IDEC HG2G Series Operator Interface Instruction Manual

INSTRUCTION SHEET
Operator Interface
MICRO/I™ HG2G Series

Contents

HG2G Series Operator Interface

Confirm that the delivered product is what you have ordered. Read this instruction sheet to make sure of correct

operation. Make sure that the instruction sheet is kept by the end user.

SAFETY PRECAUTIONS

In this operation instruction sheet, safety precautions are categorized in order of importance to Warning and Caution:

⚠ WARNING
Warning notices are used to emphasize that improper operation may cause severe personal injury or death.

⚠ CAUTION
Caution notices are used where inattention might cause personal injury or damage to equipment.

⚠ WARNING

- When using the HG2G in applications which require high reliability and safety, such as nuclear equipment, railways, aircraft, medical equipment, and vehicles, add a failsafe or backup functionality and verify an adequate level of safety using the product specifications.
- Turn off the power to the HG2G before installation, removal, wiring, maintenance, and inspection of the HG2G. Failure to turn power off may cause electrical shock or fire hazard.
- Special expertise is required to install, wire, configure, and operate the HG2G. People without such expertise must not use the HG2G.
- The HG2G uses an LCD (liquid crystal display) as a display device. The liquid inside the LCD is harmful to the skin. If the LCD is broken and the liquid attaches to your skin or clothes, wash the liquid off using soap, and consult a doctor immediately.
- Emergency and interlocking circuits must be configured outside the HG2G.
- Replace battery with UL recognized battery, model CR2032 only. Use of another battery may present a risk of fire or explosion. See instruction sheet for safety instructions.

⚠ CAUTION

- Install the HG2G according to the instructions in the Instruction Manual. Improper installation will result in falling, failure, electrical shock, fire hazard, or malfunction of the HG2G.
- The HG2G is designed for use in pollution degree 2. Use the HG2G in environments of pollution degree 2.
- The HG2G uses “PS2 of EN61131” as DC power supply.
- Prevent the HG2G from falling while moving or transporting, otherwise damage or malfunction of the HG2G will result.
- Prevent metal fragments or wire chips from dropping inside the HG2G housing. Ingress of such fragments and chips may cause fire hazard, damage, and malfunction.
- Use a power supply of the rated value. Using a wrong power supply may cause fire hazard.
- Use wire of a proper size to meet the voltage and current requirements.
- Use fuses or circuit protectors on the power line outside the HG2G.
- When exporting the HG2G to Europe, use an EN60127 (EC60127) approved fuse or an EU-approved circuit protector.
- Do not push hard or scratch the touch panel and protection sheet with a hard object such as a tool, because

they are damaged easily.

- Make sure of safety before starting and stopping the HG2G. Incorrect operation of the HG2G may cause mechanical damage or accidents.
- When disposing of the HG2G, do so as an industrial waste.

Package Content

Before installing the HG2G, make sure that the specifications of the product conform to your requirements, and that no parts are missing or damaged due to accidents during transportation.

- Main Unit (24VDC Type)

Display Device	Interface	Model No.
5.7-inch STN color LCD	RS232C, RS422/485	HG2G-SS22VF-□
	RS232C, RS422/485 & Ethernet	HG2G-SS22TF-□
5.7-inch STN monochrome LCD	RS232C, RS422/485	HG2G-SB22VF-□
	RS232C, RS422/485 & Ethernet	HG2G-SB22TF-□

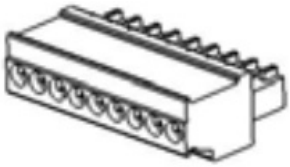
□ indicates the bezel color.

- Main Unit (12VDC Type)

Display Device	Interface	Model No.
5.7-inch STN color LCD	RS232C, RS422/485	HG2G-SS21VF-□
	RS232C, RS422/485 & Ethernet	HG2G-SS21TF-□
5.7-inch STN monochrome LCD	RS232C, RS422/485	HG2G-SB21VF-□
	RS232C, RS422/485 & Ethernet	HG2G-SB21TF-□

□ indicates the bezel color.

- Accessories

Mounting Clip (4)	
Host communication plug (1) (Attached to the Main Unit)	
Instruction Sheet (Japanese/English) [This manual] 1 each	

Type No. Development

HG2G-S#2$*F-%

# Display	S: STN color LCD B: STN monochrome LCD
$ Power supply	2: 24VDC 1: 12VDC
* Interface	V: RS232C, RS422/485 T: RS232C, RS422/485 & Ethernet
% Bezel color	W: Light gray B: Dark gray S: Silver

Specifications

Safety Standards	UL508, ANSI/ISA 12.12.01 CSA C22.2 No.142 CSA C22.2 No.213
	IEC/EN61131-2
EMC Standards	IEC/EN61131-2

Electrical Specifications	Rated Operating Voltage	HG2G-S#22*F-% : 24V DC HG2G-S#21*F-% : 12V DC
	Power Voltage Range	HG2G-S#22*F-% 85% to 120% of the rated voltage (24VDC) HG2G-S#21*F-% 85% to 150% of the rated voltage (12VDC) (including ripple)
	Power Consumption	10W maximum
	Allowable Momentary Power Interruption	10 ms maximum, Level: PS-2 (EC/EN61131)
	Inrush Current	HG2G-S#22*F-% : 20A maximum HG2G-S#21*F-% : 40A maximum

	Dielectric Strength	1000V AC, 10 mA, 1 minute (between power terminals and FG)
	Insulation Resistance	50 MO minimum (500V DC megger) (between power terminals and FG)
	Backup Battery	Built-in CR2032 lithium primary battery Standard replacement cycle: 5 years Guaranteed term: 1 year (at 25°C)
Environmental Specifications	Operating Ambient Temperature	0 to 50°C
	Operating Relative Humidity	10 to 90% RH (no condensation)
	Storage Ambient Temperature	-20 to 60°C
	Storage Relative Humidity	10 to90% RH (no condensation)
	Altitude	0 to 2000m (operation) 0 to 3000m (transportation) (IEC61131-2)
	Vibration Resistance (Damage Limits)	5 to 9 Hz, amplitude 3.5 mm 9 to 150 Hz, 9.8 m/s2 X, Y, Z directions for 10 cycles [100 minutes] (I EC60068-2-6)
	Shock Resistance (Damage Limits)	147 m/s2, 11 ms 5 shocks each in 3 axes (IEC60068-2-27)
	Pollution Degree	2 (IEC60664-1)
	Corrosion Immunity	Free from corrosive gases
Construction Specifications	Degree of Protection	P65 *1 TYPE 13 *2 (In the front of panel attachment)
	Terminal	Power supply terminal: M3 Tightening torque 0.5 to 0.6 N • m
	Dimensions	167.2 (W) x 134.7 (H) x 40.9 (D) mm
	Weight (Approx.)	500q
Noise Specifications	Electrostatic Discharge	ESD-3 (RH-1): Level 3 Contact ±6 kV / Air ± 8 kV (I EC/EN61000-4-2)
	Electromagnetic Field	AM80% 10 V/m 80 MHz to 1000 MHz 3 V/m 1.4 GHz to 2.0 GHz 1 V/m 2.0 GHz to 2.7 GHz (I EC/EN61000-4-3)
	Fast Transient Burst Withstandability	Common mode: Level 3 Power supply: ±2 kV Communication line: ±1 kV (I EC/EN61000-4-4)

	Surge Immunity	HG2G-S#22*F-°/o: 500V between +24V-OV, 1kV between +24V-FG, OV-FG HG2G-S#21*F-%: 500V between +12V-OV, 1kV between +12V-FG, OV-FG (I EC/EN61000-4-5)
	Conducted Radio Frequency Immunity	0.15 to 80MHz 80%AM (1kHz) (IEC/EN61000-4-6)
	Radiated Emission	IEC/EN61000-6-4

*1 Protection degree of the front surface after mounting. Operation not guaranteed undercertain environments.
*2 Protection against certain types of oil materials are not guaranteed under Type 13.

Installation

Operating Environment

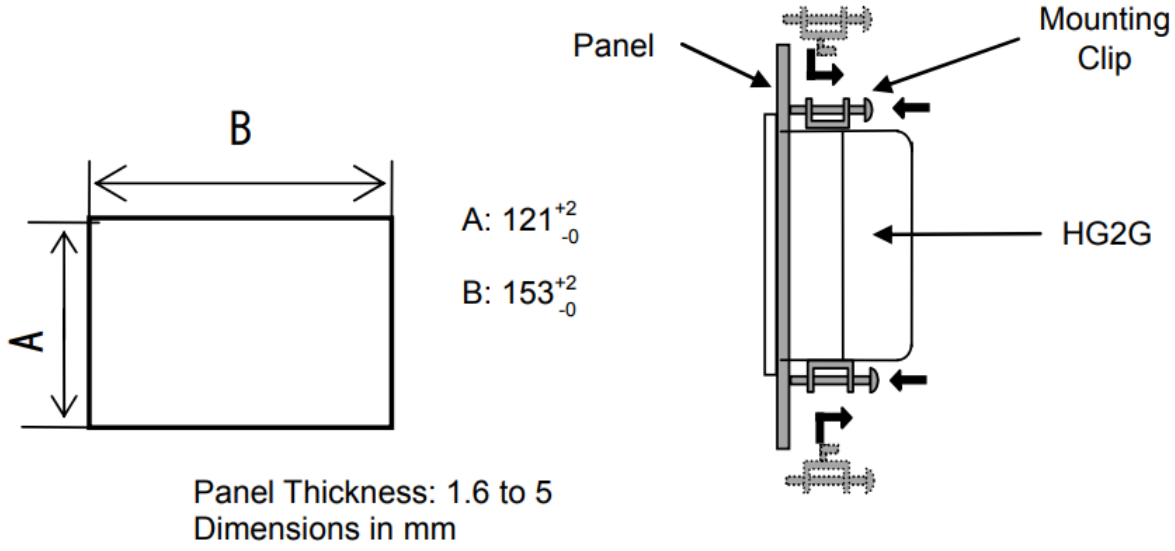
For designed performance and safety of the HG2G, do not install the HG2G in the following environments:

- Where dust, briny air, or iron particles exist.
- Where oil or chemical splashes for a long time.
- Where oil mist is filled.
- Where direct sunlight falls on the HG2G.
- Where strong ultraviolet rays fall on the HG2G.
- Where corrosive or combustible gasses exist.
- Where the HG2G is subjected to shocks or vibrations.
- Where condensation occurs due to rapid temperature change.
- Where high-voltage or arc-generating equipment (electromagnetic contactors or circuit protectors) exists in the vicinity.

Ambient Temperature

- The HG2G is designed to install on a vertical plane so that natural air-cooling is provided.
  Keep as much space as possible around the HG2G. Allow 100mm minimum clearance above and below the HG2G.
- Do not install the HG2G where the ambient temperature exceeds the rated operating ambient temperature range. When mounting the HG2G in such locations, provide a forced air-cooling fan or air-conditioner to keep the ambient temperature within the rated temperature range.

Panel Cut-out Dimensions



Place the HG2G in a panel cut-out and fasten with the attached mounting clips at four places to a specified torque of 0.12 to 0.17 N m uniformly.
Do not tighten excessively, otherwise the HG2G may warp and cause wrinkle on the display, or impair the waterproof characteristics.

CAUTION

- If the mounting clips are tightened obliquely to the panel, the HG2G may fall off the panel.
- When installing the HG2G into a panel cut-out, make sure that the gasket is not twisted.Especially when re-installing, take special care because any twists in the gasket will impathe waterproof characteristics.

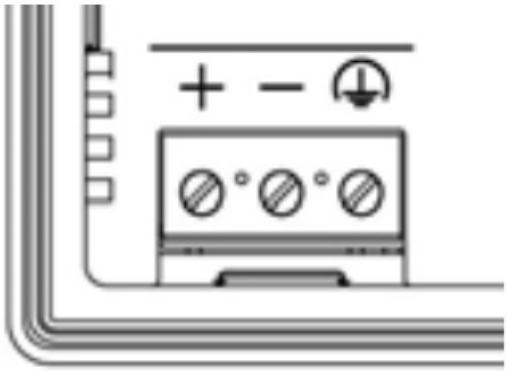
Notes for Operation

- The screen becomes blank when the backlight is burnt out; however, the touch panel remains enabled. Incorrect touch panel operation will occur when operating the touch panel when the backlight appears to be turned off but is actually burnt out. Note that this erroneous operation may result in damage.
- At temperatures over the rated operating temperature, the clock accuracy is affected. Adjust the clock before use.
- For applications which require clock accuracy, adjust the clock periodically.
- When more than one button is pressed at the same time, due to the detection characteristics of an analog type touch panel, only the gravity center of the pressed area is sensed and the unit assumes that only one button is pressed. Thus, when more than one button is pressed simultaneously, the resulting operation is not guaranteed.
- Do not install the HG2G in areas subjected to strong ultraviolet rays, since ultraviolet rays may impair the quality of the LCD.
- Use WindO/I-NV2 version 4.10 or later for the 12V DC power type HG2G operator interfaces.
  If an older version of configuration software is used to download the system program, an incorrect product Type No.is displayed on the system information screen.

Wiring

- Turn off the power supply before wiring.
- Make the wiring as short as possible and run all wires as far away as possible from high-voltage and large-current cables. Follow all the procedures and precautions when
  wiring the HG2G.

● Power Supply Terminals
Pin assignment is shown in the following table.



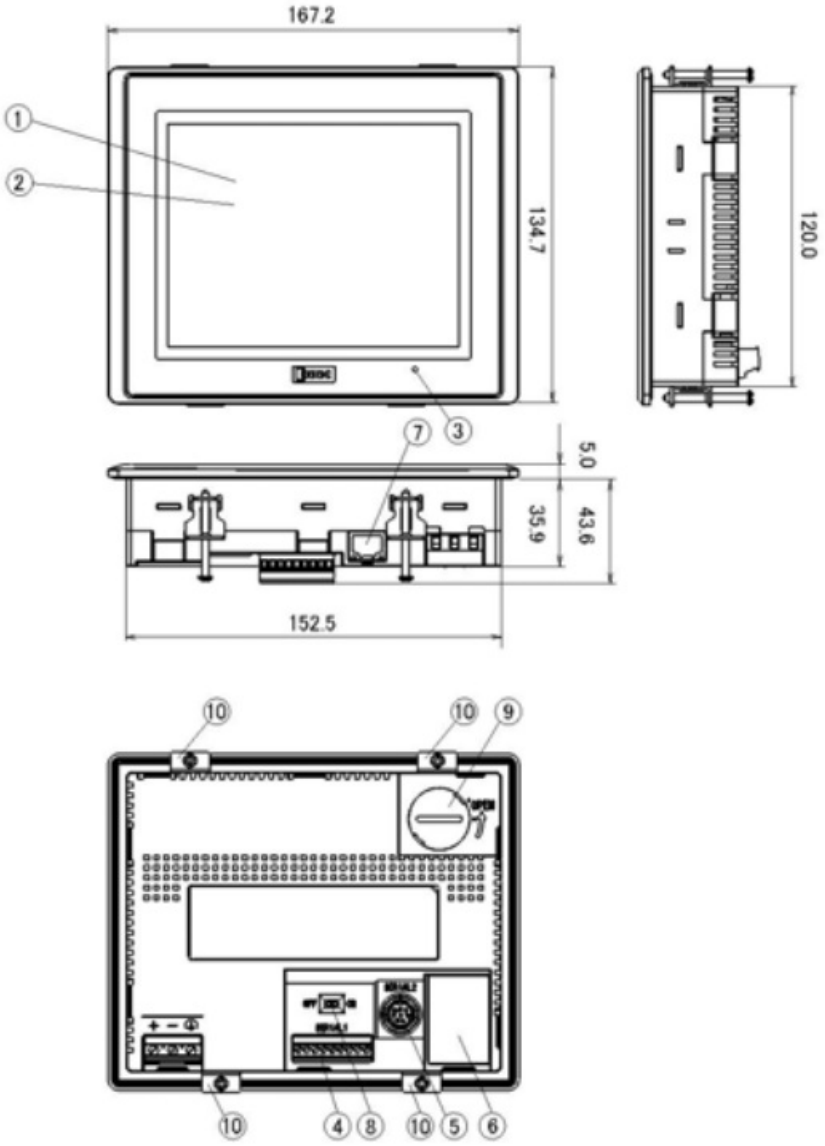
+	Power supply HG2G-S#22*F-% : 24V DC HG2G-S#21*F-% : 12V DC
–	Power supply 0V
⏚	Functional Earth

- Use applicable cables for wiring and recommended ferrules (made by Phoenix Contact) as follows:

Applicable cable	AWG18 to AWG22
Recommended Pressure Terminal	AI 0,34-8 TQ AI 0,5-8 WH AI 0,75-8 GY AI 1-8 RD AI-TWIN 2 x 0,5-8 WH AI-TWIN 2 x 0,75-8 GY AI-TWIN 2 x 1-8 RD
Tightening Torque	0.5 to 0.6 N m

- For power supply wiring, twist the wires as close as possible and make the power supply wiring as short as possible.
- Separate the HG2G power supply wiring from the power lines of I/O devices and motor equipment.
- Ground the functional ground terminal to make sure of correct operation.
- HG2G operator interfaces operate on 12 or 24V DC depending on the model. Make sure that the correct voltage is supplied to the HG operator interface.

Dimensions



All Dimensions in mm

1	Display (5.7 inch STN LCD)
2	Touch Panel (Analog resistance membrane method)
3	Status LED
4	Serial Interface 1
5	Serial Interface 2
6	O/I Link Interface
7	Ethernet Interface
8	Terminating Resistor Selector SW (for RS422/485 interface)
9	Battery Holder Cover
10	Mounting Clip Position
11	Gasket

CAUTION

- Make sure to turn off the power to the HG2G before attaching the O/I link unit or replacing the internal battery. Do not touch the printed circuit board in the HG2G and other devices.
  Otherwise, failure of the HG2G and other devices may be caused.
- Hold the connector when disconnecting the maintenance cable from serial interface 2. Do not pull the maintenance cable.

Interface

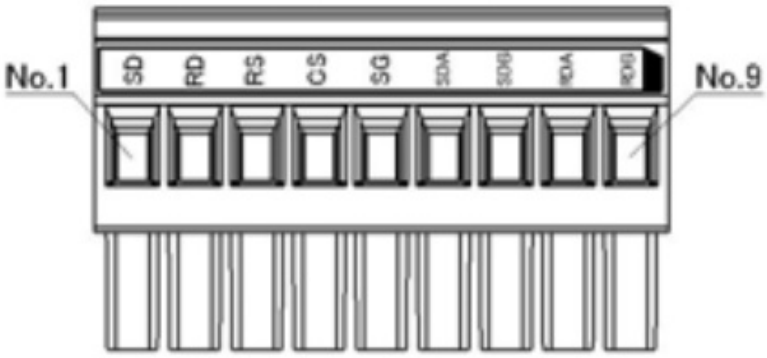
CAUTION

- Make sure to turn off the power to the HG2G before wiring each interface or switching the terminating resistor selector SW.

●Serial interface 1
Serial interface 1 is used for host communication (RS232C or RS422/485).

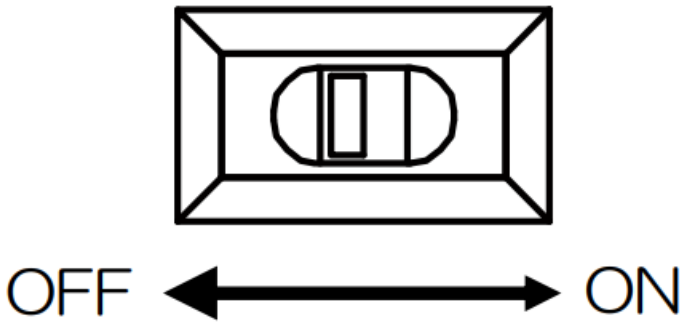
- Use applicable cables for wiring.

Applicable cable	AWG20 to AWG22
Recommended Pressure Terminal	AI 0,34-8 TQ AI 0,5-8 WH AI-TW N 2 x 0,5-8 WH (Phoenix Contact)
Tightening Torque	0 22 to 0.25 N m



No.	Name	I/O	Function	Communication type	
1	SD	OUT	Send Data	RS232C	
2	RD	N	Receive Data		
3	RS	OUT	Request to Send		
4	CS	N	Clear to Send		
5	SG	–	Signal Ground		RS422/485
6	SDA	OUT	Send Data (+)		
7	SDB	OUT	Send Data (-)		
8	RDA	N	Receive Data (+)		
9	RDB	N	Receive Data (-)		

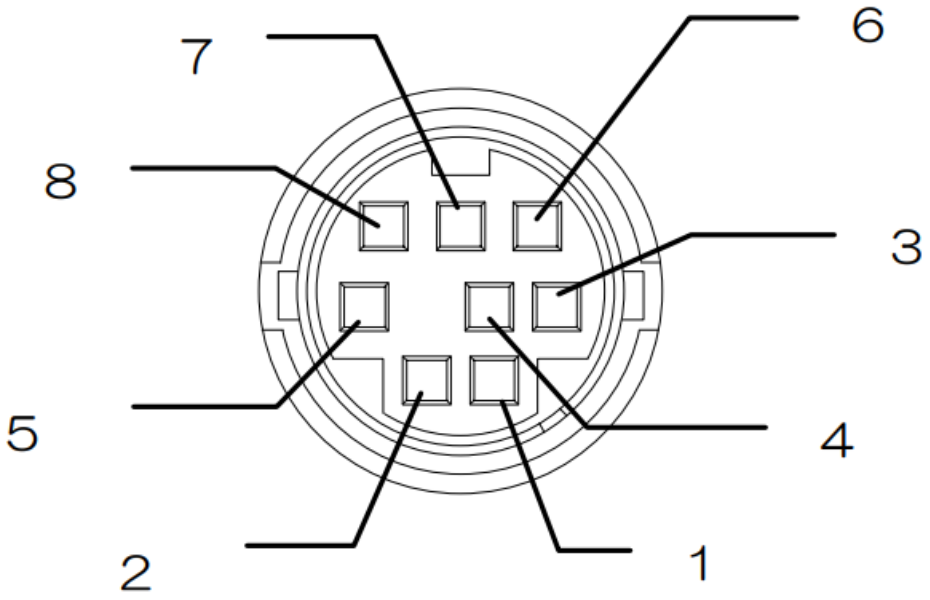
- Note that only one of the RS232C or RS422/485 interfaces can be used at one time.
- Wiring both interfaces will result in failure of the HG2G. Wire only the interface used.
- Terminating Resistor Selector Switch (for RS422/485 interface)



When using RS422/485 interface, set the Terminating Resistor Selector SW to the ON side.
This will connect the internal terminating resistor (100Ω) between RDA and RDB.

- Serial interface 2

  Serial interface 2 is used for maintenance communication (RS232C).



No.	Name	I/O	Function
1	RS	OUT	Request to Send
2	ER	OUT	Data Terminal Ready
3	SD	OUT	Send Data
4	RD	N	Receive Data
5	DR	N	Data Set Ready
6	EN	N	Cable Recognition
7	SG	–	Signal Ground
8	NC	–	No Connection

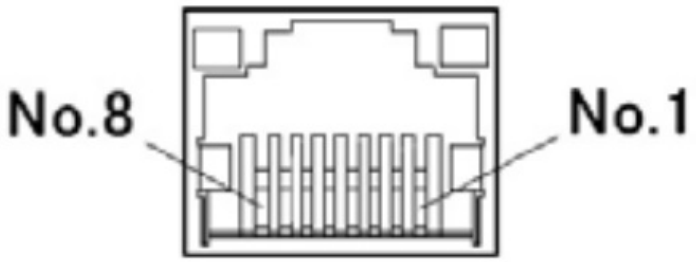
Do not connect pin 6 (EN) with any other pins except when performing maintenance communications for downloading project data.

- O/I Link interface (Option)

Method	Dedicated Interface to O/I Link Unit
Connector	Dedicated connector

The HG2G Operator Interface can be connected to an O/I Link Unit for 1:N communication with a PLC. This allows high-speed communication with the PLC host.

●Ethernet interface
EEE802.3 standard compliant (10/100Base-T)



No.	Name	/0	Function
1	TPO+	OUT	Send Data (+)
2	TPO-	OUT	Send Data (-)
3	TPI+	IN	Receive Data (+)
4	NC	–	No Connection
5	NC	–	No Connection
6	TPI-	IN	Receive Data (-)
7	NC	–	No Connection
8	NC	–	No Connection

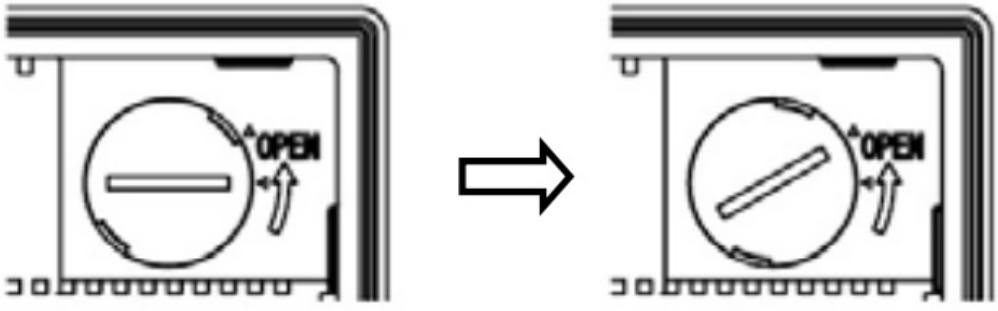
Replacing the Backlight

The HG2G's backlight cannot be replaced by the customer. When the backlight needs to be replaced, Contact IDEC.

Replacing the Backup Battery

A backup battery is built into the HG2G to retain the internal backup data (log data, keep resister, and keep relay) and clock data.
When the "Replace the battery" message is displayed, replace the backup battery by following the procedure below.
When the "Battery level LOW" message is displayed, replace the battery immediately; otherwise, the backup data and clock data may be lost.
Whether or not to display the reminder message for battery replacement can be specified with the configuration software. Refer to the Instruction Manual for details.

1. Turn off the power to the HG2G and disconnect the cable.
2. Remove the battery holder cover.

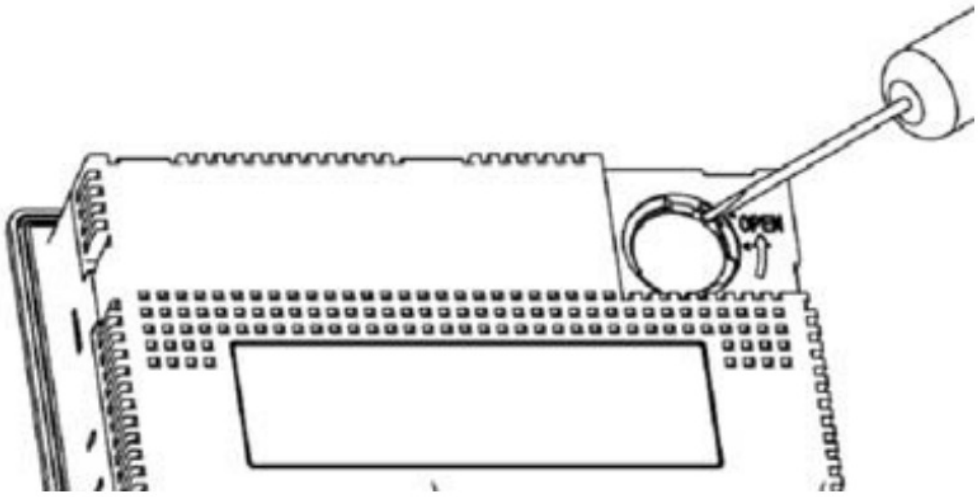


3. Turn on the power to the HG2G, wait for approximately one minute, and then turn off the power again.

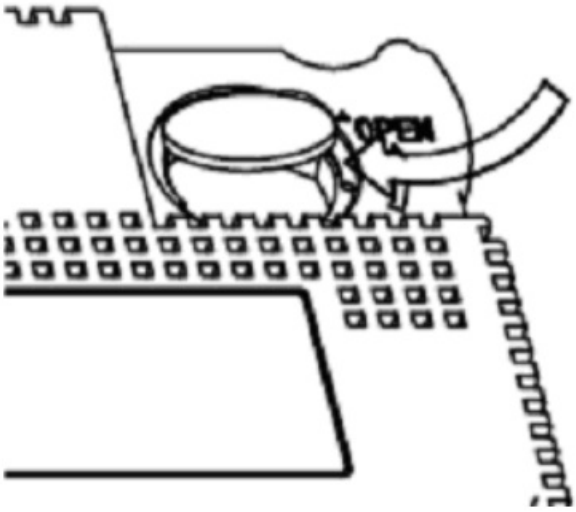
• After turning off the power to the HG2G in step (3), complete the steps through (5) within 30 seconds to replace the battery without losing the backup data and clock data. However, it is recommended that the backup data be transferred to flash memory as a precautionary measure.

For the procedure to transfer the data to flash memory, refer to the Instruction Manual. If it is not necessary to save the data, step (3) can be skipped.

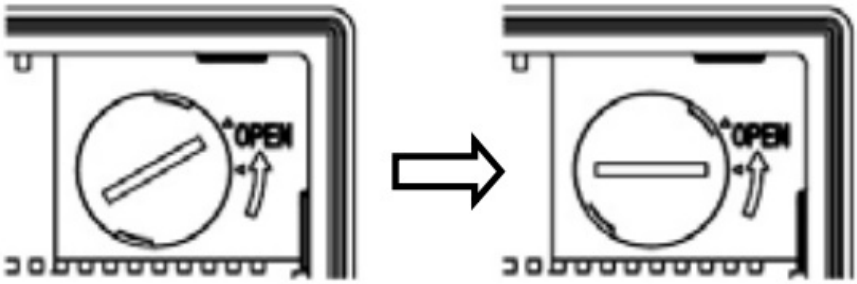
4. Insert a flathead screwdriver into the battery holder as shown in the figure, and remove the battery. The battery may pop out from the battery holder.



5. Put a new replacement battery into the battery holder.



6. Replace the battery holder cover into the original position. Replace the battery holder cover on the HG2G, and turn it clockwise to lock the cover.



• The operating life of the internal battery is approximately five years. It is recommended to replace the battery every five years even before the reminder message for battery replacement is displayed.

IDEC provides replacement service for the battery (at customer's expense). Contact IDEC.

WARNING

The battery may be regulated by national or local regulation. Observe the instructions of proper regulation. As electric capacity is left in a discarded battery and it comes into contact with other metals, it could lead to distortion, leakage, overheating, or explosion, so make sure to cover the (+) and (-) terminals with insulating tape before disposal.

CAUTION

When replacing the battery, use the specified battery only. Note that any problems and failures arising from or in connection with the use of a battery other than the specified battery is not guaranteed.

Handling of Batteries and Devices with Built-in Batteries in EU Member States

Note) The following symbol mark is for EU countries only.

This symbol mark means that batteries and accumulators, at their end-of life, should be disposed of separately from your household waste.

If a chemical symbol is printed beneath the symbol shown above, this chemical symbol means that the battery or accumulator contains a heavy metal at a certain concentration. This will be indicated as follows :

Hg : mercury (0.0005%), Cd : cadmium (0.002%), Pd : lead (0.004%)

In the European Union there are separate collection systems for used batteries and accumulators.

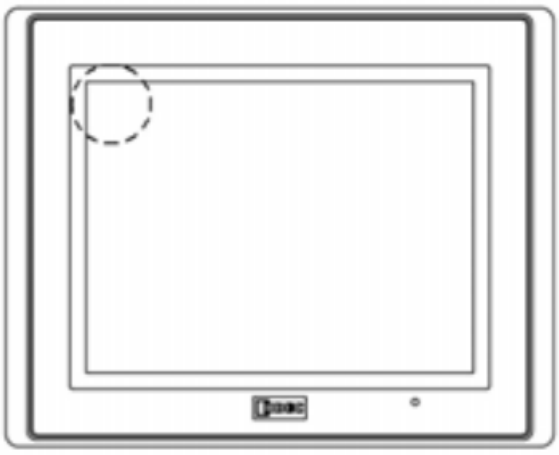
Please dispose of batteries and accumulators correctly in accordance with each country or local regulation.

Adjusting the Contrast

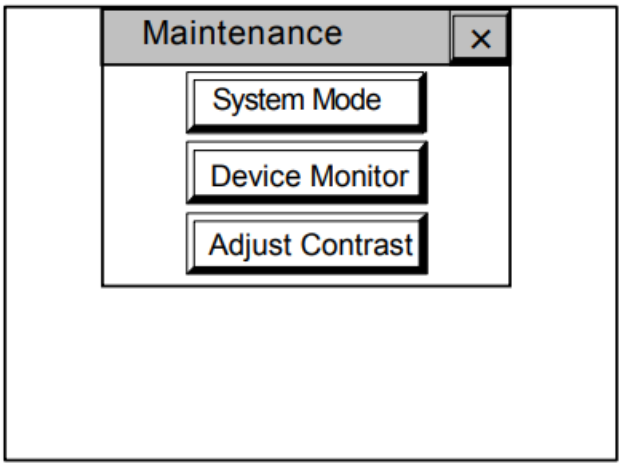
The contrast of the HG2G display can be adjusted on the Adjust Contrast Screen. Adjust the contrast to the best condition as required. To ensure the best contrast, adjust the contrast approximately 10 minutes after turning on the power.

Permission to show the Maintenance Screen can be set using the configuration software. Refer to the Instruction Manual for details.

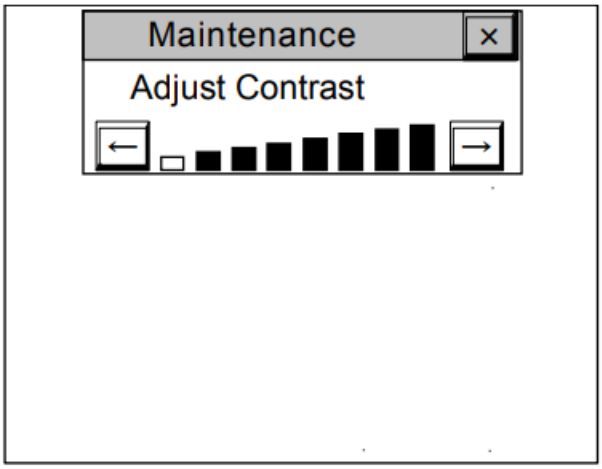
1. Turn on the power to the HG2G, then press and hold the touch panel on the upper-left corner of the screen for three seconds or longer. The Maintenance Screen appears on the screen.



2. Press the **Adjust Contrast** at the bottom of the Maintenance Screen. The Adjust Contrast Screen appears.



3. Press the ← or → at the bottom the Adjust Contrast Screen to adjust the contrast to the optimal setting.



4. Press the X to close the Adjust Contrast Screen.

   The Maintenance Screen is not displayed in System Mode. To adjust the contrast in System Mode, use the << and >> buttons located at the bottom of the top page.

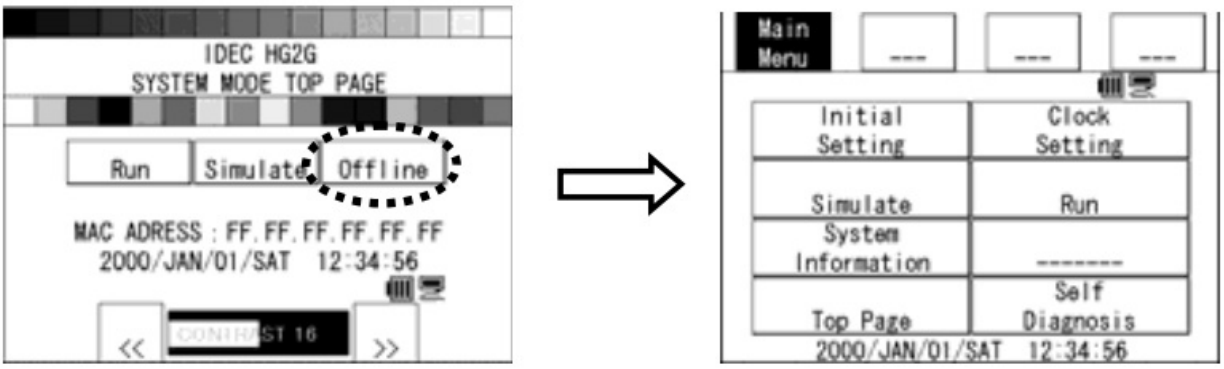
Adjusting the Touch Panel

A gap may be caused in the operation accuracy of the touch panel by the secular distortion, etc.
Readjust the touch panel according to the following procedure when there is a gap in the operation of the touch panel.

●Touch panel adjustment procedure

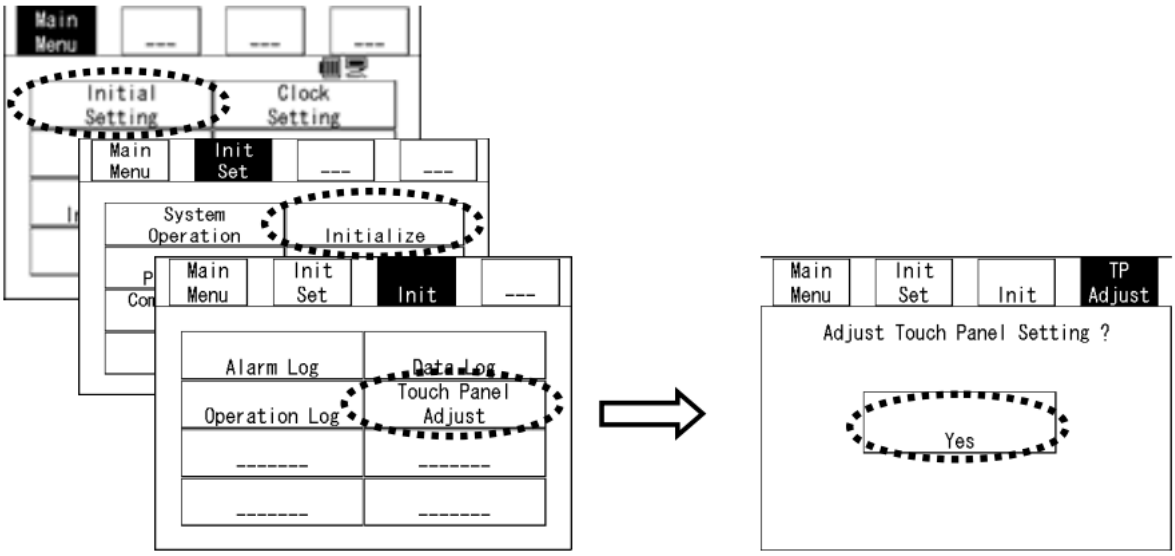
1. Press the System Mode at the top of the Maintenance Screen. The Top page Screen appears.

   Press the Offline , then the Main Menu Screen appears.



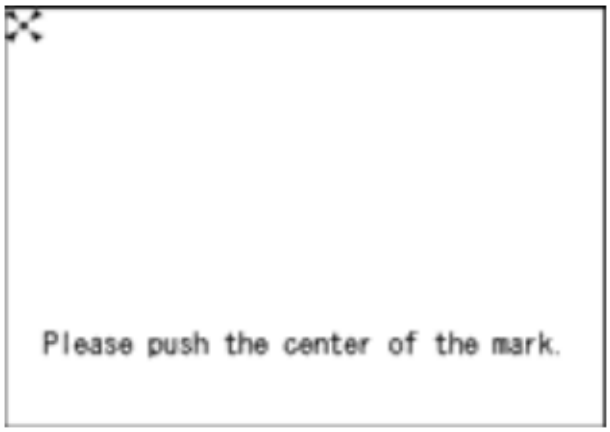
2. Press in order of Initial Setting → Initialize → Touch Panel Adjust . The confirmation screen appears and asks “Adjust Touch Panel setting?”

   Press the Yes. , then the Touch Panel Adjust screen appears.



3. Press the center of the X mark, then the position of the mark changes one after another.

   Press five marks sequentially.



4. When normally recognized, the confirmation screen of (2) is restored.

   At procedure (3), when pressing a point away from the center of the X mark, a recognition error will result. Then the X mark returns to the initial position, then repeat the procedure of(3) again.

Maintenance and Inspection

Maintain and inspect the HG2G periodically to ensure the best performance. Do not disassemble, repair, or modify the HG2G during inspection.

- Wipe any stain off the display using a soft cloth slightly dampened with neutral detergent or alcoholic solvent. Do not use solvents such as thinner, ammonia, strong acid, and strong alkaline.
- Check the terminals and connectors to make sure of no loose screws, incomplete insertion, or disconnected lines.
- Make sure that all mounting clips and screws are tightened sufficiently. If the mounting clips are loose, tighten the screw to the recommended tightening torque.

IDEC CORPORATION

Manufacturer: DEC CORP.
2-6-64 Nishimiyahara Yodogawa-ku, Osaka 532-0004, Japan
EU Authorized Representative: IDEC Elektrotechnik GmbH
Heselstuecken 8, 22453 Hamburg, Germany
http://www.idec.com

Documents / Resources

	IDEC HG2G Series Operator Interface [pdf] Instruction Manual HG2G Series Operator Interface, HG2G Series, Operator Interface, Interface

References

- IDEC Corporation Global | To create the optimum environment for humans and machines
- User Manual