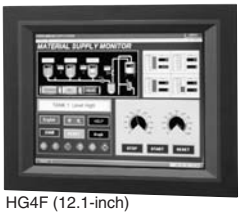
HG2F/3F/4F Operator Interfaces

Clear legible display: 350 cd/m^2 (HG3F/4F), 250 cd/m^2 (HG2F)
Quick screen refresh by high-speed CPU

- 256-color display
- Using the O/I link communication, one host PLC can connect to 16 HG2F/3F/4F units.
- Slim body style — behind-the-panel dimensions are 50 mm (HG2F), 49.6 mm (HG3F), 52.1 mm (HG4F)
- The HG2F is also available with CC-click switches on the LCD panel to provide tactile feedback for assurance when operating the switch.
- In addition to the RS232C/485 (422) serial interface port 1, the HG2F is available with USB or RS232C serial interface port 2.
- The HG3F and HG4F are available with or without a CF (compact flash) card slot and Ethernet port.
- UL, c-UL listed, EN compliant


HG4F (12.1-inch)


HG3F (10.4-inch)


HG2F (5.7-inch) Touch screen type


HG2F (5.7-inch) CC switch type

Types

• HG2F

Display Screen	Operation Type	CF Card Slot	Maintenance Port (Serial Interface 2)	Communication (Serial Interface 1)	Housing/ Bezel Color	Type No.
5.7-inch STN color LCD	Touch screen	With	USB	RS232C/485 (422)	Light gray	HG2F-SS22VDF
		With	RS232C			HG2F-SS22VCF
		Without				HG2F-SS22VF
	CC switch	With	USB			HG2F-SS52VDF
		With	RS232C			HG2F-SS52VCF
		Without				HG2F-SS52VF
5.7-inch STN monochrome LCD	Touch screen	With	USB			HG2F-SB22VDF
		With	RS232C			HG2F-SB22VCF
		Without				HG2F-SB22VF
	CC switch	With	USB			HG2F-SB52VDF
		With	RS232C			HG2F-SB52VCF
		Without				HG2F-SB52VF

The HG2F unit is supplied with four mounting clips HG9Z-2K1.

• HG3F/HG4F

Display Screen	CF Card Slot	Ethernet Port	Communication (Serial Interface 1)	Housing/Bezel Color	Type No.
10.4-inch TFT color LCD	With	With	RS232C/485 (422)	Dark gray	HG3F-FT22TF-B
				Light gray	HG3F-FT22TF-W
	Without	Without		Dark gray	HG3F-FT22VF-B
				Light gray	HG3F-FT22VF-W
12.1-inch TFT color LCD	With	With	RS232C/485 (422)	Dark gray	HG4F-JT22TF-B
				Light gray	HG4F-JT22TF-W
	Without	Without		Dark gray	HG4F-JT22VF-B
				Light gray	HG4F-JT22VF-W

The HG3F or HG4F unit is supplied with four mounting clips HG9Z-4K1.

• Spare Parts

Name	Type No.	Ordering Type No.	Description	Package Quantity
Replacement Backlight	HG9Z-2B1		For HG2F	1
	HG9Z-3FB		For HG3F	1
	HG9Z-4FB		For HG4F	1
Mounting Clip	HG9Z-2K1	HG9Z-2K1PN04	For HG2F (4 pieces are supplied with HG2F)	4
	HG9Z-4K1	HG9Z-4K1PN10	For HG3F/4F (4 pieces are supplied with HG3F/4F)	10

• **Options**

Name	Type No.	Ordering Type No.	Description	Package Quantity
Maintenance Cable	HG9Z-XCM22		D-sub 9-pin female connector to connect to computer (2m long) (Note)	1
PLC Connection Cable	PF3S-KS1		For IDEC's FA-3S SIF2 (5m long)	1
	HG9Z-3C115		For IDEC's Micro^{3}C direct connection (5m long)	1
	HG9Z-3C125		For IDEC's MicroSmart, OpenNet Controller, Micro^{3}C (5m long)	1
	HG9Z-3C135		RS232C, D-sub 25-pin, for Mitsubishi/OMRON link unit (5m long)	1
	HG9Z-3C145		RS232C, D-sub 9-pin, for Mitsubishi link unit (5m long)	1
	HG9Z-3C155		RS232C, D-sub 9-pin, for OMRON RS232C interface (5m long)	1
	HG9Z-3C165		For Mitsubishi FX/A series direct connection (5m long)	1
User Communication Cable 1C	FC2A-KP1C		For connecting the HG2F serial interface 2 port (RS232C) to a serial printer; not equipped with a connector for connecting the printer	1
Protective Sheet	HG9Z-2D2		For HG2F (5 pack)	5
	HG9Z-3DA	HG9Z-3DAPN02	For HG3F (2 pack)	2
	HG9Z-4DA	HG9Z-4DAPN02	For HG4F (2 pack)	2
Digital I/O Unit	HG9Z-2P101		For HG2F, 16 inputs / 16 outputs	1
	HG9Z-3P102		For HG3F/4F, 16 inputs / 16 outputs	1
LONWORKS Communication Unit	HG9Z-2PNL1		For HG2F	1
O/I Link Unit	HG9Z-2G1		Communication unit for O/I link	1
CF Card	HG9Z-MF32		Compact flash memory card, 32 MB	1
Design Tool	HG9Y-ZSS2W		WindO/I-NV2 on CD (English/Japanese compatible) w/o printed manual PDF files of English/Japanese manuals are stored on the CD.	1
Manual	HG9Y-B596		English hardware/software manual	1

Note: Computer link cable 4C (FC2A-KC4C) for IDEC's MicroSmart, OpenNet Controller, and Micro^{3}C is also applicable.

General Specifications

Type	HG2F	HG3F	HG4F
Rated Power Voltage	24V DC		
Power Voltage Range	20.4 to 28.8V DC	19.2 to 28.8V DC	
Power Consumption	10W maximum	25W maximum	
Power Inrush Current	20A maximum	15A maximum (cold start)	
Allowable Momentary Power Interruption	10 ms minimum		
Dielectric Strength	1,000V AC, 10 mA, 1 minute between power and FG terminals	1,500V AC, 10 mA, 1 minute between power and FG terminals	
Insulation Resistance	50 MΩ minimum between power and FG terminals (500V DC megger)	10 MΩ minimum between power and FG terminals (500V DC megger)	
Operating Temperature	0 to 50°C (no freezing)		0 to 45°C (no freezing)
Operating Humidity	10 to 95% RH (no condensation)	20 to 85% RH (no condensation)	
Storage Temperature	–20 to +60°C (no freezing)		
Storage Humidity	10 to 95% RH (no condensation)	20 to 85% RH (no condensation)	
Pollution Degree	2 (IEC 60664-1)		
Corrosion Immunity	Atmosphere free from corrosive gases		
Vibration Resistance (damage limits)	10 to 20 Hz amplitude 0.625 mm, 20 to 55 Hz acceleration 9.8 m/s^2 2 hours per axis on each of three mutually perpendicular axes		
Shock Resistance (damage limits)	147 m/s^2, 11 ms, 5 shocks on each of three mutually perpendicular axes		
Noise Immunity	Fast transient/burst test, common mode: Level 3, power terminals: ±2 kV, communication line: ±1 kV (IEC/EN 61000-4-4)		
Electrostatic Discharge	ESD-3 (RH-1), Level 3, (contact ±6 kV, aerial ±8 kV) (IEC/EN 61000-4-2)		
Mounting	Panel mounting		
Degree of Protection	IP65 NEMA TYPE 13 (operator)	IP66 NEMA TYPE 4.4X (operator)	
Dimensions (mm)	172W × 136H × 56D	324W × 240H × 55.8D	348W × 270H × 58.1D
Weight (approx.)	800g	2800g	3400g

Operation Specifications

Type	HG2F		HG3F	HG4F
	Touch Screen Type	CC Switch Type		
Switching Element	Resistive membrane			
Resolution	16 × 12	16 × 8	32 × 24	40 × 30
CC Switch Quantity	—	4 × 1 row (bottom only)	—	—
Operating Force	0.2 to 0.8N	2.5 to 5.0N	0.2 to 0.8N	0.2 to 0.8N
Mechanical Life	1,000,000 operations			
Acknowledge Sound	Electronic buzzer			
Multiple Operations	Possible to press two switching areas simultaneously (CC switch and touch screen cannot be pressed together)			

HG2F/3F/4F Operator Interfaces

Display Specifications

Type		HG2F		HG3F	HG4F
		Color	Monochrome	Color	Color
LCD		Color STN	Monochrome STN	Color TFT	
Effective Display Area (mm)		118.2W × 89.4H		211.2W × 158.4H	246W × 184.5H
Display Resolution		320W × 240H pixels		640W × 480H pixels	800W × 600H pixels
LCD Life		50,000 hours minimum		100,000 hours minimum	60,000 hours minimum
Contrast Adjustment		Possible in steps using the front touch screen			
Backlight		Cold-cathode tube		Cold-cathode tube (2 tubes)	
Backlight Life		40,000 hours nominal (Note)		50,000 hours nominal (Note)	
Backlight Control		Automatic OFF			
Backlight Replacement		Possible			
Display Character Size	1/4 size	8 × 8 pixels (Western European language: ISO 8859-1, Central European language: ANSI 1250, 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, 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 (CC Switch Type)	1/4 size	40 characters × 30 lines (40 × 20)		80 characters × 60 lines	100 characters × 75 lines
	1/2 size	40 characters × 15 lines (40 × 10)		80 characters × 30 lines	100 characters × 37 lines
	Full size	20 characters × 15 lines (20 × 10)		40 characters × 30 lines	50 characters × 37 lines
	Double size	10 characters × 7 lines (10 × 5)		20 characters × 15 lines	25 characters × 18 lines
Character Magnification		0.5, 1, 2, 3, 4, and 8 vertically and horizontally			
Character Attribute		Blink (1 or 0.5 sec period), reverse, bold, shadowed			
Graphics Type		Straight line, polyline, polygon, rectangle, circle, ellipse, arc, pie, equilateral polygons (3, 4, 5, 6, 8), paint, bitmap image			
Window Display		3 popup screens + 1 system screen			

Note: The backlight life refers to the time until the surface brightness reduces to a half after using continuously at room temperatures.

Operation Specifications

Type	HG2F	HG3F/4F
Screen Types	Base screen, popup screen, system screen	
No. of Screens	Base screen: 3000 max., popup screen: 3015 max.	
User Memory	2 MB	6 MB
Parts	Bit Button, Word Button, Goto Screen Button, Print Button, Key Button, Keypad, Selector Switch, Potentiometer, Numerical Input, Character Input, Pilot 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, Timer, Print Command, Screen print	
Calendar	Year, Month, Day, Hour, Min., Sec., Day of Week ±30 sec per month (at 25°C)	
Print Function (support)	SII printer, DPU-414	ESC/P, PC-PR, PCL command; EPSON PX-V600/Stylus C84
Power Failure Backup	Backup data: Calendar, log data, keep internal relay, keep internal register Backup duration: 1 month (at 25°C) after full charging for two days	

CF Card Interface Specifications

Interface Specifications	Compact Flash Type I standard compliant
Connector	50-pin compact flash card connector

Parallel Interface Specifications (HG3F/4F)

Electrical Characteristics	Centronics interface compliant
Connector	D-sub 25-pin female connector

Ethernet Specifications (HG3F/4F)

Interface Specifications	IEEE 802.3 standard compliant, 10Base-T

USB Interface Specifications (HG2F)

Interface Specifications	USB 2.0 compliant
Connector	Mini AB connector

For connecting with a PC using a USB port, use a USB cable with a 5-in USB mini B male connector on the HG side.

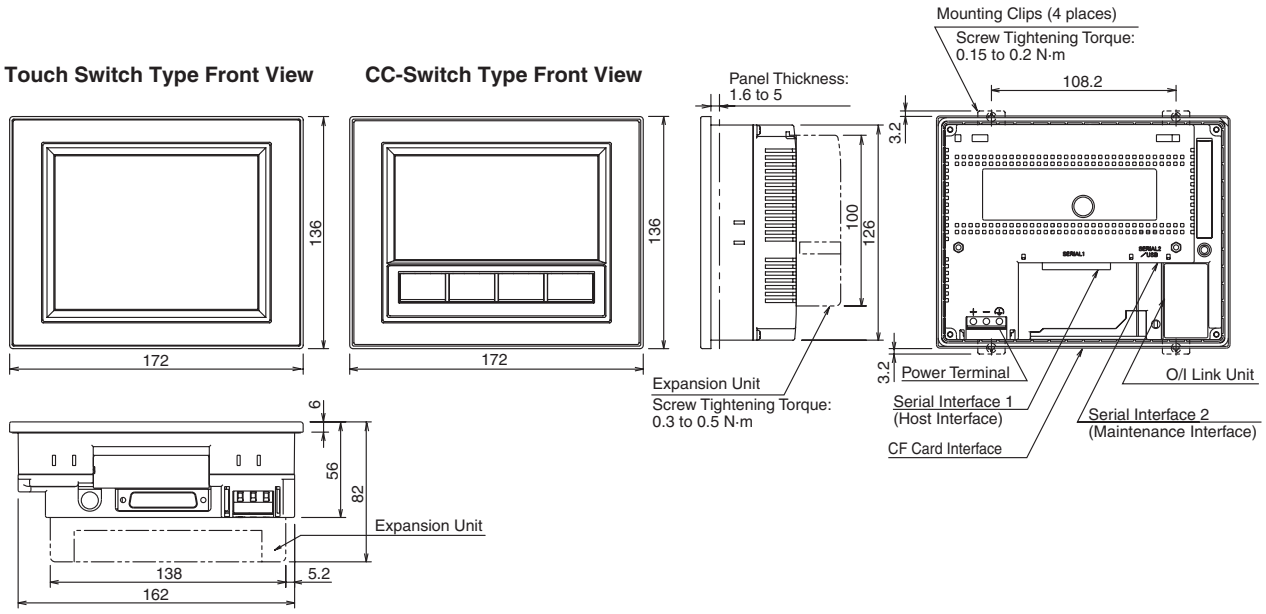
Interface Specifications

RS232C	Electrical Characteristics		EIA RS232C compliant
	Transmission Speed		1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 bps
	Synchronization		Asynchronous
	Communication Method		Half or full duplex
	Control System		Hardware control or none
	Connector		D-sub 25-pin female connector
RS485 (422)	Electrical Characteristics		EIA RS485 (422) compliant
	Transmission Speed		1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 bps
	Synchronization		Asynchronous
	Communication Method		Half or full duplex
	Control System		Hardware control or none
	Connector		D-sub 25-pin female connector
Expansion Unit (Digital I/O Unit)	Applicable Quantity		1
	Mounting Style		Mounted on the rear of the HG unit
	Input	Input Points	16
		Rated Voltage	12 to 24V DC (allowable range 10 to 28V DC)
		Isolation Method	Photocoupler
	Output	Output Points	16
		Load Voltage	12 to 24V DC (allowable range 10 to 28V DC)
		Isolation Method	Photocoupler
		Output Signal	NPN open collector
		Output ON Voltage	1.6V maximum
		Output Current	30 mA max. per point, 200 mA total
	Connector		24-pin connector (Fujitsu FCN-365P024-AG) 2 connectors for inputs and outputs
Maintenance Communication	Electrical Characteristics		EIA RS232C compliant
	Transmission Speed		9600, 19200, 38400, 57600, 115200 bps
	Synchronization		Asynchronous
	Communication Method		Half duplex, proprietary protocol
	Connector		Mini DIN 8-pin connector
O/I Link Communication	Electrical Characteristics		EIA RS485 compliant
	Transmission Speed		38400, 57600, 115200 bps
	Synchronization		Asynchronous
	Communication Method		Half duplex, proprietary protocol
	Connector		Special connector

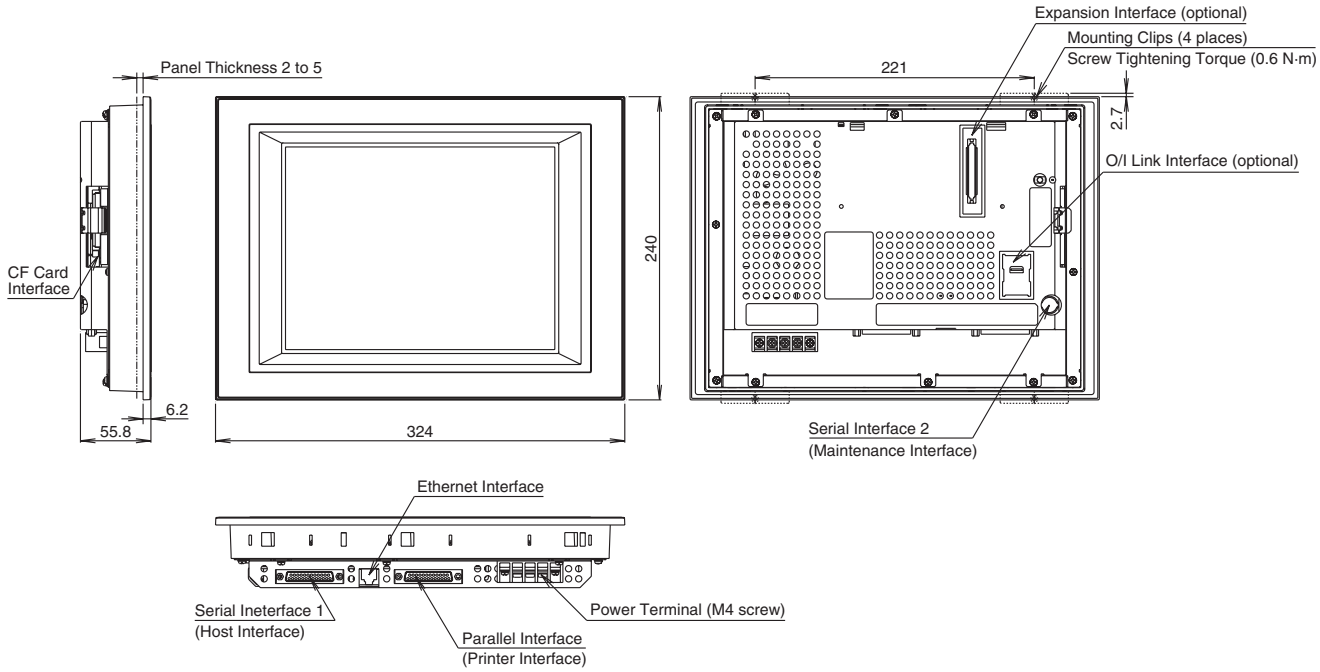
Dimensions

When installing the HG on a panel, keep a sufficient space to connect and disconnect cables and to install and remove the CF card as required.

• **HG2F**

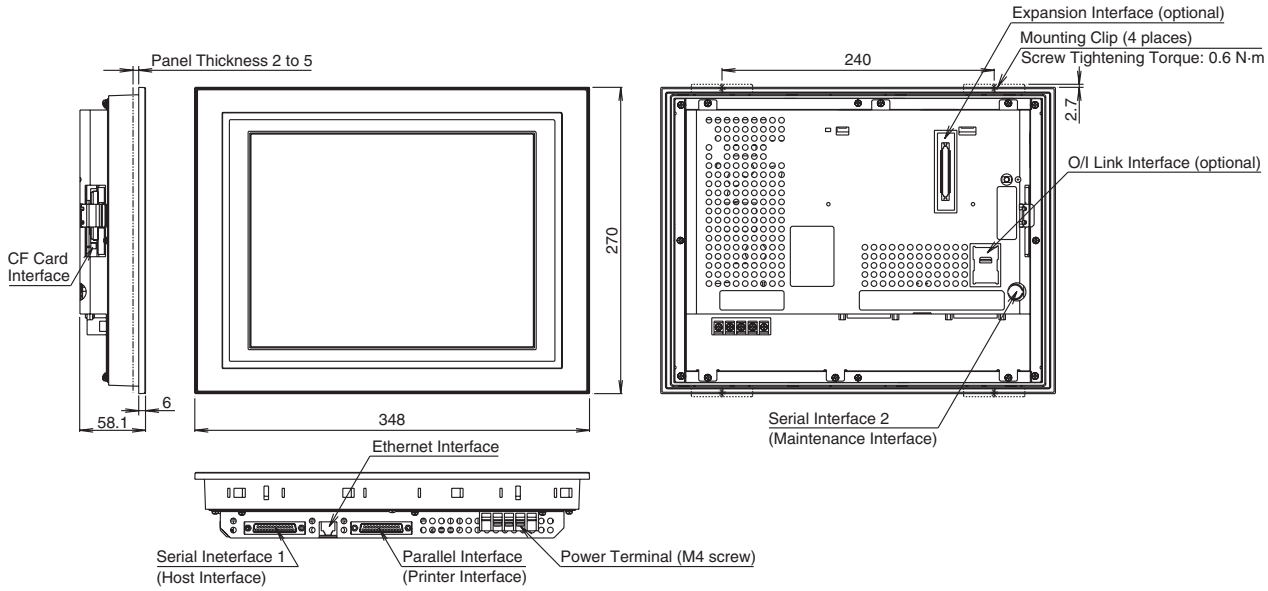


• **HG3F**



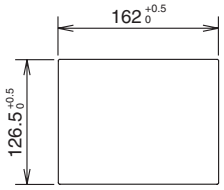
All dimensions in mm.

• **HG4F**

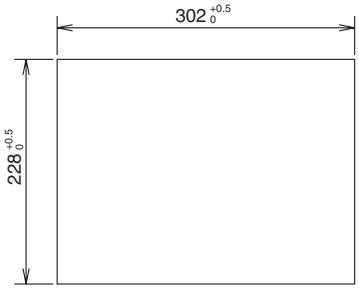


Panel Cutout

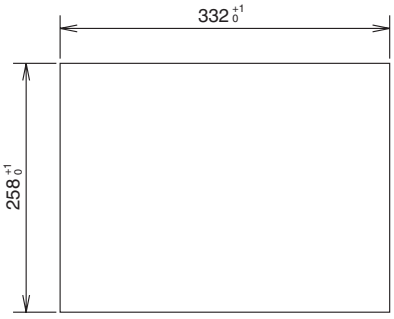
• **HG2F**
Panel thickness: 1.6 to 5 mm



• **HG3F**
Panel thickness: 2 to 5 mm



• **HG4F**
Panel thickness: 2 to 5 mm



All dimensions in mm.

⚠ Safety Precautions

- Turn off the power to the HG unit before starting installation, removal, wiring, maintenance, and inspection of the HG unit. Failure to turn power off may cause electrical shock or fire hazard.
- Special expertise is required to install, wire, configure, and operate the HG unit. People without such expertise must not use the HG unit.
- The HG unit uses an LCD (liquid crystal display) as a display device. The liquid inside the LCD is harmful to the skin. If the LCD is broken and the liquid attaches to your skin or clothes, wash the liquid off using soap, and consult a doctor immediately.
- Emergency and interlocking circuits must be configured outside the HG unit. If such a circuit is configured inside the HG unit, failure of the HG unit may cause a serious damage to the external devices.
- Read the following operating instructions to make sure of safety.

Operating Instructions

When installing and wiring the HG unit or when designing control panel including connection to the host device, observe the following instructions to make sure of safety of the personnel and performance of the HG unit.

1. Installation Location

In consideration of the safety and HG performance, avoid installing the HG unit in the following locations:

- Where dust, briny air, or iron particles exist in quantity
- Where oil or chemical splashes exist
- Where direct sunlight falls on the HG unit
- Where a corrosive gas or flammable gas exists
- Where the HG unit is subjected to vibrations or shocks
- Where dew condensation occurs due to rapid temperature change

2. Ambient Temperature

- Keep a minimum of 100 mm clearance around the HG unit for ventilation. Do not install the HG unit near heat-generating machines.
- When the ambient temperature exceeds the rated operating temperature of the HG unit, install a ventilating fan or air-conditioner.
- The HG unit is designed for installation on a vertical plane and natural air cooling. When installing the HG unit in other directions, provide forced air cooling or reduce the ambient temperature.

3. Noise

- Do not install the HG unit near high-voltage devices or arc-generating equipment, such as electromagnetic contactors and no-fuse breakers.
- Keep a minimum of 200 mm from motor lines.
- Make the power connection to the HG unit as short as possible.
- Separate the connection lines for motor devices from power lines for I/O devices connected to the HG unit.
- For connection with host devices, various cables are available for each HG unit. Select a correct cable for the HG unit and host device.
- When making a cable for connecting the HG unit to a host, use the recommended connector and applicable wire. When the maximum cable length is defined, observe the maximum cable length.

4. Operability and Maintenance

- In consideration of the viewing angle and switch operation, install the HG unit at a convenient height.
- The touch screen surface and CC switch lens are easily damaged. Do not scratch or press strongly on the surfaces using hard tools.
- To wipe off smears on the lens and screen surface, use a soft cloth dampened with the following solvents.

  Neutral detergent (squeeze the cloth tightly)

  Alcoholic solvents

  Do not use solvents such as thinner, ammonia, strong acid, and strong alkaline.