

INSTRUCTION SHEET

SMALL TEACHING PENDANT

HG1H 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

- The HG1H has been manufactured with careful regard to quality. 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.
- 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

- The HG1H is not designed for use in applications requiring a high degree of reliability and safety, such as applications for medical devices, nuclear power, railroads, aerospace, and automotive devices. The HG1H should not be used for such applications.
- Turn off the power to the HG1H before installation, removal, wiring, maintenance, and inspection of the HG1H. Failure to turn power off may cause electrical shock or fire hazard.
- Special expertise is required to install, wire, configure, and operate the HG1H. People without such expertise must not use the HG1H.
- The HG1H 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 HG1H by using the emergency stop switch mounted on the HG1H unit.
- Do not use the membrane switch for an emergency circuit or an interlocking circuit. If the HG1H 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 HG1H 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 HG1H to function as either a category 0 or category 1 stop with EN60204-1.
- Do not, under any circumstances, hold the enabling switch on the HG1H 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 HG1H, 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 HG1H if it is accidentally dropped or exposed to significant shocks, check the HG1H 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.

⚠ CAUTION

- The HG1H is designed for indoor use only (Not for outdoor use)
- The D-sub connector on the end of the HG1H 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 HG1H from falling while moving or transporting, otherwise damage or malfunction of the HG1H will result.
- 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 electrocution and fire.
- The HG1H is designed for use in pollution degree 2. Use the HG1H in environments of pollution degree 2. (based on the IEC60664-1 rating)
- Prevent metal fragments or wire chips from dropping inside the HG1H 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.
- Make sure of safety before starting and stopping the HG1H. Incorrect operation of the HG1H may cause mechanical damage or accidents.
- Do not attempt to disassemble, repair or modify the HG1H. This can create the risk of fire or electrocution.
- When disposing of the HG1H, do so as an industrial waste.
- If it is used in a way incompatible with the HG1H original use purpose, the function provided by the HG1H may be impaired.

1 Packing Content

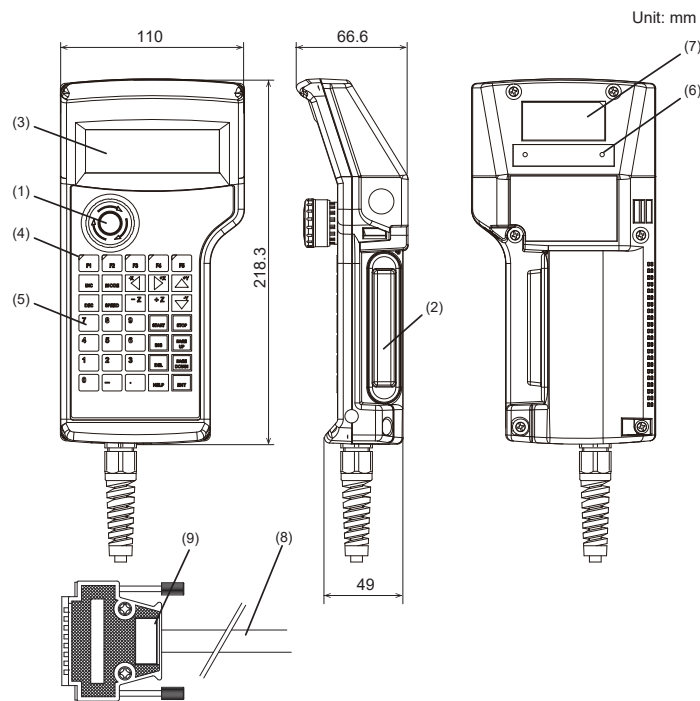
Before installing the HG1H, make sure that the product conform to your order, and that no parts are missing or damaged due to accidents during transportation.

Name	Pcs.
HG1H Unit	1

2 Type Number

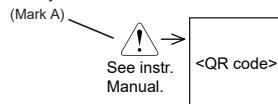
Communication Interface	Type No.
RS-232C	HG1H-SA12BH-A3
RS422	HG1H-SA12JH-A3
RS485	HG1H-SA12CH-A3

3 Part Names



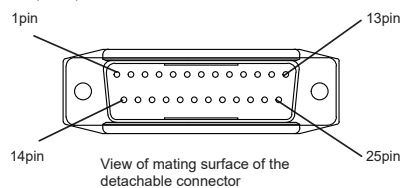
No.	Name	Description
(1)	Emergency Stop Switch	Type No. : XA1E-BV302VR (IDEC) Contact Rating : 1A/DC24V
(2)	Enabling Switch	Type No. : HE2B-M200PY (IDEC) Contact Rating : 50mA / DC24V
(3)	Display	STN transfective monochrome LCD (Character display, 20 characters X 4 lines) Dots : Blue, Background : Yellow
(4)	LED Indicator	Amber (1step by 5 rows)
(5)	Membrane Switch	35 (7 steps by 5 rows)
(6)	Mounting Hole For Wall-Mounted Hook	Wall-mounted hook fixing screw mounting part (2)
(7)	Name Plate *1	Label printed Type Number, Serial Number and Consumption Current
(8)	Cable	Cable length : 20 meter
(9)	Connector for the External Devices	D-sub 25-pin connector (Plug)

*1 About the printed contents of the main unit
(Mark A) indicates that you can refer to this instruction sheet by using the QR code.



4 External Interfaces

- Connector classification
D-sub 25-pin connector (Plug)
With fitting fixing screw (M2.6)



- RS-232C Host Interface Specifications

No.	Name	Description
1	FG	Frame Ground
2	NC	No Connection
3	NC	No Connection
4	NC	No Connection
5	NC	No Connection
6	SG	Communication Signal Ground
7	CS	Clear to send
8	RS	Request to send
9	B_NO1	Enabling Switch 1 (NO)
10	B_C1	Enabling Switch Contact 1 (COM)
11	A_NC11	Emergency Stop Switch Contact 1 (NC)
12	A_NC12	Emergency Stop Switch Contact 1 (NC)
13	DC24V-	HG1H 24V DC Power Supply (-)
14	RD	Receive data
15	SD	Send data
16	NC	No Connection
17	NC	No Connection
18	NC	No Connection
19	NC	No Connection
20	SG	Communication Signal Ground
21	B_NO2	Enabling Switch Contact 2 (NO)
22	B_C2	Enabling Switch Contact 2 (COM)
23	A_NC21	Emergency Stop Switch Contact 2 (NC)
24	A_NC22	Emergency Stop Switch Contact 2 (NC)
25	DC24V+	HG1H 24V DC Power Supply (+)

RS-422 Host Interface Specifications

No.	Name	Description
1	FG	Frame Ground
2	RD-	Receive data (-)
3	RD+	Receive data (+)
4	SD-	Send data (-)
5	SD+	Send data (+)
6	SG	Communication Signal Ground
7	NC	No Connection
8	NC	No Connection
9	B_NO1	Enabling Switch Contact 1 (NO)
10	B_C1	Enabling Switch Contact 1 (COM)
11	A_NC11	Emergency Stop Switch Contact 1 (NC)
12	A_NC12	Emergency Stop Switch Contact 1 (NC)
13	DC24V-	HG1H 24V DC Power Supply (-)
14	NC	No Connection
15	NC	No Connection
16	NC	No Connection
17	NC	No Connection
18	NC	No Connection
19	NC	No Connection
20	SG	Communication Signal Ground
21	B_NO2	Enabling Switch Contact 2 (NO)
22	B_C2	Enabling Switch Contact 2 (COM)
23	A_NC21	Emergency Stop Switch Contact 2 (NC)
24	A_NC22	Emergency Stop Switch Contact 2 (NC)
25	DC24V+	HG1H 24V DC Power Supply (+)

RS-485 Host Interface Specifications

No.	Name	Description
1	FG	Frame Ground
2	TDB	Data (B)
3	TDA	Data (A)
4	NC	No Connection
5	NC	No Connection
6	SG	Communication Signal Ground
7	NC	No Connection
8	NC	No Connection
9	B_NO1	Enabling Switch Contact 1 (NO)
10	B_C1	Enabling Switch Contact 1 (COM)
11	A_NC11	Emergency Stop Switch Contact 1 (NC)
12	A_NC12	Emergency Stop Switch Contact 1 (NC)
13	DC24V-	HG1H 24V DC Power Supply (-)
14	NC	No Connection
15	NC	No Connection
16	NC	No Connection
17	NC	No Connection
18	NC	No Connection
19	NC	No Connection
20	SG	Communication Signal Ground
21	B_NO2	Enabling Switch Contact 2 (NO)
22	B_C2	Enabling Switch Contact 2 (COM)
23	A_NC21	Emergency Stop Switch Contact 2 (NC)
24	A_NC22	Emergency Stop Switch Contact 2 (NC)
25	DC24V+	HG1H 24V DC Power Supply (+)

5 Specifications

⚠ CAUTION

- For details, refer to the HG1H System Manual.

Applicable Standards	
Safety Standards	UL508, UL1740, CSA C22.2 No.142
EMC Standards	EN61000-6-4, EN61000-6-2 FCC *1
Environmental Specifications	
Operating Temperature	0 to +40°C
Operating Humidity	10 to 90% RH (no condensation)
Storage Temperature	-20 to +60°C
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	2.8W maximum
Power Voltage Range	21.6V to 26.4V DC
Allowable Momentary Power Interruption	10ms maximum
Inrush Current	10A maximum
Dielectric withstand	AC500V, 10mA, 1 minute (between power and earth terminals)
Insulation resistance	DC500V, 10MΩ minimum (between power and earth terminals)
EMC Specifications	
Electrostatic discharge	Contact±6kV / Air±8kV
Electromagnetic field	10V/m (80M to 1000MHz), 80%AM
Fast transient burst withstand ability	Power supply : ±2KV, Communication line : ±1KV
Surge Immunity turning on electricity	500V, Between L and FG, Between L and L
Immunity to conducted disturbances	Power supply : 10V, Communication line : 10V 150k to 80MHz, 80%AM
Emission	
Class A : Measured at 10m distance	
• IEC 61000-6-4 Class A	
40dBμV/m quasi-peak (30M to 230MHz)	
47dBμV/m quasi-peak (230M to 1GHz)	
• FCC Class A	
39dBμV/m quasi-peak (30M to 88MHz)	
43.5dBμV/m quasi-peak (88M to 216MHz)	
46.4dBμV/m quasi-peak (216M to 960MHz)	
49.5dBμV/m quasi-peak (960M to 1GHz)	

Mechanical performance		
Vibration		10 to 55Hz, 9.8m/s ² , 2 hours each in 3 axes (IEC60068-2-6)
Shock		98m/s ² , 11ms (5 shocks on each of three mutually perpendicular axes) (IEC60068-2-27)
Dropping		1.0m, 1 times in each 6 axes
Communication Specifications		
Serial communication interface (RS-232C)	Communication Speed	115200, 57600, 38400, 19200, 9600bps
	Synchronization	Asynchronous communication method
Serial communication interface (RS422)	Communication method	Full-duplex, half-duplex
	Communication Speed	115200, 57600, 38400, 19200, 9600bps
Serial communication interface (RS485)	Synchronization	Asynchronous communication method
	Communication method	Half-duplex
Construction Specifications		
Construction of instruction		Hand-held type
IP code		IP54 (except connector)
Connection cable		Shielded cable
Cable length		3m
Dimensions		110 (W) X 218.3 (H) X 66.6 (D) mm
Weight		Approx. 400g (except cable)

*1 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.

Supplier's Declaration of Conformity 47 CFR § 2.1077 Compliance Information

Unique Identifier: HG1H-SA12BH-A3, HG1H-SA12CH-A3, HG1H-SA12JH-A3

Responsible Party – U.S. Contact Information

IDEC Corporation
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FCC Compliance Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

6 Installation

- For designed performance and safety of the HG1H, do not install the HG1H 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 HG1H.
 - Where strong ultraviolet rays fall on the HG1H.
 - 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.

7 Maintenance and Inspection

Maintain and inspect the HG1H 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.
Wall-Mounted Hook	When using the wall-mounted hook, make sure of no loose screws.

8 Options

Name	Type Number	Description
HG1H Debug Cable	HG9Z-TCM22	RS-232C cable to connect to a computer Length : 2m <Connector> HG1H : D-sub 25pin Connector (Socket) Computer : D-sub 9-pin Connector (Plug)
Hand Strap	HG9Z-PS1	Wrist strap 1 pc/pack
Grip Belt	HG9Z-TS2	Grip strap 1 pc/pack
Wall-Mounted Hook	HG9Z-HK1	Hook attached to the rear of the case 1 pc/pack, Includes two installation screw

IDEC CORPORATION

<http://www.idec.com>

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