

PDA1004, PDA1011 & PDA1044 ProVu Expansion Modules

Instruction Manual



PDA1004
4 Relays Module



PDA1011
Dual 4-20 mA
Output Module



PDA1044
Digital I/O Module

- External Modules Add Functionality to ProVu Meters
- Four SPST Relays Module
- Dual 4-20 mA Output (for select models) Module
- Four Digital Inputs & 4 Digital Outputs Module

Introduction

Use these external expansion modules to add functionality to ProVu meters in the field. They can be added at any time and are easy-to-install.

The PDA1004 relays module includes 4 Form A (SPST) relays rated at 3 Amps and when added to a meter that has 4 on-board relays results in a system with 8 relays.

The PDA1011 dual 4-20 mA output module can only be used with the dual input meters, Modbus scanners, and the high voltage and current meters. Connecting one of these modules to one of these meters that has the on-board 4-20 mA output, results in a meter with three 4-20 mA outputs.

The PDA1044 digital I/O module has four digital inputs and four digital outputs per module and two may be connected together to achieve a system with eight I/O. External digital inputs function similarly to the F4 digital input. They can be configured to trigger events (i.e. acknowledge/reset alarms, reset total, reset max and/or min values, disable/enable all relays, etc.), provide specific menu access, or mimic front keys. Digital outputs can be used to drive solid state relays, or as inputs to other alarm or control devices.

These expansion modules can be used individually or in systems with other modules and serial adapters. For instance, a system consisting of two 4-20 mA inputs, three 4-20 mA outputs, eight relays, eight digital inputs, eight digital outputs and RS-485 could be configured using these items:

- (1) PD6060-6R7 Dual Input Process Meter
- (1) PDA1004 Relays Module
- (1) PDA1011 Dual 4-20 mA Out Module
- (2) PDA1044 Digital I/O Module
- (1) PDA1485 Serial Adapter

MeterView Pro software can be used to configure these modules when they are connected to meters.



Disclaimer

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⚠ CAUTION

- Read complete instructions prior to installation and operation of the meter.

⚠ WARNINGS

- Risk of electric shock or personal injury.
- These products are not recommended for life support applications or applications where malfunctioning could result in personal injury or property loss. Anyone using these products for such applications does so at his/her own risk. Precision Digital Corporation shall not be held liable for damages resulting from such improper use.

⚠ WARNING

Cancer and Reproductive Harm

Limited Warranty

Precision Digital Corporation warrants these products against defects in material or workmanship for the specified period under "Specifications" from the date of shipment from the factory. Precision Digital's liability under this limited warranty shall not exceed the purchase value, repair, or replacement of the defective unit.

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Ordering Information

Model	Description
PDA1004	4 Relays Expansion Module
PDA1011	Dual 4-20 mA Output Module
PDA1044	4 Digital Inputs & 4 Digital Outputs Module

Accessories

Model	Description
PDA1002	DIN Rail Mounting Kit for Two Expansion Modules

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Specifications

Except where noted all specifications apply to operation at +25°C.

General (All models)

Power	ProVu meter M-LINK connection
Cable	Standard CAT5e cable; provided with module. <i>Note: To ensure optimum performance use only supplied cables.</i>
Connectors	Meter End: RJ45 (two); identical and Interchangeable. Field End: Removable screw terminal blocks that accept 12 to 22 AWG wire.
System	Any combination of: (1) PDA1004 Relays Module (1) PDA1011 Dual 4-20 Output Module (2) PDA1044 Digital I/O Module (1) Serial Adapter
Serial Adapter Compatibility	Expansion modules may be used with PDA1485, PDA1232, or PDA8008
Tightening Torque	Screw terminal connectors: 5 lb-in (0.56 Nm)
Enclosure	ABS-94HB material, UL94HB (Flame-Class Rating)
Overall Dimensions	2.3" x 0.9" x 3.6" 58 mm x 23 mm x 92 mm (W x H x D)
Warranty	3 years parts & labor.

PDA1004 4 Relays Expansion Module

Relays	Four; Form A (SPST); Rated 3 A @ 30 VDC and 125/250 VAC for resistive loads. 1/14 HP @ 125/250 VAC for inductive loads.
Weight	2.4 oz (68 g)

PDA1011 Dual 4-20 mA Output Module

Compatibility	PD6060, PD6262, PD6363, PD6400, PD6080, PD6081, PD6088, PD6089
Accuracy	± 0.1% of span ± 0.004 mA
Scaling Range	3.000 to 23.000 mA for any display range
Temperature Drift	0.4 µA/°C max from 0 to 65°C ambient 0.8 µA/°C max from -40 to 0°C ambient <i>Note: Analog output drift is separate from input drift.</i>
Output Loop Resistance	Power supply Minimum Maximum 24 VDC 10 Ω 700 Ω 35 VDC (external) 100 Ω 1200 Ω
Isolation	The dual 4-20 mA outputs are not isolated from each other or from the system ground.
Weight	1.8 oz (51 g)

PDA1044 Digital Input & Output Expansion Module

Channels	4 digital inputs & 4 digital outputs per module
Digital Input Logic High	3 to 5 VDC
Digital Input Logic Low	0 to 1.25 VDC
Digital Output Logic High	3.1 to 3.3 VDC
Digital Output Logic Low	0 to 0.4 VDC
Source Current	10 mA maximum output current
Sink Current	1.5 mA minimum input current
+5 V Terminal	To be used as pull-up for digital inputs only. Connect normally open pushbuttons across +5 V & DI 1-4.
⚠ WARNING	
<ul style="list-style-type: none"> DO NOT use +5 V terminal (pin 1) to power external devices. 	
Weight	2.2 oz (62 g)

Installation

There is no need to remove the expansion module from its case to complete the installation, wiring, or setup of the unit. The expansion module may be programmed using the meter's buttons or via MeterView Pro software.

⚠ WARNING

- Connect the expansion module to the meter before applying power to the meter.
- Do not connect or disconnect the expansion module with the power on.
- Do not connect any equipment other than Precision Digital's expansion modules, cables, or meters to the RJ45 MLINK connector. Otherwise damage will occur to the equipment and the meter.

Expansion Module Connections

The relay, dual-analog output, and digital I/O expansion modules PDA1004, PDA1011, and PDA1044 are connected to the meter using a CAT5e cable provided with each module (see Figure 1).



Figure 1. M-Link Connector Location on the Meter

The two RJ45 connectors on the expansion modules are identical and interchangeable; one is used to connect the meter to the module and the other is used to connect the module to an additional module.

PDA1011 4-20 mA Output Configuration

The following must be performed prior to powering the meter for the meter to recognize the PDA1011 dual analog output module:

1. Connect the M-Link connector on the module to the meter.
2. Wire and power each analog output being used. Power should be provided by a DC supply different than the one powering the meter.

PDA1044 Digital I/O Configuration

The jumper located between the RJ45 connectors of the PDA1044 (see Figure 2) must be removed on the second digital I/O module in order for the system to recognize it as module #2.

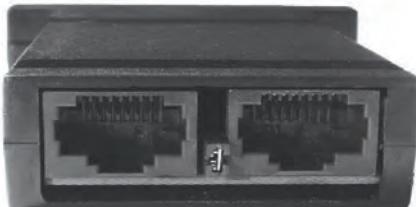


Figure 2. PDA1044 Jumper Location

Terminal Block Connections

All connections are made to removable screw terminal connectors located at the front of the module.

CAUTION

- Use copper wire with 60°C or 60/75°C insulation for all line voltage connections. Observe all safety regulations. Electrical wiring should be performed in accordance with all applicable national, state, and local codes to prevent damage to the meter and ensure personnel safety.

PDA1004 Relays Connections

Connections are made to an eight-position removable screw terminal connector.

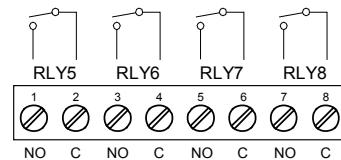


Figure 3. External Relays Module Connections

PDA1011 Dual Analog Output Connections

Connections are made to a four-position removable screw terminal connector.

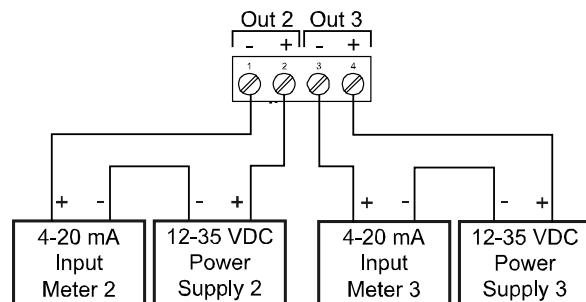


Figure 4. Dual Analog Output Module Connections

PDA1044 Digital I/O Connections

Connections are made to a ten-position removable screw terminal connector.

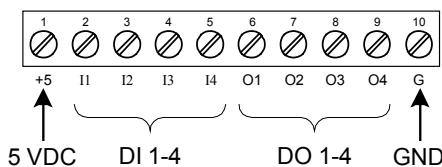


Figure 5. Digital I/O Module Connections

Mounting Instructions

Step 1: Mounting the DIN Rail Clips to Module

Place the expansion module on a flat surface with the bottom surface facing up. The bottom surface can be identified as the surface closest to the locking tab slot on the modular connector as shown in Figure 6.

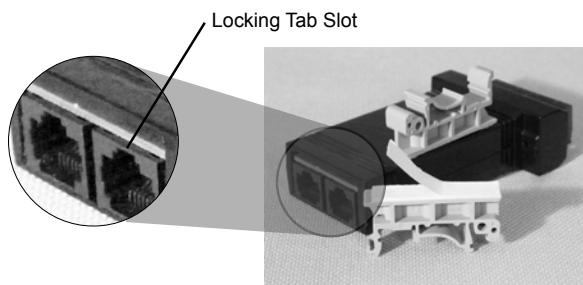


Figure 6. DIN Rail Clips Mounted to Expansion Module

Peel the protective layer off the adhesive tape on the bottom of one of the mounting clips. With the hinge end of the clip, as shown in Figure 7, facing the end of the module with the communications connector, align the clip along the long (side) edge of the module and centered lengthwise within the flat surface of the module as shown in Figure 8.



Figure 7. Hinge & Latch End of DIN Rail Clip

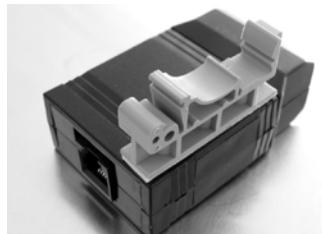


Figure 8. DIN Rail Clips Mounted to Module

Firmly press down on the clip for 10 seconds. Repeat this procedure on the opposite side. Once the clips are properly installed, the modules with clips mounted should look similar to one or both of the modules pictured in Figure 9. While the adhesive is initially quite strong, this strength improves significantly over a period of approximately 12 hours.

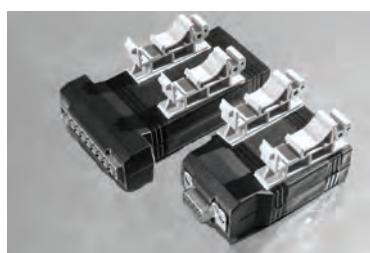


Figure 9. Examples of Clips Mounted to Modules

Step 2: Mounting the DIN Rail to a Surface

The expansion modules, serial adapters and serial converters weigh approximately 1.5 oz (42 grams) each so the mounting hardware does not need to be overly strong. We recommend two #10 pan head screws as shown in Figure 10, but only because they best accommodate the slots in the DIN rail. The amount of strain the wiring might place on the module mounting needs to be considered also. In many cases, DIN rail with double-sided tape might be acceptable, although not recommended in areas of high vibration or extreme hot or cold temperatures.



Figure 10. Mounting the DIN Rail with 2 #10 Pan Head Screws

When choosing a location to mount the DIN rail, keep in mind that wires will be entering both ends of the modules as shown in Figure 11. Leave enough room on either end of module to allow for wire routing to prevent undue stress placed on the module's connectors and mounting clips. The DIN rail may be mounted on any vertical or horizontal mounting surface.

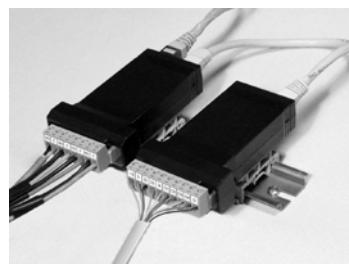


Figure 11. Example of Modules Mounted to DIN Rail

Step 3: Mounting Modules to the DIN Rail

To mount modules to a DIN rail, first locate the approximate desired position to place the module on the DIN rail, then hook the hinge end of the mounting clip to the edge of the DIN rail as shown in Figure 12. Next lower the opposite "latch end" of the clip onto the rail. Press down on the module until the latch end snaps in place.

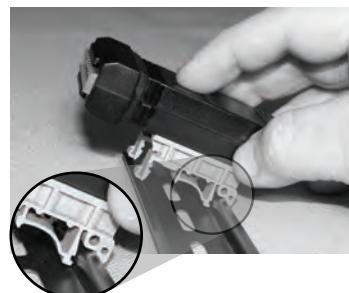


Figure 12. Snapping the Module to the DIN Rail

A typical installation will look like Figure 13 once modules are mounted to the DIN rail.

Step 4: Connections

After mounting the device(s), refer to the Instruction Manual for each module for proper connections and operation.