Operator Interface

# 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.

Distributed by

OMEGA

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**HG5G-V**
(15 inch)

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**HG4G-V**
(12.1 inch)

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**HG3G-V**
(10.4 inch)

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**HG2G-V**
(5.7 inch)

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

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**HG1G**
(4.3 inch)

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# From large to small size
# For diverse applications

## Line up

### High-Performance Model

15 inch

Version up 12.1 inch

Version 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

### Basic Model

### Compact Model

Version up 8.4 inch

Version up 5.7 inch

5.7 inch

4.3 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° |

IoT · Harsh environment · Usability

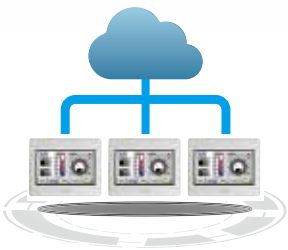
# High performance IoT functionality for the manufacturing floor

## 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 maintenace from remote locations.



## Web server function — Confirm status of the system from an 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 a your original monitor page without knowledge of Java or HTML.



IDEC

# 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$^2$, 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

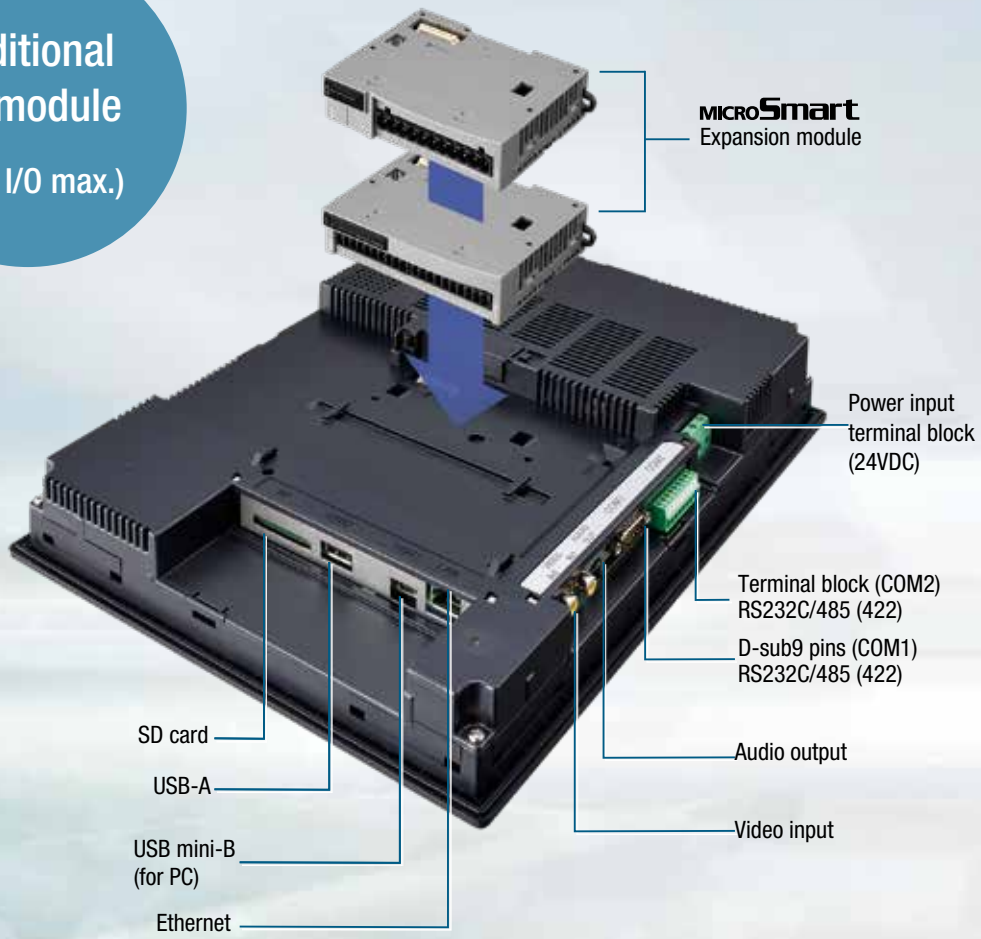
Hard coating prevents damage to the screen.

# A wide variety of functionality for users

**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.

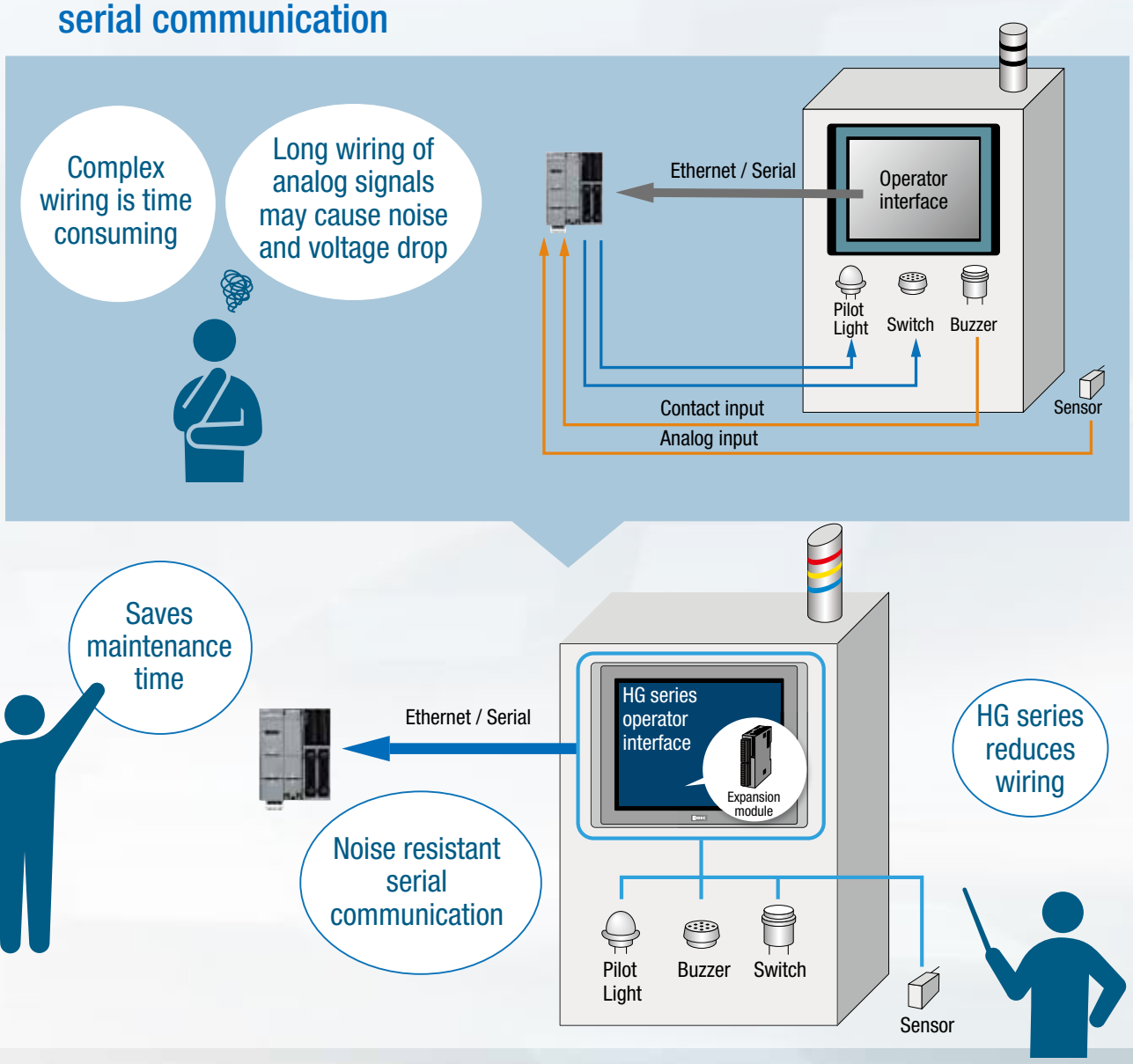
## Selectable memory

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 is of the trouble. Smooth and refined images can be recorded.

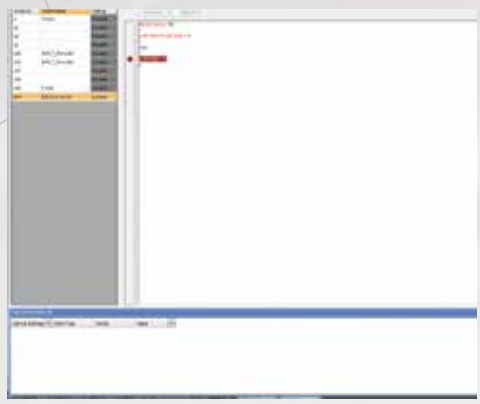
# Flexible and user-friendly programming

Automation Organizer
## WindO/I-NV4

### OI Touchscreen Programming Software

Flexible and easy to use
Easy programming enables efficiency

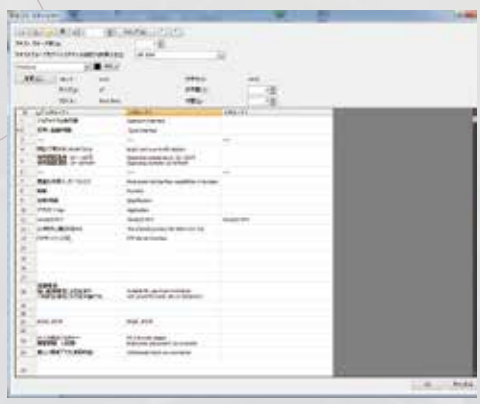
1



### 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.

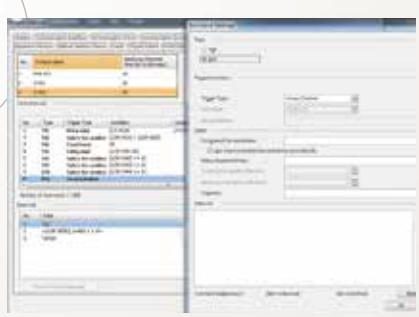
2



### Simple and useful manager fuctions

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

3



## User communication function enables use of complex protocols

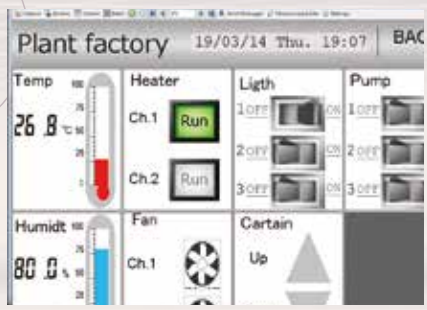
User communication function allows the use of protocols not supported by network drivers.

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

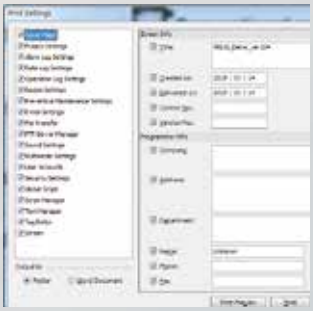
Information such as device address and operating condition of parts laid out on the screen can be checked easily.

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.

# 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$^2$)

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.

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

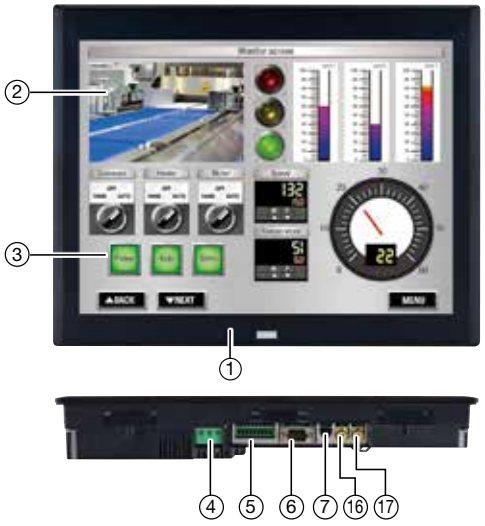
Programmable Operator Interfaces
Periphery Equipment

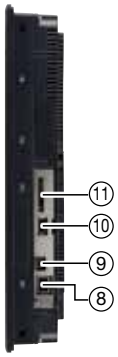
HG4G
HG4G
HG3G
HG2G
HG1G

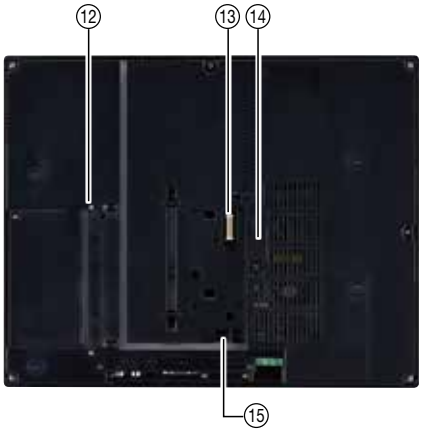
APEM
Switches & Pilot Lights
Control Boxes
Emergency Stop Switches
Enabling Switches
Safety Products
Explosion Proof
Terminal Blocks
Relays & Sockets
Circuit Protectors
Power Supplies
LED Illumination
Controllers
Operator Interfaces
Sensors
AUTO-ID
Programmable Operator Interfaces
Periphery Equipment
HG5G
HG4G
HG3G
HG2G
HG1G

# HG5G-V 15 inch Operator Interface

## Lightweight with slim bezel.
## Large size ideal for handling huge amount of information for the IoT era.




| 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) |

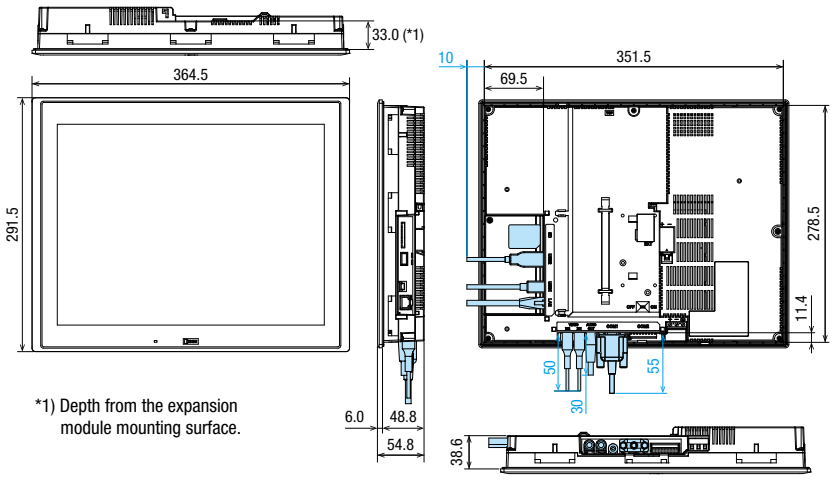
(for main unit only)

• See website for details on approvals and standards.

## HG5G-V Operator Interface

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

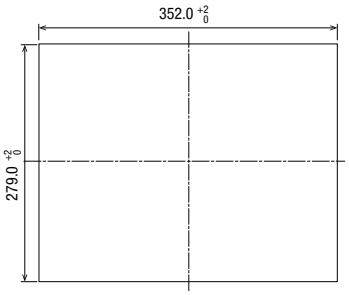
## Dimensions




*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<br>20W maximum when not using USB2 or EXT<br>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$^2$<br>10 cycles (100 minutes) on each of three mutually perpendicular axes |
| Shock Resistance | 147 m/s$^2$, 11 ms<br>5 shocks on each of three mutually perpendicular axes |
| Noise Immunity | Fast transient/burst test,<br>Power terminals: ±2 kV,<br>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)<br>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$^2$ (*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)<br>(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.<br>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<br>±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 50 mA |
| | Max. No. of Units | 4 units |

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

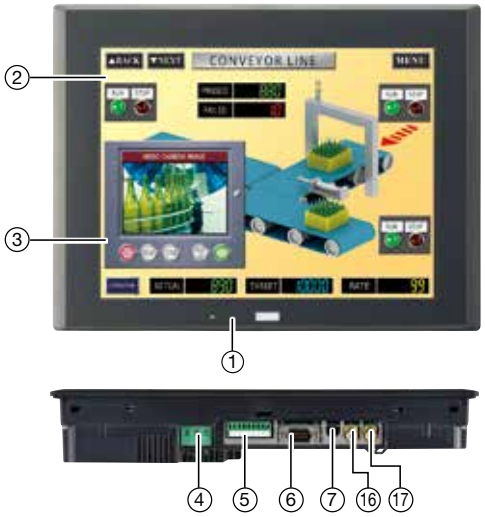
*5) 187,500 bps is available only with SIEMENS SIMATIC S7-300/400 series (MPI port direct connection).

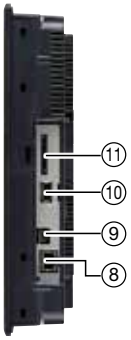
*6) RS232C only for hardware control

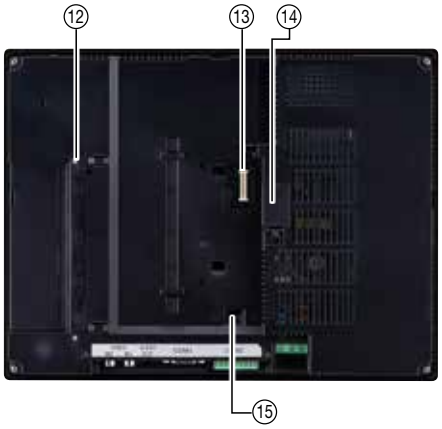
# HG4G-V 12.1 inch Operator Interface

## 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) |

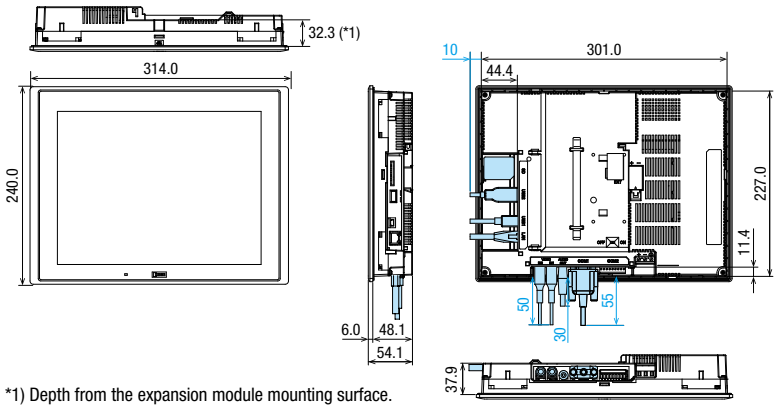
(for main unit only)

• 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<br>TFT color LCD<br>65,536 colors | Touch Switch<br>(analog resistive) | COM1<br>COM2<br>LAN<br>USB1<br>USB2<br>SD<br>EXT | VIDEO IN1<br>VIDEO IN2<br>AUDIO OUT | Black | HG4G-VCXT22MF-B | Safety Standards:<br>UL61010-1<br>UL61010-2-201<br>UL12.12.01<br>CSA C22.2 No.61010-1-12<br>CSA C22.2 No.61010-2-201<br>CSA C22.2 No.213<br>Ship Classification Standards:<br>LR, DNV·GL, ABS, ClassNK |

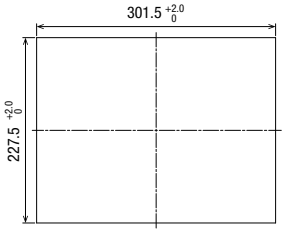
## Dimensions




*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<br>15W maximum when not using USB2 or EXT<br>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$^2$<br>10 cycles (100 minutes) on each of three mutually perpendicular axes |
| Shock Resistance | 147 m/s$^2$, 11 ms<br>5 shocks on each of three mutually perpendicular axes |
| Noise Immunity | Fast transient/burst test,<br>Power terminals: ±2 kV,<br>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)<br>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$^2$ (*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)<br>(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.<br>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<br>±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).

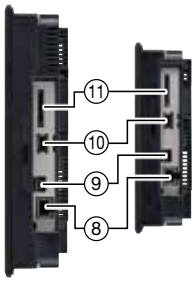
*6) RS232C only for hardware control

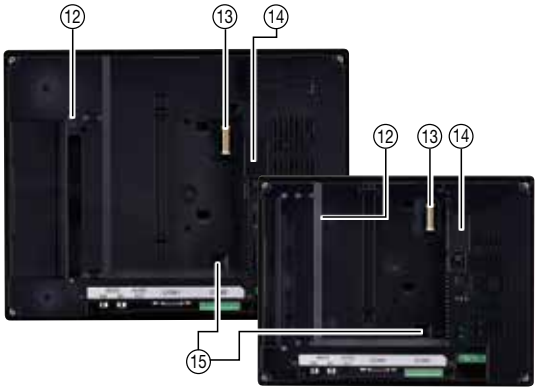
APEM
Switches & Pilot Lights
Control Boxes
Emergency Stop Switches
Enabling Switches
Safety Products
Explosion Proof
Terminal Blocks
Relays & Sockets
Circuit Protectors
Power Supplies
LED Illumination
Controllers
Operator Interfaces
Sensors
AUTO-ID
Programmable Operator Interfaces
Periphery Equipment
HG5G
HG4G
HG3G
HG2G
HG1G

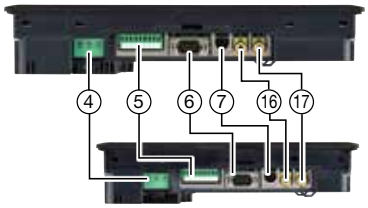
10.4, 8.4 inch

# HG3G-V Operator Interface

## Excellent visibility by super-bright LED backlight. 700 cd/m2 (10.4-inch), 800 cd/m2 (8.4-inch)




(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) |

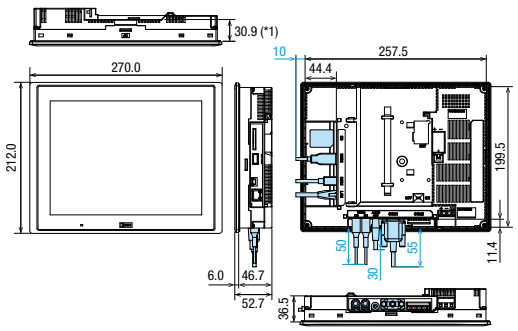
## HG3G-V Operator Interface

| 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<br>COM2<br>LAN<br>USB1<br>USB2<br>SD<br>EXT | VIDEO IN1<br>VIDEO IN2<br>AUDIO OUT | Light gray | HG3G-VAXT22MF-W | Safety Standards:<br>UL61010-1<br>UL61010-2-201<br>UL12.12.01<br>CSA C22.2 No.61010-1-12<br>CSA C22.2 No.61010-2-201<br>CSA C22.2 No.213<br>Ship Classification Standards:<br>LR, DNV·GL, ABS, ClassNK |
| | | | | Black | HG3G-VAXT22MF-B | |
| 8.4-inch TFT color LCD 65,536 colors | | | | Light gray | HG3G-V8XT22MF-W | |
| | | | | Black | HG3G-V8XT22MF-B | |

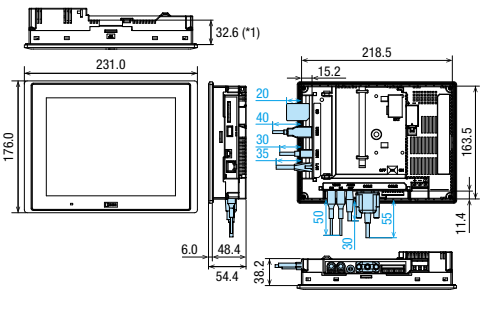
## Dimensions

All dimensions in mm

### HG3G-VA (10.4-inch)



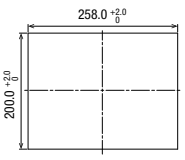

### HG3G-V8 (8.4-inch)



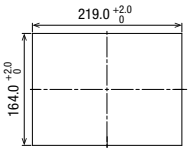

*1) Depth from the expansion module mounting surface.

## Panel Cut-out

### HG3G-VA (10.4-inch)




### HG3G-V8 (8.4-inch)




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 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<br>15W maximum when not using USB2 or EXT<br>7W maximum when Backlight OFF | 22W maximum<br>15W maximum when not using USB2 or EXT<br>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$^2$<br>10 cycles (100 minutes) on each of three mutually perpendicular axes | |
| Shock Resistance | 147 m/s$^2$, 11 ms<br>5 shocks on each of three mutually perpendicular axes | |
| Noise Immunity | Fast transient/burst test,<br>Power terminals: ±2 kV,<br>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)<br>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$^2$ (*3) | 800 cd/m$^2$ (*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)<br>(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.<br>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<br>±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 |

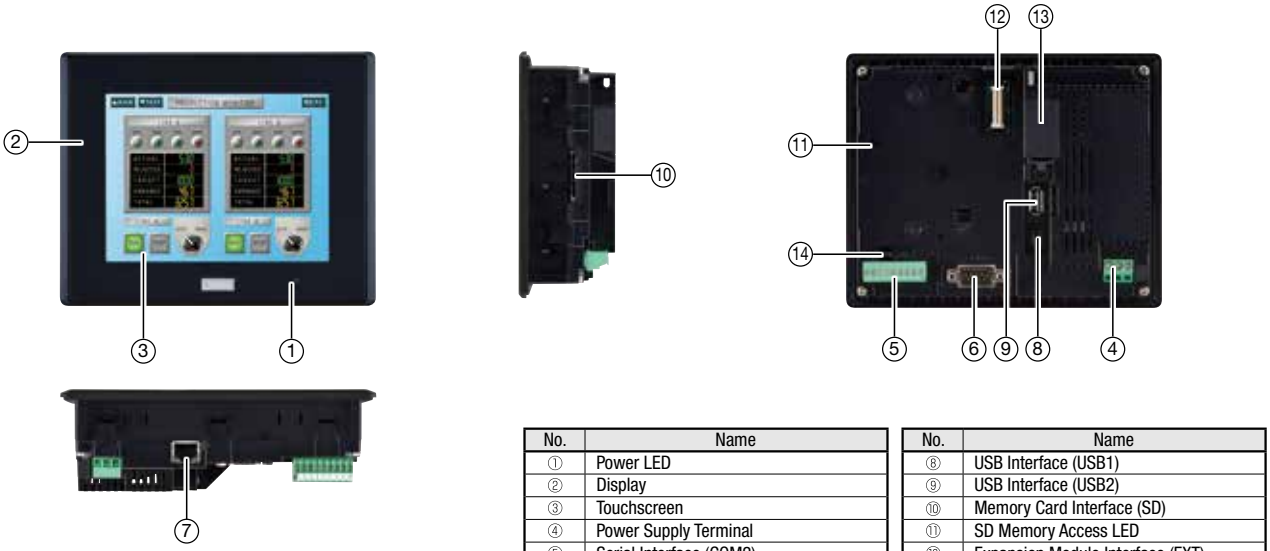
*4) RS232C and RS 422/485 can be used simultaneously

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

*6) RS232C only for hardware control

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

## Excellent visibility by super-bright LED backlight. 800 cd/m² (5.7-inch)




| No. | Name |
|---|---|
| ① | Power LED |
| ② | Display |
| ③ | Touchscreen |
| ④ | Power Supply Terminal |
| ⑤ | Serial Interface (COM2) |
| ⑥ | Serial Interface (COM1) |
| ⑦ | Ethernet Interface (LAN) |

| No. | Name |
|---|---|
| ⑧ | USB Interface (USB1) |
| ⑨ | USB Interface (USB2) |
| ⑩ | Memory Card Interface (SD) |
| ⑪ | SD Memory Access LED |
| ⑫ | Expansion Module Interface (EXT) |
| ⑬ | Battery Cover |
| ⑭ | Terminal Resistor Switch |

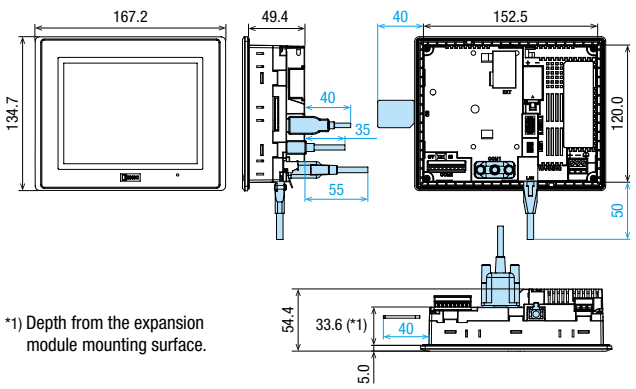
(for main unit only)

• 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 | |

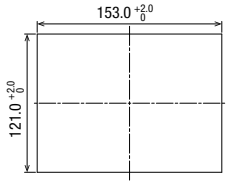
## Dimensions




*1) Depth from the expansion module mounting surface.

## 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<br>8W maximum when not using USB2 or EXT<br>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$^2$<br>10 cycles (100 minutes) on each of three mutually perpendicular axes |
| Shock Resistance | 147 m/s$^2$, 11 ms<br>5 shocks on each of three mutually perpendicular axes |
| Noise Immunity | Fast transient/burst test,<br>Power terminals: ±2 kV,<br>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)<br>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$^2$ (*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)<br>(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.<br>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<br>±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 |
| | 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 | 2 units |

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

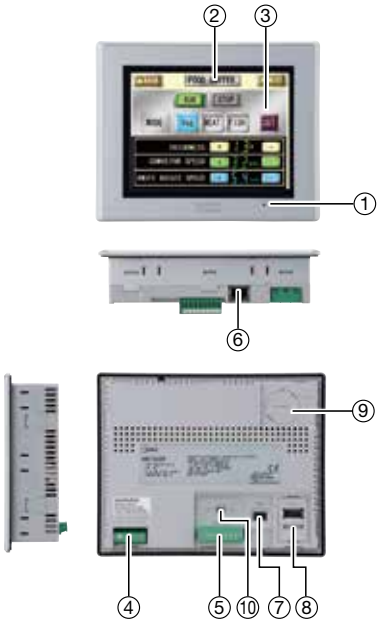
*5) 187,500 bps is available only with SIEMENS SIMATIC S7-300/400 series (MPI port direct connection).

*6) RS232C only for hardware control

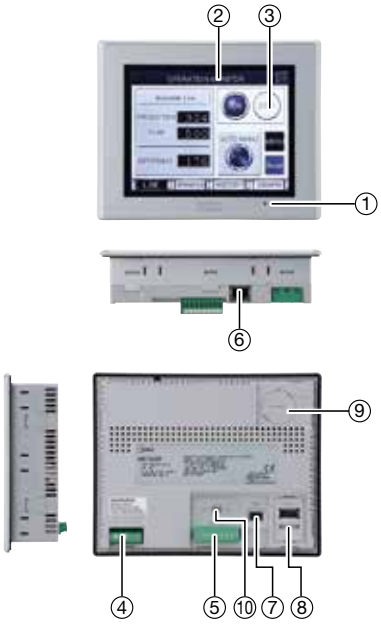
# 5.7 inch HG2G-5T Operator Interface (Basic)

## 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 |

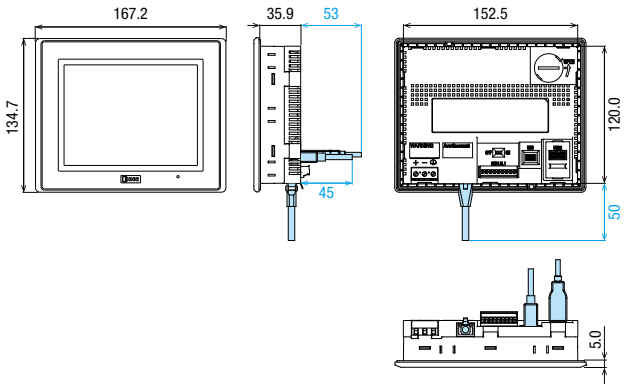
c UL us LISTED CE (for main unit only)

• See website for details on approvals and standards.

## HG2G-5T Operator Interface

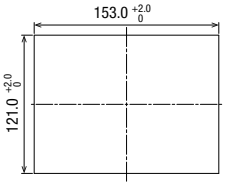
| Display Screen | Operation Style | Communication/Memory Interface | Housing/Bezel Color | Part No. | Approvals |
|---|---|---|---|---|---|
| 5.7-inch TFT color LCD 65,536 colors | Touch Switch (analog resistive) | SERIAL1 LAN USB USB2 | Light gray | HG2G-5TT22TF-W | Safety Standards: UL508 CSA C22.2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

## 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.

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



IDEC

## 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<br>4W maximum when not using USB interface (USB2) |
| Allowable Momentary Power Interruption | 10ms maximum (Voltage 20.4 to 28.8V DC)<br>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,<br>8.4 to 150 Hz, acceleration 9.8 m/s$^2$<br>10 cycles (100 minutes) on each of three mutually perpendicular axes |
| Shock Resistance | 147 m/s$^2$, 11 ms<br>5 shocks on each of three mutually perpendicular axes |
| Noise Immunity | Fast transient/burst test,<br>Power terminals: ±2 kV,<br>Communication line: ±1 kV<br>(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)<br>UL Type 4X, 12, and 13<br>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$^2$ (*3) | 1100 cd/m$^2$ (*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) | |
| | | 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) | |
| 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 liness (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.<br>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<br>±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 |
| | Ouput Current | | 5V 500 mA |

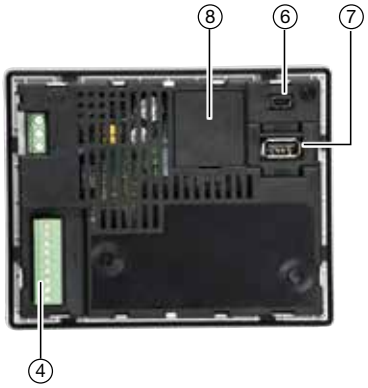
*4) RS232C and RS 422/485 can be used simultaneously

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

APEM
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

# HG1G 4.3 inch 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 |

c UL us LISTED CE (for main unit only)

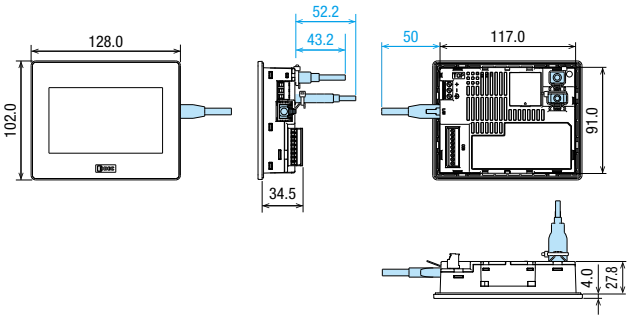
• See website for details on approvals and standards.

## 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 | HG1G-4VT22TF-B | Safety Standards: UL508 CSA C22.2 No.142 CSA C22.2 No.213 ANSI/ISA 12.12.01 |
| | | | Silver | HG1G-4VT22TF-S | |

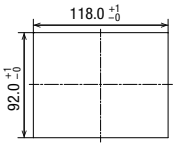
• Models with a coated board that can be used in harsh environments are also available.

## 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<br>4W maximum when not using USB interface (USB2) |
| | Allowable Momentary Power Interruption | 10ms maximum (voltage 20.4 to 28.8V DC)<br>1ms maximum (voltage 10.2 to 20.4V DC) |
| | Inrush Current | 40A maximum |
| | Dielectric Strength | 1,000V AC, 10 mA, 1 minute between power and FG terminals |
| Environmental Specifications | 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$^2$<br>10 cycles (100 minutes) on each of three mutually perpendicular axes |
| | Shock Resistance | 147 m/s$^2$, 11 ms<br>5 shocks on each of three mutually perpendicular axes |
| | Noise Immunity | Fast transient/burst test,<br>Power terminals: ±2 kV,<br>Communication line: ±1 kV (IEC/EN 61131-2, IEC/EN 61000-4-4) |
| | Electrostatic Discharge | Contact ±6 kV, air ±8 kV<br>(IEC/EN 61131-2, IEC/EN 61000-4-2) |
| | Corrosion Immunity | Free from corrosive gases |
| Structure | Mounting | Panel mounting (panel thickness: 1.0 to 5.0 mm) |
| | Degree of Protection (*1) | IP66F/IP67F (IEC 60529) (front part when mounted)<br>UL Type 4X, 12, and 13<br>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$^2$ (*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) |
| | | 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) |
| 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.<br>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<br>±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 |
| | | Ouput 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 151mA min., the operating temperature is –20 to 50° C.

# 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<br>11-pin, screw fastened type connector | 90.0 × **23.6** × 73.0 | 30 | 0 |
| 16 points/DC Input | FC6A–N16B1 | Removable, 3.81mm pitch<br>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<br>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<br>11-pin, screw fastened type connector | 90.0 × **23.6** × 73.0 | 35 | 50 |
| 16 points/Relay Output | FC6A–R161 | Removable, 3.81mm pitch<br>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<br>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<br>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<br>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<br>30V DC, 2A | 4 points/DC Input<br>4 points/Relay Output | FC6A–M08BR1 | Removable, 5.08mm pitch,<br>11-pin, screw fastened type connector | 90.0 × **23.6** × 73.0 | 30 | 25 |
| | | 16 points/DC Input<br>8 points/Relay Output | FC6A-M24BR1 | Removable, 3.81mm pitch<br>11-pin, screw fastened type connector<br>17-pin, screw fastened type connector | 90.0 × **39.2** × 73.0 | 55 | 50 |

# 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 | Consumption Current (mA) 24 |
|---|---|---|---|---|---|---|---|---|
| Analog Input Module | FC6A–J2C1 | 2 inputs | Voltage (0 to 10V, –10 to +10V)<br>Current (0 to 20mA, 4 to 20mA) | — | Removable, 5.08mm pitch<br>11-pin, screw fastened type connector | 90.0 × 23.6 × 73.0 | 40 | 0 |
| | FC6A–J4A1 | 4 inputs | | — | Removable, 3.81mm pitch<br>10-pin, screw fastened type connector | | 45 | 0 |
| | FC6A–J8A1 | 8 inputs | | — | | | 40 | 0 |
| | FC6A-J4CN1 | 4 inputs | Voltage (0 to 10V, –10 to +10V)<br>Current (0 to 20mA, 4 to 20mA)<br>Thermocouple<br>(K, J, R, S, B, E, T, N, C)<br>Resistance Thermometer<br>(Ni100, Ni1000, Pt100, Pt1000) | — | | | 50 | 0 |
| | FC6A-J4CH1Y | Isolated between channels 4 inputs | Thermocouple<br>(K, J, R, S, B, E, T, N, C) | — | | | 50 | 0 |
| | FC6A-J8CU1 | 8 inputs | Thermocouple<br>(K, J, R, S, B, E, T, N, C)<br>NTC/PTC Thermistor | — | | | 45 | 0 |
| Analog Output Module | FC6A–K2A1 | 2 outputs | — | Voltage<br>(0 to 10V, –10 to +10V)<br>Current<br>(0 to 20mA, 4 to 20mA) | Removable, 5.08mm pitch<br>11-pin, screw fastened type connector | | 40 | 0 |
| | FC6A–K4A1 | 4 outputs | — | | | | 50 | 0 |
| Analog I/O Module | FC6A-L06A1 | 4 inputs/ 2 outputs | Voltage (0 to 10V, –10 to +10V)<br>Current (0 to 20mA, 4 to 20mA) | Voltage<br>(0 to 10V, –10 to +10V)<br>Current<br>(0 to 20mA, 4 to 20mA) | Removable, 3.81mm pitch<br>10-pin, screw fastened type connector | | 55 | 0 |
| | FC6A-L03CN1 | 2 inputs/ 1 output | Voltage (0 to 10V, –10 to +10V)<br>Current (0 to 20mA, 4 to 20mA)<br>Thermocouple<br>(K, J, R, S, B, E, T, N, C)<br>Resistance Thermometer<br>(Ni100, Ni1,000, Pt100, Pt1000) | | Removable, 5.08mm pitch<br>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) |
| Keyence | KV-700/1000/3000/5000 |
| | 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

## 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 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. Therfore, 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 a 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 elecrical shock.
- When using HG2G-5T and HG1G, to satisfy specifcations for unnecessary radiation, attach a ferrite core to the power and communication cable connected to the main unit.

# 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**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
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| **EMEA** | APEM SAS | **Thailand** | IDEC Asia (Thailand) Co., Ltd. | | IDEC Izumi (H.K.) Co., Ltd. | | |
| | | **India** | IDEC Controls India Private Ltd. | **Taiwan** | IDEC Taiwan Corporation | | |



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