INSTRUCTION SHEET
MICRO/I ™
HG1P Series

Confirm that the delivered product is what you have ordered. Read this instruction sheet to make sure of correct operation. Make sure that the instruction sheet is kept by the end user.

SAFETY PRECAUTIONS

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

⚠ WARNING

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

⚠ CAUTION

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

⚠ WARNING

- When using the HG1P in applications which require high level of safety, add a fail-safe or backup functionality, and verify an adequate level of safety using the product specifications.
- Turn off the power to the HG1P before installation, removal, wiring, maintenance, and inspection of the HG1P. Failure to turn power off may cause electrical shock or fire hazard.
- Special expertise is required to install, wire, configure, and operate the HG1P. People without such expertise must not use the HG1P.
- The HG1P 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.
- An emergency circuit suitable for a system must be configured outside of the HG1P by using the emergency stop switch mounted on the HG1P unit.
- Do not use touch switches, the function keys and the function switches for an emergency circuit or an interlocking circuit. If the HG1P fails, equipment connected to the HG1P will no longer be protected, and serious injury to operators and equipment damage may be caused.
- Create and external circuit between the HG1P and an external device to ensure safety in the event of a loss of communication.
- Connect the emergency stop switch and the enabling switch on the HG1P to function as either a category 0 or category 1 stop with IEC/EN60204-1.
- Do not, under any circumstances, hold the enabling switch on the HG1P in position 2 with tape, string, or deform the rubber cover. The intrinsic function of the enabling switch will be lost, and the enabling switch may not work in an emergency.
- When using the HG1P, place your finger firmly on the enabling switch.
- Perform regular checks to confirm that the emergency stop switch and enabling switch work properly. It is extremely dangerous if the enabling switch no longer returns to position 1 due to a foreign object becoming lodged in the switch because position 2 will be maintained even when you remove your hand.
- Stop using the HG1P if it is accidentally dropped or exposed to significant shocks, check the HG1P for damage, and confirm that its various functions work safely and correctly.
- Connect the FG wire to grounding resistance of 100 Ω or less. Otherwise there is a risk of electric shock or mistaken operation.
- When more than one button is pressed at the same time, due to the detection characteristics of an analog type touch panel, only the center of the pressed area is sensed and the unit assumes that only one button is pressed. Do not operate the HG1P by pressing more than one button simultaneously because there is a risk of accident.
- The screen will not be visible if the backlight burns out, the touch panel and the function key will remain functional. Incorrect touch panel operation or incorrect function key operation will occur when operating the touch panel when the backlight appears to be off but is actually burnt out. Because such erroneous operation could result in damage, the touch panel and the function key should not be used after the backlight has burned out.
- The emergency stop function is disabled when HG1P is removed from the machine. To eliminate the possibility of accidents caused by operating the disabled emergency stop switch, place the HG1P, removed from the machine, in a location that is not visible to the operator. Install at least one emergency stop switch on the machine near the location where the HG1P is connected.

⚠ CAUTION

- The HG1P is designed for indoor use only (Not for outdoor use)
- The D-sub connector on the end of the HG1P optional cable is not water- or dust-proof. If protection against water and dust is required, the user must replace the D-sub connector with a water-proof connector.
- Prevent the HG1P from falling while moving or transporting, otherwise damage or malfunction of the HG1P will result.
- Use the product within the environmental limits given in the catalog and manual. Use of the product in hightemperature or high-humidity environments, or in locations where it is exposed to condensation, corrosive gas or large shock loads can create the risk of electrocution and fire.
- The HG1P is designed for use in pollution degree 2. Use the HG1P in environments of pollution degree 2. (based on the IEC60664-1 rating)
- Prevent metal fragments or wire chips from dropping inside the HG1P housing. Ingress of such fragments and chips may cause fire hazard, damage, and malfunction.
- Use a power supply of the rated value. Using a wrong power supply or wiring in reverse polarity may cause fire hazard and damage.
- Use wire of the HG1P optional cable.
- Make sure of safety before starting and stopping the HG1P. Incorrect operation of the HG1P may cause mechanical damage or accidents.
- Use the HG1P in a local area network if you download, upload or monitor the project data via the Ethernet port.
- The touch panel of the HG1P is made of glass, and will break if exposed to excessive shock. Take due care when handling it.
- Do not push hard or scratch the touch panel and protection sheet with a hard object such as a tool, because they are damaged easily.
- At temperatures over the rated operating temperature, the clock accuracy is affected. Adjust the clock before use.
- Do not install the HG1P in areas subjected to strong ultraviolet rays, since ultraviolet rays may impair the quality of the LCD.
- Do not attempt to disassemble, repair or modify the HG1P. This can create the risk of fire or electrocution.
- When disposing of the HG1P, do so as an industrial waste.
- Do not switch off the power or pull out the USB flash drive while it is being accessed, as this may result in destruction of the stored data. If the data on the USB flash drive is corrupted, reformat the USB flash drive.
- Install the HG1P according to the instructions. Improper installation may result in, failure, electrical shock, fire hazard, or malfunction of the HG1P.
- If it is used in a way incompatible with the HG1P original use purpose, the function provided by the HG1P may be impaired.
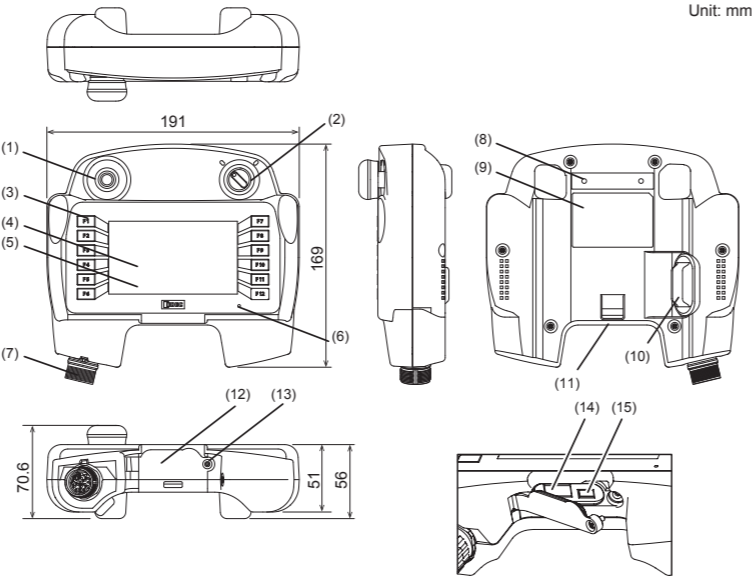
1 Packing Content

Before installing the HG1P, make sure that the product conform to your order, and that no parts are missing or damagesd due to accidents during transportation.

Name	Pcs.
HG1P Unit	1
Instruction Sheet (Japanese / English)	1
Instruction Sheet (Chinese)	1

2 Type Number

Communication Interface	Type No.
Serial Interface (RS422 /485)	HG1P-ST32YBFH-B0
Ethernet Interface	HG1P-ST32ZBFH-B0

3 Part Names

Unit: mm

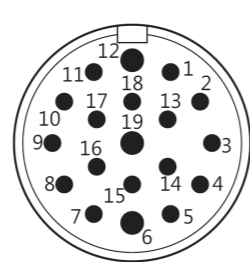| No.	Name	Description
(1)	Mechanical Switch 1 (Emergency Stop Switch)	Type No.: AB6E-3BV02PRM (IDEC) / Contact Rating: 1A/DC30V
(2)	Mechanical Switch 2 (Selector Switch)	Type No.: LB6S-2T1 (IDEC) / Contact Rating: 0.1A/DC30V (resistance load)
(3)	Function Key	12
(4)	Display	TFT color LCD
(5)	Touch Panel	Analog Resistive Film
(6)	POWER LED	Green (lit): Normal Operation (Power is on), Not lit: Power is off
(7)	Connector	Removable 19-pin Round Female Connector
(8)	Mounting Hole For Wall-Mounted Hook	Wall-mounted hook fixing screw mounting part (2)
(9)	Name Plate	Label printed with Part number, Serial Number and Consumption Current
(10)	Enabling Switch	Type No.: HE6B-M200Y (IDEC) / Contact Rating: 1A/DC30V (resistive), 0.7A/DC30V (pilot duty)
(11)	Hand Strap Mounting Part	-
(12)	USB Port Cover	-
(13)	USB Port Cover Mounting Part	USB port cover fixing screw mounting part (1)
(14)	USB Interface (USB2)	USB2.0 (Host) Connector: Type A
(15)	USB Interface (USB1)	USB2.0 (Device) Connector: Mini-B

4 External Interfaces

• Connector Type

Removable 19-pin Female Connector：CA-19P1N126Y00 (PHOENIX CONTACT)

View of mating surface of the detachable connector

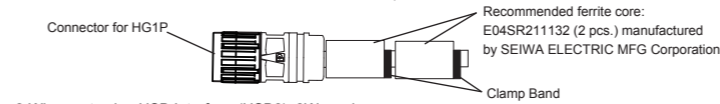| No.	Name	Function
1	C_NC1	Selector Switch Contact 1 (NC)
2	C_NO1	Selector Switch Contact 1 (NO)
3	B_C1	Enabling Switch Contact 1 (COM)
4	B_C2	Enabling Switch Contact 2 (COM)
5	B_NO2	Enabling Switch Contact 2 (NO)
6	FG	Frame Ground
7	RDA+/TP1+	Receive Data (+)
8	RDB-/TP1-	Receive Data (-)
9	SDB-/TP0-	Send Data (-)
10	A_NC21	Emergency Stop Switch Contact 2 (NC)
11	A_NC22	Emergency Stop Switch Contact 2 (NC)
12	DC24V-	HG1P 24V DC Power Supply (-)
13	C_C1	Selector Switch Contact 1 (COM)
14	B_NO1	Enabling Switch Contact 1 (NO)
15	SG	Communication Signal Ground
16	SDA+/TP0+	Send Data (+)
17	A_NC11	Emergency Stop Switch Contact 1 (NC)
18	A_NC12	Emergency Stop Switch Contact 1 (NC)
19	DC24V+	HG1P 24V DC Power Supply (+)

5 Specifications

⚠ CAUTION

- The following specifications are when the HG1P optional cable specified by IDEC is attached.
  ☞For details, refer to the WindO/I-NV4 User's Manual.

Applicable Standards		
Safety Standards		UL61010-1 / UL61010-2-201 / CSA C22.2 No.61010-1 (c-UL) / CSA C22.2 No.61010-2-201 (c-UL)
EMC Standards *1		IEC / EN 61131-2 / FCC*2
Environmental Specifications		
Operating Temperature		0 to +45℃
Operating Humidity		10 to 90% RH (no condensation)
Storage Temperature		-10 to +60℃
Storage Humidity		10 to 90% RH (no condensation)
Altitude and Atmospheric Pressure		Up to 2000m (RUN), 750 to 1060hPa
Pollution Degree		2
Corrosion Immunity		Free from corrosive gases
Electrical Specifications		
Rated Voltage		24V DC
Power Consumption		3W maximum *3
Power Voltage Range		20.4 to 28.8V DC
Allowable Momentary Power Interruption		10ms maximum
Inrush Current		20A maximum
Dielectric Withstand Voltage		AC500V, 10mA, 1 minute (between power and earth terminals)
Construction Specifications		
Vibration		5 to 8.4Hz amplitude 3.5mm, 8.4 to 150Hz acceleration 9.8m/s² / 1 octave 10 minutes 10 times on each of three mutually perpendicular axes (100 minutes) (IE61131-2)
Shock		147m/s², 11ms (5 shocks on each of three mutually perpendicular axes) (IEC61131-2)
Dropping		1.5m, 6 directions, 1 time
Connector Insertion Life		HG1P Optional Cable: 100 times / USB1: 5000 times, USB2: 1500 times
Communication Specifications		
Serial Interface (RS422/485)	Communication Speed	187500, 115200, 57600, 38400, 19200, 9600, 4800, 2400, 1200 bps
	Communication Distance	20m maximum
	Synchronization	Asynchronous
Ethernet Interface	Interface Specification	IEEE802.3i, IEEE802.3u
	Baud Rate	10Mbps, 10/100Mbps

*1 When selecting the connection speed of the Ethernet interface of 10/100 Mbps and using HG1P as the EMC Standard Approved Products, attach 2 ferrite cores near the connector of HG1P side on the HG1P optional cable.
And, fasten the ferrite cores to the cable with the clamp bands.

Connector for HG1P

Recommended ferrite core:
E04SR211132 (2 pcs.) manufactured by SEIWA ELECTRIC MFG Corporation

Clamp Band

*2 When not using USB Interface (USB2): 2W maximum

*3 This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.
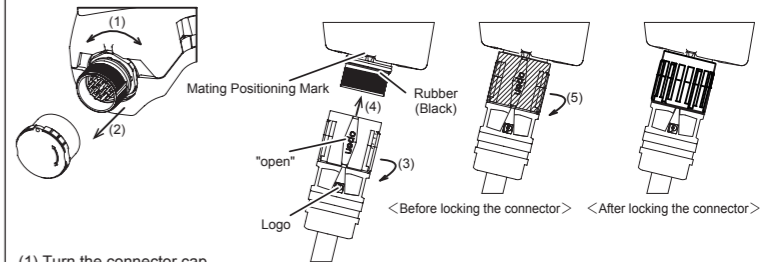
6 Installation

6.1 Operating Environment

☞For designed performance and safety of the HG1P, do not install the HG1P in the following environments:
- Where dust, briny air, or iron particles exist.
- Where oil or chemical splashes for long time.
- Where oil mist is filled.
- Where direct sunlight falls on the HG1P.
- Where strong ultraviolet rays fall on the HG1P.
- Where corrosive or combustible gasses exist.
- Where shocks or vibrations are transmitted.
- Where condensation occurs due to rapid temperature change.
- Where high-voltage or arc-generating equipment (electromagnetic contactors or circuit protectors) exists in the vicinity.
- Near devices that generate a lot of heat. Such as a boiler.
- Use the wall-mounted hook (optional item) for wall mounting.

6.2 Installation

• Attaching the HG1P Optional Cable (HG9Z-XCP13/-XCP15/-XCP17) to the HG1P

⚠ CAUTION

- Make sure to turn off the power to the HG1P before inserting or pulling the cable into or out of the connector.
- After locking the connector, gently tug on the cable to make sure that the connector does not come off.
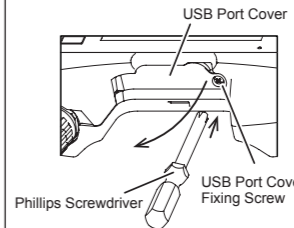- Do not apply an excessive tensile load to the cable, otherwise damage of the connector will result.

Mating Positioning Mark / Rubber (Black)
"open" / Logo
＜Before locking the connector＞ ＜After locking the connector＞

(1) Turn the connector cap.
(2) Pull off the connector cap where the resistance lessens.
(3) Turn the connector at the end of the HG1P optional cable to align the "open" text with the logo.
(4) Align the connector at the end of the HG1P optional cable with the mating positioning mark, and then push it straight on until the rubber (black) is completely covered.
(5) Turn the shaded portion of the connector clockwise 90°. The connector will stop turning at 90°. Do not try to turn it past 90°.

• Removing and Installing the USB Port Cover

⚠ CAUTION

- ☞When attaching the cover, tighten the screw to the recommended tightening torque (0.6 N·m).
- ☞When installing the HG1P, make sure that the gasket is not twisted. Because any twisitng in the gasket will impair the waterproof characteristics.
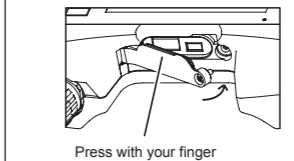
＜Removing the USB Port Cover＞

USB Port Cover
Phillips Screwdriver
USB Port Cover Fixing Screw

Unscrew the USB port cover fixing screw with a Phillips screwdriver, and then pull the USB port cover outward to open it.

⚠ CAUTION

Only one side of the USB port cover opens.
Be careful when opening the USB port cover because the part that opens may be damaged if excessive force is used.

＜Installing the USB Port Cover＞

Press with your finger

While pressing the USB port cover with your finger, close it and tighten the USB port cover fixing screw to the recommend tightening torque while keeping it from lifting up from the case.

⚠ CAUTION

Do not remove the USB port cover fixing screw from the USB port cover.

7 Maintenance and Inspection

Maintain and inspect the HG1P periodically to ensure the best performance.
Do not disassemble, repair, or modify the HG1P during inspection.

Maintenance and Inspection Parts	Description
Display	Wipe any stain of the display using a soft cloth slightly dampened with neutral detergent or alcoholic solvent. Do not use solvents such as thinner, ammonia, strong acid, and strong alkaline.
Connector	Check the connectors to make sure of incomplete insertion, or disconnected lines.
USB Port Cover	Make sure of no loose screws, or no twisted gasket.
Wall-Mounted Hook	Make sure of no loose screws.
Backlight	The HG1P's backlight cannot be replaced.
Touch Panel	A gap may be caused in the operation accuracy of the touch panel by the secular distortion, etc. Readjust the touch panel according to the following procedure when there is a gap in the operation of the touch panel.

8 Options

Name	Type Number	Description
Maintenance Cable	HG9Z-XCM42	USB cable to connect to a computer / Length: 2m / ＜Connector＞ / HG1P: USB Mini-B / Computer: USB Type-A
HG1P Optional Cable	HG9Z-XCP1* (*: Cable Length)	Communication Interface: RS422/485 or Ethernet / Length: 3m, 5m, 7m / ＜Connector＞ / HG1P: CA-19S1N128007S / Host: D-sub 25-pin Male Connector
HG1P Debug Cable	HG9Z-PX12	Length: 2m / ＜Connector＞ / HG1P: CA-19S1N128007S / Host: Twisted Wire
Hand Strap	HG9Z-PS4	Wrist strap / 1 pc/pack
Wall-Mounted Hook	HG9Z-PK3	Hook attached to the rear of the case / 1 pc/pack, Includes two installation screw

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