

# HG Series



Excellent visibility by super-bright LED backlight even in well-lit surroundings.



Withstands harsh environments.

- See website for details on approvals and standards.



**HG5G-V**  
(15 inch)

Page **L-095**



**HG4G-V**  
(12.1 inch)

**L-097**



**HG3G-V**  
(10.4 inch)

**L-099**



**HG2G-V**  
(5.7 inch)

Page **L-101**



**HG2G-5T**  
(5.7 inch)

**L-103**



**HG1G**  
(4.3 inch)

**L-105**

# From large to small size For diverse applications

## Line up

### High-Performance Model

15  
inchVersion  
up  
12.1  
inchVersion  
up  
10.4  
inch

Part No.	HG5G-V	HG4G-V	HG3G-VA
Display Size	304.1 (W) × 228.1 (H) mm	245.8 (W) × 184.3 (H) mm	210.4 (W) × 157.8 (H) mm
Display	TFT color LCD	TFT color LCD	TFT color LCD
Color / Shade	65,536 colors	65,536 colors	65,536 colors
Resolution	1024 (W) × 768 (H) pixels	1024 (W) × 768 (H) pixels	1024 (W) × 768 (H) pixels
View angle	Left/right/top/bottom: 85°	Left/right/top/bottom: 85°	Left/right/top/bottom: 85°

### High-Performance Model

Version  
up  
8.4  
inchVersion  
up  
5.7  
inch5.7  
inch4.3  
inch

Part No.	HG3G-V8	HG2G-V	HG2G-5T	HG1G
Display Size	170.5 (W) × 127.9 (H) mm	115.2 (W) × 86.4 (H) mm	115.2 (W) × 86.4 (H) mm	95.0 (W) × 53.8 (H) mm
Display	TFT color LCD	TFT color LCD	TFT monochrome LCD / TFT color LCD	TFT color LCD
Color / Shade	65,536 colors	65,536 colors	65,536 colors	65,536 colors
Resolution	1024 (W) × 768 (H) pixels	640 (W) × 480 (H) pixels	320 (W) × 240 (H) pixels	480 (W) × 272 (H) pixels
View angle	Left/right/top/bottom: 85°	Left/right/top/bottom: 80°	Left/right/top/bottom: 80° (color type)	Left/right: 70°, top: 60°, bottom 65°

### Basic Model

### Compact Model

APEM

Switches &  
Pilot Lights

Control Boxes

Emergency  
Stop SwitchesEnabling  
Switches

Safety Products

Explosion Proof

Terminal Blocks

Relays &amp; Sockets

Circuit  
Protectors

Power Supplies

LED Illumination

Controllers

Operator  
Interfaces

Sensors

AUTO-ID

Programmable  
Operator Interfaces  
Periphery  
Equipment

HG4G

HG4G

HG3G

HG2G

HG1G

# High performance IoT functionality for the manufacturing floor



## Email function

## Get notified via email

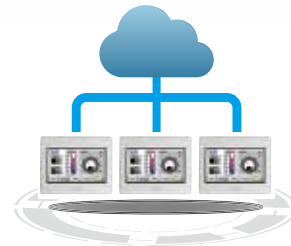
The data in the operator interface can be sent by CSV format or by screen shot. Email settings can be configured to meet the requirements of each customer.



## FTP server / client function

## Easy maintenance

FTP server function enables transfer of project data and helps utilize data log easily. Easy maintenance from remote locations.



## Web server function

## Confirm status of the system from a remote area

- The screen can be remotely monitored and operated from a PC, tablet, or smartphone.
- No special software required. Accessible using an internet browser.



Use a WEB PAGE EDITOR to create your original monitor page without knowledge of Java or HTML.

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HG3G

HG2G

HG1G

# Excellent environmental resistance

## Withstands harsh environments



### Wide Temperature range: -20 to +60°C

Suitable for use in a wide temperature range from cold to hot. (-20 to +55°C for HG1G)

### Waterproof / Oil resistant

(IP66F / IP67F / UL Type 4X, 12, and 13)

Touchscreens can be used on machines washed down by water such as food machines. Also suitable for use on food machines subject to oil spills. (HG2G-5T: IP66F protection only)

\*Operation not guaranteed when used with certain types of oils. See instructions on the back page.

### Long-life, high-performance LED backlight reduces maintenance time

48-level dimming control (\*1) reduces cost and allows for a wide range of uses. (HG5G-V: Brightness 500cd/m<sup>2</sup>, backlight life: 100,000 hours)

\*1) 32-level for HG2G-T and HG1G.

### Protection against UV rays

Strong plastic material used for protecting the screen. By using the optional protective sheet, UV protection is enhanced, and prevents degrading of the LCD (\*2).

\*2) UV protective material is used but operation is not guaranteed outdoors or under direct sunlight.

### Marine standards

LR, DNV-GL, ABS, ClassNK marine standards (\*3)

\*3) Except HG2G-5T, HG1G

### Rugged construction

Hard coating prevents damage to the screen.

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Periphery Equipment

HG4G

HG4G

HG3G

HG2G

HG1G



# A wide variety of functionality for users

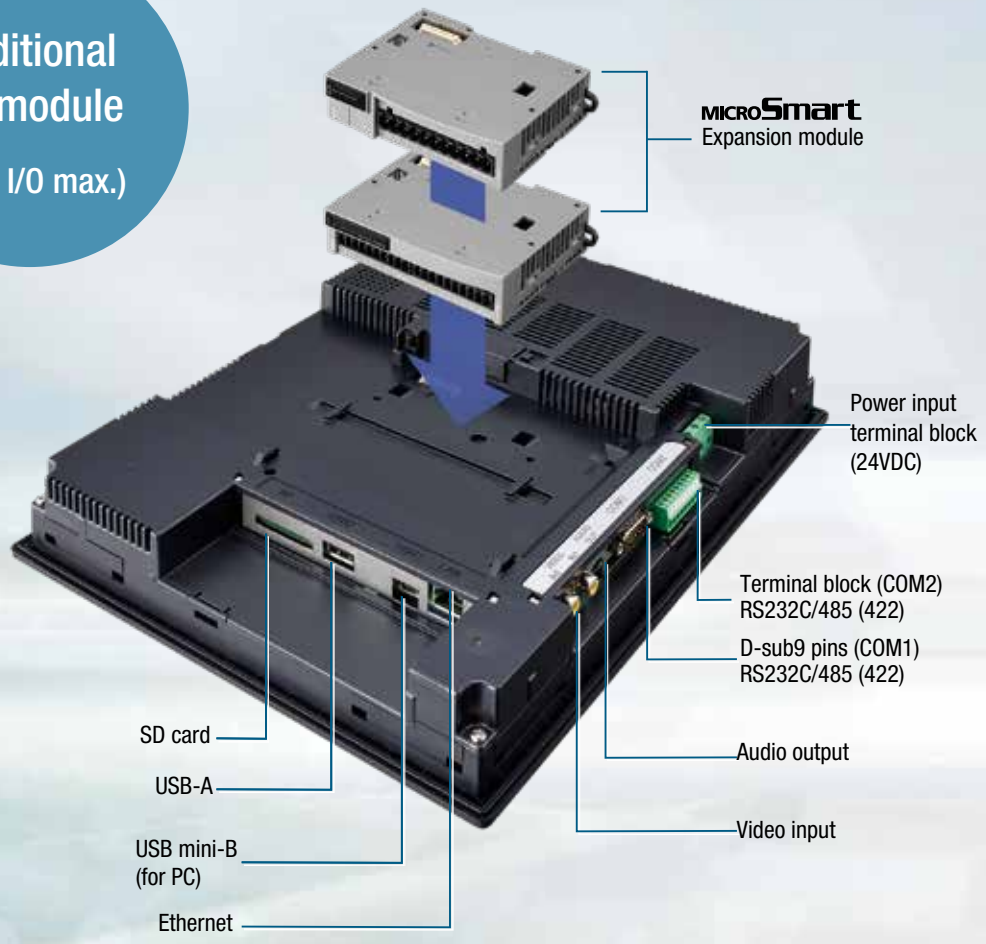
- APEM
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- Emergency Stop Switches
- Enabling Switches
- Safety Products
- Explosion Proof
- Terminal Blocks
- Relays & Sockets
- Circuit Protectors
- Power Supplies
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- HG1G

**Additional I/O module**  
(64 I/O max.)

**For both digital and analog I/O modules**



### 3-seconds startup

Stress-free quick startup

### USB autorun

Autorun menu on the USB memory enables easy transfer of data and settings.

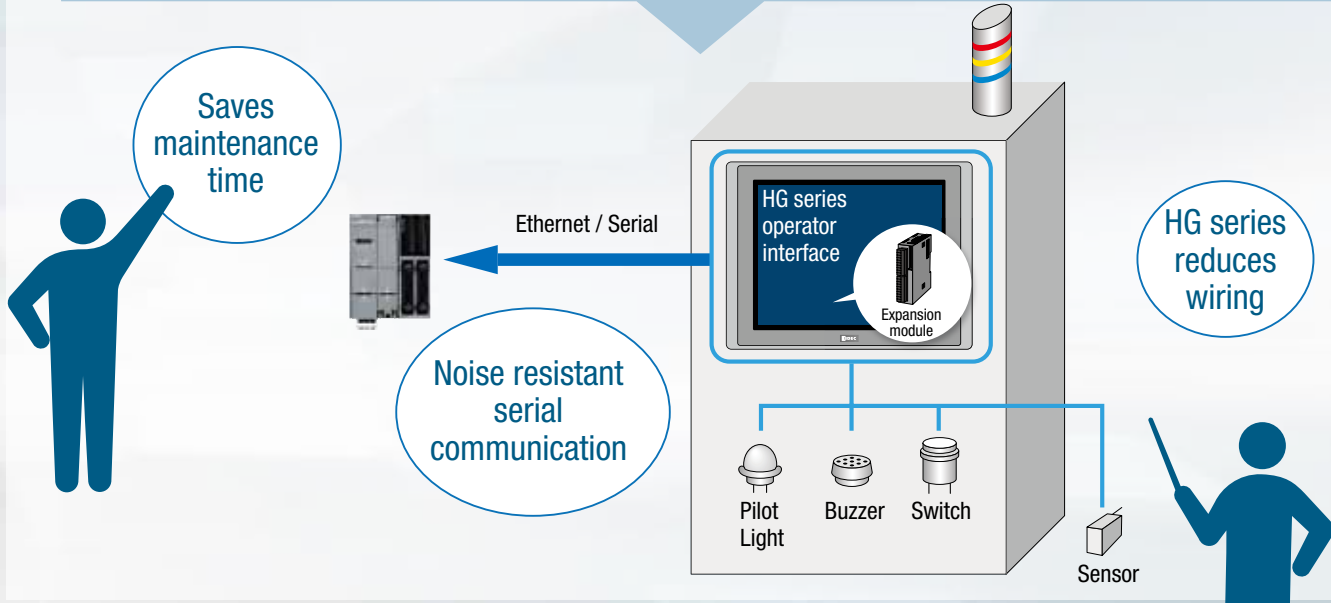
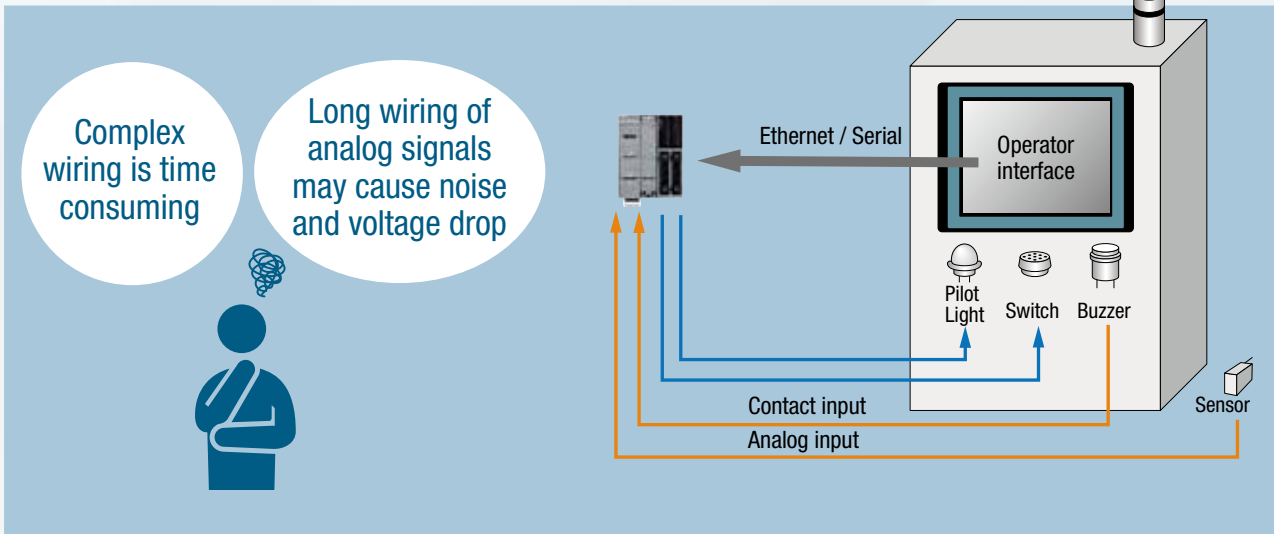
### Selectable memory

Data can be saved or transferred by using an SD card (32GB max.) and USB memory. By saving user data on an SD card or USB memory, back up of data is possible and the user memory can be reduced.

### Multiprotocol

Multiple machines using PLCs made by different manufacturers can be controlled, configured, and monitored by one operator interface. Supports BACnet (\*1) and Modbus TCP/RTU protocol.  
\*1) Except HG2G-5T, HG1T

## Analog signals and contact signals can be sent and received by serial communication



### Display image

Displays images on the screen from a camera.

### Save image

Records and plays back images on the screen from a camera and saves the data to the SD card.

### Play video

MPEG4 video files can be played back on the screen. Work procedures can be shown on the screen, and when trouble occurs, it can be used as a video manual for trouble shooting on-site.

### Record video

When an alarm is set off, video images before and after the start of the alarm can be recorded on an SD card. This enables on-site analysis of the trouble. Smooth and refined images can be recorded.

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- HG4G
- HG3G
- HG2G
- HG1G

# Flexible and user-friendly programming

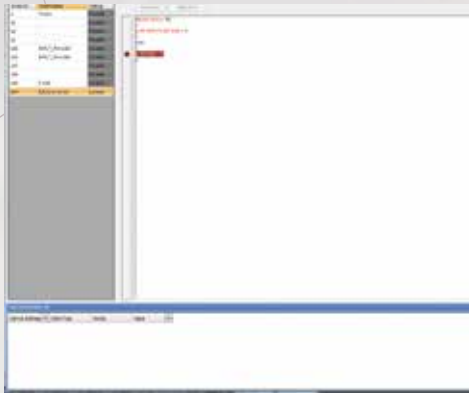


## OI Touchscreen Programming Software

Flexible and easy to use  
Easy programming enables efficiency



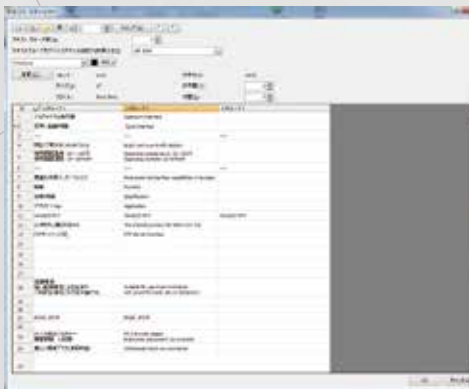
1



### Create projects efficiently with a script debugger

The script debugger allows you to check the operation of the script step by step during simulation mode.

2



### Simple and useful manager functions

Several settings such as a text manager, picture manager, and script managers can be controlled and displayed by a single manager.

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Periphery Equipment

HG4G

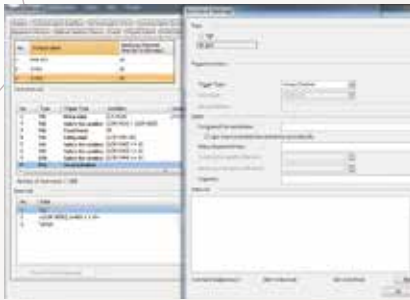
HG4G

HG3G

HG2G

HG1G

3



## User communication function enables use of complex protocols

User communication function allows the use of protocols not supported by network drivers.

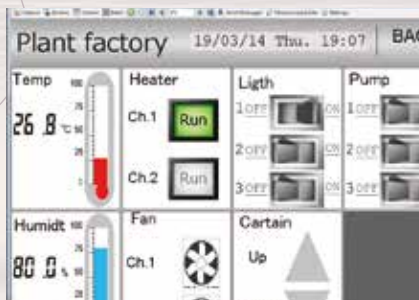
4



## Error log helps specify problems easily

The error check function displays incorrect setup or missed items in a list. You can jump to the error from this list so problems that occur in a large project can be solved quickly.

5



## Check operation of the PC using the simulator

No need to download the project data to the operator interface each time. Operation can be checked using a simulator.

6



## Check information of the object at a glance

Information such as device address and operating condition of parts laid out on the screen can be checked easily.

7



## Extensive image library

Drag & drop functionality allows intuitive operation. Images can be imported from an image library of 10,000 parts.

8



## Create documents easily by print function

Items selected from the project data can be printed and used as users manual or spec sheet. The data can also be converted to docx format and edited.

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# HG5G-V

## Powerful visual presentation

Find all the information you need on a single screen



### Super bright, high resolution display with outstanding performance

The bright display is visible from a distance and in well-lit surroundings. (500cd/m<sup>2</sup>)

The large screen and high-quality resolution makes it easy to view precise data.

Display resolution: 1024 (W)×728 (H)

View angle: Left/right/top/bottom 85°

#### Lightweight construction

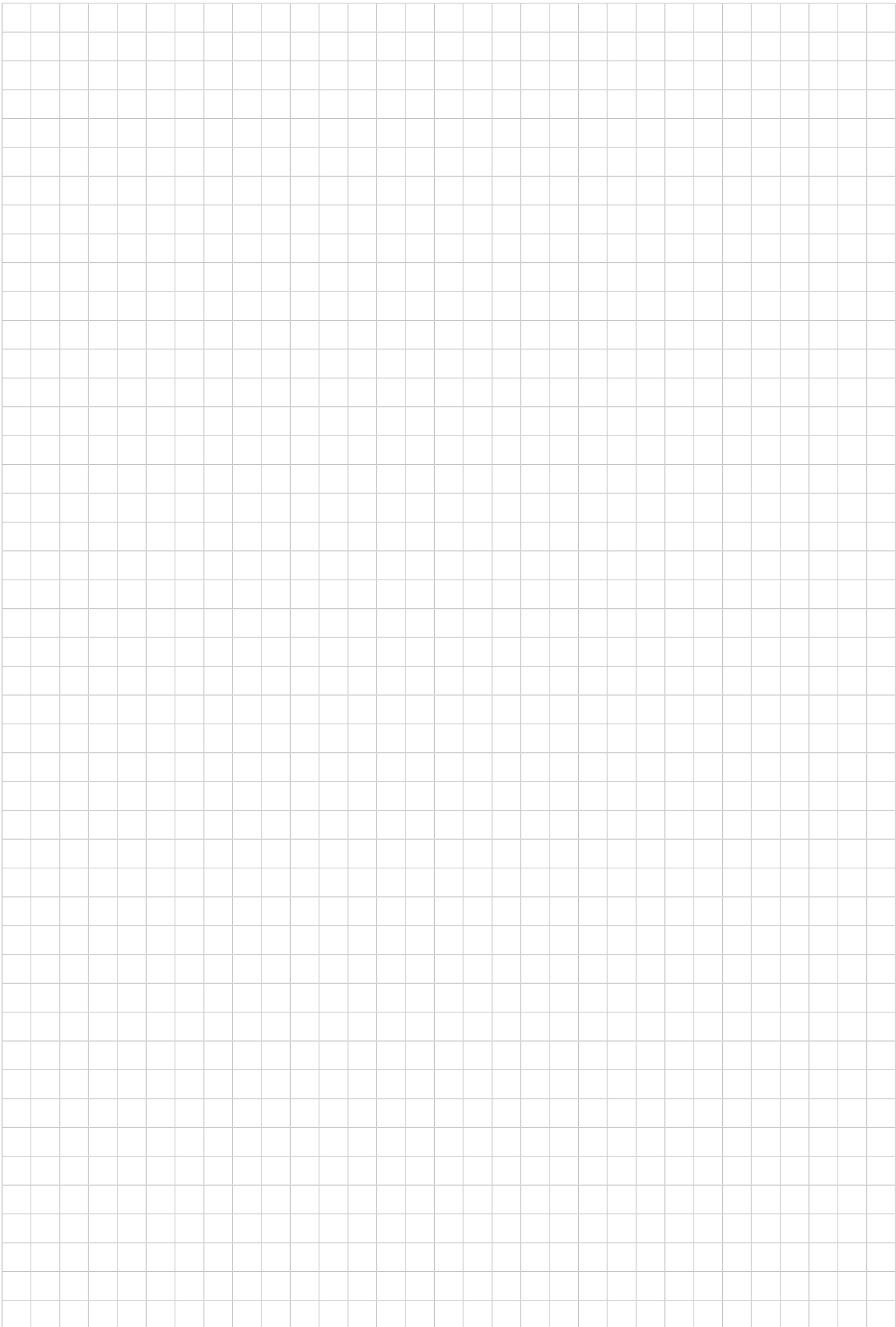
Plastic housing enables lightweight structure. (3.2kg approx.)

#### Slim bezel

Slim bezel enables downsizing of the operator interface with a large screen.

#### Energy-saving

Energy-saving 27W power consumption.



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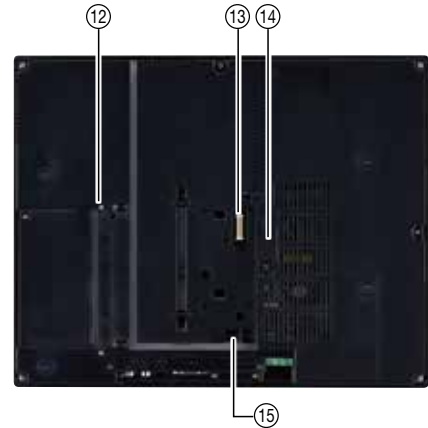
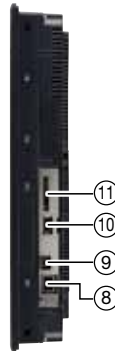
HG2G

HG1G

# HG5G-V Operator Interface 15 inch

Lightweight with slim bezel.

Large size ideal for handling huge amount of information for the IoT era.



- APEM
- Switches & Pilot Lights
- Control Boxes
- Emergency Stop Switches
- Enabling Switches
- Safety Products
- Explosion Proof
- Terminal Blocks
- Relays & Sockets
- Circuit Protectors
- Power Supplies
- LED Illumination

(for main unit only)

• See website for details on approvals and standards.

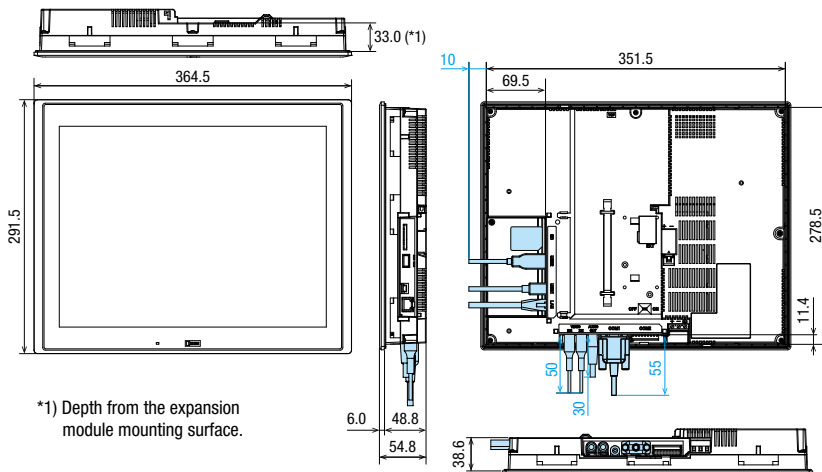
No.	Name
①	Power LED
②	Display
③	Touchscreen
④	Power Supply Terminal
⑤	Serial Interface (COM2)
⑥	Serial Interface (COM1)
⑦	Audio Interface (AUDIO OUT)
⑧	Ethernet Interface (LAN)
⑨	USB Interface (USB1)

No.	Name
⑩	USB Interface (USB2)
⑪	Memory Card Interface (SD)
⑫	SD Memory Access LED
⑬	Expansion Module Interface (EXT)
⑭	Battery Cover
⑮	Terminal Resistor Switch
⑯	Video Interface (VIDEO IN1)
⑰	Video Interface (VIDEO IN2)

## HG5G-V Operator Interface

Display Screen	Operation Style	Communication/Memory Interface	Video/Audio Interface	Housing/Bezel Color	Part No.	Approvals
15-inch TFT color LCD 65,536 colors	Touch Switch (analog resistive)	COM1 COM2 LAN USB1 USB2 SD EXT	VIDEO IN1 VIDEO IN2 AUDIO OUT	Black	HG5G-VFXT22MF-B	Safety Standards: UL61010-1, UL61010-2-201, UL12.12.01 CSA C22.2 No.61010-1-12 CSA C22.2 No.61010-2-201 CSA C22.2 No.213 Ship Classification Standards: LR, DNV-GL, ABS, ClassNK

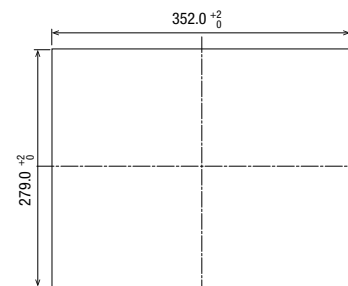
## Dimensions



\*1) Depth from the expansion module mounting surface.

## Panel Cut-out

All dimensions in mm.



Panel Thickness: 2.0 to 5.0 mm

Note 1: Dimensions in blue show the mounting dimensions of the cable.

Note 2: Dimensions in the figure may vary depending on the type of cable connected.

Note 3: Install the HG5G-V into a panel cut-out by tightening the six mounting clips (supplied with the HG5G-V) to a torque of 0.5 to 0.6 N-m.

Do not tighten with excessive force, otherwise the HG5G-V and screen may become distorted. Also waterproof characteristics may be lost.

## General Specifications

Rated Power Voltage	24V DC
Power Voltage Range	20.4 to 28.8V DC
Power Consumption	27W maximum
	20W maximum when not using USB2 or EXT 7W maximum when Backlight OFF
Allowable Momentary Power Interruption	10 ms maximum
Inrush Current	30A maximum
Dielectric Strength	1,000V AC, 10 mA, 1 minute between power and FG terminals
Operating Temperature	-20 to +60°C (no freezing)
Operating Humidity	10 to 90% RH (no condensation)
Storage Temperature	-20 to +70°C (no freezing)
Storage Humidity	10 to 90% RH (no condensation)
Pollution Degree	2
Vibration Resistance	5 to 8.4 Hz amplitude 3.5 mm, 8.4 to 150 Hz, acceleration 9.8 m/s <sup>2</sup> 10 cycles (100 minutes) on each of three mutually perpendicular axes
Shock Resistance	147 m/s <sup>2</sup> , 11 ms 5 shocks on each of three mutually perpendicular axes
Noise Immunity	Fast transient/burst test, Power terminals: ±2 kV, Communication line: ±1 kV (IEC/EN61131-2)
Electrostatic Discharge	Contact ±6 kV, air ±8 kV (IEC/EN61131-2)
Corrosion Immunity	Free from corrosive gases
Mounting	Panel mounting (Panel Thickness: 2.0 to 5.0 mm)
Degree of Protection (*1)	IP66F/IP67F (IEC 60529) (front part when mounted) UL Type 4X, 12, and 13
Dimensions	364.5W × 291.5H × 54.8D mm
Weight (approx.)	3.2 kg

• Do not use the HG5G-V in an environment subject to strong ultraviolet rays, otherwise the LCD quality will deteriorate.

\*1) See instructions on **L-111** for details.

## Display Specifications

Display	TFT Color LCD	
Color/Shade	65,536 colors	
Effective Display Area	304.1W × 228.1H mm	
Display Resolution	1,024W × 768H pixels	
View Angle	Left/right/top/bottom: 85°	
Backlight	White LED	
Backlight Life	100,000 hours minimum (*2)	
Brightness	500 cd/m <sup>2</sup> (*3)	
Brightness Adjustment	48 levels	
Backlight Replacement	Not possible	
Display Character Size	1/4 size	8 × 8 pixels (Western European language: ISO 8859-1, Central European language: ANSI 1250, Baltic: ANSI 1257, Cyrillic: ANSI1251, Japanese katakana and symbols: JIS 8-bit code)
	1/2 size	8 × 16 pixels (Western European language: ISO 8859-1, Central European language: ANSI 1250, Baltic: ANSI 1257, Cyrillic: ANSI1251, Japanese katakana and symbols: JIS 8-bit code)
		16 × 32 pixels, 24 × 48 pixels, 32 × 64 pixels (Western European language: ISO 8859-1)
	Full size	16 × 16 pixels (Japanese JIS first and second level characters, simplified Chinese, traditional Chinese, Korean)
	Double size	32 × 32 pixels (Japanese JIS first level characters, Mincho font)
Scalable	Width 8 to 128 dots (1/2 size fixed) (ISO 8859-1 western language, 7-segment)	
Quantity of Characters	1/4 size	128 characters × 96 lines
	1/2 size	128 characters × 48 lines
	Full size	64 characters × 48 lines
	Double size	32 characters × 24 lines (Mincho font)
Character Magnification	0.5, 1 to 8 vertically and horizontally (except for scalable fonts)	
Character Attribute	Blink (1 or 0.5 sec period), reverse, bold, shadowed	
Graphics	Straight line, polyline, rectangle, arc, pie, circle/ellipse, equilateral polygons (3, 4, 5, 6, 8), picture, fill	
Window Display	3 popup screens + 1 system screen	

• See instructions on **L-111** for details.

\*2) The backlight life is not guaranteed and refers to the time until the brightness reduces by half after use at 25°C. The actual life depends on operating environments and conditions.

\*3) Brightness of the LCD only.

## Operation Specifications

Switching Element	Analog resistive membrane
Operating Force	3N maximum
Mechanical Life	1,000,000 operations
Acknowledgement Sound	Electronic buzzer or audio output

## Function Specifications

Screen Types	Base screen, popup screen, system screen
No. of Screens	Base screen: 3,000 max. Popup screen: 3,015 max.
User Memory	58 MB (including expansion fonts and kanji dictionary data)
Parts	Bit Button, Word Button, Goto Screen, Print Button, Key Button, Multi Button, Keypad, Selector Switch, Potentiometer, Numerical Input, Character Input, Pilot Lamp, Multi-State Lamp, Picture Display, Message Display, Message Switching Display, Alarm List Display, Alarm Log Display, Numerical Display, Bar Graph, Trend Chart, Pie Chart, Meter, Calendar, Bit Write Command, Word Write Command, Goto Screen Command, Print Command, Timer, Screen Script Command, Multi Command, Video Display
Calendar	Year, Month, Day, Hour, Min., Sec., Day of Week ±60 sec per month (at 25°C)
Power Failure Backup Data	Calendar, log data, keep internal relay, keep internal register
Battery	Recommended replacement: every 5 years (at 25°C)

## Interface Specifications

Serial Interface (COM1)	Electrical Characteristics	EIA RS232C, RS422/485 compliant
	Transmission Speed	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 187500 bps (*5)
	Synchronization	Asynchronous
	Communication Method	Half or full duplex
	Control System	Hardware control or none (*6)
	Connector	D-sub 9-pin connector / socket
Serial Interface (COM2) (*4)	Electrical Characteristics	EIA RS232C, RS422/485 compliant
	Transmission Speed	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 187500 bps (*5)
	Synchronization	Asynchronous
	Communication Method	Half or full duplex
	Control System	Hardware control or none (*6)
	Connector	Detachable 9-pin terminal block
Ethernet Interface (LAN)	Interface	IEEE802.3u (10/100BASE-T) compliant
	Connector	Modular connector (RJ-45)
Video Interface (VIDEO IN1)	Interface	NTSC/PAL
	Connector	Pin jack
Video Interface (VIDEO IN2)	Interface	NTSC/PAL
	Connector	Pin jack
Audio Interface (AUDIO OUT)	Interface	LINE OUT (stereo)
	Connector	Mini jack connector (ø3.5 mm)
USB Interface (USB1)	Interface	USB 2.0
	Connector	USB Type Mini-B connector
USB Interface (USB2)	Interface	USB 2.0
	Connector	USB Type A connector
Memory Card Interface (SD)	Interface	SD memory card, SDHC memory card
	Connector	SD memory card socket
Expansion Module Interface (EXT)	Interface	MicroSmart I/O module interface
	Output Current	5V 130 mA, 24V 50 mA
	Max. No. of Units	4 units

\*4) RS232C and RS 422/485 can be used simultaneously

\*5) 187,500 bps is available only with SIEMENS SIMATIC S7-300/400 series (MPI port direct connection).

\*6) RS232C only for hardware control

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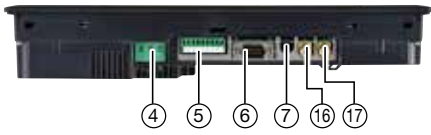
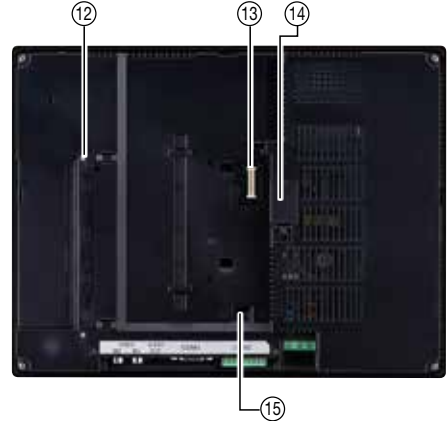
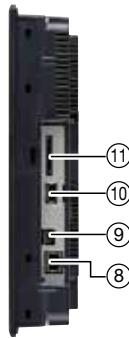
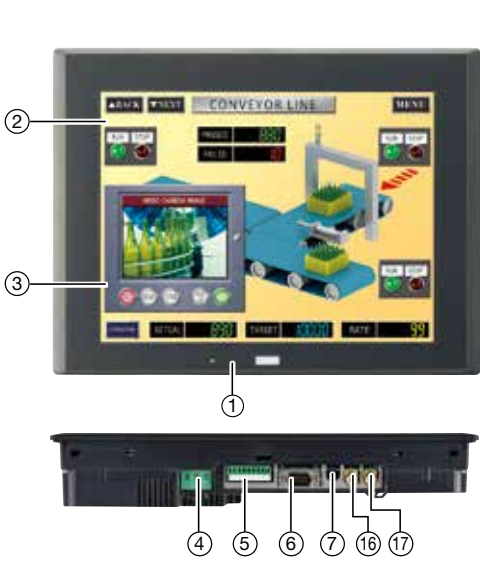
HG2G

HG1G




# HG4G-V Operator Interface 12.1 inch

Compact housing with a versatile interface.  
High performance operator interface with multimedia functions.



No.	Name
①	Power LED
②	Display
③	Touchscreen
④	Power Supply Terminal
⑤	Serial Interface (COM2)
⑥	Serial Interface (COM1)
⑦	Audio Interface (AUDIO OUT)
⑧	Ethernet Interface (LAN)
⑨	USB Interface (USB1)

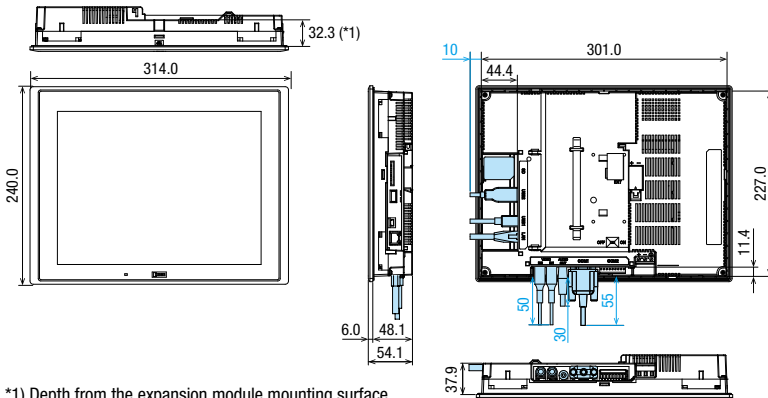
No.	Name
⑩	USB Interface (USB2)
⑪	Memory Card Interface (SD)
⑫	SD Memory Access LED
⑬	Expansion Module Interface (EXT)
⑭	Battery Cover
⑮	Terminal Resistor Switch
⑯	Video Interface (VIDEO IN1)
⑰	Video Interface (VIDEO IN2)


 (for main unit only)  
 • See website for details on approvals and standards.

## HG4G-V Operator Interface

Display Screen	Operation Style	Communication/ Memory Interface	Video/Audio Interface	Housing/Bezel Color	Part No.	Approvals
12.1-inch TFT color LCD 65,536 colors	Touch Switch (analog resistive)	COM1 COM2 LAN USB1 USB2 SD EXT	VIDEO IN1 VIDEO IN2 AUDIO OUT	Black	<b>HG4G-VCXT22MF-B</b>	Safety Standards: UL61010-1 UL61010-2-201 UL12.12.01 CSA C22.2 No.61010-1-12 CSA C22.2 No.61010-2-201 CSA C22.2 No.213  Ship Classification Standards: LR, DNV-GL, ABS, ClassNK

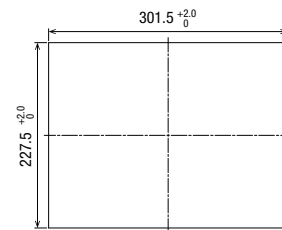
## Dimensions



\*1) Depth from the expansion module mounting surface.

## Panel Cut-out

All dimensions in mm.



Panel Thickness: 2.0 to 5.0 mm

Note 1: Dimensions in blue show the mounting dimensions of the cable.

Note 2: Dimensions in the figure may vary depending on the type of cable connected.

Note 3: Install the HG4G-V into a panel cut-out by tightening the four mounting clips (supplied with the HG4G-V) to a torque of 0.5 to 0.6 N·m.

Do not tighten with excessive force, otherwise the HG4G-V and screen may become distorted. Also waterproof characteristics may be lost.

## General Specifications

Rated Power Voltage	24V DC
Power Voltage Range	20.4 to 28.8V DC
Power Consumption	25W maximum
	15W maximum when not using USB2 or EXT
	7W maximum when Backlight OFF
Allowable Momentary Power Interruption	10 ms maximum
Inrush Current	30A maximum
Dielectric Strength	1,000V AC, 10 mA, 1 minute between power and FG terminals
Operating Temperature	-20 to +60°C (no freezing)
Operating Humidity	10 to 90% RH (no condensation)
Storage Temperature	-20 to +70°C (no freezing)
Storage Humidity	10 to 90% RH (no condensation)
Pollution Degree	2
Vibration Resistance	5 to 8.4 Hz amplitude 3.5 mm, 8.4 to 150 Hz, acceleration 9.8 m/s <sup>2</sup> 10 cycles (100 minutes) on each of three mutually perpendicular axes
Shock Resistance	147 m/s <sup>2</sup> , 11 ms 5 shocks on each of three mutually perpendicular axes
Noise Immunity	Fast transient/burst test, Power terminals: ±2 kV, Communication line: ±1 kV (IEC/EN61131-2)
Electrostatic Discharge	Contact ±6 kV, air ±8 kV (IEC/EN61131-2)
Corrosion Immunity	Free from corrosive gases
Mounting	Panel mounting (Panel Thickness: 2.0 to 5.0 mm)
Degree of Protection (*1)	IP66F/IP67F (IEC 60529) (front part when mounted) UL Type 4X, 12, and 13
Dimensions	314.0W × 240.0H × 54.1D mm
Weight (approx.)	2.1 kg

• Do not use the HG4G-V in an environment subject to strong ultraviolet rays, otherwise the LCD quality will deteriorate.

\*1) See instructions on L-111 for details.

## Display Specifications

Display	TFT Color LCD	
Color/Shade	65,536 colors	
Effective Display Area	245.76W × 184.32H mm	
Display Resolution	1,024W × 768H pixels	
View Angle	Left/right/top/bottom: 85°	
Backlight	White LED	
Backlight Life	100,000 hours minimum (*2)	
Brightness	600 cd/m <sup>2</sup> (*3)	
Brightness Adjustment	48 levels	
Backlight Replacement	Not possible	
Display Character Size	1/4 size	8 × 8 pixels (Western European language: ISO 8859-1, Central European language: ANSI 1250, Baltic: ANSI 1257, Cyrillic: ANSI1251, Japanese katakana and symbols: JIS 8-bit code)
	1/2 size	8 × 16 pixels (Western European language ISO 8859-1, Central European language: ANSI 1250, Baltic: ANSI 1257, Cyrillic: ANSI1251, Japanese katakana and symbols: JIS 8-bit code)
		16 × 32 pixels, 24 × 48 pixels, 32 × 64 pixels (Western European language: ISO 8859-1)
	Full size	16 × 16 pixels (Japanese JIS first and second level characters, simplified Chinese, traditional Chinese, Korean)
	Double size	32 × 32 pixels (Japanese JIS first level characters, Mincho font)
	Scalable	Width 8 to 128 dots (1/2 size fixed) (ISO 8859-1 western language, 7-segment)
Quantity of Characters	1/4 size	128 characters × 96 lines
	1/2 size	128 characters × 48 lines
	Full size	64 characters × 48 lines
	Double size	32 characters × 24 lines (Mincho font)
Character Magnification	0.5, 1 to 8 vertically and horizontally (except for scalable fonts)	
Character Attribute	Blink (1 or 0.5 sec period), reverse, bold, shadowed	
Graphics	Straight line, polyline, rectangle, arc, pie, circle/ellipse, equilateral polygons (3, 4, 5, 6, 8), picture, fill	
Window Display	3 popup screens + 1 system screen	

• See instructions on L-111 for details.

\*2) The backlight life is not guaranteed and refers to the time until the brightness reduces by half after use at 25°C. The actual life depends on operating environments and conditions.

\*3) Brightness of the LCD only.

## Operation Specifications

Switching Element	Analog resistive membrane
Operating Force	3N maximum
Mechanical Life	1,000,000 operations
Acknowledgement Sound	Electronic buzzer or audio output

## Function Specifications

Screen Types	Base screen, popup screen, system screen
No. of Screens	Base screen: 3,000 max. Popup screen: 3,015 max.
User Memory	58 MB (including expansion fonts and kanji dictionary data)
Parts	Bit Button, Word Button, Goto Screen, Print Button, Key Button, Multi Button, Keypad, Selector Switch, Potentiometer, Numerical Input, Character Input, Pilot Lamp, Multi-State Lamp, Picture Display, Message Display, Message Switching Display, Alarm List Display, Alarm Log Display, Numerical Display, Bar Graph, Trend Chart, Pie Chart, Meter, Calendar, Bit Write Command, Word Write Command, Goto Screen Command, Print Command, Timer, Screen Script Command, Multi Command, Video Display
Calendar	Year, Month, Day, Hour, Min., Sec., Day of Week ±60 sec per month (at 25°C)
Power Failure Backup Data	Calendar, log data, keep internal relay, keep internal register
Battery	Recommended replacement: every 5 years (at 25°C)

## Interface Specifications

Serial Interface (COM1)	Electrical Characteristics	EIA RS232C, RS422/485 compliant
	Transmission Speed	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 187500 bps (*5)
	Synchronization	Asynchronous
	Communication Method	Half or full duplex
	Control System	Hardware control or none (*6)
	Connector	D-sub 9-pin connector / socket
Serial Interface (COM2) (*4)	Electrical Characteristics	EIA RS232C, RS422/485 compliant
	Transmission Speed	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 187500 bps (*5)
	Synchronization	Asynchronous
	Communication Method	Half or full duplex
	Control System	Hardware control or none (*6)
	Connector	Detachable 9-pin terminal block
Ethernet Interface (LAN)	Interface	IEEE802.3u (10/100BASE-T) compliant
	Connector	Modular connector (RJ-45)
Video Interface (VIDEO IN1)	Interface	NTSC/PAL
	Connector	Pin jack
Video Interface (VIDEO IN2)	Interface	NTSC/PAL
	Connector	Pin jack
Audio Interface (AUDIO OUT)	Interface	LINE OUT (stereo)
	Connector	Mini jack connector (ø3.5 mm)
USB Interface (USB1)	Interface	USB 2.0
	Connector	USB Type Mini-B connector
USB Interface (USB2)	Interface	USB 2.0
	Connector	USB Type A connector
Memory Card Interface (SD)	Interface	SD memory card, SDHC memory card
	Connector	SD memory card socket
Expansion Module Interface (EXT)	Interface	MicroSmart I/O module interface
	Output Current	5V 130 mA, 24V 150 mA
	Max. No. of Units	4 units

\*4) RS232C and RS 422/485 can be used simultaneously

\*5) 187,500 bps is available only with SIEMENS SIMATIC S7-300/400 series (MPI port direct connection).

\*6) RS232C only for hardware control

APEM

Switches & Pilot Lights

Control Boxes

Emergency Stop Switches

Enabling Switches

Safety Products

Explosion Proof

Terminal Blocks

Relays & Sockets

Circuit Protectors

Power Supplies

LED Illumination

Controllers

Operator Interfaces

Sensors

AUTO-ID

Programmable Operator Interfaces

Periphery Equipment

HG5G

HG4G

HG3G

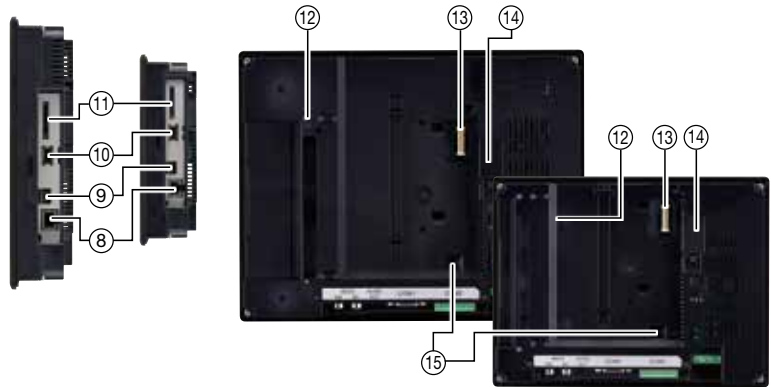
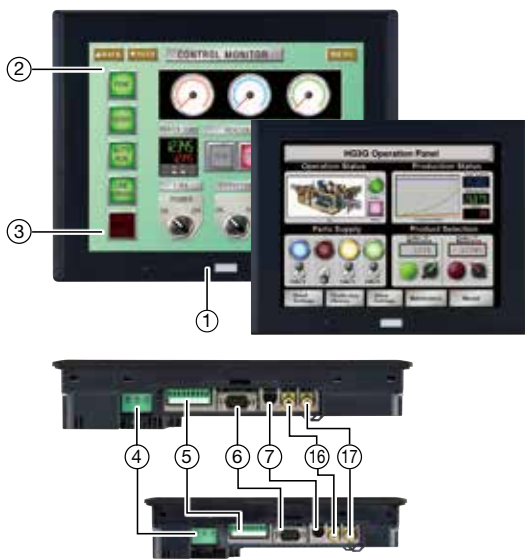
HG2G

HG1G

10.4, 8.4 inch

# HG3G-V Operator Interface

Excellent visibility by super-bright LED backlight.  
700 cd/m<sup>2</sup> (10.4-inch), 800 cd/m<sup>2</sup> (8.4-inch)



No.	Name
①	Power LED
②	Display
③	Touchscreen
④	Power Supply Terminal
⑤	Serial Interface (COM2)
⑥	Serial Interface (COM1)
⑦	Audio Interface (AUDIO OUT)
⑧	Ethernet Interface (LAN)
⑨	USB Interface (USB1)

No.	Name
⑩	USB Interface (USB2)
⑪	Memory Card Interface (SD)
⑫	SD Memory Access LED
⑬	Expansion Module Interface (EXT)
⑭	Battery Cover
⑮	Terminal Resistor Switch
⑯	Video Interface (VIDEO IN1)
⑰	Video Interface (VIDEO IN2)

UL CE (for main unit only)

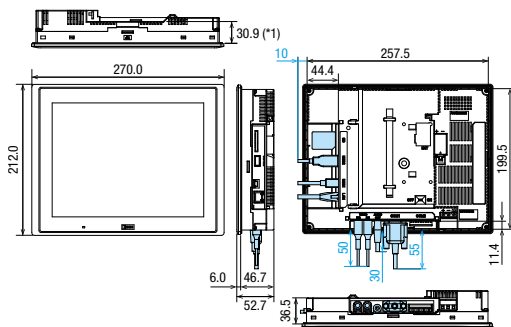
• See website for details on approvals and standards.

## HG3G-V Operator Interface

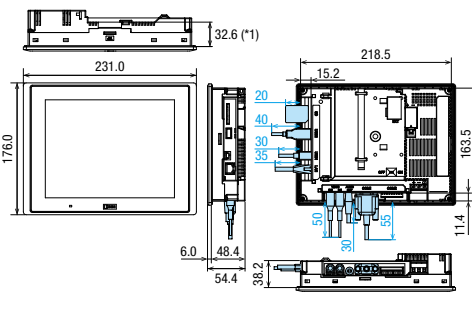
Display Screen	Operation Style	Communication/ Memory Interface	Video/Audio Interface	Housing/Bezel Color	Part No.	Approvals
10.4-inch TFT color LCD 65,536 colors	Touch Switch (analog resistive)	COM1 COM2 LAN USB1 USB2 SD EXT	VIDEO IN1 VIDEO IN2 AUDIO OUT	Light gray	HG3G-VAXT22MF-W	Safety Standards: UL61010-1 UL61010-2-201 UL12.12.01 CSA C22.2 No.61010-1-12 CSA C22.2 No.61010-2-201 CSA C22.2 No.213  Ship Classification Standards: LR, DNV-GL, ABS, ClassNK
Black				HG3G-VAXT22MF-B		
Light gray				HG3G-V8XT22MF-W		
Black				HG3G-V8XT22MF-B		

## Dimensions

### HG3G-VA (10.4-inch)



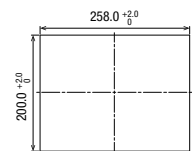
### HG3G-V8 (8.4-inch)



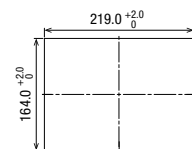
All dimensions in mm

## Panel Cut-out

### HG3G-VA (10.4-inch)



### HG3G-V8 (8.4-inch)



Panel Thickness: 2.0 to 5.0 mm

\*1) Depth from the expansion module mounting surface.

Note 1: Dimensions in blue show the mounting dimensions of the cable.

Note 2: Dimensions in the figure may vary depending on the type of cable connected.

Note 3: Install the HG3G-V into a panel cut-out by tightening the four mounting clips (supplied with the HG3G-V) to a torque of 0.5 to 0.6 N·m.

Do not tighten with excessive force, otherwise the HG3G-V and screen may become distorted. Also waterproof characteristics may be lost.

General Specifications

Model	HG3G-VA (10.4 inch)	HG3G-V8 (8.4 inch)
Rated Power Voltage	24V DC	
Power Voltage Range	20.4 to 28.8V DC	
Power Consumption	25W maximum	22W maximum
	15W maximum when not using USB2 or EXT 7W maximum when Backlight OFF	15W maximum when not using USB2 or EXT 7W maximum when Backlight OFF
Allowable Momentary Power Interruption	10 ms maximum	
Inrush Current	30A maximum	
Dielectric Strength	1,000V AC, 10 mA, 1 minute between power and FG terminals	
Operating Temperature	-20 to +60°C (no freezing)	
Operating Humidity	10 to 90% RH (no condensation)	
Storage Temperature	-20 to +70°C (no freezing)	
Storage Humidity	10 to 90% RH (no condensation)	
Pollution Degree	2	
Vibration Resistance	5 to 8.4 Hz amplitude 3.5 mm, 8.4 to 150 Hz, acceleration 9.8 m/s <sup>2</sup> 10 cycles (100 minutes) on each of three mutually perpendicular axes	
Shock Resistance	147 m/s <sup>2</sup> , 11 ms 5 shocks on each of three mutually perpendicular axes	
Noise Immunity	Fast transient/burst test, Power terminals: ±2 kV, Communication line: ±1 kV (IEC/EN 61131-2)	
Electrostatic Discharge	Contact ±6 kV, air ±8 kV (IEC/EN 61131-2)	
Corrosion Immunity	Free from corrosive gases	
Mounting	Panel mounting (Panel Thickness: 2.0 to 5.0 mm)	
Degree of Protection (*1)	IP66F/IP67F (IEC 60529) (front part when mounted) UL Type 4X, 12, and 13	
Dimensions	270.0W × 212.0H × 52.7D mm	231.0W × 176.0H × 54.4D mm
Weight (approx.)	1.65 kg	1.25 kg

• Do not use the HG3G-V in an environment subject to strong ultraviolet rays, otherwise the LCD quality will deteriorate.

\*1) See instructions on L-111 for details.

Display Specifications

Model	HG3G-VA (10.4 inch)	HG3G-V8 (8.4 inch)
Display Color	TFT Color LCD	
Color/Shade	65,536 colors	
Effective Display Area	210.4 W × 157.8 H mm	170.496 W × 127.872 H mm
Display Resolution	1,024 W × 768 H pixels	
View Angle	Left/right/top/bottom: 85°	
Backlight	White LED	
Backlight Life	100,000 hours minimum (*2)	
Brightness	700 cd/m <sup>2</sup> (*3)	800 cd/m <sup>2</sup> (*3)
Brightness Adjustment	48 levels	
Backlight Replacement	Not possible	
Display Character Size	1/4 size	8 × 8 pixels (Western European language: ISO 8859-1, Central European language: ANSI 1250, Baltic: ANSI 1257, Cyrillic: ANSI1251, Japanese katakana and symbols: JIS 8-bit code)
	1/2 size	8 × 16 pixels (Western European language: ISO 8859-1, Central European language: ANSI 1250, Baltic: ANSI 1257, Cyrillic: ANSI1251, Japanese katakana and symbols: JIS 8-bit code)
		16 × 32 pixels, 24 × 48 pixels, 32 × 64 pixels (Western European language: ISO 8859-1)
	Full size	16 × 16 pixels (Japanese JIS first and second level characters, simplified Chinese, traditional Chinese, Korean)
	Double size	32 × 32 pixels (Japanese JIS first level characters, Mincho font)
	Scalable	Width 8 to 128 dots (1/2 size fixed) (ISO 8859-1 western language, 7-segment)
Quantity of Characters	1/4 size	128 characters × 96 lines
	1/2 size	128 characters × 48 lines
	Full size	64 characters × 48 lines
	Double size	32 characters × 24 lines (Mincho font)
Character Magnification	0.5, 1 to 8 vertically and horizontally (except for scalable fonts)	
Character Attribute	Blink (1 or 0.5 sec period), reverse, bold, shadowed	
Graphics	Straight line, polyline, rectangle, arc, pie, circle/ellipse, equilateral polygons (3, 4, 5, 6, 8), picture, fill	
Window Display	3 popup screens + 1 system screen	

• See instructions on the L-111 for details.

\*2) The backlight life is not guaranteed and refers to the time until the brightness reduces by half after use at 25°C. The actual life depends on operating environments and conditions.

\*3) Brightness of the LCD only.

Operation Specifications

Switching Element	Analog resistive membrane
Operating Force	3N maximum
Mechanical Life	1,000,000 operations
Acknowledgement Sound	Electronic buzzer or audio output

Function Specifications

Screen Types	Base screen, popup screen, system screen
No. of Screens	Base screen: 3,000 max. Popup screen: 3,015 max.
User Memory	58 MB (including expansion fonts and kanji dictionary data)
Parts	Bit Button, Word Button, Goto Screen, Print Button, Key Button, Multi Button, Keypad, Selector Switch, Potentiometer, Numerical Input, Character Input, Pilot Lamp, Multi-State Lamp, Picture Display, Message Display, Message Switching Display, Alarm List Display, Alarm Log Display, Numerical Display, Bar Graph, Trend Chart, Pie Chart, Meter, Calendar, Bit Write Command, Word Write Command, Goto Screen Command, Print Command, Timer, Screen Script Command, Multi Command, Video Display
Calendar	Year, Month, Day, Hour, Min., Sec., Day of Week ±60 sec per month (at 25°C)
Power Failure Backup Data	Calendar, log data, keep internal relay, keep internal register
Battery	Recommended replacement: every 5 years (at 25°C)

Interface Specifications

Serial Interface (COM1)	Electrical Characteristics	EIA RS232C, RS422/485 compliant
	Transmission Speed	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 187500 bps (*5)
	Synchronization	Asynchronous
	Communication Method	Half or full duplex
	Control System	Hardware control or none (*6)
	Connector	D-sub 9-pin connector / socket
Serial Interface (COM2) (*4)	Electrical Characteristics	EIA RS232C, RS422/485 compliant
	Transmission Speed	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 187500 bps (*5)
	Synchronization	Asynchronous
	Communication Method	Half or full duplex
	Control System	Hardware control or none (*6)
	Connector	Detachable 9-pin terminal block
Ethernet Interface (LAN)	Interface	IEEE802.3u (10/100BASE-T) compliant
	Connector	Modular connector (RJ-45)
Video Interface (VIDEO IN1)	Interface	NTSC/PAL
	Connector	Pin jack
Video Interface (VIDEO IN2)	Interface	NTSC/PAL
	Connector	Pin jack
Audio Interface (AUDIO OUT)	Interface	LINE OUT (stereo)
	Connector	Mini jack connector (ø3.5 mm)
USB Interface (USB1)	Interface	USB 2.0
	Connector	USB Type Mini-B connector
USB Interface (USB2)	Interface	USB 2.0
	Connector	USB Type A connector
	Ouput current	5V 500 mA
Memory Card Interface (SD)	Interface	SD memory card, SDHC memory card
	Connector	SD memory card socket
Expansion Module Interface (EXT)	Interface	MicroSmart I/O module interface
	Ouput Current	5V 130 mA, 24V 150 mA
	Max. No. of Units	4 units

\*4) RS232C and RS 422/485 can be used simultaneously

\*5) 187,500 bps is available only with SIEMENS SIMATIC S7-300/400 series (MPI port direct connection).

\*6) RS232C only for hardware control

APEM

Switches & Pilot Lights

Control Boxes

Emergency Stop Switches

Enabling Switches

Safety Products

Explosion Proof

Terminal Blocks

Relays & Sockets

Circuit Protectors

Power Supplies

LED Illumination

Controllers

Operator Interfaces

Sensors

AUTO-ID

Programmable Operator Interfaces

Periphery Equipment

HG5G

HG4G

HG3G

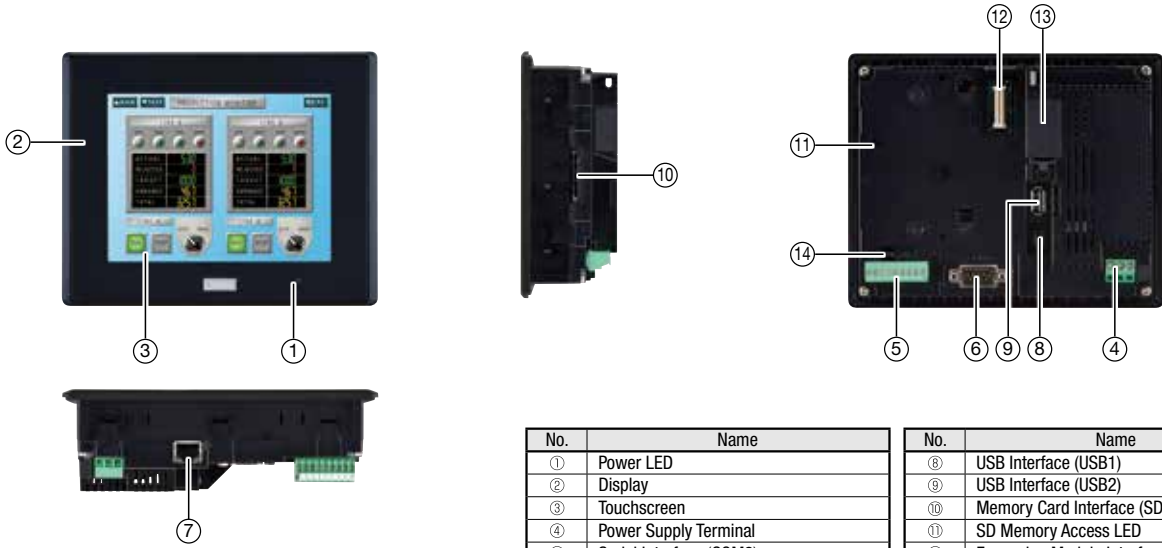
HG2G

HG1G



# 5.7 inch HG2G-V Operator Interface (High Performance)

Excellent visibility by super-bright LED backlight.  
800 cd/m<sup>2</sup> (5.7-inch)



No.	Name	No.	Name
①	Power LED	⑧	USB Interface (USB1)
②	Display	⑨	USB Interface (USB2)
③	Touchscreen	⑩	Memory Card Interface (SD)
④	Power Supply Terminal	⑪	SD Memory Access LED
⑤	Serial Interface (COM2)	⑫	Expansion Module Interface (EXT)
⑥	Serial Interface (COM1)	⑬	Battery Cover
⑦	Ethernet Interface (LAN)	⑭	Terminal Resistor Switch



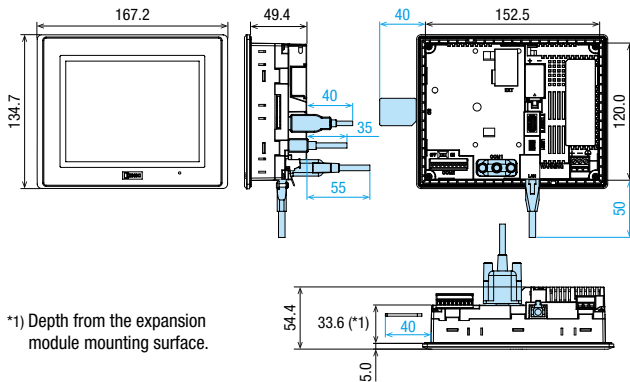
(for main unit only)

• See website for details on approvals and standards.

## HG2G-V Operator Interface

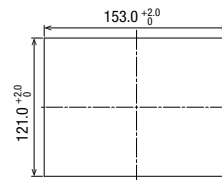
Display Screen	Operation Style	Communication/ Memory Interface	Housing/Bezel Color	Part No.	Approvals
5.7-inch TFT color LCD 65,536 colors	Touch Switch (analog resistive)	COM1 COM2 LAN USB 1 USB 2 SD EXT	Light gray	HG2G-V5FT22TF-W	Safety Standards: UL61010-1 UL61010-2-201 UL12.12.01 CSA C22.2 No.61010-1-12 CSA C22.2 No.61010-2-201 CSA C22.2 No.213 Ship Classification Standards: LR, DNV-GL, ABS, ClassNK
			Black	HG2G-V5FT22TF-B	

## Dimensions



## Panel Cut-out

All dimensions in mm.



Panel Thickness: 1.6 to 5.0 mm

Note 1: Dimensions in blue show the mounting dimensions of the cable.

Note 2: Dimensions in the figure may vary depending on the type of cable connected.

Note 3: Install the HG2G-V into a panel cut-out by tightening the four mounting clips (supplied with the HG2G-V) to a torque of 0.2 to 0.3 N·m.

Do not tighten with excessive force, otherwise the HG2G-V and screen may become distorted. Also waterproof characteristics may be lost.

## General Specifications

Rated Power Voltage	24V DC
Power Voltage Range	20.4 to 28.8V DC
Power Consumption	18W maximum
	8W maximum when not using USB2 or EXT
	4W maximum when Backlight OFF
Allowable Momentary Power Interruption	10 ms maximum
Inrush Current	30A maximum
Dielectric Strength	1,000V AC, 10 mA, 1 minute between power and FG terminals
Operating Temperature	-20 to +60°C (no freezing)
Operating Humidity	10 to 90% RH (no condensation)
Storage Temperature	-20 to +70°C (no freezing)
Storage Humidity	10 to 90% RH (no condensation)
Pollution Degree	2
Vibration Resistance	5 to 8.4 Hz amplitude 3.5 mm, 8.4 to 150 Hz, acceleration 9.8 m/s <sup>2</sup> 10 cycles (100 minutes) on each of three mutually perpendicular axes
Shock Resistance	147 m/s <sup>2</sup> , 11 ms
	5 shocks on each of three mutually perpendicular axes
Noise Immunity	Fast transient/burst test, Power terminals: ±2 kV, Communication line: ±1 kV (IEC/EN61131-2)
Electrostatic Discharge	Contact ±6 kV, air ±8 kV (IEC/EN61131-2)
Corrosion Immunity	Free from corrosive gases
Mounting	Panel mounting (Panel Thickness: 1.6 to 5.0 mm)
Degree of Protection (*1)	IP66F/IP67F (IEC 60529) (front part when mounted) UL Type 4X, 12, and 13
Dimensions	167.2W × 134.7H × 54.4D mm
Weight (approx.)	0.65 kg

• Do not use the HG2G-V in an environment subject to strong ultraviolet rays, otherwise the LCD quality will deteriorate.

\*1) See instructions on the **L-111** for details.

## Display Specifications

Display	TFT Color LCD	
Color/Shade	65,536 colors	
Effective Display Area	115.2W × 86.4H mm	
Display Resolution	640W × 480H pixels	
View Angle	Left/right/top/bottom: 80°	
Backlight	White LED	
Backlight Life	100,000 hours minimum (*2)	
Brightness	800 cd/m <sup>2</sup> (*3)	
Brightness Adjustment	48 levels	
Backlight Replacement	Not possible	
Display Character Size	1/4 size	8 × 8 pixels (Western European language: ISO 8859-1, Central European language: ANSI 1250, Baltic: ANSI 1257, Cyrillic: ANSI1251, Japanese katakana and symbols: JIS 8-bit code)
	1/2 size	8 × 16 pixels (Western European language: ISO 8859-1, Central European language: ANSI 1250, Baltic: ANSI 1257, Cyrillic: ANSI1251, Japanese katakana and symbols: JIS 8-bit code)
	Full size	16 × 16 pixels (Japanese JIS first and second level characters, simplified Chinese, traditional Chinese, Korean)
	Double size	32 × 32 pixels (Japanese JIS first level characters, Mincho font)
	Scalable	Width 8 to 128 dots (1/2 size fixed) (ISO 8859-1 western language, 7-segment)
Quantity of Characters	1/4 size	80 characters × 60 lines
	1/2 size	80 characters × 30 lines
	Full size	40 characters × 30 lines
	Double size	20 characters × 15 lines (Mincho font)
Character Magnification	0.5, 1 to 8 vertically and horizontally (except for scalable fonts)	
Character Attribute	Blink (1 or 0.5 sec period), reverse, bold, shadowed	
Graphics	Straight line, polyline, rectangle, arc, pie, circle/ellipse, equilateral polygons (3, 4, 5, 6, 8), picture, fill	
Window Display	3 popup screens + 1 system screen	

• See instructions on **L-111** for details.

\*2) The backlight life is not guaranteed and refers to the time until the brightness reduces by half after use at 25°C. The actual life depends on operating environments and conditions.

\*3) Brightness of the LCD only.

## Operation Specifications

Switching Element	Analog resistive membrane
Operating Force	3N maximum
Mechanical Life	1,000,000 operations
Acknowledgement Sound	Electronic buzzer or speaker output

## Function Specifications

Screen Types	Base screen, popup screen, system screen
No. of Screens	Base screen: 3,000 max. Popup screen: 3,015 max.
User Memory	58 MB (including expansion fonts and kanji dictionary data)
Parts	Bit Button, Word Button, Goto Screen, Print Button, Key Button, Multi Button, Keypad, Selector Switch, Potentiometer, Numerical Input, Character Input, Pilot Lamp, Multi-State Lamp, Picture Display, Message Display, Message Switching Display, Alarm List Display, Alarm Log Display, Numerical Display, Bar Graph, Trend Chart, Pie Chart, Meter, Calendar, Bit Write Command, Word Write Command, Goto Screen Command, Print Command, Timer, Screen Script Command, Multi Command, Video Display
Calendar	Year, Month, Day, Hour, Min., Sec., Day of Week ±60 sec per month (at 25°C)
Power Failure Backup Data	Calendar, log data, keep internal relay, keep internal register
Battery	Recommended replacement: every 5 years (at 25°C)

## Interface Specifications

Serial Interface (COM1)	Electrical Characteristics	EIA RS232C, RS422/485 compliant
	Transmission Speed	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 187500 bps (*5)
	Synchronization	Asynchronous
	Communication Method	Half or full duplex
	Control System	Hardware control or none (*6)
	Connector	D-sub 9-pin connector / socket
Serial Interface (COM2) (*4)	Electrical Characteristics	EIA RS232C, RS422/485 compliant
	Transmission Speed	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 187500 bps (*5)
	Synchronization	Asynchronous
	Communication Method	Half or full duplex
	Control System	Hardware control or none (*6)
	Connector	Detachable 9-pin terminal block
Ethernet Interface (LAN)	Interface	IEEE802.3u (10/100BASE-T) compliant
	Connector	Modular connector (RJ-45)
USB Interface (USB1)	Interface	USB 2.0
	Connector	USB Type Mini-B connector
USB Interface (USB2)	Interface	USB 2.0
	Connector	USB Type A connector
	Output current	5V 500 mA
Memory Card Interface (SD)	Interface	SD memory card, SDHC memory card
	Connector	SD memory card socket
Expansion Module Interface (EXT)	Interface	MicroSmart I/O module interface
	Output Current	5V 130 mA, 24V 150 mA
	Max. No. of Units	2 units

\*4) RS232C and RS 422/485 can be used simultaneously

\*5) 187,500 bps is available only with SIEMENS SIMATIC S7-300/400 series (MPI port direct connection).

\*6) RS232C only for hardware control

APEM

Switches & Pilot Lights

Control Boxes

Emergency Stop Switches

Enabling Switches

Safety Products

Explosion Proof

Terminal Blocks

Relays & Sockets

Circuit Protectors

Power Supplies

LED Illumination

Controllers

Operator Interfaces

Sensors

AUTO-ID

Programmable Operator Interfaces

Periphery Equipment

HG5G

HG4G

HG3G

HG2G

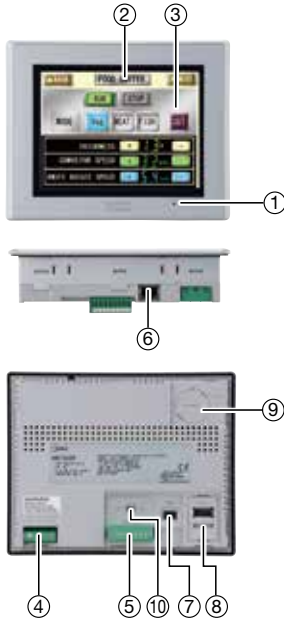
HG1G

# 5.7 inch HG2G-5T Operator Interface (Basic)

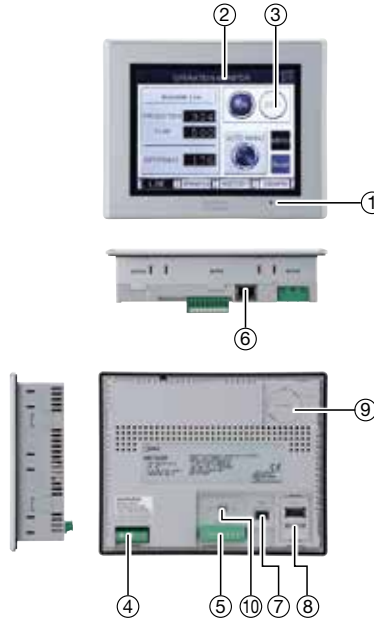
Enhanced visibility and user-friendly

Supports a wide range of operating temperatures achieving high environmental resistance.

HG2G-5TT (Color)



HG2G-5TN (Monochrome)



No.	Name
①	Power LED
②	Display
③	Touchscreen
④	Power Supply Terminal
⑤	Serial Interface 1 (SERIAL1)
⑥	Ethernet Interface (LAN)
⑦	USB Interface (USB)
⑧	USB Interface (USB2)
⑨	Battery Cover
⑩	Terminal Resistor Switch



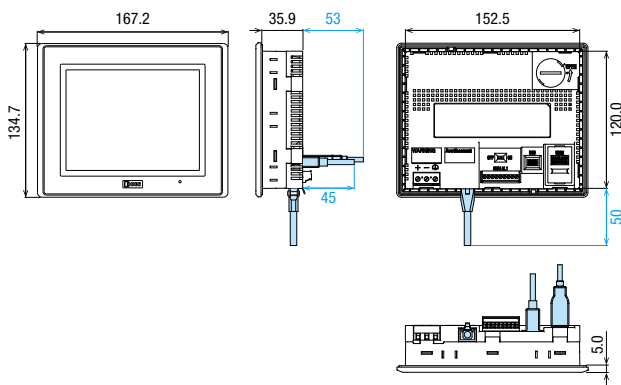
(for main unit only)

• See website for details on approvals and standards.

## HG2G-5T Operator Interface

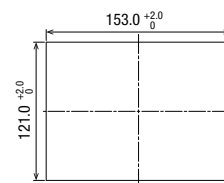
Display Screen	Operation Style	Communication/Memory Interface	Housing/Bezel Color	Part No.	Approvals
5.7-inch TFT color LCD 65,536 colors	Touch Switch (analog resistive)	SERIAL1 LAN USB USB2	Light gray	HG2G-5TT22TF-W	Safety Standards: UL508 CSA C22.2 No.142 CSA C22.2 No.213 ANSI/ISA 12.12.01
			Dark gray	HG2G-5TT22TF-B	
			Silver	HG2G-5TT22TF-S	
Light gray			HG2G-5TN22TF-W		
Dark gray			HG2G-5TN22TF-B		
Silver			HG2G-5TN22TF-S		
5.7-inch TFT Monochrome LCD 16 shades					

## Dimensions



## Panel Cut-out

All dimensions in mm.



Panel Thickness: 1.0 to 5.0 mm

Note 1: Dimensions in blue show the mounting dimensions of the cable.

Note 2: Dimensions in the figure may vary depending on the type of cable connected.

Note 3: Install the HG2G-5T into a panel cut-out by tightening the four mounting clips (supplied with the HG2G-5T) to a torque of 0.2 to 0.3 N·m.

Do not tighten with excessive force, otherwise the HG2G-5T and screen may become distorted. Also waterproof characteristics may be lost.

General Specifications

Model	HG2G-5TT (Color) / HG2G-5TN (Monochrome)	
Rated Power Voltage	12V DC/24 V DC	
Power Voltage Range	10.2 to 28.8V DC	
Power Consumption	8W maximum 4W maximum when not using USB interface (USB2)	
Allowable Momentary Power Interruption	10ms maximum (Voltage 20.4 to 28.8V DC) 1ms maximum (Voltage 10.2 to 20.4V DC)	
Inrush Current	40A maximum	
Dielectric Strength	1000V AC, 10 mA, 1 minute between power and FG terminals	
Operating Temperature	-20 to +60°C (no freezing)	
Operating Humidity	10 to 90% RH (no condensation)	
Storage Temperature	-20 to +70°C (no freezing)	
Storage Humidity	10 to 90% RH (no condensation)	
Pollution Degree	2	
Vibration Resistance	5 to 8.4 Hz amplitude 3.5 mm, 8.4 to 150 Hz, acceleration 9.8 m/s <sup>2</sup> 10 cycles (100 minutes) on each of three mutually perpendicular axes	
Shock Resistance	147 m/s <sup>2</sup> , 11 ms 5 shocks on each of three mutually perpendicular axes	
Noise Immunity	Fast transient/burst test, Power terminals: ±2 kV, Communication line: ±1 kV (IEC/EN 61131-2, IEC/EN 61000-4-4)	
Electrostatic Discharge	Contact ±6 kV, air ±8 kV (IEC/EN 61131-2, IEC/EN 61000-4-2)	
Corrosion Immunity	Free from corrosive gases	
Mounting	Panel mounting (Panel Thickness: 1.0 to 5.0 mm)	
Degree of Protection (*1)	IP66F (IEC 60529) (front part when mounted) UL Type 4X, 12, and 13 IP65F when panel thickness is below 1.5mm	
Dimensions	167.2 W × 134.7 H × 40.9 D mm	
Weight (approx.)	0.5 kg	

- Do not use the HG2G-5T in an environment subject to strong ultraviolet rays, otherwise the LCD quality will deteriorate.
- \*1) See instructions on the L-111 for details.

Display Specifications

Model	HG2G-5TT (Color)	HG2G-5TN (Monochrome)
Display	TFT color LCD	TFT Monochrome LCD
Color/Shade	65,536 colors	16 shades
Effective Display Area	115.2W × 86.4H mm	
Display Resolution	320W × 240H pixels	
View Angle	Right and left 80°, up 80°, down 80°	Right and left 65°, up 80°, down 60°
Backlight	White LED	
Backlight Life	100,000 hours minimum (*2)	
Brightness	500 cd/m <sup>2</sup> (*3)	1100 cd/m <sup>2</sup> (*3)
Brightness Adjustment	32 levels	
Backlight Replacement	Not possible	
Display Character Size	1/4 size	8 × 8 pixels (Western European language: ISO 8859-1, Central European language: ANSI 1250, Baltic: ANSI 1257, Cyrillic: ANSI1251, Japanese katakana and symbols: JIS 8-bit code)
	1/2 size	8 × 16 pixels (Western European language ISO 8859-1, Central European language: ANSI 1250, Baltic: ANSI 1257, Cyrillic: ANSI1251, Japanese katakana and symbols: JIS 8-bit code)
	Full size	16 × 16 pixels (Japanese JIS first and second level characters, simplified Chinese, traditional Chinese, Korean)
	Double size	32 × 32 pixels (Japanese JIS first level characters, Mincho font)
Quantity of Characters	1/4 size	40 characters × 30 lines
	1/2 size	40 characters × 15 lines
	Full size	20 characters × 15 lines
	Double size	10 characters × 7 lines (Mincho font)
Character Magnification	0.5, 1 to 8 vertically and horizontally (except for scalable fonts)	
Character Attribute	Blink (1 or 0.5 sec period), reverse, bold, shadowed	
Graphics	Straight line, polyline, rectangle, arc, pie, circle/ellipse, equilateral polygons (3, 4, 5, 6, 8), picture, fill	
Window Display	3 popup screens + 1 system screen	

- See instructions on L-111 for details.
- \*2) The backlight life is not guaranteed and refers to the time until the brightness reduces by half after use at 25°C. The actual life depends on operating environments and conditions.
- \*3) Brightness of the LCD only.

Operation Specifications

Switching Element	Analog resistive membrane
Operating Force	3N maximum
Mechanical Life	1,000,000 operations
Acknowledgement Sound	Electronic buzzer or speaker output

Function Specifications

Screen Types	Base screen, popup screen, system screen
No. of Screens	Base screen: 3,000 max. Popup screen: 3,015 max.
User Memory	5 MB (including expansion fonts)
Parts	Bit Button, Word Button, Goto Screen, Print Button, Key Button, Multi Button, Keypad, Selector Switch, Potentiometer, Numerical Input, Character Input, Pilot Lamp, Multi-State Lamp, Picture Display, Message Display, Message Switching Display, Alarm List Display, Alarm Log Display, Numerical Display, Bar Graph, Trend Chart, Pie Chart, Meter, Calendar, Bit Write Command, Word Write Command, Goto Screen Command, Print Command, Timer, Screen Script Command, Multi Command, Video Display
Calendar	Year, Month, Day, Hour, Min., Sec., Day of Week ±60 sec per month (at 25°C)
Power Failure Backup Data	Calendar, log data, keep internal relay, keep internal register
Battery	Recommended replacement: every 5 years (at 25°C)

Interface Specifications

Serial Interface 1 (SERIAL1) (*4)	RS232C	Electrical Characteristics	EIA RS232C compliant
		Transmission Speed	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 187500 bps (*5)
		Synchronization	Asynchronous
		Communication Method	Half or full duplex
	Control System	Hardware control or none	
	RS422 / 485	Electrical Characteristics	EIA RS422/485 compliant
Transmission Speed		1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 187500 bps (*5)	
Synchronization		Asynchronous	
Communication Method		Half or full duplex	
Control System	Control System		
Connector		Detachable 9-pin terminal block	
Ethernet Interface (LAN)	Interface	IEEE802.3u (10BASE-T/100BASE-TX) compliant	
	Connector	Modular connector (RJ-45)	
USB Interface (USB1)	Interface	USB 2.0	
	Connector	USB Type Mini-B connector	
USB Interface (USB2)	Interface	USB 2.0	
	Connector	USB Type A connector	
Output Current		5V 500 mA	

- \*4) RS232C and RS 422/485 can be used simultaneously
- \*5) 187,500 bps is available only with SIEMENS SIMATIC S7-300/400 series (MPI port direct connection).

APEM

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Periphery Equipment

HG5G

HG4G

HG3G

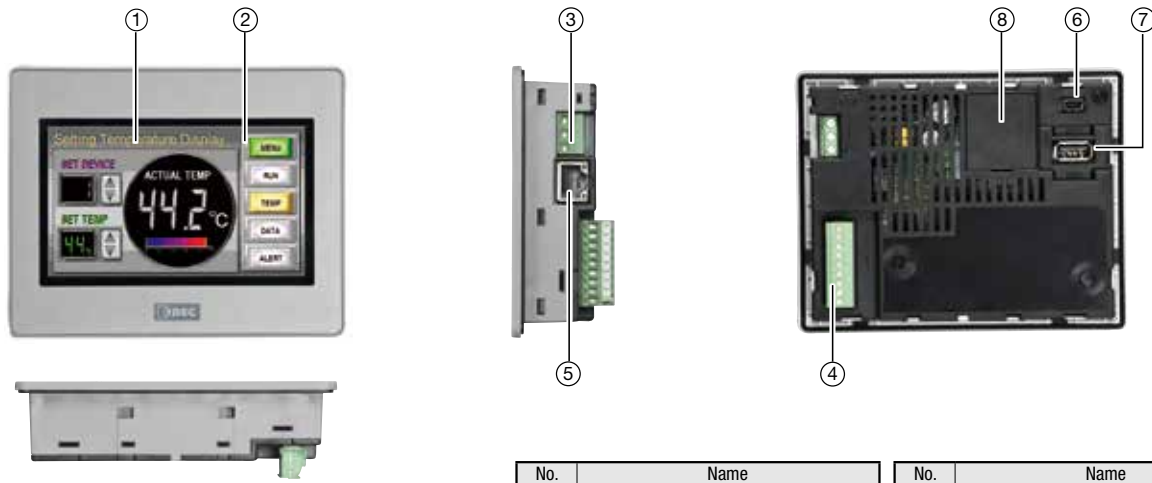
HG2G

HG1G



# 4.3 inch HG1G Operator Interface

Maintenance time reduced by IoT monitoring.  
Enhanced visibility and user-friendly.



No.	Name
①	Display
②	Touchscreen
③	Power Supply Terminal
④	Serial Interface (COM)

No.	Name
⑤	Ethernet Interface (LAN)
⑥	USB Interface (USB1)
⑦	USB Interface (USB2)
⑧	Battery Cover

(for main unit only)

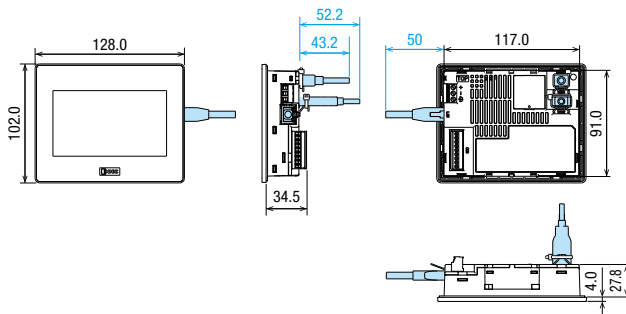
• See website for details on approvals and standards.

## HG1G Operator Interface

Display Screen	Operation Style	Communication/Memory Interface	Housing/Bezel Color	Part No.	Approvals
4.3-inch TFT color LCD 65,536 colors	Touch Switch (analog resistive)	COM LAN USB1 USB2	Black	<b>HG1G-4VT22TF-B</b>	Safety Standards: UL508 CSA C22.2 No.142 CSA C22.2 No.213 ANSI/ISA 12.12.01
			Silver	<b>HG1G-4VT22TF-S</b>	

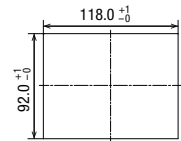
• Models with a coated board that can be used in harsh environments are also available.

## Dimensions



## Panel Cut-out

All dimensions in mm.



Panel Thickness: 1.0 to 5.0 mm

Note 1: Dimensions in blue show the mounting dimensions of the cable.

Note 2: Dimensions in the figure may vary depending on the type of cable connected.

Note 3: Install the HG1G into a panel cut-out by tightening the two mounting clips (supplied with the HG1G) to a torque of 0.3 to 0.35 N·m.

Do not tighten with excessive force, otherwise the HG1G and screen may become distorted. Also waterproof characteristics may be lost.

### General Specifications

Electrical Specifications	Rated Power Voltage	12/24 V DC
	Power Voltage Range	10.2 to 28.8V DC
	Power Consumption	8W maximum 4W maximum when not using USB interface (USB2)
	Allowable Momentary Power Interruption	10ms maximum (voltage 20.4 to 28.8V DC) 1ms maximum (voltage 10.2 to 20.4V DC)
	Inrush Current	40A maximum
Environmental Specifications	Dielectric Strength	1,000V AC, 10 mA, 1 minute between power and FG terminals
	Operating Temperature	-20 to +55°C (no freezing)
	Operating Humidity	10 to 90% RH (no condensation)
	Storage Temperature	-20 to +70°C (no freezing)
	Storage Humidity	10 to 90% RH (no condensation)
	Pollution Degree	2
	Vibration Resistance	5 to 8.4 Hz amplitude 3.5 mm, 8.4 to 150 Hz, acceleration 9.8 m/s <sup>2</sup> 10 cycles (100 minutes) on each of three mutually perpendicular axes
	Shock Resistance	147 m/s <sup>2</sup> , 11 ms 5 shocks on each of three mutually perpendicular axes
	Noise Immunity	Fast transient/burst test, Power terminals: ±2 kV, Communication line: ±1 kV (IEC/EN 61131-2, IEC/EN 61000-4-4)
	Electrostatic Discharge	Contact ±6 kV, air ±8 kV (IEC/EN 61131-2, IEC/EN 61000-4-2)
Structure	Corrosion Immunity	Free from corrosive gases
	Mounting	Panel mounting (panel thickness: 1.0 to 5.0 mm)
	Degree of Protection (*1)	IP66F/IP67F (IEC 60529) (front part when mounted) UL Type 4X, 12, and 13 IP65F/IP67F when panel thickness is below 1.5mm
	Dimensions	128 W × 102 H × 31.8 D mm
	Weight (approx.)	300g

• Do not use the HG1G in an environment subject to strong ultraviolet rays, otherwise the LCD quality will deteriorate.

\*1) See instructions on L-111 for details.

### Display Specifications

Display	TFT color LCD	
Color/Shade	65,536 colors	
Effective Display Area	95.04 W × 53.836 H mm	
Display Resolution	480 W × 272 H pixels	
View Angle	Right and left 70°, up 60°, down 65°	
Backlight	White LED	
Backlight Life	70,000 hours (*2)	
Brightness	800 cd/m <sup>2</sup> (*3)	
Brightness Adjustment	32 levels	
Backlight Replacement	Not possible	
Display Character Size	1/4 size	8 × 8 pixels (Western European language: ISO 8859-1, Central European language: ANSI 1250, Baltic: ANSI 1257, Cyrillic: ANSI1251, Japanese katakana and symbols: JIS 8-bit code)
	1/2 size	8 × 16 pixels (Western European language ISO 8859-1, Central European language: ANSI 1250, Baltic: ANSI 1257, Cyrillic: ANSI1251, Japanese katakana and symbols: JIS 8-bit code)
	Full size	16 × 16 pixels (Japanese JIS first and second level characters, simplified Chinese, traditional Chinese, Korean)
	Double size	32 × 32 pixels (Japanese JIS first level characters, Mincho font)
Quantity of Characters	1/4 size	60 characters × 34 lines
	1/2 size	60 characters × 17 lines
	Full size	60 characters × 17 lines
	Double size	15 characters × 8 lines (Mincho font)
Character Magnification	0.5, 1 to 8 vertically and horizontally (except for scalable fonts)	
Character Attribute	Blink (1 or 0.5 sec period), reverse, bold, shadowed	
Graphics	Straight line, polyline, rectangle, arc, pie, circle/ellipse, equilateral polygons (3, 4, 5, 6, 8), picture, fill	
Window Display	3 popup screens + 1 system screen	

• See instructions on L-111 for details.

\*2) The backlight life is not guaranteed and refers to the time until the brightness reduces by half after use at 25°C. The actual life depends on operating environments and conditions.

\*3) Brightness of LCD when operating condition is 25°C.

### Operation Specifications

Switching Element	Analog resistive membrane
Operating Force	3N maximum
Mechanical Life	1,000,000 operations
Acknowledgement Sound	Electronic buzzer

### Function Specifications

Screen Types	Base screen, popup screen, system screen
No. of Screens	Base screen: 3,000 max. Popup screen: 3,015 max.
User Memory	12 MB (including expansion fonts)
Parts	Bit Button, Word Button, Goto Screen, Print Button Key Button, Multi Button, Keypad, Selector Switch, Potentiometer, Numerical Input, Character Input, Pilot Lamp, Multi-State Lamp, Picture Display, Message Display, Message Switching Display, Alarm List Display, Alarm Log Display, Numerical Display, Bar Graph, Trend Chart, Pie Chart, Meter, Calendar, Bit Write Command, Word Write Command, Goto Screen Command, Print Command Screen Script Command, Multi Command, Timer
Calendar	Year, Month, Day, Hour, Min., Sec., Day of Week ±90 sec per month (at +25°C)
Power Failure Backup Data	Calendar, log data, keep internal relay, keep internal register
Battery	Recommended replacement time: every 5 years (at +25°C)

### Interface Specifications

Serial Interface (COM) (*4)	RS232C	Electrical Characteristics	EIA RS232C compliant
		Transmission Speed	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 187500 bps (*5)
		Synchronization	Asynchronous
		Communication Method	Half or full duplex
		Control System	Hardware control or none
	RS422/485	Electrical Characteristics	EIA RS422/485 compliant
		Transmission Speed	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 187500 bps (*5)
		Synchronization	Asynchronous
		Communication Method	Half or full duplex
		Control System	None
Connector	Detachable 9-pin terminal block		
Ethernet Interface (LAN)	Interface	IEEE802.3u (10BASE-T/100BASE-TX) compliant	
	Connector	Modular connector (RJ45)	
USB Interface (USB1)	Interface	USB 2.0	
	Connector	USB Type Mini-B connector	
USB Interface (USB2)	Interface	USB 2.0	
	Connector	USB Type A connector	
	Output Current	5V 500 mA (*6)	

\*4) RS232C and RS 422/485 can be used simultaneously.

\*5) 187,500 bps is available only with SIEMENS SIMATIC S7-300/400 series (MPI port direct connection).

\*6) When using USB2 at 151 mA min., the operating temperature is -20 to 50° C.

APEM

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Periphery Equipment

HG5G

HG4G

HG3G

HG2G

HG1G

## HG Series Operator Interface

## Options

Name	Part No.	Package Quantity	Description	Applicable Model						
				HG5G-V	HG4G-V	HG3G-VA	HG3G-V8	HG2G-V	HG2G-5T	HG1G
Application Software	SW1A-W1C	1	Automation Organizer (includes WindO/I-NV4)	✓	✓	✓	✓	✓	✓	✓
USB Maintenance Cable	HG9Z-XCM42	1	USB Cable (2m), USB-miniB	✓	✓	✓	✓	✓	✓	✓
PLC Connection Cable	HG9Z-XC295	1	For IDEC MicroSmart (5m), Mini DIN 8-pin (Dsub 9-pin)	✓	✓	✓	✓	✓	-	-
	HG9Z-XC305	1	For Mitsubishi FX series (5m), Mini DIN 8-pin (Dsub 9-pin)	✓	✓	✓	✓	✓	-	-
	HG9Z-XC315	1	For Mitsubishi Q series (5m), Mini DIN 6-pin (Dsub 9-pin)	✓	✓	✓	✓	✓	-	-
	HG9Z-XC275	1	For IDEC MicroSmart (5m), Mini DIN 8-pin (loose wire)	✓	✓	✓	✓	✓	✓	✓
	FC2A-KP1C	1	For IDEC MicroSmart (2.4m), Mini DIN 8-pin (loose wire)	✓	✓	✓	✓	✓	✓	✓
	FC6A-KC1C	1	For IDEC MicroSmart (FC6A) (5m), RJ45 connector (loose wire)	✓	✓	✓	✓	✓	✓	✓
	FC6A-KC2C	1	For IDEC MicroSmart (FC6A) (5m), RJ45 connector (Dsub 9-pin)	✓	✓	✓	✓	-	-	-
USB panel-mount extension cable	HG9Z-XCE11	1	For USB-A port (1m)	✓	✓	✓	✓	✓	✓	✓
	HG9Z-XCE21	1	For USB-mini B port (1m)	✓	✓	✓	✓	✓	✓	✓
Protective Cover	HG9Z-2E2PN03	3	For 5.7 inch (3 pcs/pack) (used to cover the front side of the operator interface)	-	-	-	-	✓	✓	-
Protective Sheet (*1)	HG9Z-1D4PN05	5	For 4.3 inch (5 pcs/pack) (used to protect the LCD)	-	-	-	-	-	-	✓
	HG9Z-2D5PN05	5	For 5.7 inch (5 pcs/pack) (used to protect the LCD)	-	-	-	-	✓	✓	-
	HG9Z-3D8PN02	2	For 8.4-inch (2 pcs/pack)	-	-	-	✓	-	-	-
	HG9Z-3DA2PN02	2	For 10.4-inch (2 pcs/pack)	-	-	✓	-	-	-	-
	HG9Z-4DCPN02	2	For 12.1 inch (2 pcs/pack)	-	✓	-	-	-	-	-
	HG9Z-5DFPN01	1	For 15.0 inch (1 pcs/pack)	✓	-	-	-	-	-	-
Expansion Module Clamp (*2)	HG9Z-XJ3PN05	5	For installing the expansion modules on the back of the operator interface (short). For total width 17.6 to 41.1 mm.	✓	✓	✓	✓	✓	-	-
	HG9Z-XJ4PN05	5	For installing the expansion modules on the back of the operator interface (long). For total width 47.0 to 69.4 mm.	✓	✓	✓	✓	✓	-	-
	HG9Z-XJ5PN05	5	For installing the expansion modules on the back of the operator interface (XL). For total width 70.5 to 93.0 mm.	✓	✓	✓	✓	-	-	-
User's Manual	HG9Y-B1701	1	English	✓	✓	✓	✓	✓	✓	✓

\*1) The protective sheet is UV resistant, however, resistance against direct sunlight in outdoor usage is not guaranteed.  
Used to protect the display screen.

\*2) Use the expansion module clamp when using expansion modules.

Order the module clamp by referring to the width of the module shown in the dimensions of each module.

## Maintenance Parts

Name	Part No.	Package Quantity	Description	Applicable Model						
				HG5G-V	HG4G-V	HG3G-VA	HG3G-V8	HG2G-V	HG2G-5T	HG1G
Mounting Clip	SLD-K02PN10	10	Four clips are supplied.	-	-	-	-	✓	✓	-
	HG9Z-4K2PN04	4	Four clips are supplied. (Two clips supplied with HG1G)	-	✓	✓	✓	-	-	✓
	HG9Z-4K2PN06	6	Six clips are supplied.	✓	-	-	-	-	-	-
Serial Interface Connector (Detachable 9-pin terminal block)	HG9Z-XT09V	1	One plug (terminal block type) is supplied.	-	-	-	-	✓	✓	✓
	HG9Z-XT09	1	One plug (terminal block type) is supplied.	✓	✓	✓	✓	-	-	-
Replacement Battery	HG9Z-XR1	1	Lithium battery CR2032 (one battery is supplied)	-	-	-	-	-	✓	✓
	HG9Z-XR2	1	Lithium battery CR2032W (one battery is supplied)	✓	✓	✓	✓	✓	-	-
USB Cable Lock Pin	HG9Z-XU1PN05	5	Used to lock USB cable (for USB2).	✓	✓	✓	✓	✓	✓	✓

**MICROSmart** Expansion Modules (Cannot be used for expansion with HG2G-5T and HG1G)

**Input Modules**

Input	Part No.	Connector	Dimensions (L × W × H mm)	Consumption Current (mA)	
				5V	24V
8 points/DC Input	FC6A-N08B1	Removable, 5.08mm pitch 11-pin, screw fastened type connector	90.0 × 23.6 × 73.0	30	0
16 points/DC Input	FC6A-N16B1	Removable, 3.81mm pitch 10-pin, screw fastened type connector	90.0 × 23.6 × 73.0	40	0
16 points/DC Input	FC6A-N16B3	20-pin MIL connector	90.0 × 17.6 × 73.0	40	0
32 points/DC Input	FC6A-N32B3		90.0 × 30.2 × 73.0	65	0
8 points/AC Input	FC6A-N08A11	Removable, 5.08mm pitch 11-pin, screw fastened type connector	90.0 × 23.6 × 73.0	40	0

**Output Modules**

Output	Part No.	Connector	Dimensions (L × W × H mm)	Consumption Current (mA)	
				5V	24V
8 points/Relay Output	FC6A-R081	Removable, 5.08mm pitch 11-pin, screw fastened type connector	90.0 × 23.6 × 73.0	35	50
16 points/Relay Output	FC6A-R161	Removable, 3.81mm pitch 10-pin, screw fastened type connector	90.0 × 23.6 × 73.0	50	100
8 points/Transistor Sink Output	FC6A-T08K1	Removable, 5.08mm pitch 11-pin, screw fastened type connector	90.0 × 23.6 × 73.0	25	15
8 points/Transistor Source Output	FC6A-T08P1		90.0 × 23.6 × 73.0	25	15
16 points/Transistor Sink Output	FC6A-T16K1	Removable, 3.81mm pitch 10-pin, screw fastened type connector	90.0 × 23.6 × 73.0	30	25
16 points/Transistor Sink Output	FC6A-T16K3	20-pin MIL connector	90.0 × 17.6 × 73.0	30	25
16 points/Transistor Source Output	FC6A-T16P1	Removable, 3.81mm pitch 10-pin, screw fastened type connector	90.0 × 23.6 × 73.0	30	25
16 points/Transistor Source Output	FC6A-T16P3	20-pin MIL connector	90.0 × 17.6 × 73.0	30	25
32 points/Transistor Sink Output	FC6A-T32K3		90.0 × 30.2 × 73.0	45	50
32 points/Transistor Source Output	FC6A-T32P3		90.0 × 30.2 × 73.0	45	50

**Digital Combination I/O Modules**

Input	Output	I/O Points	Part No.	Connector	Dimensions (L × W × H mm)	Consumption Current (mA)	
						5V	24V
24V DC (Sink/Source)	240V AC, 2A 30V DC, 2A	4 points/DC Input 4 points/Relay Output	FC6A-M08BR1	Removable, 5.08mm pitch, 11-pin, screw fastened type connector	90.0 × 23.6 × 73.0	30	25
		16 points/DC Input 8 points/Relay Output	FC6A-M24BR1	Removable, 3.81mm pitch 11-pin, screw fastened type connector 17-pin, screw fastened type connector	90.0 × 39.2 × 73.0	55	50

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- Periphery Equipment

- HG5G
- HG4G
- HG3G
- HG2G
- HG1G



## HG Series Operator Interface

## Analog I/O Modules

Name	Part No.	I/O Points	Input	Output	Terminal	Dimensions (L × W × H mm)	Consumption Current (mA)	
							5	24
Analog Input Module	FC6A-J2C1	2 inputs	Voltage (0 to 10V, -10 to +10V) Current (0 to 20mA, 4 to 20mA)	—	Removable, 5.08mm pitch 11-pin, screw fastened type connector	90.0 × 23.6 × 73.0	40	0
	FC6A-J4A1	4 inputs		—			45	0
	FC6A-J8A1	8 inputs		—			40	0
	FC6A-J4CN1	4 inputs	Voltage (0 to 10V, -10 to +10V) Current (0 to 20mA, 4 to 20mA) Thermocouple (K, J, R, S, B, E, T, N, C) Resistance Thermometer (Ni100, Ni1000, Pt100, Pt1000)	—	Removable, 3.81mm pitch 10-pin, screw fastened type connector		50	0
	FC6A-J4CH1Y	Isolated between channels 4 inputs	Thermocouple (K, J, R, S, B, E, T, N, C)	—			50	0
	FC6A-J8CU1	8 inputs	Thermocouple (K, J, R, S, B, E, T, N, C) NTC/PTC Thermistor	—			45	0
	Analog Output Module	FC6A-K2A1	2 outputs	—			Voltage (0 to 10V, -10 to +10V) Current (0 to 20mA, 4 to 20mA)	Removable, 5.08mm pitch 11-pin, screw fastened type connector
FC6A-K4A1		4 outputs	—	50	0			
Analog I/O Module	FC6A-L06A1	4 inputs/ 2 outputs	Voltage (0 to 10V, -10 to +10V) Current (0 to 20mA, 4 to 20mA)	Voltage (0 to 10V, -10 to +10V) Current (0 to 20mA, 4 to 20mA)	Removable, 3.81mm pitch 10-pin, screw fastened type connector	55	0	
	FC6A-L03CN1	2 inputs/ 1 output	Voltage (0 to 10V, -10 to +10V) Current (0 to 20mA, 4 to 20mA) Thermocouple (K, J, R, S, B, E, T, N, C) Resistance Thermometer (Ni100, Ni1000, Pt100, Pt1000)			Removable, 5.08mm pitch 11-pin, screw fastened type connector	55	0

- IDEC PLC MicroSmart expansion I/O modules can be used.

When connecting expansion modules to the HG5G-V, HG4G/3G-V, and HG2G-V, note the limits shown below:

Part No.	No. of Connectable Expansion Modules	Total width of expandable modules when more than two are used	Current flow rate at 5V	Current flow rate at 24V
HG5G-V	4 max.	93.0 mm max.	130 mA max.	50 mA max.
HG4G/3G-V	4 max.	93.0 mm max.	130 mA max.	150 mA max.
HG2G-V	2 max.	70.0 mm max.	130 mA max.	150 mA max.

- Use the expansion module clamp when using expansion modules.  
Order the module clamp by referring to the width of the module shown in the dimensions of each module.
- See catalog or instruction manual (<http://www.idec.com/language/>) for details on MicroSmart expansion modules.

## Compatible PLCs

Note: HG2G-5T and HG1G cannot communicate using Ethernet/IP (Logix Native Tag)

Manufacturer	Series
IDEC	MICROSmart FC6A (Ethernet)
	SmartAXIS FT1A Pro/Lite (Ethernet)
	MICROSmart FC6A / FC5A / FC4A
	SmartAXIS FT1A Pro/Lite
Mitsubishi	MELSEC-A (link unit)
	MELSEC-QnA (link unit)
	MELSEC-Q (link unit)
	MELSEC-Q (Ethernet)
	MELSEC-FX
	MELSEC-FX (Ethernet)
OMRON	SYSMAC-C
	SYSMAC-CS
	SYSMAC-CJ1
	SYSMAC-CJ2
	SYSMAC-CP1
	SYSMAC (Ethernet)
Allen-Bradley	PLC-5 (Half Duplex)
	SLC-500 (Half Duplex)
	MicroLogix (Full Duplex)
	ControlLogix (Full Duplex)
	CompactLogix (Full Duplex)
	FlexLogix (Full Duplex)
	ControlLogix (Ethernet/IP, Ethernet/IP (Logix Native Tag))
	CompactLogix (Ethernet/IP, Ethernet/IP (Logix Native Tag))
	PLC-5 (Ethernet/IP)
	SLC 500 (Ethernet/IP)
	MicroLogix (Ethernet/IP)
SIEMENS	S7-200
	S7-300 (connects to CPU)
	S7-300 (link unit)
	S7-400
	S7-1200 (Ethernet)
	KV-700/1000/3000/5000
Keyence	KV Nano
	KZ
	KV
	KV (Ethernet)
Hitachi	S10mini
	S10V
JTEKT	TOYOPUC-PC2J
	TOYOPUC-PC3J
Toshiba Machine Works	TC200
	TCmini
GE Fanuc Automation	Series90-30
	VersaMax

Manufacturer	Series
Modicon	Modbus RTU Master (*1)
	Modbus RTU Slave (*2)
	Modbus ASCII Master (*1)
	Modbus TCP Client (*1)
	Modbus TCP Server (*2)
Schneider Electric	Twido
Panasonic	FP Series
Yaskawa Electric	MP
	MP (Ethernet)
Koyo	DirectLOGIC 05
	DirectLOGIC 06
	DirectLOGIC 205
	KOSTAC SZ
	KOSTAC SU
	KOSTAC SU (Ethernet)
Fanuc	Power Mate
	Series
Yokogawa Electric	FA-M3
	FA-M3 (Ethernet)
Fuji Electric	FREX-PC
	MICREX-F
	MICREX-SX
	MICREX-SX (Ethernet)
Toshiba	PROSEC T Series
	V Series
LS Industrial Systems	MASTER-K
VIGOR	VB
	VH
Emerson	FloBoss
Hitachi Industrial Equipment Systems	EH
	EH (Ethernet)

- The compatible PLC information is for reference only (except for IDEC PLCs), and IDEC does not guarantee the operation of any other manufacturers' PLC. When using other manufacturers' PLCs, read their specifications and instruction manual carefully. The PLC must be operated correctly under the user's responsibility.
- The company names and product names are registered trademarks or brand names.

\*1) HG series can be connected as a master to the slave/server device.

\*2) HG series is connected as a slave to the master/client device.

An updated listing of compatible PLCs can be found at the following website.  
<http://www.idec.com/oi/drivers>

APEM

Switches & Pilot Lights

Control Boxes

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Enabling Switches

Safety Products

Explosion Proof

Terminal Blocks

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HG5G

HG4G

HG3G

HG2G

HG1G

## Operating Instructions

Be sure to read this manual carefully before performing installation, wiring, or maintenance work.

- This product has been manufactured under strict quality control. However, if you intend to use this product in applications where failure of this equipment may result in damage to property or injury, ensure that it is used in conjunction with appropriate fail-safe backup equipment.
- When using the HG series 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 HG series before installation, removal, wiring, maintenance, and inspection of the HG series. Failure to turn power off may cause electrical shock or fire hazard.
- Emergency and interlocking circuits must be configured outside of the HG series.
- Do not use touch switches and the function keys for an emergency circuit or an interlocking circuit. If the HG series fails, external equipment connected to the HG series will no longer be protected, and serious injury to operators and equipment damage may be caused.
- Although the screen will not be visible if the backlight of the HG series burns out, the touch panel will remain functional. Incorrect touch panel operation will occur when operating the touch panel when the backlight appears to be turned off but is actually burnt out. Because such erroneous operation could result in damage, the touch panel should not be used after the backlight has burned out.
- 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. Therefore, do not operate the HG series by pressing more than one button simultaneously.
- Use the product within the environmental limits given in the catalog and manual. Use of the product in high-temperature or high-humidity environments, or in locations where it is exposed to condensation, corrosive gas or large shock loads, can create the risk of electrical shock or fire.
- The HG series is designed for use in pollution degree 2. Use the HG series in environments of pollution degree 2. (based on the IEC60664-1 rating)
- Install the HG series according to the instructions in the User's Manual. Improper installation will result in falling, failure, electrical shock, fire hazard, or malfunction of the HG series.
- Use a power supply of the rated value. Using an incorrect power supply may cause fire.
- The HG series uses "PS2 of EN61131" as DC power supply. (based on the IEC / EN61131 rating)
- When exporting the HG series to Europe, use an EN60127 (IEC60127) approved fuse on the power line outside the HG series.
- When exporting the HG series to Europe, use an EU-approved circuit protector.
- The touch panel of the HG series is made of glass, and will break if exposed to excessive shock. Be careful when handling the HG series.
- Do not press or scratch the touch panel and protection sheet with a hard object such as a tool.
- Do not install the HG series in areas subject to strong ultraviolet rays, as ultraviolet rays may impair the quality of the LCD.
- Note that small black and bright dots may show up on LCD Screen: this is not a failure or malfunction.
- The backlight life is not guaranteed and refers to the time until the brightness reduces by half after use at 25°C. The actual life depends on operating environments and conditions.
- Protection degree refers to the front of the surface after mounting. Although the protection structure satisfies various testing conditions, operation is not guaranteed under certain environments. IP66F/IP67F oilproof structure satisfies oilproof test conditions. Conditions are listed in the appendix of Japanese Industrial Standard JIS C 0920. Operation is not guaranteed when using oil for a long period of time or oil that does not satisfy standards. Please test/check before use.
- Do not attempt to disassemble, repair or modify the HG series. This can create the risk of fire or electrical shock.
- When using HG2G-5T and HG1G, to satisfy specifications for unnecessary radiation, attach a ferrite core to the power and communication cable connected to the main unit.

APEM

Switches &amp; Pilot Lights

Control Boxes

Emergency Stop Switches

Enabling Switches

Safety Products

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Circuit Protectors

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LED Illumination

Controllers

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Periphery Equipment

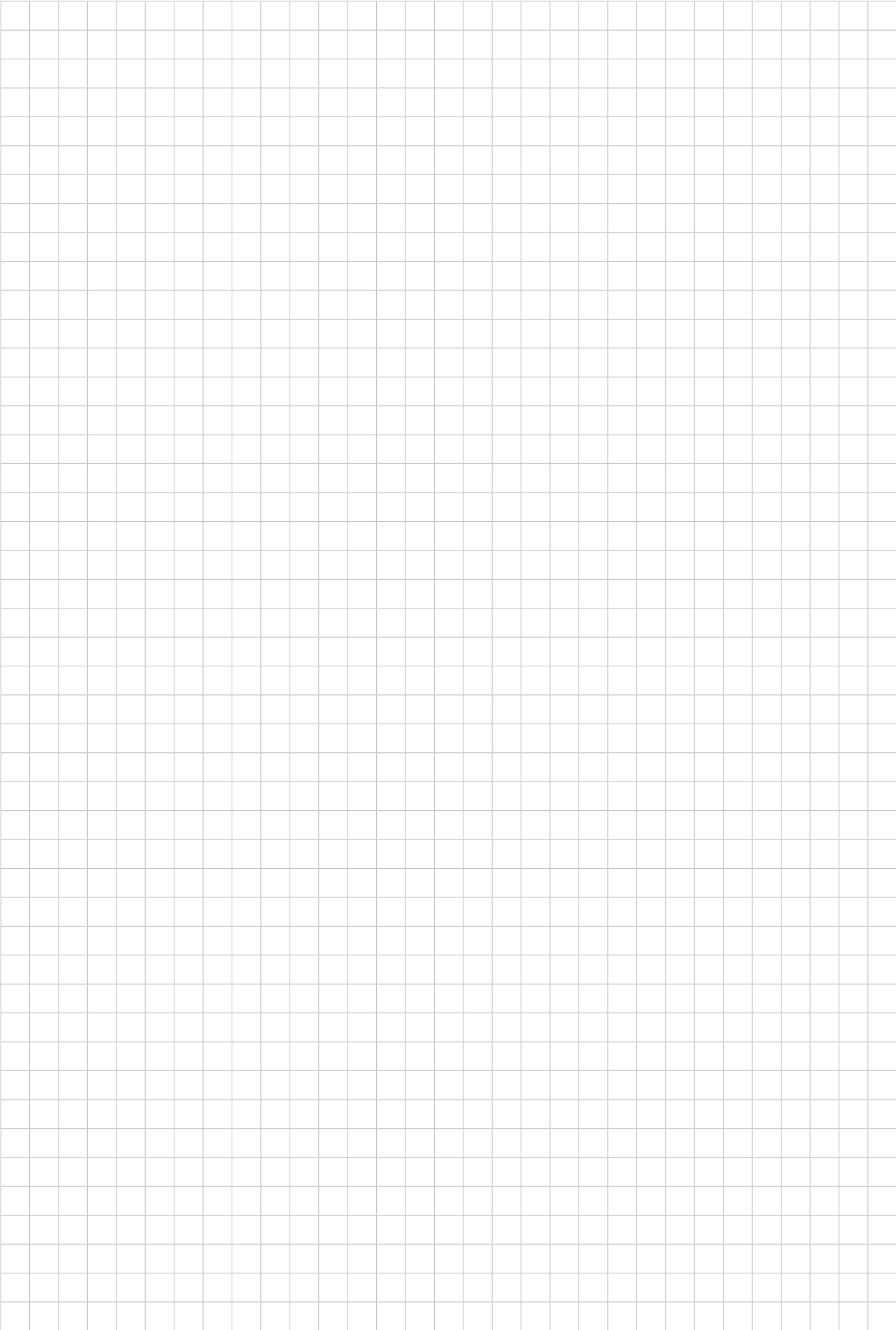
HG5G

HG4G

HG3G

HG2G

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# Ordering Terms and Conditions

Thank you for using IDEC Products.

By purchasing products listed in our catalogs, datasheets, and the like (hereinafter referred to as "Catalogs") you agree to be bound by these terms and conditions. Please read and agree to the terms and conditions before placing your order.

## 1. Notes on contents of Catalogs

- (1) Rated values, performance values, and specification values of IDEC products listed in this Catalog are values acquired under respective conditions in independent testing, and do not guarantee values gained in combined conditions.  
Also, durability varies depending on the usage environment and usage conditions.
- (2) Reference data and reference values listed in Catalogs are for reference purposes only, and do not guarantee that the product will always operate appropriately in that range.
- (3) The specifications / appearance and accessories of IDEC products listed in Catalogs are subject to change or termination of sales without notice, for improvement or other reasons.
- (4) The content of Catalogs is subject to change without notice.

## 2. Note on applications

- (1) If using IDEC products in combination with other products, confirm the applicable laws / regulations and standards.  
Also, confirm that IDEC products are compatible with your systems, machines, devices, and the like by using under the actual conditions. IDEC shall bear no liability whatsoever regarding the compatibility with IDEC products.
- (2) The usage examples and application examples listed in Catalogs are for reference purposes only. Therefore, when introducing a product, confirm the performance and safety of the instruments, devices, and the like before use. Furthermore, regarding these examples, IDEC does not grant license to use IDEC products to you, and IDEC offers no warranties regarding the ownership of intellectual property rights or non-infringement upon the intellectual property rights of third parties.
- (3) When using IDEC products, be cautious when implementing the following.
  - i. Use of IDEC products with sufficient allowance for rating and performance
  - ii. Safety design, including redundant design and malfunction prevention design that prevents other danger and damage even in the event that an IDEC product fails
  - iii. Wiring and installation that ensures the IDEC product used in your system, machine, device, or the like can perform and function according to its specifications
- (4) Continuing to use an IDEC product even after the performance has deteriorated can result in abnormal heat, smoke, fires, and the like due to insulation deterioration or the like. Perform periodic maintenance for IDEC products and the systems, machines, devices, and the like in which they are used.
- (5) IDEC products are developed and manufactured as general-purpose products for general industrial products. They are not intended for use in the following applications, and in the event that you use an IDEC product for these applications, unless otherwise agreed upon between you and IDEC, IDEC shall provide no guarantees whatsoever regarding IDEC products.
  - i. Use in applications that require a high degree of safety, including nuclear power control equipment, transportation equipment (railroads / airplanes / ships / vehicles / vehicle instruments, etc.), equipment for use in outer space, elevating equipment, medical instruments, safety devices, or any other equipment, instruments, or the like that could endanger life or human health
  - ii. Use in applications that require a high degree of reliability, such as provision systems for gas / waterworks / electricity, etc., systems that operate continuously for 24 hours, and settlement systems
  - iii. Use in applications where the product may be handled or used deviating from the specifications or conditions / environment listed in the Catalogs, such as equipment used outdoors or applications in environments subject to chemical pollution or electromagnetic interference  
If you would like to use IDEC products in the above applications, be sure to consult with an IDEC sales representative.

## 3. Inspections

We ask that you implement inspections for IDEC products you purchase without delay, as well as thoroughly keep in mind management/maintenance regarding handling of the product before and during the inspection.

## 4. Warranty

- (1) Warranty period  
The warranty period for IDEC products shall be one (1) year after purchase or delivery to the specified location. However, this shall not apply in cases where there is a different specification in the Catalogs or there is another agreement in place between you and IDEC.
- (2) Warranty scope  
Should a failure occur in an IDEC product during the above warranty period for reasons attributable to IDEC, then IDEC shall replace or repair that product, free of charge, at the purchase location / delivery location of the product, or an IDEC service base. However, failures caused by the following reasons shall be deemed outside the scope of this warranty.
  - i. The product was handled or used deviating from the conditions / environment listed in the Catalogs
  - ii. The failure was caused by reasons other than an IDEC product
  - iii. Modification or repair was performed by a party other than IDEC
  - iv. The failure was caused by a software program of a party other than IDEC
  - v. The product was used outside of its original purpose
  - vi. Replacement of maintenance parts, installation of accessories, or the like was not performed properly in accordance with the user's manual and Catalogs
  - vii. The failure could not have been predicted with the scientific and technical standards at the time when the product was shipped from IDEC
  - viii. The failure was due to other causes not attributable to IDEC (including cases of force majeure such as natural disasters and other disasters)Furthermore, the warranty described here refers to a warranty on the IDEC product as a unit, and damages induced by the failure of an IDEC product are excluded from this warranty.

## 5. Limitation of liability

The warranty listed in this Agreement is the full and complete warranty for IDEC products, and IDEC shall bear no liability whatsoever regarding special damages, indirect damages, incidental damages, or passive damages that occurred due to an IDEC product.

## 6. Service scope

The prices of IDEC products do not include the cost of services, such as dispatching technicians. Therefore, separate fees are required in the following cases.

- (1) Instructions for installation / adjustment and accompaniment at test operation (including creating application software and testing operation, etc.)
- (2) Maintenance inspections, adjustments, and repairs
- (3) Technical instructions and technical training
- (4) Product tests or inspections specified by you

The above content assumes transactions and usage within your region. Please consult with an IDEC sales representative regarding transactions and usage outside of your region. Also, IDEC provides no guarantees whatsoever regarding IDEC products sold outside your region.

# IDEC CORPORATION

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 [www.idec.com](http://www.idec.com)

**USA** IDEC Corporation  
**EMEA** APEM SAS

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**Thailand** IDEC Asia (Thailand) Co., Ltd.  
**India** IDEC Controls India Private Ltd.

**China** IDEC (Shanghai) Corporation  
IDEC Izumi (H.K.) Co., Ltd.  
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**Japan** IDEC Corporation

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