

INSTRUCTION SHEET

Operator Interface
MICRO/I™ HG2G Series

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

- The HG2G is not intended to be used for applications which require high reliability and safety, such as medical equipment, nuclear equipment, railways, aircraft, and vehicles. The HG2G cannot be used for these applications.
- For other applications which require high reliability in function and precision, provide a failsafe design and redundant design for the entire system including the HG2G.
- 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.

CAUTION

- Install the HG2G according to the instructions in the User's 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 (IEC60127) 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.

1 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

Display Device	Interface	Model No.
5.7-inch TFT color LCD	RS-232C/485(422)	HG2G-5ST22VF-%
	RS-232C/485(422) & Ethernet	HG2G-5ST22TF-%

% 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	

2 Type No. Development

HG2G-5ST22*F-%

* Interface V: RS-232C/485(422)
T: RS-232C/485(422) & Ethernet

% Bezel color W: Light gray
B: Dark gray
S: Silver

3 Specifications

Safety Standards	UL508, CSA C22.2 No.142 (c-UL)
EMC Standards	IEC/EN61131-2 :2007

Electrical Specifications	Rated Operating Voltage	12V DC / 24V DC
	Power Voltage Range	12VDC to 28.8VDC (including ripple)
	Power Consumption	8W maximum
	Allowable Momentary Power Interruption	10 ms maximum, Level: PS-2 (IEC/EN61131)
	Inrush Current	40A maximum
	Dielectric Strength	500V AC, 10 mA, 1 minute (between power terminals and FG)
	Insulation Resistance	50 MΩ minimum (500V DC megger) (between power terminals and FG)
	Backup Battery (Only HG2G-5ST22TF)	Built-in CR2032 lithium primary battery Standard replacement cycle: 4 years Guaranteed term: 1 year (at 25°C)
	Operating Ambient Temperature	0 to 50°C (no freezing)
	Operating Relative Humidity	10 to 90% RH (no condensation)
Environmental Specifications	Storage Ambient Temperature	-20 to 60°C (no freezing)
	Storage Relative Humidity	10 to 90% RH (no condensation)
	Altitude	0 to 2000m (operation) 0 to 3000m (transportation)
	Vibration Resistance (Damage Limits)	5 to 8.4 Hz, amplitude 3.5 mm 8.4 to 150 Hz, 9.8 m/s² X, Y, Z directions for 10 cycles [100 minutes] (IEC61131-2)
	Shock Resistance (Damage Limits)	147 m/s², 11 ms 5 shocks each in 3 axes (IEC61131-2)
	Pollution Degree	2
	Corrosion Immunity	Free from corrosive gases
Construction Specifications	Degree of Protection (In the front of panel attachment.)	IP66
	Dimensions	167.2 (W) × 134.7 (H) × 40.9 (D) mm
	Weight (Approx.)	500g
Noise Specifications	Electrostatic Discharge	ESD-3 (RH-1) : Level 3 Contact ±6 kV / Air ± 8 kV
	Electromagnetic Field	80% AM (1kHz) 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
	Fast Transient Burst Withstandability	Common mode: Level 3 Power supply: ±2 kV Communication line: ±1 kV
	Surge Immunity	500V between 12 / 24V - 0V 1kV between 12 / 24V - FG, 0V - FG
	Conducted Radio Frequency Immunity	0.15 to 80MHz 80%AM (1kHz) 3V (Power, Communication cable)
	Radiated Emission	Class A : 10m 40dB μV/m quasi-peak (30M to 230MHz)
		47dB μV/m quasi-peak (230M to 1GHz)

4 Installation

● Operating Environment

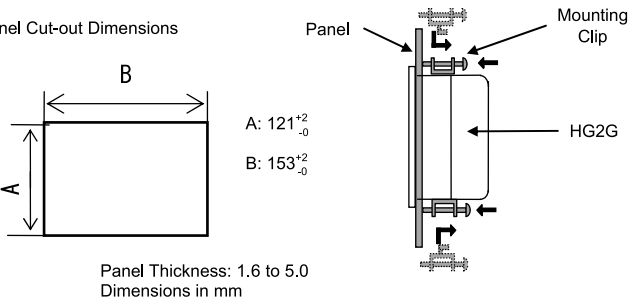
For designed performance and safety of the HG2G, do not install the HG2G in the following environments:

- 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 of the top and bottom side to a specified torque of 0.2 to 0.3 N·m uniformly. Do not tighten excessively, otherwise the HG2G may warp and cause wrinkle on the display, or impair the waterproof characteristics. The HG2G has the mounting clip positions not only on the top and bottom side but also on the left and right side. But when fasten with the attached mounting clips at the left and right side, the HG2G may impair the waterproof, the vibration resistance, and the shock resistance 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 impair the waterproof characteristics.

5 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.

6 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 12V DC / 24V DC
-	Power supply 0V
	Functional Earth

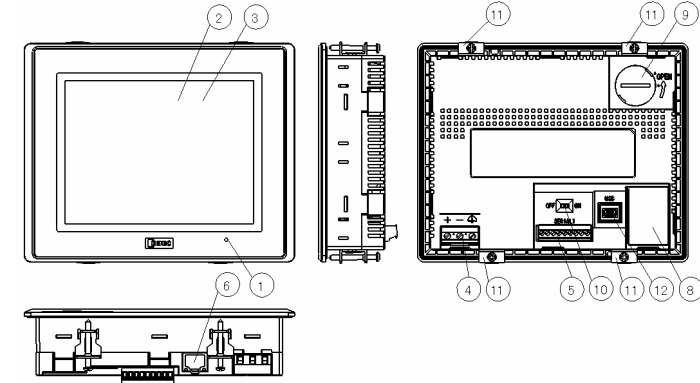
- Use applicable cables for wiring and recommended ferrules (made by Phoenix Contact) as follows:

Applicable cable	AWG 18 to 22
Recommended Pressure Terminal	Al 0.34-6 TQ
	Al 0.5-8 WH
	Al 0.75-8GY
	Al 1-8 RD
	Al-TWIN 2x0.5-8WH (TWIN Pressure Terminal)

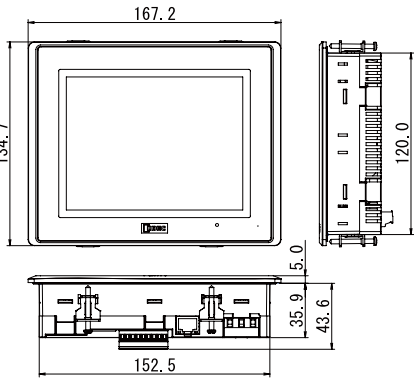
- Tighten the screws to a torque of 0.5 N·m to 0.6 N·m.
- For power supply wiring, twist the wires as close as possible and make the power supply wiring as short as possible.
- Separate the HG2G power supply wiring from the power lines of I/O devices and motor equipment.
- Ground the functional ground terminal to make sure of correct operation.

7 Dimensions

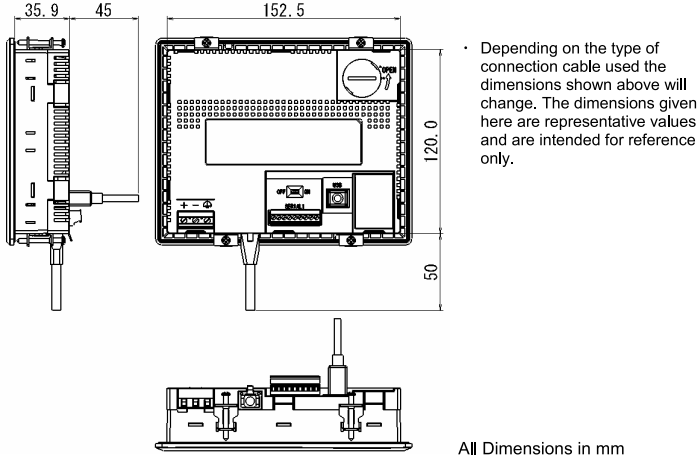
● Part Names



● Dimensions



● Cable Attached Dimensions



- Depending on the type of connection cable used the dimensions shown above will change. The dimensions given here are representative values and are intended for reference only.

All Dimensions in mm

①	POWER LED
②	Display (5.7 inch TFT Color LCD)
③	Touch Panel (Analog resistance membrane method)
④	Power Supply Terminal
⑤	Serial Interface 1
⑥	Ethernet Interface (Only HG2G-5ST22TF)
⑧	O/I Link Interface
⑨	Battery Holder Cover (Only HG2G-5ST22TF)
⑩	Terminating Resistor Selector SW (for RS-485(422) interface)
⑪	Mounting Clip Position
⑫	USB Interface USB2.0 (Device) Connector : Mini-B

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.
- When connecting the HG2G to a personal computer via the USB interface, the HG2G or the personal computer may break down depending on the conditions of the personal computer. Make sure of the following cautions, in order to prevent an accident.
 - If the personal computer has a 3-pin power plug or power plug with a ground lead type, make sure to use a plug socket including a ground input electrode or ground the earth lead, respectively.
 - If the personal computer has a 2-pin power plug without ground lead, follow the procedure below when connect the HG2G to the personal computer.
 - (1) Pull out the power plug of the personal computer from the AC outlet.
 - (2) Connect the HG2G to the personal computer.
 - (3) Insert the power plug of the personal computer into the AC outlet.

8 Interface

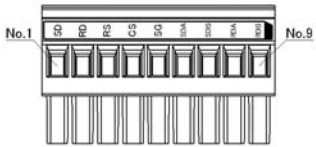
CAUTION

- 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 (RS-232C or RS-485(422)).

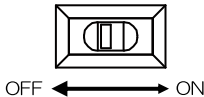
- Use applicable cables for wiring.
Applicable cable: AWG 16 to 28
Tightening Torque: 0.22 to 0.25 N·m



No.	Name	I/O	Function	Communication type	
1	SD	OUT	Send Data	RS-232C	
2	RD	IN	Receive Data		
3	RS	OUT	Request to Send		
4	CS	IN	Clear to Send		
5	SG	-	Signal Ground		
6	SDA	OUT	Send Data (+)		RS-485 (422)
7	SDB	OUT	Send Data (-)		
8	RDA	IN	Receive Data (+)		
9	RDB	IN	Receive Data (-)		

- Note that only one of the RS-232C or RS-485(422) 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 RS-485(422) interface)



When using RS-485 (422) interface, set the Terminating Resistor Selector SW to the ON side. This will connect the internal terminating resistor (100Ω) between RDA and RDB.

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.

9 Replacing the Backlight

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

10 Replacing the Backup Battery

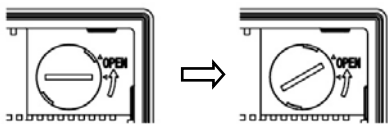
A backup battery is built into the HG2G-5ST22TF to retain the internal backup data (log data, keep resistor, and keep relay) and clock data.

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 User's Manual for details.

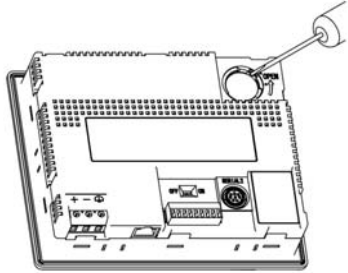
- Turn off the power to the HG2G and disconnect the cable.
- Remove the battery holder cover.



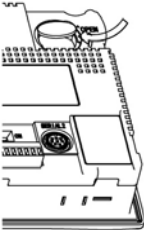
- Turn on the power to the HG2G, wait for approximately one minute, and then turn off the power again.

- 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 User's Manual. If it is not necessary to save the data, step (3) can be skipped.

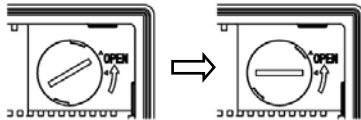
- Insert a flathead screwdriver into the battery holder as shown in the figure, and remove the battery. The battery may pop out from the battery holder.



- Put a new replacement battery into the battery holder.



- 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 four years. It is recommended to replace the battery every four years even before the reminder message for battery replacement is displayed.

IDEC provides replacement service for the battery (at customer's expense). Contact IDEC. The HG2G-5ST22VF does not have a backup battery. When turn off the power to the HG2G-5ST22VF, the internal clock data is lost and returns to the default. The HG2G-5ST22VF retains the internal log data, keep resistor, and keep relay during operation, but when turning off the power or the operation mode is changed, those data will be lost. So it is recommended that the internal keep resistor, keep relay, and brightness data be transferred to flash memory. For the procedure to transfer the data to flash memory, refer to the User's Manual.

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 and is according to the directive 2006/66/EC Article 20 information for end-users and Annex II.



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.

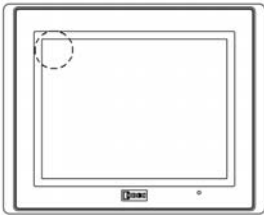
Please dispose of batteries and accumulators correctly in accordance with each country or local regulation.

11 Adjusting the Brightness

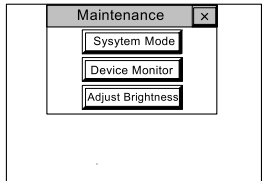
The brightness of the HG2G display can be adjusted on the Adjust Brightness Screen. Adjust the brightness to the best condition as required.

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

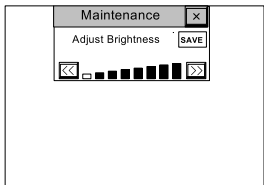
- Turn on the power to the HG2G, then press and hold the touch panel on the upper-left corner of the screen for three seconds or longer. The Maintenance Screen appears on the screen.



- Press the **Adjust Brightness** at the bottom of the Maintenance Screen. The Adjust Brightness Screen appears.



- Press the **←** and **→** at the bottom of the Adjust Brightness Screen to adjust the brightness to the optimal setting. The HG2G-5ST22VF does not have a backup battery, but the brightness is retained by pressing the **SAVE** button after the adjustment of the brightness.



- Press the **X** to close the Adjust Brightness Screen.

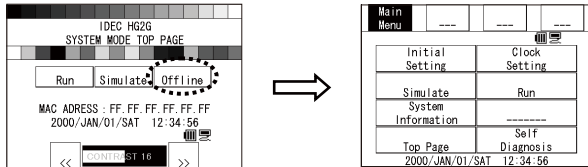
The Maintenance Screen is not displayed in System Mode. To adjust the brightness in System Mode, use the **←** and **→** buttons located at the bottom of the top page. The HG2G-5ST22VF retains the brightness by pressing the **SAVE** button located at the bottom right of the top page.

12 Adjusting the Touch Panel

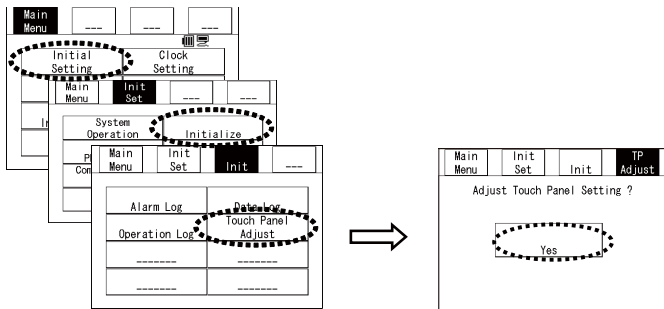
A gap may be caused in the operation accuracy of the touch panel by the secular distortion, etc. Readjust the touch panel according to the following procedure when there is a gap in the operation of the touch panel.

Touch panel adjustment procedure

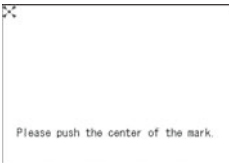
- Press the **System Mode** at the top of the Maintenance Screen. The Top page Screen appears. Press the **Offline**, then the Main Menu Screen appears.



- 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.



- Press the center of the **X** mark, then the position of the mark changes one after another. Press five marks sequentially.



- When normally recognized, the confirmation screen of (2) is restored. At procedure (2), 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.

13 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.

14 Option

The following products are available as options for the HG2G. Order the items as required.

Name	Description	Type No.
Configuration Software	Automation Organizer	SW1A-W1C
User's Manual	"WindO/I-NV2" Manual (Japanese)	HG9Y-B1118
	"WindO/I-NV2" Manual (English)	HG9Y-B1119
PLC Connecting Cable	For IDEC · ONC, MicroSmart, Mitsubishi FX series, etc. 5m length	HG9Z-XC275
	For IDEC · ONC, MicroSmart, Mitsubishi FX series, etc. 2.4m length	FC2A-KP1C
USB Maintenance Cable	USB Cable to connect to a computer Length: 2m <Connector> HG: USB Mini-B Host: USB TYPE A	HG9Z-XCM42
USB Panel Attaching Cable (for USB Mini-B)	Extension cable for attaching to USB port on front panel Length: 1m	HG9Z-XCE21
O/I Link Unit	Dedicated communication unit	HG9Z-2G1
Mounting Clip	10 pieces per package	SLD-K02PN10
Protective Sheet	5-sheets per package *1	HG9Z-2D5PN05
Protective Cover	3-sheets per package To Cover the front of HG, and to protect Display	HG9Z-2E2PN03
Replacement Battery	Coin-type lithium primary battery CR2032	HG9Z-XR1
Host Communication Plug	1 piece	HG9Z-XT09V

- *1 This product has used a special material to filter out UV rays, however no warranty is given as to be installed in direct sunlight of outside.

CAUTION

- Use WindO/I-NV2 version 4.40 or later (Automation organizer version 1.60 or later.) Do not use an older version of WindO/I-NV2.
- The USB interface is used for maintenance communication on the HG2G. Select Serial for Port on the Communication Settings dialog box. Refer to the User's Manual for details.

IDEC CORPORATION

http://www.idec.com
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