Hybrid Terminal Block Installation Guide

The Hybrid Terminal Block (Hereafter referred to as the “HTB“) network interface module with built-in Inputs/Outputs is small in size. Its modularity, by adding I/O expansions, can be used to optimize an application by providing the necessary number of I/Os.

The HTB connects directly to a CANopen field bus.

The HTB accepts up to 7 EX modules.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

- Turn power off before installing, removing, wiring, or maintaining.
- This product is not intended for use in safety critical machine functions. Where personnel and or equipment hazards exist, use appropriate hard-wired safety interlocks.
- Do not disassemble, repair, or modify the modules.
- This controller is designed for use with in an enclosure.
- Install the modules according to the installation instructions on page 3.
- Use the sensor power supply only for supplying power to sensors connected to the module.
- Use an IEC60127-approved fuse on the power line and output circuit to meet voltage and current requirements. Recommended fuse: Littlefuse® 5x20 mm Slo-Blo® 218 Series.

Failure to follow this precaution can result in death, serious injury, or equipment damage.

Package Contents

(1) HTB (1)
(2) Connector for Input (1, attached to HTB)
(3) Connector for Output (1, attached to HTB)
(4) Installation Guide <This guide> (1)

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

About the Manual

In addition to this instruction manual, refer to the following manuals for detailed information.

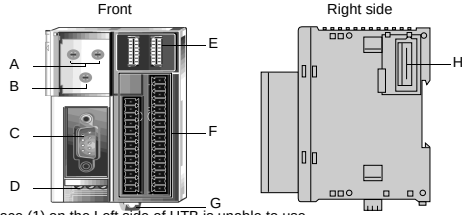
- Hybrid Terminal Block Hardware Manual
- EX module Hardware Manual
- GP3000 Series Hardware Manual
- GP-Pro EX Reference Manual “Controlling External I/O”
- Maintenance/Troubleshooting

The above manuals can be downloaded from Pro-face Home Page.

URL

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

Part Names and Functions



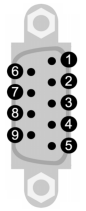
* The Interface (1) on the Left side of HTB is unable to use.

	Name	Description
A	Upper Rotary DIP switch	Define the CANopen node ID (1 to 127). When using GP as a master, available range of node ID is 1 to 63. Do not use the same node ID twice in the network. • Left Rotary DIP switch : Sets tens place with 0 to12 (decimal number) • Right Rotary DIP switch : Sets ones place with 0 to 9 (decimal number)
B	Lower Rotary DIP switch	Define the baud rate. Set the baud rate with 0 to 9 (decimal number). Set the baud rates identical to those on the master unit (such as the GP unit).

Position (lower encoder rate)	Baud Rate
0	10 kbits/s
1	20 kbits/s
2	50 kbits/s
3	125 kbits/s
4	250 kbits/s
5	500 kbits/s
6	800 kbits/s
7	1 Mbits/s
8	Automatic
9	Default rate (250 kbits/s)

Note: GP3000 Series CANopen board type is corresponding to the baud rate between 50 kbits/s and 1 Mbits/s.

Note: The value 8 is used to search automatically for the bus transmission speed. The search starts at a value of 1 Mbits/s then progressively lowers over successive searches until communication is established on the bus. The automatic search only works on an operational CANopen network.

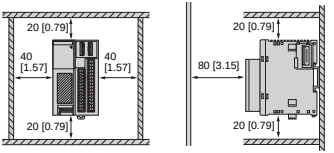
<table>
<tr><td>C</td><td>Field bus interface</td><td>A 9-pin plug D-SUB connector is used to connect the interface module to a CANopen field bus. This bus is not insulated internally.
<table>
<tr><th></th><th>Contacts</th><th>Signal</th><th>Description</th></tr>
<tr><td rowspan="9">  </td><td>1</td><td>-</td><td>-</td></tr>
<tr><td>2</td><td>CAN_L</td><td>CAN-L bus line</td></tr>
<tr><td>3</td><td>CAN_GND</td><td>CAN Ground</td></tr>
<tr><td>4</td><td>-</td><td>-</td></tr>
<tr><td>5</td><td>-</td><td>-</td></tr>
<tr><td>6</td><td>GND</td><td>Ground(Common with CAN_GND)</td></tr>
<tr><td>7</td><td>CAN_H</td><td>CAN-H bus line</td></tr>
<tr><td>8</td><td>-</td><td>-</td></tr>
<tr><td>9</td><td>-</td><td>-</td></tr>
<tr><td></td><td>Shell</td><td>FG</td><td>Frame Ground</td></tr>
</table>
Recommended cable connector:
CiA-recommended CANopen (CiA DR-303-1) -compatible DSUB 9-pin connector (DIN41652) .
Recommended network 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.</td></tr>
<tr><td>D</td><td>Electrical supply Interface</td><td>Terminal for an external 24 VDC supply of the HTB.</td></tr>
<tr><td>E</td><td>Indicator LED</td><td>
<table>
<tr><th>LED</th><th>Status</th></tr>
<tr><td>PWR</td><td>Indicates the presence of a 24 VDC power supply to HTB.</td></tr>
<tr><td>RUN
ERR</td><td>2 (RUN) and 3 (ERR) show the data exchange status between the communication units that can transmit data.</td></tr>
<tr><td>I0 - I11
Q0 - Q7</td><td>Reflect the I/O status of HTB's integrated I/O.</td></tr>
</table></td></tr>
<tr><td>F</td><td>In/Output Terminals</td><td>Input/Output terminals.</td></tr>
<tr><td>G</td><td>Hook</td><td>A hook to fix HTB on the DIN rail.</td></tr>
<tr><td>H</td><td>Extension Connector</td><td>For connecting EX modules; maximum number of EX modules that can be connected is 7.</td></tr>
</table>

Installations

1. Installation Requirements

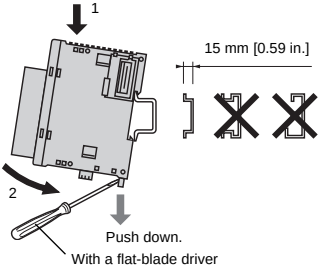
- In order to ensure proper serviceability, operability and airflow, provide space between the HTB and structural objects or other parts as the figure shows.

Unit : mm [in.]



2. 35 mm [1.38 in.] DIN rail mounting

(1) Put the upper groove of the unit on the upper edge of the DIN rail. Push the lower side of the unit to the lower edge of the DIN rail unit it clicks.



(2) While pushing down the hook in the direction of the arrow with a flat-blade driver, pull the lower side of the unit and remove the unit from the DIN rail.

IMPORTANT

- Check the vertical direction of the unit. Attach the unit on to the vertical plane properly. Improper mounting of the unit may prevent heat release and proper operation of the unit.
- The unit release hooks are kept open when not used. Make sure that the unit release hooks close properly and the unit is firmly fixed on the DIN rail.

Wiring

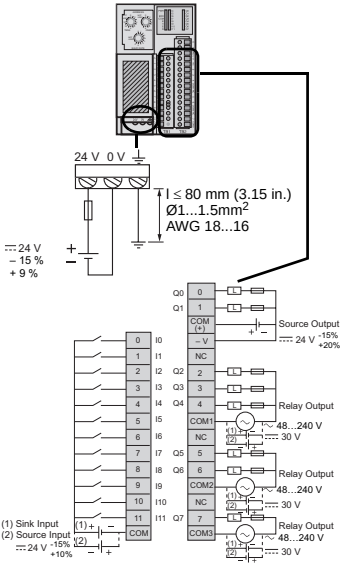
⚠ WARNING

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

IMPORTANT

- Make sure to remove the connectors from the HTB first, then connect cables to the terminal. Failure to do so may cause an electric shock.
- Be careful when you remove the connectors that are firmly fit.

□ indicates a fuse. L indicates load.



NOTE

- Please install an applicable fuse to prevent an overload in the circuit, if necessary.
- The terminals, such as COM, and COM1 to 3, are not connected together internally.
- The input/output connector is CA7-HTBCNSET-01 made by Pro-face. 13-pin connector for input and 16-pin connector for output, both connectors are packed.

1. Arrangement of the HTB's power cable and the I/O cables

■ Power Cord Specifications

◆ Power Cord

1 mm^2 to 1.5mm^2 (AWG 18 and AWG 16). Use the shortest wire length possible. The grounding wire should be 1.50 mm^2 (AWG 16).

◆I/O cables

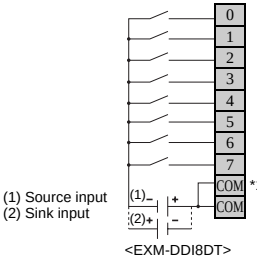
0.20 mm^2 to 1.31 mm^2, (AWG 24 to AWG 16).
(accepts up to two wires fitted with cable ends or tags)

Power supply section	 Ø 3.5 mm [0.14 in.]		N·m	0.6
In/Output terminal connector	 Ø 2.5 mm [0.10 in.]		N·m	0.4

2. EX module connecting diagram

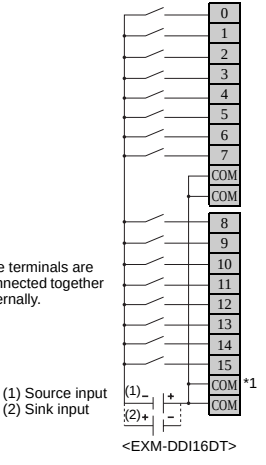
NOTE

• Please install an applicable fuse to prevent an overload in the circuit, if necessary.



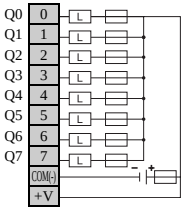
<EXM-DDI8DT>

*1 The terminals are connected together internally.

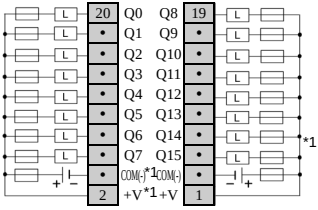


<EXM-DDI16DT>

indicates a fuse. L indicates load.

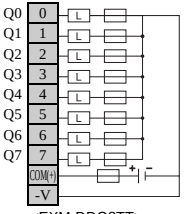


<EXM-DDO8UT>

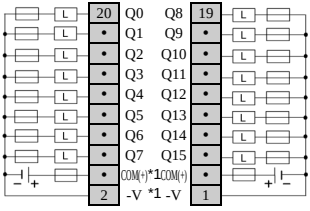


<EXM-DDO16UK>

*1 The terminals are connected together internally.

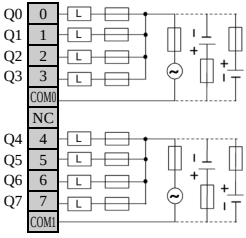


<EXM-DDO8TT>



<EXM-DDO16TK>

*1 The terminals are connected together internally.



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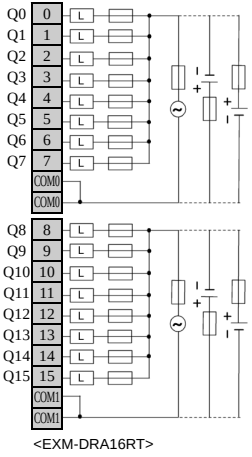

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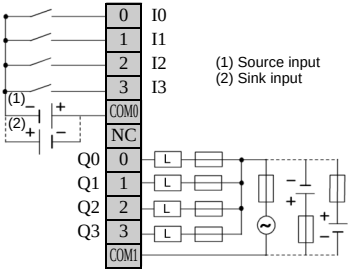
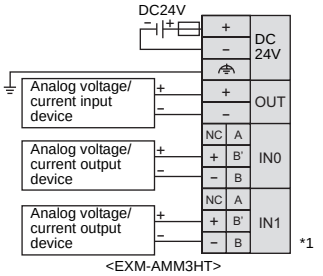
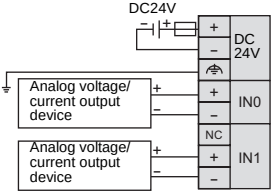


<EXM-DMM8DRT>

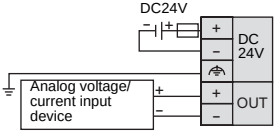


<EXM-AMM3HT>

*1 The (-) poles of inputs IN0 and IN1 are connected internally.

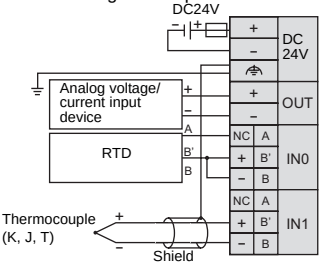


<EXM-AMI2HT>



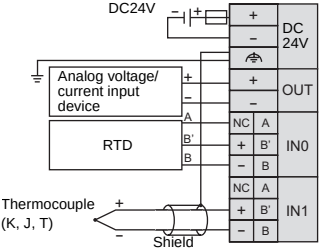
<EXM-AMO1HT>

2-wire cabling for Temperature Probes :



<EXM-ALM3LT>

3-wire cabling for Temperature Probes :

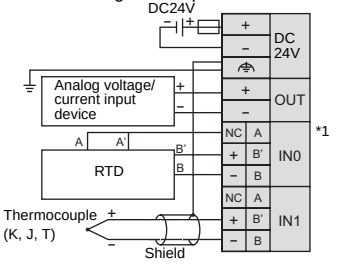


<EXM-ALM3LT>

IMPORTANT

- The power for the analog module should be supplied separately from the HTB.
  Turn the analog module on before turning the HTB on. Wait at least 30 seconds after power-off to restart the external power-supply or it may not operate properly.
- Be sure the analog OUT lines are placed in a separate duct from high-frequency, live lines such as high-voltage, high-power lines, inverters, etc.

4-wire cabling for Temperature Probes :



<EXM-ALM3LT>

*1 For 4-wire cabling, output A' is not connected.

Installation prerequisites for standards

This unit is UL/c-UL/CSA listed product:

(UL File No. E210412, CSA File No.258181)

This product conforms to the following standards:

- UL508

Industrial Control Equipment

- ANSI/ISA12.12.01

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

- CSA-C22.2 No.142-M1987

Standard for Process Control Equipment

- CSA-C22.2 No.213-M1987

Non-Incendive Electrical Equipment for Use in Class I, Division 2 Hazardous Locations

This equipment is suitable for use in Class I, Division 2, Groups A, B, C, D or nonhazardous locations only.

Warning - Explosion Hazard - Substitution of components may impair suitability for Class I, Division 2.

Warning - Explosion Hazard - Do not disconnect equipment unless power has been switched off or the area is known to be non-hazardous.

These devices are open-type devices that are to be installed in an enclosure suitable for the environment.

WARNING - Exposure to some chemicals may degrade the sealing properties of materials used in the relays inside of this device.

CE Marking

- This unit is CE marked product that conforms to EMC directives, EN55011 Class A and EN61131-2.

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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