GP3000 Series DIO 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 DIO I/F included with the DIO board type unit of the GP3000 series, as well as the wiring to the DIO connector. Before using the DIO 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>

(2) DIO Connector (1)

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.

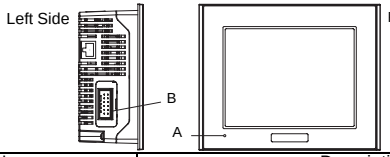
- GP3000 Series Hardware Manual
- Maintenance/Troubleshooting Guide

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 figure shows AGP-3300T unit)

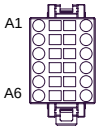
<table>
<tr><th></th><th>Name</th><th>Description</th></tr>
<tr><td>A</td><td>Status LED</td><td>
<table>
<tr><th>Color</th><th>Indicator</th><th>Operation Mode (Drawing)</th><th>Logic execution mode (when logic is enabled)</th></tr>
<tr><td rowspan="3">Green</td><td rowspan="2">ON</td><td>OFFLINE</td><td>-</td></tr>
<tr><td>In operation</td><td>RUN</td></tr>
<tr><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>
(The logic program is disabled in the AGP-3302B/ 3301L/3301S. The Status LED turns on only in Operation Mode (Drawing).)
</td></tr>
<tr><td>B</td><td>DIO Interface</td><td>Used to connect the external I/O device.</td></tr>
</table>

DIO Interface (Connector)

IMPORTANT

- When preparing the cable to connect the wiring, check the pin numbers inscribed on the DIO Connector.

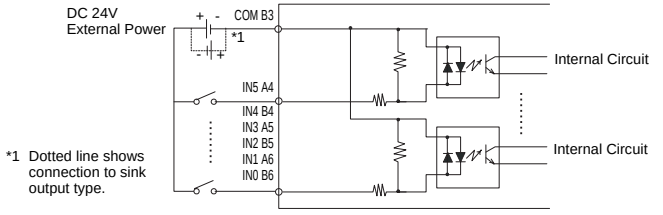
Applicable connector	1-1871940-6 <Tyco Electronics AMP.>

Pin Arrangement	Pin No.	Signal Name	Pin No.	Signal Name
 (Cable connection side)	A1	0V	B1	+24V
	A2	OUT1	B2	OUT0
	A3	NC	B3	COM
	A4	IN5	B4	IN4
	A5	IN3	B5	IN2
	A6	IN1	B6	IN0

■ Input Specifications

Rated Voltage		DC 24V
Maximum Allowable Voltage		DC 28.8V
Input Method		Source/Sink Input
Rated Current		5.7 mA (DC24V)
Input Resistance		4.2 kΩ
Operation Range	ON Voltage	DC 15V or more
	OFF Voltage	DC 5V or less
Input Delay Time	OFF to ON	1.5 ms or less
	ON to OFF	1.5 ms or less
Common Lines		1
Common Design		6 points/1 common line
External Connection		12-pin connector (used with Output section)
Input Points		6
Input Signal Display		No LED indicators
Status Display		None
Isolation Method		Photocoupler Isolation
External Power Supply		For Signal: DC 24V

◆Input Circuit

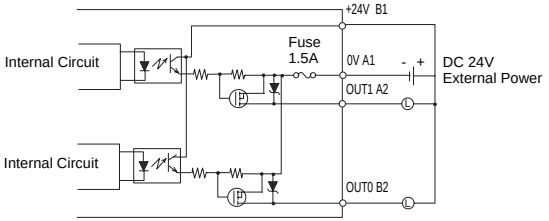


*1 Dotted line shows connection to sink output type.

■ Output Specifications (Sink type)

Rated Voltage		DC 24V
Rated Voltage Range		DC 20.4V to DC 28.8V
Output Method		Sink Output
Maximum Load Voltage		0.2A /point, 0.4A /common
Output Voltage Drop		1.5V or less
Output Delay Time	OFF to ON	1ms or less
	ON to OFF	1ms or less
Voltage Leakage (when OFF)		0.1mA or less
Clamp Voltage		39V ± 1V
Type of Output		Transistor Output
Common Lines		1
Common Design		2 points/1 common line
External Connection		12-pin connector (also used for Input)
Output Protection Type		Output is unprotected
Internal Fuse		1.5A, 125V DIP fuse (not replaceable)
Surge Control Circuit		Zener diode
Output Points		2
Output Signal Display		No LED indicators
Status Display Element		None
Isolation Method		Photocoupler Isolation
External Power Supply		DC 24V

◆Output Circuit (Sink type)



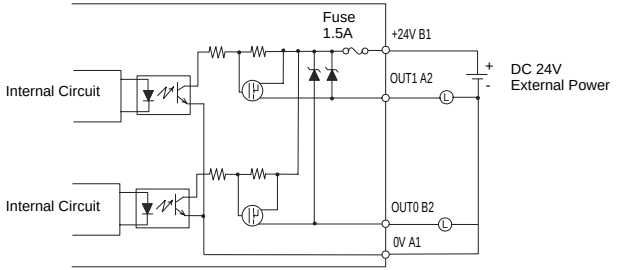
NOTE

- Since the output terminals are not electrically protected, an output line might be short-circuited or a connection fault might damage the GP unit. Please install an applicable fuse to prevent an overload in the circuit, if necessary.

■ Output Specifications (Source type)

Rated Voltage		DC 24V
Rated Voltage Range		DC 20.4V to DC 28.8V
Output Method		Source Output
Maximum Load Voltage		0.2A /point, 0.4A /common
Output Voltage Drop		DC 1.5V or less
Output Delay Time	OFF to ON	1ms or less
	ON to OFF	1ms or less
Voltage Leakage (when OFF)		0.1mA or less
Clamp Voltage		39V ± 1V
Type of Output		Transistor Output
Common Lines		1
Common Design		2 points/1 common line
External Connection		12-pin connector (also used for Input)
Output Protection Type		Output is unprotected
Internal Fuse		1.5A, 125V DIP fuse (not replaceable)
Surge Control Circuit		Zener diode
Output Points		2
Output Signal Display		No LED indicators
Status Display Element		None
Isolation Method		Photocoupler Isolation
External Power Supply		DC 24V

◆Output Circuit (Source type)



NOTE

- Since the output terminals are not electrically protected, an output line might be short-circuited or a connection fault might damage the GP unit. Please install an applicable fuse to prevent an overload in the circuit, if necessary.

Installations

1. Wiring to the DIO Connector

IMPORTANT

- Be sure to remove the DIO Connector from the GP unit prior to starting wiring. Failure to do so may cause an electric shock.

■ Items Required to Wire Connectors

Screwdriver

Recommended type: 1891348-1 <Tyco Electronics AMP.>

If another manufacturer is used, be sure the part has the following dimensions:

point depth: 1.5mm [0.06in.]

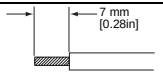
point width: 2.4mm [0.09in.]

Point shape should be DIN5264A, and meet Security Standard DN EN60900.

Also, the screwdriver's tip should be flat as indicated in order to access the narrow hole of the connector:

Screwdriver Tip Shape

■ DIO Cable Specifications

DIO Cable Diameter	AWG24 to 18 UL1015 or UL1007
Conductor Type	Stranded Wire*1
Conductor Length	

*1 If the Conductor's end (individual) wires are not twisted correctly, the end wires may either short against each other, or against an electrode.

■ Connecting the DIO Cable

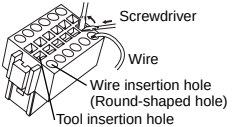
(1) Insert a flathead screwdriver, at an angle, into the tool insertion hole (square-shaped hole) of the connector.

(2) When inserting the flathead screw driver, be sure that it is perpendicular to the center division wall.

NOTE

- Make the insertion distance of the flathead screwdriver approximately 4 mm. Inserting forcefully may break the inside of the connector and will a cause of contact defect. Also, do not turn the flathead screwdriver while the tip is inside of the tool insertion hole (square-shaped hole).

(3) The adjacent wire insertion hole (round-shaped hole) will be in an open state. With the flathead screwdriver still inserted, insert the wire into the wire insertion hole (round-shaped hole).



(4) Remove the flathead screwdriver from the tool insertion hole (square-shaped hole). The wire insertion hole (round-shaped hole) will close and the wire will be secured. In the case of wire removal, remove the desired wire by inserting a flathead screwdriver into the corresponding tool insertion hole (square-shaped hole) following procedures (1) and (2).

(5) Insert the wired DIO connector straight into the DIO I/F of the LT unit.

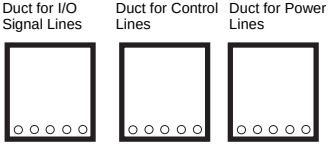
IMPORTANT

- Be sure to strip only the amount of cover required. If too much cover is removed, the end wires may short against each other, or against an electrode, which can create an electric shock. If not enough cover is removed the wire cannot carry a charge.
- Do not solder the wire itself. This could lead to a bad or poor contact.
- Insert each wire completely into its opening. Failure to do so can lead to a unit malfunction or short, either against wire filaments, or against an electrode.
- When wiring, be aware of the installation position, direction, and twisting of the wiring as to not develop stress on the connector. Fix the cable near the LT by cable clamp and set it loosely as to not place tension on the connector.

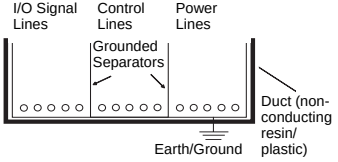
Wiring

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-D81K/D81C	3280007-03
AGP3300-S1-D24-D81K/D81C	3280007-02
AGP3300-T1-D24-D81K/D81C	3280007-01
AGP3400-T1-D24-D81K/D81C	3280035-01
AGP3400-S1-D24-D81K/D81C	3280035-02

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-D81K/D81C	3280024-21
AGP3500-T1-AF-D81K/D81C	3280035-45
AGP3600-T1-AF-D81K/D81C	3280024-13

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-L1-D24-D81C	3280024-32
AGP3500-S1-D24-D81K/D81C	3280024-22
AGP3500-T1-D24-D81K/D81C	3280035-41
AGP3600-T1-D24-D81K/D81C	3280024-14

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-D81K/D81C
- AGP3300-S1-D24-D81K/D81C
- AGP3300-T1-D24-D81K/D81C
- AGP3400-S1-D24-D81K/D81C
- AGP3400-T1-D24-D81K/D81C
- AGP3500-L1-D24-D81C
- AGP3500-S1-D24-D81K/D81C
- AGP3500-T1-D24-D81K/D81C
- AGP3600-T1-D24-D81K/D81C

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

- AGP3500-S1-AF-D81K/D81C
- AGP3500-T1-AF-D81K/D81C
- AGP3600-T1-AF-D81K/D81C

For the detailed information, 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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