial conversion cable, please do not connect it to the air conditioner side yet.

(2) Click on "**Start**", and then click on "**Programs**".

(3) Click on "**Maintenance Tool for .NET**" in the "**Maintenance Tool**" folder.




(4) The **Title Screen** will soon appear.

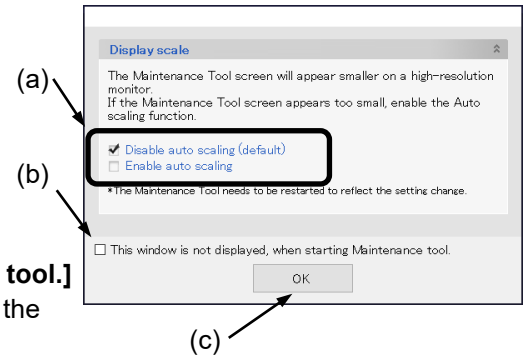



(5) The "**Screen Display Setting**" screen is displayed.
Setting the display settings

**a) Display scale**
The Maintenance Tool screen will appear smaller on a high-resolution monitor.
If the Maintenance Tool screen appears too small, check "Enable auto scaling."

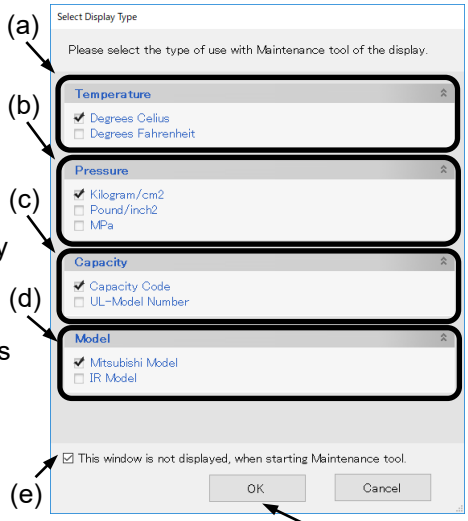
**b) [This window is not displayed,when starting Maintenance tool.]**
If the checkbox is checked, this window will not appear when the Maintenance Tool is starting up.

**c) [OK]**
Click [OK] to close the "Screen Display setting screen."




**Note**
・The Maintenance Tool needs to be restarted to reflect the change in the display scale setting.
・The display scale setting function is available only on Windows10,11.

(6) The “**Select units of measurement**” screen is displayed.
Select the method of displaying the Temperature, the Pressure and the capacity.




a) Temperature
- If the “**Degrees Celsius**” is checked, the temperature display becomes a celsius.
- If the “**Degrees Fahrenheit**” is checked, the temperature display becomes a fahrenheit.

b) Pressure
- If the “**Kilogram/cm2**” is checked, the pressure display becomes a Kilogram/cm2.
- If the “**Pound/inch2**” is checked, the pressure display becomes a Pound/inch2.

c) Capacity
- If the “**Capacity Code**” is checked.
  - ・The capacity item name of the Unit Information Display Columns becomes “**Capacity**”, and **indoor unit capacity code** is displayed.
  - ・The QJ item name of the operation monitor becomes “**QJ**”, and **indoor unit capacity code** is displayed.
- If the “**UL-Model Number**” is checked.
  - ・The capacity item name of the Unit Information Display Columns becomes “**UL-Model**”, and indoor unit **UL-Model number** is displayed.
  - ・The QJ item name of the operation monitor becomes “**Model**”, and indoor unit **UL-Model number** is displayed.

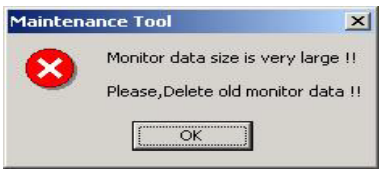
d) Model
- If the “**Mitsubishi Model**” is checked
  - ・Mitsubishi model name will be displayed in the “Model” field on the “Main Screen”. [Refer to 3.4 Main Screen.]
- If the “**IR Model**” is checked
  - ・IR model name will be displayed in the “Model” field on the “Main Screen”. [Refer to 3.4 Main Screen.]
  - ・IR model means product released from Ingersoll Rand brand in the United States.

**Caution:**
The “Model” setting applies only to the “PQRY-TLMU”, “PQRY-YLMU”, “PQHY-TLMU”, “PQHY-YLMU”, “PUMY”, “AE-200-A”, “TE-50A”, “TW-50A”, and “PWFY” models.
For other models, the name printed on the nameplate will be displayed on the Main Screen regardless of this setting.

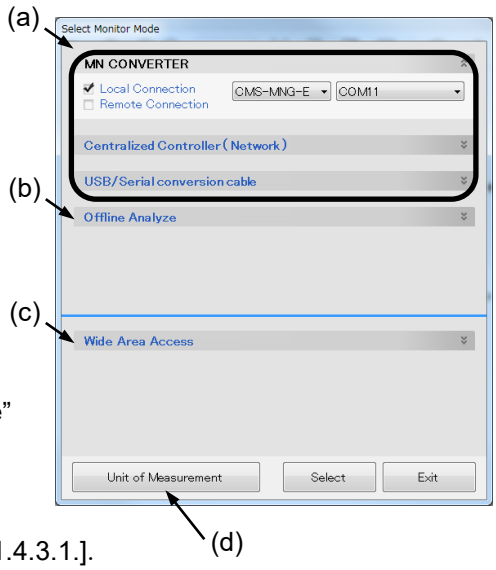
e) If the “**Don’t show this window again.**” Is checked, this window will not appear again.
(However, it is possible to select it from “**Select Monitor Mode**” screen.)

f) If the OK button selected, this screen is closed.

*The capacity to store the data obtained by the maintenance tool counts for 2G-bite maximum. When the remaining storage capacity is insufficient at starting,Warning Screen will appear. In this case, move to OFF- Line Screen to delete unnecessary data.



(7) Thereafter, the selection screen of Monitor mode is displayed.
Selecting the mode to be adapted.




**Normal mode**

a) ON LINE MODE

**- MN CONVERTER**

When on-line monitoring is adapted to air conditioning system by connecting MN Converter [Refer to 1.4.2.1.] Further select Remote connection to conduct remote connection. [Refer to 1.4.2.2.]

**- Centralized Controller (LAN)**

When on-line monitoring is adapted to air conditioning system via Centralized Controller by connecting the Maintenance Tool to LAN. [Refer to 1.4.4.1.] For remote connection, select either “Dialup connection mode” or “E-mail connection mode”. [Refer to 1.4.4.2., 1.4.4.3.]

**- USB/Serial conversion cable**

When on-line monitoring is adapted to air conditioning system by connecting USB/Serial conversion cable[Refer to 1.4.3.1.].

b) OFF LINE MODE

**-** Offline analysis

When offline analysis is adapted to the data collected under ON-LINE MODE [Refer to 1.4.5.]

c) Wide Area Access

**- Online Connection**

When monitoring on-line, using various connection methods [Refer to 1.4.6.1.]

**- Offline Analyze**

When offline analysis is adapted to the data collected under ON-LINE MODE [Refer to 1.4.6.2]

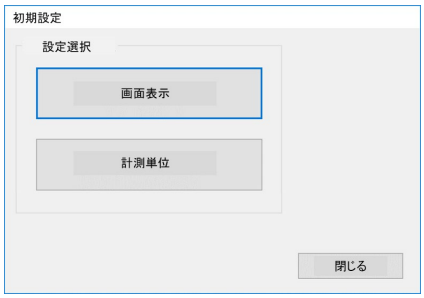
d) When [**Initial Setting**] is selected, the “**Initial Setting**” screen is displayed.

When [**Screen Display**] is selected, the “**Screen Display Setting**” screen is displayed.

[Refer to (5)]

When [**Unit of Measurement**] is selected, the “**Select units of measurement**” screen is displayed.

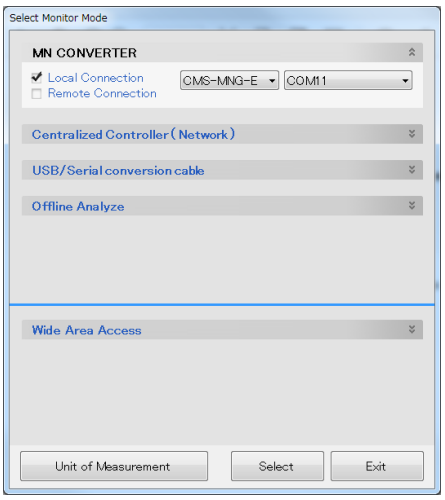
[Refer to (6)]



## 1.4.2 Starting the On-Line Monitor(MN Converter connection)

### 1.4.2.1 In case for local connection

This will be used when online monitoring is adapted to air conditioning system by connecting the maintenance tool and MN Converter locally. The maintenance tool, MN Converter and air conditioning system should be connected beforehand.




(1) Clicking “MN CONVERTER” on the selection screen of Monitor mode selects “Local connection” simultaneously. Select the model name of the connected MN Converter and the COM port No. of the connected RS-232C. Last click [Select] .

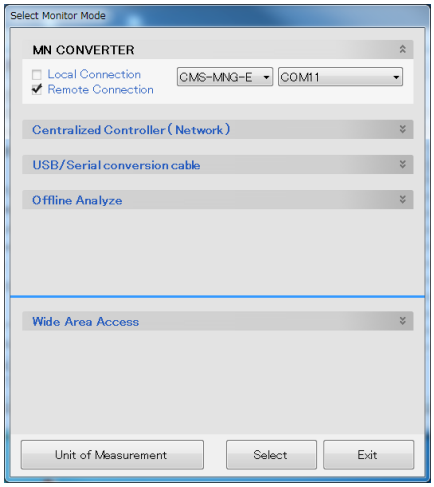
* When MN Converter model is ”CMS-MNG-E “, and it is connected via USB, USB COM port No. is displayed. Select the USB COM port No. of the connected USB.

### 1.4.2.2 In case for remote connection

This will be used when online monitoring is adapted to air conditioning system by using a modem, and connecting the maintenance tool and MN Converter with public telephone circuit remotely. The setting up of the modem for Windows (modem at the remote site side) and the initial setting up (modem connecting MN Converter at the local side. For detail, refer to (3).) are previously required. The connection of the modem, public telephone circuit and local MN Converter is necessary.

* For a description of the on-site air conditioner system connection method, refer to the MN Converter Operation Manual.

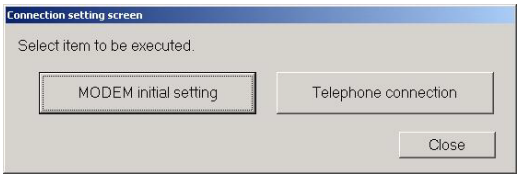
* If communication does not have for 10 minutes in remote connection, “Timeout occurred!” will be displayed, if O.K. is pushed, a telephone circuit will be cut automatically and the Maintenance tool will be ended.




(1) After clicking “MN CONVERTER” on the selection screen of Monitor mode, and click “REMOTE CONNECTION.” For MN Converter, “CMS-MNF-B””,”CMS-MNG-E” will automatically be selected. Then select COM port No. of RS-232C connected with equipment (like a modem) for connection to public telephone line.Last click [Select] .

*MN Converter to be locally installed should be „CMS-MNF-B“,”CMS-MNG-E”.
Remote connection can not be performed with “CMS-MNF.”

(2) Next the screen to set remote connection will appear. In order to conduct the initial setting (AT command setting) of the modem to be used, click [MODEM initial setting], and to initiate remote connection, click [Telephone connection] .




*Insert an isolator between the local MN Converter and modem for insulation. Inserting the isolator reduces the number of lines used by the internal wiring of RS-323C. For this reason, it is required to select [MODEM initial setting] before the remote connection to change the setting information on the modem to be installed at the local side.
For detail, see Installation Manual-annexing of MN Converter (CMS-MNF).

(3) Initial setting of modem

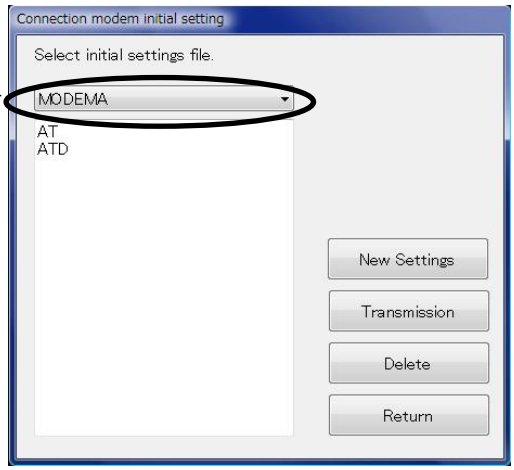
For the modem to be installed at the local side (MN Converter side), initial setting should be applied before connecting remotely. To apply the initial setting of the modem, click [MODEM initial setting] on the remote setting screen.

The **Connection Modem Initial Setting Screen** will appear. A modem that is already initialized does not have to be re-initialized.

The explanation of the operation only is described here. For the detail of the setting content, see Installation Manual-annexing of MN Converter (CMS-MNF).

(a) Explanation of screen

-Select a registered modem setup file at the **Select Initial Settings File Box**. The contents of the selected file will be listed below the selection box.



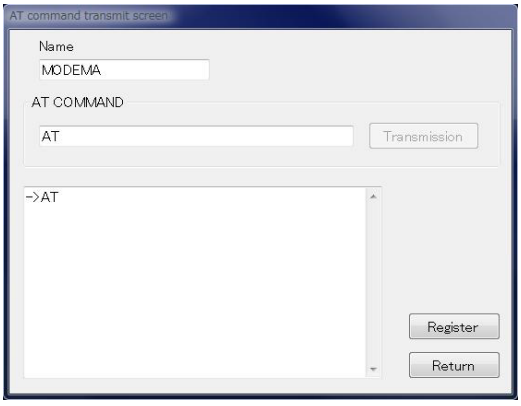

-Click on [Transmission] and the modem will be set up according to the contents selected at the selection box.
(AT commands are sent to the modem.)
Check if transfer with the modem is normal at the **Transfer with Modem Status Screen**.

- Click on [New settings] to initialize another modem. Send the initialize command and register the transfer contents for the modem at the **AT Command Transmit Screen**. [Refer to (b)]

- Click on [Delete] to delete the selected modem settings from the registered settings. When the number of registrations limit is exceeded, delete the unwanted contents. [Refer to (b)]

- Click on [Return] to return to the **Connection Setting Screen**.

(b) Perform new modem setup.




- Enter the command (you want to set) you want to send to the modem at the AT command input text. Then click on [Transmission] to send the entered AT command to the modem. The response from the modem will appear below the entered AT command. Check the contents.

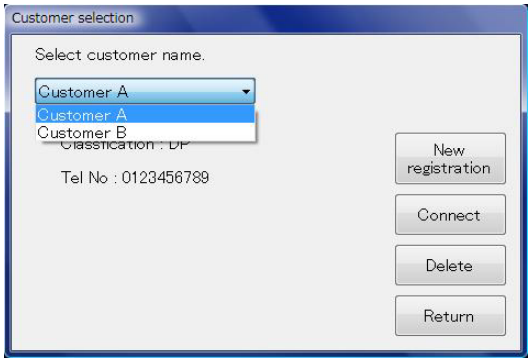
- After transmission to the modem is complete, click on [Register]. The contents sent to the modem will be registered as an initialize file. (Registered in the setup file list of the **Connection Modem Initial Setting Screen**.) At this time, do not forget to enter the registration name. Up to ten items can be registered. If ten items are already registered, new items cannot be registered. Delete unwanted items using the **Connection Modem Initial Setting Screen**.

- Click on [Return] to return to the **Connection Modem Initial Setting Screen**.

(4) Initiating the remote connection

To initiate the remote connection, click Telephone connection on the remote setting screen.

The **Customer Selection Screen** will appear. This screen connects to the on-site remote modem.

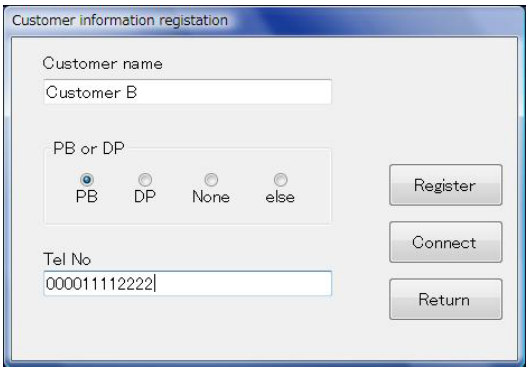



(a) When the addressee has already been registered, select the customer name to be connected in “Select customer name box” and then click Connect to initiate connection.

In the case of initial connection or to change to a new addressee, click New registration .

Then the Customer Information Registration Screen will appear.

(b) Enter Customer name of the field addressee, enter the type of the telephone circuit to be used and the telephone number of the addressee, and click Register . The set content will be registered.




* The contents transmitted to the modem vary in the chosen Line type.

Pay attention to the following.

When PB is chosen, “ATDT” is added before the telephone number.

For example, when a telephone number is 0123456789,

“ATDT0123456789” is transmitted to the modem.

It becomes the following when “DP”, “NONE” are chosen in the same way.

DP --- ATDP0123456789

NONE --- ATD0123456789

When a circuit connection is impossible in the case of above three which as well, “ELSE” is used.

When “ELSE” is chosen, nothing is added to before the telephone number.

Input a command for the circuit connection from the beginning.

For example, “ATD0,0123456789” is transmitted to the modem when “ATD0,0123456789” is inputted in the telephone number column.

When the one except for the “ELSE” is chosen, only a number can be inputted in the telephone number column.

The information for up to 100 customers can be registered. When the information for 100 customers has been registered, new customer information cannot be registered. Delete the unwanted customer information using the customer selection screen.

(c) Check the contents, then click on Connect .

The **Connection Status Indication Screen** will appear.

Connect the line. When you want to disconnect the line, click on Stop .

The line will be disconnected.



### 1.4.3 Starting the On-Line Monitor(USB/Serial conversion cable connection)

#### 1.4.3.1 In case for local connection

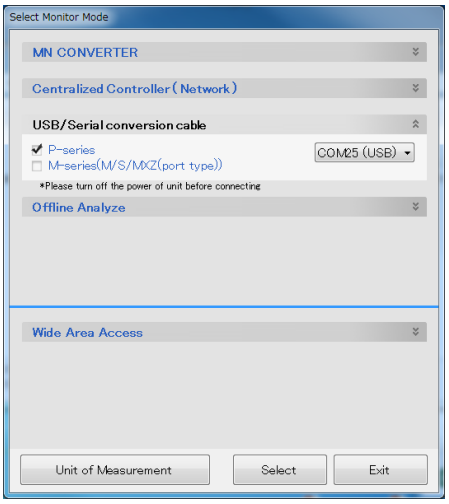
This will be used when online monitoring is adapted to air conditioning system by connecting the Maintenance tool and USB/Serial conversion cable locally.
After turning off the power supply(circuit breaker) of air conditioning system, connect the USB / Serial conversion cable to the air conditioning system.

**Caution:**

- There is a danger of electric shock, please connect/disconnect the USB / Serial conversion cable after turn off the power supply(circuit breaker) of air conditioning system.
- For safety, Please put the junction bord(Heat shrink tube part) of the USB/Serial conversion cable inside the outdoor unit and close the cover of the outdoor unit before turn on the power supply.
- Do not put the USB / serial conversion cable in a humid place.Do not get it wet.
- Do not pull or twist the USB / serial conversion cable.

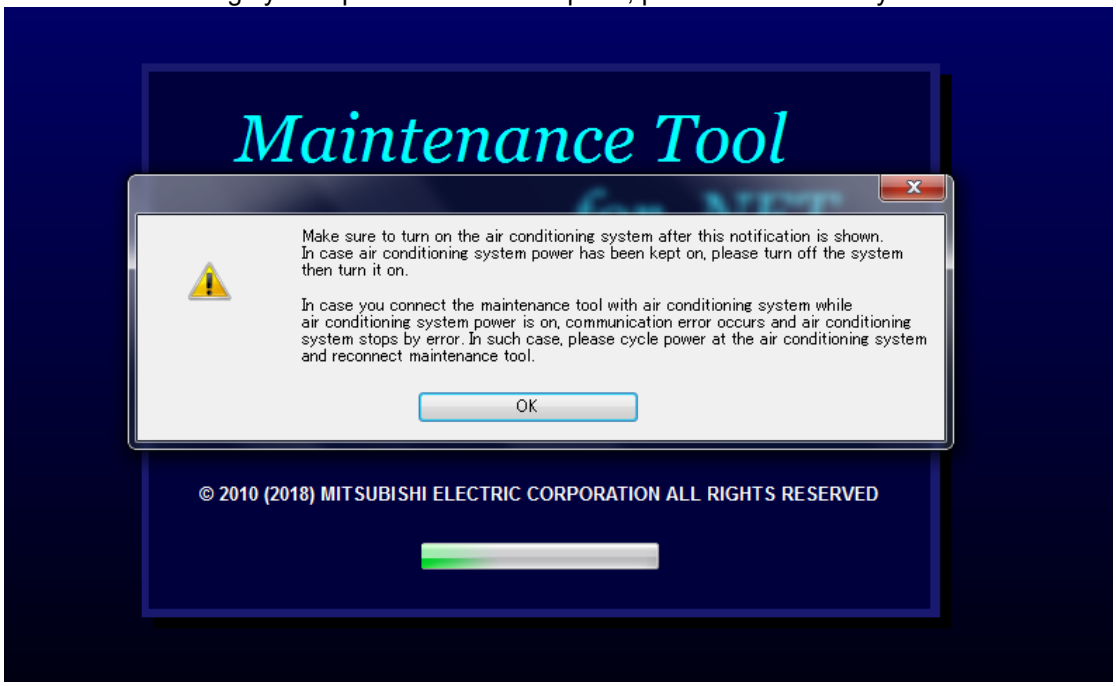
(1) Clicking “USB/Serial conversion cable” on the selection screen of Monitor mode selects “P-series” or ”M-series” simultaneously.
Select the COM port No. of the connected USB.
Last click Select .

* By pre-inserting the USB/Serial conversion cable in the USB port, the USB COM port number will be displayed.

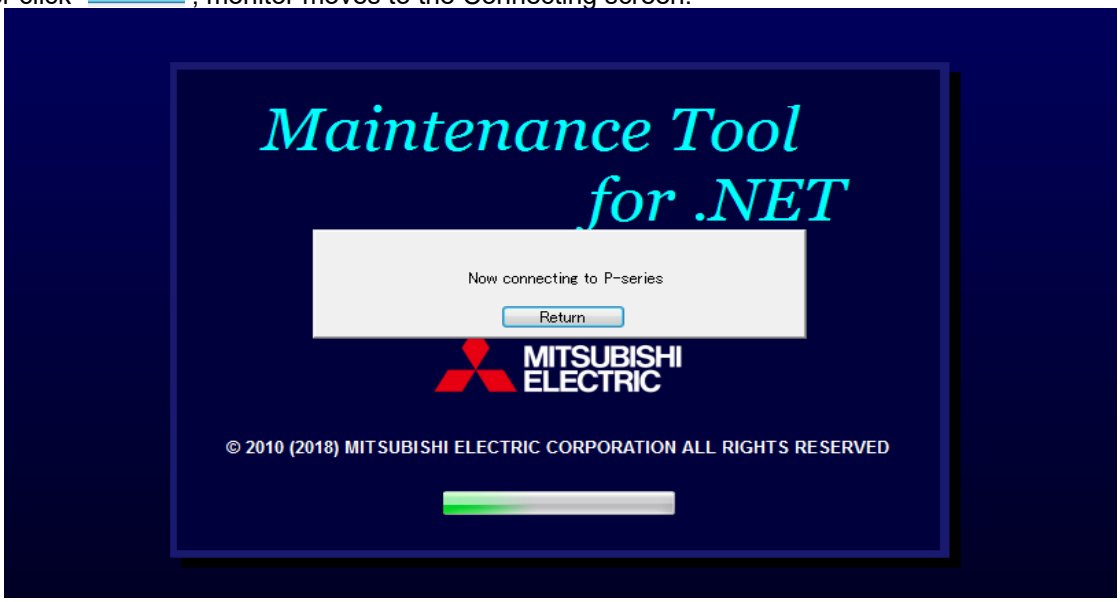


(2) Case of P-series select

Make sure to turn on the air conditioning system after the following notification is shown.
In case air conditioning system power has been kept on, please turn off the system then turn it on.




After click OK , monitor moves to the Connecting screen.



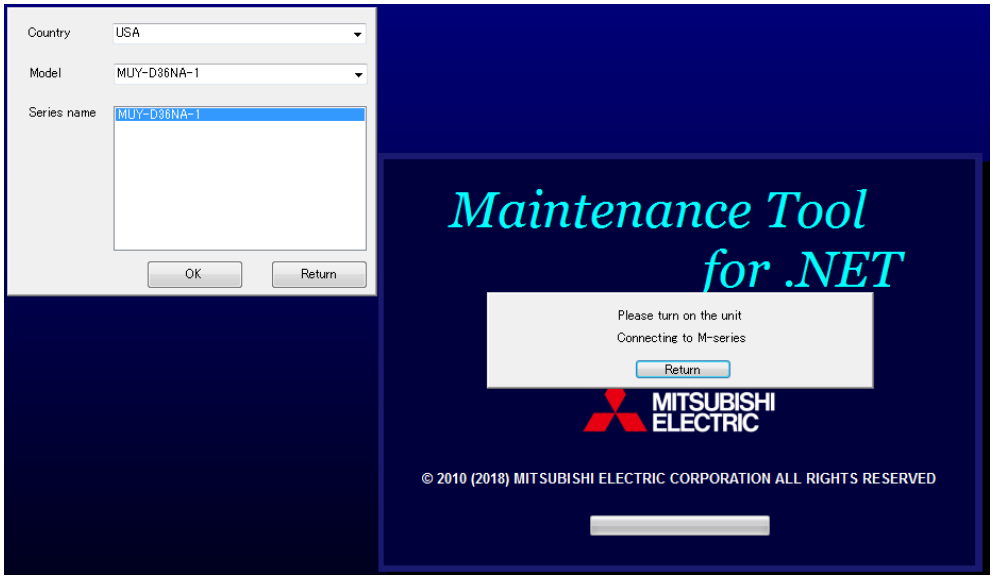

After collecting the information of air conditioning system, system automatically moves to Operation Monitor screen.

**NOTE:**

- In case you connect the maintenance tool with air conditioning system while air conditioning system power is on, communication error occurs and air conditioning system stops by error.
  In such case, please cycle power at the air conditioning system and reconnect maintenance tool.
- If you mistake Series selection ,you can return to the Select monitor mode screen by selecting "Return" button.

(3) Case of M-series select

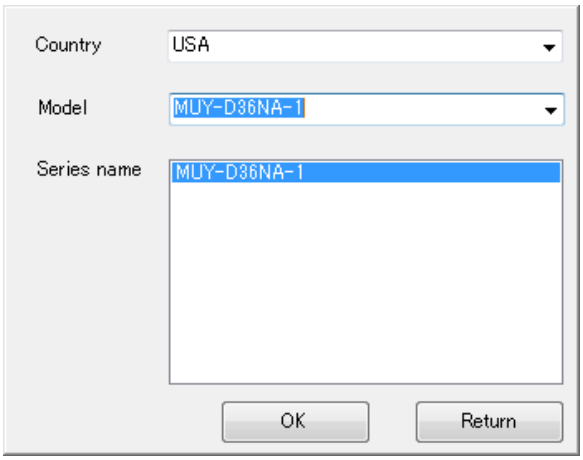
Please turn on the power supply(circuit breaker) of air conditioning system after the following Title screen is displayed.




Select Country and the model / series name of the Outdoor unit to be connected and select “OK”button.

At this time, by entering the model name in the Model input field, it is possible to narrow down the model of the pull down list.

After acquiring the information of the unit, it automatically changes to the monitor screen.




**NOTE:**

- If you mistake Series selection ,you can return to the Select monitor mode screen by selecting "Return" button.

### 1.4.4 Starting the On-Line Monitor(Centralized Controller connection)

To use the maintenance tool via Centralized Controller(Network), license registration for the Centralized Controller to be used is necessary.
Purchasing the license No. for each Centralized Controller be used, conduct the license registration through the Web browser (http://[IP address of the Centralized Controller]/ administrator.html). After selecting “Maintenance tool” of the optional function on the Web Browser Screen displayed, enter the purchased license No.
Refer to the following chapters in the “Web Browser Operation Manual” for detailed information about license registration.
Centralized Controller G-50A, AG-150A or GB-50ADA:Cahpter4 [Registering a License for Optional Functions]
Centralized Controller EB-50GU, AE-200, AE-50 or EW-50:Cahpter10 [License registration for optional functions]
When connecting maintenance tool via Expansion Controller,register the license in AG-150A connected by the Expansion Controller. (Only when AG-150A that registers the license is normally connected, it is possible to connect via Expansion Controller.)

* To use the maintenance tool via Centralized Controller (Only for LAN mode and Dialup connection mode), please check a setup of Internet Connection Firewall of PC. If the FIREWALL function is used, communication will be normally impossible with Centralized Controller, and normal data will not be displayed.
For detail, please refer to **[6. How to change setting of Firewall].**
In the case of permanently installing an anti-virus software and always started under this environment, the fire wall function of this software may be activated sometimes. In such case, The normal communication with Centralized Controller will be hindered not displaying data normally. When operating Maintenance Tool, finish the anti-virus software once or remove the fire wall function.

### 1.4.4.1 In case for local connection

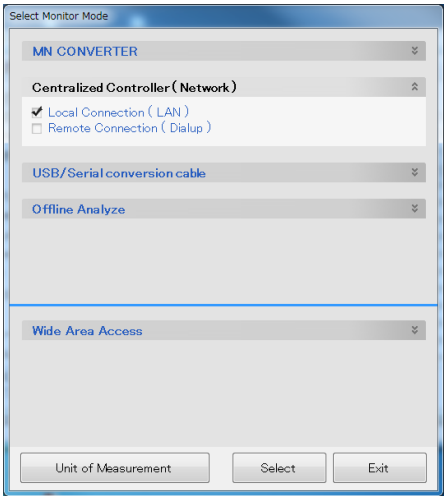
In the case when on line monitoring is applied to air conditioning system via Centralized Controller by connecting the Maintenance Tool to LAN locally.

**NOTE:**

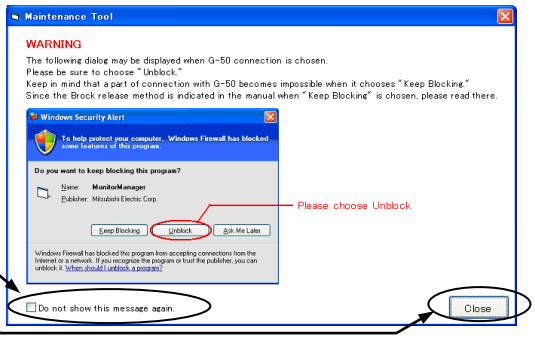
・Though the warning shown on the right appears, this is not a problem. Simply click **[Unblock]** or **[Allow access]**.



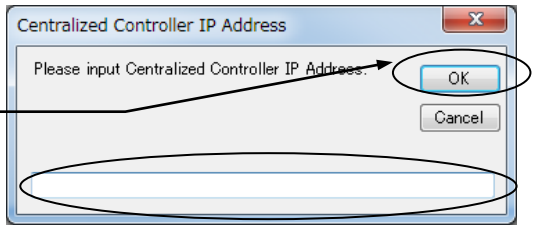

(1) Clicking “ Centralized Controller (Network)” on the selection screen of Monitor mode selects “Local connection” simultaneously. Last click “ Select “.



(2) A message will appear prompting you to unblock **[MonitorManager]**.
If **[MonitorManager]** is already unblocked, check the checkbox next To **[Do not show this message again]** to not show this message.
Click **[Close]** to close the popup window.




(3) Next IP address input screen is displayed. Here,input IP address of Centralized Controller connected to the air conditioning sy stem of which operating information is desired to monitor, and click on OK .



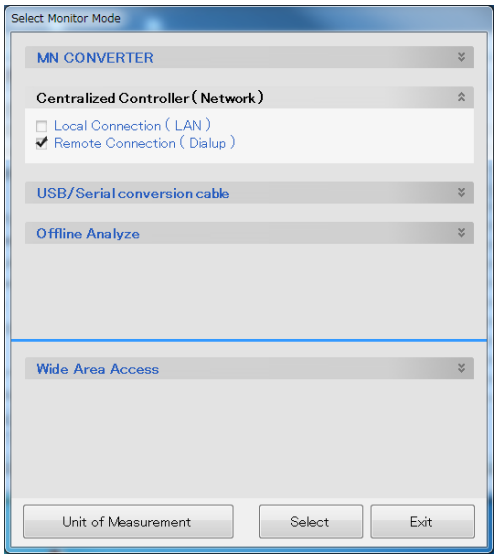

**NOTE:**
- It is required to set to the IP address in the same system with Centralized Controller to be connected to Maintenance Tool PC from [Control Panel].

### 1.4.4.2 In case for remote connection (Dialup)

In the case when on line monitoring is applied to local air conditioning system (with Centralized Controller installed) from the maintenance tool in the remote place via public telephone circuit.

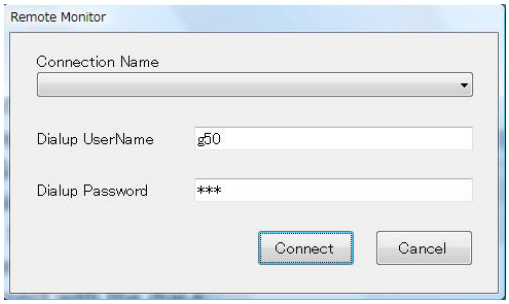
* When utilizing Remote connection (Dialup),please prepare MODEM and DIAL-UP ROUTER (of a type allowing data communication by receiving external telephone transmission) for the connection with the public circuit in addition to the components used by Local connection (LAN).
  For the system composition, please refer to the system diagram of (2)-1 in 1.1.2.
  To use Remote connection (Dialup), it is previously required to register MODEM onto Windows and set the information on the receiver (the dial-up router at Centralized Controller in the field) of the telephone transmission onto the dial-up connection screen.
* If communication does not have for 10 minutes in remote connection, “Timeout occurred!” will be displayed, if O.K. is pushed, a telephone circuit will be cut automatically and the Maintenance tool will be ended.

(1) After clicking “Centralized Controller(Network)” on the selection screen of Monitor mode, and click “REMOTECONNECTION(Dialup).”
Last click “ Select “.




(2) Next **Remote Monitor screen** is displayed.
Here select the connection name of the dial-up router at Centralized Controller in the field desired to be remotely connected.
It is being set previously on the dial-up connection screen.
Then input Dial-up user name and Dial-up password to connect with the dial-up router,and click on Connect .

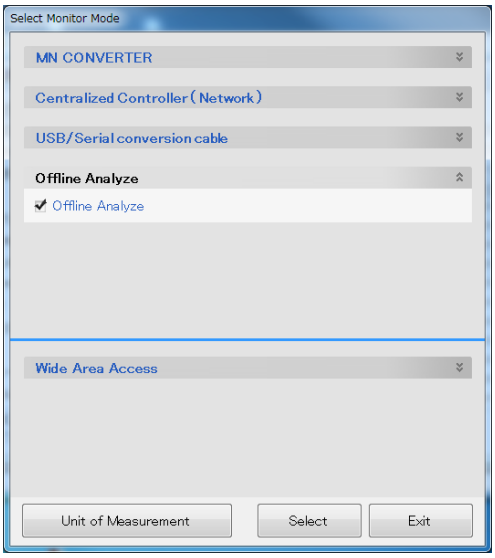
After connecting to the telephone circuit, on-line monitoring can be performed as same as the case when connected with LAN.



### 1.4.5 Starting the Off-Line Monitor

When offline analysis is adapted to the data collected under ONLINE MODE.

(1) Clicking “Offline Analyze” on the selection screen of Monitor mode.
Last click “ Select “.




### 1.4.6 Using the Wide area access mode

Under the “Wide area access mode,” the access method for remote connection can be registered to the database of each customer enabling easy online connection with the air conditioning system of the customer desired to be accessed.

**[Remote access method]**

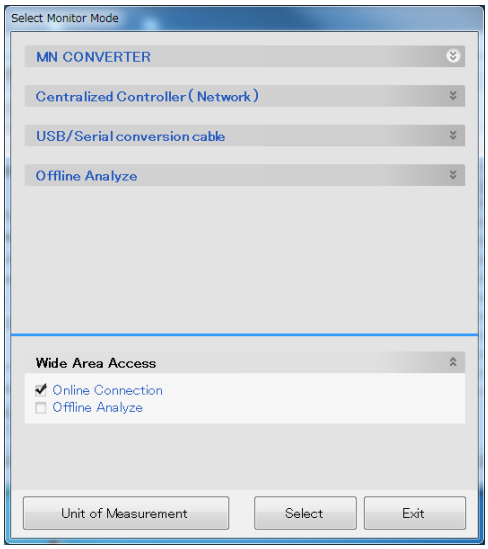
- **LAN** : Accessing by directly connecting Maintenance Tool PC and Centralized Controller with LAN (WAN).
- **Dialup** : Accessing by dialup connection to Centralized Controller via public network.
- **Modem** (MN Converter) : Accessing by connecting Modem to MN Converter via public telephone circuit.

After the online connection performed by any of the above methods, you may use the similar function as that obtainable in the normal online connection.
While under the offline mode, customer information will be provided to the monitored data enabling only to select a specified customer for display.

**NOTE:**
Even when connecting under the wide area access mode, cautions will be applied as same as under the normal connection mode. You are kindly requested to observe the cautions described in the connection method under normal mode as well. (1.4.1 - 1.4.4)

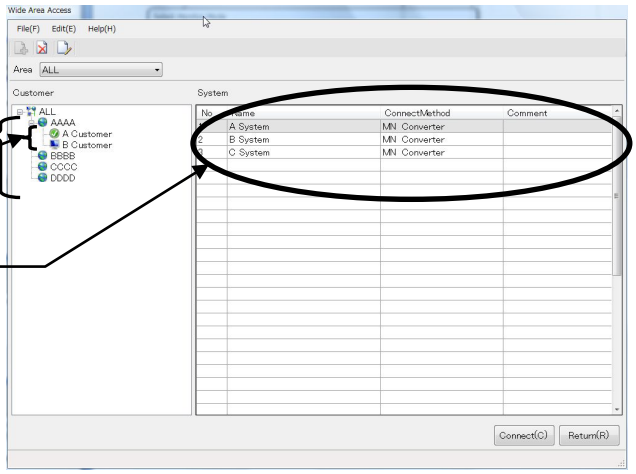
## 1.4.6.1 Online Connection

(1) Clicking “Online Connection (Wide area access mode)” on the section screen of Monitor mode.
Last click “ Select “.



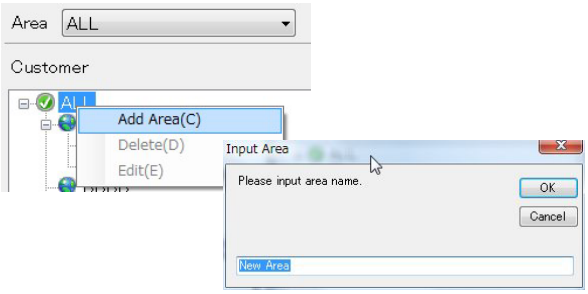

(2) The customer registration screen will be displayed.
Register customer information in the order of
[1] -> [2] -> [3] hierarchically.

[1] Area name
→ [2] Customer name
→ [3] Air conditioning system name & connection method



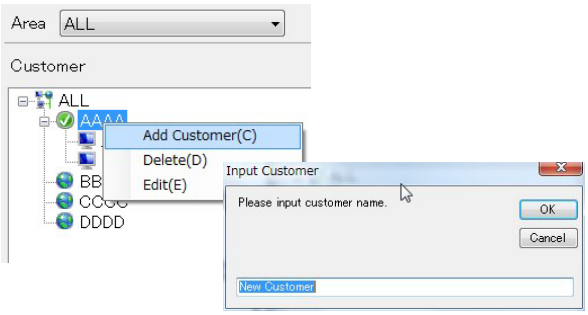

**(a) Creating the [Area name] folder**

1) When [Wide Area] is being □onfigu, the sub-menu will be displayed by right-clicking.
2) Select [Add Area].
3) As the screen to enter the AREA name appears, set a proper Area name and press [OK] to create the Area folder.




**(b) Creating the [Customer name] folder**

1) Right-clicking the [Area name folder] to be registered displays the sub-menu.
2) Select [Add Custormer].
3) As the screen to enter the Customer name appears, set a proper customer name.

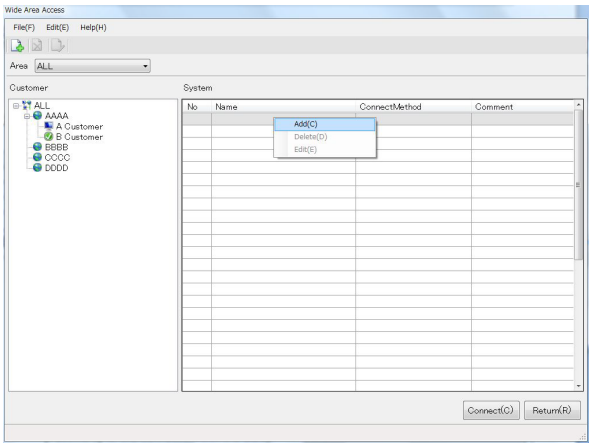



* In addition to the above mouse operation, the creation of [AREA name] and [Customer name] can be set from the **menu bar (File)** or **tool bar (Figure).**
By applying the same operation procedure(right-clicking, menu bar, tool bar), each folder can be deleted. Also the name of each folder can be changed.

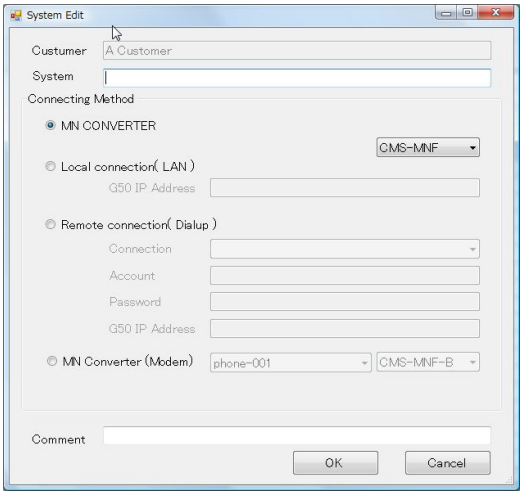
**Caution:**
If a folder is deleted, all information (customer name, air conditioning system name, etc.) will be deleted similarly.

**(c) Setting the [Air conditioning system name]**

1) Under the state when the [Customer name folder] desired to be set on the air conditioning system is □onfigu, the sub-menu will be displayed by right-clicking the air conditioning system list at the right screen.
2) Selecting [Create ...] displays [Setting screen of air conditioning system].

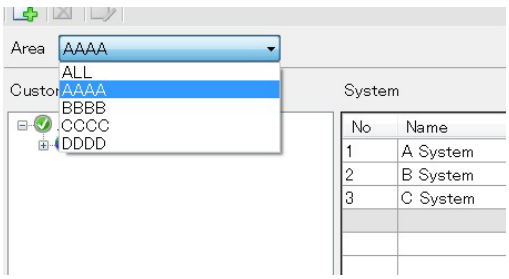



**[Setting screen of air conditioning system]**

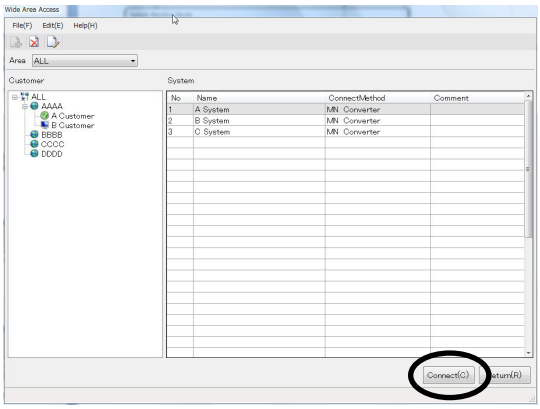



1) Set the system name.
2) Select the method to connect with the system.
   - To connect by using **LAN (WAN)**, enter the IP address of Centralized Controller to be connected. (Same as 1.4.4.1)
   - To connect by using **Dial-up**, select the [Connection name] of dialup router of the local Centralized Controller being previously set on the dialup connection screen of Windows. And enter [User name] and [Password] for the connection with the dialup router, and lastly enter the IP address of Centralized Controller. (Same as1.4.4.2)
   - To connect remotely with **MN Converter and Modem**, select [Modem(MN Converter)].
3) Enter special notes if any on the comment column.
   After entering and selecting the above, press [OK].

Set various information as required by repeating the items **(a)~(c) above**.
Using the area selecting section allows you to extract the only area desired to display.

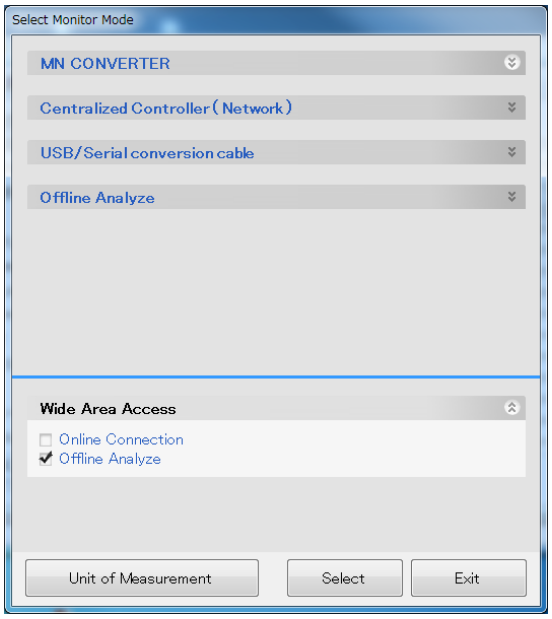


(3) Focussing on the air conditioning system desired to be connected and pressing [Connect] will start the procedure for connection. After completing the normal connection, the screen moves to the online main screen allowing normal online operation.
However when the connection method uses [Modem(MN Converter)], the screen of the Modem remote connection will appear. In this case, select the Modem to be connected and proceed the connection procedure.(Refer to 1.4.2.2.)



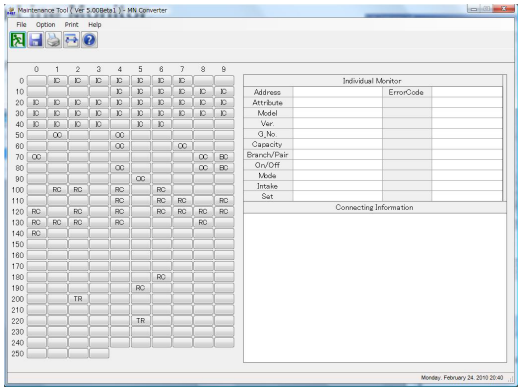

## 1.4.6.2 Offline Analyze

(1) Clicking “Offline Analyze (Wide area access mode)” on the section screen of Monitor mode.
Last click “ Select “.



## 1.4.7 Ending the Maintenance Tool

### 1.4.7.1 Ending the On-Line Monitor

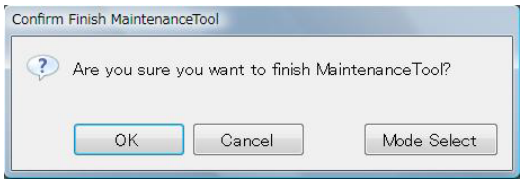


(1) Open the **Main Screen**.

(2) Click on [**File**] on the menu bar.

(3) Click on [**Return**] in the sub-menu.

(4) The message "**Are you sure you want to finish maintenance tool?**" will appear.
Click on [OK].



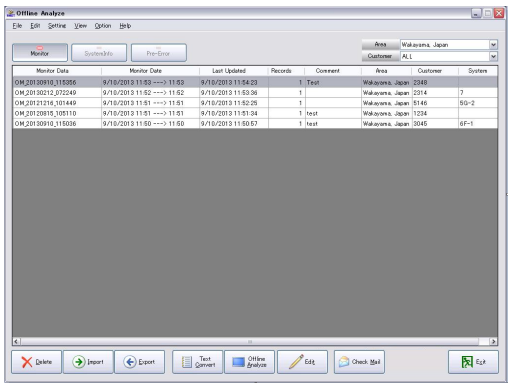

The On-Line Monitor will end and the Windows screen will appear.

*At ending of Maintenance Tool, the telephone circuit will automatically be disconnected.

* Clicking [Mode Select] returns to the [selection screen of Monitor mode].

**NOTE:**
In case of connection using USB / Serial conversion cable, Main screen is not displayed and, the Select Monitor mode screen is displayed instead. Please refer to 1.4.7.3.

### 1.4.7.2 Ending the Off-Line Monitor

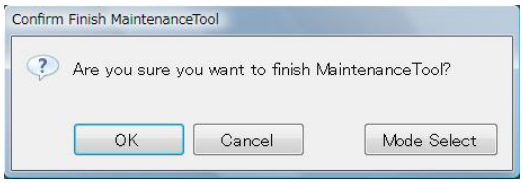


(1) Open the **Off-line Analyze Screen**.

(2) Click on [Exit].

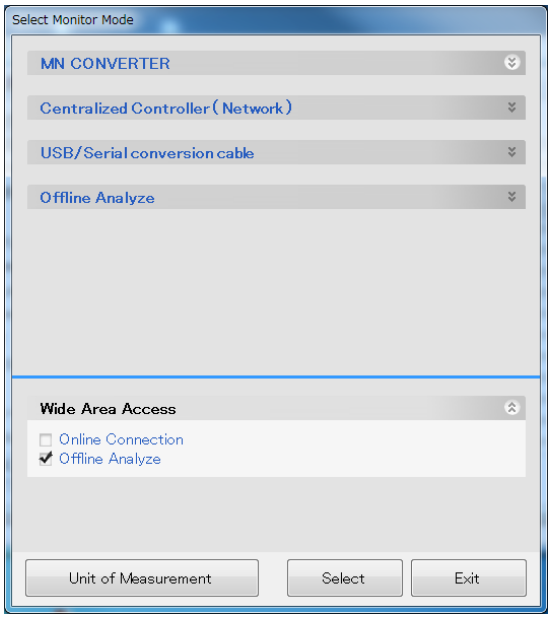
(3) The message "**Are you sure you want to finish maintenance tool?**" will appear.
Click on [OK].

* When finishing Offline Screen immediately after deleting data, a message of "Finishing Maintenance Tool !!" may sometime be displayed. The internal data is now under arrangement. Offline Screen will automatically be finished after completing this process. Please wait a while.




* Clicking [Mode Select] returns to the [selection screen of Monitor mode].

### 1.4.7.3 Ending the Mode select Monitor



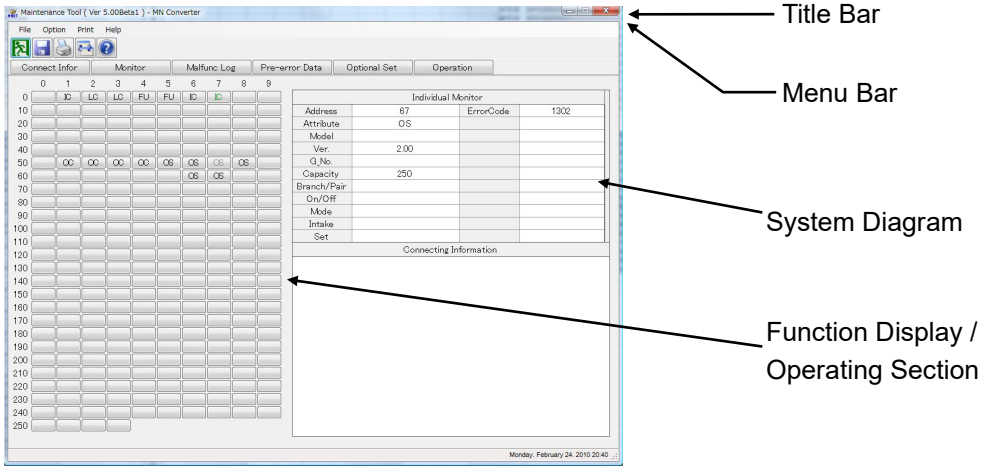

(1) Open the **Select Monitor Mode screen**.

(2) Click on Exit .

# 2 Terms for Each Section

## 2.1 Design of Screen

The design of the screen is shown below.




**- Title Bar**

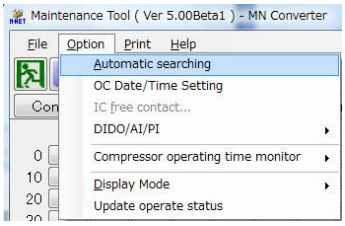
Displays the title of the screen.

**- Menu Bar**

Displays the functions that can be performed using the current screen.

Click on an item and a sub-menu or message screen will appear, as shown in the illustration.

If a sub-menu appears, further function selections can be made.




(Example of what the screen looks like when option is clicked.)

**- Function Display / Operating Section**

Displays the contents of the screen and the operation to be performed.

**NOTE:**
In case of connection using USB / Serial conversion cable, this screen is not displayed.

## 2.2 Operating Method

The following operations are performed by mouse.

(1) Click

Align the mouse pointer with the desired button and press the left button on the mouse. This is known as a click.

In general, all Maintenance Tool operations are performed with click operations.

(2) Drag

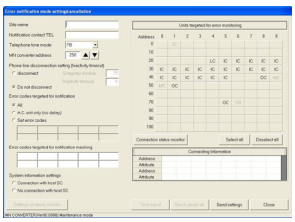
A drag is when the mouse pointer is moved while the left button is held down.

If you desired to check the bottom screen when two or more screens are being displayed on top of each other, align the mouse pointer with the title bar of the top screen and drag it. The bottom screen can now be seen.

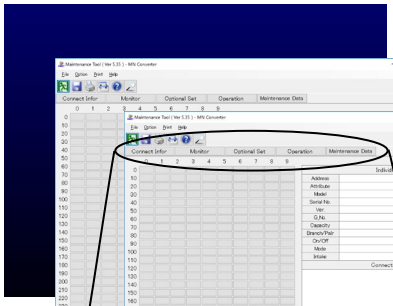
# 3 On-Line Monitor Operating Method

## 3.1 On-Line Monitor Screen Transfer

**Remote error notification**



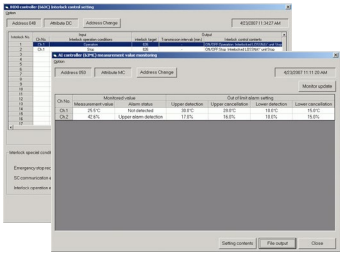
**Title Screen**



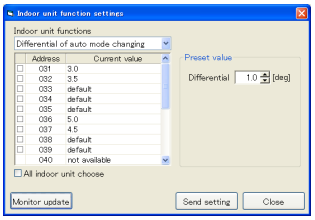
**Main Screen**



**Setting and Monitoring DIDO/AI/PI controllers**

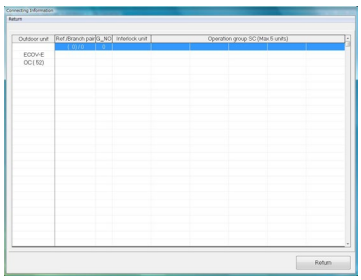


**Setting the Values for Indoor Unit Functions**

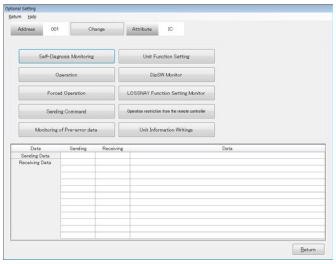


Connect Infor | Monitor | Optional Set | Operation | Maintenance Data

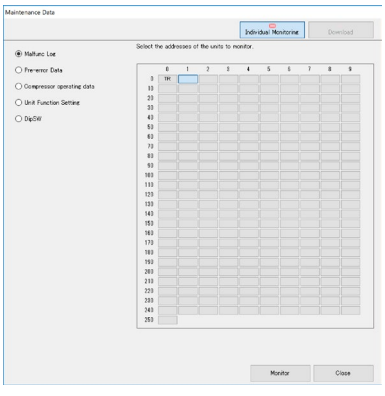
**Connecting Information**



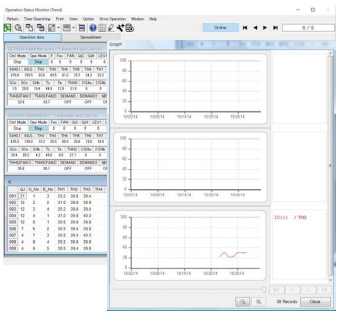
**Optional Setting**



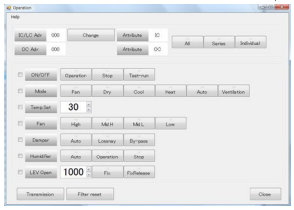
**Maintenance Data**



**Operation Monitor**



**Operation Control**



**NOTE:**
In case of connection using USB / Serial conversion cable, Operation monitor is displayed after Title screen.

## 3.2 Function Chart

**Connecting Information** ---------- [Refer to 3.7]

This allows monitoring of the indoor units connected to the outdoor unit and of the interlock units and the operation group SC connected to indoor units.

Or this allows monitoring of a network information of the Expansion Controller (PAC-YG50ECA-J) and that upper controller's connection informations.

**Operation Monitor** ---------- [Refer to 3.8]

This allows monitoring of the operating condition of the unit and operating data. The operation data obtained will be shown in the form of a graph.

This also allows the display of the refrigerant circuit diagram.

Utilizing the mail communication mode in addition, the operation monitoring data collected by Centralized Controller can periodically be transmitted to remote mail servers, and it can be referred as the off-line data later.

*The Mail communication mode can not be used with MN Converter connected.

**Optional Setting** ---------- [Refer to 3.9]

This allows use of functions such as self-diagnosis monitoring.

**Operation Control** ---------- [Refer to 3.10]

This allows the same operation as with the remote controller.

**Maintenance Data** ---------- [Refer to 3.11]

Error history and pre-error data can be monitored and downloaded.

**OC Date / Time Setting** ---------- [Refer to 3.12]

A setup of the present time can be performed to all outdoor units at the same time.

**Free contact of indoor unit** ---------- [Refer to 3.13]

When utilizing the [Indoor unit free contact mode] which uses the external input/output of Free Plan indoor unit (Building-Multi) together with Centralized Controller and TG 2000A, the contact action of the indoor unit can be tested with this function.

**Remote error notification** ---------- [Refer to 3.14]

When an error occurs in the air conditioning unit, the remote error notification function allows previously registered destinations to be automatically notified of the error via telephone lines. (This function can only be used with the MN Converter CMS-MNG-E.)

**Setting and Monitoring DIDO/AI/PI Controllers** ---------- [Refer to 3.15]

Settings and monitoring DIDO Controller (PAC-YG66DCA), AI Controller (PAC-YG63MCA), and PI Controller (PAC-YG60MCA) can be made. (PI Controllers can be used only for monitoring.)

DIDO Controllers and AI Controllers have an interlock control function.

DIDO Controllers can also change the operation status of M-NET devices (such as indoor units, DIDO Controllers) by sending operation commands. DIDO Controllers can output contacts on DIDO Controllers themselves depending on the change in input contact status.

AI Controllers can change the operation status of M-NET devices (such as indoor units, DIDO Controllers) by sending operation commands depending on the change in measurement values.

"Interlock operation conditions" for the "interlock control function" can be set on Maintenance Tool.

**Setting the Values for Indoor Unit Functions** ---------- [Refer to 3.16]

The preset settings for each function of the connected indoor units can be displayed, set, or changed.

**Compressor operating data monitor** ---------- [Refer to 3.17]

Cumulative compressor operation time and the total number of startup times of the outdoor units and chillers can be monitored. When replacing the circuit board, cumulative compressor operation time and the total number of startup times can be written to the new circuit board.

**Initial Settings and Monitoring AHC ADAPTER** ---------- [Refer to 3.18]
Initial settings and monitoring AHC ADAPTER

**Fixed value setting of compressor frequency** ---------- [Refer to 3.19]
This allows lock the compressor to a fixed frequency.

**Indoor unit LEV problem detection support** ---------- [Refer to 3.20]
This function automatically identifies the indoor units with possible locking of the LEV.

**Detection of the incorrect port connections/settings** ---------- [Refer to 3.21]
This function helps detect incorrect port connections/settings for the simultaneous heating/cooling CityMulti system (R2).

**-Connecting to P/M-series**

In case of connection using USB / Serial conversion cable, the applicable items are following.

- Operation Monitor[Refer to 3.8]
- Operation Control [Refer to 3.10].

## 3.3 Address Search Method

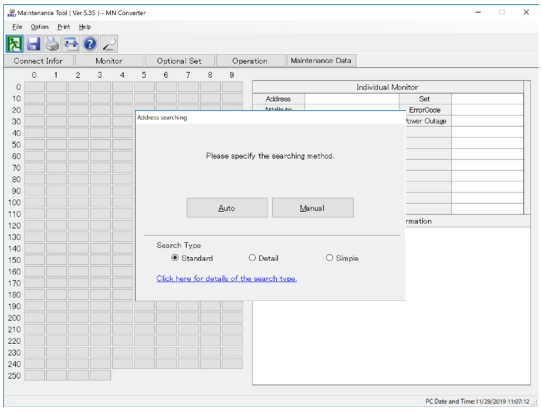
### 3.3.1 Address Search Method Selection

(1) Start the M-NET Maintenance Tool and the **Select The Address Searching Method Screen** will appear after the **Title Screen**.

(2)

(3) Select the address searching method, and click [**Standard**], [**Detail**], or [**Simple**].

(4) Click on either Auto or Manual to select the address search method.




* **Automatic Search**

The Maintenance Tool automatically searches for and displays information about units connected to the M-Net transmission line.

* **Manual Search**

The user optionally searches for the units connect to the M-Net transmission line.

### 3.3.2 Address Search Type

The search type can be selected according to the purpose.
The following table shows the information to be searched and the required search time for each search type.

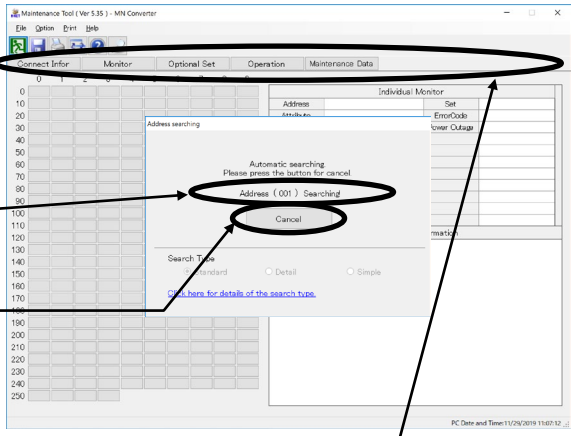
| | Simple | Standard | Detail |
|---|---|---|---|
| Address | ○ | ○ | ○ |
| Attribute | ○ | ○ | ○ |
| Model | | ○ | ○ |
| Serial No. | | ○ | ○ |
| Ver. | | ○ | ○ |
| G_No. | ○ | ○ | ○ |
| Capacity | ○ | ○ | ○ |
| Branch/Pair | ○ | ○ | ○ |
| On/Off | | | ○ |
| Mode | | | ○ |
| Intake | | | ○ |
| Set | | | ○ |
| ErrorCode | | | ○ |
| Power Outage | | | ○ |
| Connecting Information | ○ | ○ | ○ |
| Display color of attribute | ○ | ○ | ○ |
| Search time | 2 seconds/address | 5 seconds/address | 7 seconds/address |

**NOTE:**
The information to be searched and the required search time may vary with the model.

### 3.3.3 Automatic Searching

(1) Click on [Auto] and the **Automatic Address Searching Screen** will appear.

- The time required to complete the automatic search will depend on the PC.
- The address currently being searched for is displayed as [**Address**]. Up to 250 addresses can be searched for.
- Click on [Cancel] to end automatic search. The **Main Screen** will appear.

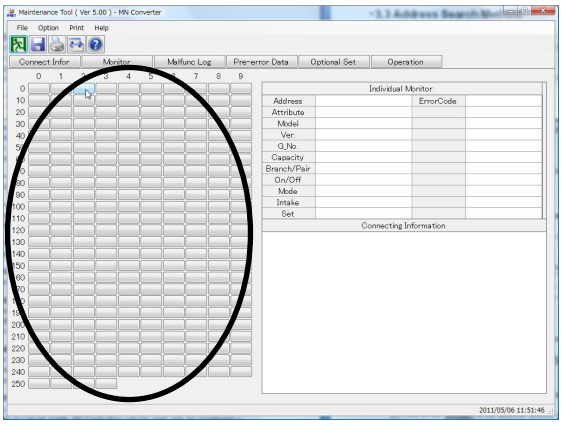



(2) When automatic search has ended, the **Main Screen** will appear.
Returning to the **Main Screen** enables the [**Function Buttons**].

### 3.3.4 Manual Searching

(1) Click on [Manual] and the **Main Screen** will appear.

(2) Click on the [**Button**] of the address desired and searching will begin.

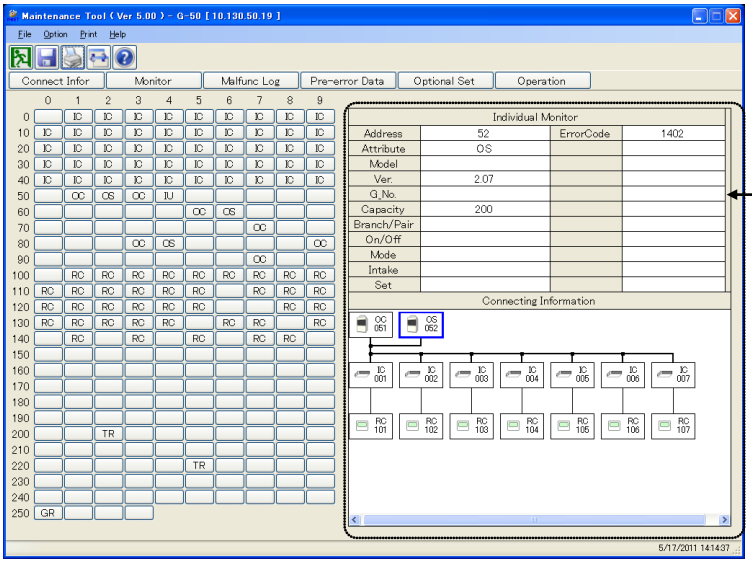



**NOTE:**
When a system is changed, please search an address after re-starting a Maintenance tool and Centralized Controller.

## 3.4 Main Screen

The operations in **3.3 Address Search Method** have made information about the units known.
The [**Unit Attributes**] are displayed on top of the address buttons.
The **Function Buttons** are now enabled at this time.

(1) When the cursor is set to the address where the attribute is displayed, the unit information and refrigeration chart will be displayed in the [Unit Information Displya Columns].




* There are the following restrictions in the refrigeration chart.
-Corresponding units are OC(OS) , BC(BS) , IC , LC(Lossnay) , FU(Fresh Master) & RC(Remote Controller). Other units are not displayed.
-The refrigeration chart is reproduced based on the connection information of each unit. It is different from the actual piping connections & transmission lines.
-The heavy line in the refrigeration chart shows connections between outdoor units , indoor units & Bccontrollers.
-The thin line in the refrigeration chart shows the connections between indoor units , remote controllers & system controllers.
-The double line in the refrigeration chart shows interlocking connections between indoor units , fresh master units & Lossnay units.
-Only the refrigeration chart for the selected outdoor unit is displayed.
-Unless the addresses for all units have been retrieved , the refrigeration chart will not be displayed fully.

**NOTE:**
・The colors in which some attributes (OC, OS, IC, LC, and FU) are displayed change according to the changes in the operation status. They will be displayed in black when the units are stopped; red, when they are in error; magenta, when they are stopped due to power failure; and green, in all other status (i.e., in operation).
・The background of the units that are stopped due to power failure will be displayed in magenta only when the search is conducted in the **[Detail]** mode. When the search is conducted in other address search modes, the background will appear in black.
・Some models (freezers, Mr. Slim etc.) do not support this function, in which case the attributes will be displayed in gray.

**Stopped** **Error** **Power failure** **Other status** **Unsupported**




・When unit information has been changed from the factory setting, the Model name and Serial No. are displayed in blue.For details on unit information writing, refer to "3.9.7 Unit Information Writings."

| | |
|---|---|
| Model | XXX-XXX-XXX |
| Serial No. | XXXXXXXXX |

If the error code is displayed in blue, you can view the troubleshooting (PDF document) by clicking the error code

| Individual Monitor | | | |
|---|---|---|---|
| Address | 51 | ErrorCode | 1302 |
| Attribute | OC | | |
| Model | PURY-P250TLMU/YLMU | | |
| Ver. | 2.00 | | |
| G_No. | | | |
| Capacity | 250 | | |
| Branch/Pair | | | |
| On/Off | | | |
| Mode | | | |
| Intake | | | |
| Set | | | |

Click

## Error Code [1302] (during operation)

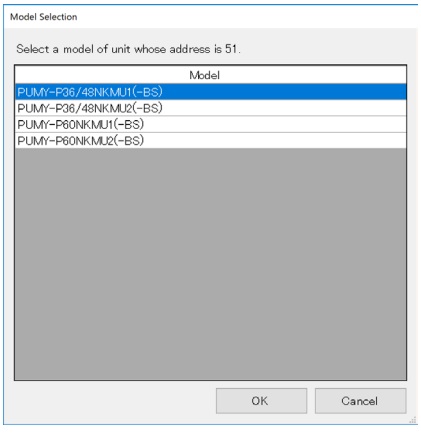
1. **Error code definition**
   **High pressure fault 1 (Outdoor unit)**
2. **Error definition and error detection method**

1) If the pressure of 3.78MPa [548psi] or higher is detected by the pressure sensor during operation (the first detection), the outdoor stops once, turns to antirestart mode for 3 minutes, and restarts after 3 minutes automatically.
2) If the pressure of 3.78MPa [548psi] or higher is detected by the pressure sensor again (the second detection) within 30 minutes after the first stop of the outdoor unit, the outdoor unit stops once, turns to anti-restart mode for 3 minutes, and restarts after 3 minutes automatically.
3) If the pressure of 3.87MPa [561psi] or higher is detected by the pressure sensor (the third detection) within 30 minutes of the second stop of the outdoor unit, the outdoor unit will make an error stop, and the error code "1302" will be displayed.
4) If the pressure of 3.78MPa [548psi] or higher is detected more than 30 minutes after the stop of the outdoor unit, the detection is regarded as the first detection, and the operation described in step 1 above will start.
5) For 30 minutes after the stop of the outdoor unit, preliminary errors will be displayed on the LED display.
6) The outdoor unit makes an error stop immediately when not only the pressure sensor but also the pressure switch detects $4.15^{+0,-0.15}$ MPa [$601^{+0,-22}$ psi]
7) Open phase due to unstable power supply voltage may cause the pressure switch to malfunction or cause the units to come to an abnormal stop.

3. **Cause, check method and remedy**

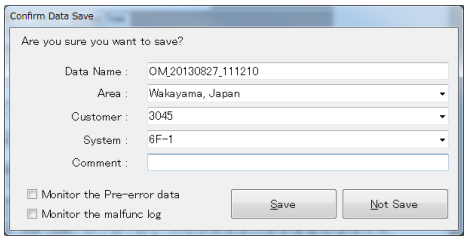
**Note**

- Only some City Multi models support the troubleshooting function.
  Non-City Multi models such as refrigerators and chillers do not support the function.
- To use the troubleshooting function, Adobe Acrobat Reader must be installed on your PC.
  The troubleshooting function will not work properly on a PC without Adobe Acrobat Reader installed.
- To display the troubleshooting for PUMY-series units, click the error code, and select the model name in the model selection screen.
  If the model name is not selected, the troubleshooting will not be displayed.



(2)The menu bar will display [**File**], [**Option**] ,[**Print**] and [**Help**].

- Click on [**File**] and "**Save System Information**" and "**Return**" sub-menu can be selected.
  Click on "**Save System Information**" and the message "**Are you sure you want to save the System Information?**" will appear.
  Clicking OK displays the screen to save data. Change the data name as required and save it.
  You may enter your comment also.
  Click on Cancel to return to the **Main Screen**.
  [Refer to **5.1 System Information Data.**]

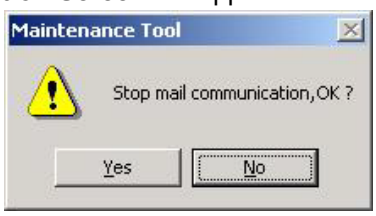



  Click on "**Return**" to end the operation of the On-line monitor.
  [Refer to **1.4.6.1 Ending the On-Line Monitor** ]

- Click on [**Option**] and "**Automatic searching**" and the "**Stop mail communication**" sub-menus can be selected. * At the connection of MN Converter, "**Stop mail communication**" is not displayed.
  Click on "**Automatic searching** " and the message "**Start the automatic searching. Is it OK?**" will appear.
  Click on OK to perform automatic searching or click on Cancel to return to the **Main Screen**.

  For more information about automatic searching, refer to [**3.3 Address Search Method 3.3.2 Automatic Searching**].

  Click on "**Stop mail communication**" ,and the **Stop mail communication Screen** will appear.
  Clicking on Yes stops the mail transfer processing of operation monotor data to remote mail servers.
  After a while, the setting completion message appears. Clicking on OK returns to the main screen.
  Clicking on No returns to the main screen directly.




- Clicking on [**Print**] prints out the display currently shown on the screen.

- Click on [**Help**] and "**Explanation of Terminology**" and "**Operation Method**" sub-menus can be selected.
  [Refer to **3.6.1 Connecting Information of outdoor units 3.6.1.2 (2) "Menu Bar"**]

**NOTE:**
"Stop mail communication" is a function to stop the operation monitor mail transmission of Centralized Controller under [mail communication mode] set in Chapter 3.7. It has no relation with (2)-2 E-mail connection mode of 1.1.2 On-line Monitor (via Centralized Controller).

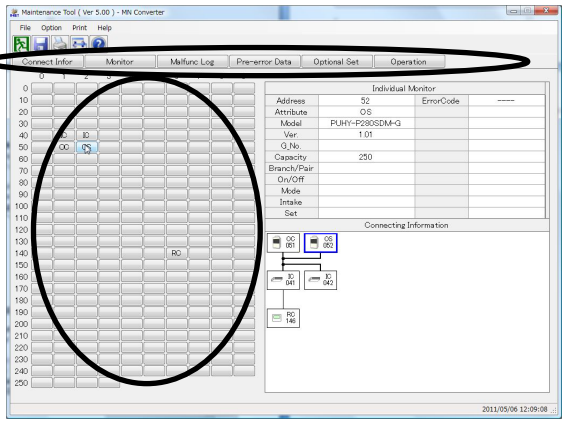
## 3.5 Function Selection Operations

(1) First, click on the desired [**Function Selection Button**].

(2) Next, click on the **Unit to Operate**.

(3) The screen will move to the various operation screens.

(4) If the wrong function selection button is clicked, click on that button once again and the other function selection buttons will be enabled.

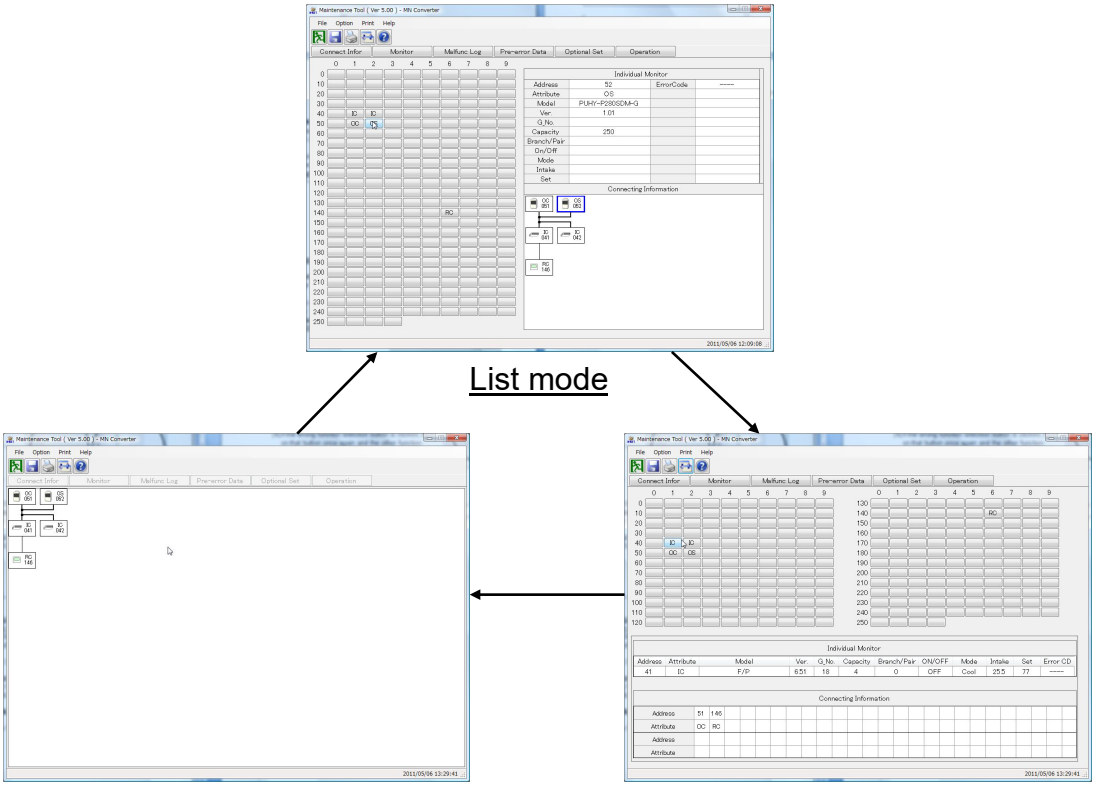


## 3.6 Display Mode Change

(1)Click on 

"List mode" then "Classic mode" then "Diagram mode" and then "List mode" and changes the screen.

(2) The menu display mode, "List mode", "classic mode" ," Diagram mode ", and each can be switched.



List mode

Diagram mode

Classic mode

## 3.7 Connecting Information [Connect Infor]

*** Items Performed Here**

- Indoor units connected to outdoor units, interlock units and the operation group SC (such as system controller and remote controller) connected to indoor units can be monitored here.
  (Refer to **3.7.1 Connecting Information of the outdoor unit**)
- Network information of the Expansion Controller (PAC-YG50ECA-J) and that Centralized Controller's connection informations can be monitored here.
  (Refer to **3.7.2 Connecting Information of the Centralized Controller and Expansion Controller**)

### 3.7.1 Connecting Information of the outdoor unit [OC]

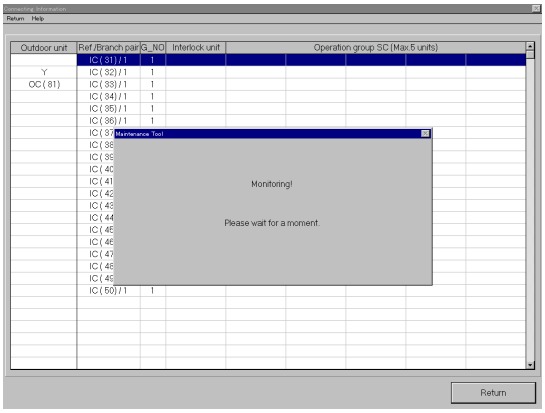
·Indoor units connected to outdoor units, interlock units and the operation group SC (such as system controller and remote controller) connected to indoor units can be monitored here.
·Select and double-click the interlock units and operation group SC (remote controller only), the **Connecting Information Screen** will display as a pop-up menu.
The screen displays addresses and attributes of the units connected to the select unit.

#### 3.7.1.1 Screen Transfer Operation

(1) Click on [Connect Infor] on the **Main Screen**.

(2) Click on the [OC] for the outdoor unit to be monitored.
- Only outdoor units and the Expansion Controller (PAC-YG50ECA-J) can be selected.

(3) Momentarily, the message "**Monitoring! Please wait for a moment.**" Will appear.

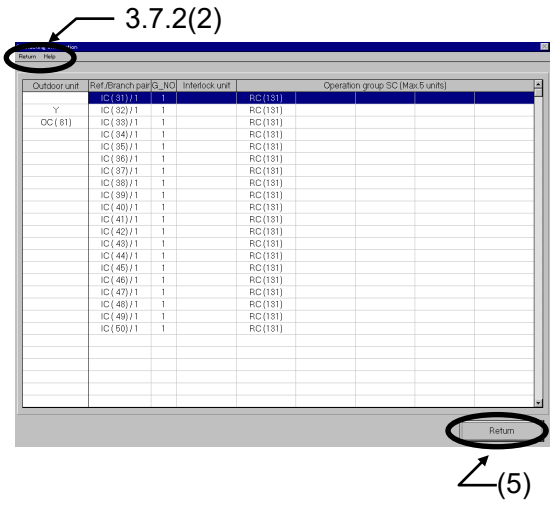



**NOTE:**
Even with the direct expansion type, when units other than the outdoor unit and other than the Expansion Controller(PAC-YG50ECA-J) are selected by (2), the screen returns to the **Main Screen** (where it waits for function selection input).

(4) Momentarily, the **Connecting Information Screen** will appear.

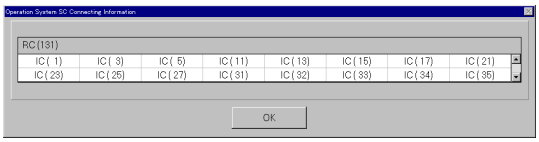
(5) Click on [Return] to end the **Connecting Information Screen**.

(6) The message "**Finish the Connecting Information**" will appear.
Click on [OK] to end or click on [Cancel] to continue.
Click on [OK] and the Main Screen appears.



### 3.7.1.2 Screen Functions and Operation

(1) Double-click on the interlock unit and operation group SC (such as system controller and remote controller), the **Operation System SC Connecting Information Screen** (in case operation group SC) will appear as a pop-up menu.
The screen displays addresses and attributes of each connected unit.



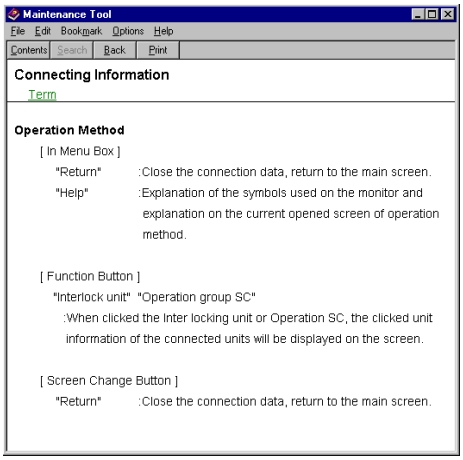

**NOTE:**
The **BC controller(BC),Subsidiary outdoor unit(OS)** are indicated in the outdoor unit column.

(2) "**Menu Bar**"
[**Return**] and [**Help**] appear in the menu bar.

Click on [**Return**] to end the **Connecting Information Screen** and return to the **Main Screen**.

Click on [**Help**] and the **Help Screen** appear.

- Click on "**Contents**" and the index for the **Help Screen** appear.
- Click on "**Back**" and the unit returns to its previous operating state.
- Click on "**Print**" and the currently displayed screen is printed. (Caution: Do not print while on-line. There is a chance that it could interfere with operation.)
- Click on "**Term**" and **Explanation of Terminology Screen** appear.
  Abbreviations, codes and other terms are explained on the explanation of terminology screen.



## 3.7.2 Connecting Information of the Centralized Controller and Expansion Controller TR

・Network information of the Expansion Controller (PAC-YG50ECA-J) and that Centralized Controller ‘s connection informations can be monitored here.

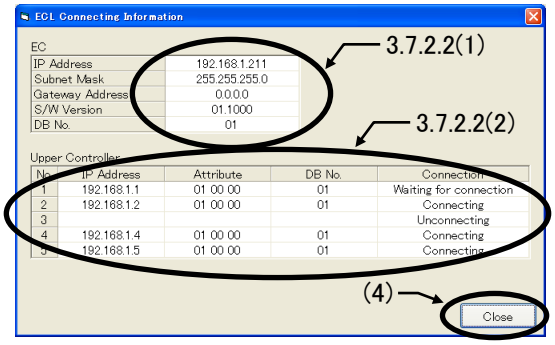
### 3.7.2.1 Screen Transfer Operation

(1) Click on Connect Infor on the **Main Screen**.

(2) Click on the TR for the Expansion Controller or the Centralized Controller to be monitored.

**NOTE:**
Even with the direct expansion type, when units other than the outdoor unit and other than the Expansion Controller(PAC-YG50ECA-J) are selected by (2), the screen returns to the **Main Screen** (where it waits for function selection input).

(3) Momentarily, the **ECL Connecting Information Screen** will appear.
The monitor result to the Expansion Controller is displayed.
Refer to [**3.7.2.2 Content of the Display Item**] for the content of the display item.




(4) Click on Close to end the **ECL Connecting Information Screen**.

### 3.7.2.2 Content of the Display Item

(1) Content of the “**EC**” Item
Selected Expansion Controller’s Network informations is displayed.
・IP Address : The Expansion Controller’s Internet protocol address.
・Subnet Mask : Subnet mask value to the Expansion Controller’s Internet Protocol address.
・Gateway Address : Gateway address on network where Expansion Controller is connected.
・S/W Version : The Expansion controller’s software version number.
・DB No. : The Expansion controller’s DB No..

(2) Content of the “ **Centralized Controller** “ Item
Connection informations of selected Expansion Controller’s upper controller is displayed.
(The setting value of the Expansion Controller is displayed, excluding Connection Column.)
・IP Address : The upper controller’s Internet protocol address.
・Attribute : The upper controller’s attribute data.
・DB No. : The upper controller’s database number.
・Connection : Connected state at upper controller and the Expansion Controller.
Connectting : The Expansion Controller and the upper controller is connecting now.
Waiting for connection : The Expansion Controller and the upper controller is not connecting now.
Unconnectting : The Expansion Controller doesn’t have the upper controller’s registration.

* When the Connection Column is a “Unconnectting”, that are displayed by the blank, excluding it.

## 3.8 Operation Monitor [Monitor]

* **Items Performed Here**
  - Monitors the operating condition and operating data of the current units every minute. This information can be displayed and saved.

* When an excessively large number of the objective unit for monitoring exists, the monitoring interval may exceed 1 minute (70s, 80s, ---).
* When the remaining storage capacity is getting insufficient during Operation Monitoring, Warning Screen will appear.
  **In this case, suspend the Operation Monitoring, move to Offline screen and delete unnecessary data to keep a proper capacity.**

* In case of connection using USB / Serial conversion cable, Operation monitor is displayed after Title screen. For this reason, Screen Transfer Operation[Refer to 3.8.1] and Operative diagnostic [Refer to 3.8.4] is not displayed.

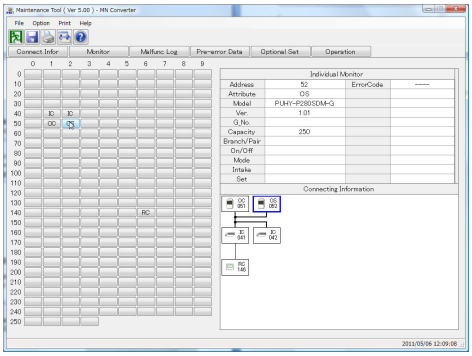
**NOTE:**
The Operation Data Collection and Storage Functions of the outdoor units will be stopped while the operation data are being monitored.

### 3.8.1 Screen Transfer Operation

(1) Click on [Monitor] on the **Main Screen**.

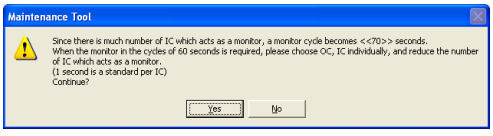
(2) Click on the unit to be monitored.
If only outdoor unit is [OC] selected here, the operating data for the units connected to the outdoor unit will be automatically monitored.
**The maximum number which can carry out a monitor changes with selected models.**
An **error message** will appear if the limited number of units is exceeded.

(3) After the units to be monitored have been selected, click on [Defined] .



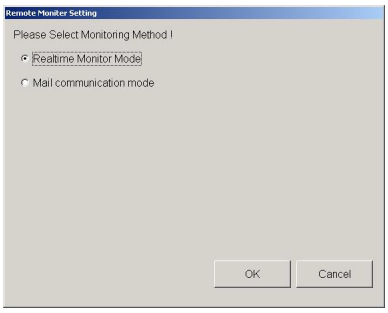
(4) The message "**Monitoring! Please wait for a moment.**" Will appear.
After a while, the screen to select monitor method appears.

When it is judged that monitoring with one minute cycle may not be performed because of many units to be monitored, a message of **[The monitoring cycle will be [* *] seconds due to too many IC units for monitoring. ---]** will be displayed automatically. To continue the monitoring, click [Yes], while to suspend it once to reduce the quantity of units for monitoring, click [NO]. Reduction of one IC can minimize the cycle time by about one second.

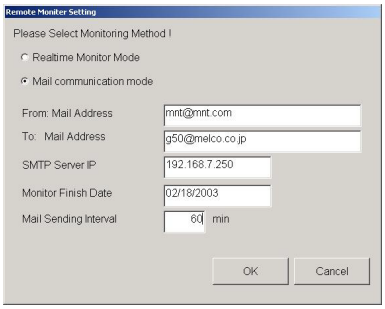



* In "MN converter connection", it shifts to (7).

(5) When desiring to observe the operation data immediately, select [**Realtime Monitor Mode**] and then click on [OK] .
Select [**Mail communication Mode**] to observe the operation data by the off-line monitor later, after mail-transmitting the operation data beforehand by using the mail transmission function.




When [**Mail communication Mode**] is selected, the setting items of mail communication will be displayed.




- From: Mail Address
  Set the mail address of the Centralized Controller in the [From: Mail Address] field. When sending mail via an ISP, set the mail address allocated by the ISP. When the mail server resides on the LAN, obtain the mail address from the LAN administrator.
  * When sending mail via an ISP, a user contract with the ISP is required.

- To: Mail Address
  Set the mail addresses of the recipients to which mail is sent.
  * The mail address of recipient (To☺) acquires and sets up the address only for Maintenance Tool.

- SMTP Server IP
  Set the mail server IP address in the Mail Server Information [SMTP Server IP] field. When sending mail via an ISP, set the ISP address of the ISP mail server. When the mail server resides on the LAN, obtain the IP address from the LAN administrator.
  * If the only information available on the ISP mail server is a domain name, use a PC to connect to the Internet, open a DOS prompt and type “ping *domain name*”. Set the IP address that is displayed as the ping response.

- Monitor Finish Data
  Set the date of monitor data transmit period.

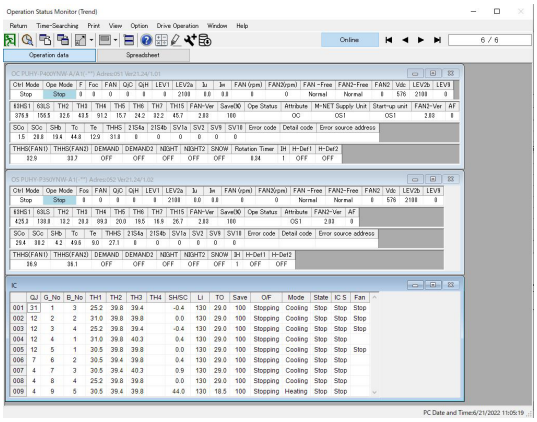
- Mail Sending Interval
  Set the transmit interval of monitor data (**max 240 min**).

Then click on [OK] .

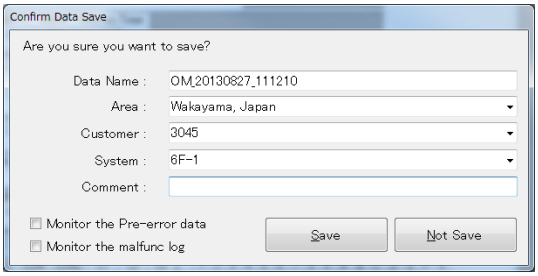
After a while, it returns to the main screen, but the mail transmission to remote receivers will be performed by Centralized Controller automatically.
* At the connection of MN Converter **“**the screen to select monitor method**”** is not displayed. Real-time Monitor Mode is always commenced not allowing to use [**Mail communication Mode**].

(6) In the case of real time monitoring, the message “**Monitoring. Please wait for a moment.**” Will appear again.

(7) Momentarily, the **Operation Status Monitor Screen** will appear.



(8) Click on Return to end the **Operating Status Monitor Screen**.
The message "**Finish the operation status monitor**" will appear.
Click on Yes to end or click on No to not end.
Clicking Yes displays the screen to save data.
Change the data name as required and save it. You may enter your comment also.
Clicking Not Save does not allow the data to be saved.
Returning to the main screen.



## 3.8.2 Screen Functions and Operations

- The operating condition and operating data are displayed every minute.
- The [**Current Time**] is displayed. The [**Monitor ID**] is displayed when saving data.
  [Refer to **5.2 Operation Status Monitor Data**]

(1) "**Operation Buttons**"

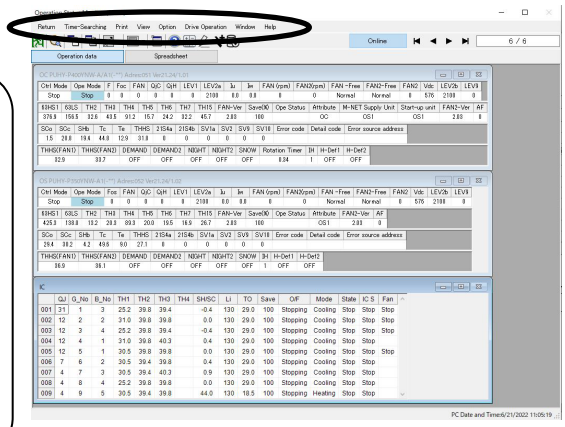
Operation operation in the same manner as a remote controller.
[Refer to **3. 11 Operation Control**]

Click on Return to end the operation status monitor and return to the **Main Screen**.
[Refer to **3.8.1(8)**]

(2) "**Menu Bar**"

[**Return**], [**Time Search**], [**Print**], [**View**], [**Option**],[**Drive Operation**],[**Window**] and [**Help**] are displayed on the menu bar.

- Click on [**Return**] to end the Operation Status Monitor and return to the **Main Screen**.



**NOTE:**
- When connecting to M/P-series with USB/Serial conversion cable, Click on [**Return**] button, then the screen return to the selection screen of monitor mode.
- When finishing monitor display which is shown right with P-series, make sure to turn off air conditioning system first then turn off the Maintenance tool. If do not follow above procedure, communication error occur and air conditioning system stops by error.

- Clicking [**Time Search**] open the "**Time Searching**"

- Click on [**Print**] and an explanation about "**Print**" and "**Copy to Clipboard**" will be displayed.

- Clicking [**Drive Operation**] open the "**Operation Control Screen**".

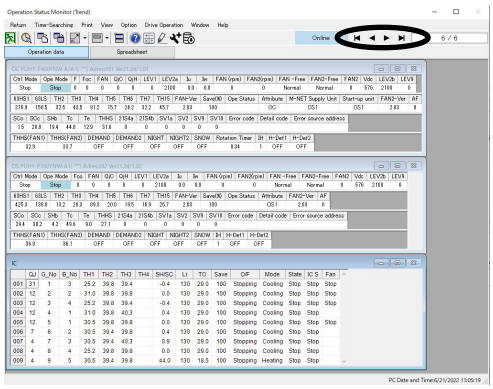
**NOTE:**
- In case of connecting to M-series with USB/Serial conversion cable, the Drive Operation is not displayed on the menu bar.

- Click on [**View**] and then select "**Switch Trend Form**" or "**Switch Classic Form**" from the **sub-menu**. Change the display format.

**NOTE:**
- In case of connection using USB/Serial conversion cable, the View is not displayed on the menu bar.

- Click on [**Help**] and an explanation about "**Terminology**" and "**Operation Method**" will be displayed.
  [Refer to **3.7.1 Connecting Information of outdoor units 3.7.1.2 (2) "Menu Bar"**]

(3) “ ◀ ▶ **Buttons**”



Toggles the display of the retrieved data.
This feature is only form the trend.
This feature is supported in the “Operation Data” screen only.

- Clicking ⏮ In the data obtained shows the oldest data.

- Clicking ◀ Display the previous data.
  Direction keys on the keyboard can be used for switching.

- Clicking ▶ Display the next data.
  Direction keys on the keyboard can be used for switching.

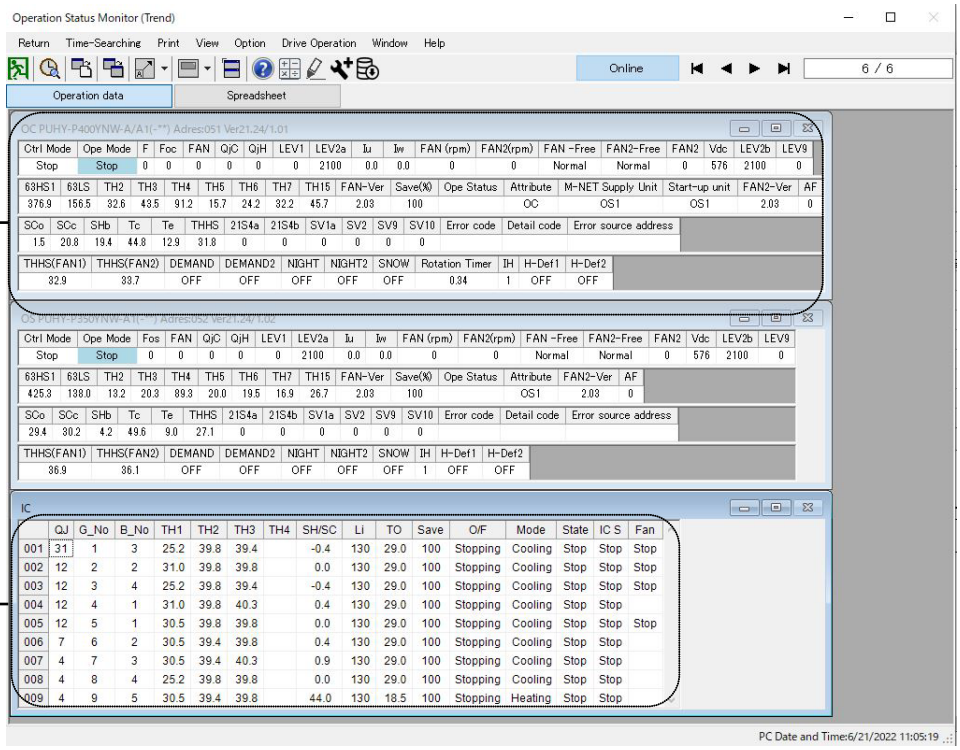
- Clicking ⏭ Data obtained in the most recent data show.

**- Operating Status Monitor Screen(For MN Converter/Centralized Controller connection)**

This screen displays the operation status and the operation data every minute.

The Operating Status Monitor Screen consists of multiple sub windows. As shown below, each sub window either displays the operation status of a single unit or of multiple units.

Sub windows can be maximized, minimized, or moved.

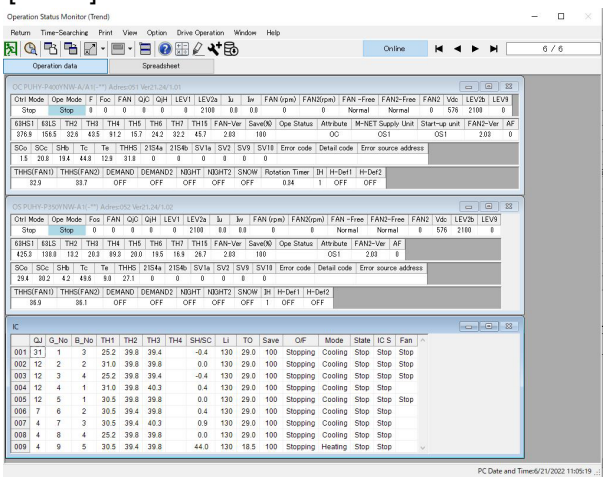



- The operation status of multiple units are displayed on a single sub window.
- Each row displays the status of a unit.
- A scroll bar will appear if a sub window contains more units than can be displayed all at once.

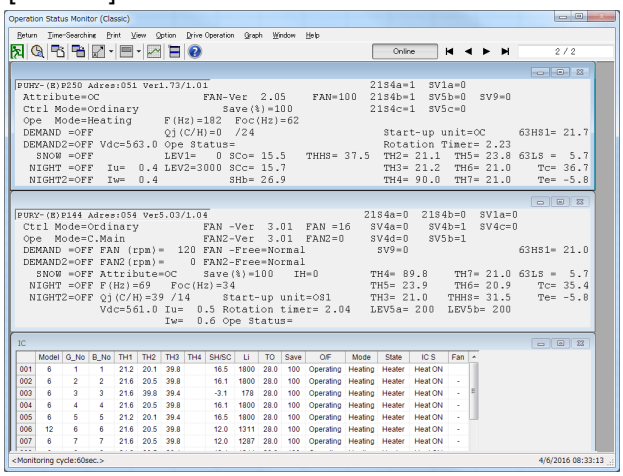
- The operation status of a single unit is displayed on a single sub window.
- The operation status of the unit is displayed in multiple rows.

Clicking the [**View**] button in the menu bar will switch between the two display formats: [Trend] screen and [Classic] screen.

[**Trend**] screen



[**Classic**] screen

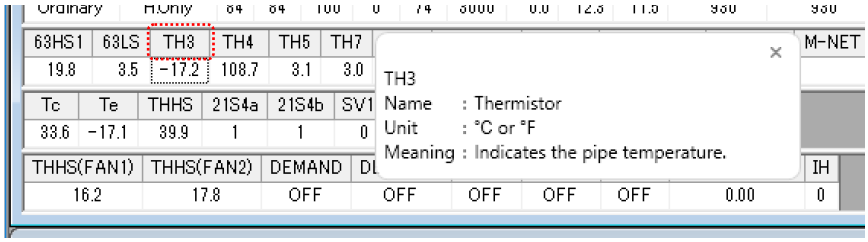


**Note**

・On the [Trend] screen, a selected cell can be highlighted in different color.
Clicking a cell will change its color between green and white.
The selection will be cleared when the operation monitoring is cancelled.




・Click the item to see the explanations of terms.



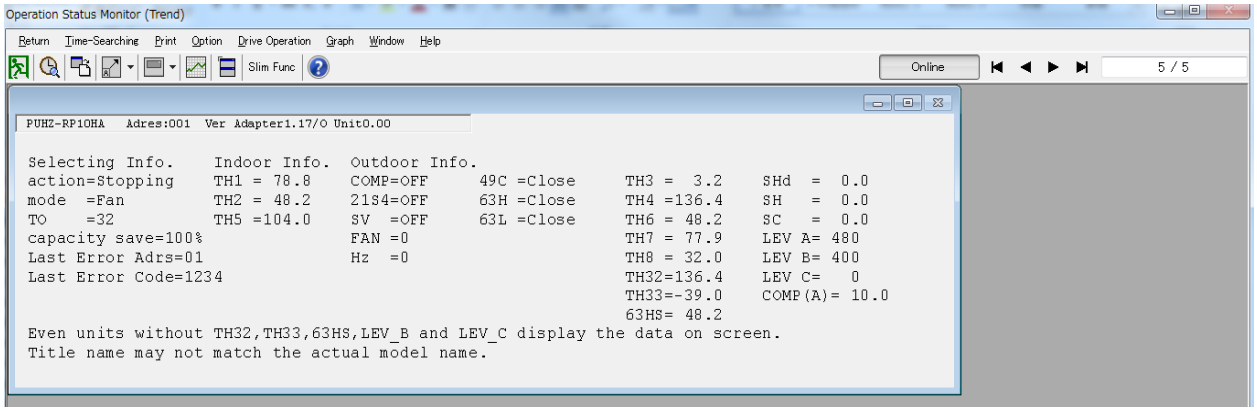

**Note**

・Some models do not support the display of data in the Trend display format. If the Trend display format is selected on the models that do not support this function, data will be displayed in the Classic display format.
・On some models, term explanations will not be displayed.
See "8. Explanation of terminology" for explanations of terms.

**- Operating Status Monitor Screen(For USB/Serial converter cable connection)**

After displaying the title screen, the screen will change to the Operation Monitor screen.
The display screen when P / M-series is connected is as follows.

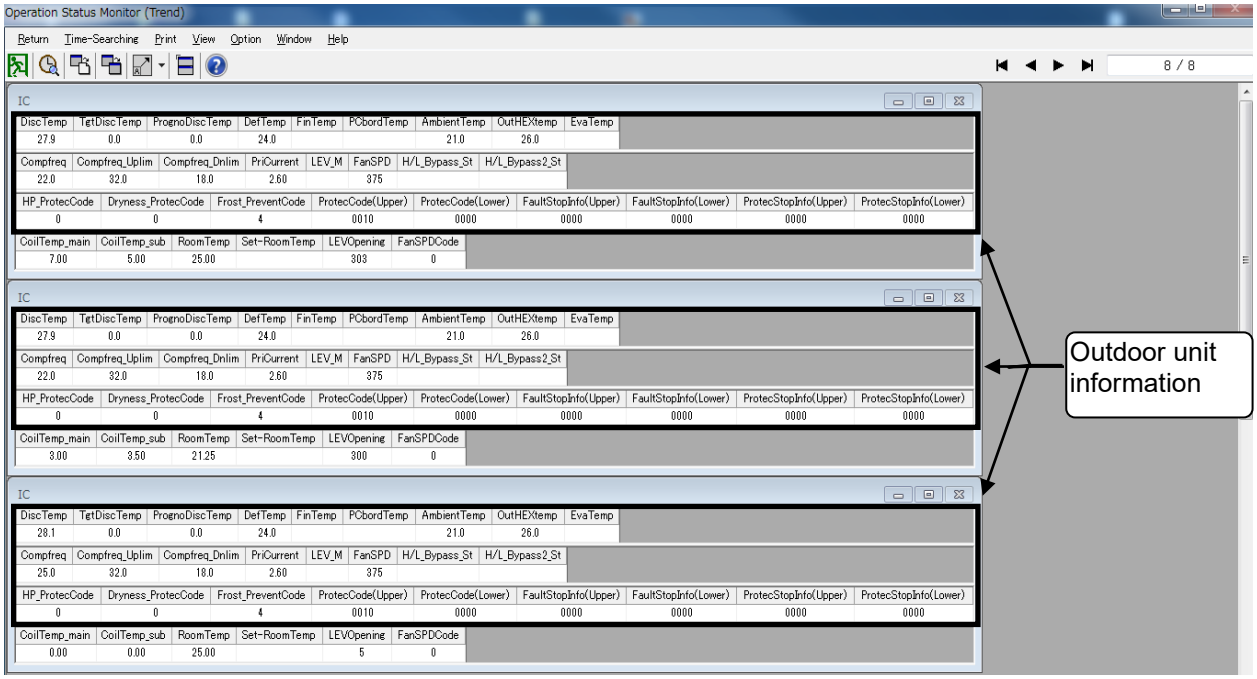
<P-series>




**Note**

・Refer to 3.8.2 “Screen Functions and Operations for the operation” about operation on the Operation monitor screen.
・Refer to 8“Explanation of Terminology” about the official name of the display items.

<M-series>



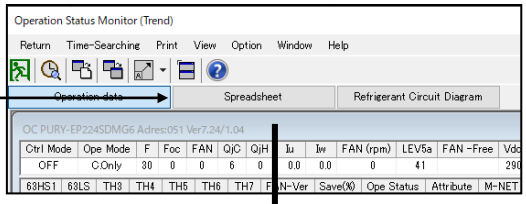

**Note**

・In case of RAC,SUZ, the indoor unit and the outdoor unit information are displayed in one window.
・In case of MXZ,
-Outdoor unit information is displayed duplicately in each indoor unit window.
-The window is line up in order of A room ,B room,・・・ from the top.
- Regardless of the number of connected indoor units,
Windows is displayed the maximum number of outdoor units that can be connected
・Depending on the timing of monitoring, it may take invalid value when monitoring at the first time.
・Refer to 3.8.2 “Screen Functions and Operations for the operation” about operation on the Operation monitor screen.( It does not correspond to some functions such as operation)
・Refer to 8“Explanation of Terminology” about the official name of the display items.
・Depending on the model, Monitorable data is different.
And unmonitorable data is shown as blank.

### 3.8.3 Spreadsheet

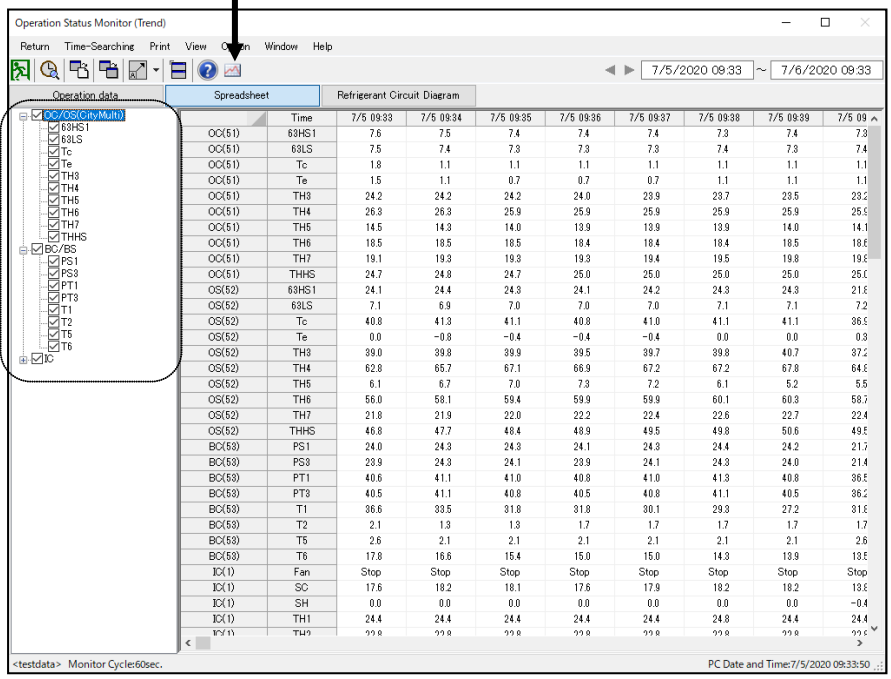
- Some models support the display of the spreadsheet.
  The display formats of the operation status and the operation data can be switched by using tabs.

Tab




Spreadsheet tab

Select the data you want to see in the spreadsheet.



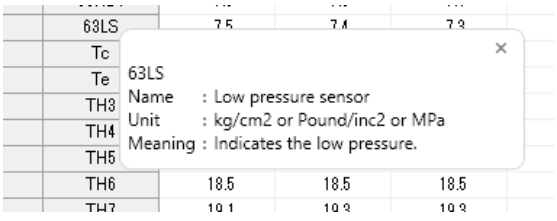

**Note**

・Clicking rows, columns, cells or button at the upper left will change its color between green and white.
The selection will be cleared when the operation monitoring is cancelled.

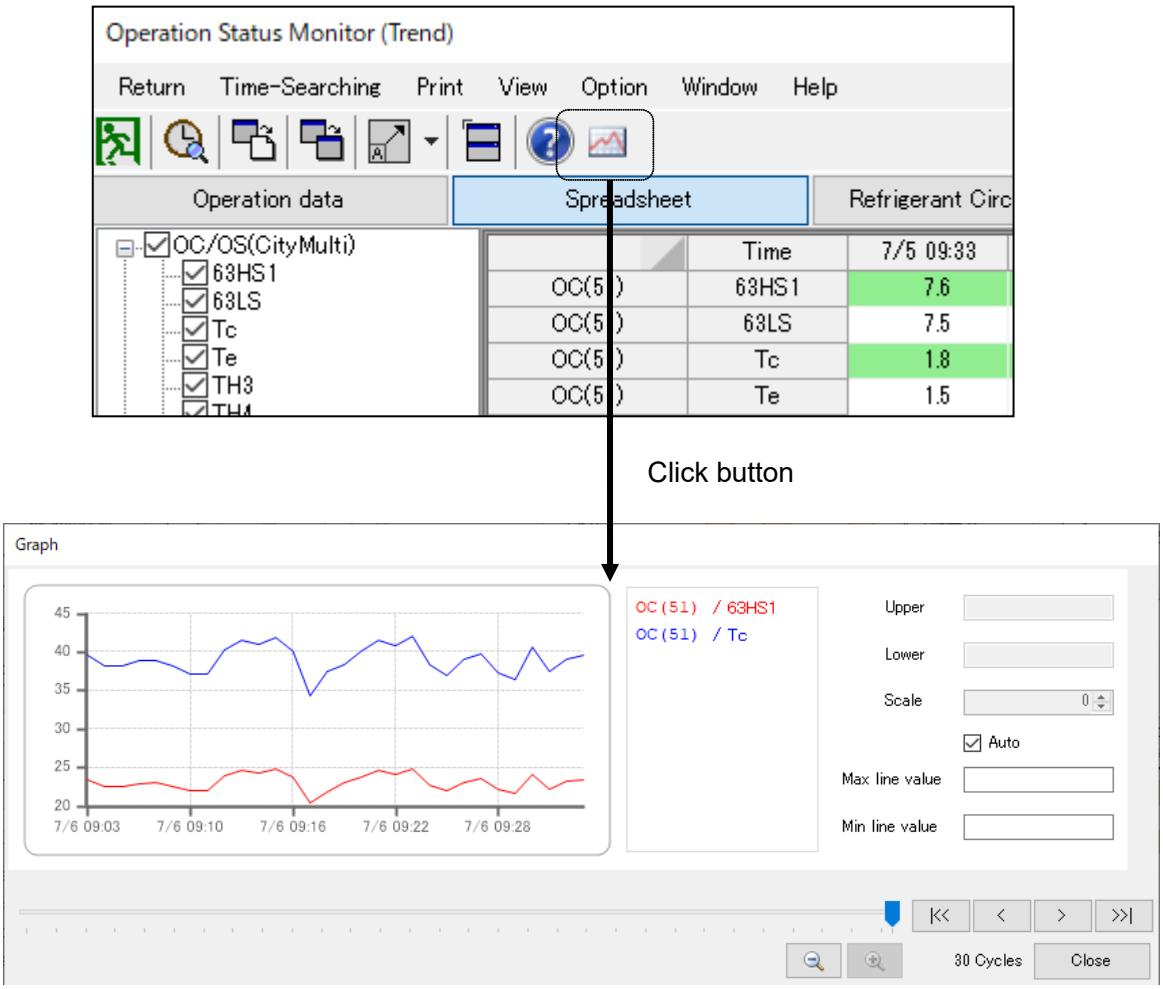
| | Time | 7/5 09:33 | 7/5 09:34 | 7/5 09:35 |
|---|---|---|---|---|
| OC(51) | 63HS1 | 7.6 | 7.5 | 7.4 |
| OC(51) | 63LS | 7.5 | 7.4 | 7.3 |
| OC(51) | Tc | 1.8 | 1.1 | 1.1 |
| OC(51) | Te | 1.5 | 1.1 | 0.7 |
| OC(51) | TH3 | 24.2 | 24.2 | 24.2 |
| OC(51) | TH4 | 26.3 | 26.3 | 25.9 |

| | Time | 7/5 09:33 | 7/5 09:34 | 7/5 09:35 |
|---|---|---|---|---|
| OC(51) | 63HS1 | 7.6 | 7.5 | 7.4 |
| OC(51) | 63LS | 7.5 | 7.4 | 7.3 |
| OC(51) | Tc | 1.8 | 1.1 | 1.1 |
| OC(51) | Te | 1.5 | 1.1 | 0.7 |
| OC(51) | TH3 | 24.2 | 24.2 | 24.2 |
| OC(51) | TH4 | 26.3 | 26.3 | 25.9 |

・Click the item to see the explanations of terms.



Click on [graph] button to display graph screen.

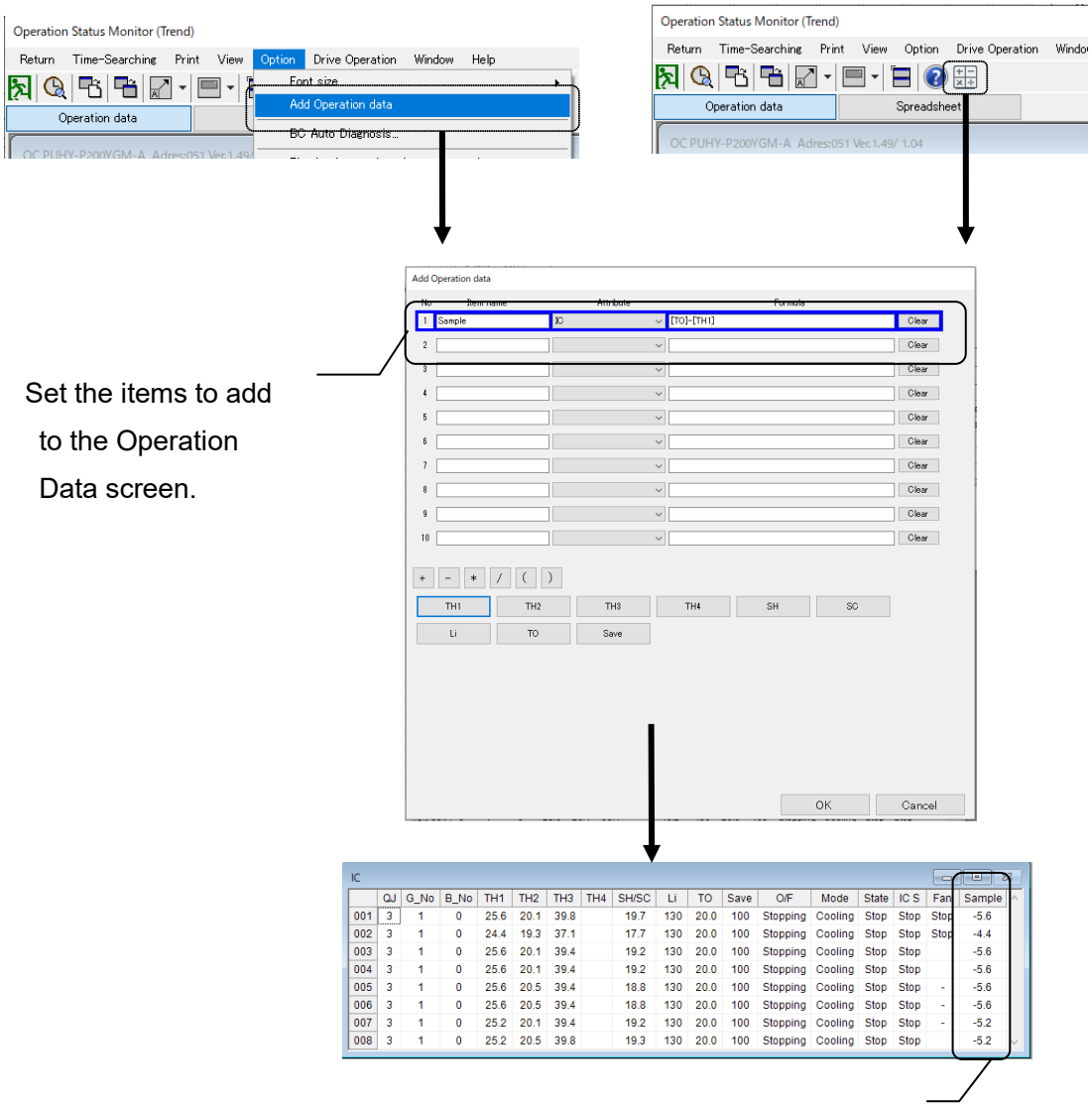



**Note**

・Some modes do not support spreadsheet function.

・The items that can be displayed on spreadsheet and graph screen differs depending on the model.

Click [**Add Operation data**] from the pulldown menu of [**Option**] on the menu bar, or click the corresponding icon to open the Add Operation Data screen. This function displays the user-customized items on the Operation Data screen. Customized calculation formula, such as the difference between the set room temperature and the return air temperature or the difference between the inlet and outlet water temperatures of the chiller, can be added that are calculated based on the existing items.




Set the items to add to the Operation Data screen.

Items set in the step above will appear here on the Operation Data screen

Add the items to the operation data as follows.

(1) Enter the item names. The items entered here will appear on the Operation Data screen.

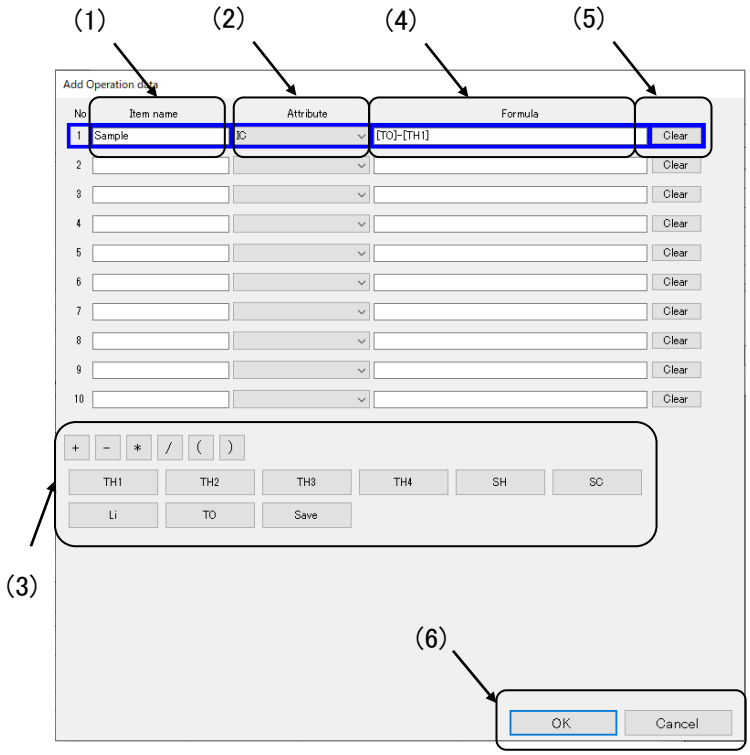
(2) Select the attributes from the pulldown menu.

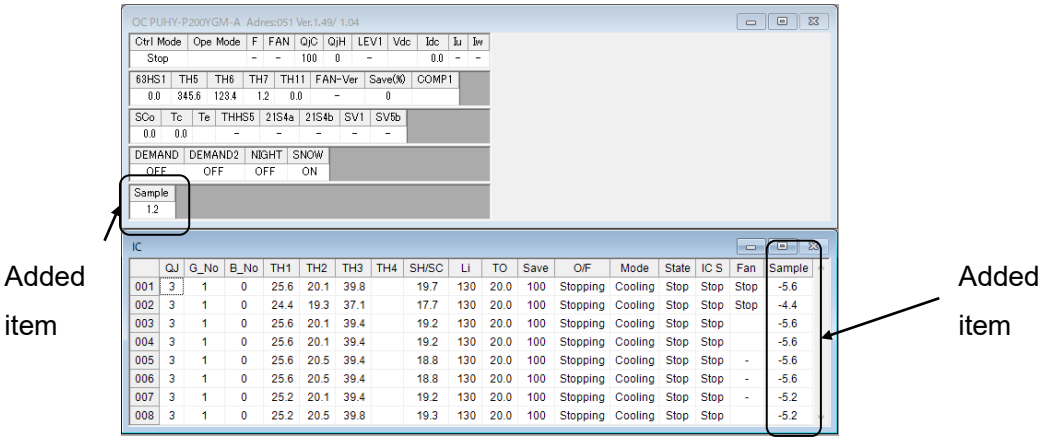
(3) Buttons corresponding to the item selected from the pulldown menu in step (2) above will appear. Click the desired button to add the item in the [Formula] field. Combine such items as [TO-TH1] or [TH4-TH1] and four arithmetic operations to create formulas.

(4) Check the formula for validity.

(5) Clicking the [**Clear**] button will clear all items entered. Use this button to correct errors in the formula.

(6) Click the [**OK**] button to add the items to the [Operation Data] screen.
Added items will appear at the bottom or at the right of the screen.



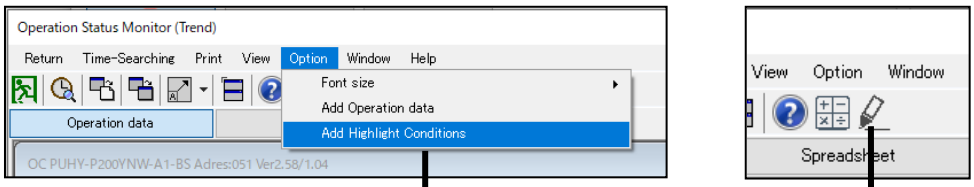

Note

① User-added items will not be included in the text format output(CSV file).

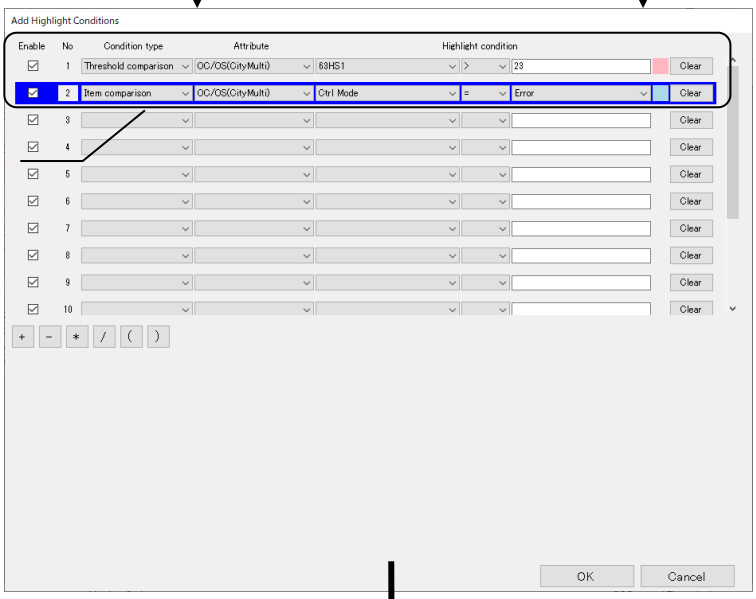
② The values that the customized formula refer to are only obtainable from the equipment with the same M-NET address.

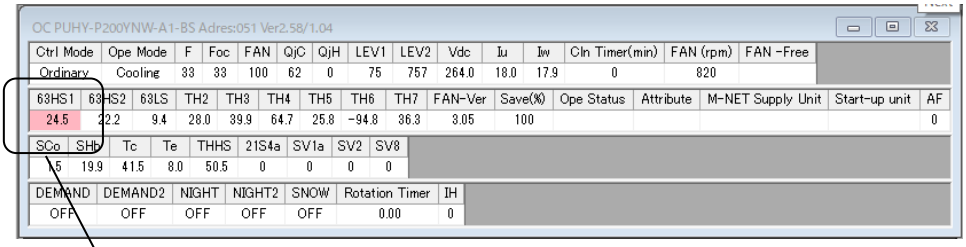
Example: Sensor readings of the outdoor unit with M-NET address 51 and of the outdoor unit with M-NET address 52 cannot be used in the same formula.

Click [**Add Highlight Conditions**] from the pulldown menu of [**Option**] on the menu bar, or click the corresponding icon to open the [**Add Highlight Conditions**] screen. This function highlights the operation data that meet certain defined conditions.



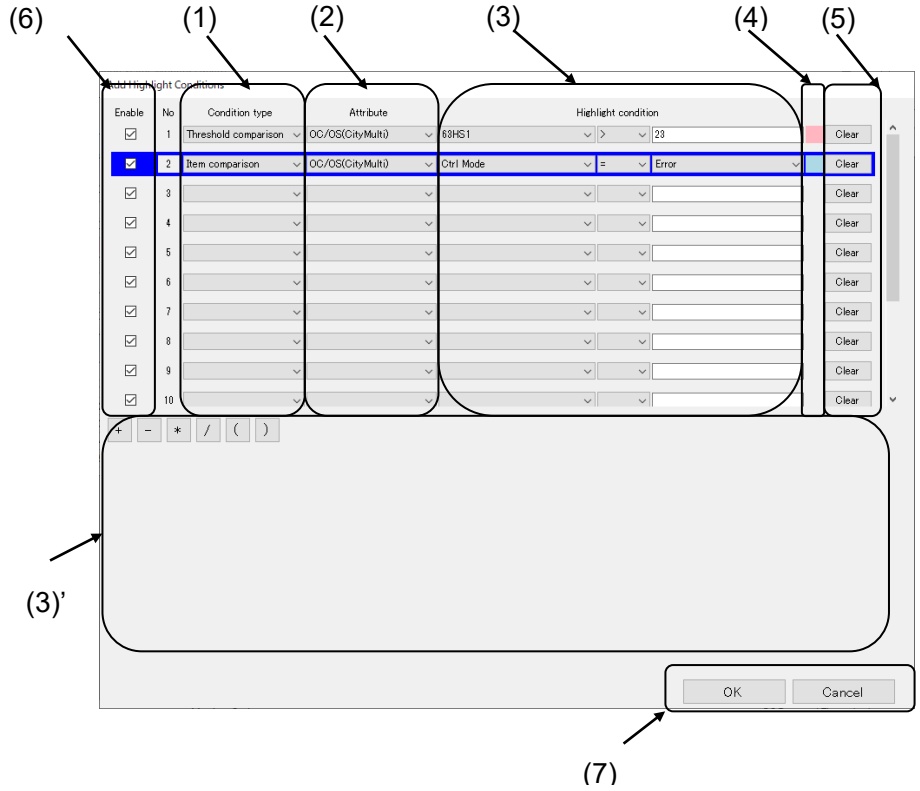

Define the highlight conditions.




Operation data that meet the defined conditions will be highlighted.

Add the highlight conditions as follows.




(1) Select the highlight condition type. The method to define highlight conditions depends on the type selected.

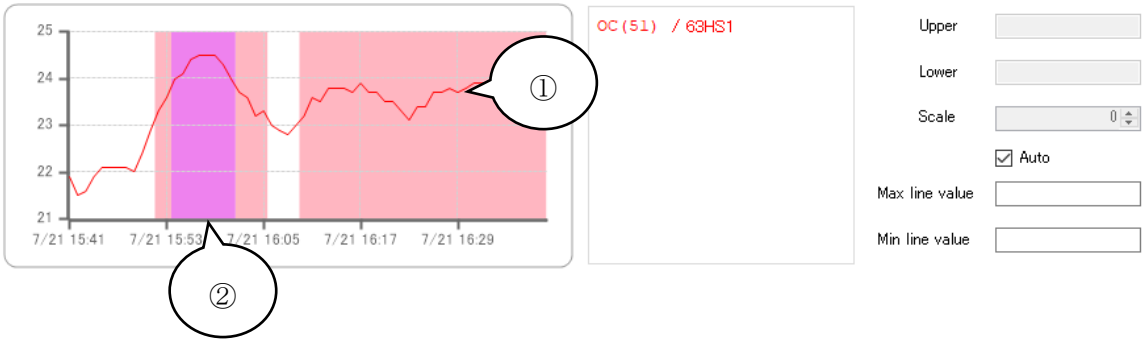
| Type | Method to define highlight conditions | Description | Example |
|---|---|---|---|
| Threshold comparison | Item 1 ▼ Symbol ▼ Threshold | Item and threshold are compared. When the defined condition is met, the operation data are highlighted. | TH1 > 15 |
| Item comparison | Item 1 ▼ Symbol ▼ Item 2 ▼ | Item 1 and Item 2 are compared. When the defined condition is met, the operation data are highlighted. | Control mode = Error |

(2) Select the attributes from the pulldown menu.

(3) Define the highlight conditions.
Highlight conditions can be defined for the equipment with the same M-NET address.
Sensor readings of the outdoor unit with M-NET address 51 and of the outdoor unit with M-NET address 52 cannot be used in the same highlight condition.

<table>
<tr><th>Item</th><th>Description</th></tr>
<tr><td>Item 1 ▼</td><td>Select the target item from the pulldown menu.<br>When [Threshold comparison] is selected, items such as temperature sensor reading and pressure sensor reading (numerical data) are displayed in the pulldown menu.<br>When [Item comparison] is selected, items such as operation mode and control mode (text data) are displayed in the pulldown menu.</td></tr>
<tr><td>Symbol ▼</td><td>Select the symbol from the pulldown menu.<br><br>
<table>
<tr><th>Symbol</th><th>Example</th><th>Description</th></tr>
<tr><td>></td><td>A > B</td><td>When value A is larger than value B, the operation data will be highlighted.</td></tr>
<tr><td>>=</td><td>A >= B</td><td>When value A is larger than or equal to value B, the operation data will be highlighted.</td></tr>
<tr><td><=</td><td>A <= B</td><td>When value A is less than or equal to value B, the operation data will be highlighted.</td></tr>
<tr><td><</td><td>A < B</td><td>When value A is less than value B, the operation data will be highlighted.</td></tr>
<tr><td>=</td><td>A = B</td><td>When value A is equal to value B, the operation data will be highlighted.</td></tr>
<tr><td>NOT=</td><td>A NOT= B</td><td>When value A is not equal to value B, the operation data will be highlighted.</td></tr>
</table></td></tr>
<tr><td>Threshold</td><td>Buttons corresponding to the item selected from the pulldown menu in step (2) will appear in the field indicated as (3) in the figure above. Click the desired button to add the item in the [Threshold] field. Combine such items as [TO-TH1] or [TH4-TH1] and for arithmetic operations to create thresholds.</td></tr>
<tr><td>Item 2 ▼</td><td>Select the item to be compared with Item 1.</td></tr>
</table>

(4) Select the highlight color. Clicking the button will change the highlight color. When the highlight condition is met, the operation data will be highlighted in the selected color.
Note that if multiple highlight conditions are met at the same time, the operation data will be highlighted in purple.




① Operation data will be highlighted in the selected color.
② Operation data that meet multiple highlight conditions will be highlighted in purple.

(5) Clicking the [**Clear**] button will clear all items entered. Use this button to change the highlight conditions.

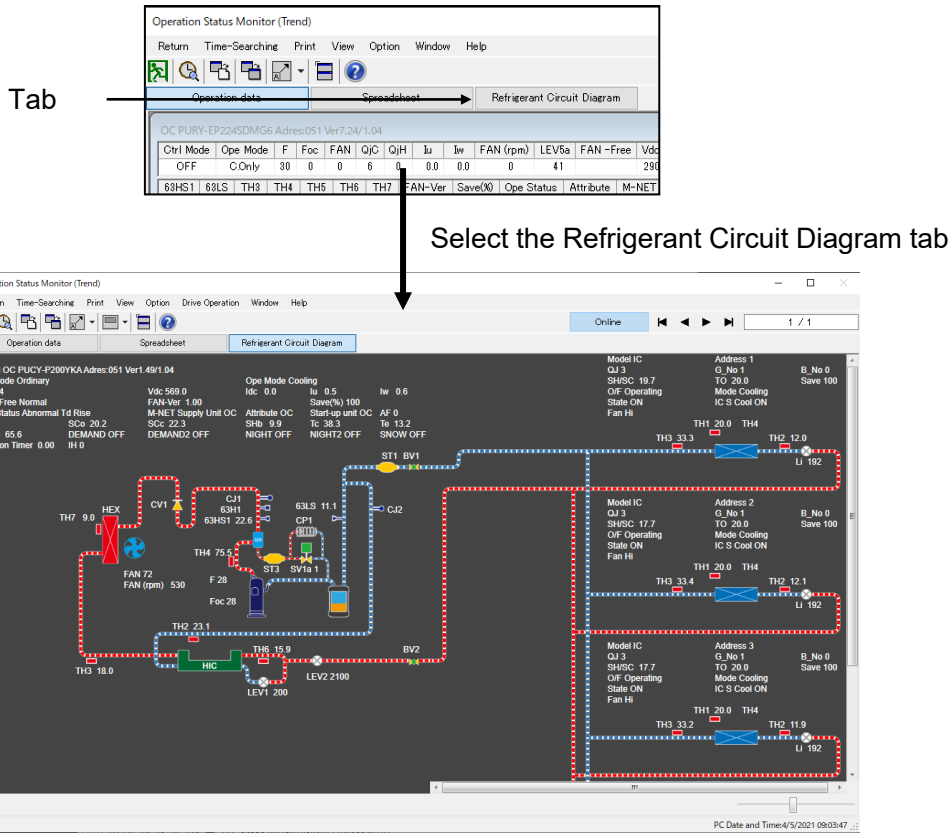
(6) Clicking the [**No.**] buttons will enable or disable the corresponding highlight conditions.
Use these buttons to temporarily enable or disable the highlight conditions.

(7) Pressing the [**OK**] button will set the defined highlight conditions. Operation data that meet the highlight conditions will be highlighted.
The highlight conditions apply to the [**Trend**] screen, [**Spreadsheet**] screen, and [**Graph**] screen, not to the [**Refrigerant circuit diagram**] screen.



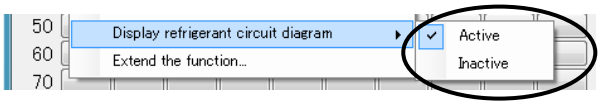
## 3.8.4 Refrigerant circuit diagram

- Some models support the display of the refrigerant circuit diagram.
  The display formats of the operation status and the operation data can be switched by using tabs. The refrigerant circuit diagram tab displays the operation status and the operation data along with a refrigerant circuit diagram.




**Note**

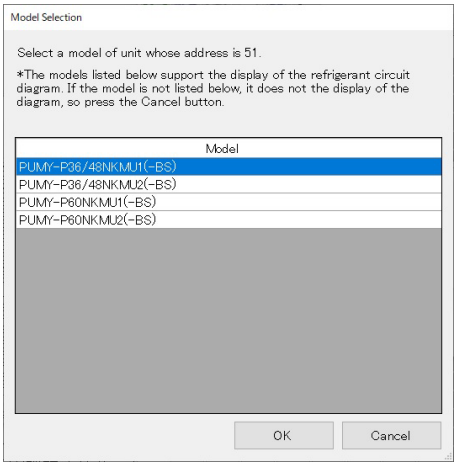
- Only some City Multi and M-series models support the display of the refrigerant circuit diagram. Non-City Multi models such as refrigerators and chillers do not support the display of the diagram.
  If none of the units monitored support the display of the diagram, the tabs of the display formats will not appear, and the operation status and the operation data will be displayed in a chart.
- The refrigerant circuit diagram will be displayed when [**Display refrigerant circuit diagram**] in [**Option**] in the main screen is set to [**Active**].
  When [**Display refrigerant circuit diagram**] is set to [**Inactive**], the tabs of the display formats will not appear, and the operation status and the operation data will be displayed in a chart.




- The refrigerant circuit diagram is displayed only when the Operation Status Monitor Screen is accessed by selecting an OC.
- Only one refrigerant system can be displayed in the refrigerant circuit diagram. If two or more refrigerant systems are monitored, only a refrigerant system with the lowest OC address will be displayed.
- Only units that are monitored in the main screen are displayed in the refrigerant circuit diagram of ICs connected to OCs.
- The refrigerant circuit diagram indicates the refrigerant flow and actuator status in animation or color. These animations and colors only represent the normal unit operation and may differ from the actual unit operation.
- Some models of M-series do not support animation and colorization.

**Caution**

- To display the refrigerant circuit diagram of PUMY-series units, open the model selection screen from [**Model Selection**] in the operation monitor screen, and select the model name of the PUMY-series units.
  If the model is not listed, press the Cancel button.
  In this case, the display function of the refrigerant circuit diagram and Model name is not available.
- When [**Display refrigerant circuit diagram**] in [**Option**] in the main screen is set to [**Inactive**], the [**Model Selection**] tab will not be displayed, and the model name of the PUMY-series units cannot be selected.



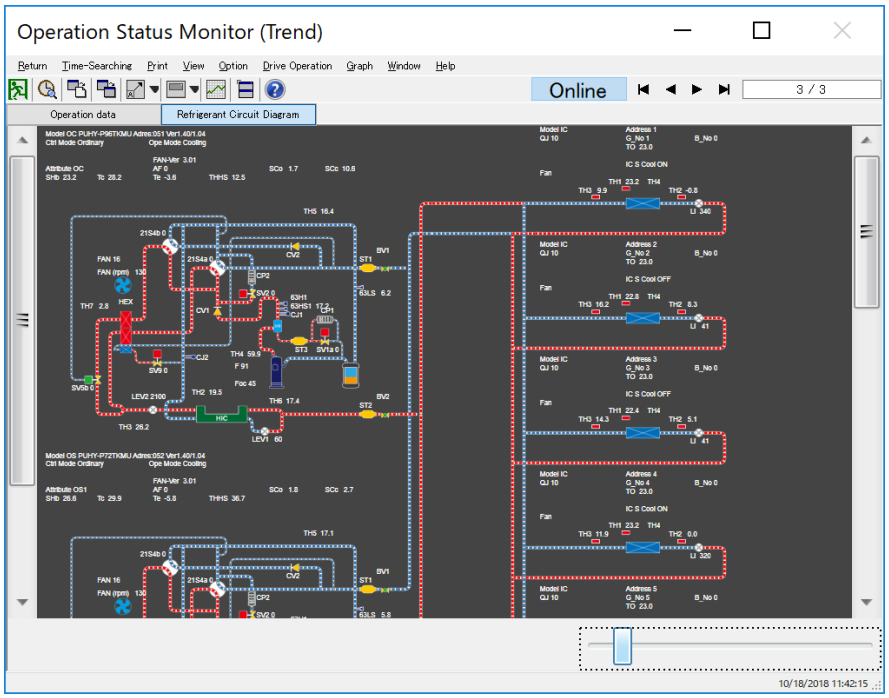
- When the refrigerant circuit diagram tab is selected

This tab displays the operation status and the operation data along with a refrigerant circuit diagram.

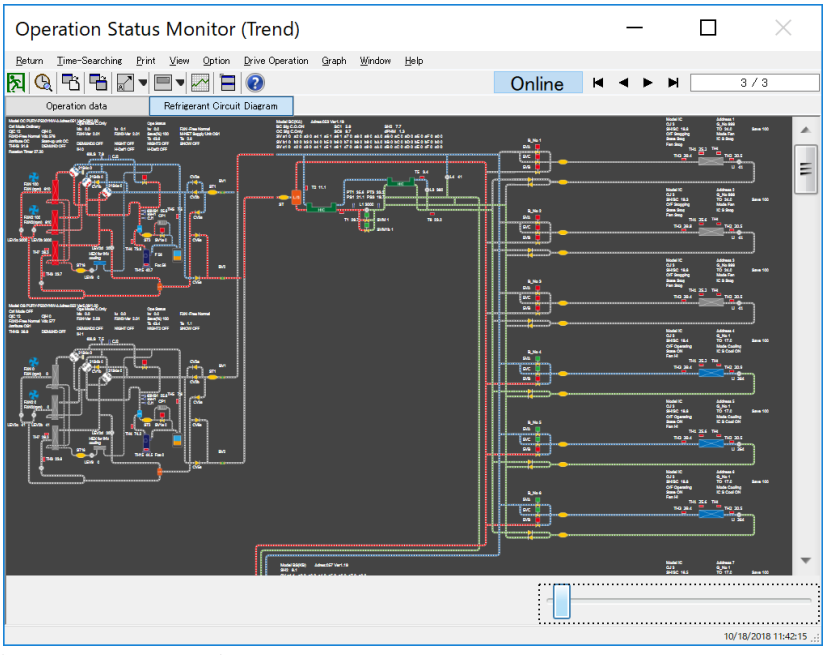
When the Y/WY series or PUMY series or M-series units are monitored, the tab displays the outdoor units on the left side and the indoor units on the right side of the screen.

When the R2/WR2 series units are monitored, the tab displays the outdoor units on the left side, the BC controllers in the center, and the indoor units on the right side of the screen.

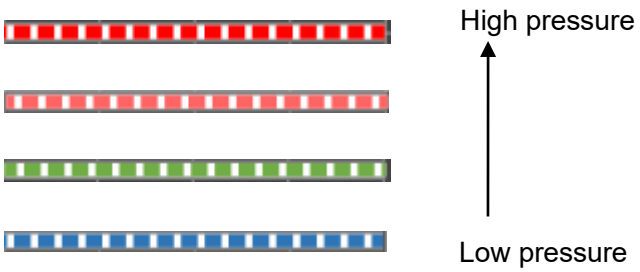
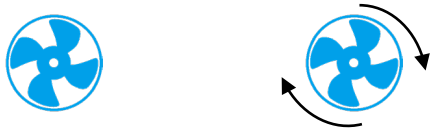
Y/WY series or PUMY series or M-series that switch cooling and heating



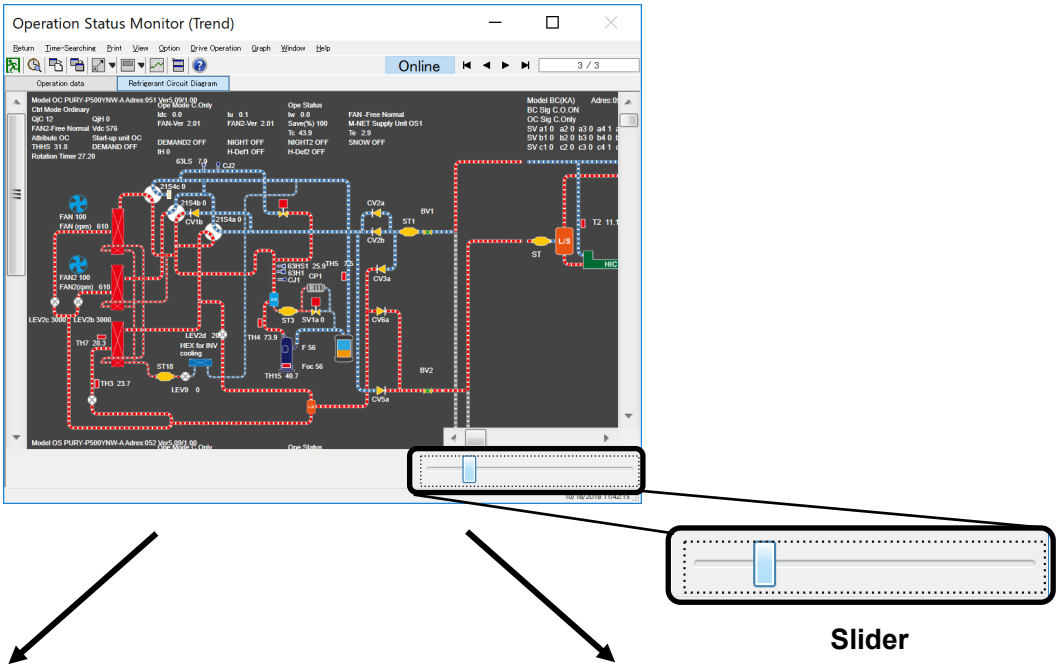

R2/WR2 series that allow simultaneous cooling and heating

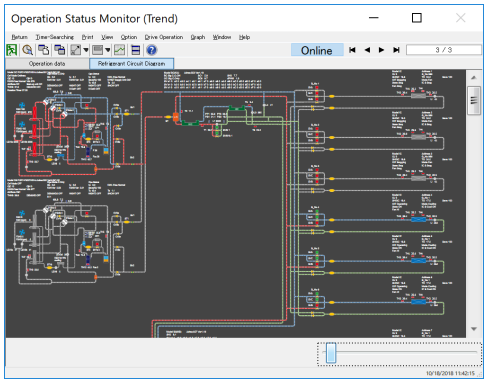


In the □onfigurati circuit diagram screen, each part of the unit is displayed in animation or color that represents the following status.

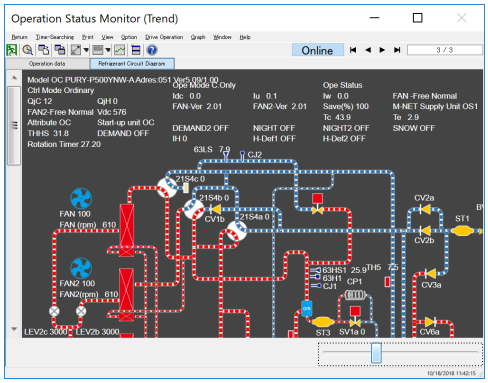
| Part | Status |
|---|---|
| Refrigerant pipe | An animation will be shown of changes in the refrigerant flow according to the pressure.<br>  <br><br>**Note**<br>An animation of the refrigerant flow represents the flow in an ideal pressure condition corresponding to the control mode of the outdoor unit. The actual pressure condition and refrigerant flow may differ from the animation. |
| Water pipe | The water flow is shown in animation.<br><br>Red lines show supplied water that flows during heating operation, blue lines show supplied water that flows during cooling operation, and orange lines show circulating water.<br>  |
| Solenoid valve | The opening status of the solenoid valve is indicated in the following colors.<br>  <br> |
| Heat exchanger | A color of the heat exchanger changes according to the operation status of the outdoor unit.<br>  <br> |
| Fan | An animation of the fan operation status changes as follows.<br>  <br> |

The refrigerant circuit diagram can be enlarged and reduced by using a slider at the bottom right of the screen.



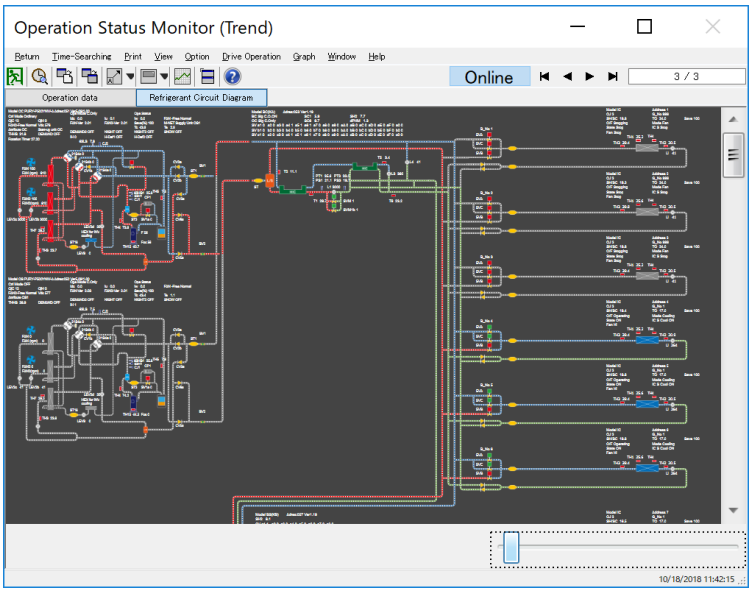




Move the slider to the left to reduce the diagram.

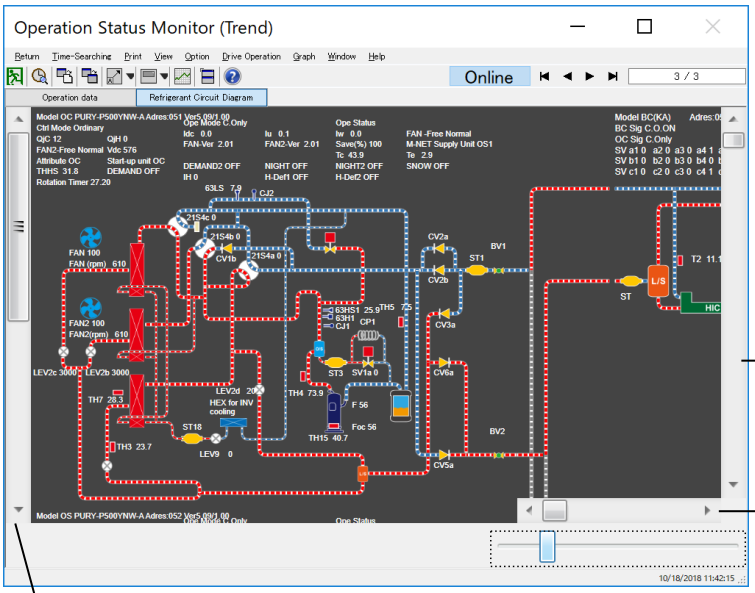



Move the slider to the right to enlarge the diagram.

A scroll bar will appear when the enlarged refrigerant circuit diagram does not fit the screen. Scroll the window to see the rest of the diagram.




Enlarge the diagram

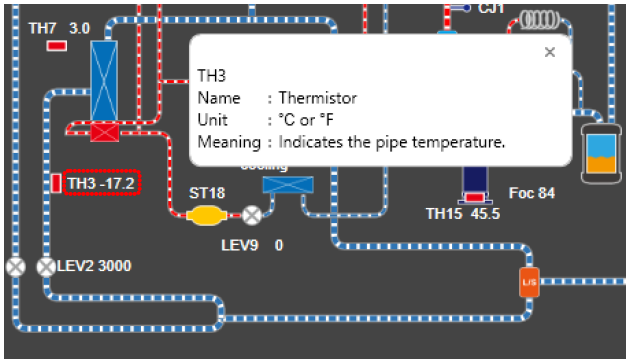



The scroll bar will appear beside the indoor unit area when the Y/WY series or PUMY series or M-series units are monitoired, or beside the BC controller and the indoor unit areas when the R2/WR2 series units are monitored.
The screen can be scrolled vertically by using the scroll bar at the right of the screen, and scrolled horizontally by using the scroll bar at the bottom.

The scroll bar will appear beside the outdoor unit area when the diagram is enlarged further.
The screen can be scrolled vertically by using the scroll bar at the left of the screen.

**Note**

Click the item to see the term explanation.



## * About LM ADAPTER

**Operation Monitor** Monitor

Item Performed Here

Operation status of LM ADAPTER, current values of network variable and □onfiguration property,setting status of switch or the like.

[**Refer to 3.7 Operation Monitor**]

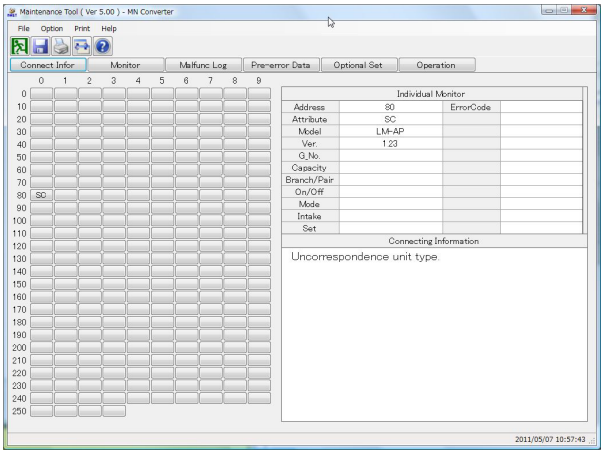
### 1. Screen Transfer Operation

To move to the screen monitoring LM ADAPTER operation, select LM ADAPTER SC from the main screen.

(LM ADAPTER is expressed by SC )

When LM ADAPTER is selected,you may not monitor other units.

Same operation procedure as that of other units is applicable to other main screens.




### 2. Screen Functions and Operations

- The operating condition and operating data are displayed every minute.
- [Current time] will be displayed.During a time when saving data,[Monitor ID] will also be displayed.

[**Refer to 5.2 Operation Status Monitor Data**.]

(1) [**Operation Button**]

[**Operation control**] will not be displayed.

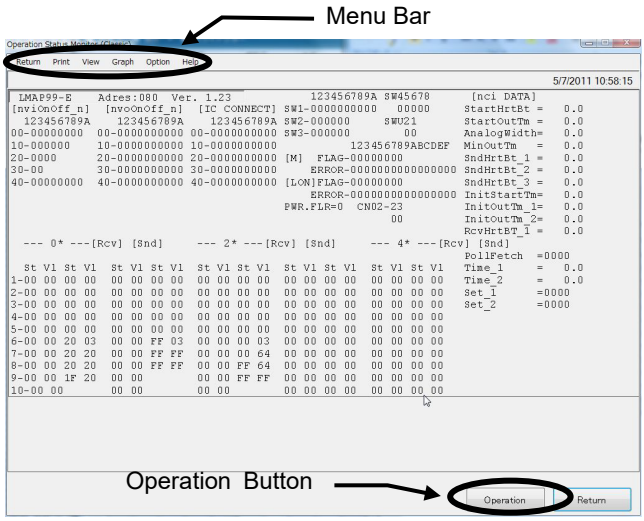
Click on [**Return**] to end the operation status monitor and return to the Main Screen.

[**Refer to 3.7.1(8)**]

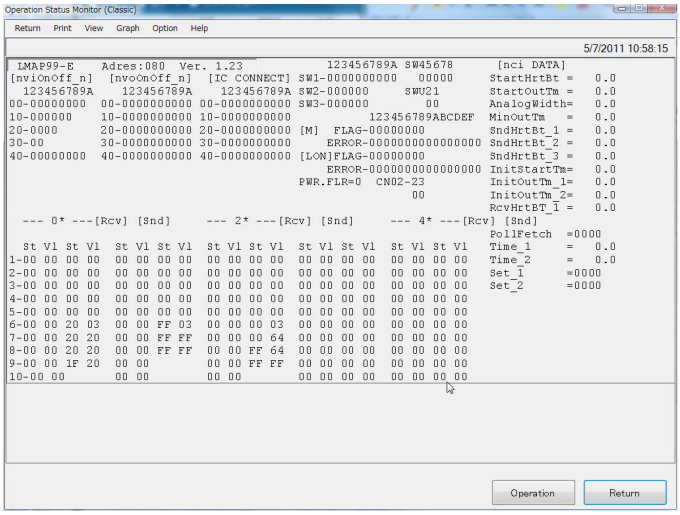
(2) [**Menu Bar**]

[**Return**] , [**Print**] and [**Help**] are displayed on the menu bar.

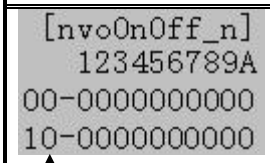
Menus are same as that of other units.

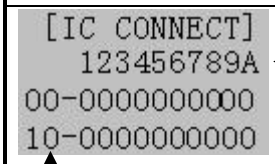


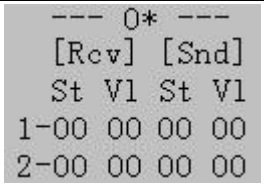
### 3. Introduction to the screen

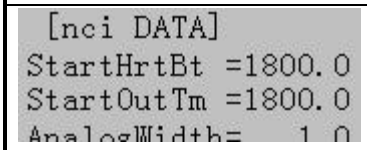



| Display | Contents |
|---|---|
| 123456789A<br>SW1-0100000000<br>SW2-000000<br>SW3-000000 | <Function set switch><br>Set status of function selector switch<br>0:OFF setting 1:ON setting |
| SW45678<br>00000 | <Extension switch><br>Set status of extension function selector switch<br>0:OFF setting 1:ON setting |
| SWU21<br>49 | <M-NET address switch><br>Set status of M-NET address switch on LM ADAPTER<br>SWU1:The units digit SWU2:The tens digit |
| 123456789ABCDEF<br>[M] FLAG-11000000<br>ERROR-0011000000000000<br>[LON]FLAG-00000000<br>ERROR-0000000000000000 | <Control flag><br>Internal processing status of LM ADAPTER<br>FLAG:Control flag status<br>ERROR:Error flag status<br>[M]:M-NET communication processing flag<br>[LON]:LonWorks communication processing flag<br>0:Reset 1:Set |
| CN02-23<br>11 | <General input><br>General input status of LM ADAPTER<br>0:Normal 1:Detecting |
| PWR.FLR=0 | <Power failure flag><br>Indicating power failure detecting status of LM ADAPTER<br>0:Powering 1:Interrupting |
| [nviOnOff_n]<br>123456789A ← Unit address (Unit digit)<br>00-0000000000<br>10-0000000000<br>Unit address(Tens digit) | <Binding status : nvoOnOff_n><br>Binding information on operation command input<br>0:No binding<br>1:Binding |

<table>
<tr><th>Display</th><th>Contents</th></tr>
<tr><td>


← Unit address (Unit digit)<br>
Unit address(Tens digit)
</td><td>
<Binding status : nvoOnOff_n><br>
Binding information on operation status output<br>
0:No binding<br>
1:Binding
</td></tr>
<tr><td>


← Unit address (Unit digit)<br>
Unit address(Tens digit)
</td><td>
<IC connection status><br>
Connection status of air conditioner(indoor unit)<br>
0:Not connected<br>
1:Connected
</td></tr>
<tr><td>


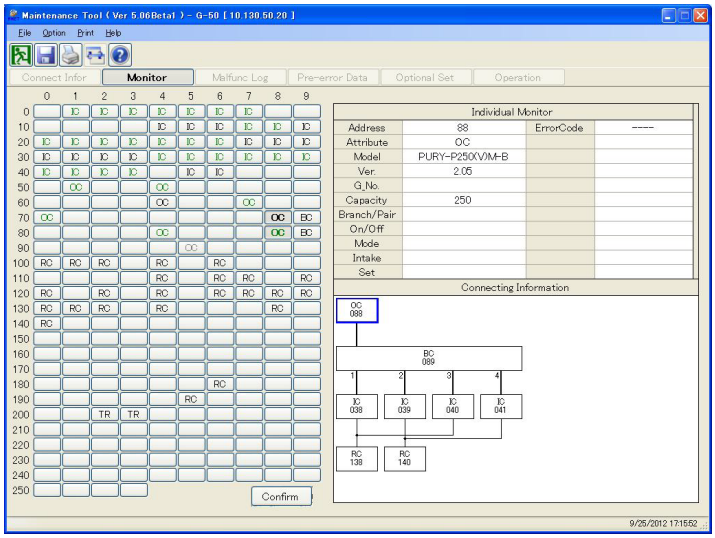
← Unit address (Tens digit)<br>
Unit address(Unit digit)
</td><td>
<nv Transmitting/receiving data><br>
Latest value of network variables<br>
[Rcv] Received value of operation command input<br>
[Snd] Output value of operation status<br>
St : state field data<br>
V1 : value field data<br>
Display example
<table>
<tr><th></th><th colspan="2">[Rcv]</th><th colspan="2">[Snd]</th></tr>
<tr><th></th><th>St</th><th>Vl</th><th>St</th><th>Vl</th></tr>
<tr><td>stopping</td><td>00</td><td>00</td><td>00</td><td>00</td></tr>
<tr><td>Operating</td><td>01</td><td>C8</td><td>01</td><td>C8</td></tr>
</table>
</td></tr>
<tr><td>


</td><td>
<nci set value><br>
Set value of configuration property
</td></tr>
</table>

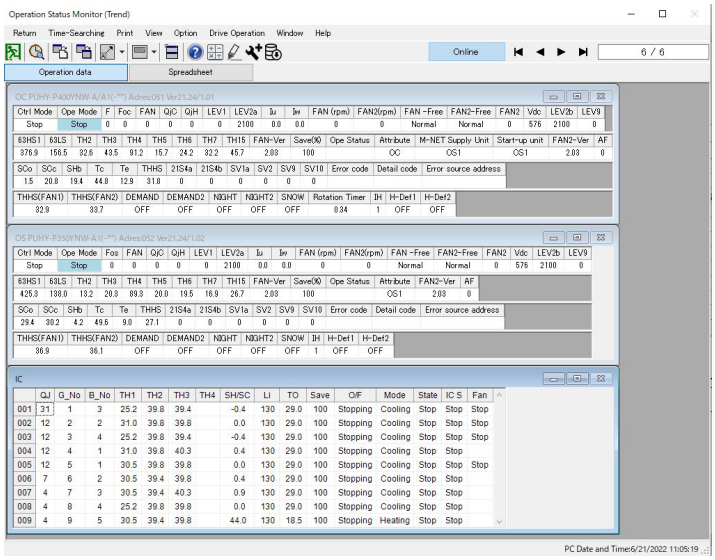
### 3.8.4 Operative Diagnostic Test Function for the SVB on the BC Unit Solenoid Valve Block

- With respect to the information provided in the Service Technical News (SWE12040), diagnostic test is run to automatically determine whether the SVB on the BC unit solenoid valve block is operating normally.

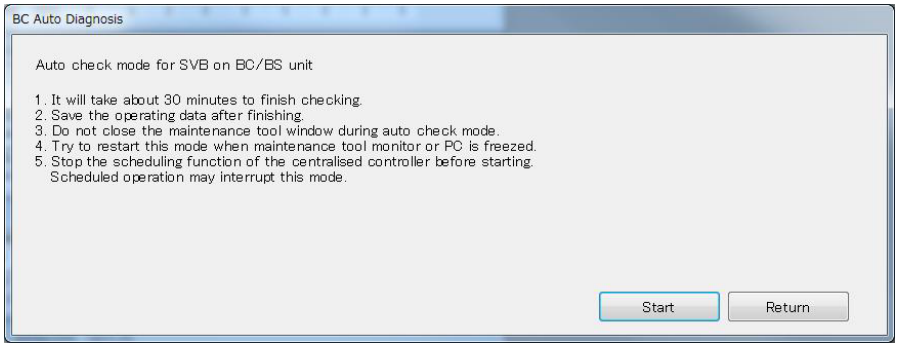
• On the main screen, select the only OC of the system which is the target of diagnosis, and start an operation monitor.
To run diagnostics for multiple systems at the same time, select the OC for each system.
*If the Operation Monitor is started with only an OC selected, the Operation Monitor will monitor operation for all units connected to the selected OC.



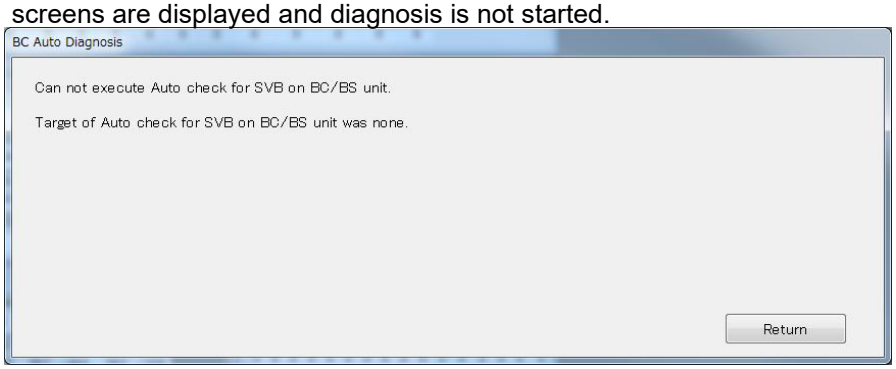

• Check the Operation Status Monitor screen to ensure that all units connected to the selected OC appear.



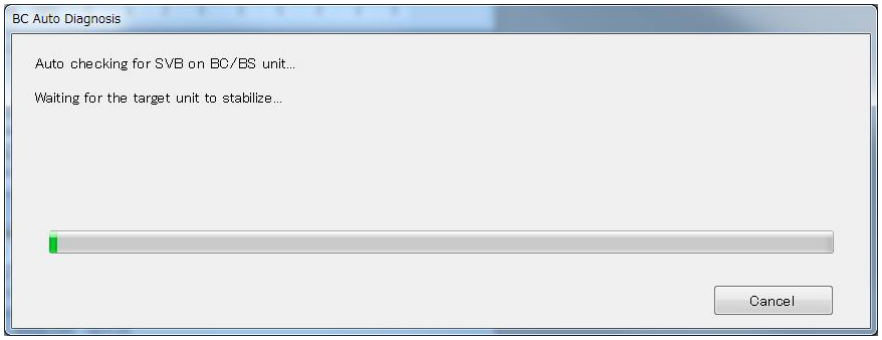
• [BC Auto Diagnosis] button is clicked from the option of a menu bar to open the **[BC Unit Diagnostic Function]** screen.
It will take approximately 30 minutes for the diagnostic test to complete.
Click on the [Start] button to start the BC diagnostic test.




• When all the units connected to OC are not displayed on an operation monitoring screen, the following screens are displayed and diagnosis is not started.

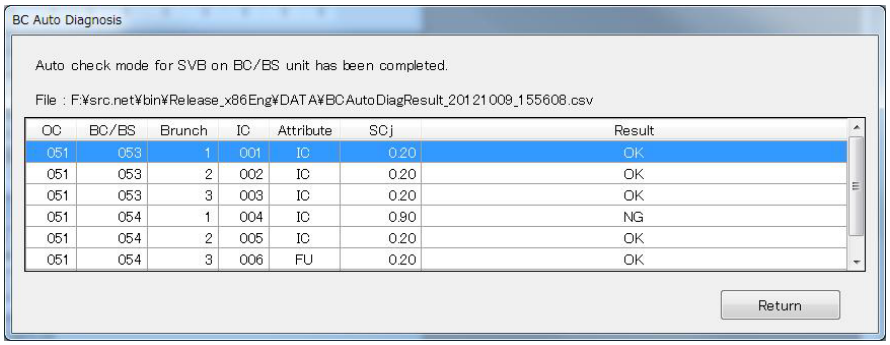



• The screen shown below will appear while the BC diagnostic test is running.
Click on the [Cancel] button to stop and exit the BC diagnostic test.



• The test results page appears once the BC diagnostics test has finished.
A “OK” result is listed in the Result column for solenoid valves that are operating normally.
A “NG” result is listed in the Result column for solenoid valves that are not operating normally.
A “—“ result is listed in the Result column for solenoid valves that could not be tested properly due to a communications error.
A “judgment is impossible “ result is listed in the Result column for solenoid valves that could not be tested properly due to ctrl mode changed to the [stop] or [error] or [defrost] or [off] during diagnosis.
A “Diagnosis is interrupted “ result is listed in the Result column for solenoid valves that could not be tested. When “Diagnosis is interrupted” fails in the unit stop processing at the time of a diagnostic start, it is displayed.

The results of the diagnostic test are saved automatically.
The name of the file is “BCAutoDiagResult_[Test Date and Time].CSV”, where “Test Date and Time” is replaced with the actual date and time of the test in numeric format.
Click and hold down the [Return] button to end the diagnostic test function.
Once the diagnostic test function has ended, the Operation Monitor data is saved and the Operation Monitor closed.




**NOTICE**

- There are four types of units to be tested, IC, FU, AU and BU.
- Only the solenoid valve of the sub port to which the unit being monitored by the Operation Monitor is connected will be checked during the diagnostic test.
- Once the diagnostic test has ended, make sure to close the Operation Monitor and save the Operation Monitor data.
- The actuators are locked while the BC diagnostic test is running.
  Always make sure to use the proper procedures when closing the Maintenance Tool.
  If the Maintenance Tool is not closed properly, the actuators will remain in the locked position, which could cause the air-conditioning equipment to malfunction.
- Do not attempt to change the operating status of any of the devices in the indoor units by a remote controller or other means while the diagnostics test is running.
  Diagnostic test results may not be accurate if operating status or conditions are changed during the test.
- Turn the Scheduler function OFF if there is a system controller connected.
- Setting of a unit is changed during the diagnosis and it will not switch back to the original setting after the diagnosis is completed.
  Write down the settings before starting the diagnosis, if necessary.
  IC and FU : Change the operation mode “Heating” and the fan speed “High”.
  BU : Change the set temperature 70℃.
  *Do not set up the preset temperature limit by the external input of BU
  Diagnostic test results may not be accurate.
- Should the diagnostic test end and close out partway through due to the PC freezing, restart the diagnostic test function.

## 3.9 Optional Setting [Optional Set]

*** Items Performed Here**

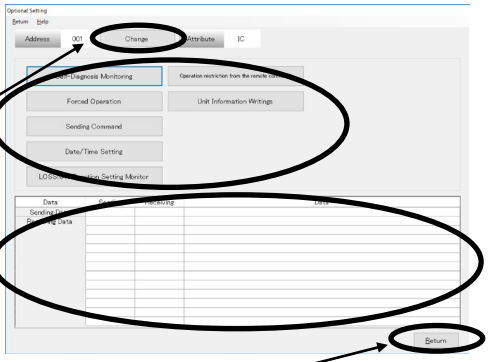
- **Self-Diagnosis Monitoring** : The self-diagnosis function (LED for service monitor) to be performed with Dip-SW on the circuit board of the outdoor unit can be monitored.
- **Forced Operation** : Changes the starting order of compressors.
- **Sending Command** : Allows to monitor the response for any M-NET command transmitted to the unit.
- **Date / Time Setting** : A setup of the present time can be performed to outdoor unit. (It is used for the time when abnormalities occurred.)
- **LOSSNAY Function Setting Monitoring** : Monitors function-item settings for LOSSNAY units.
- **Unit Information Writings** : Unit model name and serial number can be written.

(1) Click on [Optional Set] from the function selection buttons on the **Main Screen**.

(2)

(3) Click on the units to be monitored or operated.

(4) The **Optional Setting Screen** will be appear.
Click on **[Item]** to be monitored or operated.
- Click on [Change] and the **Address Change Screen** appears.
[Refer to **3.11.1.1 Malfunction Log 3.11.1.1.1 (5)**]
- The sending/receiving data are displayed on the [**Lower Column**].



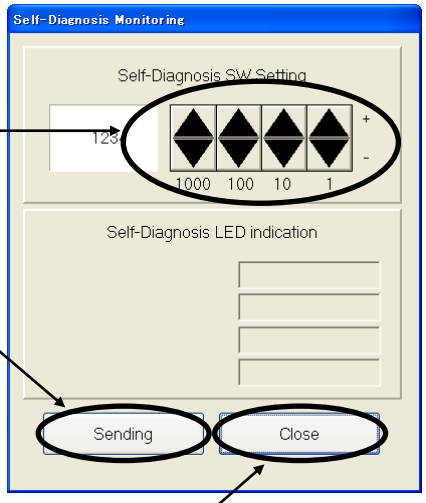

(5) Click on [Return] to end the **Optional Setting Screen** and return to the **Main Screen**.

### 3.9.1 Self-Diagnosis Monitoring

(1) Click on [Self-Diagnosis Monitoring] and the **Self-Diagnosis Monitoring Screen** will appear.

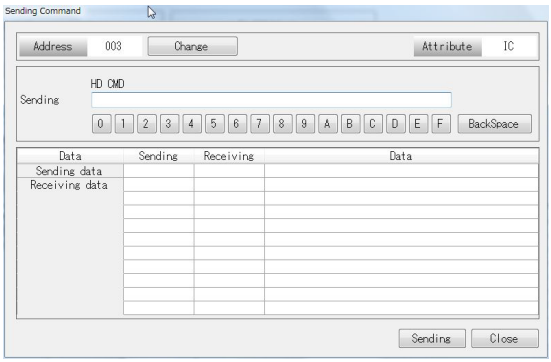
(2) Set the self-diagnosis SW value with ▲▼.
For the set value, use the **No. on the List of LED monitor display of the Service Handbook** for each unit.
* The displaying digit number is different on the model.
(There is a model that doesn't display the digit of 1000.)

(3) After setting the set value, click on [Sending].
The self-diagnosis LED display will be shown with flag or numerial value.
If the unit other than the outdoor unit or the set value being not corresponded is sended, the characters "**Not corresponded**" and "**Attribute and Version**" are displayed.




(4) Click on [Close] to end the **Self-Diagnosis Monitoring Screen** and return to the **Optional Setting Screen**.

### 3.9.2 Sending Command




(1) Click on [Sending Command] and the **Sending Command Screen** will appear.

(2) Input M-NET command desired to transmit by clicking on the button.
Direct input from the keyboard is also possible.

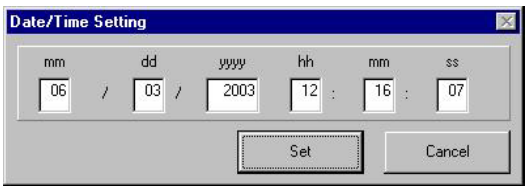
(3) After inputting command, click on [Sending] .
Response command is displayed on [**Answer**] column.

(4) Click on [Close] to end the **Sending Command Screen** and return to the **Optional Setting Screen**.

**NOTE:**
Use this function after obtaining the knowledge of **M-NET** command.

### 3.9.3 Date / Time Setting

(1) Click on [Date/Time Setting] . The **Date / Time Setting Screen** opens and the present time of PC is displayed.

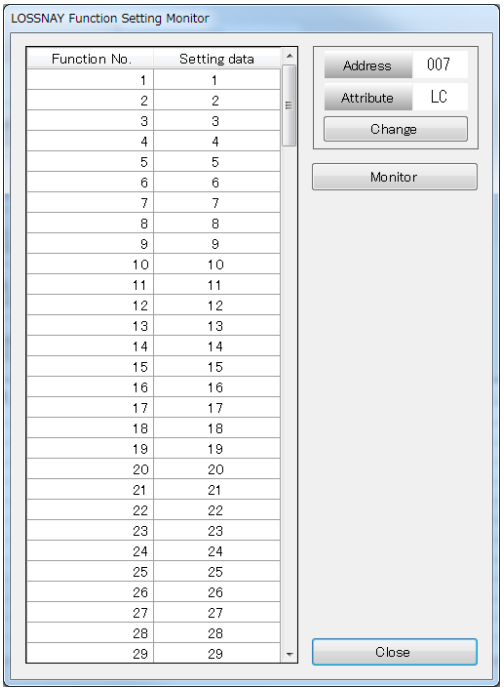



* When the unit which does not correspond to a setup of time is chosen, the message of “This function is not available” is displayed, and it cannot set up.

(2) A click of [Set] sets the time currently displayed to a unit.
* The time to set up can also be changed on a screen. Cursor is united with a change point and a numerical value is inputted.

(3) Click on [Cancel] to end the **Date / Time Setting Screen** and return to the **Main Screen**.

### 3.9.4 LOSSNAY Function Setting Monitor




(1) In the **[Optional Setting]** screen, click **[LOSSNAY Function Setting Monitor]**.
The **[LOSSNAY Function Setting Monitor]** screen appears.
On the **[LOSSNAY Function Setting Monitor]** screen, the LOSSNAY function setting status can be monitored.

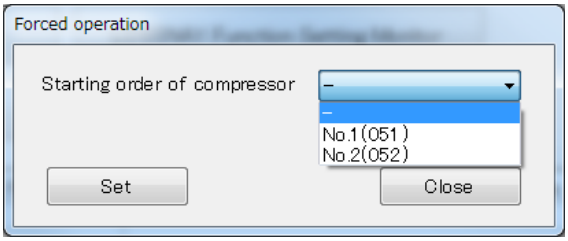
**NOTE:**
If you selected a unit that does not support the LOSSNAY Function Setting Monitor function, a **"This model does not support the LOSSNAY Function setting monitor"** message appears.
The LOSSNAY Function Setting Monitor function can only be used for some LOSSNAY models.

(2) Click **[Monitor]** to monitor the current set values and display the result on the screen.

(3) Clicking **[Change]** opens the **[Change]** screen.
For operation method, refer to “3.11.1.1 Screen Functions and Operations”.

(4) Clicking **[Close]** closes the **[LOSSNAY Function Setting Monitor]** screen.

### 3.9.5 Forced Operation




(1) On the **[Optional Setting]** screen, click **[Forced Operation]**.The **[Forced Operation]** screen appears.
On the **[Forced Operation]** screen, you can forcefully change the starting order of compressors when starting the air conditioning system.

**NOTE:**
When a unit that does not support the forced operation function is selected, a **"This model does not support the forced operation function"** message appears.
The forced operation function can only be used for some outdoor unit models.

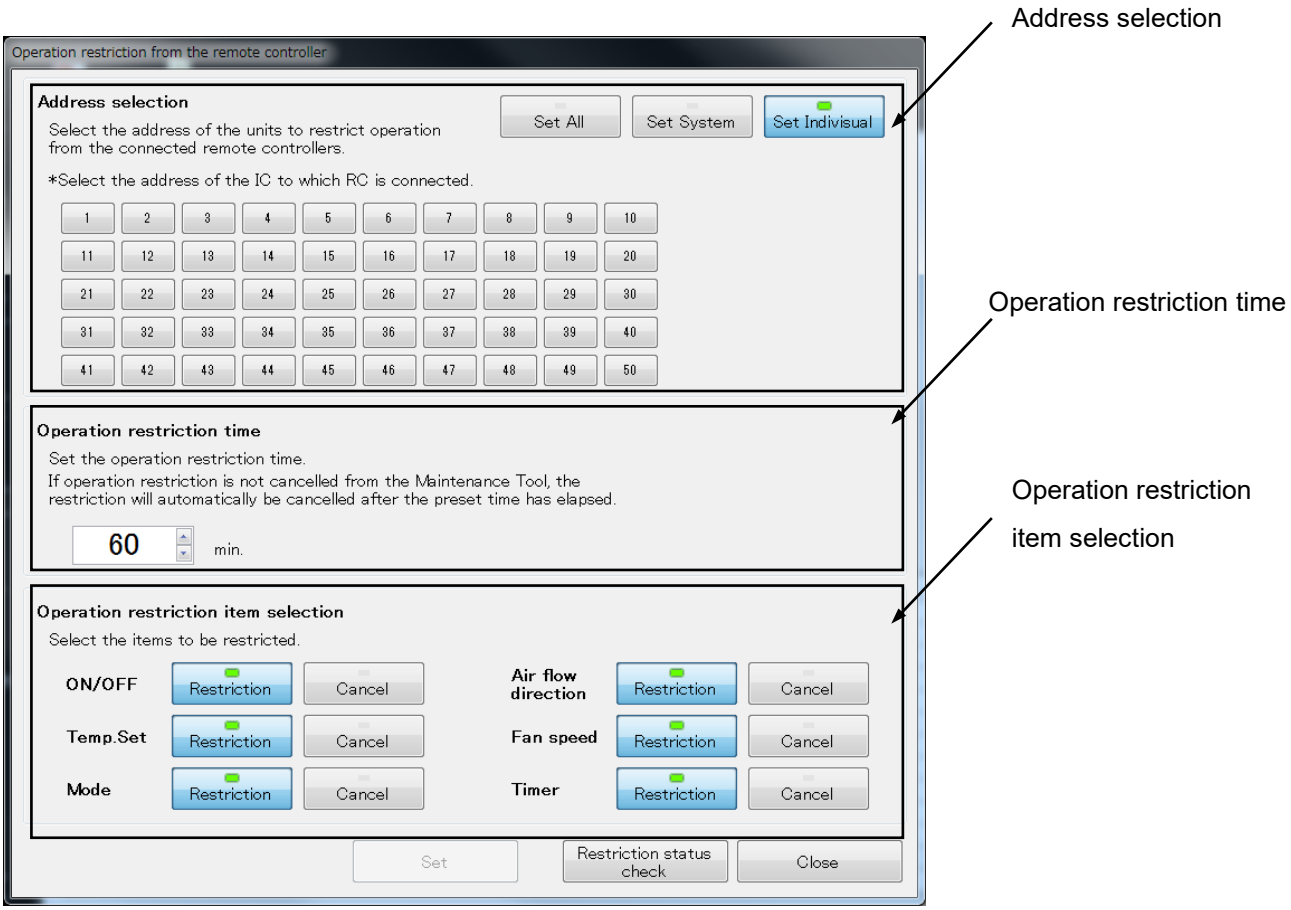
(2) Click the pull-down menu to display a list of compressors. From the list, select the compressor you wish to start first when the air conditioning system is started.

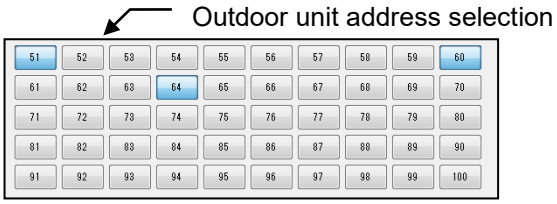
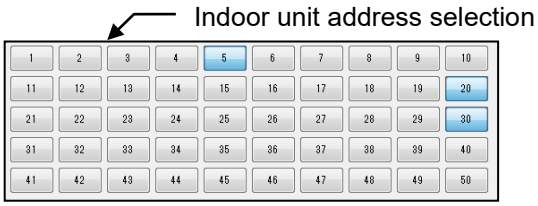
(3) Clicking **[Set]** to change the starting order of compressors. After the setting completes, a **"Setting is completed"** message appears.

(4) Clicking **[Close]** closes the **[Forced Operation]** screen.

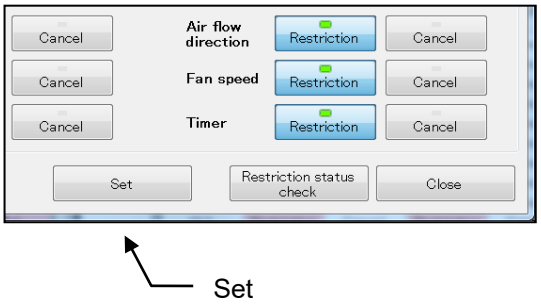
### 3.9.6 Operation restriction from the remote controller

(1) Click [**Operation restriction from the remote controller**] on the [Optional Set] window to display the [Operation restriction from the remote controller] window. Using the [Operation restriction from the remote controller] window, the operation from the remote controller can be disabled. To use this function, first set the address selection, operation restriction time, and operation restriction item selection.

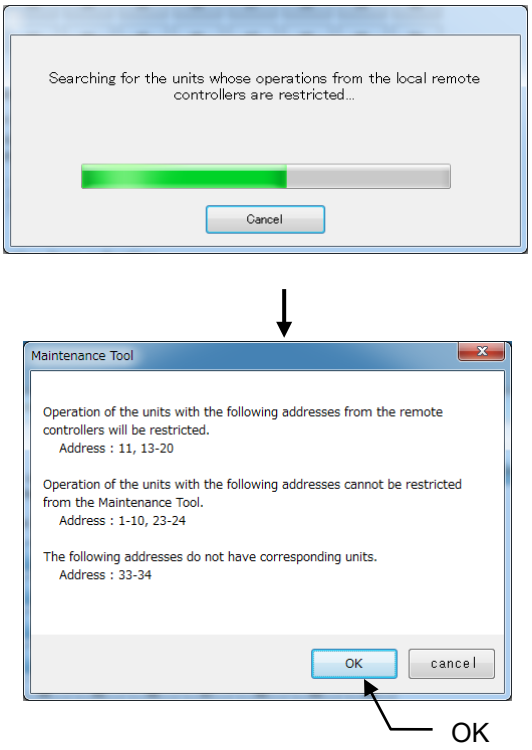


| Item | Details |
|---|---|
| Address selection | Select an address to be targeted for the operation restriction. There are three methods of selecting the address: [**Set All**], [**Set System**], and [**Set Individual**].<br><br>[**Set All**]<br>When [**Set All**] is selected, all the remote controllers are selected as targets for the operation restriction.<br><br>[**Set System**]<br>When [**Set System**] is selected, the outdoor unit address can be selected within the range from 51 to 100. Remote controllers that exist in the outdoor unit system of the designated address are selected as targets for the operation restriction.<br><br>  <br><br><br>[**Set Individual**]<br>When [**Set Individual**] is selected, the indoor unit address can be selected within the range from 1 to 50. Remote controllers that exist in the indoor unit system of the designated address are selected as targets for the operation restriction.<br><br>  <br><br><br>**Note**<br>When setting the target address using [**Set Individual**], select the address of the main unit or of both the main and sub units in the group. If only the address of the sub unit is selected, the operation of the remote controller can not be restricted. |
| Operation restriction time | Set the operation restriction time. The operation restriction from the remote controller is cancelled after the specified time period has elapsed. The operation restriction time can be set within the range from 10 minutes to 120 minutes. |
| Operation restriction item selection | Set the operation restriction item. Six operations of ON/OFF, temperature setting, operation mode, air flow direction, fan speed, and timer (restriction of the schedule set by the remote controller) can be restricted. |

(2) After setting the address selection, operation restriction time, and operation restriction item selection, click the [**Set**] button. If there is an unset item, the [**Set**] button is grayed out and cannot be clicked.



(3) The progress bar will appear, and then the confirmation messsage will appear. Click the [**OK**] button.

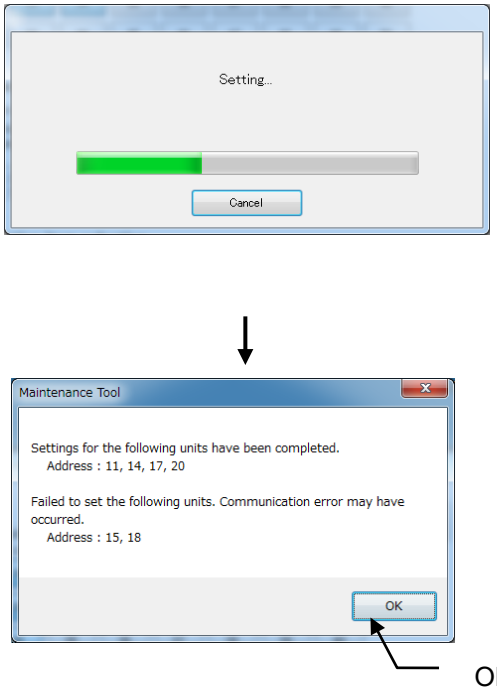



**Note**

The confirmation message will appear as follows.

| Confirmation message | Meaning |
|---|---|
| Operation of the units with the following addresses from the remote controllers will be restricted. | Appears when the operation restriction can be enabled for the selected address using the Maintenance Tool. When the [**OK**] button is clicked, the operation of the remote controller conntected to the indoor unit having the designated address is restricted. |
| Operation of the units with the following addresses cannot be restricted from the Maintenance Tool. | Appears when the operation restriction cannot be enabled for the selected address using the Maintenance Tool.<br>Operation from the remote controller cannot be restricted using the Maintenance Tool for some indoor unit models. |
| The following addresses do not have corresponding units. | Appears when there is no unit in the selected address. |

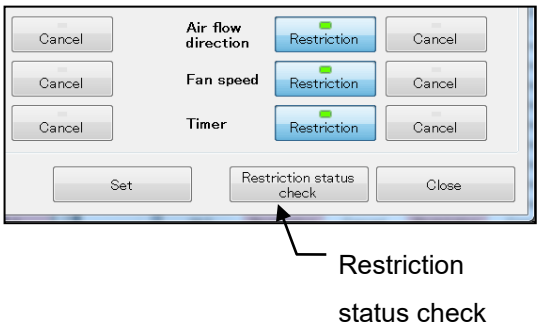
(4) The Maintenance Tool sends the operation restriction command to the target address. The progress bar will appear, and then the confirmation message will appear.
Click the [**OK**] button to close the confirmation message.



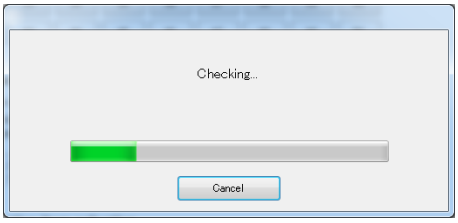

**Note**
The confirmation message will appear as follows.

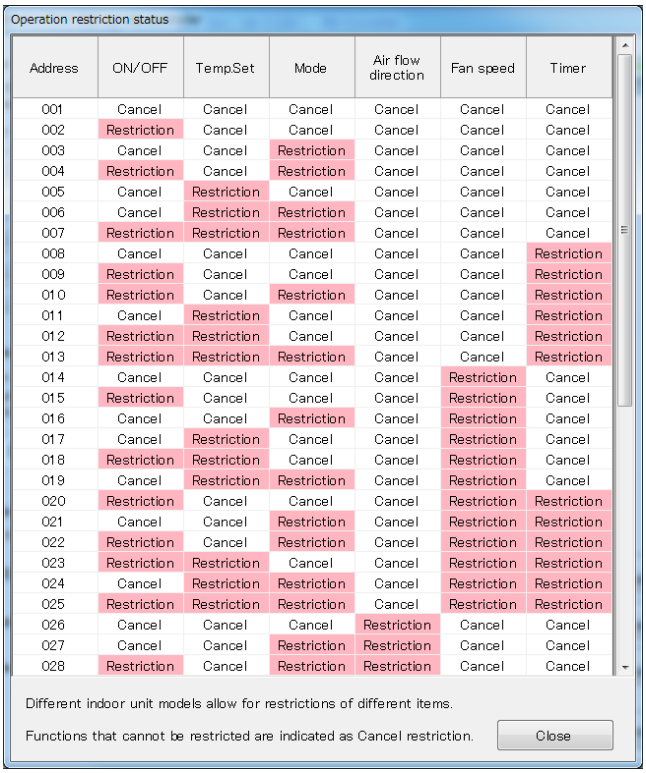
| Confirmation message | Meaning |
|---|---|
| Settings for the following units have been completed. | Appears when the operation restriction settings have been made properly. |
| Setting was cancelled. Settings for the following units have not been completed. | Appears when the [**Cancel**] button on the progress bar is clicked. |
| Failed to set the following units. Communication error may have occurred. | Appears when the setting has failed due to a communication error. Check the communication status and make the setting again. |

(5) After completion of the setting, click the [**Restriction status check**] button.



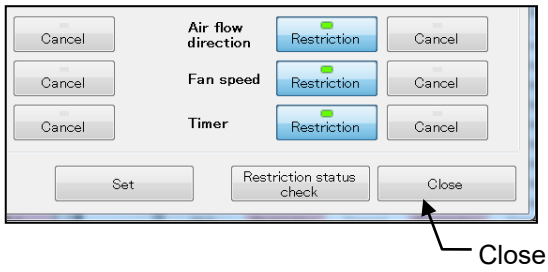
(6) The progress bar will appear, and then the [Operation restriction status] window will appear. The restriction status of each item is displayed on the [Operaton restriction status] window. Check that the restriction settings have been made properly.
Items being restricted are highlighted in red.



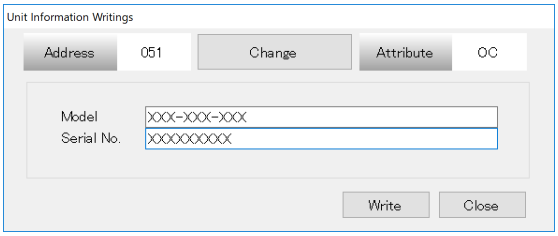




**Note**
Items that can be restricted vary depending on the indoor unit model. Items that cannot be restricted are displayed as “Cancel” on the [Operation restriction status] window.

(7) Click the [**Close**] button to close the [Operation restriction from the remote controller] window.



## 3.9.7 Unit Information Writings




(1) Click [**Unit Information Writings**] on the [Optional Setting] screen to display the [Unit Information Writings] screen as shown at right.

(2) Enter a model name in the [Model] box and a serial number in the [Serial No.] box. Then, click [**Writing**] to write the entered information into the main circuit board.

(3) Click [**Close**] to end unit information writing and return to the [Optional Setting] screen.

**Note**
- The [Model] and [Serial No.] boxes are blank when the [Unit Information Writings] screen is displayed.
- Then a unit that does not support the unit information writings function is selected, a message, "This model does not support the Unit Information Writings Function." will appear and the unit information cannot be set.
- To write another unit's information, click [**Change**] to change the target unit address. [Refer to 3.11.1.1 Malfunction Log 3.11.1.1.1 (5)].

**Important**
- Write unit information when the model name and serial number are unset to a unit (i.e., when the circuit board is replaced).
- After completing unit information writing, check the main screen to see the information has been set correctly. For how to check the information, refer to "3.3 Address Search Method" and "3.4 Main Screen."

## 3.10 Operation Control

Operation

* **Items Performed Here**

You can start/stop units and operate the operation mode, set temperature, air volume, damper, humidifier, filter sign reset, and actuator.

The operable range differs depending on the model.

*In the P-series,the item of Damper/Hummidifer/actuator can not be operated.

*In the M-series, can not use the Operation Control.

### 3.10.1 Screen Transfer Operation

(1) Click on Operation from the function selection buttons on the **Main Screen**.

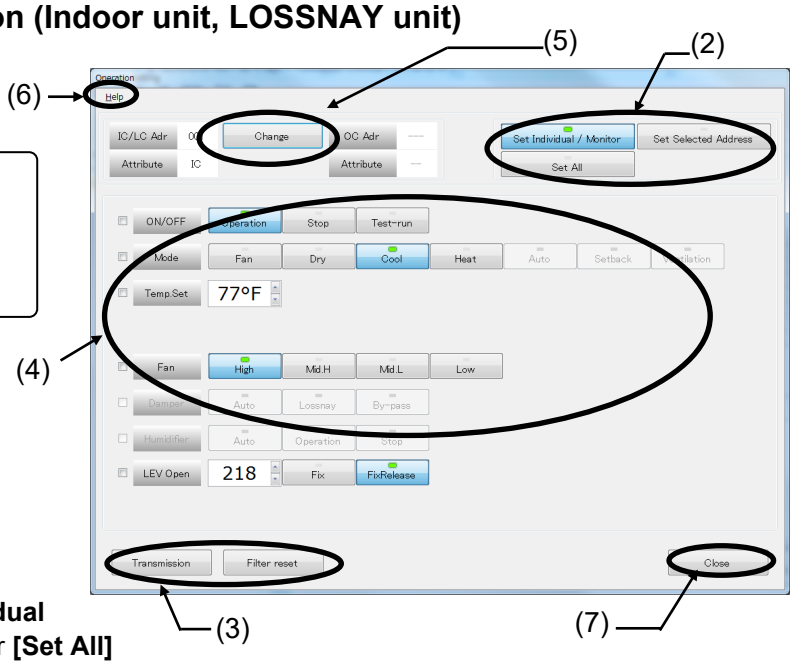
(2) Click on the unit to be controled.

(3) The **Operation Control Screen** will be appear. This display shows the current conditions.

### 3.10.2 Screen Functions and Operation (Indoor unit, LOSSNAY unit)

(1) Set each desired [**Item**].

**NOTE:**
In case of connecting to P-series with USB/Serial conversion cable, items of (2),(5) are not displayed.




(2) Set the operation range. Select **[Set Individual Unit/Monitor]**, **[Set Selected Address]** , or **[Set All]** mode.

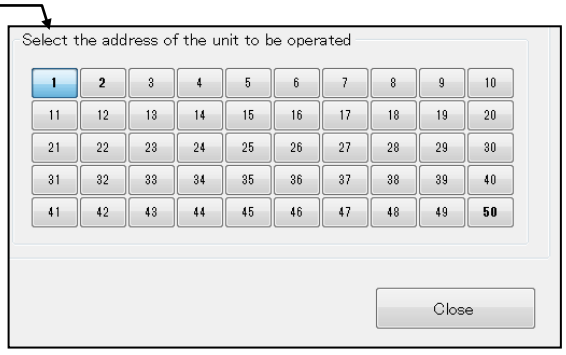
**[Set Individual Unit/Monitor]**

Operates the operation status of the selected indoor units.

**[Set Selected Address]**

When **[Set Selected Address]** is selected, the **[Select Address]** screen appears on the lower right corner of the **[Operation]** screen.

Operates the operation status of the indoor unit of the M-NET address selected using the **[Select Address]** screen.




**[Set All]**

Operates the operation status of all indoor units that exist.

**NOTE:**

- Using the batch operation for **[Set Selected Address]** and **[Set All],** four items can be set, i.e. start/stop, operation mode, set temperature, 4-levels of air volume. However, settings that are not supported by the specific model are not sent. (Mode operation for LC, etc.)

(3) After setting the operation item, click on Transmission .

* The item will not be transmitted if a “check” is removed. Please remove a check if needed.
* Click on Filter reset and the command which resets a filter sign will transmit.
* When **[Set Selected Address]** or **[Set All]** is selected, the send targets are searched . After searching, the messeage screen appears. Click [Yes] to batch send the settings to the targets. Click [No] to not send settings.

(4) The operation mode and temperature settings are set as follows.

**Mode**

Fan ⋯ Indoor unit operation mode will be set to the FAN mode.
Dry ⋯ Indoor unit operation mode will be set to the DRY mode.
Cool ⋯ Indoor unit operation mode will be set to the COOLING mode.
Heat ⋯ Indoor unit operation mode will be set to the HEATING mode.
Auto ⋯ Indoor unit operation mode will be set to the AUTO mode.
Two types of value settings(single set point and dual set points) are available.
(changeable from the function settings menu)
Setback ⋯ Indoor unit operation mode will be set to the SETBACK mode.

AUTO (dual set point) mode:

In AUTO (dual set point) mode, the preset temperatures can be set for cooling and heating, and operation can be switched automatically between cooling and heating depending on the room temperature.
The preset temperatures for cooling and heating set in AUTO (dual set point) mode will be reflected to the temperature setting for COOL/DRYING and HEAT modes.

**NOTE:**

- Temperature settings for Cooling and Heating in the AUTO (dual set point) mode can be set to the temperatures that meet the following formula:
"Preset cooling temperature – Preset heating temperature
≥ Minimum temperature difference"
*If the temperatures for Cooling and Heating are set too close to each other, the temperatures for both the Cooling and Heating will automatically be changed to meet the minimum temperature difference requirement. Minimum temperature difference requirement varies with the indoor unit settings.

SETBACK mode:

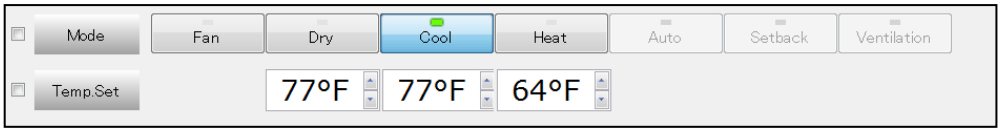
The SETBACK function automatically switches the operation mode between cooling and heating to maintain the room temperature within the set temperature range.
The preset temperatures for cooling and heating set in SETBACK mode can be different from the preset temperatures for other modes.

**Temperature settings**

The method of setting the set temperature differs depending on the indoor unit model.

- If multiple input fields are displayed for the set temperature, it is possible to set the set temperature for each mode of the target indoor units. Set the set temperatures for each mode.
- If multiple input fields for the set temperature are not displayed, it is not possible to set the set temperature for each mode of the target indoor units. Set the set temperatures that is common with different modes.

**Mode based setting supported model**




**Mode based setting unsupported model**



(5) Click on Change and the **Address Change Screen** will appear.
[Refer to **3.11.1.1 Malfunction Log 3.11.1.1.1 (5)**]

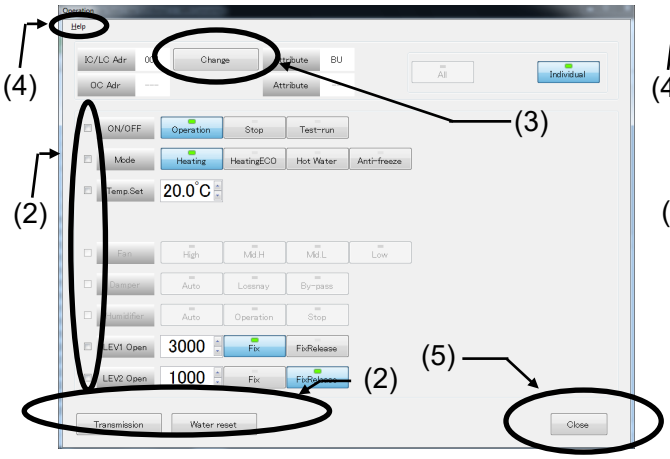
(6) "**Menu Bar**"
[**Help**] appears in the menu bar. Click on [**Help**] and an explanation of the "**Operation Method**" will appear.
[Refer to **3.7 Connecting Information 3.7.2 (2)**]

(7) Click on Close to end the **Operation Control Screen**.The **Main Screen** will return.

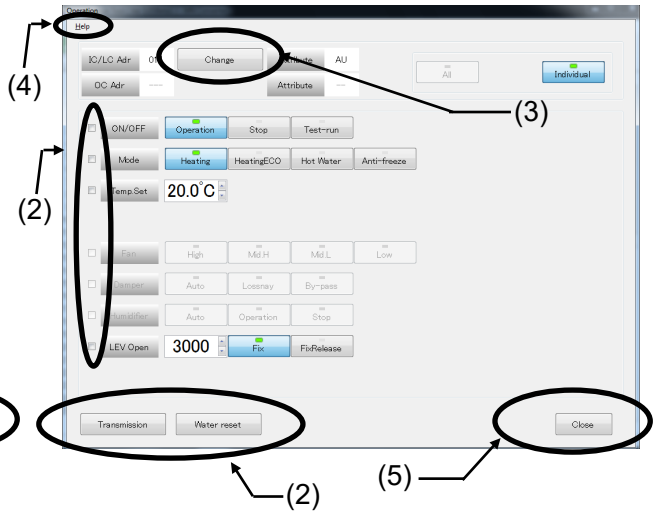
**NOTE:**
When LEV OPENING is changed, to prevent failure to release the LEV opening after test run, close the operation control screen. This release the LEV opening on this screen automatically.
However when moving to the operation control screen from the operation monitor screen, the LEV opening will be retained even by closing this screen.
At a timing when finishing the operation monitor screen, the LEV opening can be released.

### 3.10.3 Screen Functions and Operation (Booster Unit, Water HEX Unit)

Screen when Booster Unit is selected.




Screen when Water HEX Unit is selected.




(1) Set each desired [**Item**].

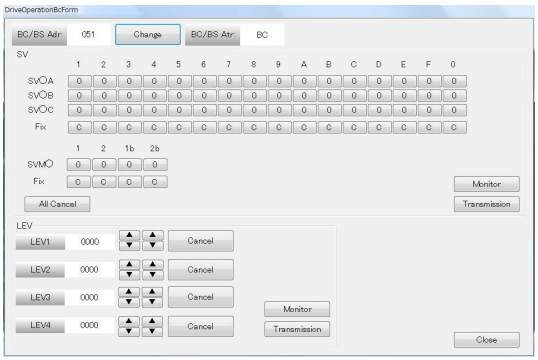
(2) After setting the operation item, click on [Transmission] .
* The item will not be transmitted if a “check” is removed. Please remove a check if needed.
* Click on [Water reset] and the command which resets a water exchange signal will transmit.

(3) Click on [Change] and the **Address Change Screen** will appear.
[Refer to **3.11.1.1 Malfunction Log 3.11.1.1.1 (5)**]

(4) ”**Menu Bar**”
[**Help**] appears in the menu bar.
Click on [**Help**] and an explanation of the “**Operation Method**” will appear.
[Refer to **3.7 Connecting Information 3.7.2 (2)**]

(5) Click on [Close] to end the **Operation Control Screen**.The **Main Screen** will return.

### 3.10.4 Screen Functions and Operation(BC Controller)



(1) Click on the button corresponding to the valve number you want to change.
"0" represents "close" and "1" represents "open".
To change the valve setting, perform
"Fix Release" → "Fix"

(2) After setting, click on Transmission .

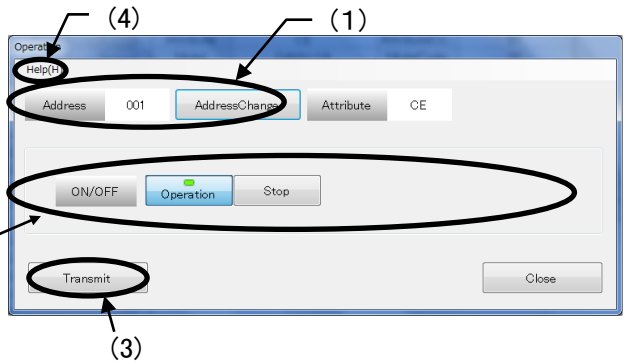
(3) Click on Monitor to check the current conditions.

(4) Change the LEV opening with . Set to the LEV opening.
Click on Transmission to send the setup contents.

(5) After adjustment by solenoid valve and LEV opening change is complete, click on Close .
The **Main Screen** will return. At this time, the contents set at this screen become invalid.

**NOTE:**
To prevent failure to release the status set after test run, close the operation control screen of BC/BS controller.
This releases all the content set on this screen automatically.
However when moving to the operation control screen of BC/BS controller from the operation monitor screen,
the set content will be retained even by closing this screen.
At a timing when finishing the operation monitor screen, the set content can be released.

### 3.10.5 Screen functions and operation (Hot Water Heat Pump Unit (QAHV))



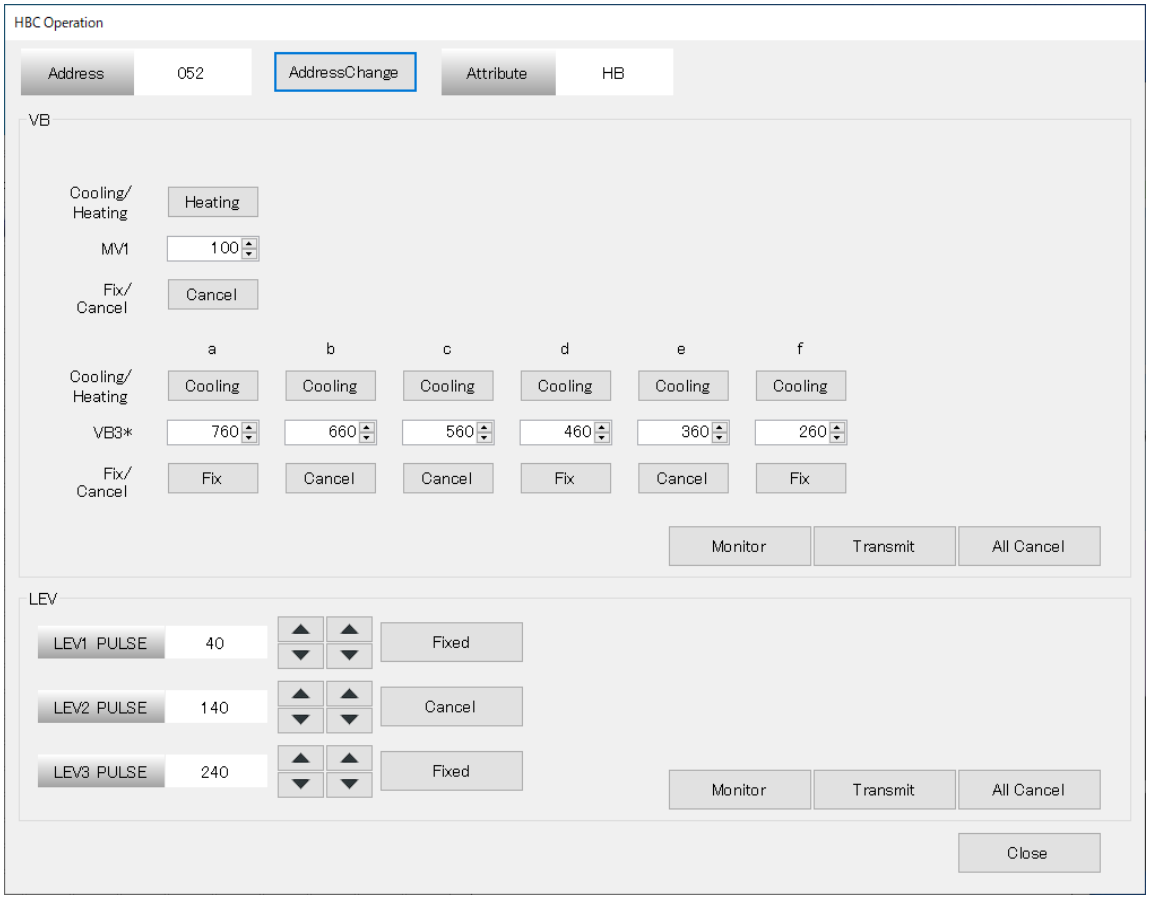

(1) Set the addresses.
Refer to Section 3.11.1.1 Malfunction Log for how to set the addresses. When making the ON/OFF setting for the Hot Water Heat Pump Unit (QAHV), select the main unit (because the setting is made for the entire system and not individual units).

(2) Set the items to be operated.
Uncheck the box to exclude items from being sent.

(3) When done making the settings, click [**Send**].

(4) [Menu bar]
The Help menu is located on the menu bar. Click [**Help**] to open the Help window.

### 3.10.6 Screen Functions and Operation(Hydro branch controller)



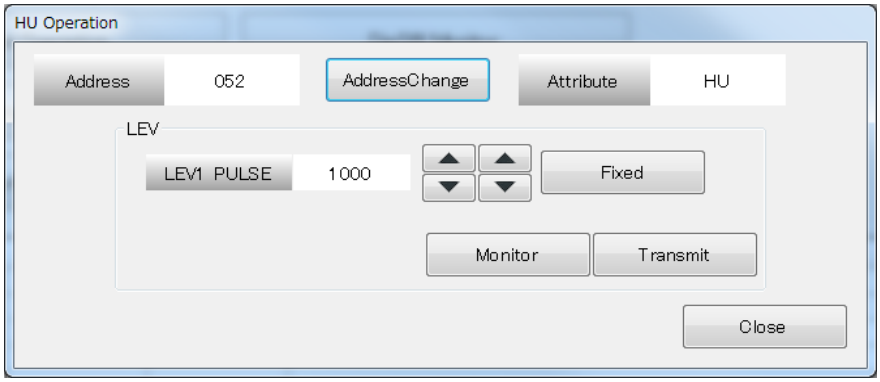

(1) Change the LEV or Valve opening with [▲▼]. Set to the LEV or Valve opening. Click on [**Transmit**] to send the setup contents.

(2) Click on [**Monitor**] to check the current conditions.

(3) Click on [**All Cancel**] to cancel fixation of all actuators.

(4) Click on [**Close**] to end the Operation Control Screen. The Main Screen will return.

### 3.10.7 Screen Functions and Operation(Hydro unit)




(5) Click on [**Monitor**] to check the current conditions.

(6) Change the LEV opening with [▲▼]. Set to the LEV opening.
Click on [**Transmit**] to send the setup content.

(7) Click on [**Close**] to end the Operation Control Screen. The Main Screen will return.

## 3.11 Maintenance Data

Maintenance Data

*** Items Performed Here**

- Individual monitoring: Error history and pre-error data can be monitored for each address.
- Download: System information, error history, and pre-error data can be downloaded all at once.

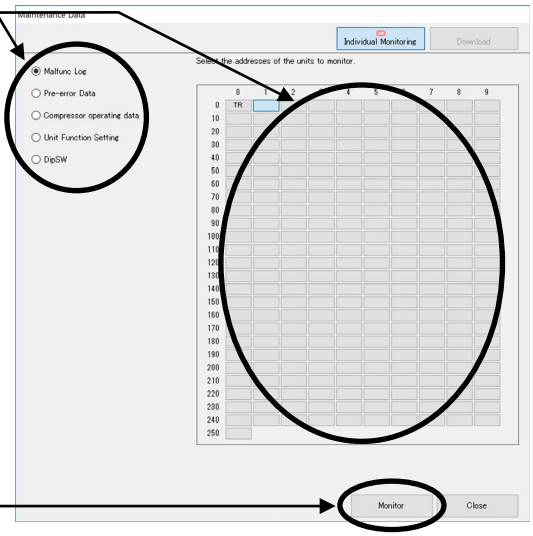
### 3.11.1 Individual Monitoring

(1) Click the function selection button [**Maintenance data**] on the [Main] screen.
The [Individual Monitor] screen will appear.

(2) Click the data and the address of the unit to be monitored.

(3) Click [Monitor].
Monitor screen will open.
See chapters 3.11.1.1 through 3.11.1.5 for details.

(4) Click [Close] to exit the [Individual Monitor] screen.
The screen will return to the [Main] screen.




**Note**

- While the addresses are being searched on the [Main] screen, the attributes already found on the [Main] screen will appear on this window.
- If a unit that does not support the function is selected, a message "This model does not support the monitoring of ***" will appear, and the unit will not be monitored.

## 3.11.1.1 Malfunction Log

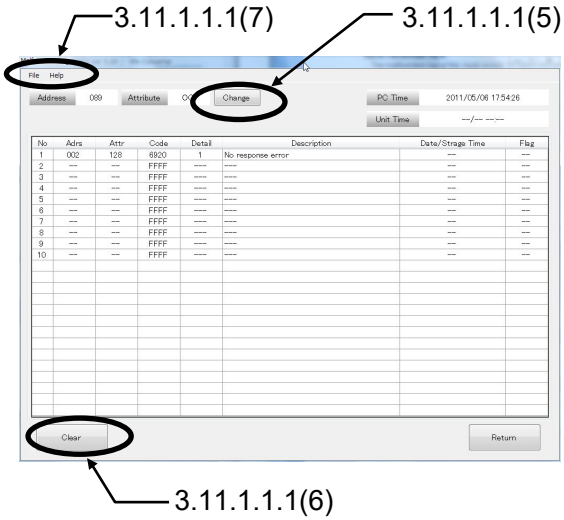
*** Items Performed Here**
**- The malfunction log of the most recent 10 cases (except operation group SC).**

## 3.11.1.1.1 Screen Functions and Operation

(1) Click [Malfunction Log] on the [Individual Monitor] screen, select the units to be monitored, and click [**Monitor**] to view the [Error History].

(2) The message "**Monitoring. Please wait for a moment.**" Will appear.

(3) Momentarily, the **Malfunction Log Screen** will appear. If the number of incidents in the malfunction log is less than ten, **[--]** will appear in the attribute column and **[FFFF]** will appear in the code column.




* Code
If the error code is displayed in blue, you can view the troubleshooting (PDF document) by clicking the error code
[Refer to **3.4 Main Screen.**]

* Error detailed No.
Error detailed No. may be displayed on the right of an error code by the model which carries out a monitor. Refer to the service handbook for the implications of detailed No.

* When the monitor of the unit with a simple clock function is carried out, the time which malfunction generated, or the time when it was integrated to unusual generating is displayed.

- When the unit has received a setup of time: The time which malfunction generated is displayed.
- When the unit has not received the setup of time: The addition time from a power supply injection when malfunction occur is displayed.

**NOTE:**
While the power supply of a unit turns off, time does not count the simple clock function of a unit. Therefore, the display of the time which malfunction generated, and addition time will be a mere rough standard.
Whether the power of the unit turned off or not can be checked on the flag display.

* About a flag display
- When a flag is "1" : The state which the power supply does not turn off after receiving a setup of time.
- When a flag is "0" : A setup of time is not received. Or the state which the power failure generated after receiving a setup of time.

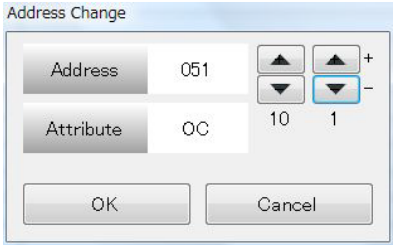
* About PC Time/Unit Time
  - PC Time : The present time set as the Maintenance Tool PC.
  - Unit Time : The present time which carried out the monitor from the unit with a simple clock function.

**NOTE:**
When the system controller which transmits a setup of time to a unit periodically is not connected, a year and moon data are not updated. In this case, the date column of unit time maybe counted up till the 9999th.

(4) Click on [Return] to end the **Malfuncion Log Screen**.
The message "**Close the malfunction log display?** " will be displayed.
Click on [Yes] to end or click on [No] to not end.
[Yes] is clicked, the **Main Screen** is returned.

**NOTE:**
When Centralized Controller is connected to the system, the malfunction log of OC is eliminated. Please check the malfunction log in Centralized Controller to check the malfunction log of OC.

(5) Click on [Change] and the **Address Change Screen** appear.
Click on [▲▼] to change the address.
The unit attributes are displayed at this time.
(If there is no unit at the address given, the attributes are not given.)




Once the address has been set, click on [OK] .
The units are changed.

If there is no unit at the address given, the message "**Unit doesn't exist in this address. Retry again.**" Will appear.
Click on [OK] to return to the **Address Change Screen**.




(6) Click on [Clear] and the message "**Clear the malfunction log. Is it OK?**" will appear.
Click on [OK] to clear or click on [Cancel] to not clear.

(7) "**Menu Bar**"
The menu bar displays [**File**] and [**Help**].
- By clicking [**File**] and then selecting "**Save as …**" from the sub-menu, the Malfunction Log data will be output and saved in the CSV format. This data can not be viewed on the offline screen.

- Click on [**File**] and then select "**Return**" from the sub-menu to end the **Malfunction Log Screen** and return to the **Main Screen**.

- Click on [**Help**] and an explanation about "**Terminology**" and "**Operation Method**" will be appear. [Refer to **3.7.1 Connecting Information of outdoor units 3.7.1.2 (2) "Menu Bar"**]

* The error history being memorized by Centralized Controller can also be monitor-displayed.
(Display can not be performed when connecting with MN Converter.)
The system controllers other than Centralized Controller can not provide the monitoring of error history.

## 3.11.1.2 Pre-error Data

*** Items Performed Here**

**- The operation status of the unit (OC/OS) until generating an error can be monitored in a unit of minute.**

## 3.11.1.2.1 Screen Functions and Operation

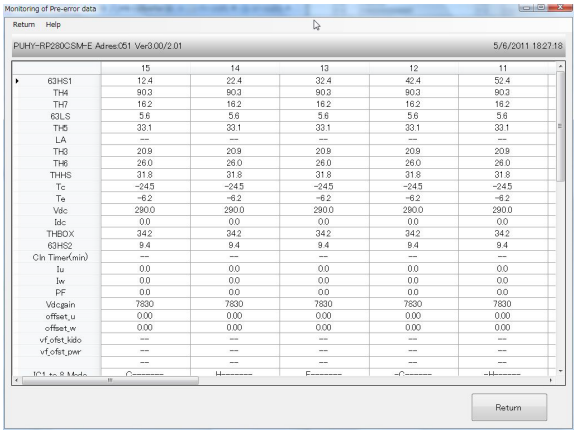
(1) Click [Pre-error Data] on the [Individual Monitor] screen, select the units to be monitored, and click [**Monitor**] to view the [Pre-Error Data] screen.

- When it chooses except the outdoor unit or constant speed unit (OS), the message of "**This model doesn't have the function of Monitoring of Pre-error.**" Is displayed not allowing operation.

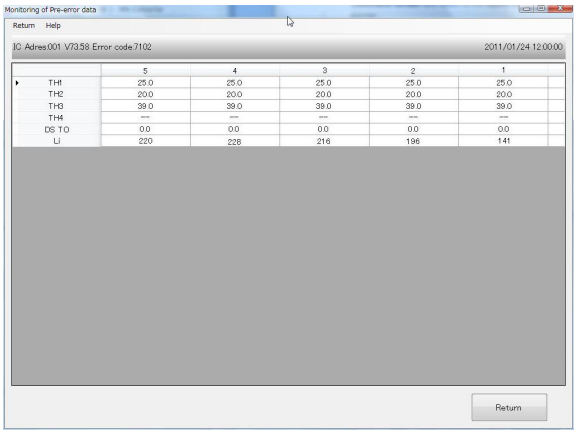
(2) As the screen opens, the monitoring of the data of the selected unit before error occurred will automatically be started.

(3) After ending the monitoring, the data of the selected unit before error occurred is displayed in a unit of minute on **Pre-error Data Screen.**
Each figure on the upper column indicates a number of minute before generating an error respectively.
The change of the display content is performed with Up/down, left/right scroll bar.

The number of displayed items and that of the stored data (per minute) differ depending on the selected item.




Outdoor Unit

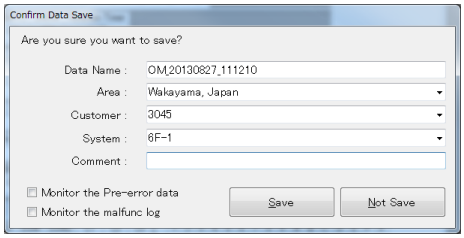



Indoor Unit

(4) ”**Menu Bar**”

The menu bar displays [**Return**] and [**Help**].

- Click on [**Return**] to end the **Pre-error Data Screen** and return to the **Optional Setting Screen**.
  As the screen to save data will appear, change the data name as required and save it. You may enter your comment also.
  After saving, return to the Optional Setting Screen.




- Click on [**Help**] and an explanation about “**Terminology**” and “**Operation Method**” will be displayed.
  [Refer to **3.7 Connecting Information 3.7.2 (2)**]

### 3.11.1.3 Compressor operating data

[Refer to **3.17 Compressor operating data monitor**]

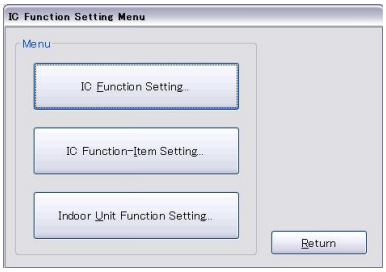
### 3.11.1.4 Unit Function setting

*** Items Performed Here**

**- A setup and monitor of a function can be performed to unit.**

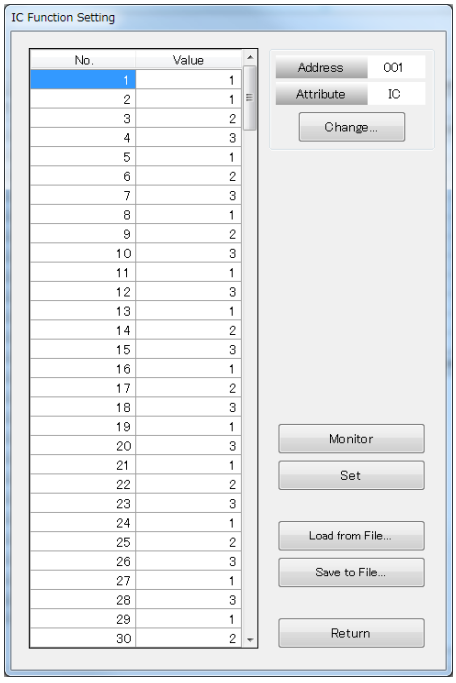
### 3.11.1.4.1 Screen Functions and Operation

**< IC Function Setting>**




(1) Click [Unit Function Setting] on the [Individual Monitor] screen, select the addresses of the units to be monitored, and click **[Monitor]**. **[IC Function Setting Menu]** screen appear.

(2) Click **[IC Function Setting]** on the **[IC Function Setting Menu]**. **[IC Function Setting]** screen appear.




(3) Set the values.

(4) Click **[Set]** to send the input data.

(5) Click **[Monitor]** to acquire the current settings and display the results.

(6) Click **[Save to File]** to export the current settings to anexternal file.External files are saved with the extension ".fsb".

(7) Click **[Load from file]** and select an fsb file to import the settings.

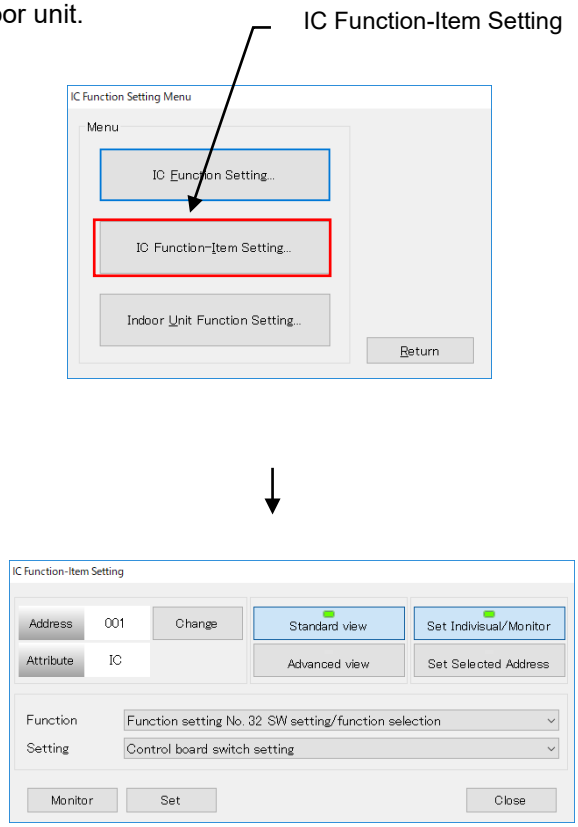
(8) Click **[Change]** to access the **[Change address]** window.Refer to **3.11.1.1 Malfunction Log 3.11.1.1.1 (5)** for how to change the addresses.

(9) Click **[Return]** to exit the **[IC Function Setting]** screen.

**< IC Function-Item Setting>**

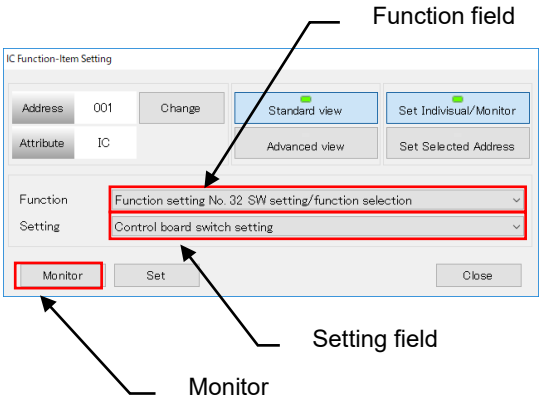
This function is used to monitor or set the functions of the indoor unit.

(1) Click [**IC Function-Item Setting…**] on the “IC Function Setting Menu” screen to display the “IC Function-Item Setting” screen.

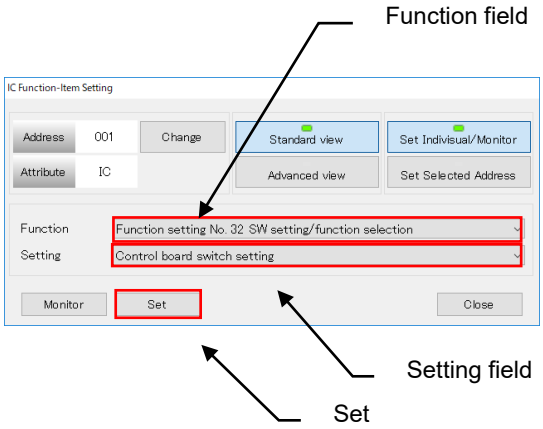



(2) To check the current function setting of the indoor unit, select the function to be checked in the Function field, and click [**Monitor**].

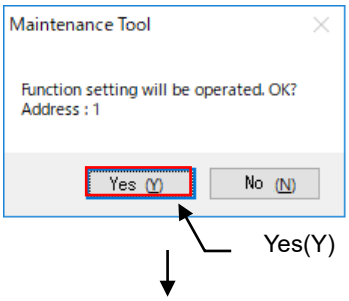
The current function setting of the indoor unit will be displayed in the Setting field.



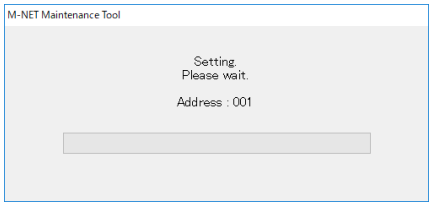
(3) To change the current function setting of the indoor unit, select the item to be changed in the Function and the Setting fields, and click [**Set**].



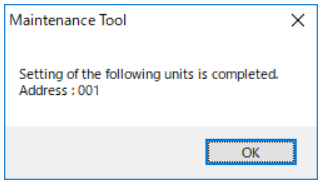

Click [**Yes (Y)**] on the confirmation window.



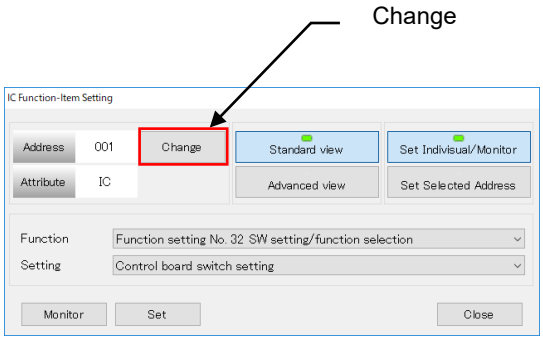

The maintenance tool will change the function setting of the indoor unit. The progress bar appears while the setting is being changed.



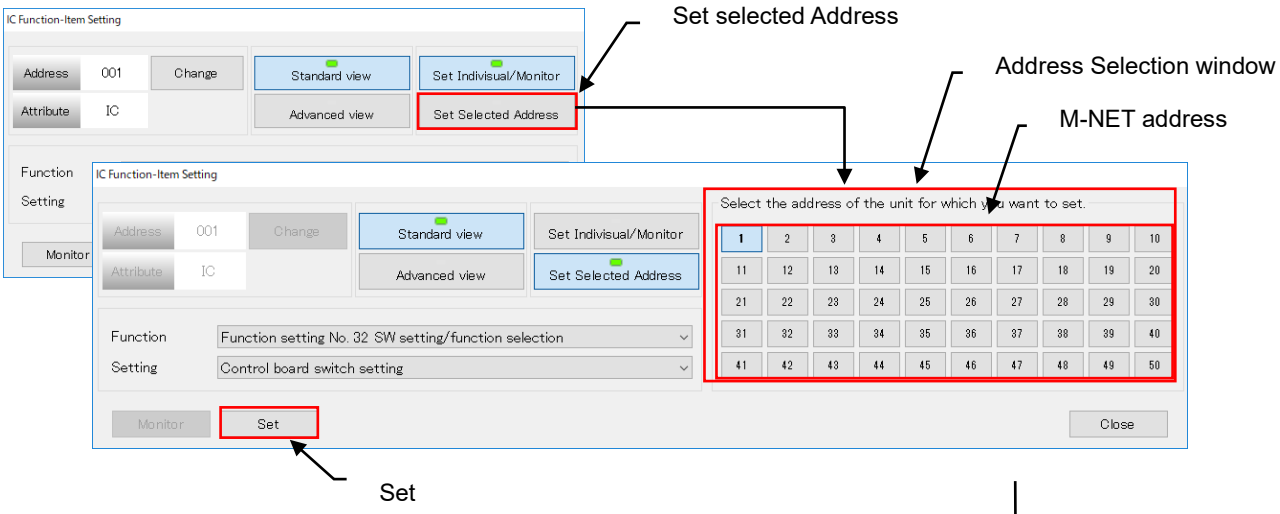

The setting completion window will appear when the function setting of the indoor unit has been changed.



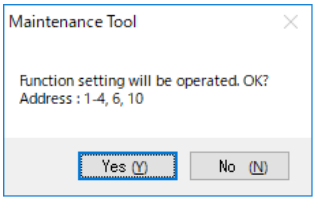

(4) To check the function setting of the indoor units with other M-NET addresses, click [**Change**] to display the “Address Change” screen. For details, refer to **3.11.1.1 Malfunction Log 3.11.1.1.1 (5)**.



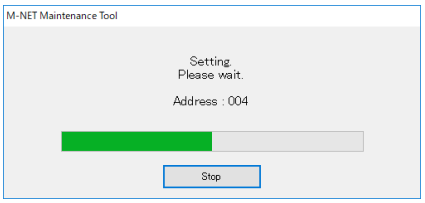
(5) To collectively change the function settings of multiple indoor units, click [**Set Selected Address**]. The Address Selection window will appear at the right of the screen. Click [**M-NET address**] of the desired indoor units, and click [**Set**].



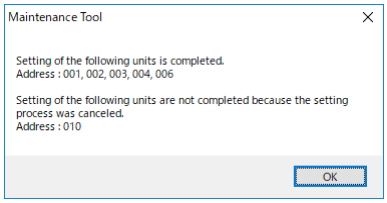

The confirmation window will appear. Check the M-NET addresses of the target indoor units, and click [**Yes (Y)**].




As with the individual setting, the progress bar will appear. To stop changing the setting in midstream, click [**Stop**].

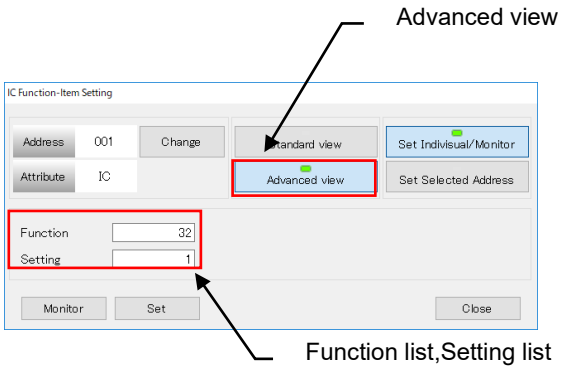



The setting completion window will appear when the function setting of the indoor unit has been changed. When the setting change is stopped in midstream, the completion status of each indoor unit will be displayed with the M-NET address.



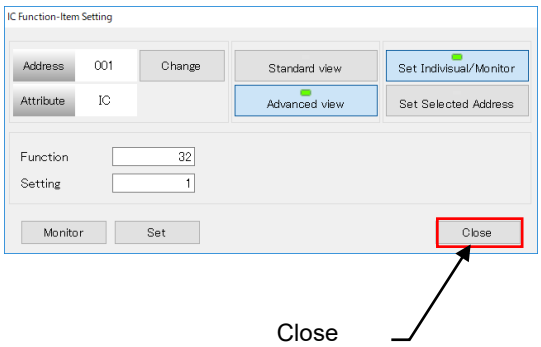

**NOTE:**
When **[Set Selected Address]** is selected, the **[Change]** and **[Monitor]** buttons are disabled.

(6) To set the Function and the Setting fields using an arbitrary number (in the text format), click [**Advanced view**].



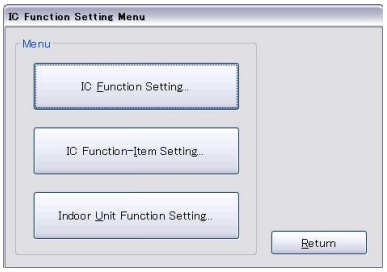

**NOTE:**
- Use this function only when asked to do so by Mitsubishi Electric.
- Enter any number within the range between 1 and 255 in the "Function" field.
- Enter any number within the range between 1 and 15 in the "Setting" field.

(7) Click [**Close**] when the monitoring or setting of the indoor unit function has been completed, and exit “IC Function-Item Setting”.

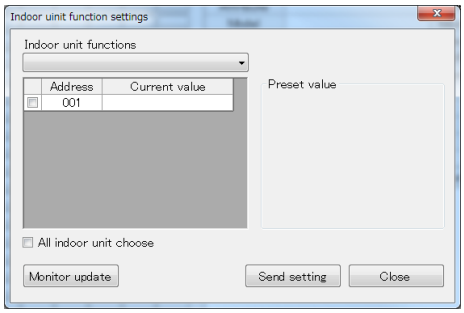


**< Indoor Unit Function Setting>**

(1) Click [Unit Function Setting] on the [Individual Monitor] screen, select the units to be monitored, and click **[Monitor]**.
**[IC Function Setting Menu]** screen appear.

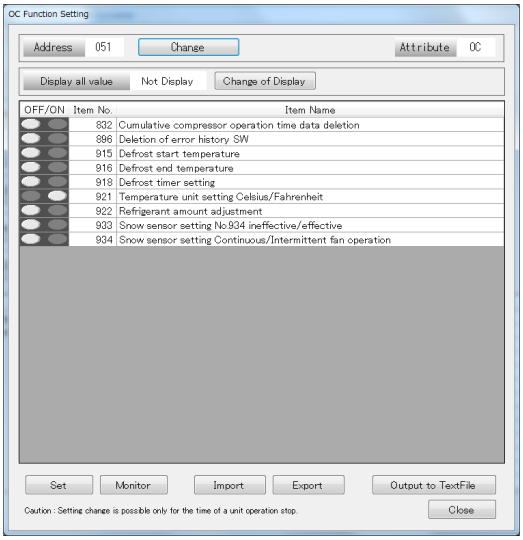



(2) Click **[Indoor Unit Function Setting]** on the **[IC Function Setting Menu]**.**[Indoor Unit Function Setting]** screen appear.Refer to **[3.16 Setting the Values for Indoor unit Functions ]**



**<OC(City Multi)>**

(1) Click [Unit Function Setting] on the [Individual Monitor] screen, select the units to be monitored, and click **[Monitor]**.
The **[OC Function setting]** screen will appear.




(2) Click the  button to change the settings for the items in the list.

(3) Click **[Set]** to send the input data.

(4) Click **[Monitor]** to acquire the current settings and display the results.

(5) Click **[Export]** to save the current settings in an external file.External files are saved with the extension “.fsb”.

(6) Click **[Import]** and select the fsb file to import the monitor results.

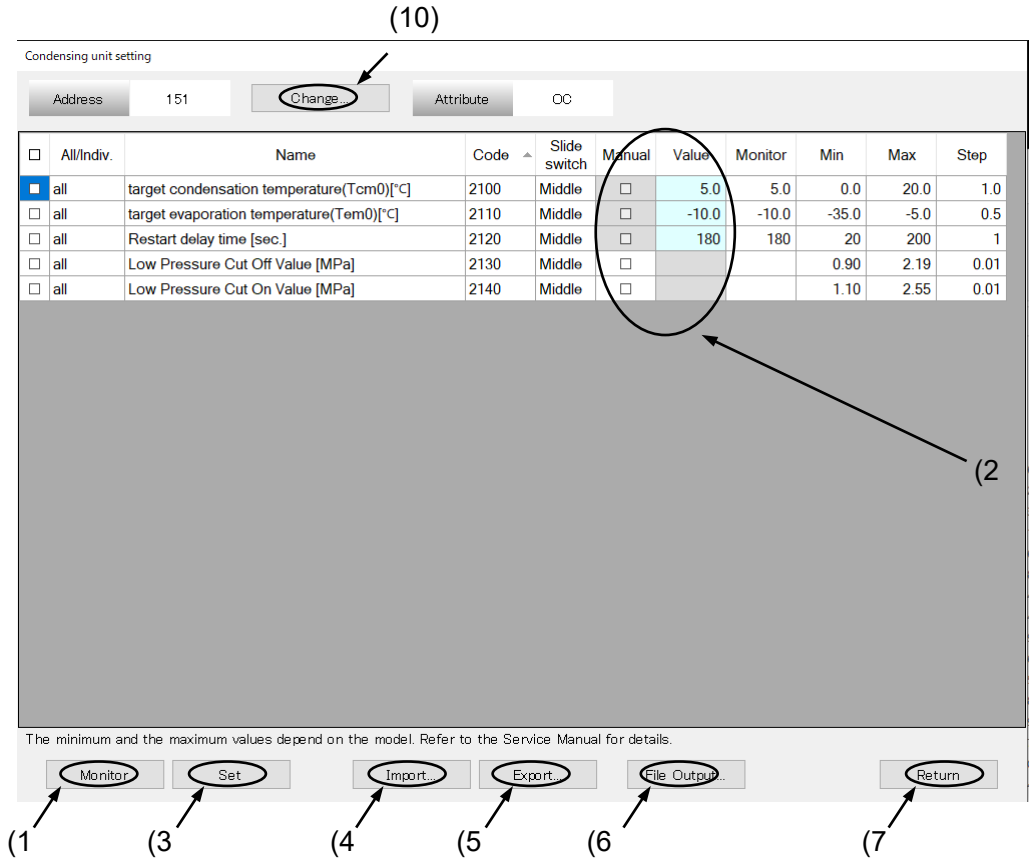
(7) Click **[Output to Text File]** to export the monitor results in a text file in the CSV format.The message will appear that notifies the user of process completion, and the saved file will automatically open.

(8) Click **[Change Address]** to access the **[Address Change]** screen.Refer to Item **3.11.1.1 Malfunction Log 3.11.1.1.1 (5)** for how to change the addresses.

(9) Click **[Close]** to exit the **[OC Function Setting]** screen and go back to the **[Optional Setting]** screen.

**<OC (condensing unit)>**

(1) Click [**Unit Function Setting**] on the [**Individual Monitor**] window, select the M-NET addresses of the condensing units to be monitored, and click [**Monitor**]. The [**Condensing unit setting**] window will appear.




**-Monitor-**

(1) When the [**Monitor**] button is clicked, the message “Are you sure you want to monitor the setting?” will appear. When [**Yes**] is clicked, the current setting values will appear in the [**Monitor**] column on the [**Condensing unit setting**] window. Only the items that are selected with the check box on the left side of the window will be monitored.

**NOTE:**
If data acquisition fails, the message [**Monitor is failed.**] will appear, suggesting that a communication error may have occurred. Check the communication status, and click the [**Monitor**] button again.

**-Setting-**

(2) To change the settings of the unit, select the [**Manual**] check box, and enter a value in the [**Value**] column.
To set a threshold, select the [**Manual**] check box, and enter a desired setting value in the [**Value**] column. In the [**Value**] column, enter a value within a range between the [**Min**] value and the [**Max**] value.
Unselect the [**Manual**] check box to automatically set a threshold.

(3) When the [**Set**] button is clicked, the message “Function settings will be made. OK?” will appear. Click [**Yes**] to apply the values entered in the [**Manual**] and [**Value**] columns to the unit. Only the items that are selected with the check box on the left side of the window will be set.

**NOTE:**
If data setting fails, the message [**Failed to set the following Code.**] will appear, suggesting that a communication error may have occurred. Check the communication status, and click the [**Monitor**] button again.

**-Data import and export-**

(4) Click the [Export] button to export (save) the setting values to an external file. The extension of the external file will be ".set."
To import (restore) the setting values, click the [**Import**] button, and select a file with an extension ".set."

(5) Click the [**File Output**] button to save the setting values in a text format. The extension of the file will be ".csv."

**-Others-**

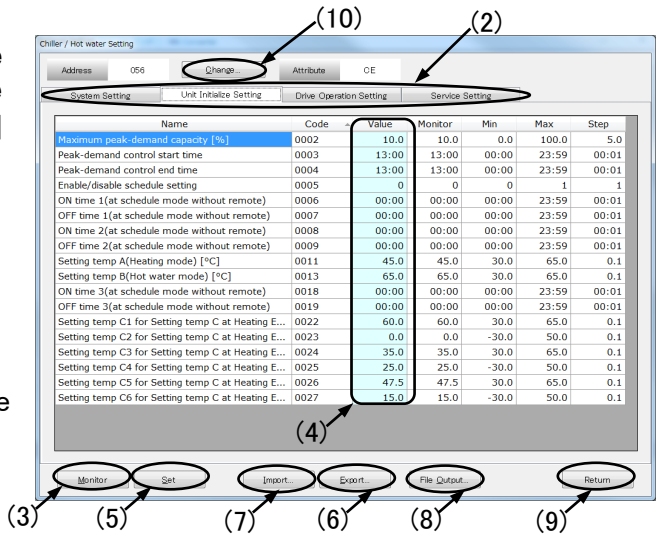
(6) To exit the [**Condensing unit setting**] window, click the [**Return**] button.

(7) Click the [**Change**] button. The [**Address Change**] window will appear. Refer to 3.12.1.1.1 (2) in 3.12.1.1 Error History for details.

**<CE/CL>**

(1) Click [Unit Function Setting] on the [Individual Monitor] screen, select the addresses of the units to be monitored, and click [**Monitor**].
**[Chiller / Hot water Setting]** screen appear.

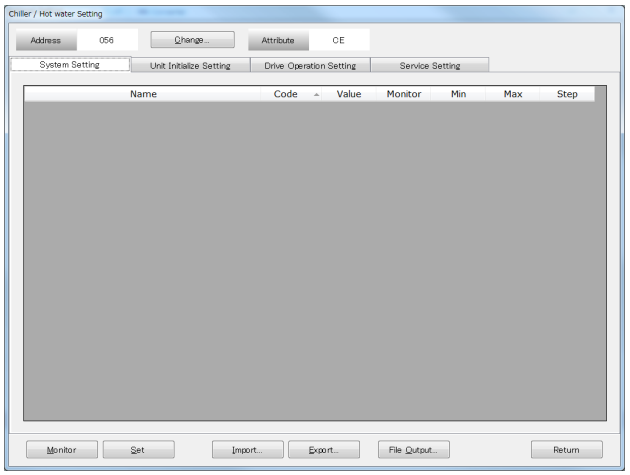
(2) Click the [**System Setting**], [**Unit Initialize Setting**], [**Drive Operation Setting**], or **[Service Setting]** tab on the **[Chiller / Hot water Setting]** window to change its settings.




Click the [**System Setting**] tab to set the system settings.
Click the [**Unit Initialize Setting**] tab to set the initial settings.
Ckick the [**Drive Operation Setting**] tab to set the operation mode settings.
Click the [**Service Setting**] tab to set the maintenance-related settings.

**Note**
Refer to the Installation/Operation Manual for the details of each setting item.

Not all functions are supported on all models, and nothing will appear on the tabs that correspond to unsupported functions.



**-Monitoring –**

(3) Click [**Monitor**]. The message [**Do you want to start monitoring?**] will appear.Click [Yes] on the popup window to acquire the current setting values and display the results in the [Monitor] value display section.

> **Note**
> If data acquisition fails due to a communication error, the message [**Monitor is failed.**] will appear. Check the communication status and try again.

**-Settings-**

(4) Enter the setting value for the [Value] column corresponding to each [Name]. The values that can be entered in the [Value] column are the values between the [Min] value and the [Max] value.

(5) Click [**Set**]. The message [**Do you want to apply the settings?**] will appear. Click [Yes] on the popup window to send the values entered in the [Value] column.The message [**Setting is succeeded.] will appear** upon successful completion of data transmission.

> **Note**
> If a setting error occurs due to a communication error, The message [**Setting is failed.**] will appear. Check the communication status and try again.

**-Importing/Exporting files-**

(6) Click **[Export]** to save the current settings in an external file. External files are saved with the extension ".set".

(7) Click [**Import**] and select a ".set" file to import the settings.

(8) Click [**File Output**] to save the current settings in a text file (CSV format).

**-Miscellaneous items-**

(9) Click [**Return**] to exit the [Chiller/Water heater settings] window.

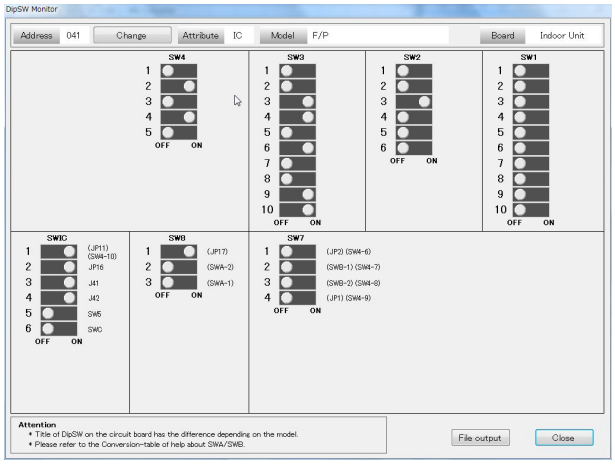
(10) Click [**Change**] to access the [Change address] window. Refer to **3.11.1.1 Malfunction Log 3.11.1.1.1 (5)** for how to change the addresses.

### 3.11.1.5 DipSW Monitor

*** Items Performed Here**
**- You can monitor the DipSW.**

### 3.11.1.5.1 Screen Functions and Operation

(1) Click [DipSW] on the [Individual Monitor] screen, select the addresses of the units to be monitored, and click **[Monitor]**.
**DipSW monitor screen** appears.




**NOTE:**
*Title of DipSW on the circuit board has the difference depending on the model.
*Please refer to the Conversion-table of help about SWA/SWB.

(2) Click to File output ,
the monitoring results to a text file (CSV) file name extension.

(3) Click on Change and the **Address Change Screen** appears.
[Refer to **3.11.1.1 Malfunction Log 3.11.1.1.1 (5)**]

SWA· SWB Conversion Table

| SWA | Monitor Display |
|---|---|
| 1 | SW8 2 (SWA-2) 3 (SWA-1) OFF ON |
| 2 | SW8 2 (SWA-2) 3 (SWA-1) OFF ON |
| 3 | SW8 2 (SWA-2) 3 (SWA-1) OFF ON |

| SWB | Monitor Display |
|---|---|
| 2 | SW7 2 (SWB-1) 3 (SWB-2) OFF ON |
| 3 | SW7 2 (SWB-1) 3 (SWB-2) OFF ON |
| 4 | SW7 2 (SWB-1) 3 (SWB-2) OFF ON |

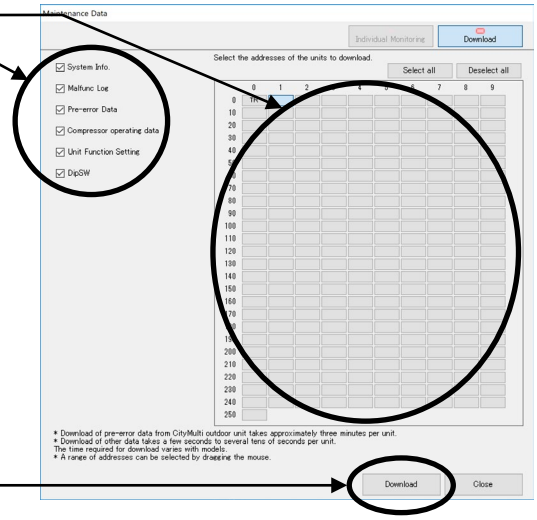
## 3.11.2 Download

(1) Click the function selection button **[Maintenance Data]** on the [Main] screen.
The [Individual Monitor] screen will appear.

(2) Click **[Download]** on the [Individual Monitor] screen.
The [Download] screen will appear.

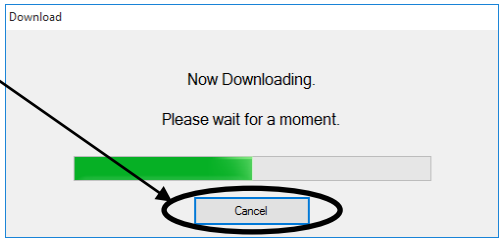
(3) Click the data and the address of the unit to be downloaded.
A range of addresses can be selected by dragging the mouse.
Click **[Select all]** to select all addresses.
Click **[Deselect all]** to clear all address selections.

(4) Click **[Download]**.
Selected data will be downloaded.



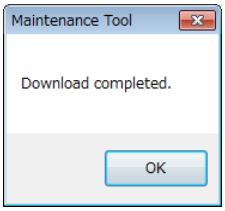

**Note**
- While the addresses are being searched on the [Main] screen, the attributes already found on the [Main] screen will appear on this window.
- Download of pre-error data from CityMulti outdoor unit takes approximately three minutes per unit.
- Download of other data takes a few seconds to several tens of seconds per unit.
- The time required for download varies with models.

(5) Click **[Cancel]** to stop downloading.




**Note**
The data downloaded up to the time when [Cancel] is clicked will be stored in the destination folder noted in Step (6).

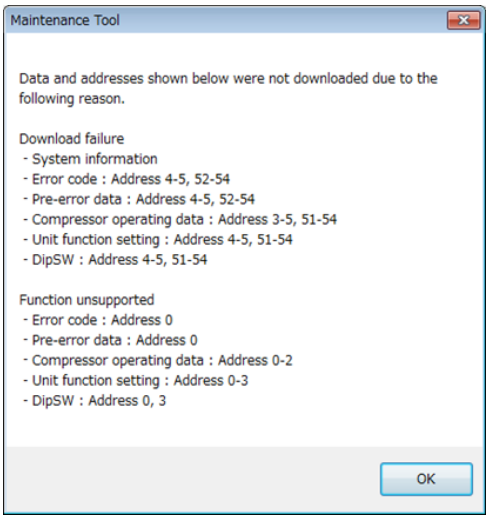
(6) When downloading is complete, “Download completed.”
Will appear on the screen.
The data to be downloaded and the storage destination are as follows.




| Data | File Name | Storage destination |
|---|---|---|
| SystemInformation | SI_YYYYMMDD_hhmmss.MTDZ | C:¥MntToolNetEA¥Data¥YYYYMMDD_hhmmss¥SystemInformation |
| Malfunc Log | ML_YYYYMMDD_hhmmss_***.csv | C:¥MntToolNetEA¥Data¥YYYYMMDD_hhmmss¥MalfuncLog |
| Pre-error Data | <For one pre-error data><br>・PE_YYYYMMDD_hhmmss_***.csv<br>・PE_YYYYMMDD_hhmmss_***.MTDZ<br><For multiple pre-error data><br>・PE#_YYYYMMDD_hhmmss_***.csv<br>・PE#_YYYYMMDD_hhmmss_***.MTDZ | C:¥MntToolNetEA¥Data¥YYYYMMDD_hhmmss¥Pre-errorData |
| Compressor operating data | <For chillers><br>CT_chiller_YYYYMMDD_hhmmss_***.txt<br><For units other than chillers><br>CT_YYYYMMDD_hhmmss_***.txt | C:¥MntToolNetEA¥Data¥YYYYMMDD_hhmmss¥CompressorOperatingData |
| Unit Function Setting | UnitFunctionSetting_YYYYMMDD_hhmmss_***.csv | C:¥MntToolNetEA¥Data¥YYYYMMDD_hhmmss¥ UnitFunctionSetting |
| DipSW | ・DipSWMonitor_YYYYMMDD_hhmmss_***.csv<br>・DipSWMonitor_YYYYMMDD_hhmmss_***.jpg | C:¥MntToolNetEA¥Data¥YYYYMMDD_hhmmss¥DipSW |

*YYYY: Year; MM: Month; DD: Date: hh: Hour; mm: Minute; ss: Second; ***: Address; and #: Data number

**Note**
- No comments will be added to the MTDZ file that is downloaded with this function.
- If download fails, a message indicating a download failure will appear. If a unit that does not support the function is selected, an error message including the data and the address of the unit will appear.




(7) Click **[Close]** to exit the [Download] screen.
The screen will return to the [Main] screen.

## 3.12 OC Date / Time Setting

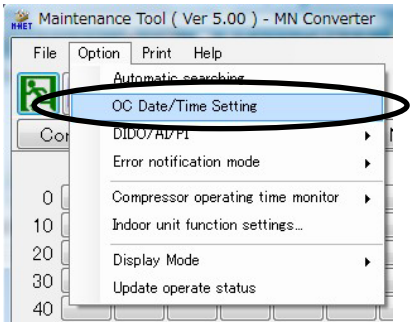
*** Items Performed Here**

- A setup of the present time can be performed to all outdoor units at the same time.

### 3.12.1 Starting of this function

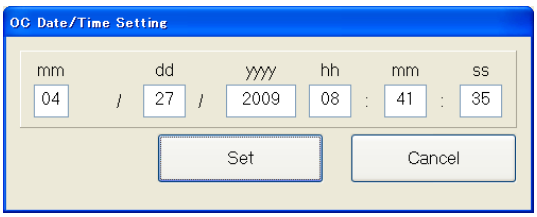
(1) Screen moving operation and its method

a) Clicking [Option] of the menu bar on the main screen and then clicking [OC Date/Time Setting] of the sub-menu. The searching about outdoor unit connected will begin.



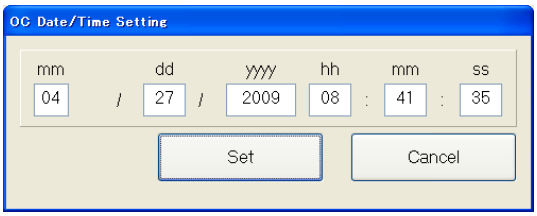

**NOTE:**
When there is no operation object, Warning Message is displayed and processing is interrupted.

b) The **[OC Date/Time Setting] Screen** opens and the present time of PC is displayed




### 3.12.2 OC Date / Time Setting

(1) The present time of PC is displayed on the **[OC Date/Time Setting] Screen** in the beginning.




(2) The time to set up can also be changed on a screen. Cursor is united with a change point and a numerical value is inputted.

(3) A click of Set sets the time currently displayed to a unit.

**NOTE:**
If it failed, Error Message and th error-generated address are displayed.




(4) When the transmission is completed, Completion Message is displayed.




(5) Click on Cancel to end the **[OC Date/Time Setting] Screen** and return to the **Main Screen**.

## 3.13 Free contact of indoor unit

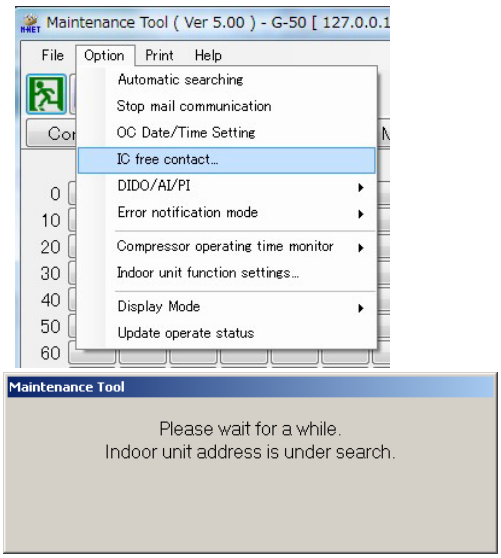
*** Items Performed Here**

- When utilizing the [Indoor unit free contact mode] which uses the external input/output of Free Plan indoor unit (Building-Multi) together with Centralized Controller and TG 2000A, the contact action of the indoor unit can be tested with this function.

### 3.13.1 Starting of this function

(1) Screen moving operation and its method

a) Clicking [Option] of the menu bar on the main screen and then clicking **[IC free contact …]** of the sub-menu will display the screen for the free contact of indoor unit.



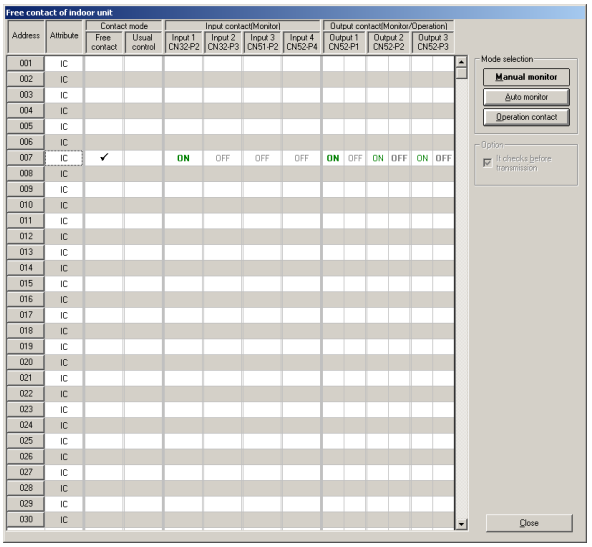

**NOTE:**
[IC free contact …] can be chosen only when G-50A is Ver.2.60 or more.

In the case when connected via Centralized Controller, the screen shown right will appear once.
Now the necessary information is under collecting from Centralized Controller.

### 3.13.2 Monitoring of contact status

(1) Manual monitoring

To manually check the contact status of indoor units at each address, select the [Manual monitor] mode.




a) Click the **[Manual monitor]** button on the mode selection section.

b) Click the **[Address button]** of the unit desired to be monitored. The contact status will be monitored from the unit for display.

**[Attribute]**
The unit attribute will be displayed.

**[Indoor unit contact mode]**
The contact mode being set will be monitored, and a check mark will be affixed on the applied mode.

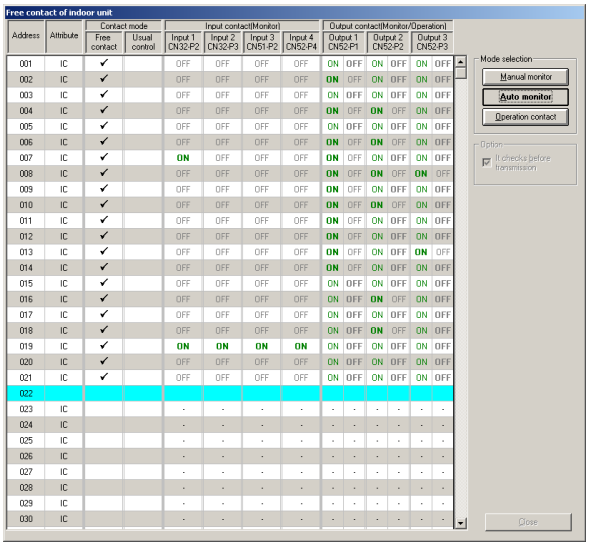
**[Input contact (monitor)]**
The ON/OFF status of each input contact will be monitored for display.

**[Output contact (monitor/operation)]**
The ON/OFF status of each output contact will be monitored for display.
In the case of output contacts, the status shown with **bold letter** represents the present status.

*In the case of non-objective attribute, and when the contact mode is under normal control, the above monitor display will be [ - ].

(2) Automatic monitoring

To automatically monitor the contact status of indoor units of No.1 ~ 50 repeatedly, select the [Auto monitor] mode.




a) Click the **[Auto monitor]** button on the mode selection section.
The contact status of indoor units of No.1 ~ 50 will automatically be monitored, and this operation will be repeated.

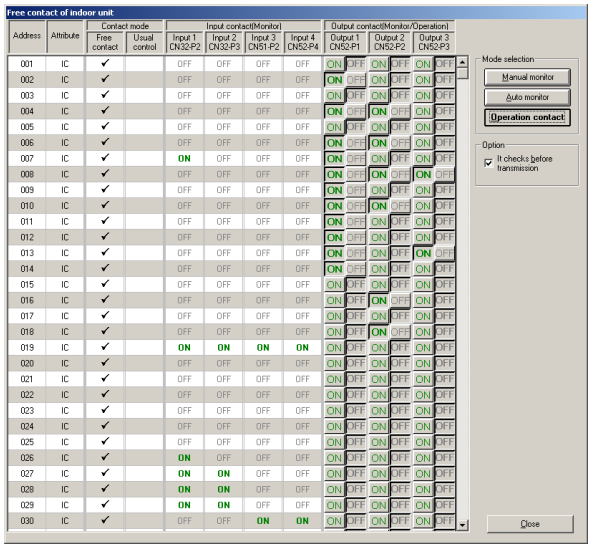
The display for [Attribute], [Indoor unit contact mode], [Input contact (monitor)] and [Output contact (monitor/operation)] are identical to that in the manual monitoring.

* In the case to terminate the auto mode, selecting other mode will stop the monitoring.

## 3.13.3 Operation of output contact

(1) Contact operation

To operate for the ON/OFF selection of the output contact of indoor units, select the [Operation contact] mode.




a) Click the **[Operation contact]** button on the mode selection section.

b) Click the **[Output contact (ON/OFF)]** button of the unit for which the ON/OFF of the output contact is desired to be selected for change.

***The state where the button is being depressed (with bold letter)** displays the present output status.

**[Option] function**

Affixing a check mark to **[It checks before transmission]** displays the warning screen as shown right before transmitting actual transmission command at the operation of output contact.
To continue the transmission, click **[Yes]**.




When a check mark is not affixed, the transmission command will be transmitted at the clicking of the **[Output contact (ON/OFF)]** button simultaneously.

## 3.13.4 Termination of this function

(1) Clicking the [Close] button will close this screen and return to the main screen display.

## 3.14 Remote error notification

The "**Remote error notification**" has been located starting from **Ver4.20**.

* **Items Performed Here**

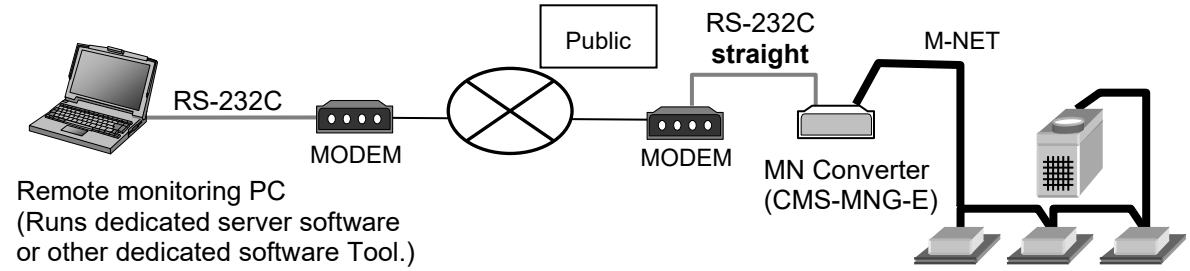
- The MN Converter (CMS-MNG-E) has a built-in remote error notification function.
  When an error occurs in an air conditioning unit, the remote error notification function allows previously registered destinations to be automatically notified of the error via telephone lines.
  To use the remote error notification function in the MN Converter (CMS-MNG-E), you must first specify the remote error notification settings from the Maintenance Tool.
  The MN Converter (CMS-MNG-E) has the following 2 modes:

  **(2) Maintenance mode**
  In this mode, the MN Converter can only be used as a normal converter.

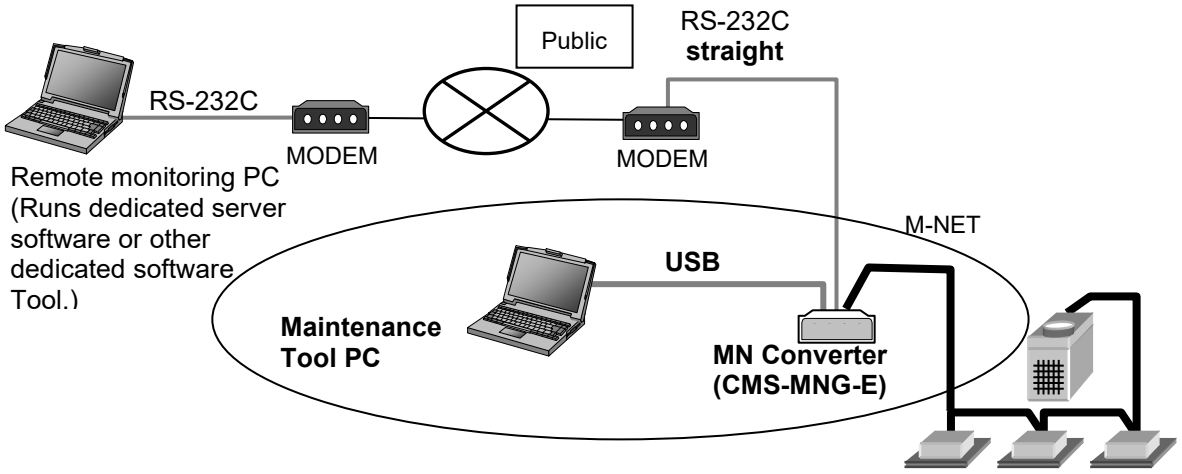
  **(3) Remote error notification mode**
  This mode allows both the normal MN Converter functions and the remote error notification function to be used.

  Use the Maintenance Tool to switch between these 2 modes.

To use the remote error notification function, connect the MN Converter (CMS-MNG-E) to a modem via the RS-232C port and then connect the modem to the telephone outlet, as shown in the figure below.
For details, refer to the Installation Manual of MN Converter (CMS-MNG-E).
The dedicated server software or other dedicated software Tool run on the remote monitoring PC.



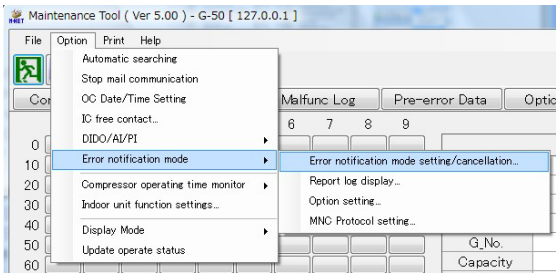

To specify the remote error notification function settings using the Maintenance Tool, connect the MN Converter (CMS-MNG-E) to the Maintenance Tool PC via USB, as shown in the figure below.



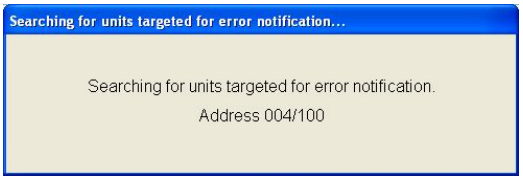

**NOTE:**
**• When setting remote error notification, connect to the MN Converter via USB.**

### 3.14.1 Starting of this function

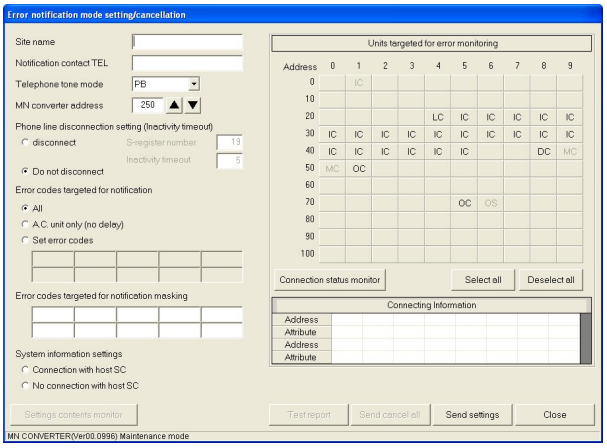
(1) Click **[Option]** in the menu bar and select **[Error notification mode] -> [Error notification mode setting/cancellation...]** in the sub-menu.




The function starts searching for units to be notified of errors and displays a message to that effect.




(2) When the search is completed, the **Error notification mode setting/cancellation screen** appears.



### 3.14.2 Design of Screen

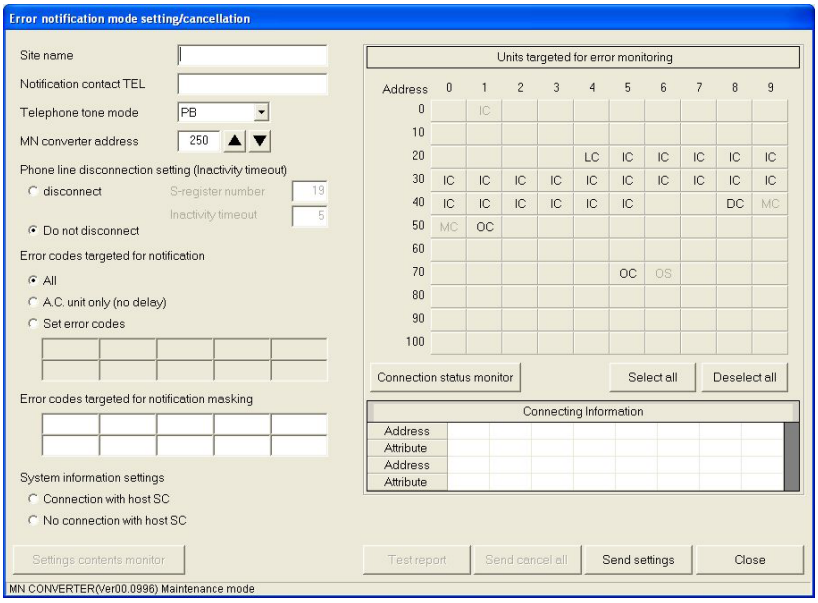
There are two kinds of following screens to the Error notification mode setting/cancellation screen.

(1) Maintenance mode -- When the MN Converter is in maintenance mode

(2) Remote error notification mode -- When the MN Converter is in remote error notification mode

**[Maintenance mode screen]**

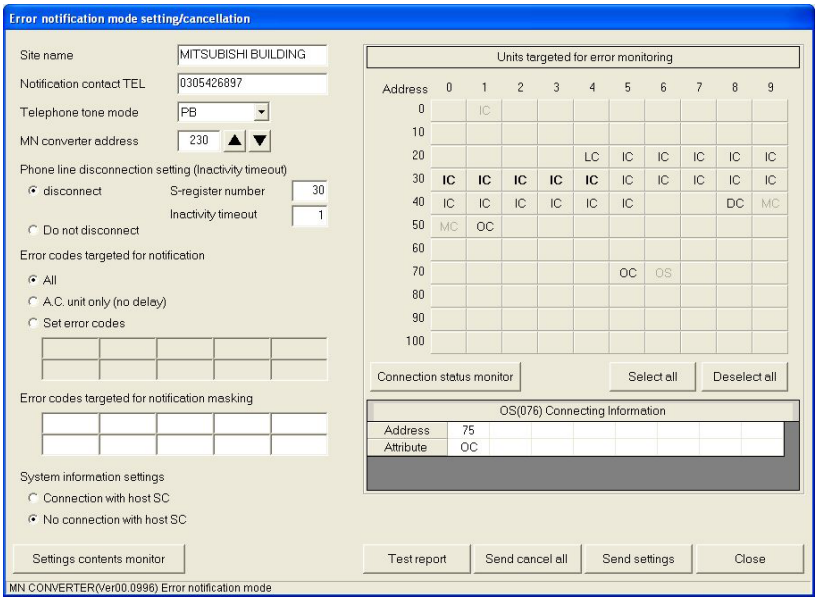
All the settings are blank and the **[Settings contents monitor]**, **[Test report]** and **[Send cancel all]** buttons are disabled.



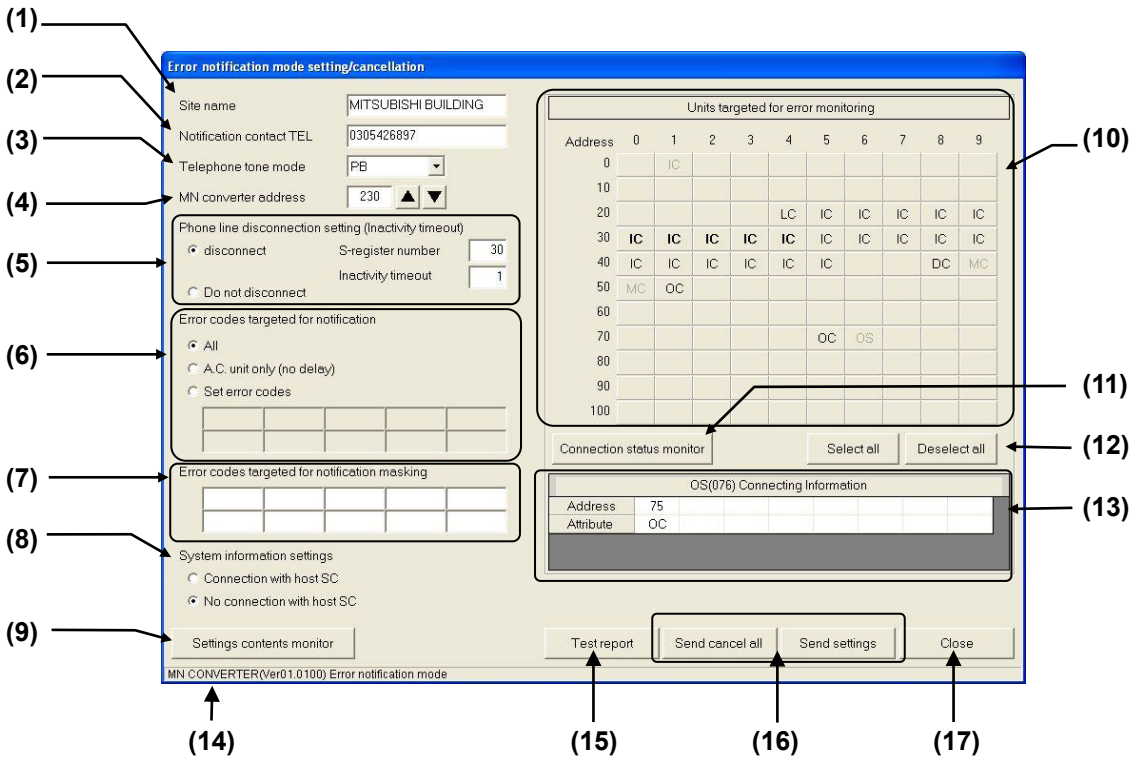

**[Remote error notification mode screen]**

Monitors and displays the settings from the MN Converter.

If the connection status monitor has not been implemented, " ***** " appears in the "**Units targeted for error monitoring**" fields.



The design of the screen is shown below.




- **(1) Site name**
  Name of the system being monitored
- **(2) Notification contact TEL**
  Telephone number of the notification contact
- **(3) Telephone tone mode**
  Telephone line dial type
- **(4) MN Converter address**
  M-NET address of the MN converter
- **(5) Phone line disconnection setting(Inactivity timeout)**
  Specifies how soon an inactive telephone line is disconnected.
- **(6) Error codes targeted for notification**
  Specifies which errors are notified.
- **(7) Error codes targeted for notification masking**
  Specifies the error codes that are not notified (masked) when an error occurs.
- **(8) System information settings**
  Specifies whether or not an upstream system controller is connected.
- **(9) Settings contents monitor**
  Monitors the MN Converter settings.
- **(10) Units targeted for error monitoring**
  Selects the units to be notified when an error occurs.
- **(11) Connection status monitor**
  Monitors the connection information for the remote error notification unit.
- **(12) Select all / Deselect all**
  Selects or deselects all the units for error notification.
- **(13)Connecting information**
  Displays the connection information for the selected unit.
- **(14)MN Converter version/mode**
  Displays the version of the connected MN Converter and its current mode.
- **(15)Test report**
  Actually calls the notification contacts and sends a test message to test notification operations.
- **(16)Send cancel all/Send settings**
  Sends either the settings or a cancel all settings instruction to the MN Converter.
- **(17)Close**
  Closes the screen.

### 3.14.3 Selecting remote error notification mode

Specify the settings below to enable the remote error notification function on the MN Converter.

(1) Enter the site name.
Enter the name of the air conditioning system to be monitored.

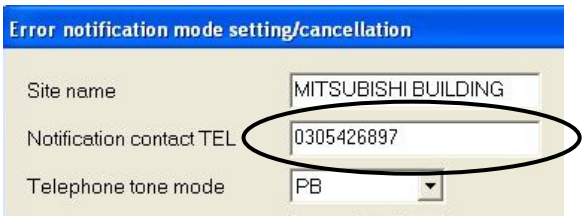



E.g.) MITSUBISHI BUILDING

The remote monitoring PC is notified of this site name.
To enable the remote monitoring PC to monitor multiple air conditioning systems at the same time, you should assign a unique site name to each system.

Site names can consist of up to 20 uppercase letters (A to Z), numbers (0 to 9) and some symbols, but may not contain the following symbols : “ + “ or ” ; “

(2) Enter the notification contact telephone number.
Take care to enter the contact telephone number correctly.




E.g.) For 012-345-6789

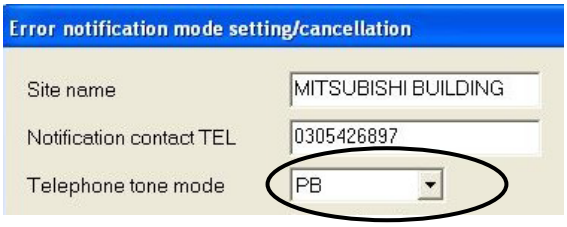
Enter the number as 0123456789.
The number cannot include hyphens (-).

Numbers can consist of up to 20 digits (0 to 9). However, when the Inactivity Timeout function is used, numbers may be no longer than 14 digits.

**Caution:**
Take care to enter the telephone number correctly. If the number contains an error, notification may be sent to an unrelated number and cause problems.
Note that Mitsubishi Electric accepts no liability whatsoever for any problems resulting from incorrect telephone number input.

**NOTE:**
When select the telephone tone type to “ELSE”, you can enter AT command in this field.

(3) Select the tone type for the telephone.
Select one of the following telephone tone types:

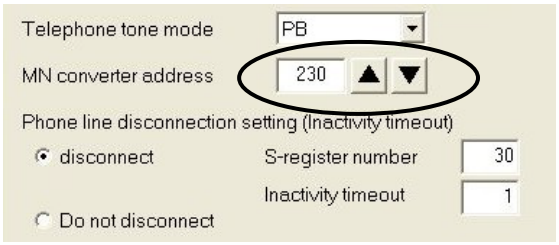



**PB** -- Tone (push-button line)
Sends ATDT plus the telephone number to the modem.
**DP** -- Pulse (dial line)
Sends ATDP plus the telephone number to the modem.
**None** -- Sends ATD plus the telephone number to the modem.
**Else** -- Nothing is added to before the telephone number.

Check your telephone line to determined which tone type is used.

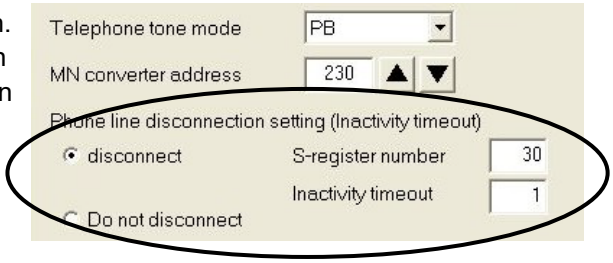
(4) Enter the MN Converter address.
Enter the M-NET address for the MN Converter.
You can enter any number between 201 and 250.
Ensure that you do not enter the same address as another unit.

The default is 250.




(5) Specify the setting for the Inactivity Timeout function.
The Inactivity Timeout function is a modem function that automatically disconnects telephone lines when there has been no communication on a connected line for a set period during error notification.

If power to the MN Converter is turned off due to a power failure or any other cause while a telephone line is connected for error notification, the telephone line remains connected unless this function is enabled.
This function can be used to release connected lines in this situation.




The S-register setting used with the Inactivity Timeout function differs depending on the modem model.
**Read the modem's instruction manual carefully to ensure that you use the correct setting.**

**-disconnect** Use the Inactivity Timeout function.

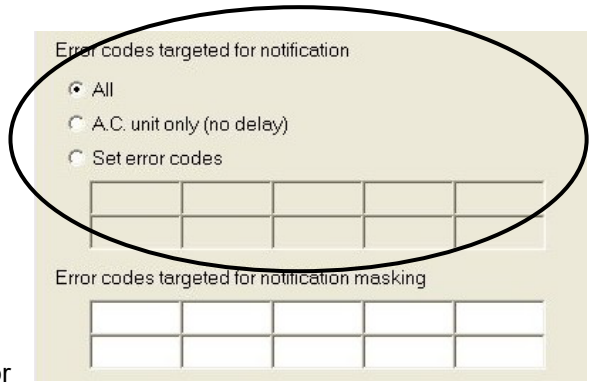
**S-register number** Modem S-register number that sets Inactivity Timeout.
**Inactivity timeout** Time for which inactivity is monitored

**-Do not disconnect** Do not use the Inactivity Timeout function (default).

**Caution:**
If you do not use the Inactivity Timeout function, bear in mind that **telephone lines may remain connected.**
If you do not use the Inactivity Timeout function, or if the modem settings are not specified correctly, Mitsubishi Electric accepts no liability whatsoever for any faults or damage arising from the continued connection of telephone lines.
**Before use, always check that the Inactivity Timeout function is working correctly.**

NOTE:
*The Inactivity Timeout function setting differs according to the modem model.
(The S-register number and the units and setting range for inactivity timeout differ.)
**Read the modem's instruction manual carefully (AT commands) to ensure that you use the correct settings.**
*If the Maintenance Tool is used to remotely connect to the MN Converter via a telephone line while the Inactivity Timeout function is being used, the Inactivity Timeout function may disconnect the telephone line when the Maintenance Tool is not being used.
If you use the Maintenance Tool to remotely connect to the MN Converter via a telephone line, consider carefully whether to use the Inactivity Timeout function and the length of timeout delay when specifying the settings.
*When changed this setting, the setting of "Notification contact TEL" is cleared.

(6) Specify the error codes targeted for notification.




You can use this setting to specify which of the errors that occur in air conditioning units will be reported.
You can choose from the following 3 options:

**[All]**
Reports all error codes.

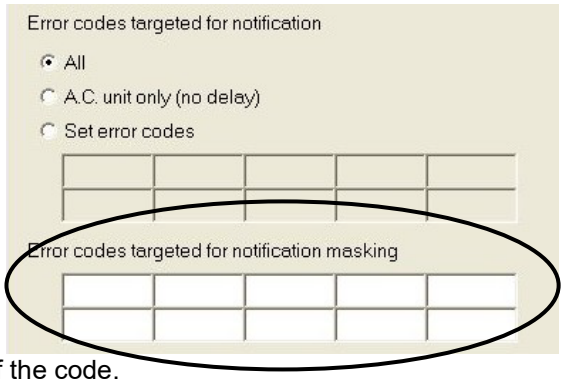
**[A.C. unit only (no delay)]**
Error delay codes are not reported.

**[Set error codes]**
Only the specified error codes are reported.

If you selected "**Set error codes**", enter the target error codes.
You can specify up to 10 error codes.
You can also specify wildcards. However, if you specify a wildcard in an error code, all the subsequent digits are also taken as wildcards.
Note that you cannot enter a wildcard at the beginning of the code.

E.g.) 2* -- All error codes from 2000 to 2999
2*50 -- Illegal specification.
**01 -- Illegal specification.

(7) Specify the error codes that will be masked from error notification.

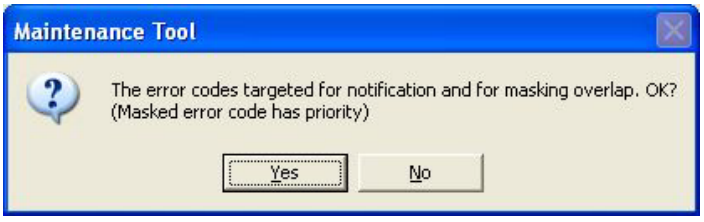



You can use this to specify error codes that will not be reported (that will be masked) when errors occur in an air conditioning unit.

You can specify up to 10 error codes.
You can also specify wildcards. However, if you specify a wildcard in an error code, all the subsequent digits are also taken as wildcards.
Note that you cannot enter a wildcard at the beginning of the code.

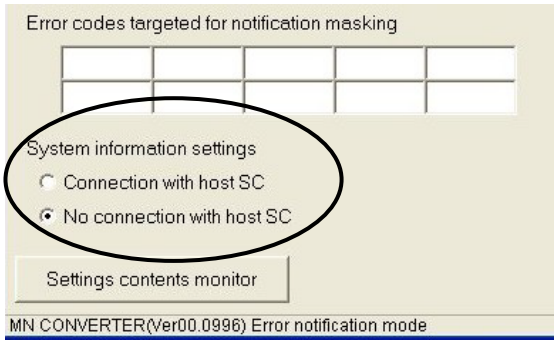
E.g.) 2* -- All error codes from 2000 to 2999
2*50 -- Illegal specification.
**01 -- Illegal specification.

**NOTE:**
If the error codes targeted for notification and the masked error codes include the same error codes, the message shown below appears.
If there is an overlap, the masking specification has priority.
If necessary, specify the settings again correctly.



(8) Select the system information settings.

This option selects whether a host system controller is connected in the M-NET system to which the MN Converter is connected.
The host system controller is the G-50A, G(B)-50A, or AG-150A, etc.




When an error occurs in an air conditioning unit, in order for the unit where the error occurred to notify the MN Converter of the error, the MN Converter address information must first be registered in the unit targeted for notification.
This system information setting (Connection/No connection with host SC) specifies the source from which the address information is registered.

**[Connection with host SC]**

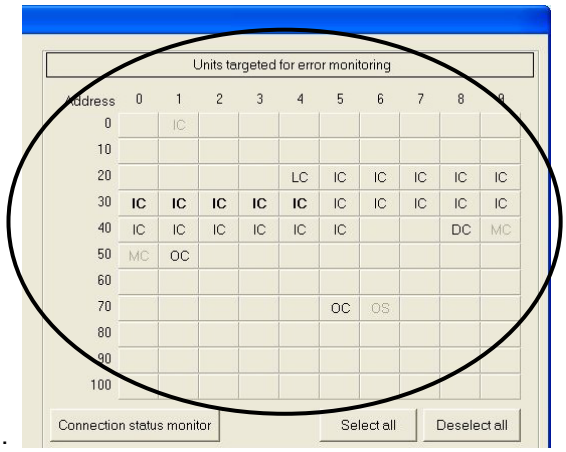
The MN Converter address information is registered/deleted in the notification target unit from the host SC. (Refer to the host SC instruction manual for details.)

**[No connection with host SC]**

The MN Converter registers/deletes its own address information in the notification target unit. (To register or delete address information, click **[Send settings]** in this screen.)

(9) Specify the units to be monitored for errors.

Use this to select the units for which notification is provided when an error occurs.
If a unit is not selected here, no notification is given when an error occurs on that unit.
When you click a unit, the name is bolded to indicate that it has been selected (will be monitored for errors).
Clicking the unit name again returns it to normal text and deselects the unit (excluded from monitoring).
Click the units to be monitored for errors so that they are selected (displayed in bold). To select all the units for monitoring, click **[Select all]**.
To deselect all the units for monitoring, click **[Deselect all]**.




The meanings of the different types of display are as follows:

| | | | |
|---|---|---|---|
| Pale gray | MC | ----- | There is no error notification function on this model.<br>This model cannot be selected.<br>Models that cannot be monitored are as follows:<br>Models other than IC, DC or OC. |
| Bold | **IC** | ----- | Selected as a unit targeted for error monitoring.<br>Currently set as a unit to be monitored for errors by the MN Converter or selected ready to be set as such. |
| Normal text | IC | ----- | Available for selection as a unit to be monitored for errors.<br>Not currently set in the MN Converter as a unit to be monitored for errors. |

In addition to the above, units may be displayed in blue. The meaning of this is as follows:

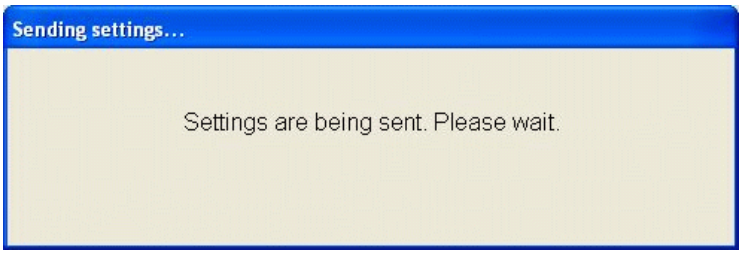
| | | | |
|---|---|---|---|
| Blue | IC | ----- | Not currently set in the MN Converter as a unit to be monitored for errors, but the MN Converter's connection data is registered in the unit. |

(10) Send the settings.
Click **[Send settings]**.

When the **Settings will be sent. OK?** Message appears, click **[Yes]**.




Setting begins.




When setting is completed, the **Settings have been sent** message appears.
Click **[OK]**.
The MN Converter switches to remote error notification mode.




**Caution:**
After specifying the error notification settings, always run the error notification test to check that notification is correctly provided to the correct addresses.
[See section 3.14.4].

**NOTE:**
If you selected "Connection with host SC", you must register the address of the MN Converter on the host SC.

**NOTE:**
MN Converter is registered with a unit targeted for error monitoring as attribute SC. When five SC is already register with a unit targeted for error monitoring, the following messages are displayed and you cannot register MN Converter with a unit. Please confirm connection relations.



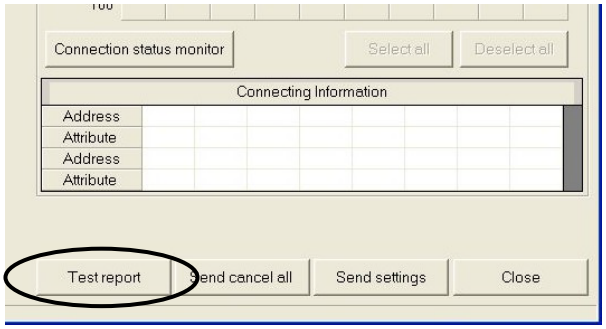
### 3.14.4 Error notification testing

After setting the MN Converter to remote error notification mode, run the error notification test to check that notification is implemented correctly.

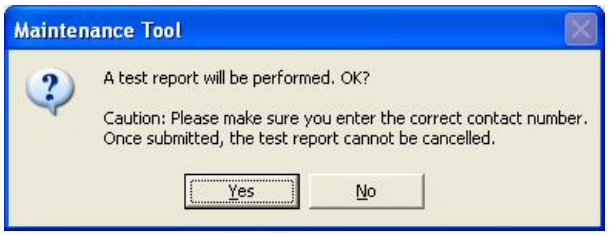
**Caution:**
After specifying the error notification settings, always run the error notification test to check that notification is correctly provided to the correct addresses during the error notification test, always check that errors are posted correctly on the remote monitoring PC.

**NOTE:**
Before running the error notification test, check whether the software running on the remote monitoring PC is the dedicated server software or another software tool. Then refer to "3.14.8 Option settings" to ensure that you specify the correct server or Toolettings.

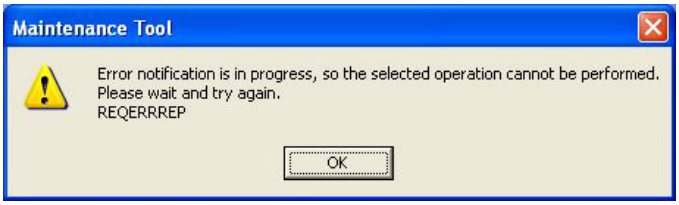
(1) In the **Error notification mode setting/cancellation screen**, click **[Test report]**.




(2) The test notification begins.
A confirmation window is displayed.
Check the contact number and then click **[Yes]**.

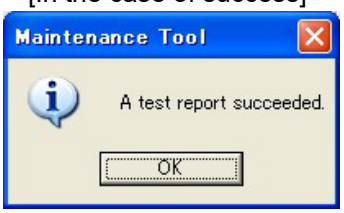



**NOTE:**
When error notification is in progress, the following messages are displayed, and the test report cannot be performed. Please wait and try again.
In addition, when a modem is not connected, the following messages are displayed.
Please try again after connecting a modem definitely.

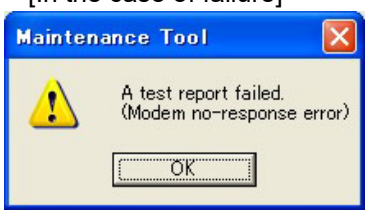



(3) After a few moments, the results are displayed.
Check the message and then click **[OK]**.

[In the case of success]




[In the case of failure]




(* The actual message differs depending on the error.)

The error messages are shown below.
If an error occurs, check the connections, etc.

## Error message When Test report

| Error message | Meaning/Cause | Repair |
|---|---|---|
| A test report failed<br>(Modem no-response error) | Modem connection error<br>The MN Converter cannot communicate with the modem.<br>Probable causes are:<br>* The cable between the MN Converter and the modem is not connected properly.<br><br>* The modem is not turned on. | <br><br><br><br>* Check the connections on the cable between the MN Converter and the modem.<br><br>* Turn the modem on. |
| A test report failed<br>(Phone connection error) | Phone line connection error.<br>A call was made via the modem, but no connection with the contact could be established.<br>Probable causes are:<br>* The cable between the modem and the telephone line is not connected properly.<br>* The other party's telephone is not responding.<br><br>* The contact phone number is wrong.<br>* The telephone line itself is damaged. | <br><br><br><br>* Check the connections on the cable between the modem and the telephone line.<br>* Check that the other party's modem is set to auto receive.<br><br>* Check the contact phone number.<br>* Check with the connecting telephone exchange. |
| A test report failed<br>(Server no-response error)<br><br>* Only when "Server" is selected in "Option settings". | Contact server no-response error.<br>Communication was established with the other party's modem, but there is no response (REP) from the contact server.<br>* The contact server is not connected or the dedicated server software is not running. | <br><br><br><br>* Check the operation status of the contact server. |
| A test report failed<br>(No-response timeout) | No response from the MN Converter.<br>The software cannot communicate with the MN Converter.<br>* The MN Converter cable is disconnected or broken.<br><br>* Power to the MN Converter has failed. | <br><br><br><br>* Check the connection to the MN Converter.<br><br>* Check that the MN Converter is powered up. |

(4) Also check that notification is provided correctly on the remote monitoring PC.
For information on the message format used for test notification, see section "3.14.9 Error notification data format".

(5) Click **[Close]** to exit the setting/cancellation screen.

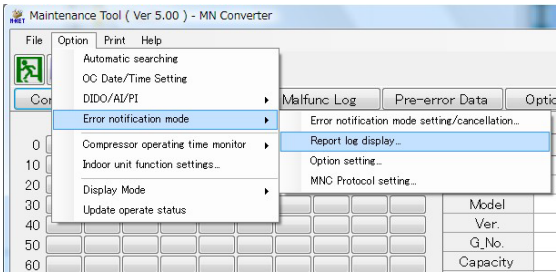
### 3.14.5 Report log

A log of past error notifications is saved in the MN Converter.
You can use the Maintenance Tool to view and check the Report log stored on the MN Converter.
The log shows the reported error codes, the address of the unit on which the error occurred and the report result (OK/NG).

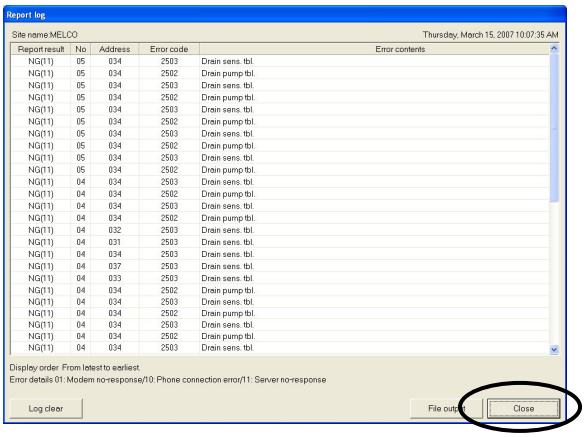
**NOTE:**
A maximum of 50 notification log entries are stored on the MN Converter.
Once the limit of 50 entries is exceeded, the oldest entries in the log are deleted sequentially.

#### 3.14.5.1 Viewing the Report log

(1) Click **[Option]** in the main menu bar and then select **[Error notification mode]** -> **[Report log display]** in the sub-menu.

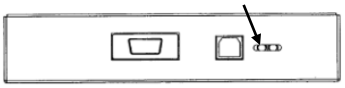



The **Report log screen** appears.
Report log entries are displayed in chronological order with the most recent entry at the top.



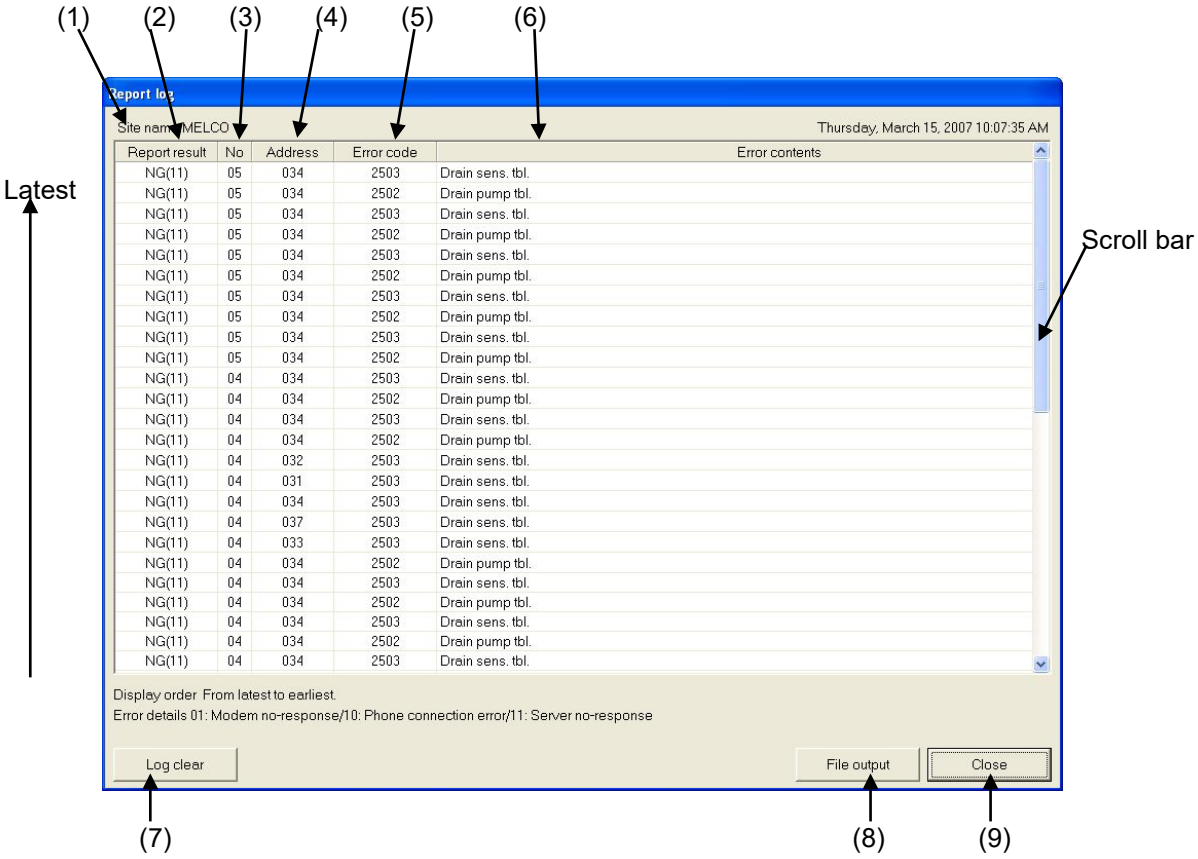

(2) Click **[Close]** to exit the Report log screen.

**NOTE:**
If the notification log stored on the MN Converter includes entries where the report result is "NG", the STATUS LED (yellow) on the front of the MN Converter repeatedly lights for 2 seconds and turns off for 0.5 seconds to show that notification failed.



To reset the flashing LED, display the Report log using the Maintenance Tool.
(See section 3.13.10 for more information on the STATUS LED display.)
If a failed notification is logged, check the error code (P.127 (5)) for the log entry and ensure that future notification is carried out correctly.

The design of the screen is shown below.




**- (1) Site name**

Name of the system being monitored [see section 3.14.3 (1)]

**- (2) Report result**

Results notified

**OK** --- Notification succeeded

**NG(**)** ----Notification failed

** : Error code (see below)

01:Modem no-response -- There was no response from the modem.

10:Phone connection error–A telephone line connection could not be established.

11:Server no-response -- There was no response from the server software. (Only applies when “Server” is selected in “Option setting” (see section 3.14.8).)

**- (3) No.**

Notification number

A number assigned sequentially for each notification. [See section 3.14.9 for details.]

**- (4) Address**

M-NET address of the unit in which the error occurred.

**- (5) Error code**

Code for the error that occurred.

**- (6) Error contents**

Details of the error.

**- (7) Log clear**

Clears the Report log.

**- (8) File output**

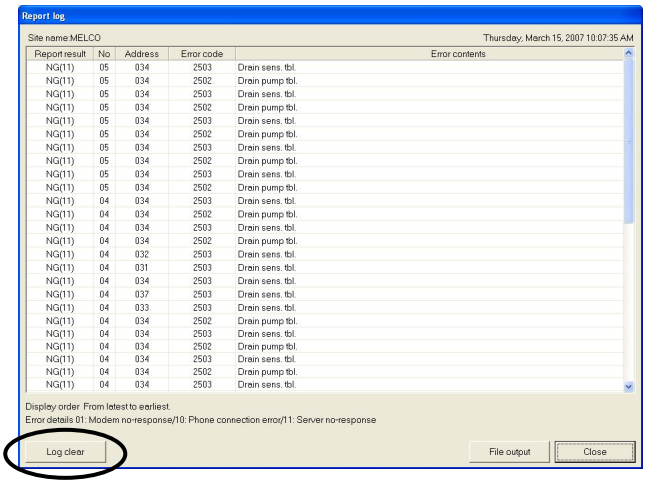
Saves the Report log as a CSV-format file. [See section 3.14.5.3.]

**- (9) Close**

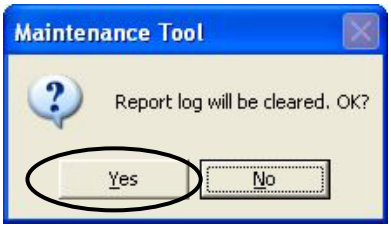
Closes the **Report log screen**.

### 3.14.5.2 Clearing the Report log

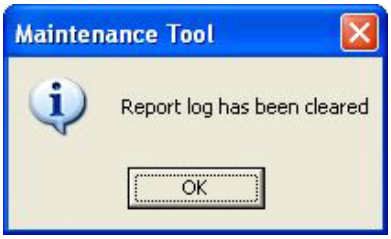
(1) Click the **[Log clear]** button in the **Report log screen**.




(2) Click **[Yes]**.




(3) The Report log is cleared. Click **[OK]**.

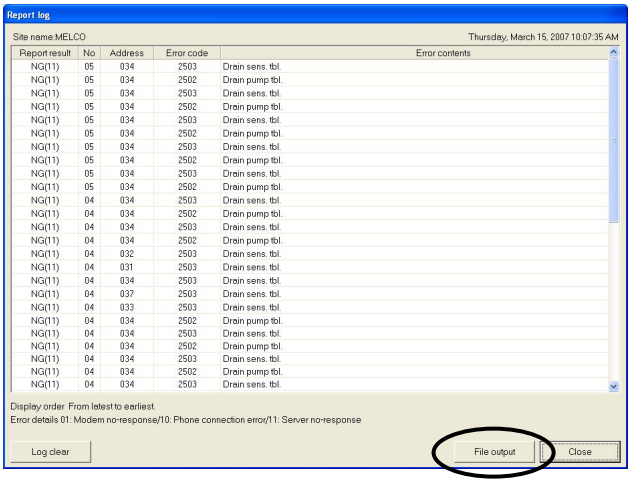



**NOTE:**
When you clear the Report log, the notification number is reset and restarts from 1 in the next report.

### 3.14.5.3 Saving the Report log in CSV format

You can save the Report log as a CSV-format file on the Maintenance Tool PC.

(1) Click the **[File output]** button in the **Report log screen**.



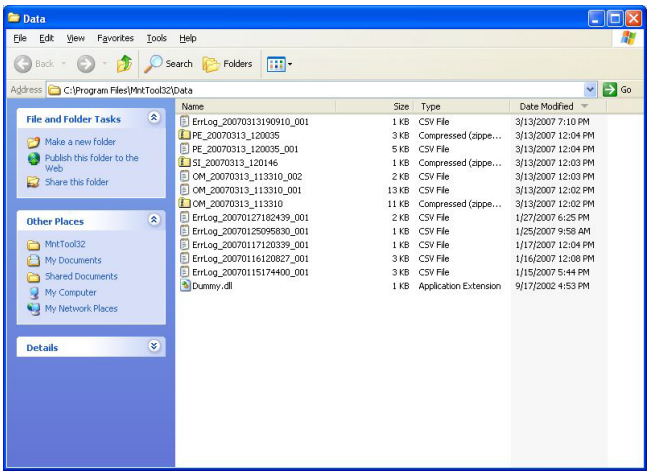
(2) Select CSV format and click **[OK]**.

**Use ,** -- Uses a comma (,) as the delimiter in the CSV file.

**Use ;** -- Uses a semicolon (;) as the delimiter in the CSV file.



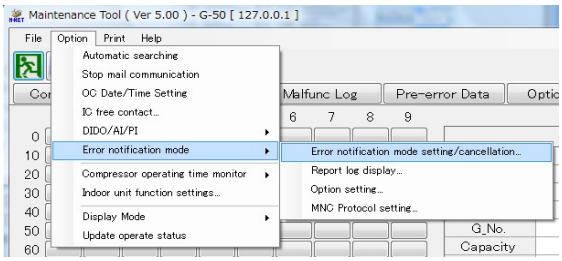

(3) The log is saved in CSV format and a folder display window opens. The folder name is **C:¥MntToolEA¥Data.**
[See section 5.5.]



### 3.14.6 Changing the error notification settings

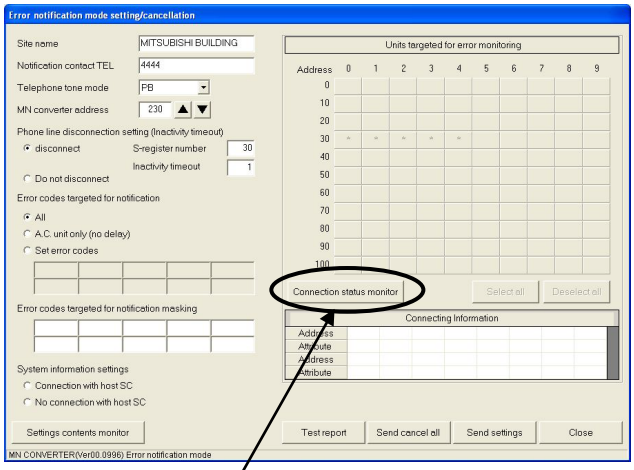
**NOTE:**
If you change the units targeted for error monitoring or change the MN Converter address, the MN Converter will be reset by the change. This will erase the previous error data stored on the MN Converter.
When the data is erased, notification also stops and no error report log is kept.
To retain the error data, set the **Minimum reporting period** in the Option settings to 0 minutes before sending the settings to forcibly report the error data currently stored on the MN Converter.
You can check whether there is currently error data stored on the MN Converter by the STATUS LED, which will blink at 0.5-second intervals if there is data stored.
For details, see section 3.14.10 "MN Converter LED display" (pattern 4).

(1) Click **[Option]** in the menu bar and select **[Error notification mode]** -> **[Error notification mode setting/cancellation]** in the sub-menu.




(2) The information set in the MN Converter is loaded and the **Error notification mode setting/cancellation screen** appears.

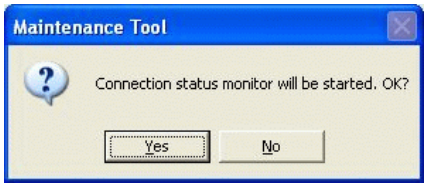
Units set on the MN Converter as targets for error monitoring are marked with an asterisk (*).

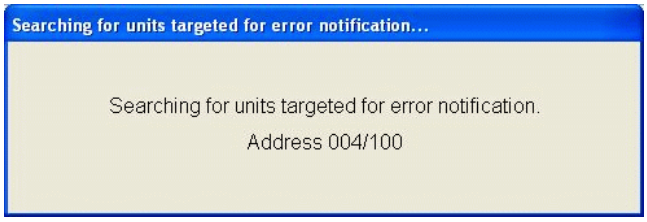



(3) Change the desired items in the **Error notification mode setting/cancellation screen**.

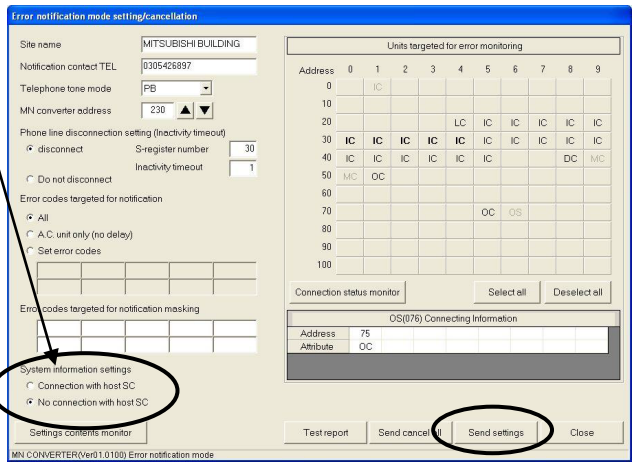
To change the units targeted for error monitoring, you have to run the Connection status monitor.
Click **[Connection status monitor]** to collect the connection information.

A confirmation window is displayed.
Click **[Yes]**.
Connection status monitor begins.



(4) Select System information settings.



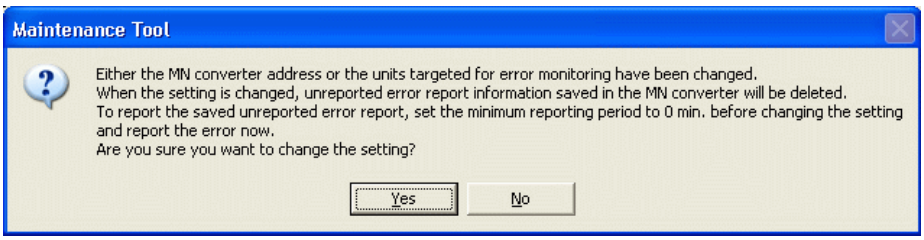

(5) Click **[Send settings]**.

A confirmation window is displayed.
Click **[Yes]**.

Setting begins.



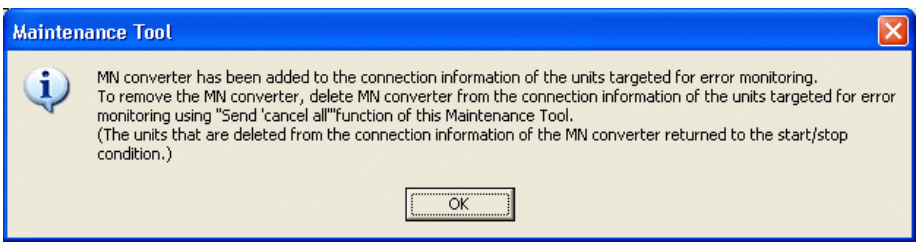

(6) If you change the units targeted for error monitoring or change the MN Converter address, the message shown below appears.
The MN Converter is reset by the change. This erases the previous error data stored on the MN Converter. Reporting also stops and no error report log is kept.
Set the “Minimum reporting period” in the Option settings to 0 minutes before sending the settings to forcibly report the error data currently stored on the MN Converter,
and click **[Yes]**.
Setting begins.




(7) The **Settings have been sent** message appears and setting is completed. Click **[OK]**.




(8) If you add the units targeted for error monitoring, the message shown below appears.
Click **[OK]**.



(9) Click **[Close]** to close the **Error notification mode setting/cancellation screen**.

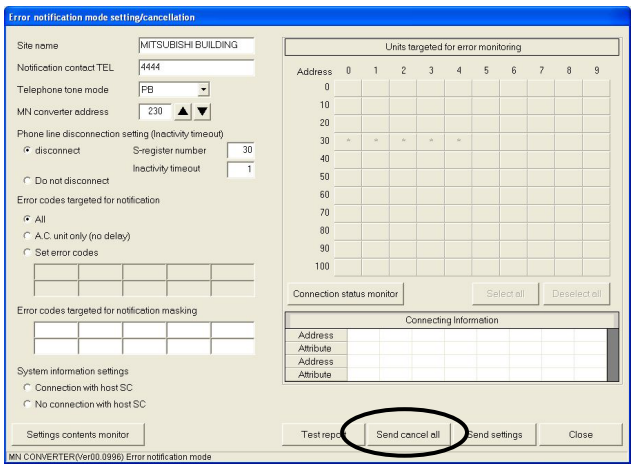
**Caution:**
If you have changed the telephone number, you must run the error notification test.
[See section **3.14.4.**]

**NOTE:**
*If you change the units to be monitored for errors when "**Connection with host SC**" is selected, **you must add or delete the MN Converter address in the corresponding unit connection data on the host SC.**
*To remove the MN Converter, delete MN Converter from the connection information of the units targeted for error monitoring using “Send cancel all” function of this Maintenance Tool.
*The units that are deleted from the connection information of MN Converter returned to the start/stop condition.

## 3.14.7 Canceling error notification mode

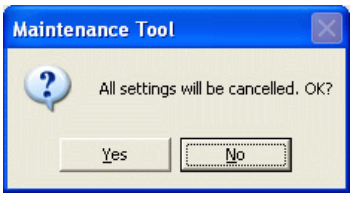
This procedure cancels error notification mode and returns the MN Converter to maintenance mode.

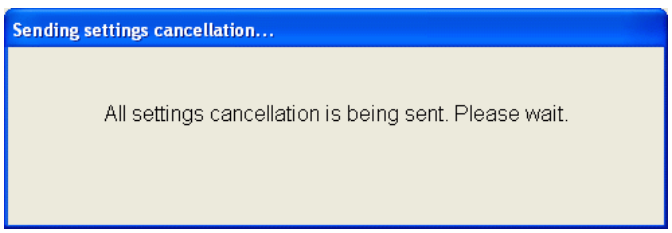
(1) In the **Error notification mode setting/cancellation screen**, click **[Send cancel all]**.



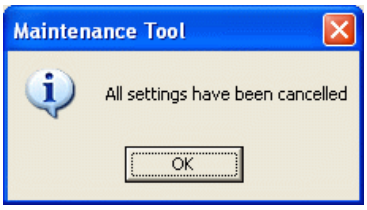

(2) A confirmation window is displayed.
Click **[Yes]**.

Cancellation begins.

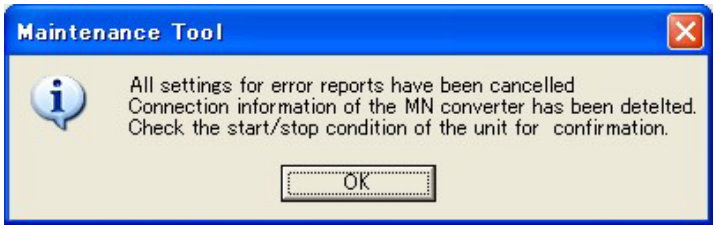


(3) When setting is completed, the **All settings have been cancelled** message appears.
Click **[OK]**.




The MN Converter switches to maintenance mode, and the message below appears.Click **[OK]**.




**NOTE:**
After cancellation, check the start/stop condition of the unit for confirmation

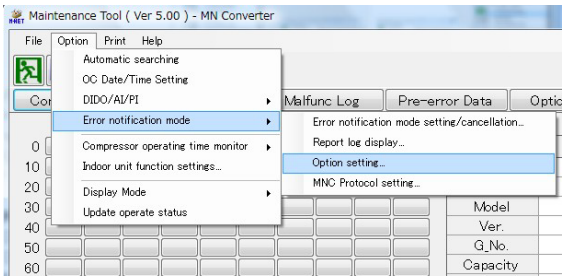
(4) Click **[Close]** to close the **Error notification mode setting/cancellation screen**.

**NOTE:**
If you selected "Connection with host SC", you must delete the address of the MN Converter from the connection data for the corresponding unit on the host SC.

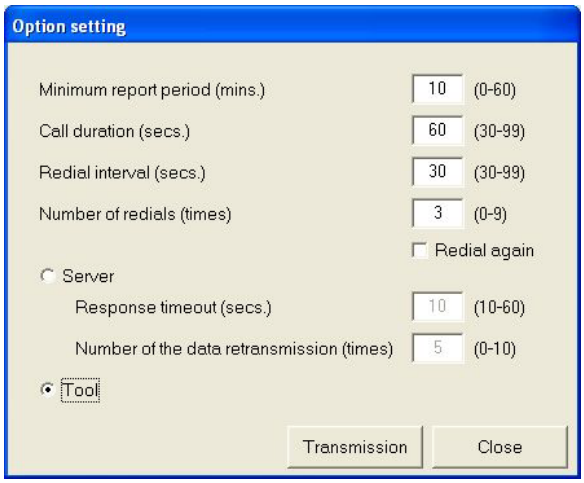
## 3.14.8 Option settings

Use the procedure below to specify the settings for remote error notification mode.

(1) Click **[Option]** in the menu bar and select **[Error notification mode]** -> **[Option setting]** in the sub-menu.




(2) The **Option setting screen** appears.



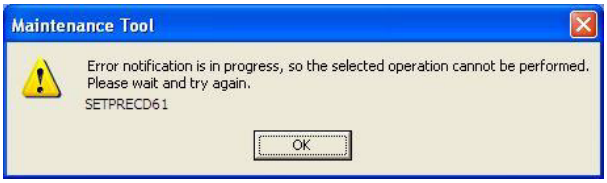

(3) Change the settings as desired and click **[Transmission]**.

(4) The new settings are applied on the MN Converter and the window shown below appears.

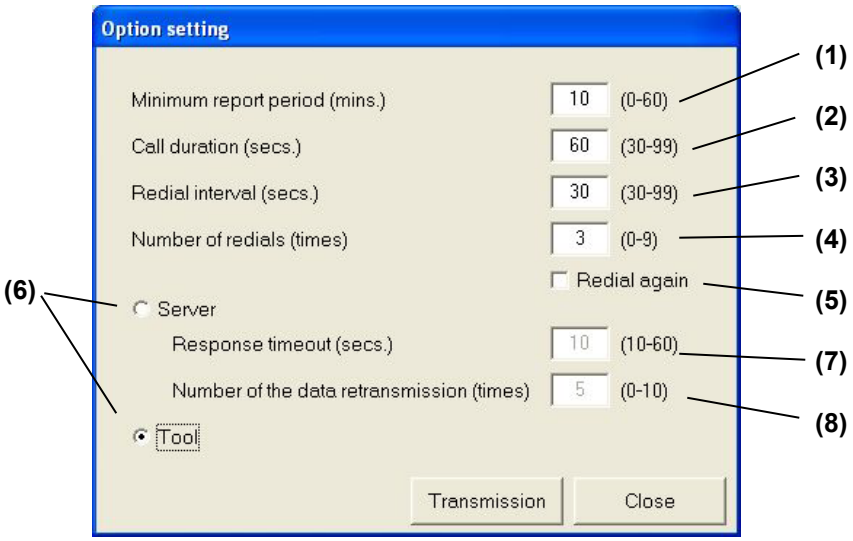



**NOTE:**

If the MN Converter is reporting an error, the message shown below appears and the settings cannot be applied. Wait a few moments until error notification ends and then resend the settings.

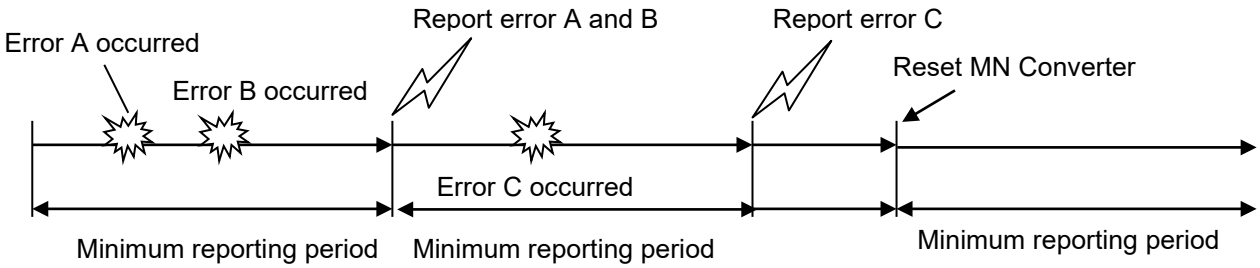


The various settings are explained below.




**- (1) Minimum reporting period (mins.)** (Default = 10 min.)

Set a period between 0 and 60 minutes in 1-minute increments as the error reporting interval.
Errors that occur during this period are all reported together when the end of the specified period is reached.
After the errors are reported, the next notification occurs at the end of the next reporting period.
If no errors occur during this period, none are reported.
Counting of the reporting period begins when the setting is specified.
If the MN Converter is reset due to an event such as a change to the error notification setting, the counting for the minimum reporting period is also reset and errors are reported as soon as the countdown restarts.




**NOTE:**
The maximum number of errors that the MN Converter can store during the minimum reporting period is 50.
Once the limit of 50 errors is exceeded, the oldest entries in the log are deleted.
When more than 50 errors occur, only the number of excess errors is reported.

**- (2) Call duration (secs.)** (Default = 60 sec.)

Set a period between 30 and 99 seconds in 1-second increments as the time for which the MN Converter continues dialing a contact telephone number once it has started the notification process.
If the contact telephone does not answer before this period expires, dialing is cancelled and notification fails. This function prevents long periods of continuous dialing.

**NOTE:**
Some modem models have a similar function. If this is the case and the modem's continuous dialing period is shorter than the Maintenance Tooletting, dialing stops after the period set on the modem.
Refer to your modem's instruction manual for details.

**- (3) Redial interval (secs.)** (Default = 30 sec.)

If the MN Converter dials a notification contact but the contact telephone does not answer, the converter redials the number for the number of times specified in "**(4) Number of redials**" below.
In this setting, specify a period between 30 and 99 seconds in 1-second increments as the interval between redials.

**- (4) Number of redials (times)** (Default = 3 times)

Set a number between 0 and 10 as the number of redials when the MN Converter dials a notification contact but the contact telephone does not answer.
If you set this number to 0, the converter does not redial the number.

**- (5) Redial again** (Default = Not selected)

If you tick this option, when the MN Converter redials a number for the number of times specified in **"(4) Number of redials**" and there is still no reply, the converter again attempts to report the same notification data after the period specified in **"(1) Minimum reporting period**" has passed.
It repeats this process until notification succeeds.
If this option is not ticked and redialing fails to establish contact, the result is stored in the error report log as a failure and that notification process ends. If this option is ticked, the result is not logged as a failure and notification is retried.

**- (6) Server/Tool** (Default = Server)

Choose whether the software running on the remote monitoring PC connected to the notification contact is the dedicated server software or another software tool.

**Server** ---------- The MN Converter waits until it receives a "REP" character string from the remote monitoring PC in response to a notification.
If "REP" is received, the notification result is stored in the MN Converter's Report log as a success.
If no response is received after a set time, the notification result is stored in the MN Converter's Report log as a failure.

**Tool** ---------- Without waiting for a response from the remote monitoring PC, the MN Converter stores the notification result in its Report log as a success when the notification from the MN Converter is completed.

When a notification test is run, this setting is also used to identify the notification contact and determine whether notification was a success or a failure.

**- (7) Response timeout (secs.)** (Default = 10 sec.)

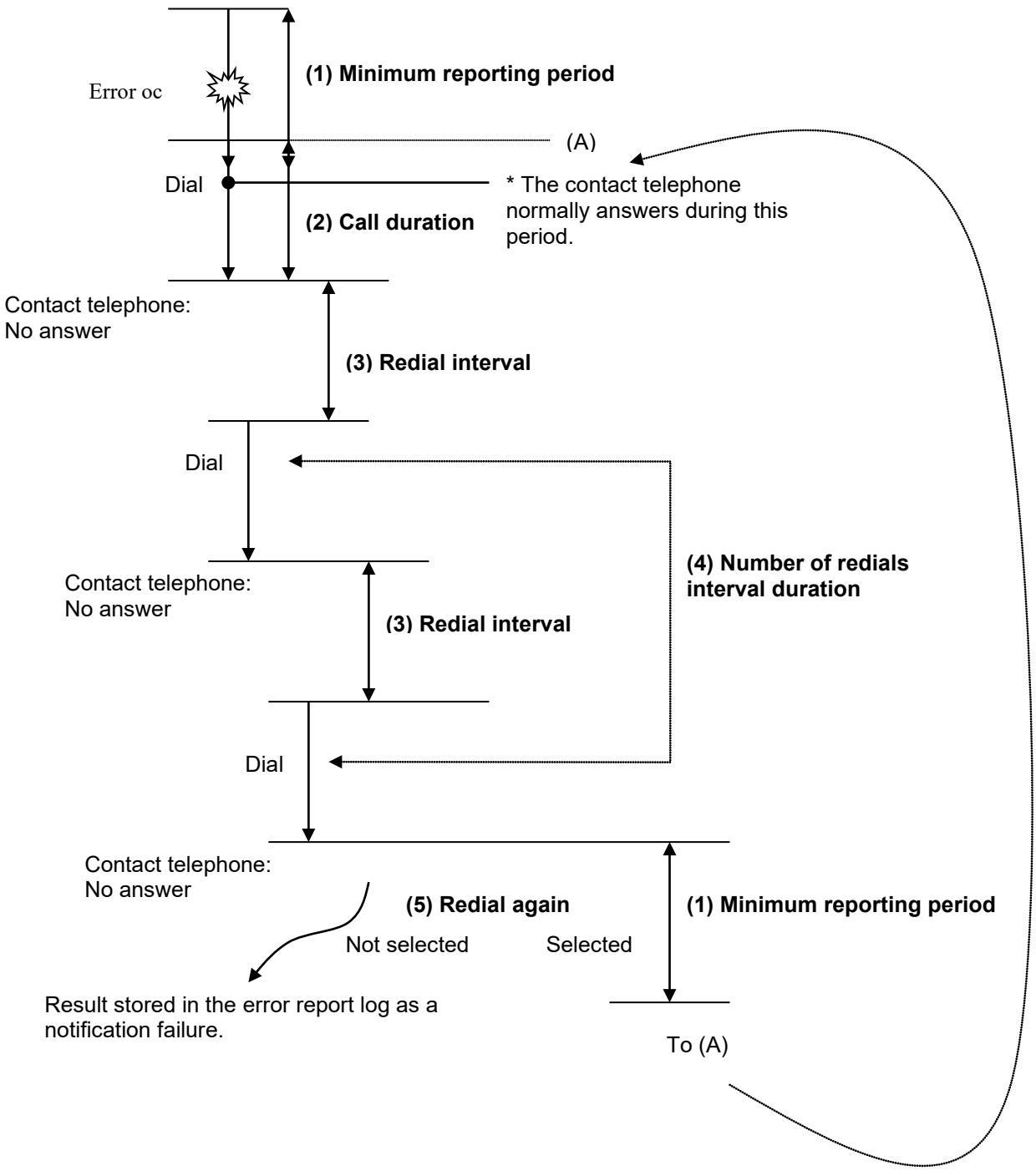
When "**Server**" is selected in "**(6) Server/Tool**" above, use this setting to specify a period between 10 and 60 seconds in 1-second increments as the time for which the MN Converter waits for a "REP" response from the server.
When "**Tool**" is selected, this setting is disabled.

**- (8) Number of the data retransmission (times)** (Default = 5 times)

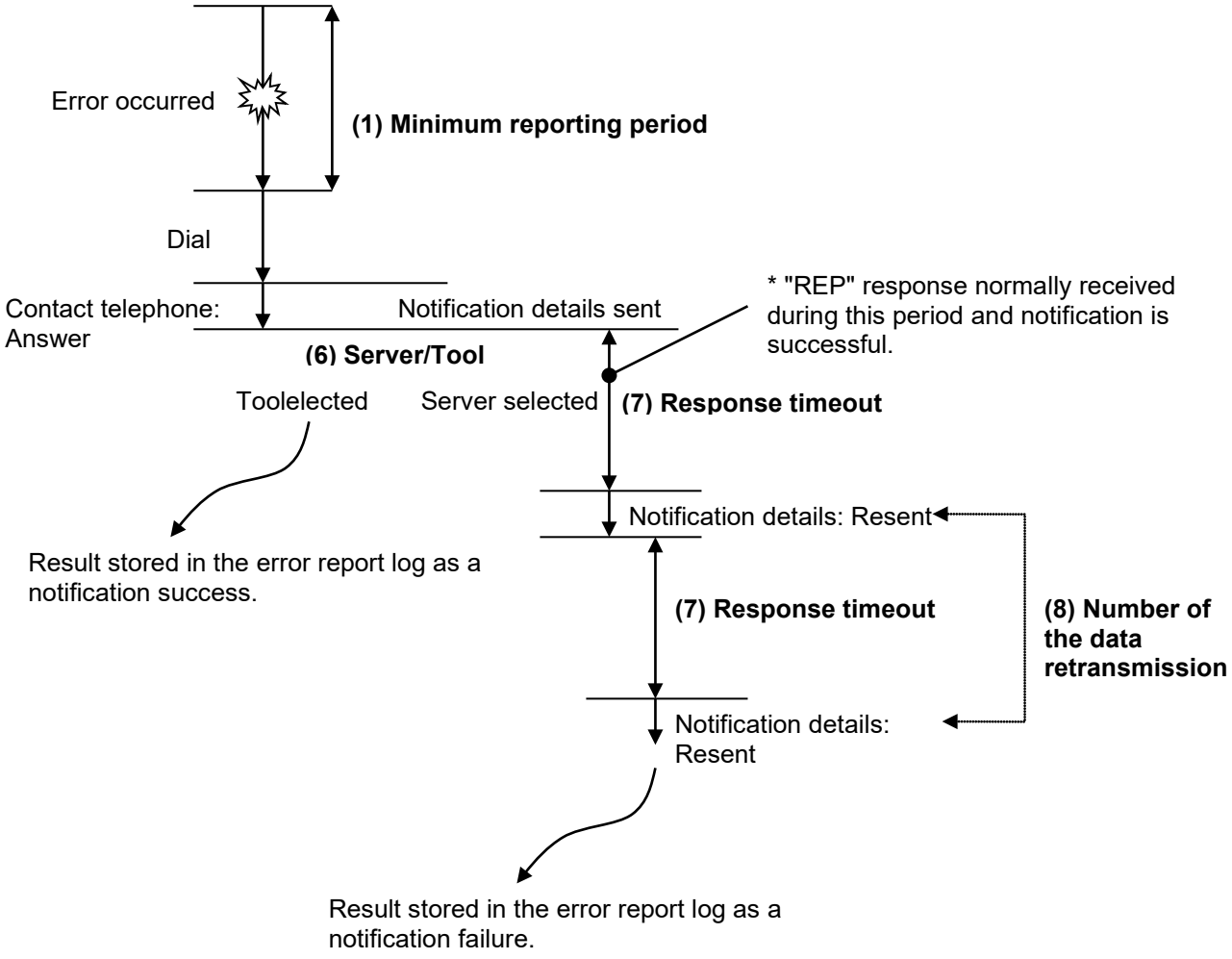
When "**Server**" is selected in "**(6) Server/Tool**" above and no "REP" response is received from the server in the time set in "**(7) Response timeout**" above, use this setting to specify a number between 0 and 10 as the number of times the MN Converter retries server notification.
If you set this number to 0, the MN Converter does not retry notification.
When "**Tool**" is selected, this setting is disabled.

The figure below summarizes these settings.

**[If the notification contact telephone does not answer]**



**[If the notification contact telephone answers]**



### 3.14.9 Error notification data format

The notification data sent from the MN Converter to the remote monitoring PC via the telephone lines is in the format shown below. The remote monitoring PC receives and processes this data in the dedicated server software or another dedicated software tool. Prior to notification, up to 50 items of error data are stored on the MN Converter. No more than 50 items of error data can be reported each time (each dialing).
If there are more than 50 errors, only the number of excess errors is reported.
The 50 items are divided into blocks of up to 20 items for transmission.

**[Data format]**

```
NO10                          -- Notification number
MITSUBISHI ELEC BUILDING      -- Site name
0312502
0346607                       -- Error data (up to 20 items)
0352503
*
*
*
(20 or more items)
NO11                          -- Notification number
MITSUBISHI ELEC BUILDING      -- Site name
0362502
0346608                       -- Error data (up to 20 items)
0352504
*
*
*
(40 or more items)
NO12                          -- Notification number
MITSUBISHI ELEC BUILDING      -- Site name
0362502
0346608                       -- Error data (up to 10 items)
0352504
*
*
*
OVER12                        -- Number of items in excess of 50 (if there are more than 50 items)
```

**- Notification number**

NO + notification number
The number increments by 1 for each item up to 50 items. When 50 is reached, numbering restarts at 1. If there are more than 20 items of error data, the notification is divided and the notification number increments by 1 for each item. The notification number displayed by the Maintenance Tool matches the error report log number on the MN Converter. When the log is cleared in the Maintenance Tool error report log screen, the numbering restarts from 1. The notification number for a test notification is 0.

**- Site name**

Site name
The site name specified in the **Error notification mode setting/cancellation screen**.

**- Error data**

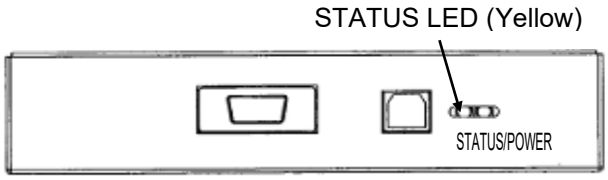
Address of unit on which the error occurred (3 digits) + error code (4 digits)
For a test notification, the unit where the error occurred is “MN Converter’s address” and the error code (1 only) is “0000”.

**- Number of errors in excess of 50**

OVER + the number of errors in excess of 50

### 3.14.10 MN Converter LED display

The MN Converter (CMS-MNG-E) has a STATUS LED (yellow) that displays the converter status.




The STATUS LED blinking patterns are shown below.

**[Maintenance mode]**

Lit: Ready for operation. (normal)
Unlit: Not ready for operation. (error)

**[Remote error notification mode]**

Lit: Ready for operation. (normal)
Unlit: Not ready for operation. (error)
Blink: When the remote error notification activates, the LED light blinks according to the following blink patterns:

■ ··Lit (Unit: second)

| Pattern | Explanation | Priority* | Blinking pattern | Operation status |
|---|---|---|---|---|
| 1 | Slow blink | High ↑ Low | ■ | Modem error |
| 2 | Long blink | | ■ 0.5 2.0 ■ 0.5 0.2-0.1-0.2-0.5 | Remote error notification failed |
| 3 | Double blink | | ■ 0.5 ■ ■ ■ 2.0 0.5 2.0 | Redialing |
| 4 | Blinking | | ■ ■ ■ ■ | Air-conditioner error |

Pattern

0.5

**1----------Modem error**

Unable to communicate with the modem. The MN Converter is not connected to the modem or the modem is not turned on. Check the connection to the modem and that the modem is turned on.

(*When all of the operation statuses occur at a time, the status with the highest priority is displayed.)

**2----------Remote error notification failed**

A failed notification result is saved in the Report log stored on the MN Converter. [See section **3.14.5.**]

If the LED is displaying this pattern, check the Report log in the Maintenance Tool and eliminate the cause of the failure.

When the Report log is displayed, the software recognizes that the log has been “checked by a person” and resets the display pattern.

When it reaches the limit of 50 items stored in the Report log, and the oldest entries that exceed the 50 limits are deleted. The display is reset when there are no failure results in the Report log.

**3----------Redialing**

The LED blinks in this pattern while the MN Converter is redialing after there is no answer from a notification contact telephone.

**4----------Air-conditioner error**

The LED blinks in this pattern when an error requiring notification has occurred in one of the units being monitored for errors and the MN Converter is storing the error data. If an error occurs in a unit that is not being monitored for errors, or if the error code is masked or does not require notification, the LED does not blink. This display is reset when error notification is carried out.

## 3.15 Setting and Monitoring DIDO/AI/PI Controllers

The “**Setting and Monitoring DIDO/AI/PI Controllers**” has been located starting from **Ver4.20**.

* **Items Performed Here**

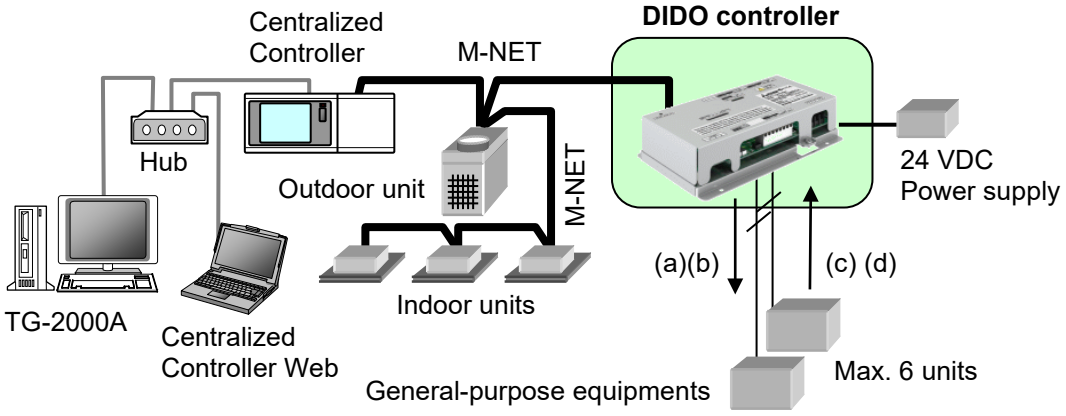
- Settings and monitoring DIDO Controller (PAC-YG66DCA), AI Controller (PAC-YG63MCA), and PI Controller (PAC-YG60MCA) can be made. (PI Controllers can be used only for monitoring.)
- DIDO Controllers and AI Controllers have an interlock control function.
  DIDO Controllers can also change the operation status of M-NET devices (such as indoor units, DIDO Controllers) by sending operation commands. DIDO Controllers can output contacts on DIDO Controllers themselves depending on the change in input contact status.
  AI Controllers can change the operation status of M-NET devices (such as indoor units, DIDO Controllers) by sending operation commands depending on the change in measurement values.
  **“Interlock operation conditions” for the “interlock control function” can be set** on Maintenance Tool.

**NOTE:**
Before using the interlock control function, plan carefully how the air-conditioners will be used. If the interlock control function is used without thorough consideration, unexpected operation may result.

### 3.15.1 Setting and Monitoring DIDO Controllers (66DC)

DIDO Controller(PAC-YG66DCA) can be used in combination with a system controller (Centralized Controller or TG-2000A) to operate/stop general-purpose equipment, as well as to monitor the operating status and error status.
Furthermore, DIDO Controller is equipped with two sets (channels 1 and 2) of standard terminals and four sets of expansion connectors as the input/output terminals.

(a) ON/OFF, (ON) output
(b) (OFF) output
(c) ON/OFF input
(d) Error/Normal input
Standard: Terminal block (for 2 units)
Expansion: Connectors (for 4 units)
Total: 6 units



The function allotment of DIDO Controller, Centralized Controller Web Browser, TG-2000A and Maintenance Tool is as follows.

[Note]S:Setting possibility, M:Monitoring only, -:None

| Function name | DIDO Controller | Centralized Controller Web | TG-2000A | Maintenance Tool |
|---|---|---|---|---|
| Address setting | S*1 | - | - | M |
| Output method (Level/pulse) setting | S*1 | - | - | M |
| Error input logic (a contact/b contact) setting | S*1 | - | - | M |
| Group registration | - | S | S | - |
| Operation and monitoring | - | S | S | M (Compulsion operation is possible.) |
| Time setting | - | S | S | M (Operation is possible)*2 |

*1 It is set with Dip switch of DIDO Controller.
*2 When Centralized Controller or TG-2000A is connected, the time setting must be made on Centralized Controller Web Browser or TG-2000A.

The following settings and monitoring can be made on DIDO Controllers (PAC-YG66DCA).

**Set the current time before using the DIDO Controller.**

**When Centralized Controller or TG-2000A is connected, the time setting must be made on Centralized Controller Web or TG-2000A.**

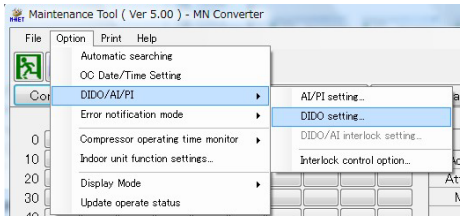
When neither of them is connected, refer to section [3.15.1.1 Time setting on DIDO Controllers].

(a) Operation
*Contact output
*Operation time reset
(b) Monitoring
*Input/output status
*Operation time (contact ON/OFF hours)
*Dip switch settings

### 3.15.1.1 Time setting on DIDO Controllers

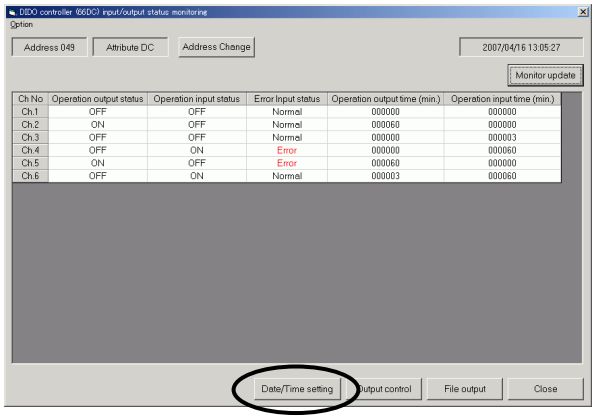
**NOTE:**
When Centralized Controller or TG-2000A is connected, the time setting must be made on Centralized Controller Web or TG-2000A.

(1) Click **[Option]** in the menu bar and select **[DIDO/AI/PI] -> [DIDO setting]** in the sub-menu.



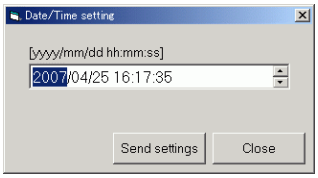

(2) Click DC of the unit (DIDO Controller) to be set or monitored on the **Main screen**.

(3) **DIDO controller (66DC) input/output status monitoring screen** will appear.




(4) Click **[Date/Time setting]** in the **DIDO controller (66DC) input/output status monitoring screen**.

(5) The current time is monitored, and **Date/Time setting screen** will appear.



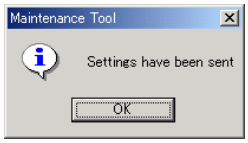

(6) Set the current date and time.

(7) Click **[Send settings]**.

(8) The message **"Are you sure you want to send the Date/Time setting?"** will appear. Click **[Yes]**.



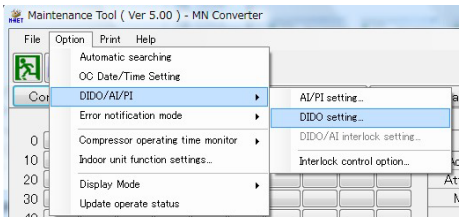

(9) Time is set to DIDO Controller, and the message **"Settings have been sent."** Will appear. Click **[OK]**.




(10) Click **[Close]** to return to the **DIDO controller (66DC) input/output status monitoring screen**.

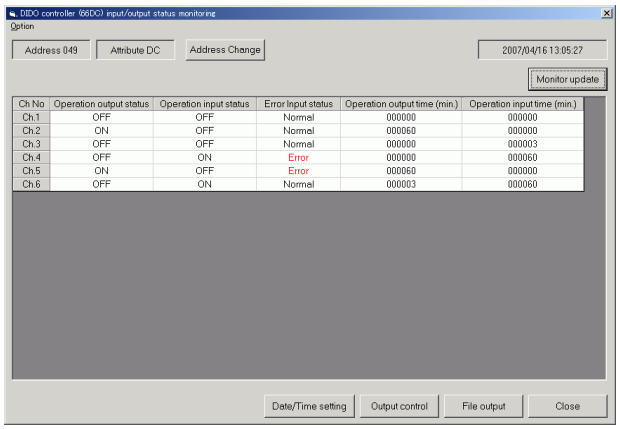
### 3.15.1.2 Monitoring input/output status on DIDO Controllers (66DC)

(1) Click **[Option]** in the menu bar and select **[DIDO/AI/PI] -> [DIDO setting]** in the sub-menu.




(2) Click DC of the unit (DIDO Controller) to be set or monitored on the **Main screen**.

(3) The input/output status is monitored, and **DIDO controller (66DC) input/output status monitoring screen** will appear.

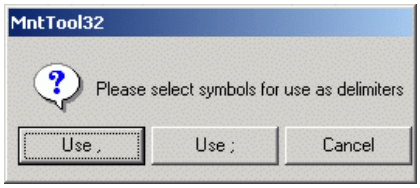



**[Operation output status]**
**[Operation input status]**
The ON/OFF status for each contact is monitored and displayed.
**[Error input status]**
The error input status for each contact is monitored and displayed.

**[Operation output time(min.)]**
**[Operation input time(min.)]**
The integrated operation time for operation ON/OFF time is monitored and displayed.

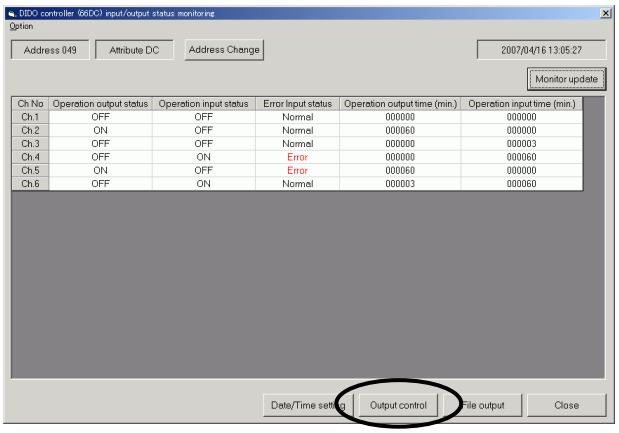
(4) Click **[Monitor update]** to update the monitoring status.

(5) Click **[File output]** to save the monitored information as a CSV file.
1) Click **[File output]**.
2) The message **"Please select symbols for use as delimiters."** Will appear. Click **[Use ,]** or **[Use ;]**.
3) **[File]** is output and saved.
The output destination folder path will be displayed.
The folder name is **C:MntToolEA¥Data.**
[See section 5.6.]



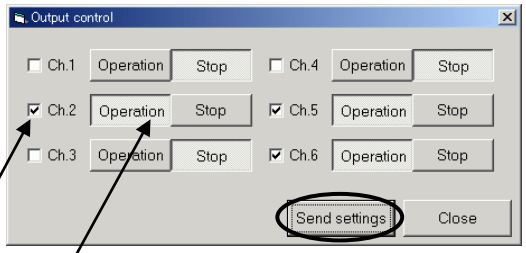
### 3.15.1.3 Output control

(1) Click **[Output control]** in the **DIDO controller (66DC) input/output status monitoring screen**.




(2) The current output status is monitored, and **Output control screen** will appear.

*** <u>The pressed (sunken) button</u> shows the current status.**

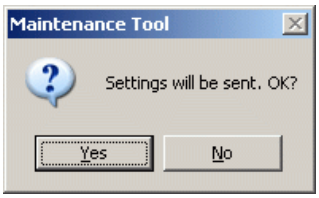



(3) Check the <u>checkbox of the channel to be output</u>.

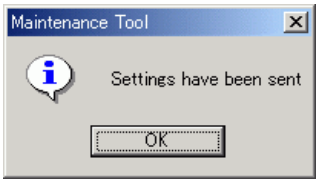
(4) Click **[Operation]** or **[Stop]**.

(5) Click **[Send settings]**.

(6) The message "**Settings will be sent. OK?"** will appear, click **[Yes]**. The setting will be applied to the unit.



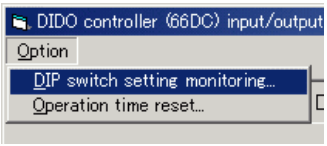

(7) The message "**Settings have been sent."** Will appear, click **[OK]**.




(8) Click **[Close]** to return to the **DIDO controller (66DC) input/output status monitoring screen**.

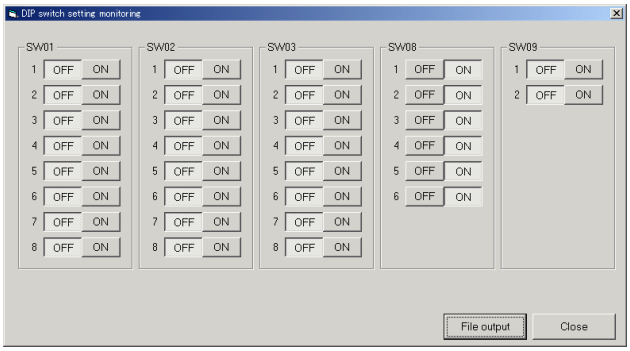
### 3.15.1.4 Monitoring Dip switch setting of DIDO Controllers

(1) Click **[Option]** in the **DIDO controller (66DC) input/output status monitoring screen** and select **[DIP switch setting monitoring]** in the sub-menu.




(2) The DIP switch setting is monitored, and **DIP switch setting monitoring screen** will appear.

*** <u>The pressed (sunken) button</u> shows the current status.**

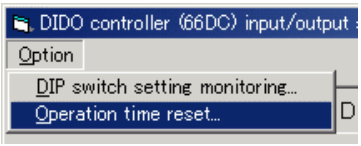



(3) Click **[File output]** to save the monitored information as a CSV file.
Refer to section [3.14.1.2 Monitoring input/output status on DIDO Controllers (66DC) (5)].
The folder name is
**C:¥MntToolEA¥Data.**
[See section 5.6.]

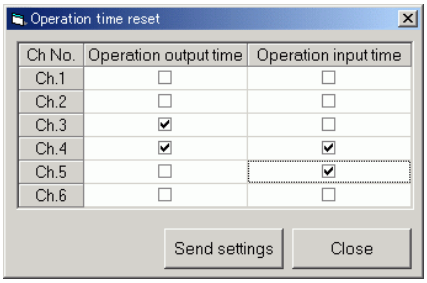
(4) Click **[Close]** to return to the **DIDO controller (66DC) input/output status monitoring screen**.

### 3.15.1.5 Operation time reset

(1) Click **[Option]** in the **DIDO controller (66DC) input/output status monitoring screen** and select **[Operation time reset]** in the sub-menu.




(2) **Operation time reset screen** will appear.




(3) Check the checkbox of to reset the operation time of the selected channel.

(4) Click **[Send settings]**.

(5) The message **"Settings will be sent. OK?"** will appear, click **[Yes]**.
The setting will be applied to the unit.

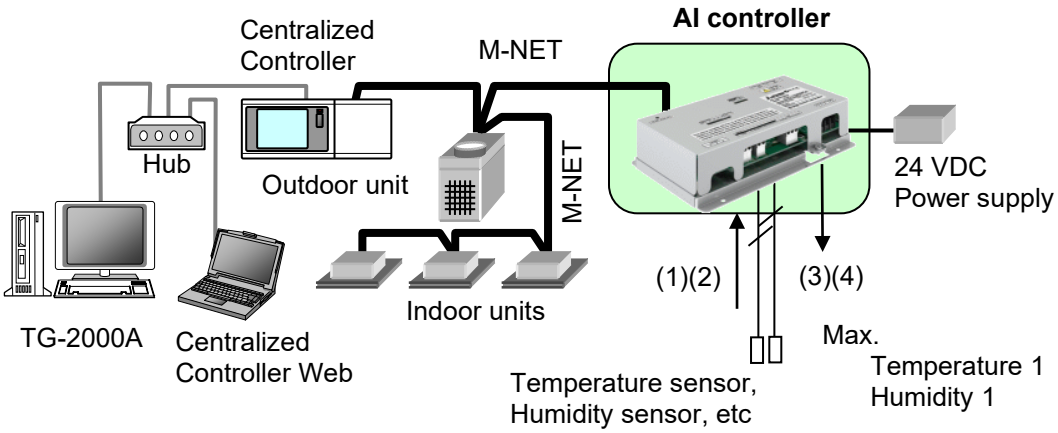
(6) The message **"Settings have been sent."**will appear, click **[OK]**.

(7) Click **[Close]** to return to the **DIDO controller (66DC) input/output status monitoring screen**.

### 3.15.2 Setting and Monitoring AI Controllers (63MC)

AI Controller (PAC-YG63MCA) is capable of measuring the temperature and humidity.
Trend displays of measurement data can be shown on the Centralized Controller Web Browser and TG-2000A. Furthermore, an alarm can be output if measurement data exceeds a preset upper or lower limit.

(1) Channel 1 temperature or humidity sensor input
(2) Channel 2 temperature or humidity sensor input
(3) Channel 1 upper/lower limit alarm output
(4) Channel 2 upper/lower limit alarm output




The function allotment of AI Controller, Centralized Controller Web Browser,TG-2000A and Maintenance Tool is as follows.

[Note] S:Setting possibility, M:Monitoring only, -:None

| Function name | AI Controller | Centralized Controller Web | TG-2000A | Maintenance Tool |
|---|---|---|---|---|
| Address setting | S*1 | - | - | M |
| Setting of the input to use | S*1 | - | - | M |
| Setting of the analog input type | S*1 | - | - | M |
| Range and category setting of sensor | - | S | S | M (Operation is possible)*2 |
| Setting of upper/lower limit alarm interlock output use | S*1 | - | - | M |
| Range setting of Upper/Lower limit alarm | - | S | S | M (Operation is possible)*2 |
| Monitoring and trend displays of measurement data | - | S | S | M (Monitoring only) |
| Time setting | - | S | S | M (Operation is possible)*2 |

*1 It is set with Dip switch of DIDO Controller.
*2 When Centralized Controller or TG-2000A is connected, the time setting must be made on Centralized Controller Web Browser or TG-2000A.

The following settings and monitoring can be made on AI Controllers (PAC-YG63MCA).

**When Centralized Controller or TG-2000A is connected, the setting must be made on Centralized Controller Web Browser or TG-2000A.**

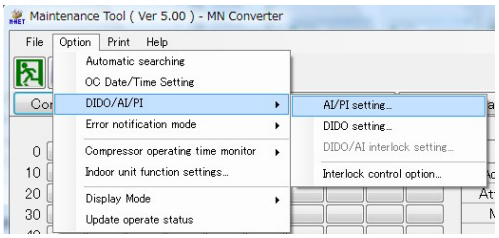
(a) Settings
*Current time
*Measurement category (temperature, humidity)
*Measurement range (upper limit, lower limit, correction value)
*Out-of limit alarm value (alarm threshold, alarm-off threshold)

(b) Monitoring
*Current measurement value
*Current out-of-limit alarm status
*Correction value for Pt100 detection
*Dip switch setting
*Measurement value history
*History of out-of-limit alarm/alarm-off
*Change history of measurement category (temperature or humidity)

**NOTE:**
The temperature is displayed in the unit (°C or °F) that has been selected at Maintenance Tool startup

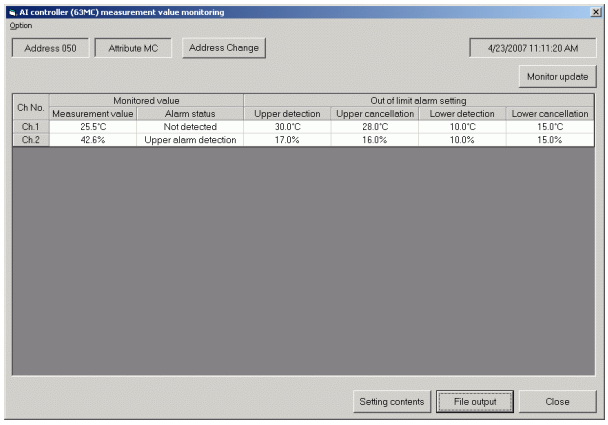
### 3.15.2.1 Monitoring measurement value on AI Controllers (63MC)

(1) Click **[Option]** in the menu bar and select **[DIDO/AI/PI] -> [AI/PI setting]** in the sub-menu.




(2) Click MC of the unit (AI Controller) to be set or monitored on the **Main screen**.

(3) The current measurement value is monitored, and **AI controller (63MC) measurement value monitoring screen** will appear.




**[Measurement value]**
The current measurement value of each channel is shown.
**[Alarm status]**
The current out-of-limit alarm status is shown.
**[Upper detection] [Upper cancellation]**
**[Lower detection] [Lower cancellation]**
The preset alarm detection value and alarm cancellation value are shown.

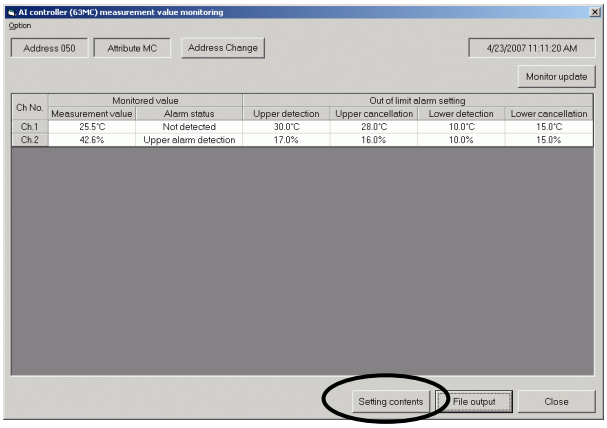
(4) Click **[Monitor update]** to update the monitoring status.

(5) Click **[File output]** to save the monitored information as a CSV file.
Refer to section [3.15.1.2 Monitoring input/output status on DIDO Controllers (66DC) (5)].
The folder name is
**C:¥MntToolEA¥Data.**
[See section 5.7.]

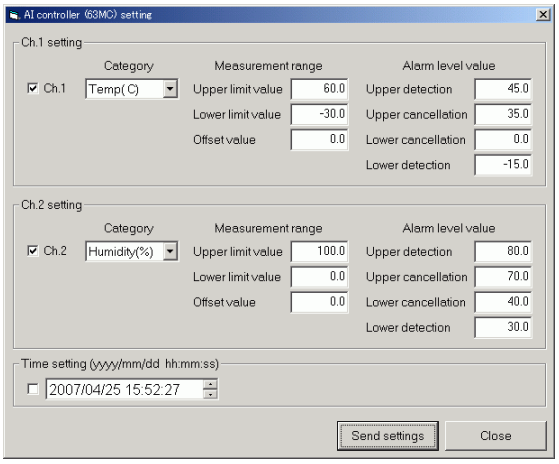
### 3.15.2.2 Setting for AI Controllers (63MC)

**NOTE:**
When Centralized Controller or TG-2000A is connected, the setting must be made on Centralized Controller Web Browser or TG-2000A.
When the settings are made on Maintenance Tool, the setting change is not applied to Centralized Controller or TG-2000A.

(1) Click **[Setting contents]** in **the AI controller (63MC) measurement value monitoring screen**.




(2) The setting details are monitored, and, **AI controller (63MC) setting screen** will appear.




**[Category]**
The measurement category (temperature or humidity) is shown.
**[Upper limit value][Lower limit value]**
The upper/lower limits of the measurement range are shown.

<Settable range>
In case of temperature:-100.0°C to 100.0°C
(-148.0°F to 212.0°F)
In case of humidity:0.0% to 100.0%
Note that the range must be fixed between –30.0°C and 60.0°C (-22.0°F and 140.0°F) when the temperature sensor for Pt100 detection (Ch1 only) is used.

**[Correction value]**
The correction value is shown.
< Settable range >
In case of temperature:-10.0°C to 10.0°C (-18.0°F to 18.0°F)
In case of humidity:-10.0% to 10.0%

**[Upper limit alarm detection]** **[Upper limit alarm cancellation]**
**[Lower limit alarm cancellation]** **[Lower limit alarm detection]**
The alarm detection value and the alarm cancellation value are shown.

**[Time setting]**
The current date and time is shown.

(3) Check the checkbox of the channel to be output and the check box of **[Time setting]** (when time setting is needed).

(4) Change the settings.

(5) **Click [Send settings]**.

(6) The message "**Settings will be sent. OK?"** will appear, click **[Yes]**.
The setting will be applied to the unit.

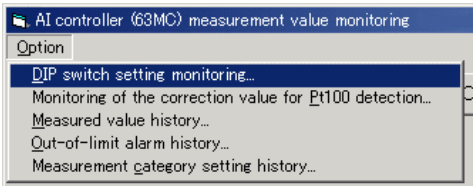
(7) The message "**Settings have been sent."** Will appear, click **[OK]**.

(8) Click **[Close]** to return to the **AI controller (63MC) measurement value monitoring screen**.

**NOTE:**
When you use Fahrenheit for the unit, there might be differences of the plus or minus 0.1 °F in the set value and the value monitored after it sets it.

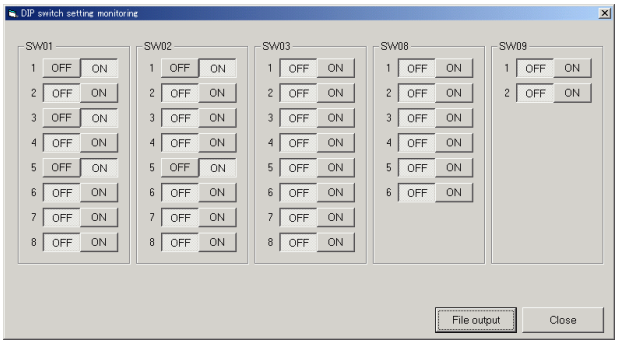
### 3.15.2.3 Monitoring Dip switch setting of AI Controllers

(1) Click **[Option]** in the **AI controller (63MC) measurement value monitoring screen** and select **[DIP switch setting monitoring]** in the sub-menu.




(2) The DIP switch setting is monitored, and **DIP switch setting monitoring screen** will appear.

*** <u>The pressed (sunken) button</u> shows the current status.**

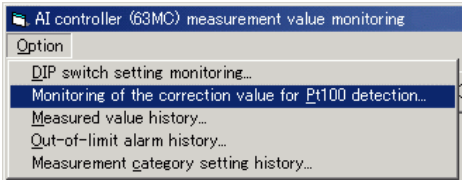



(3) Click **[File output]** to save the monitored information as a CSV file.
Refer to section [3.15.1.2 Monitoring input/output status on DIDO Controllers (66DC) (5)].
The folder name is
**C:¥MntToolEA¥Data.**
[See section 5.7.]

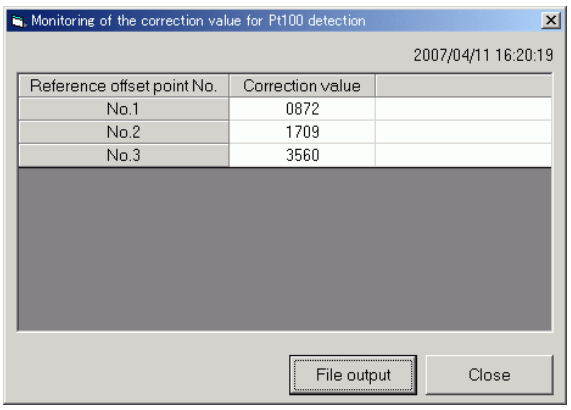
(4) Click **[Close]** to return to the **AI controller (63MC) measurement value monitoring screen**.

### 3.15.2.4 Monitoring of the correction value for Pt100 detection

(1) Click **[Option]** in the **AI controller (63MC) measurement value monitoring screen**, and select **[Monitoring of the correction value for Pt100 detection]** in the sub-menu.



(2) The correction value for Pt100 detection is monitored, and **Monitoring of the correction value for Pt100 detection screen** will appear.




**[Correction value]**

The correction value for each Reference correction point No. is shown.

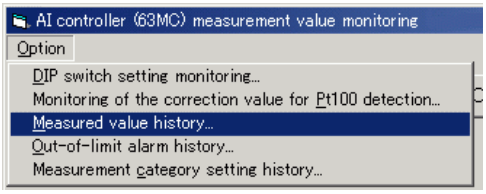
(3) Click **[File output]** to save the monitored information as a CSV file.
Refer to section [3.15.1.2 Monitoring input/output status on DIDO Controllers (66DC) (5)].
The folder name is
**C:¥MntToolEA¥Data.**
[See section 5.7.]

(4) Click **[Close]** to return to the **AI controller (63MC) measurement value monitoring screen**.

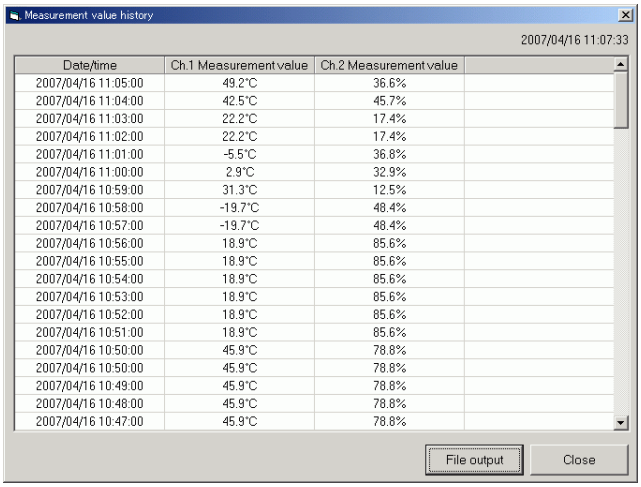
### 3.15.2.5 Measured value history

The measurement values in the past are displayed. Up to 120 of the latest data can be displayed.

(1) Click **[Option]** in the **AI controller (63MC) measurement value monitoring screen** and select **[Measured value history]** in the sub-menu.




(2) The measured value history is monitored, and **Measured value history screen** will appear.




**[Date/Time]**

The date and time when the measurement is made is shown.

**[Ch.1 Measurement value]**

**[Ch.2 Measurement value]**

The measurement value of each channel is shown.

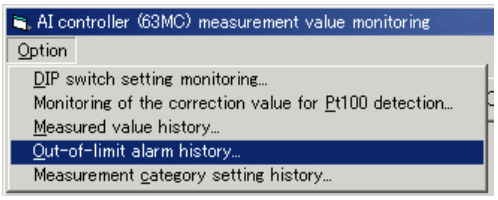
(3) Click **[File output]** to save the monitored information as a CSV file.
Refer to section [3.15.1.2 Monitoring input/output status on DIDO Controllers (66DC) (5)].
The folder name is
**C:¥MntToolEA¥Data.**
[See section 5.7.]

(4) Click **[Close]** to return to the **AI controller (63MC) measurement value monitoring screen**.

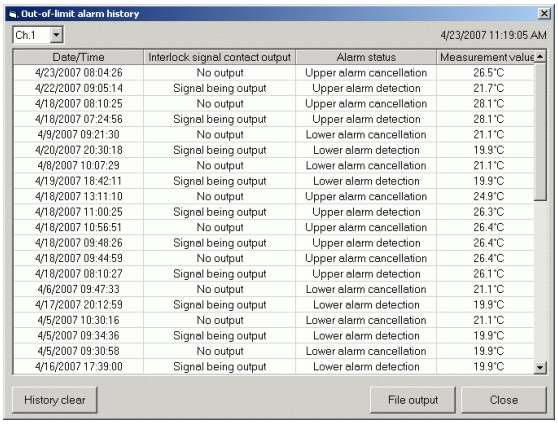
### 3.15.2.6 Out-of-limit alarm history

The history of out-of-limit alarm/alarm-off is displayed. Up to 100 of the latest data can be displayed.

(1) Click **[Option]** in the **AI controller (63MC) measurement value monitoring screen**, and select **[Out-of-limit alarm history]** in the sub-menu.




(2) The out-of-limit alarm history is monitored, and **Out-of-limit alarm historyscreen** will appear.




**[Date/Time]**
The date and time when the alarm is activated/deactivated is shown.

**[Interlock signal contact output]**
The output status of interlock signal contact is shown.

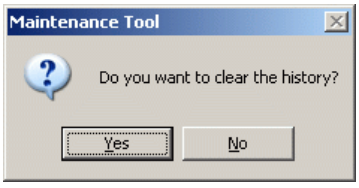
**[Alarm status]**
The alarm status (out-of-limit alarm ON or OFF) is shown.

**[Measurement value]**
The measurement value when an alarm is detection/cancellation is shown.

(3) Select the channel **[Ch1]** or **[Ch2]** to be monitored using the pulldown.




(4) Click **[History clear]** to clear the history of out-of-limit alarm/alarm-off.
1)Click **[History clear].**
2)The message **"Do you want to clear the history?"** will appear, and click **[Yes]** .




3) The message **"The history was cleared."** Will appear., and click **[OK]**.



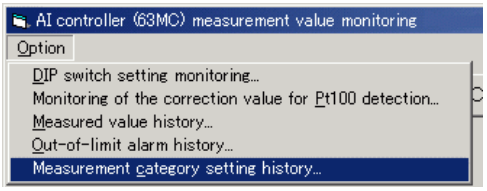

(5) Click **[File output]** to save the monitored information as a CSV file.
Refer to section [3.15.1.2 Monitoring input/output status on DIDO Controllers (66DC) (5)].
The folder name is
**C:¥MntToolEA¥Data.**
[See section 5.7.]

(6) Click **[Close]** to return to the **AI controller (63MC) measurement value monitoring screen**.

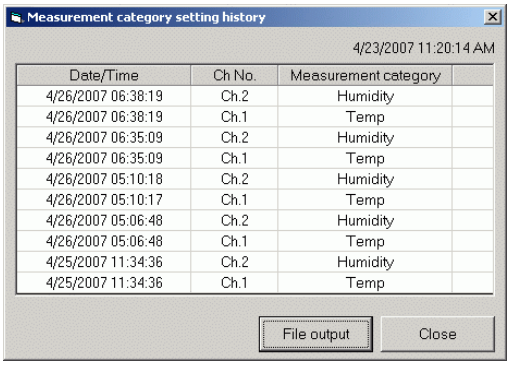
### 3.15.2.7 Measurement category setting history

The change history of measurement category (temperature or humidity) is displayed. Up to 10 of the latest data
can be displayed.

(1) Click **[Option]** in the **AI controller (63MC) measurement value monitoring screen** and select **[Measurement category setting history]** in the sub-menu.




(2) The measurement category setting history is monitored, and **Measurement category setting history screen** will appear.




**[Date/Time]**
The date and time when the measurement category is changed is shown.

**[Ch No.]**
The channel on which the measurement category is changed is shown.

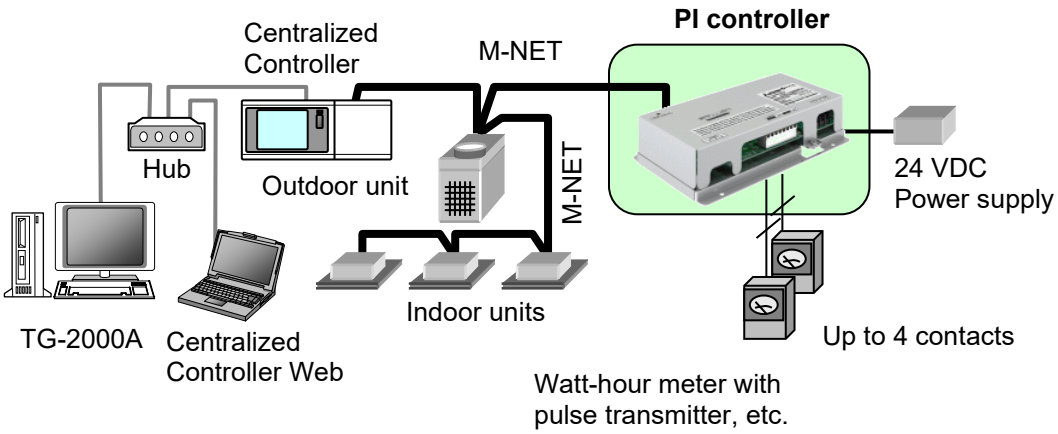
**[Measurement Category]**
The measurement category after the change has been made is shown.

(3) Click **[File output]** to save the monitored information as a CSV file.
Refer to section [3.15.1.2 Monitoring input/output status on DIDO Controllers (66DC) (5)].
The folder name is
**C:¥MntToolEA¥Data.**
[See section 5.7.]

(4) Click **[Close]** to return to the **AI controller (63MC) measurement value monitoring screen**.

### 3.15.3 Monitoring PI Controllers (60MC)

PI Controller (PAC-YG60MCA) counts pulses from a power meter, gas meter, water meter, and calorimeter. The combined use of the Centralized Controller and TG-2000A allows for calculating the charges for each unit
and performing peak-cut operation (demand control).




The function allotment of PI Controller, Centralized Controller Web Browser,TG-2000A and Maintenance Tool is as follows.

[Note] S:Setting possibility, M:Monitoring only, -:None

| Function name | PI Controller | Centralized Controller Web | TG-2000A | Maintenance Tool |
|---|---|---|---|---|
| Address setting | S*1 | - | - | M |
| Use of input contact setting | S*1 | - | - | M |
| Pulse weight value setting | S*1 | S*2 | S*2 | M |
| Charge time zone setting | - | - | S | M |
| Time setting | - | S | S | M |

*1 It is set with Dip switch of DIDO Controller.
*2 When Centralized Controller or TG-2000A is connected, the time setting must be made on Centralized Controller Web Browser or TG-2000A.

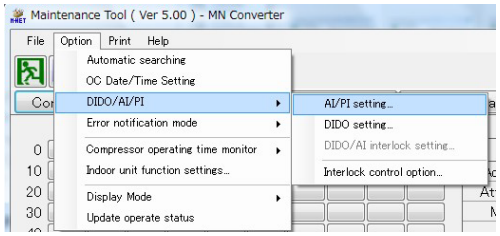
The following monitors of PI Controllers (PAC-YG60MCA) can be done.

**NOTE:**
The setting must be made on Centralized Controller Web Browser or TG-2000A.

*Current measurement value
*Measurement data history (cumulative value) (for the last 7 days)
*Measurement data history (settlement date) (up to 3 data of the last 3 settlement days in each month)
*Power failure/restoration history
*Pulse unit (weight) change history
*Current time
*Pulse unit (weight) setting
*Measurement unit setting
*Measurement data recording intervals
*Charge time zone setting
*Thermal storage device connection setting
*Settlement day setting
*Dip switch setting

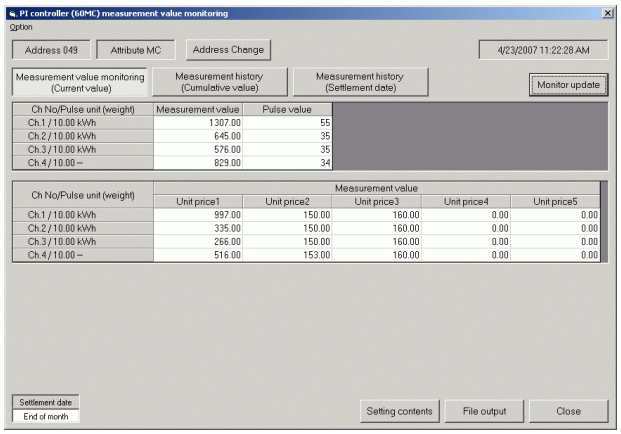
### 3.15.3.1 PI Controller (60MC) measurement value Monitor (current value)

(1) Click **[Option]** in the menu bar and select **[DIDO/AI/PI] -> [AI/PI setting]** in the sub-menu.




(2) Click MC of the unit (PI Controller) to be monitored on the **Main screen**.

(3) The current measurement value is monitored, and **PI controller (60MC) measurement value monitoring screen** will appear.




**[Ch No/Pulse unit (weight)]**
The current pulse unit (weight) of each channel is shown.

**[Measurement value]**
The current measurement value is shown.

**[Pulse value]**
The current pulse value is shown.

**[Unit price 1 to 5]**
The current measurement value per unit price is shown.

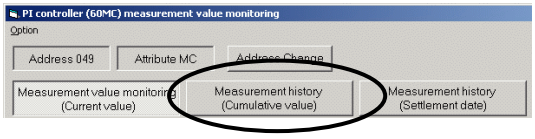
**[Settlement date]**
The settlement date is shown.

(4) Click **[Monitor update]** to update the measurement values.

(5) Click **[File output]** to save the monitored information as a CSV file.
Refer to section [3.15.1.2 Monitoring input/output status on DIDO Controllers (66DC) (5)].
The folder name is
**C:¥MntToolEA¥Data.**
[See section 5.8.]

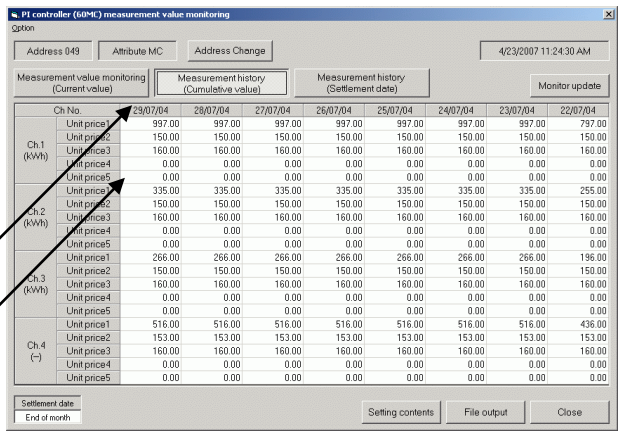
### 3.15.3.2 PI Controller (60MC) measurement value Monitor (cumulative value)

(1) Click **[Measurement data history (cumulative value)]** in the **PI controller (60MC) measurement value monitoring screen**.




(2) The current measurement value is monitored, and **Measurement data history (cumulative value)** will appear.

The measurement data history per channel and unit price for the last seven days and the current measurement value (the leftmost) will be displayed.




**[Date] YY/MM/DD**

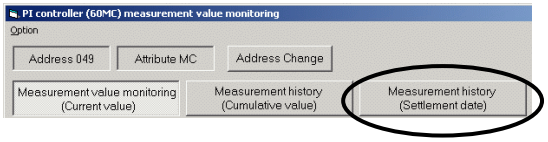
**[Cumulative value]**

(3) Click **[Monitor update]** to update the measurement values.

(4) Click **[File output]** to save the monitored information as a CSV file.
Refer to section [3.15.1.2 Monitoring input/output status on DIDO Controllers (66DC) (5)].
The folder name is
**C:¥MntToolEA¥Data.**
[See section 5.8.]

### 3.15.3.3 PI Controller (60MC) measurement value Monitor (settlement date)

(1) Click **[Measurement data history (settlement date)]** in the **PI controller (60MC) measurement value monitoring screen**.

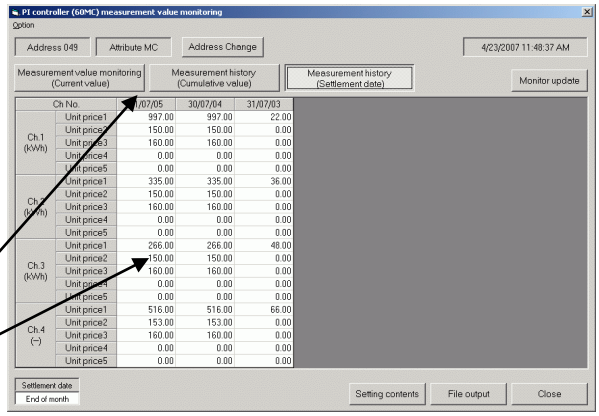



(2) The current measurement value is monitored, and **Measurement data history (settlement date)** will appear.

The measurement data history per channel and unit price for the last three settlement day will be displayed.

**[Date] YY/MM/DD (settlement date)**

**[Value (settlement date)]**

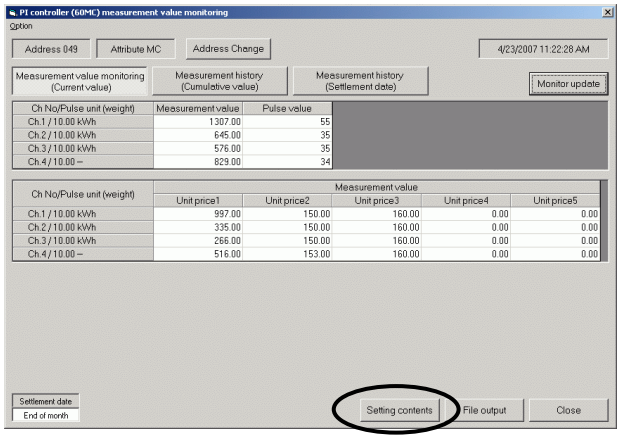



(3) Click **[Monitor update]** to update the measurement values.

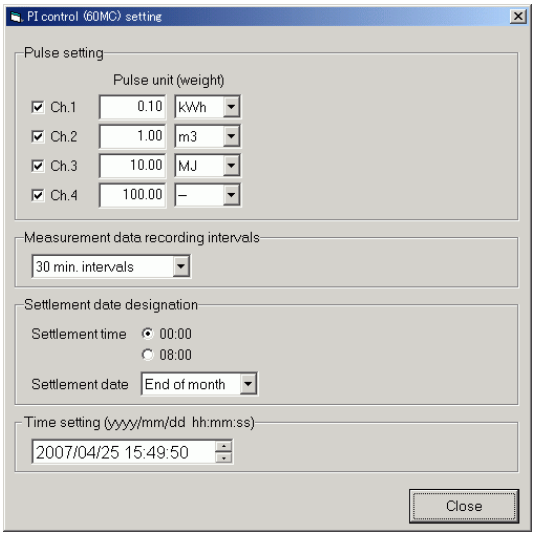
(4) Click **[File output]** to save the monitored information as a CSV file.
Refer to section [3.15.1.2 Monitoring input/output status on DIDO Controllers (66DC) (5)].
The folder name is
**C:¥MntToolEA¥Data.**
[See section 5.8.]

### 3.15.3.4 Monitoring of settings on PI Controllers (60MC)

(1) Click **[Setting contents]** in **the PI controller (60MC) measurement value monitoring screen**.



(2) The setting details are monitored, and
**PI controller (60MC) setting screen** will appear.
No settings of PI Controller can be made in the Maintenance Tool.




**[Pulse unit (weight)]**
The pulse unit (weight) and the measurement unit of each channel are shown.
(Unit: kWh, m3, MJ, or – no unit)

**[Measurement data recording intervals]**
The measurement data recording intervals is shown.

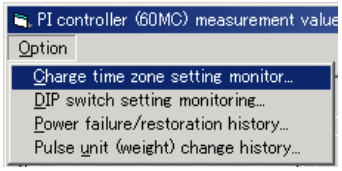
**[Settlement time][Settlement date]**
The settlement day (month-end, or 1-28th) and the time (0:00 or 8:00) settings are shown.

**[Time setting]**
The current date and time is shown.

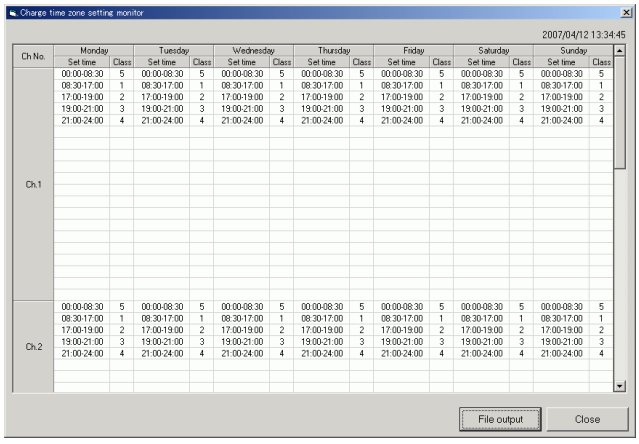
(3) Click **[Close]** to return to the **PI controller (60MC) measurement value monitoring screen**.

### 3.15.3.5 Charge time zone setting monitor

(1) Click **[Option]** in the **PI controller (60MC) measurement value monitoring screen** and select **[Charge time zone setting monitor]** in the sub-menu.




(2) The charge time zone setting is monitored, and **Charge time zone setting monitor screen** will appear.




**[Set time]**
The charge time zone setting is shown.

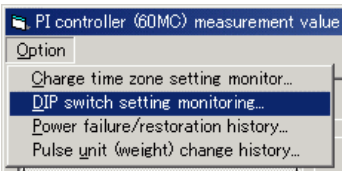
**[Class]**
The price class during the set time zone is shown.

(3) Click **[File output]** to save the monitored information as a CSV file.
Refer to section [3.15.1.2 Monitoring input/output status on DIDO Controllers (66DC) (5)].
The folder name is
**C:¥MntToolEA¥Data.**
[See section 5.8.]

(4) Click **[Close]** to return to the **PI controller (60MC) measurement value monitoring screen**.

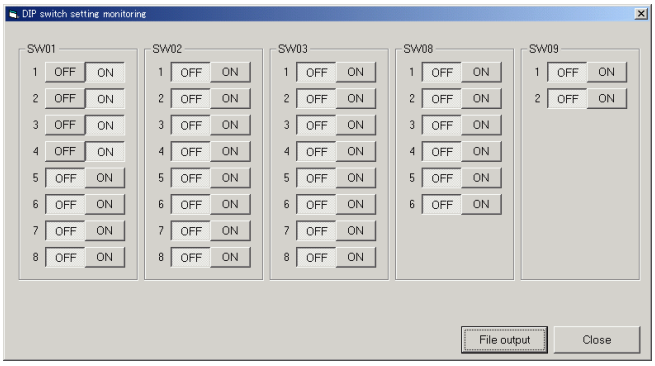
### 3.15.3.6 Monitoring Dip switch setting of PI Controllers

(1) Click **[Option]** in the **PI controller (60MC) measurement value monitoring screen** and select **[DIP switch setting monitoring]** in the sub-menu.




(2) The DIP switch setting is monitored, and **DIP switch setting monitoring screen** will appear.

*** <u>The pressed (sunken) button</u> shows the current status.**

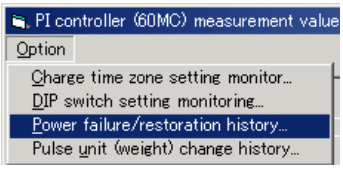



(3) Click **[File output]** to save the monitored information as a CSV file.
Refer to section [3.15.1.2 Monitoring input/output status on DIDO Controllers (66DC) (5)].
The folder name is
**C:¥MntToolEA¥Data.**
[See section 5.8.]

(4) Click **[Close]** to return to the **PI controller (60MC) measurement value monitoring screen**.

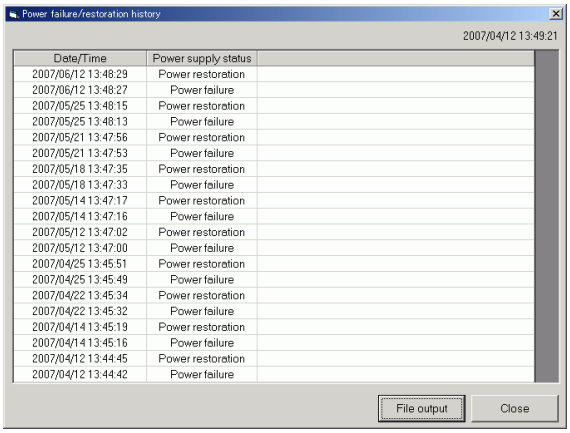
### 3.15.3.7 Power failure/restoration history

(1) Click **[Option]** in the **PI controller (60MC) measurement value monitoring screen** and select **[Power failure/restoration history]** in the sub-menu.




(2) The power failure/restoration history is monitored, and **Power failure/restoration historyscreen** will appear.
Up to 20 of the latest data can be displayed.

**[Date/Time]**
The date and time when power failure/restoration occurs is shown.
**[Power supply status]**
The status, power failure or power restoration, is shown.

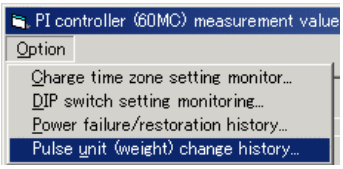



(3) Click **[File output]** to save the monitored information as a CSV file.
Refer to section [3.15.1.2 Monitoring input/output status on DIDO Controllers (66DC) (5)].
The folder name is
**C:¥MntToolEA¥Data.**
[See section 5.8.]

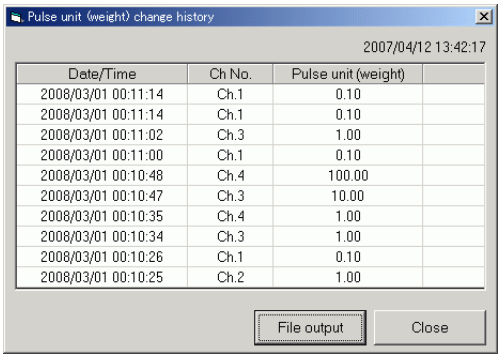
(4) Click **[Close]** to return to the **PI controller (60MC) measurement value monitoring screen**.

### 3.15.3.8 Pulse unit (weight) change history

(1) Click **[Option]** in the **PI controller (60MC) measurement value monitoring screen** and select **[Pulse unit (weight) change history]** in the sub-menu.




(2) The pulse unit (weight) change history is monitored, and **Pulse unit (weight) change history screen** will appear. Up to 10 of the latest data can be displayed.




**[Date/Time]**
The date and time when the pulse unit (weight) is changed is shown.

**[Ch No.]**
The channel on which the pulse unit (weight) is changed is shown.

**[Pulse unit (weight)]**
The pulse unit (weight) after the change has been made is shown.

(3) Click **[File output]** to save the monitored information as a CSV file.
Refer to section [3.15.1.2 Monitoring input/output status on DIDO Controllers (66DC) (5)].
The folder name is
**C:¥MntToolEA¥Data.**
[See section 5.8.]

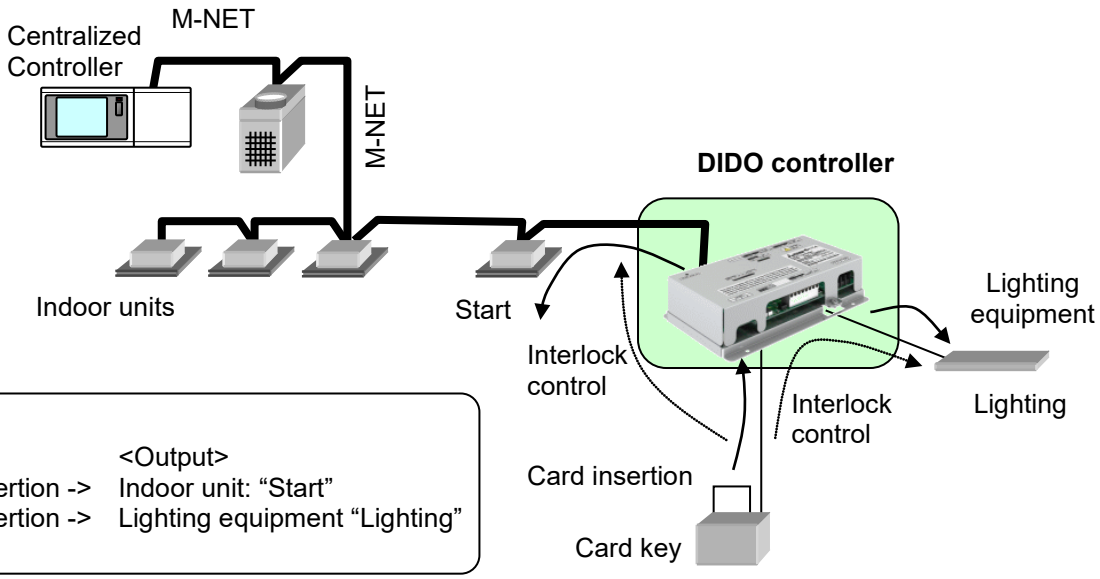
(4) Click **[Close]** to return to the **PI controller (60MC) measurement value monitoring screen**.

### 3.15.4 Interlock control settings on DIDO Controllers (66DC)

DIDO Controllers (PAC-YG66DCA) can control the following items of M-NET devices or the contacts on DIDO Controllers depending on the change in input contact status.

*DIDO Controller: contact output
*Indoor unit: start/stop control
*Indoor unit: operation mode change
*Indoor unit: temperature setting

The interlock control settings can be made on Maintenance Tool. (Max. 24 patterns)




E.g.)

| <Input> | <Output> |
|---|---|
| Card insertion -> | Indoor unit: “Start” |
| Card insertion -> | Lighting equipment “Lighting” |

**Caution:**

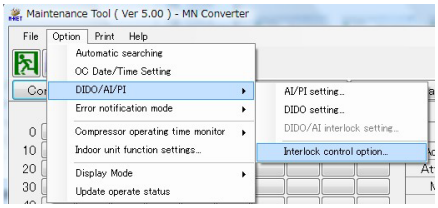
**Before using the interlock control, you must agree to the following.**

1. **This feature must not be used for disaster prevention or security purposes. (Not designed to be used in situations that are life-threatening)**
2. **No functions must be added that allow the malfunctioning unit to run by defeating the safety features, such as an external ON/OFF switch or a short-circuit.**
3. **Those settings for the function that are not supported by the interlocked units must not be made. All the settings must be made within the specified range. (Failure to observe these precautions may result in malfunctions and failures.)**
4. **Perform a test run for interlock control, and confirm the correct settings and normal operation.**
5. **The system must be configured in the way that integrates the operation of the interlocked fire and emergency control systems.**

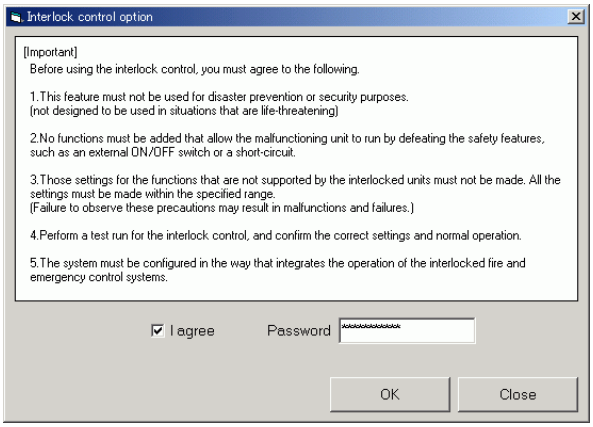
### 3.15.4.1 Starting the interlock control settings on DIDO Controllers

The password is needed to make the settings for interlock control. Only the allowed administrator can perform the settings. To make the settings, enter the password first to be identified as an administrator. The procedures are shown below. The setting procedures are the same for AI Controllers.

(1) Click **[Option]** in the menu bar and select **[DIDO/AI/PI] -> [Interlock control option]** in the sub-menu.




(2) **Interlock control option screen** will appear.



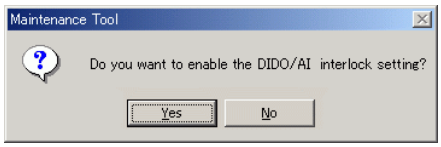

(3) Click the checkbox of **[I agree]** to accept the agreement.

**Caution:**
**Read the agreement carefully.**

(4) Enter the password.

(5) Click **[OK]**.

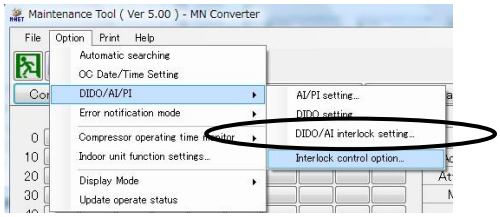
(6) **"Do you want to enable the DIDO/AI interlock setting?"** will appear, click **[Yes]**.




(7) **"DIDO/AI interlock setting has been enabled."**will appear, click **[OK]**.



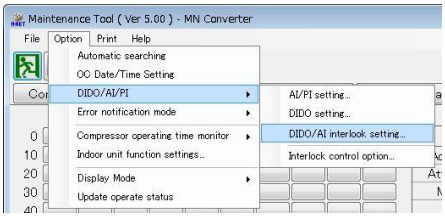

(8) **[DIDO/AI interlock setting** ] in **[DIDO/AI/PI]** sub-menu becomes active, and the settings can be made.




**NOTE:**
**[DIDO/AI interlock setting]** will be kept active once it becomes active.
To make it inactive, enter the password to make a inactivation on the interlock control option screen [ Refer to 3.15.4.1 (4) ].

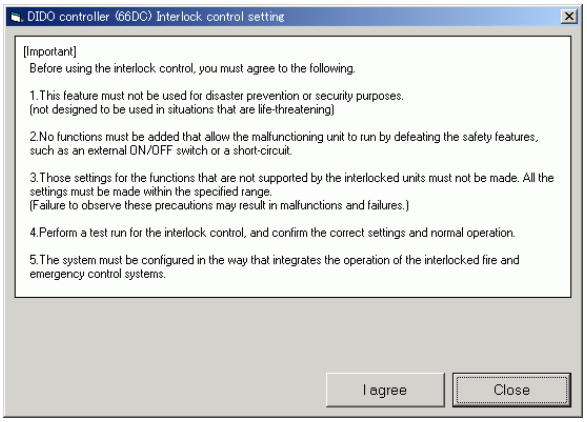
### 3.15.4.2 Interlock control settings on DIDO Controllers

(1) Click **[Option]** in the menu bar and select **[DIDO/AI/PI] -> [DIDO/AI interlock setting]** in the sub-menu.




(2) Click DC of the unit (DIDO Controller) to be monitored on the **Main screen**.

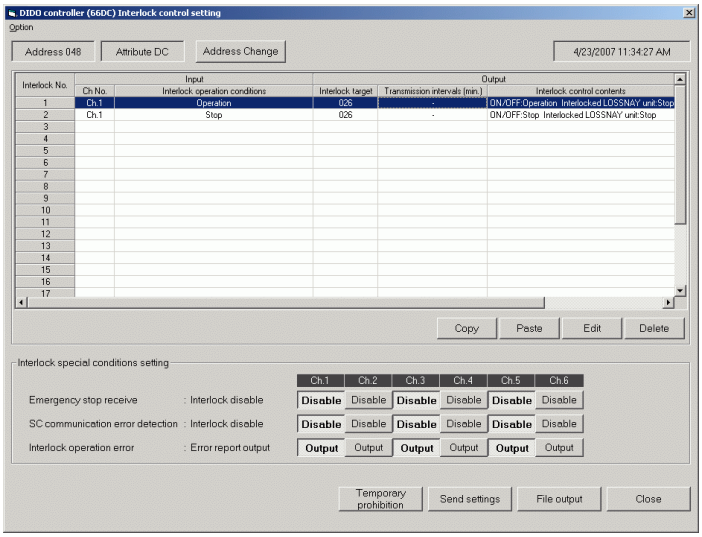
(3)**DIDO controller (66DC) Interlock control setting screen** will appear.




**Caution:**
**Read the agreement carefully.**

(4) Click the checkbox of **[I agree]** to accept the agreement.

(5) The interlock control settings is monitored, and **DIDO controller (66DC) Interlock control setting screen** will appear.




**[Interlock No.]**

The pattern No. of interlock control setting is shown. Up to 24 patterns can be set.

<Input>

**[Ch No.][Interlock operation conditions]**

The input Ch No. of the interlock source and the interlock condition (operation, stop, error occurrence, error reset) are shown.

<Output>

**[Interlock target]**

The unit address of the interlock target is shown.
When the contact on the DIDO Controller is output, the channel No. to be output is shown.

**[Transmission intervals (min.)]**

"-" is shown. (not to be used)

**[Interlock control contents]**

Interlock operation (start/stop etc.) is shown.

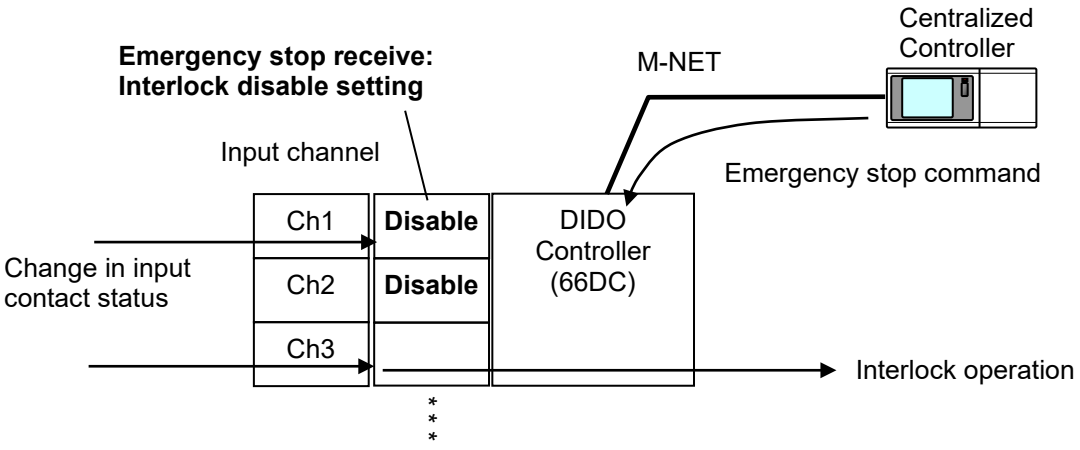
<Interlock special condition setting>

**[Emergency stop receive: Interlock disable]**

When the emergency stop command is received from Centralized Controller, whether to enable or disable the interlock operation depending on the change in input contact status can be set for each channel.

* The **pressed (sunken) button** shows the currently **"Disable"** status.

The interlock operation will be disabled for 15 minutes on the input channel on which "Disable" is set after the emergency stop command is received from Centralized Controller.
Unless the emergency stop command is received again within 15 minutes, the "Interlock disable" will be inactive after 15 minutes have passed.
**For your safety, "Disable" is set (default) to all channels. However, the setting can be changed on the unit that is required to be run at emergency. Consider carefully how the unit is required to be run at emergency, and make the proper setting.**

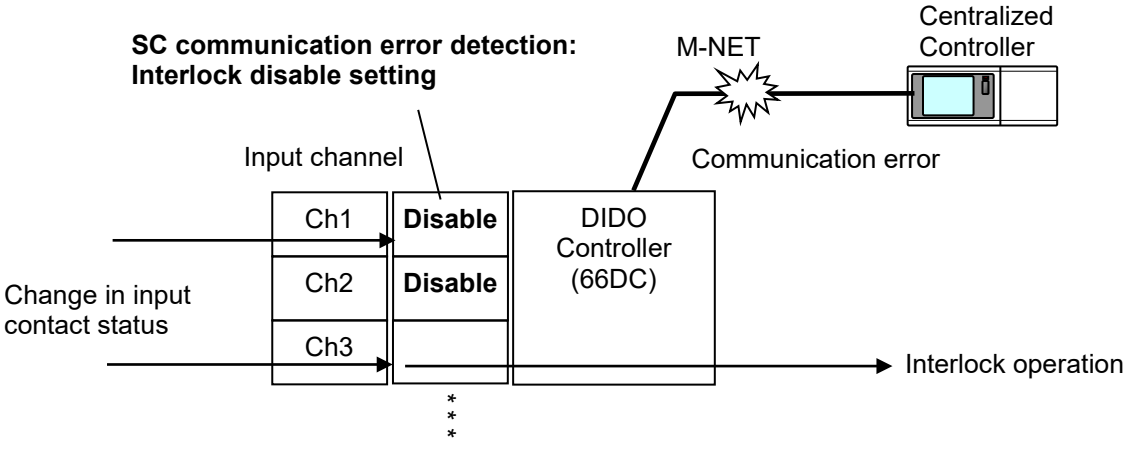



**[SC communication error detection: Interlock disable]**

When the communication error with Centralized Controller occurs, whether to enable or disable the interlock operation depending on the change in input contact status can be set for each channel.

* The **pressed (sunken) button** shows the currently **"Disable"** status.

The interlock operation will be disabled on the input channel on which "Disable" is set when the communication error with Centralized Controller occurs.
When the communication error with Centralized Controller is reset, the "Interlock disable" will be inactive.
**For your safety, "Disable" must be set when no means (such as local remote controllers) is available to stop the operation of the interlock target unit.**

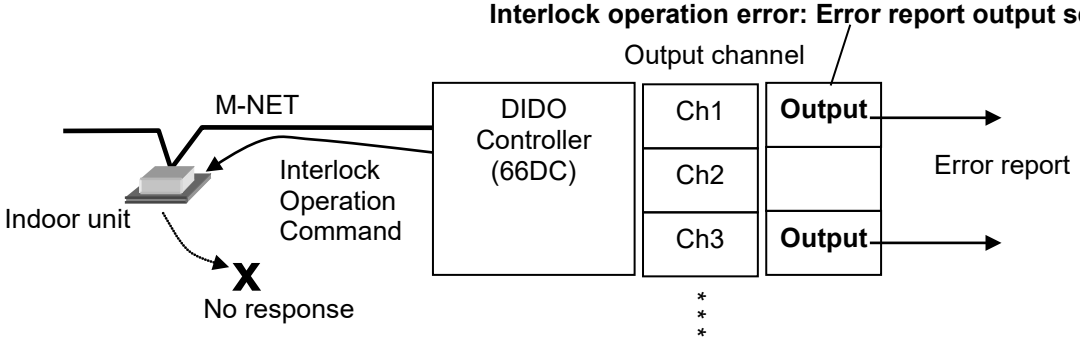


**[Interlock operation error: Error report output]**

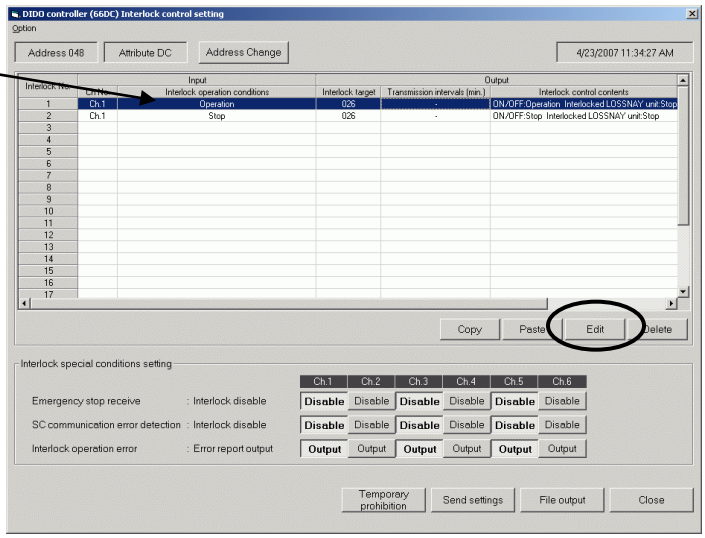
When the interlock control with the M-NET device is failed (when no response to the interlock operation command is received from the M-NET device), Whether to output or doesn't output the error report can be set for each output channel.

* The **pressed (sunken) button** shows the currently **"Output"** status.

**Interlock operation error: Error report output setting**



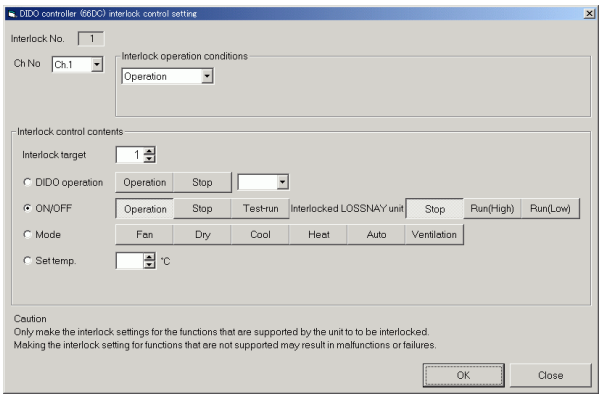

(6) Select the line to be set, and click **[Edit]**.




To copy the preset interlock setting, select the line to be copied, and click **[Copy]**, then select the line to be pasted, and click **[Paste]**.

To delete the setting, select the line to be deleted, and click **[Delete]**.

(7) **DIDO controller (66DC) Interlock control setting screen** will appear.




**[Interlock No.]**

The pattern No. of interlock control setting is shown.

**[Ch No.]**

Set the input Ch No. of interlock source.

**[Interlock operation conditions]**

Set the interlock condition (operation, stop, error occurrence, error reset) of the input channel (Ch No.) of the interlock source.

**[Interlock target]**

Select the unit address to be controlled.

When the contact on the DIDO Controller is output, select the address of the DIDO Controller.

Select one of the following operations by clicking a radio button.

* The **pressed (sunken) button** shows the currently **"Enabled"** status.

*** [DIDO operation]**

Select the channel to be output, and set whether to **[Operation]** or **[Stop]** the selected channel.

*** [ON/OFF]**

Set the start/stop control of the indoor unit.
Even when the LOSSNAY unit is not interlocked with the indoor unit, one of the operation mode buttons of [Interlocked LOSSNAY unit] must be set to **"Enabled"**.

*** [Mode]**

Set the operation mode of the indoor unit.

*** [Set temp.]**

Set the set temperature of the indoor unit.(19°C – 28°C)

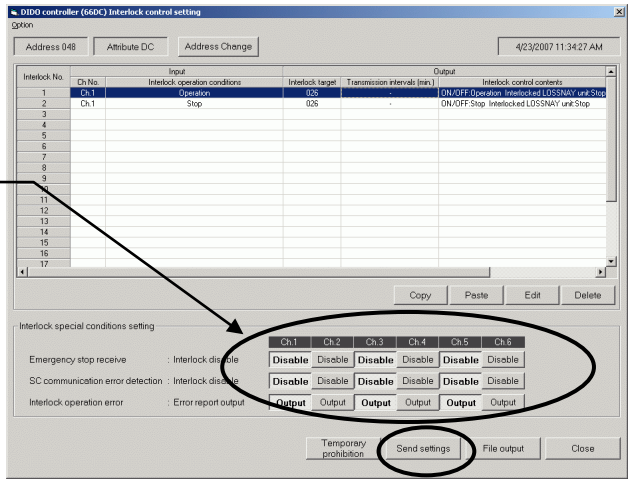
**Caution:**
Only make the interlock settings for the functions that are supported by the unit to be interlocked.
Making the interlock setting for functions that are not supported may result in malfunctions or failures.

(8) Click **[OK]**.

(9) The screen will return to the **DIDO controller (66DC) Interlock control setting screen**.
(* The settings have not been saved yet.)

(10) Repeat the steps between (6) and (9).

(11) Select the **[Disable]** or **[Output]** of each channel for each setting item, **[Emergency stop receive: Interlock disable], [SC communication error detection: Interlock disable]** and **[Interlock operation error: Error report output]**.




(12) Click **[Send settings].**

(13) "**Settings will be sent. OK?"** will appear, click **[Yes].**
The setting will be applied to the unit.

(14) "**Settings have been sent."**will appear, click **[OK]**.

(15) Click **[Close]** to return to the **Main screen**.

**NOTE:**
When you use Fahrenheit for the unit, there might be differences of the plus or minus 0.1 °F in the set value and the value monitored after it sets it.

**NOTE:**

If there are several patterns of the same input channel and interlock operation conditions, **the interlock control operation will be output in the ascending order of the interlock operation No.**

Note the order when setting the same interlock operation conditions patterns.

To output several interlock control operations under the same input interlock operation conditions, make the following settings.

E.g.)

<Input interlock operation condition>

**[Ch No.]** 1 **[Interlock operation conditions]** Error occurrence

When following three interlock control operations are output under the above interlock operation condition.

<Interlock control operation output>

**[Interlock target]** 001 (Indoor unit: address 01)

The interlock control is output in the following order.

**[ON/OFF]** Operation, **Interlocked LOSSNAY unit:** Run (Low)

**[Mode]** Cool

**[Set temp.]** 25°C

**[Interlock No.]** **1** **[Ch No.]** 1 **[Interlock operation conditions]** Error occurrence
**[Interlock target]** 001 **[ON/OFF]** Operation,
**Interlocked LOSSNAY unit:** Run (Low)

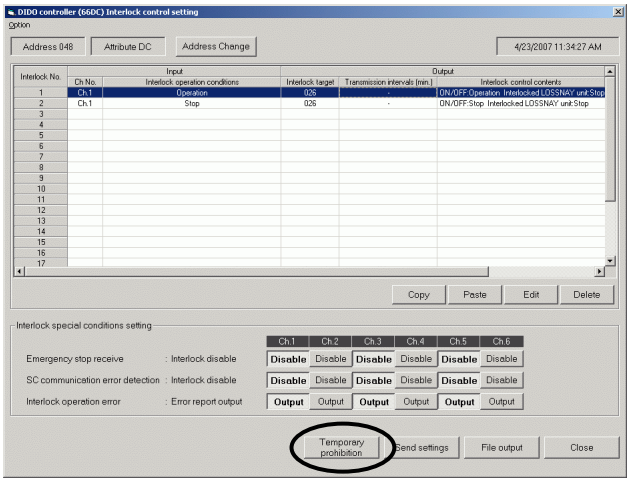
**[Interlock No.]** **2** **[Ch No.]** 1 **[Interlock operation conditions]** Error occurrence
**[Interlock target]** 001 **[Mode]** Cool

**[Interlock No.]** **3** **[Ch No.]** 1 **[Interlock operation conditions]** Error occurrence
**[Interlock target]** 001 **[Set temp.]** 25°C

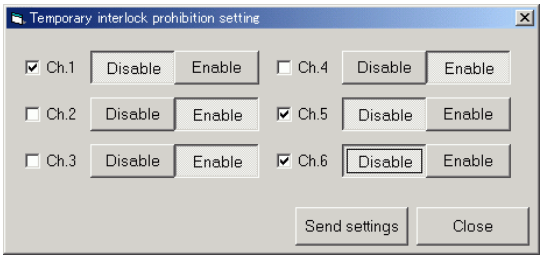
The interlock control operation is output in the order of No.1, 2 and 3.

### 3.15.4.3 Temporary interlock prohibition setting

(1) Click **[Temporary prohibition]**.




(2) **Temporary interlock prohibition setting screen** will appear.




* **<u>The pressed (sunken) button</u>** shows the current status.

(3) Click the checkbox of the channel to be changed, and select **[Disable]** or **[Enable]**.

(4) Click **[Send settings].**

(5) "**Settings will be sent. OK?"** will appear, click **[Yes]**.
The setting will be applied to the unit.

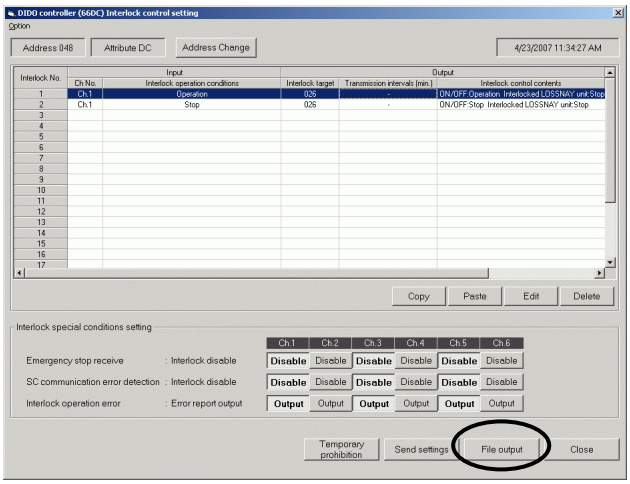
(6) "**Settings have been sent."**will appear, click **[OK]**.

**NOTE:**
The "disable temporary interlock control (prohibition)" will be active for 15 minutes after the setting has been sent, and will be inactive after 15 minutes have passed.
When the setting is sent again within 15 minutes before the "disable temporary interlock control " becomes inactive, the "disable temporary interlock control " will be active again for another 15 minutes.
When the "enable temporary interlock control " setting is sent during the "disable temporary interlock control " within 15 minutes, the "disable temporary interlock control " will be inactive.

(7) Click **[Close]** to return to the **DIDO controller (66DC) Interlock control setting screen**.

### 3.15.4.4 Saving the interlock control settings on DIDO Controllers (66DC) in CSV format

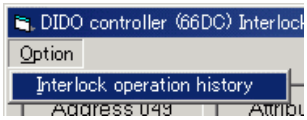
(1) Click **[File output]** to save the interlock control settings as a CSV file.
Refer to section [3.15.1.2 Monitoring input/output status on DIDO Controllers (66DC) (5)].
The folder name is
**C:¥MntToolEA¥Data.**
[See section 5.9.]



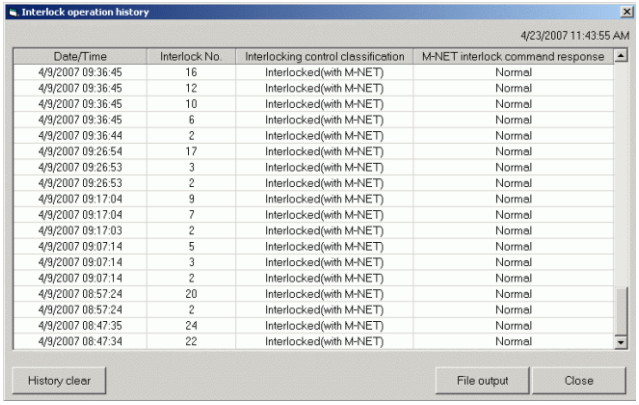

(2) Click **[Close]** to return to the **Main screen**.

### 3.15.4.5 DIDO Controller interlock operation history

(1) Click **[Option]** in the menu bar and select **[Interlock operation history]**




(2) The interlock operation history is monitored, and **Interlock operation history screen** will appear.
Up to 100 of the latest data can be displayed.




**[Date/Time]**
The date and time when the interlock control is made is shown.

**[Interlock No.]**
The pattern No. of interlock control setting is shown. [ Refer to section 3.15.4.2. ]

**[Interlock operation type]**
The interlock target (M-NET device or contact on DIDO Controller) is shown.

**[M-NET interlock command response]**

When a response is received from the M-NET device to be interlocked, **"Normal"** is shown.

When no response is received, **"Error"** is shown.
When the interlock operation type is "Interlocked with contact", **"-"** is shown.

(3) Click **[History clear]** to clear the interlock operation history.
Refer to section [ 3.15.2.6 Out-of-limit alarm history (4) ].

(4) Click **[File output]** to save the interlock operation history as a CSV file.
Refer to section [3.15.1.2 Monitoring input/output status on DIDO Controllers (66DC) (5)].
The folder name is
**C:¥MntToolEA¥Data.**
[See section 5.9.]

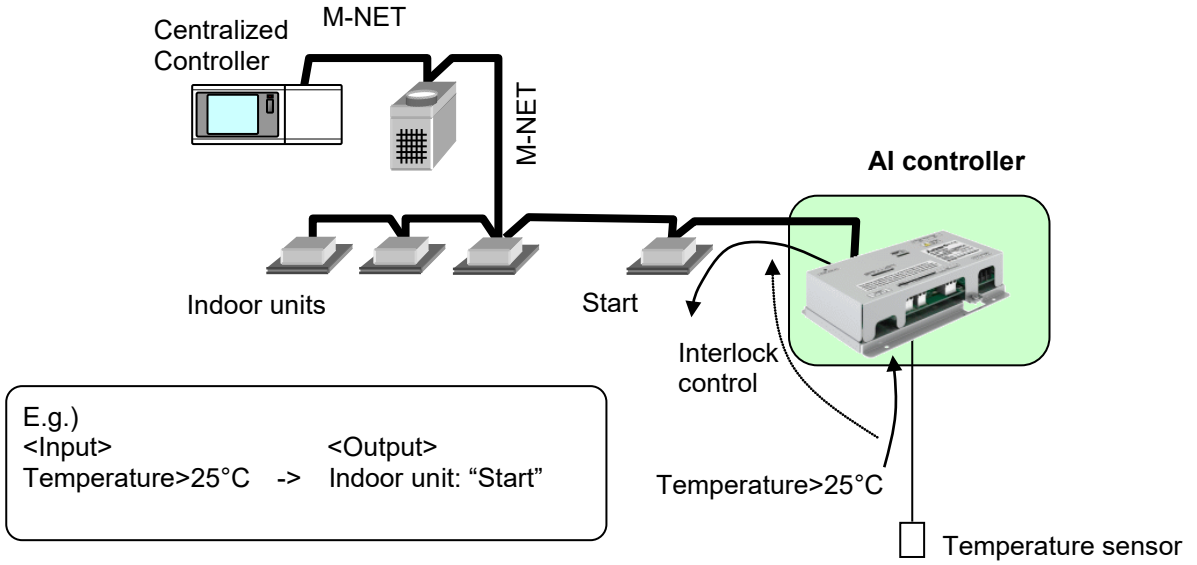
(5) Click **[Close]** to return to the **DIDO controller (66DC) Interlock control setting screen**.

### 3.15.5 Interlock control settings on AI Controllers

AI Controllers (PAC-YG63MCA) can control the following items of M-NET devices depending on the measurement values measured by AI Controllers.

*Indoor unit: start/stop control
*Indoor unit: operation mode change
*Indoor unit: temperature setting

The interlock control settings can be made on Maintenance Tool. (Max. 24 patterns)




**Caution:**

**Before using the interlock control, you must agree to the following.**

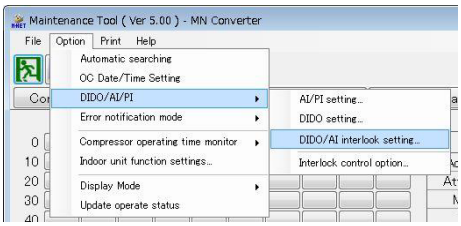
1. **This feature must not be used for disaster prevention or security purposes. (Not designed to be used in situations that are life-threatening)**
2. **No functions must be added that allow the malfunctioning unit to run by defeating the safety features, such as an external ON/OFF switch or a short-circuit.**
3. **Those settings for the function that are not supported by the interlocked units must not be made. All the settings must be made within the specified range. (Failure to observe these precautions may result in malfunctions and failures.)**
4. **Perform a test run for interlock control, and confirm the correct settings and normal operation.**
5. **The system must be configured in the way that integrates the operation of the interlocked fire and emergency control systems.**

### 3.15.5.1 Starting the interlock control settings on AI Controllers

The password is needed to make the settings for interlock control. Only the allowed administrator can perform the settings. To make the settings, enter the password first to be identified as an administrator. The procedures are shown below. The setting procedures are the same for DIDO Controllers.
Refer to section [3.15.4.1 Starting the interlock control settings on DIDO Controllers ].

### 3.15.5.2 Interlock control settings on AI Controllers

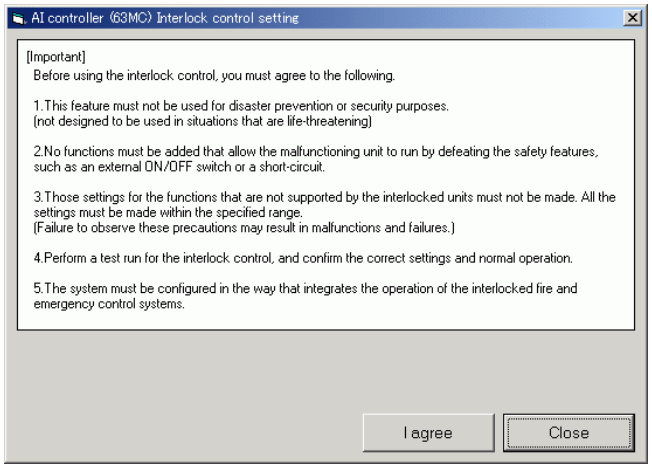
(1) Click **[Option]** in the menu bar and select **[DIDO/AI/PI] -> [DIDO/AI interlock setting]** in the sub-menu.




(2) Click MC of the unit (AI Controller) to be monitored on the **Main screen**.

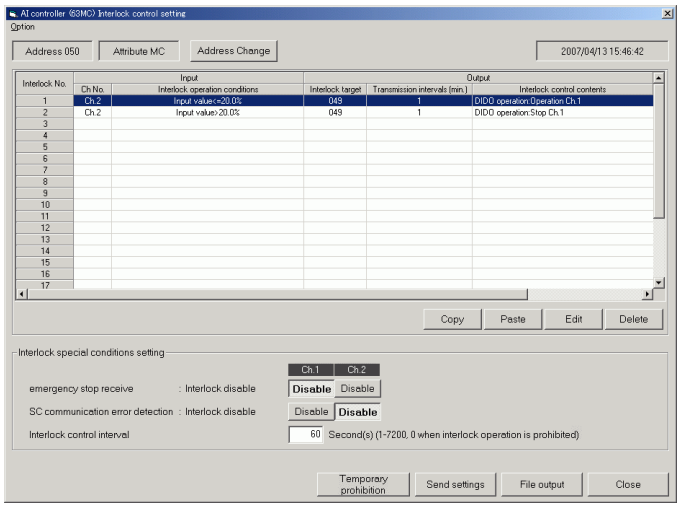
(3) **AI controller (63MC) interlock control setting screen** will appear.

**Caution:**
**Read the agreement carefully.**




(4) Click the checkbox of **[I agree]** to accept the agreement.

(5) The interlock control settings is monitored, and **AI controller (63MC) interlock control setting screen** will appear.




**[Interlock No.]**
The pattern No. of interlock control setting is shown. Up to 24 patterns can be set.

<Input>
**[Ch No.][Interlock operation conditions]**
The Ch No. of the interlock source and the interlock condition (condition based on the measurement value) are shown.

<Output>

**[Interlock target]**

The unit address of the interlock target is shown.

**[Transmission intervals (min.)]**

As long as the input interlock condition is met, the interlock control operation will keep being output continuously at the set intervals.

E.g.) When the following input interlock condition is set
input value>25°C, Transmission intervals (min.): 10 min., Interlock control contents: Operation

As long as the measurement value keeps 26°C, the “operation ON” command will keep being sent at 10 minute intervals even when the air-conditioner is once turned off by a local remote controller.

**[Interlock control contents]**

Interlock operation (start/stop etc.) is shown.

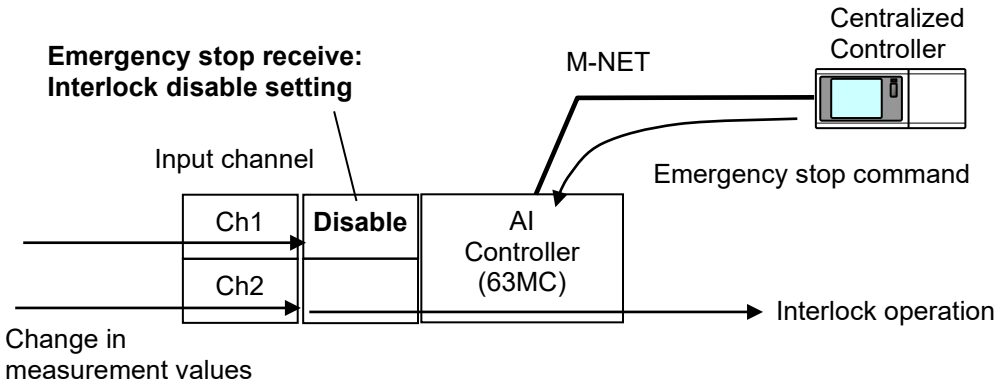
<Interlock special condition setting>

**[Emergency stop receive: Interlock disable]**

When the emergency stop command is received from Centralized Controller, whether to enable or disable the interlock operation depending on the change in measurement values can be set for each channel.

* The **pressed (sunken) button** shows the currently **“Disable”** status.

The interlock operation will be disabled for 15 minutes on the input channel on which “Disable” is set after the emergency stop command is received from Centralized Controller.
Unless the emergency stop command is received again within 15 minutes, the “Interlock disable” will be inactive after 15 minutes have passed.
**For your safety, “Disable” is set (default) to all channels. However, the setting can be changed on the unit that is required to be run at emergency. Consider carefully how the unit is required to be run at emergency, and make the proper setting.**

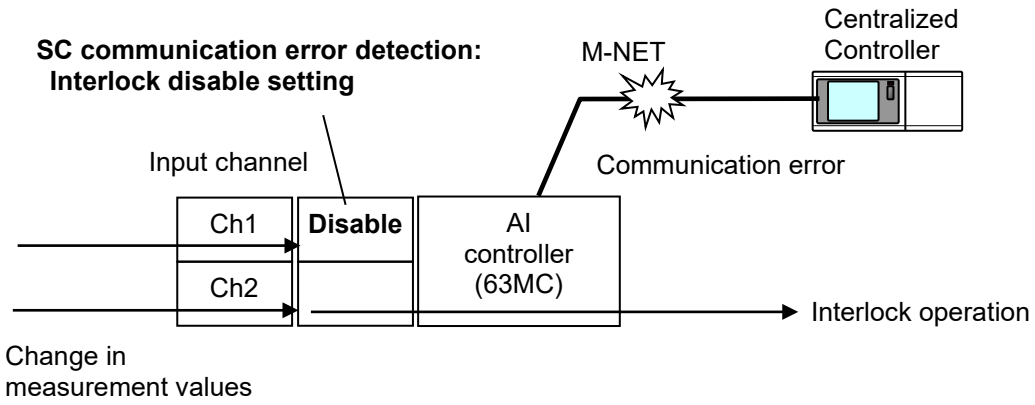


**[SC communication error detection: Interlock disable]**

When the communication error with Centralized Controller occurs, whether to enable or disable the interlock operation depending on the change in measurement values can be set for each channel.

* The **pressed (sunken) button** shows the currently **"Disable"** status.

The interlock operation will be disabled on the input channel on which "Disable" is set when the communication error with Centralized Controller occurs.
When the communication error with Centralized Controller is reset, the "Interlock disable" will be inactive.
**For your safety, "Disable" must be set when no means (such as local remote controllers) is available to stop the operation of the interlock target unit.**

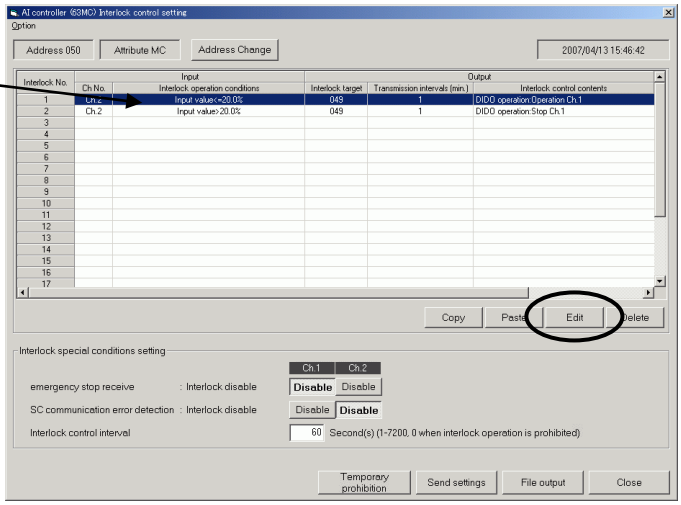



**[Interlock control interval]**

Whether the interlock condition is met is determined at the set intervals depending on the monitored current value.

E.g.) When the interlock control intervals is set to 60 seconds
Whether the interlock condition is met is determined at 60 second intervals depending on the monitored current value. The interlock control operation will be output when the interlock condition is met.

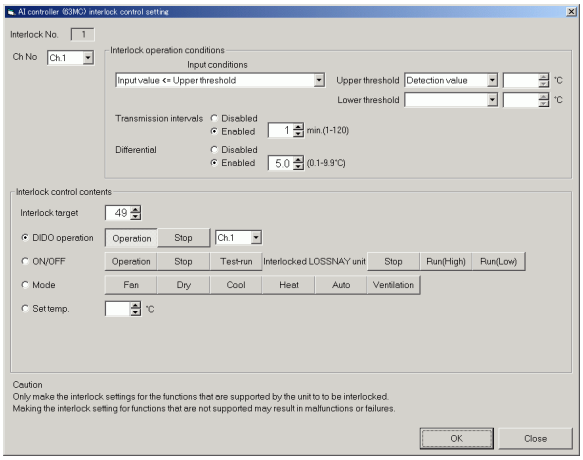
(6) Select the line to be set, and click **[Edit]**.




To copy the preset interlock setting, select the line to be copied, and click **[Copy]**, then select the line to be pasted, and click **[Paste]**.

To delete the setting, select the line to be deleted, and click **[Delete]**.

(7) **AI controller (63MC) interlock control setting screen** will appear.




**[Interlock No.]**

The pattern No. of interlock control setting is shown.

**[Ch No.]**

Set the input Ch No. of interlock source.

**[Input conditions]**

Set the interlock condition of the interlock source input channel (Ch No.).

Select the comparison relation between the input value and the upper/lower threshold.

**[Upper threshold][Lower threshold]**

The upper/lower threshold to use for input conditions can be set.

Select one among **"Detection value"**, **"Cancellation value"**, or **"Manual setting"**.

When the **"Detection value"** is selected, the upper/lower limit alarm detection of the interlock source (AI Controller) will be applied.

[See section 3.15.2.2. Setting for AI Controllers (63MC) (2)]

When the **"Cancellation value"** is selected, the upper/lower limit alarm cancellation of the interlock source (AI Controller) will be applied.

[See section 3.15.2.2. Setting for AI Controllers (63MC) (2)]

When the **"Manual setting"** is selected, enter the value in the box on the right within the measurement range (between the upper and the lower limit values) of the interlock source (AI Controller).

[See section 3.15.2.2. Setting for AI Controllers (63MC) (2)]

**[Transmission intervals]**

As long as the input interlock condition is met, the interlock control operation will keep being output continuously at the set intervals.

Select **"Disabled"** or **"Enabled"**. When **"Enabled"** is selected, set the value. (1-120 min.)

**[Differential]**

(This setting can be made only when **"Enable"** is selected in the **[Data transmission intervals]**.)

The **"differential"** can be set.

Select **"Disabled"** or **"Enabled"**. When **"Enabled"** is selected, set the value. (0.1-9.9°C /°F /%)

Make this setting to keep outputting the same interlock control operation preventing other interlock control operations from being output when the input value remains around the upper/lower thresholds.

As long as the interlock condition is met, the interlock control operation is output under the set interlock condition (including the set differential). The differential is not available for the first case.

**To make the differential valid, make the differentials of all the channels the same.**

**[Interlock target]**

Select the unit address to be controlled.
Select one of the following operations by clicking a radio button.

* The **pressed (sunken) button** shows the currently **"Enabled"** status.

*** [DIDO operation]**
Select the channel to be output, and set whether to **[Operation]** or **[Stop]** the selected channel.

*** [ON/OFF]**
Set the start/stop control of the indoor unit.
Even when the LOSSNAY unit is not interlocked with the indoor unit, one of the operation mode buttons of [Interlocked LOSSNAY unit] must be set to **"Enabled"**.

*** [Mode]**
Set the operation mode of the indoor unit.

*** [Set temp.]**
Set the set temperature of the indoor unit. (19°C – 28°C)

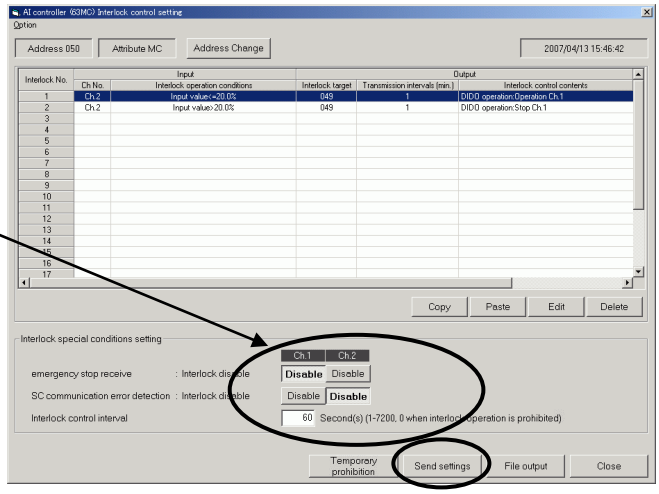
**Caution:**
Only make the interlock settings for the functions that are supported by the unit to be interlocked.
Making the interlock setting for functions that are not supported may result in malfunctions or failures.

(8) Click **[OK]**.

(9) The screen will return to the **AI controller (63MC) interlock control setting screen**.
(* The settings have not been saved yet.)

(10) Repeat the steps between (6) and (9).

(11) Select the **[Disable]** or **[Output]** of each channel for each setting item, **[Emergency stop receive: Interlock disable], [SC communication error detection: Interlock disable]** and **[Interlock control interval]**.




(12) Click **[Send settings].**

(13) "**Settings will be sent. OK?"** will appear, click **[Yes].**
The setting will be applied to the unit.

(14) "**Settings have been sent."**will appear, click **[OK]**.

(15) Click **[Close]** to return to the **Main screen**.

**NOTE:**

If there are several patterns of the same input channel and interlock operation conditions, **the interlock control operation will be output in the ascending order of the interlock operation No.**

Note the order when setting the same interlock operation conditions patterns.
To output several interlock control operations under the same input interlock operation conditions, make the following settings.

E.g.)

<Input interlock operation condition>
**[Ch No.]** 1 **[Interlock operation conditions]** Input value>25°C
When following three interlock control operations are output under the above interlock operation condition.
<Interlock control operation output>
**[Interlock target]** 001 (Indoor unit: address 01)
The interlock control is output in the following order.
**[ON/OFF]** Operation, **Interlocked LOSSNAY unit:** Run (Low)
**[Mode]** Cool
**[Set temp.]** 23°C

**[Interlock No.]** **1** **[Ch No.]** 1 **[Interlock operation conditions]** Input value>25°C
**[Interlock target]** 001 **[ON/OFF]** Operation, **Interlocked LOSSNAY unit:** Run (Low)

**[Interlock No.]** **2** **[Ch No.]** 1 **[Interlock operation conditions]** Input value>25°C
**[Interlock target]** 001 **[Mode]** Cool

**[Interlock No.]** **3** **[Ch No.]** 1 **[Interlock operation conditions]** Input value>25°C
**[Interlock target]** 001 **[Set temp.]** 23°C

The interlock control operation is output in the order of No.1, 2 and 3.

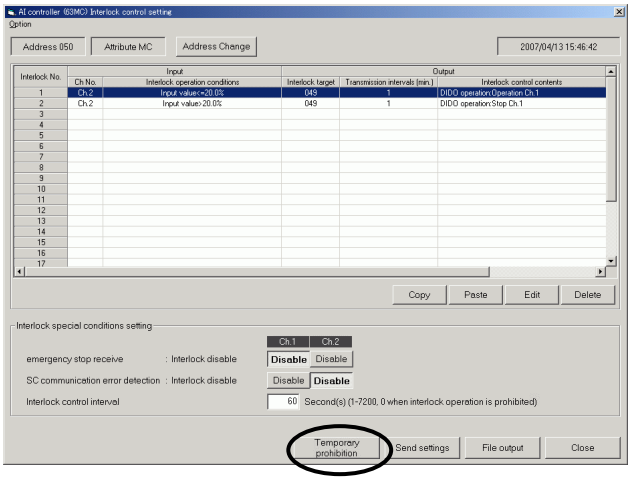
The interlock control No. does not have to be consecutive;
however it is recommended to set the consecutive No. to avoid mistakes in the setting.

**NOTE:**

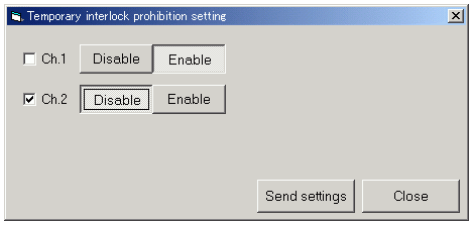
When you use Fahrenheit for the unit, there might be differences of the plus or minus 0.1 °F in the set value and the value monitored after it sets it.

### 3.15.5.3 Temporary interlock prohibition setting

(1) Click **[Temporary prohibition]**.




(2) **Temporary interlock prohibition setting screen** will appear.




* **<u>The pressed (sunken) button</u>** shows the current status.

(3) Click the checkbox of the channel to be changed, and select **[Disable]** or **[Enable]**.

(4) Click **[Send settings].**

(5) "**Settings will be sent. OK?"** will appear, click **[Yes]**.
The setting will be applied to the unit.

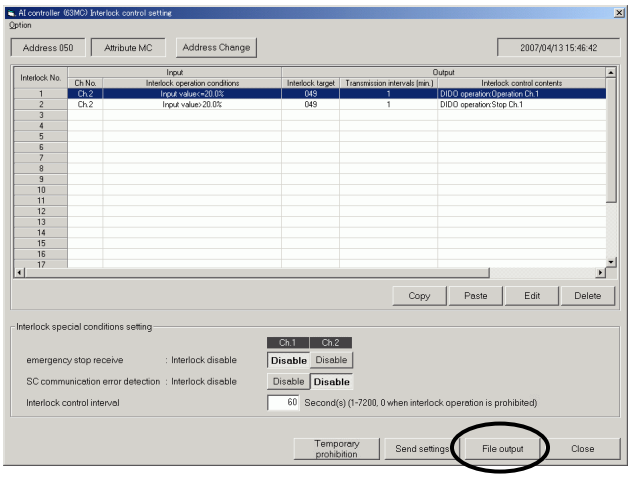
(6) "**Settings have been sent."**will appear, click **[OK]**.

**NOTE:**
The "disable temporary interlock control (prohibition)" will be active for 15 minutes after the setting has been sent, and will be inactive after 15 minutes have passed.
When the setting is sent again within 15 minutes before the "disable temporary interlock control" becomes inactive, the "disable temporary interlock control" will be active again for another 15 minutes.
When the "enable temporary interlock control" setting is sent during the "disable temporary interlock control" within 15 minutes, the "disable temporary interlock control" will be inactive.

(7) Click **[Close]** to return to the **AI controller (63MC) interlock control setting screen**.

### 3.15.5.4 Saving the interlock control settings on AI Controllers (63MC) in CSV format

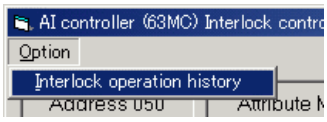
(1) Click **[File output]** to save the interlock control settings as a CSV file.
Refer to section [3.15.1.2 Monitoring input/output status on DIDO Controllers (66DC) (5)].
The folder name is
**C:¥MntToolEA¥Data.**
[See section 5.9.]



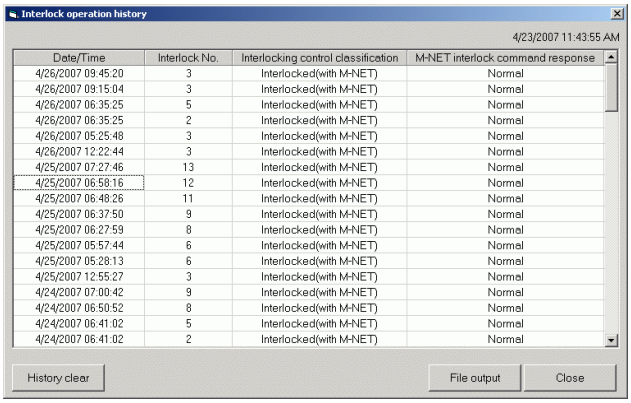

(2) Click **[Close]** to return to the **Main screen**.

### 3.15.5.5 AI Controller interlock operation history

(1) Click **[Option]** in the menu bar and select **[Interlock operation history]**




(2) The interlock operation history is monitored, and **Interlock operation history screen** will appear.
Up to 100 of the latest data can be displayed.




**[Date/Time]**
The date and time when the interlock control is made is shown.

**[Interlock No.]**
The pattern No. of interlock control setting is shown. [ Refer to section 3.15.5.2. ]

**[Interlock operation type]**
The interlock target (only the “Interlocked(with M-NET)” here) is shown.

**[M-NET interlock command response]**

When a response is received from the M-NET device to be interlocked, **“Normal”** is shown.

When no response is received, **“Error”** is shown.
When the interlock operation type is “Interlocked with contact”, **“-“** is shown.

(3) Click **[History clear]** to clear the interlock operation history.
Refer to section [ 3.15.2.6 Out-of-limit alarm history (4) ].

(4) Click **[File output]** to save the interlock operation history as a CSV file.
Refer to section [3.15.1.2 Monitoring input/output status on DIDO Controllers (66DC) (5)].
The folder name is
**C:¥MntToolEA¥Data.**
[See section 5.9.]

(5) Click **[Close]** to return to the **AI controller (63MC) interlock control setting screen**.

# 3.16 Setting the Values for Indoor unit Functions

*** Features**

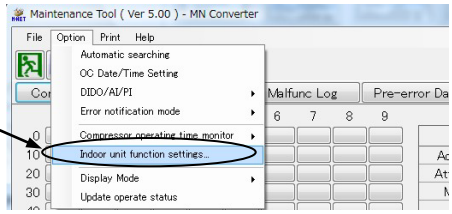
- The preset values for each function of the connected indoor units can be displayed.
- The preset values for each function of the connected indoor units can be set or changed.

**NOTE:**
The function mentioned here is not available to the models that do not support this function.

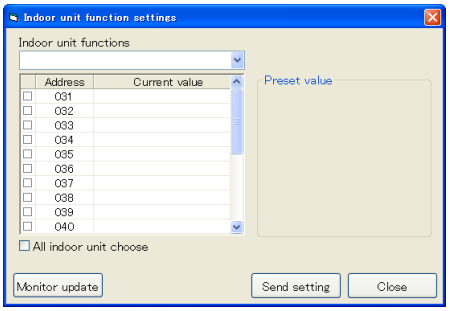
## 3.16.1 Start-up

(1) Start-up sequence

a) Click **[Option (O)]** of the menubar in the **[On-Line Main]** Screen,
and click **[Indoor unit function settings]** of the submenu.




b) The **[Indoor unit function settings]** screen is displayed.

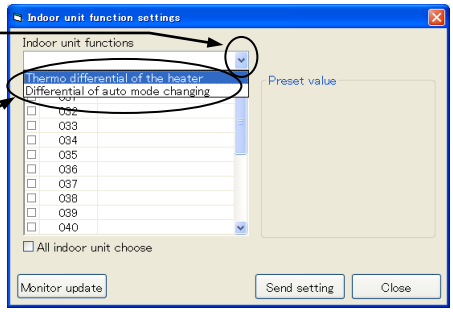



## 3.16.2 Monitoring the preset value

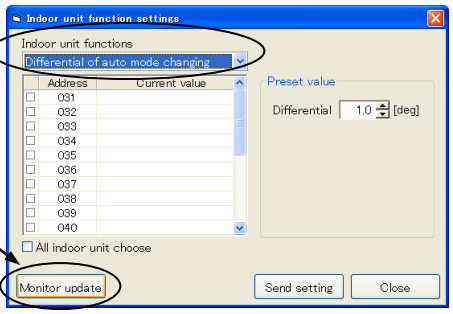
(1) Select the function whose preset value is to be monitored from the list of **[Indoor unit functions]**.

a) Click **[ ▼ ]** next to **[Indoor unit functions]**.

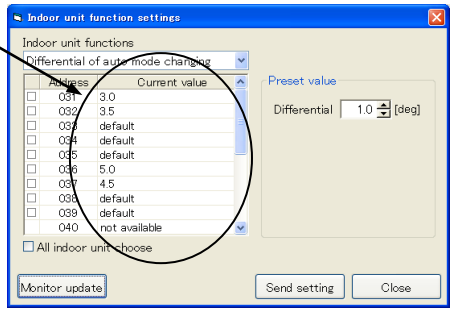
b) Select the desired function from the list of functions that appears.




c) The selected function will appear under **[Indoor unit functions]**.




(2) Click the **[Monitor update]** button.
The current data for the selected function will be collected from all indoor units, and the results will appear in the **[Current value]** field.




・Values that may appear in the **[Cuurent value]** field (Example of displayed value.)

| Displayed value | | Description |
|---|---|---|
| Thermo differential of the heater | 1.0～5.0 | Current preset value |
| Differential of auto mode changing | 0.9*～5.0 | |
| Default | | Default value |
| Not available | | The selected function is not supported. |

* Some models are unsupported to set 0.9 degrees.

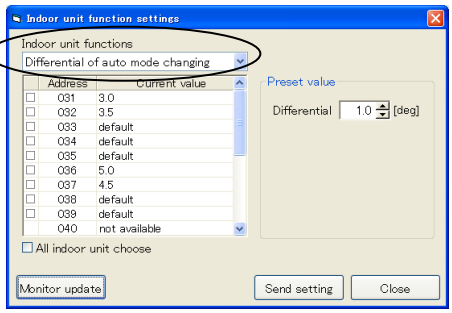
### 3.16.3 Setting/Changing the values

(1) Select the function whose preset value is to be set/changed from the list of **[Indoor unit functions]**. (Refer to **[3.16.2 (1)]**)

a) Click **[ ▼ ]** next to **[Indoor unit functions]**.

b) Select the desired function from the list of functions.

c) The selected function will appear under **[Indoor unit functions]**.




(2) **Click the check box next to the indoor units** whoose preset values are to be set/changed (multiple selection allowed).

When the check box next to **[All indoor unit choose]** is clicked, all indoor units are selected.

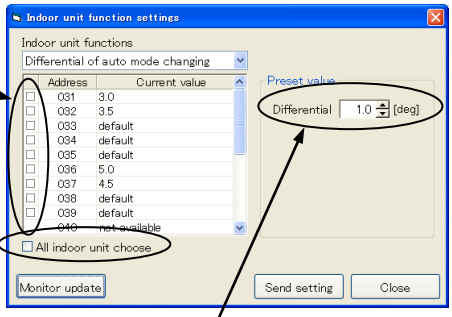
(3) Enter the values in the **[Differential]** field.

a) Click **[ ▲ ][ ▼ ]** next to the preset value to increase or decrease the value.

・Clicking **[ ▲ ]** increases the value in 0.1 increments.

・Clicking **[ ▼ ]** decreases the value in 0.1 increments.

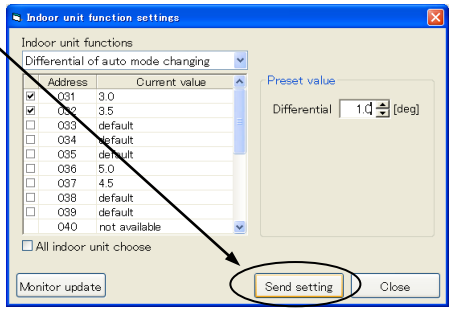
・The range of values available depends on the function.




(4) Click the **[Send setting]** button.

a) The changes made to the selected functions for the selected indoor unit(s) are reflected.

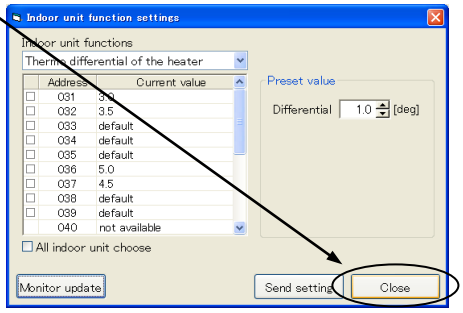
b) The current data for the selected function will be collected from all indoor units, and the results will appear in the **[Cuurent value]** field. (Refer to **[3.16.2 (2)]**)




### 3.16.4 Exiting the function

(1) Exiting sequence

a) Click the **[Close]** button to close the **[Indoor unit function settings]** screen to go back to the **[On-Line Main]** screen.



## 3.17 Compressor operating data monitor

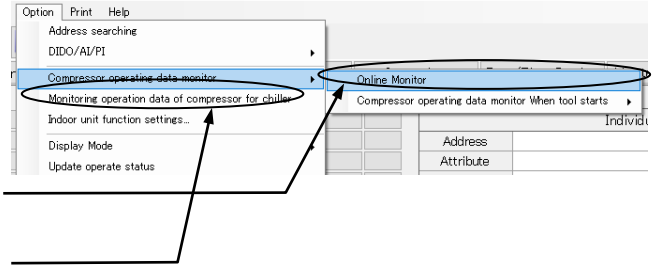
*** Features**

- Cumulative compressor operation time and the total number of startup times of the outdoor units and chillers can be monitored.
- Cumulative pump operation time and the total number of startup times of the chillers can be monitored.
- When replacing the circuit board on the outdoor unit or the chiller, cumulative compressor operation time and the total number of startup times data can be acquired and stored, and then written to the new circuit board after replacement.

## 3.17.1 Start-up

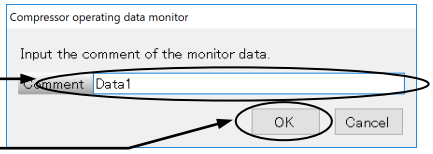
(1) Start-up sequence

a) Outdoor units:Click **[Option]** of the menubar on the **[On-Line Main]** screen, and click **[Compressor operating data monitor]→[Online Monitor]** of the submenu.
Chillers:Click **[Monitoring operation data of compressor for chiller].**

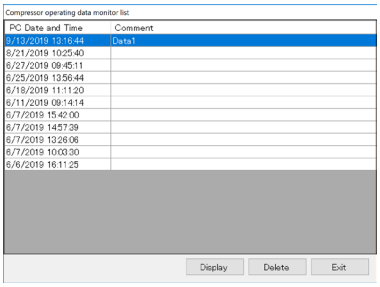



b) The **[Compresor operating data monitor comment input]** screen is displayed.
Input the comment on the monitored data.

c) When **[OK]** button clicked, it start the monitoring.




d) When the monitor is completed, the monitor result is saved, and the list of the data monitored to **[Compressor operating data monitor list]** screen is displayed.

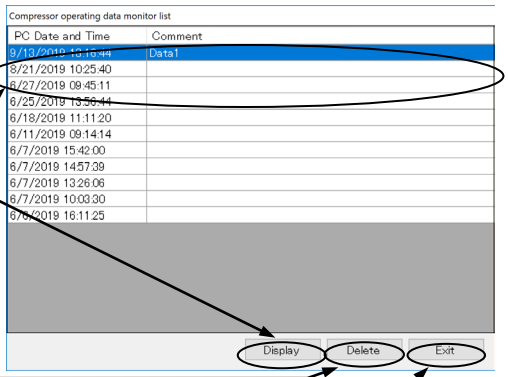


## 3.17.2 Compressor operating data monitor

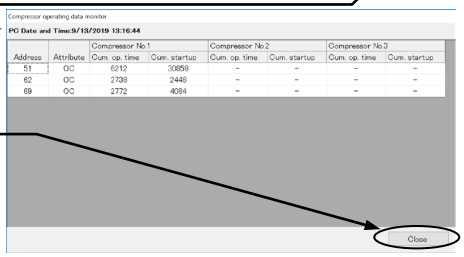
(1) When the line of data that wants to confirm the monitor result is clicked from **[Compressor operating data monitor list]** screen, and **[Display]** button is clicked, the monitor result is displayed on **[Compressor operating data monitor]** screen.

When the line of data clicked from the list screen, and **[Delete]** button is clicked, the selected data is deleted.

When **[Exit]** button is clicked, it returns to **[On-Line Main]** screen.

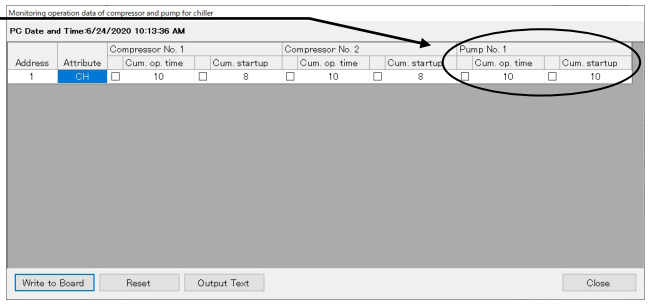



(2) To close **[Compressor operating data monitor]** screen, **[Close]** button is clicked.
It returns to **[Compressor operating data monitor list]** screen.




**NOTE:**
When the units with only one or two compressor, the compressor operating time and startup monitor that doesn't exist is displayed as "-".

(3) In the case of some chiller, in addition to the compressor data, the pump data are also displayed.



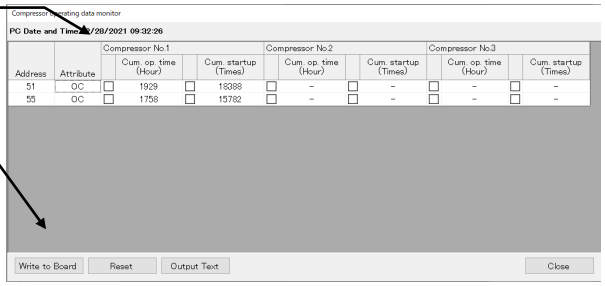
## 3.17.3 Importing the compressor operation data to the control board

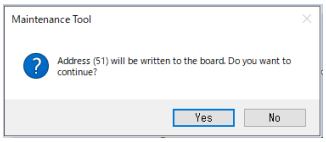
- When replacing the control board on the unit, the compressor operation data need to be restored as follows.

(1) Before replacing the control board, acquire and save the operation data according to "3.17.2 Compressor operating data monitor."

(2) On the [**Compressor operating data monitor**] screen, select the unit to which you want to import the operation data.

(3) Clicking the [**Write to Board**] button will show a message "Address(**) will be written to the board. Do you want to continue?"

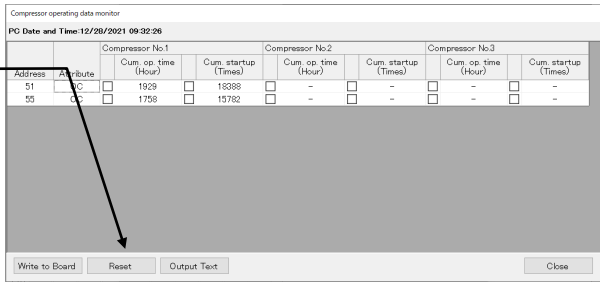


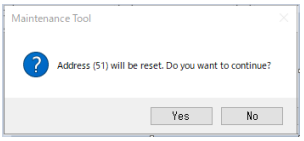




Clicking [**Yes (Y)**] will start writting the operation data that were acquired in step (1) above.
Clicking [**No (N)**] will display the [**Compressor operating data monitor**] screen without writting the operation data.

## 3.17.4 Resetting the compressor operation data

(1) Clicking the [**Reset**] button will show a message "Address(**) will be reset. Do you want to continue?"

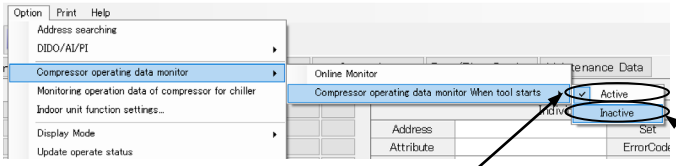



Clicking [**Yes (Y)**] will reset the operation data. The cumulative compressor operation time and the total number of startup times will be reset to zero.
Clicking [**No (N)**] will display the [**Compressor operating data monitor**] screen without resetting the operation data.

## 3.17.5 Automatic compressor operating data monitor when Tooltart

(1) Click **[Option]** of the menubar on the **[On-Line Main]** screen, and click **[Compressor operating data monitor]→[Compressor operating data monitor When Tooltarts]** of the submenu. And then click **[Active]**.




When the Maintenance Tool (at On-Line mode) starts, the compressor operating time is monitored and saved automatically.

**[Compressor operating data monitor When tool starts]** will be kept active once it becomes active.

The data automatically saved when the Tooltarts can be referred to by **[3.17.2 Compressor operating data monitor]** and **[4.6.1 Compressor operating data monitor(Off-Line Analyzing)]**.

To Make it inactive, click **[Inactive]** of the submenu.

**NOTE:**
- This function is only for use with the outdoor units. Chillers are not supported.
- The comment doesn't attach to the data automatically monitored when the Tooltarts.

**NOTE:**
When the compressor operating data monitor when the Tooltarts is inactive, the uptime of the Maintenance Tool is shortened.

# 3.18 Initial Settings and Monitoring AHC ADAPTER

## 3.18.1 About AHC

Advanced HVAC CONTROLLER (hereafter referred to as AHC) comprises of MITSUBISHI ELECTRIC's AHC ADAPTER (PAC-IF01AHC-J) and α2 SIMPLE APPLICATION CONTROLLER* (hereafter referred to as ALPHA2).

* α2 SIMPLE APPLICATION CONTROLLER is one of the Programming Logic Controllers that are manufactured by MITSUBISHI ELECTRIC CORPORATION.

AHC allows for the connection of M-NET to other systems, which was not possible with the use of ALPHA2 alone. AHC provides the following functions.

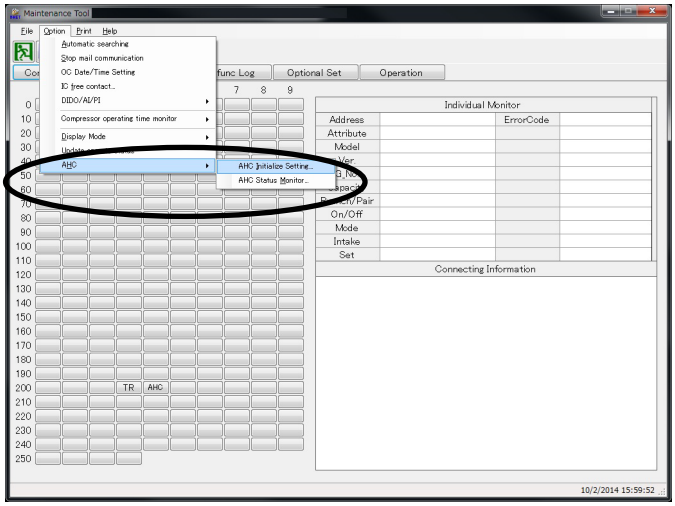
1.Controls external devices using the sensor data of the air conditioning units connected to M-NET.
2.Interlocks the operation of air conditioning units and external devices that are connected to ALPHA2.
3.Controls air conditioning units that are connected to M-NET.
4.Allows for the combined use of the items 1-3 above.
5.Monitors the input/output status of ALPHA2 via a remote controller or a centralized controller.

This manual includes descriptions of the how to initial settings of AHC and the AHC Status Monitor by Maintenance Tool. Refer to the AHC Technical Manual for more details for AHC.

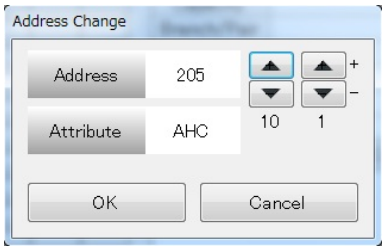
## 3.18.2 Initial Settings of AHC

Open the AHC Initializing Setting screen

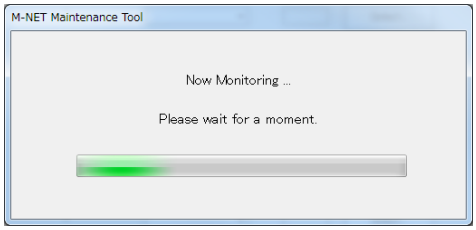
(1) From the [**Option**] menu bar, select [**AHC**] > [**AHC Initialize Setting**].



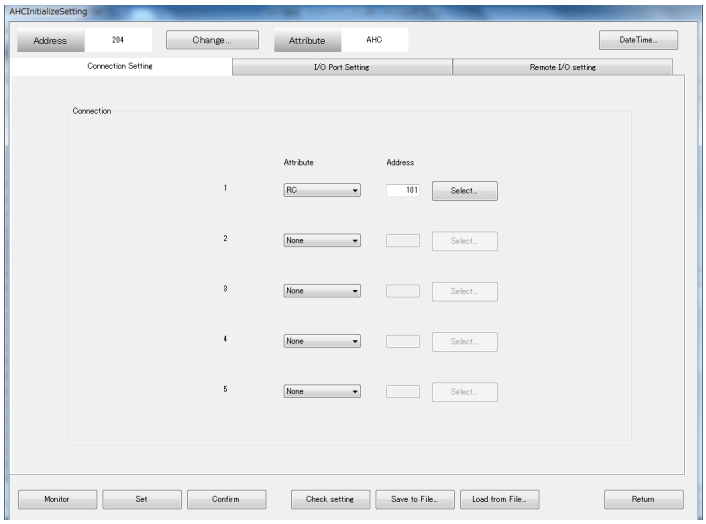

(2) The [**Address Change**] screen appears. Enter the M-NET address of the AHC ADAPTER to be initialized and then click the [**OK**] . Refer to the AHC Installation Manual for how to set the address for the AHC ADAPTER.



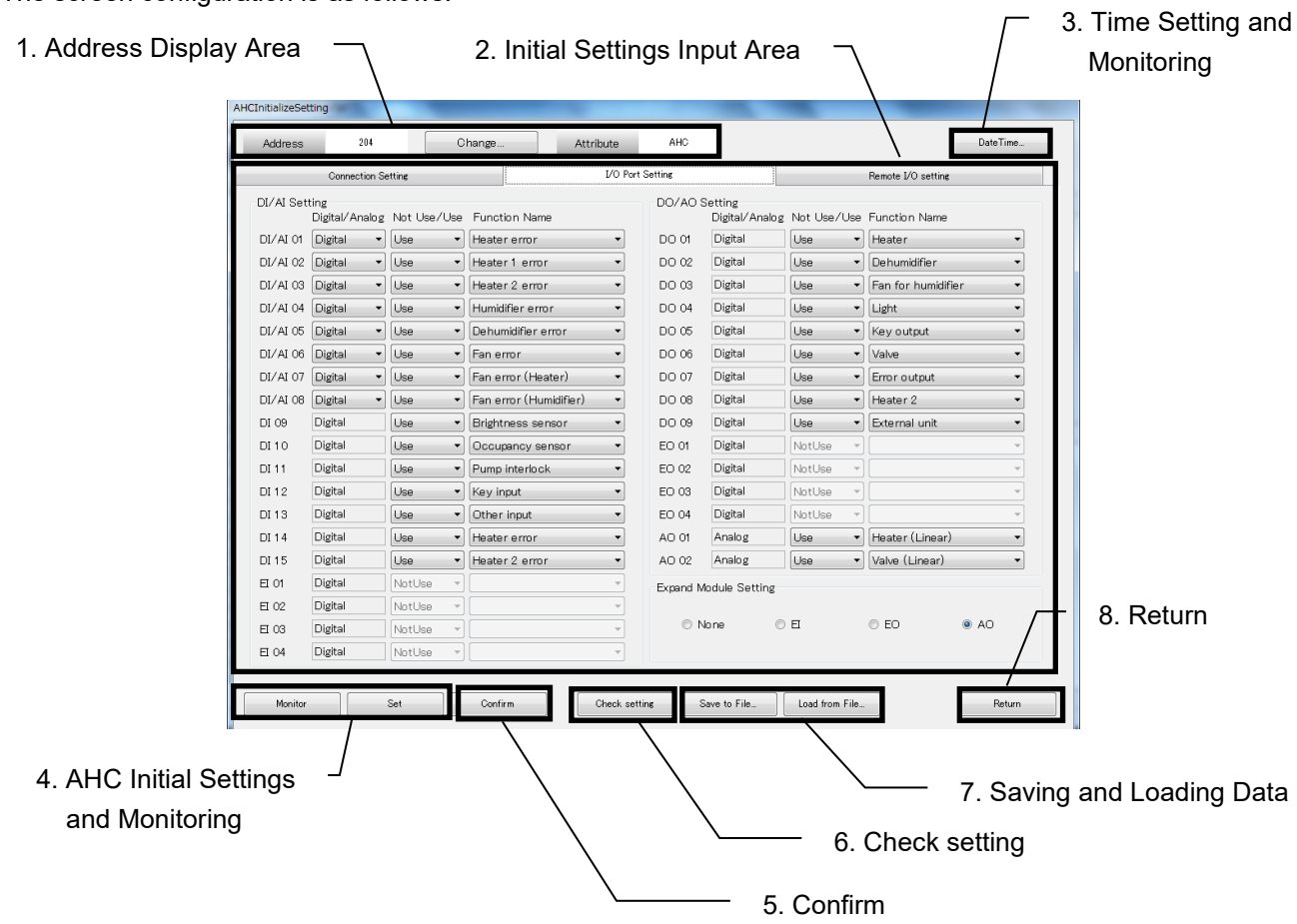
(3) The progress bar appears. This process may take a couple of minutes depending on the number of setting items.




(4) The [**AHC Initialize Setting**] screen opens.



The screen configuration is as follows.

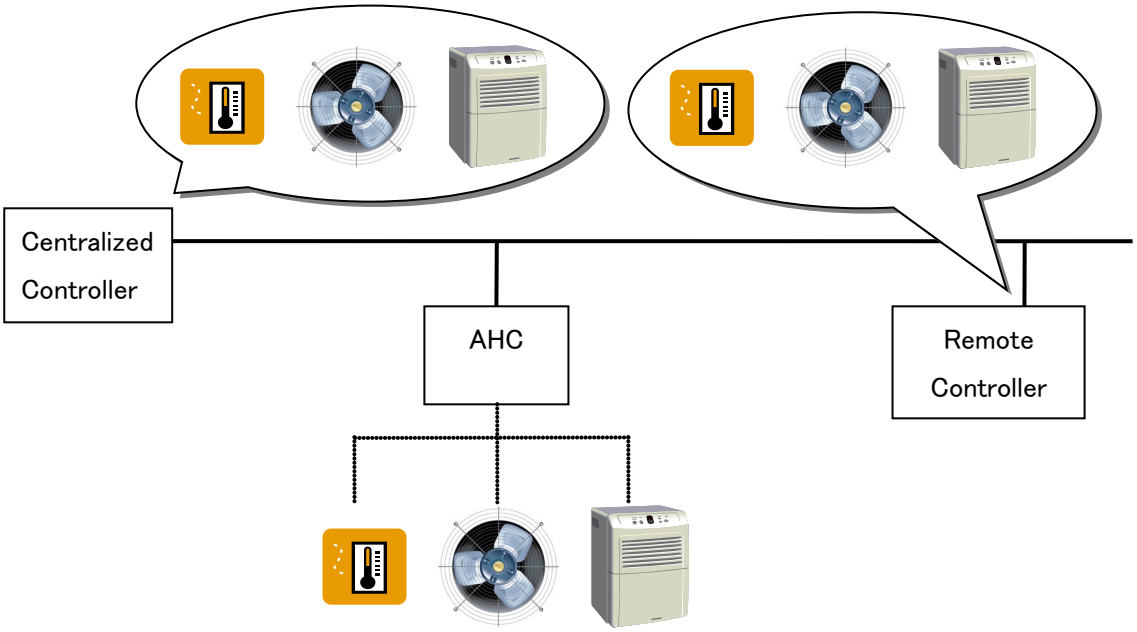



1. Address Display Area
   Displays the M-NET address for AHC. Press the [**Change**] button and specify the M-NET address to configure the initial settings of another AHC and monitor. Refer to [**3.11.1.1 Malfunction Log 3.11.1.1.1 (5)**]
2. Initial Settings Input Area
   Allows you to edit the initial setting items of AHC.The items that can be set vary depending on the selected tab. Refer to [**3.18.3 Editing the Connection Information** through **3.18.7 Editing the Remote I/O setting**]
3. Time Setting and Monitoring
   The **[AHC Date/Time Setting]** screen appears.Refer to [**3.18.8 Time Setting and Monitoring**]
4. AHC Initial Settings and Monitoring
   Press the **[Set]** button to set the item that was edited in “2. Initial Settings Input Area” for AHC.Press the **[Monitor]** button to monitor the setting item and update the display from AHC. Refer to [**3.18.9 Settings** and **3.18.10 Confirmation of Settings**]
5. Confirm
   Displays the **[Status Check]** screen. The settings on the Remote I/O of ALPHA2 and AHC ADAPTER can be checked on the [**Status Check**] screen. Refer to [**3.18.11 Confirm**]
6. Check setting
   The [**Check setting data**] screen appears. The [**Check setting data**] screen can be used to check details of settings configured for the AHC and to print setting items. Refer to [**3.18.12 Check Setting**]
7. Saving and Loading Data
   Press the **[Save to File]** button to save the item that was edited in “2. Initial Settings Input Area.”Press the **[Load from File]** button to apply the settings saved in the file to the “2. Initial Settings Input Area.” Refer to [**3.18.13 Saving the Setting File** and **3.18.14 Loading the Setting File**]
8. Return
   Use the **[Return]** button to close the **[AHC Initialize Setting]** screen and return to the **[Main]** screen.

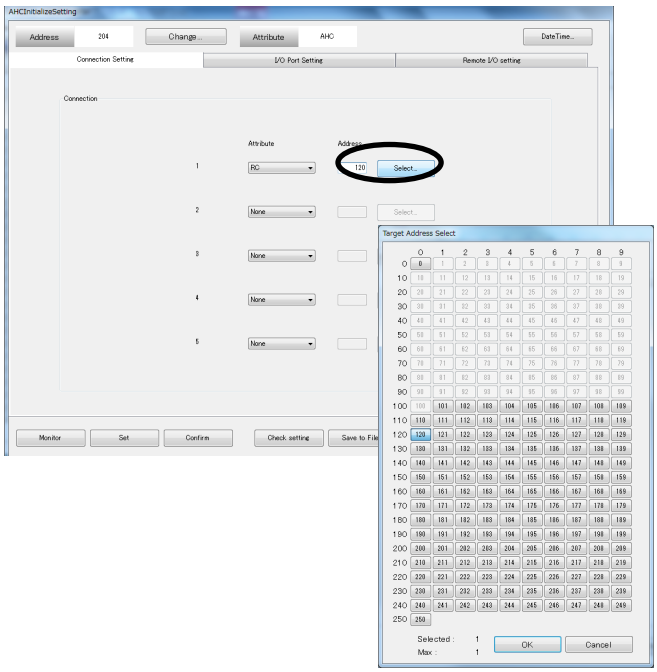
### 3.18.3 Editing the Connection Information

Assign the controllers（centralized controller and remote controller）to AHC. The status of external equipment connected to AHC can be monitored from the assigned controllers.

Furthermore, if an error occurs with AHC, the error status can be displayed on the controllers.




(1) Select the [**Connection Setting**] tab and enter the M-NET address for the remote controller in the M-NET address input box. Enter the M-NET address of the Remote Controller in the M-NET address input box, or alternatively use the [**Select** ] button to select the M-NET address to be set.



**NOTE:**

- Only the M-NET address for the remote controller can be set in Maintenance Tool. The M-NET address of the centralized controller set as AHC can be monitored from Maintenance Tool but cannot be changed and set by Maintenance Tool. Assign the centralized controller to AHC from the centralized controller.

(*) Refer to the centralized controller manual

**NOTE:**

- Setting item input boxes that are still blank will display with a bold red frame to highlight that they are blank. Enter the M-NET address for the Remote Controller.



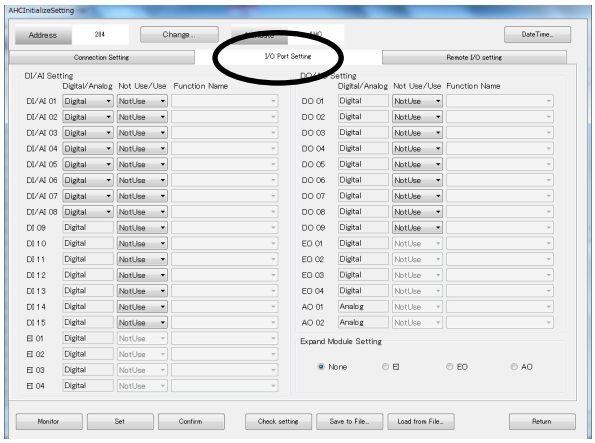

**NOTE:**

- The controller attribute is shown in [Attribute]. **[TR]** displays for the Main centralized controller, **[RC]** for the Remote Controller, and **[SC]** for the Sub centralized controller.

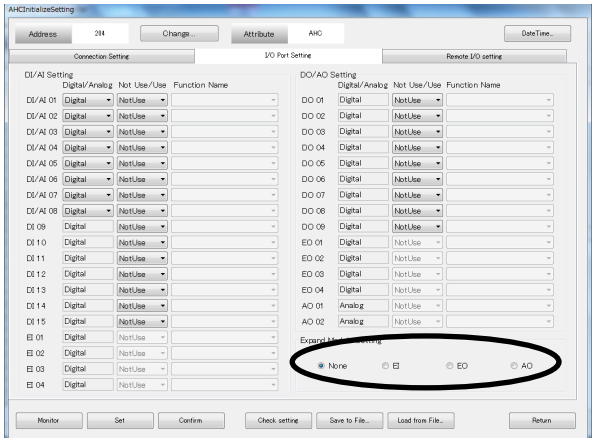
### 3.18.4 Editing the I/O Port Setting

Set the input and output function of ALPHA2.

(1) Select the [**I/O Port Setting**] tab.



(2) Select the expansion module.The ports that can be set are converted in accordance with the expansion module type.



(3) Select the input and output information

a) Digital/Analog

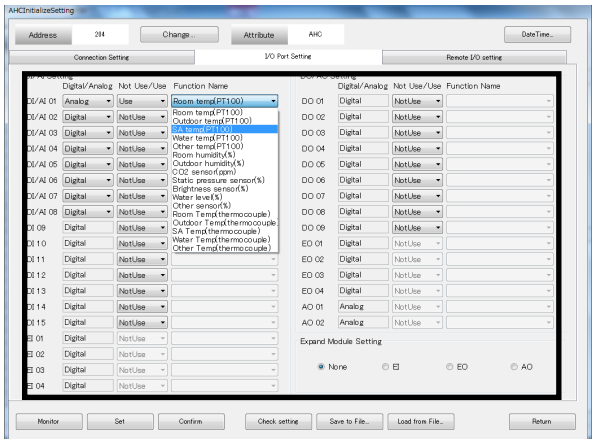
Set whether the input and output ports are used for analog or digital inputs and outputs. The function names that can be selected vary depending on whether Analog or Digital is selected.

b) Not Use/Use

Set whether to use or not use the input and output ports.

c) Function name

Set the function for which to use the input and output ports.

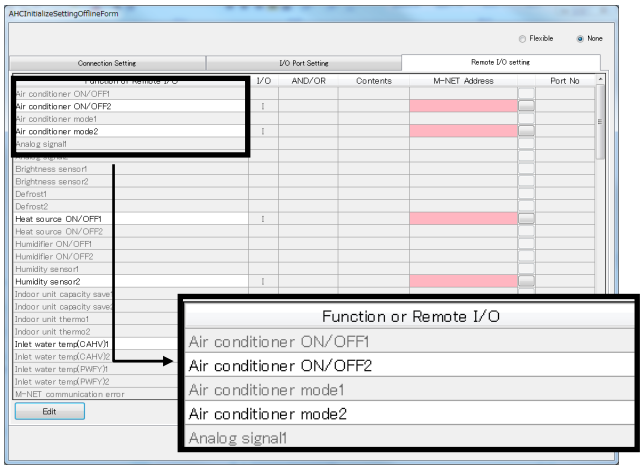
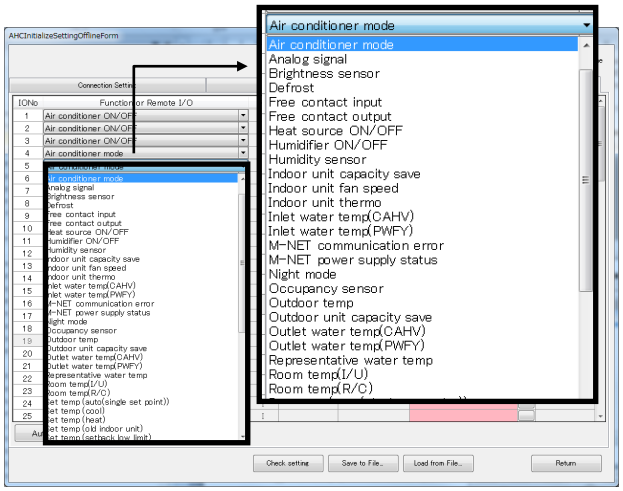


### 3.18.5 Editing the Remote I/O setting

Set the Remote I/O settings. Once the Remote I/O settings are configured, the AHC will start the below operations.

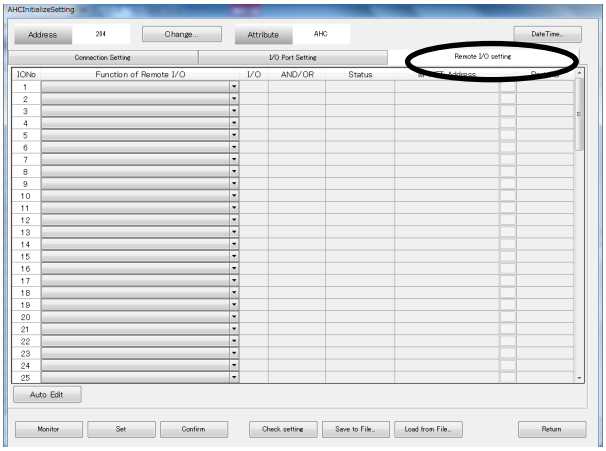
- Monitoring of input data (sensor data and operating status) for the unit connected to M-NET
- Output from the unit connected to M-NET

Note that the steps for navigating the [**Remote I/O setting**] tab vary according to the DipSW103-3 and version of AHC ADAPTER in use.

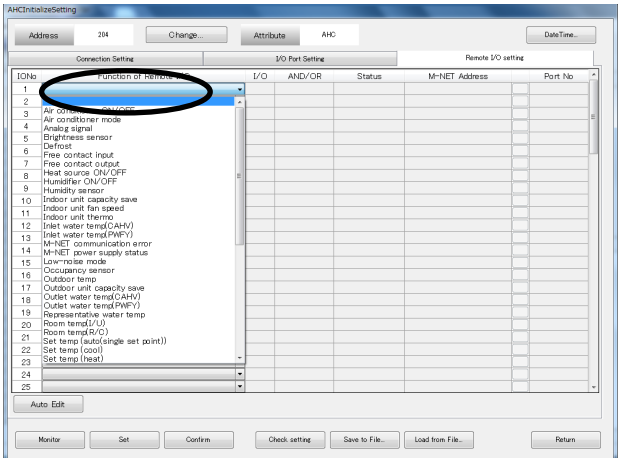
<table>
<tr><th>AHC ADAPTER Ver</th><th>DipSW 103-3</th><th>[Remote I/O setting] screen</th></tr>
<tr><td>Versions prior to Ver. 2.00</td><td>ON</td><td rowspan="2">Users select whether to enable or disable each function available for use. The functions assigned to each Remote I/O setting for monitoring and operation are all locked.<br>  <br></td></tr>
<tr><td>OFF</td></tr>
<tr><td>Ver. 2.00 or later</td><td>ON</td></tr>
<tr><td>Ver. 2.00 or later</td><td>OFF</td><td>Users can select functions assigned to each Remote I/O setting and the number of target groups as desired. Each function can be assigned to a maximum of 50 groups.<br>  <br></td></tr>
</table>

### 3.18.6 Editing the Remote I/O setting
### (For an AHC ADAPTER Ver. 2.00 or Later AND when DipSW103-3 is set to OFF)

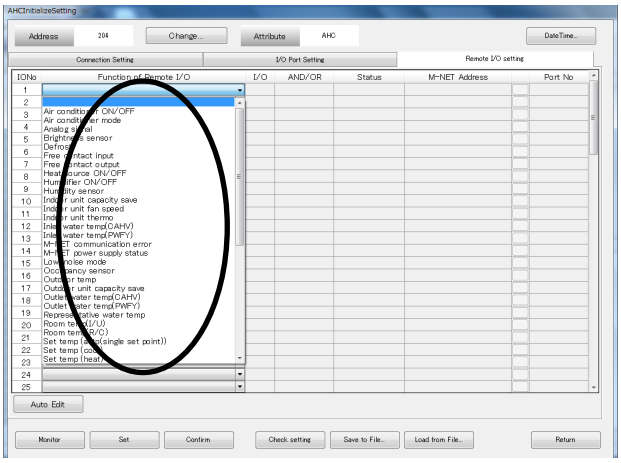
(1) Select the [**Remote I/O setting**] tab.




(2) Click the drop-down list in the [**Function of Remote I/O**] box to display a list of function that can be assigned to the remote I/O.



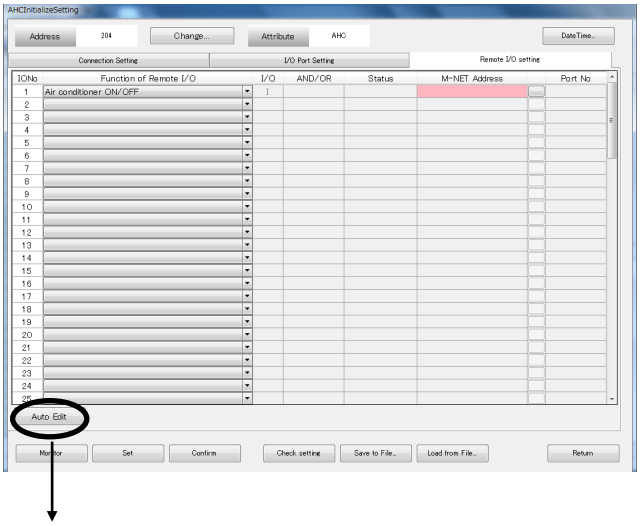

(3) Select the function to be assigned to the remote I/O.



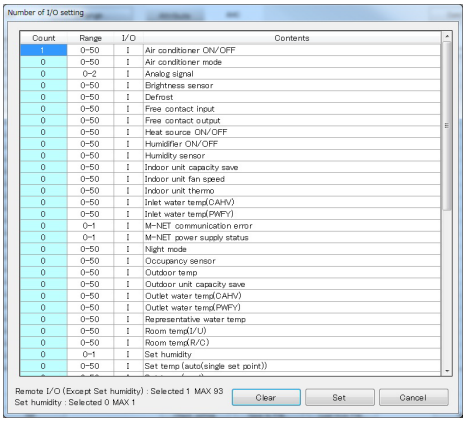

**NOTE:**

- Although any desired Remote I/O function can be assigned to each **[I/O No]** for most I/O No., the only Remote I/O function that can be assigned to I/O No. 19 is Set humidity.
- No functions can be assigned to the I/O with the following numbers: 65, 96, 97, 98, 99, 100.

(4) Click the [**Auto Edit**] button to open the [**Number of I/O setting**] screen. Use this function to set a number of Remote I/O settings all at once.




(5) Enter the number of Remote I/O settings to set in the [**Count**] box. Any number that lies within the range shown in the [**Range**] box can be used. The maximum number of Remote I/O settings that can be set is listed at the bottom of the screen. The number of Remote I/O settings to be set cannot exceed this maximum number.

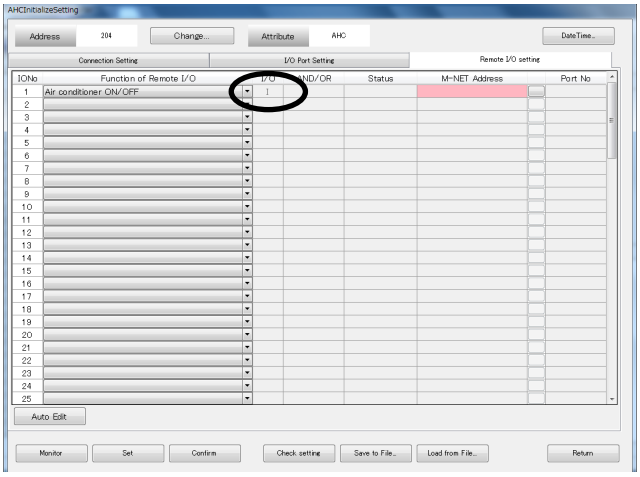



Click the [**Set**] button to reflect the changes made to the settings shown on the [**Number of I/O setting**] screen in the [**Remote I/O setting**] tab.

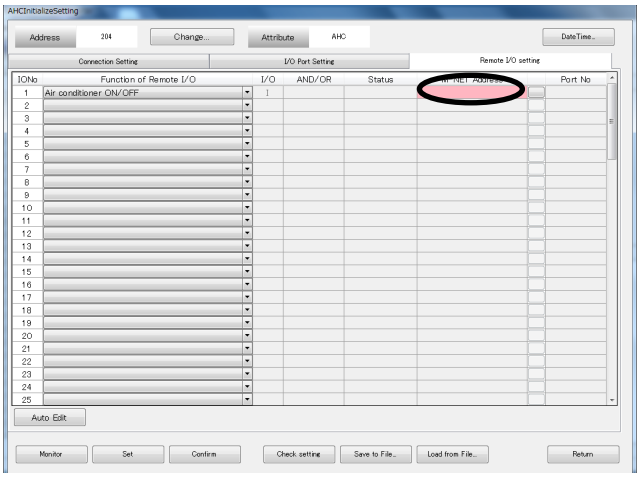
Click the [**Clear**] button to reset all the values in the **[Count]** column to zero. Then, click the [**Set**] button to clear all the settings on the [**Remote I/O setting**] tab**.**

Click the [**Cancel**] button to close the [**Number of I/O setting**] screen without reflecting the changes made to the settings shown on the [**Number of I/O setting**] screen.

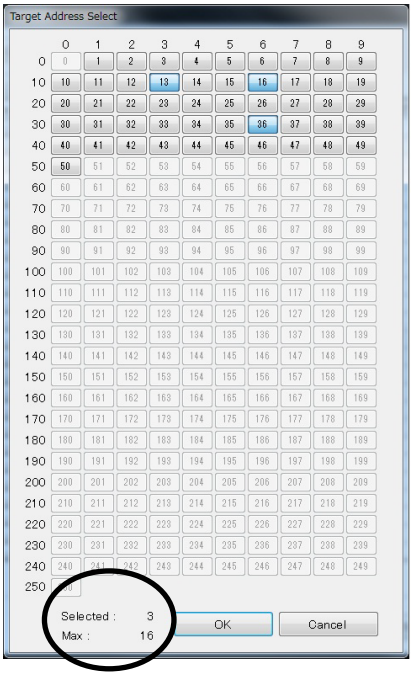
(6) Once the [**Function of Remote I/O**] is configured, the input type for the Remote I/O setting set in the [**I/O**] box appears on the screen. [I] is an input. The sensor data for the unit connected to M-NET and the operating status are monitored periodically by the AHC. [O] is an output. Operation of the unit connected to M-NET is controlled by the AHC control logic.



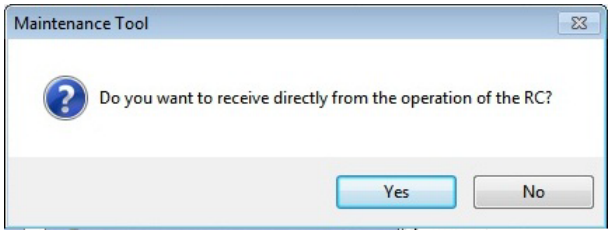
(7) Once a function is assigned to the remote I/O, the background color of the [**M-NET Address**] box changes to red. Set the M-NET address for the target of the operation and monitor in the [**M-NET Address**] box. To set the M-NET address, either enter the M-NET address directly into the input box, or push the button on the side of the [**M-NET Address**] box and then select the M-NET address of the relevant unit from the [**Target Address Select**] screen that appears. The [**M-NET Address**] column will be grayed out when no address settings are required.




The number of selectable M-NET addresses and the range of M-NET addresses differ according to the selected input data. The maximum number of selectable M-NET addresses is displayed at the bottom of the [**Target Address Select**] screen.

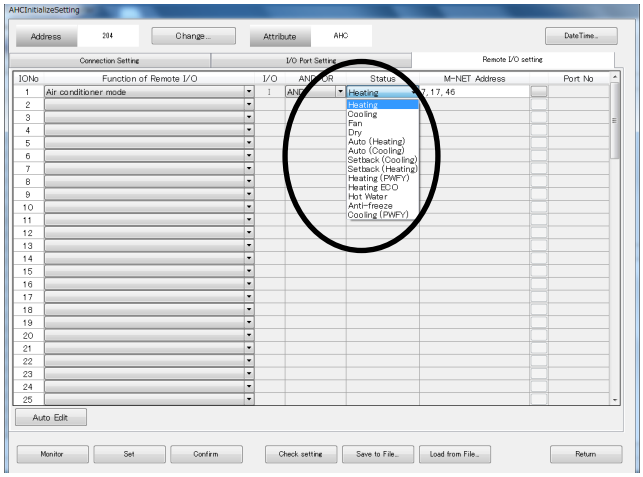


For some selected input data, the message “Do you want to receive directly from the operation of the RC?” may be displayed when switching to the [**Target Address Screen**].
If [**Yes**] is selected, the input data is acquired from the remote controller assigned in 3.18.3 Editing the Connection Setting.
If [**No**] is selected, the [**Target Address screen**] appears. Click the M-NET addresses to acquire the input data for and click the [**OK**] button.

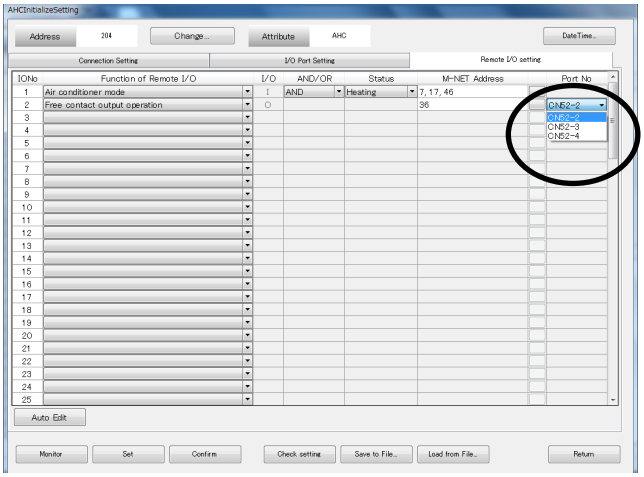


(8) Set the aggregation condition.
Set the aggregation condition only when selecting multiple M-NET addresses.
a) AND/OR
Select the aggregation condition (AND: match for all units or OR: match for at least one unit) to output the acquired data to ALPHA2 when AHC ADAPTER acquires data from multiple units.

b) Status
Select the condition for AHC ADAPTER to output the acquired data to ALPHA2.
Use the contents in combination with the AND and OR conditions.
Select the acquired value for AHC ADAPTER to send to ALPHA2.

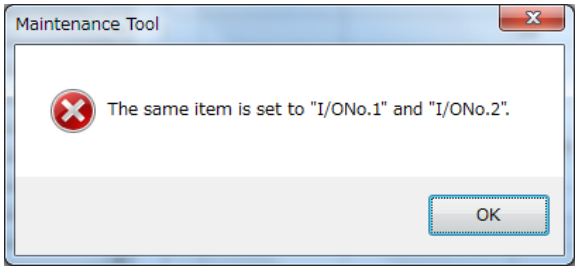



(9) Select the port.
Note that the Port No. will need to be set for some functions. Set the input and output terminals.




**NOTE:**

- An error message will appear if two or more I/O numbers have identical settings. If the message appears, check the settings.



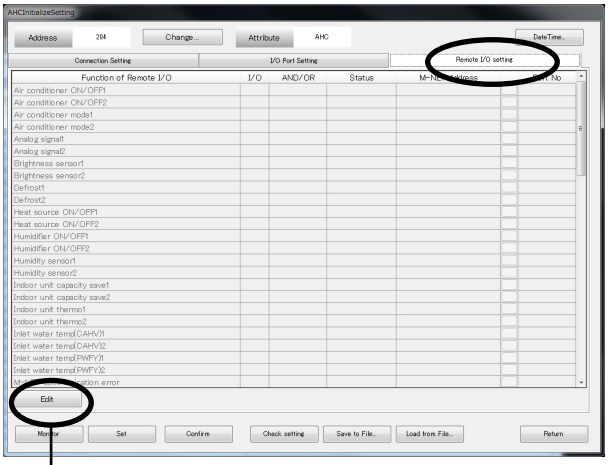
### 3.18.7 Editing the Remote I/O setting (Applicable to AHC ADAPTERS version 2.00 and later AND when DipSW103-3 is set to a setting other than OFF )

The method for configuring the [**Function of Remote I/O**] settings differs for the DipSW103-3 and version of AHC ADAPTER .

**NOTE:**

- All settings other than the [**Function of Remote I/O**] settings can be configured in the same way as described in [**3.16.6 Editing the Remote I/O setting (Applicable to AHC ADAPTERs Ver. 2.00 and Later AND when DipSW103-3 is set to OFF)**]

(1) Select the [**Remote I/O setting**] tab and then click the [**Edit**] button.

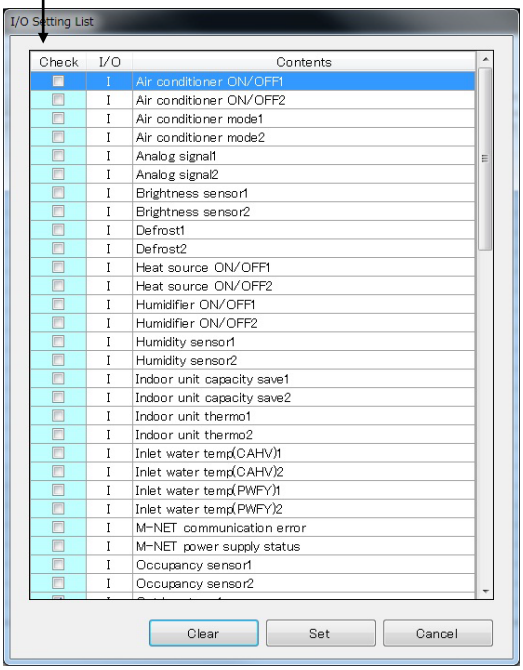



(2) The [**I/O Setting List**] screen appears. Check off the checkbox of the desired setting item to enable the setting.

Click the [**Set**] button to reflect the changes made to the settings shown on the [**I/O Setting List**] screen in the [**Remote I/O setting**] tab.

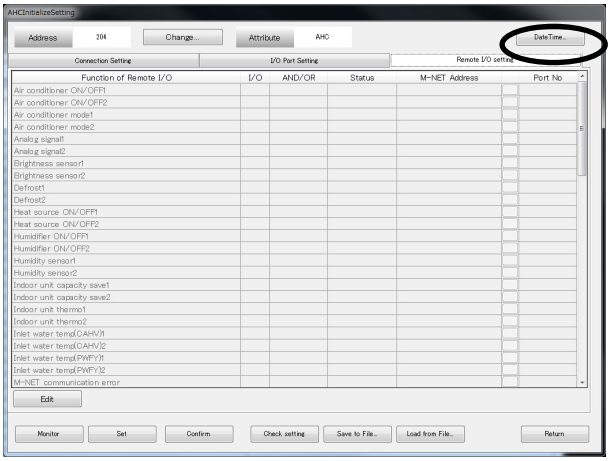
Click the [**Clear**] button to uncheck all the checkboxes in the [**Check**] column**.** Then, click the [**Set**] button to clear all the settings on the [**Remote I/O setting**] tab.

Click the [**Cancel**] button to close the [**I/O Setting List**] screen without reflecting the changes made to the settings shown on the [**I/O Setting List**] screen.

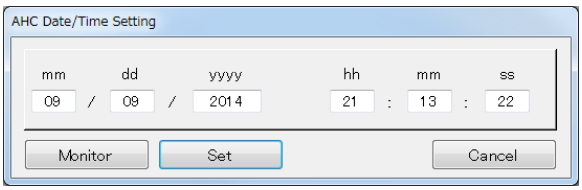


### 3.18.8 Time Setting and Monitoring

(1) Click on [**Datetime**] button.




(2) The [**AHC Date/Time Setting**] screen opens and the present time of PC is displayed.



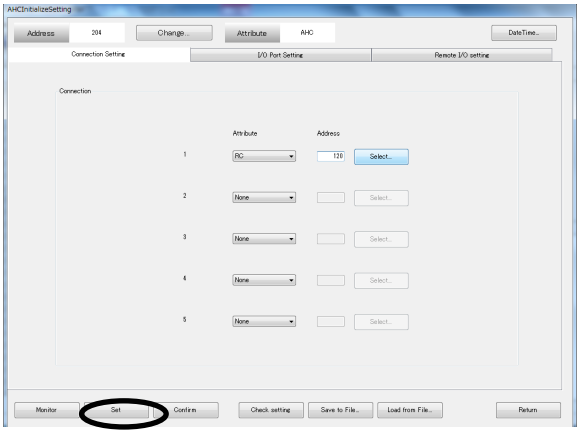

A click of [**Set**] button sets the time currently displayed to a AHC. The time to set up can also be changed on a screen. Cursor is united with a change point and a numerical value is inputted.
Click on [**Monitor**] button to acquire the current setting Date/Time and display the results in the [**AHC Date/Time Setting**] screen.

Click on [**Cancel**] button to end the [**AHC Date/Time Setting**] screen.

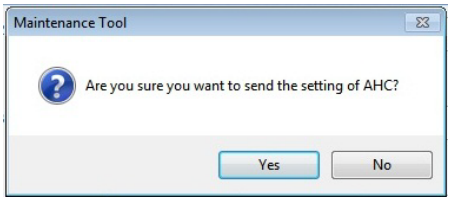
### 3.18.9 Settings

Apply the edited initial setting data to AHC.

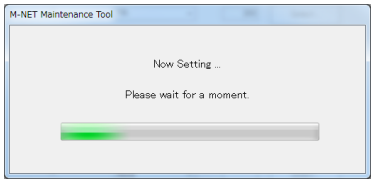
(1) Click on [**Set**] button.



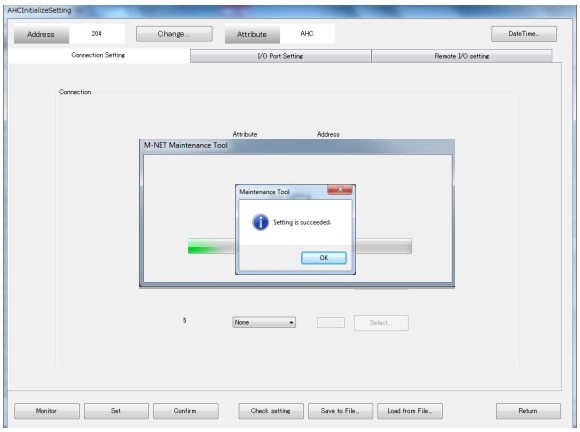

(2) A confirmation screen appears. Click the [**Yes**] button.




(3) The progress bar appears. This process may take a couple of minutes depending on the number of setting items.



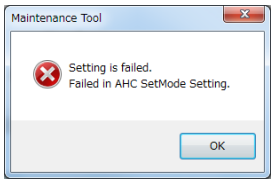

(4) Configuration of the initial settings is complete.




An error message appears if monitoring fails.Below is a list of possible causes of problems. For details, refer to the section on Troubleshooting.

• The initial settings are duplicated from Centralized Controller.

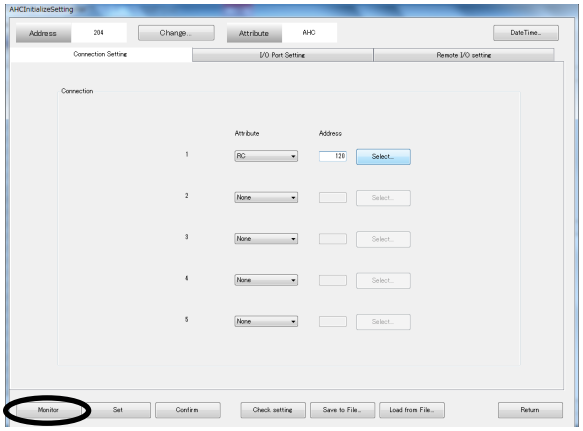
• There are problems with M-NET communications between devices.



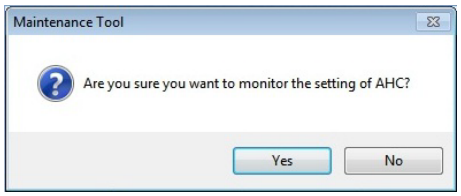
### 3.18.10 Confirmation of Settings

Check the settings set for the AHC.

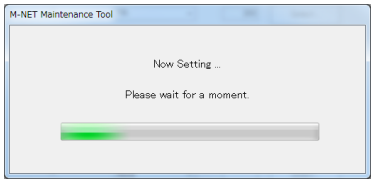
(1) Click the [**Monitor**] button.



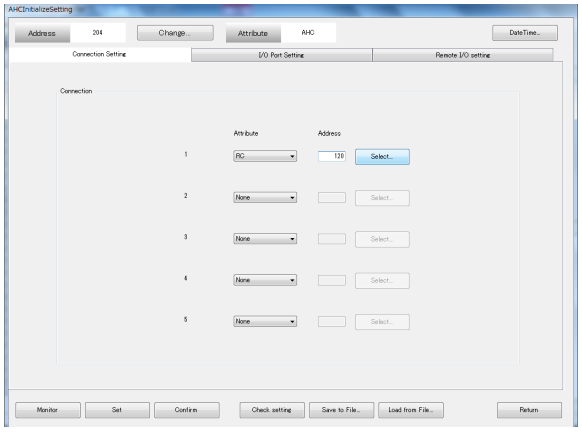
(2) A confirmation screen appears. Click the [**Yes**] button.




(3) The progress bar appears. This process may take a couple of minutes depending on the number of setting items.



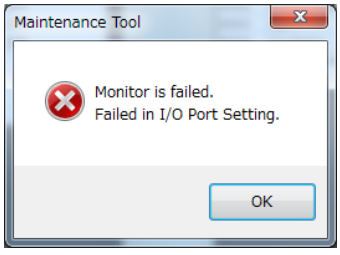

(4) Settings configured for the AHCare reflected when monitoring finishes. Check to make sure that the setting details shown match those entered
If they do not match, reconfigure the settings that need to be changed.



An error message appears if monitoring fails.Below is a list of possible causes of problems. For details, refer to the section on Troubleshooting.

• The initial settings are duplicated from Centralized Controller.

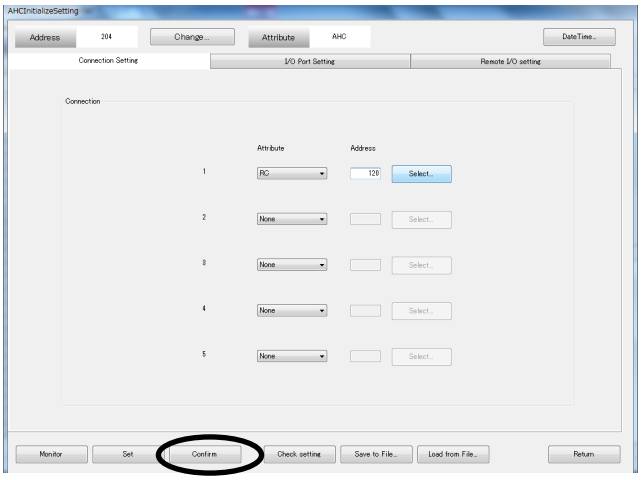
• There are problems with M-NET communications between devices.



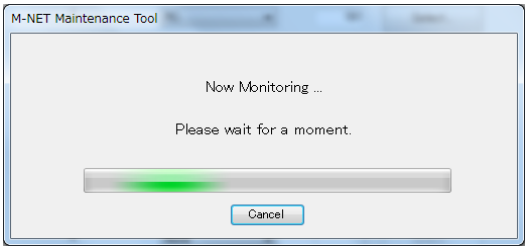
### 3.18.11 Confirm

Clicking the [**Confirm**] button will display the [**Status Check**] screen. Assigning the air conditioner monitoring/operating function to the Remote I/O of the AHC will require the programming of ALPHA2 and setting of the initial settings of AHC ADAPTER via the M-NET (on the Remote I/O setting tab). On the [**Status Check**] screen, if a function is assigned to the I/O No. of ALPHA2 and the AHC ADAPTER can be checked.

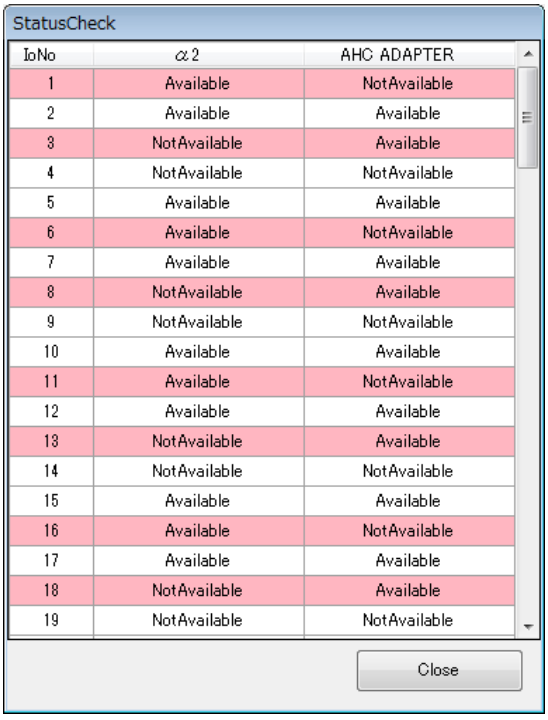
(1) Click the [**Confirm**] button.




(2) The progress bar appears. This process may take a couple of minutes depending on the number of setting items. To cancel the monitoring process, click the Cancel button.



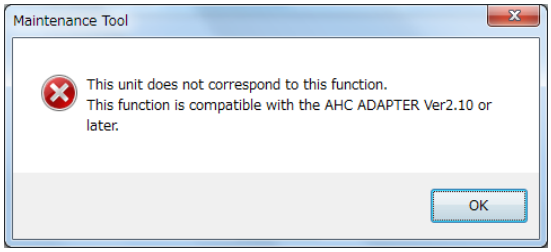

(3) The [**Status Check**] screen appears.
The availability status list of ALPHA2 and the AHC ADAPTER will appear. The status of each I/O No. will appear either as [**Available**] or [**NotAvailable**]. If the availability status settings of ALPHA2 and AHC ADAPTER do not match, the cell will be highlighted in red. Check the settings on ALPHA2 and the AHC ADAPTER. Click the [**Close**] button to close the [**Status Check**] screen.



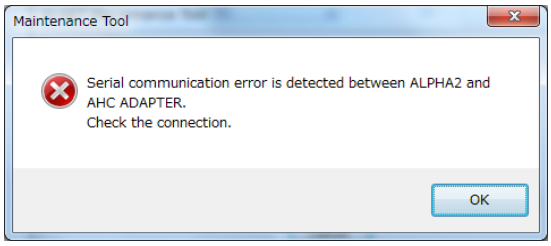

**NOTE:**
- The settings for ALPHA2 and the AHC ADAPTER must match for the function assigned to the Remote I/O to function properly.

An error message appears if monitoring fails.Below is a list of possible causes of problems

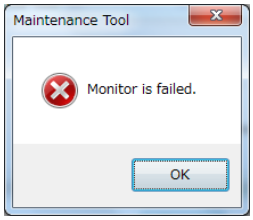
- The version of the AHC ADAPTER software you are using does not support this function. This function is supported by versions 2.10 and later.




- A serial communication error was detected between ALPHA2 and the AHC ADAPTER. Check the serial cable connection between ALPHA2 and the AHC ADAPTER.

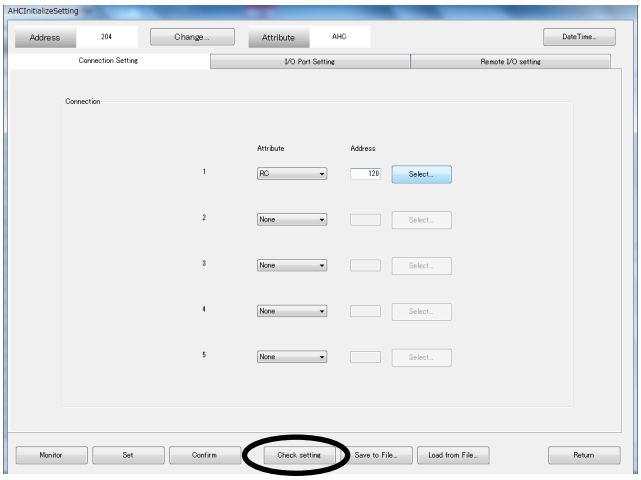



- The initial settings are duplicated from Centralized Controller.
- There are problems with M-NET communications between devices.

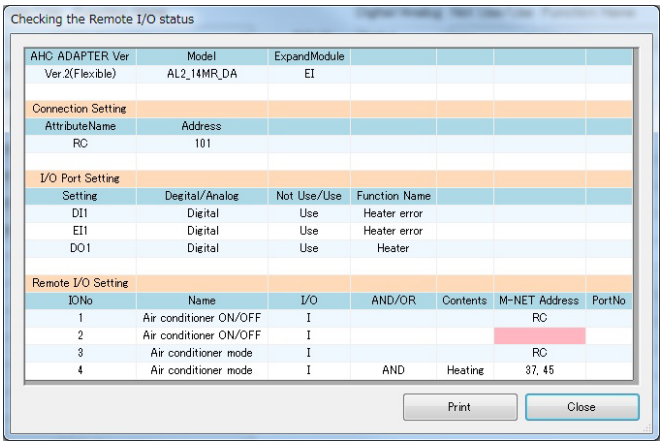


### 3.18.12 Check Setting

(1) Click the [**Check setting**] button.



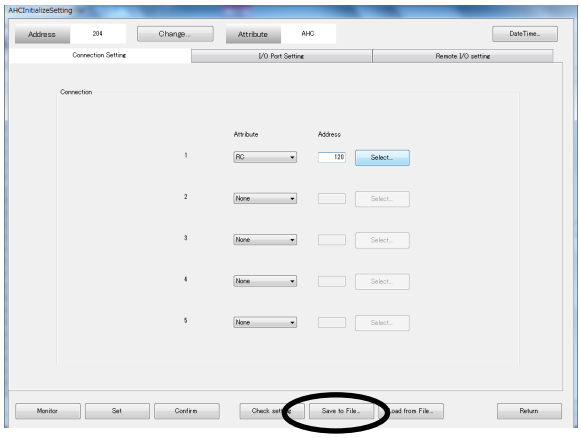

(2) The [**Check setting data**] screen appears. The [**Check setting data**] screen displays a list that can be used to check the settings entered for initial setting items. A bold red frame will display around setting boxes that are blank to highlight items that have not yet been configured. Click the [**Print**] button to enable a screenshot of the [**Check setting data**] screen to be printed out. Click the [**Close**] button to close the [**Check setting data**] screen.



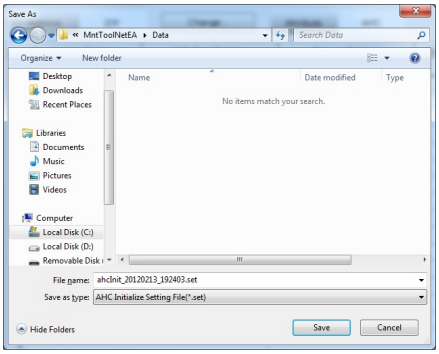
### 3.18.13 Saving the Setting File

Save the edited AHC initial setting data.

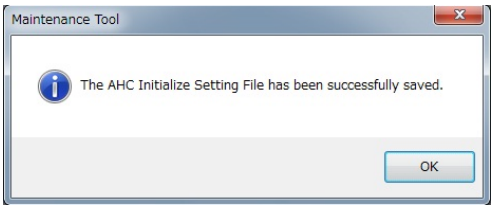
(1) Click the [**Save to File**] button.




(2) The save screen appears. Save the file to any folder.



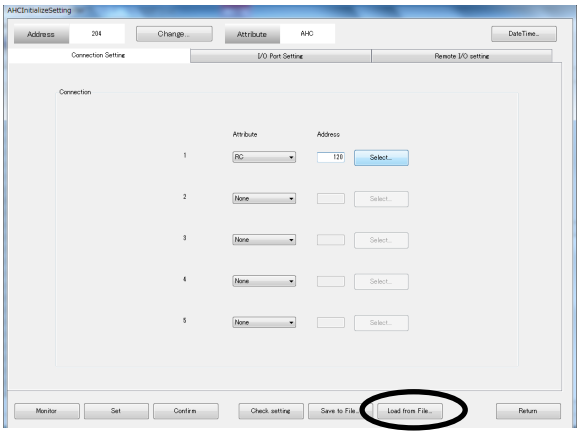

(3) A save successful screen appears. Click the **[OK ]** button.



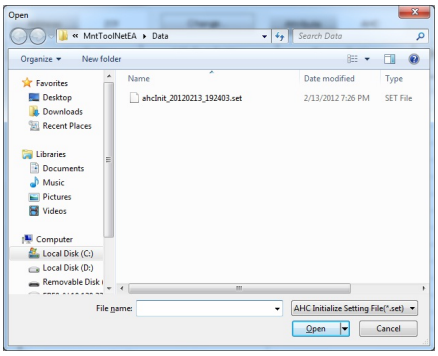
### 3.18.14 Loading the Setting File

Load the edited AHC initial setting data.

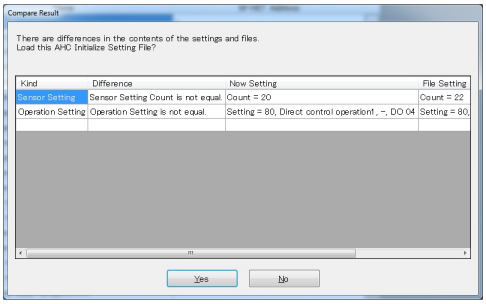
(1) Click the [**Load from File**] button.



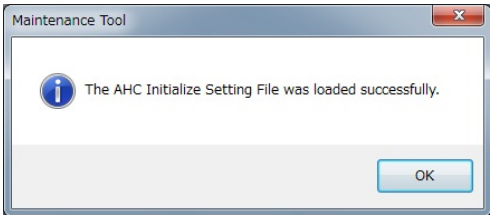

(2) The file selection screen appears. Select the setting file.




(3) A table shows the setting items that will be changed when the setting file is loaded during online setting. If the setting items are acceptable, click the [**Yes**] button. The settings in the loaded setting file are applied.



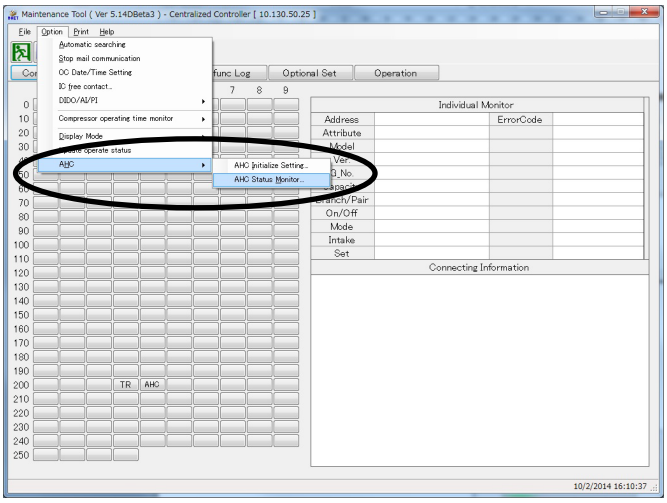

(4) A load successful screen appears. Click the [**OK**] button.



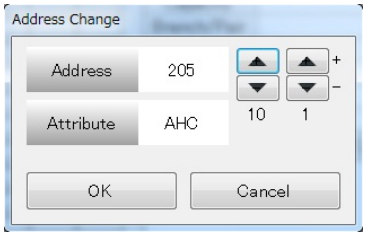
## 3.18.15 Monitoring of AHC

Open the AHC Status Monitor screen

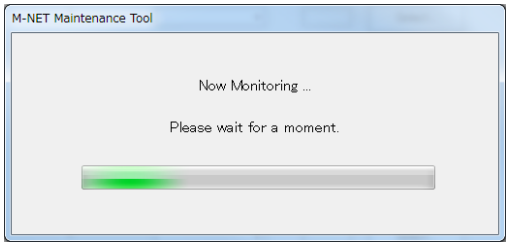
(1) From the [**Option**] menu bar, select [**AHC**] > [**AHC Status Monitor**].




(2) The [**Address Change**] screen appears. Enter the M-NET address of the AHC to be initialized and then click the [**OK**] .




(3) The progress bar appears. This process may take a couple of minutes depending on the number of setting items.

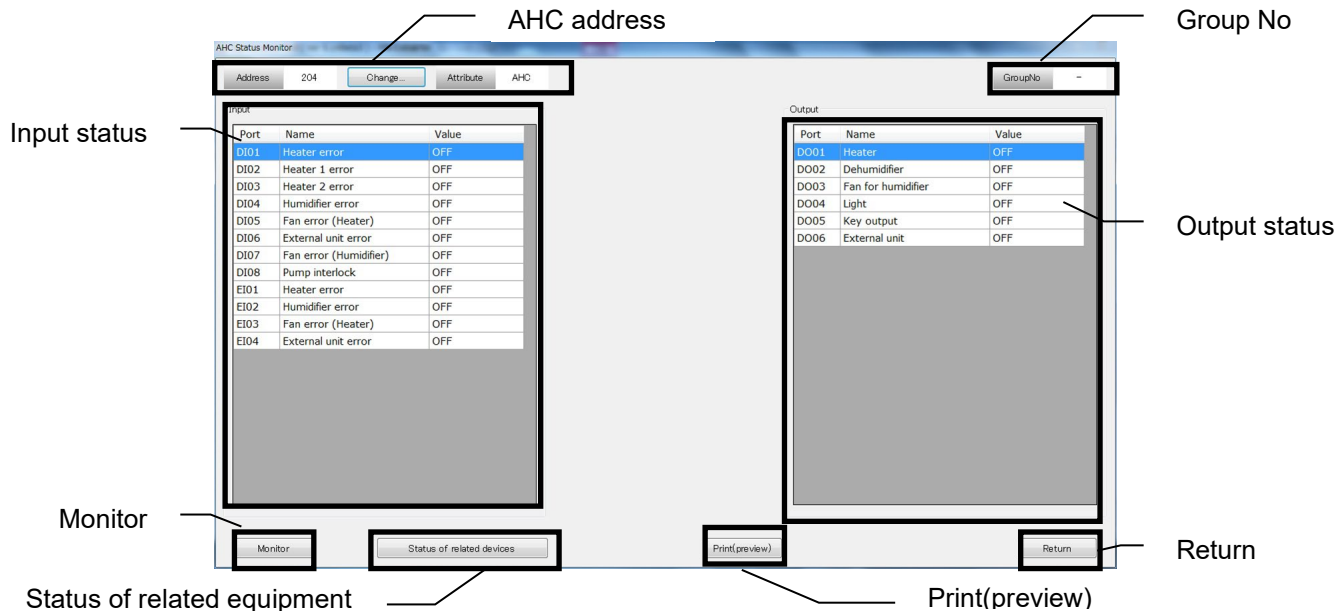


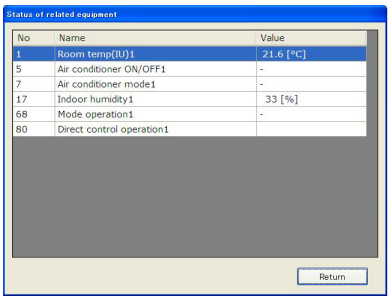
## 3.18.16 Monitoring of AHC

On the AHC List screen, the status of input and output ports of each Advanced HVAC CONTROLLER (AHC) can be monitored.

Click [Monitor/Operation] in the menu bar, and then click [AHC List] to access the AHC List screen.

The port names and their status of each AHC will appear.

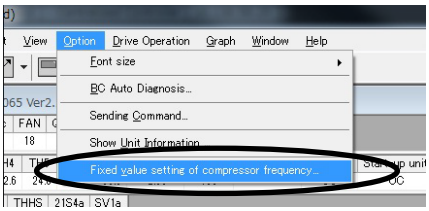



| Item | Description |
|---|---|
| AHC address | The M-NET address of the connected AHC will appear. |
| Group No | The Group No. set for the AHC will appear. |
| Monitor | Click on [**Monitor**] button to acquire the current AHC Status and display the results in the [**AHC Status Monitor**] screen. |
| Input status | [Input port code * + Input port name + Input status] will appear.<br>* DI1–DI15 (Digital input), EI1–EI4 (Extended digital input), AI1–AI8 (Analog input)<br>Note: The status of the unused ports will not appear.<br>Note: If a communication error occurs with AHC, no port information will appear. |
| Output status | [Output port code * + Output port name + Output status] will appear.<br>* DO1–DO9 (Digital output), EO1–EO4 (Extended digital output), AO1–AO2 (Analog output)<br>Note: The status of the unused ports will not appear.<br>Note: If a communication error occurs with AHC, no port information will appear. |
| Status of related equipment | Click to display the status of the equipment that are used to control the equipments that are connected to the AHC.<br>  |
| Print(preview) | A screenshot of the [**AHC Status Monitor**] screen can be printed out. |
| Return | Press the Return button to close the [**AHC Status Monitor**] screen and return to the [**Main**] screen. |

## 3.19 Fixed value setting of compressor frequency

- This section describes how to lock the compressor to a fixed frequency.

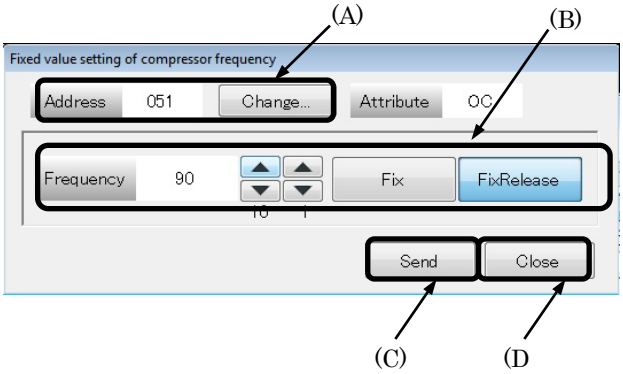
(1) With the dipswitch SW4 No. 857 on the outdoor unit turned on,click [**Option**] on the menu bar and then click [**Fixed value setting of compressor frequency** ] on the sub menu to open the [**Fixed value setting of compressor frequency**] screen.




**Note**

- Compressor frequency can only be fixed while the compressor on the outdoor unit (OC) is in operation.
  Compressor frequency cannot be fixed when one or more of the following conditions are met.
  -Only the auxiliary outdoor unit (OS) is operating for such reason as an emergency operation or a rotation operation.
  -Less than three minutes after the compressor on the OC started up.
  -The control mode other than the constant mode is being used.
- When a unit that does not support the fixed value setting of compressor frequency is selected, the following message, "This unit does not support the fixed value setting of compressor frequency." will appear, and the setting cannot be made.

(2) The [**Fixed value setting of compressor frequency**] screen appears.




A) Click the [**Address Change**] button and then select the M-NET address of the unit for which the compressor is to be locked to a fixed frequency.

B) The current compressor fixed frequency [**Fix/FixRelease**] status display on the screen. To lock the compressor to a fixed frequency, first enter the value at which to lock the frequency and click the [**Fix**] button before clicking the [**Send**] button. To release the compressor from the fixed frequency, click the [**FixRelease**] button and then click the [**Send**] button.

**Note**

- Note that the frequency set on the [**Fixed value setting of compressor frequency**] screen is the all temporary frequencies F (Foc + Fos).
- If the frequency of the outdoor unit is set to the frequency below the minimum frequency level, the unit will go into the Thermo-OFF state.

C) Click the [**Send**] button to transmit the setting value.

> **Note**
> In order to prevent failure to trigger the setting status release, the system is designed to clear the settings shown on the screen automatically when the [**Operation status monitor**] screen is closed.

D) Click the [**Close**] button to close the [**Fixed value setting of compressor frequency**] screen and return to the [**Operation status monitor**] screen.

## 3.20 Indoor unit LEV problem detection support

* **Items Performed Here**
  - Problems with the LEV on indoor units are mainly divided into two types: Problems with the stepping motor and locking of the LEV. This function automatically identifies the indoor units with possible locking of the LEV.

**Note**

The LEV on indoor units consists of the stepping motor and the valve.

The LEV can either become locked-open or locked-close due to the following causes.

- Motor: Short-circuited coil
- Valve: Clogging by foreign substances or damage to the valve seat

### 3.20.1 Judgment conditions of the LEV diagnosis function and grouping of indoor units

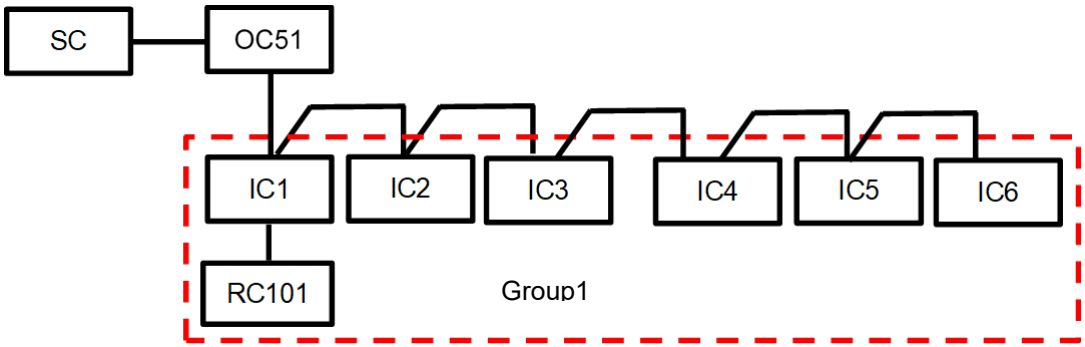
This function automatically determines the operation mode(Cooling mode or Heating mode) to perform a diagnosis in, based on the indoor and outdoor temperatures.
Diagnosis of LEV locking is performed based on the values of TH2 (liquid pipe temperature) value and TH3 (gas pipe temperature) value.

Diagnosis is performed either by treating all indoor units in a given refrigerant system as one category or as two categories (A and B), depending on the number of remote controllers in a given system and the type of grouping made by the centralized controller.

(1) Diagnosis of all indoor units being treated as a single category

・When a given refrigerant system has only one group of indoor units.

Example. IC1 through IC6 are grouped into group 1 from the centralized controller



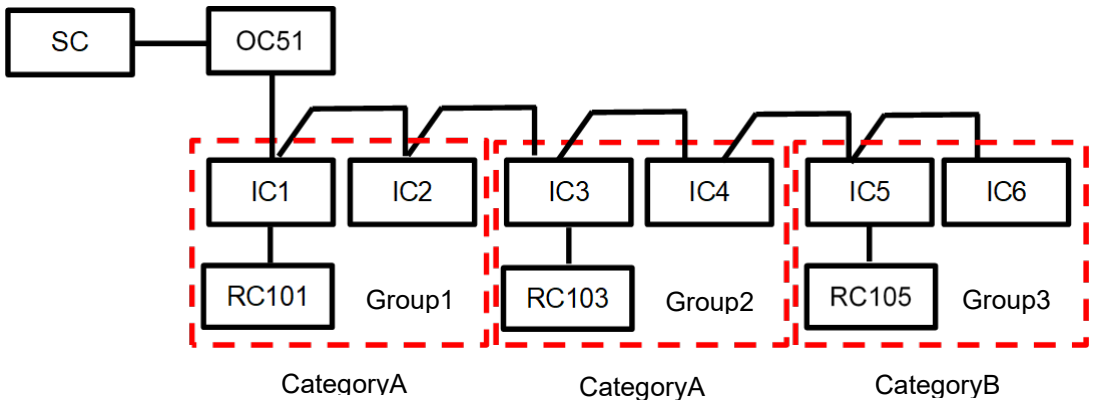

**IC1 through IC6 are treated and diagnosed as a single category.**

If there is only one category in a given refrigerant system, the LEVs will only be checked for being locked-close.
The Maintenance Tool will operate the indoor units in the “Test run/Cooling (Heating)/High fan speed” mode.
The units will remain on standby for 15 minutes until the control mode of the outdoor unit becomes stable.
After 15 minutes have passed, the diagnosis will begin.

(2) Diagnosis of indoor units being treated as two separate categories (A and B)

・When a given refrigerant system has two or more groups

Example. IC1 and IC2 are grouped as group 1, IC3 and IC4 are grouped as group 2, and IC5 and IC6 are grouped as group 3 from the centralized controller.




**IC1 through IC4 are categorized as category A, and IC5 and IC6 are categorized as category B**

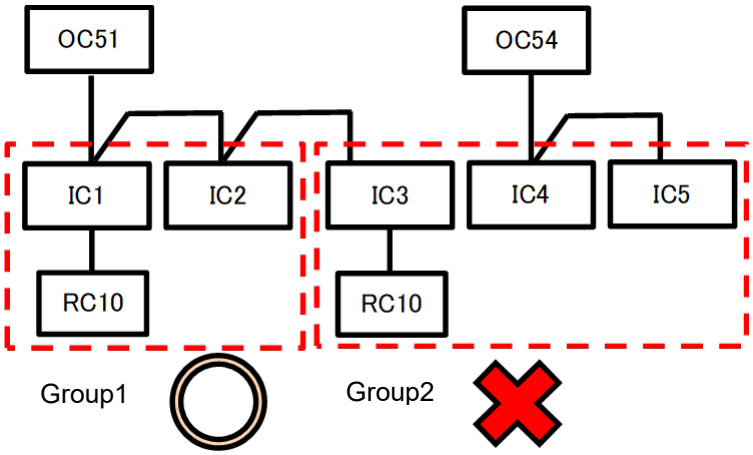
When indoor units are categorized into two categories, the LEVs on indoor units in category A will be diagnosed for locked-close, and category B for locked-open.

The Maintenance Tool will operate the indoor units in category A in the “Test run/Cooling (Heating)/High fan speed” mode. Then, the Maintenance Tool will operated the indoor units in category B in the “Start/Fan/High fan speed” mode. The units will remain on standby for 15 minutes until the control mode of the outdoor unit becomes stable. After 15 minutes have passed, the diagnosis will begin.

Next, the LEVs on indoor units in category A will be diagnosed for locked-open, and category B for locked-close.

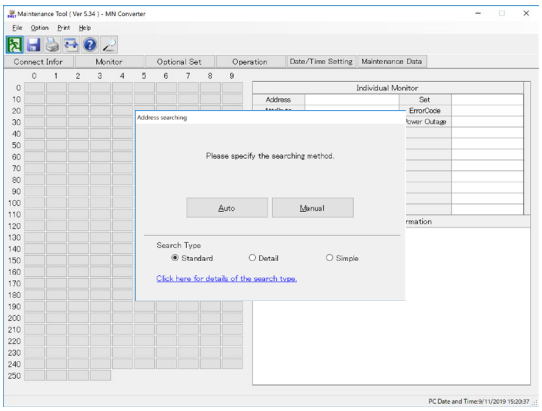
The Maintenance Tool will operate the indoor units in category A in the “Start/Fan/High fan speed” mode. Then, the Maintenance Tool will operate the indoor units in category B in the “Test run/Cooling (Heating)/High fan speed” mode. The units will remain on standby for 15 minutes until the control mode of the outdoor unit becomes stable. After 15 minutes have passed, the diagnosis will begin.

### 3.20.2 Restrictions and cautionary notes

| Function | Explanation |
|---|---|
| Restrictions and Cautions | ➢ This function will operate start/stop, operation mode, set temperature and air volume. Please note down these setting information before starting diagnosis, and restore its after diagnosis.<br>➢ The types of equipment this function can diagnose are as follows: air-cooled and water-cooled Y/R2 series of R410A outdoor units except the cooling only model, BC controllers except the CMB-PW202V-J model, and Freeplan indoor unit.<br>➢ Do not operate the air conditioning units during the diagnosis. Changing any setting from the local remote controller will adversely affect the diagnostic result.<br>➢ Disable the timer and schedule functions if they are used.<br>➢ The diagnosis may not properly performed when the outdoor unit frosts.<br>➢ Diagnosis is impossible for indoor units that are grouped across outdoor units (Indoor units grouped in different refrigerant systems).<br><br>**Example:**<br>  |
| Termination of diagnosis and termination conditions | ➢ The diagnosis will be canceled when the control mode becomes the stopping mode (including Error mode) or defrost mode.<br>➢ Diagnosis of units that started having communication errors during diagnosis will be terminated.<br>➢ If the diagnosis was not properly completed, check the error messages and the operating status of the units, and restart the diagnosis. |

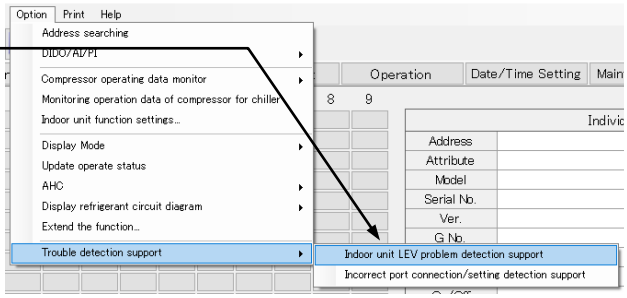
## 3.20.3 Operation method

(1) Start the Maintenance Tool, and search the address of the OC in the refrigerant system to be diagnosed.
To diagnose more than one refrigerant system simultaneously, search the addresses of all Ocs in the refrigerant systems to be diagnosed.




**Note**
Only the refrigerant systems that appear in the search result will be diagnosed.

(2) From the **[Option]** tab on the Main window, select **[Error detection support function]** and then **[Indoor unit LEV problem detection support]**.

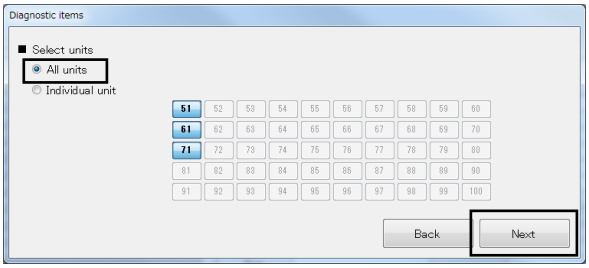



(3) The diagnostic settings window will appear.
Select the outdoor units to diagnose. There are two ways to select the outdoor units.

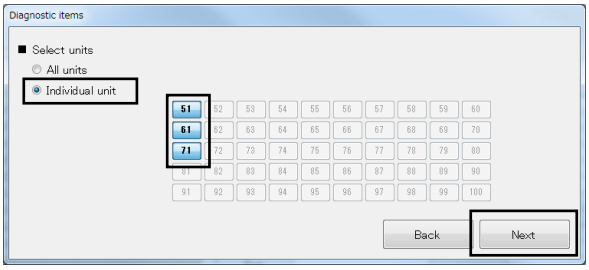
① All units: Select this option to diagnose all refrigerant systems whose addresses are displayed on the main window.
② Individual unit: Select this option to select the refrigerant systems to be diagnosed from the systems whose addresses are displayed on the main window.

Check that all units to be diagnosed are selected, and click **[Next]**.

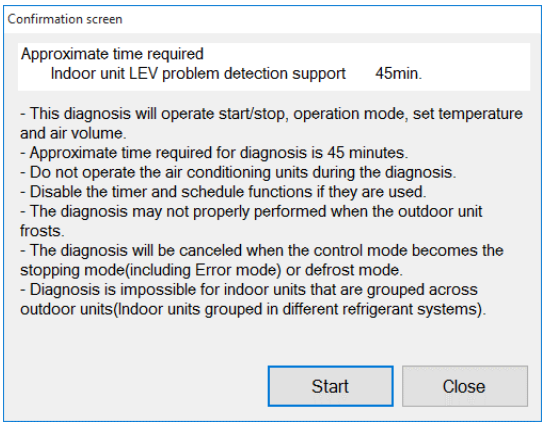
①All units




②Individual unit



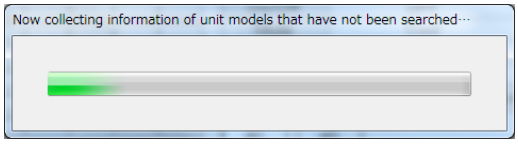
(4) A confirmation window will appear. Note the approximate duration of diagnosis and restrictions that apply, and click **[Start]**.




**Note**

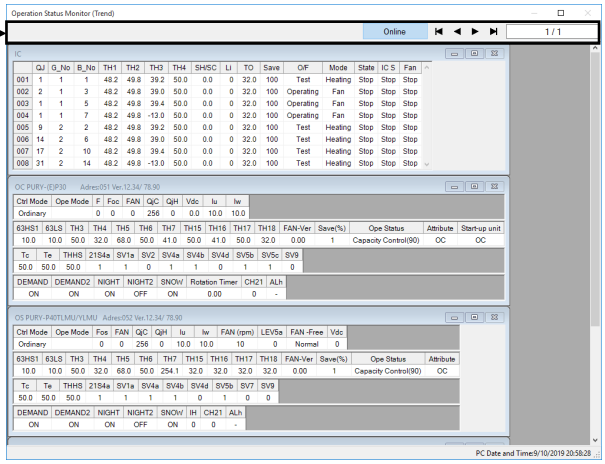
- LEV diagnosis will begin after the control function of the outdoor unit has stabilized. There will be an approximate 15-minute wait time for the diagnosis of locked-close status, and another 15 minutes for locked-open.
- If all of the entire refrigerant systems to be diagnosed have only one indoor unit group, diagnosis will be completed in approximately 30 minutes.
- If any of the refrigerant systems to be diagnosed has two or more indoor unit groups, diagnosis will be completed in approximately 45

(5) Based on the connection information of the units to be diagnosed, the diagnosis function will verify if all necessary unit information has been collected. Any missing information on the units will be collected.

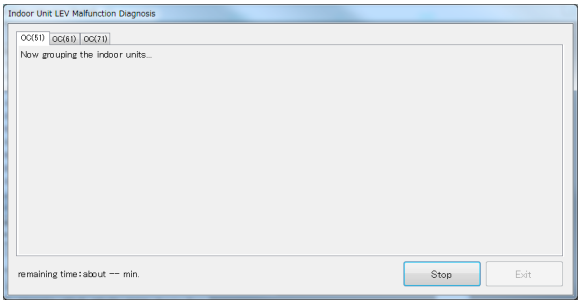



(6) When all necessary information has been collected, the Operation Monitoring window will open.
The Operation Monitoring window cannot be closed during diagnosis.

As shown in the figure at right, all menubars except ⏮ ◀ ▶ ⏭ will be hidden, and the **[X]** will become unavailable for selection.
Monitoring of operation will continue after the diagnosis is completed.



(7) Diagnosis will begin.
Indoor units in each refrigerant system will be categorized based on their grouping status.




**Note**

- If a given refrigerant system has only one group, the LEVs will only be checked for being locked-close.
- If a given refrigerant system has two or more indoor unit groups, these groups will be divided into category A and category B, and diagnosis will proceed in the following order.

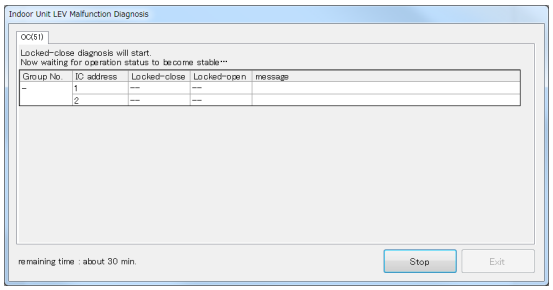
  Category A: Diagnosed for locked-close
  → Diagnosed for locked-open
  Category B: Diagnosed for locked-open
  → Diagnosed for locked-close

- All indoor units belonging to the same group will be categorized into the same category.

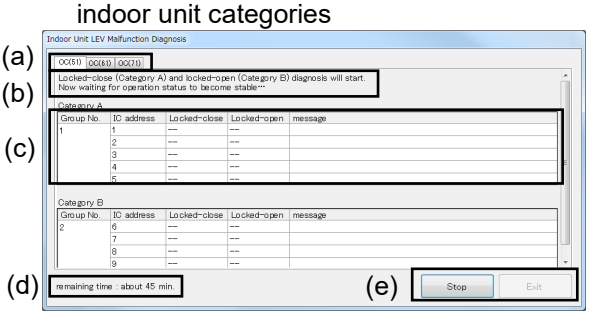
(8) After grouping, the diagnostic results screen will appear.
For a refrigerant system with only one indoor unit category, information on all indoor units will appear in a single table.
For a refrigerant system with two or more indoor unit categories, information on indoor units in category A and category B will appear in separate tables.

(a) OC (address): Click the tab to toggle through the diagnostic results on different refrigerant systems. A maximum of 50 refrigerant systems can be displayed.

①When a given system has only one indoor unit category




②When a given system has one or more indoor unit categories



(b) The table below shows the diagnostic status of the refrigerant systems shown and the reasons for terminating the diagnostic process.

| Diagnostic status and reasons for termination | Display content |
|---|---|
| Grouping of indoor units is in progress. | “Now grouping the indoor units...” |
| Diagnosis of locked-close is on hold until the unit operation becomes stable. | “Locked-close diagnosis will start.<br>Now waiting for operation status to become stable…” |
| Waiting for the operation to become stable (1st wait period) | “Locked-close (Category A) and locked-open (Category B) diagnosis will start.<br>Now waiting for operation status to become stable…” |
| Waiting for the operation to become stable (2nd wait period) | “Locked-open (Category A) and locked-close (Category B) diagnosis will start.<br>Now waiting for operation status to become stable…” |
| Normal completion of diagnosis | “The diagnosis has been completed.” |
| The outdoor unit went into the “Pipe cleaning” mode. | “The diagnosis has been canceled because the control mode switched to “Pipe cleaning” mode.” |
| The outdoor unit went into the “Stop” mode. | “The diagnosis has been canceled because the control mode switched to “Stop” mode.” |
| The outdoor unit went into the “Thermo-Off” mode. | “The diagnosis has been canceled because the control mode switched to “Thermo-Off” mode.” |
| The outdoor unit went into the “Error” mode. | “The diagnosis has been canceled because the control mode switched to “Error” mode.” |
| The outdoor unit went into the “Initial” mode. | “The diagnosis has been canceled because the control mode switched to “Initial” mode.” |
| The outdoor unit went into the “Refrigerant leakage detection” mode. | “The diagnosis has been canceled because the control mode switched to “Refrigerant leakage” mode.” |
| The outdoor unit went into the “Defrost” mode. | “The diagnosis has been canceled because the control mode switched to “Defrost” mode.” |
| The operation of outdoor unit did not become stable. | “The diagnosis has been canceled because the operation status did not become stable.” |
| Communication error | “The diagnosis has been canceled due to a communication error.” |
| Grouping of indoor units connected to different outdoor units | “The diagnosis has been canceled because some indoor units are grouped across outdoor units (Indoor units grouped in different refrigerant systems).” |
| Failure to acquire the files containing unit model information during diagnosis | “The diagnosis has been canceled because the unit model information acquisition failed.” |
| Diagnosis was terminated by the user | “The diagnosis has been completed.” |

(c) The table below shows indoor unit information and diagnostic results

| Item | Explanation | Display content |
|---|---|---|
| Group No. | When a centralized controller such as AE-200 is connected to a given system, group information will be displayed. | “1”, “2”, “3” ... |
| | When no centralized controllers such as AE-200 are connected to a given system, no group information will be displayed. | “-“ |
| IC address | IC addresses will be displayed. | “1”, “2”, “3” ... |
| Locked-close | The results of diagnosis of locked-close state will be displayed. | |
| | No LEVs being locked-close were found. | “OK” |
| | LEVs were found to be locked-close. | “Failed” |
| | No diagnosis of LEVs being locked-close was performed. | “- -“ |
| Locked-open | The results of diagnosis of locked-open state will be displayed. | |
| | No LEVs being locked-open were found. | “OK” |
| | LEVs were found to be locked-open. | “Failed” |
| | No diagnosis of LEVs being locked-open was performed. | “- -“ |
| Message Item | Messages regarding LEV status will be displayed. | |
| | Locked-close “OK”: Locked-open “OK” | “ “ (A blank will appear.) |
| | Explanation | Display content |
| | Locked-close “OK”: Locked-open “Failed” | “There is a possibility that the LEV is Locked-open or incompletely sealed. Please check the LEV.” |
| | Locked-close “Failed”: Locked-open “Failed” | “There is a possibility that the LEV is Locked. Please check the LEV.” |
| | Indoor units that do not support the diagnosis function | “This unit model does not support the diagnosis function.” |
| | Communication error during diagnosis | “The diagnosis has been canceled due to a communication error.” |

(d) The table below shows the overall progress and the results of diagnosis

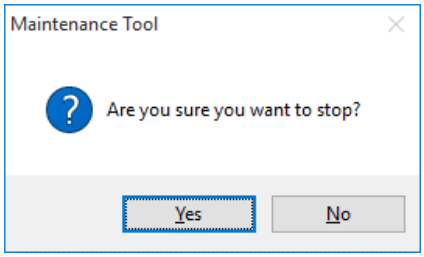
| Overall progress | Display content |
|---|---|
| When one or more refrigerant systems to be diagnosed have two or more indoor unit categories | “The remaining time will be counted down from approximately 45 minutes.” |
| When all refrigerant systems to be diagnosed have only one indoor unit category | “The remaining time will be counted down from approximately 30 minutes.” |
| Normal completion of the diagnosis of all refrigerant systems<br>Diagnosis was terminated by the user | “The diagnoses for all systems have been completed.” |
| Termination of the diagnosis of one or more refrigerant systems | “The diagnosis has been canceled in one or more systems because the operation status did not become stable.” |

(e)**[Stop]** and **[Close]**

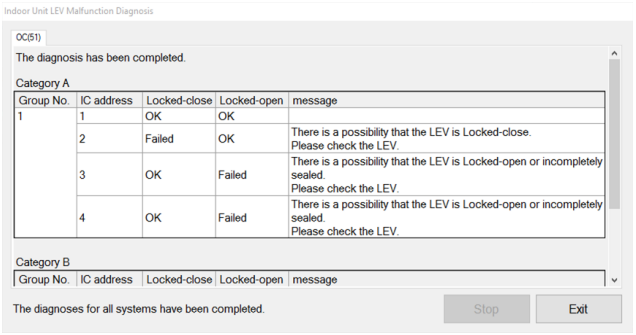
Clicking **[Stop]** will display a confirmation pop-up. Clicking **[Yes]** will terminate the diagnosis, and the **[Close]** button will become active.

Clicking **[Close]** will display the Operation Monitoring window.

Clicking **[No]** will continue the diagnosis.




**Diagnostic result example**



### 3.20.4 Diagnostic results

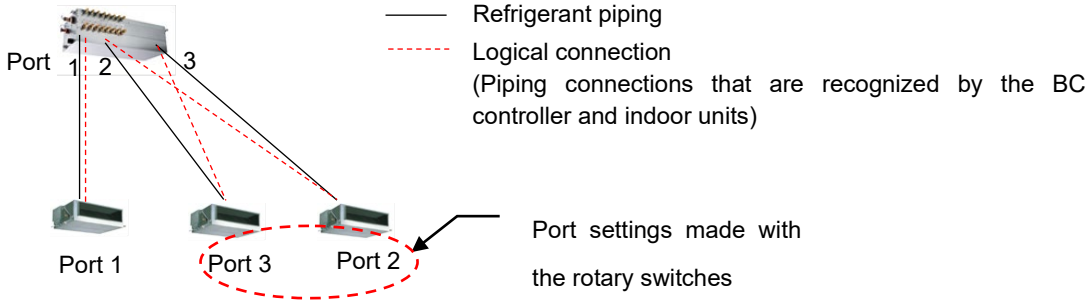
When diagnosis is complete, a folder for storing the diagnostic results will be created in the "C:¥MntToolNetEA¥Data" folder, and the following data will be stored in the folder.
The folder will be named based on the date and time when the [Start] button is clicked.
yyyyMMdd_HHmmss (year/month/date_hour/minute/second)(Example: [Start] button clicked at 14 minutes and 15 seconds past 13 o'clock on April 1st, 2018: 20180401_131415)

① Window showing the diagnostic result of each refrigerant system [ext jpg]
Example: 20180401_131415(51)_result.jpg
② Operation data acquired by the "Operation data collection" function [ext MTDZ]
③ Text file containing the operation data acquired by the "Operation data collection" function [ext csv]
④ File in which error data for analysis will be stored [ext MTLZ]

## 3.21 Detection of the incorrect port connections/settings

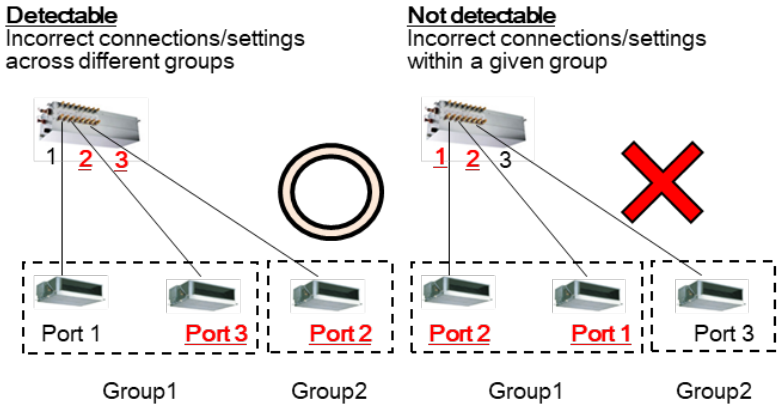
*** Items Performed Here**

- This function helps detect incorrect port connections/settings for the simultaneous heating/cooling CityMulti system (R2).
  Incorrect port connections/settings means that the port setting for a given indoor unit does not match the port number on the BC controller to which the indoor unit piping is connected.
  Incorrect port connections/settings are detected by operating the indoor units **in each group** and studying the change in piping temperatures. Units are operated in the cooling mode when the outside temperature is 15°C or above, and in the heating mode when the outside temperature is below 15°C.
- Operation data collected during a diagnosis are automatically be saved and are available for viewing on the Offline analysis window after the diagnosis is completed.



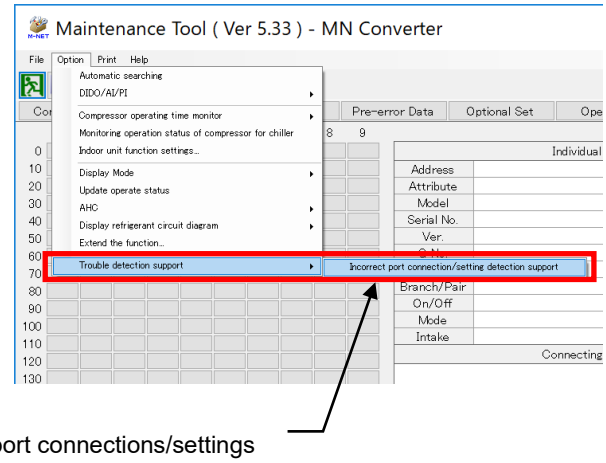

**Example of an incorrect port connection/setting**

### 3.21.1 Restrictions and cautionary notes

| Function | Description |
|---|---|
| Restrictions and cautionary notes | ➢ This function helps detect incorrect port connections/settings. Actual port connections/settings need to be physically checked on site.<br>➢ Units are operated by the groups, and incorrect port connections/settings within the same group are not detectable. When changes are made to the indoor unit group setting information, recheck the port for incorrect connections/settings using this function.<br>  <br><br>➢ The diagnostic process will be cancelled if the operation status of the air conditioning units being diagnosed changes during a diagnosis due to an operation mode change from a remote controller or a breaker trip.<br>➢ Indoor units will stop after completion of the diagnosis. Restart the indoor units as necessary.<br>➢ If the outdoor unit fails to go into operation within 15 minutes due to communication error or for other reasons, the incorrect port connection/setting detection function will be cancelled. |

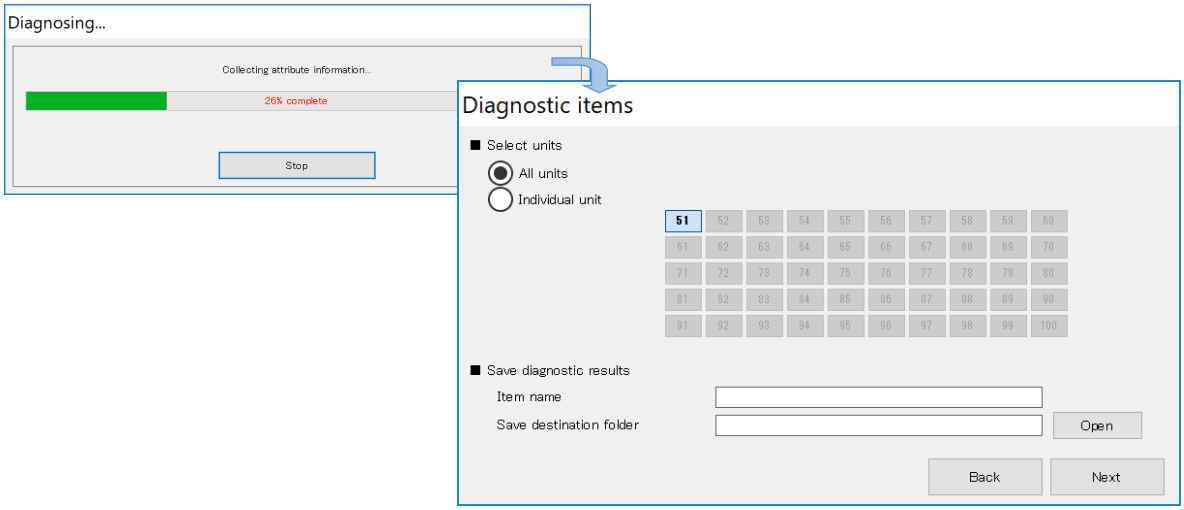
## 3.21.2 Operation method

(1) From the **[Option]** tab on the Main window, select **[Error detection support function]** and then **[Incorrect port connections/settings detection support]**.




Detection of the incorrect port connections/settings

(2) The progress bar will appear, and then the **[Diagnostic settings]** window will appear.




**[Selecting the units to diagnose]**

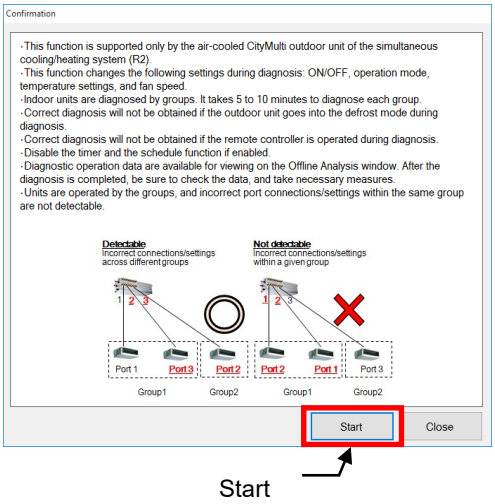
Select the system to be diagnosed from the unit selection menu. Select **[All units]** to select all systems whose attribute is OC on the M-NET system. Select **[Individual]** to select the diagnosis target individually.

**[Saving the diagnostic results]**

Select the site name and the save-destination folder to save and the output data. See “3.21.3 Diagnostic results” for the types of data that will be saved.

Select the units to be diagnosed, enter the save- destination folder for the diagnostic results, and click **[Next]**.

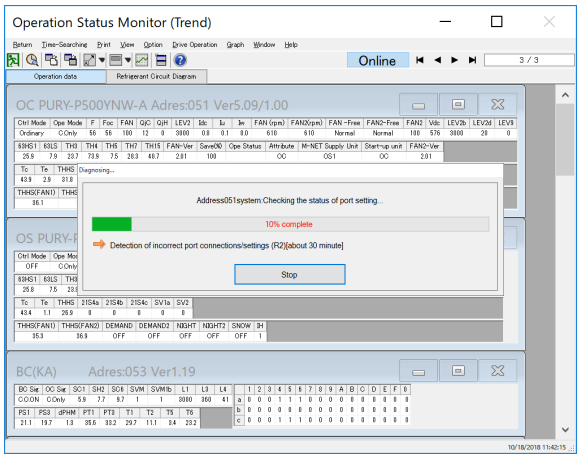
(3) The confirmation window will appear. Read the cautionary notes for using this function, and then click **[Start]**.



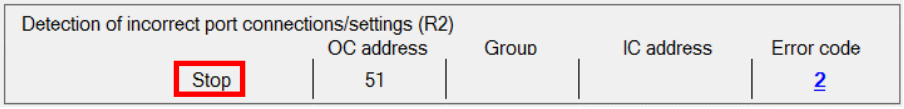

**Note**

It will take approximately [15 minutes + Number of groups x 5 minutes] to complete the diagnosis of a refrigerant system using the incorrect port connections/settings function.
15 minutes are the sum of the time it takes to check the system settings (5 minutes), start the outdoor unit (5 minutes), and perform other processes (5 minutes). It takes approximately 5 minutes to diagnose each group if the port connections/settings are normal, but takes approximately 10 minutes if the port connections/settings are incorrect.

(4) Detection of incorrect port connections/settings will begin, and the operation monitor window and the progress bar will appear on the screen. Clicking **[Cancel]** will cancel the process.



(5) Diagnostic results will appear upon completion of the diagnosis. Take appropriate measures based on the diagnosis.




Port connection/setting check results
OK : The port settings are correctly set.
Fail : The port settings may not be correctly set.
Check the port settings.
Cancel : Diagnosis was cancelled.
Diagnosis will be cancelled when the outdoor unit operation is stopped by the user or the unit goes into a defrost mode or other modes not supported by the diagnostic function.
Restart the diagnosis.
Not supported: The outdoor unit with the selected address does not support the function.

**Note**
Groups without connection to the centralized controller will appear as "-" in the "Group" column.

### 3.21.3 Diagnostic results

When diagnosis is done, the following data will be saved in the folder that was designated in the Diagnostic settings window. Review the diagnostic results as necessary.

① Diagnostic results [extension jpg]
② Operation data [extension MTDZ
③ ② in the CSV format file [extension CSV]
④ Diagnostic result log [extension MTLZ]

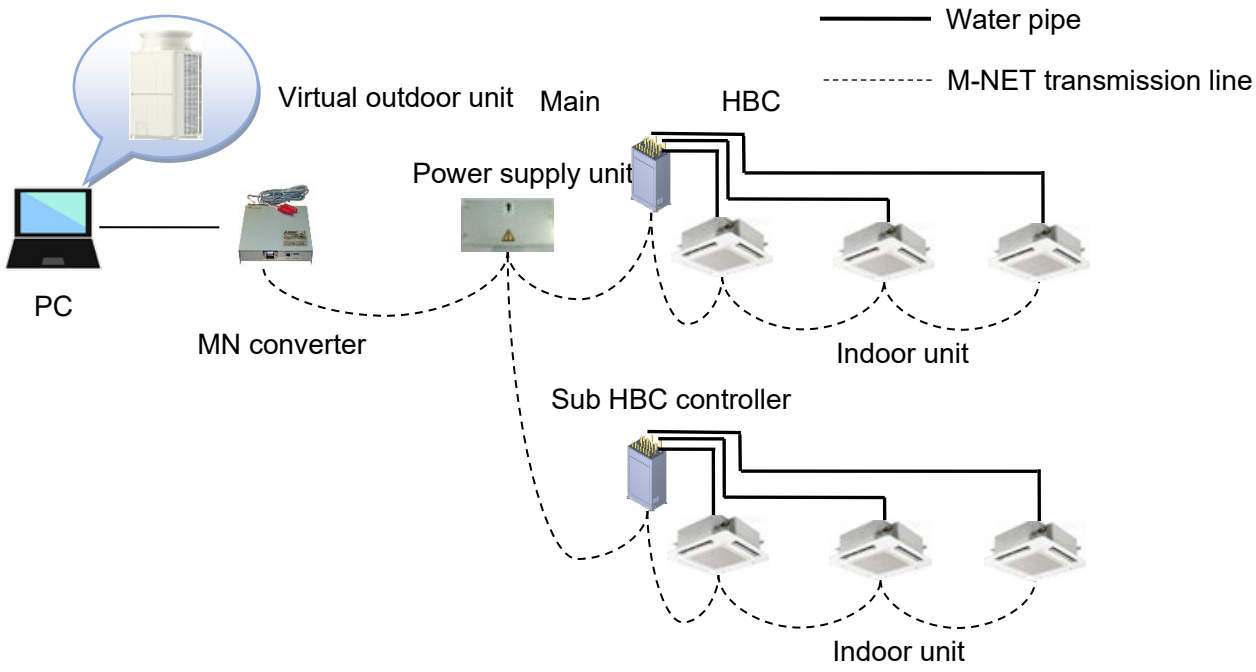
## 3.22 HVRF-R2 installation support function

*** Features**

- The HVRF-R2 installation support function enables the HVRF-R2 units to perform the debris removal operation and the air vent operation with the Maintenance Tool.
  Conventionally, the debris removal operation and the air vent operation cannot be performed unless the installation of the outdoor unit/heat-source unit (hereinafter referred to as outdoor unit), HBC controller, and indoor unit has been completed. The HVRF-R2 installation support function allows the HVRF-R2 units to perform these operations upon completion of installation of the HBC controller and the indoor unit.

### 3.22.1 System configuration

To use the HVRF-R2 installation support function, configure the system as follows.



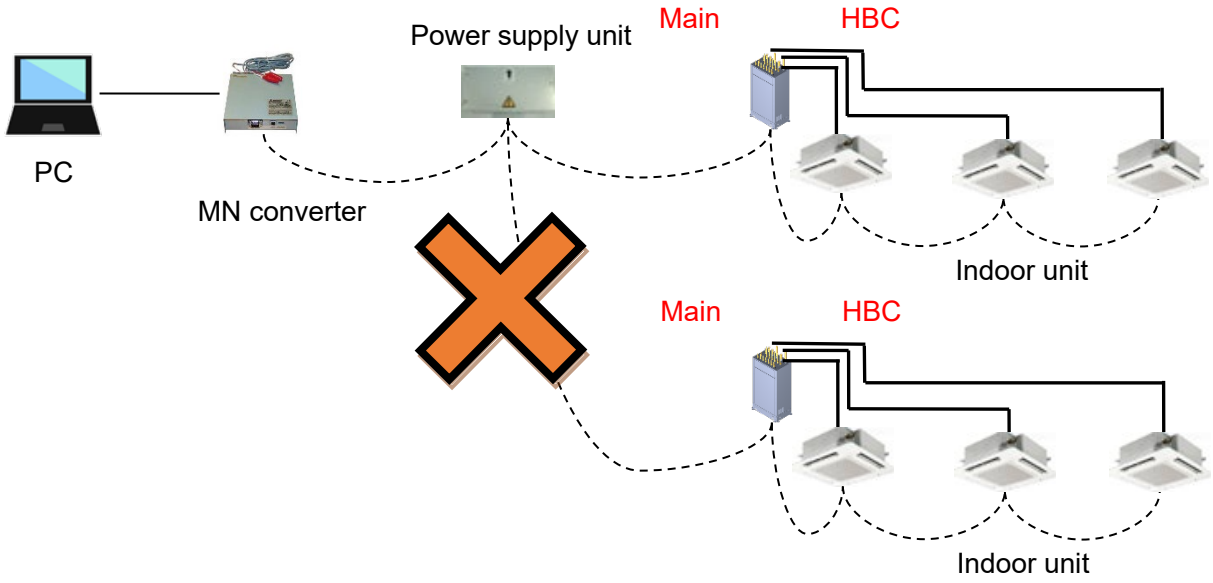

| No. | Device | Description |
|---|---|---|
| 1 | PC | PC on which the Maintenance Tool is installed.<br>In the HVRF-R2 installation support function, the Maintenance Tool works as a virtual outdoor unit.<br>The HBC controller and the indoor unit operate as if the outdoor unit was connected, allowing the debris removal operation and the air vent operation to be performed without the outdoor unit being connected. |
| 2 | MN converter | Used to connect a PC to the M-NET transmission line.<br>The HVRF-R2 installation support function works with any models of MN converter. |
| 3 | Power supply unit | Used to supply power to the M-NET transmission line.<br>The outdoor unit usually supplies power to the M-NET transmission line.<br>The M-NET transmission line in the system shown in the figure above requires the power supply unit because there is no outdoor unit.<br>Use PAC-SC51KUA. |
| 4 | HBC controller | There are two types of HBC controllers: "Main HBC controller (with pump)" and "Sub HBC controller (without pump)."<br>The HVRF-R2 installation support function supports only vertical type Main-HBC(Horizontal type Main-HBC is unsupported). |
| 5 | Indoor unit | The HVRF-R2 installation support function works with any models of indoor unit. |

**NOTE:**

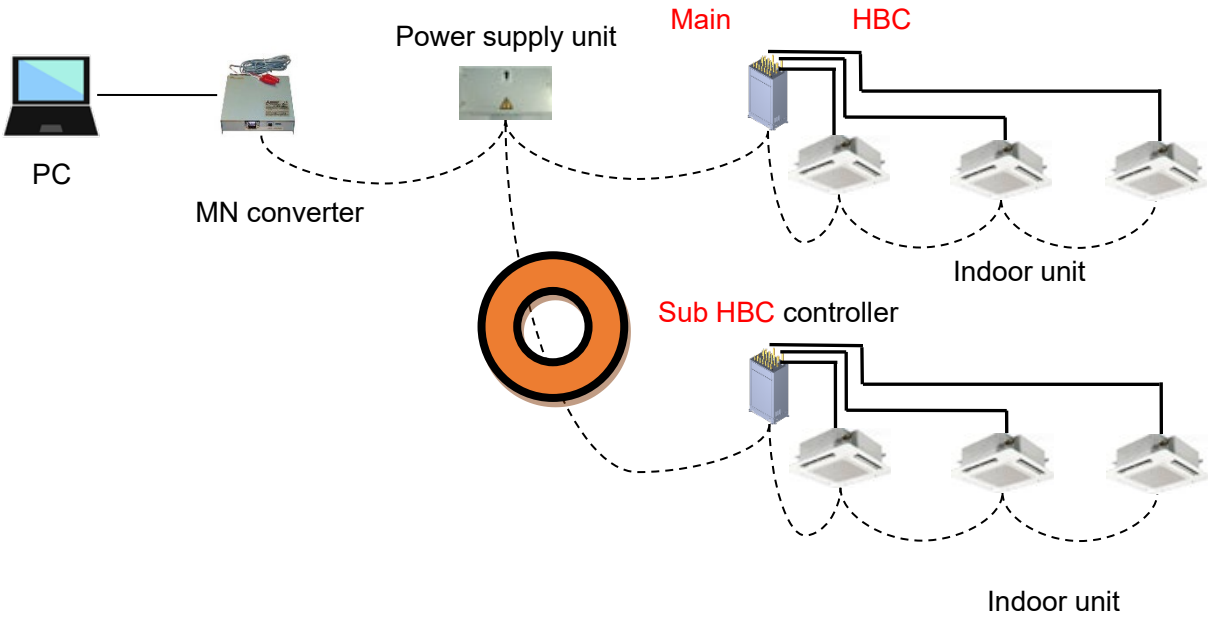
With the HVRF-R2 installation support function, the debris removal operation and the air vent operation cannot be performed in systems containing multiple main HBC controllers.

To perform the HVRF-R2 installation support function in multiple systems, perform the debris removal operation and the air vent operation for each system.

The HVRF-R2 installation support function cannot be used for systems containing multiple main HBC controllers.

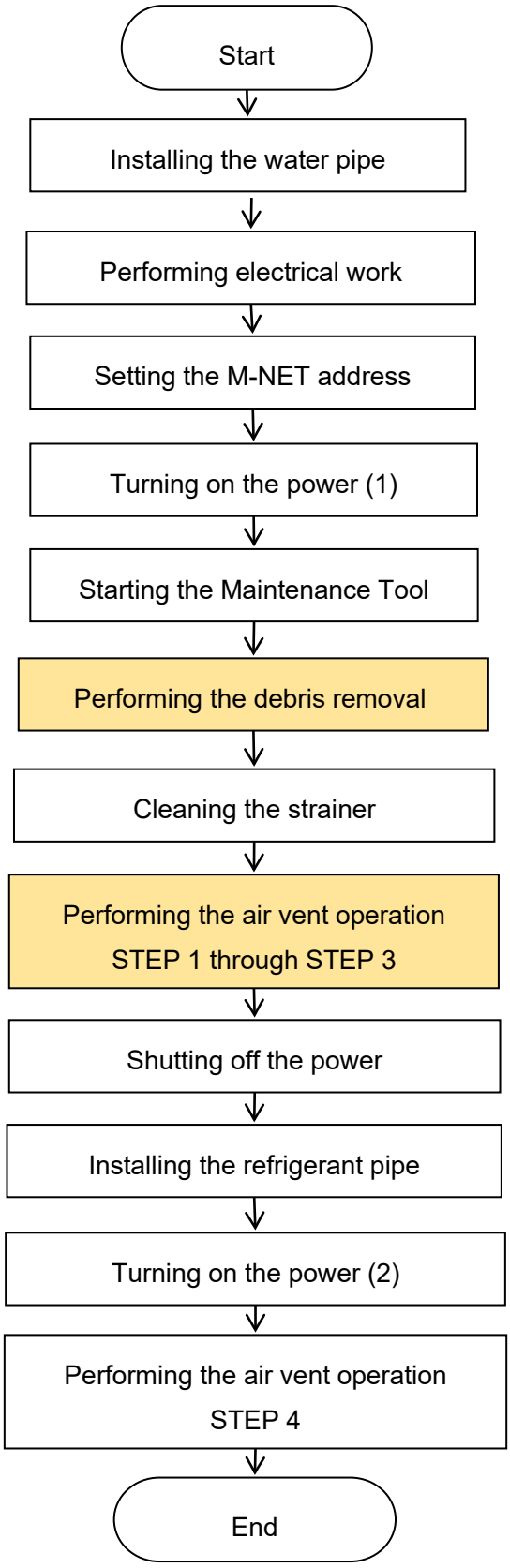



The HVRF-R2 installation support function can be used for systems containing one main HBC controller.



## 3.22.2 Overview of the system configuration procedure

The following flowchart shows the procedure for configuring the HVRF system with the Maintenance Tool. The Maintenance Tool supports the steps "Debris removal operation" and "Air vent operation STEP 1 through STEP 3." Follow the conventional procedure for other steps.
This manual describes the procedures only for "Debris removal operation" and "Air vent operation STEP 1 through STEP 3" that are highlighted in yellow in the figure below. See the Installation Manual or the Service Handbook for the procedure for other steps.



## 3.22.3 Procedure ("Installing the water pipe" through "Turning on the power (1)")

Install the water pipe, perform electrical work, set the M-NET address, and set the branch port address of the indoor unit by referring to the Installation Manual.

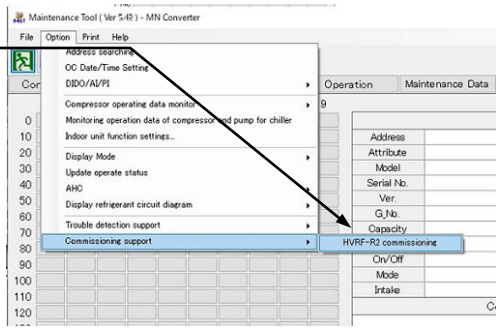
When the HVRF-R2 installation support function is used, the automatic M-NET address assignment function cannot be used. Manually assign an arbitrary M-NET address.

After the procedures above have been completed, connect the power supply unit to the M-NET transmission line. Then, turn on the power of the HBC controller, indoor unit, and power supply unit.

## 3.22.4 Procedure ("Starting the Maintenance Tool" through "Cleaning the strainer")

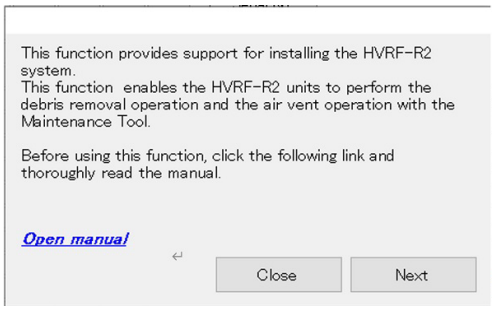
Connect the MN converter to the M-NET transmission line, and start the Maintenance Tool.

(9) Click [Option] > [Commissioning support] > [HVRF-R2 commissioning].

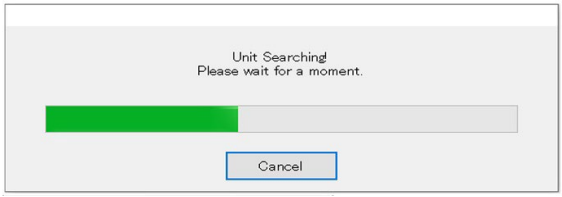



(10) A confirmation window will appear.
Check the details, and click [Next].

To open the manual (this document), click [Open manual].



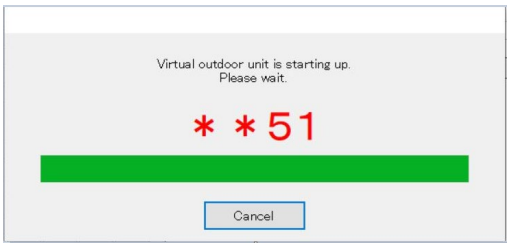

(11) A progress bar will appear.
An error message will appear if there is a problem with the system configuration.
If the error message appears, take corrective actions according to the table below, and restart from step (1).




| Error message | Corrective action |
|---|---|
| HBC controller with the M-NET address ** does not support the HVRF-R2 installation support function. | The HVRF-R2 installation support function works only for the HBC controller installed vertically. For other HBC controllers, install the outdoor unit to perform the debris removal operation and the air vent operation. |
| HBC controller does not exist. | Check that the HBC controller is connected to the M-NET transmission line. |
| Two or more main HBC controllers exist. | With the HVRF-R2 installation support function, |

| | |
|---|---|
| Check the system configuration. | the debris removal operation and the air vent operation cannot be performed in systems containing multiple main HBC controllers.<br>Perform the debris removal operation and the air vent operation for each system. |
| Four or more sub HBC controllers exist.<br>Check the system configuration. | |
| M-NET address ** is set to the device other than the HBC controller.<br>To use the HVRF-R2 installation support function, disconnect the devices other than HBC controllers and ICs from the M-NET transmission line. | Separate the devices other than the HVRF system (such as the VRF system and chiller) from the M-NET transmission line. |

(12) The startup window of the virtual outdoor unit appears.
The virtual outdoor unit communicates with the HBC controller and the indoor unit to perform startup processing. Wait until the startup processing is completed.
The startup processing will be completed in about three minutes.



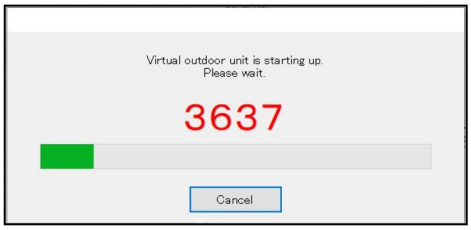

**NOTE:**

The service LED of the virtual outdoor unit appears on the Maintenance Tool window.

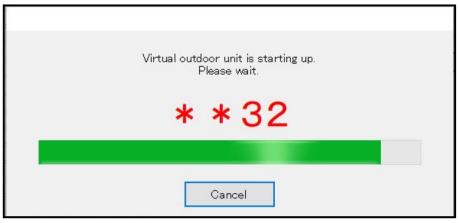
The horsepower, software version, M-NET address, and refrigerant information of the virtual outdoor unit are displayed alternately. If an error occurs, an error code will be displayed. If the error code is displayed, see the Service Handbook, and take corrective action.



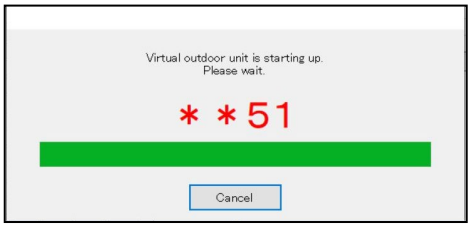

Horsepower of the virtual outdoor unit




Software version of the virtual outdoor unit




Refrigerant information of the virtual outdoor unit

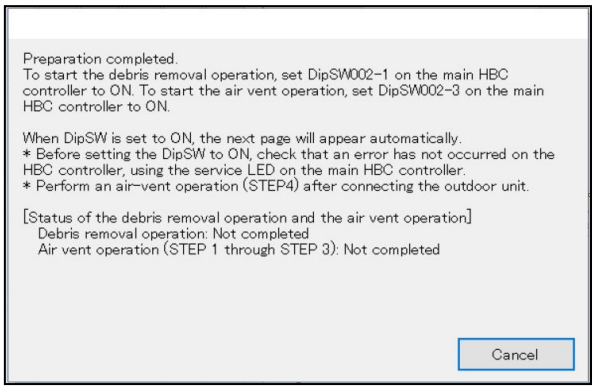



M-NET address of the virtual outdoor

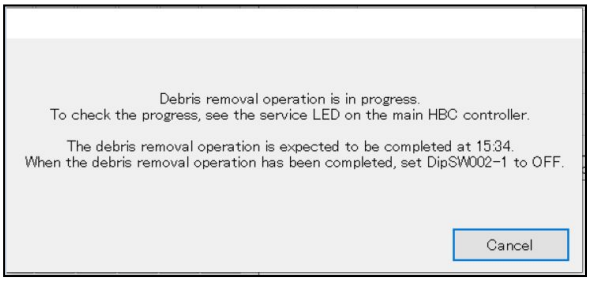



Error code

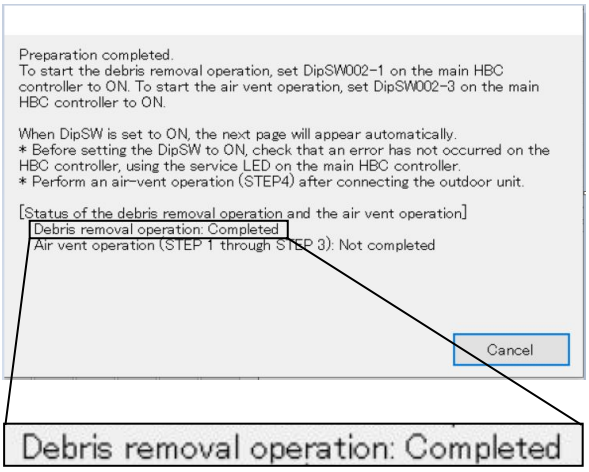
(13) When the startup of the virtual outdoor unit has been completed, a preparation window will appear.
By referring to "Instructions for Debris Removal Operation" in the Service Handbook, make preparation for the debris removal operation, and perform the debris removal operation by setting DipSW002-1 on the main HBC controller to ON.




(14) When DipSW002-1 on the main HBC controller is set to ON, the Maintenance Tool window changes to the next page, and the debris removal operation starts. Wait until the debris removal operation is completed.
The progress of the debris removal operation is not displayed in the Maintenance Tool window. To check the progress, see the service LED on the main HBC controller.



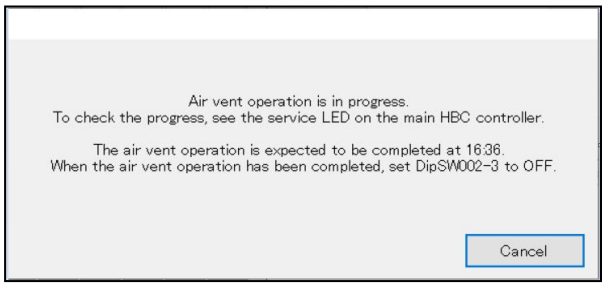

(15) When the debris removal operation has been completed, set DipSW002-1 on the main HBC controller to OFF. The Maintenance Tool window will change to the next page. Check that "Debris removal operation: Completed" is displayed.




(16) Clean the strainer by referring to the instructions in the Service Handbook.

## 3.22.5 Procedure ("Air vent operation STEP 1 through STEP 3" through "Shutting off the power")

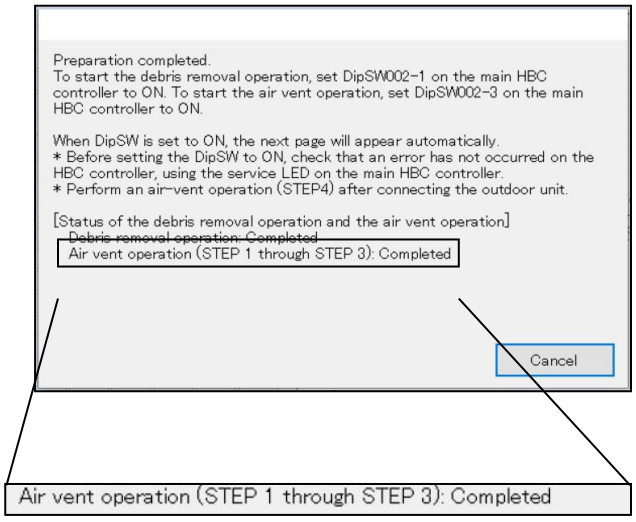
(1) By referring to "Instructions for the Air Vent Operation" in the Service Handbook, make preparation for the air vent operation, and perform the air vent operation by setting DipSW001-10 to OFF and then setting DipSW002-3 to ON on the main HBC controller.




When DipSW002-3 is set to ON, the Maintenance Tool window changes to the next page, and the air vent operation (STEP 1 through STEP 3) starts. Wait until the air vent operation (STEP 1 through STEP 3) is completed.
As with the debris removal operation, check the progress, using the service LED on the main HBC controller.

**NOTE:**
Before performing the air vent operation using the Maintenance Tool, set Dip-SW1-10 on the main HBC controller to OFF. When DipSW2-3 is set to ON while DipSW1-10 is set to ON, the air vent operation (STEP 4) will be performed and stopped abnormally because the air vent operation (STEP 4) requires installation of the outdoor unit.

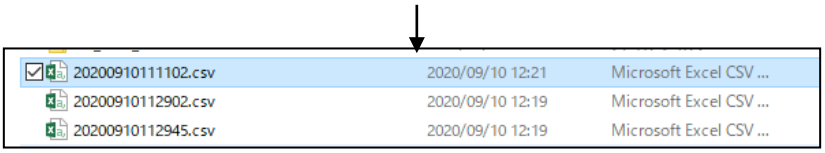
(2) When the air vent operation (STEP 1 through STEP 3) has been completed, set DipSW002-3 on the main HBC controller to OFF.
The Maintenance Tool window will change to the next page. Check that "Air vent operation: Completed" is displayed.
The Maintenance Tool will not be used in the further steps. Click [Cancel] to exit the Maintenance Tool.




(3) Turn off the power of the HBC controller, indoor unit, and power supply unit, and then disconnect the power supply unit.
This step completes the debris removal operation and the air vent operation from the Maintenance Tool.

**NOTE:**
Install the refrigerant pipe, and perform the air vent operation (STEP 4) by referring to the Installation Manual and the Service Handbook.
Note that only the air vent operation (STEP 4) can be performed by setting DipSW001-10 on the main HBC controller to ON.

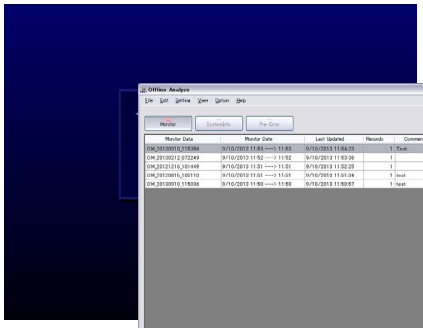
## 3.22.6 Restrictions and precautions

| Restrictions and precautions | Description |
|---|---|
| Exit from the Maintenance Tool | Do not exit the Maintenance Tool or disconnect the MN converter or the power supply unit from the M-NET transmission line during debris removal operation or air vent operation to prevent error from occurring.<br><br>If an error occurs, perform the debris removal operation or the air vent operation again from the first step. |
| In the event of a power failure | If a power failure occurs, perform the debris removal operation or the air vent operation again from the first step. |
| If an error occurs during the debris removal operation or the air vent operation | If an error occurs during debris removal operation or air vent operation, check the log file stored in the "C:¥MntToolNetEA¥Data" folder.<br><br>The log file name is "year, month, hour, minute, and second when the Maintenance Tool is started" + ".csv".<br><br>  <br><br>The log file records the error code detected by the HBC controller and the opening of the flow control valve. If an error occurs, take measures according to the information in the log file.<br><br>Branch port No.<br><br>Date Time Error_Code Error_Detail Error_Address HB(052)<br>0 1 2 3 4 5<br>9/10/2020 11:11 52<br>9/10/2020 11:16 52 C715 0 0 0 0 0<br>9/10/2020 11:21 52 C715 0 0 0 0 0<br>9/10/2020 11:26 52 C715 0 0 0 0 0<br>9/10/2020 11:31 52 0 0 0 0 0 0<br>9/10/2020 11:36 52 0 0 0 0 0 0<br>9/10/2020 11:41 52 0 0 0 0 0 0<br>9/10/2020 11:46 52 0 0 0 0 0 0<br>9/10/2020 11:51 52 0 0 0 0 0 0<br>9/10/2020 11:56 52 0 0 0 0 0 0<br>9/10/2020 12:01 52 0 0 0 0 0 0<br>9/10/2020 12:06 52 0 0 0 0 0 0<br>9/10/2020 12:11 52 0 0 0 0 0 0<br>9/10/2020 12:16 52 0 0 0 0 0 0<br><br>Sampling time<br>Error code detected by the main HBC controller<br>Opening of the flow control valve |

# 4 Off-Line Monitor Operating Method

## 4.1 Off-Line Monitor Screen Transfer

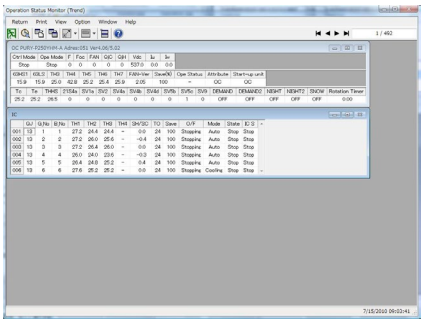
**Title Screen**



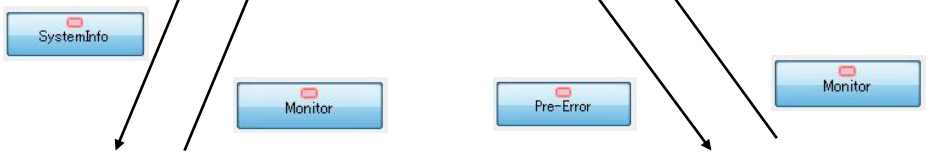
**Operation Monitor**



**(Operation monitor Data list screen)**

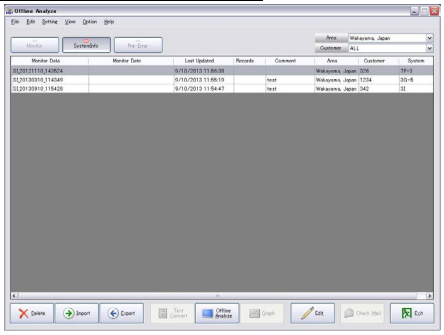


**(Operation status monitor screen)**

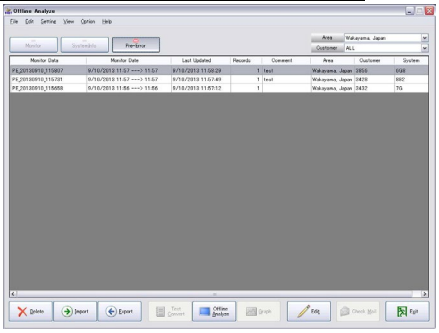



**System Information**

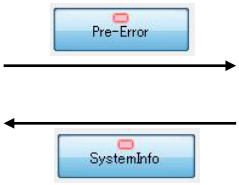
**Monitoring of Pre-error Data**

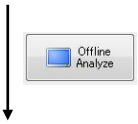


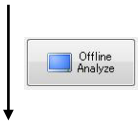
**(System info. Data list screen)**

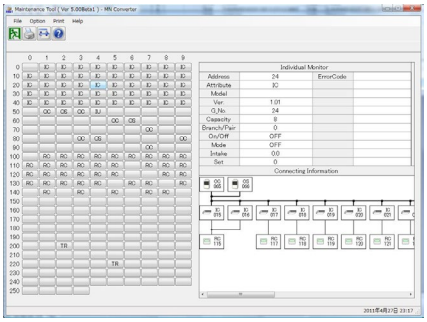


**(Pre-error Data list screen)**

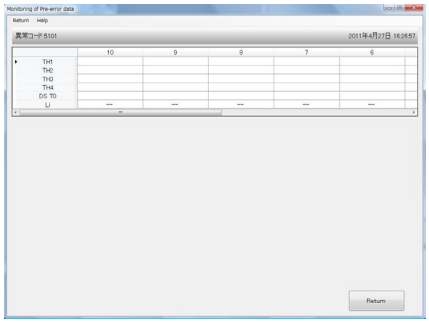


**(System information screen)**



**(Pre-error data screen)**

## 4.2 Function Chart

### 4.2.1 Operation Monitor

**Off-Line Analizing** ---------- [Refer to 4.3.1]
Monitors and prints about unit data and the refrigerant circuit diagram saved in On-Line "**3.8 Operation Monitor**".

**Check Mail** ---------- [Refer to 4.3.2]
Extracts the operation monitoring data being mail-transferred by the remote monitor mode from the mail server.

### 4.2.2 System Information Monitor

**Off-Line Analyzing** ---------- [Refer to 4.4.1]
Monitors and prints about unit data saved in On-Line "**3.4 Main Screen**".

### 4.2.3 Monitoring of Pre-error Data

**Off-Line Analizing** ---------- [Refer to 4.5.1]
Monitors and prints about unit data saved in On-Line "**3.11.1.2 Monitoring of Pre-error data**".

### 4.2.4 Compressor operating data monitor

**Off-Line Analizing** ---------- [Refer to 4.6.1]
Monitors and prints about unit data saved in On-Line "**3.16 Compressor operating data monitor**".

### 4.2.5 Function common for each screen (Filing operation)

**Delete Data** ---------- [Refer to 4.7.1]
The offline data selected can be deleted.

**Export** ---------- [Refer to 4.7.2]
Allows to output the off-line data selected on the screen as a separate file from the database.

**Import** ---------- [Refer to 4.7.3]
Allows to take the off-line data being output as a file by Export into the database.

**Text Convert** ---------- [Refer to 4.7.4]
Allows to output the off-line data being displayed on the screen as a file in Text format from the database. The system information data can not be converted. The Pre-error data can be converted in text on Offline Analysis Screen.

**Monitor Data information edit** ---------- [Refer to 4.7.5]
Allows to edit the name of Monitor Data or other relevant information.

**Right-clicking menu** ---------- [Refer to 4.7.6]
The items that can be set are same as that of the function button on the screen listing each data.

**Malfunction Log Data** ---------- [Refer to 4.7.7]
Allows to open The folder of data file by the Explorer.

### 4.2.6 Offline Analyze on Wide area access mode

**Off-Line Analyzing** ---------- [Refer to 4.8.1]
Allows to edit the monitored name.

### 4.2.7 Offline Analyze on Initial settings of AHC

**Off-Line Analyzing** ---------- [Refer to 4.9.1]

Allows to edit the the initial AHC settings.

- **Changing the name of monitor data**
  You may change the monitor data name on the screen of the data list.
- **Right-clicking menu**
  Clicking the right button of the mouse on the [Monitor data] desired to be operated displays the pop-up menu. Using the pop-up menu facilitates your operation.
- **Malfunction Log Data**
  The folder where the CSV file (Malfunction Log etc.) is stored can be displayed.
- The offline mode includes 2 types, the [**normal mode**] and [**wide area access mode**].
  Although the functions of both modes are almost same, however, under the [**wide area access mode**], the following functions are provided additionally.
  **1) Display of monitored name objective for data collection**
  The [AREA name], [Customer] and [Air conditioning system name] are shown for each data obtained.
  **2) Display of extracted data**
  By selecting [AREA name] and [Customer name], the relevant data only can be displayed.

**NOTE**: Both the data obtained by online under normal mode and that under wide area access mode can be displayed commonly under both offline modes.

- **Connecting to P/M series**
  In case of connection using USB / Serial conversion cable, the applicable items are following.
  ・Operation monitor[Refer to 4.2.1]
  ・Function common for each screen (Filing operation)[Refer to 4.2.5]

# 4.3 Operation Monitor

*** Items Performed Here**

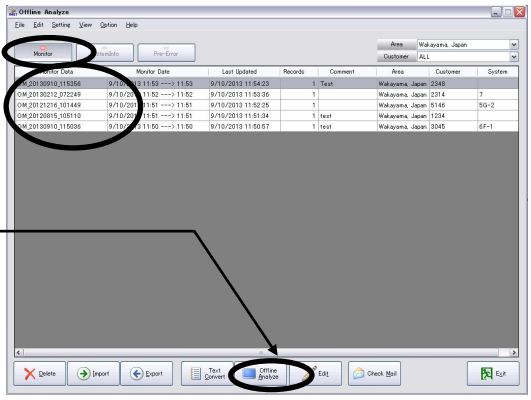
- Monitors and prints about the System Information and the Operating Data of units saved using the on-line monitor.

## 4.3.1 Off-Line Analyzing

(1) Click on [Monitor] to display the data list screen of Operation Monitor.

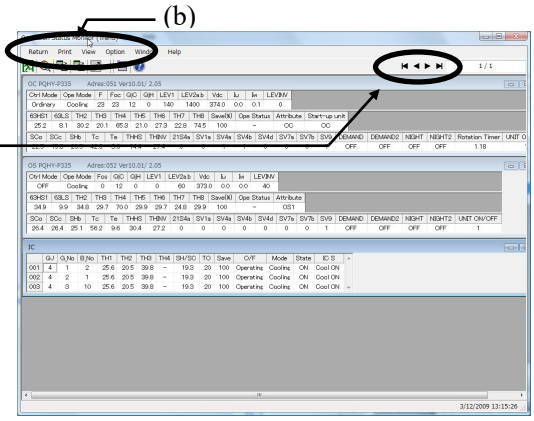
(2) Click on [**Monitor Data**] desired to be monitored.

(3) Click on [Offline Analyze].



**NOTE:**
This covers the operation with the menu of the right-clicking of the mouse.
(Refer to 4.7.6 Right-clicking menu.).

(4) **Operation Status Monitor Screen**

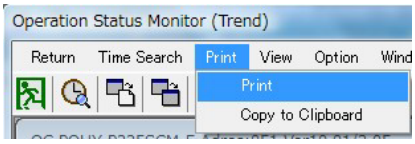



(a) Click on the [◀◀] [◀] [▶] [▶▶] buttons to display data from oldest or one minute before or one minute after or Latest.
This feature is supported in the "Operation Data" screen only.

(b) "**Menu Bar**"
The menu bar displays [**Return**], [**Print**], [**View**], [**Time Search**], [**Option**], [**Help**].

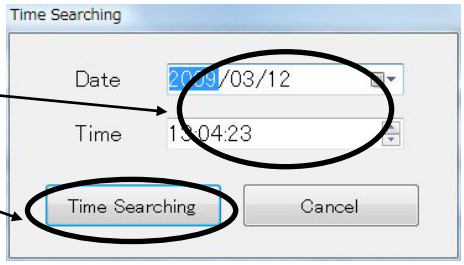
- Click on [**Return**] to end the **Operation Status Monitor Screen**.
[Refer to (c)]

- Click on [**Print**] and then select "**Print**" from the **sub-menu**.
The hard copy of the screen will be printed from the connected printer.




- Click on [**Time Search**] and the **Time Searching Screen** will appear.
Enter the [**Date**] and [**Time**].
(When entering the time, refer to the monitor data time.)

Once the time has been entered, click on [Time Searching].
The entered data will appear.
If no time data has been entered, data for the nearest time will appear.




**NOTE:**
Set the data/time to be entered to the time presented within the monitor data.
Setting to the time outside of the monitor time may cause to disable the search function.

- Click on [**View**] and then select "**Switch Trend Form**" or "**Switch Classic Form**" from the **sub-menu**.Change the display format.

- Click on [**Help**] and "**Explanation of Terminology**" and "**Operation Method**" sub-menus can be selected.

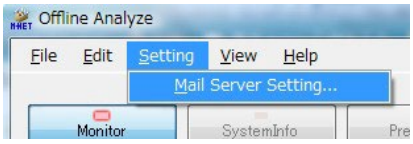
[Refer to **3.6.1 Connecting Information of outdoor units 3.6.1.2 (2) "Menu Bar"**]

(c) Click on [**Return**] on the menu bar to end the **Operation Status Monitor Screen**.
The screen returns to the data list screen of Operation Monitor.

## 4.3.2 Check mail

***Mail Server Setting**

In order to provide mail checking to the operation data mail-messaged from Centralized Controller by utilizing Mail communication mode under online mode, the setting is required relating to the connection of the objective mail server.

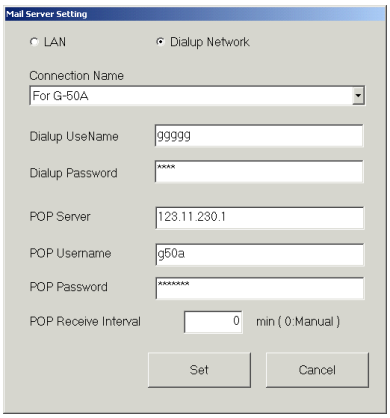



(a) Clicking on the sub-menu "**Mail server setting**" of "**Setting**" on the menu bar displays **Mail server setting screen**.

(b) For lan connection, click on "**LAN**," set the items relating to mail servers, and click on Set .

Items to be set

- Pop server :Ip address of mail servers for receiving
- User name :User name for mail receiving
- Password :Password for mail receiving




(c) For diaplup connection, click on "**Dialup Network**," set the items relating to dialup and mail servers,and click on Set .

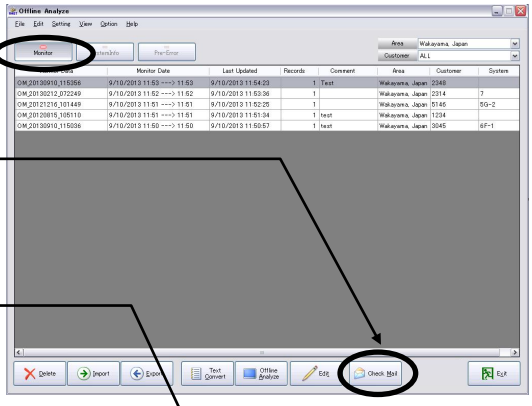
Items to be set

- Connection name:dialup connection name (requires to set the information on the provider to be connected by [dialup connection] from [control panel])
- Dialup user name :user name for dialup connection
- Dialup password :password for dialup connection
- POP Server :IP address of mail servers for receiving
- User Name :User name for mail receiving
- Password :Password for mail receiving

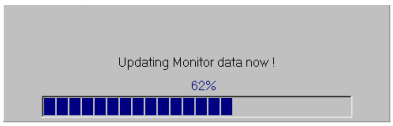
* When there are many amounts of data, this several hours case is in update of monitor data. We recommend you to set up so that interval time may be inputted into "POP Receive Interval" of "Mail Server Setting" and a mail check may be carried out periodically. (A mail check is automatically performed at the set-up interval.)

(1) Click on Monitor to display the data list screen of Operation Monitor.

(2) Click on Check Mail .
Initiates the checking of the operation monitor data mail for the mail server, and storing of the acquired data. During the data transfering and storing, the progress rate will be displayed.



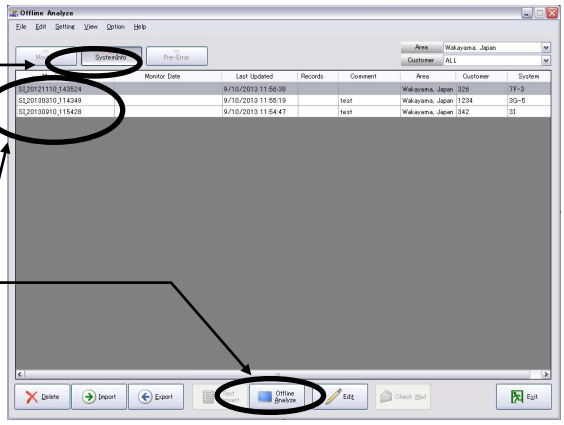

(3) After completing of data tranffer and storing, the numbers of received mail will be displayed.
(The numbers of the received mail counted here have no relation with the numbers displayed on the monitor data.)
Clicking on OK returns to the data list screen of Operation Monitor.




*The capacity to store the data obtained by the Maintenance Tool counts for 2G-bite maximum. When the remaining storage capacity is getting insufficient during data reception by mail, Warning Screen will appear. In this case, suspend the mail checking, and delete unnecessary data on Offline Screen to keep a proper capacity.

# 4.4 System Information

## 4.4.1 Off-Line Analyzing



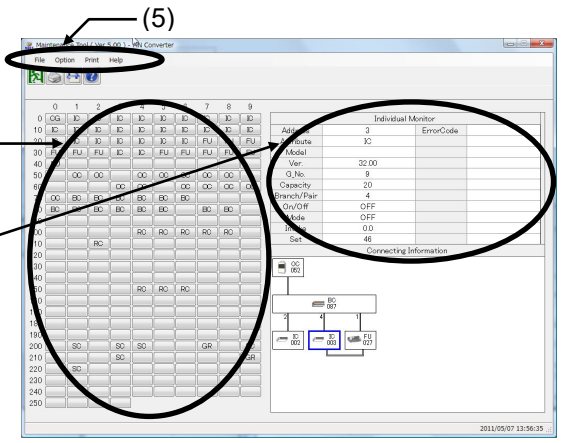
(1) Click on SystemInfo to display the data list screen of System Information.

(2) Click on [**Monitor Data**] desired to monitor.

(3) Click on Offline Analyze .

**- The System Information Screen** of Off-Line displays all connection information memorized by the connected Centralized Controller.

**NOTE:**
This covers the operation with the menu of the right-clicking of the mouse.
(Refer to 4.6.6 Right-clicking menu.)




(4) Click on the address [**Button**] of the attributes to be displayed and the [**Unit Information Display Column**] is shown in the same way as when on-line. The [**Function Selection Buttons**] cannot be used.

(5) "**Menu Bar**"
[**Return**], [**Print**], [**Option**] and [**Help**] are displayed on the menu bar.

- Click on [**Return**] to end the system information. [Refer to (6)]

- Click on [**Print**] and an explanation "**Print**" and "**Copy to Clipboard**" will be displayed.

- Click on [**Option**] and then select "**Display Mode**" from the sub-menu.

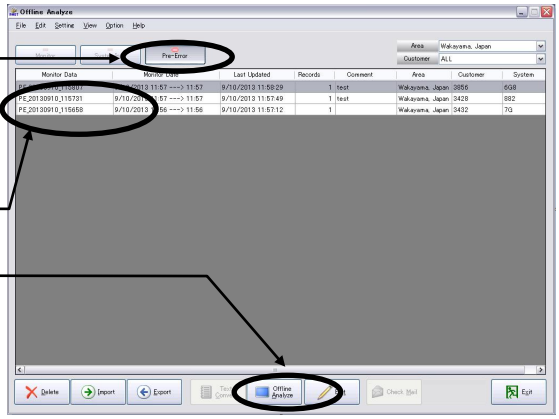
  To switch the display mode.[**Refer to 3.6 Display Mode Change**]

- Click on [**Help**] and an explanation "**Terminology**" and "**Operation Method**" will be displayed.
  [Refer to **3.7.1 Connecting Information of outdoor units 3.7.1.2 (2) "Menu Bar"**]

(6) Click on [**Return**] on the menu bar to end system information.

# 4.5 Monitoring of Pre-error Data

## 4.5.1 Off-Line Analyzing



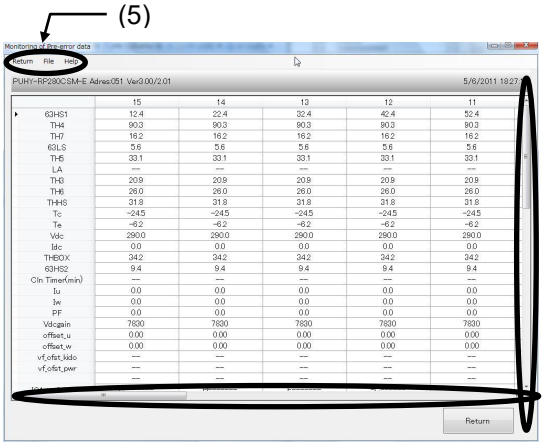
(1) Click on [Pre-Error] to display the data list screen of Pre-error.

(2) Click on [**Monitor Data**] desired to monitor.

(3) Click on [Offline Analyze] .

**NOTE:**
This covers the operation with the menu of the right-clicking of the mouse.
(Refer to 4.6.6 Right-clicking menu.)

(4) On the Pre-error Data screen, the operation status data immediately before generating error will be displayed in a unit of minute.
Each figure on the upper column indicates a number of minute before generating an error respectively.
The change of the display content is performed with Up/down, left/right scroll bar.
The number of displayed items and that of the stored data (per minute) differ depending on the selected item.



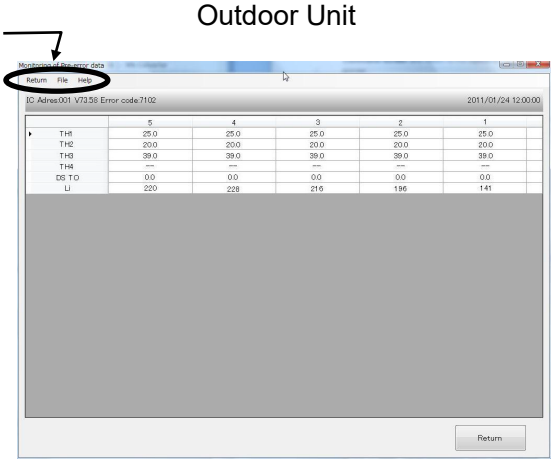

Outdoor Unit

(5) "**Menu Bar**"
[**Return**], **[Text convert] of [file]** and [**Help**] are displayed on the menu bar.

- Click on [**Return**] to end the Monitor before error occurred screen.[Refer to (6)]

- Clicking **[Text convert] of [file]** prepares a text file of the Before error occurred data being displayed.

- Click on [**Help**] and an explanation "**Terminology**" and "**Operation Method**" will be displayed.
[Refer to **3.7 Connecting Information 3.7.2 (2)"Menu Bar"**]



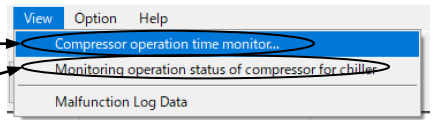

Indoor Unit

(6) Click on [**Return**] on the menu bar to end the data list screen of **Pre-error Data**.

# 4.6 Compressor operating data monitor

## 4.6.1 Off-Line Analyzing

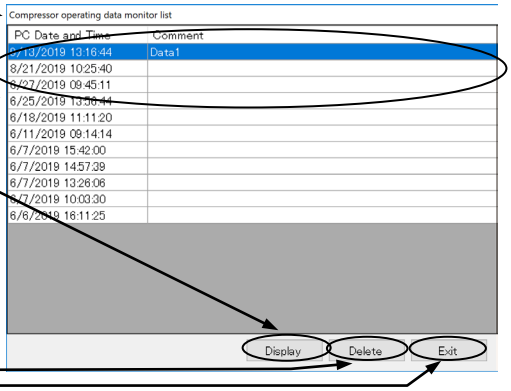
(1) Click **[View]** of the menubar on the **[Off-Line Main]** screen,
and click **[Compressor operating data monitor]** of the submenu to monitor the outdoor unit data.
click **[Monitoring operation data of compressor for chiller]** of the submenu to monitor the chiller unit data.
**[Compressor operating data monitor list]** screen is displayed.



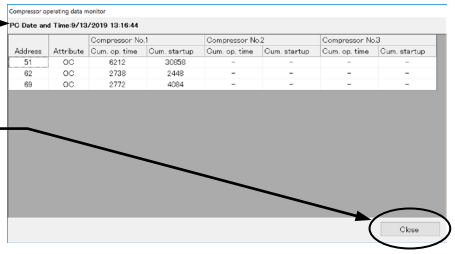

(2) When the line of data that wants to confirm the monitor result is clicked from **[Compressor operating data monitor list]** screen, and **[Display]** button is clicked, the monitor result is displayed on **[Compressor operating data monitor]** screen.

When the line of data clicked from the list screen, and **[Delete]** button is clicked, the selected data is deleted.

When **[Exit]** button is clicked, it returns to **[Off-Line Main]** screen.




(3) To close **[Compressor operating data monitor]** screen, **[Close]** button is clicked.
It returns to **[Compressor operating data monitor list]** screen.




**NOTE:**
When the units with only one or two compressor, the compressor operating time and startup monitor that doesn't exist is displayed as "-".

# 4.7 Function common for each screen (Filing operation)

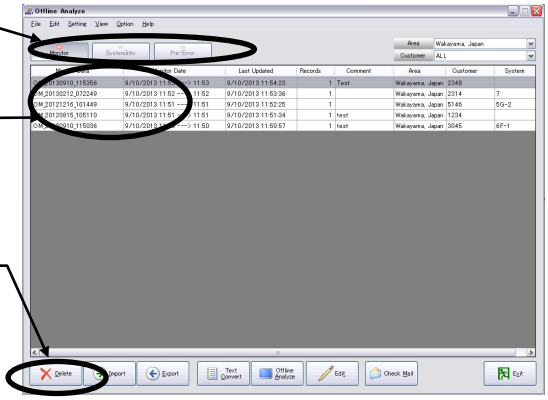
* Clicking the button of “Monitor Data”, “Monitor Date”, “Last Updated” and “Others” at the upper column allows to sort the displayed data.
* The right-clicking operation of the mouse covers the operation of each file also. For detail, refer to the item 4.7.6 Right-click menu.

## 4.7.1 Delete Data

(1) Clicking either Monitor , SystemInfo or Pre-Error to display Data list screen containing the file desired to edit.

(2) Click on [**Monitor Data**] desired to delete.

(3) Click on Delete .
Then the screen to confirm the selected monitor data will appear.
Clicking on Yes deletes the data.
Clicking on No returns to Data list screen.



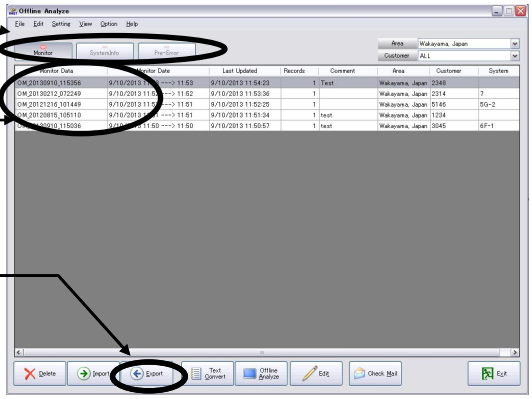
**NOTE:**
Selecting monitor data collectively enables to execute batch deletion.
This operation may be performed in the similar way of the file selection of Windows explorer (shift,ctrl).

## 4.7.2 Export

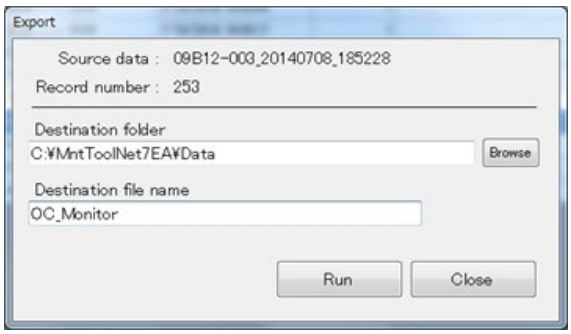
(1) Clicking either Monitor , SystemInfo or Pre-Error to display Data list screen containing the file desired to edit.

(2) Click on [**Monitor Data**] desired to output.

(3) Click on Export .

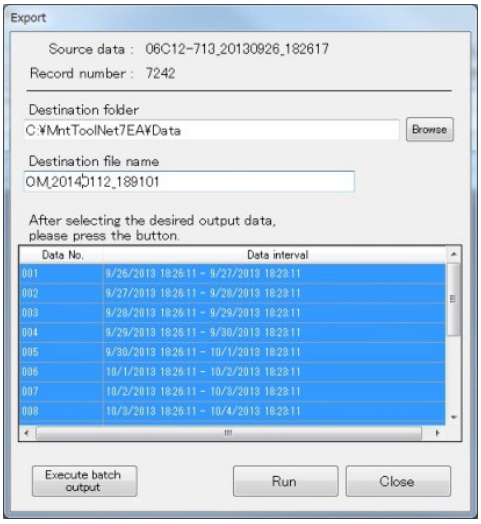


(4) The “**Export**” screen is displayed. Enter **[Destination folder]** and **[Destination file name]**, and then select **[Run]**. The data is exported to the specified destination folder




**NOTE:**
The extension of the exported file is .MTDZ

(5) When one day or more of operation data is selected, you must select the data interval. Select the **[Data interval]** to export, and then select **[Run]**. Select **[Excute batch Output]** to export all of the data.

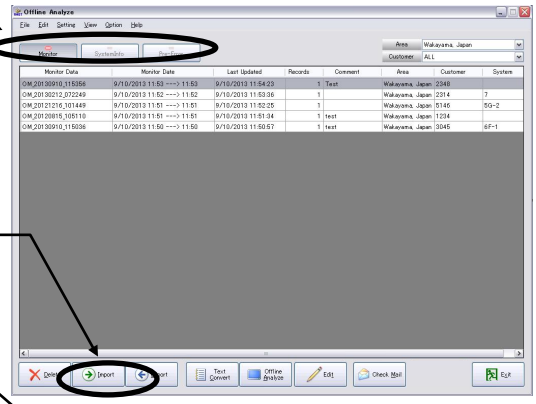


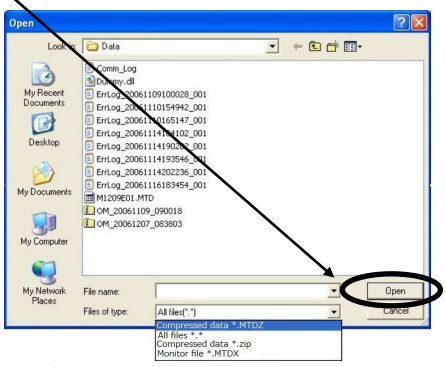

**NOTE:**
When you click **[Run]**, an export file for each selected data interval is individually output. The extension of the exported file is .MTDZ.
When you click **[Excute batch Output]**, the data for all of the data intervals is output in a single file. The extension of the exported file is .MTPZ.

## 4.7.3 Import

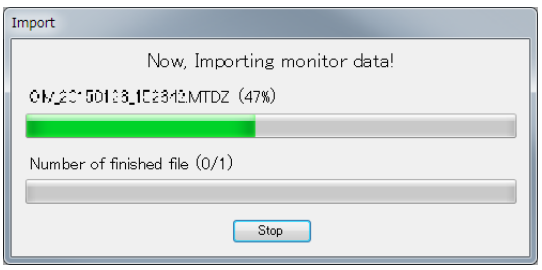
(1) Clicking either Monitor , SystemInfo or Pre-Error to display Data list screen containing the file desired to edit.

(2) Click on Import .
The screen to read a file will be displayed.
Open reading folder, input the file name and click on.




(3) A progress bar is displayed while importing. Click [**Stop**] to stop the import process.




**NOTE:**
Files with the following file extensions can be imported.
- Monitor file *.MTDZ,MTDX,MTPZ
- Compressed data *.zip

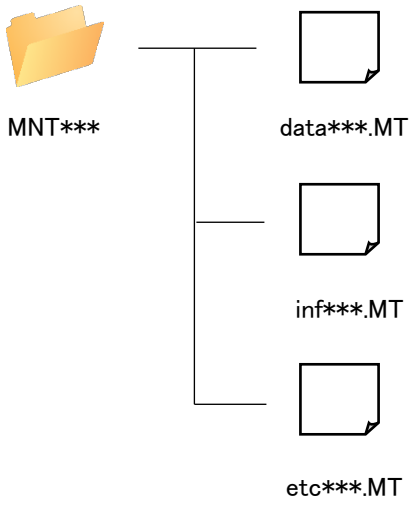
■About the operation data collection function

Some outdoor units are equipped with functions of collecting and recording the unit operation data in the flash memory on the control board. The data recorded in the flash memory can be saved in the USB memory stick and checked from the Maintenance Tool.

■About the data saved in the USB memory stick

In the USB memory stick, a folder MNT*** is created, and three files (data***.MT, inf***.MT, and etc***.MT) are saved in the folder.

*** is a serial number from 000 to 100.




■About checking the data

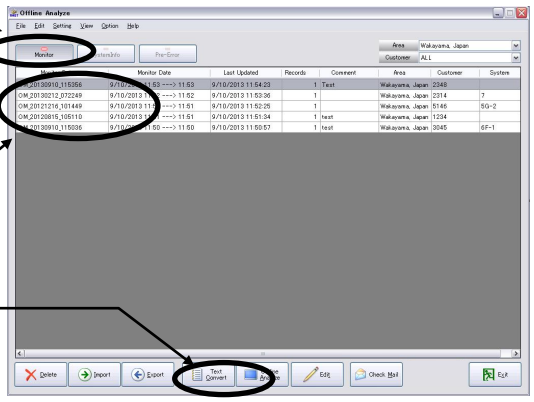
The data saved in the USB memory stick can be checked by importing one of the three files (data***.MT, inf***.MT, and etc***.MT) on the Maintenance Tool to add new data on the offline analysis screen. The file with the cumulative compressor operation time, error history, and outdoor unit dip switch setting data can be output.

## 4.7.4 Text Convert

(1) Clicking Monitor to display Data list screen containing the file desired to edit.
(Text conversion can also be adapted to the Pre-error data. For the converting method, refer to 4.5.1(5).)

(2) Click on [**Monitor Data**] desired to convert into text format.

(3) Click on Text Convert .
The screen to confirm the selected monitor data.
Clicking on Yes provides text conversion processing and then a file name will be displayed.
[Refer to **5.4 Text Convert Data**]



In the case of Operation Monitor, clicking Yes displays Data Transfer Screen prompting you to select the object and method of the conversion.

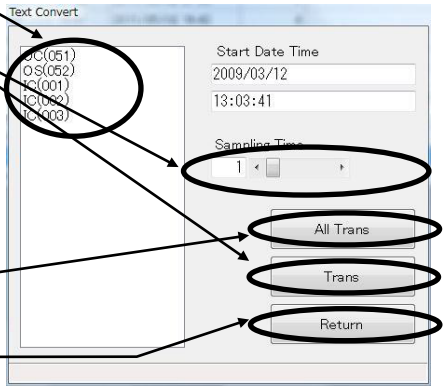
(a) Click on [**units**].
Set the [**Sampling Time**] between 1-min and 10-min.

(b) Click on Trans .
**"Converting! Please wait for a moment."** Will be appeared, then a file name will be displayed.

[Refer to **5.4 Text Convert Data**]

(c) Click on All Trans to transfer the data of all units.

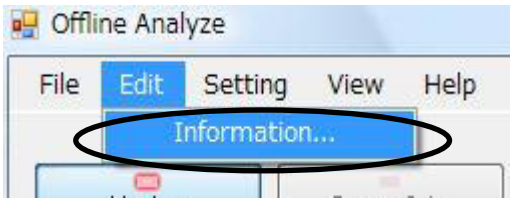
(d) Click on Return to end the **Data Transfer Screen**.



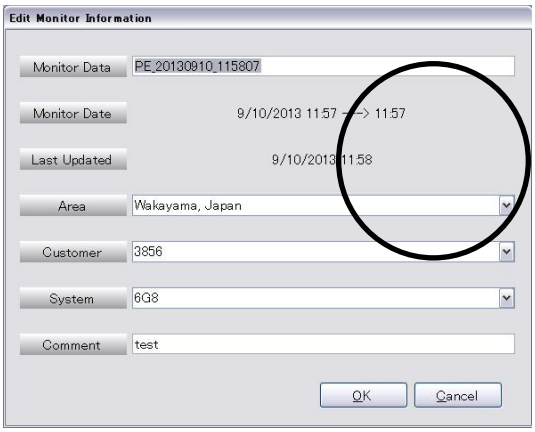

* During processing operation, the progress ratio will be displayed.

**NOTE:**
You can convert multiple files to text file at the same time by selecting multiple [**Monitor data**] and then clicking [**Text Convert**].

### 4.7.5 Monitor Data information Edit

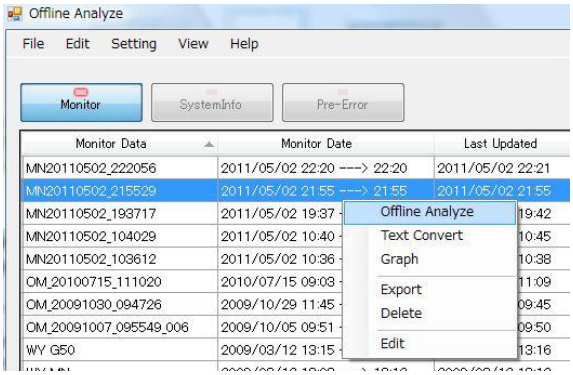



- Changing the name of monitor data
  Clicking the Edit of the menu bar while focussing the monitor data name on the Monitor Data of which name is desired to be changed on the Screen listing each data will display the editing screen.
  On this screen, the name of Monitor Data or other relevant information can be edited.



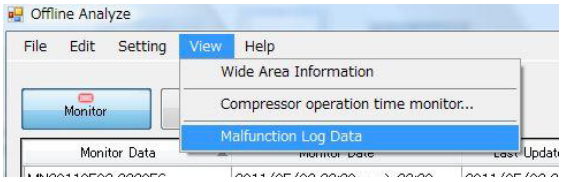

### 4.7.6 Right-clicking menu

- Right-clicking menu
  Clicking the right button of the mouse on [Monitor data] displays the pop-up menu as shown on the right screen.
  The items that can be set are same as that of the function button on the screen listing each data.
  (Some function is unable to operate partially.)
  Use them in accordance with your applications.




### 4.7.7 Malfunction Log Data

Click **[View]** of the menubar on the **[Off-Line Main]** screen, and click **[Malfunction Log Data]** of the submenu.
The folder of data file is displayed by the Explorer.



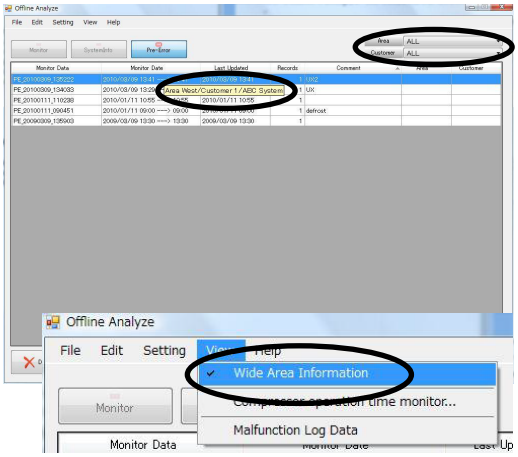
## 4.8 Offline Analyze on Wide area access mode

### 4.8.1 Off-Line Analyzing

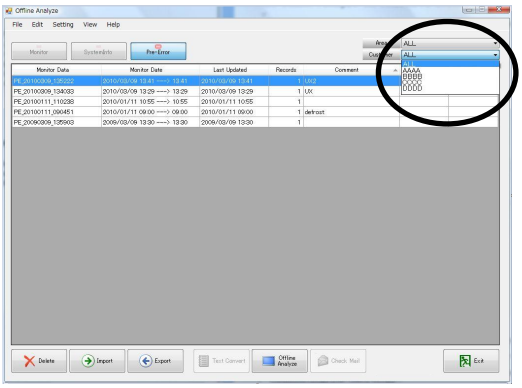
The function of the offline mode is mostly equals that of the normal mode, however, the following function is provided additionally.

1) Display of monitored name objective for data collection.
   - The [AREA name], [Customer name] and [Air conditioning system name] are shown for each data obtained.
   - Setting the cursor to the data provides the pop-up display of the [AREA name], [Customer name] and [Air conditioning system name] of the data.

   In order not to show the POP-UP display, click the View of the menu bar and remove the check mark of the [Show Wide Area Info.] on the sub-menu.




2) Display of extracted data.
   - By selecting [AREA name] and [Customer name], the relevant data only can be displayed.



As the other function and operation are same as that under the normal mode, please refer to Chapters 4.3 – 4.7.

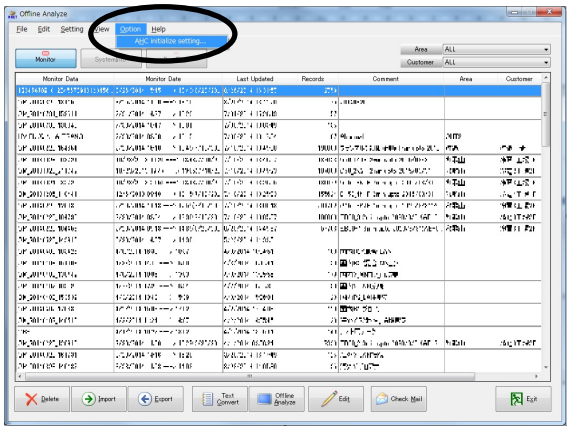
**NOTE:**
Both the data obtained by online under normal mode and that under wide area access mode can be displayed commonly under both offline modes.

# 4.9 Offline Analyze on Initial settings of AHC

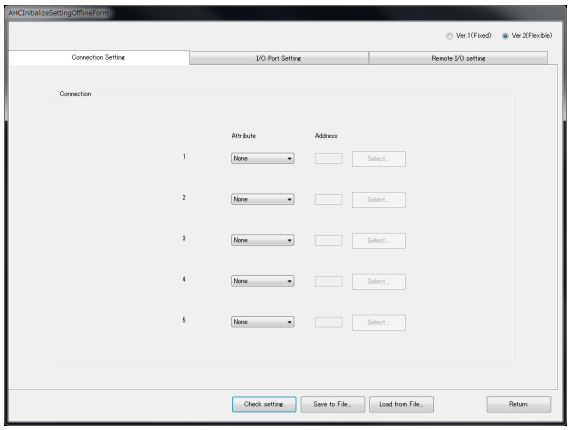
## 4.9.1 Off-Line Analyzing

Initialize AHC settings in OFFLINE mode.

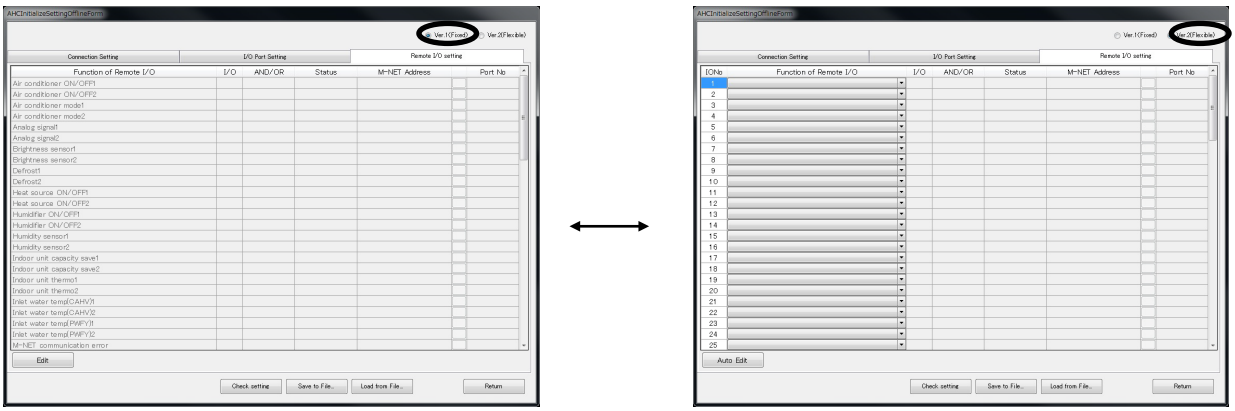
(1) rom the [**Option**] menu bar, select [**AHC Initialize Setting**] on the submenu.



(2) The [**AHC Initializing Setting**] screen opens.



(3) The radio buttons can be used to toggle settings on the [**Remote I/O setting**] tab. Select [**Ver.2 (Flexible)**] to edit settings for an AHC ADAPTER that is Ver. 2.00 or later AND when DipSW103-3 is set to OFF. Otherwise, select [**Ver.1 (Fixed)**].The steps to follow to configure settings are the same as in ONLINE mode. Refer to [**3.18.2 Initial Settings of AHC**] for further details.



**NOTE:**

- Configuring the initial settings of AHC and creating a settings file using [**Save to file**] in advance in OFFLINE mode will enable settings to be configured more smoothly on-site.

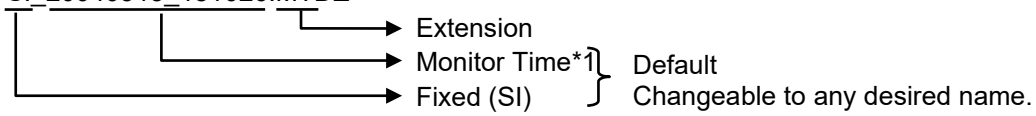
# 5 File Names

## 5.1 System Information Data

When the system information data saved in the database in "**3.4 Main Screen (2)**" is exported in "**4.7.2 Export**", exported data is saved in
**C:¥MntTool¥NETEA¥Data.** (Default setting. Can be changed.)
The exported file is a compressed archive with the file extension MTDZ.

- The following is an explanation of the file name

SI_20040315_181026.MTDZ



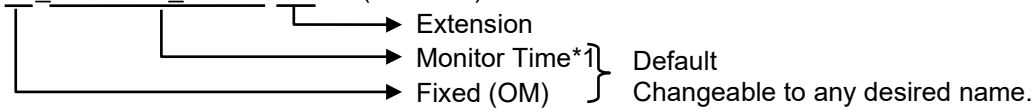

*1 **Monitor Time**
Monitor starting time : YYYYMMDD_hhmmss format

## 5.2 Operating Status Monitor Data

When the operation status monitor data saved in the database automatically in "**3.7 Operation Monitor**" is exported in "**4.7.2 Export**", exported data is saved in
**C:¥MntTool¥NETEA¥Data.** (Default setting. Can be changed.)
The exported file is a compressed archive with the file extension MTDZ or MTPZ.

- The following is an explanation of the file name(**Operating Status Monitor Data** has been automatically stored at the on-line monitoring.)

OM_20040315_181026.MTDZ (or MTPZ)

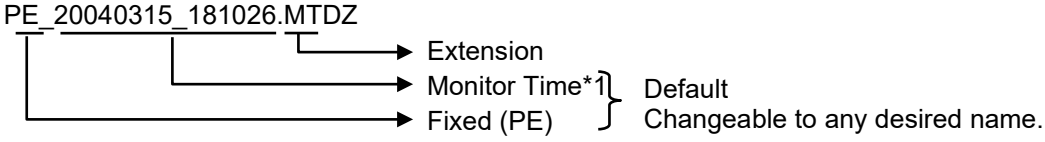



*1 **Monitor Time**
Monitor starting time : YYYYMMDD_hhmmss format

## 5.3 Pre-error Data

When the pre-error data saved in the database in "**3.11.1.2 Monitoring of Pre-error Data**" is exported in "**4.7.2 Export**", exported data is saved in
**C:¥MntToolNETEA¥Data.** (Default setting. Can be changed.)
The exported file is a compressed archive with the file extension MTDZ.

- The following is an explanation of the file name(**Pre-error Data** has been automatically stored at the on-line monitoring.)

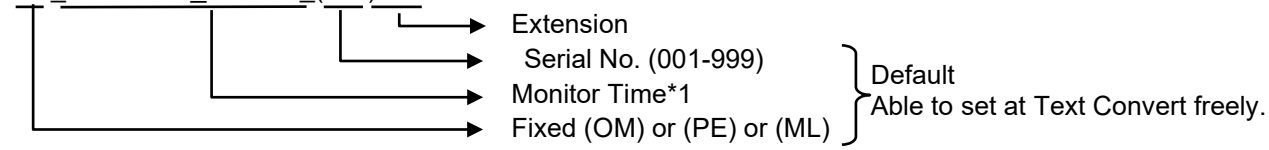



*1 **Monitor Time**
Monitor starting time : YYYYMMDD_hhmmss format

## 5.4 Text Convert Data

The data saved in Section "**4.7.4 Text Convert**" is stored in
**C:¥MntToolNETEA¥Data**

- The following is an explanation of the file name




*1 **Monitor Time**
Monitor starting time : YYYYMMDD_hhmmss format

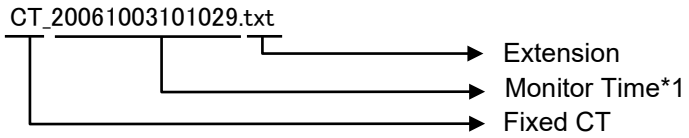
* For the data obtained before Ver4.04 via MN Converter, "MN"-"PC host name" will be displayed at the former part of the data.

## 5.5 Compressor Operating Data

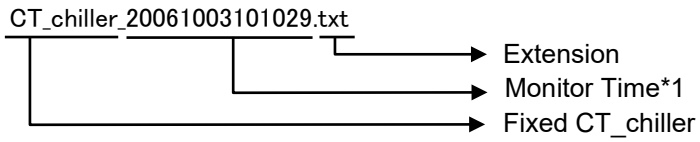
The data saved in Section "**3.17 Compressor operating data monitor**" is stored in **C:¥MntToolNETEA¥Data**

- The following is an explanation of the file name

**Outdoor units**




**Chillers**



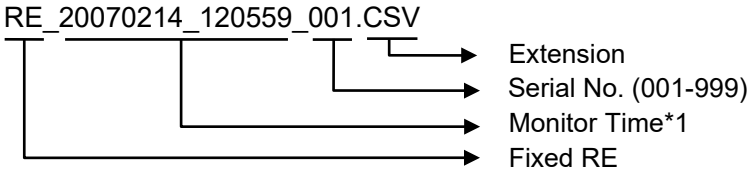

*1 **Monitor Time**

Monitor time : YYYYMMDD_hhmmss format

## 5.6 Remote error notification report log Data

The data saved in Section "**3.14.5.3 Saving the Report log in CSV format**" is stored in **C:¥MntToolNETEA¥Data**

- The following is an explanation of the file name




*1 **Monitor Time**

Monitor time : YYYYMMDD_hhmmss format

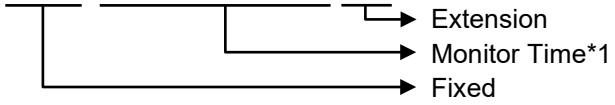
## 5.7 DIDO Controller Monitor Data

The data saved in Section "**3.15.1 Setting and Monitoring DIDO Controllers (66DC)**" is stored in **C:¥MntToolNETEA¥Data**

- The following is an explanation of the file name

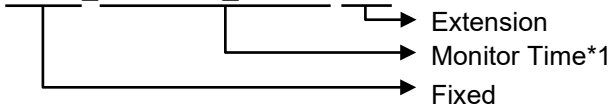
(1) Monitoring input/output status on DIDO Controllers (66DC) (Section "3.15.1.2" )

DCCV_20070214_120559.CSV




(2) Monitoring Dip switch setting of DIDO Controllers (Section "3.15.1.4" )

DCDS_20070214_120559.CSV




*1 **Monitor Time**

Monitor time: YYYYMMDD_hhmmss format

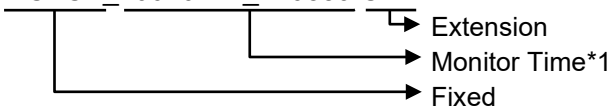
## 5.8 AI Controller Monitor Data

The data saved in Section "**3.15.2 Setting and Monitoring AI Controllers (63MC)**" is stored in **C:¥MntToolNETEA¥Data**

- The following is an explanation of the file name

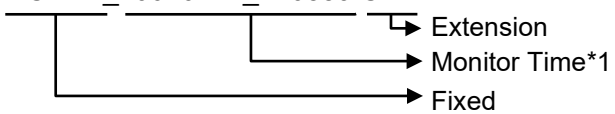
(1) Monitoring measurement value on AI Controllers (63MC) (Section "3.15.2.1" )

MCTCV_20070214_120559.CSV



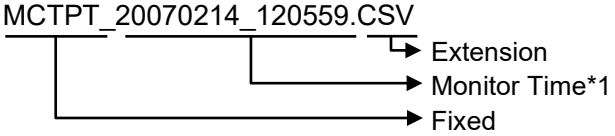

(2) Monitoring Dip switch setting of AI Controllers (Section "3.15.2.3" )

MCTDS_20070214_120559.CSV



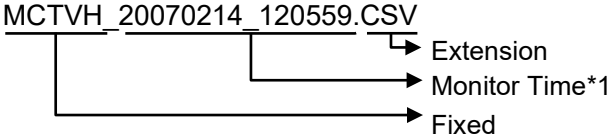

(3) Monitoring of the correction value for Pt100 detection (Section "3.15.2.4" )

MCTPT_20070214_120559.CSV

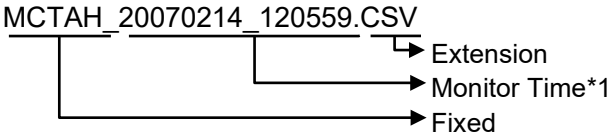



(4) Measured value history (Section "3.14.2.5" )

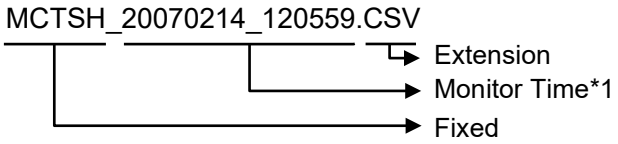
MCTVH_20070214_120559.CSV



(5) Out-of-limit alarm history (Section “3.15.2.6” )




(6) Measurement category setting history (Section “3.15.2.7” )




*1 **Monitor Time**

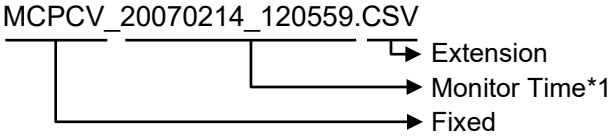
Monitor time: YYYYMMDD_hhmmss format

## 5.9 PI Controller Monitor Data

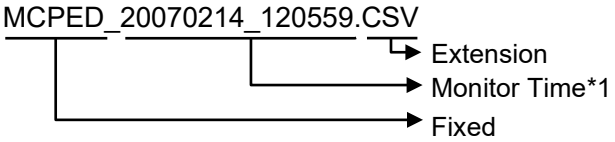
The data saved in Section “**3.15. Monitoring PI Controllers (60MC)**” is stored in **C:¥MntToolNETEA¥Data**

- The following is an explanation of the file name

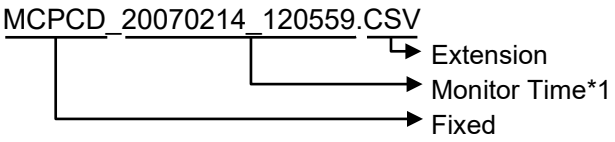
(1) PI Controller (60MC) measurement value Monitor (current value) (Section “3.15.3.1” )



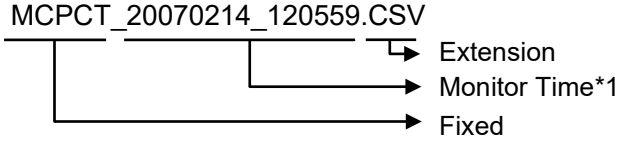

(2) PI Controller (60MC) measurement value Monitor (cumulative value) (Section “3.15.3.2” )



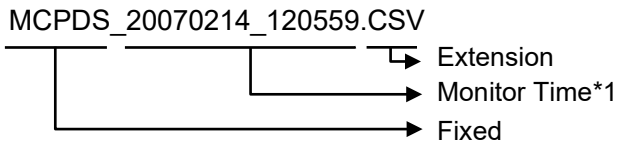

(3) PI Controller (60MC) measurement value Monitor (settlement date) (Section “3.15.3.3” )




(4) Charge time zone setting monitor (Section “3.15.3.5” )

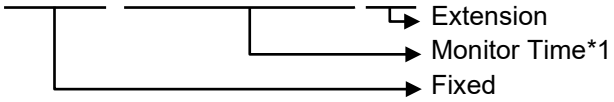



(5) Monitoring Dip switch setting of PI Controllers (Section “3.15.3.6” )



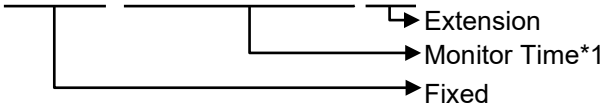
(6) Power failure/restoration history (Section “3.15.3.7” )

MCPPH_20070214_120559.CSV




(7) Pulse unit (weight) change history (Section “3.15.3.8” )

MCPWH_20070214_120559.CSV




*1 **Monitor Time**

Monitor time: YYYYMMDD_hhmmss format

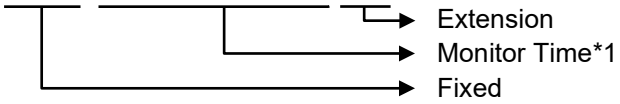
## 5.10 DIDO/AI Controller interlock control Data

The data saved in Section “**3.15.4 Interlock control settings on DIDO Controllers (66DC)**” and “**3.15.5 Interlock control settings on AI Controllers (63MC)**” is stored in **C:¥MntToolNETEA¥Data**

- The following is an explanation of the file name

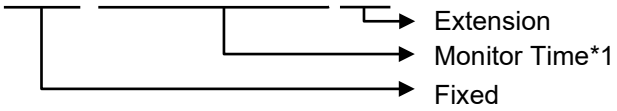
(1) Saving the interlock control settings on DIDO Controllers (66DC) in CSV format (Section “3.15.4.4” )

DCIL_20070214_120559.CSV



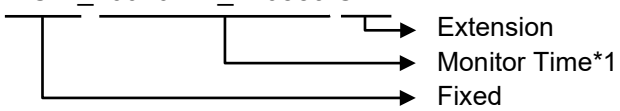

(2) Saving the interlock control settings on AI Controllers (63MC) in CSV format (Section “3.15.5.4” )

MCTIL_20070214_120559.CSV



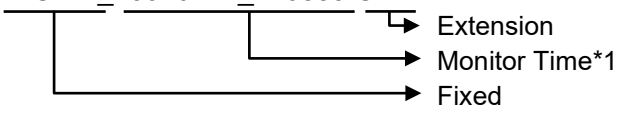

(3) DIDO controler interlock operation history (Section “3.15.4.5” )

DCIH_20070214_120559.CSV




(4) AI Controller interlock operation history(Section “3.15.5.5” )

MCTIH_20070214_120559.CSV




*1 **Monitor Time**

Monitor time: YYYYMMDD_hhmmss format

# 6 Troubleshooting

## Trouble When Installing or Starting

| Trouble | Cause | Repair |
|---|---|---|
| Cannot install. | Install CD-ROM not properly positioned. | Properly position Install CD-ROM. |
| | A local disk (It's C-Drive) is setting a compression option. | Release compression option of a local disk, and install the Maintenance Tool again. |
| Cannot start application. | Insufficient memory. | End other applications. |
| | OS is not an English version. | Regional options setup, changing into English area form. Or after changing date separator into [/], time separator into [:], and a decimal point mark is changed into [.], it tries. (Refer to 1.2.1 *1) |
| | A local disk (It's C-Drive) is setting a compression option. | Release compression option of a local disk, and install the Maintenance Tool again. |
| The message of "Can't Connect to Centralized Controller" is displayed at on-line starting. | The IP address of Centralized Controller or PC is incorrect. | Input the correct address. |
| | LAN cable is not connected. | Connect securely LAN cable between Centralized Controller/HUB/PC. |
| The message of "Maintenance Tool can't connect to old version G-50A! Use G-50A upper version2.40!" is displayed at the on-line starting. | The S/W version of G-50A is older than Ver2.40. | The Maintenance Tool can not be connected to the older version of G-50A than Ver2.40. Use the new version G-50A. (**Recommended Ver2.50** or more ) To use the E-mail connection mode, the version of G-50A should be above 2.60. |
| The message "M-Net interface board not connected" appears. | -RS-232C cable and MN converter are not connected.<br>-A straight type RS-232C cable is being used. | A cross type RS-232C cable is being used. Make sure MN converter and PC are properly connected. (Refer to Operator's Manual for the MN converter.) |
| | MN converter is not turned on. | Connect the MN converter and the air conditioning unit to the M-Net transmission line. (Refer to the Operator's Manual for the MN Converter) |
| A message of " Monitor data size is very large!! Please, delete old monitor data!!" is displayed at starting. | The memory capacity to store data is insufficient. | Move to Offline Screen, and delete unnecessary data. |
| A message of " Maintenance Tool can't connect to this Centralized Controller! Because, this Centralized Controller is not licensed!!" is displayed at starting under the online mode. | The license registration has not been d one for Centralized Controller. | Purchase the license No., and register the license for Centralized Controller. |
| A message of " The term of validity of the installed version went out.!!" Is displayed at starting.<br>Maintenance Tool does not start. | The term of validity of the installed version went out. | It upgrades. Please upgrade periodically |

| Trouble | Cause | Repair |
|---|---|---|
| A message of "Communication conversion application does not exist " is displayed at starting online mode. | Application software for P/M-series does not exist. | Reinstall the latest maintenance tool. |
| A message of "Rewriting software for USB/Serial conversion cable does not exist.Please check the manual for M&P-series" is displayed at starting online mode. | FT_PROG is not installed. | Install FT_PROG.<br>*Refer to 1.3.1 (5) |
| A message of "USB/Serial conversion cable is not connected" is displayed at starting online mode. | USB /Serial conversion cable is not connected. | Operate the maintenance tool with USB / Serial conversion cable connected. |
| A message of " Model DataBase does not exist" is displayed at starting online mode. | Software required for the operation of the maintenance tool does not exist | Reinstall the latest maintenance tool. |
| A message of " Multiple cables are connected" is displayed at starting online mode. | Multiple USB cables (FTDI chip built-in) are connected to the PC. | Operate the maintenance tool with only the USB/Serial conversion cable. |
| A message that it is necessary to install .net Ver 4 or later is displayed at starting online mode. | .NET Framework 4.0 is not installed. | Install .NET Framework 4.0 or more. |
| A message that it is missing vcruntime140 is displayed at starting online mode. | Visual C++ Redistributable is not installed. | Install Visual C++ Redistributable.<br>*Refer to 1.3.1 (5) |
| Display does not move from title screem to Operation monitor screen with P-series. | Air conditioning system power on timing is wrong. | Please turn on air conditioning system after connecting Maintenance tool.<br>(Refer to 1.4.3.1 In case for local connection) |

## Trouble with Main Screen

| Trouble | Cause | Repair |
|---|---|---|
| Cannot select function selection buttons. | Collecting data about individual units using manual search. (Unit is communicating.) | Can be used when communication with all the units selected by manual search have completed communication. |
| A[**]appears in the unit address button for an existing unit. | -No response from that unit.<br>-Attributes cannot be known due to communication error. | Wait a moment and then click on the address button for the same unit again. |
| A[**]appears in the unit address button for a unit that does not exist. | Interference caused an non-existing unit to appear. | Wait a moment and then click on the address button for the same unit again. The[**] display will disappear. |
| A[??]appears in the address button. | There is a unit that is not compatible with the Maintenance Tool. | Refer to the explanation on terminology in help.<br>If there is no explanation, the unit is not a compatible type. |
| Address searching takes 3 minutes or more per set. (Centralized Controller connection) | The port required for communication is being protected by the Firewall checking function of Windows or anti-virus software. | In this case, the communication transmitted from Centralized Controller may not partially be received. Please remove the check mark on the Firewall function of the necessary port. (For detail, please refer to “6. How to change setting of Firewall”.) (If the version of G-50A is more than 2.50, only [IC] can be searched, even if it uses FIREWALL. However, [OC] reference cannot be performed. Moreover, since other functions cannot operate normally, please be sure to remove a check.) |
| | When a Maintenance Tool is not ended normally, Centralized Controller will be in a data resending state, and LAN communication will increase. | In this case, please perform "Stop mail communication" of 3.4 (2), and start a Maintenance Tool again after waiting about 15 minutes. |
| | The version of G-50A is old. | A recommendation version is 2.50 or more. |

## Connecting information Trouble

| Trouble | Cause | Repair |
|---|---|---|
| Cannot switch to connection information screen. | A unit other than an outdoor unit (OC) has been selected. | Refer to 3.6.1 |
| The connection data display does not appear when the operating system SC is clicked. | An operating SC other than remote control has been clicked. | Click on remote control.<br>Monitoring of connection data cannot be done from operating SC other than remote control. |

## Operation Monitor Trouble

| Trouble | Cause | Repair |
|---|---|---|
| The monitor display screen on the operation monitor has red characters. | Because of the increased re-transmission process work due to abundant communication noise, data may not be monitored fully within the rated cycle. | Please take a countermeasure against the communication noise source in this case. |
| All of the characters on the monitor display for some units are red. | There is no answer from the unit.(Cannot communicate with the unit.) | Error with unit.<br>Refer to the service handbook for that unit. |
| The message of ” Centralized Controller can't Connect to SMTP Server !<br>or Centralized Controller Date Setting is wrong !! Continue ?” is displayed at remote monitor setting. | The dial-up router is not connected. Or connected but incorrectly. | By referring to Instruction Manual of Dial-up router, connect or set correctly. |
| | The default gateway of Centralized Controller is not set. | Set correctly by using the Centralized Controller initial setting tool.<br>(When Centralized Controller, please set it from initialization WEB.)<br>(Refer to Instruction Manual of Centralized Controller.) |
| | The incorrect display of the receiver address is pointed out by SMTP. | Set the correct mailing address. |
| | The Monitor Finish Date is older than the current date/time of Centralized Controller. | Set the monitor finish date correctly.<br>(However when connecting to Centralized Controller in a region with a time differential, set it by considering the time in that place.) |
| A message of " Monitor data size is very large!! Please, delete old monitor data!!" is displayed during collecting data. | The memory capacity to store data is insufficient. | Move to Offline Screen, and delete unnecessary data. |
| Data becomes a red display and the "-" display. | Since data cannot receive normally.<br>- There is too much number of a monitor.<br>- Data transforms itself by a noise. | - Reduce the number of a monitor.<br>- Cope with noise generating origin.<br>* Also when returning from a graph screen to an operation screen, it may become a red display and the "-" display, but it is normal. |

## Malfunction Log Trouble

| Trouble | Cause | Repair |
|---|---|---|
| Cannot clear malfunction log | The unit is not compatible with malfunction log clear. | The malfunction log cannot be cleared. |
| There is an error code, but the contents of the error are not displayed | This is a newly added error code and is not compatible with the Maintenance Tool. | Refer to the service handbook for that unit. |

# Operation Monitor Mail Communication Mode Trouble

| Trouble | Cause | Repair |
|---|---|---|
| Operation monitor mail cannot receive normally. | A mail address and SMTP server information were made a mistake in and set up by mail communication setup. | Please set up the right information again after performing "Stop mail communication" of 3.4 (2). |
| | The mail address a contract of is not made with a provider was set as [FROM: Mail Address].<br>(When using dialup) | Please set the regular mail address a contract of is made with the provider to [FROM: Mail Address]. |
| | The mail address of recipient (To:) is not an address only for Maintenance Tool.<br>(The mail address used usually is set up. In this case, once other mail software receives mail, operation data mail will be deleted from a mail server.) | The mail address of recipient (To:) acquires and sets up the address only for Maintenance Tool. |
| The analysis screen of the operation monitor data (which carried out mail acquisition by OFFLINE) is not displayed. | The system configuration information acquired from Centralized Controller im mediately after a mail communication s etup was not acquired normally. | Please delete the corresponding data. Text conversion can be carried out and data can be outputted. |
| | Mail communication mode was set up from the Maintenance Tool of a remote place, and the mail address of recipient (To:) was set as another addressing to a Maintenance Tool of a remote place.<br>(System configuration information mail is transmitted from Centralized Controll er immediately after a mail communicat ion setup.<br>However, the Maintenance Tool by the side of a setup is using dial-up service, and mail transmission cannot be performed.<br>Consequently, since the Maintenance Tool with which mail is transmitted cannot acquire system configuration information mail, even if it receives after that operation monitor data mail, it does not indicate by normal. | When mail communication mode is set up from the Maintenance Tool of a remote place, mail acquisition of operation data can be performed only with the Maintenance Tool which set up.<br>Please make a set the mail address of a Maintenance Tool which set mail communication mode to the mail address of recipient (To:). |

## Free contact of indoor unit Trouble

| Trouble | Cause | Repair |
|---|---|---|
| A menu cannot be chosen and cannot be started. | The version of G-50A is old. | A recommendation version is 2.60 or more. |

## Remote error notification Trouble

| Trouble | Cause | Repair |
|---|---|---|
| A menu cannot be chosen and cannot be started. | The MN Converter model is not CMS-MNG-E. | Use the CMS-MNG-E MN Converter model. |
| When Maintenance Tool is connected to the MN Converter (CMS-MNG-E) via RS-232C, a message of " Cannot communicate with MN converter." is displayed at starting.<br>Maintenance Tool does not start. | The MN converter (CMS-MNG-E) mode is the error notification mode. | Connect to the MN Converter (CMS-MNG-E) via USB. |

## Setting and Monitoring DIDO/AI/PI Controllers Trouble

| Trouble | Cause | Repair |
|---|---|---|
| The pulse unit (weight) cannot be set on the PI Controller. | The PI Controller can be used only for monitoring. | Make the settings for the PI Controller on Centralized Controller Web Browser or TG-2000A. |
| An error occurs when the limit alarm value is set on the **AI controller (63MC) setting screen** on the AI Controller. | The values exceeding the upper/lower limit of the measurement range are set. | Set the values between the upper and lower limit of the measurement range. |
| **[DIDO/AI interlock setting]** in the sub menu is inactive. | The interlock setting is not set to enabled on the **Interlock control option screen.** | **[Option]** in the menu bar and select **[DIDO/AI/PI]** ,and select **[Interlock control option]** in the sub menu. Read the agreement on the **Interlock control option screen**, and agree. |
| An error occurs when the password is entered to accept the agreement on the **Interlock control option screen**. | The entered password is incorrect. | Ask the administrator for the password used on the **Interlock control option screen**. |
| An error occurs when the upper/lower thresholds for the interlock operation condition are set on the **AI controller (63MC) interlock control setting screen**. | The values exceeding the upper/lower limit of the measurement range are set. | Set the upper/lower thresholds for the interlock operation condition between the upper and the lower limit values of the measurement range. |
| An error occurs when the interlock control setting is made on the **DIDO controller (66DC) /AI controller (63MC) interlock control setting screen**. | The interlock target unit that has the set address does not exist. | Set the correct unit address of the interlock target. |
| The interlock control is not performed when the interlock control setting is made. | The set address of the interlock target unit is incorrect., or the address of the different unit is set. | Set the correct unit address of the interlock target. |
| | An emergency stop is made when the interlock control is set to “Prohibited” when an emergency stop is made with Centralized Controller. | After the emergency stop is reset, check that the interlock control is performed properly. |
| | A communication error occurs when the interlock control is set to “Prohibited” when a communication error is occurring with Centralized Controller. | After the communication error is reset, check that the interlock control is performed properly. |
| Two or more interlock control operations with the AI Controller are being performed simultaneously. | The set input condition and the set range overlap with those that have been set for other interlock No. | Check that the set input condition and the set range do not overlap with those that have been set for other interlock No. There is an exception when two or more interlock control operations are simultaneously performed. |
| | Differentials are set for some interlock operation No., whereas not for some, or the set differentials are different. | To make the differential valid, make the differentials of all the channels the same. |
| The attribute (each address) searched by auto or manual search cannot be set. | The wrong sub menu is selected in **[Option]** in the menu bar. | Select the correct setting the sub menu, and set the attribute (each address). |
| | After the attribute is displayed, the unit to be connected is changed without changing the address. | Click **[File]** and select [**Return**] to shutdown and restart the Maintenance Tool. Try the auto/manual search again. |
| The message **“**** monitoring failed.”** appears. | The power of the unit is turned off, or the M-NET transmission line or the MN converter is not connected properly. | Turn on the power of the unit, and reconnect the M-NET transmission line or the MN converter. |
| The **upper/lower detection/cancellation values** are not updated when **[Monitor update]** is clicked on the **AI controller (63MC) measurement value monitoring screen**. | When the setting change is made on Centralized Controller Web Browser, the **upper/lower detection/cancellation values** are not updated. Only the **measurement value** and the **alarm status** are updated. | Click **[Close]** to end the **AI controller (63MC) measurement value monitoring screen**, and open the screen again. |

## Off-Line Monitor Trouble

| Trouble | Cause | Repair |
|---|---|---|
| The message of ”Timeout Can’t connect to Mailserver.” is displayed. | The setting of IP address of POP server is incorrect. | Set the correct IP address with Mail Server Setting. |
| | The setting of the IP address of PC is incorrect. | Set the IP address of PC correctly. |
| The message of “Invalid Parameter!” is displayed. | The POP server is not set yet. | Set POP server. |
| The message of “Can’t Connect to mail sever!” is displayed. | The LAN cable is not connected correctly. | Connect LAN cable securely. |
| | The IP address setting of POP server is not correct. | Set the correct IP address with Mail Server Setting. |
| The message of “POP Authention Error” is displayed. | The setting of the user and password of POP server is not correct. | Set correctly with Mail Server Setting. |
| A message of " Monitor data size is very large!! Please, delete old monitor data!!" is displayed during collecting the mail of operation data. | The memory capacity to store data is insufficient. | Move to Offline Screen, and delete unnecessary data. |
| A message of " Now finalizing Maintenance Tool !!" is displayed at finishing Offline, and the screen does not finish. | The internal data is under arrangement at finishing the Maintenance Tool. | Offline Screen will automatically be finished after completing this process. Please wait a while. |
| Data cannot be imported. | It was going to import the data acquired by “Maintenance Tool (Ver.3.**)”. | The data obtained by Ver.4.** has no compatibility with that obtained by Ver.3.**. |
| A message of " The file name is incorrect. --- " is displayed. Data cannot be imported. | It contains characters unable to be fetched in (such as [ “or”] and the like). | Please delete such special characters in the file name. |
| In processing for the time searching or text convert of the operation status monitor, "Date or Time is wrong" is displayed without executing the processing. | The information inherent in a district (language) will be added on the column of Date and Time depending on the PC (OS) of the district. However, such information inherent in the district can not be read by the Maintenance Tool. | - Change the setting of the OS to that in English for use.<br>- Execute processing after deleting the information (characters) inherent in the district to be added on the column of Date and Time. |
| "This archive file was broken." appears when importing. | The ZIP archive selected for importing may be broken. | Double-click the applicable file and check that the file is recognized as a ZIP archive. Archives acquired from media or through email is sometimes broken. In such a case, reacquire the archive. |
| "As for the data with path, the import is not done." appears when importing. | Multiple files are included in the ZIP archive selected for import. | Extract files from the ZIP archive to a folder and then select the files to import when importing. |
| "Since two or more files are compressed, it cannot import." appears when importing. | Archives created in a format that includes a path cannot be imported. | Extract files from the ZIP archive to a folder and import them. |

## Unit trouble when connecting Maintenance tool

| Trouble | Cause | Repair |
|---|---|---|
| Communication error ED/ 0403 occurs with P-series. | Air conditioning system power on timing is wrong. | Please turn on air conditioning system after connecting Maintenance tool. (Refer to 1.4.3.1 In case for local connection) |

# 7 Explanation of Terminology

Models and terms not explained in this chapter are explained in the term explanations of the [Operation Status Monitor] screen and [Refrigerant Circuit Diagram] screen.
See "3.8.2 Screen Functions and Operations" for details.

## Main Screen Terminology

| Mark | Meaning |
|---|---|
| Address | Address of selected unit |
| Attribute | Attribute of selected unit<br>CG ····· Control gateway<br>TR ····· Central controller<br>RC ····· Remote controller<br>VR ····· VAV remote controller<br>MB ····· Parallel interface<br>MA ····· M-net converter for K-control<br>KA ····· K-control converter for M-net<br>AN ····· Multi panel controller<br>GR ····· Group remote controller<br>AR ····· Air handling remote controller<br>FR ····· Fan coil remote controller<br>SC ····· System controller<br>IC ····· Indoor unit<br>LC ····· Lossnay<br>OC ····· Outdoor unit (heat source unit)<br>BC ····· BC controller<br>BS ····· BC controller<br>SE ····· Remote sensor<br>HB ····· Hydro branch controller<br>HS ····· Sub-Hydro branch controller<br>HU ····· Hydro unit<br>FU ····· Fresh master<br>AH ····· Air handling unit<br>FL ····· Fan coil unit<br>FA ····· Filter unit<br>IU ····· ICE-Y sub controller<br>CA ····· CAV controller<br>MC ····· Measuring controller<br>BU ····· Booster Unit<br>AU ····· Water HEX Unit<br>CE ····· Hot Water Heat Pump Unit (MAIN)<br>CL ····· Hot Water Heat Pump Unit (SUB)<br>AHC ··· Advanced HVAC CONTROLLER |
| Model | Model of selected unit |
| Ver. | S/W version of selected unit |
| G_NO. | Group number |
| Capacity | Capacity of selected unit |
| UL-Model | UL-Model number of selected unit |
| Branch/pair | Branch or pair number |
| ON/OFF | Operation ON/OFF |
| Mode | Operation mode |
| Intake | Room temperature |
| Set | Set temperature |
| Err-CD | The newest error is displayed. |

## Connecting Information Monitor Terminology

| Mark | Meaning |
|---|---|
| CG | Control gateway |
| TR | Central controller |
| RC | Remote controller |
| VR | Remote controller for VAV |
| MB | Parallel interface |
| MA | M-net converter for K-control |
| KA | K-control converter for M-net |
| AN | Multi panel controller |
| GR | Group remote controller |
| AR | Air handling remote controller |
| FR | Remote controller for fan coil |
| SC | System controller |
| IC | Indoor unit |
| LC | Lossnay |
| OC | Outdoor unit (heat source unit) |
| BC | BC controller |
| BS | BC controller |
| HB | Hydro branch controller |
| HS | Sub-Hydro branch controller |
| HU | Hydro unit |
| SE | Remote sensor |
| FU | Fresh master |
| AH | Air handling unit |
| FL | Fan coil unit |
| FA | Filter unit |
| IU | ICE-Y sub controller |
| CA | CAV controller |
| MC | Measuring controller |
| BU | Booster Unit |
| AU | Water HEX Unit |

# Monitoring of Pre-error data Terminology

| Mark | Meaning |
|---|---|
| OC | Outdoor Unit |
| | Condensing unit |
| | ECOV-X37/55VA |
| OS | Outdoor Sub Unit |
| IC | Multidensity Modbus I/F |
| CE/CL | CAHV-P500YA-HPB |
| | CAHV-P500YB-HPB |
| | CRHV-P600YA-HPB |
| | QAHV-N560YA-HPB |
| | QAHV-N560YA-KR |
| | QAHV-N136TAU-HPB |
| CH/CL | EACV-P900YA,EAHV-P900YA,EAHV-P900YA-H |
| HB | CMB-WP108V-G |
| | CMB-WP108/1016V-GA1 |
| | CMB-WM108/1016V-AA |
| | CMB-WM350/500F-AA |
| HS | CMB-WP108/1016V-GB1 |
| | CMB-WM108/1016V-AB |
| | CMB-WM108/1016V-BB |
| HU | CMH-WM250/350/500V-A |
| CC | RBH-P35NRA-Q-TWN/RBS-P20/202HRA-Q-TWN |

# Operation Status Monitor Terminology

| Mark | UL/Non-UL | Model | |
|---|---|---|---|
| OC | UL | Y | PUHY-P72/96/108TGMU-A |
| | | | PUHY-P126/144TGMU-A |
| | | | PUHY-P168/192/204/216/234TGMU-A |
| | | R2 | PURY-P72/96/108/126/144TGMU-A |
| | | | PURY-P168/192/204/216/234TGMU-A |
| | | WY | PQHY-P72/96TGMU-A |
| | | WR2 | PQRY-P72/96TGMU-A |
| | | S | PUMY-P100/125/140YHM |
| | | | PUMY-P36/48NHMUR4 |
| | | | PUMY-P36/48NKMU |
| | | | PUMY-HP36/48NKMU |
| | | | PUMY-P60NKMU |
| | | | MXZ-8C48NA |
| | | | MXZ-4C36/5C42/8C48NAHZ |
| | | | MXZ-8C60NA-U1 |
| | Non-UL | Y | PUHY - 200/250YM* |
| | | | PUHY - 200/250YMF |
| | | | PU(H)Y-P200/250YMF-B,YMC |
| | | | PU(H)Y-200/250YMF-B,YMC |
| | | | PU(H)Y-200/250TM-(C) |
| | | | PU(H)Y-400/500YBM |
| | | | PU(H)Y-315YMC |
| | | | PUHY-400/500YMF-B,YMC |
| | | | PUHY-P400/500YMF-B,YMC |
| | | | PU(H)Y-P200/250YMF-C |
| | | | PUHY-P400/500YMF-C |
| | | | PUHY-400/500YMF-C |
| | | | PUD-P200/250YMF-C |
| | | | PU(H)Y-P200/250/315Y(R)EM-A |
| | | | PU(H)Y-P200/250/315YEM(*)-A |
| | | | PU(H)Y-200/250/315YEM(*)-A |
| | | | PUHY-P700/750/800YSGM-A |
| | | | PUHY-P200/250/300/350YGM-A |
| | | | PUHY-P400YGM-A |
| | | | PUHY-P450/500/550/600/650YGM-A |
| | | | PUHY-P450/500/550/600/650YMM-A |
| | | | PUHY-P400/650YSM-A |
| | | | PUHY-P450/500/550/600/650YCSM-A |
| | | | PUHY-P600YCSS-A |
| | | | PUHY-200/250/300/350/400/450/500YC-A |
| | | | PUHY-P200/250/300/350/400/450/500/550/600/650/700YC-A |
| | | | PUHY-P300/350/400YCSM-A |
| | | | PUHY-P450/500/550/600/650YMM(C)-A |
| | | | PUHY-P400/650YSM(C)-A |
| | | | PUHY-P450/500/550/600/650YCSM-A |
| | | | PUHY-P450/600YCSS-A |
| | | WY | PQHY-P200/250YEM-A |
| | | | PQHY-P200/250YGM-A |
| | | | PQHY-P400/500YSGM-A |
| | | R2 | PURY-200/250YM |
| | | | PURY-200/250YMF-B |
| | | | PURY-P200/250YMF-B |
| | | | PURY-200/250YMF-C |
| | | | PURY-P200/250YMF-C |
| | | | PURY-P400/500YMF-C |
| | | | PURY-200/250YEM-A |
| | | | PURY-P200/250YEM-A |
| | | | PURY-80/100TMU |
| | | | PURY-P200/250/300/350/400YGM-A |
| | | | PURY-P450/500/550/600/650YGM-A |
| | | WR2 | PQRY-P200/250YMF-B |
| | | | PQRY-P200/250YMF-C |
| | | | PQRY-P200/250YGM-A |
| | | | PQRY-P400/500YSGM-A |

| Mark | UL/Non-UL | Model | |
|---|---|---|---|
| OC | Non-UL | S | PUMY |
| | | | PUMY-P100/125/140V/YHM-A |
| | | | PUMY-P100/125/140YHM-B |
| | | | PUMY-P125/140V/YHMBR3 |
| | | | PUMY-P100/125/140YHMC-C |
| | | | PUMY-SP100/125/140YHMC-SD |
| | | | PUMY-P100/125/140VHMC-S |
| | | | PUMY-SP100/125/140VHMC-SR |
| | | | PUHZ-RP**HA |
| | | | PUMY-P100V/YHMBR4 |
| | | | PUMY-P125/140V/YHMSR1 |
| | | | PUMY-P112/125/140V/YKM(E) |
| | | | PUMY-P112/125/140V/YKM-A |
| | | | PUMY-SP80V/YKMD-A(R1) |
| | | | PUMY-SP100/125/140V/YKM |
| | | | PUMY-CP100/125/140V/YKM |
| | | | PUMY-P200/250YKMC-C |
| | | | PUMY-P200/250YKM1-CN |
| | | | PUMY-SP200/250YKM1-SD |
| | | | PUMY-P200YKM |
| | | | PUMY-P200YKMD |
| | | | PUMY-P175/200/225YKM |
| | | | PUMY-CP175/200/225YKM |
| | | | MXZ-8C140/160VAMD-A |
| | | | PUMY-P250/300YBM |
| | | | PUMY-SP250/300YBM-SD.TH |
| | | | MXY-4C100/5C125/6C140VA |
| | | | MXZ-6C53VAM-SG1 |
| | | | MXZ-8C112/140/160VAMZ-C |
| | | | MXY-8C112/140/160VAM-CN1 |
| | | | MXZ-6C112/8C140/8C160NAM |
| | | | MXZ-8C200VAM-C |
| | | | MXZ-6C112/8C140/8C160NAM |
| | | | MXZ-8C200VAM1-CTMXZ-8C200VAM2-CN1MXZ-8C200VAM2-CN1MXZ-8C200VAM2-CN1MXZ-8C225/250XAM.TH-TW1MXZ-8C225/250XAM.TH-TW1MXZ-8C225/250XAM.TH-TW1 |
| | | | MXZ-8C200VAM2-CN1 |
| | | | MXZ-8C225/250XAM.TH-TW1 |
| | | | MXZ-12C280/335YAM-CN1 |
| | - | Condensing unit | ECOV-EN75/110/150/185/225/260/300/335MVB |
| | | | ECOV-EN75/110/150/185/225/260/300/335VB |
| | | | ECOV-X37/55VA |
| OS | | | PUHN-200/250YMF-B,YMC |
| | | | PUHN-P200/250YMF-B,YMC |
| | | | PUHN-200/250YMF-C |
| | | | PUHN-P200/250YMF-C |
| SC | | | LMAP02/03/04 |
| IC | | | DOAS |
| FU | | | FU : Fresh Master |
| LC | | | LC:Lossnay |
| AU | | | PWFY-P100/200VM-E-AU |
| | | | PWFY-P100/140/200VM-E1-AU |
| | | | PWFY-P100/140/200VM-E2-AU |
| | | | PWFY-EP100VM-E1-AU |
| | | | PWFY-EP100VM-E2-AU |
| | | | PWFY-P36/72NMU-E-AU |
| BU | | | PWFY-P100VM-E-BU |
| | | | PWFY-P36NMU-E-BU |
| CE/CL | | | CAHV-P500YA-HPB |
| | | | CAHV-P500YB-HPB |
| | | | CRHV-P600YA-HPB |
| | | | QAHV-N560YA-HPB |
| | | | QAHV-N560YA-KR |
| | | | QAHV-N136TAU-HPB |
| CH/CL | | | EACV-P900YA |
| | | | EAHV-P900YA |
| | | | EAHV-P900YA-H |

| Mark | Model |
|---|---|
| HB | CMB-WP108V-G |
| | CMB-WP108/1016V-GA1 |
| | CMB-WM108/1016V-AA |
| | CMB-WM350/500F-AA |
| HS | CMB-WP108/1016V-GB1 |
| | CMB-WM108/1016V-AB |
| | CMB-WM108/1016V-BB |
| HU | CMH-WM250/350/500V-A |
| CC | RBH-P35NRA-Q-TWN |
| | RBS-P20/202HRA-Q-TWN |

# Data before Error occurred Terminology ( Outdoor Unit )

| Mark | Official Name | Meaning |
|---|---|---|
| Ope Mode 1,2 | Operation mode | Operation mode for outdoor unit |
| Ctrl Mode 1,2 | Control mode | Control mode for outdoor unit |
| Ope State 1,2 | Operation display1,2 | Display of outdoor operation (3-min restart, compressor running, pr eliminary error, Error, warm-up mode etc) |
| Indoor mode of BC branch | | Indoor mode of BC branch (All cooling ON/OFF etc) |
| Ctrl Liquid 1 | | Display of outdoor liquid correction mode |
| Ope Time Comp 1 | | Operation time( accumulated ) of comp.1 |
| Ope Time Comp 2 | | Operation time( accumulated ) of comp.2 |
| Total Freq(F) | Temporary compressor frequ ency for calculation | Total temporary compresser frequency |
| Ope Freq(Hz) | Actual frequency | Compressor operating frequency |
| Comp Hz | | Compressor output frequency before error stop |
| Hz | Hz up or down | Up or down of compressor frequency |
| AK | AK up or down | Up or down of heatexchanger capacity(calculation) |
| AK Capacity | Heat exchanger capacity | Variable which determine the size of outdoor heat exchanger |
| Toff/NF | Fan speed | Parameter of outdoor fan speed(%) |
| AL | Accumulator level | Liquid level in the accumulation ( 0: Undercharge, 1: Adequate, 2: Overcharge ) |
| FAN | Fan | Fan capacity of outdoor unit (not proportional to rotational frequen cy) |
| FAN (rpm) | Fan speed | FAN rotation speed[rpm] |
| FAN-FREE | Fan free run | Outdoor unit fan State |
| SC | Sub-cool | |
| SH | Supper heat | |
| Qjc(Qj(C)) | Total capacity code (cool) | Cooling indoor unit capacity |
| Qjh(Qj(H)) | Total capacity code (heat) | Heating indoor unit capacity |
| Ope Status | Operation Status, Backup m ode | Operation Status, Backup mode |
| Start-up unit | Start-up unit | Start-up unit |
| Deference of TC | Deference between target T C and real TC | Deference between target TC and real TC |
| Deference of ET | Deference between target E T and real ET | Deference between target ET and real ET |
| Target TC | | Target high pressure saturation temp. |
| Target ET | | Target low pressure saturation temp. |
| Forecast TC | | Forecast high pressure saturation temp. |
| Forecast ET | | Forecast low pressure saturation temp. |
| SLEV | Oil return LEV opening | Adjusts the amount of liquid refrigerant and oil returned from the accumulator |
| LEV1 | SC coil LEV opening | Adjusts refrigerant in the bypass pipe from liquid pipe in the outd oor unit in cooling mode. |
| LEV2,2a,2b | Refrigerant flow adjustment | Adjusts refrigerant flow during heating |
| LEV1,2,3,4 ,5,6,7,8 | LEV pulse of indoor unit 1-8 | LEV pulse of indoor unit 1-8 |
| L1 | LEV1 opening | Liquid level control, differential pressure control |
| L2 | LEV2 opening | Liquid level control, differential pressure control |
| L3 | LEV3 opening | Liquid level control, differential pressure control |
| L4 | LEV4 opening | Differential pressure control |
| 21S4,21S4a | 4-way valve | Switches the cooling/heating cycle (0:Cooling, 1:Heating) |
| 21S4b | 4-way valve | Capacity control of heat exchanger |
| 21S4c | 4-way valve | Capacity control of heat exchanger (Gas side) |
| SV1 | Solenoid valve output | Returns oil from the oil separator(Bypass between discharge pipe and suction pipe) |
| SV1a | Solenoid valve output | For opening/closing the bypass circuit under the O/S. |
| SV2 | Solenoid valve output | Switches the capacity control valve inside the compressor(Capacity control full load) |
| SV21,21/31 | Solenoid valve output | For the refrigerant control |
| SV22,SV32 | Solenoid valve output | Switches the capacity control valve Inside the compressor(Capacity control full load) |
| SV2/3 | Solenoid valve output | For the refrigerant control |
| SV3 | Solenoid valve output | Switches the capacity control valve inside the compressor(Capacity control unload) |
| SV32 | Solenoid valve output | Switches the capacity control valve inside the compressor |
| SV4,SV5 | Solenoid valve output | Controls capacity and restricts the high pressure (Frequency contr ol backup) (Bypass between discharge pipe and suction pipe) |
| SV5B | Solenoid valve output | Restricts the rise in the discharge temperature and bypass circuit at defrosting(liquid bypass) |
| SV6 | Solenoid valve output | Capacity control of heat exchanger |
| SV6a | Solenoid valve output | Capacity control of heat exchanger |
| SV6B | Solenoid valve output | Capacity control of heat exchanger |
| SV6C | Solenoid valve output | Capacity control of heat exchanger |
| SV6D | Solenoid valve output | Capacity control of heat exchanger |
| SV6E | Solenoid valve output | Capacity control of heat exchanger |

| | | |
|---|---|---|
| SV6a1/CVa2 | Solenoid valve output | For the refrigerant control |
| SV6b1/CVb2 | Solenoid valve output | For the refrigerant control |
| SV6c1/CVc2 | Solenoid valve output | For the refrigerant control |
| SV7 | Solenoid valve output | Bypass control of heat exchanger (Heat exchanger bypass) |
| SV71,SV72 ,SV73 | Solenoid valve output | Capacity control of heat exchanger |
| SV8 | Solenoid valve output | Capacity control of heat exchanger |
| SV8/9 | Solenoid valve output | For the refrigerant control |
| SV10,11,12 | Solenoid valve output | For the refrigerant control |
| SV13,14,15 | Solenoid valve output | For the refrigerant control |
| SV13t,14t | Solenoid valve output | For the refrigerant control |
| SVM | Solenoid valve output(SVM) | All cool only units will be open at defrosting |
| SV*a | Solenoid valve output(SV*a) | Supply refrigerant to the cool only indoor unit |
| SV*b | Solenoid valve output(SV*b) | Supply refrigerant to the heat pump indoor unit |
| SV*c | Solenoid valve output(SV*c) | Supply refrigerant to the cool only indoor unit |
| F | All temporary frequencies | All temporary frequencies (Foc) [Hz] |
| Comp ON | | Display of compressor run (1) / compressor off (0) |
| 72C | Magnetic relay | Magnetic relay(inverter main circuit) |
| 52C1 | electromagnetic contactor | 52C output On during indoor unit running (inverter main circuit) |
| 52C2 | Relay output | Control of compressor2 |
| CH2/3 | Accumlater level detection h eater output | Accumulator level detection heater output |
| CH1 | Crankcase heater output | Control of compressor heater |
| 52F | Contactor | ON/OFF switch of NO.2 fan |
| TH1,TH11 | Thermistor | Detects the discharge temperature for the high pressure protectio n. |
| TH12 | Thermistor | Detects the discharge temperature for |
| | | the high pressure protection |
| TH2 | Thermistor | Detects saturated temperature and then, control the compressor fr equency and liquid level in the accumulator (Detects saturated ev aporation temperature) |
| TH3 | Thermistor | Detects the liquid level in the accumulator (Detects lower liquid le vel in the accumulator) |
| TH4 | Thermistor | Detects the liquid level in the accumulator (Detects upper liquid le vel in the accumulator) |
| TH5 | Thermistor | Controls compressor frequency, controls defrosting and detects the liquid level in heating mode, detects the sub-cool at the heat exc hanger exit in combination with 63 HS data, and controls LEV1 (Detects the liquid pipe temperature) |
| TH6 | Thermistor | Detects the ambient temperature and then, controls the fan freque ncy liquid level in the accumulator, and the opening LEV pulse for oil return. (Detects the ambient air temperature) |
| TH7,TH8 ,TH9 | Thermistor (Controls SC) | Controls LEV1 based on the temperature differences between TH 7,8 and 9. |
| TH9 | Thermistor | Senses the refrigerant composition based on TH2, TH9 and 63LS (composition sensing) |
| TH10 | Thermistor | Detects the oil temperature (Lower compressor shell) |
| TH10a ,TH10b | Thermistor | Detects outlet temperature of heat exchanger in heating mode. (G as pipe temperature of heat exchanger) |
| TH10c | Thermistor | Detects the oil temperature (Lower compressor shell) |
| T1 | TH11 thermistor | LEV control (Controls liquid level) (Temperature at liquid entrance area) |
| T2 | TH12 thermistor | LEV control (Superheat) (Temperature at bypass exit area) |
| T3 | TH13 thermistor | LEV control (Controls liquid level) (Temperature of heat exchanger exit area) |
| T4 | TH14 thermistor | LEV control (Controls liquid level) (Heat exchanger entrance temp erature) |
| T5 | TH15 thermistor | LEV control (Superheat) (Bypass exit temperature) |
| T6 | TH16 thermistor | LEV control (Subcool) (Bypass entrance temperature) |
| THHS | Thermistor | Controls the inverter cooling fan based on the THHS temperature. (Inverter radiator plate temperature) |
| 63HS(1) | High pressure sensor | Detects the discharge pressure and then, protects unit against da mage by high pressure. |
| 63HS2 | Intermediate pressure sensor | Detects the discharge pressure and then, protects unit against da mage by Intermediate pressure. (63HS2 is not displayed according to the unit model.) |
| HPS1 | High pressure sensor 1 | Detects high pressure of compressor discharge |
| HPS2 | High pressure sensor 2 | Detects high pressure of gas pump |
| MPS | Middle pressure sensor | Detects middle pressure of BC controller |
| LPS | Low pressure sensor | Detects low pressure |
| 63LS | Low pressure sensor | Detects the suction pressure and then, senses the refrigerant com position |
| A_OC | Refrigerant composition(R32) | Real percentage of R32 |
| A_OC* | Refrigerant composition(R32) | Calculated percentage of R32 |
| Tc | Average of saturation gas te mperature of high pressure and saturation liquid tempera | For control of compressor frequency and fan speed |

| | | |
|---|---|---|
| | ture of high pressure | |
| Te | Saturation temperature of low pressure | Same as TH2 |
| Icomp | Direct current | DC of inverter compressor |
| SV3t | Solenoid valve output | For the refrigerant control |
| SV4t | Solenoid valve output | For the refrigerant control |
| SV5t | Solenoid valve output | For the refrigerant control |
| SV6t | Solenoid valve output | For the refrigerant control |
| SV7t | Solenoid valve output | For the refrigerant control |
| SV8t | Solenoid valve output | For the refrigerant control |
| TH9b | Thermistor | Senses the refrigerant composition based on TH2,TH9b and 63LS. (composition sensing) |
| TH18 | Thermistor | Detects temperature |
| Ope Mode1,3 | Operation mode 1,3 | Operation mode for outdoor unit |
| Ctrl Mode3 | Control mode 3 | Control mode for outdoor unit |
| Vdc | Bus voltage | Bus voltage |
| Idc | COMP operation current (DC) | Peak value [A] |
| Iu | Phase-U current | Phase-U current of compressor |
| Iw | Phase-W current | Phase-W current of compressor |
| PF | Power factor | Inverter output phase angle |
| Vdcgain | Vdcgain | Vdcgain |
| offset_u | offset_u | offset_u |
| offset_w | offset_w | offset_w |
| vf_ofst_kido | vf_ofst_kido | vf_ofst_kido |
| vf_ofst_power | vf_ofst_power | vf_ofst_power |
| Error Code | Error code | Error code |
| Time(min.sec) | Time(min.sec) | Time(min.sec) before error occurred |
| SV4a | Solenoid valve output | Heat exchanger capacity control |
| SV4b | Solenoid valve output | Heat exchanger capacity control |
| SV4c | Solenoid valve output | Heat exchanger capacity control |
| SV4d | Solenoid valve output | Heat exchanger bypass ON/OFF |
| THHS2 | Thermistor THHS2 | Comp inverter2 radiator plate temperature |
| THHS5 | Thermistor THHS5 | Fan inverter of outdoor unit radiator plate temperature |
| T5b | Thermistor TH5b | Controls defrosting (start/end) in heating mode (No.1 compressor) |
| TS5 | Thermistor THHS5 | Fan inverter of heat exchanger unit radiator plate temperature |
| T1(BC/main BC) | TH11 thermistor | LEV control (Controls liquid level) (Temperature at liquid entrance area) |
| T2(BC/main BC) | TH12 thermistor | LEV control (Superheat) (Temperature at bypass exit area) |
| T5(BC/main BC) | TH15 thermistor | LEV control (Superheat) (Temperature at LEV3 exit area) |
| T6(BC/main BC) | TH16 thermistor | LEV control (Subcool) (Temperature at LEV3 entrance area) |
| T2(sub BC1) | TH12 thermistor of sub BC | LEV control (Superheat) (Temperature at bypass exit area) |
| T5(sub BC1) | TH15 thermistor of sub BC1 | LEV control (Superheat) (Temperature at LEV3 exit area) |
| T2(sub BC2) | TH12 thermistor of sub BC2 | LEV control (Superheat) (Temperature at bypass exit area) |
| T5(sub BC2) | TH15 thermistor of sub BC2 | LEV control (Superheat) (Temperature at LEV3 exit area) |
| P1(BC/main BC) | High pressure (63HS1) | Detects the high pressure at the liquid side |
| P3(BC/main BC) | Intermediate pressure (63HS3) | Detects the intermediate pressure |
| L1(BC/main BC) | LEV1 opening | Liquid level control, differential pressure control |
| L2(main BC) | LEV2 opening | Liquid level control, differential pressure control |
| L3(BC/main BC) | LEV3 opening | Liquid level control, differential pressure control, superheat of bypass control |
| L3(sub BC1) | LEV3 opening of sub BC1 | Liquid level control, differential pressure control, superheat of bypass control |
| L3(sub BC2) | LEV3 opening of sub BC2 | Liquid level control, differential pressure control, superheat of bypass control |
| Idc1 | DC trunk line current | DC trunk line current of inverter1 |
| Vdc1 | Bus voltage | Bus voltage of inverter1 |
| Iu1 | Phase-U current | Phase-U current of compressor1 |
| Iw1 | Phase-W current | Phase-W current of compressor1 |
| PF1 | Power factor | Inverter output phase angle of inverter1 |
| Vdcgain1 | Vdcgain | Vdcgain of inverter1 |
| offset_u1 | offset_u | offset_u of inverter1 |
| offset_w1 | offset_w | offset_w of inverter1 |
| vf_ofst_kido1 | vf_ofst_kido | vf_ofst_kido of inverter1 |
| vf_ofst_power1 | vf_ofst_power | vf_ofst_power of inverter1 |
| Idc2 | DC trunk line current | DC trunk line current of inverter2 |
| Vdc2 | Bus voltage | Bus voltage of inverter2 |
| Iu2 | Phase-U current | Phase-U current of compressor2 |
| Iw2 | Phase-W current | Phase-W current of compressor2 |
| PF2 | Power factor | Inverter output phase angle of inverter2 |
| Vdcgain2 | Vdcgain | Vdcgain of inverter2 |
| offset_u2 | offset_u | offset_u of inverter2 |
| offset_w2 | offset_w | offset_w of inverter2 |
| vf_ofst_kido2 | vf_ofst_kido | vf_ofst_kido of inverter2 |

| | | |
|---|---|---|
| vf_ofst_power2 | vf_ofst_power | vf_ofst_power of inverter2 |
| FAN2 | Fan | Fan capacity of heat exchanger unit |
| FAN2 (rpm) | Fan speed | FAN rotation speed[rpm] |
| FAN2-FREE | Fan free run | Outdoor unit fan State |
| Primarity | Primarity | Indicates whether the unit is primary or secondary |
| SV5D | Solenoid valve output | Closes when outdoor unit stops |
| OC Total Freq | Total Frequency of OC unit | Total temporary frequency of OC unit |
| OS Total Freq | Total Frequency of OS unit | Total temporary frequency of OC unit |
| Total Freq | Total Frequency of OC and OS units | Total temporary frequency of OC and OS units |
| IH | IH bound power | IH restricted electricity |
| H-Def1 | Continuous Heating | Heat exchanger1 defrost |
| H-Def2 | Continuous Heating | Heat exchanger2 defrost |

# Data before Error occurred Terminology ( Condensing unit )

| Mark | Official Name | Meaning |
|---|---|---|
| TH1 | Discharge pipe temperature | Discharge pipe temperature of the compressor |
| TH2 | Compressor shell oil temperature | Oil temperature of the compressor shell bottom |
| TH4 | – | For Japan market model |
| TH5 | – | For Japan market model |
| TH6 | Outside air temperature | Temperature of outside air |
| TH7 | Suction pipe temperature | Suction pipe temperature of the compressor |
| TH8 | Liquid pipe temperature | Temperature of the liquid pipe |
| HPS | High-pressure | Use for controlling compressor, fan and high-pressure protection. |
| LPS | Low-pressure | Use for controlling compressor, fan and low-pressure protection. |
| Idc | Direct current(INV DC current) | Peak value of the DCCT detection |
| Vdc | Bus voltage(INV DC voltage) | DC bus voltage |
| Tc | Condensation temperature (Converted high-pressure saturation temperature) | Condensation temperature of unit module. |
| Te | Evaporation temperature (Converted low-pressure saturation temperature) | Evaporation temperature of unit module. |
| THHS | Inverter heatsink temperature | Temperature of the heatsink. for controlling the inverter cooling fan. |
| AL | Liquid refrigerant flooding level | Determine the liquid refrigerant flooding condition.<br>0:dry, 1:wet, 2:liquid refrigerant flooding |
| Tem0 | – | For Japan market model |
| Tem1 | – | For Japan market model |
| Tcm | Target condensation temperature | Target condensation temperature of unit module.<br>When unit correspondencing, It doesn't show because the controlling use representative value. |
| Tem | Target evaporation temperature | Target evaporation temperature of unit module. |
| Delta-Tcm | Target condensation temperature difference | Difference between the target condensation temperature and actual temperature(Tcm-Tc) |
| Delta-Tem | Target evaporation temperature difference | Difference between the target evaporation temperature and actual temperature(Tem-Te) |
| Coff | Low-pressure cut-off value | Low-pressure cutoff compressor OFF-threshold<br>Unit:Mpa |
| Con | Low-pressure cut-on value | Low-pressure cutoff compressor ON-threshold<br>Unit:Mpa |
| lead-in speed | Compressor suction speed | Rate of the low-pressure change of compressor<br>Unit:Mpa/10s |
| Discharge-SH | Compressor discharge superheat | Discharge superheat of the compressor(TH1-Tc) |
| S-TH6 | Representative outside air temperature | Representative outside air temperature of the overall unit |
| S-HPS | Representative high-pressure | Representative high-pressure of the overall unit<br>Unit:Mpa |
| S-LPS | Representative low-pressure | Representative low-pressure of the overall unit<br>Unit:Mpa |
| S-Coff | Overall Low-pressure cutoff compressor OFF-threshold | Representative low-pressure cutoff compressor OFF-threshold of the overall unit Unit:Mpa |
| S-Con | Overall Low-pressure cutoff compressor ON-threshold | Representative low-pressure cutoff compressor ON-threshold of the overall unit<br>Unit:Mpa |
| Iu | Compressor U-phase current value | Inverter output current value(U-phase) |
| Iw | Compressor W-phase current value | Inverter output current value(W-phase) |
| Vunb | Limit of unbalance of power supply voltage | Show the state of the unbalance limiting control of power supply voltage.<br>1:Under control、0:Nomal |
| Fm | Target frequency of the compressor(unit module value) (Hz) | Target frequency of the compressor. |
| FAN(AK%) | Heat exchanger capacity ( Fan output) | Variable of the motor rotation speed of the condenser fan (%) |
| S-Fm(Hz) | Target frequency of the compressor(unit module value) (Hz) | Target frequency of the compressor of unit module. |
| X101 | Auxiliary relay<X101> status | Used for the bypass solenoid valve output(the primary-side power-supply voltage).<br>1:ON, 0:OFF |

| | | |
|---|---|---|
| X102 | Auxiliary relay<X102> status | For Japan market model |
| X103 | Auxiliary relay<X103> status | Used for the crankcase heater output (the primary-side power-supply voltage).<br>1:ON, 0:OFF |
| X104 | Auxiliary relay<X104> status | Used for the solenoid valve <injection> output ( the primary-side power-supply voltage).<br>1:ON, 0:OFF |
| X105 | Auxiliary relay<X105> status | Used for the high/low pressure bypass solenoid valve output ( the primary-side power-supply voltage).<br>1:ON, 0:OFF |
| X106 | Auxiliary relay<X106> status | The solenoid valve <oil return> output (21Q1～3) (the primary-side power-supply voltage).<br>1:ON, 0:OFF |
| X107 | Auxiliary relay<X107> status | Used for the output of the operating status of the compressor(auxiliary relay<X61> drive) (the primary-side power-supply voltage).<br>1:ON, 0:OFF |
| X108 | Auxiliary relay<X108> status | Used for 52F output (the primary-side power-supply voltage). 1:ON, 0:OFF |
| X109 | Auxiliary relay<X109> status | – |
| X110 | Auxiliary relay<X110> status | – |
| X111 | Auxiliary relay<X111> status | Used for the unit operation signal output(auxiliary relay<X4>drive) (the primary-side power-supply voltage).<br>1:ON, 0:OFF |
| X112 | Auxiliary relay<X112> status | Used for the error alarm signal output ( auxiliary relay<X5>drive ) ( the primary-side power-supply voltage).<br>1:ON, 0:OFF |
| X172 | Auxiliary relay<X172> status | Used for the 72C drive source output (the primary-side power-supply voltage).<br>1:ON, 0:OFF |
| 72C | Output of 72C for export | – |
| Err | Error output | – |
| COMP | Compressor ON/OFF output | – |
| LEV | LEV output value | LEV output value of the linear expansion valve <injection>. 0～480 pulse |

# Data before Error occurred Terminology (ECOV-X37/55VA)

| Mark | Official Name | Meaning |
|---|---|---|
| TH1 | Discharge pipe temperature | Discharge pipe temperature of the compressor |
| TH2 | Compressor oil temperature | Oil temperature of the compressor shell bottom |
| TH4 | Gascooler outlet pipe temperature | Temperature of the gascooler outlet pipe |
| TH5 | Heat exchanger outlet pipe temperature | Temperature of the heat exchanger outlet pipe |
| TH6 | Outside air temperature | Temperature of outside air |
| TH7 | Suction pipe temperature | Suction pipe temperature of the compressor |
| TH8 | Liquid pipe temperature | Temperature of the liquid pipe |
| TH9 | Oil pipe temperature | Temperature of the oil pipe |
| HPS1 | High-pressure1 | Use for controlling compressor, fan and high-pressure protection. |
| HPS2 | High-pressure2 | Use for controlling compressor, fan and high-pressure protection. |
| MPS | Middle-pressure | Use for controlling compressor, fan and middle-pressure protection. |
| LPS | Low-pressure | Use for controlling compressor, fan and low-pressure protection. |
| Vdc | Bus voltage(INV DC voltage) | DC bus voltage |
| Tc | Condensation temperature (Converted high-pressure saturation temperature) | Condensation temperature of unit module. |
| Te | Evaporation temperature (Converted low-pressure saturation temperature) | Evaporation temperature of unit module. |
| THHS | Inverter heatsink temperature | Temperature of the heatsink. For controlling the inverter cooling fan. |
| AL | Liquid refrigerant flooding level | Determine the liquid refrigerant flooding condition.<br>0：dry, 1：wet, 2：liquid refrigerant flooding |
| Tem0 | Target evaporation temperature setting value | Target evaporation temperature setting value |
| Tcm | Target condensation temperature | Target condensation temperature of unit module.<br>When unit correspondencing, it doesn't show because the controlling use representative value. |
| Tem | Target evaporation temperature | Target evaporation temperature of unit module. |
| Delta-Tcm | Target condensation temperature difference | Difference between the target condensation temperature and actual temperature(Tcm-Tc) |
| Delta-Tem | Target evaporation temperature difference | Difference between the target evaporation temperature and actual temperature(Tem-Te) |
| Coff | Low-pressure cut-off value | Low-pressure cutoff compressor OFF-threshold |
| Con | Low-pressure cut-on value | Low-pressure cutoff compressor ON-threshold |
| lead-in speed | Compressor suction speed | Rate of the low-pressure change of compressor Unit:Pressure/10s |
| Discharge-SH | Compressor discharge superheat | Discharge superheat of the compressor(TH1-Tc) |
| Iu | Compressor U-phase current value | Inverter output current value(U-phase) |
| Iw | Compressor W-phase current value | Inverter output current value(W-phase) |
| Vunb | Limit of unbalance of power supply voltage | Show the state of the unbalance limiting control of power supply voltage.<br>1：Under control、0：Nomal |
| Fm | Target frequency of the compressor(unit module value)(Hz) | Target frequency of the compressor |
| FAN(AK%) | Heat exchanger capacity ( Fan output) | Variable of the motor rotation speed of the condenser fan (%) |
| S-Fm(Hz) | Target frequency of the compressor(overall unit)(Hz) | Target frequency of the compressor of the overall unit |
| X101 | Auxiliary relay<X101> status | Show the output status of the auxiliary relay <X101>.<br>1：ON、0：OFF |
| X102 | Auxiliary relay<X102> status | Show the output status of the auxiliary relay <X102>.<br>1：ON、0：OFF |
| X103 | Auxiliary relay<X103> status | Show the output status of the auxiliary relay <X103>.<br>1：ON、0：OFF |
| X104 | Auxiliary relay<X104> status | Show the output status of the auxiliary relay <X104>.<br>1：ON、0：OFF |
| X105 | Auxiliary relay<X105> status | Show the output status of the auxiliary relay <X105>.<br>1：ON、0：OFF |
| X107 | Auxiliary relay<X107> status | Show the output status of the auxiliary relay <X107>.<br>1：ON、0：OFF |
| X111 | Auxiliary relay<X111> status | Show the output status of the auxiliary relay <X111>.<br>1：ON、0：OFF |

| | | |
|---|---|---|
| X112 | Auxiliary relay<X112> status | Show the output status of the auxiliary relay <X112>.<br>1：ON、0：OFF |
| X113 | Auxiliary relay<X113> status | Show the output status of the auxiliary relay <X113>.<br>1：ON、0：OFF |
| 13V-3 | Fan1 auxiliary relay<X10> status | Show the output status of the auxiliary relay <X10> of fan1.<br>1：ON、0：OFF |
| 13V-4 | Fan2 auxiliary relay<X10> status | Show the output status of the auxiliary relay <X10> of fan2.<br>1：ON、0：OFF |
| 72C | Output of 72C | Used for the 72C drive source output.<br>1：ON, 0：OFF |
| LEV1～LEV4 | LEV output value | LEV output value |
| Nm | Target fan rotation speed | Target rotation speed of fan |
| avgNj1 | Fan actual rotation speed1 | Actual rotation speed of fan1 |
| avgNj2 | Fan actual rotation speed2 | Actual rotation speed of fan2 |

# Data before Error occurred Terminology ( Outdoor Sub Unit )

| Mark | Official Name | Meaning |
|---|---|---|
| Ope State 1 | | Display of outdoor operation (3-min restart, compressor running, preliminary error, Error, warm-up mode etc) |
| Ope State 2 | | Display of outdoor operation (Power failure LEV ON/OFF) |
| Ctrl Liquid | | Display of outdoor liquid correction mode |
| Ope Time Comp1 | | Operation time( accumulated ) of comp. |
| Comp ON | | Display of compressor run (1) / compressor off (0) |
| 52C1 | electromagnetic contactor | Control of compressor |
| CH2/3 | Accumlater level detection heater output | Accumulator level detection heater output |
| Akx(2) | Heat exchanger capacity | Variable which determine the size of outdoor heat exchanger |
| AL | Accumulator level | Liquid level in the accumulation ( 0: Undercharge, 1: Adequate, 2 :Overcharge ) |
| LEV1 | SC coil LEV opening | Adjusts refrigerant in the bypass pipe from liquid pipe in the outdoor unit in cooling mode. |
| LEV2 | Liquid pipe LEV opening | Control of refrigerant in heating mode |
| 21S4(a) | 4-way valve | Switches the cooling/heating cycle (0:Cooling, 1:Heating) |
| 21S4(b) | 4-way valve | Capacity control of heat exchanger |
| SV1 | Solenoid valve output | Returns oil from the oil separator (Bypass between discharge pipe and suction pipe) |
| SV4 | Solenoid valve output | Control of low pressure (evaporation refrigerant in Accumulator ) |
| SV5B(b) | Solenoid valve output | Control of refrigerant amount in liquid line |
| SV22/32 | Solenoid valve output | For the refrigerant control |
| TH11 | Thermistor | Detects the discharge temperature for the high pressure protection. |
| TH3 | Thermistor | Detects the liquid level in the accumulator (Detects lower liquid level in the accumulator) |
| TH4 | Thermistor | Detects the liquid level in the accumulator (Detects upper liquid level in the accumulator) |
| TH5 | Thermistor | Controls compressor frequency, controls defrosting and detects the liquid level in heating mode, detects the sub-cool at the heat exchanger exit in combination with 63 HS data, and controls LEV1 (Detects the liquid pipe temperature) |
| TH6 | Thermistor | Detects ambient temperature |
| TH7(8,9) | Thermistor (Controls SC) | Controls LEV1 based on the temperature differences between TH 7,8 and 9. |
| TH10a | Thermistor | Detects outlet temperature of heat exchanger in heating mode. (Gas pipe temperature of heat exchanger) |
| TH10b | Thermistor | Detects temperature of balance pipe |
| 63LS | Low pressure sensor | Detects the suction pressure and then, senses the refrigerant composition. |

## Data before Error occurred Terminology (Multidensity Modbus I/F)

| Mark | Official Name | Meaning |
|---|---|---|
| TAmb | Thermistor(Return air temperature) | Detects and controls the room temperature of indoor units |
| TGEv | Thermistor(Gas line temperature) | Indoor unit gas side piping temperature |
| TASup | Thermistor(Supply air temperature) | Detects and controls the delivery temperature from the indoor unit |
| TsGEv | Gas line saturation temperature | Saturation temperature conversion value of gas piping pressure of indoor unit |
| PGEv | Pressure (Gas line pressure) | Detects gas line pressure |
| TO | Target room temperature | Temperature set by Indoor unit |
| LI | Electric expansion valve | Indoor unit EEV opening pulse |
| FAN | Fan data | Indoor unit fan output |

# Data before Error occurred Terminology (CAHV-P500YA-HPB,CAHV-P500YB-HPB)

| Mark | Official Name | Meaning |
|---|---|---|
| TH1 | Thermistor | Discharge Ref temperature 1 |
| TH2 | Thermistor | Suction Ref temperature 1 |
| TH3 | Thermistor | Shell Ref temperature 1 |
| TH4 | Thermistor | Air hex Ref temperature 1 |
| TH5 | Thermistor | Discharge Ref temperature 2 |
| TH6 | Thermistor | Suction Ref temperature 2 |
| TH7 | Thermistor | Shell Ref temperature 2 |
| TH8 | Thermistor | Air hex Ref temperature 2 |
| TH9 | Thermistor | Outdoor temperature 1 |
| TH10 | Thermistor | Water Inlet temperature 1 |
| TH11 | Thermistor | Water Outlet temperature 1 |
| TH12 | Thermistor | Water Inlet temperature 2 |
| TH13 | Thermistor | Water Outlet temperature 2 |
| TH14 | Thermistor | Representative water temperature 1 |
| TH15 | Thermistor | Representative water temperature 2 |
| THHS | Thermistor | IGBT temperature |
| HP1 | Pressure sensor | High pressure senser |
| LP1 | Pressure sensor | Low pressure senser |
| Ts | | Target water temperature |
| Twi | | Current inlet water temperature |
| Two | | Current outlet water temperature |
| Twg | Main water temperature | TH14 or TH15 temperature which is selected |
| Tout | Main outdoor temperature | 4-20mA2 or IT temperature which is selected |
| 0-10IN | 0-10V/2-10V | External analog input for Target water temp (0-10V) |
| 1-5IN | 1-5V | External analog input for Target water temp (1-5V) |
| 4/20IN1 | 4-20mA1 | External analog input for Target water temp (4-20mA) |
| Idc(Comp) | | DC trunk line current [A] |
| Iu(Comp) | | Phase-U current of compressor [A] |
| Iw(Comp) | | Phase-W current of compressor [A] |
| Vdc(Comp) | | COMP bus voltage [V] |
| 4/20IN2 | 4-20mA2 | External analog input for Outdoor temp (4-20mA2 |
| SHs | | Target superheat value at the suction pipe to compressor |
| SH | | difference from suction gas temp to saturated gas temp |
| Shell-SH | | superheat value at the suction point of compressor |
| Td-SHs | | Target superheat value at the discharged pipe from compressor |
| Td-SH | | superheat value at the discharged point from compressor |
| COMP1 | | oparating frequency in main circuit |
| COMP2 | | oparating frequency in sub circuit |
| FAN(Hz) | | Outdoor unit fan output [%] |
| LEV1 | | LEV1 pulse |
| LEV2 | | LEV2 pulse at HIC circuit |

# Data before Error occurred Terminology (CRHV-P600YA-HPB)

| Mark | Official Name | Meaning |
|---|---|---|
| Ver | Software Version | Program ROM |
| TH1 | Thermistor | Discharge Ref temp.1 |
| TH2 | Thermistor | Suction Ref temp.1 |
| TH3 | Thermistor | Shell Ref temp.1 |
| TH4 | Thermistor | Heat exchanger wall temp.1 |
| TH5 | Thermistor | Discharge Ref temp.2 |
| TH6 | Thermistor | Suction Ref temp.2 |
| TH7 | Thermistor | Shell Ref temp.2 |
| TH8 | Thermistor | Heat exchanger wall temp.2 |
| TH9 | Thermistor | Outdoor temp.1 |
| TH11 | Thermistor | Water inlet temp.1 |
| TH12 | Thermistor | Water outlet temp.1 |
| TH13 | Thermistor | Heat source inlet temp.1 |
| TH14 | Thermistor | Heat source outlet temp.1 |
| TH15 | Thermistor | External Water sensor.1 |
| TH16 | Thermistor | External Water sensor.2 |
| TH17 | Thermistor | Hot Water inlet temp.2 |
| TH18 | Thermistor | Hot Water outlet temp.2 |
| TH20 | Thermistor | Heat source inlet temp.2 |
| HP | 63HS | High pressure sensor |
| LP | 63LS | Low pressure sensor |
| Vdc | - | COMP bus voltage [V] |
| Iu | - | Phase-U current of compressor [A] |
| Iw | - | Phase-W current of compressor [A] |
| Ts | - | Target water temperature |
| Twi | - | Current inlet hot water temperature |
| Two | - | Current outlet hot water temperature |
| Twg | Main water temperature | TH15 or TH16 temperature which is selected |
| SHs | - | Target superheat value at the suction pipe to compressor |
| SHt | - | - |
| SHb | - | - |
| Shell-SH | - | Superheat value at the shell of the compressor |
| Td-SHs | - | Target superheat value at the discharge pipe |
| Td-SH | - | Superheat value at the discharge pipe |
| THHS | Thermistor | IGBT temperature |
| LEV1 | - | Electronic expansion valve(Main/Sub circuit) |
| LEV2 | - | - |
| LEV3 | - | Electronic expansion valve(Main/Sub injection circuit) |
| COMP1(Hz) | - | Operating frequency in main circuit [Hz] |
| COMP2(Hz) | - | Operating frequency in sub circuit [Hz] |
| 4-20mA1 | - | External analog input for Target water temp (4-20mA1) |
| 0-10V | - | External analog input for Target water temp (0-10V/2-10V) |
| 1-5V | - | External analog input for Target water temp (1-5V) |
| 4-20mA2 | - | External analog input for Outdoor temp (4-20mA2) |

# Data before Error occurred Terminology

## QAHV-N560YA-HPB, QAHV-N560YA-KR, QAHV-N136TAU-HPB

| Mark | Official Name | Meaning |
|---|---|---|
| TH1 | Compressor Discharge Refrigerant temperature | |
| TH2 | Compressor Suction Refrigerant temperature | |
| TH3 | Gascooler Refrigerant temperature | |
| TH4 | Air hex(Heat exchange) inlet Refrigerant temperature | |
| TH5 | Air hex(Heat exchange) outlet Refrigerant temperature | |
| TH9 | Outdoor temperature | |
| TH11 | Water outlet temperature | |
| TH12 | Water inlet temperature | |
| TH14 | Shell Refrigerant temperature | |
| TH15 | External water sensor.1 | |
| TH16 | External water sensor.2 | |
| TH17 | External water sensor.3 | |
| TH15p | External water sensor.4(For 6 sensor system only) | |
| TH16p | External water sensor.5(For 6 sensor system only) | |
| TH17p | External water sensor.6(For 6 sensor system only) | |
| TH18 | External Water sensor (secondary circuit) | |
| TH19 | No use | |
| THHS | Heat sink temperature | |
| HP1 | High pressure senser [Mpa] | |
| HPb | High pressure amplitude amplitude value [Mpa] | |
| LP1 | Low pressure senser [Mpa] | |
| 4/20IN | Analog input 4-20mA/0-10V/1-5V/2-10V | External analog input for Target water temperature |
| Idc | DC trunk line current [A] | |
| Iu | U-Phase current effective value[A] | |
| Iw | W-Phase current effective value[A] | |
| Vdc | Bus voltage [V] | |
| Vp-p | No use | |
| Target superheat | | |
| Real superheat | | |
| FlowRate1(L/m) | Flow sensor.1 | flow rate (liter per minutes) |
| FlowRate2(L/m) | Flow sensor (secondary circuit) | flow rate (liter per minutes) |
| FlowRate3(L/m) | No use | |
| Pump(%) | Pump output | Percentage of pump output (current value / maximum value) for water flow rate control |
| FAN(Hz) | Fan frequency | |
| F(Hz) | Compressor frequency | |
| MVW1 | | Flow control valve MV 1 Valve opening |
| LEVA | | Command value of LEVA pulse of unit |
| LEVC | | Command value of LEVC pulse of unit |

# Data before Error occurred Terminology (EACV-P900YA,EAHV-P900YA,EAHV-P900YA-H)

| Mark | Official Name | Meaning |
|---|---|---|
| Ver | Software Version | Program ROM |
| TH1 | Thermistor | Water inlet temp. 1 |
| TH2 | Thermistor | Water inlet temp. 2 |
| TH3 | Thermistor | Water outlet temperature |
| TH5 | Thermistor | ACC Inlet Ref temperature |
| TH6 | Thermistor | Air hex Ref temperature |
| TH7 | Thermistor | Water hex Ref temperature |
| TH10 | Thermistor | Outdoor temperature |
| TH11 | Thermistor | Discharge Ref temperature |
| TH15 | Thermistor | External Water sensor |
| HP | 63HS | High pressure sensor |
| LP | 63LS | Low pressure sensor |
| Vdc | - | COMP bus voltage [V] |
| Iu | - | Phase-U current of compressor [A] |
| Iw | - | Phase-W current of compressor [A] |
| Ts | - | Target water temperature |
| Twi | - | Current inlet water temperature |
| Two | - | Current outlet water temperature |
| Twg | Main water temperature | External water temperature |
| Tout | - | Outdoor air temperature by BMS |
| SHs | - | Target superheat value at the ACC inlet pipe |
| SCs | - | Target subcool value at the ACC inlet pipe |
| SH | - | - |
| SC | - | - |
| Td-SH | - | Superheat value at the discharge pipe |
| THHS | Thermistor | IGBT temperature |
| LEV1 | - | Electronic expansion valve(Main/Sub circuit) |
| COMP1(Hz) | - | Operating frequency in main circuit [Hz] |
| FAN1(Hz) | - | Operating frequency of fan moter1 [Hz] |
| FAN2(Hz) | - | Operating frequency of fan moter2 [Hz] |
| FAN3(Hz) | - | Operating frequency of fan moter3 [Hz] |
| 4-20mA1 | - | External analog input for Target water temp (4-20mA1) |
| 0-10V | - | External analog input for Target water temp (0-10V/2-10V) |
| 1-5V | - | External analog input for Target water temp (1-5V) |

# Data before Error occurred Terminology (CMB-WP108V-G)

| Mark | Official Name | Meaning |
|---|---|---|
| Time(min.sec) | Time(min.sec) | Time(min.sec) before error occurred |
| TH11 | Thermistor | |
| TH12 | Thermistor | |
| TH13 | Thermistor | |
| TH14 | Thermistor | |
| TH15 | Thermistor | |
| TH16 | Thermistor | |
| TH31a | Thermistor | |
| TH31b | Thermistor | |
| TH31c | Thermistor | |
| TH31d | Thermistor | |
| TH31e | Thermistor | |
| TH31f | Thermistor | |
| TH31g | Thermistor | |
| TH31h | Thermistor | |
| TH32 | Thermistor | |
| TH33 | Thermistor | |
| TH34 | Thermistor | |
| TH35 | Thermistor | |
| TH36 | Thermistor | |
| TH37 | Thermistor | |
| Ps1 | Pressure sensor | |
| SWgp1 | SWgp1 signal | |
| SWgp2 | SWgp2 signal | |
| SWgp3 | SWgp3 signal | |
| PS | Power failure detection | |
| Float | Float SW setting value | |
| Flcon | Float SW setting value | |
| PumpI1 | Pump1 Input | number of rotations |
| PumpI2 | Pump2 Input | number of rotations |
| PumpO1 | Pump1 Output | variable for control |
| PumpO2 | Pump2 Output | variable for control |
| HB Sig | Outdoor unit operation control | Outdoor unit operation control signal to OC |
| OC Sig | Indoor unit operation control | Indoor unit operation control signal from OC |
| sigmaQj(C) | Total capacity code (cooling) | Outdoor unit operation control signal to OC |
| sigmaQj(H) | Total capacity code (heating) | Indoor unit operation control signal from OC |
| 21S4Ma | 4-way valve | Cooling indoor unit capacity |
| 21S4Mb | 4-way valve | Heating indoor unit capacity |
| SVM1 | Solenoid valve | |
| 72C | Contactor | |
| 1a-1h | 2 way valve MV1* | "0" represents "valve opening = 85"<br>"1" represents "valve opening = 800"<br>"2" represents "valve opening = 1600" |
| 2a-2h | 2 way valve MV2* | "0" represents "valve opening = 85"<br>"1" represents "valve opening = 800"<br>"2" represents "valve opening = 1600" |
| 3a-3h | 3 way valve MV3* | |
| LEV1 | Linear expansion valve | |
| LEV2 | Linear expansion valve | |
| LEV3 | Linear expansion valve | |
| Error Code | Error Code | Error Code |

# Data before Error occurred Terminology (CMB-WP108/1016V-GA1, CMB-WM108/1016V-AA)

| Mark | Official Name | Meaning |
|---|---|---|
| Time(min.sec) | Time(min.sec) | Time(min.sec) before error occurred |
| TH11 | Thermistor sensor | Liquid-side refrigerant temp. of Heating-main heat exchanger |
| TH12 | Thermistor sensor | Liquid-side refrigerant temp. of Cooling-main heat exchanger |
| TH13 | Thermistor sensor | Gas-side refrigerant temp. of Heating-main heat exchanger |
| TH14 | Thermistor sensor | Gas-side refrigerant temp. of Cooling-main heat exchanger |
| TH15 | Thermistor sensor | Bypass inlet temperature |
| TH16 | Thermistor sensor | Bypass outlet temperature |
| TH31a-p | Thermistor sensor | 1st-16th port returned water temp. |
| PS1 | Pressure sensor PS1 | Detects the high pressure at the liquid side. |
| PS3 | Pressure sensor PS3 | Detects the low pressure. |
| TH32 | Thermistor sensor | Outlet water temp. of Heating-main heat exchanger |
| TH33 | Thermistor sensor | Outlet water temp. of Cooling-main heat exchanger |
| TH34 | Thermistor sensor | Water pump 2 discharge water temp. |
| TH35 | Thermistor sensor | Water pump 1 discharge water temp. |
| SH1 | Superheat | Superheat at bypass exit area. TH13-TH11 (only HB) |
| SH2 | Superheat | Superheat at bypass exit area. TH14-TH12 (only HB) |
| SC1 | Subcool | Subcool at liquid entrance area. PT1-TH11 (only HB) |
| SC2 | Subcool | Subcool at liquid entrance area. PT1-TH12 (only HB) |
| PT1 | Average of saturation gas te mperature of high pressure and saturation liquid temperature of high pr essure | For control of LEV (LEV1,LEV2,LEV3). (only HB) |
| dPHM | Differential pressure | PS1-PS3 Pressure.(only HB) |
| PS | Power failure detection | |
| Float | Float SW | |
| FIcon | Float SW | |
| PumpI1 | Pump1 Input | number of rotations |
| PumpI2 | Pump2 Input | number of rotations |
| PumpO1 | Pump1 Output | variable for control |
| PumpO2 | Pump2 Output | variable for control |
| sigmaQj(C) | Total capacity code (cooling) | Cooling indoor unit capacity |
| sigmaQj(H) | Total capacity code (heating) | Heating indoor unit capacity |
| 21S4Ma | 4-way valve | Switches the cooling/heating cycle (0:Cooling, 1:Heating) |
| 21S4Mb | 4-way valve | Heat exchanger capacity control |
| SVM1 | Solenoid valve | Refrigerant flow volume control |
| HB Sig | Outdoor unit operation contro l | Outdoor unit operation control signal to OC |
| OC Sig | Indoor unit operation control | Indoor unit operation control signal from OC |
| VB3a-3p | 3-way valve MV3* | Controls the water flow path and the water flow rate |
| LEV1 | LEV1 opening | Liquid level control, differential pressure control |
| LEV2 | LEV2 opening | Liquid level control, differential pressure control |
| LEV3 | LEV3 opening | Liquid level control, differential pressure control, superheat of bypa ss control |
| Error Code | Error Code | Error Code |
| Time(min.sec) | Time(min.sec) | Time(min.sec) before error occurred |

## Data before Error occurred Terminology (CMB-WP108/1016V-GB1, CMB-WM108/1016V-AB)

| Mark | Official Name | Meaning |
|---|---|---|
| Time(min.sec) | Time(min.sec) | Time(min.sec) before error occurred |
| TH31a-p | Thermistor sensor | 1st-16th port returned water temp. |
| TH32 | Thermistor sensor | Outlet water temp. of Heating-main heat exchanger |
| TH33 | Thermistor sensor | Outlet water temp. of Cooling-main heat exchanger |
| PS | Power failure detection | |
| Float | Float SW | |
| FIcon | Float SW | |
| VB3a-3p | 3-way valve VB3* | Controls the water flow path and the water flow rate |
| Error Code | Error Code | Error Code |
| Time(min.sec) | Time(min.sec) | Time(min.sec) before error occurred |
| TH31a-p | Thermistor sensor | 1st-16th port returned water temp. |
| TH32 | Thermistor sensor | Outlet water temp. of Heating-main heat exchanger |
| TH33 | Thermistor sensor | Outlet water temp. of Cooling-main heat exchanger |
| PS | Power failure detection | |
| Float | Float SW | |
| FIcon | Float SW | |
| VB3a-3p | 3-way valve VB3* | Controls the water flow path and the water flow rate |
| Error Code | Error Code | Error Code |

# Data before Error occurred Terminology (CMB-WM350/500F-AA)

| Mark | Official Name | Meaning |
|---|---|---|
| Time(min.sec) | Time(min.sec) | Time(min.sec) before error occurred. |
| TH11 | Thermistor (Refrigerant side) | Liquid-side refrigerant temperature of Heating-main heat exchange r. |
| TH12 | Thermistor (Refrigerant side) | Liquid-side refrigerant temperature of Cooling-main heat exchanger. |
| TH13 | Thermistor (Refrigerant side) | Gas-side refrigerant temperature of Heating-main heat exchanger. |
| TH14 | Thermistor (Refrigerant side) | Gas-side refrigerant temperature of Cooling-main heat exchanger. |
| TH15 | Thermistor (Refrigerant side) | Bypass inlet temperature. |
| TH16 | Thermistor (Refrigerant side) | Bypass outlet temperature. |
| TH31a-f | Thermistor (Water side) | 1st-6th port returned water temperature. |
| TH32 | Thermistor (Water side) | Outlet water temperature of Heating-main heat exchanger. |
| TH33 | Thermistor (Water side) | Outlet water temperature of Cooling-main heat exchanger. |
| TH34 | Thermistor (Water side) | Water pump 2 discharge water temperature. |
| TH35 | Thermistor (Water side) | Water pump 1 discharge water temperature. |
| THHS1 | Thermistor | Pump1-inverter Heat sink temperature. |
| THHS2 | Thermistor | Pump2-inverter Heat sink temperature. |
| PS1 | Pressure sensor (Refrigerant side) | Refrigerant high pressure at the gas side. |
| PS3 | Pressure sensor (Refrigerant side) | Refrigerant medium pressure. |
| Pw1(kPa) | Pressure sensor (Water side) | Water pump1 suction water pressure. |
| Pw2(kPa) | Pressure sensor (Water side) | Water pump1 discharge water pressure. |
| Pw3(kPa) | Pressure sensor (Water side) | Water pump2 suction water pressure. |
| Pw4(kPa) | Pressure sensor (Water side) | Water pump2 discharge water pressure. |
| SH1 | Superheat | Superheat at exit area of heat exchanger. TH13-TH11 |
| SH2 | Superheat | Superheat at exit area of heat exchanger. TH14-TH12 |
| SC1 | Subcool | Subcool at exit area of heat exchanger. PT1-TH11 |
| SC2 | Subcool | Subcool at exit area of heat exchanger. PT1-TH12 |
| PT1 | Average of saturation gas te mperature of high pressure and saturation liquid tempera ture of high pressure | For control of LEV. (LEV1,LEV2,LEV3) |
| dPHM | Differential pressure | PS1-PS3 Pressure. |
| PS | Power failure detection | ("OFF" : normal, "ON" : power failure) |
| PumpO1 | Pump1 Output | Variable for control. |
| PumpO2 | Pump2 Output | Variable for control. |
| Vdc1 | Pump1 bus voltage | Pump1 bus voltage. [V] |
| Iu1 | Pump1 U-Phase current effe ctive value | Pump1 U-Phase current effective value. [A] |
| Iw1 | Pump1 W-Phase current effe ctive value | Pump1 W-Phase current effective value. [A] |
| Vdcgain1 | Pump1-inverter Vdcgain | Pump1-inverter Vdcgain. |
| offset_u1 | Pump1-inverter offset_u | Pump1-inverter offset_u. |
| offset_w1 | Pump1-inverter offset_w | Pump1-inverter offset_w. |
| vf_ofst_pwr1 | Pump1-inverter vf_ofst_pwr | Pump1-inverter vf_ofst_pwr. |
| Vdc2 | Pump2 bus voltage | Pump2 bus voltage. [V] |
| Iu2 | Pump2 U-Phase current effe ctive value | Pump2 U-Phase current effective value. [A] |
| Iw2 | Pump2 W-Phase current effe ctive value | Pump2 W-Phase current effective value. [A] |
| Vdcgain2 | Pump2-inverter Vdcgain | Pump2-inverter Vdcgain. |
| offset_u2 | Pump2-inverter offset_u | Pump2-inverter offset_u. |
| offset_w2 | Pump2-inverter offset_w | Pump2-inverter offset_w. |
| vf_ofst_pwr2 | Pump2-inverter vf_ofst_pwr | Pump2-inverter vf_ofst_pwr. |
| QjC | Total capacity code (cooling) | Cooling indoor unit capacity. |
| QjH | Total capacity code (heating) | Heating indoor unit capacity. |
| 21S4Ma | 4-way valve | Switches the cooling/heating cycle. (0:Heating, 1:Cooling) |
| 21S4Mb | 4-way valve | Switches the cooling/heating cycle. (0:Cooling, 1:Heating) |
| SV1 | Solenoid valve | Refrigerant flow volume control. |
| MV1 | 3 way valve MV1 | Water supply valve for cooling circuit and heating circuit. |
| VB3a-f | Valve block VB3* | Controls the water flow path and the water flow rate. |
| LEV1 | LEV1 opening | Liquid level control, differential pressure control. |
| LEV2 | LEV2 opening | Liquid level control, differential pressure control. |
| LEV3 | LEV3 opening | Liquid level control, differential pressure control, superheat of bypa ss control. |
| Error Code | Error code | Error code. |

# Data before Error occurred Terminology (CMB-WM108/1016V-BB)

| Mark | Official Name | Meaning |
|---|---|---|
| Time(min.sec) | Time(min.sec) | Time(min.sec) before error occurred. |
| TH31a-p | Thermistor (Water side) | 1st-16th port returned water temperature. |
| TH32 | Thermistor (Water side) | Outlet water temperature of Heating-main heat exchanger. |
| TH33 | Thermistor (Water side) | Outlet water temperature of Cooling-main heat exchanger. |
| PS | Power failure detection | ("OFF" : normal, "ON" : power failure) |
| Float | Float switch | ("OFF" : error, "ON" : normal) |
| Flcon | Detection of the disconnected float switch | ("OFF" : disconnection, "ON" : connection) |
| VB3a-p | 3 way valve VB3* | Controls the water flow path and the water flow rate. |
| Error Code | Error code | Error code. |

# Data before Error occurred Terminology (CMH-WM250/350/500V-A)

| Mark | Official Name | Meaning |
|---|---|---|
| Time(min.sec) | Time(min.sec) | Time(min.sec) before error occurred |
| TH11 | Thermistor | Liquid-side refrigerant temp. of heat exchanger |
| TH13 | Thermistor | Gas-side refrigerant temp. of heat exchanger |
| TH32 | Thermistor | Outlet water temp. of heat exchanger |
| TH35 | Thermistor | Water pump discharge water temp. |
| THHS | Thermistor | Heat sink temperature |
| PWS(kPa) | Pressure sensor | Water pump suction water pressure |
| PWD(kPa) | Pressure sensor | Water pump discharge water pressure |
| Prf | Pressure sensor | Refrigerant pressure at heat exchanger |
| Trf | Saturation temperature of refrigerant | For control of LEV |
| SH | Superheat | Superheat at heat exchanger. TH13-Tref |
| SC | Subcool | Subcool at heat exchanger. Tref-TH11 |
| PS | Power failure detection | Power failure detection |
| PumpO1 | Pump1 Output | variable for control |
| Vdc | Pump1 bus voltage | Pump1 bus voltage [V] |
| Iu | U-Phase current effective value | U-Phase current effective value [A] |
| Iw | W-Phase current effective value | W-Phase current effective value [A] |
| Vdcgain | Vdcgain | Vdcgain |
| offset_u | offset_u | offset_u |
| offset_w | offset_w | offset_w |
| vf_ofst_pwr | vf_ofst_pwr | vf_ofst_pwr |
| HU Sig | Outdoor unit operation control | Outdoor unit operation control signal to OC |
| OC Sig | Indoor unit operation control | Indoor unit operation control signal from OC |
| QjC | Total capacity code (cooling) | Cooling indoor unit capacity |
| QjH | Total capacity code (heating) | Heating indoor unit capacity |
| SV1 | Solenoid valve | Refrigerant flow volume control |
| LEV1 | LEV1 opening | Heat exchanger capacity control |
| Error Code | Error code | Error code |

# Data before Error occurred Terminology (RBH-P35NRA-Q-TWN/RBS-P20/202HRA-Q-TWN)

| Mark | Official Name | Meaning |
|---|---|---|
| MODEL CODE (Unit code) | - | 06(STD08) |
| Ver | Software Version | Main program ROM version |
| TH1 | Thermistor | Room temperature (Air temperature measured by thermistor) |
| TH2 | End of defrosting1 | Defrost end(1)/Other(0) |
| TH3 | End of defrosting2 | Defrost end(1)/Other(0) |
| TH4 | Model(Unit) setting | Model setting input |
| THe | Analog input1 | Blank |
| 4-20 | Analog input2 | Blank |
| SET TEMP. | Room temerature setting | Target room temperature (Cut-off value) |
| RC COMMAND | Remote controler command | Operation(1)/Stop(0) |
| DATE | DATE(YYMMDD) | A date when abnormalities occur |
| TIME | TIME | A time when abnormalities occur |
| DIFF. | Room temperature difference | Differential of room temperature ((Cut-in value) - (Cut-off value)) |
| SETBACK | Setback value | Setting value of setback operation |
| TEMP ALARM | Difference of high temperatur e alarm | Setting value of high temperature alarm |
| X6 | External abnormalities | Condensing unit is unusual(1)/usual(0) |
| X7 | Compressor ON/OFF | One or more compressors are Running(1)/Stop(0) |
| IN3 | External contact input | Set up(1)/Unset up(0) |
| IN4 | (Reserve) | Blank |
| LEV | Linear expantion valve | Linear expantion valve output [pulse] |
| X1 | Control source output | - |
| X2 | Solenoid valve (liquid) output | - |
| X3 | Cooler fan output | - |
| X4 | Defrost heater output1 | - |
| X5 | Defrost heater output2 | - |
| X30 | Alarm output1 | Condensing unit is unusual(1)/usual(0) |
| X31 | Alarm output2 | High temperature alarm(1)/usual(0) |
| X32 | Alarm output3 | High temperature error (50℃)(1)/usual(0) |
| 12-1 | Driver output1 (DC12V) | Warning buzzer output |
| 12-2 | Driver output2 (DC12V) | Blank |
| 12-3 | Driver output2 (DC12V) | Blank |

# Operation Status Monitor Terminology
# (PUHY-P72/96/108TGMU-A, PUHY-P126/144TGMU-A, PUHY-P168/192/204/216/234TGMU-A)

| Mark | Official Name | Meaning |
|---|---|---|
| Ctrl Mode | | Control mode for outdoor unit |
| Ope Mode | | Operation mode for outdoor unit |
| Save | | Signal of capacity saving from system controller.<br>figure : % No signal : 100% |
| Power | Power source frequency | Power source frequency (Hz) |
| F | Temporary compressor frequency for calculation | Variable for control |
| F1 | Temporary compressor frequency of No.1 Comp for calculation | Variable for control<br>(only for P168 type or over) |
| F2 | Temporary compressor frequency of No.2 Comp for calculation | Variable for control<br>(only for P168 type or over) |
| AK | Heat exchanger capacity | Variable which determines the size of outdoor heat exchanger |
| FAN | Fan | Fan capacity of outdoor unit<br>(not proportional to rotational frequency) |
| DEMAND | ON/OFF demand | Input stop signal of compressor<br>( ON:effective, OFF:ineffective ) |
| DEMAND2 | Intermediate demand | Signal of capacity saving<br>( ON:effective, OFF:ineffective )<br>DEMAND=OFF, DEMAND2=OFF: 100%<br>DEMAND=OFF, DEMAND2=ON : 75%<br>DEMAND= ON, DEMAND2=ON : 50%<br>DEMAND= ON, DEMAND2=OFF: 25% |
| SNOW | Snow sensor | Input run signal of outdoor unit fan<br>(As compressor stopped)<br>( ON:effective, OFF:ineffective ) |
| NIGHT | Night mode | Decreases frequency of outdoor unit fan<br>( ON:effective, OFF:ineffective ) |
| Qj(C) | Total capacity code (cool) | Cooling indoor unit capacity |
| Qj(H) | Total capacity code (heat) | Heating indoor unit capacity |
| LEV1 | SC coil LEV opening | Adjusts refrigerant in the bypass pipe from liquid pipe in the outdoor unit in cooling mode. |
| 21S4a | 4-way valve | Switches the cooling/heating cycle<br>(0:Cooling, 1:Heating) |
| 21S4b | 4-way valve | Capacity control of heat exchanger (Gas side)<br>(only for P126 type or over) |
| SV1 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | The discharge pressure control |
| SV3 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | Protects compressor when No.2 compressor stops.<br>(only for P168 type or over) |
| SV5b | Solenoid valve output | Capacity control of heat exchanger (Liquid side).<br>(only for P126 type or over) |
| 52F | Contactor | ON/OFF switch of No.2 fan<br>(only for P168 type or over) |
| Rep | Repeater output | Prohibit(0)/Permit(1) the communication with centralized control system |
| TH11 | Thermistor<br>(Detects discharge temperature) | Detects discharge temperature for protection of No.1 compressor. |
| TH12 | Thermistor<br>(Detects discharge temperature) | Detects discharge temperature for protection of No.2 compressor.<br>(only for P168 type or over) |
| TH5 | Thermistor<br>(Detects the liquid pipe temperature) | Controls defrosting (start/ end) in heating mode. |
| TH6 | Thermistor<br>(Detects the ambient air temperature) | Detects the ambient temperature and then, controls the fan frequency and liquid level in the accumulator. |
| TH7(8) | Thermistor<br>(Controls SC) | Controls LEV1 based on the temperature differences between TH 6,7 and 8. |
| THHS1 | Thermistor<br>(Comp inverter radiator plate temperature) | Controls the Comp inverter cooling fan based on the THHS1 temperature. |
| THHS5 | Thermistor<br>(Fan inverter radiator plate temperature) | Controls the Fan inverter cooling fan based on the THHS5 temperature. |
| 63HS | High pressure sensor | Detects the discharge pressure and then protects unit against da |

| | | |
|---|---|---|
| | | mage by high pressure. |
| 63LS | Low pressure sensor | Detects the suction pressure and then, senses the refrigerant com position. |
| Tc | Average of saturation gas te mperature of high pressure and saturation liquid tempera ture of high pressure | For control of compressor frequency and fan speed. |
| Te | Saturation temperature of lo w pressure | For control of compressor frequency and fan speed |
| SCO | Sub-cool at heat exchanger Tc-TH5 | Variable for control |
| SCC | Sub-cool at SC coil exit Tc-TH7 | Variable for control |
| SHB | SC coil bypass exit supper heat TH8-Te | Variable for control |
| Vdc | Bus voltage | Bus voltage |
| Idc | DC trunk line current | DC trunk line current |
| Iu | Phase-U current | Phase-U current of compressor |
| Iw | Phase-W current | Phase-W current of compressor |

# Operation Status Monitor Terminology
# (PURY-P72/96/108/126/144TGMU-A, PURY-P168/192/204/216/234TGMU-A)

| Mark | Official Name | Meaning |
|---|---|---|
| Ctrl Mode | | Control mode for outdoor unit |
| Ope Mode | | Operation mode for outdoor unit |
| Save | | Signal of capacity saving from system controller.<br>figure : % No signal : 100% |
| Power | Power source frequency | Power source frequency (Hz) |
| F | Temporary compressor frequency for calculation | Variable for control |
| F1 | Temporary compressor frequency of No.1 Comp for calculation | Variable for control<br>(only for P168 type or over) |
| F2 | Temporary compressor frequency of No.2 Comp for calculation | Variable for control<br>(only for P168 type or over) |
| AK | Heat exchanger capacity | Variable which determines the size of outdoor heat exchanger |
| FAN | Fan | Fan capacity of outdoor unit<br>(not proportional to rotational frequency) |
| DEMAND | ON/OFF demand | Input stop signal of compressor<br>( ON:effective, OFF:ineffective ) |
| DEMAND2 | Intermediate demand | Signal of capacity saving<br>( ON:effective OFF:ineffective )<br>DEMAND=OFF, DEMAND2=OFF: 100%<br>DEMAND=OFF, DEMAND2=ON : 75%<br>DEMAND= ON, DEMAND2=ON : 50%<br>DEMAND= ON, DEMAND2=OFF: 25% |
| SNOW | Snow sensor | Input run signal of outdoor unit fan<br>(As compressor stopped)<br>( ON:effective, OFF:ineffective ) |
| NIGHT | Night mode | Decreases frequency of outdoor unit fan<br>( ON:effective, OFF:ineffective ) |
| Qj(C) | Total capacity code (cool) | Cooling indoor unit capacity |
| Qj(H) | Total capacity code (heat) | Heating indoor unit capacity |
| 21S4a | 4-way valve | Switches the cooling/heating cycle<br>(0:Cooling, 1:Heating) |
| 21S4b | 4-way valve | Heat exchanger capacity control<br>(only for P168 type or over) |
| SV1 | Solenoid valve output | Bypass between discharge pipe and suction pipe |
| SV2 | Solenoid valve output | Bypass between discharge pipe and suction pipe |
| SV3 | Solenoid valve output | Bypass between discharge pipe and suction pipe<br>(only for P168 type or over) |
| SV4a | Solenoid valve output | Heat exchanger capacity control |
| SV4b | Solenoid valve output | Heat exchanger capacity control |
| SV4c | Solenoid valve output | Heat exchanger capacity control |
| SV4d | Solenoid valve output | Heat exchanger bypass ON/OFF |
| SV5a | Solenoid valve output | Heat exchanger capacity control<br>(only for P168 type or over) |
| SV5b | Solenoid valve output | Heat exchanger capacity control<br>(only for P168 type or over) |
| 52F | Contactor | ON/OFF switch of No.2 fan<br>(only for P168 type or over) |
| Rep | Repeater output | Prohibit(0)/Permit(1) the communication with centralized control system |
| TH11 | Thermistor<br>(Detects discharge temperature) | Detects discharge temperature for protection of No.1 compressor. |
| TH12 | Thermistor<br>(Detects discharge temperature) | Detects discharge temperature for protection of No.2 compressor.<br>(only for P168 type or over) |
| TH5 | Thermistor<br>(Detects the pipe temperature) | Controls defrosting (start/ end) in heating mode. |
| TH6 | Thermistor<br>(Detects the ambient air temperature) | Detects the ambient temperature and then, controls the fan frequency and liquid level in the accumulator. |
| TH7 | Thermistor<br>(Detects pipe temperature) | For defrost control |
| THHS1 | Thermistor<br>(Comp inverter radiator plate temperature) | Controls the Comp inverter cooling fan based on the THHS1 temperature. |
| THHS5 | Thermistor<br>(Fan inverter radiator plate temperature) | Controls the Fan inverter cooling fan based on the THHS5 temperature. |

| | | |
|---|---|---|
| 63HS | High pressure sensor | Detects the discharge pressure and then protects unit against damage by high pressure. |
| 63LS | Low pressure sensor | Detects the suction pressure and then, protects unit against damage by low pressure. |
| Tc | Average of saturation gas temperature of high pressure and saturation liquid temperature of high pressure | For control of compressor frequency and fan speed. |
| Te | Saturation temperature of low pressure | For control of compressor frequency and fan speed. |
| Vdc | Bus voltage | Bus voltage |
| Idc | DC trunk line current | DC trunk line current |
| Iu | Phase-U current | Phase-U current of compressor |
| Iw | Phase-W current | Phase-W current of compressor |

# Operation Status Monitor Terminology (PQHY-P72/96TGMU-A)

| Mark | Official Name | Meaning |
|---|---|---|
| Ctrl Mode | | Control mode for outdoor unit |
| Ope Mode | | Operation mode for outdoor unit |
| Save | | Signal of capacity saving from system controller.<br>figure : % No signal : 100% |
| Power | Power source frequency | Power source frequency (Hz) |
| F | Temporary compressor frequency for calculation | Variable for control |
| AK | Heat exchanger capacity | Variable which determines the size of outdoor |
| heat exchanger | | |
| DEMAND | ON/OFF demand | Input stop signal of compressor<br>( ON:effective, OFF:ineffective ) |
| DEMAND2 | Intermediate demand | Signal of capacity saving<br>( ON:effective, OFF:ineffective )<br>DEMAND=OFF, DEMAND2=OFF: 100%<br>DEMAND=OFF, DEMAND2=ON : 75%<br>DEMAND= ON, DEMAND2=ON : 50%<br>DEMAND= ON, DEMAND2=OFF: 25% |
| NIGHT | Night mode | Decreases frequency of outdoor unit fan<br>( ON:effective, OFF:ineffective ) |
| Qj(C) | Total capacity code (cool) | Cooling indoor unit capacity |
| Qj(H) | Total capacity code (heat) | Heating indoor unit capacity |
| LEV1 | SC coil LEV opening | Adjusts refrigerant in the bypass pipe from liquid pipe in the outdoor unit in cooling mode. |
| LEV2 | Cool down inverter LEV opening | Cool down inverter |
| 21S4a | 4-way valve | Switches the cooling/heating cycle<br>(0:Cooling, 1:Heating) |
| SV1 | Solenoid valve output | Bypass between discharge pipe and suction pipe |
| SV4a | Solenoid valve output | Heat exchanger capacity control |
| SV4b | Solenoid valve output | Heat exchanger capacity control |
| SV4c | Solenoid valve output | Heat exchanger capacity control |
| SV4d | Solenoid valve output | Heat exchanger bypass ON/OFF |
| SV5a | Solenoid valve output | Heat exchanger capacity control<br>(only for P400/500YSGM-A type) |
| SV5b | Solenoid valve output | Heat exchanger capacity control<br>(only for P400/500YSGM-A type) |
| SV7a | Solenoid valve output | Heat exchanger capacity control |
| SV7b | Solenoid valve output | Heat exchanger capacity control |
| SV7c | Solenoid valve output | Heat exchanger capacity control |
| UNIT_ON/OFF | ON/OFF-output | ON/OFF-monitor (TB8-1,2P) |
| Rep | Repeater output | Prohibit(0)/Permit(1) the communication with centralized control system |
| TH11 | Thermistor<br>(Detects discharge temperature) | Detects discharge temperature for protection of No.1 compressor. |
| TH5 | Thermistor<br>(Detects the liquid pipe temperature) | Controls defrosting (start/ end) in heating mode. |
| TH6 | Thermistor<br>(Detects the ambient air temperature) | Detects the ambient temperature and then, controls the fan frequency and liquid level in the accumulator. |
| TH7(8) | Thermistor<br>(Controls SC) | Controls LEV1 based on the temperature differences between TH 6,7 and 8. |
| TH9 | Thermistor<br>(Freeze prevention sensor) | Detects the water heat exchanger temperature and then, carries out freeze prevention control. |
| THINV | Thermistor<br>(Outlet of heat exchanger for cool down inverter) | Controls a capacity of heat exchanger for cool down inverter depends on a temperature of THINV. |
| THHS1 | Thermistor<br>(Comp inverter radiator plate temperature) | Controls the Comp inverter cooling fan based on the THHS1 temperature. |
| 63HS | High pressure sensor | Detects the discharge pressure and then protects unit against damage by high pressure. |
| 63LS | Low pressure sensor | Detects the suction pressure and then, protects unit against damage by low pressure. |
| Tc | Average of saturation gas temperature of high pressure and saturation liquid temperature of high pressure | For control of compressor frequency and fan speed. |
| Te | Saturation temperature of low pressure | For control of compressor frequency and fan speed. |

| | | |
|---|---|---|
| Vdc | Bus voltage | Bus voltage |
| Idc | DC trunk line current | DC trunk line current |
| Iu | Phase-U current | Phase-U current of compressor |
| Iw | Phase-W current | Phase-W current of compressor |

# Operation Status Monitor Terminology (PQRY-P72/96TGMU-A)

| Mark | Official Name | Meaning |
|---|---|---|
| Ctrl Mode | | Control mode for outdoor unit |
| Ope Mode | | Operation mode for outdoor unit |
| Save | | Signal of capacity saving from system controller.<br>figure : % No signal : 100% |
| Power | Power source frequency | Power source frequency (Hz) |
| F | Temporary compressorfrequency for calculation | Variable for control |
| AK | Heat exchanger capacity | Variable which determines the size of outdoorheat exchanger |
| DEMAND | ON/OFF demand | Input stop signal of compressor<br>( ON:effective, OFF:ineffective ) |
| DEMAND2 | Intermediate demand | Signal of capacity saving<br>( ON:effective, OFF:ineffective )<br>DEMAND=OFF, DEMAND2=OFF: 100%<br>DEMAND=OFF, DEMAND2=ON : 75%<br>DEMAND= ON, DEMAND2=ON : 50%<br>DEMAND= ON, DEMAND2=OFF: 25% |
| NIGHT | Night mode | Decreases frequency of outdoor unit fan<br>( ON:effective, OFF:ineffective ) |
| Qj(C) | Total capacity code (cool) | Cooling indoor unit capacity |
| Qj(H) | Total capacity code (heat) | Heating indoor unit capacity |
| LEV2 | Cool down inverter LEV opening | Cool down inverter |
| 21S4a | 4-way valve | Switches the cooling/heating cycle<br>(0:Cooling, 1:Heating) |
| SV1 | Solenoid valve output | Bypass between discharge pipe and suction pipe |
| SV4a | Solenoid valve output | Heat exchanger capacity control |
| SV4b | Solenoid valve output | Heat exchanger capacity control |
| SV4c | Solenoid valve output | Heat exchanger capacity control |
| SV4d | Solenoid valve output | Heat exchanger bypass ON/OFF |
| SV5a | Solenoid valve output | Heat exchanger capacity control<br>(only for P400/500YSGM-A type) |
| SV5b | Solenoid valve output | Heat exchanger capacity control<br>(only for P400/500YSGM-A type) |
| SV7a | Solenoid valve output | Heat exchanger capacity control |
| SV7b | Solenoid valve output | Heat exchanger capacity control |
| SV7c | Solenoid valve output | Heat exchanger capacity control |
| UNIT_ON/OFF | ON/OFF-output | ON/OFF-monitor (TB8-1,2P) |
| Rep | Repeater output | Prohibit(0)/Permit(1) the communication with centralized control system |
| TH11 | Thermistor<br>(Detects discharge temperature) | Detects discharge temperature for protection of No.1 compressor. |
| TH6 | Thermistor<br>(Detects the ambient air temperature) | Detects the ambient temperature and then, controls the fan frequency and liquid level in the accumulator. |
| TH9 | Thermistor<br>(Freeze prevention sensor) | Detects the water heat exchanger temperature and then, carries out freeze prevention control. |
| THINV | Thermistor<br>(Outlet of heat exchanger for cool down inverter) | Controls a capacity of heat exchanger for cool down inverter depends on a temperature of THINV. |
| THHS1 | Thermistor<br>(Comp inverter radiator plate temperature) | Controls the Comp inverter cooling fan based on the THHS1 temperature. |
| 63HS | High pressure sensor | Detects the discharge pressure and then protects unit against damage by high pressure. |
| 63LS | Low pressure sensor | Detects the suction pressure and then, protects unit against damage by low pressure. |
| Tc | Average of saturation gas temperature of high pressure and saturation liquid temperature of high pressure | For control of compressor frequency and fan speed. |
| Te | Saturation temperature of low pressure | For control of compressor frequency and fan speed. |
| Vdc | Bus voltage | Bus voltage |
| Idc | DC trunk line current | DC trunk line current |
| Iu | Phase-U current | Phase-U current of compressor |
| Iw | Phase-W current | Phase-W current of compressor |

# Operation Status Monitor Terminology (PUMY-P100/125/140YHM)

| Mark | Official Name | Meaning |
|---|---|---|
| Operation mode | | Operation mode |
| FAN | Fan steps | Out door unit fan steps |
| F/Hz | Compressor frequency | Compressor frequency |
| SC | Sub cool | Sub cool |
| SCm | Target sub cool | Target sub cool (cooling) |
| Pdm | Target high pressure | Target high pressure (heating) |
| ETm | Target evaporation temperatu re | Target evaporation temperature (cooling) |
| 52C | electromagnetic contactor | 52C output (inverter main circuit) |
| 21S4 | 4-way valve | 4-way valve |
| SV1(A) | Solenoid valve 1 output | The bypass of discharge gas (for pd back up) |
| SV1(B) | Solenoid valve 1 output | The bypass of discharge gas(for td back up) |
| SV1(C) | Solenoid valve 1 output | The bypass of discharge gas(for stop mode pressure equalization) |
| TH4 | Thermistor (Detects discharge temperatu re) | It detects the discharge temperature to control the compressor fre quency. It protects the discharge temperature. It is used to calculate the discharge superheat temperature. |
| TH6 | Thermistor | It detects the low pressure saturation temperature to control the c ompressor frequency. |
| TH3 | Thermistor (Pipe temperature/Defrost det ermination) | It is used to control LEV pulse in cooling mode. It is used to start the defrost mode in heating mode. |
| TH7 | Thermistor (Detects the ambient air tem perature) | It detects the ambient temperature to control outdoor fan and LEV pulse. |
| TH8 | Thermistor (radiator plate temperature) | It detects the power transistor radiator plate temperature for protec tion of power transistor. |
| 63HS | High pressure sensor | It detects the discharge pressure to control the compressor freque ncy and protects unit against damage by high pressure. It is used to calculate the sub cool. (Detects discharge pressure) |
| SC 1 | Sub cool of indoor unit 1 | Heating mode:Sub cool of indoor unit 1 |
| SC 2 | Sub cool of indoor unit 2 | Heating mode:Sub cool of indoor unit 2 |
| SC 3 | Sub cool of indoor unit 3 | Heating mode:Sub cool of indoor unit 3 |
| SC 4 | Sub cool of indoor unit 4 | Heating mode:Sub cool of indoor unit 4 |
| SC 5 | Sub cool of indoor unit 5 | Heating mode:Sub cool of indoor unit 5 |
| SC 6 | Sub cool of indoor unit 6 | Heating mode:Sub cool of indoor unit 6 |
| SC 7 | Sub cool of indoor unit 7 | Heating mode:Sub cool of indoor unit 7 |
| SC 8 | Sub cool of indoor unit 8 | Heating mode:Sub cool of indoor unit 8 |
| SC 9 | Sub cool of indoor unit 9 | Heating mode:Sub cool of indoor unit 9 |
| SC10 | Sub cool of indoor unit 10 | Heating mode:Sub cool of indoor unit 10 |
| SC11 | Sub cool of indoor unit 11 | Heating mode:Sub cool of indoor unit 11 |
| SC12 | Sub cool of indoor unit 12 | Heating mode:Sub cool of indoor unit 12 |
| SCm 1 | Target sub cool of indoor un it 1 | Heating mode:Target sub cool of indoor unit 1 |
| SCm 2 | Target sub cool of indoor un it 2 | Heating mode:Target sub cool of indoor unit 2 |
| SCm 3 | Target sub cool of indoor un it 3 | Heating mode:Target sub cool of indoor unit 3 |
| SCm 4 | Target sub cool of indoor un it 4 | Heating mode:Target sub cool of indoor unit 4 |
| SCm 5 | Target sub cool of indoor un it 5 | Heating mode:Target sub cool of indoor unit 5 |
| SCm 6 | Target sub cool of indoor un it 6 | Heating mode:Target sub cool of indoor unit 6 |
| SCm 7 | Target sub cool of indoor un it 7 | Heating mode:Target sub cool of indoor unit 7 |
| SCm 8 | Target sub cool of indoor un it 8 | Heating mode:Target sub cool of indoor unit 8 |
| SCm 9 | Target sub cool of indoor un it 9 | Heating mode:Target sub cool of indoor unit 9 |
| SCm10 | Target sub cool of indoor un it 10 | Heating mode:Target sub cool of indoor unit 10 |
| SCm11 | Target sub cool of indoor un it 11 | Heating mode:Target sub cool of indoor unit 11 |
| SCm12 | Target sub cool of indoor un it 12 | Heating mode:Target sub cool of indoor unit 12 |
| LEV 1 | LEV pulse of indoor unit 1 | LEV pulse of indoor unit 1 LEV pulse control from the outdoor un it |
| LEV 2 | LEV pulse of indoor unit 2 | LEV pulse of indoor unit 2 LEV pulse control from the outdoor un it |

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|---|---|---|
| LEV 3 | LEV pulse of indoor unit 3 | LEV pulse of indoor unit 3 LEV pulse control from the outdoor unit |
| LEV 4 | LEV pulse of indoor unit 4 | LEV pulse of indoor unit 4 LEV pulse control from the outdoor unit |
| LEV 5 | LEV pulse of indoor unit 5 | LEV pulse of indoor unit 5 LEV pulse control from the outdoor unit |
| LEV 6 | LEV pulse of indoor unit 6 | LEV pulse of indoor unit 6 LEV pulse control from the outdoor unit |
| LEV 7 | LEV pulse of indoor unit 7 | LEV pulse of indoor unit 7 LEV pulse control from the outdoor unit |
| LEV 8 | LEV pulse of indoor unit 8 | LEV pulse of indoor unit 8 LEV pulse control from the outdoor unit |
| LEV 9 | LEV pulse of indoor unit 9 | LEV pulse of indoor unit 9 LEV pulse control from the outdoor unit |
| LEV10 | LEV pulse of indoor unit 10 | LEV pulse of indoor unit 10 LEV pulse control from the outdoor unit |
| LEV11 | LEV pulse of indoor unit 11 | LEV pulse of indoor unit 11 LEV pulse control from the outdoor unit |
| LEV12 | LEV pulse of indoor unit 12 | LEV pulse of indoor unit 12 LEV pulse control from the outdoor unit |
| INPUT CURRENT | INPUT CURRENT | Input current of outdoor unit. |
| COMP CURRENT | COMPRESSOR CURRENT | Compressor operating current of outdoor unit. |
| VDC | BUS BAR VOLTAGE(V) | Bus bar voltage of inverter circuit |

# Operation Status Monitor Terminology (PUMY-P36/48NHMUR4)

| Mark | Official Name | Meaning |
|---|---|---|
| Operation mode | | Operation mode |
| F/Hz | Compressor frequency | Compressor frequency |
| FAN | Fan steps | Out door unit fan steps |
| VDC | BUS BAR VOLTAGE(V) | Bus bar voltage of inverter circuit |
| LEV_A | LEV-A pulse of outdoor unit (not implemented) | Command value of LEV-A pulse of outdoor unit (fixed to blank) |
| LEV_B | LEV-B pulse of outdoor unit (not implemented) | Command value of LEV-B pulse of outdoor unit (fixed to blank) |
| 52C | electromagnetic contactor | 52C output (inverter main circuit) |
| 21S4 | 4-way valve | 4-way valve |
| SV1(A) | Solenoid valve 1 output | The bypass of discharge gas (for pd back up) |
| SV1(B) | Solenoid valve 1 output | The bypass of discharge gas(for td back up) |
| SV1(C) | Solenoid valve 1 output | The bypass of discharge gas(for stop mode pressure equalization) |
| demand | A state of demand function via outdoor unit input | Input: 1 / No input: 0 |
| TH4 | Thermistor (Detects comp. surface temperature) | It detects the comp. surface temperature to control the compressor frequency.<br>It protects the comp. surface temperature.<br>It is used to calculate the discharge superheat temperature. |
| TH6 | Thermistor | It detects the low pressure saturation temperature to control the compressor frequency. |
| TH3 | Thermistor (Pipe temperature/Defrost determination) | It is used to control LEV pulse in cooling mode.<br>It is used to start the defrost mode in heating mode. |
| TH7 | Thermistor (Detects the ambient air temperature) | It detects the ambient temperature to control outdoor fan and LEV pulse. |
| TH8 | Thermistor (radiator plate temperature) | It detects the power transistor radiator plate temperature for protection of power transistor. |
| 63HS | High pressure sensor | It detects the discharge pressure to control the compressor frequency and protects unit against damage by high pressure.<br>It is used to calculate the sub cool. (Detects discharge pressure) |
| 63LS | Low pressure sensor (not implemented) | It detects the suction pressure to control LEV-B and LEVs of indoor units pulse. (fixed to 0.0) |
| TH2 | Thermistor (not implemented) (HIC temperature) | It is used to control LEV-B pulse. (fixed to 0.0) |
| SC | Sub cool | Sub cool |
| SCm | Target sub cool | Target sub cool (cooling) |
| Pdm | Target high pressure | Target high pressure (heating) |
| ETm | Target evaporation temperature | Target evaporation temperature (cooling) |
| I(input)(A) | Input current | Input current of outdoor unit. |
| I(comp)(A) | Compressor current | Compressor operating current of outdoor unit. |
| SC 1 | Sub cool of indoor unit 1 | Heating mode:Sub cool of indoor unit 1 |
| SC 2 | Sub cool of indoor unit 2 | Heating mode:Sub cool of indoor unit 2 |
| SC 3 | Sub cool of indoor unit 3 | Heating mode:Sub cool of indoor unit 3 |
| SC 4 | Sub cool of indoor unit 4 | Heating mode:Sub cool of indoor unit 4 |
| SC 5 | Sub cool of indoor unit 5 | Heating mode:Sub cool of indoor unit 5 |
| SC 6 | Sub cool of indoor unit 6 | Heating mode:Sub cool of indoor unit 6 |
| SC 7 | Sub cool of indoor unit 7 | Heating mode:Sub cool of indoor unit 7 |
| SC 8 | Sub cool of indoor unit 8 | Heating mode:Sub cool of indoor unit 8 |
| SC 9 | Sub cool of indoor unit 9 | Heating mode:Sub cool of indoor unit 9 |
| SC10 | Sub cool of indoor unit 10 | Heating mode:Sub cool of indoor unit 10 |
| SC11 | Sub cool of indoor unit 11 | Heating mode:Sub cool of indoor unit 11 |
| SC12 | Sub cool of indoor unit 12 | Heating mode:Sub cool of indoor unit 12 |
| SCm 1 | Target sub cool of indoor unit 1 | Heating mode:Target sub cool of indoor unit 1 |
| SCm 2 | Target sub cool of indoor unit 2 | Heating mode:Target sub cool of indoor unit 2 |
| SCm 3 | Target sub cool of indoor unit 3 | Heating mode:Target sub cool of indoor unit 3 |
| SCm 4 | Target sub cool of indoor unit 4 | Heating mode:Target sub cool of indoor unit 4 |
| SCm 5 | Target sub cool of indoor unit 5 | Heating mode:Target sub cool of indoor unit 5 |
| SCm 6 | Target sub cool of indoor unit 6 | Heating mode:Target sub cool of indoor unit 6 |
| SCm 7 | Target sub cool of indoor unit 7 | Heating mode:Target sub cool of indoor unit 7 |
| SCm 8 | Target sub cool of indoor un | Heating mode:Target sub cool of indoor unit 8 |

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| SCm 9 | Target sub cool of indoor unit 9 | Heating mode:Target sub cool of indoor unit 9 |
| SCm10 | Target sub cool of indoor unit 10 | Heating mode:Target sub cool of indoor unit 10 |
| SCm11 | Target sub cool of indoor unit 11 | Heating mode:Target sub cool of indoor unit 11 |
| SCm12 | Target sub cool of indoor unit 12 | Heating mode:Target sub cool of indoor unit 12 |
| LEV 1 | LEV pulse of indoor unit 1 | LEV pulse of indoor unit 1 LEV pulse control from the outdoor unit |
| LEV 2 | LEV pulse of indoor unit 2 | LEV pulse of indoor unit 2 LEV pulse control from the outdoor unit |
| LEV 3 | LEV pulse of indoor unit 3 | LEV pulse of indoor unit 3 LEV pulse control from the outdoor unit |
| LEV 4 | LEV pulse of indoor unit 4 | LEV pulse of indoor unit 4 LEV pulse control from the outdoor unit |
| LEV 5 | LEV pulse of indoor unit 5 | LEV pulse of indoor unit 5 LEV pulse control from the outdoor unit |
| LEV 6 | LEV pulse of indoor unit 6 | LEV pulse of indoor unit 6 LEV pulse control from the outdoor unit |
| LEV 7 | LEV pulse of indoor unit 7 | LEV pulse of indoor unit 7 LEV pulse control from the outdoor unit |
| LEV 8 | LEV pulse of indoor unit 8 | LEV pulse of indoor unit 8 LEV pulse control from the outdoor unit |
| LEV 9 | LEV pulse of indoor unit 9 | LEV pulse of indoor unit 9 LEV pulse control from the outdoor unit |
| LEV10 | LEV pulse of indoor unit 10 | LEV pulse of indoor unit 10 LEV pulse control from the outdoor unit |
| LEV11 | LEV pulse of indoor unit 11 | LEV pulse of indoor unit 11 LEV pulse control from the outdoor unit |
| LEV12 | LEV pulse of indoor unit 12 | LEV pulse of indoor unit 12 LEV pulse control from the outdoor unit |

# Operation Status Monitor Terminology (PUMY-P60NKMU)

| Mark | Official Name | Meaning |
|---|---|---|
| Operation mode | | Operation mode |
| F/Hz | Compressor frequency | Compressor frequency |
| FAN | Fan steps | Out door unit fan steps |
| VDC | BUS BAR VOLTAGE(V) | Bus bar voltage of inverter circuit |
| LEV_A | LEV-A pulse of outdoor unit | Command value of LEV-A pulse of outdoor unit (fixed to blank) |
| LEV_B | LEV-B pulse of outdoor unit | Command value of LEV-B pulse of outdoor unit (fixed to blank) |
| 52C | electromagnetic contactor | 52C output (inverter main circuit) |
| 21S4 | 4-way valve | 4-way valve |
| SV1 | Solenoid valve 1 output | Bypass valve for discharge gas |
| SV2 | Solenoid valve 2 output | Switching valve for refrigerant circuit |
| SV3 | Solenoid valve 3 output | Oil return valve |
| demand | A state of demand function via outdoor unit input | Input: 1 / No input: 0 |
| TH4 | Thermistor (Detects comp. surface temperature) | It detects the comp. surface temperature to control the compressor frequency.<br>It protects the comp. surface temperature.<br>It is used to calculate the discharge superheat temperature. |
| TH6 | Thermistor | It detects the low pressure saturation temperature to control the compressor frequency. |
| TH3 | Thermistor (Pipe temperature/Defrost determination) | It is used to control LEV pulse in cooling mode.<br>It is used to start the defrost mode in heating mode. |
| TH7 | Thermistor (Detects the ambient air temperature) | It detects the ambient temperature to control outdoor fan and LEV pulse. |
| TH8 | Thermistor (radiator plate temperature) | It detects the power transistor radiator plate temperature for protection of power transistor. |
| 63HS | High pressure sensor | It detects the discharge pressure to control the compressor frequency and protects unit against damage by high pressure.<br>It is used to calculate the sub cool. (Detects discharge pressure) |
| 63LS | Low pressure sensor | It detects the suction pressure to control LEV-B and LEVs of indoor units pulse. |
| TH2 | Thermistor (HIC temperature) | It is used to control LEV-B pulse. |
| SC | Sub cool | Sub cool |
| SCm | Target sub cool | Target sub cool (cooling) |
| Pdm | Target high pressure | Target high pressure (heating) |
| ETm | Target evaporation temperature | Target evaporation temperature (cooling) |
| I(input)(A) | Input current | Input current of outdoor unit. |
| I(comp)(A) | Compressor current | Compressor operating current of outdoor unit. |
| SC 1 | Sub cool of indoor unit 1 | Heating mode:Sub cool of indoor unit 1 |
| SC 2 | Sub cool of indoor unit 2 | Heating mode:Sub cool of indoor unit 2 |
| SC 3 | Sub cool of indoor unit 3 | Heating mode:Sub cool of indoor unit 3 |
| SC 4 | Sub cool of indoor unit 4 | Heating mode:Sub cool of indoor unit 4 |
| SC 5 | Sub cool of indoor unit 5 | Heating mode:Sub cool of indoor unit 5 |
| SC 6 | Sub cool of indoor unit 6 | Heating mode:Sub cool of indoor unit 6 |
| SC 7 | Sub cool of indoor unit 7 | Heating mode:Sub cool of indoor unit 7 |
| SC 8 | Sub cool of indoor unit 8 | Heating mode:Sub cool of indoor unit 8 |
| SC 9 | Sub cool of indoor unit 9 | Heating mode:Sub cool of indoor unit 9 |
| SC10 | Sub cool of indoor unit 10 | Heating mode:Sub cool of indoor unit 10 |
| SC11 | Sub cool of indoor unit 11 | Heating mode:Sub cool of indoor unit 11 |
| SC12 | Sub cool of indoor unit 12 | Heating mode:Sub cool of indoor unit 12 |
| SCm 1 | Target sub cool of indoor unit 1 | Heating mode:Target sub cool of indoor unit 1 |
| SCm 2 | Target sub cool of indoor unit 2 | Heating mode:Target sub cool of indoor unit 2 |
| SCm 3 | Target sub cool of indoor unit 3 | Heating mode:Target sub cool of indoor unit 3 |
| SCm 4 | Target sub cool of indoor unit 4 | Heating mode:Target sub cool of indoor unit 4 |
| SCm 5 | Target sub cool of indoor unit 5 | Heating mode:Target sub cool of indoor unit 5 |
| SCm 6 | Target sub cool of indoor unit 6 | Heating mode:Target sub cool of indoor unit 6 |
| SCm 7 | Target sub cool of indoor unit 7 | Heating mode:Target sub cool of indoor unit 7 |
| SCm 8 | Target sub cool of indoor unit 8 | Heating mode:Target sub cool of indoor unit 8 |
| SCm 9 | Target sub cool of indoor un | Heating mode:Target sub cool of indoor unit 9 |

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| | it 9 | |
| SCm10 | Target sub cool of indoor unit 10 | Heating mode:Target sub cool of indoor unit 10 |
| SCm11 | Target sub cool of indoor unit 11 | Heating mode:Target sub cool of indoor unit 11 |
| SCm12 | Target sub cool of indoor unit 12 | Heating mode:Target sub cool of indoor unit 12 |
| LEV 1 | LEV pulse of indoor unit 1 | LEV pulse of indoor unit 1 LEV pulse control from the outdoor unit |
| LEV 2 | LEV pulse of indoor unit 2 | LEV pulse of indoor unit 2 LEV pulse control from the outdoor unit |
| LEV 3 | LEV pulse of indoor unit 3 | LEV pulse of indoor unit 3 LEV pulse control from the outdoor unit |
| LEV 4 | LEV pulse of indoor unit 4 | LEV pulse of indoor unit 4 LEV pulse control from the outdoor unit |
| LEV 5 | LEV pulse of indoor unit 5 | LEV pulse of indoor unit 5 LEV pulse control from the outdoor unit |
| LEV 6 | LEV pulse of indoor unit 6 | LEV pulse of indoor unit 6 LEV pulse control from the outdoor unit |
| LEV 7 | LEV pulse of indoor unit 7 | LEV pulse of indoor unit 7 LEV pulse control from the outdoor unit |
| LEV 8 | LEV pulse of indoor unit 8 | LEV pulse of indoor unit 8 LEV pulse control from the outdoor unit |
| LEV 9 | LEV pulse of indoor unit 9 | LEV pulse of indoor unit 9 LEV pulse control from the outdoor unit |
| LEV10 | LEV pulse of indoor unit 10 | LEV pulse of indoor unit 10 LEV pulse control from the outdoor unit |
| LEV11 | LEV pulse of indoor unit 11 | LEV pulse of indoor unit 11 LEV pulse control from the outdoor unit |
| LEV12 | LEV pulse of indoor unit 12 | LEV pulse of indoor unit 12 LEV pulse control from the outdoor unit |

# Operation Status Monitor Terminology (MXZ-8C48NA, MXZ-4C36/5C42/8C48NAHZ, MXZ-8C60NA-U1)

| Mark | Official Name | Meaning |
|---|---|---|
| Operation mode | | Operation mode |
| F/Hz | Compressor frequency | Compressor frequency |
| FAN | Fan steps | Out door unit fan steps |
| VDC | BUS BAR VOLTAGE(V) | Bus bar voltage of inverter circuit |
| LEV_A | LEV-A pulse of outdoor unit | Command value of LEV-A pulse of outdoor unit |
| LEV_B | LEV-B pulse of outdoor unit | Command value of LEV-B pulse of outdoor unit |
| 52C | electromagnetic contactor | 52C output (inverter main circuit) |
| 21S4 | 4-way valve | 4-way valve |
| SV1 | Solenoid valve 1 output | Bypass valve for discharge gas |
| SV2 | Solenoid valve 2 output | Switching valve for refrigerant circuit |
| SV3 | Solenoid valve 3 output | Oil return valve |
| demand | A state of demand function via outdoor unit input | Input: 1 / No input: 0 |
| TH4 | Thermistor (Detects comp. surface temperature) | It detects the comp. surface temperature to control the compressor frequency. It protects the comp. surface temperature. It is used to calculate the discharge superheat temperature. |
| TH6 | Thermistor | It detects the low pressure saturation temperature to control the compressor frequency. |
| TH3 | Thermistor (Pipe temperature/Defrost determination) | It is used to control LEV pulse in cooling mode. It is used to start the defrost mode in heating mode. |
| TH7 | Thermistor (Detects the ambient air temperature) | It detects the ambient temperature to control outdoor fan and LEV pulse. |
| TH8 | Thermistor (radiator plate temperature) | It detects the power transistor radiator plate temperature for protection of power transistor. |
| 63HS | High pressure sensor | It detects the discharge pressure to control the compressor frequency and protects unit against damage by high pressure. It is used to calculate the sub cool. (Detects discharge pressure) |
| 63LS | Low pressure sensor | It detects the suction pressure to control LEV-B and LEVs of indoor units pulse. |
| TH2 | Thermistor (HIC temperature) | It is used to control LEV-B pulse. |
| SC | Sub cool | Sub cool |
| SCm | Target sub cool | Target sub cool (cooling) |
| Pdm | Target high pressure | Target high pressure (heating) |
| ETm | Target evaporation temperature | Target evaporation temperature (cooling) |
| I(input)(A) | Input current | Input current of outdoor unit. |
| I(comp)(A) | Compressor current | Compressor operating current of outdoor unit. |
| SC 1 | Sub cool of indoor unit 1 | Heating mode:Sub cool of indoor unit 1 |
| SC 2 | Sub cool of indoor unit 2 | Heating mode:Sub cool of indoor unit 2 |
| SC 3 | Sub cool of indoor unit 3 | Heating mode:Sub cool of indoor unit 3 |
| SC 4 | Sub cool of indoor unit 4 | Heating mode:Sub cool of indoor unit 4 |
| SC 5 | Sub cool of indoor unit 5 | Heating mode:Sub cool of indoor unit 5 |
| SC 6 | Sub cool of indoor unit 6 | Heating mode:Sub cool of indoor unit 6 |
| SC 7 | Sub cool of indoor unit 7 | Heating mode:Sub cool of indoor unit 7 |
| SC 8 | Sub cool of indoor unit 8 | Heating mode:Sub cool of indoor unit 8 |
| SC 9 | Sub cool of indoor unit 9 | Heating mode:Sub cool of indoor unit 9 |
| SC10 | Sub cool of indoor unit 10 | Heating mode:Sub cool of indoor unit 10 |
| SC11 | Sub cool of indoor unit 11 | Heating mode:Sub cool of indoor unit 11 |
| SC12 | Sub cool of indoor unit 12 | Heating mode:Sub cool of indoor unit 12 |
| SCm 1 | Target sub cool of indoor unit 1 | Heating mode:Target sub cool of indoor unit 1 |
| SCm 2 | Target sub cool of indoor unit 2 | Heating mode:Target sub cool of indoor unit 2 |
| SCm 3 | Target sub cool of indoor unit 3 | Heating mode:Target sub cool of indoor unit 3 |
| SCm 4 | Target sub cool of indoor unit 4 | Heating mode:Target sub cool of indoor unit 4 |
| SCm 5 | Target sub cool of indoor unit 5 | Heating mode:Target sub cool of indoor unit 5 |
| SCm 6 | Target sub cool of indoor unit 6 | Heating mode:Target sub cool of indoor unit 6 |
| SCm 7 | Target sub cool of indoor unit 7 | Heating mode:Target sub cool of indoor unit 7 |
| SCm 8 | Target sub cool of indoor unit 8 | Heating mode:Target sub cool of indoor unit 8 |

| | | |
|---|---|---|
| SCm 9 | Target sub cool of indoor unit 9 | Heating mode:Target sub cool of indoor unit 9 |
| SCm10 | Target sub cool of indoor unit 10 | Heating mode:Target sub cool of indoor unit 10 |
| SCm11 | Target sub cool of indoor unit 11 | Heating mode:Target sub cool of indoor unit 11 |
| SCm12 | Target sub cool of indoor unit 12 | Heating mode:Target sub cool of indoor unit 12 |
| LEV 1 | LEV pulse of indoor unit 1 | LEV pulse of indoor unit 1 LEV pulse control from the outdoor unit |
| LEV 2 | LEV pulse of indoor unit 2 | LEV pulse of indoor unit 2 LEV pulse control from the outdoor unit |
| LEV 3 | LEV pulse of indoor unit 3 | LEV pulse of indoor unit 3 LEV pulse control from the outdoor unit |
| LEV 4 | LEV pulse of indoor unit 4 | LEV pulse of indoor unit 4 LEV pulse control from the outdoor unit |
| LEV 5 | LEV pulse of indoor unit 5 | LEV pulse of indoor unit 5 LEV pulse control from the outdoor unit |
| LEV 6 | LEV pulse of indoor unit 6 | LEV pulse of indoor unit 6 LEV pulse control from the outdoor unit |
| LEV 7 | LEV pulse of indoor unit 7 | LEV pulse of indoor unit 7 LEV pulse control from the outdoor unit |
| LEV 8 | LEV pulse of indoor unit 8 | LEV pulse of indoor unit 8 LEV pulse control from the outdoor unit |
| LEV 9 | LEV pulse of indoor unit 9 | LEV pulse of indoor unit 9 LEV pulse control from the outdoor unit |
| LEV10 | LEV pulse of indoor unit 10 | LEV pulse of indoor unit 10 LEV pulse control from the outdoor unit |
| LEV11 | LEV pulse of indoor unit 11 | LEV pulse of indoor unit 11 LEV pulse control from the outdoor unit |
| LEV12 | LEV pulse of indoor unit 12 | LEV pulse of indoor unit 12 LEV pulse control from the outdoor unit |

# Operation Status Monitor Terminology (PUMY-P36/48NKMU, PUMY-HP36/48NKMU)

| Mark | Official Name | Meaning |
|---|---|---|
| Operation mode | | Operation mode |
| F/Hz | Compressor frequency | Compressor frequency |
| FAN | Fan steps | Out door unit fan steps |
| VDC | BUS BAR VOLTAGE(V) | Bus bar voltage of inverter circuit |
| LEV_A | LEV-A pulse of outdoor unit | Command value of LEV-A pulse of outdoor unit |
| LEV_B | LEV-B pulse of outdoor unit | Command value of LEV-B pulse of outdoor unit |
| 52C | electromagnetic contactor | 52C output (inverter main circuit) |
| 21S4 | 4-way valve | 4-way valve |
| SV1 | Solenoid valve 1 output | Bypass valve for discharge gas |
| SV2 | Solenoid valve 2 output | Switching valve for refrigerant circuit |
| SV3 | Solenoid valve 3 output | Oil return valve |
| demand | A state of demand function via outdoor unit input | Input: 1 / No input: 0 |
| TH4 | Thermistor (Detects comp. surface temperature) | It detects the comp. surface temperature to control the compressor frequency. It protects the comp. surface temperature. It is used to calculate the discharge superheat temperature. |
| TH6 | Thermistor | It detects the low pressure saturation temperature to control the compressor frequency. |
| TH3 | Thermistor (Pipe temperature/Defrost determination) | It is used to control LEV pulse in cooling mode. It is used to start the defrost mode in heating mode. |
| TH7 | Thermistor (Detects the ambient air temperature) | It detects the ambient temperature to control outdoor fan and LEV pulse. |
| TH8 | Thermistor (radiator plate temperature) | It detects the power transistor radiator plate temperature for protection of power transistor. |
| 63HS | High pressure sensor | It detects the discharge pressure to control the compressor frequency and protects unit against damage by high pressure. It is used to calculate the sub cool. (Detects discharge pressure) |
| 63LS | Low pressure sensor | It detects the suction pressure to control LEV-B and LEVs of indoor units pulse. |
| TH2 | Thermistor (HIC temperature) | It is used to control LEV-B pulse. |
| SC | Sub cool | Sub cool |
| SCm | Target sub cool | Target sub cool (cooling) |
| Pdm | Target high pressure | Target high pressure (heating) |
| ETm | Target evaporation temperature | Target evaporation temperature (cooling) |
| I(input)(A) | Input current | Input current of outdoor unit. |
| I(comp)(A) | Compressor current | Compressor operating current of outdoor unit. |
| SC 1 | Sub cool of indoor unit 1 | Heating mode:Sub cool of indoor unit 1 |
| SC 2 | Sub cool of indoor unit 2 | Heating mode:Sub cool of indoor unit 2 |
| SC 3 | Sub cool of indoor unit 3 | Heating mode:Sub cool of indoor unit 3 |
| SC 4 | Sub cool of indoor unit 4 | Heating mode:Sub cool of indoor unit 4 |
| SC 5 | Sub cool of indoor unit 5 | Heating mode:Sub cool of indoor unit 5 |
| SC 6 | Sub cool of indoor unit 6 | Heating mode:Sub cool of indoor unit 6 |
| SC 7 | Sub cool of indoor unit 7 | Heating mode:Sub cool of indoor unit 7 |
| SC 8 | Sub cool of indoor unit 8 | Heating mode:Sub cool of indoor unit 8 |
| SC 9 | Sub cool of indoor unit 9 | Heating mode:Sub cool of indoor unit 9 |
| SC10 | Sub cool of indoor unit 10 | Heating mode:Sub cool of indoor unit 10 |
| SC11 | Sub cool of indoor unit 11 | Heating mode:Sub cool of indoor unit 11 |
| SC12 | Sub cool of indoor unit 12 | Heating mode:Sub cool of indoor unit 12 |
| SCm 1 | Target sub cool of indoor unit 1 | Heating mode:Target sub cool of indoor unit 1 |
| SCm 2 | Target sub cool of indoor unit 2 | Heating mode:Target sub cool of indoor unit 2 |
| SCm 3 | Target sub cool of indoor unit 3 | Heating mode:Target sub cool of indoor unit 3 |
| SCm 4 | Target sub cool of indoor unit 4 | Heating mode:Target sub cool of indoor unit 4 |
| SCm 5 | Target sub cool of indoor unit 5 | Heating mode:Target sub cool of indoor unit 5 |
| SCm 6 | Target sub cool of indoor unit 6 | Heating mode:Target sub cool of indoor unit 6 |
| SCm 7 | Target sub cool of indoor unit 7 | Heating mode:Target sub cool of indoor unit 7 |
| SCm 8 | Target sub cool of indoor unit 8 | Heating mode:Target sub cool of indoor unit 8 |
| SCm 9 | Target sub cool of indoor un | Heating mode:Target sub cool of indoor unit 9 |

| | | |
|---|---|---|
| | it 9 | |
| SCm10 | Target sub cool of indoor unit 10 | Heating mode:Target sub cool of indoor unit 10 |
| SCm11 | Target sub cool of indoor unit 11 | Heating mode:Target sub cool of indoor unit 11 |
| SCm12 | Target sub cool of indoor unit 12 | Heating mode:Target sub cool of indoor unit 12 |
| LEV 1 | LEV pulse of indoor unit 1 | LEV pulse of indoor unit 1 LEV pulse control from the outdoor unit |
| LEV 2 | LEV pulse of indoor unit 2 | LEV pulse of indoor unit 2 LEV pulse control from the outdoor unit |
| LEV 3 | LEV pulse of indoor unit 3 | LEV pulse of indoor unit 3 LEV pulse control from the outdoor unit |
| LEV 4 | LEV pulse of indoor unit 4 | LEV pulse of indoor unit 4 LEV pulse control from the outdoor unit |
| LEV 5 | LEV pulse of indoor unit 5 | LEV pulse of indoor unit 5 LEV pulse control from the outdoor unit |
| LEV 6 | LEV pulse of indoor unit 6 | LEV pulse of indoor unit 6 LEV pulse control from the outdoor unit |
| LEV 7 | LEV pulse of indoor unit 7 | LEV pulse of indoor unit 7 LEV pulse control from the outdoor unit |
| LEV 8 | LEV pulse of indoor unit 8 | LEV pulse of indoor unit 8 LEV pulse control from the outdoor unit |
| LEV 9 | LEV pulse of indoor unit 9 | LEV pulse of indoor unit 9 LEV pulse control from the outdoor unit |
| LEV10 | LEV pulse of indoor unit 10 | LEV pulse of indoor unit 10 LEV pulse control from the outdoor unit |
| LEV11 | LEV pulse of indoor unit 11 | LEV pulse of indoor unit 11 LEV pulse control from the outdoor unit |
| LEV12 | LEV pulse of indoor unit 12 | LEV pulse of indoor unit 12 LEV pulse control from the outdoor unit |

# Operation Status Monitor Terminology
# (PUHY - 200/250YM*)

| Mark | Official Name | Meaning |
|---|---|---|
| Control mode | | Control mode for outdoor unit |
| Operation mode | | Operation mode for outdoor unit |
| F/ | "Temporary compressor frequency for calculation" | Variable for control |
| Hz | Compressor frequency | Compressor frequency |
| AK | Heat exchanger capacity | Variable which determine the size of outdoor heat exchanger |
| AL | Accumulator level | "Liquid level in the accumulation ( 0 :Undercharge, 1: Adequate, 2 :Overcharge )" |
| FAN | Fan | "Fan capacity of outdoor unit (not proportional to rotational frequency)" |
| SCO | Sub-cool at heat exchanger | Variable for control |
| SCC | Sub-cool at SC coil exit | Variable for control |
| SHB | SC coil bypass exit Supper heat | Variable for control |
| Qj(C) | Total capacity code (cool) | Cooling indoor unit capacity |
| Qj(H) | Total capacity code (heat) | Heating indoor unit capacity |
| SLEV | Oil return LEV opening | Adjusts the amount of liquid refrigerant and oil returned from the accumulator |
| LEV1 | SC coil LEV opening | Adjusts refrigerant in the bypass pipe from liquid pipe in the outd oor unit in cooling mode. |
| 21S4 | 4-way valve | Switches the cooling/heating cycle |
| SV1 | Solenoid valve output (Bypass between discharge pipe and suction pipe) | Returns oil from the oil separator Restricts the rise in the discharge pressure |
| SV2 | Solenoid valve output (Capacity control full load) | Switches the capacity control valve inside the compressor |
| SV3 | Solenoid valve output (Capacity control unload) | Switches the capacity control valve inside the compressor |
| SV4 | Solenoid valve output (Bypass between discharge pipe and suction pipe) | Controls capacity and restricts the high pressure (Frequency contr ol backup) |
| Repeater | Repeater output | Prohibit(0)/Permit(1) the Communication with centralized control sy stem |
| TH1 | Thermistor | Detects the discharge temperature for the high pressure protectio n. |
| TH2 | Thermistor (Detects saturated evaporatio n temperature) | Detects saturated temperature and then, control the compressor fr equency and liquid level in the accumulator |
| TH3 | Thermistor (Detects lower liquid level in the accumulator) | Detects the liquid level in the accumulator |
| TH4 | Thermistor (Detects upper liquid level in the accumulator) | Detects the liquid level in the accumulator |
| TH5 | Thermistor (Detects the liquid pipe temp erature) | Controls compressor frequency, controls defrosting and detects the liquid level in heating mode, detects the sub-cool at the heat exc hanger exit in combination with 63 HS data, and controls LEV1. |
| TH6 | Thermistor (Detects the ambient air tem perature) | Detects the ambient temperature and then, controls the fan freque ncy liquid level in the accumulator, and the opening LEV pulse for oil return. |
| TH7(8) | Thermistor (Controls SC) | Controls LEV1 based on the temperature differences between TH 6,7 and 8. |
| THHS | Thermistor (Inverter radiator plate tempe rature) | Controls the inverter cooling fan based on the THHS temperature. |
| 63HS | High pressure sensor | Detects the discharge pressure and then protects unit against da mage by high pressure. |

# Operation Status Monitor Terminology
# (PUHY - 200/250YMF)

| Mark | Official Name | Meaning |
|---|---|---|
| Control mode | | Control mode for outdoor unit |
| Operation mode | | Operation mode for outdoor unit |
| F/ | "Temporary compressor frequency for calculation" | Variable for control |
| AK | Heat exchanger capacity | Variable which determine the size of outdoor heat exchanger |
| AL | Accumulator level | "Liquid level in the accumulation ( 0: Undercharge, 1: Adequate, 2: Overcharge )" |
| FAN | Fan | "Fan capacity of outdoor unit (not proportional to rotational frequency)" |
| SCO | Sub-cool at heat exchanger | Variable for control |
| SCC | Sub-cool at SC coil exit | Variable for control |
| SHB | "SC coil bypass exit " Supper heat | Variable for control |
| Qj(C) | Total capacity code (cool) | Cooling indoor unit capacity |
| Qj(H) | Total capacity code (heat) | Heating indoor unit capacity |
| SLEV | Oil return LEV opening | Adjusts the amount of liquid refrigerant and oil returned from the accumulator |
| LEV1 | SC coil LEV opening | Adjusts refrigerant in the bypass pipe from liquid pipe in the outdoor unit in cooling mode. |
| 21S4 | 4-way valve | Switches the cooling/heating cycle |
| SV1 | Solenoid valve output (Bypass between discharge pipe and suction pipe) | "Returns oil from the oil separator " Restricts the rise in the discharge pressure |
| SV4 | Solenoid valve output (Bypass between discharge pipe and suction pipe) | Controls capacity and restricts the high pressure (Frequency control backup) |
| Repeater | Repeater output | Prohibit(0)/Permit(1) the Communication with centralized control system |
| TH1 | Thermistor | Detects the discharge temperature for the high pressure protection. |
| TH2 | Thermistor (Detects saturated evaporation temperature) | Detects saturated temperature and then, control the compressor frequency and liquid level in the accumulator |
| TH3 | Thermistor (Detects lower liquid level in the accumulator) | Detects the liquid level in the accumulator |
| TH4 | Thermistor (Detects upper liquid level in the accumulator) | Detects the liquid level in the accumulator |
| TH5 | Thermistor (Detects the liquid pipe temperature) | Controls compressor frequency, controls defrosting and detects the liquid level in heating mode, detects the sub-cool at the heat exchanger exit in combination with 63 HS data, and controls LEV1. |
| TH6 | Thermistor (Detects the ambient air temperature) | Detects the ambient temperature and then, controls the fan frequency liquid level in the accumulator, and the opening LEV pulse for oil return. |
| TH7(8) | Thermistor (Controls SC) | Controls LEV1 based on the temperature differences between TH 6,7 and 8. |
| THHS | Thermistor (Inverter radiator plate temperature) | Controls the inverter cooling fan based on the THHS temperature. |
| 63HS | High pressure sensor | Detects the discharge pressure and then protects unit against damage by high pressure. |

# Operation Status Monitor Terminology
# (PU(H)Y-P200/250YMF-B,YMC)

| Mark | Official Name | Meaning |
|---|---|---|
| Control mode | | Control mode for outdoor unit |
| Operation mode | | Operation mode for outdoor unit |
| F | Compressor frequency | Compressor frequency |
| AK | Heat exchanger capacity | Variable which determine the size of outdoor heat exchanger |
| AL | Accumulator level | Liquid level in the accumulation<br>( 0: A little, 1: Medium, 2: Much(overcharge) ) |
| FAN | Fan | Fan capacity of outdoor unit<br>(not proportional to rotational frequency) |
| SCO | Sub-cool at heat exchanger<br>Tc-TH5 | Variable for control |
| SCC | Sub-cool at SC coil exit<br>Tc-TH7 | Variable for control |
| SHB | SC coil bypass exit supper he at<br>TH8-TH2 | Variable for control |
| Qj(C) | Total capacity code (Cool) | Cooling indoor unit capacity |
| Qj(H) | Total capacity code (Heat) | Heating indoor unit capacity |
| SLEV | Oil return LEV opening | Adjusts the amount of liquid refrigerant and oil returned from the accumulator |
| LEV1 | SC coil LEV opening | Adjusts refrigerant in the bypass pipe from liquid pipe in the outd oor unit in cooling mode |
| 21S4 | 4 way valve | Switches the cooling/heating cycle<br>(0:Cooling, 1:Heating) |
| SV1 | Solenoid valve output<br>(Bypass between discharge pip e and suction pipe) | Returns oil from the oil separator |
| SV2 | Solenoid valve output<br>(Bypass between discharge pip e and suction pipe) | Controls capacity and restricts the high pressure (Frequency contr ol backup) |
| Repeater | Repeater output | Prohibit(0)/Permit(1) the Communication with centralized control sy stem |
| TH1 | Thermistor<br>(Detects discharge temperatur e) | Detects the discharge temperature for the high pressure protection |
| TH2 | Thermistor<br>(Detects saturated evaporation temperature) | Detects saturated temperature and then, control the compressor fr equency and liquid level in the accumulator |
| TH3 | Thermistor<br>(Detects lower liquid level in t he accumulator) | Detects the liquid level in the accumulator |
| TH4 | Thermistor<br>(Detects upper liquid level in t he accumulator) | Detects the liquid level in the accumulator |
| TH5 | Thermistor<br>(Detects the liquid pipe temper ature) | Controls compressor frequency, controls defrosting and detects the liquid level in heating mode, detects the sub-cool at the heat exc hanger exit in combination with 63 HS data, and controls LEV1 |
| TH6 | Thermistor<br>(Detects the ambient air tempe rature) | Detects the ambient temperature and then, controls the fan freque ncy liquid level in the accumulator, and the opening LEV pulse for oil return |
| TH7(8) | Thermistor(Controls SC) | Controls LEV1 based on the temperature differences between TH 6,7 and 8 |
| TH9 | Thermistor<br>(Composition sensing) | Senses the refrigerant composition based on TH2, TH9 and 63LS |
| TH10 | Thermistor<br>(Lower compressor shell) | Detects the oil temperature |
| THHS | Thermistor<br>(Inverter radiator plate tempera ture) | Controls the inverter cooling fan based on the THHS temperature |
| 63HS | High pressure sensor | Detects the discharge pressure and then protects unit against da mage by high pressure |
| 63LS | Low pressure sensor | Detects the suction pressure and then, senses the refrigerant com position |
| A-OC | Refrigerant composition(R32) | Real percentage of R32 |
| A-OC* | Refrigerant composition(R32) | Calculated percentage of R32 |
| Tc | Average of saturation gas tem perature of high pressure and saturation liquid temperature of high pressure | For control of compressor frequency and fan speed |
| Te | Saturation temperature of low | Same as TH2 |

| | | |
|---|---|---|
| | pressure | |

# Operation Status Monitor Terminology (PU(H)Y-200/250YMF-B,YMC)

| Mark | Official Name | Meaning |
|---|---|---|
| Control mode | | Control mode for outdoor unit |
| Operation mode | | Operation mode for outdoor unit |
| F | Compressor frequency | Compressor frequency |
| AK | Heat exchanger capacity | Variable which determine the size of outdoor heat exchanger |
| AL | Accumulator level | Liquid level in the accumulation<br>( 0: A little, 1: Medium, 2: Much(overcharge) ) |
| FAN | Fan | Fan capacity of outdoor unit<br>(not proportional to rotational frequency) |
| SCO | Sub-cool at heat exchanger Tc-TH5 | Variable for control |
| SCC | Sub-cool at SC coil exit Tc-TH7 | Variable for control |
| SHB | SC coil bypass exit supper heat<br>TH8-TH2 | Variable for control |
| Qj(C) | Total capacity code (Cool) | Cooling indoor unit capacity |
| Qj(H) | Total capacity code (Heat) | Heating indoor unit capacity |
| SLEV | Oil return LEV opening | Adjusts the amount of liquid refrigerant and oil returned from the accumulator |
| LEV1 | SC coil LEV opening | Adjusts refrigerant in the bypass pipe from liquid pipe in the outd oor unit in cooling mode |
| 21S4 | 4 way valve | Switches the cooling/heating cycle<br>(0:Cooling, 1:Heating) |
| SV1 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | Returns oil from the oil separator |
| SV2 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | Controls capacity and restricts the high pressure (Frequency contr ol backup) |
| Repeater | Repeater output | Prohibit(0)/Permit(1) the Communication with centralized control sy stem |
| TH1 | Thermistor<br>(Detects discharge temperatu re) | Detects the discharge temperature for the high pressure protection |
| TH2 | Thermistor<br>(Detects saturated evaporatio n temperature) | Detects saturated temperature and then, control the compressor fr equency and liquid level in the accumulator |
| TH3 | Thermistor<br>(Detects lower liquid level in the accumulator) | Detects the liquid level in the accumulator |
| TH4 | Thermistor<br>(Detects upper liquid level in the accumulator) | Detects the liquid level in the accumulator |
| TH5 | Thermistor<br>(Detects the liquid pipe temp erature) | Controls compressor frequency, controls defrosting and detects the liquid level in heating mode, detects the sub-cool at the heat exc hanger exit in combination with 63 HS data, and controls LEV1 |
| TH6 | Thermistor<br>(Detects the ambient air tem perature) | Detects the ambient temperature and then, controls the fan freque ncy liquid level in the accumulator, and the opening LEV pulse for oil return |
| TH7(8) | Thermistor(Controls SC) | Controls LEV1 based on the temperature differences between TH 6,7 and 8 |
| THHS | Thermistor<br>(Inverter radiator plate tempe rature) | Controls the inverter cooling fan based on the THHS temperature |
| 63HS | High pressure sensor | Detects the discharge pressure and then protects unit against da mage by high pressure |

# Operation Status Monitor Terminology (PU(H)Y-200/250TM-(C))

| Mark | Official Name | Meaning |
|---|---|---|
| Control mode | | Control mode for outdoor unit |
| Operation mode | | Operation mode for outdoor unit |
| F | Compressor frequency | Compressor frequency |
| AK | Heat exchanger capacity | Variable which determine the size of outdoor heat exchanger |
| AL | Accumulator level | Liquid level in the accumulation<br>( 0: A little, 1: Medium, 2: Much(overcharge) ) |
| FAN | Fan | Fan capacity of outdoor unit<br>(not proportional to rotational frequency) |
| SCO | Sub-cool at heat exchanger Tc-TH5 | Variable for control |
| SCC | Sub-cool at SC coil exit Tc-TH7 | Variable for control |
| SHB | SC coil bypass exit supper heat<br>TH8-TH2 | Variable for control |
| Qj(C) | Total capacity code (Cool) | Cooling indoor unit capacity |
| Qj(H) | Total capacity code (Heat) | Heating indoor unit capacity |
| SLEV | Oil return LEV opening | Adjusts the amount of liquid refrigerant and oil returned from the accumulator |
| LEV1 | SC coil LEV opening | Adjusts refrigerant in the bypass pipe from liquid pipe in the outd oor unit in cooling mode |
| 21S4 | 4 way valve | Switches the cooling/heating cycle<br>(0:Cooling, 1:Heating) |
| SV1 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | Returns oil from the oil separator |
| SV2 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | Controls capacity and restricts the high pressure (Frequency contr ol backup) |
| Repeater | Repeater output | Prohibit(0)/Permit(1) the Communication with centralized control sy stem |
| TH1 | Thermistor<br>(Detects discharge temperatu re) | Detects the discharge temperature for the high pressure protection |
| TH2 | Thermistor<br>(Detects saturated evaporatio n temperature) | Detects saturated temperature and then, control the compressor fr equency and liquid level in the accumulator |
| TH3 | Thermistor<br>(Detects lower liquid level in the accumulator) | Detects the liquid level in the accumulator |
| TH4 | Thermistor<br>(Detects upper liquid level in the accumulator) | Detects the liquid level in the accumulator |
| TH5 | Thermistor<br>(Detects the liquid pipe temp erature) | Controls compressor frequency, controls defrosting and detects the liquid level in heating mode, detects the sub-cool at the heat exc hanger exit in combination with 63 HS data, and controls LEV1 |
| TH6 | Thermistor<br>(Detects the ambient air tem perature) | Detects the ambient temperature and then, controls the fan freque ncy liquid level in the accumulator, and the opening LEV pulse for oil return |
| TH7(8) | Thermistor(Controls SC) | Controls LEV1 based on the temperature differences between TH 6,7 and 8 |
| THHS | Thermistor<br>(Inverter radiator plate tempe rature) | Controls the inverter cooling fan based on the THHS temperature |
| 63HS | High pressure sensor | Detects the discharge pressure and then protects unit against da mage by high pressure |

# Operation Status Monitor Terminology (PU(H)Y-400/500YBM)

| Mark | Official Name | Meaning |
|---|---|---|
| Control mode | | Control mode for outdoor unit |
| Operation mode | | Operation mode for outdoor unit |
| F | Temporary compressor frequency for calculation | Variable for control |
| F1 | Temporary compressor frequency for NO.1 COMP for calculation | Variable for control |
| F2 | Temporary compressor frequency for NO.2 COMP for calculation | Variable for control |
| AK | Heat exchanger capacity | Variable which determine the size of outdoor heat exchanger |
| AL | Accumulator level | Liquid level in the accumulation<br>( 0: A little, 1: Medium, 2: Much(overcharge) ) |
| FAN | Fan | Fan capacity of outdoor unit<br>(not proportional to rotational frequency) |
| SCO | Sub-cool at heat exchanger Tc-TH5 | Variable for control |
| SCC | Sub-cool at SC coil exit Tc-TH7 | Variable for control |
| SHB | SC coil bypass exit supper heat<br>TH8-TH2 | Variable for control |
| Qj(C) | Total capacity code (Cool) | Cooling indoor unit capacity |
| Qj(H) | Total capacity code (Heat) | Heating indoor unit capacity |
| SLEV | Oil return LEV opening | Adjusts the amount of liquid refrigerant and oil returned from the accumulator |
| LEV1 | SC coil LEV opening | Adjusts refrigerant in the bypass pipe from liquid pipe in the outdoor unit in cooling mode |
| 21S4a | 4 way valve<br>Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | Switches the cooling/heating cycle<br>(0:Cooling, 1:Heating)<br>Returns oil from the oil separator |
| SV22 | Solenoid valve output<br>(Capacity control full load) | Switches the capacity control valve Inside the compressor |
| SV32 | Solenoid valve output<br>(Capacity control unload) | Switches the capacity control valve Inside the compressor |
| SV4 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | Controls capacity and restricts the high pressure (Frequency control backup) |
| 21S4b | Solenoid valve output<br>(Capacity control of heat exchanger) | Capacity control of heat exchanger |
| SV5B | Solenoid valve output<br>(Capacity control of heat exchanger) | Capacity control of heat exchanger |
| SV6 | Solenoid valve output | Hot gas bypass |
| 52F | Contactor | ON/OFF switch of NO.2 fan |
| Repeater | Repeater output | Prohibit(0)/Permit(1) the Communication with centralized control system |
| TH11(TH12) | Thermistor<br>(Detects discharge temperature) | Detects the discharge temperature for the high pressure protection |
| TH2 | Thermistor<br>(Detects saturated evaporation temperature) | Detects saturated temperature and then, control the compressor frequency and liquid level in the accumulator |
| TH3 | Thermistor<br>(Detects lower liquid level in the accumulator) | Detects the liquid level in the accumulator |
| TH4 | Thermistor<br>(Detects upper liquid level in the accumulator) | Detects the liquid level in the accumulator |
| TH5 | Thermistor<br>(Detects the liquid pipe temperature) | Controls compressor frequency, controls defrosting and detects the liquid level in heating mode, detects the sub-cool at the heat exchanger exit in combination with 63 HS data, and controls LEV1 |
| TH6 | Thermistor<br>(Detects the ambient air temperature) | Detects the ambient temperature and then, controls the fan frequency liquid level in the accumulator, and the opening LEV pulse for oil return |
| TH7(8,9) | Thermistor(Controls SC) | Controls LEV1 based on the temperature differences between TH 7,8 and 9 |
| THHS | Thermistor | Controls the inverter cooling fan based on the THHS temperature |

| | | |
|---|---|---|
| | (Inverter radiator plate tempe rature) | |
| 63HS | High pressure sensor | Detects the discharge pressure and then protects unit against da mage by high pressure |

# Operation Status Monitor Terminology
# (PU(H)Y-315YMC)

| Mark | Official Name | Meaning |
|---|---|---|
| Control mode | | Control mode for outdoor unit |
| Operation mode | | Operation mode for outdoor unit |
| F | Compressor frequency | Compressor frequency |
| AK | Heat exchanger capacity | Variable which determine the size of outdoor heat exchanger |
| AL | Accumulator level | Liquid level in the accumulation<br>( 0: A little, 1: Medium, 2: Much(overcharge) ) |
| FAN | Fan | Fan capacity of outdoor unit<br>(not proportional to rotational frequency) |
| SCO | Sub-cool at heat exchanger<br>Tc-TH5 | Variable for control |
| SCC | Sub-cool at SC coil exit<br>Tc-TH7 | Variable for control |
| SHB | SC coil bypass exit supper heat<br>TH8-TH2 | Variable for control |
| Qj(C) | Total capacity code (Cool) | Cooling indoor unit capacity |
| Qj(H) | Total capacity code (Heat) | Heating indoor unit capacity |
| SLEV | Oil return LEV opening | Adjusts the amount of liquid refrigerant and oil returned from the accumulator |
| LEV1 | SC coil LEV opening | Adjusts refrigerant in the bypass pipe from liquid pipe in the outd oor unit in cooling mode |
| 21S4 | 4 way valve | Switches the cooling/heating cycle<br>(0:Cooling, 1:Heating) |
| SV1 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | Returns oil from the oil separator |
| SV2 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | Controls capacity and restricts the high pressure (Frequency contr ol backup) |
| Repeater | Repeater output | Prohibit(0)/Permit(1) the Communication with centralized control sy stem |
| TH1 | Thermistor<br>(Detects discharge temperatu re) | Detects the discharge temperature for the high pressure protection |
| TH2 | Thermistor<br>(Detects saturated evaporatio n temperature) | Detects saturated temperature and then, control the compressor fr equency and liquid level in the accumulator |
| TH3 | Thermistor<br>(Detects lower liquid level in the accumulator) | Detects the liquid level in the accumulator |
| TH4 | Thermistor<br>(Detects upper liquid level in the accumulator) | Detects the liquid level in the accumulator |
| TH5 | Thermistor<br>(Detects the liquid pipe temp erature) | Controls compressor frequency, controls defrosting and detects the liquid level in heating mode, detects the sub-cool at the heat exc hanger exit in combination with 63 HS data, and controls LEV1 |
| TH6 | Thermistor<br>(Detects the ambient air tem perature) | Detects the ambient temperature and then, controls the fan freque ncy liquid level in the accumulator, and the opening LEV pulse for oil return |
| TH7(8) | Thermistor(Controls SC) | Controls LEV1 based on the temperature differences between TH 6,7 and 8 |
| THHS | Thermistor<br>(Inverter radiator plate tempe rature) | Controls the inverter cooling fan based on the THHS temperature |
| 63HS | High pressure sensor | Detects the discharge pressure and then protects unit against da mage by high pressure |

# Operation Status Monitor Terminology (PUHY-400/500YMF-B,YMC)

| Mark | Official Name | Meaning |
|---|---|---|
| Control mode | | Control mode for outdoor unit |
| Operation mode | | Operation mode for outdoor unit |
| Save | | Signal of capacity saving from system controller.<br>figure : % No signal : 100% |
| F | Temporary compressor frequency for calculation | Variable for control |
| F1 | Temporary compressor frequency of NO.1 COMP for calculation | Variable for control |
| F2 | Temporary compressor frequency of NO.2 COMP for calculation | Variable for control |
| AK | Heat exchanger capacity | Variable which determine the size of outdoor heat exchanger |
| AK1 | Heat exchanger capacity (Variable capacity unit) | Variable which determine the size of outdoor heat exchanger |
| AL | Accumulator level | Liquid level in the accumulation<br>( 0: A little, 1: Medium, 2: Much(overcharge) ) |
| FAN1 | Fan | Fan capacity of outdoor unit(Fan on a variable capacity unit)<br>(not proportional to rotational frequency) |
| SCO | Sub-cool at heat exchanger Tc-TH5 | Variable for control |
| SCC | Sub-cool at SC coil exit Tc-TH7 | Variable for control |
| SHB | SC coil bypass exit super heat TH8-TH2 | Variable for control |
| DEMAND | ON/OFF demand | Input stop signal of compressor<br>(1:effective 0:ineffective) |
| SNOW | Snow sensor | Input run signal of outdoor unit fan(As compressor stopped)<br>(1:effective 0:ineffective) |
| NIGHT | Night mode | Decreases frequency of outdoor unit fan<br>(1:effective 0:ineffective) |
| Qj(C) | Total capacity code (cool) | Cooling indoor unit capacity |
| Qj(H) | Total capacity code (heat) | Heating indoor unit capacity |
| SLEV | Oil return LEV opening | Adjusts the amount of liquid refrigerant and oil returned from the accumulator |
| LEV1 | SC coil LEV opening | Adjusts refrigerant in the bypass pipe from liquid pipe in the outdoor unit in cooling mode. |
| 21S4a | 4-way valve | Switches the cooling/heating cycle<br>(0:Cooling, 1:Heating) |
| 21S4b | 4-way valve | Capacity control of heat exchanger |
| SV1 | Solenoid valve output (Bypass between discharge pipe and suction pipe) | Returns oil from the oil separator |
| SV22 | Solenoid valve output (Capacity control full load) | Switches the capacity control valve inside the compressor |
| SV32 | Solenoid valve output (Capacity control unload) | Switches the capacity control valve inside the compressor |
| SV4 | Solenoid valve output (Bypass between discharge pipe and suction pipe) | Controls capacity and restricts the high pressure (Frequency control backup) |
| SV5b | Solenoid valve output (Capacity control of heat exchanger) | Capacity control of heat exchanger |
| SV6 | Solenoid valve output | Hot gas bypass |
| 52F | Contactor | ON/OFF switch of NO.2 fan |
| Repeater | Repeater output | Prohibit(0)/Permit(1) the Communication with centralized control system |
| Power | | Power source frequency |
| TH11(TH12) | Thermistor (Detects discharge temperature) | Detects the discharge temperature for protection of compressor. |
| TH2 | Thermistor (Detects saturated evaporation temperature) | Detects saturated temperature and then, control the compressor frequency and liquid level in the accumulator |
| TH3 | Thermistor (Detects lower liquid level in the accumulator) | Detects the liquid level in the accumulator |
| TH4 | Thermistor (Detects upper liquid level in | Detects the liquid level in the accumulator |

| | | |
|---|---|---|
| | the accumulator) | |
| TH5 | Thermistor<br>(Detects the liquid pipe temp erature) | Controls compressor frequency, controls defrosting and detects the liquid level in heating mode, detects the sub-cool at the heat exc hanger exit in combination with 63 HS data, and controls LEV1. |
| TH6 | Thermistor<br>(Detects the ambient air tem perature) | Detects the ambient temperature and then, controls the fan freque ncy, liquid level in the accumulator, and the opening LEV pulse fo r oil return. |
| TH7(8,9a) | Thermistor<br>(Controls SC) | Controls LEV1 based on the temperature differences between TH 7,8 and 9a. |
| TH10a(10b) | Thermistor<br>(Gas pipe temperature of he at exchanger) | Detects outlet temperature of heat exchanger in heating mode. |
| THHS | Thermistor<br>(Inverter radiator plate tempe rature) | Controls the inverter cooling fan based on the THHS temperature. |
| 63HS | High pressure sensor | Detects the discharge pressure and then protects unit against da mage by high pressure. |
| Tc | Average of saturation gas te mperature of high pressure and saturation liquid tempera ture of high pressure | For control of compressor frequency and fan speed. |

# Operation Status Monitor Terminology (PUHY-P400/500YMF-B,YMC)

| Mark | Official Name | Meaning |
|---|---|---|
| Control mode | | Control mode for outdoor unit |
| Operation mode | | Operation mode for outdoor unit |
| Save | | Signal of capacity saving from system controller. |
| | | figure : % No signal : 100% |
| F | Temporary compressor frequency for calculation | Variable for control |
| F1 | Temporary compressor frequency of NO.1 COMP for calculation | Variable for control |
| F2 | Temporary compressor frequency of NO.2 COMP for calculation | Variable for control |
| AK | Heat exchanger capacity | Variable which determine the size of outdoor heat exchanger |
| AK1 | Heat exchanger capacity (Variable capacity unit) | Variable which determine the size of outdoor heat exchanger |
| AL | Accumulator level | Liquid level in the accumulation ( 0: A little, 1: Medium, 2: Much(overcharge) ) |
| FAN1 | Fan | Fan capacity of outdoor unit(Fan on a variable capacity unit) (not proportional to rotational frequency) |
| SCO | Sub-cool at heat exchanger Tc-TH5 | Variable for control |
| SCC | Sub-cool at SC coil exit Tc-TH7 | Variable for control |
| SHB | SC coil bypass exit super heat TH8-TH2 | Variable for control |
| DEMAND | ON/OFF demand | Input stop signal of compressor |
| SNOW | Snow sensor | Input run signal of outdoor unit fan(As compressor stopped) (1:effective 0:ineffective) |
| NIGHT | Night mode | Decreases frequency of outdoor unit fan (1:effective 0:ineffective) |
| Qj(C) | Total capacity code (cool) | Cooling indoor unit capacity |
| Qj(H) | Total capacity code (heat) | Heating indoor unit capacity |
| SLEV | Oil return LEV opening | Adjusts the amount of liquid refrigerant and oil returned from the accumulator |
| LEV1 | SC coil LEV opening | Adjusts refrigerant in the bypass pipe from liquid pipe in the outdoor unit in cooling mode. |
| 21S4a | 4-way valve | Switches the cooling/heating cycle (0:Cooling, 1:Heating) |
| 21S4b | 4-way valve | Capacity control of heat exchanger |
| SV1 | Solenoid valve output (Bypass between discharge pipe and suction pipe) | Returns oil from the oil separator |
| SV22 | Solenoid valve output (Capacity control full load) | Switches the capacity control valve inside the compressor |
| SV32 | Solenoid valve output (Capacity control unload) | Switches the capacity control valve inside the compressor |
| SV4 | Solenoid valve output (Bypass between discharge pipe and suction pipe) | Controls capacity and restricts the high pressure(Frequency control backup) |
| SV5b | Solenoid valve output (Capacity control of heat exchanger) | Capacity control of heat exchanger |
| SV6 | Solenoid valve output | Hot gas bypass |
| 52F | Contactor | ON/OFF switch of NO.2 fan |
| Repeater | Repeater output | Prohibit(0)/Permit(1) the Communication with centralized control system |
| Power | | Power source frequency |
| TH11(TH12) | Thermistor (Detects discharge temperature) | Detects the discharge temperature for protection of compressor. |
| TH2 | Thermistor (Detects saturated evaporation temperature) | Detects saturated temperature and then, control the compressor frequency and liquid level in the accumulator |
| TH3 | Thermistor (Detects lower liquid level in the accumulator) | Detects the liquid level in the accumulator |
| TH4 | Thermistor (Detects upper liquid level in t | Detects the liquid level in the accumulator |

| | | |
|---|---|---|
| | he accumulator) | |
| TH5 | Thermistor<br>(Detects the liquid pipe temper ature) | Controls compressor frequency, controls defrosting and detects the liquid level in heating mode, detects the sub-cool at the heat exc hanger exit in combination with 63 HS data, and controls LEV1. |
| TH6 | Thermistor<br>(Detects the ambient air tempe rature) | Detects the ambient temperature and then, controls the fan freque ncy, liquid level in the accumulator, and the opening LEV pulse fo r oil return. |
| TH7(8,9a) | Thermistor<br>(Controls SC) | Controls LEV1 based on the temperature differences between TH 7,8 and 9a. |
| TH9b | Thermistor<br>(Composition sensing) | Senses the refrigerant composition based on TH2,TH9b and 63LS. |
| TH10a(10b) | Thermistor<br>(Gas pipe temperature of heat exchanger) | Detects outlet temperature of heat exchanger in heating mode. |
| TH10c | Thermistor<br>(Lower compressor shell) | Detects the oil temperature |
| THHS | Thermistor<br>(Inverter radiator plate tempera ture) | Controls the inverter cooling fan based on the THHS temperature. |
| 63HS | High pressure sensor | Detects the discharge pressure and then protects unit against da mage by high pressure. |
| 63LS | Low pressure sensor | Detects the suction pressure and then, senses the refrigerant com position. |
| A-OC | Refrigerant composition(R32) | |
| A-OC* | Refrigerant composition(R32) | Calculated percentage of R32 |
| Tc | Average of saturation gas Temperature of high pressure and saturation liquid temperatu re of high pressure | For control of compressor frequency and fan speed. |
| Te | Saturation temperature of low pressure | same as TH2. |

# Operation Status Monitor Terminology
# (PU(H)Y-P200/250YMF-C)

| Mark | Official Name | Meaning |
|---|---|---|
| Control mode | | Control mode for outdoor unit |
| Operation mode | Operation mode for outdoor unit | |
| Save | | Signal of capacity saving from system controller.<br>figure : % |
| F | Compressor frequency | Compressor frequency |
| AK | Heat exchanger capacity | Variable which determine the size of outdoor heat exchanger |
| AL | Accumulator level | Liquid level in the accumulation<br>( 0: A little, 1: Medium, 2: Much(overcharge) ) |
| FAN | Fan | Fan capacity of outdoor unit<br>(not proportional to rotational frequency) |
| SCO | Sub-cool at heat exchanger Tc-TH5 | Variable for control |
| SCC | Sub-cool at SC coil exit Tc-TH7 | Variable for control |
| SHB | SC coil bypass exit supper heat Variable for control TH8-TH2 | |
| DEMAND | ON/OFF demand | Input stop signal of compressor<br>( 1:effective 0:ineffective ) |
| NIGHT | Night mode | Decreases frequency of outdoor unit fan<br>( 1:effective 0:ineffective ) |
| Qj(C) | Total capacity code (cool) | Cooling indoor unit capacity |
| Qj(H) | Total capacity code (heat) | Heating indoor unit capacity |
| SLEV | Oil return LEV opening | Adjusts the amount of liquid refrigerant and oil returned from the accumulator |
| LEV1 | SC coil LEV opening | Adjusts refrigerant in the bypass pipe from liquid pipe in the outd oor unit in cooling mode. |
| 21S4 | 4-way valve | Switches the cooling/heating cycle<br>(0:Cooling, 1:Heating) |
| SV1 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | Returns oil from the oil separator |
| SV2 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | Controls capacity and restricts the high pressure (Frequency contr ol backup) |
| SV3 | Solenoid valve output<br>(Capacity control of heat exc hanger) | Capacity control of heat exchanger |
| SV4 | Solenoid valve output<br>(Capacity control of heat exc hanger) | Capacity control of heat exchanger |
| Repeater | Repeater output | Prohibit(0)/Permit(1) the Communication with centralized control sy stem |
| TH1 | Thermistor<br>(Detects discharge temperatu re) | Detects the discharge temperature for the high pressure protectio n. |
| TH2 | Thermistor<br>(Detects saturated evaporatio n temperature) | Detects saturated temperature and then, control the compressor fr equency and liquid level in the accumulator |
| TH5 | Thermistor<br>(Detects the liquid pipe temp erature) | Controls compressor frequency, controls defrosting and detects the liquid level in heating mode, detects the sub-cool at the heat exc hanger exit in combination with 63 HS data, and controls LEV1. |
| TH6 | Thermistor<br>(Detects the ambient air tem perature) | Detects the ambient temperature and then, controls the fan freque ncy liquid level in the accumulator, and the opening LEV pulse for oil return. |
| TH7(8) | Thermistor | Controls LEV1 based on the temperature differences between TH 6,7 and 8. |
| | (Controls SC) | |
| TH9 | Thermistor<br>(Composition sensing) | Senses the refrigerant composition based on TH2, TH9 and 63LS. |
| TH10 | Thermistor<br>(Lower compressor shell) | Detects the oil temperature |
| THHS | Thermistor<br>(Inverter radiator plate tempe rature) | Controls the inverter cooling fan based on the THHS temperature. |
| 63HS | High pressure sensor | Detects the discharge pressure and then protects unit against da mage by high pressure. |
| 63LS | Low pressure sensor | Detects the suction pressure and then, senses the refrigerant com |

| | | |
|---|---|---|
| | | position. |
| A-OC | Refrigerant composition(R32) | Real percentage of R32 |
| A-OC* | Refrigerant composition(R32) | Calculated percentage of R32 |
| Tc | Average of saturation gas temp temperature of high pressure and saturation liquid temperature of high pressure | For control of compressor frequency and fan speed |
| Te | Saturation temperature of low pressure | Same as TH2 |

# Operation Status Monitor Terminology (PUHY-P400/500YMF-C)

| Mark | Official Name | Meaning |
|---|---|---|
| Control mode | | Control mode for outdoor unit |
| Operation mode | | Operation mode for outdoor unit |
| Save | | Signal of capacity saving from system controller.<br>figure : % No signal : 100% |
| F | Temporary compressor frequency for calculation | Variable for control |
| F1 | Temporary compressor frequency of NO.1 COMP for calculation | Variable for control |
| F2 | Temporary compressor frequency of NO.2 COMP for calculation | Variable for control |
| AK1 | Heat exchanger capacity (Variable capacity unit) | Variable which determine the size of outdoor heat exchanger |
| AL | Accumulator level | Liquid level in the accumulation<br>( 0: A little, 1: Medium, 2: Much(overcharge) ) |
| FAN1 | Fan | Fan capacity of outdoor unit(Fan on a variable capacity unit)<br>(not proportional to rotational frequency) |
| SCO | Sub-cool at heat exchanger Tc-TH5 | Variable for control |
| SCC | Sub-cool at SC coil exit Tc-TH7 | Variable for control |
| SHB | SC coil bypass exit super heat<br>TH8-TH2 | Variable for control |
| DEMAND | ON/OFF demand | Input stop signal of compressor |
| SNOW | Snow sensor | Input run signal of outdoor unit fan(As compressor stopped)<br>(1:effective 0:ineffective) |
| NIGHT | Night mode | Decreases frequency of outdoor unit fan<br>(1:effective 0:ineffective) |
| Qj(C) | Total capacity code (cool) | Cooling indoor unit capacity |
| Qj(H) | Total capacity code (heat) | Heating indoor unit capacity |
| SLEV | Oil return LEV opening | Adjusts the amount of liquid refrigerant and oil returned from the accumulator |
| LEV1 | SC coil LEV opening | Adjusts refrigerant in the bypass pipe from liquid pipe in the outdoor unit in cooling mode. |
| 21S4a | 4-way valve | Switches the cooling/heating cycle<br>(0:Cooling, 1:Heating) |
| 21S4b | 4-way valve | Capacity control of heat exchanger |
| SV1 | Solenoid valve output | Returns oil from the oil separator<br>(Bypass between discharge pipe and suction pipe) |
| SV22 | Solenoid valve output<br>(Capacity control full load) | Switches the capacity control valve inside the compressor |
| SV32 | Solenoid valve output<br>(Capacity control unload) | Switches the capacity control valve inside the compressor |
| SV4 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | Controls capacity and restricts the high pressure(Frequency control backup) |
| SV5b | Solenoid valve output<br>(Capacity control of heat exchanger) | Capacity control of heat exchanger |
| SV6 | Solenoid valve output<br>(Capacity control of heat exchanger) | Capacity control of heat exchanger |
| SV7 | Solenoid valve output<br>(Capacity control of heat exchanger) | Capacity control of heat exchanger |
| SV8 | Solenoid valve output<br>(Capacity control of heat exchanger) | Capacity control of heat exchanger |
| 52F | Contactor | ON/OFF switch of NO.2 fan |
| Repeater | Repeater output | Prohibit(0)/Permit(1) the Communication with centralized control system |
| Power | | Power source frequency |
| TH11(TH12) | Thermistor<br>(Detects discharge temperature) | Detects the discharge temperature for protection of compressor. |
| TH2 | Thermistor<br>(Detects saturated evaporatio | Detects saturated temperature and then, control the compressor frequency and liquid level in the accumulator |

| | | |
|---|---|---|
| | n temperature) | |
| TH3 | Thermistor<br>(Detects lower liquid level in the accumulator) | Detects the liquid level in the accumulator |
| TH4 | Thermistor<br>(Detects upper liquid level in the accumulator) | Detects the liquid level in the accumulator |
| TH5 | Thermistor<br>(Detects the liquid pipe temperature) | Controls compressor frequency, controls defrosting and detects the liquid level in heating mode, detects the sub-cool at the heat exchanger exit in combination with 63 HS data, and controls LEV1. |
| TH6 | Thermistor<br>(Detects the ambient air temperature) | Detects the ambient temperature and then, controls the fan frequency, liquid level in the accumulator, and the opening LEV pulse for oil return. |
| TH7(8,9a) | Thermistor(Controls SC) | Controls LEV1 based on the temperature differences between TH 7,8 and 9a. |
| TH9b | Thermistor(Composition sensing) | Senses the refrigerant composition based on TH2,TH9b and 63LS. |
| TH10a(10b) | Thermistor<br>(Gas pipe temperature of heat exchanger) | Detects outlet temperature of heat exchanger in heating mode. |
| TH10c | Thermistor<br>(Lower compressor shell) | Detects the oil temperature |
| THHS | Thermistor<br>(Inverter radiator plate temperature) | Controls the inverter cooling fan based on the THHS temperature. |
| 63HS | High pressure sensor | Detects the discharge pressure and then protects unit against damage by high pressure. |
| 63LS | Low pressure sensor | Detects the suction pressure and then, senses the refrigerant composition. |
| A-OC | Refrigerant composition(R32) | Real percentage of R32 |
| A-OC* | Refrigerant composition(R32) | Calculated percentage of R32 |
| Tc | Average of saturation gas temperature of high pressure and saturation liquid temperature of high pressure | For control of compressor frequency and fan speed. |
| Te | Saturation temperature of low pressure | same as TH2. |

# Operation Status Monitor Terminology (PUHY-400/500YMF-C)

| Mark | Official Name | Meaning |
|---|---|---|
| Control mode | | Control mode for outdoor unit |
| Operation mode | | Operation mode for outdoor unit |
| Save | | Signal of capacity saving from system controller.<br>figure : % No signal : 100% |
| F | Temporary compressor frequency for calculation | Variable for control |
| F1 | Temporary compressor frequency of NO.1 COMP for calculation | Variable for control |
| F2 | Temporary compressor frequency of NO.2 COMP for calculation | Variable for control |
| AK | Heat exchanger capacity | Variable which determine the size of outdoor heat exchanger |
| AK1 | Heat exchanger capacity (Variable capacity unit) | Variable which determine the size of outdoor heat exchanger |
| AL | Accumulator level | Liquid level in the accumulation<br>( 0: A little, 1: Medium, 2: Much(overcharge) ) |
| FAN1 | Fan | Fan capacity of outdoor unit(Fan on a variable capacity unit)<br>(not proportional to rotational frequency) |
| SCO | Sub-cool at heat exchanger Tc-TH5 | Variable for control |
| SCC | Sub-cool at SC coil exit Tc-TH7 | Variable for control |
| SHB | SC coil bypass exit super heat<br>TH8-TH2 | Variable for control |
| DEMAND | ON/OFF demand | Input stop signal of compressor<br>(1:effective 0:ineffective) |
| SNOW | Snow sensor | Input run signal of outdoor unit fan(As compressor stopped)<br>(1:effective 0:ineffective) |
| NIGHT | Night mode | Decreases frequency of outdoor unit fan<br>(1:effective 0:ineffective) |
| Qj(C) | Total capacity code (cool) | Cooling indoor unit capacity |
| Qj(H) | Total capacity code (heat) | Heating indoor unit capacity |
| SLEV | Oil return LEV opening | Adjusts the amount of liquid refrigerant and oil returned from the accumulator |
| LEV1 | SC coil LEV opening | Adjusts refrigerant in the bypass pipe from liquid pipe in the outdoor unit in cooling mode. |
| 21S4a | 4-way valve | Switches the cooling/heating cycle<br>(0:Cooling, 1:Heating) |
| 21S4b | 4-way valve | Capacity control of heat exchanger |
| SV1 | Solenoid valve output (Bypass between discharge pipe and suction pipe) | Returns oil from the oil separator |
| SV22 | Solenoid valve output (Capacity control full load) | Switches the capacity control valve inside the compressor |
| SV32 | Solenoid valve output (Capacity control unload) | Switches the capacity control valve inside the compressor |
| SV4 | Solenoid valve output (Bypass between discharge pipe and suction pipe) | Controls capacity and restricts the high pressure(Frequency control backup) |
| SV5b | Solenoid valve output (Capacity control of heat exchanger) | Capacity control of heat exchanger |
| SV6 | Solenoid valve output (Capacity control of heat exchanger) | Capacity control of heat exchanger |
| 52F | Contactor | ON/OFF switch of NO.2 fan |
| Repeater | Repeater output | Prohibit(0)/Permit(1) the Communication with centralized control system |
| Power | | Power source frequency |
| TH11(TH12) | Thermistor (Detects discharge temperature) | Detects the discharge temperature for protection of compressor. |
| TH2 | Thermistor (Detects saturated evaporation temperature) | Detects saturated temperature and then, control the compressor frequency and liquid level in the accumulator |
| TH3 | Thermistor (Detects lower liquid level in | Detects the liquid level in the accumulator |

| | | |
|---|---|---|
| | the accumulator) | |
| TH4 | Thermistor<br>(Detects upper liquid level in the accumulator) | Detects the liquid level in the accumulator |
| TH5 | Thermistor<br>(Detects the liquid pipe temperature) | Controls compressor frequency, controls defrosting and detects the liquid level in heating mode, detects the sub-cool at the heat exchanger exit in combination with 63 HS data, and controls LEV1. |
| TH6 | Thermistor<br>(Detects the ambient air temperature) | Detects the ambient temperature and then, controls the fan frequency, liquid level in the accumulator, and the opening LEV pulse for oil return. |
| TH7(8,9a) | Thermistor<br>(Controls SC) | Controls LEV1 based on the temperature differences between TH 7,8 and 9a. |
| TH10a(10b) | Thermistor<br>(Gas pipe temperature of heat exchanger) | Detects outlet temperature of heat exchanger in heating mode. |
| THHS | Thermistor<br>(Inverter radiator plate temperature) | Controls the inverter cooling fan based on the THHS temperature. |
| 63HS | High pressure sensor | Detects the discharge pressure and then protects unit against damage by high pressure. |
| Tc | Average of saturation gas temperature of high pressure and saturation liquid temperature of high pressure | For control of compressor frequency and fan speed. |

# Operation Status Monitor Terminology (PUD-P200/250YMF-C)

| Mark | Official Name | Meaning |
|---|---|---|
| Ctrl Mode | | Control mode for outdoor unit |
| Ctrl Mode | | Control mode for outdoor unit |
| Ope Mode | | Operation mode for outdoor unit |
| Save | | Signal of capacity saving from system controller<br>figure : % No signal : 100% |
| Power | Power source frequency | Power source frequency (Hz) |
| F | Temporary compressor frequency for calculation | Variable for control |
| AK | Heat exchanger capacity | Variable which determines the size of outdoor heat exchanger |
| FAN | Fan | Fan capacity of outdoor unit<br>(not proportional to rotational frequency) |
| DEMAND | ON/OFF demand | Input stop signal of compressor<br>( ON:effective, OFF:ineffective ) |
| SNOW | Snow sensor | Input run signal of outdoor unit fan<br>(As compressor stopped)<br>( ON:effective, OFF:ineffective ) |
| NIGHT | Night mode | Decreases frequency of outdoor unit fan<br>( ON:effective, OFF:ineffective ) |
| QjC | Total capacity code (cool) | Cooling indoor unit capacity |
| SLEV | Oil return LEV opening | Adjusts the amount of liquid refrigerant and oil returned from the accumulator |
| LEV1 | SC coil LEV opening | Adjusts refrigerant in the bypass pipe from liquid pipe in the outd oor unit in cooling mode |
| SV1 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | The discharge pressure control |
| SV2 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | The discharge pressure control |
| SV3 | Solenoid valve output | Capacity control of heat exchanger |
| TH1 | Thermistor<br>(Detects discharge temperature) | Detects discharge temperature for protection of compressor. |
| TH2 | Thermistor | |
| TH5 | Thermistor<br>(Detects the liquid pipe temperature) | Controls defrosting (start/ end) in heating mode |
| TH6 | Thermistor<br>(Detects the ambient air temperature) | Detects the ambient temperature and then, controls the fan frequency and liquid level in the accumulator. |
| TH7(8) | Thermistor<br>(Controls SC) | Controls LEV1 based on the temperature differences between TH 6,7 and 8 |
| TH9 | Thermistor | Detects the high pressure liquid temperature |
| TH10 | Thermistor | Detects lower compressor shell and then protects compressor. |
| THHS | Thermistor<br>(Comp inverter radiator plate temperature) | Controls the Comp inverter cooling fan based on the THHS temperature. |
| 63HS | High pressure sensor | Detects the discharge pressure and then protects unit against damage by high pressure. |
| 63LS | Low pressure sensor | Detects the suction pressure and then, senses the refrigerant composition |
| Tc | Average of saturation gas temperature of high pressure and saturation liquid temperature of high pressure | For control of compressor frequency and fan speed |
| Te | Saturation temperature of low pressure | For control of compressor frequency and fan speed |
| SCO | Sub-cool at heat exchanger | Variable for control |
| Tc-TH5 | | |
| SCC | Sub-cool at SC coil exit<br>Tc-TH7 | Variable for control |
| SHB | SC coil bypass exit supper heat<br>TH8-Te | Variable for control |
| A_oc | Refrigerant composition(R32) | Real persentage of R32 |
| A_oc* | Refrigerant composition(R32) | Calculated persentage of R32 |

| | | |
|---|---|---|

# Operation Status Monitor Terminology
# (PU(H)Y-P200/250/315Y(R)EM-A)

| Mark | Official Name | Meaning |
|---|---|---|
| Ctrl Mode | | Control mode for outdoor unit |
| Ope Mode | | Operation mode for outdoor unit |
| Save | | Signal of capacity saving from system controller.<br>figure : % No signal : 100% |
| F | Compressor frequency | Compressor frequency |
| AK | Heat exchanger capacity | Variable which determines the size of outdoor heat exchanger |
| AL | Accumulator level | Liquid level in the accumulation<br>( 0: A little, 1: Medium, 2: Much(overcharge) ) |
| FAN | Fan | Fan capacity of outdoor unit<br>(not proportional to rotational frequency) |
| SCO | Sub-cool at heat exchanger<br>Tc-TH5 | Variable for control |
| SCC | Sub-cool at SC coil exit<br>Tc-TH7 | Variable for control |
| SHB | SC coil bypass exit supper heat<br><br>TH8-TH2 | Variable for control |
| DEMAND | ON/OFF demand | Input stop signal of compressor<br>( ON:effective, OFF:ineffective ) |
| DEMAND2 | | Signal of capacity saving<br>( ON:effective, OFF:ineffective ) |
| SNOW | Snow sensor | Input run signal of outdoor unit fan<br>(As compressor stopped)<br>( ON:effective, OFF:ineffective ) |
| NIGHT | Night mode | Decreases frequency of outdoor unit fan<br>( ON:effective, OFF:ineffective ) |
| Qj(C) | Total capacity code (cool) | Cooling indoor unit capacity |
| Qj(H) | Total capacity code (heat) | Heating indoor unit capacity damage by high pressure.<br>"closing": at the time of usual. "open": at the time of actuation. |
| SLEV | Oil return LEV opening | Adjusts the amount of liquid refrigerant and oil returned from the accumulator |
| LEV1 | SC coil LEV opening | Adjusts refrigerant in the bypass pipe from liquid pipe in the outd oor unit in cooling mode. |
| 21S4 | 4-way valve | Switches the cooling/heating cycle<br>(0:Cooling, 1:Heating) |
| SV1 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | Returns oil from the oil separator |
| SV2 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | Discharge-suction bypass |
| SV3 | Solenoid valve output<br>(Capacity control of heat exchan ger) | Capacity control of heat exchanger |
| SV4 | Solenoid valve output<br>(Capacity control of heat exchan ger) | Capacity control of heat exchanger |
| Repeater | Repeater output | Prohibit(0)/Permit(1) the communication with centralized control sys tem |
| TH1 | Thermistor<br>(Detects discharge temperature) | Detects the discharge temperature for the high pressure protectio n. |
| TH2 | Thermistor<br>(Detects saturated evaporation te mperature) | Detects saturated temperature and then, controls the compressor f requency and liquid level in the accumulator |
| TH5 | Thermistor<br>(Detects the liquid pipe temperat ure) | Controls compressor frequency and defrosting and detects the liqu id level in heating mode and the sub-cool at the heat exchanger exit in combination with 63 HS data, and controls LEV1. |
| TH6 | Thermistor<br>(Detects the ambient air tempera ture) | Detects the ambient temperature and then, controls the fan freque ncy and liquid level in the accumulator. |
| TH7(8) | Thermistor<br>(Controls SC) | Controls LEV1 based on the temperature differences between TH 6,7 and 8. |
| THHS | Thermistor<br>(Inverter radiator plate temperatu re) | Controls the inverter cooling fan based on the THHS temperature. |
| 63HS | High pressure sensor | Detects the discharge pressure and then protects unit against da mage by high pressure. |

| | | |
|---|---|---|
| 63LS | Low pressure sensor | Detects the suction pressure and then, senses the refrigerant com position. |
| A-OC | Refrigerant composition(R32) | Real percentage of R32 |
| A-OC* | Refrigerant composition(R32) | Calculated percentage of R32 |
| Tc | Average of saturation gas tempe rature of high pressure and satu ration liquid temperature of high pressure | For control of compressor frequency and fan speed |
| Te | Saturation temperature of low pr essure | Same as TH2 |
| Vdc | Bus voltage | Bus voltage |
| Idc | DC trunk line current | DC trunk line current |
| Iu | Phase-U current | Phase-U current of compressor |
| Iw | Phase-W current | Phase-W current of compressor |

# Operation Status Monitor Terminology
# (PU(H)Y-P200/250/315YEM(*)-A)

| Mark | Official Name | Meaning |
|---|---|---|
| Ctrl Mode | | Control mode for outdoor unit |
| Ope Mode | | Operation mode for outdoor unit |
| Save | | Signal of capacity saving from system controller.<br>figure : % No signal : 100% |
| F | Compressor frequency | Compressor frequency |
| AK | Heat exchanger capacity | Variable which determines the size of outdoor heat exchanger |
| AL | Accumulator level | Liquid level in the accumulation<br>( 0: A little, 1: Medium, 2: Much(overcharge) ) |
| FAN | Fan | Fan capacity of outdoor unit<br>(not proportional to rotational frequency) |
| SCO | Sub-cool at heat exchanger Tc-TH5 | Variable for control |
| SCC | Sub-cool at SC coil exit Tc-TH7 | Variable for control |
| SHB | SC coil bypass exit supper heat<br>TH8-TH2 | Variable for control |
| DEMAND | ON/OFF demand | Input stop signal of compressor<br>( ON : effective OFF : ineffective ) |
| DEMAND2 | | Signal of capacity saving<br>( ON : effective OFF : ineffective ) |
| SNOW | Snow sensor | Input run signal of outdoor unit fan<br>(As compressor stopped)<br>( ON : effective OFF : ineffective ) |
| NIGHT | Night mode | Decreases frequency of outdoor unit fan<br>( ON : effective OFF : ineffective ) |
| Qj(C) | Total capacity code (cool) | Cooling indoor unit capacity |
| Qj(H) | Total capacity code (heat) | Heating indoor unit capacity |
| LEV1 | SC coil LEV opening | Adjusts refrigerant in the bypass pipe from liquid pipe in the outd oor unit in cooling mode. |
| 21S4 | 4-way valve | Switches the cooling/heating cycle<br>(0:Cooling, 1:Heating) |
| SV1 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | Returns oil from the oil separator |
| SV3 | Solenoid valve output<br>(Capacity control of heat exc hanger) | Capacity control of heat exchanger |
| SV4 | Solenoid valve output<br>(Capacity control of heat exc hanger) | Capacity control of heat exchanger |
| Repeater | Repeater output | Prohibit(0)/Permit(1) the communication with centralized control sys tem |
| TH1 | Thermistor<br>(Detects discharge temperatu re) | Detects the discharge temperature for the high pressure protectio n. |
| TH2 | Thermistor<br>(Detects saturated evaporatio n temperature) | Detects saturated temperature and then, controls the compressor f requency and liquid level in the accumulator |
| TH5 | Thermistor<br>(Detects the liquid pipe temp erature) | Controls compressor frequency and defrosting and detects the liqu id level in heating mode and the sub-cool at the heat exchanger exit in combination with 63 HS data, and controls LEV1. |
| TH6 | Thermistor<br>(Detects the ambient air tem perature) | Detects the ambient temperature and then, controls the fan freque ncy and liquid level in the accumulator. |
| | | |
| TH7(8) | Thermistor<br>(Controls SC) | Controls LEV1 based on the temperature differences between TH 6,7 and 8. |
| THHS | Thermistor<br>(Inverter radiator plate tempe rature) | Controls the inverter cooling fan based on the THHS temperature. |
| 63HS | High pressure sensor | Detects the discharge pressure and then protects unit against da mage by high pressure. |
| 63LS | Low pressure sensor | Detects the suction pressure and then, senses the refrigerant com position. |
| A-OC | Refrigerant composition(R32) | Real percentage of R32 |
| A-OC* | Refrigerant composition(R32) | Calculated percentage of R32 |

| | | |
|---|---|---|
| Tc | Average of saturation gas temperature of high pressure and saturation liquid temperature of high-pressure | For control of compressor frequency and fan speed |
| Te | Saturation temperature of low pressure | Same as TH2 |
| Vdc | Bus voltage | Bus voltage |
| Idc | DC trunk line current | DC trunk line current |
| Iu | Phase-U current | Phase-U current of compressor |
| Iw | Phase-W current | Phase-W current of compressor |

# Operation Status Monitor Terminology
# (PU(H)Y-200/250/315YEM(*)-A)

| Mark | Official Name | Meaning |
|---|---|---|
| Ctrl Mode | | Control mode for outdoor unit |
| Ope Mode | | Operation mode for outdoor unit |
| Save | | Signal of capacity saving from system controller.<br>figure : % No signal : 100% |
| F | Compressor frequency | Compressor frequency |
| AK | Heat exchanger capacity | Variable which determines the size of outdoor heat exchanger |
| AL | Accumulator level | Liquid level in the accumulation<br>( 0: A little, 1: Medium, 2: Much(overcharge) ) |
| FAN | Fan | Fan capacity of outdoor unit<br>(not proportional to rotational frequency) |
| SCO | Sub-cool at heat exchanger<br>Tc-TH5 | Variable for control |
| SCC | Sub-cool at SC coil exit<br>Tc-TH7 | Variable for control |
| SHB | SC coil bypass exit supper heat<br>TH8-TH2 | Variable for control |
| DEMAND | ON/OFF demand | Input stop signal of compressor<br>( ON : effective OFF : ineffective ) |
| DEMAND2 | | Signal of capacity saving<br>( ON : effective OFF : ineffective ) |
| SNOW | Snow sensor | Input run signal of outdoor unit fan<br>(As compressor stopped)<br>( ON : effective OFF : ineffective ) |
| NIGHT | Night mode | Decreases frequency of outdoor unit fan<br>( ON : effective OFF : ineffective ) |
| Qj(C) | Total capacity code (cool) | Cooling indoor unit capacity |
| Qj(H) | Total capacity code (heat) | Heating indoor unit capacity |
| LEV1 | SC coil LEV opening | Adjusts refrigerant in the bypass pipe from liquid pipe in the outd oor unit in cooling mode. |
| 21S4 | 4-way valve | Switches the cooling/heating cycle<br>(0:Cooling, 1:Heating) |
| SV1 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | Returns oil from the oil separator |
| Repeater | Repeater output | Prohibit(0)/Permit(1) the communication with centralized control sys tem |
| TH1 | Thermistor<br>(Detects discharge temperatu re) | Detects the discharge temperature for the high pressure protectio n. |
| TH5 | Thermistor<br>(Detects the liquid pipe temp erature) | Controls compressor frequency, and defrosting and detects the liq uid level in heating mode and the sub-cool at the heat exchanger exit in combination with 63 HS data, and controls LEV1. |
| TH6 | Thermistor<br>(Detects the ambient air tem perature) | Detects the ambient temperature and then, controls the fan freque ncy and liquid level in the accumulator. |
| TH7(8) | Thermistor<br>(Controls SC) | Controls LEV1 based on the temperature differences between TH 6,7 and 8. |
| THHS | Thermistor<br>(Inverter radiator plate tempe rature) | Controls the inverter cooling fan based on the THHS temperature. |
| 63HS | High pressure sensor | Detects the discharge pressure and then protects unit against da mage by high pressure. |
| 63LS | Low pressure sensor | Detects the suction pressure and then, senses the refrigerant com position. |
| Vdc | Bus voltage | Bus voltage |
| Idc | DC trunk line current | DC trunk line current |
| Iu | Phase-U current | Phase-U current of compressor |
| Iw | Phase-W current | Phase-W current of compressor |

# Operation Status Monitor Terminology (PUHY-P700/750/800YSGM-A)

| Mark | Official Name | Meaning |
|---|---|---|
| Ctrl Mode | | Control mode for outdoor unit |
| Ope Mode | | Operation mode for outdoor unit |
| Save | | Signal of capacity saving from system controller.<br>figure : % No signal : 100% |
| Power | Power source frequency | Power source frequency (Hz) |
| F | Temporary compressor frequency for calculation | Variable for control |
| F1 | Temporary compressor frequency of No.1 Comp for calculation | Variable for control |
| F2 | Temporary compressor frequency of No.2 Comp for calculation | Variable for control |
| AK | Heat exchanger capacity | Variable which determines the size of outdoor heat exchanger |
| FAN1 | Fan | Fan capacity of compressor unit<br>(not proportional to rotational frequency) |
| FAN2 | Fan | Fan capacity of heat exchanger unit<br>(not proportional to rotational frequency) |
| DEMAND | ON/OFF demand | Input stop signal of compressor<br>( ON:effective, OFF:ineffective ) |
| DEMAND2 | Intermediate demand | Signal of capacity saving<br>( ON:effective, OFF:ineffective )<br>DEMAND=OFF, DEMAND2=OFF: 100%<br>DEMAND=OFF, DEMAND2=ON : 75%<br>DEMAND= ON, DEMAND2=ON : 50%<br>DEMAND= ON, DEMAND2=OFF: 25% |
| SNOW | Snow sensor | Input run signal of outdoor unit fan<br>(As compressor stopped)<br>( ON:effective, OFF:ineffective ) |
| NIGHT | Night mode | Decreases frequency of outdoor unit fan<br>( ON:effective, OFF:ineffective ) |
| Qj(C) | Total capacity code (cool) | Cooling indoor unit capacity |
| Qj(H) | Total capacity code (heat) | Heating indoor unit capacity |
| LEV1 | SC coil LEV opening | Adjusts refrigerant in the bypass pipe from liquid pipe in the outdoor unit in cooling mode. |
| 21S4a | 4-way valve | Switches the cooling/heating cycle<br>(0:Cooling, 1:Heating) |
| 21S4b | 4-way valve | Capacity control of heat exchanger (Gas side) |
| 21S4c | 4-way valve | Capacity control of heat exchanger (Gas side) |
| SV1 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | The discharge pressure control |
| SV3 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | Protects compressor when compressor stops. |
| SV5b | Solenoid valve output | Capacity control of heat exchanger (Liquid side). |
| SV5c | Solenoid valve output | Capacity control of heat exchanger (Liquid side). |
| Rep | Repeater output | Prohibit(0)/Permit(1) the communication with centralized control system |
| TH11 | Thermistor<br>(Detects discharge temperature) | Detects discharge temperature for protection of No.1 compressor. |
| TH12 | Thermistor<br>(Detects discharge temperature) | Detects discharge temperature for protection of No.2 compressor. |
| TH5 | Thermistor<br>(Detects the liquid pipe temperature) | Controls defrosting (start/ end) in heating mode. |
| TH6 | Thermistor | Detects the ambient temperature and then, controls the fan frequency and liquid level in the accumulator. |
| | (Detects the ambient air temperature) | |
| TH7(8) | Thermistor<br>(Controls SC) | Controls LEV1 based on the temperature differences between TH7 and 8. |
| TH10 | Thermistor | Detects lower compressor shell and then protects compressor. |
| T5b | Thermistor TH5b | Controls defrosting (start/ end) in heating mode<br>(No.1 compressor). |
| THHS1 | Thermistor<br>(Comp inverter radiator plate temperature) | Controls the Comp inverter1 cooling fan based on the THHS1 temperature. |

| | | |
|---|---|---|
| THHS2 | Thermistor<br>(Comp inverter radiator plate temperature) | Controls the Comp inverter2 cooling fan based on the THHS2 temperature. |
| THHS5 | Thermistor<br>(Fan inverter radiator plate temperature) | Controls the Fan inverter cooling fan based on the THHS5 temperature. |
| TS5 | Thermistor THHS5<br>(Fan inverter radiator plate temperature) | Controls the Fan inverter cooling fan based on the TS5 temperature. |
| 63HS | High pressure sensor | Detects the discharge pressure and then protects unit against damage by high pressure. |
| 63LS | Low pressure sensor | Detects the suction pressure and then, protects unit against damage by low pressure. |
| Tc | Average of saturation gas temperature of high pressure and saturation liquid temperature of high pressure | For control of compressor frequency and fan speed. |
| Te | Saturation temperature of low pressure | For control of compressor frequency and fan speed |
| SCO | Sub-cool at heat exchanger<br>Tc-TH5 | Variable for control |
| SCC | Sub-cool at SC coil exit<br>Tc-TH7 | Variable for control |
| SHB | SC coil bypass exit supper heat<br>TH8-Te | Variable for control |
| Vdc1 | Bus voltage | Bus voltage of inverter1 |
| Idc1 | DC trunk line current | DC trunk line current of inverter1 |
| Iu1 | Phase-U current | Phase-U current of inverter1 |
| Iw1 | Phase-W current | Phase-W current of inverter1 |
| Vdc2 | Bus voltage | Bus voltage of inverter2 |
| Idc2 | DC trunk line current | DC trunk line current of inverter2 |
| Iu2 | Phase-U current | Phase-U current of inverter2 |
| Iw2 | Phase-W current | Phase-W current of inverter2 |

# Operation Status Monitor Terminology
# (PUHY-P200/250/300/350YGM-A,PUHY-P400YGM-A,PUHY-P450/500/550/600/650YGM-A)

| Mark | Official Name | Meaning |
|---|---|---|
| Ctrl Mode | | Control mode for outdoor unit |
| Ope Mode | | Operation mode for outdoor unit |
| Save | | Signal of capacity saving from system controller.<br>figure : % No signal : 100% |
| Power | Power source frequency | Power source frequency (Hz) |
| F | Temporary compressor frequency for calculation | Variable for control |
| F1 | Temporary compressor frequency of No.1 Comp for calculation | Variable for control<br>(only for P450 type or over) |
| F2 | Temporary compressor frequency of No.2 Comp for calculation | Variable for control<br>(only for P450 type or over) |
| AK | Heat exchanger capacity | Variable which determines the size of outdoor heat exchanger |
| FAN | Fan | Fan capacity of outdoor unit<br>(not proportional to rotational frequency) |
| DEMAND | ON/OFF demand | Input stop signal of compressor<br>( ON:effective, OFF:ineffective ) |
| DEMAND2 | Intermediate demand | Signal of capacity saving<br>( ON:effective, OFF:ineffective )<br>DEMAND=OFF, DEMAND2=OFF: 100%<br>DEMAND=OFF, DEMAND2=ON : 75%<br>DEMAND= ON, DEMAND2=ON : 50%<br>DEMAND= ON, DEMAND2=OFF: 25% |
| SNOW | Snow sensor | Input run signal of outdoor unit fan<br>(As compressor stopped)<br>( ON:effective, OFF:ineffective ) |
| SV5 | Solenoid valve output | |
| NIGHT | Night mode | Decreases frequency of outdoor unit fan<br>( ON:effective, OFF:ineffective ) |
| Qj(C) | Total capacity code (cool) | Cooling indoor unit capacity |
| Qj(H) | Total capacity code (heat) | Heating indoor unit capacity |
| LEV1 | SC coil LEV opening | Adjusts refrigerant in the bypass pipe from liquid pipe in the outdoor unit in cooling mode. |
| 21S4a | 4-way valve | Switches the cooling/heating cycle<br>(0:Cooling, 1:Heating) |
| 21S4b | 4-way valve | Capacity control of heat exchanger (Gas side) |
| 21S4c | 4-way valve | Capacity control of heat exchanger (Gas side)<br>(only for P400 type or over) |
| SV1 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | The discharge pressure control |
| SV3 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | Protects compressor when compressor stops.<br>(only for P450 type or over) |
| SV5b | Solenoid valve output | Capacity control of heat exchanger (Liquid side). |
| SV5c | Solenoid valve output | Capacity control of heat exchanger (Liquid side).<br>(only for P450 type or over) |
| 52F | Contactor | ON/OFF switch of No.2 fan<br>(only for P450 type or over) |
| Rep | Repeater output | Prohibit(0)/Permit(1) the communication with centralized control system |

| | | |
|---|---|---|
| TH11 | Thermistor<br>(Detects discharge temperature) | Detects discharge temperature for protection of No.1 compressor. |
| TH12 | Thermistor<br>(Detects discharge temperature) | Detects discharge temperature for protection of No.2 compressor. (only for P450 type or over) |
| TH5 | Thermistor<br>(Detects the liquid pipe temperature) | Controls defrosting (start/ end) in heating mode. |
| TH6 | Thermistor<br>(Detects the ambient air temperature) | Detects the ambient temperature and then, controls the fan frequency and liquid level in the accumulator. |
| TH7(8) | Thermistor<br>(Controls SC) | Controls LEV1 based on the temperature differences between TH 6,7 and 8. |
| THHS1 | Thermistor<br>(Comp inverter radiator plate temperature) | Controls the Comp inverter cooling fan based on the THHS1 temperature. |
| THHS5 | Thermistor<br>(Fan inverter radiator plate temperature) | Controls the Fan inverter cooling fan based on the THHS5 temperature. |
| 63HS | High pressure sensor | Detects the discharge pressure and then protects unit against damage by high pressure. |
| 63LS | Low pressure sensor | Detects the suction pressure and then, senses the refrigerant composition. |
| Tc | Average of saturation gas temperature of high pressure and saturation liquid temperature of high pressure | For control of compressor frequency and fan speed. |
| Te | Saturation temperature of low pressure | For control of compressor frequency and fan speed |
| Vdc | Bus voltage | Bus voltage |
| Idc | DC trunk line current | DC trunk line current |
| Iu | Phase-U current | Phase-U current of compressor |
| Iw | Phase-W current | Phase-W current of compressor |

# Operation Status Monitor Terminology

## (PUHY-P450/500/550/600/650YMM-A , PUHY-P400/650YSM-A , PUHY-P450/500/550/600/650YCSM-A , PUHY-P600YCSS-A)

| Mark | Official Name | Meaning |
|---|---|---|
| Primality | | Indicates whether the unit is primary or secondary. |
| Ctrl Mode | | Control mode for outdoor unit |
| Ope Mode | | Operation mode for outdoor unit |
| Save | | Signal of capacity saving from system controller.<br>figure : % No signal : 100% |
| Power | Power source frequency | Power source frequency (Hz) |
| F | Temporary compressor frequency for calculation | Variable for control<br>(Total frequency : Foc+Fos) |
| Foc | Temporary compressor frequency for calculation | Variable for control<br>(Total frequency of OC unit) |
| Fos | Temporary compressor frequency for calculation | Variable for control<br>(Total frequency of OS unit) |
| F1 | Temporary compressor frequency of No.1 Comp for calculation | Variable for control |
| F2 | Temporary compressor frequency of No.2 Comp for calculation | Variable for control |
| AK | Heat exchanger capacity | Variable which determines the size of outdoor heat exchanger |
| FAN | Fan | Fan capacity of outdoor unit<br>(not proportional to rotational frequency) |
| DEMAND | ON/OFF demand | Input stop signal of compressor<br>( ON:effective OFF:ineffective ) |
| DEMAND2 | Intermediate demand | Signal of capacity saving<br>( ON:effective OFF:ineffective )<br>DEMAND=OFF, DEMAND2=OFF: 100%<br>DEMAND=OFF, DEMAND2=ON : 75%<br>DEMAND= ON, DEMAND2=ON : 50%<br>DEMAND= ON, DEMAND2=OFF: 25% |
| SNOW | Snow sensor | Input run signal of outdoor unit fan<br>(As compressor stopped)<br>( ON:effective OFF:ineffective ) |
| NIGHT | Night mode | Decreases frequency of outdoor unit fan<br>( ON:effective OFF:ineffective ) |
| Qj(C) | Total capacity code (cool) | Cooling indoor unit capacity |
| Qj(H) | Total capacity code (heat) | Heating indoor unit capacity |
| LEV1 | SC coil LEV opening | Adjusts refrigerant in the bypass pipe from liquid pipe in the outdoor unit in cooling mode. |
| 21S4a | 4-way valve | Switches the cooling/heating cycle<br>(0:Cooling, 1:Heating) |
| 21S4b | 4-way valve | Capacity control of heat exchanger (Gas side) |
| 21S4c | 4-way valve | Capacity control of heat exchanger (Gas side)<br>Only for PUHY-PYMM-A and PUHY-PYSM-A type |
| SV1 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | The discharge pressure control |
| SV3 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | Protects compressor when No.2 compressor stops. |
| SV5b | Solenoid valve output | Capacity control of heat exchanger (Liquid side). |
| SV5c | Solenoid valve output | Capacity control of heat exchanger (Liquid side).<br>Only for PUHY-PYMM-A and PUHY-PYSM-A type |
| SV5d | Solenoid valve output | Closes when outdoor unit stops. |
| 52F | Contactor | ON/OFF switch of No.2 fan |
| Rep | Repeater output | Prohibit(0)/Permit(1) the communication with centralized control system |
| TH11 | Thermistor<br>(Detects discharge temperature) | Detects discharge temperature for protection of No.1 compressor. |
| TH12 | Thermistor<br>(Detects discharge temperature) | Detects discharge temperature for protection of No.2 compressor. |
| TH2 | Thermistor<br>(Detects the heat exchanger exit temperature) | Detects the temperature of the inlet to accumlator |
| TH5 | Thermistor<br>(Detects the liquid pipe temperature) | Controls defrosting (start/ end) in heating mode. |

| | | |
|---|---|---|
| TH6 | Thermistor<br>(Detects the ambient air temperature) | Detects the ambient temperature and then, controls the fan frequency and liquid level in the accumulator. |
| TH7(8) | Thermistor<br>(Controls SC) | Controls LEV1 based on the temperature differences between TH 6,7 and 8. |
| THHS1 | Thermistor<br>(Comp inverter radiator plate temperature) | Controls the Comp inverter cooling fan based on the THHS1 temperature. |
| THHS5 | Thermistor<br>(Fan inverter radiator plate temperature) | Controls the Fan inverter cooling fan based on the THHS5 temperature. |
| 63HS | High pressure sensor | Detects the discharge pressure and then protects unit against damage by high pressure. |
| 63LS | Low pressure sensor | Detects the suction pressure and then, senses the refrigerant composition. |
| Tc | Average of saturation gas temperature of high pressure and saturation liquid temperature of high pressure | For control of compressor frequency and fan speed. |
| Te | Saturation temperature of low pressure | For control of compressor frequency and fan speed |
| SCO | Sub-cool at heat exchanger | Variable for control |
| Tc-TH5 | | |
| SCC | Sub-cool at SC coil exit<br>Tc-TH7 | Variable for control |
| SHB | SC coil bypass exit supper heat<br>TH8-Te | Variable for control |
| Vdc | Bus voltage | Bus voltage |
| Idc | DC trunk line current | DC trunk line current |
| Iu | Phase-U current | Phase-U current of compressor |
| Iw | Phase-W current | Phase-W current of compressor |

# Operation Status Monitor Terminology (PUHY-200/250/300/350/400/450/500YC-A)

| Mark | Official Name | Meaning |
|---|---|---|
| Ctrl Mode | | Control mode for outdoor unit |
| Ope Mode | | Operation mode for outdoor unit |
| Save | | Signal of capacity saving from system controller.<br>figure : % No signal : 100% |
| Power | Power source frequency | Power source frequency (Hz) |
| F | Temporary compressor frequency for calculation | Variable for control |
| F1 | Temporary compressor frequency of No.1 Comp for calculation | Variable for control<br>(only for 400 type or over) |
| F2 | Temporary compressor frequency of No.2 Comp for calculation | Variable for control<br>(only for 400 type or over) |
| AK | Heat exchanger capacity | Variable which determines the size of outdoor heat exchanger |
| FAN | Fan | Fan capacity of outdoor unit<br>(not proportional to rotational frequency) |
| DEMAND | ON/OFF demand | Input stop signal of compressor<br>( ON:effective, OFF:ineffective ) |
| DEMAND2 | Intermediate demand | Signal of capacity saving<br>( ON:effective, OFF:ineffective )<br>DEMAND=OFF, DEMAND2=OFF: 100%<br>DEMAND=OFF, DEMAND2=ON : 75%<br>DEMAND= ON, DEMAND2=ON : 50%<br>DEMAND= ON, DEMAND2=OFF: 25% |
| SNOW | Snow sensor | Input run signal of outdoor unit fan<br>(As compressor stopped)<br>( ON:effective, OFF:ineffective ) |
| NIGHT | Night mode | Decreases frequency of outdoor unit fan<br>( ON:effective, OFF:ineffective ) |
| Qj(C) | Total capacity code (cool) | Cooling indoor unit capacity |
| Qj(H) | Total capacity code (heat) | Heating indoor unit capacity |
| LEV1 | SC coil LEV opening | Adjusts refrigerant in the bypass pipe from liquid pipe in the outdoor unit in cooling mode. |
| 21S4a | 4-way valve | Switches the cooling/heating cycle<br>(0:Cooling, 1:Heating) |
| 21S4b | 4-way valve | Capacity control of heat exchanger (Gas side)<br>(only for 400 type or over) |
| SV1 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | The discharge pressure control |
| SV3 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | Protects compressor when No.2 compressor stops.<br>(only for 400 type or over) |
| SV5b | Solenoid valve output | Capacity control of heat exchanger (Liquid side).<br>(only for 400 type or over) |
| 52F | Contactor | ON/OFF switch of No.2 fan<br>(only for 400 type or over) |
| Rep | Repeater output | Prohibit(0)/Permit(1) the communication with centralized control system |
| TH11 | Thermistor<br>(Detects discharge temperature) | Detects discharge temperature for protection of No.1 compressor. |
| TH12 | Thermistor<br>(Detects discharge temperature) | Detects discharge temperature for protection of No.2 compressor.<br>(only for 400 type or over) |
| TH5 | Thermistor<br>(Detects the liquid pipe temperature) | Controls defrosting (start/ end) in heating mode. |
| TH6 | Thermistor<br>(Detects the ambient air temperature) | Detects the ambient temperature and then, controls the fan frequency and liquid level in the accumulator. |
| TH7(8) | Thermistor<br>(Controls SC) | Controls LEV1 based on the temperature differences between TH 6,7 and 8. |
| THHS1 | Thermistor<br>(Comp inverter radiator plate temperature) | Controls the Comp inverter cooling fan based on the THHS1 temperature. |
| THHS5 | Thermistor<br>(Fan inverter radiator plate temperature) | Controls the Fan inverter cooling fan based on the THHS5 temperature. |
| 63HS | High pressure sensor | Detects the discharge pressure and then protects unit against da |

| | | |
|---|---|---|
| | | mage by high pressure. |
| 63LS | Low pressure sensor | Detects the suction pressure and then, senses the refrigerant com position. |
| Tc | Average of saturation gas te mperature of high pressure and saturation liquid tempera ture of high pressure | For control of compressor frequency and fan speed. |
| Te | Saturation temperature of lo w pressure | For control of compressor frequency and fan speed |
| SCO | Sub-cool at heat exchanger Tc-TH5 | Variable for control |
| SCC | Sub-cool at SC coil exit Tc-TH7 | Variable for control |
| SHB | SC coil bypass exit supper heat | Variable for control |
| TH8-Te | | |
| Vdc | Bus voltage | Bus voltage |
| Idc | DC trunk line current | DC trunk line current |
| Iu | Phase-U current | Phase-U current of compressor |
| Iw | Phase-W current | Phase-W current of compressor |

# Operation Status Monitor Terminology
# (PUHY-P200/250/300/350/400/450/500/550/600/650/700YC-A)

| Mark | Official Name | Meaning |
|---|---|---|
| Ctrl Mode | | Control mode for outdoor unit |
| Ope Mode | | Operation mode for outdoor unit |
| Save | | Signal of capacity saving from system controller.<br>figure : % No signal : 100% |
| Power | Power source frequency | Power source frequency (Hz) |
| F | Temporary compressor frequency for calculation | Variable for control |
| F1 | Temporary compressor frequency of No.1 Comp for calculation | Variable for control<br>(only for P450 type or over) |
| F2 | Temporary compressor frequency of No.2 Comp for calculation | Variable for control<br>(only for P450 type or over) |
| AK | Heat exchanger capacity | Variable which determines the size of outdoor heat exchanger |
| FAN | Fan | Fan capacity of outdoor unit<br>(not proportional to rotational frequency) |
| DEMAND | ON/OFF demand | Input stop signal of compressor<br>( ON:effective OFF:ineffective ) |
| DEMAND2 | Intermediate demand | Signal of capacity saving<br>( ON:effective OFF:ineffective )<br>DEMAND=OFF, DEMAND2=OFF: 100%<br>DEMAND=OFF, DEMAND2=ON : 75%<br>DEMAND= ON, DEMAND2=ON : 50%<br>DEMAND= ON, DEMAND2=OFF: 25% |
| SNOW | Snow sensor | Input run signal of outdoor unit fan<br>(As compressor stopped)<br>( ON:effective OFF:ineffective ) |
| NIGHT | Night mode | Decreases frequency of outdoor unit fan<br>( ON:effective OFF:ineffective ) |
| Qj(C) | Total capacity code (cool) | Cooling indoor unit capacity |
| Qj(H) | Total capacity code (heat) | Heating indoor unit capacity |
| LEV1 | SC coil LEV opening | Adjusts refrigerant in the bypass pipe from liquid pipe in the outdoor unit in cooling mode. |
| 21S4a | 4-way valve | Switches the cooling/heating cycle<br>(0:Cooling, 1:Heating) |
| 21S4b | 4-way valve | Capacity control of heat exchanger (Gas side)<br>(only for P450 type or over) |
| SV1 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | The discharge pressure control |
| SV3 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | Protects compressor when No.2 compressor stops.<br>(only for P450 type or over) |
| SV5b | Solenoid valve output | Capacity control of heat exchanger (Liquid side).<br>(only for P450 type or over) |
| 52F | Contactor | ON/OFF switch of No.2 fan<br>(only for P450 type or over) |
| Rep | Repeater output | Prohibit(0)/Permit(1) the communication with centralized control system |
| TH11 | Thermistor<br>(Detects discharge temperature) | Detects discharge temperature for protection of No.1 compressor. |
| TH12 | Thermistor<br>(Detects discharge temperature) | Detects discharge temperature for protection of No.2 compressor.<br>(only for P450 type or over) |
| TH5 | Thermistor<br>(Detects the liquid pipe temperature) | Controls defrosting (start/ end) in heating mode. |
| TH6 | Thermistor<br>(Detects the ambient air temperature) | Detects the ambient temperature and then, controls the fan frequency and liquid level in the accumulator. |
| TH7(8) | Thermistor<br>(Controls SC) | Controls LEV1 based on the temperature differences between TH 6,7 and 8. |
| THHS1 | Thermistor<br>(Comp inverter radiator plate temperature) | Controls the Comp inverter cooling fan based on the THHS1 temperature. |
| THHS5 | Thermistor<br>(Fan inverter radiator plate temperature) | Controls the Fan inverter cooling fan based on the THHS5 temperature. |
| 63HS | High pressure sensor | Detects the discharge pressure and then protects unit against da |

| | | |
|---|---|---|
| | | mage by high pressure. |
| 63LS | Low pressure sensor | Detects the suction pressure and then, senses the refrigerant com position. |
| Tc | Average of saturation gas te mperature of high pressure and saturation liquid tempera ture of high pressure | For control of compressor frequency and fan speed. |
| Te | Saturation temperature of lo w pressure | For control of compressor frequency and fan speed |
| SCO | Sub-cool at heat exchanger Tc-TH5 | Variable for control |
| SCC | Sub-cool at SC coil exit Tc-TH7 | Variable for control |
| SHB | SC coil bypass exit supper heat | Variable for control |
| TH8-Te | | |
| Vdc | Bus voltage | Bus voltage |
| Idc | DC trunk line current | DC trunk line current |
| Iu | Phase-U current | Phase-U current of compressor |
| Iw | Phase-W current | Phase-W current of compressor |

# Operation Status Monitor Terminology (PUHY-P300/350/400YCSM-A)

| Mark | Official Name | Meaning |
|---|---|---|
| Ctrl Mode | | Control mode for outdoor unit |
| Ope Mode | | Operation mode for outdoor unit |
| Save | | Signal of capacity saving from system controller.<br>figure : % No signal : 100% |
| Power | Power source frequency | Power source frequency (Hz) |
| F | Temporary compressor frequency for calculation | Variable for control |
| AK | Heat exchanger capacity | Variable which determines the size of outdoor heat exchanger |
| DEMAND | ON/OFF demand | Input stop signal of compressor<br>( ON:effective, OFF:ineffective ) |
| DEMAND2 | Intermediate demand | Signal of capacity saving<br>( ON:effective, OFF:ineffective )<br>DEMAND=OFF, DEMAND2=OFF: 100%<br>DEMAND=OFF, DEMAND2=ON : 75%<br>DEMAND= ON, DEMAND2=ON : 50%<br>DEMAND= ON, DEMAND2=OFF: 25% |
| NIGHT | Night mode | Decreases frequency of outdoor unit fan<br>( ON:effective, OFF:ineffective ) |
| Qj(C) | Total capacity code (cool) | Cooling indoor unit capacity |
| Qj(H) | Total capacity code (heat) | Heating indoor unit capacity |
| LEV1 | SC coil LEV opening | Adjusts refrigerant in the bypass pipe from liquid pipe in the outdoor unit in cooling mode. |
| LEV2 | Cool down inverter LEV opening | Cool down inverter |
| 21S4a | 4-way valve | Switches the cooling/heating cycle<br>(0:Cooling, 1:Heating) |
| SV1 | Solenoid valve output | Bypass between discharge pipe and suction pipe |
| SV4a | Solenoid valve output | Heat exchanger capacity control |
| SV4b | Solenoid valve output | Heat exchanger capacity control |
| SV4c | Solenoid valve output | Heat exchanger capacity control |
| SV4d | Solenoid valve output | Heat exchanger bypass ON/OFF |
| SV5a | Solenoid valve output | Heat exchanger capacity control<br>(only for P400/500YSGM-A type) |
| SV5b | Solenoid valve output | Heat exchanger capacity control<br>(only for P400/500YSGM-A type) |
| SV7a | Solenoid valve output | Heat exchanger capacity control |
| SV7b | Solenoid valve output | Heat exchanger capacity control |
| SV7c | Solenoid valve output | Heat exchanger capacity control |
| UNIT_ON/OFF | ON/OFF-output | ON/OFF-monitor (TB8-1,2P) |
| Rep | Repeater output | Prohibit(0)/Permit(1) the communication with centralized control system |
| TH11 | Thermistor<br>(Detects discharge temperature) | Detects discharge temperature for protection of No.1 compressor. |
| TH5 | Thermistor<br>(Detects the liquid pipe temperature) | Controls defrosting (start/ end) in heating mode. |
| TH6 | Thermistor<br>(Detects the ambient air temperature) | Detects the ambient temperature and then, controls the fan frequency and liquid level in the accumulator. |
| TH7(8) | Thermistor<br>(Controls SC) | Controls LEV1 based on the temperature differences between TH 6,7 and 8. |
| TH9 | Thermistor<br>(Freeze prevention sensor) | Detects the water heat exchanger temperature and then, carries out freeze prevention control. |
| THINV | Thermistor<br>(Outlet of heat exchanger for cool down inverter) | Controls a capacity of heat exchanger for cool down inverter depends on a temperature of THINV. |
| THHS1 | Thermistor<br>(Comp inverter radiator plate temperature) | Controls the Comp inverter cooling fan based on the THHS1 temperature. |
| 63HS | High pressure sensor | Detects the discharge pressure and then protects unit against damage by high pressure. |
| 63LS | Low pressure sensor | Detects the suction pressure and then, protects unit against damage by low pressure. |
| Tc | Average of saturation gas temperature of high pressure and saturation liquid temperature of high pressure | For control of compressor frequency and fan speed. |
| Te | Saturation temperature of low pressure | For control of compressor frequency and fan speed. |

| | | |
|---|---|---|
| Vdc | Bus voltage | Bus voltage |
| Idc | DC trunk line current | DC trunk line current |
| Iu | Phase-U current | Phase-U current of compressor |
| Iw | Phase-W current | Phase-W current of compressor |

# Operation Status Monitor Terminology

## (PUHY-P450/500/550/600/650YMM(C)-A, PUHY-P400/650YSM(C)-A, PUHY-P450/500/550/600/650YCSM-A, PUHY-P450/600YCSS-A)

| Mark | Official Name | Meaning |
|---|---|---|
| Primality | | Indicates whether the unit is primary or secondary. |
| Ctrl Mode | | Control mode for outdoor unit |
| Ope Mode | | Operation mode for outdoor unit |
| Save | | Signal of capacity saving from system controller.<br>figure : % No signal : 100% |
| Power | Power source frequency | Power source frequency (Hz) |
| F | Temporary compressor frequency for calculation | Variable for control<br>(Total frequency : Foc+Fos) |
| Foc | Temporary compressor frequency for calculation | Variable for control<br>(Total frequency of OC unit) |
| Fos | Temporary compressor frequency for calculation | Variable for control<br>(Total frequency of OS unit) |
| F1 | Temporary compressor frequency of No.1 Comp for calculation | Variable for control |
| F2 | Temporary compressor frequency of No.2 Comp for calculation | Variable for control |
| AK | Heat exchanger capacity | Variable which determines the size of outdoor heat exchanger |
| FAN | Fan | Fan capacity of outdoor unit<br>(not proportional to rotational frequency) |
| DEMAND | ON/OFF demand | Input stop signal of compressor<br>( ON:effective, OFF:ineffective ) |
| DEMAND2 | Intermediate demand | Signal of capacity saving<br>( ON:effective, OFF:ineffective )<br>DEMAND=OFF, DEMAND2=OFF: 100%<br>DEMAND=OFF, DEMAND2=ON : 75%<br>DEMAND= ON, DEMAND2=ON : 50%<br>DEMAND= ON, DEMAND2=OFF: 25% |
| SNOW | Snow sensor | Input run signal of outdoor unit fan<br>(As compressor stopped)<br>( ON:effective, OFF:ineffective ) |
| NIGHT | Night mode | Decreases frequency of outdoor unit fan<br>( ON:effective, OFF:ineffective ) |
| Qj(C) | Total capacity code (cool) | Cooling indoor unit capacity |
| Qj(H) | Total capacity code (heat) | Heating indoor unit capacity |
| LEV1 | SC coil LEV opening | Adjusts refrigerant in the bypass pipe from liquid pipe in the outdoor unit in cooling mode. |
| 21S4a | 4-way valve | Switches the cooling/heating cycle<br>(0:Cooling, 1:Heating) |
| 21S4b | 4-way valve | Capacity control of heat exchanger (Gas side) |
| 21S4c | 4-way valve | Capacity control of heat exchanger (Gas side)<br>Only for PUHY-PYMM-A and PUHY-PYSM-A type |
| SV1 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | The discharge pressure control |
| SV3 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | Protects compressor when No.2 compressor stops. |
| SV5b | Solenoid valve output | Capacity control of heat exchanger (Liquid side). |
| SV5c | Solenoid valve output | Capacity control of heat exchanger (Liquid side).<br>Only for PUHY-PYMM-A and PUHY-PYSM-A type |
| SV5d | Solenoid valve output | Closes when outdoor unit stops. |
| 52F | Contactor | ON/OFF switch of No.2 fan |
| Rep | Repeater output | Prohibit(0)/Permit(1) the communication with centralized control system |
| TH11 | Thermistor<br>(Detects discharge temperature) | Detects discharge temperature for protection of No.1 compressor. |
| TH12 | Thermistor<br>(Detects discharge temperature) | Detects discharge temperature for protection of No.2 compressor. |
| TH5 | Thermistor<br>(Detects the liquid pipe temperature) | Controls defrosting (start/ end) in heating mode. |
| TH6 | Thermistor<br>(Detects the ambient air temperature) | Detects the ambient temperature and then, controls the fan frequency and liquid level in the accumulator. |

| | | |
|---|---|---|
| TH7(8) | Thermistor<br>(Controls SC) | Controls LEV1 based on the temperature differences between TH 6,7 and 8. |
| THHS1 | Thermistor<br>(Comp inverter radiator plate temperature) | Controls the Comp inverter cooling fan based on the THHS1 temp erature. |
| THHS5 | Thermistor<br>(Fan inverter radiator plate t emperature) | Controls the Fan inverter cooling fan based on the THHS5 temper ature. |
| 63HS | High pressure sensor | Detects the discharge pressure and then protects unit against da mage by high pressure. |
| 63LS | Low pressure sensor | Detects the suction pressure and then, senses the refrigerant com position. |
| Tc | Average of saturation gas te mperature of high pressure and saturation liquid tempera ture of high pressure | For control of compressor frequency and fan speed. |
| Te | Saturation temperature of lo w pressure | For control of compressor frequency and fan speed |
| SCO | Sub-cool at heat exchanger<br>Tc-TH5 | Variable for control |
| SCC | Sub-cool at SC coil exit<br>Tc-TH7 | Variable for control |
| SHB | SC coil bypass exit supper heat<br>TH8-Te | Variable for control |
| Vdc | Bus voltage | Bus voltage |
| Idc | DC trunk line current | DC trunk line current |
| Iu | Phase-U current | Phase-U current of compressor |
| Iw | Phase-W current | Phase-W current of compressor |

# Operation Status Monitor Terminology (PQHY-P200/250YEM-A)

| Mark | Official Name | Meaning |
|---|---|---|
| Control mode | | Control mode for outdoor unit |
| Operation mode | | Operation mode for outdoor unit |
| F | Compressor frequency | Compressor frequency |
| AK | Heat exchanger capacity | Variable which determine the size of outdoor heat exchanger |
| AL | Accumulator level | Liquid level in the accumulation<br>( 0: A little, 1: Medium, 2: Much(overcharge) ) |
| Qj(C) | Total capacity code (cool) | Cooling indoor unit capacity |
| Qj(H) | Total capacity code (heat) | Heating indoor unit capacity |
| SLEV | Oil return LEV opening | Adjusts the amount of liquid refrigerant and oil returned from the accumulator |
| LEV1 | SC coil LEV opening | Adjusts refrigerant in the bypass pipe from liquid pipe in the outd oor unit in cooling mode. |
| LEV2 | Cool down inverter LEV ope ning | Cool down inverter |
| 21S4 | 4-way valve | Switches the cooling/heating cycle<br>(0:Cooling, 1:Heating) |
| SV1 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | Returns oil from the oil separator |
| SV2 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | Controls capacity and restricts the high pressure (Frequency contr ol backup) |
| SV3 | Solenoid valve output<br>(Capacity control of heat exc hanger) | Capacity control of heat exchanger |
| SV4 | Solenoid valve output<br>(Capacity control of heat exc hanger) | Capacity control of heat exchanger |
| SV5 | Solenoid valve output<br>(Capacity control of heat exc hanger) | Capacity control of heat exchanger |
| SV6 | Solenoid valve output<br>(Capacity control of heat exc hanger) | Capacity control of heat exchanger |
| SV71 | Solenoid valve output<br>(Capacity control of heat exc hanger) | Capacity control of heat exchanger |
| SV72 | Solenoid valve output<br>(Capacity control of heat exc hanger) | Capacity control of heat exchanger |
| SV73 | Solenoid valve output<br>(Capacity control of heat exc hanger) | Capacity control of heat exchanger |
| UNIT ON/OFF | ON/OFF-output | ON/OFF-monitor (TB8-1,2P) |
| Repeater | Repeater output | Prohibit(0)/Permit(1) the Communication with centralized control sy stem |
| TH1 | Thermistor<br>(Detects discharge temperatu re) | Detects the discharge temperature for the high pressure protectio n. |
| TH2 | Thermistor<br>(Detects saturated evaporatio n temperature) | Detects saturated temperature and then, control the compressor fr equency and liquid level in the accumulator |
| TH5 | Thermistor<br>(Detects the liquid pipe temp erature) | Controls compressor frequency, controls defrosting and detects the liquid level in heating mode, detects the sub-cool at the heat exc hanger exit in combination with 63 HS data, and controls LEV1. |
| TH6 | Thermistor<br>(Detects the ambient air tem perature) | Detects the ambient temperature and then, controls the liquid level in the accumulator, and the opening LEV pulse for oil return. |
| TH7 | Thermistor<br>(Controls SC) | Controls LEV1 based on the temperature differences between TH 6,7 and 8. |
| TH8 | Thermistor<br>(Controls SC) | Controls LEV1 based on the temperature differences between TH 6,7 and 8. |
| TH9 | Thermistor<br>(Composition sensing) | Senses the refrigerant composition based on TH2, TH9 and 63LS. |
| TH10 | Thermistor<br>(Lower compressor shell) | Detects the oil temperature |
| THHS | Thermistor<br>(Inverter radiator plate tempe | Detects the inverter radiator plate temperature for protection of inv erter. |

| | | |
|---|---|---|
| | rature) | |
| THINV | Thermistor<br>(Outlet of heat exchanger for cool down inverter) | Controls a capacity of heat exchanger for cool down inverter depe nds on a temperature of THINV. |
| 63HS | High pressure sensor | Detects the discharge pressure and then protects unit against da mage by high pressure. |
| 63LS | Low pressure sensor | Detects the suction pressure and then, senses the refrigerant com position. |
| A-OC | Refrigerant composition(R32) | Real percentage of R32 |
| A-OC* | Refrigerant composition(R32) | Calculated percentage of R32 |
| Tc | Average of saturation gas te mperature of high pressure and saturation liquid tempera ture of high pressure | For control of compressor frequency and fan speed. |
| Te | Saturation temperature of lo w pressure | Same as TH2 |

# Operation Status Monitor Terminology (PQHY-P200/250YGM-A, PQHY-P400/500YSGM-A)

| Mark | Official Name | Meaning |
|---|---|---|
| Ctrl Mode | | Control mode for outdoor unit |
| Ope Mode | | Operation mode for outdoor unit |
| Save | | Signal of capacity saving from system controller.<br>figure : % No signal : 100% |
| Power | Power source frequency | Power source frequency (Hz) |
| F | Temporary compressor frequency for calculation | Variable for control |
| AK | Heat exchanger capacity | Variable which determines the size of outdoor heat exchanger |
| DEMAND | ON/OFF demand | Input stop signal of compressor<br>( ON:effective OFF:ineffective ) |
| DEMAND2 | Intermediate demand | Signal of capacity saving<br>( ON:effective OFF:ineffective )<br>DEMAND=OFF, DEMAND2=OFF: 100%<br>DEMAND=OFF, DEMAND2=ON : 75%<br>DEMAND= ON, DEMAND2=ON : 50%<br>DEMAND= ON, DEMAND2=OFF: 25% |
| NIGHT | Night mode | Decreases frequency of outdoor unit fan<br>( ON:effective OFF:ineffective ) |
| Qj(C) | Total capacity code (cool) | Cooling indoor unit capacity |
| Qj(H) | Total capacity code (heat) | Heating indoor unit capacity |
| LEV1 | SC coil LEV opening | Adjusts refrigerant in the bypass pipe from liquid pipe in the outdoor unit in cooling mode. |
| LEV2 | Cool down inverter LEV opening | Cool down inverter |
| 21S4a | 4-way valve | Switches the cooling/heating cycle<br>(0:Cooling, 1:Heating) |
| SV1 | Solenoid valve output | Bypass between discharge pipe and suction pipe |
| SV4a | Solenoid valve output | Heat exchanger capacity control |
| SV4b | Solenoid valve output | Heat exchanger capacity control |
| SV4c | Solenoid valve output | Heat exchanger capacity control |
| SV4d | Solenoid valve output | Heat exchanger bypass ON/OFF |
| SV5a | Solenoid valve output | Heat exchanger capacity control<br>(only for P400 type or over) |
| SV5b | Solenoid valve output | Heat exchanger capacity control<br>(only for P400 type or over) |
| SV7a | Solenoid valve output | Heat exchanger capacity control |
| SV7b | Solenoid valve output | Heat exchanger capacity control |
| SV7c | Solenoid valve output | Heat exchanger capacity control |
| UNIT_ON/OFF | ON/OFF-output | ON/OFF-monitor (TB8-1,2P) |
| Rep | Repeater output | Prohibit(0)/Permit(1) the communication with centralized control system |
| TH11 | Thermistor<br>(Detects discharge temperature) | Detects discharge temperature for protection of No.1 compressor. |
| TH5 | Thermistor<br>(Detects the liquid pipe temperature) | Controls defrosting (start/ end) in heating mode. |
| TH6 | Thermistor<br>(Detects the ambient air temperature) | Detects the ambient temperature and then, controls the fan frequency and liquid level in the accumulator. |
| TH7(8) | Thermistor<br>(Controls SC) | Controls LEV1 based on the temperature differences between TH 6,7 and 8. |
| TH9 | Thermistor<br>(Freeze prevention sensor) | Detects the water heat exchanger temperature and then, carries out freeze prevention control. |
| THINV | Thermistor<br>(Outlet of heat exchanger for cool down inverter) | Controls a capacity of heat exchanger for cool down inverter depends on a temperature of THINV. |
| THHS1 | Thermistor<br>(Comp inverter radiator plate temperature) | Controls the Comp inverter cooling fan based on the THHS1 temperature. |
| 63HS | High pressure sensor | Detects the discharge pressure and then protects unit against damage by high pressure. |
| 63LS | Low pressure sensor | Detects the suction pressure and then, protects unit against damage by low pressure. |
| Tc | Average of saturation gas temperature of high pressure and saturation liquid temperature of high pressure | For control of compressor frequency and fan speed. |
| Te | Saturation temperature of low pressure | For control of compressor frequency and fan speed. |

| | | |
|---|---|---|
| Vdc | Bus voltage | Bus voltage |
| Idc | DC trunk line current | DC trunk line current |
| Iu | Phase-U current | Phase-U current of compressor |
| Iw | Phase-W current | Phase-W current of compressor |

# Operation Status Monitor Terminology (PURY-200/250YM*)

| Mark | Official Name | Meaning |
|---|---|---|
| Control mode | | Control mode for outdoor unit |
| Running mode | | Running mode for outdoor unit |
| Capacity save | | Capacity save signal from host SC<br>Unit: % Non receiving status: 100% |
| F/ | Low frequency | Control variable |
| Hz | Actual frequency | Compressor operating frequency |
| AK | Heater exchange capacity | Control variable to determine the size of outdoor heat exchanger |
| AL | Accumulator level | Liquid level of accumulation<br>(0:Insufficient 1:Proper 2:Over filling) |
| FAN | Fan | Fan capacity of outdoor unit<br>(not in proportion to rotation frequency) |
| Demand | Connecting point demand | Compressor stop<br>(1: Input 0: No input) |
| SNOW | Snow sensor | Outdoor fan forced operation input<br>(only during compressor off)<br>(1: Input 0: No input) |
| Night | Night mode | Outdoor fan max. rotational frequency reducing input<br>(1: Input 0: No input) |
| Qj(C) | Total capacity code (Cool) | Cool only indoor unit capacity |
| Qj(H) | Total capacity code (Heat) | Heat pump indoor unit capacity |
| SLEV | Oil return LEV opening | Adjusts the amount of liquid refrigerant(oil) returned from the accu mulator |
| 21S4 | 4 way valve | 4 way valve |
| SV1 | Solenoid valve output<br>(discharge-suction bypass) | Returns oil from the oil separator<br>Restricts the rise in the discharge pressure |
| SV2 | Solenoid valve output<br>(Capacity control-full load) | Switches the compressor unload/full load |
| SV3 | Solenoid valve output<br>(Capacity control-unload) | Switches the compressor unload/full load |
| SV4 | Solenoid valve output<br>(Discharge-suction bypass) | Controls capacity and restricts the high pressure (Frequency contr ol backup) |
| SV5 | Solenoid valve output<br>(liquid bypass) | Restricts the rise in the discharge temperature and bypass circuit at defrosting |
| SV6A | Solenoid valve output<br>(Capacity control of heat exc hanger) | Capacity control of heat exchanger |
| SV6B | Solenoid valve output<br>(Capacity control of heat exc hanger) | Capacity control of heat exchanger |
| SV6C | Solenoid valve output<br>(Capacity control of heat exc hanger) | Capacity control of heat exchanger |
| SV6D | Solenoid valve output<br>(Capacity control of heat exc hanger) | Capacity control of heat exchanger |
| SC6E | Solenoid valve output<br>(Capacity control of heat exc hanger) | Capacity control of heat exchanger |
| SV7 | Solenoid valve output<br>(Heat exchanger bypass) | Bypass control of heat exchanger |
| Repeater | Repeater | Permit(1)/Prohibit(0) the communication with central control system |
| TH1 | Thermistor<br>(Detects discharge temperatu re) | Detects the discharge temperature for the high pressure protection |
| TH2 | Thermistor<br>(Detects saturated evaporatio n temperature) | Detects the low pressure saturation temperature then, detects liqui d level in the accumulator and control the frequency |
| TH3 | Thermistor<br>(Detects the lower liquid leve l in the accumulator) | Detects the liquid level in the accumulator |
| TH4 | Thermistor<br>(Detects the upper liquid lev el in the accumulator) | Detects the liquid level in the accumulator |
| TH5 | Thermistor<br>(Detects the pipe temperatur e) | Frequency control |
| TH6 | Thermistor<br>(Detects the outside air temp | Detects the temperature outside, controls the fan and the liquid le vel heater, set the opening of oil return LEV. |

| | | |
|---|---|---|
| | erature) | |
| 63HS | High pressure sensor | Detects the high pressure for high pressure protection |
| THHS | Thermistor<br>(Inverter radiator plate tempe rature) | Controls the inverter cooling fan based on the THHS temperature |
| THBOX | Thermistor | Determine the TRIAC failure at outdoor fan lock |

# Operation Status Monitor Terminology (PURY-200/250YMF-B)

| Mark | Official Name | Meaning |
|---|---|---|
| Control mode | | Control mode for outdoor unit |
| Operation mode | | Operation mode for outdoor unit |
| F | Compressor frequency | Compressor frequency |
| AK | Heat exchanger capacity | Variable which determine the size of outdoor heat exchanger |
| AL | Accumulator level | Liquid level in the accumulation<br>( 0: A little, 1: Medium, 2: Much(overcharge) ) |
| FAN | Fan | Fan capacity of outdoor unit<br>(not proportional to rotational frequency) |
| Qj(C) | Total capacity code (Cool) | Cooling indoor unit capacity |
| Qj(H) | Total capacity code (Heat) | Heating indoor unit capacity |
| SLEV | Oil return LEV opening | Adjusts the amount of liquid refrigerant and oil returned from the accumulator |
| 21S4 | 4 way valve | Switches the cooling/heating cycle<br>(0:Cooling, 1:Heating) |
| SV1 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | Returns oil from the oil separator |
| SV2 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | Controls capacity and restricts the high pressure (Frequency control backup) |
| SV3 | Solenoid valve output<br>(Capacity control of heat exchanger) | Capacity control of heat exchanger. |
| SV4 | Solenoid valve output<br>(Capacity control of heat exchanger) | Capacity control of heat exchanger. |
| SV5 | Solenoid valve output<br>(Capacity control of heat exchanger) | Capacity control of heat exchanger. |
| SV6 | Solenoid valve output<br>(Capacity control of heat exchanger) | Capacity control of heat exchanger. |
| Repeater | Repeater output | Prohibit(0)/Permit(1) the Communication with centralized control system |
| TH1 | Thermistor<br>(Detects discharge temperature) | Detects the discharge temperature for the high pressure protection |
| TH3 | Thermistor<br>(Detects lower liquid level in the accumulator) | Detects the liquid level in the accumulator |
| TH4 | Thermistor<br>(Detects upper liquid level in the accumulator) | Detects the liquid level in the accumulator |
| TH5 | Thermistor<br>(Detects the liquid pipe temperature) | For defrost control |
| TH6 | Thermistor<br>(Detects the ambient air temperature) | Detects the ambient temperature and then, controls the fan frequency liquid level in the accumulator, and the opening LEV pulse for oil return |
| TH7 | Thermistor<br>(Detects the liquid pipe temperature) | For defrost control |
| THHS | Thermistor<br>(Inverter radiator plate temperature) | Controls the inverter cooling fan based on the THHS temperature |
| 63HS | High pressure sensor | Detects the discharge pressure and then protects unit against damage by high pressure |
| 63LS | Low pressure sensor | Detects the suction pressure and then, controls the frequency. |
| Tc | Average of saturation gas temperature of high pressure and saturation liquid temperature of high pressure | For control of compressor frequency and fan speed |
| Te | Saturation temperature of low pressure | Same as TH2 |

# Operation Status Monitor Terminology (PURY-P200/250YMF-B)

| Mark | Official Name | Meaning |
|---|---|---|
| Control mode | | Control mode for outdoor unit |
| Operation mode | | Operation mode for outdoor unit |
| F | Compressor frequency | Compressor frequency |
| AK | Heat exchanger capacity | Variable which determine the size of outdoor heat exchanger |
| AL | Accumulator level | Liquid level in the accumulation<br>( 0: A little, 1: Medium, 2: Much(overcharge) ) |
| FAN | Fan | Fan capacity of outdoor unit<br>(not proportional to rotational frequency) |
| Qj(C) | Total capacity code (Cool) | Cooling indoor unit capacity |
| Qj(H) | Total capacity code (Heat) | Heating indoor unit capacity |
| SLEV | Oil return LEV opening | Adjusts the amount of liquid refrigerant and oil returned from the accumulator |
| 21S4 | 4 way valve | Switches the cooling/heating cycle<br>(0:Cooling, 1:Heating) |
| SV1 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | Returns oil from the oil separator |
| SV2 | Solenoid valve output | Controls capacity and restricts the high pressure (Frequency control backup) |
| | (Bypass between discharge pipe and suction pipe) | |
| SV3 | Solenoid valve output<br>(Capacity control of heat exchanger) | Capacity control of heat exchanger. |
| SV4 | Solenoid valve output<br>(Capacity control of heat exchanger) | Capacity control of heat exchanger. |
| SV5 | Solenoid valve output<br>(Capacity control of heat exchanger) | Capacity control of heat exchanger. |
| SV6 | Solenoid valve output<br>(Capacity control of heat exchanger) | Capacity control of heat exchanger. |
| Repeater | Repeater output | Prohibit(0)/Permit(1) the Communication with centralized control system |
| TH1 | Thermistor<br>(Detects discharge temperature) | Detects the discharge temperature for the high pressure protection |
| TH2 | Thermistor<br>(Detects saturated evaporation temperature) | Detects saturated temperature and then, control the compressor frequency and liquid level in the accumulator. |
| TH3 | Thermistor<br>(Detects lower liquid level in the accumulator) | Detects the liquid level in the accumulator |
| TH4 | Thermistor<br>(Detects upper liquid level in the accumulator) | Detects the liquid level in the accumulator |
| TH5 | Thermistor<br>(Detects the liquid pipe temperature) | For defrost control |
| TH6 | Thermistor<br>(Detects the ambient air temperature) | Detects the ambient temperature and then, controls the fan frequency liquid level in the accumulator, and the opening LEV pulse for oil return |
| TH7 | Thermistor<br>(Detects the liquid pipe temperature) | For defrost control |
| TH9 | Thermistor<br>(Composition sensing) | Senses the refrigerant composition based on TH2, TH9 and 63LS. |
| TH10 | Thermistor<br>(Lower compressor shell) | Detects the oil temperature |
| THHS | Thermistor<br>(Inverter radiator plate temperature) | Controls the inverter cooling fan based on the THHS temperature |
| 63HS | High pressure sensor | Detects the discharge pressure and then protects unit against damage by high pressure |
| 63LS | Low pressure sensor | Detects the suction pressure and then, senses the refrigerant composition. |
| A-OC | Refrigerant composition(R32) | Real percentage of R32 |

| A-OC* | Refrigerant composition(R32) | Calculated percentage of R32 |
|---|---|---|
| Tc | Average of saturation gas temperature of high pressure and saturation liquid temperature of high pressure | For control of compressor frequency and fan speed |
| Te | Saturation temperature of low pressure | Same as TH2 |

# Operation Status Monitor Terminology (PURY-200/250YMF-C)

| Mark | Official Name | Meaning |
|---|---|---|
| Control mode | | Control mode for outdoor unit |
| Operation mode | | Operation mode for outdoor unit |
| Save | | Signal of capacity saving from system controller.<br>figure : % No signal : 100% |
| DEMAND | ON/OFF demand | Input stop signal of compressor<br>(1:effective 0:ineffective) |
| NIGHT | Night mode | Decreases frequency of outdoor unit fan<br>(1:effective 0:ineffective) |
| F | Compressor frequency | Compressor frequency |
| AK | Heat exchanger capacity | Variable which determine the size of outdoor heat exchanger |
| AL | Accumulator level | Liquid level in the accumulation<br>( 0: A little, 1: Medium, 2: Much(overcharge) ) |
| FAN | Fan | Fan capacity of outdoor unit<br>(not proportional to rotational frequency) |
| Qj(C) | Total capacity code (cool) | Cooling indoor unit capacity |
| Qj(H) | Total capacity code (heat) | Heating indoor unit capacity |
| SLEV | Oil return LEV opening | Adjusts the amount of liquid refrigerant and oil returned from the accumulator |
| 21S4 | 4-way valve | Switches the cooling/heating cycle<br>(0:Cooling, 1:Heating) |
| SV1 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | Returns oil from the oil separator |
| SV2 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | Controls capacity and restricts the high pressure (Frequency control backup) |
| SV3 | Solenoid valve output<br>(Capacity control of heat exchanger) | Capacity control of heat exchanger |
| SV4 | Solenoid valve output<br>(Capacity control of heat exchanger) | Capacity control of heat exchanger |
| SV5 | Solenoid valve output<br>(Capacity control of heat exchanger) | Capacity control of heat exchanger |
| SV6 | Solenoid valve output<br>(Capacity control of heat exchanger) | Capacity control of heat exchanger |
| Repeater | Repeater output | Prohibit(0)/Permit(1) the Communication with centralized control system |
| TH1 | Thermistor<br>(Detects discharge temperature) | Detects the discharge temperature for the high pressure protection. |
| TH5 | Thermistor<br>(Detects the liquid pipe temperature) | For defrost control |
| TH6 | Thermistor<br>(Detects the ambient air temperature) | Detects the ambient temperature and then, controls the fan frequency liquid level in the accumulator, and the opening LEV pulse for oil return. |
| TH7 | Thermistor<br>(Detects the liquid pipe temperature) | For defrost control |
| THHS | Thermistor<br>(Inverter radiator plate temperature) | Controls the inverter cooling fan based on the THHS temperature. |
| 63HS | High pressure sensor | Detects the discharge pressure and then protects unit against damage by high pressure. |
| 63LS | Low pressure sensor | Detects the suction pressure and then, senses the refrigerant composition. |
| Tc | Average of saturation gas temp temperature of high pressure and saturation liquid temperature of high pressure | For control of compressor frequency and fan speed |
| Te | Saturation temperature of low pressure | For control of compressor frequency and fan speed |

# Operation Status Monitor Terminology (PURY-P200/250YMF-C)

| Mark | Official Name | Meaning |
|---|---|---|
| Control mode | | Control mode for outdoor unit |
| Operation mode | | Operation mode for outdoor unit |
| Save | | Signal of capacity saving from system controller.<br>figure : % No signal : 100% |
| F | Temporary compressor frequency for calculation | Variable for control |
| F1 | Temporary compressor frequency of NO.1 COMP for calculation | Variable for control |
| F2 | Temporary compressor frequency of NO.2 COMP | Variable for control for calculation |
| AK | Heat exchanger capacity | Variable which determine the size of outdoor heat exchanger |
| AL | Accumulator level | Liquid level in the accumulation<br>( 0: A little, 1: Medium, 2: Much(overcharge) ) |
| FAN1 | Fan | Fan capacity of outdoor unit(Fan on a variable capacity unit)<br>(not proportional to rotational frequency) |
| DEMAND | ON/OFF demand | Input stop signal of compressor<br>(1:effective 0:ineffective) |
| SNOW | Snow sensor | Input run signal of outdoor unit fan (As compressor stopped)<br>(1:effective 0:ineffective) |
| NIGHT | Night mode | Decreases frequency of outdoor unit fan<br>(1:effective 0:ineffective) |
| ∑Qj(C) | Total capacity code (cool) | Cooling indoor unit capacity |
| ∑Qj(H) | Total capacity code (heat) | Heating indoor unit capacity |
| SLEV | Oil return LEV opening | Adjusts the amount of liquid refrigerant and oil returned from the accumulator |
| 21S4a/b | 4-way valve | Switches the cooling/heating cycle<br>(0:Cooling, 1:Heating) |
| SV1 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | Returns oil from the oil separator |
| SV22 | Solenoid valve output<br>(Capacity control full load) | Switches the capacity control valve inside the compressor (only P500 type) |
| SV32 | Solenoid valve output<br>(Capacity control unload) | Switches the capacity control valve inside the compressor (only P500 type) |
| SV4a | Solenoid valve output | Controls capacity and restricts the high pressure (Frequency control backup)<br>(Bypass between discharge pipe and suction pipe) |
| SV6a | Solenoid valve output | Hot gas bypass |
| SV3 | Solenoid valve output | Capacity control of heat exchanger |
| SV4 | Solenoid valve output | Capacity control of heat exchanger |
| SV5 | Solenoid valve output | Capacity control of heat exchanger |
| SV6 | Solenoid valve output | Capacity control of heat exchanger |
| SV7/8 | Solenoid valve output | Capacity control of heat exchanger |
| 52F | Contactor | ON/OFF switch of NO.2 fan |
| Repeater | Repeater output | Prohibit(0)/Permit(1) the Communication with centralized control system |
| Power | | Power source frequency |
| TH11 | Thermistor<br>(Detects discharge temperature) | Detects the discharge temperature for protection of No.1 compressor. |
| TH12 | Thermistor<br>(Detects discharge temperature) | Detects the discharge temperature for protection of No.2 compressor. |
| TH2 | Thermistor<br>(Detects saturated evaporation temperature) | Detects saturated temperature and then, control the compressor frequency and liquid level in the accumulator |
| TH3 | Thermistor | Detects the liquid level in the accumulator |
| | (Detects lower liquid level in the accumulator) | |
| TH4 | Thermistor<br>(Detects upper liquid level in the accumulator) | Detects the liquid level in the accumulator |
| TH5 | Thermistor<br>(Detects the pipe temperature) | For defrost control |
| TH6 | Thermistor<br>(Detects the ambient air temperature) | Detects the ambient temperature and then, controls the fan frequency, liquid level in the accumulator, and the opening LEV pulse for oil return. |

| | | |
|---|---|---|
| TH7 | Thermistor<br>(Detects pipe temperature) | For defrost control |
| TH9 | Thermistor<br>(Composition sensing) | Senses the refrigerant composition based on TH2, TH9 and 63LS |
| TH10 | Thermistor<br>(Lower compressor shell) | Detects the oil temperature |
| THHS | Thermistor<br>(Inverter radiator plate tempe rature) | Controls the inverter cooling fan based on the THHS temperature. |
| 63HS | High pressure sensor | Detects the discharge pressure and then protects unit against da mage by high pressure. |
| 63LS | Low pressure sensor | Detects the suction pressure and then, senses the refrigerant com position. |
| A-OC | Refrigerant composition(R32) | Real percentage of R32 |
| A-OC* | Refrigerant composition(R32) | Calculated percentage of R32 |
| Tc | Average of saturation gas te mperature of high pressure and saturation liquid tempera ture of high pressure | For control of compressor frequency and fan speed. |
| Te | Saturation temperature of lo w pressure | same as TH2. |

# Operation Status Monitor Terminology (PURY-P400/500YMF-C)

| Mark | Official Name | Meaning |
|---|---|---|
| Control mode | | Control mode for outdoor unit |
| Operation mode | | Operation mode for outdoor unit |
| Save | | Signal of capacity saving from system controller.<br>figure : % No signal : 100% |
| F | Temporary compressor frequency for calculation | Variable for control |
| F1 | Temporary compressor frequency of NO.1 COMP for calculation | Variable for control |
| F2 | Temporary compressor frequency of NO.2 COMP | Variable for control for calculation |
| AK | Heat exchanger capacity | Variable which determine the size of outdoor heat exchanger |
| AL | Accumulator level | Liquid level in the accumulation<br>( 0: A little, 1: Medium, 2: Much(overcharge) ) |
| FAN1 | Fan | Fan capacity of outdoor unit(Fan on a variable capacity unit)<br>(not proportional to rotational frequency) |
| DEMAND | ON/OFF demand | Input stop signal of compressor<br>(1:effective 0:ineffective) |
| SNOW | Snow sensor | Input run signal of outdoor unit fan (As compressor stopped)<br>(1:effective 0:ineffective) |
| NIGHT | Night mode | Decreases frequency of outdoor unit fan<br>(1:effective 0:ineffective) |
| ∑Qj(C) | Total capacity code (cool) | Cooling indoor unit capacity |
| ∑Qj(H) | Total capacity code (heat) | Heating indoor unit capacity |
| SLEV | Oil return LEV opening | Adjusts the amount of liquid refrigerant and oil returned from the accumulator |
| 21S4a/b | 4-way valve | Switches the cooling/heating cycle<br>(0:Cooling, 1:Heating) |
| SV1 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | Returns oil from the oil separator |
| SV22 | Solenoid valve output<br>(Capacity control full load) | Switches the capacity control valve inside the compressor (only P500 type) |
| SV32 | Solenoid valve output<br>(Capacity control unload) | Switches the capacity control valve inside the compressor (only P500 type) |
| SV4a | Solenoid valve output | Controls capacity and restricts the high pressure (Frequency control backup)<br>(Bypass between discharge pipe and suction pipe) |
| SV6a | Solenoid valve output | Hot gas bypass |
| SV3 | Solenoid valve output | Capacity control of heat exchanger |
| SV4 | Solenoid valve output | Capacity control of heat exchanger |
| SV5 | Solenoid valve output | Capacity control of heat exchanger |
| SV6 | Solenoid valve output | Capacity control of heat exchanger |
| SV7/8 | Solenoid valve output | Capacity control of heat exchanger |
| 52F | Contactor | ON/OFF switch of NO.2 fan |
| Repeater | Repeater output | Prohibit(0)/Permit(1) the Communication with centralized control system |
| Power | | Power source frequency |
| TH11 | Thermistor<br>(Detects discharge temperature) | Detects the discharge temperature for protection of No.1 compressor. |
| TH12 | Thermistor<br>(Detects discharge temperature) | Detects the discharge temperature for protection of No.2 compressor. |
| TH2 | Thermistor<br>(Detects saturated evaporation temperature) | Detects saturated temperature and then, control the compressor frequency and liquid level in the accumulator |
| TH3 | Thermistor<br>(Detects lower liquid level in the accumulator) | Detects the liquid level in the accumulator |
| TH4 | Thermistor<br>(Detects upper liquid level in the accumulator) | Detects the liquid level in the accumulator |
| TH5 | Thermistor<br>(Detects the pipe temperature) | For defrost control |
| TH6 | Thermistor<br>(Detects the ambient air temperature) | Detects the ambient temperature and then, controls the fan frequency, liquid level in the accumulator, and the opening LEV pulse for oil return. |

| | | |
|---|---|---|
| TH7 | Thermistor<br>(Detects pipe temperature) | For defrost control |
| TH9 | Thermistor<br>(Composition sensing) | Senses the refrigerant composition based on TH2, TH9 and 63LS |
| TH10 | Thermistor<br>(Lower compressor shell) | Detects the oil temperature |
| THHS | Thermistor<br>(Inverter radiator plate tempe rature) | Controls the inverter cooling fan based on the THHS temperature. |
| 63HS | High pressure sensor | Detects the discharge pressure and then protects unit against da mage by high pressure. |
| 63LS | Low pressure sensor | Detects the suction pressure and then, senses the refrigerant com position. |
| A-OC | Refrigerant composition(R32) | Real percentage of R32 |
| A-OC* | Refrigerant composition(R32) | Calculated percentage of R32 |
| Tc | Average of saturation gas te mperature of high pressure and saturation liquid tempera ture of high pressure :For co ntrol of compressor frequenc y and fan speed. | |
| Te | Saturation temperature of lo w pressure :same as TH2. | |

# Operation Status Monitor Terminology (PURY-200/250YEM-A)

| Mark | Official Name | Meaning |
|---|---|---|
| Ctrl Mode | | Control mode for outdoor unit |
| Ope Mode | | Operation mode for outdoor unit |
| Save | | Signal of capacity saving from system controller.<br>figure : % No signal : 100% |
| DEMAND | ON/OFF demand | Input stop signal of compressor<br>( ON : effective OFF : ineffective ) |
| DEMAND2 | | Signal of capacity saving<br>( ON : effective OFF : ineffective ) |
| SNOW | Snow sensor | Input run signal of outdoor unit fan<br>(As compressor stopped)<br>( ON : effective OFF : ineffective ) |
| NIGHT | Night mode | Decreases frequency of outdoor unit fan<br>( ON : effective OFF : ineffective ) |
| F | Compressor frequency | Compressor frequency |
| AK | Heat exchanger capacity | Variable which determine the size of outdoor heat exchanger |
| AL | Accumulator level | Liquid level in the accumulation<br>( 0: A little, 1: Medium, 2: Much(overcharge) ) |
| FAN | Fan | Fan capacity of outdoor unit<br>(not proportional to rotational frequency) |
| Qj(C) | Total capacity code (cool) | Cooling indoor unit capacity |
| Qj(H) | Total capacity code (heat) | Heating indoor unit capacity |
| 21S4 | 4-way valve | Switches the cooling/heating cycle<br>(0:Cooling, 1:Heating) |
| SV1 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | Returns oil from the oil separator |
| SV3 | Solenoid valve output<br>(Capacity control of heat exc hanger) | Capacity control of heat exchanger |
| SV4 | Solenoid valve output<br>(Capacity control of heat exc hanger) | Capacity control of heat exchanger |
| SV5 | Solenoid valve output<br>(Capacity control of heat exc hanger) | Capacity control of heat exchanger |
| SV6 | Solenoid valve output<br>(Capacity control of heat exc hanger) | Capacity control of heat exchanger |
| Repeater | Repeater output | Prohibit(0)/Permit(1) the Communication with centralized control sy stem |
| TH1 | Thermistor<br>(Detects discharge temperatu re) | Detects the discharge temperature for the high pressure protectio n. |
| TH5 | Thermistor<br>(Detects the liquid pipe temp erature) | For defrost control |
| TH6 | Thermistor<br>(Detects the ambient air tem perature) | Detects the ambient temperature and then, controls the fan freque ncy and liquid level in the accumulator. |
| TH7 | Thermistor<br>(Detects the liquid pipe temp erature) | For defrost control |
| THHS | Thermistor<br>(Inverter radiator plate tempe rature) | Controls the inverter cooling fan based on the THHS temperature. |
| 63HS | High pressure sensor | Detects the discharge pressure and then protects unit against da mage by high pressure. |
| 63LS | Low pressure sensor | Detects the suction pressure and then, senses the refrigerant com position. |
| Tc | Average of saturation gas te mperature of high pressure and saturation liquid tempera ture of high-pressure | |
| Te | Saturation temperature of lo w pressure | |
| Vdc | Bus voltage | Bus voltage |
| Idc | DC trunk line current | DC trunk line current |
| Iu | Phase-U current | Phase-U current of compressor |
| Iw | Phase-W current | Phase-W current of compressor |

# Operation Status Monitor Terminology (PURY-P200/250YEM-A)

| Mark | Official Name | Meaning |
|---|---|---|
| Ctrl Mode | | Control mode for outdoor unit |
| Ope Mode | | Operation mode for outdoor unit |
| Save | | Signal of capacity saving from system controller.<br>figure : % No signal : 100% |
| DEMAND | ON/OFF demand | Input stop signal of compressor<br>( ON : effective OFF : ineffective ) |
| DEMAND2 | | Signal of capacity saving<br>( ON : effective OFF : ineffective ) |
| SNOW | Snow sensor | Input run signal of outdoor unit fan<br>(As compressor stopped)<br>( ON : effective OFF : ineffective ) |
| NIGHT | Night mode | Decreases frequency of outdoor unit fan<br>( ON : effective OFF : ineffective ) |
| F | Compressor frequency | Compressor frequency |
| AK | Heat exchanger capacity | Variable which determine the size of outdoor heat exchanger |
| AL | Accumulator level | Liquid level in the accumulation<br>( 0: A little, 1: Medium, 2: Much(overcharge) ) |
| FAN | Fan | Fan capacity of outdoor unit<br>(not proportional to rotational frequency) |
| Qj(C) | Total capacity code (cool) | Cooling indoor unit capacity |
| Qj(H) | Total capacity code (heat) | Heating indoor unit capacity |
| 21S4 | 4-way valve | Switches the cooling/heating cycle<br>(0:Cooling, 1:Heating) |
| SV1 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | Returns oil from the oil separator |
| SV3 | Solenoid valve output<br>(Capacity control of heat exc hanger) | Capacity control of heat exchanger |
| SV4 | Solenoid valve output<br>(Capacity control of heat exc hanger) | Capacity control of heat exchanger |
| SV5 | Solenoid valve output<br>(Capacity control of heat exc hanger) | Capacity control of heat exchanger |
| SV6 | Solenoid valve output<br>(Capacity control of heat exc hanger) | Capacity control of heat exchanger |
| Repeater | Repeater output | Prohibit(0)/Permit(1) the Communication with centralized control sy stem |
| TH1 | Thermistor<br>(Detects discharge temperatu re) | Detects the discharge temperature for the high pressure protectio n. |
| TH2 | Thermistor<br>(Detects saturated evaporatio n temperature) | Detects saturated temperature and then, control the compressor fr equency and liquid level in the accumulator |
| TH5 | Thermistor<br>(Detects the liquid pipe temp erature) | For defrost control |
| TH6 | Thermistor<br>(Detects the ambient air tem perature) | Detects the ambient temperature and then, controls the fan freque ncy and liquid level in the accumulator. |
| TH7 | Thermistor<br>(Detects the liquid pipe temp erature) | For defrost control |
| THHS | Thermistor<br>(Inverter radiator plate tempe rature) | Controls the inverter cooling fan based on the THHS temperature. |
| 63HS | High pressure sensor | Detects the discharge pressure and then protects unit against da mage by high pressure. |
| 63LS | Low pressure sensor | Detects the suction pressure and then, senses the refrigerant com position. |
| A-OC | Refrigerant composition(R32) | Real percentage of R32 |
| A-OC* | Refrigerant composition(R32) | Calculated percentage of R32 |
| Tc | Average of saturation gas te mperature of high pressure and saturation liquid tempera | |

| | | |
|---|---|---|
| | ture of high-pressure | |
| Te | Saturation temperature of low pressure | |
| Vdc | Bus voltage | Bus voltage |
| Idc | DC trunk line current | DC trunk line current |
| Iu | Phase-U current | Phase-U current of compressor |
| Iw | Phase-W current | Phase-W current of compressor |

# Operation Status Monitor Terminology (PURY-80/100TMU)

| Mark | Official Name | Meaning |
|---|---|---|
| Control mode | | Control mode for outdoor unit |
| Operation mode | | Operation mode for outdoor unit |
| Save | | Signal of capacity saving from system controller.<br>Figure : % No signal : 100% |
| DEMAND | ON/OFF demand | Input stop signal of compressor<br>(1:effective 0:ineffective) |
| NIGHT | Night mode | Decreases frequency of outdoor unit fan<br>(1:effective 0:ineffective) |
| SNOW | Snow sensor | Input run signal of outdoor unit fan(As compressor stopped)<br>(1:effective 0:ineffective) |
| F | Compressor frequency | Compressor frequency |
| AK | Heat exchanger capacity | Variable which determine the size of outdoor heat exchanger |
| AL | Accumulator level | Liquid level in the accumulation<br>( 0: A little, 1: Medium, 2: Much(overcharge) ) |
| FAN | Fan | Fan capacity of outdoor unit<br>(not proportional to rotational frequency) |
| Qj(C) | Total capacity code (cool) | Cooling indoor unit capacity |
| Qj(H) | Total capacity code (heat) | Heating indoor unit capacity |
| SLEV | Oil return LEV opening | Adjusts the amount of liquid refrigerant and oil returned from the accumulator |
| 21S4 | 4-way valve | Switches the cooling/heating cycle<br>(0:Cooling, 1:Heating) |
| SV1 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | Returns oil from the oil separator |
| SV2 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | Controls capacity and restricts the high pressure (Frequency control backup) |
| SV3 | Solenoid valve output<br>(Capacity control of heat exchanger) | Capacity control of heat exchanger |
| SV4 | Solenoid valve output<br>(Capacity control of heat exchanger) | Capacity control of heat exchanger |
| SV5 | Solenoid valve output<br>(Capacity control of heat exchanger) | Capacity control of heat exchanger |
| SV6 | Solenoid valve output<br>(Capacity control of heat exchanger) | Capacity control of heat exchanger |
| Repeater | Repeater output | Prohibit(0)/Permit(1) the Communication with centralized control system |
| TH1 | Thermistor<br>(Detects discharge temperature) | Detects the discharge temperature for the high pressure protection. |
| TH5 | Thermistor<br>(Detects the liquid pipe temperature) | For defrost control |
| TH6 | Thermistor<br>(Detects the ambient air temperature) | Detects the ambient temperature and then, controls the fan frequency liquid level in the accumulator, and the opening LEV pulse for oil return. |
| TH7 | Thermistor<br>(Detects the liquid pipe temperature) | For defrost control |
| THHS | Thermistor<br>(Inverter radiator plate temperature) | Controls the inverter cooling fan based on the THHS temperature. |
| 63HS | High pressure sensor | Detects the discharge pressure and then protects unit against damage by high pressure. |
| 63LS | Low pressure sensor | Detects the suction pressure and then, senses the refrigerant composition. |
| Tc | Average of saturation gas temperature of high pressure and saturation liquid temperature of high pressure | For control of compressor frequency and fan speed. |
| Te | Saturation temperature of low pressure | For control of compressor frequency and fan speed. |

# Operation Status Monitor Terminology (PURY-P200/250/300/350/400YGM-A,PURY-P450/500/550/600/650YGM-A)

| Mark | Official Name | Meaning |
|---|---|---|
| Ctrl Mode | | Control mode for outdoor unit |
| Ope Mode | | Operation mode for outdoor unit |
| Save | | Signal of capacity saving from system controller.<br>figure : % No signal : 100% |
| Power | Power source frequency | Power source frequency (Hz) |
| F | Temporary compressor frequency for calculation | Variable for control |
| F1 | Temporary compressor frequency of No.1 Comp for calculation | Variable for control<br>(only for P450 type or over) |
| F2 | Temporary compressor frequency of No.2 Comp for calculation | Variable for control<br>(only for P450 type or over) |
| AK | Heat exchanger capacity | Variable which determines the size of outdoor heat exchanger |
| FAN | Fan | Fan capacity of outdoor unit<br>(not proportional to rotational frequency) |
| DEMAND | ON/OFF demand | Input stop signal of compressor<br>( ON:effective, OFF:ineffective ) |
| DEMAND2 | Intermediate demand | Signal of capacity saving<br>( ON:effective, OFF:ineffective )<br>DEMAND=OFF, DEMAND2=OFF: 100%<br>DEMAND=OFF, DEMAND2=ON : 75%<br>DEMAND= ON, DEMAND2=ON : 50%<br>DEMAND= ON, DEMAND2=OFF: 25% |
| SNOW | Snow sensor | Input run signal of outdoor unit fan<br>(As compressor stopped)<br>( ON:effective, OFF:ineffective ) |
| NIGHT | Night mode | Decreases frequency of outdoor unit fan<br>( ON:effective, OFF:ineffective ) |
| Qj(C) | Total capacity code (cool) | Cooling indoor unit capacity |
| Qj(H) | Total capacity code (heat) | Heating indoor unit capacity |
| 21S4a | 4-way valve | Switches the cooling/heating cycle<br>(0:Cooling, 1:Heating) |
| 21S4b | 4-way valve | Heat exchanger capacity control<br>(only for P450 type or over) |
| SV1 | Solenoid valve output | Bypass between discharge pipe and suction pipe |
| SV2 | Solenoid valve output | Bypass between discharge pipe and suction pipe |
| SV3 | Solenoid valve output | Bypass between discharge pipe and suction pipe<br>(only for P450 type or over) |
| SV4a | Solenoid valve output | Heat exchanger capacity control |
| SV4b | Solenoid valve output | Heat exchanger capacity control |
| SV4c | Solenoid valve output | Heat exchanger capacity control |
| SV4d | Solenoid valve output | Heat exchanger bypass ON/OFF |
| SV5a | Solenoid valve output | Heat exchanger capacity control<br>(only for P450 type or over) |
| SV5b | Solenoid valve output | Heat exchanger capacity control<br>(only for P450 type or over) |
| 52F | Contactor | ON/OFF switch of No.2 fan<br>(only for P450 type or over) |
| Rep | Repeater output | Prohibit(0)/Permit(1) the communication with centralized control system |
| TH11 | Thermistor<br>(Detects discharge temperature) | Detects discharge temperature for protection of No.1 compressor. |
| TH12 | Thermistor<br>(Detects discharge temperature) | Detects discharge temperature for protection of No.2 compressor.<br>(only for P450 type or over) |
| TH5 | Thermistor<br>(Detects the pipe temperature) | Controls defrosting (start/ end) in heating mode. |
| TH6 | Thermistor<br>(Detects the ambient air temperature) | Detects the ambient temperature and then, controls the fan frequency and liquid level in the accumulator. |
| TH7 | Thermistor<br>(Detects pipe temperature) | For defrost control |
| THHS1 | Thermistor<br>(Comp inverter radiator plate temperature) | Controls the Comp inverter cooling fan based on the THHS1 temperature. |
| THHS5 | Thermistor<br>(Fan inverter radiator plate t | Controls the Fan inverter cooling fan based on the THHS5 temperature. |

| | | |
|---|---|---|
| | emperature) | |
| 63HS | High pressure sensor | Detects the discharge pressure and then protects unit against da mage by high pressure. |
| 63LS | Low pressure sensor | Detects the suction pressure and then, protects unit against dama ge by low pressure. |
| Tc | Average of saturation gas te mperature of high pressure and saturation liquid tempera ture of high pressure | For control of compressor frequency and fan speed. |
| Te | Saturation temperature of lo w pressure | For control of compressor frequency and fan speed. |
| Vdc | Bus voltage | Bus voltage |
| Idc | DC trunk line current | DC trunk line current |
| Iu | Phase-U current | Phase-U current of compressor |
| Iw | Phase-W current | Phase-W current of compressor |

# Operation Status Monitor Terminology (PQRY-P200/250YMF-B)

| Mark | Official Name | Meaning |
|---|---|---|
| Control mode | | Control mode for outdoor unit |
| Operation mode | | Operation mode for outdoor unit |
| F | Compressor frequency | Compressor frequency |
| AK | Heat exchanger capacity | Variable which determine the size of outdoor heat exchanger |
| AL | Accumulator level | Liquid level in the accumulation<br>( 0: A little, 1: Medium, 2: Much(overcharge) ) |
| Qj(C) | Total capacity code (cool) | Cooling indoor unit capacity |
| Qj(H) | Total capacity code (heat) | Heating indoor unit capacity |
| SLEV | Oil return LEV opening | Adjusts the amount of liquid refrigerant and oil returned from the accumulator |
| LEV2 | Cool down inverter LEV opening | Cool down inverter |
| 21S4 | 4-way valve | Switches the cooling/heating cycle<br>(0:Cooling, 1:Heating) |
| SV1 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | Returns oil from the oil separator |
| SV2 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | Controls capacity and restricts the high pressure (Frequency control backup) |
| SV3 | Solenoid valve output<br>(Capacity control of heat exchanger) | Capacity control of heat exchanger |
| SV4 | Solenoid valve output<br>(Capacity control of heat exchanger) | Capacity control of heat exchanger |
| SV5 | Solenoid valve output<br>(Capacity control of heat exchanger) | Capacity control of heat exchanger |
| SV6 | Solenoid valve output<br>(Capacity control of heat exchanger) | Capacity control of heat exchanger |
| SV71 | Solenoid valve output<br>(Capacity control of heat exchanger) | Capacity control of heat exchanger |
| SV72 | Solenoid valve output<br>(Capacity control of heat exchanger) | Capacity control of heat exchanger |
| SV73 | Solenoid valve output<br>(Capacity control of heat exchanger) | Capacity control of heat exchanger |
| UNIT ON/OFF | ON/OFF-output | ON/OFF-monitor (TB8-1,2P) |
| Repeater | Repeater output | Prohibit(0)/Permit(1) the Communication with centralized control system |
| TH1 | Thermistor<br>(Detects discharge temperature) | Detects the discharge temperature for the high pressure protection. |
| TH2 | Thermistor<br>(Detects saturated evaporation temperature) | Detects saturated temperature and then, control the compressor frequency and liquid level in the accumulator |
| TH3 | Thermistor<br>(Detects lower liquid level in the accumulator) | Detects the liquid level in the accumulator |
| TH4 | Thermistor<br>(Detects upper liquid level in the accumulator) | Detects the liquid level in the accumulator |
| TH6 | Thermistor<br>(Detects the ambient air temperature) | Detects the ambient temperature and then, controls the liquid level in the accumulator, and the opening LEV pulse for oil return. |
| TH9 | Thermistor<br>(Composition sensing) | Senses the refrigerant composition based on TH2, TH9 and 63LS. |
| TH10 | Thermistor<br>(Lower compressor shell) | Detects the oil temperature |
| THHS | Thermistor<br>(Inverter radiator plate temperature) | Detects the inverter radiator plate temperature for protection of inverter. |
| THINV | Thermistor<br>(Outlet of heat exchanger for cool down inverter) | Controls a capacity of heat exchanger for cool down inverter depends on a temperature of THINV. |

| | | |
|---|---|---|
| 63HS | High pressure sensor | Detects the discharge pressure and then protects unit against da mage by high pressure. |
| 63LS | Low pressure sensor | Detects the suction pressure and then, senses the refrigerant com position. |
| A-OC | Refrigerant composition(R32) | Real percentage of R32 |
| A-OC* | Refrigerant composition(R32) | Calculated percentage of R32 |
| Tc | Average of saturation gas te mperature of high pressure and saturation liquid tempera ture of high pressure | For control of compressor frequency and fan speed. |
| Te | Saturation temperature of lo w pressure | Same as TH2 |

# Operation Status Monitor Terminology (PQRY-P200/250YMF-C)

| Mark | Official Name | Meaning |
|---|---|---|
| Control mode | | Control mode for outdoor unit |
| Operation mode | | Operation mode for outdoor unit |
| F | Compressor frequency | Compressor frequency |
| AK | Heat exchanger capacity | Variable which determine the size of outdoor heat exchanger |
| AL | Accumulator level | Liquid level in the accumulation<br>( 0: A little, 1: Medium, 2: Much(overcharge) ) |
| Qj(C) | Total capacity code (cool) | Cooling indoor unit capacity |
| Qj(H) | Total capacity code (heat) | Heating indoor unit capacity |
| SLEV | Oil return LEV opening | Adjusts the amount of liquid refrigerant and oil returned from the accumulator |
| LEV2 | Cool down inverter LEV opening | Cool down inverter |
| 21S4 | 4-way valve | Switches the cooling/heating cycle<br>(0:Cooling, 1:Heating) |
| SV1 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | Returns oil from the oil separator |
| SV2 | Solenoid valve output<br>(Bypass between discharge pipe and suction pipe) | Controls capacity and restricts the high pressure (Frequency control backup) |
| SV3 | Solenoid valve output<br>(Capacity control of heat exchanger) | Capacity control of heat exchanger |
| SV4 | Solenoid valve output<br>(Capacity control of heat exchanger) | Capacity control of heat exchanger |
| SV5 | Solenoid valve output<br>(Capacity control of heat exchanger) | Capacity control of heat exchanger |
| SV6 | Solenoid valve output<br>(Capacity control of heat exchanger) | Capacity control of heat exchanger |
| SV71 | Solenoid valve output<br>(Capacity control of heat exchanger) | Capacity control of heat exchanger |
| SV72 | Solenoid valve output<br>(Capacity control of heat exchanger) | Capacity control of heat exchanger |
| SV73 | Solenoid valve output<br>(Capacity control of heat exchanger) | Capacity control of heat exchanger |
| UNIT ON/OFF | ON/OFF-output | ON/OFF-monitor (TB8-1,2P) |
| Repeater | Repeater output | Prohibit(0)/Permit(1) the Communication with centralized control system |
| TH1 | Thermistor<br>(Detects discharge temperature) | Detects the discharge temperature for the high pressure protection. |
| TH2 | Thermistor<br>(Detects saturated evaporation temperature) | Detects saturated temperature and then, control the compressor frequency and liquid level in the accumulator |
| TH6 | Thermistor<br>(Detects the ambient air temperature) | Detects the ambient temperature and then, controls the liquid level in the accumulator, and the opening LEV pulse for oil return. |
| TH9 | Thermistor<br>(Composition sensing) | Senses the refrigerant composition based on TH2, TH9 and 63LS. |
| TH10 | Thermistor<br>(Lower compressor shell) | Detects the oil temperature |
| THHS | Thermistor<br>(Inverter radiator plate temperature) | Detects the inverter radiator plate temperature for protection of inverter. |
| THINV | Thermistor<br>(Outlet of heat exchanger for cool down inverter) | Controls a capacity of heat exchanger for cool down inverter depends on a temperature of THINV. |
| 63HS | High pressure sensor | Detects the discharge pressure and then protects unit against damage by high pressure. |
| 63LS | Low pressure sensor | Detects the suction pressure and then, senses the refrigerant composition. |
| A-OC | Refrigerant composition(R32) | Real percentage of R32 |

| | | |
|---|---|---|
| A-OC* | Refrigerant composition(R32) | Calculated percentage of R32 |
| Tc | Average of saturation gas te mperature of high pressure and saturation liquid tempera ture of high pressure | For control of compressor frequency and fan speed. |
| Te | Saturation temperature of lo w pressure | Same as TH2 |

# Operation Status Monitor Terminology (PQRY-P200/250YGM-A, PQRY-P400/500YSGM-A)

| Mark | Official Name | Meaning |
|---|---|---|
| Ctrl Mode | | Control mode for outdoor unit |
| Ope Mode | | Operation mode for outdoor unit |
| Save | | Signal of capacity saving from system controller.<br>figure : % No signal : 100% |
| Power | Power source frequency | Power source frequency (Hz) |
| F | Temporary compressor frequency for calculation | Variable for control |
| AK | Heat exchanger capacity | Variable which determines the size of outdoor heat exchanger |
| DEMAND | ON/OFF demand | Input stop signal of compressor<br>( ON:effective OFF:ineffective ) |
| DEMAND2 | Intermediate demand | Signal of capacity saving<br>( ON:effective OFF:ineffective )<br>DEMAND=OFF, DEMAND2=OFF: 100%<br>DEMAND=OFF, DEMAND2=ON : 75%<br>DEMAND= ON, DEMAND2=ON : 50%<br>DEMAND= ON, DEMAND2=OFF: 25% |
| NIGHT | Night mode | Decreases frequency of outdoor unit fan<br>( ON:effective OFF:ineffective ) |
| Qj(C) | Total capacity code (cool) | Cooling indoor unit capacity |
| Qj(H) | Total capacity code (heat) | Heating indoor unit capacity |
| LEV2 | Cool down inverter LEV opening | Cool down inverter |
| 21S4a | 4-way valve | Switches the cooling/heating cycle<br>(0:Cooling, 1:Heating) |
| SV1 | Solenoid valve output | Bypass between discharge pipe and suction pipe |
| SV4a | Solenoid valve output | Heat exchanger capacity control |
| SV4b | Solenoid valve output | Heat exchanger capacity control |
| SV4c | Solenoid valve output | Heat exchanger capacity control |
| SV4d | Solenoid valve output | Heat exchanger bypass ON/OFF |
| SV5a | Solenoid valve output | Heat exchanger capacity control<br>(only for P400 type or over) |
| SV5b | Solenoid valve output | Heat exchanger capacity control<br>(only for P400 type or over) |
| SV7a | Solenoid valve output | Heat exchanger capacity control |
| SV7b | Solenoid valve output | Heat exchanger capacity control |
| SV7c | Solenoid valve output | Heat exchanger capacity control |
| UNIT_ON/OFF | ON/OFF-output | ON/OFF-monitor (TB8-1,2P) |
| Rep | Repeater output | Prohibit(0)/Permit(1) the communication with centralized control system |
| TH11 | Thermistor<br>(Detects discharge temperature) | Detects discharge temperature for protection of No.1 compressor. |
| TH6 | Thermistor<br>(Detects the ambient airtemperature) | Detects the ambient temperature and then, controls the fan frequency and liquid level in the accumulator. |
| TH9 | Thermistor<br>(Freeze prevention sensor) | Detects the water heat exchanger temperature and then, carries out freeze prevention control. |
| THINV | Thermistor<br>(Outlet of heat exchanger for cool down inverter) | Controls a capacity of heat exchanger for cool down inverter depends on a temperature of THINV. |
| THHS1 | Thermistor<br>(Comp inverter radiator plate temperature) | Controls the Comp inverter cooling fan based on the THHS1 temperature. |
| 63HS | High pressure sensor | Detects the discharge pressure and then protects unit against damage by high pressure. |
| 63LS | Low pressure sensor | Detects the suction pressure and then, protects unit against damage by low pressure. |
| Tc | Average of saturation gas temperature of high pressure and saturation liquid temperature of high pressure | For control of compressor frequency and fan speed. |
| Te | Saturation temperature of low pressure | For control of compressor frequency and fan speed. |
| Vdc | Bus voltage | Bus voltage |
| Idc | DC trunk line current | DC trunk line current |
| Iu | Phase-U current | Phase-U current of compressor |
| Iw | Phase-W current | Phase-W current of compressor |

# Operation Status Monitor Terminology (PUMY)

| Mark | Official Name | Meaning |
|---|---|---|
| Operation mode | | Operation mode |
| Capacity save | | The signal of capacity save from master system controller.<br>unit:% The signal is displayed "100%" under no signal. |
| FAN | Fan steps | Out door unit fan steps |
| F/Hz | Compressor frequency | Compressor frequency |
| SLEV | LEV pulse | It is controlled by the sub cool at outdoor heatexchanger exit in cooling mode.<br>It is opened fully in heating mode.<br>It is backup when the discharge temperature raises abnormality.(Cooling, heating mode) |
| SC | Sub cool | Sub cool |
| SN | Sub cool steps | Sub cool steps |
| Pdm | Target high pressure | Target high pressure |
| ETm | Target evaporation temperature | Target evaporation temperature |
| Demand | Contact demand input | The compressor is stopped when the contact is closed.<br>(1:ON 0:OFF) |
| Night | Night(silent)mode | The compressor maximum frequency is down when the contact of outdoor control board is ON<br>Contact input (1:ON 0:OFF) |
| Inner | Comp inner thermostat | The thermostat in the compressor is ON when the motor temperature abnormal rises.<br>Input(1:ON 0:OFF) |
| IPM | IPM abnormal input | It is detected when the overcurrent flows to the IPM, or the IPM temperature abnormal rises.<br>(1:ON 0:OFF) |
| 52C | electromagnetic contactor (inverter main circuit) | 52C output On during indoor unit running |
| 21S4 | 4-way valve | 4-way valve |
| SV1 | Solenoid valve output | The bypass of discharge gas |
| Repeater | Repeater output | It is permission(1) / prohibition(2) of communication with the centralized controllers. |
| TH1 | Thermistor<br>(Detects discharge temperature) | It detects the discharge temperature to control the compressor frequency.<br>It protects the discharge temperature.<br>It is used to calculate the discharge superheat temperature. |
| TH2 | Thermistor | It detects the low pressure saturation temperature to control the compressor frequency. |
| TH5 | Thermistor | It is used to control SLEV pulse in cooling mode.<br>It is used to start the defrost mode in heating mode.<br>(Pipe temperature・Defrost determination) |
| TH6 | Thermistor<br>(Detects the ambient air temperature) | It detects the ambient temperature to control outdoor fan and LEV pulse. |
| THHS | Thermistor | It detects the power transistor radiator plate temperature for protection of power transistor.<br>(radiator plate temperature) |
| 63HS | High pressure sensor | It detects the discharge pressure to control the compressor frequency and protects unit against damage by high pressure.<br>It is used to calculate the sub cool.<br>(Detects discharge pressure) |
| Power factor | compressor power factor data | It detects the compressor power factor to control the optimum voltage. |
| SC1 | Sub cool of indoor unit 1 | Heating mode Sub cool<br>Cooling mode :Super heat |
| SC2 | Sub cool of indoor unit 2 | Heating mode Sub cool<br>Cooling mode :Super heat |
| SC3 | Sub cool of indoor unit 3 | Heating mode Sub cool<br>Cooling mode :Super heat |
| SC4 | Sub cool of indoor unit 4 | Heating mode Sub cool<br>Cooling mode :Super heat |
| SC5 | Sub cool of indoor unit 5 | Heating mode Sub cool<br>Cooling mode :Super heat |
| SC6 | Sub cool of indoor unit 6 | Heating mode Sub cool<br>Cooling mode :Super heat |
| SC7 | Sub cool of indoor unit 7 | Heating mode Sub cool<br>Cooling mode :Super heat |
| SC8 | Sub cool of indoor unit 8 | Heating mode Sub cool<br>Cooling mode :Super heat |
| LEV1 | LEV pulse of indoor unit 1 | LEV pulse of indoor unit 1 |

| | | |
|---|---|---|
| | | LEV pulse control from the outdoor unit<br>Cooling mode: It controls the super heat of indoor unit heatexchanger exit<br>Heating mode: It controls the sub cool of indoor unit heatexchanger exit |
| LEV2 | LEV pulse of indoor unit 2 | LEV pulse of indoor unit 2<br>LEV pulse control from the outdoor unit<br>Cooling mode: It controls the super heat of indoor unit heatexchanger exit<br>Heating mode: It controls the sub cool of indoor unit heatexchanger exit |
| LEV3 | LEV pulse of indoor unit 3 | LEV pulse of indoor unit 3<br>LEV pulse control from the outdoor unit<br>Cooling mode: It controls the super heat of indoor unit heatexchanger exit<br>Heating mode: It controls the sub cool of indoor unit heatexchanger exit |
| LEV4 | LEV pulse of indoor unit 4 | LEV pulse of indoor unit 4<br>LEV pulse control from the outdoor unit<br>Cooling mode: It controls the super heat of indoor unit heatexchanger exit<br>Heating mode: It controls the sub cool of indoor unit heatexchanger exit |
| LEV5 | LEV pulse of indoor unit 5 | LEV pulse of indoor unit 5<br>LEV pulse control from the outdoor unit<br>Cooling mode: It controls the super heat of indoor unit heatexchanger exit<br>Heating mode: It controls the sub cool of indoor unit heatexchanger exit |
| LEV6 | LEV pulse of indoor unit 6 | LEV pulse of indoor unit 6<br>LEV pulse control from the outdoor unit<br>Cooling mode: It controls the super heat of indoor unit heatexchanger exit<br>Heating mode: It controls the sub cool of indoor unit heatexchanger exit |
| LEV7 | LEV pulse of indoor unit 7 | LEV pulse of indoor unit 7<br>LEV pulse control from the outdoor unit<br>Cooling mode: It controls the super heat of indoor unit heatexchanger exit<br>Heating mode: It controls the sub cool of indoor unit heatexchanger exit |
| LEV8 | LEV pulse of indoor unit 8 | LEV pulse of indoor unit 8<br>LEV pulse control from the outdoor unit<br>Cooling mode: It controls the super heat of indoor unit heatexchanger exit<br>Heating mode: It controls the sub cool of indoor unit heatexchanger exit |

# Operation Status Monitor Terminology
# (PUMY-P100/125/140V/YHM-A, PUMY-P100/125/140YHM-B)

| Mark | Official Name | Meaning |
|---|---|---|
| Operation mode | | Operation mode |
| FAN | Fan steps | Out door unit fan steps |
| F/Hz | Compressor frequency | Compressor frequency |
| SC | Sub cool | Sub cool |
| SCm | Target sub cool | Target sub cool (cooling) |
| Pdm | Target high pressure | Target high pressure(heating) |
| ETm | Target evaporation temperatu re | Target evaporation temperature(cooling) |
| 52C | electromagnetic contactor (inverter main circuit) | 52C output |
| 21S4 | 4-way valve | 4-way valve |
| SV1(Pd) | Solenoid valve output | The bypass of discharge gas (for pd back up) |
| SV1(Td) | Solenoid valve output | The bypass of discharge gas(for td back up) |
| SV1(Stop) | Solenoid valve output | The bypass of discharge gas(for stop mode pressure equalization) |
| TH4 | Thermistor (Detects discharge temperatu re) | It detects the discharge temperature to control the compressor fre quency.<br>It protects the discharge temperature.<br>It is used to calculate the discharge superheat temperature. |
| TH6 | Thermistor | It detects the low pressure saturation temperature to control the c ompressor frequency. |
| TH3 | Thermistor (Pipe temperature/Defrost det ermination) | It is used to control LEV pulse in cooling mode.<br>It is used to start the defrost mode in heating mode. |
| TH7 | Thermistor (Detects the ambient air tem perature) | It detects the ambient temperature to control outdoor fan and LEV pulse. |
| TH8 | Thermistor (radiator plate temperature) | It detects the power transistor radiator plate temperature for protec tion of power transistor. |
| 63HS | High pressure sensor | It detects the discharge pressure to control the compressor freque ncy and protects unit against damage by high pressure.<br>It is used to calculate the sub cool. (Detects discharge pressure) |
| SC1 | Sub cool of indoor unit 1 | Heating mode:Sub cool |
| SC2 | Sub cool of indoor unit 2 | Heating mode:Sub cool |
| SC3 | Sub cool of indoor unit 3 | Heating mode:Sub cool |
| SC4 | Sub cool of indoor unit 4 | Heating mode:Sub cool |
| SC5 | Sub cool of indoor unit 5 | Heating mode:Sub cool |
| SC6 | Sub cool of indoor unit 6 | Heating mode:Sub cool |
| SC7 | Sub cool of indoor unit 7 | Heating mode:Sub cool |
| SC8 | Sub cool of indoor unit 8 | Heating mode:Sub cool |
| SCm1 | Target sub cool of indoor un it 1 | Heating mode:Target sub cool |
| SCm2 | Target sub cool of indoor un it 2 | Heating mode:Target sub cool |
| SCm3 | Target sub cool of indoor un it 3 | Heating mode:Target sub cool |
| SCm4 | Target sub cool of indoor un it 4 | Heating mode:Target sub cool |
| SCm5 | Target sub cool of indoor un it 5 | Heating mode:Target sub cool |
| SCm6 | Target sub cool of indoor un it 6 | Heating mode:Target sub cool |
| SCm7 | Target sub cool of indoor un it 7 | Heating mode:Target sub cool |
| SCm8 | Target sub cool of indoor un it 8 | Heating mode:Target sub cool |
| LEV1 | LEV pulse of indoor unit 1 | LEV pulse of indoor unit 1 LEV pulse control from the outdoor un it |
| LEV2 | LEV pulse of indoor unit 2 | LEV pulse of indoor unit 2 LEV pulse control from the outdoor un it |
| LEV3 | LEV pulse of indoor unit 3 | LEV pulse of indoor unit 3 LEV pulse control from the outdoor un it |
| LEV4 | LEV pulse of indoor unit 4 | LEV pulse of indoor unit 4 LEV pulse control from the outdoor un it |
| LEV5 | LEV pulse of indoor unit 5 | LEV pulse of indoor unit 5 LEV pulse control from the outdoor un it |
| LEV6 | LEV pulse of indoor unit 6 | LEV pulse of indoor unit 6 LEV pulse control from the outdoor un it |
| LEV7 | LEV pulse of indoor unit 7 | LEV pulse of indoor unit 7 LEV pulse control from the outdoor un |

| | | |
|---|---|---|
| | | it |
| LEV8 | LEV pulse of indoor unit 8 | LEV pulse of indoor unit 8 LEV pulse control from the outdoor un it |
| INPUT CURRENT | INPUT CURRENT | Input current of outdoor unit. |
| COMP CURRENT | COMPRESSOR CURRENT | Compressor operating current of outdoor unit. |

# Operation Status Monitor Terminology (PUMY-P125/140V/YHMBR3, PUMY-P100/125/140YHMC-C, PUMY-SP100/125/140YHMC-SD, PUMY-P100/125/140VHMC-S, PUMY-SP100/125/140VHMC-SR)

| Mark | Official Name | Meaning |
|---|---|---|
| Operation mode | | Operation mode |
| FAN | Fan steps | Out door unit fan steps |
| F/Hz | Compressor frequency | Compressor frequency |
| SC | Sub cool | Sub cool |
| SCm | Target sub cool | Target sub cool (cooling) |
| Pdm | Target high pressure | Target high pressure (heating) |
| ETm | Target evaporation temperatu re | Target evaporation temperature (cooling) |
| 52C | electromagnetic contactor | 52C output (inverter main circuit) |
| 21S4 | 4-way valve | 4-way valve |
| SV1(A) | Solenoid valve 1 output | The bypass of discharge gas (for pd back up) |
| SV1(B) | Solenoid valve 1 output | The bypass of discharge gas(for td back up) |
| SV1(C) | Solenoid valve 1 output | The bypass of discharge gas(for stop mode pressure equalization) |
| TH4 | Thermistor (Detects discharge temperatu re) | It detects the discharge temperature to control the compressor fre quency. It protects the discharge temperature. It is used to calculate the discharge superheat temperature. |
| TH6 | Thermistor | It detects the low pressure saturation temperature to control the c ompressor frequency. |
| TH3 | Thermistor (Pipe temperature/Defrost det ermination) | It is used to control LEV pulse in cooling mode. It is used to start the defrost mode in heating mode. |
| TH7 | Thermistor (Detects the ambient air tem perature) | It detects the ambient temperature to control outdoor fan and LEV pulse. |
| TH8 | Thermistor (radiator plate temperature) | It detects the power transistor radiator plate temperature for protec tion of power transistor. |
| 63HS | High pressure sensor | It detects the discharge pressure to control the compressor freque ncy and protects unit against damage by high pressure. It is used to calculate the sub cool. (Detects discharge pressure) |
| SC 1 | Sub cool of indoor unit 1 | Heating mode:Sub cool of indoor unit 1 |
| SC 2 | Sub cool of indoor unit 2 | Heating mode:Sub cool of indoor unit 2 |
| SC 3 | Sub cool of indoor unit 3 | Heating mode:Sub cool of indoor unit 3 |
| SC 4 | Sub cool of indoor unit 4 | Heating mode:Sub cool of indoor unit 4 |
| SC 5 | Sub cool of indoor unit 5 | Heating mode:Sub cool of indoor unit 5 |
| SC 6 | Sub cool of indoor unit 6 | Heating mode:Sub cool of indoor unit 6 |
| SC 7 | Sub cool of indoor unit 7 | Heating mode:Sub cool of indoor unit 7 |
| SC 8 | Sub cool of indoor unit 8 | Heating mode:Sub cool of indoor unit 8 |
| SC 9 | Sub cool of indoor unit 9 | Heating mode:Sub cool of indoor unit 9 |
| SC10 | Sub cool of indoor unit 10 | Heating mode:Sub cool of indoor unit 10 |
| SC11 | Sub cool of indoor unit 11 | Heating mode:Sub cool of indoor unit 11 |
| SC12 | Sub cool of indoor unit 12 | Heating mode:Sub cool of indoor unit 12 |
| SCm 1 | Target sub cool of indoor un it 1 | Heating mode:Target sub cool of indoor unit 1 |
| SCm 2 | Target sub cool of indoor un it 2 | Heating mode:Target sub cool of indoor unit 2 |
| SCm 3 | Target sub cool of indoor un it 3 | Heating mode:Target sub cool of indoor unit 3 |
| SCm 4 | Target sub cool of indoor un it 4 | Heating mode:Target sub cool of indoor unit 4 |
| SCm 5 | Target sub cool of indoor un it 5 | Heating mode:Target sub cool of indoor unit 5 |
| SCm 6 | Target sub cool of indoor un it 6 | Heating mode:Target sub cool of indoor unit 6 |
| SCm 7 | Target sub cool of indoor un it 7 | Heating mode:Target sub cool of indoor unit 7 |
| SCm 8 | Target sub cool of indoor un it 8 | Heating mode:Target sub cool of indoor unit 8 |
| SCm 9 | Target sub cool of indoor un it 9 | Heating mode:Target sub cool of indoor unit 9 |
| SCm10 | Target sub cool of indoor un it 10 | Heating mode:Target sub cool of indoor unit 10 |
| SCm11 | Target sub cool of indoor un it 11 | Heating mode:Target sub cool of indoor unit 11 |
| SCm12 | Target sub cool of indoor un it 12 | Heating mode:Target sub cool of indoor unit 12 |
| LEV 1 | LEV pulse of indoor unit 1 | LEV pulse of indoor unit 1 LEV pulse control from the outdoor un it |

| | | |
|---|---|---|
| LEV 2 | LEV pulse of indoor unit 2 | LEV pulse of indoor unit 2 LEV pulse control from the outdoor unit |
| LEV 3 | LEV pulse of indoor unit 3 | LEV pulse of indoor unit 3 LEV pulse control from the outdoor unit |
| LEV 4 | LEV pulse of indoor unit 4 | LEV pulse of indoor unit 4 LEV pulse control from the outdoor unit |
| LEV 5 | LEV pulse of indoor unit 5 | LEV pulse of indoor unit 5 LEV pulse control from the outdoor unit |
| LEV 6 | LEV pulse of indoor unit 6 | LEV pulse of indoor unit 6 LEV pulse control from the outdoor unit |
| LEV 7 | LEV pulse of indoor unit 7 | LEV pulse of indoor unit 7 LEV pulse control from the outdoor unit |
| LEV 8 | LEV pulse of indoor unit 8 | LEV pulse of indoor unit 9 LEV pulse control from the outdoor unit |
| LEV 9 | LEV pulse of indoor unit 9 | LEV pulse of indoor unit 10 LEV pulse control from the outdoor unit |
| LEV10 | LEV pulse of indoor unit 10 | LEV pulse of indoor unit 11 LEV pulse control from the outdoor unit |
| LEV11 | LEV pulse of indoor unit 11 | LEV pulse of indoor unit 12 LEV pulse control from the outdoor unit |
| LEV12 | LEV pulse of indoor unit 12 | LEV pulse of indoor unit 13 LEV pulse control from the outdoor unit |
| INPUT CURRENT | INPUT CURRENT | Input current of outdoor unit. |
| COMP CURRENT | COMPRESSOR CURRENT | Compressor operating current of outdoor unit. |
| VDC | BUS BAR VOLTAGE(V) | Bus bar voltage of inverter circuit |

Operation Status Monitor Terminology

# (PUHZ-RP**HA)

| Mark | Official Name | Meaning |
|---|---|---|
| [Selecting Info.] | | |
| action | Operation ON/OFF | Operation running of unit |
| mode | Running mode | Running mode of unit |
| TO | Set temperature | Temperature set by remote controller |
| capacity save | Capacity save | Capacity save signal from system controller<br>Unit: % Non receiving status: 100% |

| Mark | Official Name | Meaning |
|---|---|---|
| [Indoor Info.] | | |
| TH1 | Thermistor(room temperature) | Detects the room temperature, for deciding ON/OFF. |
| TH2 | Thermistor<br>(liquid pipe temperature) | Detects the liquid side temperature. |
| TH5 | Thermistor<br>(gas pipe temperature) | Detects the gas side temperature. |

| Mark | Official Name | Meaning |
|---|---|---|
| [Outdoor Info.] | | |
| COMP | Ccmp. ON/OFF | Ccmp. ON/OFF<br>(ON:running) |
| 21S4 | 4-way valve | Switches the cooling/heating cycle<br>(ON:Heating) |
| SV | Solenoid valve output | Solenoid valve output<br>(ON:Action) |
| FAN | Fan output step | Fan output step |
| Hz | Compressor frequency | Compressor frequency |
| 49C | Inner thermostat (compresso r) | Inner thermostat (compressor) actuation state<br>"closing": at the time of usual. "open": at the time of actuation. |
| 63H | High pressure sensor | Detects the discharge pressure and then protects unit against da mage by high pressure.<br>"closing": at the time of usual. "open": at the time of actuation. |
| 63L | Low pressure sensor | Detects the suction pressure and then, senses the refrigerant com position.<br>"closing": at the time of usual. "open": at the time of actuation. |
| TH3 | Thermistor | Detects the liquid pipe temperature |
| TH4 | Thermistor | Detects discharge temperature |
| TH6 | Thermistor | Detects saturated evaporation temperature |
| TH7 | Thermistor | Detects the ambient air temperature |
| TH8 | Thermistor | Detects radiator plate temperature |
| SHd | Discharge superheat | |
| SH | Superheat | |
| SC | Subcool | |
| LEV A | SC coil LEV opening | Adjusts refrigerant in the bypass pipe from liquid pipe in the outd oor unit in cooling mode. |
| LEV B | LEV opening B | |

# Operation Status Monitor Terminology (PUMY-P100V/YHMBR4)

| Mark | Official Name | Meaning |
|---|---|---|
| Operation mode | | Operation mode |
| F/Hz | Compressor frequency | Compressor frequency |
| FAN | Fan steps | Out door unit fan steps |
| VDC | BUS BAR VOLTAGE(V) | Bus bar voltage of inverter circuit |
| LEV_A | LEV-A pulse of outdoor unit (not implemented) | Command value of LEV-A pulse of outdoor unit (fixed to blank) |
| LEV_B | LEV-B pulse of outdoor unit (not implemented) | Command value of LEV-B pulse of outdoor unit (fixed to blank) |
| 52C | electromagnetic contactor | 52C output (inverter main circuit) |
| 21S4 | 4-way valve | 4-way valve |
| SV1(A) | Solenoid valve 1 output | The bypass of discharge gas (for pd back up) |
| SV1(B) | Solenoid valve 1 output | The bypass of discharge gas(for td back up) |
| SV1(C) | Solenoid valve 1 output | The bypass of discharge gas(for stop mode pressure equalization) |
| demand | A state of demand function via outdoor unit input | Input: 1 / No input: 0 |
| TH4 | Thermistor (Detects comp. surface temperature) | It detects the comp. surface temperature to control the compressor frequency.<br>It protects the comp. surface temperature.<br>It is used to calculate the discharge superheat temperature. |
| TH6 | Thermistor | It detects the low pressure saturation temperature to control the compressor frequency. |
| TH3 | Thermistor (Pipe temperature/Defrost determination) | It is used to control LEV pulse in cooling mode.<br>It is used to start the defrost mode in heating mode. |
| TH7 | Thermistor (Detects the ambient air temperature) | It detects the ambient temperature to control outdoor fan and LEV pulse. |
| TH8 | Thermistor (radiator plate temperature) | It detects the power transistor radiator plate temperature for protection of power transistor. |
| 63HS | High pressure sensor | It detects the discharge pressure to control the compressor frequency and protects unit against damage by high pressure.<br>It is used to calculate the sub cool. (Detects discharge pressure) |
| 63LS | Low pressure sensor (not implemented) | It detects the suction pressure to control LEV-B and LEVs of indoor units pulse. (fixed to 0.0) |
| TH2 | Thermistor (not implemented) (HIC temperature) | It is used to control LEV-B pulse. (fixed to 0.0) |
| SC | Sub cool | Sub cool |
| SCm | Target sub cool | Target sub cool (cooling) |
| Pdm | Target high pressure | Target high pressure (heating) |
| ETm | Target evaporation temperature | Target evaporation temperature (cooling) |
| I(input)(A) | Input current | Input current of outdoor unit. |
| I(comp)(A) | Compressor current | Compressor operating current of outdoor unit. |
| SC 1 | Sub cool of indoor unit 1 | Heating mode:Sub cool of indoor unit 1 |
| SC 2 | Sub cool of indoor unit 2 | Heating mode:Sub cool of indoor unit 2 |
| SC 3 | Sub cool of indoor unit 3 | Heating mode:Sub cool of indoor unit 3 |
| SC 4 | Sub cool of indoor unit 4 | Heating mode:Sub cool of indoor unit 4 |
| SC 5 | Sub cool of indoor unit 5 | Heating mode:Sub cool of indoor unit 5 |
| SC 6 | Sub cool of indoor unit 6 | Heating mode:Sub cool of indoor unit 6 |
| SC 7 | Sub cool of indoor unit 7 | Heating mode:Sub cool of indoor unit 7 |
| SC 8 | Sub cool of indoor unit 8 | Heating mode:Sub cool of indoor unit 8 |
| SC 9 | Sub cool of indoor unit 9 | Heating mode:Sub cool of indoor unit 9 |
| SC10 | Sub cool of indoor unit 10 | Heating mode:Sub cool of indoor unit 10 |
| SC11 | Sub cool of indoor unit 11 | Heating mode:Sub cool of indoor unit 11 |
| SC12 | Sub cool of indoor unit 12 | Heating mode:Sub cool of indoor unit 12 |
| SCm 1 | Target sub cool of indoor unit 1 | Heating mode:Target sub cool of indoor unit 1 |
| SCm 2 | Target sub cool of indoor unit 2 | Heating mode:Target sub cool of indoor unit 2 |
| SCm 3 | Target sub cool of indoor unit 3 | Heating mode:Target sub cool of indoor unit 3 |
| SCm 4 | Target sub cool of indoor unit 4 | Heating mode:Target sub cool of indoor unit 4 |
| SCm 5 | Target sub cool of indoor unit 5 | Heating mode:Target sub cool of indoor unit 5 |
| SCm 6 | Target sub cool of indoor unit 6 | Heating mode:Target sub cool of indoor unit 6 |
| SCm 7 | Target sub cool of indoor unit 7 | Heating mode:Target sub cool of indoor unit 7 |
| SCm 8 | Target sub cool of indoor un | Heating mode:Target sub cool of indoor unit 8 |

| | | |
|---|---|---|
| | it 8 | |
| SCm 9 | Target sub cool of indoor unit 9 | Heating mode:Target sub cool of indoor unit 9 |
| SCm10 | Target sub cool of indoor unit 10 | Heating mode:Target sub cool of indoor unit 10 |
| SCm11 | Target sub cool of indoor unit 11 | Heating mode:Target sub cool of indoor unit 11 |
| SCm12 | Target sub cool of indoor unit 12 | Heating mode:Target sub cool of indoor unit 12 |
| LEV 1 | LEV pulse of indoor unit 1 | LEV pulse of indoor unit 1 LEV pulse control from the outdoor unit |
| LEV 2 | LEV pulse of indoor unit 2 | LEV pulse of indoor unit 2 LEV pulse control from the outdoor unit |
| LEV 3 | LEV pulse of indoor unit 3 | LEV pulse of indoor unit 3 LEV pulse control from the outdoor unit |
| LEV 4 | LEV pulse of indoor unit 4 | LEV pulse of indoor unit 4 LEV pulse control from the outdoor unit |
| LEV 5 | LEV pulse of indoor unit 5 | LEV pulse of indoor unit 5 LEV pulse control from the outdoor unit |
| LEV 6 | LEV pulse of indoor unit 6 | LEV pulse of indoor unit 6 LEV pulse control from the outdoor unit |
| LEV 7 | LEV pulse of indoor unit 7 | LEV pulse of indoor unit 7 LEV pulse control from the outdoor unit |
| LEV 8 | LEV pulse of indoor unit 8 | LEV pulse of indoor unit 8 LEV pulse control from the outdoor unit |
| LEV 9 | LEV pulse of indoor unit 9 | LEV pulse of indoor unit 9 LEV pulse control from the outdoor unit |
| LEV10 | LEV pulse of indoor unit 10 | LEV pulse of indoor unit 10 LEV pulse control from the outdoor unit |
| LEV11 | LEV pulse of indoor unit 11 | LEV pulse of indoor unit 11 LEV pulse control from the outdoor unit |
| LEV12 | LEV pulse of indoor unit 12 | LEV pulse of indoor unit 12 LEV pulse control from the outdoor unit |

# Operation Status Monitor Terminology (PUMY-P125/140V/YHMSR1)

| Mark | Official Name | Meaning |
|---|---|---|
| Operation mode | | Operation mode |
| F/Hz | Compressor frequency | Compressor frequency |
| FAN | Fan steps | Out door unit fan steps |
| VDC | BUS BAR VOLTAGE(V) | Bus bar voltage of inverter circuit |
| LEV_A | LEV-A pulse of outdoor unit (not implemented) | Command value of LEV-A pulse of outdoor unit (fixed to blank) |
| LEV_B | LEV-B pulse of outdoor unit (not implemented) | Command value of LEV-B pulse of outdoor unit (fixed to blank) |
| 52C | electromagnetic contactor | 52C output (inverter main circuit) |
| 21S4 | 4-way valve | 4-way valve |
| SV1(A) | Solenoid valve 1 output | The bypass of discharge gas (for pd back up) |
| SV1(B) | Solenoid valve 1 output | The bypass of discharge gas(for td back up) |
| SV1(C) | Solenoid valve 1 output | The bypass of discharge gas(for stop mode pressure equalization) |
| demand | A state of demand function via outdoor unit input | Input: 1 / No input: 0 |
| TH4 | Thermistor (Detects comp. surface temperature) | It detects the comp. surface temperature to control the compressor frequency.<br>It protects the comp. surface temperature.<br>It is used to calculate the discharge superheat temperature. |
| TH6 | Thermistor | It detects the low pressure saturation temperature to control the compressor frequency. |
| TH3 | Thermistor (Pipe temperature/Defrost determination) | It is used to control LEV pulse in cooling mode.<br>It is used to start the defrost mode in heating mode. |
| TH7 | Thermistor (Detects the ambient air temperature) | It detects the ambient temperature to control outdoor fan and LEV pulse. |
| TH8 | Thermistor (radiator plate temperature) | It detects the power transistor radiator plate temperature for protection of power transistor. |
| 63HS | High pressure sensor | It detects the discharge pressure to control the compressor frequency and protects unit against damage by high pressure.<br>It is used to calculate the sub cool. (Detects discharge pressure) |
| 63LS | Low pressure sensor (not implemented) | It detects the suction pressure to control LEV-B and LEVs of indoor units pulse. (fixed to 0.0) |
| TH2 | Thermistor (not implemented) (HIC temperature) | It is used to control LEV-B pulse. (fixed to 0.0) |
| SC | Sub cool | Sub cool |
| SCm | Target sub cool | Target sub cool (cooling) |
| Pdm | Target high pressure | Target high pressure (heating) |
| ETm | Target evaporation temperature | Target evaporation temperature (cooling) |
| I(input)(A) | Input current | Input current of outdoor unit. |
| I(comp)(A) | Compressor current | Compressor operating current of outdoor unit. |
| SC 1 | Sub cool of indoor unit 1 | Heating mode:Sub cool of indoor unit 1 |
| SC 2 | Sub cool of indoor unit 2 | Heating mode:Sub cool of indoor unit 2 |
| SC 3 | Sub cool of indoor unit 3 | Heating mode:Sub cool of indoor unit 3 |
| SC 4 | Sub cool of indoor unit 4 | Heating mode:Sub cool of indoor unit 4 |
| SC 5 | Sub cool of indoor unit 5 | Heating mode:Sub cool of indoor unit 5 |
| SC 6 | Sub cool of indoor unit 6 | Heating mode:Sub cool of indoor unit 6 |
| SC 7 | Sub cool of indoor unit 7 | Heating mode:Sub cool of indoor unit 7 |
| SC 8 | Sub cool of indoor unit 8 | Heating mode:Sub cool of indoor unit 8 |
| SC 9 | Sub cool of indoor unit 9 | Heating mode:Sub cool of indoor unit 9 |
| SC10 | Sub cool of indoor unit 10 | Heating mode:Sub cool of indoor unit 10 |
| SC11 | Sub cool of indoor unit 11 | Heating mode:Sub cool of indoor unit 11 |
| SC12 | Sub cool of indoor unit 12 | Heating mode:Sub cool of indoor unit 12 |
| SCm 1 | Target sub cool of indoor unit 1 | Heating mode:Target sub cool of indoor unit 1 |
| SCm 2 | Target sub cool of indoor unit 2 | Heating mode:Target sub cool of indoor unit 2 |
| SCm 3 | Target sub cool of indoor unit 3 | Heating mode:Target sub cool of indoor unit 3 |
| SCm 4 | Target sub cool of indoor unit 4 | Heating mode:Target sub cool of indoor unit 4 |
| SCm 5 | Target sub cool of indoor unit 5 | Heating mode:Target sub cool of indoor unit 5 |
| SCm 6 | Target sub cool of indoor unit 6 | Heating mode:Target sub cool of indoor unit 6 |
| SCm 7 | Target sub cool of indoor unit 7 | Heating mode:Target sub cool of indoor unit 7 |
| SCm 8 | Target sub cool of indoor un | Heating mode:Target sub cool of indoor unit 8 |

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| SCm 9 | Target sub cool of indoor unit 9 | Heating mode:Target sub cool of indoor unit 9 |
| SCm10 | Target sub cool of indoor unit 10 | Heating mode:Target sub cool of indoor unit 10 |
| SCm11 | Target sub cool of indoor unit 11 | Heating mode:Target sub cool of indoor unit 11 |
| SCm12 | Target sub cool of indoor unit 12 | Heating mode:Target sub cool of indoor unit 12 |
| LEV 1 | LEV pulse of indoor unit 1 | LEV pulse of indoor unit 1 LEV pulse control from the outdoor unit |
| LEV 2 | LEV pulse of indoor unit 2 | LEV pulse of indoor unit 2 LEV pulse control from the outdoor unit |
| LEV 3 | LEV pulse of indoor unit 3 | LEV pulse of indoor unit 3 LEV pulse control from the outdoor unit |
| LEV 4 | LEV pulse of indoor unit 4 | LEV pulse of indoor unit 4 LEV pulse control from the outdoor unit |
| LEV 5 | LEV pulse of indoor unit 5 | LEV pulse of indoor unit 5 LEV pulse control from the outdoor unit |
| LEV 6 | LEV pulse of indoor unit 6 | LEV pulse of indoor unit 6 LEV pulse control from the outdoor unit |
| LEV 7 | LEV pulse of indoor unit 7 | LEV pulse of indoor unit 7 LEV pulse control from the outdoor unit |
| LEV 8 | LEV pulse of indoor unit 8 | LEV pulse of indoor unit 8 LEV pulse control from the outdoor unit |
| LEV 9 | LEV pulse of indoor unit 9 | LEV pulse of indoor unit 9 LEV pulse control from the outdoor unit |
| LEV10 | LEV pulse of indoor unit 10 | LEV pulse of indoor unit 10 LEV pulse control from the outdoor unit |
| LEV11 | LEV pulse of indoor unit 11 | LEV pulse of indoor unit 11 LEV pulse control from the outdoor unit |
| LEV12 | LEV pulse of indoor unit 12 | LEV pulse of indoor unit 12 LEV pulse control from the outdoor unit |

# Operation Status Monitor Terminology
# (PUMY-P112/125/140V/YKM(E), PUMY-P112/125/140V/YKM-A, PUMY-SP80V/YKMD-A(R1), PUMY-SP100/125/140V/YKM, PUMY-CP100/125/140V/YKM, PUMY-P100/125/140NKM)

| Mark | Official Name | Meaning |
|---|---|---|
| Operation mode | | Operation mode |
| F/Hz | Compressor frequency | Compressor frequency |
| FAN | Fan steps | Out door unit fan steps |
| VDC | BUS BAR VOLTAGE(V) | Bus bar voltage of inverter circuit |
| LEV_A | LEV-A pulse of outdoor unit | Command value of LEV-A pulse of outdoor unit |
| LEV_B | LEV-B pulse of outdoor unit | Command value of LEV-B pulse of outdoor unit |
| 52C | electromagnetic contactor | 52C output (inverter main circuit) |
| 21S4 | 4-way valve | 4-way valve |
| SV1 | Solenoid valve 1 output | Bypass valve for discharge gas |
| SV2 | Solenoid valve 2 output | Switching valve for refrigerant circuit |
| SV3 | Solenoid valve 3 output | Oil return valve |
| demand | A state of demand function via outdoor unit input | Input: 1 / No input: 0 |
| TH4 | Thermistor (Detects comp. surface temperature) | It detects the comp. surface temperature to control the compressor frequency.<br>It protects the comp. surface temperature.<br>It is used to calculate the discharge superheat temperature. |
| TH6 | Thermistor | It detects the low pressure saturation temperature to control the compressor frequency. |
| TH3 | Thermistor (Pipe temperature/Defrost determination) | It is used to control LEV pulse in cooling mode.<br>It is used to start the defrost mode in heating mode. |
| TH7 | Thermistor (Detects the ambient air temperature) | It detects the ambient temperature to control outdoor fan and LEV pulse. |
| TH8 | Thermistor (radiator plate temperature) | It detects the power transistor radiator plate temperature for protection of power transistor. |
| 63HS | High pressure sensor | It detects the discharge pressure to control the compressor frequency and protects unit against damage by high pressure.<br>It is used to calculate the sub cool. (Detects discharge pressure) |
| 63LS | Low pressure sensor | It detects the suction pressure to control LEV-B and LEVs of indoor units pulse. |
| TH2 | Thermistor (HIC temperature) | It is used to control LEV-B pulse. |
| SC | Sub cool | Sub cool |
| SCm | Target sub cool | Target sub cool (cooling) |
| Pdm | Target high pressure | Target high pressure (heating) |
| ETm | Target evaporation temperature | Target evaporation temperature (cooling) |
| I(input)(A) | Input current | Input current of outdoor unit. |
| I(comp)(A) | Compressor current | Compressor operating current of outdoor unit. |
| SC 1 | Sub cool of indoor unit 1 | Heating mode:Sub cool of indoor unit 1 |
| SC 2 | Sub cool of indoor unit 2 | Heating mode:Sub cool of indoor unit 2 |
| SC 3 | Sub cool of indoor unit 3 | Heating mode:Sub cool of indoor unit 3 |
| SC 4 | Sub cool of indoor unit 4 | Heating mode:Sub cool of indoor unit 4 |
| SC 5 | Sub cool of indoor unit 5 | Heating mode:Sub cool of indoor unit 5 |
| SC 6 | Sub cool of indoor unit 6 | Heating mode:Sub cool of indoor unit 6 |
| SC 7 | Sub cool of indoor unit 7 | Heating mode:Sub cool of indoor unit 7 |
| SC 8 | Sub cool of indoor unit 8 | Heating mode:Sub cool of indoor unit 8 |
| SC 9 | Sub cool of indoor unit 9 | Heating mode:Sub cool of indoor unit 9 |
| SC10 | Sub cool of indoor unit 10 | Heating mode:Sub cool of indoor unit 10 |
| SC11 | Sub cool of indoor unit 11 | Heating mode:Sub cool of indoor unit 11 |
| SC12 | Sub cool of indoor unit 12 | Heating mode:Sub cool of indoor unit 12 |
| SCm 1 | Target sub cool of indoor unit 1 | Heating mode:Target sub cool of indoor unit 1 |
| SCm 2 | Target sub cool of indoor unit 2 | Heating mode:Target sub cool of indoor unit 2 |
| SCm 3 | Target sub cool of indoor unit 3 | Heating mode:Target sub cool of indoor unit 3 |
| SCm 4 | Target sub cool of indoor unit 4 | Heating mode:Target sub cool of indoor unit 4 |
| SCm 5 | Target sub cool of indoor unit 5 | Heating mode:Target sub cool of indoor unit 5 |
| SCm 6 | Target sub cool of indoor unit 6 | Heating mode:Target sub cool of indoor unit 6 |
| SCm 7 | Target sub cool of indoor unit 7 | Heating mode:Target sub cool of indoor unit 7 |

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|---|---|---|
| SCm 8 | Target sub cool of indoor unit 8 | Heating mode:Target sub cool of indoor unit 8 |
| SCm 9 | Target sub cool of indoor unit 9 | Heating mode:Target sub cool of indoor unit 9 |
| SCm10 | Target sub cool of indoor unit 10 | Heating mode:Target sub cool of indoor unit 10 |
| SCm11 | Target sub cool of indoor unit 11 | Heating mode:Target sub cool of indoor unit 11 |
| SCm12 | Target sub cool of indoor unit 12 | Heating mode:Target sub cool of indoor unit 12 |
| LEV 1 | LEV pulse of indoor unit 1 | LEV pulse of indoor unit 1 LEV pulse control from the outdoor unit |
| LEV 2 | LEV pulse of indoor unit 2 | LEV pulse of indoor unit 2 LEV pulse control from the outdoor unit |
| LEV 3 | LEV pulse of indoor unit 3 | LEV pulse of indoor unit 3 LEV pulse control from the outdoor unit |
| LEV 4 | LEV pulse of indoor unit 4 | LEV pulse of indoor unit 4 LEV pulse control from the outdoor unit |
| LEV 5 | LEV pulse of indoor unit 5 | LEV pulse of indoor unit 5 LEV pulse control from the outdoor unit |
| LEV 6 | LEV pulse of indoor unit 6 | LEV pulse of indoor unit 6 LEV pulse control from the outdoor unit |
| LEV 7 | LEV pulse of indoor unit 7 | LEV pulse of indoor unit 7 LEV pulse control from the outdoor unit |
| LEV 8 | LEV pulse of indoor unit 8 | LEV pulse of indoor unit 8 LEV pulse control from the outdoor unit |
| LEV 9 | LEV pulse of indoor unit 9 | LEV pulse of indoor unit 9 LEV pulse control from the outdoor unit |
| LEV10 | LEV pulse of indoor unit 10 | LEV pulse of indoor unit 10 LEV pulse control from the outdoor unit |
| LEV11 | LEV pulse of indoor unit 11 | LEV pulse of indoor unit 11 LEV pulse control from the outdoor unit |
| LEV12 | LEV pulse of indoor unit 12 | LEV pulse of indoor unit 12 LEV pulse control from the outdoor unit |

# Operation Status Monitor Terminology (PUMY-P200/250YKMC-C, PUMY-P200/250YKM1-CN, PUMY-SP200/250YKM1-SD)

| Mark | Official Name | Meaning |
|---|---|---|
| Operation mode | | Operation mode |
| F/Hz | Compressor frequency | Compressor frequency |
| FAN | Fan steps | Out door unit fan steps |
| VDC | BUS BAR VOLTAGE(V) | Bus bar voltage of inverter circuit |
| LEV_A | LEV-A pulse of outdoor unit | Command value of LEV-A pulse of outdoor unit (fixed to blank) |
| LEV_B | LEV-B pulse of outdoor unit | Command value of LEV-B pulse of outdoor unit (fixed to blank) |
| 52C | electromagnetic contactor | 52C output (inverter main circuit) |
| 21S4 | 4-way valve | 4-way valve |
| SV1 | Solenoid valve 1 output | Bypass valve for discharge gas |
| SV2 | Solenoid valve 2 output | Switching valve for refrigerant circuit |
| SV3 | Solenoid valve 3 output | Oil return valve |
| demand | A state of demand function via outdoor unit input | Input: 1 / No input: 0 |
| TH4 | Thermistor (Detects comp. surface temperature) | It detects the comp. surface temperature to control the compressor frequency. It protects the comp. surface temperature. It is used to calculate the discharge superheat temperature. |
| TH6 | Thermistor | It detects the low pressure saturation temperature to control the compressor frequency. |
| TH3 | Thermistor (Pipe temperature/Defrost determination) | It is used to control LEV pulse in cooling mode. It is used to start the defrost mode in heating mode. |
| TH7 | Thermistor (Detects the ambient air temperature) | It detects the ambient temperature to control outdoor fan and LEV pulse. |
| TH8 | Thermistor (radiator plate temperature) | It detects the power transistor radiator plate temperature for protection of power transistor. |
| 63HS | High pressure sensor | It detects the discharge pressure to control the compressor frequency and protects unit against damage by high pressure. It is used to calculate the sub cool. (Detects discharge pressure) |
| 63LS | Low pressure sensor | It detects the suction pressure to control LEV-B and LEVs of indoor units pulse. |
| TH2 | Thermistor (HIC temperature) | It is used to control LEV-B pulse. |
| SC | Sub cool | Sub cool |
| SCm | Target sub cool | Target sub cool (cooling) |
| Pdm | Target high pressure | Target high pressure (heating) |
| ETm | Target evaporation temperature | Target evaporation temperature (cooling) |
| I(input)(A) | Input current | Input current of outdoor unit. |
| I(comp)(A) | Compressor current | Compressor operating current of outdoor unit. |
| SC 1 | Sub cool of indoor unit 1 | Heating mode:Sub cool of indoor unit 1 |
| SC 2 | Sub cool of indoor unit 2 | Heating mode:Sub cool of indoor unit 2 |
| SC 3 | Sub cool of indoor unit 3 | Heating mode:Sub cool of indoor unit 3 |
| SC 4 | Sub cool of indoor unit 4 | Heating mode:Sub cool of indoor unit 4 |
| SC 5 | Sub cool of indoor unit 5 | Heating mode:Sub cool of indoor unit 5 |
| SC 6 | Sub cool of indoor unit 6 | Heating mode:Sub cool of indoor unit 6 |
| SC 7 | Sub cool of indoor unit 7 | Heating mode:Sub cool of indoor unit 7 |
| SC 8 | Sub cool of indoor unit 8 | Heating mode:Sub cool of indoor unit 8 |
| SC 9 | Sub cool of indoor unit 9 | Heating mode:Sub cool of indoor unit 9 |
| SC10 | Sub cool of indoor unit 10 | Heating mode:Sub cool of indoor unit 10 |
| SC11 | Sub cool of indoor unit 11 | Heating mode:Sub cool of indoor unit 11 |
| SC12 | Sub cool of indoor unit 12 | Heating mode:Sub cool of indoor unit 12 |
| SCm 1 | Target sub cool of indoor unit 1 | Heating mode:Target sub cool of indoor unit 1 |
| SCm 2 | Target sub cool of indoor unit 2 | Heating mode:Target sub cool of indoor unit 2 |
| SCm 3 | Target sub cool of indoor unit 3 | Heating mode:Target sub cool of indoor unit 3 |
| SCm 4 | Target sub cool of indoor unit 4 | Heating mode:Target sub cool of indoor unit 4 |
| SCm 5 | Target sub cool of indoor unit 5 | Heating mode:Target sub cool of indoor unit 5 |
| SCm 6 | Target sub cool of indoor unit 6 | Heating mode:Target sub cool of indoor unit 6 |
| SCm 7 | Target sub cool of indoor unit 7 | Heating mode:Target sub cool of indoor unit 7 |
| SCm 8 | Target sub cool of indoor un | Heating mode:Target sub cool of indoor unit 8 |

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| SCm 9 | Target sub cool of indoor unit 9 | Heating mode:Target sub cool of indoor unit 9 |
| SCm10 | Target sub cool of indoor unit 10 | Heating mode:Target sub cool of indoor unit 10 |
| SCm11 | Target sub cool of indoor unit 11 | Heating mode:Target sub cool of indoor unit 11 |
| SCm12 | Target sub cool of indoor unit 12 | Heating mode:Target sub cool of indoor unit 12 |
| LEV 1 | LEV pulse of indoor unit 1 | LEV pulse of indoor unit 1 LEV pulse control from the outdoor unit |
| LEV 2 | LEV pulse of indoor unit 2 | LEV pulse of indoor unit 2 LEV pulse control from the outdoor unit |
| LEV 3 | LEV pulse of indoor unit 3 | LEV pulse of indoor unit 3 LEV pulse control from the outdoor unit |
| LEV 4 | LEV pulse of indoor unit 4 | LEV pulse of indoor unit 4 LEV pulse control from the outdoor unit |
| LEV 5 | LEV pulse of indoor unit 5 | LEV pulse of indoor unit 5 LEV pulse control from the outdoor unit |
| LEV 6 | LEV pulse of indoor unit 6 | LEV pulse of indoor unit 6 LEV pulse control from the outdoor unit |
| LEV 7 | LEV pulse of indoor unit 7 | LEV pulse of indoor unit 7 LEV pulse control from the outdoor unit |
| LEV 8 | LEV pulse of indoor unit 8 | LEV pulse of indoor unit 8 LEV pulse control from the outdoor unit |
| LEV 9 | LEV pulse of indoor unit 9 | LEV pulse of indoor unit 9 LEV pulse control from the outdoor unit |
| LEV10 | LEV pulse of indoor unit 10 | LEV pulse of indoor unit 10 LEV pulse control from the outdoor unit |
| LEV11 | LEV pulse of indoor unit 11 | LEV pulse of indoor unit 11 LEV pulse control from the outdoor unit |
| LEV12 | LEV pulse of indoor unit 12 | LEV pulse of indoor unit 12 LEV pulse control from the outdoor unit |

# Operation Status Monitor Terminology
# (PUMY-P200YKM, PUMY-P200YKMD, PUMY-P175/200/225YKM, PUMY-CP175/200/225YKM, MXZ-8C200VAM-C, MXZ-8C200VAM1-CT, MXZ-8C200VAM2-CN1, MXZ-8C225/250XAM.TH-TW1)

| Mark | Official Name | Meaning |
|---|---|---|
| Operation mode | | Operation mode |
| F/Hz | Compressor frequency | Compressor frequency |
| FAN | Fan steps | Out door unit fan steps |
| VDC | BUS BAR VOLTAGE(V) | Bus bar voltage of inverter circuit |
| LEV_A | LEV-A pulse of outdoor unit | Command value of LEV-A pulse of outdoor unit |
| LEV_B | LEV-B pulse of outdoor unit | Command value of LEV-B pulse of outdoor unit |
| 52C | electromagnetic contactor | 52C output (inverter main circuit) |
| 21S4 | 4-way valve | 4-way valve |
| SV1 | Solenoid valve 1 output | Bypass valve for discharge gas |
| SV2 | Solenoid valve 2 output | Switching valve for refrigerant circuit |
| SV3 | Solenoid valve 3 output | Oil return valve |
| demand | A state of demand function via outdoor unit input | Input: 1 / No input: 0 |
| TH4 | Thermistor (Detects comp. surface temperature) | It detects the comp. surface temperature to control the compressor frequency.<br>It protects the comp. surface temperature.<br>It is used to calculate the discharge superheat temperature. |
| TH6 | Thermistor | It detects the low pressure saturation temperature to control the compressor frequency. |
| TH3 | Thermistor (Pipe temperature/Defrost determination) | It is used to control LEV pulse in cooling mode.<br>It is used to start the defrost mode in heating mode. |
| TH7 | Thermistor (Detects the ambient air temperature) | It detects the ambient temperature to control outdoor fan and LEV pulse. |
| TH8 | Thermistor (radiator plate temperature) | It detects the power transistor radiator plate temperature for protection of power transistor. |
| 63HS | High pressure sensor | It detects the discharge pressure to control the compressor frequency and protects unit against damage by high pressure.<br>It is used to calculate the sub cool. (Detects discharge pressure) |
| 63LS | Low pressure sensor | It detects the suction pressure to control LEV-B and LEVs of indoor units pulse. |
| TH2 | Thermistor (HIC temperature) | It is used to control LEV-B pulse. |
| SC | Sub cool | Sub cool |
| SCm | Target sub cool | Target sub cool (cooling) |
| Pdm | Target high pressure | Target high pressure (heating) |
| ETm | Target evaporation temperature | Target evaporation temperature (cooling) |
| I(input)(A) | Input current | Input current of outdoor unit. |
| I(comp)(A) | Compressor current | Compressor operating current of outdoor unit. |
| SC 1 | Sub cool of indoor unit 1 | Heating mode:Sub cool of indoor unit 1 |
| SC 2 | Sub cool of indoor unit 2 | Heating mode:Sub cool of indoor unit 2 |
| SC 3 | Sub cool of indoor unit 3 | Heating mode:Sub cool of indoor unit 3 |
| SC 4 | Sub cool of indoor unit 4 | Heating mode:Sub cool of indoor unit 4 |
| SC 5 | Sub cool of indoor unit 5 | Heating mode:Sub cool of indoor unit 5 |
| SC 6 | Sub cool of indoor unit 6 | Heating mode:Sub cool of indoor unit 6 |
| SC 7 | Sub cool of indoor unit 7 | Heating mode:Sub cool of indoor unit 7 |
| SC 8 | Sub cool of indoor unit 8 | Heating mode:Sub cool of indoor unit 8 |
| SC 9 | Sub cool of indoor unit 9 | Heating mode:Sub cool of indoor unit 9 |
| SC10 | Sub cool of indoor unit 10 | Heating mode:Sub cool of indoor unit 10 |
| SC11 | Sub cool of indoor unit 11 | Heating mode:Sub cool of indoor unit 11 |
| SC12 | Sub cool of indoor unit 12 | Heating mode:Sub cool of indoor unit 12 |
| SCm 1 | Target sub cool of indoor unit 1 | Heating mode:Target sub cool of indoor unit 1 |
| SCm 2 | Target sub cool of indoor unit 2 | Heating mode:Target sub cool of indoor unit 2 |
| SCm 3 | Target sub cool of indoor unit 3 | Heating mode:Target sub cool of indoor unit 3 |
| SCm 4 | Target sub cool of indoor unit 4 | Heating mode:Target sub cool of indoor unit 4 |
| SCm 5 | Target sub cool of indoor unit 5 | Heating mode:Target sub cool of indoor unit 5 |
| SCm 6 | Target sub cool of indoor unit 6 | Heating mode:Target sub cool of indoor unit 6 |
| SCm 7 | Target sub cool of indoor un | Heating mode:Target sub cool of indoor unit 7 |

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| SCm 8 | Target sub cool of indoor unit 8 | Heating mode:Target sub cool of indoor unit 8 |
| SCm 9 | Target sub cool of indoor unit 9 | Heating mode:Target sub cool of indoor unit 9 |
| SCm10 | Target sub cool of indoor unit 10 | Heating mode:Target sub cool of indoor unit 10 |
| SCm11 | Target sub cool of indoor unit 11 | Heating mode:Target sub cool of indoor unit 11 |
| SCm12 | Target sub cool of indoor unit 12 | Heating mode:Target sub cool of indoor unit 12 |
| LEV 1 | LEV pulse of indoor unit 1 | LEV pulse of indoor unit 1 LEV pulse control from the outdoor unit |
| LEV 2 | LEV pulse of indoor unit 2 | LEV pulse of indoor unit 2 LEV pulse control from the outdoor unit |
| LEV 3 | LEV pulse of indoor unit 3 | LEV pulse of indoor unit 3 LEV pulse control from the outdoor unit |
| LEV 4 | LEV pulse of indoor unit 4 | LEV pulse of indoor unit 4 LEV pulse control from the outdoor unit |
| LEV 5 | LEV pulse of indoor unit 5 | LEV pulse of indoor unit 5 LEV pulse control from the outdoor unit |
| LEV 6 | LEV pulse of indoor unit 6 | LEV pulse of indoor unit 6 LEV pulse control from the outdoor unit |
| LEV 7 | LEV pulse of indoor unit 7 | LEV pulse of indoor unit 7 LEV pulse control from the outdoor unit |
| LEV 8 | LEV pulse of indoor unit 8 | LEV pulse of indoor unit 8 LEV pulse control from the outdoor unit |
| LEV 9 | LEV pulse of indoor unit 9 | LEV pulse of indoor unit 9 LEV pulse control from the outdoor unit |
| LEV10 | LEV pulse of indoor unit 10 | LEV pulse of indoor unit 10 LEV pulse control from the outdoor unit |
| LEV11 | LEV pulse of indoor unit 11 | LEV pulse of indoor unit 11 LEV pulse control from the outdoor unit |
| LEV12 | LEV pulse of indoor unit 12 | LEV pulse of indoor unit 12 LEV pulse control from the outdoor unit |

# Operation Status Monitor Terminology
# (MXZ-8C140/160VAMD-A, MXY-4C100/5C125/6C140VA, MXZ-6C53VAM-SG1, MXZ-8C112/140/160VAMZ-C, MXY-8C112/140/160VAM-CN1, MXZ-6C112/8C140/8C160NAM)

| Mark | Official Name | Meaning |
|---|---|---|
| Operation mode | | Operation mode |
| F/Hz | Compressor frequency | Compressor frequency |
| FAN | Fan steps | Out door unit fan steps |
| VDC | BUS BAR VOLTAGE(V) | Bus bar voltage of inverter circuit |
| LEV_A | LEV-A pulse of outdoor unit | Command value of LEV-A pulse of outdoor unit |
| LEV_B | LEV-B pulse of outdoor unit | Command value of LEV-B pulse of outdoor unit |
| 52C | electromagnetic contactor | 52C output (inverter main circuit) |
| 21S4 | 4-way valve | 4-way valve |
| SV1 | Solenoid valve 1 output | Bypass valve for discharge gas |
| SV2 | Solenoid valve 2 output | Switching valve for refrigerant circuit |
| SV3 | Solenoid valve 3 output | Oil return valve |
| demand | A state of demand function via outdoor unit input | Input: 1 / No input: 0 |
| TH4 | Thermistor (Detects comp. surface temperature) | It detects the comp. surface temperature to control the compressor frequency.<br>It protects the comp. surface temperature.<br>It is used to calculate the discharge superheat temperature. |
| TH6 | Thermistor | It detects the low pressure saturation temperature to control the compressor frequency. |
| TH3 | Thermistor (Pipe temperature/Defrost determination) | It is used to control LEV pulse in cooling mode.<br>It is used to start the defrost mode in heating mode. |
| TH7 | Thermistor (Detects the ambient air temperature) | It detects the ambient temperature to control outdoor fan and LEV pulse. |
| TH8 | Thermistor (radiator plate temperature) | It detects the power transistor radiator plate temperature for protection of power transistor. |
| 63HS | High pressure sensor | It detects the discharge pressure to control the compressor frequency and protects unit against damage by high pressure.<br>It is used to calculate the sub cool. (Detects discharge pressure) |
| 63LS | Low pressure sensor | It detects the suction pressure to control LEV-B and LEVs of indoor units pulse. |
| TH2 | Thermistor (HIC temperature) | It is used to control LEV-B pulse. |
| SC | Sub cool | Sub cool |
| SCm | Target sub cool | Target sub cool (cooling) |
| Pdm | Target high pressure | Target high pressure (heating) |
| ETm | Target evaporation temperature | Target evaporation temperature (cooling) |
| I(input)(A) | Input current | Input current of outdoor unit. |
| I(comp)(A) | Compressor current | Compressor operating current of outdoor unit. |
| SC 1 | Sub cool of indoor unit 1 | Heating mode:Sub cool of indoor unit 1 |
| SC 2 | Sub cool of indoor unit 2 | Heating mode:Sub cool of indoor unit 2 |
| SC 3 | Sub cool of indoor unit 3 | Heating mode:Sub cool of indoor unit 3 |
| SC 4 | Sub cool of indoor unit 4 | Heating mode:Sub cool of indoor unit 4 |
| SC 5 | Sub cool of indoor unit 5 | Heating mode:Sub cool of indoor unit 5 |
| SC 6 | Sub cool of indoor unit 6 | Heating mode:Sub cool of indoor unit 6 |
| SC 7 | Sub cool of indoor unit 7 | Heating mode:Sub cool of indoor unit 7 |
| SC 8 | Sub cool of indoor unit 8 | Heating mode:Sub cool of indoor unit 8 |
| SC 9 | Sub cool of indoor unit 9 | Heating mode:Sub cool of indoor unit 9 |
| SC10 | Sub cool of indoor unit 10 | Heating mode:Sub cool of indoor unit 10 |
| SC11 | Sub cool of indoor unit 11 | Heating mode:Sub cool of indoor unit 11 |
| SC12 | Sub cool of indoor unit 12 | Heating mode:Sub cool of indoor unit 12 |
| SCm 1 | Target sub cool of indoor unit 1 | Heating mode:Target sub cool of indoor unit 1 |
| SCm 2 | Target sub cool of indoor unit 2 | Heating mode:Target sub cool of indoor unit 2 |
| SCm 3 | Target sub cool of indoor unit 3 | Heating mode:Target sub cool of indoor unit 3 |
| SCm 4 | Target sub cool of indoor unit 4 | Heating mode:Target sub cool of indoor unit 4 |
| SCm 5 | Target sub cool of indoor unit 5 | Heating mode:Target sub cool of indoor unit 5 |
| SCm 6 | Target sub cool of indoor unit 6 | Heating mode:Target sub cool of indoor unit 6 |
| SCm 7 | Target sub cool of indoor unit 7 | Heating mode:Target sub cool of indoor unit 7 |

| | | |
|---|---|---|
| SCm 8 | Target sub cool of indoor unit 8 | Heating mode:Target sub cool of indoor unit 8 |
| SCm 9 | Target sub cool of indoor unit 9 | Heating mode:Target sub cool of indoor unit 9 |
| SCm10 | Target sub cool of indoor unit 10 | Heating mode:Target sub cool of indoor unit 10 |
| SCm11 | Target sub cool of indoor unit 11 | Heating mode:Target sub cool of indoor unit 11 |
| SCm12 | Target sub cool of indoor unit 12 | Heating mode:Target sub cool of indoor unit 12 |
| LEV 1 | LEV pulse of indoor unit 1 | LEV pulse of indoor unit 1 LEV pulse control from the outdoor unit |
| LEV 2 | LEV pulse of indoor unit 2 | LEV pulse of indoor unit 2 LEV pulse control from the outdoor unit |
| LEV 3 | LEV pulse of indoor unit 3 | LEV pulse of indoor unit 3 LEV pulse control from the outdoor unit |
| LEV 4 | LEV pulse of indoor unit 4 | LEV pulse of indoor unit 4 LEV pulse control from the outdoor unit |
| LEV 5 | LEV pulse of indoor unit 5 | LEV pulse of indoor unit 5 LEV pulse control from the outdoor unit |
| LEV 6 | LEV pulse of indoor unit 6 | LEV pulse of indoor unit 6 LEV pulse control from the outdoor unit |
| LEV 7 | LEV pulse of indoor unit 7 | LEV pulse of indoor unit 7 LEV pulse control from the outdoor unit |
| LEV 8 | LEV pulse of indoor unit 8 | LEV pulse of indoor unit 8 LEV pulse control from the outdoor unit |
| LEV 9 | LEV pulse of indoor unit 9 | LEV pulse of indoor unit 9 LEV pulse control from the outdoor unit |
| LEV10 | LEV pulse of indoor unit 10 | LEV pulse of indoor unit 10 LEV pulse control from the outdoor unit |
| LEV11 | LEV pulse of indoor unit 11 | LEV pulse of indoor unit 11 LEV pulse control from the outdoor unit |
| LEV12 | LEV pulse of indoor unit 12 | LEV pulse of indoor unit 12 LEV pulse control from the outdoor unit |

# Operation Status Monitor Terminology (PUMY-P250/300YBM, PUMY-SP250/300YBM-SD.TH, MXZ-12C280/335YAM-CN1)

| Mark | Official Name | Meaning |
|---|---|---|
| Operation mode | | Operation mode |
| F/Hz | Compressor frequency | Compressor frequency |
| FAN | Fan steps | Out door unit fan steps |
| VDC | BUS BAR VOLTAGE(V) | Bus bar voltage of inverter circuit |
| LEV_A | LEV-A pulse of outdoor unit | Command value of LEV-A pulse of outdoor unit |
| LEV_B | LEV-B pulse of outdoor unit | Command value of LEV-B pulse of outdoor unit |
| 52C | electromagnetic contactor | 52C output (inverter main circuit) |
| 21S4 | 4-way valve | 4-way valve |
| SV1 | Solenoid valve 1 output | Bypass valve for discharge gas |
| SV2 | Solenoid valve 2 output | Switching valve for refrigerant circuit |
| SV3 | Solenoid valve 3 output | Oil return valve |
| demand | A state of demand function via outdoor unit input | Input: 1 / No input: 0 |
| TH4 | Thermistor (Detects comp. surface temperature) | It detects the comp. surface temperature to control the compressor frequency. It protects the comp. surface temperature. It is used to calculate the discharge superheat temperature. |
| TH6 | Thermistor | It detects the low pressure saturation temperature to control the compressor frequency. |
| TH3 | Thermistor (Pipe temperature/Defrost determination) | It is used to control LEV pulse in cooling mode. It is used to start the defrost mode in heating mode. |
| TH7 | Thermistor (Detects the ambient air temperature) | It detects the ambient temperature to control outdoor fan and LEV pulse. |
| TH8 | Thermistor (radiator plate temperature) | It detects the power transistor radiator plate temperature for protection of power transistor. |
| 63HS | High pressure sensor | It detects the discharge pressure to control the compressor frequency and protects unit against damage by high pressure. It is used to calculate the sub cool. (Detects discharge pressure) |
| 63LS | Low pressure sensor | It detects the suction pressure to control LEV-B and LEVs of indoor units pulse. |
| TH2 | Thermistor (HIC temperature) | It is used to control LEV-B pulse. |
| SC | Sub cool | Sub cool |
| SCm | Target sub cool | Target sub cool (cooling) |
| Pdm | Target high pressure | Target high pressure (heating) |
| ETm | Target evaporation temperature | Target evaporation temperature (cooling) |
| I(input)(A) | Input current | Input current of outdoor unit. |
| I(comp)(A) | Compressor current | Compressor operating current of outdoor unit. |
| SC 1 | Sub cool of indoor unit 1 | Heating mode:Sub cool of indoor unit 1 |
| SC 2 | Sub cool of indoor unit 2 | Heating mode:Sub cool of indoor unit 2 |
| SC 3 | Sub cool of indoor unit 3 | Heating mode:Sub cool of indoor unit 3 |
| SC 4 | Sub cool of indoor unit 4 | Heating mode:Sub cool of indoor unit 4 |
| SC 5 | Sub cool of indoor unit 5 | Heating mode:Sub cool of indoor unit 5 |
| SC 6 | Sub cool of indoor unit 6 | Heating mode:Sub cool of indoor unit 6 |
| SC 7 | Sub cool of indoor unit 7 | Heating mode:Sub cool of indoor unit 7 |
| SC 8 | Sub cool of indoor unit 8 | Heating mode:Sub cool of indoor unit 8 |
| SC 9 | Sub cool of indoor unit 9 | Heating mode:Sub cool of indoor unit 9 |
| SC10 | Sub cool of indoor unit 10 | Heating mode:Sub cool of indoor unit 10 |
| SC11 | Sub cool of indoor unit 11 | Heating mode:Sub cool of indoor unit 11 |
| SC12 | Sub cool of indoor unit 12 | Heating mode:Sub cool of indoor unit 12 |
| SC13 | Sub cool of indoor unit 13 | Heating mode:Sub cool of indoor unit 13 |
| SC14 | Sub cool of indoor unit 14 | Heating mode:Sub cool of indoor unit 14 |
| SC15 | Sub cool of indoor unit 15 | Heating mode:Sub cool of indoor unit 15 |
| SC16 | Sub cool of indoor unit 16 | Heating mode:Sub cool of indoor unit 16 |
| SC17 | Sub cool of indoor unit 17 | Heating mode:Sub cool of indoor unit 17 |
| SC18 | Sub cool of indoor unit 18 | Heating mode:Sub cool of indoor unit 18 |
| SC19 | Sub cool of indoor unit 19 | Heating mode:Sub cool of indoor unit 19 |
| SC20 | Sub cool of indoor unit 20 | Heating mode:Sub cool of indoor unit 20 |
| SC21 | Sub cool of indoor unit 21 | Heating mode:Sub cool of indoor unit 21 |
| SC22 | Sub cool of indoor unit 22 | Heating mode:Sub cool of indoor unit 22 |
| SC23 | Sub cool of indoor unit 23 | Heating mode:Sub cool of indoor unit 23 |
| SC24 | Sub cool of indoor unit 24 | Heating mode:Sub cool of indoor unit 24 |
| SC25 | Sub cool of indoor unit 25 | Heating mode:Sub cool of indoor unit 25 |
| SC26 | Sub cool of indoor unit 26 | Heating mode:Sub cool of indoor unit 26 |
| SC27 | Sub cool of indoor unit 27 | Heating mode:Sub cool of indoor unit 27 |

| | | |
|---|---|---|
| SC28 | Sub cool of indoor unit 28 | Heating mode:Sub cool of indoor unit 28 |
| SC29 | Sub cool of indoor unit 29 | Heating mode:Sub cool of indoor unit 29 |
| SC30 | Sub cool of indoor unit 30 | Heating mode:Sub cool of indoor unit 30 |
| SCm 1 | Target sub cool of indoor unit 1 | Heating mode:Target sub cool of indoor unit 1 |
| SCm 2 | Target sub cool of indoor unit 2 | Heating mode:Target sub cool of indoor unit 2 |
| SCm 3 | Target sub cool of indoor unit 3 | Heating mode:Target sub cool of indoor unit 3 |
| SCm 4 | Target sub cool of indoor unit 4 | Heating mode:Target sub cool of indoor unit 4 |
| SCm 5 | Target sub cool of indoor unit 5 | Heating mode:Target sub cool of indoor unit 5 |
| SCm 6 | Target sub cool of indoor unit 6 | Heating mode:Target sub cool of indoor unit 6 |
| SCm 7 | Target sub cool of indoor unit 7 | Heating mode:Target sub cool of indoor unit 7 |
| SCm 8 | Target sub cool of indoor unit 8 | Heating mode:Target sub cool of indoor unit 8 |
| SCm 9 | Target sub cool of indoor unit 9 | Heating mode:Target sub cool of indoor unit 9 |
| SCm10 | Target sub cool of indoor unit 10 | Heating mode:Target sub cool of indoor unit 10 |
| SCm11 | Target sub cool of indoor unit 11 | Heating mode:Target sub cool of indoor unit 11 |
| SCm12 | Target sub cool of indoor unit 12 | Heating mode:Target sub cool of indoor unit 12 |
| SCm13 | Target sub cool of indoor unit 13 | Heating mode:Target sub cool of indoor unit 13 |
| SCm14 | Target sub cool of indoor unit 14 | Heating mode:Target sub cool of indoor unit 14 |
| SCm15 | Target sub cool of indoor unit 15 | Heating mode:Target sub cool of indoor unit 15 |
| SCm16 | Target sub cool of indoor unit 16 | Heating mode:Target sub cool of indoor unit 16 |
| SCm17 | Target sub cool of indoor unit 17 | Heating mode:Target sub cool of indoor unit 17 |
| SCm18 | Target sub cool of indoor unit 18 | Heating mode:Target sub cool of indoor unit 18 |
| SCm19 | Target sub cool of indoor unit 19 | Heating mode:Target sub cool of indoor unit 19 |
| SCm20 | Target sub cool of indoor unit 20 | Heating mode:Target sub cool of indoor unit 20 |
| SCm21 | Target sub cool of indoor unit 21 | Heating mode:Target sub cool of indoor unit 21 |
| SCm22 | Target sub cool of indoor unit 22 | Heating mode:Target sub cool of indoor unit 22 |
| SCm23 | Target sub cool of indoor unit 23 | Heating mode:Target sub cool of indoor unit 23 |
| SCm24 | Target sub cool of indoor unit 24 | Heating mode:Target sub cool of indoor unit 24 |
| SCm25 | Target sub cool of indoor unit 25 | Heating mode:Target sub cool of indoor unit 25 |
| SCm26 | Target sub cool of indoor unit 26 | Heating mode:Target sub cool of indoor unit 26 |
| SCm27 | Target sub cool of indoor unit 27 | Heating mode:Target sub cool of indoor unit 27 |
| SCm28 | Target sub cool of indoor unit 28 | Heating mode:Target sub cool of indoor unit 28 |
| SCm29 | Target sub cool of indoor unit 29 | Heating mode:Target sub cool of indoor unit 29 |
| SCm30 | Target sub cool of indoor unit 30 | Heating mode:Target sub cool of indoor unit 30 |
| LEV 1 | LEV pulse of indoor unit 1 | LEV pulse of indoor unit 1 LEV pulse control from the outdoor unit |
| LEV 2 | LEV pulse of indoor unit 2 | LEV pulse of indoor unit 2 LEV pulse control from the outdoor unit |
| LEV 3 | LEV pulse of indoor unit 3 | LEV pulse of indoor unit 3 LEV pulse control from the outdoor unit |
| LEV 4 | LEV pulse of indoor unit 4 | LEV pulse of indoor unit 4 LEV pulse control from the outdoor unit |
| LEV 5 | LEV pulse of indoor unit 5 | LEV pulse of indoor unit 5 LEV pulse control from the outdoor unit |
| LEV 6 | LEV pulse of indoor unit 6 | LEV pulse of indoor unit 6 LEV pulse control from the outdoor unit |
| LEV 7 | LEV pulse of indoor unit 7 | LEV pulse of indoor unit 7 LEV pulse control from the outdoor unit |

| | | |
|---|---|---|
| LEV 8 | LEV pulse of indoor unit 8 | LEV pulse of indoor unit 8 LEV pulse control from the outdoor unit |
| LEV 9 | LEV pulse of indoor unit 9 | LEV pulse of indoor unit 9 LEV pulse control from the outdoor unit |
| LEV10 | LEV pulse of indoor unit 10 | LEV pulse of indoor unit 10 LEV pulse control from the outdoor unit |
| LEV11 | LEV pulse of indoor unit 11 | LEV pulse of indoor unit 11 LEV pulse control from the outdoor unit |
| LEV12 | LEV pulse of indoor unit 12 | LEV pulse of indoor unit 12 LEV pulse control from the outdoor unit |
| LEV13 | LEV pulse of indoor unit 13 | LEV pulse of indoor unit 13 LEV pulse control from the outdoor unit |
| LEV14 | LEV pulse of indoor unit 14 | LEV pulse of indoor unit 14 LEV pulse control from the outdoor unit |
| LEV15 | LEV pulse of indoor unit 15 | LEV pulse of indoor unit 15 LEV pulse control from the outdoor unit |
| LEV16 | LEV pulse of indoor unit 16 | LEV pulse of indoor unit 16 LEV pulse control from the outdoor unit |
| LEV17 | LEV pulse of indoor unit 17 | LEV pulse of indoor unit 17 LEV pulse control from the outdoor unit |
| LEV18 | LEV pulse of indoor unit 18 | LEV pulse of indoor unit 18 LEV pulse control from the outdoor unit |
| LEV19 | LEV pulse of indoor unit 19 | LEV pulse of indoor unit 19 LEV pulse control from the outdoor unit |
| LEV20 | LEV pulse of indoor unit 20 | LEV pulse of indoor unit 20 LEV pulse control from the outdoor unit |
| LEV21 | LEV pulse of indoor unit 21 | LEV pulse of indoor unit 21 LEV pulse control from the outdoor unit |
| LEV22 | LEV pulse of indoor unit 22 | LEV pulse of indoor unit 22 LEV pulse control from the outdoor unit |
| LEV23 | LEV pulse of indoor unit 23 | LEV pulse of indoor unit 23 LEV pulse control from the outdoor unit |
| LEV24 | LEV pulse of indoor unit 24 | LEV pulse of indoor unit 24 LEV pulse control from the outdoor unit |
| LEV25 | LEV pulse of indoor unit 25 | LEV pulse of indoor unit 25 LEV pulse control from the outdoor unit |
| LEV26 | LEV pulse of indoor unit 26 | LEV pulse of indoor unit 26 LEV pulse control from the outdoor unit |
| LEV27 | LEV pulse of indoor unit 27 | LEV pulse of indoor unit 27 LEV pulse control from the outdoor unit |
| LEV28 | LEV pulse of indoor unit 28 | LEV pulse of indoor unit 28 LEV pulse control from the outdoor unit |
| LEV29 | LEV pulse of indoor unit 29 | LEV pulse of indoor unit 29 LEV pulse control from the outdoor unit |
| LEV30 | LEV pulse of indoor unit 30 | LEV pulse of indoor unit 30 LEV pulse control from the outdoor unit |

# Operation Status Monitor Terminology (PUHN-200/250YMF-B,YMC)

| Mark | Official Name | Meaning |
|---|---|---|
| Control mode | | Control mode for outdoor unit |
| Operation mode | | Operation mode for outdoor unit |
| F3 | Temporary compressor frequency of NO.3 COMP for calculation | Variable for control |
| AK2 | Heat exchanger capacity (Constant capacity unit) | Variable which determine the size of outdoor heat exchanger |
| AL | Accumulator level | Liquid level in the accumulation ( 0: A little, 1: Medium, 2: Much(overcharge) ) |
| FAN2 | Fan (not proportional to rotational frequency) | Fan capacity of outdoor unit(Fan on a constant capacity unit) |
| SCO | Sub-cool at heat exchanger | Variable for control |
| SCC | Sub-cool at SC coil exit | Variable for control |
| SHB | SC coil bypass exit super heat | Variable for control |
| LEV1 | SC coil LEV opening | Adjusts refrigerant in the bypass pipe from liquid pipe in the outdoor unit in cooling mode. |
| LEV2 | Liquid pipe LEV opening | Controls a flow of liquid refrigerant |
| 21S4 | 4-way valve | Switches the cooling/heating cycle (0:Cooling, 1:Heating) |
| SV1 | Solenoid valve output (Bypass between discharge pipe and suction pipe) | Returns oil from the oil separator |
| SV4 | Solenoid valve output (Bypass between discharge pipe and suction pipe) | Protection of over down low pressure(for evaporates refrigerant in an accumulator) |
| SV5b | Solenoid valve output (Liquid pipe) | Controls a flow of liquid refrigerant |
| TH11 | Thermistor (Detects discharge temperature) | Detects the discharge temperature for protection of compressor. |
| TH3 | Thermistor (Detects lower liquid level in the accumulator) | Detects the liquid level in the accumulator |
| TH4 | Thermistor (Detects upper liquid level in the accumulator) | Detects the liquid level in the accumulator |
| TH5 | Thermistor (Detects the liquid pipe temperature) | Controls compressor frequency, controls defrosting and detects the liquid level in heating mode, detects the sub-cool at the heat exchanger exit in combination with 63 HS data, and controls LEV1. |
| TH6 | Thermistor (Detects the ambient air temperature) | Detects the ambient temperature and then, controls the liquid level in the accumulator. |
| TH7(8,9) | Thermistor (Controls SC) | Controls LEV1 based on the temperature differences between TH6,7,8 and 9. |
| TH10a | Thermistor (Gas pipe temperature of heat exchanger) | Detects outlet temperature of heat exchanger in heating mode. |
| TH10b | Thermistor (balance pipe) | Detects temperature of balance pipe. |
| 63LS | Low pressure sensor | Detects the suction pressure. |

# Operation Status Monitor Terminology (PUHN-P200/250YMF-B,YMC)

| Mark | Official Name | Meaning |
|---|---|---|
| Control mode | | Control mode for outdoor unit |
| Operation mode | | Operation mode for outdoor unit |
| F3 | Temporary compressor frequency of NO.3 COMP for calculation | Variable for control |
| AK2 | Heat exchanger capacity (Constant capacity unit) | Variable which determine the size of outdoor heat exchanger |
| AL | Accumulator level | Liquid level in the accumulation( 0: A little, 1: Medium, 2: Much(overcharge) ) |
| FAN2 | Fan | Fan capacity of outdoor unit (Fan on a constant capacity unit) (not proportional to rotational frequency) |
| SCO | Sub-cool at heat exchanger | Variable for control |
| SCC | Sub-cool at SC coil exit | Variable for control |
| SHB | SC coil bypass exit super heat | Variable for control |
| LEV1 | SC coil LEV opening | Adjusts refrigerant in the bypass pipe from liquid pipe in the outdoor unit in cooling mode. |
| LEV2 | Liquid pipe LEV opening | Controls a flow of liquid refrigerant |
| 21S4 | 4-way valve | Switches the cooling/heating cycle (0:Cooling, 1:Heating) |
| SV1 | Solenoid valve output (Bypass between discharge pipe and suction pipe) | Returns oil from the oil separator |
| SV22 | Solenoid valve output (Capacity control full load) | Switches the capacity control valve inside the compressor |
| SV32 | Solenoid valve output (Capacity control unload) | Switches the capacity control valve inside the compressor |
| SV4 | Solenoid valve output (Bypass between discharge pipe and suction pipe) | Protection of over down low pressure (for evaporates refrigerant in an accumulator) |
| SV5b | Solenoid valve output (Liquid pipe) | Controls a flow of liquid refrigerant |
| TH11 | Thermistor (Detects discharge temperature) | Detects the discharge temperature for protection of compressor. |
| TH3 | Thermistor (Detects lower liquid level in the accumulator) | Detects the liquid level in the accumulator |
| TH4 | Thermistor (Detects upper liquid level in the accumulator) | Detects the liquid level in the accumulator |
| TH5 | Thermistor (Detects the liquid pipe temperature) | Controls compressor frequency, controls defrosting and detects the liquid level in heating mode, detects the sub-cool at the heat exchanger exit in combination with 63 HS data, and controls LEV1. |
| TH6 | Thermistor (Detects the ambient air temperature) | Detects the ambient temperature and then, controls the liquid level in the accumulator. |
| TH7(8,9) | Thermistor (Controls SC) | Controls LEV1 based on the temperature differences between TH 6,7,8 and 9. |
| TH10a | Thermistor (Gas pipe temperature of heat exchanger) | Detects outlet temperature of heat exchanger in heating mode. |
| TH10b | Thermistor (balance pipe) | Detects temperature of balance pipe. |
| 63LS | Low pressure sensor | Detects the suction pressure and then, senses the refrigerant composition. |

# Operation Status Monitor Terminology (PUHN-200/250YMF-C)

| Mark | Official Name | Meaning |
|---|---|---|
| Control mode | | Control mode for outdoor unit |
| Operation mode | | Operation mode for outdoor unit |
| F3 | Temporary compressor frequency of NO.3 COMP for calculation | Variable for control |
| AK2 | Heat exchanger capacity (Constant capacity unit) | Variable which determine the size of outdoor heat exchanger |
| AL | Accumulator level | Liquid level in the accumulation ( 0: A little, 1: Medium, 2: Much(overcharge) ) |
| FAN2 | Fan | Fan capacity of outdoor unit(Fan on a constant capacity unit) (not proportional to rotational frequency) |
| SCO | Sub-cool at heat exchanger | Variable for control |
| SCC | Sub-cool at SC coil exit | Variable for control |
| SHB | SC coil bypass exit super heat | Variable for control |
| LEV | SC coil LEV opening | Adjusts refrigerant in the bypass pipe from liquid pipe in the outdoor unit in cooling mode. |
| LEV2 | Liquid pipe LEV opening | Controls a flow of liquid refrigerant |
| 21S4 | 4-way valve | Switches the cooling/heating cycle (0:Cooling, 1:Heating) |
| SV1 | Solenoid valve output (Bypass between discharge pipe and suction pipe) | Returns oil from the oil separator |
| SV4 | Solenoid valve output (Bypass between discharge pipe and suction pipe) | Protection of over down low pressure(for evaporates refrigerant in an accumulator) |
| SV5b | Solenoid valve output (Liquid pipe) | Controls a flow of liquid refrigerant |
| TH11 | Thermistor (Detects discharge temperature) | Detects the discharge temperature for protection of compressor. |
| TH3 | Thermistor (Detects lower liquid level in the accumulator) | Detects the liquid level in the accumulator |
| TH4 | Thermistor (Detects upper liquid level in the accumulator) | Detects the liquid level in the accumulator |
| TH5 | Thermistor (Detects the liquid pipe temperature) | Controls compressor frequency, controls defrosting and detects the liquid level in heating mode, detects the sub-cool at the heat exchanger exit in combination with 63 HS data, and controls LEV1. |
| TH6 | Thermistor (Detects the ambient air temperature) | Detects the ambient temperature and then, controls the liquid level in the accumulator. |
| TH7(8,9) | Thermistor(Controls SC) | Controls LEV1 based on the temperature differences between TH 6,7,8 and 9. |
| TH10a | Thermistor (Gas pipe temperature of heat exchanger) | Detects outlet temperature of heat exchanger in heating mode. |
| TH10b | Thermistor(balance pipe) | Detects temperature of balance pipe. |
| 63LS | Low pressure sensor | Detects the suction pressure. |

# Operation Status Monitor Terminology (PUHN-P200/250YMF-C)

| Mark | Official Name | Meaning |
|---|---|---|
| Control mode | | Control mode for outdoor unit |
| Operation mode | | Operation mode for outdoor unit |
| F3 | Temporary compressor frequency of NO.3 COMP for calculation | Variable for control |
| AK2 | Heat exchanger capacity (Constant capacity unit) | Variable which determine the size of outdoor heat exchanger |
| AL | Accumulator level | Liquid level in the accumulation ( 0: A little, 1: Medium, 2: Much(overcharge) ) |
| FAN2 | Fan | Fan capacity of outdoor unit(Fan on a constant capacity unit) (not proportional to rotational frequency) |
| SCO | Sub-cool at heat exchanger | Variable for control |
| SCC | Sub-cool at SC coil exit | Variable for control |
| SHB | SC coil bypass exit super heat | Variable for control |
| LEV1 | SC coil LEV opening | Adjusts refrigerant in the bypass pipe from liquid pipe in the outdoor unit in cooling mode. |
| LEV2 | Liquid pipe LEV opening | Controls a flow of liquid refrigerant |
| 21S4 | 4-way valve | Switches the cooling/heating cycle (0:Cooling, 1:Heating) |
| SV1 | Solenoid valve output (Bypass between discharge pipe and suction pipe) | Returns oil from the oil separator |
| SV22 | Solenoid valve output (Capacity control full load) | Switches the capacity control valve inside the compressor |
| SV32 | Solenoid valve output (Capacity control unload) | Switches the capacity control valve inside the compressor |
| SV4 | Solenoid valve output (Bypass between discharge pipe and suction pipe) | Protection of over down low pressure(for evaporates refrigerant in an accumulator) |
| SV5b | Solenoid valve output (Liquid pipe) | Controls a flow of liquid refrigerant |
| TH11 | Thermistor (Detects discharge temperature) | Detects the discharge temperature for protection of compressor. |
| TH3 | Thermistor (Detects lower liquid level in the accumulator) | Detects the liquid level in the accumulator |
| TH4 | Thermistor (Detects upper liquid level in the accumulator) | Detects the liquid level in the accumulator |
| TH5 | Thermistor (Detects the liquid pipe temperature) | Controls compressor frequency, controls defrosting and detects the liquid level in heating mode, detects the sub-cool at the heat exchanger exit in combination with 63 HS data, and controls LEV1. |
| TH6 | Thermistor (Detects the ambient air temperature) | Detects the ambient temperature and then, controls the liquid level in the accumulator. |
| TH7(8,9) | Thermistor(Controls SC) | Controls LEV1 based on the temperature differences between TH 6,7,8 and 9. |
| TH10a | Thermistor (Gas pipe temperature of heat exchanger) | Detects outlet temperature of heat exchanger in heating mode. |
| TH10b | Thermistor(balance pipe) | Detects temperature of balance pipe. |
| 63LS | Low pressure sensor | Detects the suction pressure and then, senses the refrigerant composition. |

# Operation Status Monitor Terminology (ECOV-EN75/110/150/185/225/260/300/335MVB, ECOV-EN75/110/150/185/225/260/300/335VB)

| Mark | Official Name | Meaning |
|---|---|---|
| TH1 | Discharge pipe temperature | Discharge pipe temperature of the compressor |
| TH2 | Compressor shell oil temperature | Oil temperature of the compressor shell bottom |
| TH4 | – | For Japan market model |
| TH5 | – | For Japan market model |
| TH6 | Outside air temperature | Temperature of outside air |
| TH7 | Suction pipe temperature | Suction pipe temperature of the compressor |
| TH8 | Liquid pipe temperature | Temperature of the liquid pipe |
| HPS | High-pressure | Use for controlling compressor, fan and high-pressure protection. |
| LPS | Low-pressure | Use for controlling compressor, fan and low-pressure protection. |
| Idc | Direct current(INV DC current) | Peak value of the DCCT detection |
| Vdc | Bus voltage(INV DC voltage) | DC bus voltage |
| Tc | Condensation temperature (Converted high-pressure saturation temperature) | Condensation temperature of unit module. |
| Te | Evaporation temperature (Converted low-pressure saturation temperature) | Evaporation temperature of unit module. |
| THHS | Inverter heatsink temperature | Temperature of the heatsink.<br>For controlling the inverter cooling fan. |
| AL | Liquid refrigerant flooding level | Determine the liquid refrigerant flooding condition.<br>0:dry, 1:wet, 2:liquid refrigerant flooding |
| Qnow | – | For Japan market model |
| Qave | – | For Japan market model |
| Tave | – | For Japan market model |
| Tem0 | – | For Japan market model |
| Tem1 | – | For Japan market model |
| Tem1' | – | For Japan market model |
| Tem1Shift | – | For Japan market model |
| Tcm | Target condensation temperature | Target condensation temperature of unit module.<br>When unit correspondencing, It doesn't show because the controlling use representative value. |
| Tem | Target evaporation temperature | Target evaporation temperature of unit module. |
| Delta-Tcm | Target condensation temperature difference | Difference between the target condensation temperature and actual temperature(Tcm-Tc) |
| Delta-Tem | Target evaporation temperature difference | Difference between the target evaporation temperature and actual temperature(Tem-Te) |
| L.Cut off | Low-pressure cutoff compressor OFF-threshold | Low-pressure cutoff compressor OFF-threshold Unit:Mpa |
| L.Cut on | Low-pressure cutoff compressor ON-threshold | Low-pressure cutoff compressor ON-threshold Unit:Mpa |
| lead-in speed | Compressor suction speed | Rate of the low-pressure change of compressor Unit:Mpa/10s |
| Discharge-SH | Compressor discharge superheat | Discharge superheat of the compressor(TH1-Tc) |
| Esc | Instantaneous value of the subcool coil temperature efficiency | – |
| EscA | Average value of the subcool coil temperature efficiency | – |
| S-TH6 | Representative outside air temperature | Representative outside air temperature of the overall unit |
| S-HPS | Representative high-pressure | Representative high-pressure of the overall unit<br>Unit:Mpa |
| S-LPS | Representative low-pressure | Representative low-pressure of the overall unit<br>Unit:Mpa |
| S-Coff | Overall Low-pressure cut-off value | Representative low-pressure cutoff compressor OFF-threshold of the overall unit<br>Unit:Mpa |
| S-Con | Overall Low-pressure cut-on value | Representative low-pressure cutoff compressor ON-threshold of the overall unit<br>Unit:Mpa |
| S-Tc | Representative condensation temperature | Representative value of the actual condensation temperature of the overall unit |
| S-Te | Representative evaporation | Representative value of the actual evaporation temperature of the overall |

| | | |
|---|---|---|
| | temperature | unit |
| S-Tcm | Representative target condensation temperature | Representative value of the setting condensation temperature of the overall unit |
| S-Tem | Representative target evaporation temperature | Representative value of the setting evaporation temperature of the overall unit |
| S-Delta-Tcm | Representative target condensation temperature difference | S-Tcm – S-Tc |
| S-Delta-Tem | Representative target evaporation temperature difference | S-Tem – S-Te |
| S-Esc | Representative instantaneous value of the subcool coil temperature efficiency | Minimum value of the instantaneous value of the subcool coil temperature efficiency of the overall unit |
| S-EscA | Representative average value of the subcool coil temperature efficiency | Minimum value of the average value of the subcool coil temperature efficiency of the overall unit |
| Rst | Alarm reset input(X2) | Error alarm reset input. |
| ShiftM | – | For Japan market model |
| 63H | 63H | Show the high-pressure switch status.<br>1:ON, 0:OFF |
| 63L | 63L | Show the low-pressure switch (field-supplied) status.<br>1:ON, 0:OFF |
| X31 | Operation input(X31) | Show the contact input status of the auxiliary relay <X31>.<br>1:ON, 0:OFF |
| SW2 | Unit module operation SW (SW21, SW2, SW23) | Show the contact input status of the unit module operation switch.<br>1:ON, 0:OFF |
| SW4 | Operation at fixed compressor frequency SW(SW4) | Show the contact input status of the switch <Normal-Fixed frequency>.<br>1:ON(Fixed frequency), 0:OFF(Normal) |
| X1 | Operation SW(X11) | Show the contact input status of the operation switch (auxiliary relay <X11>).<br>1:ON, 0:OFF |
| CN63 | CN63PW input | – |
| TYP1 | TYPE1 | – |
| TYP2 | TYPE2 | – |
| TYP4 | TYPE4 | – |
| TYP5 | TYPE5 | – |
| TYP6 | TYPE6 | – |
| Iu | Compressor U-phase current value | Inverter output current value(U-phase) |
| Iw | Compressor W-phase current value | Inverter output current value(W-phase) |
| Vunb | Limit of unbalance of power supply voltage | Show the state of the unbalance limiting control of power supply voltage.<br>(1:Under control、0:Nomal) |
| FAN-Ver | Fan inverter S/W version | Software version of the fan inverter |
| Ctrl mode | Control mode | Outdoor unit control mode |
| Ope mode | Operation mode | Outdoor unit operation mode |
| Fm | Target frequency of the compressor(unit module value) (Hz) | Target frequency of the compressor. |
| FAN(AK%) | Heat exchanger capacity ( Fan output) | Variable of the motor rotation speed of the condenser fan (%) |
| Rpter | Repeater | Permit(1) /Prohibit (0) the communication with the centralized control system. |
| M-Supply | M-net power supply | Power supply to the indoor unit system. (M-net power supply) |
| f0 | Current operating frequency of the compressor (Hz) | Current operating frequency of the compressor |
| S-Fm(Hz) | Target frequency of the compressor (overall value)(Hz) (only OC) | Target frequency of the compressor of overall unit. |
| X101 | Auxiliary relay<X101> status | Used for the bypass solenoid valve output(the primary-side power-supply voltage).<br>1:ON, 0:OFF |
| X102 | Auxiliary relay<X102> status | For Japan market model |
| X103 | Auxiliary relay<X103> status | Used for the crankcase heater output(the primary-side power-supply voltage).<br>1:ON, 0:OFF |
| X104 | Auxiliary relay<X104> status | Used for the solenoid valve <injection> output ( the primary-side |

| | | |
|---|---|---|
| | | power-supply voltage).<br>1:ON, 0:OFF |
| X105 | Auxiliary relay<X105> status | Used for the high/low pressure bypass solenoid valve output ( the primary-side power-supply voltage).<br>1:ON, 0:OFF |
| X106 | Auxiliary relay<X106> status | The solenoid valve <oil return> output (21Q1～3) (the primary-side power-supply voltage).<br>1:ON, 0:OFF |
| X107 | Auxiliary relay<X107> status | Used for the output of the operating status of the compressor(auxiliary relay<X61> drive)(the primary-side power-supply voltage). 1:ON, 0:OFF |
| X108 | Auxiliary relay<X108> status | Used for 52F output (the primary-side power-supply voltage).<br>1:ON, 0:OFF |
| X109 | Auxiliary relay<X109> status | - |
| X110 | Auxiliary relay<X110> status | - |
| X111 | Auxiliary relay<X111> status | Used for the unit operation signal output(auxiliary relay<X4>drive)(the primary-side power-supply voltage).<br>1:ON, 0:OFF |
| X112 | Auxiliary relay<X112> status | Used for the error alarm signal output(auxiliary relay<X5>drive)(the primary-side power-supply voltage).<br>1:ON, 0:OFF |
| X172 | Auxiliary relay<X172> status | Used for the 72C drive source output(the primary-side power-supply voltage).<br>1:ON, 0:OFF |
| 72C | Output of 72C for export | Used for the 72C drive source output(DC12V power-supply). 1:ON, 0:OFF |
| Err | Error output | - |
| COMP | Compressor ON/OFF output | - |
| LEV | LEV output value | LEV output value of the linear expansion valve<injection>.<br>0～480 pulse |
| SW1～4 | DipSW1～4 input | Show the DipSW status.<br>1:ON, 0:OFF |
| Hc1 | - | For Japan market model |
| Hc2 | - | For Japan market model |
| Hc3 | | For Japan market model |

# Operation Status Monitor Terminology (ECOV-X37/55VA)

| Mark | Official Name | Meaning |
|---|---|---|
| TH1 | Discharge pipe temperature | Discharge pipe temperature of the compressor |
| TH2 | Compressor oil temperature | Oil temperature of the compressor shell bottom |
| TH4 | Gascooler outlet pipe temperature | Temperature of the gascooler outlet pipe |
| TH5 | Heat exchanger outlet pipe temperature | Temperature of the heat exchanger outlet pipe |
| TH6 | Outside air temperature | Temperature of outside air |
| TH7 | Suction pipe temperature | Suction pipe temperature of the compressor |
| TH8 | Liquid pipe temperature | Temperature of the liquid pipe |
| TH9 | Oil pipe temperature | Temperature of the oil pipe |
| HPS1 | High-pressure1 | Use for controlling compressor, fan and high-pressure protection. |
| HPS2 | High-pressure2 | Use for controlling compressor, fan and high-pressure protection. |
| MPS | Middle-pressure | Use for controlling compressor, fan and middle-pressure protection. |
| LPS | Low-pressure | Use for controlling compressor, fan and low-pressure protection. |
| Vdc | Bus voltage(INV DC voltage) | DC bus voltage |
| Tc | Condensation temperature (Converted high-pressure saturation temperature) | Condensation temperature of unit module. |
| Te | Evaporation temperature (Converted low-pressure saturation temperature) | Evaporation temperature of unit module. |
| THHS | Inverter heatsink temperature | Temperature of the heatsink. For controlling the inverter cooling fan. |
| AL | Liquid refrigerant flooding level | Determine the liquid refrigerant flooding condition.<br>0:dry, 1:wet, 2:liquid refrigerant flooding |
| Tem0 | Target evaporation temperature setting value | Target evaporation temperature setting value |
| Tcm | Target condensation temperature | Target condensation temperature of unit module.<br>When unit correspondencing, it doesn't show because the controlling use representative value. |
| Tem | Target evaporation temperature | Target evaporation temperature of unit module. |
| Coff | Low-pressure cut-off value | Low-pressure cutoff compressor OFF-threshold |
| Con | Low-pressure cut-on value | Low-pressure cutoff compressor ON-threshold |
| S-Tc | Representative condensation temperature | Representative value of the actual condensation temperature of the overall unit |
| S-Te | Representative evaporation temperature | Representative value of the actual evaporation temperature of the overall |
| S-Tcm | Representative target condensation temperature | Representative value of the target condensation temperature of the overall unit |
| S-Tem | Representative target evaporation temperature | Representative value of the target evaporation temperature of the overall unit |
| Rst | Alarm reset input(X2) | Error alarm reset input. |
| 63H | 63H | Show the high-pressure switch status.<br>1:ON, 0:OFF" |
| 63L | 63L | Show the low-pressure switch (field-supplied) status.<br>1:ON, 0:OFF" |
| X3 | Operation input(X31) | Show the contact input status of the auxiliary relay <X31>.<br>1:ON, 0:OFF" |
| X1 | Operation SW(X11) | "Show the contact input status of the operation switch (auxiliary relay <X11>). |
| TYP1 | – | – |
| TYP2 | – | – |
| TYP4 | – | – |
| TYP5 | – | – |
| TYP6 | – | – |
| Iu | Compressor U-phase current value | Inverter output current value(U-phase) |
| Iw | Compressor W-phase current value | Inverter output current value(W-phase) |
| Vunb | Limit of unbalance of power supply voltage | Show the state of the unbalance limiting control of power supply voltage.<br>1:Under control、0:Nomal |
| Ctrl mode | Control mode | Outdoor unit control mode |
| Ope mode | Operation mode | Outdoor unit operation mode |
| Fm | Target frequency of the | Target frequency of the compressor |

| | | |
|---|---|---|
| | compressor(unit module value) (Hz) | |
| FAN(AK%) | Heat exchanger capacity ( Fan output) | Variable of the motor rotation speed of the condenser fan (%) |
| Rpter | Repeater | Permit(1) /Prohibit (0) the M-net communication with the centralized control system. |
| M-Supply | M-net power supply | Power supply to the indoor unit system. (M-net power supply) |
| f0 | Current operating frequency of the compressor (Hz) | Current operating frequency of the compressor |
| S-Fm(Hz) | Target frequency of the compressor(overall unit)(Hz) | Target frequency of the compressor of the overall unit |
| X101 | Auxiliary relay<X101> status | Show the output status of the auxiliary relay <X101>.<br>1:ON、0:OFF |
| X102 | Auxiliary relay<X102> status | Show the output status of the auxiliary relay <X102>.<br>1:ON、0:OFF |
| X103 | Auxiliary relay<X103> status | Show the output status of the auxiliary relay <X103>.<br>1:ON、0:OFF |
| X104 | Auxiliary relay<X104> status | Show the output status of the auxiliary relay <X104>.<br>1:ON、0:OFF |
| X105 | Auxiliary relay<X105> status | Show the output status of the auxiliary relay <X105>.<br>1:ON、0:OFF |
| X107 | Auxiliary relay<X107> status | Show the output status of the auxiliary relay <X107>.<br>1:ON、0:OFF |
| X111 | Auxiliary relay<X111> status | Show the output status of the auxiliary relay <X111>.<br>1:ON、0:OFF |
| X112 | Auxiliary relay<X112> status | Show the output status of the auxiliary relay <X112>.<br>1:ON、0:OFF |
| X113 | Auxiliary relay<X113> status | Show the output status of the auxiliary relay <X113>.<br>1:ON、0:OFF |
| 13V-3 | Fan1 auxiliary relay<X10> status | Show the output status of the auxiliary relay <X10> of fan1.<br>1:ON、0:OFF |
| 13V-4 | Fan2 auxiliary relay<X10> status | Show the output status of the auxiliary relay <X10> of fan2.<br>1:ON、0:OFF |
| 72C | Output of 72C | Used for the 72C drive source output.<br>1:ON, 0:OFF |
| LEV1～LEV4 | LEV output value | LEV output value |
| Nm | Target fan rotation speed | Target rotation speed of fan |
| avgNj1 | Fan actual rotation speed1 | Actual rotation speed of fan1 |
| avgNj2 | Fan actual rotation speed2 | Actual rotation speed of fan2 |
| Vsp1 | Fan output voltage 1 | Output voltage of fan1 |
| Vsp2 | Fan output voltage 2 | Output voltage of fan2 |
| SW1～4 | DipSW1～4 input | Show the DipSW status.<br>1:ON, 0:OFF |

# Operation Status Monitor Terminology (LMAP02/03/04)

| Mark | Official Name | Meaning |
|---|---|---|
| nviOnOff_n | input binding | Binding information of an operation input<br>(0:No binding 1:Binding) |
| nvoOnOff_n | output binding | Binding information of an operation output<br>(0:No binding 1:Binding) |
| IC CONNECT | IC connection information | State of connected indoor system<br>(0:Nothing 1:Connected) |
| SW1-1~10 | SW1 setting value | Standard function setting<br>(0:OFF setting 1:ON setting) |
| SW2-1~6 | SW2 setting value | Service function setting<br>(0:OFF setting 1:ON setting) |
| SW3-1~6 | SW3 setting value | Special function 1 setting<br>(0:OFF setting 1:ON setting) |
| SW4~8 | SW4~8 setting value | Special function 2 setting<br>(0:OFF setting 1:ON setting) |
| SWU1~2 | SWU1~2 setting value | Address of Air-conditioner<br>(SWU1:1 position SWU2:10 position) |
| FLAG | Control flag | State of control flag<br>(0:Set 1:Reset)<br>(M:M-NET flag LON:LON flag) |
| ERROR | Error flag | State of error flag<br>(0:Normal 1:Abnormality)<br>(M:M-NET flag LON:LON flag) |
| PWR.FLR | Detection of power failure | Input of power failure detection<br>(0:Normal 1:power failure) |
| NCRESET | Detection of NC's reset | Input of NC reset<br>(0:Normal 1:Reset) |
| UPLINK | Detection of the uplink | Input of uplink<br>(0:Normal 1:Detection) |
| CN02-2~3 | Function state detection | Input of detection<br>(0:Normal 1:Detection) |
| Rcv St Vl | Received input data | LON receiving information on operation<br>(St :State Vl :Value) |
| Snd St Vl | Transmitted output data | LON transmitted information on an operation state<br>(St :State Vl :Value) |
| StartHrtBt | nci information | Start time of automatic update(second unit) |
| StartOutTm | nci information | Start time when output changes(second unit) |
| AnalogWidth | nci information | Analog change width(－C unit) |
| MinOutTm | nci information | Minimum transmitting secured time(second unit) |
| SndHrtBt_1 | nci information | Send heartbeat No.1(second unit) |
| SndHrtBt_2 | nci information | Send heartbeat No.2(second unit) |
| SndHrtBt_3 | nci information | Send heartbeat No.3(second unit) |
| InitStartTm | nci information | Initial output start time(second unit) |
| InitOutTm_1 | nci information | Transmitting secured time No.1(second unit) |
| InitOutTm_2 | nci information | Transmitting secured time No.2(second unit) |
| RevHrtBT_1 | nci information | Receiving heartbeat setting No.1(second unit) |
| RevHrtBT_2 | nci information | Receiving heartbeat setting No.2(second unit) |
| PollFetch | nci information | Pole fetch setting(HEX value) |
| Time_1 | nci information | Time No.1(second unit) |
| Time_2 | nci information | Time No.2(second unit) |
| Set_1 | nci information | Setting No.1(HEX value) |
| Set_2 | nci information | Setting No.2(HEX value) |
| Dual set point mode | Set point mode information | Set point mode of connected indoor system<br>(0*:single set point mode 1:dual set point mode)<br>* including disconnected indoor system |

## Operation Status Monitor Terminology (DOAS)

| Mark | Official Name | Meaning |
|---|---|---|
| TH1 | Thermistor(supply air temperature) | Detects the supply air temperature. |
| TO | Set temperature | Set value of supply air temperature. |
| ON/OFF | Operation ON/OFF | Operation running of DOAS |
| Mode | Running mode | Running mode of DOAS |
| Status | Operating condition | Operation status of DOAS |
| IC.S | Operation control | Operation signal |

# Operation Status Monitor Terminology
# (FU : Fresh Master)

<table>
<tr><th>Mark</th><th>Official Name</th><th>Meaning</th></tr>
<tr><td>Qj</td><td>Capacity code</td><td>Capacity Code - Model Number List
<table>
<tr><th>Capacity Code</th><th>Model Number</th></tr>
<tr><td>6</td><td>P500</td></tr>
<tr><td>10</td><td>P800</td></tr>
<tr><td>13</td><td>P1000</td></tr>
</table></td></tr>
<tr><td>TH1</td><td>Thermistor(outside temperature):Detects intake temperature</td><td></td></tr>
<tr><td>TH2</td><td>Thermistor<br>(Liquid pipe temperature)</td><td>Detects liquid pipe temperature</td></tr>
<tr><td>TH3</td><td>Thermistor<br>(Gas pipe temperature)</td><td>Detects gas pipe temperature</td></tr>
<tr><td>TH4</td><td>Thermistor(Room temperature)</td><td>Detects intake temperature</td></tr>
<tr><td>SH/SC</td><td>Super heat/ Sub cool</td><td>In heating mode: Subcool/ In cooling mode :Superheat</td></tr>
<tr><td>Li</td><td>LEV opening pulse</td><td>LEV opening pulse.</td></tr>
<tr><td>TO</td><td>Target temperature</td><td>In heating mode--- Set point of Dip-SW3,4,5<br>In cooling mode--- Average target temperature of connected IC<br>Other---- No meaning(IC mode whichever connected Target temperature )</td></tr>
<tr><td>Save</td><td></td><td>Capacity save signal from system controller<br>Unit: % Non-receiving status: 100%</td></tr>
<tr><td>Mode</td><td>Operation mode</td><td>Operation mode</td></tr>
<tr><td>Status</td><td>Running mode</td><td>Running mode</td></tr>
<tr><td>Dam.</td><td>Damper status</td><td>Damper position (Lossnay/Bypass)</td></tr>
<tr><td>Sign</td><td>Operation control of indoor unit</td><td>Operation status of indoor unit</td></tr>
</table>

# Operation Status Monitor Terminology (LC:Lossnay)

<table>
<tr><th>Mark</th><th>Official Name</th><th>Meaning</th></tr>
<tr><td>G_No</td><td>Group Number</td><td>Group Number<br>Group number is the number given by Centralized Controller.<br>Lossnays which have the same group number are in the same gr oup.</td></tr>
<tr><td>OA temp.</td><td>Thermistor(outdoor air tempe rature)</td><td>Detects outdoor air temperature</td></tr>
<tr><td>RA temp.</td><td>Thermistor(Room air tempera ture)</td><td>Detects room air temperature</td></tr>
<tr><td>SA temp.</td><td>Thermistor(Supply air temper ature)</td><td>Detects supply air temperature</td></tr>
<tr><td>OA Humidity</td><td>OA humidtty</td><td>Detects outdoor air relative humidity</td></tr>
<tr><td>CO2 concentration</td><td>CO2 concentoration</td><td>Detects CO2 concentration(ppm)</td></tr>
<tr><td>SA Setting(IU)</td><td>SA fan speed ordered from interlocked IC</td><td>SA fan speed ordered from interlocked IC and AHU (Stopping/Low (Extra Low)/Hi(Extra Hi))<br>To define fan speed [m3/h]</td></tr>
<tr><td>EA Setting(IU)</td><td>EA fan speed ordered from interlocked IC</td><td>EA fan speed ordered from interlocked IC and AHU (Stopping/Low (Extra Low)/Hi(Extra Hi))<br>To define fan speed [m3/h]</td></tr>
<tr><td>SA Setting(RC)</td><td>SA fan speed ordered from RC</td><td>SA fan speed ordered from RC<br>(Stopping/Low (Extra Low)/Hi(Extra Hi)/Auto)</td></tr>
<tr><td>EA Setting(RC)</td><td>EA fan speed ordered from RC</td><td>EA fan speed ordered from RC<br>(Stopping/Low (Extra Low)/Hi(Extra Hi)/Auto)</td></tr>
<tr><td>SA Operation</td><td>Supply fan status</td><td>Supply fan status<br>(Stopping/Extra Low/Low/Hi/Extra Hi)</td></tr>
<tr><td>EA Operation</td><td>Exhaust fan status</td><td>Exhaust fan status<br>(Stopping/Extra Low/Low/Hi/Extra Hi)</td></tr>
<tr><td>TO</td><td>Target temperature</td><td>Average target temperature of connected IC when ventilation mod e is automatic mode</td></tr>
<tr><td>O/F</td><td>Operation ON/OFF</td><td>Operating status (Stopping/Operating/Interlocked operation/Delayed operatin/Error)</td></tr>
<tr><td>Ventilation mode 1</td><td>Vetnilation mode 1</td><td>Ventilation mode 1<br>(Ordinaly/Night purge/24hr operation)</td></tr>
<tr><td>Ventilation mode 2</td><td>Ventilation mode 2</td><td>
<table>
<tr><th>Mode</th><th>Meaning</th></tr>
<tr><td>Ordinary</td><td>Ordinary operating</td></tr>
<tr><td>Intermittent stopping</td><td>SA fan is stopping to avoid condensat ion in Lossnay cores</td></tr>
<tr><td>Stopping under defr osting operation</td><td>SA fan stopping because connected I C is defrosting operation</td></tr>
<tr><td>All device OFF</td><td>Stopping because all device OFF sign al is given by SC</td></tr>
<tr><td>Power air supply/ex haust</td><td>Power air supply/exhaust operating</td></tr>
<tr><td>Night purge</td><td>Night purge operating</td></tr>
<tr><td>Anti-freezing operati on</td><td>SA fan is stopping for anti-freezing in Lossnay cores</td></tr>
<tr><td>Delayed operation</td><td>Delayed operating (Maximum 30 minut es)</td></tr>
<tr><td>Drying humidifire</td><td>SA fan is operating to dry humidifires</td></tr>
<tr><td>Humidifiring prepara tion</td><td>SA fan is stopping to fill humidifires w ith water</td></tr>
<tr><td>High humidity inter mittent operation</td><td>SA fan is stopping to avoid condensat ein in Lossnay cores</td></tr>
<tr><td>Heater cool dowm</td><td>Heater cool down operation</td></tr>
<tr><td>Ordinary</td><td>Ordinary operating</td></tr>
<tr><td>Intermittent stopping</td><td>SA fan is stopping to avoid condensat ion in Lossnay cores</td></tr>
<tr><td>Stopping under defr osting operation</td><td>SA fan stopping because connected I C is defrosting operation</td></tr>
</table>
</td></tr>
<tr><td>Humidifying</td><td>Humidifier ordered</td><td>Humidifier ordered from RC(ON/OFF/Auto)</td></tr>
<tr><td>Humidifier valve</td><td>Humidifier status</td><td>Operation of Solenoid Valve (ON/OFF)</td></tr>
<tr><td>Ventilation</td><td>Damper ordered</td><td>Damper ordered from RC(Lossnay/Bypass/Auro)</td></tr>
<tr><td>Damper</td><td>Damper status</td><td>Damper status (Lossnay/Bypass)</td></tr>
<tr><td>SW002</td><td>Setting of dip-switch 2</td><td>Setting of dip-switch 2<br>(Refer to Lossnay Technical Manual and Installation Instruction for more information)</td></tr>
<tr><td>SW005</td><td>Setting of dip-switch 5</td><td>Setting of dip-switch 5<br>(Refer to Lossnay Technical Manual and Installation Instruction for more information)</td></tr>
<tr><td>SW006</td><td>Setting of dip-switch 6</td><td>Setting of dip-switch 6<br>(Refer to Lossnay Technical Manual and Installation Instruction for</td></tr>
</table>

| | | |
|---|---|---|
| | | more information) |
| SW007 | Setting of dip-switch 7 | Setting of dip-switch 7<br>(Refer to Lossnay Technical Manual and Installation Instruction for more information) |
| Monitor Output | Monitor output of TM3 | Monitor outoput status for TM3-7,8,9 (ON-1,OFF-0) |
| Actual RPM SA1 | Actual RPM SA1 | Actual RPM SA1 (DC Motor only) |
| Motor PWM SA1 | Motor PWM SA1 | Motor PWM SA1 (DC Motor only) |
| Actual RPM EA1 | Actual RPM EA1 | Actual RPM EA1 (DC Motor only) |
| Motor PWM EA1 | Motor PWM EA1 | Motor PWM EA1 (DC Motor only) |
| Actual RPM SA2 | Actual RPM SA2 | Actual RPM SA2 (DC Motor only) |
| Motor PWM SA2 | Motor PWM SA2 | Motor PWM SA2 (DC Motor only) |
| Actual RPM EA2 | Actual RPM EA2 | Actual RPM EA2 (DC Motor only) |
| Motor PWM EA2 | Motor PWM EA2 | Motor PWM EA2 (DC Motor only) |

# Operation Status Monitor Terminology

## (PWFY-P100/200VM-E-AU, PWFY-P100/140/200VM-E1-AU, PWFY-P100/140/200VM-E2-AU, PWFY-EP100VM-E1-AU, PWFY-EP100VM-E2-AU, PWFY-P36/72NMU-E-AU)

| Mark | Official Name | Meaning |
|---|---|---|
| Ctrl Mode | Control Mode | Water HEX Unit control mode |
| Ope Mode | Operation Mode | Water HEX Unit operation mode |
| O/F | Operation ON/OFF | Operation running of Water HEX Unit |
| I/O | water temp.sensor position | water inlet temperature / water outlet temperature |
| AU S | Operation control of the outdoor unit | Operation signal of transmitting from Water HEX Unit to outdoor unit. |
| State | Operating condition | Operation status of Water HEX Unit |
| SV1 | Solenoid valve | Bypass between gas pipe and liquid pipe |
| DEMAND | Control point demand | Input stop signal of compressor.<br>(ON:effective, OFF:ineffective) |
| LEV1W | LEV1W opening pulse | Water Hex Unit LEV1W opening pulse. |
| TH22 | Thermistor | Detects the liquid side temperature of Water HEX Unit for frost prevention and SH/SC control. |
| TH23 | Thermistor | Detects the gas side temperature of Water HEX Unit for control sensor error and SH control. |
| TH6 | Thermistor | water inlet temperature |
| TH8 | Thermistor | water outlet temperature |
| To | Set temperature | Temperature set by remote controller |
| SC | Subcool | Subcool |
| SH | Superheat | Superheat |

# Operation Status Monitor Terminology (PWFY-P100VM-E-BU, PWFY-P36NMU-E-BU)

| Mark | Official Name | Meaning |
|---|---|---|
| Ctrl Mode | Control Mode | Booster Unit control mode |
| Ope Mode | Operation Mode | Booster Unit operation mode |
| O/F | Operation ON/OFF | Operation running of Booster Unit |
| I/O | water temp.sensor position | water inlet temperature / water outlet temperature |
| BU S | Operation control of the outd oor Unit | Operation signal of transmitting from Booster Unit to outdoor unit. |
| State | Operating condition | Operation status of Booster Unit |
| F | Temporary compressor frequ ency for calculation | Variable for control |
| DEMAND | Control point demand | Input stop signal of compressor.<br>(ON:effective, OFF:ineffective) |
| LEV1W | LEV1W opening pulse | Booster Unit LEV1W opening pulse. |
| LEV2W | LEV2W opening pulse | Booster Unit LEV2W opening pulse. |
| TH11 | Thermistor | Discharge temperature |
| TH22 | Thermistor | Detects the liquid side temperature of Booster Unit for frost preve ntion and SH/SC control. |
| TH13 | Thermistor | evaporator outlet temperature |
| TH6 | Thermistor | water inlet temperature |
| TH8 | Thermistor | water outlet temperature |
| THHS | Thermistor | Heat sink temperature |
| 63HSW | Pressure sensor | High pressure |
| 63LSW | Pressure sensor | Low pressure |
| To | Set temperature | Temperature set by remote controller |
| Vdc | COMP bus voltage | COMP bus voltage [V] |
| Iu | current effective value | current effective value [A] |

# Operation Status Monitor Terminology (CAHV-P500YA-HPB,CAHV-P500YB-HPB)

| Mark | Official Name | Meaning |
|---|---|---|
| Ver | Software Version | Program ROM |
| Operation | | Operation input source |
| Snow | | RC→Remote control , SW→Switch |

Input

| Mark | Official Name | Meaning |
|---|---|---|
| On/Off Level | | ON→Run , OFF→Stop |
| Water temp Ctrl | | IN→Inlet water temperature emperature control<br>OUT→Outlet water temperature based control |
| Main Water temp Ctrl | | ON→External water temperature sensor<br>OFF→Builtin sensor on the unit |
| Fan Mode | | ON→Coercion , OFF→Ordinary |
| Hot Water | | ON→Hot water , OFF→Heating |
| Heating Eco | | ON→Heating Eco , OFF→Heating |
| Anti Freeze | | ON→Anti Freeze , OFF→Off |
| COP/Capacity | | ON→COP Priority , OFF→Capacity Priority |
| Multi Ctrl | | ON→Multiple Ctrl , OFF→Individual control |
| Temp setting | | ON→Effective , OFF→Invalid |
| On/Off setting | | ON→Enable schedule setting<br>OFF→Disable schedule setting |

Status

| Mark | Official Name | Meaning |
|---|---|---|
| On/Off Ctrl | | Run/Stop |
| Fan Mode | | ON→Coercion , OFF→Ordinary |
| Mode | | Heating/Heating Eco/Hot Water/Anti Freeze |
| Defrost Mode | | Other/Wait/Limit/On |
| Demand | | ON→Control demand |
| Schedule | | ON→Control schedule |
| Restart Lim | | ON→Control restart |
| Remain（min） | | Restart (minute) |
| Pre err（cnt） | | Error count |
| Err code | | Error content（M-NET code） |
| line | | Refrigerant line 1,2,3 |
| Total（hr） | | Total hour |

| Mark | Official Name | Meaning |
|---|---|---|
| TH1 | Thermistor | Discharge Ref temperature 1 |
| TH2 | Thermistor | Suction Ref temperature 1 |
| TH3 | Thermistor | Shell Ref temperature 1 |
| TH4 | Thermistor | Air hex Ref temperature 1 |
| TH5 | Thermistor | Discharge Ref temperature 2 |
| TH6 | Thermistor | Suction Ref temperature 2 |
| TH7 | Thermistor | Shell Ref temperature 2 |
| TH8 | Thermistor | Air hex Ref temperature 2 |
| TH9 | Thermistor | Outdoor temperature 1 |
| TH10 | Thermistor | Water Inlet temperature 1 |
| TH11 | Thermistor | Water Outlet temperature 1 |
| TH12 | Thermistor | Water Inlet temperature 2 |
| TH13 | Thermistor | Water Outlet temperature 2 |

| | | |
|---|---|---|
| TH14 | Thermistor | Representative water temperature 1 |
| TH15 | Thermistor | Representative water temperature 2 |
| TH16 | Thermistor | Outdoor temperature 2 |
| 63H1 | | High pressure switch |
| HP1 | Pressure sensor | High pressure senser |
| LP1 | Pressure sensor | Low pressure senser |
| Iu | | Phase-U current of compressor [A] |
| Iw | | Phase-W current of compressor [A] |
| Idc | | DC trunk line current [A] |
| Vdc | | COMP bus voltage [V] |
| Ts | | Target water temperature |
| Twi | | Current inlet water temperature |
| Two | | Current outlet water temperature |
| Twg | Main water temperature | TH14 or TH15 temperature which is selected |
| Tout | Main outdoor temperature | 4-20mA2 or IT temperature which is selected |
| THHS | Thermistor | IGBT temperature |
| 4/20IN1 | 4-20mA1 | External analog input for Target water temp (4-20mA) |
| 4/20IN2 | 4-20mA2 | External analog input for Outdoor temp (4-20mA2) |
| 0-10IN | 0-10V/2-10V | External analog input for Target water temp (0-10V) |
| 1-5IN | 1-5V | External analog input for Target water temp (1-5V) |
| 0-10out | | |
| LEV1 | | LEV1 pulse |
| LEV2 | | LEV2 pulse at HIC circuit |
| COMP1 | | oparating frequency in main circuit |
| COMP2 | | oparating frequency in sub circuit |
| FAN | | Outdoor unit fan output [%] |
| SHs | | Target superheat value at the suction pipe to compressor |
| SH | | difference from suction gas temp to saturated gas temp |
| Dtime | | Defrosting time ban |
| Dtemp | | Defrost start temperature |
| THc10 | | Water Inlet temperature compensation TH10 |
| THc11 | | Water Outlet temperature compensation TH11 |
| THc12 | | Water Inlet temperature compensation TH12 |
| THc13 | | Water Outlet temperature compensation TH13 |
| THc14 | | Representative water temperature compensation TH14 |
| THc15 | | Representative water temperature compensation TH15 |

Schedule

| **Mark** | **Official Name** | **Meaning** |
|---|---|---|
| Time | | Current Time |
| Demand | Peak-demand control | Start time - End time |
| On/Off1 | Scheduled operation 1 | Operation start time 1 - Operation end time 1 |
| On/Off2 | Scheduled operation 2 | Operation start time 2 - Operation end time 2 |
| On/Off3 | Scheduled operation 3 | Operation start time 3 - Operation end time 3 |
| Temp chg | Temperature change | Time 1 , Time 2 |
| Set temp | | Water temp. setting A,B,C |
| Thr-diff | | Thermo differential 1,2 |
| Main water temp | Control Sensor select(at Target Setting temp) | TH14 or TH15 temperature which is selected |
| Main water temp（2） | Control Sensor select(at Target Setting temp) | TH14 or TH15 temperature which is selected |
| Main water temp（3） | Control Sensor select(at Target Setting temp) | TH14 or TH15 temperature which is selected |
| L-noise（%） | | Capacity low noise（%） |

| | | |
|---|---|---|
| Demand（%） | | Maximum capacity demand（%） |

# Operation Status Monitor Terminology (CRHV-P600YA-HPB)

| Mark | Official Name | Meaning |
|---|---|---|
| Ver | Software Version | Program ROM |

Input

| Mark | Official Name | Meaning |
|---|---|---|
| Water temp Ctrl | - | IN→Inlet water temperature emperature control<br>OUT→Outlet water temperature based control |
| Main Water temp Ctrl | - | ON→External water temperature sensor<br>OFF→Builtin sensor on the unit |
| Multi Ctrl | - | ON→Multiple Ctrl , OFF→Individual control |
| Temp setting | - | ON→Effective , OFF→Invalid |
| On/Off setting | - | ON→Enable schedule setting |

Status

| Mark | Official Name | Meaning |
|---|---|---|
| On/Off Ctrl | - | Run/Stop |
| Demand | - | ON→Control demand |
| Restart Lim | - | ON→Control restart |
| Remain（min） | - | Restart (minute) |
| Pre err（cnt） | - | Error count |
| Err code | - | Error content（M-NET code） |
| Total（hr） | - | Total hour |
| Mode | - | Heating/Heating Eco/Hot Water/Anti Freeze |
| Schedule | - | ON→Control schedule |

Schedule

| Mark | Official Name | Meaning |
|---|---|---|
| Time | - | Current Time |
| Thr-diff1 | - | Thermo differential 1 |
| Thr-diff2 | - | Thermo differential 2 |
| Demand（max%） | - | Maximum capacity demand [%] |
| Demand | Peak-demand control | Start time - End time |
| On/Off1 | Scheduled operation 1 | Operation start time 1 - Operation end time 1 |
| On/Off2 | Scheduled operation 2 | Operation start time 2 - Operation end time 2 |
| On/Off3 | Scheduled operation 3 | Operation start time 3 - Operation end time 3 |
| Temp chg1 | - | Temperature change1 |
| Temp chg2 | - | Temperature change2 |
| Setting temp1 | - | Water temp. setting A |
| Setting temp2 | - | Water temp. setting B |
| Setting temp3 | - | Water temp. setting C |
| Main water temp1 | Control Sensor select(at Target Setting temp) | TH15 or TH16 temperature which is selected |
| Main water temp2 | Control Sensor select(at Target Setting temp) | TH15 or TH16 temperature which is selected |
| Main water temp3 | Control Sensor select(at Target Setting temp) | TH15 or TH16 temperature which is selected |

Input(CN142)

| Mark | Official Name | Meaning |
|---|---|---|
| A1 | RUN | Run/Stop |
| A3 | Mode Change2 | Heating Eco/Heating |
| B3 | Pump Interlock | Normal/Error |
| C3 | - | - |
| C4 | Demand | ON/OFF |
| C5 | Anti Freeze | ON/OFF |
| C6 | Capacity | Capacity priority / Cop priority |
| D3 | - | - |
| D4 | Mode Change1 | Hot water/Heating |
| D6 | Flow Switch | Normal/Error |

Output

| Mark | Official Name | Meaning |
|---|---|---|
| X01 | MAIN BOX=-<br>SUB BOX= | MAIN BOX=Solenoid valve(Main injection ciruit)<br>SUB BOX=Solenoid valve(Injection ciruit) |
| X02 | MAIN BOX=-<br>SUB BOX= | MAIN BOX=Crankcase heater(for heating the compressor)<br>SUB BOX=Crankcase heater(for heating the compressor) |
| X03 | MAIN BOX=<br>SUB BOX= | MAIN BOX=Cooling Fan 1-1<br>SUB BOX=Cooling Fan 2-1 |
| X04 | MAIN BOX=-<br>SUB BOX= | MAIN BOX=Pump operation command output (Hot water)<br>SUB BOX=- |
| X05 | MAIN BOX=-<br>SUB BOX= | MAIN BOX=Pump operation command output (Heat source)<br>SUB BOX=Cooling Fan 2-2 |
| X06 | MAIN BOX=-<br>SUB BOX=- | MAIN BOX=Error display output<br>SUB BOX=- |
| X07 | MAIN BOX=-<br>SUB BOX=- | MAIN BOX=Operation display output<br>SUB BOX=- |
| X08 | MAIN BOX=-<br>SUB BOX=- | MAIN BOX=Emergency signal A(for extra heater)<br>SUB BOX=- |
| X09 | MAIN BOX=-<br>SUB BOX=- | MAIN BOX=Three way valve<br>SUB BOX=- |

12Voutput

| Mark | Official Name | Meaning |
|---|---|---|
| 72C | - | - |
| 52C | - | Electromagnetic relay(Inverter main circuit) |

Unit condition Unit1 to Unit16

| Mark | Official Name | Meaning |
|---|---|---|
| TH1 | Thermistor | Discharge Ref temp. 1 |
| TH2 | Thermistor | Suction Ref temp. 1 |
| TH3 | Thermistor | Shell Ref temp. 1 |
| TH4 | Thermistor | Heat exchanger wall temp. 1 |
| TH5 | Thermistor | Discharge Ref temp. 2 |
| TH6 | Thermistor | Suction Ref temp. 2 |
| TH7 | Thermistor | Shell Ref temp. 2 |
| TH8 | Thermistor | Heat exchanger wall temp. 2 |
| TH9 | Thermistor | Outdoor temp. 1 |
| TH11 | Thermistor | Water inlet temp. 1 |
| TH12 | Thermistor | Water outlet temp. 1 |
| TH13 | Thermistor | Heat source inlet temp. 1 |
| TH14 | Thermistor | Heat source outlet temp. 1 |
| TH15 | Thermistor | External Water sensor. 1 |
| TH16 | Thermistor | External Water sensor. 2 |
| TH17 | Thermistor | Hot Water inlet temp. 2 |
| TH18 | Thermistor | Hot Water outlet temp. 2 |
| TH20 | Thermistor | Heat source inlet temp. 2 |
| THc11 | - | Hot Water Inlet temperature compensation 1 TH11 |
| THc12 | - | Hot Water Outlet temperature compensation 1 TH12 |
| THc15 | - | Representative water temperature compensation TH15 |
| THc16 | - | Representative water temperature compensation TH16 |
| THc17 | - | Hot Water Inlet temperature compensation 2 TH17 |
| THc18 | - | Hot Water Outlet temperature compensation 2 TH18 |
| 63H1 | - | High pressure switch |
| HP | 63HS | High pressure sensor |
| LP | 63LS | Low pressure sensor |
| Vdc | - | COMP bus voltage [V] |
| Iu | - | Phase-U current of compressor [A] |
| Iw | - | Phase-W current of compressor [A] |
| Ts | - | Target water temperature |
| Twi | - | Current inlet hot water temperature |
| Two | - | Current outlet hot water temperature |
| Twg | Main water temperature | TH15 or TH16 temperature which is selected |
| Tout | Main outdoor temperature | 4-20mA2 or IT temperature which is selected |
| SHs | - | Target superheat value at the suction pipe to compressor |
| SHt | - | - |
| SHb | - | - |
| THHS | Thermistor | IGBT temperature |

| | | |
|---|---|---|
| LEV1 | - | Electronic expansion valve(Main/Sub circuit) |
| LEV2 | - | - |
| LEV3 | - | Electronic expansion valve(Main/Sub injection circuit) |
| COMP1(Hz) | - | Operating frequency in main circuit [Hz] |
| COMP2(Hz) | - | Operating frequency in sub circuit [Hz] |
| 4-20mA1 | - | External analog input for Target water temp (4-20mA1) |
| 0-10V | - | External analog input for Target water temp (0-10V/2-10V) |
| 1-5V | - | External analog input for Target water temp (1-5V) |
| 4-20mA2 | - | External analog input for Outdoor temp (4-20mA2) |

# Operation Status Monitor Terminology
# QAHV-N560YA-HPB, QAHV-N560YA-KR, QAHV-N136TAU-HPB

Status

| Mark | Official Name | Meaning |
|---|---|---|
| On/Off Ctrl | On/Off Control | |
| System err | System error | |
| Demand | | |
| Fan mode | | ON：Forced<br>The fan will remain in operation after the compressor has stopped (including when the operation status is "STOP").<br>OFF：Normal<br>The fan will stop when the compressor stops. |
| Lnoise | Low noise mode | Operation using the set capacity as an upper limit |
| Lnoise(%) | Low noise capacity | Setting value used during Low noise mode. |
| Hot water | Hot water storage mode | |
| HeatingUp | Heatingup mode | |
| Demand(%) | Demand capacity | Setting value used during Demand control. |
| SWU3 | SWU3 | Rotary switch on control board |
| Pump | Pump output | Percentage of pump output (current value / maximum value) for water flow Rate control |
| Fan | Fan frequency | |
| LEVA | | Command value of LEVA pulse of unit |
| LEVC | | Command value of LEVC pulse of unit |
| pump2 Out | Pump output(secondary circuit) | Percentage of pump output (current value / maximum value) for water flow Rate control(secondary circuit) |
| Time | | |
| Demand str | Demand start time | |
| Demand end | Demand end time | |
| Demand drv | On/Off Demand | |
| RestartLim | Compressor restart limit | |
| Remain | Time to compressor restart | |
| Pre err | Pre err cnt | |
| Err code | | |
| 63H1 | High pressure switch | |
| TH1 | Compressor Discharge Refrigerant temperature | |
| TH2 | Compressor Suction Refrigerant temperature | |
| TH3 | Gascooler Refrigerant temperature | |
| TH4 | Air hex(Heat exchange) inlet Refrigerant temperature | |
| TH5 | Air hex(Heat exchange) outlet Refrigerant temperature | |
| TH9 | Outdoor temperature | |
| TH11 | Water outlet temperature | |
| TH12 | Water inlet temperature | |
| TH14 | Shell Refrigerant temperature | |
| THHS | Heat sink temperature | |
| TH15 | External water sensor.1 | |
| TH16 | External water sensor.2 | |
| TH17 | External water sensor.3 | |
| TH15p | External water sensor.4(For 6 sensor system only) | |
| TH16p | External water sensor.5(For 6 sensor system only) | |
| TH17p | External water sensor.6(For 6 sensor system only) | |
| TH18 | External Water sensor (secondary circuit) | |
| TH19 | no use | |
| HP1 | High pressure senser [Mpa] | |
| LP1 | Low pressure senser [Mpa] | |
| F | Compressor frequency | |
| OpeMode | | -(stop)/Defrost/HeatingUp/HotWaterStrage |
| Tej1 | Defrost start air coil refrigerant temperature | Items for product developers. |
| Teios1 | Target compressor suction superheat(LEV control) | Items for product developers. |
| Teio1 | Current compressor suction superheat | Items for product developers. |
| Tdgos | | Items for product developers.<br>(Discharge refrigerant tempeRateure gas cooler outlet refrigerant temperature) target value |

| | | |
|---|---|---|
| Iu | U-Phase current effective value[A] | |
| Iw | W-Phase current effective value[A] | |
| Idc | DC trunk line current [A] | |
| Vdc | Bus voltage [V] | |
| Vp-p | No use | |
| MVW1 | | Flow control valve MV 1 Valve opening |
| 4-20mA/1-5V/0-10V/2-10V IN | Analog input 4-20mA/0-10V/1-5V/2-10V | External analog input for Target water temperature |
| ThermoOffTemp | Thermo off temperature | Thermooff temperature (= Target tempeRateure of tank) |
| CurrentHWTemp | Current hotwater temperature | Control target outlet temperature |
| TargetOutletTemp | Outlet hot water temperature (boiling temperature) | |
| TargetOutletTemp2 | Outlet hot water temperature (boiling temperature) (secondary circuit) | |
| TargetFlowRate1 | Target flow Rate | |
| TargetFlowRate2 | Target flow Rate (secondary circuit) | |
| FlowRate1(L/m) | Flow sensor.1 | flow rate (L per minutes) |
| FlowRate2(L/m) | Flow sensor (secondary circuit) | flow rate (L per minutes) |
| FlowRate3(L/m) | no use | |

# Operation Status Monitor Terminology (EACV-P900YA,EAHV-P900YA,EAHV-P900YA-H)

| Mark | Official Name | Meaning |
|---|---|---|
| Ver | Software Version | Program ROM |

Input

| Mark | Official Name | Meaning |
|---|---|---|
| Water temp Ctrl | - | IN→Inlet water temperature emperature control<br>OUT→Outlet water temperature based control |
| Main Water temp Ctrl | - | ON→External water temperature sensor<br>OFF→Built-in sensor on the unit |
| Multi Ctrl | - | ON→Multiple Ctrl , OFF→Individual control |
| Temp setting | - | ON→Effective , OFF→Invalid |
| On/Off setting | - | ON→Enable schedule setting |

Status

| Mark | Official Name | Meaning |
|---|---|---|
| On/Off Ctrl | - | Run/Stop |
| Fan Mode | - | ON→Control fan |
| Defrost Mode | - | Other/Wait/Limit/On |
| Demand | - | ON→Control demand |
| Restart Lim | - | ON→Control restart |
| Remain（min） | - | Restart (minute) |
| Pre err（cnt） | - | Error count |
| Err code | - | Error content（M-NET code） |
| Detail | - | Detail error code |
| Total（hr） | - | Total hour |
| Mode | - | Heating/Heating Eco/Cooling/Anti Freeze |
| Schedule | - | ON→Control schedule |

Schedule

| Mark | Official Name | Meaning |
|---|---|---|
| Time | - | Current Time |
| Thr-diff1 | - | Thermo differential 1 |
| Thr-diff2 | - | Thermo differential 2 |
| Demand（max%） | - | Maximum capacity demand [%] |
| Demand | Peak-demand control | Start time - End time |
| On/Off1 | Scheduled operation 1 | Operation start time 1 - Operation end time 1 |
| On/Off2 | Scheduled operation 2 | Operation start time 2 - Operation end time 2 |
| On/Off3 | Scheduled operation 3 | Operation start time 3 - Operation end time 3 |
| Setting temp1 | - | Water temp. setting 1 |
| Setting temp2 | - | Water temp. setting 2 |
| Setting temp3 | - | Water temp. setting 3 |

Input(CN142)

| Mark | Official Name | Meaning |
|---|---|---|
| A1 | RUN | Run/Stop |
| A3 | Fan Mode | Forced/Normal |
| B1 | Cooling/Heating switching | ON→Heating/OFF→Cooling |
| B3 | Pump Interlock | Normal/Error |
| C5 | Anti-Freeze | ON/OFF |
| C6 | Capacity | ON→COP priority/OFF→Capacity priority |
| D3 | Flow Switch | Normal/Error |
| D4 | Outlet water temp. switching | ON→2nd(temp.2)/OFF→1st(temp.1) |
| D5 | Demand | ON/OFF |
| D6 | Mode Change | Heating Eco/Heating |

Output

| Mark | Official Name | Meaning |
|---|---|---|
| X01 | MAIN BOX=-<br>SUB BOX= | MAIN BOX=Solenoid valve(4-way valve)<br>SUB BOX=Solenoid valve(4-way valve) |

| | | |
|---|---|---|
| X02 | MAIN BOX=-<br>SUB BOX= | MAIN BOX=Case heater(for heating the compressor)<br>SUB BOX=Case heater(for heating the compressor) |
| X03 | MAIN BOX=<br>SUB BOX= | MAIN BOX=-<br>SUB BOX=- |
| X04 | MAIN BOX=-<br>SUB BOX= | MAIN BOX=Pump operation command output<br>SUB BOX=- |
| X05 | MAIN BOX=-<br>SUB BOX= | MAIN BOX=Drain pan heater signal output<br>SUB BOX=Supplementary heater signal output |
| X06 | MAIN BOX=-<br>SUB BOX=- | MAIN BOX=Operation display output<br>SUB BOX=- |
| X07 | MAIN BOX=-<br>SUB BOX=- | MAIN BOX=Error display output<br>SUB BOX=- |
| X08 | MAIN BOX=-<br>SUB BOX=- | MAIN BOX=Defrost signal output<br>SUB BOX=- |
| X09 | MAIN BOX=-<br>SUB BOX=- | MAIN BOX=Cooling/Heating operation display output<br>SUB BOX=- |

12Voutput

| Mark | Official Name | Meaning |
|---|---|---|
| 52C | - | Electromagnetic relay(Inverter main circuit) |

Unit condition Unit1 to Unit6

| Mark | Official Name | Meaning |
|---|---|---|
| TH1 | Thermistor | Water inlet temp. 1 |
| TH2 | Thermistor | Water inlet temp. 2 |
| TH3 | Thermistor | Water outlet temperature |
| TH5 | Thermistor | ACC Inlet Ref temperature |
| TH6 | Thermistor | Air hex Ref temperature |
| TH7 | Thermistor | Water hex Ref temperature |
| TH10 | Thermistor | Outdoor temperature |
| TH11 | Thermistor | Discharge Ref temperature |
| TH15 | Thermistor | External Water sensor |
| THc1 | - | Water Inlet temp. 1 compensation TH1 |
| THc2 | - | Water Inlet temp. 2 compensation TH2 |
| THc3 | - | Water Outlet temperature compensation TH3 |
| THc15 | - | External water temperature compensation TH15 |
| 63H1 | - | High pressure switch |
| HP | 63HS | High pressure sensor |
| LP | 63LS | Low pressure sensor |
| Vdc | - | COMP bus voltage [V] |
| Iu | - | Phase-U current of compressor [A] |
| Iw | - | Phase-W current of compressor [A] |
| Ts | - | Target water temperature |
| Twi | - | Current inlet water temperature |
| Two | - | Current outlet water temperature |
| Twg | Main water temperature | External water temperature |
| Tout | - | Outdoor air temperature by BMS |
| SHs | - | Target superheat value at the suction pipe to compressor |
| SCs | - | Target subcool value at the suction pipe to compressor |
| SH | - | - |
| SC | - | - |
| Td-SH | - | Superheat value at the discharge pipe |
| THHS | Thermistor | IGBT temperature |
| LEV1 | - | Electronic expansion valve(Main/Sub circuit) |
| COMP1(Hz) | - | Operating frequency in main circuit [Hz] |
| FAN1(Hz) | - | Operating frequency of fan moter1 [Hz] |
| FAN2(Hz) | - | Operating frequency of fan moter2 [Hz] |
| FAN3(Hz) | - | Operating frequency of fan moter3 [Hz] |
| 4-20mA1 | - | External analog input for Target water temp (4-20mA1) |
| 0-10V | - | External analog input for Target water temp (0-10V/2-10V) |
| 1-5V | - | External analog input for Target water temp (1-5V) |

# Operation Status Monitor Terminology (CMB-WP108V-G)

| Mark | Official Name | Meaning |
|---|---|---|
| TH11 | Thermistor sensor | |
| TH12 | Thermistor sensor | |
| TH13 | Thermistor sensor | |
| TH14 | Thermistor sensor | |
| TH15 | Thermistor sensor | |
| TH16 | Thermistor sensor | |
| TH31a | Thermistor sensor | |
| TH31b | Thermistor sensor | |
| TH31c | Thermistor sensor | |
| TH31d | Thermistor sensor | |
| TH31e | Thermistor sensor | |
| TH31f | Thermistor sensor | |
| TH31g | Thermistor sensor | |
| TH31h | Thermistor sensor | |
| TH32 | Thermistor sensor | |
| TH33 | Thermistor sensor | |
| TH34 | Thermistor sensor | |
| TH35 | Thermistor sensor | |
| TH36 | Thermistor sensor | |
| TH37 | Thermistor sensor | |
| Ps1 | Pressure sensor | |
| SWgp1 | SWgp1 signal | |
| SWgp2 | SWgp2 signal | |
| SWgp3 | SWgp3 signal | |
| PS | Power failure detection | |
| Float | Float SW | |
| FIcon | Float SW | |
| PumpI1 | Pump1 Input | number of rotations |
| PumpI2 | Pump2 Input | number of rotations |
| PumpO1 | Pump1 Output | variable for control |
| PumpO2 | Pump2 Output | variable for control |
| HB Sig | Outdoor unit operation control | Outdoor unit operation control signal to OC |
| OC Sig | Indoor unit operation control | Indoor unit operation control signal from OC |
| sigmaQj(C) | Total capacity code (cooling) | Cooling indoor unit capacity |
| sigmaQj(H) | Total capacity code (heating) | Heating indoor unit capacity |
| 21S4Ma | 4 way valve | |
| 21S4Mb | 4 way valve | |
| SVM1 | Solenoid valve | |
| 72C | Contactor | |
| Air vent operation | Air vent operation | The record of air vent operation<br>complete Air vent operation has been completed<br>incomplete Air vent operation has not been completed |
| Debris removal operation | Debris removal operation | The record of debris removal operation<br>complete Debris removal operationn has been completed<br>incomplete Debris removal operation has not been completed |

| | | |
|---|---|---|
| 1a-1h | 2 way valve MV1* | "0" represents "valve opening = 85"<br>"1" represents "valve opening = 800"<br>"2" represents "valve opening = 1600" |
| 2a-2h | 2 way valve MV2* | |
| 3a-3h | 3 way valve MV3* | |
| LEV1 | Linear expansion valve | |
| LEV2 | Linear expansion valve | |
| LEV3 | Linear expansion valve | |

# Operation Status Monitor Terminology (CMB-WP108/1016V-GA1, CMB-WM108/1016V-AA)

| Mark | Official Name | Meaning |
|---|---|---|
| TH11 | Thermistor sensor | Liquid-side refrigerant temp. of Heating-main heat exchanger |
| TH12 | Thermistor sensor | Liquid-side refrigerant temp. of Cooling-main heat exchanger |
| TH13 | Thermistor sensor | Gas-side refrigerant temp. of Heating-main heat exchanger |
| TH14 | Thermistor sensor | Gas-side refrigerant temp. of Cooling-main heat exchanger |
| TH15 | Thermistor sensor | Bypass inlet temperature |
| TH16 | Thermistor sensor | Bypass outlet temperature |
| TH31a-p | Thermistor sensor | 1st-16th port returned water temp. |
| PS1 | Pressure sensor PS1 | Detects the high pressure at the liquid side. |
| PS3 | Pressure sensor PS3 | Detects the low pressure. |
| TH32 | Thermistor sensor | Outlet water temp. of Heating-main heat exchanger |
| TH33 | Thermistor sensor | Outlet water temp. of Cooling-main heat exchanger |
| TH34 | Thermistor sensor | Water pump 2 discharge water temp. |
| TH35 | Thermistor sensor | Water pump 1 discharge water temp. |
| SH1 | Superheat | Superheat at bypass exit area. TH13-TH11 (only HB) |
| SH2 | Superheat | Superheat at bypass exit area. TH14-TH12 (only HB) |
| SC1 | Subcool | Subcool at liquid entrance area. PT1-TH11 (only HB) |
| SC2 | Subcool | Subcool at liquid entrance area. PT1-TH12 (only HB) |
| PT1 | Average of saturation gas te mperature of high pressure and saturation liquid temperature of high pr essure | For control of LEV (LEV1,LEV2,LEV3). (only HB) |
| dPHM | Differential pressure | PS1-PS3 Pressure.(only HB) |
| PS | Power failure detection | |
| Float | Float SW | |
| FIcon | Float SW | |
| PumpI1 | Pump1 Input | number of rotations |
| PumpI2 | Pump2 Input | number of rotations |
| PumpO1 | Pump1 Output | variable for control |
| PumpO2 | Pump2 Output | variable for control |
| HB Sig | Outdoor unit operation contro l | Outdoor unit operation control signal to OC |
| OC Sig | Indoor unit operation control | Indoor unit operation control signal from OC |
| sigmaQj(C) | Total capacity code (cooling) | Cooling indoor unit capacity |
| sigmaQj(H) | Total capacity code (heating) | Heating indoor unit capacity |
| 21S4Ma | 4-way valve | Switches the cooling/heating cycle (0:Cooling, 1:Heating) |
| 21S4Mb | 4-way valve | Heat exchanger capacity control |
| SVM1 | Solenoid valve | Refrigerant flow volume control |
| Air vent operation | Air vent operation | The record of air vent operation<br>complete : Air vent operation has been completed<br>incomplete : Air vent operation has not been completed |
| Debris removal operation | Debris removal operation | The record of debris removal operation<br>complete : Debris removal operationn has been completed<br>incomplete : Debris removal operation has not been completed |
| VB3a-3p | 3-way valve MV3* | Controls the water flow path and the water flow rate |
| LEV1 | LEV1 opening | Liquid level control, differential pressure control |
| LEV2 | LEV2 opening | Liquid level control, differential pressure control |
| LEV3 | LEV3 opening | Liquid level control, differential pressure control, superheat of bypa ss control |

# Operation Status Monitor Terminology (CMB-WP108/1016V-GB1, CMB-WM108/1016V-AB)

| Mark | Official Name | Meaning |
|---|---|---|
| TH31a-p | Thermistor sensor | 1st-16th port returned water temp. |
| TH32 | Thermistor sensor | Outlet water temp. of Heating-main heat exchanger |
| TH33 | Thermistor sensor | Outlet water temp. of Cooling-main heat exchanger |
| PS | Power failure detection | |
| Float | Float SW | |
| FIcon | Float SW | |
| VB3a-3p | 3-way valve VB3* | Controls the water flow path and the water flow rate |
| TH31a-p | Thermistor sensor | 1st-16th port returned water temp. |
| TH32 | Thermistor sensor | Outlet water temp. of Heating-main heat exchanger |
| TH33 | Thermistor sensor | Outlet water temp. of Cooling-main heat exchanger |
| PS | Power failure detection | |
| Float | Float SW | |
| FIcon | Float SW | |

# Operation Status Monitor Terminology (CMB-WM350/500F-AA)

| Mark | Official Name | Meaning |
|---|---|---|
| TH11 | Thermistor (Refrigerant side) | Liquid-side refrigerant temperature of Heating-main heat exchange r. |
| TH12 | Thermistor (Refrigerant side) | Liquid-side refrigerant temperature of Cooling-main heat exchanger. |
| TH13 | Thermistor (Refrigerant side) | Gas-side refrigerant temperature of Heating-main heat exchanger. |
| TH14 | Thermistor (Refrigerant side) | Gas-side refrigerant temperature of Cooling-main heat exchanger. |
| TH15 | Thermistor (Refrigerant side) | Bypass inlet temperature. |
| TH16 | Thermistor (Refrigerant side) | Bypass outlet temperature. |
| TH31a-f | Thermistor (Water side) | 1st-6th port returned water temperature. |
| TH32 | Thermistor (Water side) | Outlet water temperature of Heating-main heat exchanger. |
| TH33 | Thermistor (Water side) | Outlet water temperature of Cooling-main heat exchanger. |
| TH34 | Thermistor (Water side) | Water pump 2 discharge water temperature. |
| TH35 | Thermistor (Water side) | Water pump 1 discharge water temperature. |
| THHS1 | Thermistor | Pump1-inverter Heat sink temperature. |
| THHS2 | Thermistor | Pump2-inverter Heat sink temperature. |
| PS1 | Pressure sensor (Refrigerant side) | Refrigerant high pressure at the gas side. |
| PS3 | Pressure sensor (Refrigerant side) | Refrigerant medium pressure. |
| Pw1(kPa) | Pressure sensor (Water side) | Water pump1 suction water pressure. |
| Pw2(kPa) | Pressure sensor (Water side) | Water pump1 discharge water pressure. |
| Pw3(kPa) | Pressure sensor (Water side) | Water pump2 suction water pressure. |
| Pw4(kPa) | Pressure sensor (Water side) | Water pump2 discharge water pressure. |
| SH1 | Superheat | Superheat at exit area of heat exchanger. TH13-TH11 |
| SH2 | Superheat | Superheat at exit area of heat exchanger. TH14-TH12 |
| SC1 | Subcool | Subcool at exit area of heat exchanger. PT1-TH11 |
| SC2 | Subcool | Subcool at exit area of heat exchanger. PT1-TH12 |
| PT1 | Average of saturation gas temperature of high pressure and saturation liquid temperature of high pressure | For control of LEV. (LEV1,LEV2,LEV3) |
| dPHM | Differential pressure | PS1-PS3 Pressure. |
| PS | Power failure detection | ("OFF" : normal, "ON" : power failure) |
| PumpO1 | Pump1 Output | Variable for control. |
| PumpO2 | Pump2 Output | Variable for control. |
| Vdc1 | Pump1 bus voltage | Pump1 bus voltage. [V] |
| Iu1 | Pump1 U-Phase current effective value | Pump1 U-Phase current effective value. [A] |
| Iw1 | Pump1 W-Phase current effective value | Pump1 W-Phase current effective value. [A] |
| Vdc2 | Pump2 bus voltage | Pump2 bus voltage. [V] |
| Iu2 | Pump2 U-Phase current effective value | Pump2 U-Phase current effective value. [A] |
| Iw2 | Pump2 W-Phase current effective value | Pump2 W-Phase current effective value. [A] |
| HB Sig | Outdoor unit operation control | Outdoor unit operation control signal to OC. |
| OC Sig | Indoor unit operation control | Indoor unit operation control signal from OC. |
| QjC | Total capacity code (cooling) | Cooling indoor unit capacity. |
| QjH | Total capacity code (heating) | Heating indoor unit capacity. |
| 21S4Ma | 4-way valve | Switches the cooling/heating cycle. (0:Heating, 1:Cooling) |
| 21S4Mb | 4-way valve | Switches the cooling/heating cycle. (0:Cooling, 1:Heating) |
| SV1 | Solenoid valve | Refrigerant flow volume control. |
| Air vent operation | Air vent operation | The record of air vent operation.<br>Complete : Air vent operation has been completed<br>Incomplete : Air vent operation has not been completed |
| Debris removal operation | Debris removal operation | The record of debris removal operation.<br>Complete : Debris removal operation has been completed<br>Incomplete : Debris removal operation has not been completed |
| MV1 | 3 way valve MV1 | Water supply valve for cooling circuit and heating circuit. |
| VB3a-f | Valve block VB3* | Controls the water flow path and the water flow rate. |
| LEV1 | LEV1 opening | Liquid level control, differential pressure control. |
| LEV2 | LEV2 opening | Liquid level control, differential pressure control. |
| LEV3 | LEV3 opening | Liquid level control, differential pressure control, superheat of bypass control. |
| Pump1-Ver | Pump1-inverter board S/W version | Software version of the pump1-inverter board. |
| Pump2-Ver | Pump2-inverter board S/W version | Software version of the pump2-inverter board. |
| PS-Ver | Power-supply board S/W version | Software version of the power-supply board. |

| | | |
|---|---|---|
| VB(1)-Ver | Valve-block(1) board S/W version | Software version of the valve-block(1) board. |

# Operation Status Monitor Terminology (CMB-WM108/1016V-BB)

| Mark | Official Name | Meaning |
|---|---|---|
| TH31a-p | Thermistor (Water side) | 1st-16th port returned water temperature. |
| TH32 | Thermistor (Water side) | Outlet water temperature of Heating-main heat exchanger. |
| TH33 | Thermistor (Water side) | Outlet water temperature of Cooling-main heat exchanger. |
| PS | Power failure detection | ("OFF" : normal, "ON" : power failure) |
| Float | Float switch | ("OFF" : error, "ON" : normal) |
| FIcon | Detection of the disconnected float switch | ("OFF" : disconnect, "ON" : connect) |
| VB3a-p | Valve block VB3* | Controls the water flow path and the water flow rate. |
| VB(1)-Ver | Valve-block(1) board S/W version | Software version of the valve-block(1) board. |
| VB(2)-Ver | Valve-block(2) board S/W version | Software version of the valve-block(2) board. |

# Operation Status Monitor Terminology (CMH-WM250/350/500V-A)

| Mark | Official Name | Meaning |
|---|---|---|
| TH11 | Thermistor | Liquid-side refrigerant temp. of heat exchanger |
| TH13 | Thermistor | Gas-side refrigerant temp. of heat exchanger |
| TH32 | Thermistor | Outlet water temp. of heat exchanger |
| TH35 | Thermistor | Water pump discharge water temp. |
| THHS | Thermistor | Heat sink temperature |
| PWS(kPa) | Pressure sensor | Water pump suction water pressure |
| PWD(kPa) | Pressure sensor | Water pump discharge water pressure |
| Prf | Pressure sensor | Refrigerant pressure at heat exchanger |
| Trf | Saturation temperature of refrigerant | For control of LEV |
| SH | Superheat | Superheat at heat exchanger. TH13-Tref |
| SC | Subcool | Subcool at heat exchanger. Tref-TH11 |
| PS | Power failure detection | Power failure detection |
| PumpO1 | Pump1 Output | variable for control |
| Vdc | Pump1 bus voltage | Pump1 bus voltage [V] |
| Iu | U-Phase current effective value | U-Phase current effective value [A] |
| Iw | W-Phase current effective value | W-Phase current effective value [A] |
| HU Sig | Outdoor unit operation control | Outdoor unit operation control signal to OC |
| OC Sig | Indoor unit operation control | Indoor unit operation control signal from OC |
| QjC | Total capacity code (cooling) | Cooling indoor unit capacity |
| QjH | Total capacity code (heating) | Heating indoor unit capacity |
| SV1 | Solenoid valve | Refrigerant flow volume control |
| LEV1 | LEV1 opening | Heat exchanger capacity control |
| Air vent operation | Air vent operation | The record of air vent operation.<br>"complete":Air vent operation has not been completed.<br>"incomplete":Air vent operation has not been completed. |
| Debris removal operation | Debris removal operation | The record of debris removal operation.<br>"complete":Debris removal operation has been completed.<br>"incomplete":Debris removal operation has not been com pleted. |
| Water pressure checking | Water pressure checking | The record of water pressure checking.<br>"complete":Water pressure checking has been completed.<br>"incomplete":Water pressure checking has not been com pleted. |
| Water piping length checking | Water piping length checking | The record of water piping length checking.<br>"complete":Water piping length checking has been compl eted.<br>"incomplete":Water piping length checking has not been completed. |
| PS-Ver | Power-supply board S/W version | Software version of the power-supply board |

# Operation Status Monitor Terminology (RBH-P35NRA-Q-TWN,RBS-P20/202HRA-Q-TWN)

| Mark | Official Name | Meaning |
|---|---|---|
| MODEL CODE (Unit code) | - | 06(STD08) |
| Ver | Software Version | Main program ROM version |
| TH1 | Thermistor | Room temperature (Air temperature measured by thermistor) |
| TH2 | End of defrosting1 | Defrost end(1)/Other(0) |
| TH3 | End of defrosting2 | Defrost end(1)/Other(0) |
| TH4 | Model(Unit) setting | Model setting input |
| THe | Analog input1 | Blank |
| 4-20 | Analog input2 | Blank |
| SET TEMP. | Room temerature setting | Target room temperature (Cut-off value) |
| DATE | - | Current Time |
| F | Time setup flag | Current Time Set up(1)/Unset up(0) |
| DIFF. | Room temperature difference | Differential of room temperature ((Cut-in value) - (Cut-off value)) |
| SETBACK | Setback value | Setting value of setback operation |
| TEMP ALARM | Difference of high temperatur e alarm | Setting value of high temperature alarm |
| TEMP SHIFT | Temperature shift value | Setting value of tenmerature shift operation |
| COOLING TIME | Normal operation start time | Time to change setback operation to normal operation |
| SETBACK TIME | Setback operation start time | Time to change normal operation to setback operation |
| DEFROST TIME | Defrosting start time | Time to start defrost cycle in the case of fixed time defrost |
| DEF.CYCLE | Defrost cycle | Defrost cycle in the case of cycle defrost [hour] |
| DEF.TIME | Defrost time[minute] | Defrost time for offcycle defrosting. For defrosting with heater, it s hows the backup time to finish defrosting |
| WATER DRIP | Water drip time [minute] | Unit stop time after defrost mode, to prevent drain water flooding |
| FAN DELAY | Fan start delay time [minute] | Fan start delay time from the unit starts cooling after defrost cycle [minute] |
| INTERVAL | Restart delay time setting | Restart delay time from the unit goes into Thermo-OFF [second] |
| INT.THERM | Intelligent timer preset value | Setting value of intelligence time function |
| RT CORRECT | Room temperature correction | Room temperature correction value [degree] |
| X6 | External abnormalities | Condensing unit is unusual(1)/usual(0) |
| X7 | Compressor ON/OFF | One or more compressors are Running(1)/Stop(0) |
| IN3 | External contact input | Set up(1)/Unset up(0) |
| IN4 | (Reserve) | Blank |
| LEV | Linear expantion valve | Linear expantion valve output [pulse] |
| UCNo. | Unit controller number | Unit controller number (1 to 4) |
| SW1 | Setting of dip-switch 1 | Setting of dip-switch 1 (Refer to Technical Manual and Instruction Manual for more information) |
| SW2 | Setting of dip-switch 2 | Setting of dip-switch 2 (Refer to Technical Manual and Instruction Manual for more information) |
| TEMP RANGE | Unit setting | Setting of temperature range (High/Low/Extra low temperature) |
| OPE. CODE | Operation code | The code of operational status |
| COMP START | Number of compressor starts | Number of compressor starts |
| LiqSV ON/OFF | Solenoid valve (liquid) ON time/OFF time | Solenoid valve (liquid) ON time/OFF time of the previous day [hou r/hour] |
| HeaterON/OFF | Heater ON time/OFF time | Defrost heater ON time/OFF time of the previous day [hour/hour] |
| TH1 MAX,MIN | MAX/MIN value of room tem perature | MAX,MIN value of room temperature of the previous day [degree] |
| X1 | Control source output | - |
| X2 | Solenoid valve (liquid) output | - |
| X3 | Cooler fan output | - |
| X4 | Defrost heater output1 | - |
| X5 | Defrost heater output2 | - |
| X30 | Alarm output1 | Condensing unit is unusual(1)/usual(0) |
| X31 | Alarm output2 | High temperature alarm(1)/usual(0) |
| X32 | Alarm output3 | High temperature error (50℃)(1)/usual(0) |
| 12-1 | Driver output1 (DC12V) | Warning buzzer output |
| 12-2 | Driver output2 (DC12V) | Blank |
| 12-3 | Driver output2 (DC12V) | Blank |

# Operation Status Monitor Terminology(P-series)

| Mark | Official Name | Meaning |
|---|---|---|
| action | Operation state(action) | Operation state of Unit |
| mode | Operation mode | Operation mode of Unit |
| TO | Setting temperature | Setting temperature of Unit |
| capacity save(%) | Capacity save | Signal of capacity saving from system controller.<br>figure : %, No signal : 100% |
| TH1 | Indoor room temperature | Detects the room temperature and performs thermo judgment based on the difference from the set temperature.<br>The display temperature varies depending on the room temperature detect position of function selecting. |
| TH2 | Indoor pipe temperature | Indoor pipe temperature<br>In case of multiple indoor units connection, average value is displayed. |
| TH5 | Indoor 2-phase pipe temperature | Indoor 2-phase pipe temperature |
| COMP | Compressor state | Compressor state<br>"ON" indication at compressor operation |
| 21S4 | 4way valve state | 4way valve state<br>"ON" indication at heating side |
| SV | Solenoid valve state | Solenoid valve state<br>"ON" indication at solenoid valve operation |
| FAN | Fan step | Fan step of Outdoor unit |
| Hz | Target frequency | Target Compressor frequency |
| 49C | Inner thermo | Inner thermo(compressor) state<br>Normally "closed" indication, operation "open" indication |
| 63H | 63H protection state | High pressure protection state<br>Normally "closed" indication, operation "open" indication |
| 63L | 63L protection state | Low pressure protection state<br>Normally "closed" indication, operation "open" indication |
| 63HS | Pressure saturation temperature | Pressure saturation temperature of Outdoor unit |
| LEV A | LEV opening (A) | LEV opening(A) of Outdoor unit |
| LEV B | LEV opening (B) | LEV opening (B) of Outdoor unit |
| LEV C | LEV opening (C) | LEV opening (C) of Outdoor unit |
| TH3 | Liquid temperature | Liquid temperature of Outdoor unit |
| TH4 | Discharge temperature | Discharge temperature of Outdoor unit |
| TH5 | Indoor pipe temperature | Indoor pipe temperature of Outdoor unit |
| TH6 | 2-phase pipe temperature | 2-phase pipe temperature of Outdoor unit |
| TH7 | Ambient temperature | Ambient temperature of Outdoor unit |
| TH8 | Heat sink temperature | Heat sink temperature of Outdoor unit |
| TH32 | Suction pipe temperature | Suction pipe temperature |
| TH33 | Comp. surface temperature | Comp. surface temperature |
| SHd(SH) | Discharge superheat | Discharge superheat |
| SC | Subcool | Subcool |
| COMP(A) | Secondary current | Secondary current |
| Last Error Adrs | Last Error Address | Unit address where the error occurred after turn ON<br>(Latest value only) |
| Last Error Code | Last Error Code | Error code after turn ON(Latest value only) |

*Depending on the model, the monitor Mark and display value may not match.
*Depending on the model, Monitorable data is different.
*The model name displayed on the monitor may not match the actual model name.

# Operation Status Monitor Terminology(M-series)

| Mark | Official Name | Unit |
|---|---|---|
| DiscTemp | Discharge temperature | ℃/°F |
| TgtDiscTemp | Target discharge temperature | ℃/°F |
| PrognoDiscTemp | Prognostic discharge temperature | ℃/°F |
| DefTemp | Defrost temperature | ℃/°F |
| FinTemp | Fin temperature | ℃/°F |
| PCbordTemp | PC board temperature | ℃/°F |
| AmbientTemp | Ambient temperature | ℃/°F |
| OutHEXtemp | Outdoor Hexadecimal temp | ℃/°F |
| EvaTemp | Evaporation temperature | ℃/°F |
| CoilTemp_main | Coil temperature [MAIN] | ℃/°F |
| CoilTemp_sub | Coil temperature [SUB] | ℃/°F |
| RoomTemp | Room temperature | ℃/°F |
| Set-RoomTemp | Set temp - room temp | ℃/°F |
| Compfreq | Compressor frequency | Hz |
| Compfreq_Uplim | Upper limit compressor frequency | Hz |
| Compfreq_Dnlim | Lower limit compressor frequency | Hz |
| PriCurrent | Outdoor primary current | A |
| LEV_M | LEV M opening | pulse |
| FanSPD | Outdoor fan speed | rpm |
| H/L_Bypass_St | H/L bypass valve control State | - |
| H/L_Bypass2_St | H/L bypass valve control 2 State | - |
| LEVOpening | LEV opening | Pulse |
| FanSPDCode | Fan speed code | - |
| HP_ProtecCode | High pressure protection code | - |
| Dryness_ProtecCode | Dryness protection code | - |
| Frost_PreventCode | Frost prevention code | - |
| ProtecCode(Lower) | Protection code | - |
| ProtecCode(Upper) | | |
| FaultStopInfo(Lower) | Fault stop information | - |
| FaultStopInfo(Upper) | | |
| ProtecStopInfo(Lower) | Protection stop information | - |
| ProtecStopInfo(Upper) | | |

*Depending on the model, Monitorable data is different.

# 8 Connection table for M-series

## <For USA>

| fiscal_year | series | model | Relay cable | Connector |
|---|---|---|---|---|
| 2005 | MUZ-A24 RAC-A(1) | MUY/MUZ-A24NA(-1/U1) | Type AD | CN605 |
| 2005 | MUZ-A24 RAC-A(2) | MUY/MUZ-A24NA(-1/U1) | Type AD | CN605 |
| 2005 | MUZ-A24 RAC-A(3) | MUY/MUZ-A24NA(-1/U1) | Type AD | CN605 |
| 2005 | MUZ-D(GA) big rac | MUZ-D30/36NA(-1/-U1/-U2)<br>GA24NA(-U1) | Type AD | CN605 |
| 2005 | GE small rac | MUZ-GE09/12/15/18NA(-U1) | Type AD | CN606 |
| 2005 | MUZ-A09/12/15/17NA small rac(1) | MUZ-A09/12/15/17NA(-1/-U1/-U2) | Type AD | CN606 |
| 2005 | MUZ-A09/12/15/17NA small rac(2) | MUZ-A09/12/15/17NA(-1/-U1/-U2) | Type AD | CN606 |
| 2005 | MUZ-A09/12/15/17NA small rac(3) | MUZ-A09/12/15/17NA(-1/-U1/-U2) | Type B | CN606 |
| 2005 | MUZ-FD09/12NA(-U1) small rac | MUZ-FD09/12NA(-U1) | Type B | CN606 |
| 2008 | SUZ-KA25NA.TH | SUZ-KA25NA.TH | Type AD | CN606 |
| 2008 | SUZ-KA35NA.TH | SUZ-KA35NA.TH | Type AD | CN606 |
| 2008 | SUZ-KA50NA.TH | SUZ-KA50NA.TH | Type B | CN606 |
| 2008 | SUZ-KA60NA.TH | SUZ-KA60NA.TH | Type B | CN605 |
| 2008 | SUZ-KA71NA.TH | SUZ-KA71NA.TH | Type B | CN605 |
| 2009 | MUY-D30NA-1 | MUY-D30NA-1 | Type AD | CN605 |
| 2009 | MUY-D36NA-1 | MUY-D36NA-1 | Type AD | CN605 |
| 2009 | MUY-GA24NA | MUY-GA24NA | Type AD | CN605 |
| 2009 | MUY-GE09NA | MUY-GE09NA | Type AD | CN606 |
| 2009 | MUY-GE12NA | MUY-GE12NA | Type AD | CN606 |
| 2009 | MUY-GE15NA | MUY-GE15NA | Type AD | CN606 |
| 2009 | MUY-GE18NA | MUY-GE18NA | Type AD | CN606 |
| 2009 | MUZ-D30NA-1 | MUZ-D30NA-1 | Type AD | CN605 |
| 2009 | MUZ-D30NA-U2 | MUZ-D30NA-U2 | Type AD | CN605 |
| 2009 | MUZ-D36NA-1 | MUZ-D36NA-1 | Type B | CN605 |
| 2009 | MUZ-D36NA-U2 | MUZ-D36NA-U2 | Type B | CN605 |
| 2009 | FE small rac | MUZ-FE09/12NA | Type B | CN606 |
| 2009 | MUZ-FE09NA | MUZ-FE09NA | Type B | CN606 |
| 2009 | MUZ-FE12NA | MUZ-FE12NA | Type B | CN606 |
| 2009 | MUZ-GA24NA | MUZ-GA24NA | Type B | CN605 |
| 2009 | MUZ-GA24NA-U1 | MUZ-GA24NA-U1 | Type B | CN605 |
| 2009 | MUZ-GE09NA | MUZ-GE09NA | Type B | CN606 |
| 2009 | MUZ-GE12NA | MUZ-GE12NA | Type B | CN606 |
| 2009 | MUZ-GE15NA | MUZ-GE15NA | Type B | CN606 |
| 2009 | MUZ-GE18NA | MUZ-GE18NA | Type B | CN606 |
| 2010 | SUZ-KA09NA.TH | SUZ-KA09NA.TH | Type B | CN606 |
| 2010 | SUZ-KA09NA.TH H | SUZ-KA09NA.TH H | Type B | CN606 |
| 2010 | SUZ-KA12NA.TH | SUZ-KA12NA.TH | Type B | CN606 |
| 2010 | SUZ-KA12NA.TH H | SUZ-KA12NA.TH H | Type B | CN606 |
| 2010 | SUZ-KA15NA.TH | SUZ-KA15NA.TH | Type B | CN606 |
| 2010 | SUZ-KA15NA.TH H | SUZ-KA15NA.TH H | Type B | CN606 |
| 2010 | SUZ-KA18NA.TH | SUZ-KA18NA.TH | Type B | CN606 |
| 2010 | SUZ-KA18NA.TH H | SUZ-KA18NA.TH H | Type B | CN606 |
| 2011 | MUY-GE15NA-1 | MUY-GE15NA-1 | Type B | CN606 |
| 2011 | MUY-GE18NA-1 | MUY-GE18NA-1 | Type B | CN606 |
| 2011 | MUY-GE24NA | MUY-GE24NA | Type C | CN806 |
| 2011 | MUZ-FE09NA H | MUZ-FE09NA H | Type B | CN606 |

| fiscal_year | series | model | Relay cable | Connector |
|---|---|---|---|---|
| 2011 | MUZ-FE09NA-1 | MUZ-FE09NA-1 | Type B | CN606 |
| 2011 | MUZ-FE12NA H | MUZ-FE12NA H | Type B | CN606 |
| 2011 | MUZ-FE12NA1 | MUZ-FE12NA1 | Type B | CN606 |
| 2011 | MUZ-FE18NA | MUZ-FE18NA | Type C | CN806 |
| 2011 | MUZ-GE09NA H | MUZ-GE09NA H | Type B | CN606 |
| 2011 | MUZ-GE12NA H | MUZ-GE12NA H | Type B | CN606 |
| 2011 | MUZ-GE15NA H | MUZ-GE15NA H | Type B | CN606 |
| 2011 | MUZ-GE15NA-1 | MUZ-GE15NA-1 | Type B | CN606 |
| 2011 | MUZ-GE18NA H | MUZ-GE18NA H | Type B | CN606 |
| 2011 | MUZ-GE18NA-1 | MUZ-GE18NA-1 | Type B | CN606 |
| 2011 | MUZ-GE24NA | MUZ-GE24NA | Type C | CN806 |
| 2012 | MUZ-FE09NAH | MUZ-FE09NAH | Type B | CN606 |
| 2012 | MUZ-FE12NAH | MUZ-FE12NAH | Type B | CN606 |
| 2012 | MUZ-GE09NAH | MUZ-GE09NAH | Type B | CN606 |
| 2012 | MUZ-GE12NAH | MUZ-GE12NAH | Type B | CN606 |
| 2012 | MUZ-GE15NAH | MUZ-GE15NAH | Type B | CN606 |
| 2012 | MUZ-GE18NAH | MUZ-GE18NAH | Type B | CN606 |
| 2013 | MUZ-FE18NA H | MUZ-FE18NA H | Type C | CN806 |
| 2013 | MUZ-FH09NA | MUZ-FH09NA | Type C | CN606 |
| 2013 | MUZ-FH09NAH | MUZ-FH09NAH | Type C | CN606 |
| 2013 | MUZ-FH12NA | MUZ-FH12NA | Type C | CN606 |
| 2013 | MUZ-FH12NAH | MUZ-FH12NAH | Type C | CN606 |
| 2013 | MUZ-FH15NA | MUZ-FH15NA | Type C | CN806 |
| 2013 | MUZ-FH15NAH | MUZ-FH15NAH | Type C | CN806 |
| 2013 | MUZ-GE24NA H | MUZ-GE24NA H | Type C | CN806 |
| 2014 | MUY-GE09NA2 | MUY-GE09NA2 | Type B | CN606 |
| 2014 | MUY-GE12NA2 | MUY-GE12NA2 | Type B | CN606 |
| 2014 | MUY-GE15NA2 | MUY-GE15NA2 | Type B | CN606 |
| 2014 | MUZ-GE09NA2 | MUZ-GE09NA2 | Type B | CN606 |
| 2014 | MUZ-GE09NAH2 | MUZ-GE09NAH2 | Type B | CN606 |
| 2014 | MUZ-GE12NA2 | MUZ-GE12NA2 | Type B | CN606 |
| 2014 | MUZ-GE12NAH2 | MUZ-GE12NAH2 | Type B | CN606 |
| 2014 | MUZ-GE15NA2 | MUZ-GE15NA2 | Type B | CN606 |
| 2014 | MUZ-GE15NAH2 | MUZ-GE15NAH2 | Type B | CN606 |
| 2014 | MUZ-HE09NA | MUZ-HE09NA | Type B | CN606 |
| 2014 | MUZ-HE12NA | MUZ-HE12NA | Type B | CN606 |
| 2014 | MUZ-HE15NA | MUZ-HE15NA | Type C | CN606 |
| 2014 | MUZ-HE18NA | MUZ-HE18NA | Type B | CN606 |
| 2014 | MUZ-HE24NA | MUZ-HE24NA | Type B | CN806 |
| 2015 | MUY-GL18NA-U1 | MUY-GL18NA-U1 | Type C | CN606 |
| 2015 | MUY-GL24NA-U1 | MUY-GL24NA-U1 | Type AD | CN806 |
| 2015 | MUZ-FH18NA | MUZ-FH18NA | Type AD | CN806 |
| 2015 | MUZ-FH18NA2 | MUZ-FH18NA2 | Type AD | CN806 |
| 2015 | MUZ-FH18NAH | MUZ-FH18NAH | Type AD | CN806 |
| 2015 | MUZ-FH18NAH2 | MUZ-FH18NAH2 | Type C | CN806 |
| 2015 | MUZ-GL18NAH-U1 | MUZ-GL18NAH-U1 | Type AD | CN606 |
| 2015 | MUZ-GL18NA-U1 | MUZ-GL18NA-U1 | Type C | CN606 |
| 2015 | MUZ-GL24NAH-U1 | MUZ-GL24NAH-U1 | Type C | CN806 |
| 2015 | MUZ-GL24NA-U1 | MUZ-GL24NA-U1 | Type C | CN806 |
| 2015 | MUZ-HM24NA-U1 | MUZ-HM24NA-U1 | Type C | CN606 |
| 2015 | MXZ-2B20NA | MXZ-2B20NA | Type AD | CN605 |
| 2015 | MXZ-2B20NA-1 | MXZ-2B20NA-1 | Type AD | CN605 |
| 2015 | MXZ-2B20NA-2 | MXZ-2B20NA-2 | Type AD | CN605 |

| fiscal_year | series | model | Relay cable | Connector |
|---|---|---|---|---|
| 2015 | MXZ-2C20NAHZ | MXZ-2C20NAHZ | Type C | CN861 |
| 2015 | MXZ-2C20NAHZ2-U1 | MXZ-2C20NAHZ2-U1 | Type C | CN861 |
| 2015 | MXZ-3B24NA | MXZ-3B24NA | Type AD | CN606 |
| 2015 | MXZ-3B24NA-1 (a) | MXZ-3B24NA-1 (a) | Type AD | CN606 |
| 2015 | MXZ-3B24NA-1 (b) | MXZ-3B24NA-1 (b) | Type C | CN605 |
| 2015 | MXZ-3B30NA | MXZ-3B30NA | Type AD | CN605 |
| 2015 | MXZ-3B30NA-1 (a) | MXZ-3B30NA-1 (a) | Type AD | CN605 |
| 2015 | MXZ-3B30NA-1 (b) | MXZ-3B30NA-1 (b) | Type C | CN605 |
| 2015 | MXZ-3C24NA | MXZ-3C24NA | Type C | CN861 |
| 2015 | MXZ-3C24NA2-U1 | MXZ-3C24NA2-U1 | Type C | CN861 |
| 2015 | MXZ-3C24NAHZ | MXZ-3C24NAHZ | Type C | CN861 |
| 2015 | MXZ-3C24NAHZ2-U1 | MXZ-3C24NAHZ2-U1 | Type C | CN861 |
| 2015 | MXZ-3C30NA | MXZ-3C30NA | Type C | CN861 |
| 2015 | MXZ-3C30NA2-U1 | MXZ-3C30NA2-U1 | Type C | CN861 |
| 2015 | MXZ-3C30NAHZ | MXZ-3C30NAHZ | Type C | CN861 |
| 2015 | MXZ-3C30NAHZ2-U1 | MXZ-3C30NAHZ2-U1 | Type C | CN861 |
| 2015 | MXZ-4B36NA | MXZ-4B36NA | Type C | CN861 |
| 2015 | MXZ-4B36NA-1 (a) | MXZ-4B36NA-1 (a) | Type C | CN861 |
| 2015 | MXZ-4B36NA-1 (b) | MXZ-4B36NA-1 (b) | Type C | CN605 |
| 2015 | MXZ-4C36NA | MXZ-4C36NA | Type C | CN861 |
| 2015 | MXZ-4C36NA2-U1 | MXZ-4C36NA2-U1 | Type C | CN861 |
| 2015 | MXZ-5B42NA | MXZ-5B42NA | Type C | CN861 |
| 2015 | MXZ-5C42NA | MXZ-5C42NA | Type C | CN861 |
| 2015 | MXZ-5C42NA2-U1 | MXZ-5C42NA2-U1 | Type C | CN861 |
| 2015 | MUZ-GL18NAH | MUZ-GL18NAH | Type C | CN606 |
| 2016 | MUZ-HM24NA2-U1 | MUZ-HM24NA2-U1 | Type C | CN606 |
| 2016 | MUZ-HM09NA-U8 | MUZ-HM09NA-U8 | Type B | CN606 |
| 2016 | MUZ-HM09NA2-U8 | MUZ-HM09NA2-U8 | Type B | CN606 |
| 2016 | MUZ-HM12NA-U8 | MUZ-HM12NA-U8 | Type B | CN606 |
| 2016 | MUZ-HM12NA2-U8 | MUZ-HM12NA2-U8 | Type B | CN606 |
| 2016 | MUZ-HM24NA-U1 | MUZ-HM24NA-U1 | Type C | CN606 |
| 2016 | MUFZ-KJ09NAHZ-U1 | MUFZ-KJ09NAHZ-U1 | Type C | CN606 |
| 2016 | MUFZ-KJ12NAHZ-U1 | MUFZ-KJ12NAHZ-U1 | Type C | CN606 |
| 2016 | MUFZ-KJ15NAHZ-U1 | MUFZ-KJ15NAHZ-U1 | Type C | CN806 |
| 2016 | MUFZ-KJ18NAHZ-U1 | MUFZ-KJ18NAHZ-U1 | Type C | CN806 |
| PIMS2016 | MUZ-FH09NA-1 | MUZ-FH09NA-1 | Type C | CN606 |
| PIMS2016 | MUZ-FH09NAH-1 | MUZ-FH09NAH-1 | Type C | CN606 |
| PIMS2016 | MUZ-FH12NA-1 | MUZ-FH12NA-1 | Type C | CN606 |
| PIMS2016 | MUZ-FH12NAH-1 | MUZ-FH12NAH-1 | Type C | CN606 |
| PIMS2016 | MUZ-GL09NAH-U1 | MUZ-GL09NAH-U1 | Type C | CN606 |
| PIMS2016 | MUZ-GL12NAH-U1 | MUZ-GL12NAH-U1 | Type C | CN606 |
| PIMS2016 | MUZ-GL15NAH-U1 | MUZ-GL15NAH-U1 | Type C | CN606 |
| PIMS2016 | MUY-GL09NA-U1 | MUY-GL09NA-U1 | Type C | CN606 |
| PIMS2016 | MUY-GL12NA-U1 | MUY-GL12NA-U1 | Type C | CN606 |
| PIMS2016 | MUY-GL15NA-U1 | MUY-GL15NA-U1 | Type C | CN606 |
| PIMS2016 | MUZ-GL09NA-U1 | MUZ-GL09NA-U1 | Type C | CN606 |
| PIMS2016 | MUZ-GL12NA-U1 | MUZ-GL12NA-U1 | Type C | CN606 |
| PIMS2016 | MUZ-GL15NA-U1 | MUZ-GL15NA-U1 | Type C | CN606 |
| PIMS2016 | MUZ-HM09NA-U1 | MUZ-HM09NA-U1 | Type C | CN606 |
| PIMS2016 | MUZ-HM12NA-U1 | MUZ-HM12NA-U1 | Type C | CN606 |
| PIMS2016 | MUZ-HM15NA-U1 | MUZ-HM15NA-U1 | Type C | CN606 |
| PIMS2016 | MUY-HM09NA-L1 | MUY-HM09NA-L1 | Type C | CN606 |
| PIMS2016 | MUY-HM12NA-L1 | MUY-HM12NA-L1 | Type C | CN606 |

| fiscal_year | series | model | Relay cable | Connector |
|---|---|---|---|---|
| PIMS2016 | MUY-HM15NA-L1 | MUY-HM15NA-L1 | Type C | CN606 |
| PIMS2016 | MUZ-HM18NA-U1 | MUZ-HM18NA-U1 | Type C | CN606 |
| PIMS2016 | MUY-HM18NA-L1 | MUY-HM18NA-L1 | Type C | CN606 |
| PIMS2016 | MUZ-HM09NA2-U1 | MUZ-HM09NA2-U1 | Type C | CN606 |
| PIMS2016 | MUZ-HM12NA2-U1 | MUZ-HM12NA2-U1 | Type C | CN606 |
| PIMS2016 | MUZ-HM15NA2-U1 | MUZ-HM15NA2-U1 | Type C | CN606 |
| PIMS2016 | MUZ-HM18NA2-U1 | MUZ-HM18NA2-U1 | Type C | CN606 |
| PIMS2016 | MUZ-FH06NA | MUZ-FH06NA | Type C | CN606 |
| PIMS2016 | MUZ-FH06NAH | MUZ-FH06NAH | Type C | CN606 |
| PIMS2016 | MUZ-GL09NA-U8 | MUZ-GL09NA-U8 | Type C | CN606 |
| PIMS2016 | MUZ-GL09NAH-U8 | MUZ-GL09NAH-U8 | Type C | CN606 |
| 2017 | MXZ-2C20NA2-U1 | MXZ-2C20NA2-U1 | Type C | CN861 |
| 2017 | MUY-HM24NA-L1 | MUY-HM24NA-L1 | Type C | CN606 |
| 2018 | MUZ-GL24NA-U2 | MUZ-GL24NA-U2 | Type C | CN806 |
| 2018 | MUZ-JP09WA-U1 | MUZ-JP09WA-U1 | Type C | CN606 |
| 2018 | MUZ-JP12WA-U1 | MUZ-JP12WA-U1 | Type C | CN606 |
| 2018 | MUZ-WR09NA-U1 | MUZ-WR09NA-U1 | Type C | CN606 |
| 2018 | MUZ-WR12NA-U1 | MUZ-WR12NA-U1 | Type C | CN606 |
| 2018 | MUZ-WR18NA-U1 | MUZ-WR18NA-U1 | Type C | CN606 |
| 2018 | MUZ-WR24NA-U1 | MUZ-WR24NA-U1 | Type C | CN606 |
| 2018 | SUZ-KA09NA2.MX | SUZ-KA09NA2.MX | Type C | CN606 |
| 2018 | SUZ-KA09NAH2.MX | SUZ-KA09NAH2.MX | Type C | CN606 |
| 2018 | SUZ-KA09NAR1.TH | SUZ-KA09NAR1.TH | Type C | CN606 |
| 2018 | SUZ-KA09NAR1.TH H | SUZ-KA09NAR1.TH H | Type C | CN606 |
| 2018 | SUZ-KA12NA2.MX | SUZ-KA12NA2.MX | Type C | CN606 |
| 2018 | SUZ-KA12NAH2.MX | SUZ-KA12NAH2.MX | Type C | CN606 |
| 2018 | SUZ-KA12NAR1.TH | SUZ-KA12NAR1.TH | Type C | CN606 |
| 2018 | SUZ-KA12NAR1.TH H | SUZ-KA12NAR1.TH H | Type C | CN606 |
| 2018 | SUZ-KA15NA2.MX | SUZ-KA15NA2.MX | Type C | CN606 |
| 2018 | SUZ-KA15NAH2.MX | SUZ-KA15NAH2.MX | Type C | CN606 |
| 2018 | SUZ-KA15NAR1.TH | SUZ-KA15NAR1.TH | Type C | CN606 |
| 2018 | SUZ-KA15NAR1.TH H | SUZ-KA15NAR1.TH H | Type C | CN606 |
| 2018 | SUZ-KA18NAR1.TH | SUZ-KA18NAR1.TH | Type C | CN606 |
| 2018 | SUZ-KA18NAR1.TH H | SUZ-KA18NAR1.TH H | Type C | CN606 |
| 2019 | MUY-GL09NA-U2 | MUY-GL09NA-U2 | Type C | CN606 |
| 2019 | MUY-GL12NA-U2 | MUY-GL12NA-U2 | Type C | CN606 |
| 2019 | MUY-GL15NA-U2 | MUY-GL15NA-U2 | Type C | CN606 |
| 2019 | MUZ-GL09NAH-U2 | MUZ-GL09NAH-U2 | Type C | CN606 |
| 2019 | MUZ-GL09NA-U2 | MUZ-GL09NA-U2 | Type C | CN606 |
| 2019 | MUZ-GL12NAH-U2 | MUZ-GL12NAH-U2 | Type C | CN606 |
| 2019 | MUZ-GL12NA-U2 | MUZ-GL12NA-U2 | Type C | CN606 |
| 2019 | MUZ-GL15NAH-U2 | MUZ-GL15NAH-U2 | Type C | CN606 |
| 2019 | MUZ-GL15NA-U2 | MUZ-GL15NA-U2 | Type C | CN606 |
| 2019 | MUZ-HM09NAH-U1 | MUZ-HM09NAH-U1 | Type C | CN606 |
| 2019 | MUZ-HM09NA-U2 | MUZ-HM09NA-U2 | Type C | CN606 |
| 2019 | MUZ-HM12NAH-U1 | MUZ-HM12NAH-U1 | Type C | CN606 |
| 2019 | MUZ-HM12NA-U2 | MUZ-HM12NA-U2 | Type C | CN606 |
| 2019 | MUZ-HM15NAH-U1 | MUZ-HM15NAH-U1 | Type C | CN606 |
| 2019 | MUZ-HM15NA-U2 | MUZ-HM15NA-U2 | Type C | CN606 |
| 2019 | MUZ-HM18NAH-U1 | MUZ-HM18NAH-U1 | Type C | CN606 |
| 2019 | MUZ-HM18NA-U2 | MUZ-HM18NA-U2 | Type C | CN606 |
| 2019 | MUZ-HM24NAH-U1 | MUZ-HM24NAH-U1 | Type C | CN606 |
| 2019 | MUZ-WR09NA-U2 | MUZ-WR09NA-U2 | Type C | CN606 |

| fiscal_year | series | model | Relay cable | Connector |
|---|---|---|---|---|
| 2019 | MUZ-WR12NA-U2 | MUZ-WR12NA-U2 | Type C | CN606 |
| 2019 | MUZ-WR18NA-U2 | MUZ-WR18NA-U2 | Type C | CN606 |
| 2019 | SUZ-KA09NAHZ.TH | SUZ-KA09NAHZ.TH | Type C | CN606 |
| 2019 | SUZ-KA12NAHZ.TH | SUZ-KA12NAHZ.TH | Type C | CN606 |
| 2019 | SUZ-KA15NAHZ.TH | SUZ-KA15NAHZ.TH | Type C | CN806 |
| 2019 | SUZ-KA18NAHZ.TH | SUZ-KA18NAHZ.TH | Type C | CN806 |
| 2020 | SUZ-KA18NA2.TH | SUZ-KA18NA2.TH | Type C | CN606 |
| 2020 | SUZ-KA18NAH2.TH | SUZ-KA18NAH2.TH | Type C | CN606 |
| 2020 | SUZ-KA24NA2.TH | SUZ-KA24NA2.TH | Type C | CN806 |
| 2020 | SUZ-KA24NAH2.TH | SUZ-KA24NAH2.TH | Type C | CN806 |
| 2020 | SUZ-KA30NA2.TH | SUZ-KA30NA2.TH | Type C | CN806 |
| 2020 | SUZ-KA30NAH2.TH | SUZ-KA30NAH2.TH | Type C | CN806 |
| 2020 | SUZ-KA36NA2.TH | SUZ-KA36NA2.TH | Type C | CN806 |
| 2020 | SUZ-KA36NAH2.TH | SUZ-KA36NAH2.TH | Type C | CN806 |

## <For Europe>

| fiscal_year | series | model | Relay cable | Connector |
|---|---|---|---|---|
| 2005 | MUZ-FA GA KA small RAC(1) | MUZ-FA GA25/35VA(H) GB/HA/GC35VA(H) SUZ25 | Type AD | CN606 |
| 2005 | MUZ-FA GA KA small RAC(2) | MUZ-FA GA25/35VA(H)　SUZ25 | Type AD | CN606 |
| 2005 | MUZ-FA GA KA small RAC(3) | MUZ-FA GA25/35VA(H)　SUZ25 | Type AD | CN606 |
| 2005 | MUZ-FB25/35 | MUZ-FB25/35VA(H)-E1,E2 | Type B | CN606 |
| 2005 | MUZ-FD25/35VABH | MUZ-FD25/35VABH-E1 | Type B | CN606 |
| 2005 | MUZ-FD50 | MUZ-FD50VA(BH)-E1 | Type AD | CN605 |
| 2005 | MUZ-GA GB big RAC-A(1) | MUZ-GA50VA-E1/GA60VA-E1,E2 /GA71VA-E1,E2/GB50VA-E1,E2 | Type AD | CN605 |
| 2005 | MUZ-GA GB big RAC-A(2) | MUZ-GA50VA-E1/GA60VA-E1,E2 /GA71VA-E1,E2/GB50VA-E1,E2 | Type AD | CN605 |
| 2005 | MUZ-GA GB big RAC-A(3) | MUZ-GA50VA-E1/GA60VA-E1,E2 /GA71VA-E1,E2/GB50VA-E1,E2 | Type AD | CN605 |
| 2005 | MUZ-GA60VA big RAC-B | MUZ-GA60VA-E3 | Type AD | CN605 |
| 2005 | MUZ-GB50/FB35/GE | MUZ-GB50VA/FB35VAH/GE25/35/42/50VA(H) | Type B | CN606 |
| 2005 | MUZ-HC GC FD small RAC | MUZ-HC FD25/35VA(H) GC25VA(H) | Type B | CN606 |
| 2005 | SUZ-KA25VA.TH | SUZ-KA25VA.TH | Type AD | CN606 |
| 2005 | SUZ-KA25VAH.TH | SUZ-KA25VAH.TH | Type AD | CN606 |
| 2005 | SUZ-KA35VA.TH | SUZ-KA35VA.TH | Type AD | CN606 |
| 2005 | SUZ-KA35VAH.TH | SUZ-KA35VAH.TH | Type AD | CN606 |
| 2005 | SUZ-KA50VA.TH | SUZ-KA50VA.TH | Type AD | CN605 |
| 2005 | SUZ-KA60VA.TH | SUZ-KA60VA.TH | Type AD | CN605 |
| 2005 | SUZ-KA71VA.TH | SUZ-KA71VA.TH | Type AD | CN605 |
| 2007 | MUZ-GA71VA-E2 | MUZ-GA71VA-E2 | Type AD | CN605 |
| 2007 | MUZ-GC25VA-E1 | MUZ-GC25VA-E1 | Type B | CN606 |
| 2007 | MUZ-GC35VA-E1 | MUZ-GC35VA-E1 | Type AD | CN606 |
| 2007 | MUZ-HC25VA-E1 | MUZ-HC25VA-E1 | Type B | CN606 |
| 2007 | MUZ-HC35VAB-E1 | MUZ-HC35VAB-E1 | Type B | CN606 |
| 2007 | SUZ-KA50VA#1.TH | SUZ-KA50VA#1.TH | Type AD | CN605 |
| 2007 | SUZ-KA60VA#1.TH | SUZ-KA60VA#1.TH | Type AD | CN605 |
| 2007 | SUZ-KA71VA#1.TH | SUZ-KA71VA#1.TH | Type AD | CN605 |
| 2008 | MUZ-FD25VABH-E1 | MUZ-FD25VABH-E1 | Type B | CN606 |
| 2008 | MUZ-FD25VA-E1 | MUZ-FD25VA-E1 | Type B | CN606 |
| 2008 | MUZ-FD25VAH-E1 | MUZ-FD25VAH-E1 | Type B | CN606 |
| 2008 | MUZ-FD35VABH-E1 | MUZ-FD35VABH-E1 | Type B | CN606 |
| 2008 | MUZ-FD35VA-E1 | MUZ-FD35VA-E1 | Type B | CN606 |
| 2008 | MUZ-FD35VAH-E1 | MUZ-FD35VAH-E1 | Type B | CN606 |
| 2008 | MUZ-FD50VABH-E1 | MUZ-FD50VABH-E1 | Type AD | CN605 |
| 2008 | MUZ-GA60VA-E3 | MUZ-GA60VA-E3 | Type AD | CN605 |
| 2008 | MUZ-GB50VA-E3 | MUZ-GB50VA-E3 | Type B | CN606 |
| 2008 | MUZ-HC35VAB-E2 | MUZ-HC35VAB-E2 | Type B | CN606 |
| 2008 | MUZ-HC35VA-E2 | MUZ-HC35VA-E2 | Type B | CN606 |
| 2008 | SUZ-KA25VAHR1.TH | SUZ-KA25VAHR1.TH | Type B | CN606 |
| 2008 | SUZ-KA25VAR1.TH | SUZ-KA25VAR1.TH | Type B | CN606 |
| 2008 | SUZ-KA35VAHR1.TH | SUZ-KA35VAHR1.TH | Type B | CN606 |
| 2008 | SUZ-KA35VAR1.TH | SUZ-KA35VAR1.TH | Type B | CN606 |
| 2008 | SUZ-KA50VAR2.TH | SUZ-KA50VAR2.TH | Type B | CN606 |
| 2008 | SUZ-KA60VAR2.TH | SUZ-KA60VAR2.TH | Type AD | CN605 |
| 2009 | MUZ 09model | MUZ-GE25/35/42/50/60/71VA(H)-E1 | Type C | CN605 |
| 2009 | MUZ-FD50VA-E1 | MUZ-FD50VA-E1 | Type AD | CN605 |
| 2009 | MUZ-GE25VA-E1 | MUZ-GE25VA-E1 | Type B | CN606 |
| 2009 | MUZ-GE25VAH-E1 | MUZ-GE25VAH-E1 | Type B | CN606 |
| 2009 | MUZ-GE35VA-E1 | MUZ-GE35VA-E1 | Type B | CN606 |
| 2009 | MUZ-GE35VAH-E1 | MUZ-GE35VAH-E1 | Type B | CN606 |

| fiscal_year | series | model | Relay cable | Connector |
|---|---|---|---|---|
| 2009 | MUZ-GE42VA-E1 | MUZ-GE42VA-E1 | Type B | CN606 |
| 2009 | MUZ-GE42VAH-E1 | MUZ-GE42VAH-E1 | Type B | CN606 |
| 2009 | MUZ-GE50VA-E1 | MUZ-GE50VA-E1 | Type B | CN606 |
| 2009 | MUZ-GE50VAH-E1 | MUZ-GE50VAH-E1 | Type B | CN606 |
| 2010 | MUZ-GE60VA-E1 | MUZ-GE60VA-E1 | Type C | CN806 |
| 2010 | MUZ-GE71VA-E1 | MUZ-GE71VA-E1 | Type C | CN806 |
| 2010 | SUZ-KA25VA2.TH | SUZ-KA25VA2.TH | Type B | CN606 |
| 2010 | SUZ-KA35VA2.TH | SUZ-KA35VA2.TH | Type B | CN606 |
| 2010 | SUZ-KA50VA2.TH | SUZ-KA50VA2.TH | Type B | CN606 |
| 2010 | SUZ-KA60VA2.TH | SUZ-KA60VA2.TH | Type AD | CN605 |
| 2010 | SUZ-KA71VA2.TH | SUZ-KA71VA2.TH | Type C | CN806 |
| 2011 | MUZ-EF25VE-E1 | MUZ-EF25VE-E1 | Type C | CN606 |
| 2011 | MUZ-EF25VEH-E1 | MUZ-EF25VEH-E1 | Type C | CN606 |
| 2011 | MUZ-EF35VE-E1 | MUZ-EF35VE-E1 | Type C | CN606 |
| 2011 | MUZ-EF35VEH-E1 | MUZ-EF35VEH-E1 | Type C | CN606 |
| 2011 | MUZ-EF42VE-E1 | MUZ-EF42VE-E1 | Type C | CN606 |
| 2011 | MUZ-EF50VE-E1 | MUZ-EF50VE-E1 | Type C | CN606 |
| 2012 | MUZ-FH25VE-E1 | MUZ-FH25VE-E1 | Type C | CN606 |
| 2012 | MUZ-FH25VEHZ-E1 | MUZ-FH25VEHZ-E1 | Type C | CN606 |
| 2012 | MUZ-FH35VE-E1 | MUZ-FH35VE-E1 | Type C | CN606 |
| 2012 | MUZ-FH35VEHZ-E1 | MUZ-FH35VEHZ-E1 | Type C | CN606 |
| 2012 | MUZ-FH50VE-E1 | MUZ-FH50VE-E1 | Type C | CN806 |
| 2012 | MUZ-FH50VEHZ-E1 | MUZ-FH50VEHZ-E1 | Type C | CN806 |
| 2012 | MUZ-GE25VA-E2 | MUZ-GE25VA-E2 | Type B | CN606 |
| 2012 | MUZ-GE35VA-E2 | MUZ-GE35VA-E2 | Type B | CN606 |
| 2012 | MUZ-GE35VAH-E2 | MUZ-GE35VAH-E2 | Type B | CN606 |
| 2012 | MUZ-GF60VE-E1 | MUZ-GF60VE-E1 | Type C | CN806 |
| 2012 | MUZ-GF71VE-E1 | MUZ-GF71VE-E1 | Type C | CN806 |
| 2012 | MUZ-SF25VE-E1 | MUZ-SF25VE-E1 | Type C | CN606 |
| 2012 | MUZ-SF25VEH-E1 | MUZ-SF25VEH-E1 | Type C | CN606 |
| 2012 | MUZ-SF35VE-E1 | MUZ-SF35VE-E1 | Type C | CN606 |
| 2012 | MUZ-SF35VEH-E1 | MUZ-SF35VEH-E1 | Type C | CN606 |
| 2012 | MUZ-SF42VE-E1 | MUZ-SF42VE-E1 | Type C | CN606 |
| 2012 | MUZ-SF42VEH-E1 | MUZ-SF42VEH-E1 | Type C | CN606 |
| 2012 | MUZ-SF50VE-E1 | MUZ-SF50VE-E1 | Type C | CN606 |
| 2012 | MUZ-SF50VEH-E1 | MUZ-SF50VEH-E1 | Type C | CN606 |
| 2012 | SUZ-KA25VA3.TH | SUZ-KA25VA3.TH | Type C | CN606 |
| 2012 | SUZ-KA35VA3.TH | SUZ-KA35VA3.TH | Type C | CN606 |
| 2012 | SUZ-KA50VA3.TH | SUZ-KA50VA3.TH | Type C | CN606 |
| 2012 | SUZ-KA60VA3.TH | SUZ-KA60VA3.TH | Type C | CN806 |
| 2012 | SUZ-KA71VA3.TH | SUZ-KA71VA3.TH | Type C | CN806 |
| 2013 | MUFZ-KJ25VE-E1 | MUFZ-KJ25VE-E1 | Type C | CN606 |
| 2013 | MUFZ-KJ25VEHZ-E1 | MUFZ-KJ25VEHZ-E1 | Type C | CN606 |
| 2013 | MUFZ-KJ35VE-E1 | MUFZ-KJ35VE-E1 | Type C | CN606 |
| 2013 | MUFZ-KJ35VEHZ-E1 | MUFZ-KJ35VEHZ-E1 | Type C | CN606 |
| 2013 | MUFZ-KJ50VE-E1 | MUFZ-KJ50VE-E1 | Type C | CN806 |
| 2013 | MUFZ-KJ50VEHZ-E1 | MUFZ-KJ50VEHZ-E1 | Type C | CN806 |
| 2013 | MUZ-EF25VE-E2 | MUZ-EF25VE-E2 | Type C | CN606 |
| 2013 | MUZ-EF25VEH-E2 | MUZ-EF25VEH-E2 | Type C | CN606 |
| 2013 | MUZ-EF35VE-E2 | MUZ-EF35VE-E2 | Type C | CN606 |
| 2013 | MUZ-EF35VEH-E2 | MUZ-EF35VEH-E2 | Type C | CN606 |
| 2013 | MUZ-EF42VE-E2 | MUZ-EF42VE-E2 | Type C | CN606 |
| 2013 | MUZ-EF50VE-E2 | MUZ-EF50VE-E2 | Type C | CN606 |

| fiscal_year | series | model | Relay cable | Connector |
|---|---|---|---|---|
| 2013 | MUZ-HJ25VA-E1 | MUZ-HJ25VA-E1 | Type C | CN606 |
| 2013 | MUZ-HJ35VA-E1 | MUZ-HJ35VA-E1 | Type C | CN606 |
| 2013 | MUZ-HJ50VA-E1 | MUZ-HJ50VA-E1 | Type C | CN606 |
| 2013 | SUHZ-SW45VA.TH | SUHZ-SW45VA.TH | Type C | CN606 |
| 2013 | SUHZ-SW45VAH.TH | SUHZ-SW45VAH.TH | Type C | CN606 |
| 2013 | SUZ-KA25VA4.TH | SUZ-KA25VA4.TH | Type C | CN606 |
| 2013 | SUZ-KA25VA4.TH-ER | SUZ-KA25VA4.TH-ER | Type C | CN606 |
| 2013 | SUZ-KA35VA4.TH | SUZ-KA35VA4.TH | Type C | CN606 |
| 2013 | SUZ-KA35VA4.TH-ER | SUZ-KA35VA4.TH-ER | Type C | CN606 |
| 2013 | SUZ-KA50VA4.TH | SUZ-KA50VA4.TH | Type C | CN606 |
| 2013 | SUZ-KA50VA4.TH-ER | SUZ-KA50VA4.TH-ER | Type C | CN606 |
| 2013 | SUZ-KA60VA4.TH | SUZ-KA60VA4.TH | Type C | CN806 |
| 2013 | SUZ-KA60VA4.TH-ER | SUZ-KA60VA4.TH-ER | Type C | CN806 |
| 2013 | SUZ-KA71VA4.TH | SUZ-KA71VA4.TH | Type C | CN806 |
| 2013 | SUZ-KA71VA4.TH-ER | SUZ-KA71VA4.TH-ER | Type C | CN806 |
| 2014 | MUFZ-KJ25VE-ER1 | MUFZ-KJ25VE-ER1 | Type C | CN606 |
| 2014 | MUFZ-KJ25VEHZ-ER1 | MUFZ-KJ25VEHZ-ER1 | Type C | CN606 |
| 2014 | MUFZ-KJ35VE-ER1 | MUFZ-KJ35VE-ER1 | Type C | CN606 |
| 2014 | MUFZ-KJ35VEHZ-ER1 | MUFZ-KJ35VEHZ-ER1 | Type C | CN606 |
| 2014 | MUFZ-KJ50VE-ER1 | MUFZ-KJ50VE-ER1 | Type C | CN806 |
| 2014 | MUFZ-KJ50VEHZ-ER1 | MUFZ-KJ50VEHZ-ER1 | Type C | CN806 |
| 2014 | MUZ-EF25VE-E3 | MUZ-EF25VE-E3 | Type C | CN606 |
| 2014 | MUZ-EF25VE-ER3 | MUZ-EF25VE-ER3 | Type C | CN606 |
| 2014 | MUZ-EF25VE-ET4 | MUZ-EF25VE-ET4 | Type C | CN606 |
| 2014 | MUZ-EF25VEH-ER2 | MUZ-EF25VEH-ER2 | Type C | CN606 |
| 2014 | MUZ-EF25VEH-ET3 | MUZ-EF25VEH-ET3 | Type C | CN606 |
| 2014 | MUZ-EF35VE-E3 | MUZ-EF35VE-E3 | Type C | CN606 |
| 2014 | MUZ-EF35VE-ER3 | MUZ-EF35VE-ER3 | Type C | CN606 |
| 2014 | MUZ-EF35VE-ET4 | MUZ-EF35VE-ET4 | Type C | CN606 |
| 2014 | MUZ-EF35VEH-ER2 | MUZ-EF35VEH-ER2 | Type C | CN606 |
| 2014 | MUZ-EF35VEH-ET3 | MUZ-EF35VEH-ET3 | Type C | CN606 |
| 2014 | MUZ-EF42VE-E3 | MUZ-EF42VE-E3 | Type C | CN606 |
| 2014 | MUZ-EF42VE-ER3 | MUZ-EF42VE-ER3 | Type C | CN606 |
| 2014 | MUZ-EF42VE-ET4 | MUZ-EF42VE-ET4 | Type C | CN606 |
| 2014 | MUZ-EF50VE-ER2 | MUZ-EF50VE-ER2 | Type C | CN606 |
| 2014 | MUZ-FH25VE-E2 | MUZ-FH25VE-E2 | Type C | CN606 |
| 2014 | MUZ-FH25VE-E3 | MUZ-FH25VE-E3 | Type C | CN606 |
| 2014 | MUZ-FH25VE-ER1 | MUZ-FH25VE-ER1 | Type C | CN606 |
| 2014 | MUZ-FH25VE-ER2 | MUZ-FH25VE-ER2 | Type C | CN606 |
| 2014 | MUZ-FH25VE-ER3 | MUZ-FH25VE-ER3 | Type C | CN606 |
| 2014 | MUZ-FH25VEHZ-E3 | MUZ-FH25VEHZ-E3 | Type C | CN606 |
| 2014 | MUZ-FH25VEHZ-ER1 | MUZ-FH25VEHZ-ER1 | Type C | CN606 |
| 2014 | MUZ-FH25VEHZ-ER3 | MUZ-FH25VEHZ-ER3 | Type C | CN606 |
| 2014 | MUZ-FH35VE-E2 | MUZ-FH35VE-E2 | Type C | CN606 |
| 2014 | MUZ-FH35VE-ER1 | MUZ-FH35VE-ER1 | Type C | CN606 |
| 2014 | MUZ-FH35VE-ER2 | MUZ-FH35VE-ER2 | Type C | CN606 |
| 2014 | MUZ-FH35VEHZ-ER1 | MUZ-FH35VEHZ-ER1 | Type C | CN606 |
| 2014 | MUZ-FH50VE-ER1 | MUZ-FH50VE-ER1 | Type C | CN806 |
| 2014 | MUZ-FH50VEHZ-ER1 | MUZ-FH50VEHZ-ER1 | Type C | CN806 |
| 2014 | MUZ-GF60VE-ER1 | MUZ-GF60VE-ER1 | Type C | CN806 |
| 2014 | MUZ-GF71VE-ER1 | MUZ-GF71VE-ER1 | Type C | CN806 |
| 2014 | MUZ-HJ25VA-ER1 | MUZ-HJ25VA-ER1 | Type C | CN606 |
| 2014 | MUZ-HJ35VA-E2 | MUZ-HJ35VA-E2 | Type B | CN606 |

| fiscal_year | series | model | Relay cable | Connector |
|---|---|---|---|---|
| 2014 | MUZ-HJ35VA-ER1 | MUZ-HJ35VA-ER1 | Type C | CN606 |
| 2014 | MUZ-HJ35VA-ER2 | MUZ-HJ35VA-ER2 | Type B | CN606 |
| 2014 | MUZ-HJ50VA-ER1 | MUZ-HJ50VA-ER1 | Type C | CN606 |
| 2014 | MUZ-HJ60VA-E1 | MUZ-HJ60VA-E1 | Type C | CN606 |
| 2014 | MUZ-HJ60VA-ER1 | MUZ-HJ60VA-ER1 | Type C | CN606 |
| 2014 | MUZ-HJ71VA-E1 | MUZ-HJ71VA-E1 | Type C | CN606 |
| 2014 | MUZ-HJ71VA-ER1 | MUZ-HJ71VA-ER1 | Type C | CN606 |
| 2014 | MUZ-SF25VE-E2 | MUZ-SF25VE-E2 | Type C | CN606 |
| 2014 | MUZ-SF25VE-ER2 | MUZ-SF25VE-ER2 | Type C | CN606 |
| 2014 | MUZ-SF25VE-ET3 | MUZ-SF25VE-ET3 | Type C | CN606 |
| 2014 | MUZ-SF25VEH-ER1 | MUZ-SF25VEH-ER1 | Type C | CN606 |
| 2014 | MUZ-SF25VEH-ET2 | MUZ-SF25VEH-ET2 | Type C | CN606 |
| 2014 | MUZ-SF35VE-E2 | MUZ-SF35VE-E2 | Type C | CN606 |
| 2014 | MUZ-SF35VE-ER2 | MUZ-SF35VE-ER2 | Type C | CN606 |
| 2014 | MUZ-SF35VE-ET3 | MUZ-SF35VE-ET3 | Type C | CN606 |
| 2014 | MUZ-SF35VEH-ER1 | MUZ-SF35VEH-ER1 | Type C | CN606 |
| 2014 | MUZ-SF35VEH-ET2 | MUZ-SF35VEH-ET2 | Type C | CN606 |
| 2014 | MUZ-SF42VE-E2 | MUZ-SF42VE-E2 | Type C | CN606 |
| 2014 | MUZ-SF42VE-ER2 | MUZ-SF42VE-ER2 | Type C | CN606 |
| 2014 | MUZ-SF42VE-ET3 | MUZ-SF42VE-ET3 | Type C | CN606 |
| 2014 | MUZ-SF42VEH-ER1 | MUZ-SF42VEH-ER1 | Type C | CN606 |
| 2014 | MUZ-SF42VEH-ET2 | MUZ-SF42VEH-ET2 | Type C | CN606 |
| 2014 | MUZ-SF50VE-ER1 | MUZ-SF50VE-ER1 | Type C | CN606 |
| 2014 | MUZ-SF50VEH-ER1 | MUZ-SF50VEH-ER1 | Type C | CN606 |
| 2014 | MUFZ-KJ25VEHZ-ET1 | MUFZ-KJ25VEHZ-ET1 | Type C | CN606 |
| 2014 | MUFZ-KJ35VEHZ-ET1 | MUFZ-KJ35VEHZ-ET1 | Type C | CN606 |
| 2014 | MUFZ-KJ50VEHZ-ET1 | MUFZ-KJ50VEHZ-ET1 | Type C | CN606 |
| 2014 | MXZ-2D53VAH-ER2 | MXZ-2D53VAH-ER2 | Type A | CN606 |
| 2014 | SUZ-SA71VA.TH | SUZ-SA71VA.TH | Type C | CN806 |
| 2015 | MUZ-DM25VA-E1 | MUZ-DM25VA-E1 | Type C | CN606 |
| 2015 | MUZ-DM25VA-ER1 | MUZ-DM25VA-ER1 | Type C | CN606 |
| 2015 | MUZ-DM25VA-ET1 | MUZ-DM25VA-ET1 | Type C | CN606 |
| 2015 | MUZ-DM35VA-E1 | MUZ-DM35VA-E1 | Type C | CN606 |
| 2015 | MUZ-DM35VA-ER1 | MUZ-DM35VA-ER1 | Type C | CN606 |
| 2015 | MUZ-DM35VA-ET1 | MUZ-DM35VA-ET1 | Type C | CN606 |
| 2015 | MUZ-EF25VE-E4 | MUZ-EF25VE-E4 | Type C | CN606 |
| 2015 | MUZ-EF25VE-E5 | MUZ-EF25VE-E5 | Type C | CN606 |
| 2015 | MUZ-EF25VE-ER4 | MUZ-EF25VE-ER4 | Type C | CN606 |
| 2015 | MUZ-EF25VE-ER5 | MUZ-EF25VE-ER5 | Type C | CN606 |
| 2015 | MUZ-EF25VE-ET3 | MUZ-EF25VE-ET3 | Type C | CN606 |
| 2015 | MUZ-EF25VE-ET5 | MUZ-EF25VE-ET5 | Type C | CN606 |
| 2015 | MUZ-EF25VEH-E3 | MUZ-EF25VEH-E3 | Type C | CN606 |
| 2015 | MUZ-EF25VEH-E4 | MUZ-EF25VEH-E4 | Type C | CN606 |
| 2015 | MUZ-EF25VEH-ER3 | MUZ-EF25VEH-ER3 | Type C | CN606 |
| 2015 | MUZ-EF25VEH-ET2 | MUZ-EF25VEH-ET2 | Type C | CN606 |
| 2015 | MUZ-EF35VE-E4 | MUZ-EF35VE-E4 | Type C | CN606 |
| 2015 | MUZ-EF35VE-E5 | MUZ-EF35VE-E5 | Type C | CN606 |
| 2015 | MUZ-EF35VE-ER4 | MUZ-EF35VE-ER4 | Type C | CN606 |
| 2015 | MUZ-EF35VE-ER5 | MUZ-EF35VE-ER5 | Type C | CN606 |
| 2015 | MUZ-EF35VE-ET3 | MUZ-EF35VE-ET3 | Type C | CN606 |
| 2015 | MUZ-EF35VE-ET5 | MUZ-EF35VE-ET5 | Type C | CN606 |
| 2015 | MUZ-EF35VEH-E3 | MUZ-EF35VEH-E3 | Type C | CN606 |
| 2015 | MUZ-EF35VEH-E4 | MUZ-EF35VEH-E4 | Type C | CN606 |

| fiscal_year | series | model | Relay cable | Connector |
|---|---|---|---|---|
| 2015 | MUZ-EF35VEH-ER3 | MUZ-EF35VEH-ER3 | Type C | CN606 |
| 2015 | MUZ-EF35VEH-ET2 | MUZ-EF35VEH-ET2 | Type C | CN606 |
| 2015 | MUZ-EF42VE-E4 | MUZ-EF42VE-E4 | Type C | CN606 |
| 2015 | MUZ-EF42VE-E5 | MUZ-EF42VE-E5 | Type C | CN606 |
| 2015 | MUZ-EF42VE-ER4 | MUZ-EF42VE-ER4 | Type C | CN606 |
| 2015 | MUZ-EF42VE-ER5 | MUZ-EF42VE-ER5 | Type C | CN606 |
| 2015 | MUZ-EF42VE-ET3 | MUZ-EF42VE-ET3 | Type C | CN606 |
| 2015 | MUZ-EF42VE-ET5 | MUZ-EF42VE-ET5 | Type C | CN606 |
| 2015 | MUZ-EF50VE-E3 | MUZ-EF50VE-E3 | Type C | CN606 |
| 2015 | MUZ-EF50VE-ER3 | MUZ-EF50VE-ER3 | Type C | CN606 |
| 2015 | MUZ-EF50VE-ET2 | MUZ-EF50VE-ET2 | Type C | CN606 |
| 2015 | MUZ-EF50VE-ET3 | MUZ-EF50VE-ET3 | Type C | CN606 |
| 2015 | MUZ-FH25VE-E4 | MUZ-FH25VE-E4 | Type C | CN606 |
| 2015 | MUZ-FH25VE-ER4 | MUZ-FH25VE-ER4 | Type C | CN606 |
| 2015 | MUZ-FH25VE-ET2 | MUZ-FH25VE-ET2 | Type C | CN606 |
| 2015 | MUZ-FH25VE-ET3 | MUZ-FH25VE-ET3 | Type C | CN606 |
| 2015 | MUZ-FH25VEHZ-E4 | MUZ-FH25VEHZ-E4 | Type C | CN606 |
| 2015 | MUZ-FH25VEHZ-ER4 | MUZ-FH25VEHZ-ER4 | Type C | CN606 |
| 2015 | MUZ-FH25VEHZ-ET1 | MUZ-FH25VEHZ-ET1 | Type C | CN606 |
| 2015 | MUZ-FH25VEHZ-ET2 | MUZ-FH25VEHZ-ET2 | Type C | CN606 |
| 2015 | MUZ-FH35VE-E3 | MUZ-FH35VE-E3 | Type C | CN606 |
| 2015 | MUZ-FH35VE-ER3 | MUZ-FH35VE-ER3 | Type C | CN606 |
| 2015 | MUZ-FH35VE-ET2 | MUZ-FH35VE-ET2 | Type C | CN606 |
| 2015 | MUZ-FH35VE-ET3 | MUZ-FH35VE-ET3 | Type C | CN606 |
| 2015 | MUZ-FH35VEHZ-E2 | MUZ-FH35VEHZ-E2 | Type C | CN606 |
| 2015 | MUZ-FH35VEHZ-ER2 | MUZ-FH35VEHZ-ER2 | Type C | CN606 |
| 2015 | MUZ-FH35VEHZ-ET1 | MUZ-FH35VEHZ-ET1 | Type C | CN606 |
| 2015 | MUZ-FH35VEHZ-ET2 | MUZ-FH35VEHZ-ET2 | Type C | CN606 |
| 2015 | MUZ-FH50VE-E2 | MUZ-FH50VE-E2 | Type C | CN806 |
| 2015 | MUZ-FH50VE-ER2 | MUZ-FH50VE-ER2 | Type C | CN806 |
| 2015 | MUZ-FH50VE-ET1 | MUZ-FH50VE-ET1 | Type C | CN806 |
| 2015 | MUZ-FH50VE-ET2 | MUZ-FH50VE-ET2 | Type C | CN806 |
| 2015 | MUZ-FH50VEHZ-E2 | MUZ-FH50VEHZ-E2 | Type C | CN806 |
| 2015 | MUZ-FH50VEHZ-ER2 | MUZ-FH50VEHZ-ER2 | Type C | CN806 |
| 2015 | MUZ-FH50VEHZ-ET1 | MUZ-FH50VEHZ-ET1 | Type C | CN806 |
| 2015 | MUZ-FH50VEHZ-ET2 | MUZ-FH50VEHZ-ET2 | Type C | CN806 |
| 2015 | MUZ-GF60VE-E2 | MUZ-GF60VE-E2 | Type C | CN806 |
| 2015 | MUZ-GF60VE-ER2 | MUZ-GF60VE-ER2 | Type C | CN806 |
| 2015 | MUZ-GF60VE-ET1 | MUZ-GF60VE-ET1 | Type C | CN806 |
| 2015 | MUZ-GF60VE-ET2 | MUZ-GF60VE-ET2 | Type C | CN806 |
| 2015 | MUZ-GF71VE-E2 | MUZ-GF71VE-E2 | Type C | CN806 |
| 2015 | MUZ-GF71VE-ER2 | MUZ-GF71VE-ER2 | Type C | CN806 |
| 2015 | MUZ-GF71VE-ET1 | MUZ-GF71VE-ET1 | Type C | CN806 |
| 2015 | MUZ-GF71VE-ET2 | MUZ-GF71VE-ET2 | Type C | CN806 |
| 2015 | MUZ-HJ25VA-E2 | MUZ-HJ25VA-E2 | Type C | CN606 |
| 2015 | MUZ-HJ25VA-ER2 | MUZ-HJ25VA-ER2 | Type C | CN606 |
| 2015 | MUZ-HJ25VA-ET1 | MUZ-HJ25VA-ET1 | Type C | CN606 |
| 2015 | MUZ-HJ25VA-ET2 | MUZ-HJ25VA-ET2 | Type C | CN606 |
| 2015 | MUZ-HJ35VA-E3 | MUZ-HJ35VA-E3 | Type C | CN606 |
| 2015 | MUZ-HJ35VA-ER3 | MUZ-HJ35VA-ER3 | Type C | CN606 |
| 2015 | MUZ-HJ35VA-ET1 | MUZ-HJ35VA-ET1 | Type C | CN606 |
| 2015 | MUZ-HJ35VA-ET2 | MUZ-HJ35VA-ET2 | Type C | CN606 |
| 2015 | MUZ-HJ50VA-E2 | MUZ-HJ50VA-E2 | Type C | CN606 |

| fiscal_year | series | model | Relay cable | Connector |
|---|---|---|---|---|
| 2015 | MUZ-HJ50VA-ER2 | MUZ-HJ50VA-ER2 | Type C | CN606 |
| 2015 | MUZ-HJ50VA-ET1 | MUZ-HJ50VA-ET1 | Type C | CN606 |
| 2015 | MUZ-HJ50VA-ET2 | MUZ-HJ50VA-ET2 | Type C | CN606 |
| 2015 | MUZ-HJ60VA-E1 | MUZ-HJ60VA-E1 | Type C | CN606 |
| 2015 | MUZ-HJ60VA-E2 | MUZ-HJ60VA-E2 | Type C | CN606 |
| 2015 | MUZ-HJ60VA-ER1 | MUZ-HJ60VA-ER1 | Type C | CN606 |
| 2015 | MUZ-HJ60VA-ET1 | MUZ-HJ60VA-ET1 | Type C | CN606 |
| 2015 | MUZ-HJ71VA-E1 | MUZ-HJ71VA-E1 | Type C | CN606 |
| 2015 | MUZ-HJ71VA-E2 | MUZ-HJ71VA-E2 | Type C | CN606 |
| 2015 | MUZ-HJ71VA-ER1 | MUZ-HJ71VA-ER1 | Type C | CN606 |
| 2015 | MUZ-HJ71VA-ET1 | MUZ-HJ71VA-ET1 | Type C | CN606 |
| 2015 | MUZ-SF25VE-E3 | MUZ-SF25VE-E3 | Type C | CN606 |
| 2015 | MUZ-SF25VE-E4 | MUZ-SF25VE-E4 | Type C | CN606 |
| 2015 | MUZ-SF25VE-ER3 | MUZ-SF25VE-ER3 | Type C | CN606 |
| 2015 | MUZ-SF25VE-ER4 | MUZ-SF25VE-ER4 | Type C | CN606 |
| 2015 | MUZ-SF25VE-ET2 | MUZ-SF25VE-ET2 | Type C | CN606 |
| 2015 | MUZ-SF25VE-ET4 | MUZ-SF25VE-ET4 | Type C | CN606 |
| 2015 | MUZ-SF25VEH-E2 | MUZ-SF25VEH-E2 | Type C | CN606 |
| 2015 | MUZ-SF25VEH-E3 | MUZ-SF25VEH-E3 | Type C | CN606 |
| 2015 | MUZ-SF25VEH-ER2 | MUZ-SF25VEH-ER2 | Type C | CN606 |
| 2015 | MUZ-SF25VEH-ET1 | MUZ-SF25VEH-ET1 | Type C | CN606 |
| 2015 | MUZ-SF35VE-E3 | MUZ-SF35VE-E3 | Type C | CN606 |
| 2015 | MUZ-SF35VE-E4 | MUZ-SF35VE-E4 | Type C | CN606 |
| 2015 | MUZ-SF35VE-ER3 | MUZ-SF35VE-ER3 | Type C | CN606 |
| 2015 | MUZ-SF35VE-ER4 | MUZ-SF35VE-ER4 | Type C | CN606 |
| 2015 | MUZ-SF35VE-ET2 | MUZ-SF35VE-ET2 | Type C | CN606 |
| 2015 | MUZ-SF35VE-ET4 | MUZ-SF35VE-ET4 | Type C | CN606 |
| 2015 | MUZ-SF35VEH-E2 | MUZ-SF35VEH-E2 | Type C | CN606 |
| 2015 | MUZ-SF35VEH-E3 | MUZ-SF35VEH-E3 | Type C | CN606 |
| 2015 | MUZ-SF35VEH-ER2 | MUZ-SF35VEH-ER2 | Type C | CN606 |
| 2015 | MUZ-SF35VEH-ET1 | MUZ-SF35VEH-ET1 | Type C | CN606 |
| 2015 | MUZ-SF42VE-E3 | MUZ-SF42VE-E3 | Type C | CN606 |
| 2015 | MUZ-SF42VE-E4 | MUZ-SF42VE-E4 | Type C | CN606 |
| 2015 | MUZ-SF42VE-ER3 | MUZ-SF42VE-ER3 | Type C | CN606 |
| 2015 | MUZ-SF42VE-ER4 | MUZ-SF42VE-ER4 | Type C | CN606 |
| 2015 | MUZ-SF42VE-ET2 | MUZ-SF42VE-ET2 | Type C | CN606 |
| 2015 | MUZ-SF42VE-ET4 | MUZ-SF42VE-ET4 | Type C | CN606 |
| 2015 | MUZ-SF42VEH-E2 | MUZ-SF42VEH-E2 | Type C | CN606 |
| 2015 | MUZ-SF42VEH-E3 | MUZ-SF42VEH-E3 | Type C | CN606 |
| 2015 | MUZ-SF42VEH-ER2 | MUZ-SF42VEH-ER2 | Type C | CN606 |
| 2015 | MUZ-SF42VEH-ET1 | MUZ-SF42VEH-ET1 | Type C | CN606 |
| 2015 | MUZ-SF50VE-E2 | MUZ-SF50VE-E2 | Type C | CN606 |
| 2015 | MUZ-SF50VE-ER2 | MUZ-SF50VE-ER2 | Type C | CN606 |
| 2015 | MUZ-SF50VE-ET1 | MUZ-SF50VE-ET1 | Type C | CN606 |
| 2015 | MUZ-SF50VE-ET2 | MUZ-SF50VE-ET2 | Type C | CN606 |
| 2015 | MUZ-SF50VEH-E2 | MUZ-SF50VEH-E2 | Type C | CN606 |
| 2015 | MUZ-SF50VEH-ET1 | MUZ-SF50VEH-ET1 | Type C | CN606 |
| 2015 | MXZ-2B30VA-E1 | MXZ-2B30VA-E1 | Type AD | CN606 |
| 2015 | MXZ-2B40VA-E1 | MXZ-2B40VA-E1 | Type AD | CN606 |
| 2015 | MXZ-2B52VA-E1 | MXZ-2B52VA-E1 | Type AD | CN606 |
| 2015 | MXZ-2C30VA-E1 | MXZ-2C30VA-E1 | Type AD | CN606 |
| 2015 | MXZ-2C40VA-E1 | MXZ-2C40VA-E1 | Type AD | CN606 |
| 2015 | MXZ-2C52VA-E1 | MXZ-2C52VA-E1 | Type AD | CN606 |

| fiscal_year | series | model | Relay cable | Connector |
|---|---|---|---|---|
| 2015 | MXZ-2D33VA-E1 | MXZ-2D33VA-E1 | Type AD | CN606 |
| 2015 | MXZ-2D33VA-E2 | MXZ-2D33VA-E2 | Type AD | CN606 |
| 2015 | MXZ-2D33VA-ER2 | MXZ-2D33VA-ER2 | Type AD | CN606 |
| 2015 | MXZ-2D33VA-ET2 | MXZ-2D33VA-ET2 | Type AD | CN606 |
| 2015 | MXZ-2D40VA-E1 | MXZ-2D40VA-E1 | Type AD | CN606 |
| 2015 | MXZ-2D40VA-ER2 | MXZ-2D40VA-ER2 | Type AD | CN606 |
| 2015 | MXZ-2D42VA2-E3 | MXZ-2D42VA2-E3 | Type AD | CN606 |
| 2015 | MXZ-2D42VA2-ER3 | MXZ-2D42VA2-ER3 | Type AD | CN606 |
| 2015 | MXZ-2D42VA2-ET3 | MXZ-2D42VA2-ET3 | Type AD | CN606 |
| 2015 | MXZ-2D42VA-E2 | MXZ-2D42VA-E2 | Type AD | CN606 |
| 2015 | MXZ-2D42VA-E3 | MXZ-2D42VA-E3 | Type AD | CN606 |
| 2015 | MXZ-2D42VA-ER3 | MXZ-2D42VA-ER3 | Type AD | CN606 |
| 2015 | MXZ-2D42VA-ET2 | MXZ-2D42VA-ET2 | Type AD | CN606 |
| 2015 | MXZ-2D42VA-ET3 | MXZ-2D42VA-ET3 | Type AD | CN606 |
| 2015 | MXZ-2D53VA2-E3 | MXZ-2D53VA2-E3 | Type AD | CN606 |
| 2015 | MXZ-2D53VA2-ER3 | MXZ-2D53VA2-ER3 | Type AD | CN606 |
| 2015 | MXZ-2D53VA2-ET3 | MXZ-2D53VA2-ET3 | Type AD | CN606 |
| 2015 | MXZ-2D53VA-E1 | MXZ-2D53VA-E1 | Type AD | CN606 |
| 2015 | MXZ-2D53VA-E2 | MXZ-2D53VA-E2 | Type AD | CN606 |
| 2015 | MXZ-2D53VA-E3 | MXZ-2D53VA-E3 | Type AD | CN606 |
| 2015 | MXZ-2D53VA-ER2 | MXZ-2D53VA-ER2 | Type AD | CN606 |
| 2015 | MXZ-2D53VA-ER3 | MXZ-2D53VA-ER3 | Type AD | CN606 |
| 2015 | MXZ-2D53VA-ET2 | MXZ-2D53VA-ET2 | Type AD | CN606 |
| 2015 | MXZ-2D53VA-ET3 | MXZ-2D53VA-ET3 | Type AD | CN606 |
| 2015 | MXZ-2D53VAH2-E3 | MXZ-2D53VAH2-E3 | Type AD | CN606 |
| 2015 | MXZ-2D53VAH-E1 | MXZ-2D53VAH-E1 | Type AD | CN606 |
| 2015 | MXZ-2D53VAH-E2 | MXZ-2D53VAH-E2 | Type AD | CN606 |
| 2015 | MXZ-2D53VAH-E3 | MXZ-2D53VAH-E3 | Type AD | CN606 |
| 2015 | MXZ-2DM40VA-E1 | MXZ-2DM40VA-E1 | Type AD | CN606 |
| 2015 | MXZ-2DM40VA-ER1 | MXZ-2DM40VA-ER1 | Type AD | CN606 |
| 2015 | MXZ-2DM40VA-ET1 | MXZ-2DM40VA-ET1 | Type AD | CN606 |
| 2015 | MXZ-2E53VAHZ-E1 | MXZ-2E53VAHZ-E1 | Type C | CN861 |
| 2015 | MXZ-2E53VAHZ-ER1 | MXZ-2E53VAHZ-ER1 | Type C | CN861 |
| 2015 | MXZ-2HJ40VA-E1 | MXZ-2HJ40VA-E1 | Type AD | CN606 |
| 2015 | MXZ-2HJ40VA-ER1 | MXZ-2HJ40VA-ER1 | Type AD | CN606 |
| 2015 | MXZ-2HJ40VA-ET1 | MXZ-2HJ40VA-ET1 | Type AD | CN606 |
| 2015 | MXZ-3B54VA-E1 | MXZ-3B54VA-E1 | Type AD | CN605 |
| 2015 | MXZ-3B68VA-E1 | MXZ-3B68VA-E1 | Type AD | CN605 |
| 2015 | MXZ-3C54VA-E1 | MXZ-3C54VA-E1 | Type AD | CN605 |
| 2015 | MXZ-3C68VA-E1 | MXZ-3C68VA-E1 | Type AD | CN605 |
| 2015 | MXZ-3D54VA2-E2 | MXZ-3D54VA2-E2 | Type C | CN861 |
| 2015 | MXZ-3D54VA2-E3 | MXZ-3D54VA2-E3 | Type C | CN861 |
| 2015 | MXZ-3D54VA2-ER2 | MXZ-3D54VA2-ER2 | Type C | CN861 |
| 2015 | MXZ-3D54VA2-ER3 | MXZ-3D54VA2-ER3 | Type C | CN861 |
| 2015 | MXZ-3D54VA2-ET2 | MXZ-3D54VA2-ET2 | Type C | CN861 |
| 2015 | MXZ-3D54VA2-ET3 | MXZ-3D54VA2-ET3 | Type C | CN861 |
| 2015 | MXZ-3D54VA-E1 | MXZ-3D54VA-E1 | Type C | CN861 |
| 2015 | MXZ-3D68VA-E1 | MXZ-3D68VA-E1 | Type C | CN861 |
| 2015 | MXZ-3D68VA-E2 | MXZ-3D68VA-E2 | Type C | CN861 |
| 2015 | MXZ-3D68VA-E3 | MXZ-3D68VA-E3 | Type C | CN861 |
| 2015 | MXZ-3D68VA-ER2 | MXZ-3D68VA-ER2 | Type C | CN861 |
| 2015 | MXZ-3D68VA-ER3 | MXZ-3D68VA-ER3 | Type C | CN861 |
| 2015 | MXZ-3D68VA-ET2 | MXZ-3D68VA-ET2 | Type C | CN861 |

| fiscal_year | series | model | Relay cable | Connector |
|---|---|---|---|---|
| 2015 | MXZ-3D68VA-ET3 | MXZ-3D68VA-ET3 | Type C | CN861 |
| 2015 | MXZ-3DM50VA-E1 | MXZ-3DM50VA-E1 | Type C | CN861 |
| 2015 | MXZ-3DM50VA-ER1 | MXZ-3DM50VA-ER1 | Type C | CN861 |
| 2015 | MXZ-3DM50VA-ET1 | MXZ-3DM50VA-ET1 | Type C | CN861 |
| 2015 | MXZ-3E54VA-E1 | MXZ-3E54VA-E1 | Type C | CN861 |
| 2015 | MXZ-3E54VA-ER1 | MXZ-3E54VA-ER1 | Type C | CN861 |
| 2015 | MXZ-3E54VA-ET1 | MXZ-3E54VA-ET1 | Type C | CN861 |
| 2015 | MXZ-3E68VA-E1 | MXZ-3E68VA-E1 | Type C | CN861 |
| 2015 | MXZ-3E68VA-ER1 | MXZ-3E68VA-ER1 | Type C | CN861 |
| 2015 | MXZ-3E68VA-ET1 | MXZ-3E68VA-ET1 | Type C | CN861 |
| 2015 | MXZ-3HJ50VA-E1 | MXZ-3HJ50VA-E1 | Type C | CN861 |
| 2015 | MXZ-3HJ50VA-ER1 | MXZ-3HJ50VA-ER1 | Type C | CN861 |
| 2015 | MXZ-3HJ50VA-ET1 | MXZ-3HJ50VA-ET1 | Type C | CN861 |
| 2015 | MXZ-4B71VA-E1 | MXZ-4B71VA-E1 | Type AD | CN605 |
| 2015 | MXZ-4B80VA-E1 | MXZ-4B80VA-E1 | Type AD | CN605 |
| 2015 | MXZ-4C71VA-E1 | MXZ-4C71VA-E1 | Type AD | CN605 |
| 2015 | MXZ-4C80VA2-E1 | MXZ-4C80VA2-E1 | Type C | CN605 |
| 2015 | MXZ-4C80VA-E1 (a) | MXZ-4C80VA-E1 (a) | Type AD | CN605 |
| 2015 | MXZ-4C80VA-E1 (b) | MXZ-4C80VA-E1 (b) | Type C | CN605 |
| 2015 | MXZ-4D72VA-E1 | MXZ-4D72VA-E1 | Type C | CN861 |
| 2015 | MXZ-4D72VA-E2 | MXZ-4D72VA-E2 | Type C | CN861 |
| 2015 | MXZ-4D72VA-E3 | MXZ-4D72VA-E3 | Type C | CN861 |
| 2015 | MXZ-4D72VA-ER2 | MXZ-4D72VA-ER2 | Type C | CN861 |
| 2015 | MXZ-4D72VA-ER3 | MXZ-4D72VA-ER3 | Type C | CN861 |
| 2015 | MXZ-4D72VA-ET2 | MXZ-4D72VA-ET2 | Type C | CN861 |
| 2015 | MXZ-4D72VA-ET3 | MXZ-4D72VA-ET3 | Type C | CN861 |
| 2015 | MXZ-4D83VA-E1 | MXZ-4D83VA-E1 | Type C | CN605 |
| 2015 | MXZ-4D83VA-E2 | MXZ-4D83VA-E2 | Type C | CN605 |
| 2015 | MXZ-4D83VA-ER2 | MXZ-4D83VA-ER2 | Type C | CN605 |
| 2015 | MXZ-4D83VA-ET2 | MXZ-4D83VA-ET2 | Type C | CN605 |
| 2015 | MXZ-4E72VA-E1 | MXZ-4E72VA-E1 | Type C | CN861 |
| 2015 | MXZ-4E72VA-ER1 | MXZ-4E72VA-ER1 | Type C | CN861 |
| 2015 | MXZ-4E72VA-ET1 | MXZ-4E72VA-ET1 | Type C | CN861 |
| 2015 | MXZ-4E83VA-E1 | MXZ-4E83VA-E1 | Type C | CN861 |
| 2015 | MXZ-4E83VA-E2 | MXZ-4E83VA-E2 | Type C | CN861 |
| 2015 | MXZ-4E83VA-ER1 | MXZ-4E83VA-ER1 | Type C | CN861 |
| 2015 | MXZ-4E83VA-ET1 | MXZ-4E83VA-ET1 | Type C | CN861 |
| 2015 | MXZ-4E83VA-ET2 | MXZ-4E83VA-ET2 | Type C | CN861 |
| 2015 | MXZ-4E83VAHZ-E1 | MXZ-4E83VAHZ-E1 | Type C | CN861 |
| 2015 | MXZ-4E83VAHZ-ER1 | MXZ-4E83VAHZ-ER1 | Type C | CN861 |
| 2015 | MXZ-5B100VA-E1 | MXZ-5B100VA-E1 | Type AD | CN605 |
| 2015 | MXZ-5C100VA2-E1 | MXZ-5C100VA2-E1 | Type C | CN605 |
| 2015 | MXZ-5C100VA-E1 (a) | MXZ-5C100VA-E1 (a) | Type AD | CN605 |
| 2015 | MXZ-5C100VA-E1 (b) | MXZ-5C100VA-E1 (b) | Type C | CN605 |
| 2015 | MXZ-5D102VA-E1 | MXZ-5D102VA-E1 | Type C | CN605 |
| 2015 | MXZ-5D102VA-E2 | MXZ-5D102VA-E2 | Type C | CN605 |
| 2015 | MXZ-5D102VA-ER2 | MXZ-5D102VA-ER2 | Type C | CN605 |
| 2015 | MXZ-5D102VA-ET2 | MXZ-5D102VA-ET2 | Type C | CN605 |
| 2015 | MXZ-5E102VA-E1 | MXZ-5E102VA-E1 | Type C | CN861 |
| 2015 | MXZ-5E102VA-E2 | MXZ-5E102VA-E2 | Type C | CN861 |
| 2015 | MXZ-5E102VA-ER1 | MXZ-5E102VA-ER1 | Type C | CN861 |
| 2015 | MXZ-5E102VA-ET1 | MXZ-5E102VA-ET1 | Type C | CN861 |
| 2015 | MXZ-5E102VA-ET2 | MXZ-5E102VA-ET2 | Type C | CN861 |

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|---|---|---|---|---|
| 2015 | MXZ-6C120VA-E1 | MXZ-6C120VA-E1 | Type C | CN861 |
| 2015 | MXZ-6C120VA-E2 | MXZ-6C120VA-E2 | Type C | CN861 |
| 2015 | MXZ-6C122VA-E1 | MXZ-6C122VA-E1 | Type C | CN861 |
| 2015 | MXZ-6C122VA-E2 | MXZ-6C122VA-E2 | Type C | CN861 |
| 2015 | MXZ-6C122VA-ER1 | MXZ-6C122VA-ER1 | Type C | CN861 |
| 2015 | MXZ-6C122VA-ER2 | MXZ-6C122VA-ER2 | Type C | CN861 |
| 2015 | MXZ-6D122VA-E1 | MXZ-6D122VA-E1 | Type C | CN861 |
| 2015 | MXZ-6D122VA-ER1 | MXZ-6D122VA-ER1 | Type C | CN861 |
| 2015 | MXZ-6D122VA-ET1 | MXZ-6D122VA-ET1 | Type C | CN861 |
| 2015 | MXZ-2D53VAH-ER3 | MXZ-2D53VAH-ER3 | Type A | CN606 |
| 2016 | MUZ-DM50VA-ER1 | MUZ-DM50VA-ER1 | Type C | CN606 |
| 2016 | MUZ-DM60VA-ER1 | MUZ-DM60VA-ER1 | Type C | CN606 |
| 2016 | MUZ-DM71VA-ER1 | MUZ-DM71VA-ER1 | Type C | CN606 |
| 2016 | MUZ-HC35VA-E1 | MUZ-HC35VA-E1 | Type B | CN606 |
| 2016 | MUZ-LN25VG-E1 | MUZ-LN25VG-E1 | Type C | CN606 |
| 2016 | MUZ-LN25VG-ER1 | MUZ-LN25VG-ER1 | Type C | CN606 |
| 2016 | MUZ-LN25VG-ET1 | MUZ-LN25VG-ET1 | Type C | CN606 |
| 2016 | MUZ-LN25VGHZ-E1 | MUZ-LN25VGHZ-E1 | Type C | CN606 |
| 2016 | MUZ-LN25VGHZ-ER1 | MUZ-LN25VGHZ-ER1 | Type C | CN606 |
| 2016 | MUZ-LN25VGHZ-ET1 | MUZ-LN25VGHZ-ET1 | Type C | CN606 |
| 2016 | MUZ-LN35VG-E1 | MUZ-LN35VG-E1 | Type C | CN606 |
| 2016 | MUZ-LN35VG-ER1 | MUZ-LN35VG-ER1 | Type C | CN606 |
| 2016 | MUZ-LN35VG-ET1 | MUZ-LN35VG-ET1 | Type C | CN606 |
| 2016 | MUZ-LN35VGHZ-E1 | MUZ-LN35VGHZ-E1 | Type C | CN606 |
| 2016 | MUZ-LN35VGHZ-ER1 | MUZ-LN35VGHZ-ER1 | Type C | CN606 |
| 2016 | MUZ-LN35VGHZ-ET1 | MUZ-LN35VGHZ-ET1 | Type C | CN606 |
| 2016 | MUZ-LN50VG-E1 | MUZ-LN50VG-E1 | Type C | CN606 |
| 2016 | MUZ-LN50VG-ER1 | MUZ-LN50VG-ER1 | Type C | CN606 |
| 2016 | MUZ-LN50VG-ET1 | MUZ-LN50VG-ET1 | Type C | CN606 |
| 2016 | MUZ-LN50VGHZ-E1 | MUZ-LN50VGHZ-E1 | Type C | CN606 |
| 2016 | MUZ-LN50VGHZ-ER1 | MUZ-LN50VGHZ-ER1 | Type C | CN606 |
| 2016 | MUZ-LN50VGHZ-ET1 | MUZ-LN50VGHZ-ET1 | Type C | CN606 |
| 2016 | MUZ-LN60VG-E1 | MUZ-LN60VG-E1 | Type C | CN606 |
| 2016 | MUZ-LN60VG-ER1 | MUZ-LN60VG-ER1 | Type C | CN606 |
| 2016 | MUZ-LN60VG-ET1 | MUZ-LN60VG-ET1 | Type C | CN606 |
| 2016 | MUZ-WN25VA-E1 | MUZ-WN25VA-E1 | Type C | CN606 |
| 2016 | MUZ-WN25VA-ER1 | MUZ-WN25VA-ER1 | Type C | CN606 |
| 2016 | MUZ-WN25VA-ET1 | MUZ-WN25VA-ET1 | Type C | CN606 |
| 2016 | MUZ-WN35VA-ET1 | MUZ-WN35VA-ET1 | Type C | CN606 |
| 2016 | MXZ-4E83VA-E3 | MXZ-4E83VA-E3 | Type C | CN861 |
| 2016 | MXZ-4E83VA-ER2 | MXZ-4E83VA-ER2 | Type C | CN861 |
| 2016 | MXZ-4E83VA-ET3 | MXZ-4E83VA-ET3 | Type C | CN861 |
| 2016 | MXZ-4E83VAHZ-E2 | MXZ-4E83VAHZ-E2 | Type C | CN861 |
| 2016 | MXZ-4E83VAHZ-ER2 | MXZ-4E83VAHZ-ER2 | Type C | CN861 |
| 2016 | MXZ-5E102VA-E3 | MXZ-5E102VA-E3 | Type C | CN861 |
| 2016 | MXZ-5E102VA-ER2 | MXZ-5E102VA-ER2 | Type C | CN861 |
| 2016 | MXZ-5E102VA-ET3 | MXZ-5E102VA-ET3 | Type C | CN861 |
| 2016 | MXZ-6D122VA-E2 | MXZ-6D122VA-E2 | Type C | CN861 |
| 2016 | MXZ-6D122VA-ER2 | MXZ-6D122VA-ER2 | Type C | CN861 |
| 2016 | MXZ-6D122VA-ET2 | MXZ-6D122VA-ET2 | Type C | CN861 |
| 2016 | MUFZ-KJ25VEHZ-E2 | MUFZ-KJ25VEHZ-E2 | Type C | CN606 |
| 2016 | MUFZ-KJ25VEHZ-ER2 | MUFZ-KJ25VEHZ-ER2 | Type C | CN606 |
| 2016 | MUFZ-KJ25VEHZ-ET2 | MUFZ-KJ25VEHZ-ET2 | Type C | CN606 |

| fiscal_year | series | model | Relay cable | Connector |
|---|---|---|---|---|
| 2016 | MUFZ-KJ35VEHZ-E2 | MUFZ-KJ35VEHZ-E2 | Type C | CN606 |
| 2016 | MUFZ-KJ35VEHZ-ER2 | MUFZ-KJ35VEHZ-ER2 | Type C | CN606 |
| 2016 | MUFZ-KJ35VEHZ-ET2 | MUFZ-KJ35VEHZ-ET2 | Type C | CN606 |
| 2016 | MUFZ-KJ50VEHZ-E2 | MUFZ-KJ50VEHZ-E2 | Type C | CN606 |
| 2016 | MUFZ-KJ50VEHZ-ER2 | MUFZ-KJ50VEHZ-ER2 | Type C | CN606 |
| 2016 | MUFZ-KJ50VEHZ-ET2 | MUFZ-KJ50VEHZ-ET2 | Type C | CN606 |
| 2016 | SUZ-KA25VA6.TH | SUZ-KA25VA6.TH | Type C | CN606 |
| 2016 | SUZ-KA25VA6.TH-ER | SUZ-KA25VA6.TH-ER | Type C | CN606 |
| 2016 | SUZ-KA25VA6.TH-ET | SUZ-KA25VA6.TH-ET | Type C | CN606 |
| 2016 | SUZ-KA35VA6.TH | SUZ-KA35VA6.TH | Type C | CN606 |
| 2016 | SUZ-KA35VA6.TH-ER | SUZ-KA35VA6.TH-ER | Type C | CN606 |
| 2016 | SUZ-KA35VA6.TH-ET | SUZ-KA35VA6.TH-ET | Type C | CN606 |
| 2016 | SUZ-KA50VA6.TH | SUZ-KA50VA6.TH | Type C | CN606 |
| 2016 | SUZ-KA50VA6.TH-ET | SUZ-KA50VA6.TH-ET | Type C | CN606 |
| 2016 | SUZ-KA60VA6.TH | SUZ-KA60VA6.TH | Type C | CN806 |
| 2016 | SUZ-KA60VA6.TH-ET | SUZ-KA60VA6.TH-ET | Type C | CN806 |
| 2016 | SUZ-KA71VA6.TH | SUZ-KA71VA6.TH | Type C | CN806 |
| 2016 | SUZ-KA71VA6.TH-ET | SUZ-KA71VA6.TH-ET | Type C | CN806 |
| 2017 | MUZ-WN35VA-E1 | MUZ-WN35VA-E1 | Type C | CN606 |
| 2017 | MXZ-2D33VA-E3 | MXZ-2D33VA-E3 | Type AD | CN606 |
| 2017 | MXZ-2D33VA-ER3 | MXZ-2D33VA-ER3 | Type AD | CN606 |
| 2017 | MXZ-2D33VA-ET3 | MXZ-2D33VA-ET3 | Type AD | CN606 |
| 2017 | MXZ-4D83VA-ER1 | MXZ-4D83VA-ER1 | Type C | CN605 |
| 2017 | MXZ-5D102VA-ER1 | MXZ-5D102VA-ER1 | Type C | CN605 |
| 2017 | MXZ-6D122VA2-E1 | MXZ-6D122VA2-E1 | Type C | CN861 |
| 2017 | MXZ-6D122VA2-ER1 | MXZ-6D122VA2-ER1 | Type C | CN861 |
| 2017 | MXZ-6D122VA2-ET1 | MXZ-6D122VA2-ET1 | Type C | CN861 |
| 2018 | MUY-TP35VF-E1 | MUY-TP35VF-E1 | Type C | CN606 |
| 2018 | MUY-TP35VF-ET1 | MUY-TP35VF-ET1 | Type C | CN606 |
| 2018 | MUY-TP50VF-E1 | MUY-TP50VF-E1 | Type C | CN606 |
| 2018 | MUY-TP50VF-ET1 | MUY-TP50VF-ET1 | Type C | CN606 |
| 2018 | MUZ-AP25VG-E1 | MUZ-AP25VG-E1 | Type C | CN606 |
| 2018 | MUZ-AP25VG-E6 | MUZ-AP25VG-E6 | Type C | CN606 |
| 2018 | MUZ-AP25VG-ER1 | MUZ-AP25VG-ER1 | Type C | CN606 |
| 2018 | MUZ-AP25VG-ET1 | MUZ-AP25VG-ET1 | Type C | CN606 |
| 2018 | MUZ-AP25VGH-E1 | MUZ-AP25VGH-E1 | Type C | CN606 |
| 2018 | MUZ-AP35VG-E1 | MUZ-AP35VG-E1 | Type C | CN606 |
| 2018 | MUZ-AP35VG-E6 | MUZ-AP35VG-E6 | Type C | CN606 |
| 2018 | MUZ-AP35VG-ER1 | MUZ-AP35VG-ER1 | Type C | CN606 |
| 2018 | MUZ-AP35VG-ET1 | MUZ-AP35VG-ET1 | Type C | CN606 |
| 2018 | MUZ-AP35VGH-E1 | MUZ-AP35VGH-E1 | Type C | CN606 |
| 2018 | MUZ-AP42VG-E1 | MUZ-AP42VG-E1 | Type C | CN606 |
| 2018 | MUZ-AP42VG-E6 | MUZ-AP42VG-E6 | Type C | CN606 |
| 2018 | MUZ-AP42VG-ER1 | MUZ-AP42VG-ER1 | Type C | CN606 |
| 2018 | MUZ-AP42VG-ET1 | MUZ-AP42VG-ET1 | Type C | CN606 |
| 2018 | MUZ-AP42VGH-E1 | MUZ-AP42VGH-E1 | Type C | CN606 |
| 2018 | MUZ-AP50VG-E1 | MUZ-AP50VG-E1 | Type C | CN606 |
| 2018 | MUZ-AP50VG-ER1 | MUZ-AP50VG-ER1 | Type C | CN606 |
| 2018 | MUZ-AP50VG-ET1 | MUZ-AP50VG-ET1 | Type C | CN606 |
| 2018 | MUZ-AP50VGH-E1 | MUZ-AP50VGH-E1 | Type C | CN606 |
| 2018 | MUZ-AP25VG-E2 | MUZ-AP25VG-E2 | Type C | CN606 |
| 2018 | MUZ-AP25VG-ER2 | MUZ-AP25VG-ER2 | Type C | CN606 |
| 2018 | MUZ-AP25VG-ET2 | MUZ-AP25VG-ET2 | Type C | CN606 |

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|---|---|---|---|---|
| 2018 | MUZ-AP25VGH-E2 | MUZ-AP25VGH-E2 | Type C | CN606 |
| 2018 | MUZ-AP35VG-E2 | MUZ-AP35VG-E2 | Type C | CN606 |
| 2018 | MUZ-AP35VG-ER2 | MUZ-AP35VG-ER2 | Type C | CN606 |
| 2018 | MUZ-AP35VG-ET2 | MUZ-AP35VG-ET2 | Type C | CN606 |
| 2018 | MUZ-AP35VGH-E2 | MUZ-AP35VGH-E2 | Type C | CN606 |
| 2018 | MUZ-AP42VG-E2 | MUZ-AP42VG-E2 | Type C | CN606 |
| 2018 | MUZ-AP42VG-ER2 | MUZ-AP42VG-ER2 | Type C | CN606 |
| 2018 | MUZ-AP42VG-ET2 | MUZ-AP42VG-ET2 | Type C | CN606 |
| 2018 | MUZ-AP42VGH-E2 | MUZ-AP42VGH-E2 | Type C | CN606 |
| 2018 | MUZ-HR25VF-ET1 | MUZ-HR25VF-ET1 | Type C | CN606 |
| 2018 | MUZ-HR35VF-ET1 | MUZ-HR35VF-ET1 | Type C | CN606 |
| 2018 | MUZ-HR42VF-ET1 | MUZ-HR42VF-ET1 | Type C | CN606 |
| 2018 | MUZ-HR50VF-ET1 | MUZ-HR50VF-ET1 | Type C | CN606 |
| 2018 | MXZ-2D33VA-E4 | MXZ-2D33VA-E4 | Type A | CN606 |
| 2018 | MXZ-2D33VA-ER4 | MXZ-2D33VA-ER4 | Type A | CN606 |
| 2018 | MXZ-2D33VA-ET4 | MXZ-2D33VA-ET4 | Type A | CN606 |
| 2018 | MXZ-2D42VA2-E4 | MXZ-2D42VA2-E4 | Type A | CN606 |
| 2018 | MXZ-2D42VA2-ER4 | MXZ-2D42VA2-ER4 | Type A | CN606 |
| 2018 | MXZ-2D42VA2-ET4 | MXZ-2D42VA2-ET4 | Type A | CN606 |
| 2018 | MXZ-2D53VA2-E4 | MXZ-2D53VA2-E4 | Type A | CN606 |
| 2018 | MXZ-2D53VA2-ER4 | MXZ-2D53VA2-ER4 | Type A | CN606 |
| 2018 | MXZ-2D53VA2-ET4 | MXZ-2D53VA2-ET4 | Type A | CN606 |
| 2018 | MXZ-2D53VAH2-E4 | MXZ-2D53VAH2-E4 | Type A | CN606 |
| 2018 | MXZ-2E53VAHZ-E2 | MXZ-2E53VAHZ-E2 | Type C | CN861 |
| 2018 | MXZ-2E53VAHZ-ER2 | MXZ-2E53VAHZ-ER2 | Type C | CN861 |
| 2018 | MXZ-2F33VF2-E1 | MXZ-2F33VF2-E1 | Type C | CN606 |
| 2018 | MXZ-2F33VF2-ET1 | MXZ-2F33VF2-ET1 | Type C | CN606 |
| 2018 | MXZ-2F33VF3-E1 | MXZ-2F33VF3-E1 | Type C | CN606 |
| 2018 | MXZ-2F33VF3-ET1 | MXZ-2F33VF3-ET1 | Type C | CN606 |
| 2018 | MXZ-2F33VF-E1 | MXZ-2F33VF-E1 | Type C | CN606 |
| 2018 | MXZ-2F33VF-ET1 | MXZ-2F33VF-ET1 | Type C | CN606 |
| 2018 | MXZ-2F42VF2-ET1 | MXZ-2F42VF2-ET1 | Type C | CN606 |
| 2018 | MXZ-2F42VF3-E1 | MXZ-2F42VF3-E1 | Type C | CN606 |
| 2018 | MXZ-2F42VF3-ET1 | MXZ-2F42VF3-ET1 | Type C | CN606 |
| 2018 | MXZ-2F42VF-E1 | MXZ-2F42VF-E1 | Type C | CN606 |
| 2018 | MXZ-2F42VF-ET1 | MXZ-2F42VF-ET1 | Type C | CN606 |
| 2018 | MXZ-2F53VF2-ET1 | MXZ-2F53VF2-ET1 | Type C | CN606 |
| 2018 | MXZ-2F53VF3-E1 | MXZ-2F53VF3-E1 | Type C | CN606 |
| 2018 | MXZ-2F53VF3-ET1 | MXZ-2F53VF3-ET1 | Type C | CN606 |
| 2018 | MXZ-2F53VF-E1 | MXZ-2F53VF-E1 | Type C | CN606 |
| 2018 | MXZ-2F53VF-ET1 | MXZ-2F53VF-ET1 | Type C | CN606 |
| 2018 | MXZ-2F53VFH-E1 | MXZ-2F53VFH-E1 | Type C | CN606 |
| 2018 | MXZ-2HA40VF-E1 | MXZ-2HA40VF-E1 | Type C | CN606 |
| 2018 | MXZ-2HA40VF-ET1 | MXZ-2HA40VF-ET1 | Type C | CN606 |
| 2018 | MXZ-2HA50VF-E1 | MXZ-2HA50VF-E1 | Type C | CN606 |
| 2018 | MXZ-2HA50VF-ET1 | MXZ-2HA50VF-ET1 | Type C | CN606 |
| 2018 | MXZ-3E54VA-E2 | MXZ-3E54VA-E2 | Type C | CN861 |
| 2018 | MXZ-3E54VA-ER2 | MXZ-3E54VA-ER2 | Type C | CN861 |
| 2018 | MXZ-3E54VA-ET2 | MXZ-3E54VA-ET2 | Type C | CN861 |
| 2018 | MXZ-3E68VA-E2 | MXZ-3E68VA-E2 | Type C | CN861 |
| 2018 | MXZ-3E68VA-ER2 | MXZ-3E68VA-ER2 | Type C | CN861 |
| 2018 | MXZ-3E68VA-ET2 | MXZ-3E68VA-ET2 | Type C | CN861 |
| 2018 | MXZ-3F54VF-E1 | MXZ-3F54VF-E1 | Type C | CN861 |

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|---|---|---|---|---|
| 2018 | MXZ-3F54VF-E2 | MXZ-3F54VF-E2 | Type C | CN861 |
| 2018 | MXZ-3F54VF-ET1 | MXZ-3F54VF-ET1 | Type C | CN861 |
| 2018 | MXZ-3F54VF-ET2 | MXZ-3F54VF-ET2 | Type C | CN861 |
| 2018 | MXZ-3F68VF-E1 | MXZ-3F68VF-E1 | Type C | CN861 |
| 2018 | MXZ-3F68VF-E2 | MXZ-3F68VF-E2 | Type C | CN861 |
| 2018 | MXZ-3F68VF-ET1 | MXZ-3F68VF-ET1 | Type C | CN861 |
| 2018 | MXZ-3F68VF-ET2 | MXZ-3F68VF-ET2 | Type C | CN861 |
| 2018 | MXZ-3HA50VF-E1 | MXZ-3HA50VF-E1 | Type C | CN861 |
| 2018 | MXZ-3HA50VF-ET1 | MXZ-3HA50VF-ET1 | Type C | CN861 |
| 2018 | MXZ-4E72VA-E2 | MXZ-4E72VA-E2 | Type C | CN861 |
| 2018 | MXZ-4E72VA-ER2 | MXZ-4E72VA-ER2 | Type C | CN861 |
| 2018 | MXZ-4E72VA-ET2 | MXZ-4E72VA-ET2 | Type C | CN861 |
| 2018 | MXZ-4E83VA-E4 | MXZ-4E83VA-E4 | Type C | CN861 |
| 2018 | MXZ-4E83VA-ER3 | MXZ-4E83VA-ER3 | Type C | CN861 |
| 2018 | MXZ-4E83VA-ET4 | MXZ-4E83VA-ET4 | Type C | CN861 |
| 2018 | MXZ-4E83VAHZ-E3 | MXZ-4E83VAHZ-E3 | Type C | CN861 |
| 2018 | MXZ-4E83VAHZ-ER3 | MXZ-4E83VAHZ-ER3 | Type C | CN861 |
| 2018 | MXZ-4F72VF-E1 | MXZ-4F72VF-E1 | Type C | CN861 |
| 2018 | MXZ-4F72VF-E2 | MXZ-4F72VF-E2 | Type C | CN861 |
| 2018 | MXZ-4F72VF-ET1 | MXZ-4F72VF-ET1 | Type C | CN861 |
| 2018 | MXZ-4F72VF-ET2 | MXZ-4F72VF-ET2 | Type C | CN861 |
| 2018 | MXZ-5E102VA-E4 | MXZ-5E102VA-E4 | Type C | CN861 |
| 2018 | MXZ-5E102VA-ER3 | MXZ-5E102VA-ER3 | Type C | CN861 |
| 2018 | MXZ-5E102VA-ET4 | MXZ-5E102VA-ET4 | Type C | CN861 |
| 2018 | SUZ-M25VA.TH | SUZ-M25VA.TH | Type C | CN606 |
| 2018 | SUZ-M25VA-ET.TH | SUZ-M25VA-ET.TH | Type C | CN606 |
| 2018 | SUZ-M35VA.TH | SUZ-M35VA.TH | Type C | CN606 |
| 2018 | SUZ-M35VA-ET.TH | SUZ-M35VA-ET.TH | Type C | CN606 |
| 2018 | SUZ-M50VA.TH | SUZ-M50VA.TH | Type C | CN606 |
| 2018 | SUZ-M50VA-ET.TH | SUZ-M50VA-ET.TH | Type C | CN606 |
| 2018 | SUZ-M60VA.TH | SUZ-M60VA.TH | Type C | CN806 |
| 2018 | SUZ-M60VA-ET.TH | SUZ-M60VA-ET.TH | Type C | CN806 |
| 2018 | SUZ-M71VA.TH | SUZ-M71VA.TH | Type C | CN806 |
| 2018 | SUZ-M71VA-ET.TH | SUZ-M71VA-ET.TH | Type C | CN806 |
| 2018 | SUZ-SA100VA2.TH | SUZ-SA100VA2.TH | Type C | CN806 |
| 2018 | SUZ-SA71VA3.TH | SUZ-SA71VA3.TH | Type C | CN806 |
| 2018 | SUZ-SM71VA.TH | SUZ-SM71VA.TH | Type C | CN806 |
| 2019 | MUZ-AP20VG-E1 | MUZ-AP20VG-E1 | Type C | CN606 |
| 2019 | MUZ-AP20VG-ER1 | MUZ-AP20VG-ER1 | Type C | CN606 |
| 2019 | MUZ-AP20VG-ET1 | MUZ-AP20VG-ET1 | Type C | CN606 |
| 2019 | MUZ-AP60VG-E1 | MUZ-AP60VG-E1 | Type C | CN606 |
| 2019 | MUZ-AP60VG-ER1 | MUZ-AP60VG-ER1 | Type C | CN606 |
| 2019 | MUZ-AP60VG-ET1 | MUZ-AP60VG-ET1 | Type C | CN606 |
| 2019 | MUZ-AP71VG-E1 | MUZ-AP71VG-E1 | Type C | CN806 |
| 2019 | MUZ-BT20VG-E1 | MUZ-BT20VG-E1 | Type C | CN606 |
| 2019 | MUZ-BT20VG-ER1 | MUZ-BT20VG-ER1 | Type C | CN606 |
| 2019 | MUZ-BT20VG-ET1 | MUZ-BT20VG-ET1 | Type C | CN606 |
| 2019 | MUZ-BT25VG-E1 | MUZ-BT25VG-E1 | Type C | CN606 |
| 2019 | MUZ-BT25VG-ER1 | MUZ-BT25VG-ER1 | Type C | CN606 |
| 2019 | MUZ-BT25VG-ET1 | MUZ-BT25VG-ET1 | Type C | CN606 |
| 2019 | MUZ-BT35VG-E1 | MUZ-BT35VG-E1 | Type C | CN606 |
| 2019 | MUZ-BT35VG-ER1 | MUZ-BT35VG-ER1 | Type C | CN606 |
| 2019 | MUZ-BT35VG-ET1 | MUZ-BT35VG-ET1 | Type C | CN606 |

| fiscal_year | series | model | Relay cable | Connector |
|---|---|---|---|---|
| 2019 | MUZ-BT50VG-E1 | MUZ-BT50VG-E1 | Type C | CN606 |
| 2019 | MUZ-BT50VG-ER1 | MUZ-BT50VG-ER1 | Type C | CN606 |
| 2019 | MUZ-BT50VG-ET1 | MUZ-BT50VG-ET1 | Type C | CN606 |
| 2019 | MUZ-EF25VG-E1 | MUZ-EF25VG-E1 | Type C | CN606 |
| 2019 | MUZ-EF25VG-ER1 | MUZ-EF25VG-ER1 | Type C | CN606 |
| 2019 | MUZ-EF25VG-ET1 | MUZ-EF25VG-ET1 | Type C | CN606 |
| 2019 | MUZ-EF25VGH-E1 | MUZ-EF25VGH-E1 | Type C | CN606 |
| 2019 | MUZ-EF35VG-E1 | MUZ-EF35VG-E1 | Type C | CN606 |
| 2019 | MUZ-EF35VG-ER1 | MUZ-EF35VG-ER1 | Type C | CN606 |
| 2019 | MUZ-EF35VG-ET1 | MUZ-EF35VG-ET1 | Type C | CN606 |
| 2019 | MUZ-EF35VGH-E1 | MUZ-EF35VGH-E1 | Type C | CN606 |
| 2019 | MUZ-EF42VG-E1 | MUZ-EF42VG-E1 | Type C | CN606 |
| 2019 | MUZ-EF42VG-ER1 | MUZ-EF42VG-ER1 | Type C | CN606 |
| 2019 | MUZ-EF42VG-ET1 | MUZ-EF42VG-ET1 | Type C | CN606 |
| 2019 | MUZ-EF50VG-E1 | MUZ-EF50VG-E1 | Type C | CN606 |
| 2019 | MUZ-EF50VG-ER1 | MUZ-EF50VG-ER1 | Type C | CN606 |
| 2019 | MUZ-EF50VG-ET1 | MUZ-EF50VG-ET1 | Type C | CN606 |
| 2019 | MUZ-HR25VF-E1 | MUZ-HR25VF-E1 | Type C | CN606 |
| 2019 | MUZ-HR25VF-ER1 | MUZ-HR25VF-ER1 | Type C | CN606 |
| 2019 | MUZ-HR35VF-E1 | MUZ-HR35VF-E1 | Type C | CN606 |
| 2019 | MUZ-HR35VF-ER1 | MUZ-HR35VF-ER1 | Type C | CN606 |
| 2019 | MUZ-HR42VF-E1 | MUZ-HR42VF-E1 | Type C | CN606 |
| 2019 | MUZ-HR42VF-ER1 | MUZ-HR42VF-ER1 | Type C | CN606 |
| 2019 | MUZ-HR50VF-E1 | MUZ-HR50VF-E1 | Type C | CN606 |
| 2019 | MUZ-HR50VF-ER1 | MUZ-HR50VF-ER1 | Type C | CN606 |
| 2019 | MUZ-LN25VG2-E1 | MUZ-LN25VG2-E1 | Type C | CN606 |
| 2019 | MUZ-LN25VG2-ET1 | MUZ-LN25VG2-ET1 | Type C | CN606 |
| 2019 | MUZ-LN25VGHZ2-E1 | MUZ-LN25VGHZ2-E1 | Type C | CN606 |
| 2019 | MUZ-LN35VG2-E1 | MUZ-LN35VG2-E1 | Type C | CN606 |
| 2019 | MUZ-LN35VG2-ET1 | MUZ-LN35VG2-ET1 | Type C | CN606 |
| 2019 | MUZ-LN35VGHZ2-E1 | MUZ-LN35VGHZ2-E1 | Type C | CN606 |
| 2019 | MUZ-LN50VG2-E1 | MUZ-LN50VG2-E1 | Type C | CN606 |
| 2019 | MUZ-LN50VG2-ET1 | MUZ-LN50VG2-ET1 | Type C | CN606 |
| 2019 | MXZ-2F42VF2-E1 | MXZ-2F42VF2-E1 | Type C | CN606 |
| 2019 | MXZ-2F53VF2-E1 | MXZ-2F53VF2-E1 | Type C | CN606 |
| 2019 | MXZ-2F53VFH2-E1 | MXZ-2F53VFH2-E1 | Type C | CN606 |
| 2019 | MXZ-2F53VFH3-E1 | MXZ-2F53VFH3-E1 | Type C | CN606 |
| 2019 | MXZ-2F53VFHZ-E1 | MXZ-2F53VFHZ-E1 | Type C | CN861 |
| 2019 | MXZ-3F54VF2-E1 | MXZ-3F54VF2-E1 | Type C | CN861 |
| 2019 | MXZ-3F54VF2-ET1 | MXZ-3F54VF2-ET1 | Type C | CN861 |
| 2019 | MXZ-3F54VF3-E1 | MXZ-3F54VF3-E1 | Type C | CN861 |
| 2019 | MXZ-3F54VF3-ET1 | MXZ-3F54VF3-ET1 | Type C | CN861 |
| 2019 | MXZ-3F68VF2-E1 | MXZ-3F68VF2-E1 | Type C | CN861 |
| 2019 | MXZ-3F68VF2-ET1 | MXZ-3F68VF2-ET1 | Type C | CN861 |
| 2019 | MXZ-3F68VF3-E1 | MXZ-3F68VF3-E1 | Type C | CN861 |
| 2019 | MXZ-3F68VF3-ET1 | MXZ-3F68VF3-ET1 | Type C | CN861 |
| 2019 | MXZ-4F72VF2-E1 | MXZ-4F72VF2-E1 | Type C | CN861 |
| 2019 | MXZ-4F72VF2-ET1 | MXZ-4F72VF2-ET1 | Type C | CN861 |
| 2019 | MXZ-4F72VF3-E1 | MXZ-4F72VF3-E1 | Type C | CN861 |
| 2019 | MXZ-4F72VF3-ET1 | MXZ-4F72VF3-ET1 | Type C | CN861 |
| 2019 | MXZ-4F80VF2-E1 | MXZ-4F80VF2-E1 | Type C | CN861 |
| 2019 | MXZ-4F80VF2-ET1 | MXZ-4F80VF2-ET1 | Type C | CN861 |
| 2019 | MXZ-4F80VF3-E1 | MXZ-4F80VF3-E1 | Type C | CN861 |

| fiscal_year | series | model | Relay cable | Connector |
|---|---|---|---|---|
| 2019 | MXZ-4F80VF3-ET1 | MXZ-4F80VF3-ET1 | Type C | CN861 |
| 2019 | MXZ-4F83VF-E1 | MXZ-4F83VF-E1 | Type C | CN861 |
| 2019 | MXZ-4F83VF-ET1 | MXZ-4F83VF-ET1 | Type C | CN861 |
| 2019 | MXZ-4F83VFHZ-E1 | MXZ-4F83VFHZ-E1 | Type C | CN861 |
| 2019 | MXZ-5F102VF-E1 | MXZ-5F102VF-E1 | Type C | CN861 |
| 2019 | MXZ-5F102VF-ET1 | MXZ-5F102VF-ET1 | Type C | CN861 |
| 2019 | SUZ-KA50VA6.TH-ER | SUZ-KA50VA6.TH-ER | Type C | CN606 |
| 2019 | SUZ-KA60VA6.TH-ER | SUZ-KA60VA6.TH-ER | Type C | CN806 |
| 2019 | SUZ-M25VA-ETR2.TH | SUZ-M25VA-ETR2.TH | Type C | CN606 |
| 2019 | SUZ-M25VAR1.TH | SUZ-M25VAR1.TH | Type C | CN606 |
| 2019 | SUZ-M25VAR2.TH | SUZ-M25VAR2.TH | Type C | CN606 |
| 2019 | SUZ-M35VA-ETR2.TH | SUZ-M35VA-ETR2.TH | Type C | CN606 |
| 2019 | SUZ-M35VAR1.TH | SUZ-M35VAR1.TH | Type C | CN606 |
| 2019 | SUZ-M35VAR2.TH | SUZ-M35VAR2.TH | Type C | CN606 |
| 2019 | SUZ-M50VA-ETR2.TH | SUZ-M50VA-ETR2.TH | Type C | CN606 |
| 2019 | SUZ-M50VAR1.TH | SUZ-M50VAR1.TH | Type C | CN606 |
| 2019 | SUZ-M50VAR2.TH | SUZ-M50VAR2.TH | Type C | CN606 |
| 2019 | SUZ-M60VA-ETR2.TH | SUZ-M60VA-ETR2.TH | Type C | CN806 |
| 2019 | SUZ-M60VAR1.TH | SUZ-M60VAR1.TH | Type C | CN806 |
| 2019 | SUZ-M60VAR2.TH | SUZ-M60VAR2.TH | Type C | CN806 |
| 2019 | SUZ-M71VA-ETR1.TH | SUZ-M71VA-ETR1.TH | Type C | CN806 |
| 2019 | SUZ-M71VAR1.TH | SUZ-M71VAR1.TH | Type C | CN806 |
| 2020 | MUZ-AP25VG-E3 | MUZ-AP25VG-E3 | Type C | CN606 |
| 2020 | MUZ-AP25VG-ET3 | MUZ-AP25VG-ET3 | Type C | CN606 |
| 2020 | MUZ-AP25VGH-E3 | MUZ-AP25VGH-E3 | Type C | CN606 |
| 2020 | MUZ-AP35VG-E3 | MUZ-AP35VG-E3 | Type C | CN606 |
| 2020 | MUZ-AP35VG-ET3 | MUZ-AP35VG-ET3 | Type C | CN606 |
| 2020 | MUZ-AP35VGH-E3 | MUZ-AP35VGH-E3 | Type C | CN606 |
| 2020 | MUZ-FT25VGHZ-E1 | MUZ-FT25VGHZ-E1 | Type C | CN606 |
| 2020 | MUZ-FT25VGHZ-ET1 | MUZ-FT25VGHZ-ET1 | Type C | CN606 |
| 2020 | MUZ-FT25VGHZ-SC1 | MUZ-FT25VGHZ-SC1 | Type C | CN606 |
| 2020 | MUZ-FT35VGHZ-E1 | MUZ-FT35VGHZ-E1 | Type C | CN606 |
| 2020 | MUZ-FT35VGHZ-ET1 | MUZ-FT35VGHZ-ET1 | Type C | CN606 |
| 2020 | MUZ-FT35VGHZ-SC1 | MUZ-FT35VGHZ-SC1 | Type C | CN606 |
| 2020 | MUZ-FT50VGHZ-E1 | MUZ-FT50VGHZ-E1 | Type C | CN606 |
| 2020 | MUZ-FT50VGHZ-ET1 | MUZ-FT50VGHZ-ET1 | Type C | CN606 |
| 2020 | MUZ-FT50VGHZ-SC1 | MUZ-FT50VGHZ-SC1 | Type C | CN606 |
| 2020 | MUZ-HR25VF-E2 | MUZ-HR25VF-E2 | Type C | CN606 |
| 2020 | MUZ-HR25VF-ET2 | MUZ-HR25VF-ET2 | Type C | CN606 |
| 2020 | MUZ-HR35VF-E2 | MUZ-HR35VF-E2 | Type C | CN606 |
| 2020 | MUZ-HR35VF-ET2 | MUZ-HR35VF-ET2 | Type C | CN606 |
| 2020 | MUZ-HR42VF-E2 | MUZ-HR42VF-E2 | Type C | CN606 |
| 2020 | MUZ-HR42VF-ET2 | MUZ-HR42VF-ET2 | Type C | CN606 |
| 2020 | MUZ-HR50VF-E2 | MUZ-HR50VF-E2 | Type C | CN606 |
| 2020 | MUZ-HR50VF-ET2 | MUZ-HR50VF-ET2 | Type C | CN606 |
| 2020 | MUZ-HR60VF-E1 | MUZ-HR60VF-E1 | Type C | CN606 |
| 2020 | MUZ-HR60VF-ER1 | MUZ-HR60VF-ER1 | Type C | CN606 |
| 2020 | MUZ-HR60VF-ET1 | MUZ-HR60VF-ET1 | Type C | CN606 |
| 2020 | MUZ-HR71VF-E1 | MUZ-HR71VF-E1 | Type C | CN606 |
| 2020 | MUZ-HR71VF-ER1 | MUZ-HR71VF-ER1 | Type C | CN606 |
| 2020 | MUZ-HR71VF-ET1 | MUZ-HR71VF-ET1 | Type C | CN606 |
| 2020 | MXZ-6F122VF-E1 | MXZ-6F122VF-E1 | Type C | CN861 |
| 2020 | MXZ-6F122VF-ET1 | MXZ-6F122VF-ET1 | Type C | CN861 |

| fiscal_year | series | model | Relay cable | Connector |
|---|---|---|---|---|
| 2020 | SUZ-KA71VA6.TH-ER | SUZ-KA71VA6.TH-ER | Type C | CN806 |

## <For Australlia>

| fiscal_year | series | model | Relay cable | Connector |
|---|---|---|---|---|
| 2005 | FB50VA | MUZ-FB50VA(H)-A1 | Type AD | CN605 |
| 2005 | FB50VA | MUFZ-FB50VA(H)-A1 | Type AD | CN605 |
| 2005 | GB50/FB35/GE | MUZ-GB50VA-A2/FB35VAH/GE25/35/50 | Type B | CN606 |
| 2005 | MUZ-FA GA KA small RAC(1) | MUZ-GA25/35VA(H) GB25/35VA(H) SUZ25 | Type AD | CN606 |
| 2005 | MUZ-FA GA KA small RAC(2) | MUZ-GA25/35VA(H) SUZ25 | Type AD | CN606 |
| 2005 | MUZ-FA GA KA small RAC(3) | MUZ-GA25/35VA(H) FA25/35VA-A1 SUZ25 | Type AD | CN606 |
| 2005 | MUZ-FB25/35 | MUZ-FB25VA(H)/35VA-A1 GC25/35VA | Type B | CN606 |
| 2005 | MUZ-FB35VAH | MUZ-FB35VAH-A1 | Type B | CN606 |
| 2005 | MUZ-GA GB big RAC-A(1) | MUZ-GA50VA-A1/GA60VA-A1,A2 /GA71VA-A1/GA80VA-A1/GB50VA-A1 | Type AD | CN605 |
| 2005 | MUZ-GA GB big RAC-A(2) | MUZ-GA50VA-A1/GA60VA-A1,A2 /GA71VA-A1/GA80VA-A1/GB50VA-A1 | Type AD | CN605 |
| 2005 | MUZ-GA GB big RAC-A(3) | MUZ-GA50VA-A1/GA60VA-A1,A2 /GA71VA-A1/GA80VA-A1/GB50VA-A1 | Type AD | CN605 |
| 2005 | MUZ-GA60VA big RAC-B | MUZ-GA60VA-A3 | Type AD | CN605 |
| 2005 | SUZ-KA25VA.TH-A | SUZ-KA25VA.TH-A | Type AD | CN606 |
| 2005 | SUZ-KA35VA.TH-A | SUZ-KA35VA.TH-A | Type AD | CN606 |
| 2005 | SUZ-KA50VA.TH-A | SUZ-KA50VA.TH-A | Type AD | CN605 |
| 2005 | SUZ-KA60VA.TH-A | SUZ-KA60VA.TH-A | Type AD | CN605 |
| 2005 | SUZ-KA71VA.TH-A | SUZ-KA71VA.TH-A | Type AD | CN605 |
| 2007 | SUZ-KA50VA#1.TH-A | SUZ-KA50VA#1.TH-A | Type AD | CN605 |
| 2007 | SUZ-KA60VA#1.TH-A | SUZ-KA60VA#1.TH-A | Type AD | CN605 |
| 2007 | SUZ-KA71VA#1.TH-A | SUZ-KA71VA#1.TH-A | Type AD | CN605 |
| 2008 | MUZ-FB25VA-A1 | MUZ-FB25VA-A1 | Type B | CN606 |
| 2008 | MUZ-FB35VA-A1 | MUZ-FB35VA-A1 | Type B | CN606 |
| 2008 | MUZ-FB35VAH-A1 | MUZ-FB35VAH-A1 | Type B | CN606 |
| 2008 | MUZ-FB50VA-A1 | MUZ-FB50VA-A1 | Type AD | CN605 |
| 2008 | MUZ-FB50VAH-A1 | MUZ-FB50VAH-A1 | Type AD | CN605 |
| 2008 | SUZ-KA25VAR1.TH-A | SUZ-KA25VAR1.TH-A | Type B | CN606 |
| 2008 | SUZ-KA35VAR1.TH-A | SUZ-KA35VAR1.TH-A | Type B | CN606 |
| 2008 | SUZ-KA50VAR2.TH-A | SUZ-KA50VAR2.TH-A | Type B | CN606 |
| 2008 | SUZ-KA60VAR2.TH-A | SUZ-KA60VAR2.TH-A | Type AD | CN605 |
| 2009 | MUFZ-FB50VAH-A1 | MUFZ-FB50VAH-A1 | Type AD | CN606 |
| 2009 | MUY-GC25VA-A1 | MUY-GC25VA-A1 | Type B | CN606 |
| 2009 | MUY-GC35VA-A1 | MUY-GC35VA-A1 | Type B | CN606 |
| 2009 | MUY-GC71 | MUY-GC71VA-A1 | Type AD | CN605 |
| 2009 | MUZ 09model | MUZ-GE60/71/80VA-A1 | Type C | CN806 |
| 2009 | MUZ-GE25VA-A1 | MUZ-GE25VA-A1 | Type B | CN606 |
| 2009 | MUZ-GE35VA-A1 | MUZ-GE35VA-A1 | Type B | CN606 |
| 2009 | MUZ-GE50VA-A1 | MUZ-GE50VA-A1 | Type B | CN606 |
| 2010 | MUZ-GE60VA-A1 | MUZ-GE60VA-A1 | Type C | CN806 |
| 2010 | MUZ-GE71VA-A1 | MUZ-GE71VA-A1 | Type C | CN806 |
| 2010 | MUZ-GE80VA-A1 | MUZ-GE80VA-A1 | Type C | CN806 |
| 2010 | SUZ-KA25VA2.TH-A | SUZ-KA25VA2.TH-A | Type B | CN606 |
| 2010 | SUZ-KA35VA2.TH-A | SUZ-KA35VA2.TH-A | Type B | CN606 |
| 2010 | SUZ-KA50VA2.TH-A | SUZ-KA50VA2.TH-A | Type B | CN606 |
| 2010 | SUZ-KA60VA2.TH-A | SUZ-KA60VA2.TH-A | Type AD | CN605 |
| 2010 | SUZ-KA71VA2.TH-A | SUZ-KA71VA2.TH-A | Type C | CN806 |
| 2011 | MUZ-GE33VA-A1 | MUZ-GE33VA-A1 | Type B | CN606 |
| 2011 | MUZ-GE42VA-A1 | MUZ-GE42VA-A1 | Type B | CN606 |
| 2011 | SUZ-KA25VA3.TH-A | SUZ-KA25VA3.TH-A | Type B | CN606 |
| 2011 | SUZ-KA50VA3.TH-A | SUZ-KA50VA3.TH-A | Type B | CN606 |
| 2011 | SUZ-KA60VA3.TH-A | SUZ-KA60VA3.TH-A | Type C | CN806 |

| fiscal_year | series | model | Relay cable | Connector |
|---|---|---|---|---|
| 2011 | SUZ-KA71VA3.TH-A | SUZ-KA71VA3.TH-A | Type C | CN806 |
| 2012 | MUZ-GE25VA-A2 | MUZ-GE25VA-A2 | Type B | CN606 |
| 2012 | MUZ-GE35VA2-A1 | MUZ-GE35VA2-A1 | Type B | CN606 |
| 2012 | MUZ-GE35VA2-A2 | MUZ-GE35VA2-A2 | Type B | CN606 |
| 2012 | MUZ-GE50VA2-A1 | MUZ-GE50VA2-A1 | Type C | CN806 |
| 2012 | MUZ-GE80VA2-A1 | MUZ-GE80VA2-A1 | Type C | CN806 |
| 2013 | MUZ-EF25VE-A1 | MUZ-EF25VE-A1 | Type C | CN606 |
| 2013 | MUZ-EF35VE-A1 | MUZ-EF35VE-A1 | Type C | CN606 |
| 2013 | MUZ-EF42VE-A1 | MUZ-EF42VE-A1 | Type C | CN606 |
| 2013 | MUZ-EF50VE-A1 | MUZ-EF50VE-A1 | Type C | CN606 |
| 2013 | MUZ-GE60VAD-A1 | MUZ-GE60VAD-A1 | Type C | CN806 |
| 2013 | MUZ-GE71VAD-A1 | MUZ-GE71VAD-A1 | Type C | CN806 |
| 2013 | MUZ-GE80VAD-A1 | MUZ-GE80VAD-A1 | Type C | CN806 |
| 2014 | MUFZ-KJ25VE-A1 | MUFZ-KJ25VE-A1 | Type C | CN606 |
| 2014 | MUFZ-KJ35VE-A1 | MUFZ-KJ35VE-A1 | Type C | CN606 |
| 2014 | MUFZ-KJ50VE-A1 | MUFZ-KJ50VE-A1 | Type C | CN806 |
| 2014 | MUFZ-KJ50VEHZ-A1 | MUFZ-KJ50VEHZ-A1 | Type C | CN806 |
| 2014 | MUZ-GE25VAD-A1 | MUZ-GE25VAD-A1 | Type B | CN606 |
| 2014 | MUZ-GE35VAD-A1 | MUZ-GE35VAD-A1 | Type B | CN606 |
| 2014 | MUZ-GE42VAD-A1 | MUZ-GE42VAD-A1 | Type B | CN606 |
| 2014 | MUZ-GE50VAD-A1 | MUZ-GE50VAD-A1 | Type B | CN606 |
| 2015 | MUZ-FH25VE-A1 | MUZ-FH25VE-A1 | Type C | CN606 |
| 2015 | MUZ-FH25VEHZ-A1 | MUZ-FH25VEHZ-A1 | Type C | CN606 |
| 2015 | MUZ-FH35VE-A1 | MUZ-FH35VE-A1 | Type C | CN606 |
| 2015 | MUZ-FH35VEHZ-A1 | MUZ-FH35VEHZ-A1 | Type C | CN606 |
| 2015 | MUZ-FH50VE-A1 | MUZ-FH50VE-A1 | Type C | CN806 |
| 2015 | MUZ-FH50VEHZ-A1 | MUZ-FH50VEHZ-A1 | Type C | CN806 |
| 2015 | MUZ-GL25VGD-A1 | MUZ-GL25VGD-A1 | Type C | CN606 |
| 2015 | MUZ-GL35VGD-A1 | MUZ-GL35VGD-A1 | Type C | CN606 |
| 2015 | MUZ-GL42VGD-A1 | MUZ-GL42VGD-A1 | Type C | CN606 |
| 2015 | MUZ-GL50VGD-A1 | MUZ-GL50VGD-A1 | Type C | CN806 |
| 2015 | MUZ-GL60VGD-A1 | MUZ-GL60VGD-A1 | Type C | CN806 |
| 2015 | MUZ-GL71VGD-A1 | MUZ-GL71VGD-A1 | Type C | CN806 |
| 2015 | MUZ-GL80VGD-A1 | MUZ-GL80VGD-A1 | Type C | CN806 |
| 2015 | MXZ-2B52VA-A1 | MXZ-2B52VA-A1 | Type AD | CN606 |
| 2015 | MXZ-2C52VA-A1 | MXZ-2C52VA-A1 | Type AD | CN606 |
| 2015 | MXZ-2D52VA-A1 | MXZ-2D52VA-A1 | Type AD | CN606 |
| 2015 | MXZ-2D52VA-A2 | MXZ-2D52VA-A2 | Type AD | CN606 |
| 2015 | MXZ-3B54VA-A1 | MXZ-3B54VA-A1 | Type AD | CN605 |
| 2015 | MXZ-3C54VA-A1 | MXZ-3C54VA-A1 | Type AD | CN605 |
| 2015 | MXZ-3D54VA-A1 | MXZ-3D54VA-A1 | Type C | CN861 |
| 2015 | MXZ-3D54VA-A2 | MXZ-3D54VA-A2 | Type C | CN861 |
| 2015 | MXZ-4B71VA-A1 | MXZ-4B71VA-A1 | Type AD | CN605 |
| 2015 | MXZ-4B80VA-A1 | MXZ-4B80VA-A1 | Type AD | CN605 |
| 2015 | MXZ-4C71VA-A1 | MXZ-4C71VA-A1 | Type AD | CN605 |
| 2015 | MXZ-4C80VA-A1 (a) | MXZ-4C80VA-A1 (a) | Type AD | CN605 |
| 2015 | MXZ-4C80VA-A1 (b) | MXZ-4C80VA-A1 (b) | Type C | CN605 |
| 2015 | MXZ-4D71VA-A1 | MXZ-4D71VA-A1 | Type C | CN861 |
| 2015 | MXZ-4D71VA-A2 | MXZ-4D71VA-A2 | Type C | CN861 |
| 2015 | MXZ-4D80VA-A1 | MXZ-4D80VA-A1 | Type C | CN605 |
| 2015 | MXZ-5B100VA-A1 | MXZ-5B100VA-A1 | Type AD | CN605 |
| 2015 | MXZ-5C100VA-A1 (a) | MXZ-5C100VA-A1 (a) | Type AD | CN605 |
| 2015 | MXZ-5C100VA-A1 (b) | MXZ-5C100VA-A1 (b) | Type C | CN605 |

| fiscal_year | series | model | Relay cable | Connector |
|---|---|---|---|---|
| 2015 | MXZ-5D100VA-A1 | MXZ-5D100VA-A1 | Type C | CN605 |
| 2015 | MXZ-6C120VA-A1 | MXZ-6C120VA-A1 | Type C | CN861 |
| 2015 | MXZ-6C120VA-A2 | MXZ-6C120VA-A2 | Type C | CN861 |
| 2015 | MXZ-6D120VA-A1 | MXZ-6D120VA-A1 | Type C | CN861 |
| 2016 | MUZ-GE25VAD2-A1 | MUZ-GE25VAD2-A1 | Type B | CN606 |
| 2016 | MUZ-GE35VAD2-A1 | MUZ-GE35VAD2-A1 | Type B | CN606 |
| 2016 | MUZ-GE42VAD2-A1 | MUZ-GE42VAD2-A1 | Type B | CN606 |
| 2016 | MUZ-GE50VAD2-A1 | MUZ-GE50VAD2-A1 | Type B | CN606 |
| 2016 | MXZ-2E52VAD-A1 | MXZ-2E52VAD-A1 | Type C | CN861 |
| 2016 | MXZ-3E54VAD-A1 | MXZ-3E54VAD-A1 | Type C | CN861 |
| 2016 | MXZ-4E71VAD-A1 | MXZ-4E71VAD-A1 | Type C | CN861 |
| 2016 | MXZ-4E80VAD-A1 | MXZ-4E80VAD-A1 | Type C | CN861 |
| 2016 | MXZ-5E100VAD-A1 | MXZ-5E100VAD-A1 | Type C | CN861 |
| 2016 | MXZ-6E120VAD-A1 | MXZ-6E120VAD-A1 | Type C | CN861 |
| 2017 | MUY-GN25VF-A1 | MUY-GN25VF-A1 | Type C | CN606 |
| 2017 | MUY-GN35VF-A1 | MUY-GN35VF-A1 | Type C | CN606 |
| 2017 | MUY-GN42VF-A1 | MUY-GN42VF-A1 | Type C | CN606 |
| 2017 | MUY-GN50VF-A1 | MUY-GN50VF-A1 | Type C | CN606 |
| 2017 | MUY-GN60VF-A1 | MUY-GN60VF-A1 | Type C | CN606 |
| 2017 | MUY-GN71VF-A1 | MUY-GN71VF-A1 | Type C | CN806 |
| 2017 | MUY-GN80VF-A1 | MUY-GN80VF-A1 | Type C | CN806 |
| 2018 | MUZ-AP25VG-A1 | MUZ-AP25VG-A1 | Type C | CN606 |
| 2018 | MUZ-AP25VGD-A1 | MUZ-AP25VGD-A1 | Type C | CN606 |
| 2018 | MUZ-AP35VG-A1 | MUZ-AP35VG-A1 | Type C | CN606 |
| 2018 | MUZ-AP35VGD-A1 | MUZ-AP35VGD-A1 | Type C | CN606 |
| 2018 | MUZ-AP42VG-A1 | MUZ-AP42VG-A1 | Type C | CN606 |
| 2018 | MUZ-AP42VGD-A1 | MUZ-AP42VGD-A1 | Type C | CN606 |
| 2018 | MUZ-AP50VG-A1 | MUZ-AP50VG-A1 | Type C | CN606 |
| 2018 | MUZ-AP50VGD-A1 | MUZ-AP50VGD-A1 | Type C | CN606 |
| 2018 | MUZ-AP60VG-A1 | MUZ-AP60VG-A1 | Type C | CN606 |
| 2018 | MUZ-AP60VGD-A1 | MUZ-AP60VGD-A1 | Type C | CN606 |
| 2018 | MUZ-AP71VG-A1 | MUZ-AP71VG-A1 | Type C | CN806 |
| 2018 | MUZ-AP71VGD-A1 | MUZ-AP71VGD-A1 | Type C | CN806 |
| 2018 | MUZ-AP80VG-A1 | MUZ-AP80VG-A1 | Type C | CN806 |
| 2018 | MUZ-AP80VGD-A1 | MUZ-AP80VGD-A1 | Type C | CN806 |
| 2018 | MUZ-LN25VG-A1 | MUZ-LN25VG-A1 | Type C | CN606 |
| 2018 | MUZ-LN25VGHZ-A1 | MUZ-LN25VGHZ-A1 | Type C | CN606 |
| 2018 | MUZ-LN35VG-A1 | MUZ-LN35VG-A1 | Type C | CN606 |
| 2018 | MUZ-LN35VGHZ-A1 | MUZ-LN35VGHZ-A1 | Type C | CN606 |
| 2018 | MUZ-LN50VG-A1 | MUZ-LN50VG-A1 | Type C | CN606 |
| 2018 | MUZ-LN50VGHZ-A1 | MUZ-LN50VGHZ-A1 | Type C | CN806 |
| 2018 | MUZ-LN60VG-A1 | MUZ-LN60VG-A1 | Type C | CN806 |
| 2018 | MXZ-2D52VA2-A1 | MXZ-2D52VA2-A1 | Type AD | CN606 |
| 2018 | SUZ-KA25VAD2.TH-A | SUZ-KA25VAD2.TH-A | Type C | CN606 |
| 2018 | SUZ-KA35VAD2.TH-A | SUZ-KA35VAD2.TH-A | Type C | CN606 |
| 2018 | SUZ-KA50VAD2.TH-A | SUZ-KA50VAD2.TH-A | Type C | CN806 |
| 2018 | SUZ-KA60VAD2.TH-A | SUZ-KA60VAD2.TH-A | Type C | CN806 |
| 2018 | SUZ-KA71VAD2.TH-A | SUZ-KA71VAD2.TH-A | Type C | CN806 |
| 2019 | MXZ-2E52VAD2-A1 | MXZ-2E52VAD2-A1 | Type C | CN861 |
| 2019 | MXZ-3E54VAD2-A1 | MXZ-3E54VAD2-A1 | Type C | CN861 |
| 2019 | MXZ-4E71VAD2-A1 | MXZ-4E71VAD2-A1 | Type C | CN861 |
| 2019 | MXZ-4E80VAD2-A1 | MXZ-4E80VAD2-A1 | Type C | CN861 |
| 2019 | MXZ-5E100VAD2-A1 | MXZ-5E100VAD2-A1 | Type C | CN861 |

| fiscal_year | series | model | Relay cable | Connector |
|---|---|---|---|---|
| 2019 | MXZ-6E120VAD2-A1 | MXZ-6E120VAD2-A1 | Type C | CN861 |
| 2020 | MUFZ-KW25VG-A1 | MUFZ-KW25VG-A1 | Type C | CN606 |
| 2020 | MUFZ-KW35VG-A1 | MUFZ-KW35VG-A1 | Type C | CN606 |
| 2020 | MUFZ-KW42VG-A1 | MUFZ-KW42VG-A1 | Type C | CN606 |
| 2020 | MUFZ-KW50VG-A1 | MUFZ-KW50VG-A1 | Type C | CN806 |
| 2020 | MUFZ-KW50VGHZ-A1 | MUFZ-KW50VGHZ-A1 | Type C | CN806 |
| 2020 | MUFZ-KW60VG-A1 | MUFZ-KW60VG-A1 | Type C | CN806 |
| 2020 | MUFZ-KW60VGHZ-A1 | MUFZ-KW60VGHZ-A1 | Type C | CN806 |
| 2020 | MUZ-AP20VG-A1 | MUZ-AP20VG-A1 | Type C | CN606 |
| 2020 | MUZ-EF25VG-A1 | MUZ-EF25VG-A1 | Type C | CN606 |
| 2020 | MUZ-EF35VG-A1 | MUZ-EF35VG-A1 | Type C | CN606 |
| 2020 | MUZ-EF42VG-A1 | MUZ-EF42VG-A1 | Type C | CN606 |
| 2020 | MUZ-EF50VG-A1 | MUZ-EF50VG-A1 | Type C | CN606 |
| 2020 | MUZ-LN25VG2-A1 | MUZ-LN25VG2-A1 | Type C | CN606 |
| 2020 | MUZ-LN25VGHZ2-A1 | MUZ-LN25VGHZ2-A1 | Type C | CN606 |
| 2020 | MUZ-LN35VG2-A1 | MUZ-LN35VG2-A1 | Type C | CN606 |
| 2020 | MUZ-LN35VGHZ2-A1 | MUZ-LN35VGHZ2-A1 | Type C | CN606 |
| 2020 | MUZ-LN50VG2-A1 | MUZ-LN50VG2-A1 | Type C | CN606 |
| 2020 | MXZ-2F52VF-A1 | MXZ-2F52VF-A1 | Type C | CN606 |
| 2020 | MXZ-2F52VGD-A1 | MXZ-2F52VGD-A1 | Type C | CN861 |
| 2020 | MXZ-3F54VGD-A1 | MXZ-3F54VGD-A1 | Type C | CN861 |
| 2020 | MXZ-4F71VGD-A1 | MXZ-4F71VGD-A1 | Type C | CN861 |
| 2020 | MXZ-4F80VGD-A1 | MXZ-4F80VGD-A1 | Type C | CN861 |
| 2020 | MXZ-5F100VGD-A1 | MXZ-5F100VGD-A1 | Type C | CN861 |
| 2020 | MXZ-6F120VGD-A1 | MXZ-6F120VGD-A1 | Type C | CN861 |
| 2020 | SUZ-M25VAD-A.TH | SUZ-M25VAD-A.TH | Type C | CN606 |
| 2020 | SUZ-M35VAD-A.TH | SUZ-M35VAD-A.TH | Type C | CN606 |
| 2020 | SUZ-M50VAD-A.TH | SUZ-M50VAD-A.TH | Type C | CN606 |
| 2020 | SUZ-M60VAD-A.TH | SUZ-M60VAD-A.TH | Type C | CN806 |
| 2020 | SUZ-M71VAD-A.TH | SUZ-M71VAD-A.TH | Type C | CN806 |

## <For Asia>

| fiscal_year | series | model | Relay cable | Connector |
|---|---|---|---|---|
| 2010 | MUY-GE10VA-R1 | MUY-GE10VA-R1 | Type B | CN606 |
| 2010 | MUY-GE13VA-R1 | MUY-GE13VA-R1 | Type B | CN606 |
| 2010 | MUY-GE15VA-R1 | MUY-GE15VA-R1 | Type B | CN606 |
| 2010 | MUY-GE18VA-R1 | MUY-GE18VA-R1 | Type B | CN606 |
| 2010 | MUY-GE24VA-R1 | MUY-GE24VA-R1 | Type C | CN806 |
| 2010 | MXY-2E20VA-R1 | MXY-2E20VA-R1 | Type AD | CN606 |
| 2010 | MXY-3A28VA-R6 | MXY-3A28VA-R6 | Type AD | CN605 |
| 2010 | MXY-4A28VA-R6 | MXY-4A28VA-R6 | Type AD | CN605 |
| 2010 | MXY-4A38VA-P2 | MXY-4A38VA-P2 | Type AD | CN605 |
| 2010 | MXY-4A38VA-P3 | MXY-4A38VA-P3 | Type AD | CN605 |
| 2011 | MXY-2E20VA-R2 | MXY-2E20VA-R2 | Type AD | CN606 |
| 2011 | MXY-3A28VA-R7 | MXY-3A28VA-R7 | Type AD | CN605 |
| 2011 | MXY-4A28VA-R7 | MXY-4A28VA-R7 | Type AD | CN605 |
| 2011 | MUZ-SFG09VA-T1 | MUZ-SFG09VA-T1 | Type B | CN606 |
| 2011 | MUZ-SFG13VA-T1 | MUZ-SFG13VA-T1 | Type B | CN606 |
| 2012 | MUY-GE10VA-R2 | MUY-GE10VA-R2 | Type B | CN606 |
| 2012 | MUY-GE13VA-R2 | MUY-GE13VA-R2 | Type B | CN606 |
| 2012 | MUY-GE15VA-R2 | MUY-GE15VA-R2 | Type B | CN606 |
| 2012 | MUY-GE24VA-R2 | MUY-GE24VA-R2 | Type C | CN806 |
| 2012 | MXY-2H20VA-T1 | MXY-2H20VA-T1 | Type AD | CN606 |
| 2012 | MXY-3H28VA-T1 | MXY-3H28VA-T1 | Type AD | CN605 |
| 2012 | MXY-4A38VA-P3 | MXY-4A38VA-P3 | Type AD | CN605 |
| 2012 | MUZ-EF09VA-T1 | MUZ-EF09VA-T1 | Type C | CN606 |
| 2012 | MUZ-EF13VA-T1 | MUZ-EF13VA-T1 | Type C | CN606 |
| 2012 | MUZ-SGH09VA-T1 | MUZ-SGH09VA-T1 | Type B | CN606 |
| 2012 | MUZ-SGH13VA-T1 | MUZ-SGH13VA-T1 | Type B | CN606 |
| 2012 | MUZ-SGH15VA-T1 | MUZ-SGH15VA-T1 | Type B | CN606 |
| 2012 | MUZ-SGH18VA-T1 | MUZ-SGH18VA-T1 | Type C | CN606 |
| 2012 | MUZ-SGH24VA-T1 | MUZ-SGH24VA-T1 | Type C | CN806 |
| 2013 | SUY-KA18VA.TH | SUY-KA18VA.TH | Type C | CN606 |
| 2013 | SUY-KA24VA.TH | SUY-KA24VA.TH | Type C | CN806 |
| 2013 | MUZ-FK09VA-T1 | MUZ-FK09VA-T1 | Type C | CN606 |
| 2013 | MUZ-FK13VA-T1 | MUZ-FK13VA-T1 | Type C | CN606 |
| 2014 | MUY-GK09VA-T1 | MUY-GK09VA-T1 | Type B | CN606 |
| 2014 | MUY-GK13VA-T1 | MUY-GK13VA-T1 | Type B | CN606 |
| 2014 | MUY-GK15VA-T1 | MUY-GK15VA-T1 | Type B | CN606 |
| 2014 | MUY-GK18VA-T1 | MUY-GK18VA-T1 | Type B | CN606 |
| 2014 | MUY-GK24VA-T1 | MUY-GK24VA-T1 | Type C | CN806 |
| 2014 | MUY-GM18VF-T1 | MUY-GM18VF-T1 | Type C | CN606 |
| 2014 | SUY-KA18VA.TH-T | SUY-KA18VA.TH-T | Type C | CN606 |
| 2014 | SUY-KA24VA.TH-T | SUY-KA24VA.TH-T | Type C | CN806 |
| 2014 | SUY-KA30VA.TH-T | SUY-KA30VA.TH-T | Type C | CN806 |
| 2014 | SUY-KA36VA.TH-T | SUY-KA36VA.TH-T | Type C | CN806 |
| 2015 | MUY-FL10VE-R1 | MUY-FL10VE-R1 | Type C | CN606 |
| 2015 | MUY-GL10VA-R1 | MUY-GL10VA-R1 | Type B | CN606 |
| 2015 | MUY-GL18VA-R1 | MUY-GL18VA-R1 | Type C | CN806 |
| 2015 | MXY-2G20VA-R1 | MXY-2G20VA-R1 | Type AD | CN606 |
| 2015 | MXY-3G28VA-R1 | MXY-3G28VA-R1 | Type C | CN861 |
| 2015 | MXY-4G28VA-R1 | MXY-4G28VA-R1 | Type C | CN861 |
| 2015 | MXY-4G38VA-R1 | MXY-4G38VA-R1 | Type C | CN861 |
| 2015 | MXY-5G48VA-R1 | MXY-5G48VA-R1 | Type C | CN861 |
| 2015 | MUZ-FK18VA-T1 | MUZ-FK18VA-T1 | Type C | CN806 |

| fiscal_year | series | model | Relay cable | Connector |
|---|---|---|---|---|
| 2016 | MXY-3G28VA-R2 | MXY-3G28VA-R2 | Type C | CN861 |
| 2016 | MXY-4G28VA-R2 | MXY-4G28VA-R2 | Type C | CN861 |
| 2016 | MUY-GM09VF-T1 | MUY-GM09VF-T1 | Type C | CN606 |
| 2016 | MUY-GM13VF-T1 | MUY-GM13VF-T1 | Type C | CN606 |
| 2016 | MUY-GM15VF-T1 | MUY-GM15VF-T1 | Type C | CN606 |
| 2016 | MUY-GM24VF-T1 | MUY-GM24VF-T1 | Type C | CN806 |
| 2016 | MUY-GM30VF-T1 | MUY-GM30VF-T1 | Type C | CN806 |
| 2016 | MUY-GN09VF-T1 | MUY-GN09VF-T1 | Type C | CN606 |
| 2016 | MUY-GN13VF-T1 | MUY-GN13VF-T1 | Type C | CN606 |
| 2016 | MUY-GN15VF-T1 | MUY-GN15VF-T1 | Type C | CN606 |
| 2016 | MUY-GN18VF-T1 | MUY-GN18VF-T1 | Type C | CN606 |
| 2016 | MUY-GN24VF-T1 | MUY-GN24VF-T1 | Type C | CN806 |
| 2016 | MUY-GN30VF-T1 | MUY-GN30VF-T1 | Type C | CN806 |
| 2016 | MUZ-FM09VF-T1 | MUZ-FM09VF-T1 | Type C | CN606 |
| 2016 | MUZ-FM13VF-T1 | MUZ-FM13VF-T1 | Type C | CN606 |
| 2016 | MUZ-FM18VF-T1 | MUZ-FM18VF-T1 | Type C | CN806 |
| 2016 | MUZ-LN09VF-T1 | MUZ-LN09VF-T1 | Type C | CN606 |
| 2016 | MUZ-LN13VF-T1 | MUZ-LN13VF-T1 | Type C | CN606 |
| 2016 | MUZ-LN18VF-T1 | MUZ-LN18VF-T1 | Type C | CN606 |
| 2016 | SUY-SA18VA.TH-T | SUY-SA18VA.TH-T | Type C | CN606 |
| 2016 | SUY-SA24VA.TH-T | SUY-SA24VA.TH-T | Type C | CN606 |
| 2016 | SUY-SA30VA.TH-T | SUY-SA30VA.TH-T | Type C | CN806 |
| 2016 | SUY-SA36VA.TH-T | SUY-SA36VA.TH-T | Type C | CN806 |
| 2016 | MUY-GE22NA-C1 | MUY-GE22NA-C1 | Type C | CN606 |
| 2016 | MUY-GE25NA-C1 | MUY-GE25NA-C1 | Type C | CN606 |
| 2016 | MUY-GE35NA-C1 | MUY-GE35NA-C1 | Type C | CN606 |
| 2016 | MUY-GE42NA-C1 | MUY-GE42NA-C1 | Type C | CN606 |
| 2016 | MUY-GE50NA-C1 | MUY-GE50NA-C1 | Type C | CN806 |
| 2016 | MUY-GE60NA-C1 | MUY-GE60NA-C1 | Type C | CN806 |
| 2016 | MUY-GE71NA-C1 | MUY-GE71NA-C1 | Type C | CN806 |
| 2016 | MUY-GN10VF-D1 | MUY-GN10VF-D1 | Type C | CN606 |
| 2016 | MUY-GN13VF-D1 | MUY-GN13VF-D1 | Type C | CN606 |
| 2016 | MUY-GN15VF-D1 | MUY-GN15VF-D1 | Type C | CN606 |
| 2016 | MUY-GN18VF-D1 | MUY-GN18VF-D1 | Type C | CN606 |
| 2016 | MUY-GN22VF-D1 | MUY-GN22VF-D1 | Type C | CN606 |
| 2016 | MUY-GN26VF-D1 | MUY-GN26VF-D1 | Type C | CN806 |
| 2016 | MUZ-GE22NA-C1 | MUZ-GE22NA-C1 | Type C | CN606 |
| 2016 | MUZ-GE25NA-C1 | MUZ-GE25NA-C1 | Type C | CN606 |
| 2016 | MUZ-GE35NA-C1 | MUZ-GE35NA-C1 | Type C | CN606 |
| 2016 | MUZ-GE42NA-C1 | MUZ-GE42NA-C1 | Type C | CN606 |
| 2016 | MUZ-GE50NA-C1 | MUZ-GE50NA-C1 | Type C | CN806 |
| 2016 | MUZ-GE60NA-C1 | MUZ-GE60NA-C1 | Type C | CN806 |
| 2016 | MUZ-GE71NA-C1 | MUZ-GE71NA-C1 | Type C | CN806 |
| 2016 | MUZ-HJ35VA-PK1 | MUZ-HJ35VA-PK1 | Type C | CN606 |
| 2016 | MUZ-HJ50VA-PK1 | MUZ-HJ50VA-PK1 | Type C | CN606 |
| 2016 | MUZ-HJ71VA-PK1 | MUZ-HJ71VA-PK1 | Type C | CN606 |
| 2016 | MUZ-HL25VA-V1 | MUZ-HL25VA-V1 | Type C | CN606 |
| 2016 | MUZ-HL35VA-V1 | MUZ-HL35VA-V1 | Type C | CN606 |
| 2016 | MUZ-HL50VA-V1 | MUZ-HL50VA-V1 | Type C | CN606 |
| 2017 | MXY-2G20VA2-R1 | MXY-2G20VA2-R1 | Type C | CN606 |
| 2017 | MXY-2G20VA-R2 | MXY-2G20VA-R2 | Type AD | CN606 |
| 2017 | MXY-3G28VA2-R1 | MXY-3G28VA2-R1 | Type C | CN861 |
| 2017 | MXY-4G33VA2-R1 | MXY-4G33VA2-R1 | Type C | CN861 |

| fiscal_year | series | model | Relay cable | Connector |
|---|---|---|---|---|
| 2017 | MXY-4G38VA2-R1 | MXY-4G38VA2-R1 | Type C | CN861 |
| 2017 | MXY-5G48VA2-R1 | MXY-5G48VA2-R1 | Type C | CN861 |
| 2017 | SUY-KA30VA.TH | SUY-KA30VA.TH | Type C | CN806 |
| 2017 | SUY-KA36VA.TH | SUY-KA36VA.TH | Type C | CN806 |
| 2017 | MUY-JP09VF-TH1 | MUY-JP09VF-TH1 | Type C | CN606 |
| 2017 | MUY-JP13VF-TH1 | MUY-JP13VF-TH1 | Type C | CN606 |
| 2017 | MUY-JP15VF-TH1 | MUY-JP15VF-TH1 | Type C | CN606 |
| 2017 | MUY-JP18VF-TH1 | MUY-JP18VF-TH1 | Type C | CN606 |
| 2017 | MUY-JP24VF-TH1 | MUY-JP24VF-TH1 | Type C | CN606 |
| 2017 | MUY-GF24VA-HK1 | MUY-GF24VA-HK1 | Type C | CN806 |
| 2017 | MUY-GJ10VA-HK1 | MUY-GJ10VA-HK1 | Type C | CN606 |
| 2017 | MUY-GJ13VA-HK1 | MUY-GJ13VA-HK1 | Type C | CN606 |
| 2017 | MUY-GK18VA-HK1 | MUY-GK18VA-HK1 | Type C | CN606 |
| 2017 | MXZ-2C50NA-C1 | MXZ-2C50NA-C1 | Type A | CN606 |
| 2017 | MXZ-4C80NA-C1 | MXZ-4C80NA-C1 | Type C | CN605 |
| 2017 | MXZ-5C100NA-CZ | MXZ-5C100NA-CZ | Type C | CN605 |
| 2018 | MUY-GR09VF-TH1 | MUY-GR09VF-TH1 | Type C | CN606 |
| 2018 | MUY-GR13VF-TH1 | MUY-GR13VF-TH1 | Type C | CN606 |
| 2018 | MUY-GR15VF-TH1 | MUY-GR15VF-TH1 | Type C | CN606 |
| 2018 | MUY-GR18VF-TH1 | MUY-GR18VF-TH1 | Type C | CN606 |
| 2018 | MUY-GR24VF-TH1 | MUY-GR24VF-TH1 | Type C | CN606 |
| 2018 | MUY-GR30VF-TH1 | MUY-GR30VF-TH1 | Type C | CN806 |
| 2018 | SUY-SA18VA2.TH-TH | SUY-SA18VA2.TH-TH | Type C | CN606 |
| 2018 | SUY-SA24VA2.TH-TH | SUY-SA24VA2.TH-TH | Type C | CN606 |
| 2018 | SUY-SA30VA2.TH-TH | SUY-SA30VA2.TH-TH | Type C | CN806 |
| 2018 | MUY-GN10VA-SG1 | MUY-GN10VA-SG1 | Type C | CN606 |
| 2018 | MUY-GN13VA-SG1 | MUY-GN13VA-SG1 | Type C | CN606 |
| 2018 | MUY-GN15VA-SG1 | MUY-GN15VA-SG1 | Type C | CN606 |
| 2018 | MUY-GN18VA-SG1 | MUY-GN18VA-SG1 | Type C | CN606 |
| 2018 | MUY-GN24VA-SG1 | MUY-GN24VA-SG1 | Type C | CN806 |
| 2018 | MUY-JP10VF-DA1 | MUY-JP10VF-DA1 | Type C | CN606 |
| 2018 | MUY-JP10VF-NE1 | MUY-JP10VF-NE1 | Type C | CN606 |
| 2018 | MUY-JP13VF-DA1 | MUY-JP13VF-DA1 | Type C | CN606 |
| 2018 | MUY-JP13VF-NE1 | MUY-JP13VF-NE1 | Type C | CN606 |
| 2018 | MUY-JP15VF-DA1 | MUY-JP15VF-DA1 | Type C | CN606 |
| 2018 | MUY-JP18VF-DA1 | MUY-JP18VF-DA1 | Type C | CN606 |
| 2018 | MUY-JP18VF-NE1 | MUY-JP18VF-NE1 | Type C | CN606 |
| 2018 | MUY-JP22VF-DA1 | MUY-JP22VF-DA1 | Type C | CN606 |
| 2018 | MUY-JP24VF-NE1 | MUY-JP24VF-NE1 | Type C | CN606 |
| 2018 | MUY-JP25VF-VN1 | MUY-JP25VF-VN1 | Type C | CN606 |
| 2018 | MUY-JP35VF-VN1 | MUY-JP35VF-VN1 | Type C | CN606 |
| 2018 | MUY-JP50VF-VN1 | MUY-JP50VF-VN1 | Type C | CN606 |
| 2018 | MUY-JP60VF-VN1 | MUY-JP60VF-VN1 | Type C | CN606 |
| 2018 | MUZ-HP13VA-DA1 | MUZ-HP13VA-DA1 | Type C | CN606 |
| 2018 | MUZ-HP18VA-DA1 | MUZ-HP18VA-DA1 | Type C | CN606 |
| 2018 | MUZ-HP24VA-DA1 | MUZ-HP24VA-DA1 | Type C | CN606 |
| 2018 | MUZ-LN10VF-MY1 | MUZ-LN10VF-MY1 | Type C | CN606 |
| 2018 | MUZ-LN13VF-MY1 | MUZ-LN13VF-MY1 | Type C | CN606 |
| 2018 | MUZ-LN18VF-DA1 | MUZ-LN18VF-DA1 | Type C | CN606 |
| 2018 | MUZ-LN25VF-VN1 | MUZ-LN25VF-VN1 | Type C | CN606 |
| 2018 | MUZ-LN35VF-VN1 | MUZ-LN35VF-VN1 | Type C | CN606 |
| 2019 | MUY-KP09VF-TH1 | MUY-KP09VF-TH1 | Type C | CN606 |
| 2019 | MUY-KP13VF-TH1 | MUY-KP13VF-TH1 | Type C | CN606 |

| fiscal_year | series | model | Relay cable | Connector |
|---|---|---|---|---|
| 2019 | MUY-KP15VF-TH1 | MUY-KP15VF-TH1 | Type C | CN606 |
| 2019 | MUY-KP18VF-TH1 | MUY-KP18VF-TH1 | Type C | CN606 |
| 2019 | MUY-GP10VF-SG1 | MUY-GP10VF-SG1 | Type C | CN606 |
| 2019 | MUY-GP13VF-SG1 | MUY-GP13VF-SG1 | Type C | CN606 |
| 2019 | MUY-GP15VF-SG1 | MUY-GP15VF-SG1 | Type C | CN606 |
| 2019 | MUY-GP18VF-SG1 | MUY-GP18VF-SG1 | Type C | CN606 |
| 2019 | MUY-GP20VF-SG1 | MUY-GP20VF-SG1 | Type C | CN606 |
| 2019 | MUY-GP24VF-SG1 | MUY-GP24VF-SG1 | Type C | CN806 |
| 2019 | MUY-GR10VF-DA1 | MUY-GR10VF-DA1 | Type C | CN606 |
| 2019 | MUY-GR10VF-MY1 | MUY-GR10VF-MY1 | Type C | CN606 |
| 2019 | MUY-GR13VF-DA1 | MUY-GR13VF-DA1 | Type C | CN606 |
| 2019 | MUY-GR13VF-MY1 | MUY-GR13VF-MY1 | Type C | CN606 |
| 2019 | MUY-GR13VFT-DA1 | MUY-GR13VFT-DA1 | Type C | CN606 |
| 2019 | MUY-GR15VF-DA1 | MUY-GR15VF-DA1 | Type C | CN606 |
| 2019 | MUY-GR15VF-MY1 | MUY-GR15VF-MY1 | Type C | CN606 |
| 2019 | MUY-GR18VF-DA1 | MUY-GR18VF-DA1 | Type C | CN606 |
| 2019 | MUY-GR18VF-MY1 | MUY-GR18VF-MY1 | Type C | CN606 |
| 2019 | MUY-GR18VFT-DA1 | MUY-GR18VFT-DA1 | Type C | CN606 |
| 2019 | MUY-GR22NJ-TW1 | MUY-GR22NJ-TW1 | Type C | CN606 |
| 2019 | MUY-GR22VF-DA1 | MUY-GR22VF-DA1 | Type C | CN606 |
| 2019 | MUY-GR22VFT-DA1 | MUY-GR22VFT-DA1 | Type C | CN606 |
| 2019 | MUY-GR24VF-MY1 | MUY-GR24VF-MY1 | Type C | CN606 |
| 2019 | MUY-GR25VF-VN1 | MUY-GR25VF-VN1 | Type C | CN606 |
| 2019 | MUY-GR26VF-DA1 | MUY-GR26VF-DA1 | Type C | CN806 |
| 2019 | MUY-GR28NJ-TW1 | MUY-GR28NJ-TW1 | Type C | CN606 |
| 2019 | MUY-GR28VF-MY1 | MUY-GR28VF-MY1 | Type C | CN806 |
| 2019 | MUY-GR35NJ-TW1 | MUY-GR35NJ-TW1 | Type C | CN606 |
| 2019 | MUY-GR35VF-VN1 | MUY-GR35VF-VN1 | Type C | CN606 |
| 2019 | MUY-GR42NJ-TW1 | MUY-GR42NJ-TW1 | Type C | CN606 |
| 2019 | MUY-GR50NJ-TW1 | MUY-GR50NJ-TW1 | Type C | CN806 |
| 2019 | MUY-GR50VF-VN1 | MUY-GR50VF-VN1 | Type C | CN606 |
| 2019 | MUY-GR60NJ-TW1 | MUY-GR60NJ-TW1 | Type C | CN806 |
| 2019 | MUY-GR60VF-VN1 | MUY-GR60VF-VN1 | Type C | CN606 |
| 2019 | MUY-GR71NJ-TW1 | MUY-GR71NJ-TW1 | Type C | CN806 |
| 2019 | MUY-GR71VF-VN1 | MUY-GR71VF-VN1 | Type C | CN606 |
| 2019 | MUY-GR80NJ-TW1 | MUY-GR80NJ-TW1 | Type C | CN806 |
| 2019 | MUY-JR22VF-DA1 | MUY-JR22VF-DA1 | Type C | CN606 |
| 2019 | MUY-JR36VF-DA1 | MUY-JR36VF-DA1 | Type C | CN806 |
| 2019 | MUY-JR36VF-MY1 | MUY-JR36VF-MY1 | Type C | CN806 |
| 2019 | MUY-JS09VF-TH1 | MUY-JS09VF-TH1 | Type C | CN606 |
| 2019 | MUY-JS13VF-TH1 | MUY-JS13VF-TH1 | Type C | CN606 |
| 2019 | MUY-JS15VF-TH1 | MUY-JS15VF-TH1 | Type C | CN606 |
| 2019 | MUY-JS18VF-TH1 | MUY-JS18VF-TH1 | Type C | CN606 |
| 2019 | MUY-JS24VF-TH1 | MUY-JS24VF-TH1 | Type C | CN606 |
| 2019 | MUY-KS09VF-TH1 | MUY-KS09VF-TH1 | Type C | CN606 |
| 2019 | MUY-KS13VF-TH1 | MUY-KS13VF-TH1 | Type C | CN606 |
| 2019 | MUY-KS15VF-TH1 | MUY-KS15VF-TH1 | Type C | CN606 |
| 2019 | MUY-KS18VF-TH1 | MUY-KS18VF-TH1 | Type C | CN606 |
| 2019 | MUY-KS24VF-TH1 | MUY-KS24VF-TH1 | Type C | CN606 |
| 2019 | MUZ-GR22NJ-TW1 | MUZ-GR22NJ-TW1 | Type C | CN606 |
| 2019 | MUZ-GR28NJ-TW1 | MUZ-GR28NJ-TW1 | Type C | CN606 |
| 2019 | MUZ-GR35NJ-TW1 | MUZ-GR35NJ-TW1 | Type C | CN606 |
| 2019 | MUZ-GR42NJ-TW1 | MUZ-GR42NJ-TW1 | Type C | CN606 |

| fiscal_year | series | model | Relay cable | Connector |
|---|---|---|---|---|
| 2019 | MUZ-GR50NJ-TW1 | MUZ-GR50NJ-TW1 | Type C | CN806 |
| 2019 | MUZ-GR60NJ-TW1 | MUZ-GR60NJ-TW1 | Type C | CN806 |
| 2019 | MUZ-GR71NJ-TW1 | MUZ-GR71NJ-TW1 | Type C | CN806 |
| 2019 | MUZ-GR80NJ-TW1 | MUZ-GR80NJ-TW1 | Type C | CN806 |
| 2019 | SUZ-KA25VA-VN.TH | SUZ-KA25VA-VN.TH | Type C | CN606 |
| 2019 | SUZ-KA35VA-VN.TH | SUZ-KA35VA-VN.TH | Type C | CN606 |
| 2019 | SUZ-KA50VA-DA.TH | SUZ-KA50VA-DA.TH | Type C | CN606 |
| 2019 | SUZ-KA50VA-VN.TH | SUZ-KA50VA-VN.TH | Type C | CN606 |
| 2019 | SUZ-KA71VA-DA.TH | SUZ-KA71VA-DA.TH | Type C | CN806 |
| 2019 | SUZ-KA71VA-VN.TH | SUZ-KA71VA-VN.TH | Type C | CN806 |
| 2020 | MUY-HS22NF-TW1 | MUY-HS22NF-TW1 | Type C | CN606 |
| 2020 | MUY-HS28NF-TW1 | MUY-HS28NF-TW1 | Type C | CN606 |
| 2020 | MUY-HS35NF-TW1 | MUY-HS35NF-TW1 | Type C | CN606 |
| 2020 | MUY-HS42NF-TW1 | MUY-HS42NF-TW1 | Type C | CN606 |
| 2020 | MUY-HS50NF-TW1 | MUY-HS50NF-TW1 | Type C | CN606 |
| 2020 | MUY-HS60NF-TW1 | MUY-HS60NF-TW1 | Type C | CN606 |
| 2020 | MUY-HS71NF-TW1 | MUY-HS71NF-TW1 | Type C | CN806 |
| 2020 | MUY-HS80NF-TW1 | MUY-HS80NF-TW1 | Type C | CN806 |
| 2020 | MUY-HS90NF-TW1 | MUY-HS90NF-TW1 | Type C | CN806 |
| 2020 | MUY-JP10VF2-MY1 | MUY-JP10VF2-MY1 | Type C | CN606 |
| 2020 | MUY-JP10VF-MY1 | MUY-JP10VF-MY1 | Type C | CN606 |
| 2020 | MUY-JP13VF-MY1 | MUY-JP13VF-MY1 | Type C | CN606 |
| 2020 | MUY-JP15VF-MY1 | MUY-JP15VF-MY1 | Type C | CN606 |
| 2020 | MUY-JP18VF-MY1 | MUY-JP18VF-MY1 | Type C | CN606 |
| 2020 | MUY-JP24VF-MY1 | MUY-JP24VF-MY1 | Type C | CN606 |
| 2020 | MUY-JR30VF-DA1 | MUY-JR30VF-DA1 | Type C | CN806 |
| 2020 | MUY-JR34VF-TH1 | MUY-JR34VF-TH1 | Type C | CN806 |
| 2020 | MUY-JS18VF-DA1 | MUY-JS18VF-DA1 | Type C | CN606 |
| 2020 | MUY-JS18VF-MY1 | MUY-JS18VF-MY1 | Type C | CN606 |
| 2020 | MUY-JS22VF-DA1 | MUY-JS22VF-DA1 | Type C | CN606 |
| 2020 | MUY-JS24VF-MY1 | MUY-JS24VF-MY1 | Type C | CN606 |

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