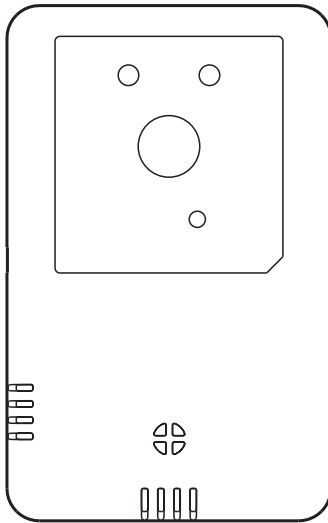


REFRIGERANT LEAK DETECTOR

INSTALLATION MANUAL



Installation manual	ENGLISH
Installationsanleitung	DEUTSCH
Manuel d'installation	FRANÇAIS
Manual de instalación	ESPAÑOL
Manuale di installazione	ITALIANO
Installatiehandleiding	NEDERLANDS
Kurulum kılavuzu	TÜRKÇE
Manual de instalação	PORTUGUÊS
Podręcznik instalacji	POLSKI



This product complies with following directives/regulations

EU	GB
MD 2006 / 42 / EC	SMR S.I. 2008 / 1597
LVD 2014 / 35 / EU	EER S.I. 2016 / 1101
EMC 2014 / 30 / EU	EMC S.I. 2016 / 1091
RoHS 2011 / 65 / EU	RoHS S.I. 2012 / 3032
Ecodesign 2009 / 125 / EC	Ecodesign S.I. 2020 / 1528

CE and UKCA marking is applicable to the area of 50 Hz power supply

Questo condizionatore è conforme alle seguenti norme:
 Macchine 2006 / 42 / EC
 Bassa tensione 2014 / 35 / EU
 EMC 2014 / 30 / EU
 RoHS 2011 / 65 / EU
 Ecoprogettazione 2009 / 125 / EC

La marcatura CE è applicabile all'area di alimentazione elettrica di 50Hz.

Bu klima aşağıdaki yönerge ile uyumludur.

Makine 2006 / 42 / EC
 Alçak gerilim 2014 / 35 / EU
 EMC 2014 / 30 / EU
 RoHS 2011 / 65 / EU
 Çevreci tasarım 2009 / 125 / EC
 CE 50Hz güç kaynağının alanı için de geçerlidir.

Este ar condicionado respeita as seguintes directivas.

Maquinário 2006 / 42 / EC
 Baixa Voltagem 2014 / 35 / EU
 EMC 2014 / 30 / EU
 RoHS 2011 / 65 / EU
 Ecodesign 2009 / 125 / EC
 Tomada CE é aplicável a área da fonte de alimentação 50Hz.

Ce climatiseur est conforme aux directives suivantes :

Machinerie 2006 / 42 / EC
 Basse tension 2014 / 35 / EU
 EMC 2014 / 30 / EU
 RoHS 2011 / 65 / EU
 Conception écologique 2009 / 125 / EC

Le marquage CE est applicable dans les zones d'alimentation électrique de 50 Hz.

Este aire acondicionado cumple con las siguientes directrices.

Maquinaria 2006 / 42 / EC
 Bajo voltaje 2014 / 35 / EU
 EMC 2014 / 30 / EU
 RoHS 2011 / 65 / EU
 Ecodiseño 2009 / 125 / EC

La marca CE corresponde al área de suministro de energía de 50 Hz.

Deze airconditioner voldoet aan de volgende richtlijn.

Machinerie 2006 / 42 / EC
 Lage spanning 2014 / 35 / EU
 EMC 2014 / 30 / EU
 RoHS 2011 / 65 / EU
 Ecodesign 2009 / 125 / EC

CE-markering is van toepassing op het gebied met een netstroom van 50 Hz.

Diese Klimaanlage entspricht den folgenden Richtlinien.

Maschinen 2006 / 42 / EC
 Niederspannung 2014 / 35 / EU
 EMC 2014 / 30 / EU
 RoHS 2011 / 65 / EU
 Ecodesign 2009 / 125 / EC

CE Herstellung ist in Bereich mit 50 Hz Stromversorgung anwendbar.

Ten klimatyzator spełnia wymogi niżej wymienionej dyrektywy.

Maszynowa 2006 / 42 / EC
 Niskonapięciowa 2014 / 35 / EU
 EMC 2014 / 30 / EU
 RoHS 2011 / 65 / EU
 Dot. ekoprojektu 2009 / 125 / EC

Znakowanie CE ma zastosowanie do obszaru prądu zasilającego 50 Hz

REFRIGERANT LEAK DETECTOR INSTALLATION MANUAL

This manual describes the way of installing the refrigerant leak detector (hereinafter referred to as the detector).
The leak detector is a safety measure equipment required to install on the MHI R32 VRF system.
When the detector is necessary, install it according to this manual.
Use it together with installation manuals attached to the indoor unit, remote controller, outdoor unit and shut-off valve.

Contents

■	General requirement	2
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■	2 . Accessories	4
■	3 . Place to install refrigerant leak detector	5
■	4 . Installation of refrigerant leak detector	8
■	5 . Wire connection to indoor unit	10
■	6 . Settings of refrigerant leak detector	10
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■	8 . Refrigerant sensor replacement.....	14
■	9 . I/F PCB replacement (Save, transfer of accumulated refrigerant sensor operation hours)	15
■	10 . Other	16

Regarding safety measure equipment of air-conditioners (refrigerant leak detector) for MHI R32 VRF system

MHI R32 VRF system uses R32 refrigerant.
R32 refrigerant is categorized as mildly flammable (A2L) by International Standard ISO817. Safety measures specified in safety standard IEC60335-2-40 Ed.6.0. must be observed when installing or using R32 refrigerant equipment.
Always install it whenever it is judged necessary to install safety measure equipment.
It is very dangerous if a refrigerant leak happens by accident when the air-conditioner is used without installation of safety measure equipment (including a detector). It can lead to an explosion if the leak is not detected in the place where an ignition source exists.
The detector contains sensor to detect refrigerant in air.
If refrigerant leaks, the detector will inform it to outdoor and indoor units, and other safety measure equipment. The alarm will then be turned on and the operation of each equipment will be controlled for keeping the concentration of refrigerant leaked in the room under the hazard level.

1. Safety precautions

- Read this “Safety precautions” carefully before starting work to install the equipment correctly.
Always observe each precaution because it describes important contents for safety.\

 WARNING	It is highly possible to lead to a significant result such as death or serious injury if it is handled incorrectly.
 CAUTION	It is possible to get hurt or cause physical damage.

It could result in significant result depending on situation

- “Pictograph” used in the text means as follows.

	Strictly prohibited.		Always practice as instructed.
--	----------------------	---	--------------------------------

- User is required to keep it safety where it could be consulted any time.
Give it to construction workers when equipment is relocated or repaired. When users are changed, give it to new user.

WARNING

-  ● **Consult your dealer or a professional contractor to install the unit.**
Improper installation made on your own may cause electric shocks, fire or dropping of the unit.
-  ● **Installation work should be performed properly according to this installation manual.**
Improper installation work may result in electric shocks, fire or break-down.
-  ● **Be sure to use accessories and specified parts for installation work.**
Use of unspecified parts may result in drop, fire or electric shocks.
-  ● **Install the unit properly to a place with sufficient strength to hold the weight.**
If the place is not strong enough, the unit may drop and cause injury.
-  ● **Be sure to have the electrical wiring work done by qualified electrical installer, and use exclusive circuit.**
Power source with insufficient and improper work can cause electric shock and fire.

 WARNING

-
-  ● **Shut OFF the main power supply before starting electrical work.**
Otherwise, it could result in electric shocks, break-down or malfunction.
-
-  ● **Do not modify the unit.**
It could cause electric shocks, fire, or break-down.
-
-  ● **Be sure to turn OFF the power circuit breaker before repairing/inspecting the unit.**
Repairing/inspecting the unit with the power circuit breaker turned ON could cause electric shocks or injury.
-
-  ● **Do not install the unit in appropriate environment or where inflammable gas could generate, flow in, accumulate or leak.**
If the unit is used at places where air contains dense oil mist, steam, organic solvent vapor, corrosive gas (ammonium, sulfuric compound, acid, etc.) or where acidic or alkaline solution, special spray, etc. are used, it could cause electric shocks, break-down, smoke or fire as a result of significant deterioration of its performance or corrosion.
-
-  ● **Do not install the unit where water vapor is generated excessively or condensation occurs.**
It could cause electric shocks, fire, or break-down.
-
-  ● **Do not use the unit in a place where it gets wet, such as laundry room.**
It could cause electric shocks, fire, or break-down.
-
-  ● **Do not operate the unit with wet hands.**
It could cause electric shocks.
-
-  ● **Do not wash the unit with water.**
It could cause electric shocks, fire, or break-down.
-
-  ● **Use the specified cables for wiring, and connect them securely with care to protect electronic parts from external forces.**
Improper connections or fixing could cause heat generation, fire, etc.
-
-  ● **Seal the inlet hole for remote control cable with putty.**
If dew, water, insect, etc. enters through the hole, it could cause electric shocks, fire or break-down.
If dew or water enters the unit, it may cause screen display anomalies.
-
-  ● **When installing the unit at a hospital, telecommunication facility, etc., take measures to suppress electric noises.**
It could cause malfunction or break-down due to hazardous effects on the inverter, private power generator, high frequency medical equipment, radio communication equipment, etc.
The influences transmitted from the remote control to medical or communication equipment could disrupt medical activities, video broadcasting or cause noise interference.
-
-  ● **Do not leave the refrigerant leak detector with its upper case removed.**
If dew, water, insect, etc. enters through the hole, it could cause electric shocks, fire or break-down.
-

⚠ CAUTION

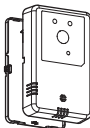
● Do not install the detector at following places.

- (1) It could cause break-down or deformation of detector.
 - Where it is exposed to direct sunlight
 - Where the ambient temperature becomes 0 °C or below, or 40 °C or above
 - Where the surface is not flat
 - Where the strength of installation area is insufficient
- (2) Moisture may be attached to internal parts of the detector, resulting in a display failure.
 - Place with high humidity where condensation occurs on the detector
 - Where the detector gets wet
- (3) Accurate room temperature may not be detected using the temperature sensor of the detector.
 - Where the average room temperature cannot be detected
 - Place near the equipment to generate heat
 - Place affected by outside air in opening/closing the door
 - Place exposed to direct sunlight or wind from air conditioner
 - Where the difference between wall and room temperature is large



2. Accessories

Following parts are provided.

Detector	Wood screw	Installation manual (This Manual)	User's manual
			
1 piece	2 pieces	1 piece	1 piece

Following parts are arranged at site. Prepare them according to the respective installation procedures.

Item name	Q'ty	Remark
European standard junction box	1	This is not required when installing directly on a wall. If not embedding the box in a wall, it shall be insulating material of at least 1mm thick for supplementary insulation.
Lacing (JIS C8425 or equivalent)	As required	Necessary to run R/C cable on the wall. It shall be insulating material of at least 1mm thick for supplementary insulation.
Putty	Suitably	For sealing gaps
Molly anchor	As required	
R/C cable (0.3 mm ² x 2 pcs)	As required	See right table when longer than 100 m

When the cable length is longer than 100 m, the max size for wires used in the detector case is 0.5 mm². Connect them to wires of larger size near the outside of detector. When wires are connected, take measures to prevent water, etc. from entering inside.

≤ 200 m	0.5 mm ² x 2-core
≤ 300m	0.75 mm ² x 2-core
≤ 400m	1.25 mm ² x 2-core
≤ 600m	2.0 mm ² x 2-core

3. Place to install refrigerant leak detector

Install the detector following instructions here.

Place where refrigerant leak can happen

The following places are specified by IEC60335-2-40 Ed.6.0. as the spots with high risks of refrigerant leak.

- A refrigerant system in which a single rupture of the refrigerant circuit results in a refrigerant release to a space, irrespective of the location of the refrigerant circuit. (Direct system)
- Blow outlet, suction inlet of indoor unit.
- Piping joints other than site-made joints directly connecting the indoor unit to the refrigerant piping or factory made mechanical joints in compliance with ISO 14903.

Installation place

Ensure to meet all the required conditions for setting detectors (shown below).

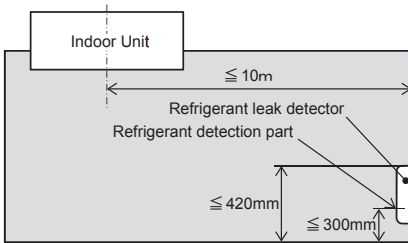
The same conditions are required in the case of mechanical joints which are not meeting the standards of ISO14903 and exposed in the room. In this case, refer to 'mechanical joint' instead of 'indoor unit'.

- The refrigerant detection part is within 300 mm above floor (make the height of top face of detector not higher than 420 mm from the floor surface).
- Horizontal distance from the center of the indoor unit is less than 10 m.

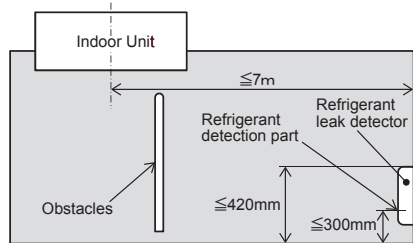
If there is any obstacle such as partition between the indoor unit and the detector, the horizontal distance from the center of the indoor unit must be within 7 m.

- * Address setting of main IU is required when one detector is shared among multiple indoor units.
Refer to the installation manual of the remote control (RC-EX3D or later) for detailed setting instructions.

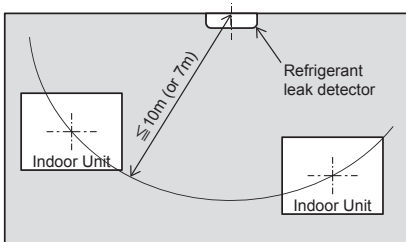
[Ceiling mounted type ①] FDT,FDTC,FDTW,FDTS,FDTQ



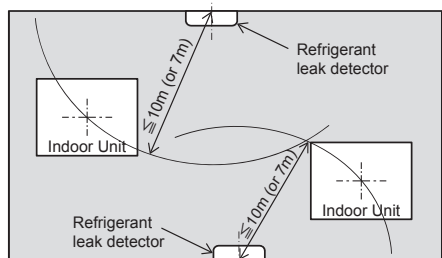
Standard
(Side view)



With Obstacles
(Side view)

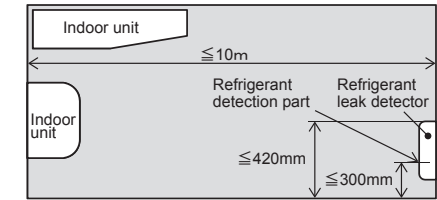


Indoor units
(Top view)

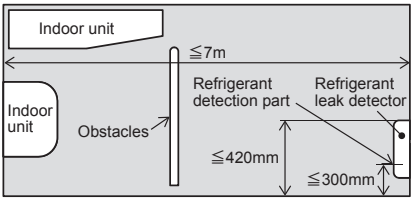


Each over 10m Indoor units
(Top view)

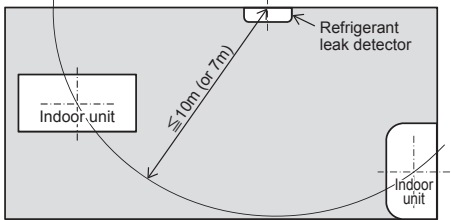
[Ceiling mounted type ②/Wall mounted type] FDE,FDK



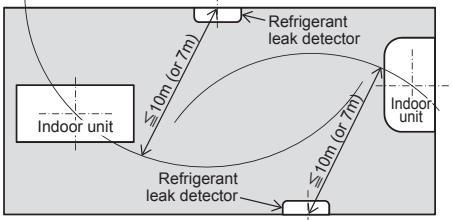
Standard
(Side view)



With Obstacles
(Side view)



Indoor units
(Top view)



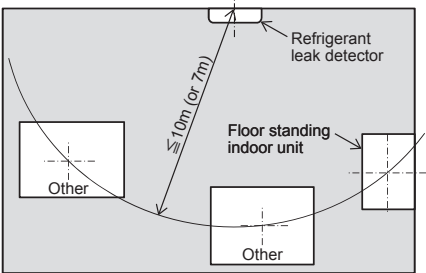
Each over 10m Indoor units
(Top view)

[With Floor standing type] Floor standing type : FDFW,FDFL,FDFU

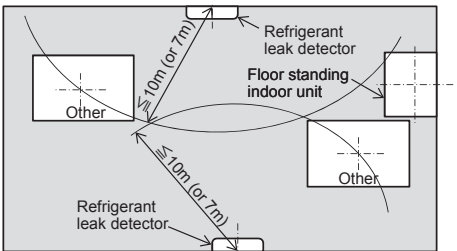
Floor standing type has refrigerant leak detector inside the unit.

Where a floor standing indoor unit and an indoor unit other than that are installed in the same room, exclude the detector which is built in the floor standing indoor unit and install another detector.

※ Detector isn't required for Floor standing type.

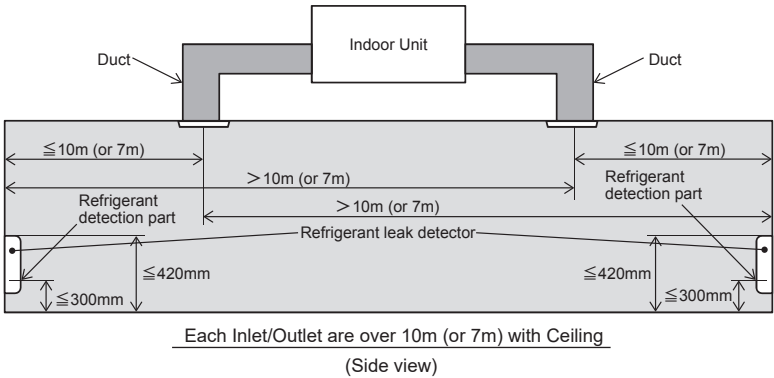


Floor standing type and Others are 10m (or 7m) or less
(Top view)

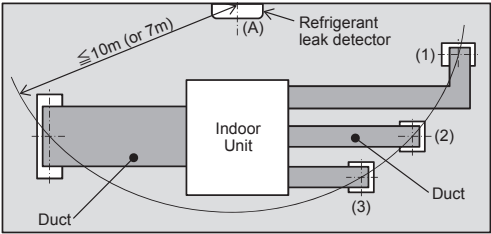


Each over 10m Indoor units
(Top view)

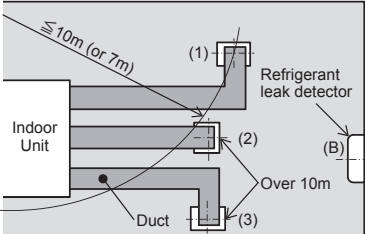
[Duct connected type] FDU,FDUM,FDUT,FDUH,FDU-F



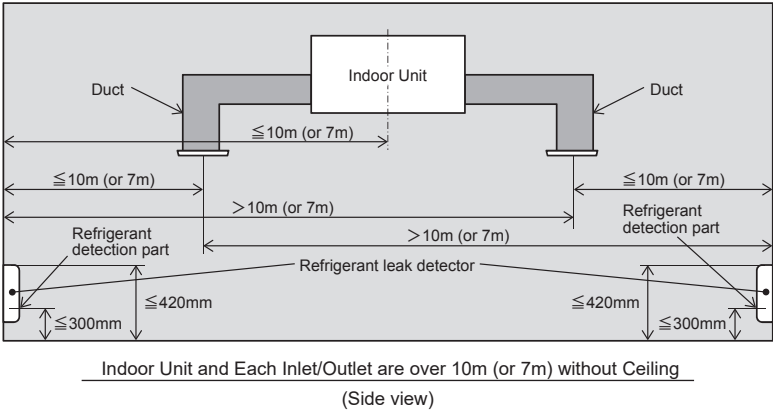
※ It is possible only with Detector(A).



※ Detector(B) is also required.
(Detector(A) and (B) must be installed.)



※ Indoor Unit is also 10m (or 7m) or less



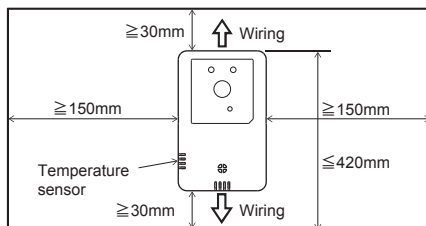
4. Installation of refrigerant leak detector

Always fix the refrigerant leak detector on a flat surface of object.
Secure the installation space shown in the figure.

For the installation method, "Embedding wiring" or "exposing wiring" can be selected.

For the wiring direction, "Backward", "Upper" or "Lower" can be selected.

Determine the installation place in consideration of the installation method and wiring direction.



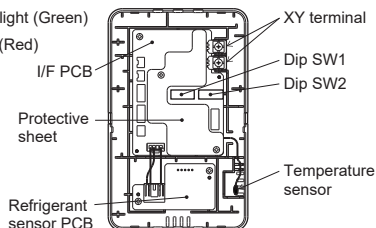
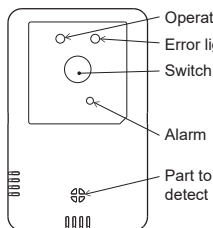
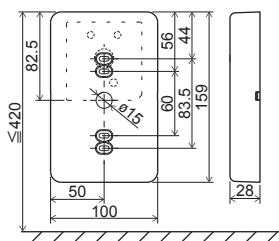
Secure minimum spaces for disassembling the case.

Left/Right side...150mm or more

If using L-shaped screwdriver, 50mm or more is available.

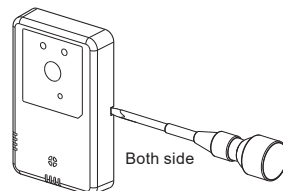
Perform installation and wiring work for the refrigerant leak detector according to the following procedure.

Dimensions (Viewed from front)



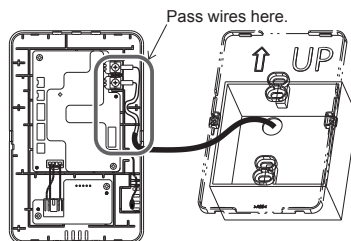
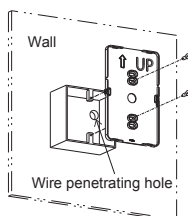
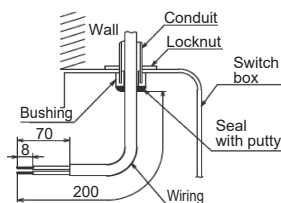
To disassemble the refrigerant leak detector case into the upper and lower pieces after assembling them once

- Insert the tip of flat head screwdriver or the like in the recess (Both side) at the lower part of the refrigerant leak detector and twist it lightly to remove.
- It is recommended that the tip of the screwdriver be wrapped with tape to avoid damaging the case.
- Take care to protect the removed upper case from moisture or dust.



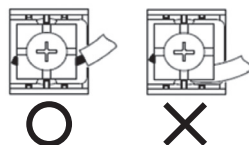
In case of Embedding wiring (When the wiring is retrieved "Backward")

- ① Refer to the diagram for wiring end treatment.
Embed the switch box and the wiring beforehand. Seal the inlet hole for the wiring with putty.
- ② When the wiring are passed through the lower case, fix the lower case at 2 places on the switch box.
- ③ Connect the wiring from X and Y terminals of the refrigerant leak detector to X and Y terminals of indoor unit.
The wiring (X, Y) have no polarity. Fix the wiring such that the wiring will run around the terminal screws on the upper case of the refrigerant leak detector.
- ④ Install the upper case with care not to pinch the wiring.



Cautions for wire connection

Use wires of no larger than 0.5 mm^2 for wiring running through the refrigerant leak detector case. Take care not to pinch the sheath. Tighten by hand ($0.7 \text{ N}\cdot\text{m}$ or less) the wire connection. If the wire is connected using an electric driver, it may cause failure or deformation.



In case of Exposing wiring

(When the wiring is taken out from "Upper" or "Lower".)

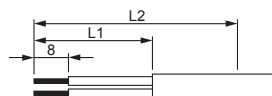
- ① Refer to the diagram for wiring end treatment.
- ② Cut out the central thin wall sections on the upper case for the wiring.
Take care not to damage the PCB and not to leave any chips of cut thin wall inside.
It is better to cut off easily if 2 sides (A) in vertical direction are cut with a nipper and a line is dent with a cutter along one side (B) in horizontal direction and the thinner wall section is folded inwards of case.
- ③ Fix the lower case on a flat surface with two wood screws.
- ④ Connect the wiring from X and Y terminals of the refrigerant leak detector to X and Y terminals of indoor unit.
The wiring (X, Y) have no polarity. Fix the wiring such that the wiring will run around the terminal screws on the upper case of the refrigerant leak detector."
- ⑤ Route the wiring as shown in the diagram.
- ⑥ Install the upper case with care not to pinch the wiring.
- ⑦ Seal the area cut in ② with putty. Prevents foreign matter and moisture from entering.
- ⑧ Cover the wiring with the wiring cover. Prevents damage to the detector due to pulling on the wiring.



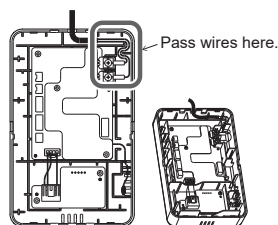
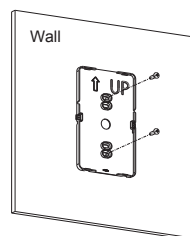
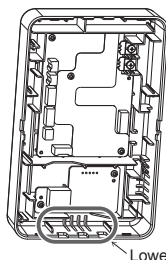
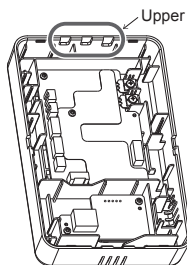
2 sides in vertical direction (A)



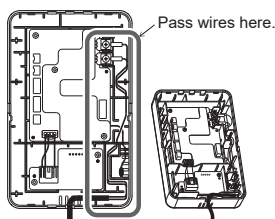
1 side in lateral direction (B)



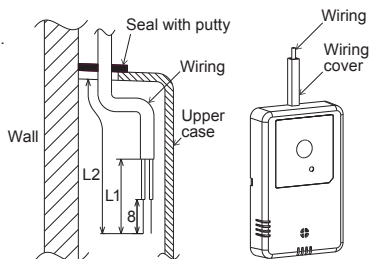
Wire take-out direction	Upper	Lower
L1	70mm	150mm
L2	120mm	200mm



In case of "Upper"



In case of "Lower"



In case of "Upper"

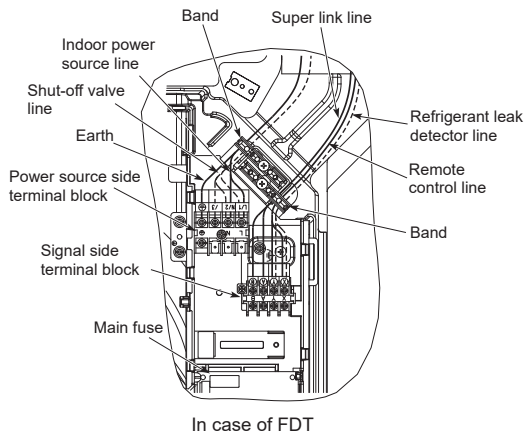
5. Wire connection to indoor unit

The refrigerant leak detector uses the remote control signals.

Connect the wiring to X and Y terminals of the indoor unit.

The wiring (X, Y) have no polarity.

Refer to the installation manual of the indoor unit for connections with other types of units.



6. Settings of refrigerant leak detector

How to set by detector

The detector has two Dip SWs. Their functions are as follows. Set them as required.

The function becomes valid when the power is turned from OFF to ON or CPU of detector is reset, after changing the Dip SW setting.

<Dip SW 1>

	Function	ON	OFF	The original factory state
SW1-1	Main-sub setting	Refer to the main-sub setting.		OFF
SW1-2	Main-sub setting			OFF
SW1-3	—	—	—	OFF
SW1-4	Inspection mode	Valid	Invalid	OFF

<Dip SW 2>

	Function	ON	OFF	The original factory state
SW2-1	Alarm sound stop function	Valid	Invalid	ON
SW2-2	Alarm function	Valid	Invalid	ON
SW2-3	Leak detect function	Valid	Invalid	ON
SW2-4	—	—	—	OFF

[Main-sub setting of detectors]

Up to four detectors, along with the remote control, can be connected to one indoor unit.

This setting is necessary for the following cases.

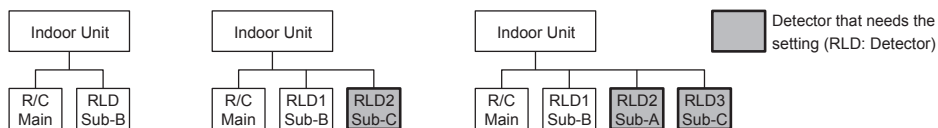
- When the remote controller is not connected.
- When two or more detectors are connected.

⇒ This setting is not necessary when connecting 1 unit of remote controller and 1 unit of detector.
Set the Dip SW 1 (SW1-1, SW1-2) as shown in the following table.

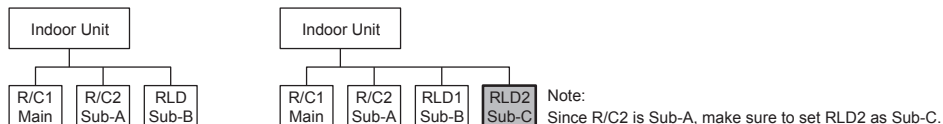
		SW1-1	
		ON	OFF
SW1-2	ON	Main	Sub-C
	OFF	Sub-A	Sub-B

- Setting as Sub-B in the original factory state.
- When connecting two or more detectors, set them avoiding duplication.
- When the remote controller is not connected to the indoor unit on which the detector is connected, set it as the main (SW1-1: ON/ SW1-2: ON). If more than two units are connected, make sure to specify one unit as the main.

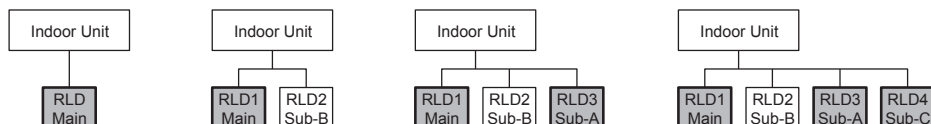
<When connecting 1 unit of remote controller>



<When connecting 2 remote controllers>



<When there is no remote controller>



[Setting detector functions]

When the detector detects refrigerant leak, it turns on the alarm and Error light (Red) to notify the leak. By operating the Dip SWs, the following functions below can be configured.

<Function to stop the alarm (Dip SW2-1)>

This function stops the alarm sound emitted during refrigerant leakage using the switch on the detector. This function is turned on in the original factory state (Dip SW2-1: ON).

When this function is turned on (Dip SW2-1: ON), by pushing the switch once while the detector's alarm is sounding, the alarm sound will stop. Note that this will not stop the flashing of the Error light (red).

To turned off the function to stop controlling the alarm sound by switch, Dip SW2-1 into OFF.

<Alarm function (Dip SW2-2)>

This function triggers an alarm sound when refrigerant leakage occurs. The alarm sound level from the detector is approximately 65dB at a distance of 1 meter from the detector. This function is turned on in the original factory state (Dip SW2-2: ON).

When other alarms are used for refrigerant leakage alarms, you can turn off the function that sounds an alarm.

To turned off this function, Dip SW2-2 to OFF. When the alarm of this detector is turned off, other device to alert the user for refrigerant leak must be installed.

<Function to detect leak (Dip SW2-3)>

This function detects refrigerant leakage. This function is turned on in the original factory state (Dip SW2-3: ON).

When using other detectors for refrigerant leakage detection and using this detector solely as an audible alarming device, you can turn off the function to detect refrigerant leakage.

To turned off this function, Dip SW2-3 to OFF. When the detection of this detector is turned off, other device to detect refrigerant leak must be installed.

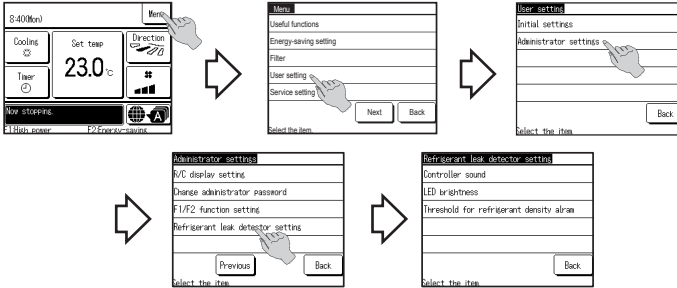
How to set by remote controller

Each setting of the detector can be made by remote controller (RC-EX3D or later). The administrator password must be entered during setting.

Tap the [Menu] button on the TOP screen and select [User setting] ⇒ [Administrator settings] ⇒

[Refrigerant leak detector setting].

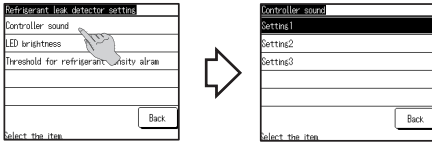
The following screen displays of remote controller can change without any announcement. Please refer to the remote controller's manual for the latest information.



<Controller sound>

The level of alarm sound for refrigerant leak is adjustable.

If you set it, the alarm will sound for 3 seconds in the selected sound.



Setting 1: The biggest sound.

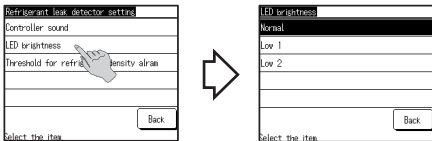
The setting selected in the original factory state.

Setting 2: The sound slightly smaller than Setting 1.

Setting 3: The sound smaller than Setting 1.

<LED brightness>

The brightness of Operation light (Green) that turns on in the detector's operation is adjustable.



Normal: 100% brightness.

The setting selected in the original factory state.

Low 1: 75% brightness.

Low 2: 50% brightness.

<Threshold for refrigerant density alarm>

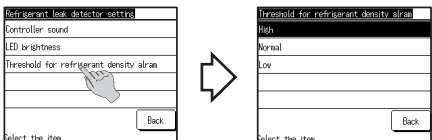
After detecting refrigerant leak, the alarm sound and the flash of Error light (Red) change to notify a decrease in the concentration.

The concentration level to turn on the notifications is adjustable.

The patterns of the alarm sound and Error light (Red) are as follows.

	Alarm sound	Error light (Red)	Operation light (Green)
When refrigerant leak is detected	Continuous	Continuous flash	OFF
When the concentration of refrigerant inside room decreases	Intermittent	5 flashes	OFF

Intermittent sound:
Synchronized with flash of
Error light (Red).



High: The same level as the concentration when refrigerant leak is detected.

The setting selected in the original factory state.

Normal: The level of concentration is between High and Low.

Low: The level of concentration close to the lowest concentration that the detector can sense.

7. Check the connection of safety equipment

After installing and connecting safety measure devices, including the detector, check if they are connected correctly. If it is incorrect, it cannot process safety measures correctly when a refrigerant leak is detected.

After connecting safety measure equipment, make sure to check their connection.

Unless connection is checked, we cannot take responsibility even if refrigerant leaks during operation without checking connection.

After confirming that the outdoor units, indoor units, remote controllers, and safety devices (detectors, shut-off valves, ventilation systems, etc.) in the system are properly connected, proceed with the following steps.

After doing, confirm that the indoor units and other safety devices are functioning properly. Refer to the respective instruction manuals for each device on how to confirm the device operation status.

No.	Operation	Check						
1	Turn on the Dip SW2-3 (Dip SW2-3 is ON by the original factory state). * The detector does not work when Dip SW2-3 is not ON.	<u>Statuses of detector's alarm and light indicators</u> <table> <tr> <th>Alarm sound</th><th>Operation (green)</th><th>Error (red)</th></tr> <tr> <td>Stop</td><td>ON</td><td>OFF</td></tr> </table>	Alarm sound	Operation (green)	Error (red)	Stop	ON	OFF
Alarm sound	Operation (green)	Error (red)						
Stop	ON	OFF						
2	<u>Set the outdoor unit to the safety equipment check mode.</u> See the outdoor unit operation manual for setting details.	* This is the normal status.						
3	<u>Hold-down the detector's switch twice.</u> Take <u>three seconds or longer</u> for each time. (See the diagram below) See [Caution for switch operation (P. 16)] in (10) for details. * After the switch has been held-down twice, in about one second, the detector sends the connection test signal, an alarm sound goes off, the Operation (green) turns off, and the Error (red) starts to flash continuously.	• <u>Statuses of detector's alarm and light indicators</u> <table> <tr> <th>Alarm sound</th><th>Operation (green)</th><th>Error (red)</th></tr> <tr> <td>Continuous sound</td><td>ON</td><td>Flash continuously</td></tr> </table> * If this status is not reached, it is possible that the detector is malfunctioning. * This is different from the actual state when a refrigerant leak is detected. The operation light (green) turns off when an actual refrigerant leak is detected. • Error code of the remote control connected to the indoor unit with the detector connected: "E23" is displayed. If "E23" is not displayed, there is a possibility of incorrect connection or settings. Check the connection and settings.	Alarm sound	Operation (green)	Error (red)	Continuous sound	ON	Flash continuously
Alarm sound	Operation (green)	Error (red)						
Continuous sound	ON	Flash continuously						
4	Push the detector's switch once. The alarm sound will stop.	<u>Statuses of detector's alarm and light indicators</u> <table> <tr> <th>Alarm sound</th><th>Operation (green)</th><th>Error (red)</th></tr> <tr> <td>Stop</td><td>ON</td><td>Flash continuously</td></tr> </table>	Alarm sound	Operation (green)	Error (red)	Stop	ON	Flash continuously
Alarm sound	Operation (green)	Error (red)						
Stop	ON	Flash continuously						
5	Push the detector's switch three times. The detector sends a signal to return to the original mode, while the Operation (green) lights up and the Error (red) turns off.	<u>Statuses of detector's alarm and light indicators</u> <table> <tr> <th>Alarm sound</th><th>Operation (green)</th><th>Error (red)</th></tr> <tr> <td>Stop</td><td>ON</td><td>OFF</td></tr> </table>	Alarm sound	Operation (green)	Error (red)	Stop	ON	OFF
Alarm sound	Operation (green)	Error (red)						
Stop	ON	OFF						
6	<u>Cancel the safety equipment check mode for the outdoor unit.</u> See the outdoor unit operation manual for setting details.	* This is the normal status.						

8. Refrigerant sensor replacement

Replace the refrigerant sensor for detection of detector refrigerant 15 years after the start of use. It may not detect properly as a result of aging.
Even if the air conditioner is not used, the leakage is monitored and the life is counted always while the power is supplied to the air-conditioner.

Notice of refrigerant sensor replacement

When it lapses 14 years and 6 months, it notifies it is near the replacement period. Then it notifies every month till it reaches 15 years. Report it to your dealer to prepare a new refrigerant sensor.
If it reaches 15 years, the need of replacement is notified. This continues till it is replaced. Make sure to replace the refrigerant sensor.

Notification period		Pre-notice for replacement	Notice for replacement
		Every month between 14 years and 6 months and 14 years and 11 months	15 years
Detector	Display	Operation light (green), Error light (red) flash 3 times alternately	Operation light (green), Error light (red) flash alternately continuously.
	To stop display	Push detector switch once.	Replace refrigerant sensor
Remote controller (RC-EX3D or later)	Display	TOP screen	"Refrigerant sensor replace time is coming."
		Error history display screen	"M52"
	Display stop		"M51"
		Refer to remote controller manual.	Refer to remote controller manual.

9. I/F PCB replacement (Save, transfer of accumulated refrigerant sensor operation hours)

When replacing I/F PCB for repair, it is necessary to transfer accumulated operation hours of refrigerant sensor. Accumulated operation hours is saved in I/F PCB. If I/F PCB is replaced, accumulated operation hours is turned to 0 so that replacement period of refrigerant sensor cannot be displayed correctly and specified replacement period could be exceeded.

When replacing I/F PCB, make sure to transfer the accumulated operation hours of refrigerant sensor to new I/F PCB using the remote controller (RC-EX3D or later).

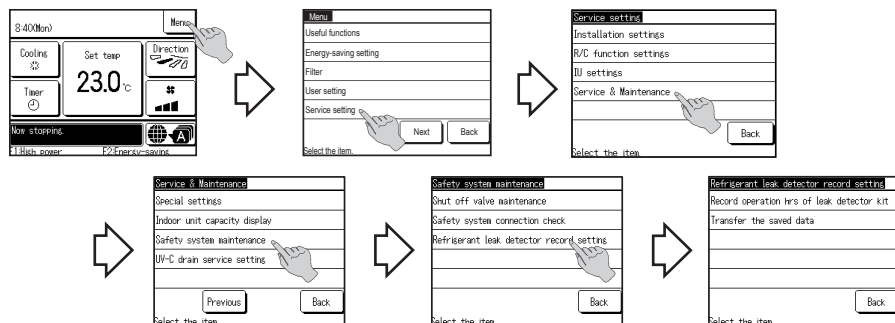
Save and transfer of accumulated refrigerant sensor operation hours

Save the accumulated operation hours of refrigerant sensor in remote controller (RC-EX3D or later) and transfer it to new I/F PCB. The service password must be entered during setting.

Tap the **[Menu]** button on the TOP screen and select **[Service setting]** ⇒ **[Service & Maintenance]** ⇒

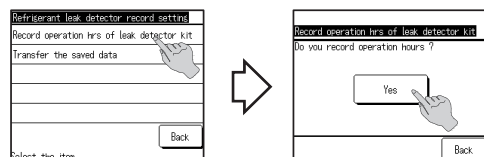
[Safety system maintenance] ⇒ **[Refrigerant leak detector record setting]**.

Specifications of following remote controller screen are subject to change without notice. For latest information, refer to the manual of remote controller.



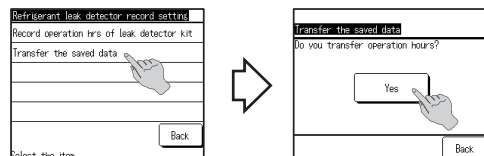
[When saving accumulated operation hours in remote controller]

Save it before replacing I/F PCB.



[When transferring accumulated operation hours saved in remote controller to I/F PCB]

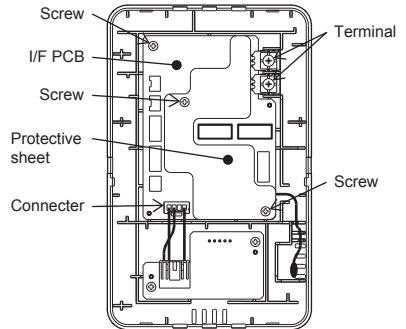
Transfer it after replacing I/F PCB.



I/F PCB replacement

When installing, removing or operating detector PCB, always turn off the power to the indoor unit. If it is turn on, it could cause electric shock, trouble or improper operation.

- ① Save accumulated operation hours of refrigerant sensor in remote controller.
- ② Remove the upper case.
Take care to protect wire connection terminals from undue load. It could damage terminals or PCB.
- ③ Disconnect wire terminals (2 pcs.) and connector on the I/F PCB.
- ④ Remove I/F PCB fixing screws (3 pcs.) and take out I/F PCB from the upper case.
- ⑤ Install new I/F PCB on the upper case and fix it with screws (3 pcs.).
Install also the protection sheet.
- ⑥ Connect wire terminals on I/F PCB and connector securely. Unless it is connected correctly, it cannot detect refrigerant leak.
- ⑦ Install the upper case on the lower case.
- ⑧ Transfer the accumulated operation hours saved in remote controller to new I/F PCB.



10. Other

Switch operation

[Kinds of switch operation]

As the switch is operated, the detector operates accordingly.
Switch operation and detector operation are as follows.

	Normal mode (Dip SW1-4: OFF)	Inspection mode (Dip SW1-4: ON)	Remark
1 push	Alarm stop	Alarm stop	At refrigerant leak detection
	Operation (green), Error (red) flash stop	Operation (green), Error (red) flash stop	Near to refrigerant sensor replacement period
2 push	—	—	—
3 push	Alarm stop + Error (red) OFF	Alarm stop + Error (red) OFF	At refrigerant leak detection
1 hold-down	—	Accumulated refrigerant sensor operation hours reset	At refrigerant sensor replacement
2 hold-down	Connection check signal ON/OFF	—	At connection check for installation, inspection
3 hold-down	Refrigerant leak detector CPU reset	Refrigerant leak detector CPU reset	—

[Caution for switch operation]

Unless the switch is operated as follows, it does neither recognize the switch operation nor operate as intended.
Take care.

- ① When it is pushed twice or three times, push interval less than 1 second.
If it is longer than 1 second, it recognizes less than intended number of times.
- ② When holding down, one hold-down needs to be 3 seconds or more.
If one push of switch is less than 3 seconds, it is not recognized as a hold-down but as normal push.
- ③ After pushing the switch, the detector starts each operation when hand is released from the switch.
If the switch is pushed continuously, the detector does not start each operation.
Other devices than detector start operation 10 and few second after releasing hand from switch at the maximum. It depends on communication condition with each device.

Detector control list

No.	Control	*1 Remote controller display code	Major start conditions	*2 Operation light (green)	Error light (red)	*3 Alarm	*4 Switch 1 push
1	Normal	—	Power ON	ON	OFF	OFF	—
2	Refrigerant sensor replacement notice	M52	Every month after using the detector for 14 years and 6 months	3 flash (alternate)	3 flash (alternate)	OFF	Light OFF
3	Refrigerant sensor replacement guide	M51	When the detector has been used for 15 years	Continuous flash (alternate)	Continuous flash (alternate)	OFF	—
4	Leak detection	E23	When it exceeds the leak detect density.	OFF	Alarm flash	ON	Alarm OFF
5	Leak density increase	E23	When the density has become approx. 4 times of detection density.	OFF	Alarm flash	ON	—
6	Leak density decrease	E23	When it drops below the density as set with the remote controller.	OFF	5 flash (simultaneous)	Error (red) simultaneous ON	Alarm OFF
7	Buzzer sound volume setting	—	When the buzzer sound volume is set with the remote controller.	Course of events	Course of events	3 seconds ON	—
8	Safety measure equipment connection check	E23	When it is held down twice.	ON	Alarm flash	ON	Alarm OFF
9	Inspection mode	—	When SW1-4 is ON	Alarm flash	Course of events	Course of events	—
10	Accumulated operation time reset	—	When SW1-4 is ON and the switch is held down once.	Continuous flash	Course of events	Reset ON	—
11	No registration of indoor unit at power ON	—	When signal is not received for 10 minutes from indoor unit.	6 flash (simultaneous)	6 flash (simultaneous)	OFF	—
12	Excessive number of registered indoor units	E10	When more than 17 indoor units are connected.	3 flash (simultaneous)	3 flash (simultaneous)	OFF	—
13	Blown thermal sensor wire	E28	When the detection temperature drops below -50°C.	4 flash (simultaneous)	4 flash (simultaneous)	OFF	—
14	Defective refrigerant sensor	M11	When the output voltage of refrigerant sensor is 2.53V or more.	1 flash (Alternate)	1 flash (Alternate)	Error (red) simultaneous ON	Alarm OFF
15	Refrigerant sensor disconnection	M12	When the output voltage of refrigerant sensor is less than 0.05V.	2 flash (Alternate)	2 flash (Alternate)	Error (red) simultaneous ON	Alarm OFF
16	Communication error	M41	When it cannot communicate for 2 minutes with indoor unit.	5 flash (simultaneous)	5 flash (simultaneous)	OFF	—
17	Detector CPU reset	—	When it has been held down 3 times.	Reset flash (simultaneous)	Reset flash (simultaneous)	Reset ON	—
18	Alarm dedicated control	—	When SW2-2 is turned ON, SW2-3 is turned OFF and inputs are received from other device.	OFF	Alarm flash	ON	Alarm OFF

*1: Error code or maintenance code displayed on the remote controller

*2: Light flashes are as follows.

Alarm flash:	ON/OFF repeat 2 times per second.	Reset flash:	Short flash twice
Continuous flash:	ON/OFF once per second continues.	Simultaneous:	Operation (green) and Error (red) flash simultaneously.
n flash:	ON/OFF once per second repeats n times.	Alternate:	Operation (green) and Error (red) flash alternately.

*3: Alarm operations are as follows.

OFF:	Alarm stop	Simultaneous ON:	Alarm operates at light ON.
ON:	Alarm operates continuously.	3 seconds ON:	Alarm operates for 3 seconds.
Reset ON:	Beep		

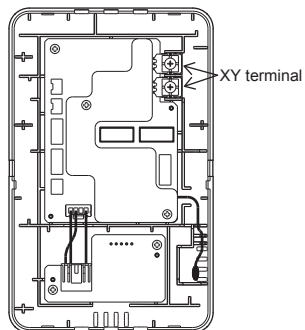
*4: The operation when the switch is pushed once during each trouble.

When the detector is not connected to indoor unit

When using detector without connecting to indoor unit such as when the detector is used only as a alarm, the power is not supplied.
In such occasion, connect DC18V to detector XY terminal.

About of temperature sensor

You can change IU main unit return air temperature sensor to the refrigerant leak detector side.
Regarding the setting method, refer to the Installation Manual of the remote controller (RC-EX3D or later).





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