GP3000 Series CANopen Interface Installation Guide

Caution
Be sure to read the “Warning/Caution Information” on the attached sheet before using the product.

CAUTION
This manual describes the part names and general specifications related to the CANopen I/F included with the CANopen board type unit of the GP3000 series, as well as the wiring to the CANopen connector. Before using the CANopen connector, be sure to read this Installation Guide in conjunction with the attached GP3000 Series’ Installation Guide.

Package Contents

(1) Installation Guide (1) <This Guide>

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

About the Manual

For the detailed information on GP3000 series, refer to the following manual.

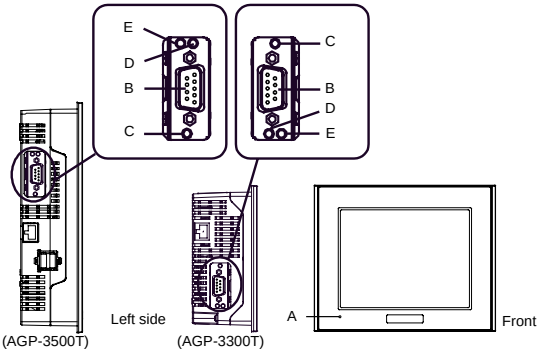
- GP3000 Series Hardware Manual
- Maintenance/Troubleshooting Guide

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/

Part Names and Functions



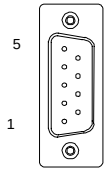
The arrangement of CANopen I/F and its peripheral equipment differs between the GP-3300/GP-3400 Series and the GP-3500/GP-3600 Series.

<table>
<tr><th></th><th>Name</th><th>Description</th></tr>
<tr><td>A</td><td>Status LED</td><td>
<table>
<tr><th>Color</th><th>Indicator</th><th>Operation Mode (Drawing)</th><th>Logic execution mode (when logic is enabled)</th></tr>
<tr><td rowspan="2">Green</td><td rowspan="2">ON</td><td>OFFLINE</td><td>-</td></tr>
<tr><td>In operation</td><td>RUN</td></tr>
<tr><td></td><td>Flashing</td><td>In operation</td><td>STOP</td></tr>
<tr><td rowspan="2">Red</td><td>ON</td><td colspan="2">When power is turned on.</td></tr>
<tr><td>Flashing</td><td>In operation</td><td>Major Error</td></tr>
<tr><td rowspan="2">Orange</td><td>ON</td><td colspan="2">Backlight burnout</td></tr>
<tr><td>Flashing</td><td colspan="2">During software startup</td></tr>
</table>
</td></tr>
<tr><td>B</td><td>CANopen Interface</td><td>Dsub 9-pin connector (plug.)</td></tr>
<tr><td>C
D
E</td><td>CANopen Status LED</td><td>This LED indicates the communication status of the CANopen.
<table>
<tr><th colspan="2">Status LED</th><th>Indicates</th></tr>
<tr><td>C</td><td>PWR (Green)</td><td>ON: When applying current,
OFF: When light is off</td></tr>
<tr><td>D</td><td>RUN (Green)</td><td>Turns on when Communication is enabled.</td></tr>
<tr><td>E</td><td>ERR (Red)</td><td>Turns on when failure occurs in connected slaves (ex.) Hybrid Terminal Block.</td></tr>
</table>
</td></tr>
</table>

CANopen Specifications

■ CANopen Interface

Connector (GP unit side)	XM2C-0942-502L <OMRON Co.>
Recommended Cable connector (Cable side)	See page 5.
Interfit Bracket	#4-40 (inch screws are used.)

Pin Arrangement		Signal Name	Description
 (GP Unit Side)	1	—	
	2	CAN_L	CAN-L bus line
	3	CAN_GND	CAN ground
	4	—	
	5	—	
	6	—	
	7	CAN_H	CAN-H bus line
	8	—	
	9	—	
	Shell	FG	Frame Ground (Common with SG)

■ CANopen Data Transfer Settings

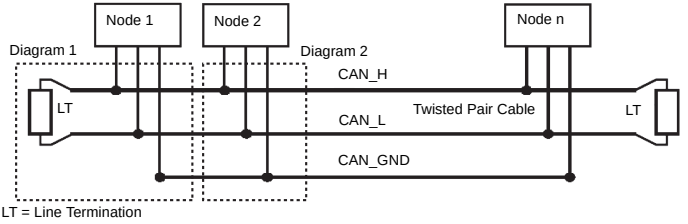
CANopen is the networking concept based on the international standard CAN. CANopen is defined as a uniform application layer by the DS 301 specifications of the CiA (CAN in automation).

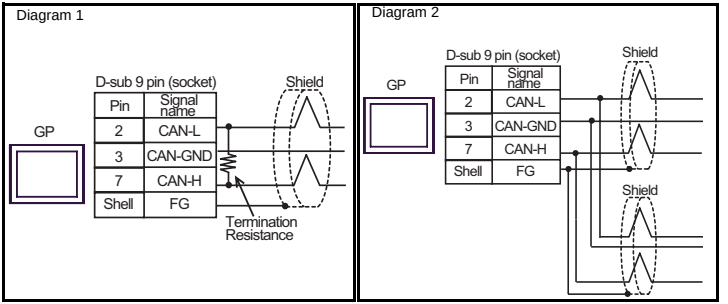
Communication Type	1:N
Connection Method	Multi Drop Connection
Transfer Method	CSMA/NBA. Half-duplex serial transmission.
Transfer distance speed/ Transmission length	Baud rate*1 / Bus length: 1000 kbps / 20m; 800 kbps / 40m; 500 kbps / 100m; 250 kbps (factory settings) / 250m; 125 kbps / 500m; 50 kbps / 1000m *1 Set the baud rate with the software.
No. of nodes	63 nodes max. Bit variable input: 512 points*1, Bit variable output: 512 points*1, Integer variable input: 128 points*2, Integer variable output: 128 points*2.

*1 When using GP-Pro EX under Ver.2.50, Bit variable enables to input/output 256 points.
*2 When using GP-Pro EX under Ver.2.50, Integer variable enables to input/output 64 points.

■ CANopen cable arrangement

The CANopen interface uses DSUB 9-pin plug connector. The plug is assigned with the CAN_H, CAN_L and CAN_GND connections. CAN_H and CAN_L are two physically different bus levels. CAN_GND is the common reference potential.





NOTE

- The cable's resistance value should be 70mΩ/m or less.
- The above diagrams shows the case used the cable connector "XM2D-0901" by OMRON Co.

◆Line termination

To minimize the signal's reflections from the end of the cable, a line termination shall be placed close to the 2 ends of the bus. Connect both ends of the twisted pair cable(CAN_H and CAN_L) to each LT. Use line termination whose resistance value is 120 Ω. (Resistance Tolerance: 5% maximum, Rated Power: 1/4 W minimum)

■ CANopen communication cable and other recommended items

Recommended Cable Connector:

CiA-recommended CANopen (CiA DR-303-1) -compatible DSUB 9-pin connector (DIN41652) .

CANopen Recommended Transfer Cable:

CiA-recommended CANopen (CiA DR-303-1) -compatible twisted pair cables with shield.

NOTE

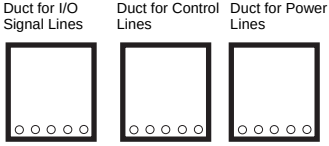
- Please use your own cables or cable connectors with your guarantee.

	Model No.	Manufacturer	Description
Recommended Cable Connector	XM2D-0901	<OMRON Co.>	DSUB 9-pin socket
	TSXCANKCDF180T	<Schneider Electric>	Straight connector with terminal selector switch attached
	TSXCANKCDF90T TSXCANKCDF90TP	<Schneider Electric>	Right-angled connector with terminal selector switch attached. Only for use for GP-3300 Series.
	VS-09-BU-DSUB/CAN	<PHOENIX CONTACT>	Connector with terminal block attached with terminal selector switch attached
	SUBCON-PLUS-CAN/AX	<PHOENIX CONTACT>	Straight connector with terminal selector switch attached
	SUBCON-PLUS-CAN/PG SUBCON-PLUS-CAN	<PHOENIX CONTACT>	Right-angled connector with terminal selector switch attached
CANopen Recommended Transfer Cable	TSX CAN CA50/TSX CAN CA100	<Schneider Electric>	Cable for CANopen (IEC60332-1) 50 m/100 m
	TSX CAN CB50/TSX CAN CB100	<Schneider Electric>	UL-authenticated cable for CANopen (IEC60332-2) 50 m/100 m

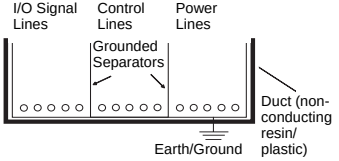
Wiring

1. Wiring Precautions

- To help prevent noise and interference problems, separate all control, communication and power lines by placing them in a separate ducts.



If different wires must be placed in the same duct, separate them with an earthed/grounded divider.



NOTE

- If the lines cannot be separated, use shielded lines and create a ground from the shield line.

IMPORTANT

- Use noise-reducing external wiring methods to increase overall system reliability.
- To prevent power surges or noise interference, use ducts to separate all DC I/O or current circuit wires from communication cables.
- To prevent malfunctions due to noise, communication cables must be wired separately from high-frequency lines and power lines such as high-voltage lines, high-current lines, and inverters.

Installation prerequisites for standards

The following units are UL/c-UL listed products.

(UL File No.E220851, UL File No.E182139)

Product Model No.	UL/c-UL Registration Model No.
AGP3300-L1-D24-CA1M	3280007-03
AGP3300-S1-D24-CA1M *1	3280007-02
AGP3300-T1-D24-CA1M	3280007-01
AGP3400-S1-D24-CA1M *1	3280035-02
AGP3400-T1-D24-CA1M	3280035-01

*1 The sales area is limited.

The following units are UL/c-UL recognized components. (UL File No.E171486, UL File No.E231702)

Product Model No.	UL/c-UL Registration Model No.
AGP3500-S1-AF-CA1M *1	3280024-21
AGP3500-T1-AF-CA1M	3280035-45
AGP3510-T1-AF-CA1M *1	3581301-01
AGP3600-T1-AF-CA1M	3280024-13

*1 The sales area is limited.

The following units are UL/c-UL listed products.

(UL File No.E220851, UL File No.E210412)

Product Model No.	UL/c-UL Registration Model No.
AGP3500-S1-D24-CA1M *1	3280024-22
AGP3500-T1-D24-CA1M	3280035-41
AGP3600-T1-D24-CA1M	3280024-14

*1 The sales area is limited.

For the detailed certification's information, refer to the Pro-face Home page.

<Cautions>

Be aware of the following items when building the GP into an end-use product:

- The GP unit's rear face is not approved as an enclosure. When building the GP unit into an end-use product, be sure to use an enclosure that satisfies standards as the end-use product's overall enclosure.
- The GP unit must be used indoors only.
- Install and operate the GP with its front panel facing outwards.
- If the GP is mounted so as to cool itself naturally, be sure to install it in a vertical panel. Also, it's recommended that the GP should be mounted at least 100mm away from any other adjacent structures or machine parts. The temperature must be checked on the final product in which the GP is installed.
- Serial Interface (COM2) is not Limited Power Source.

Hazardous Locations - Compliance and Handling Cautions

(1) Power and input/output wiring must be in accordance with Class I, Division 2 wiring methods - Article 501-10(B) of the National Electrical Code, NFPA 70 within the United States, and in accordance with Section 18-152 of the Canadian Electrical Code for units installed within Canada.

(2) Suitable for use in Class I, Division 2, Groups A, B, C, and D Hazardous Locations, or Non-Hazardous Locations.

(3) WARNING: Explosion hazard-substitution of any components may impair compliance to Class I, Division 2.

(4) WARNING: Explosion hazard-when in hazardous locations, turn the power OFF before replacing or wiring modules.

(5) WARNING: Explosion hazard-confirm that the power supply has been turned OFF before disconnecting equipment, or confirm that the location is not subject to the risk of explosion.

(6) WARNING: Explosion hazard-do not disconnect equipment unless power has been switched off or the area is known to be Non-Hazardous.

(7) In the case of use in Hazardous Locations, be sure to check that the externally connected unit and each interface have been fixed with screws and locked. In Hazardous Locations, it's impossible to insert or pull the cable from the applicable port. Be sure to check that the location is Non-Hazardous before inserting or pulling it.

CE Marking

The following units are CE marked products complying with the EMC Directive.

- AGP3300-L1-D24-CA1M
- AGP3300-S1-D24-CA1M *1
- AGP3300-T1-D24-CA1M
- AGP3400-S1-D24-CA1M *1
- AGP3400-T1-D24-CA1M
- AGP3500-S1-D24-CA1M *1
- AGP3500-T1-D24-CA1M
- AGP3600-T1-D24-CA1M
- AGP3600-U1-D24-CA1M *1

*1 The sales area is limited.

The following units are CE marked products complying with both the EMC Directive and low-voltage directive.

- AGP3500-S1-AF-CA1M *1
- AGP3500-T1-AF-CA1M
- AGP3510-T1-AF-CA1M *1
- AGP3600-T1-AF-CA1M

*1 The sales area is limited.

For the detailed information, please be downloaded and refer the Declaration of Conformity from Pro-face Home Page.

INQUIRY

Do you have any questions about difficulties with this product?
Please access our site anytime that 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 uses of this product.

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