GP3000H Soft-type Cable for GP2000H Conversion Adapter <RS-232C/RS-422 > (with connector) Installation Guide

Thank you for purchasing Pro-face's GP3000H Soft-type Cable for GP2000H Conversion Adapter <RS-232C/RS-422> (with connector) (Hereafter referred to as "this cable"). This cable is an optional cable designed to connect the GP3000H series unit (Hereafter referred to as the "GP3000H") and the GP2000H series RS-232C or RS-422 Conversion Adapter (Hereafter referred to as the "GP2000H Conversion Adapter").

This cable comes in two types of communication methods, RS-232C or RS-422, each of which is available in two lengths of 3m and 10m.

Safety Precautions

⚠ WARNING

• Be sure to confirm that power is not being supplied to the GP3000H and the external devices before connecting this cable. Failure to do so can result in an electric shock.

• Do not modify this cable, since it may result in a fire or electric shock.

• This cable is not appropriate for use with aircraft control devices, aerospace equipment, central trunk data transmission (communication) devices, nuclear power control devices, or medical life support equipment, due to these devices inherent requirements of extremely high levels of safety and reliability.

• When using this cable with transportation vehicles (trains, cars and ships), disaster and crime prevention devices, various types of safety equipment, non-life support related medical devices, etc. use redundant and/or failsafe system designs to ensure reliability and safety.

Package Contents

(1) This Cable (1)
(2) Common Mode Filter (1)
(3) Connector Cap (1)
   (attached to the cable connector)
(4) Installation Guide (1) (This Guide)

This cable has been carefully packed, with special attention to quality. However, should you find anything damaged or missing, please contact your local distributor immediately.

About the Manual

■ About the GP3000H
• GP3000H Series Hardware Manual
• Maintenance/Troubleshooting
• GP-Pro EX Reference Manual "Hand Held GP"

■ How to connect the GP3000H to peripheral equipment
• This Guide
• GP-Pro EX Device/PLC Connection Manual "GP3000H Series Connection Guide"

■ About the GP2000H Conversion Adapter
• GP2000H Series RS-232C Conversion Adapter (GP2000H-AP232) Installation Guide
• GP2000H Series RS-422 Conversion Adapter (GP2000H-AP422) Installation Guide

The manuals can be selected from the help menu of GP-Pro EX or downloaded from Pro-face Home Page.
URL
http://www.pro-face.com/otasuke/

System Design
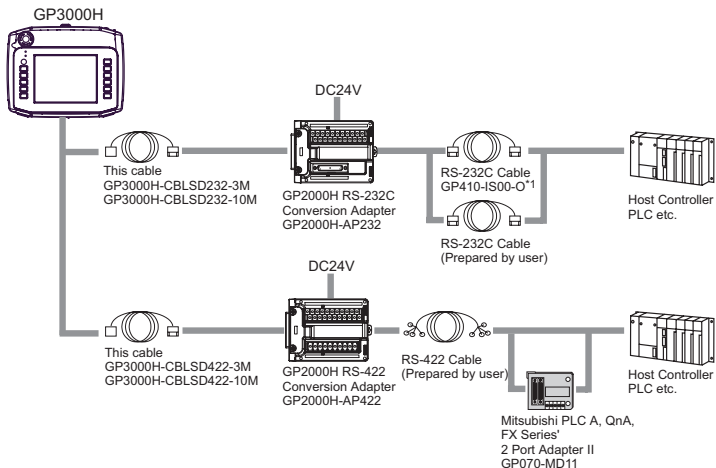
*1 Some connections may not be possible depending on the type of PLC used. For details, please read the GP-Pro EX Device/PLC Connection Manual "GP3000H Series Connection Guide."

Types of cables

Name	Model	Description
GP3000H Soft-type 3 m Cable for GP2000H Conversion Adapter <RS-232C> (with connector)	GP3000H-CBLSD232-3M	The cable between the GP2000H Series RS-232C Conversion Adapter and the GP3000H, equipped with D-Sub connector.
GP3000H Soft-type 10 m Cable for GP2000H Conversion Adapter <RS-232C> (with connector)	GP3000H-CBLSD232-10M	
GP3000H Soft-type 3 m Cable for GP2000H Conversion Adapter <RS-422> (with connector)	GP3000H-CBLSD422-3M	The cable between the GP2000H Series RS-422 Conversion Adapter and the GP3000H, equipped with D-Sub connector.
GP3000H Soft-type 10 m Cable for GP2000H Conversion Adapter <RS-422> (with connector)	GP3000H-CBLSD422-10M	

NOTE
• This cable cannot be used when connecting the GP3000H to the GP3000H Conversion Adapter.

Connecting and removing this cable

IMPORTANT
• Dropping this cable's connector or hitting it against hard objects could result in damage to the connector.
• Be sure to connect the GP2000H Conversion Adapter first, and connect the GP3000H last. Otherwise, the RS-232C/RS-422/RS-485 circuit may fail.

1. Connecting the GP2000H Conversion Adapter

◆ Attachment
(1) Insert the D-Sub connector of this cable into the 37 pin D-Sub connector of the GP2000H Conversion Adapter, and fasten the connector in place using the two screws. Use a tightening torque of 0.5N•m.
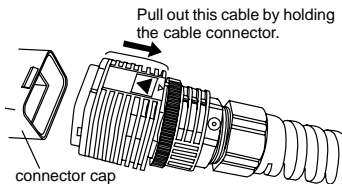
NOTE
• Avoid bending this cable excessively and pulling this cable with excessive force. Excessive bending and pulling can result in cable disconnection.

2. Connecting the GP3000H

◆ Attachment

(1) Before connection, remove the cable's connector cap and GP3000H connector cover. To remove the cable's connector cap, pull out the cable by holding the cable connector as shown.

Pull out this cable by holding the cable connector.

connector cap

NOTE

• To disconnect the cable from the connector cap, be sure to hold the cable connector and pull it out. If you hold other parts of the cable (lock ring, etc.), the cable cannot be disconnected.

(2) Insert the cable connector to the GP3000H cable connector until it clicks. Match the ▲ points and insert the cable connector, as shown below.

Match the ▲ points and insert the cable connector until it clicks.
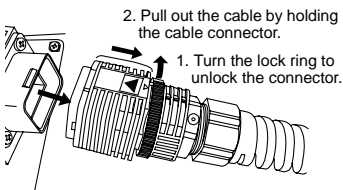

GP3000H cable connector
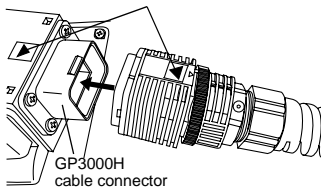
NOTE

• Be sure to insert the cable connector as shown. Failure to do so might result in damage to the connector.

(3) Turn the cable connector lock ring to lock the connector, so that the small △ mark (for LOCK) on the lock ring is aligned with the small ▽ mark on the cable connector.

Align the small △ and ▽ marks to lock the connector.
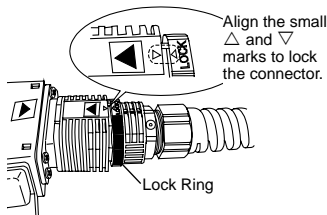
Lock Ring

◆ Removal

(1) Unlock the connector that has been locked in the mounting procedure. (Turn the lock ring as shown so that the small △ mark is displaced from the ▽ mark). Then, pull out the cable by holding the cable connector.

2. Pull out the cable by holding the cable connector.

1. Turn the lock ring to unlock the connector.

NOTE

• To disconnect the cable, be sure to hold the cable's connector and pull it out. If you hold other parts of the cable (lock ring, etc.), the cable cannot be disconnected.

Connecting with peripheral equipment

1. GP2000H Conversion Adapter 22 pin terminal block

The pins that can be connected to peripheral equipment are shown below.

Pin No.	Signal Name	Name shown on pin	Description
1	DOUT0.C	DO0	Cannot be used[*1]
2	RESERVE	Not labeled	
3	DOUT1.C	DO1	
4	RESERVE	Not labeled	
5	OP.C	OP	
6	OP.GND	OPG	
7	BUZZ OUT	BZ	
8	DOUT.GND	DOG	
9	EMG0A	EM0A	Emergency switch 0A (Normally Open)[*2]
10	EMG0B	EM0B	Emergency switch 0B (Normally Open)[*2]
11	EMG1A	EM1A	Emergency switch 1A (Normally Closed)[*2]
12	EMG1B	EM1B	Emergency switch 1B (Normally Closed)[*2]
13	EMG2A	EM2A	Emergency switch 2A (Normally Closed)[*2]
14	EMG2B	EM2B	Emergency switch 2B (Normally Closed)[*2]
15	ENB0A	EN0A	3-position enable switch 0A (Normally Open)[*2]
16	ENB0B	EN0B	3-position enable switch 0B (Normally Open)[*2]
17	ENB1A	EN1A	3-position enable switch 1A (Normally Open)[*2]
18	ENB1B	EN1B	3-position enable switch 1B (Normally Open)[*2]
19	+24V	+24V	Power Input DC24 V
20	0V	0V	Power Input 0 V
21	NC	NC	Not connected
22	FG	FG	Frame Ground (Common with SG)

[*1] When connecting to the GP3000H, signals cannot be output from the GP2000H Conversion Adapter. Do not make any connections to these pins. Please read the "Restrictions" (page 8) for details.

[*2] To improve noise resistance, be sure to twist each pair of wires close to the terminal block.

NOTE

• For information regarding installation of the GP2000H Conversion Adapter, please read the GP2000H Series RS-232C/RS-422 Conversion Adapter Installation Guide.

2. Connection with external power supply

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⚠ WARNING

- To avoid an electric shock, prior to connecting the GP3000H's power cord terminals to the power terminal block, confirm that the GP3000H's power supply is completely turned OFF, via a breaker, or similar unit.
- Any other power level can damage both the GP3000H and the power supply.
- When the FG terminal is connected, be sure the wire is grounded.

◆ Power Supply Cautions

- Input and Output signal lines must be separated from the power control cables for operational circuits.

- The GP3000H's power supply cord should not be bundled with or kept close to main circuit lines (high voltage, high current), or input/output signal lines.
- To improve noise resistance, make the power cord as short as possible.
- If the supplied voltage exceeds the GP3000H's range, connect a voltage transformer.
- Between the line and the ground, be sure to use a low noise power supply. If there is an excess amount of noise, connect a noise reducing transformer.

IMPORTANT

- Use voltage and noise reducing transformers with capacities exceeding the GP3000H's Power Consumption value.
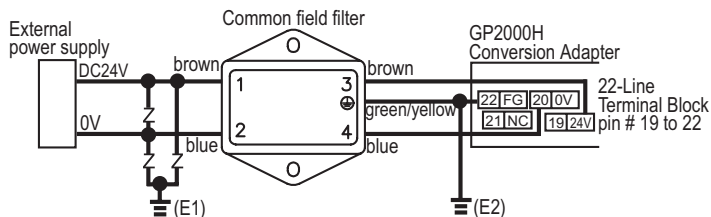
NOTE

- To improve noise resistance, be sure to use the Common Mode Filter included with this product.
- Connect a surge absorber to handle power surges.

IMPORTANT

- Be sure to ground the surge absorber (E1) separately from the GP2000H Conversion Adapter (E2). Select a surge absorber that has a maximum circuit voltage greater than that of the peak voltage of the power supply.
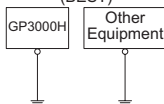
◆ Grounding Cautions

- Be sure to create an exclusive ground for the Power Cord's FG terminal. Use a grounding resistance of 100 Ω, a wire of 2mm² or thicker, or ground using your country's applicable standard.

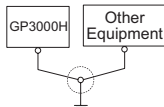- The SG (signal ground) and FG (frame ground) terminals are connected internally in the GP3000H.
  When connecting the SG line to another device, be sure that the design of the system/connection does not produce a ground loop.

- The grounding wire should have a diameter greater than 2 mm². Create the connection point as close to the GP3000H as possible, and make the wire as short as possible. When using a long grounding wire, replace the thin wire with a thicker wire, and place it in a duct.
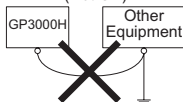
◆ Input/Output Signal Line Cautions

- All GP3000H Input and Output signal lines must be separated from all operating circuit (power) cables.

- If the operating circuit (power) cables cannot be separated, use a shielded cable and ground the shield.

Exclusive Grounding (BEST)

Common Grounding (OK)

Common Grounding (Not OK)

Restrictions

Please be aware of the following restrictions when using the GP2000H RS-232C/RS-422 Conversion Adapter and this cable to connect the GP3000H to peripheral equipment.

• The GP3000H cannot be connected to Ethernet networks.

• For GP3000Hs mounted with key switches, outputting to peripheral equipment by turning the GP3000H key switch is not possible. However, the GP3000H's power supply can be turned ON/OFF by turning the GP3000H key switch.

• This cable cannot be unplugged from the GP2000H Conversion Adapter without causing an emergency stop by providing an external safety circuit.

• The operation switches and function keys cannot be used for functions involving signal outputting to peripheral equipment. Example: Function keys designed to activate external buzzers, etc.

• Data set ready "DR (DSR)" signals cannot be used when connecting to peripheral equipment using RS-232C connections.

• The GP2000H Conversion Adapter does not comply with UL dust and drip proofing standards.

NOTE

• Pro-face's GP3000H Conversion Adapter (model: AGP3000H-ADPCOM-01) and a dedicated cable (sold separately) are necessary to overcome these restrictions. Please refer to "Accessories" in "Chapter 1 Overview" in the GP3000H Series Hardware Manual.

UL/c-UL Approval

The system constructing the following three components does not conform to UL/c-UL standards:

• GP3000H
• This cable
• GP2000H RS-232C/RS-422 Conversion Adapter

When you apply for UL/c-UL standards, the system above mentioned could be evaluated.

Inquiry

Do you have any questions or comments about this product? Please access our site anytime if you need help with a solution.

http://www.pro-face.com/otasuke/

Note

Please be aware that Digital Electronics Corporation shall not be held liable by the user for any damages, losses, or third party claims arising from the use of this product.

Please be aware that the contents of this installation guide may be changed without prior notice.