

proense Digital Panel Meter DPM3-E Series

Quick Start Guide

AUTOMATIONDIRECT.COM

3505 HUTCHINSON ROAD
CUMMING, GA 30040-5860

Models:
DPM3-E-H DPM3-E-L
DPM3-E-A2R-H DPM3-E-

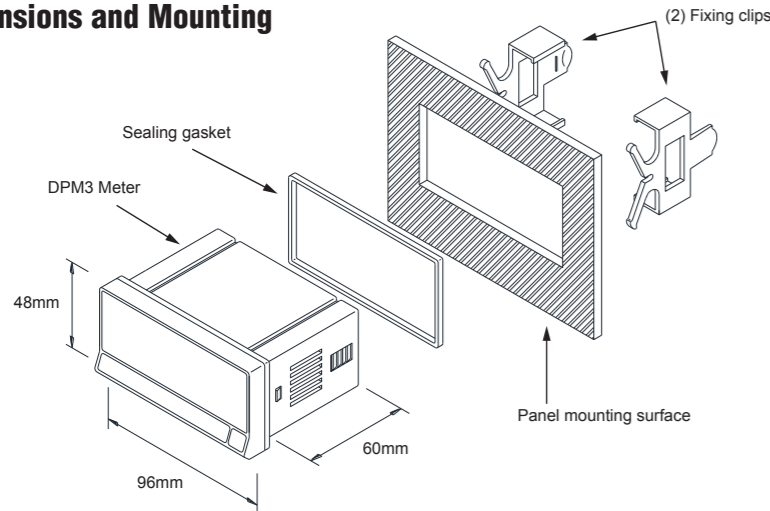


This Quick Start Guide provides basic information for configuring the ProSense DPM3 series digital panel meters. For more specific information and advanced configuration instructions please visit www.AutomationDirect.com and download the free instruction manual for this DPM3 series.

Features

- 96 x 48mm 1/8 DIN
- 5 digit (-19999 to 19999) tri-color (red, green, amber) LED display
- Selectable decimal point
- True RMS for AC voltage and current inputs
- AC/DC voltage input 600V, 200V, 20V, 2V
- AC/DC current input 200mA, 1A, 5A, shunt 50mV, shunt 60mV, shunt 100 mV
- AC or DC powered
- Display scaling or teaching modes
- Optional 4-20mA analog output
- Optional (2) Form C SPDT
- Activation on increasing or decreasing input signal
- Hysteresis or time delay operation
- Display color change on relay operation
- Configuration for direct or reverse acting
- Total or selective configuration lock out
- Programmable functions include:
 - Minimum (valley) and maximum (peak) value memory
 - Minimum (valley) and maximum (peak) value reset
 - Hold
- Filtering to minimize display bounce
- Display brightness adjustment

Dimensions and Mounting



To install the instrument, prepare a 92mm x 45mm panel cut-out and slide the unit inwards making sure to place the sealing gasket between the front side panel and the front bezel.

While holding the unit in place, put the fixing clips on both sides of the case and slide them through the guide tracks until they reach the panel at the rear side.

Press slightly to fasten the clips to the latching slots on the case and get the unit fully assembled and close fitted to achieve a good seal.

To remove the instrument from the panel, pull the rear fixing clips latching tabs outwards until they are disengaged, then slide the fixing clips back over the case.

Installation	
Dimensions	96 x 48 x 60mm (1/8 DIN)
Panel Cutout	92 x 45mm (Max. panel thickness 10mm)
Case Material	Polycarbonate UL 94 V-0



WARNING: To minimize the risk of potential safety problems, you should follow all applicable local and national codes that regulate the installation and operation of your equipment. These codes vary from area to area and it is your responsibility to determine which codes should be followed, and to verify that the equipment, installation, and operation are in compliance with the latest revision of these codes.

Equipment damage or serious injury to personnel can result from the failure to follow all applicable codes and standards. We do not guarantee the products described in this publication are suitable for your particular application, nor do we assume any responsibility for your product design, installation, or operation.

If you have any questions concerning the installation or operation of this equipment, or if you need additional information, please call us at 1-800-633-0405 or 770-844-4200.

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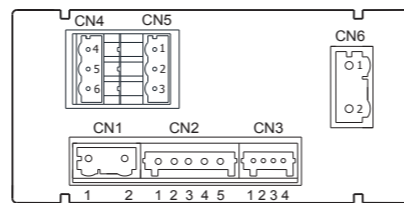


WARNING! Electric shock danger

1. Keep away from high-voltage and high-frequency environment during the installation to prevent interference. Avoid using the device in environments which contain: (a) dust or corrosive gas; (b) high humidity or high radiation; (c) shock or vibration
2. Make sure the input power is switched off when installing or uninstalling the DPM3 to prevent harm to personnel or equipment.
3. Before switching on the input power, check the signal connection, e.g. the input voltage and polarity. Voltage that is too high may cause damage to the DPM3.
4. Front cover should be cleaned only with a soft cloth soaked in neutral soap product. DO NOT USE SOLVENTS.
5. Outputs remain active in Programming Mode.

Wiring Terminals

Note: For additional wiring information download complete manual from www.AutomationDirect.com



CN1	
AC Supply	DC Supply
1 Line	1 VDC
2 Neutral	2 VDC

Polarity insensitive for DC power

CN3	
1	Common
2	Peak
3	Valley
4	Hold

CN2	
Electrical Inputs	
1	Common
2	Shunt / 2V
3	200mA
4	1A / 5A
5	20 / 200 / 600V

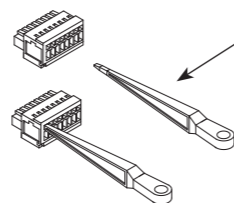
2 SPDT Relays (-A2R)

CN4 (Relay 2)		CN5 (Relay 1)	
4	NO2	1	NO1
5	CM2	2	CM1
6	NC2	3	NC1

NO: Normally Open, CM: Common, NC: Normally Closed

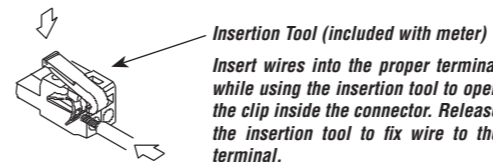
CN6	
Analog Output	
1	(-) 4-20mA
2	(+) 4-20mA

CN2 and CN3 Terminals



Insertion Tool (included with meter)
Insert wires into the proper terminal while using the insertion tool to open the clip inside the connector. Release the insertion tool to fix wire to the terminal.

CN1, CN4, CN5 and CN6 Terminals



Insertion Tool (included with meter)
Insert wires into the proper terminal while using the insertion tool to open the clip inside the connector. Release the insertion tool to fix wire to the terminal.



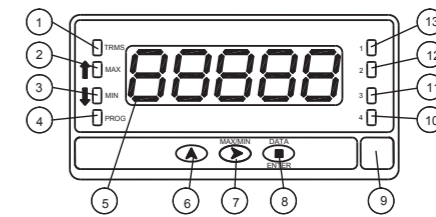
Warning: If this instrument is not installed and used in accordance with these instructions, the protection provided by it against hazards may be impaired. To meet the requirements of EN 610101-1 standard, where the unit is permanently connected to main supply, it is obligatory to install a circuit breaking device that is easily reachable by the operator and clearly marked as the disconnecting device.

To guarantee electromagnetic compatibility, the following guidelines should be followed:

- Power supply wires should be separately routed from signal wires and never ran in the same conduit.
- Use shielded cable for signal wiring.
- Cable cross-section must be $\geq 0.25\text{mm}^2$

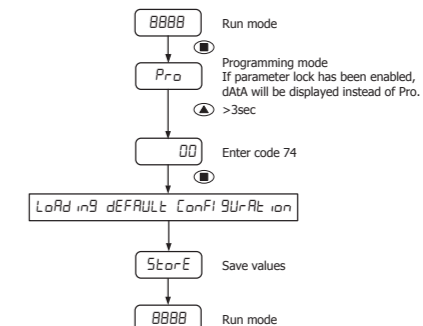
Before connecting signal wires, signal type and input range should be verified to be within the proper limits. Do not connect more than one input signal to the meter simultaneously.

Programming Panel Keys



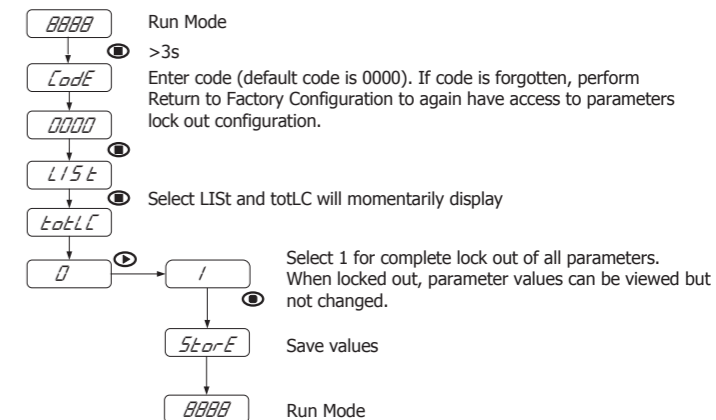
Programming Panel			
#	Description	Run Mode	Programming Mode
1	True RMS	Indicates reading AC using true RMS	---
2	MAX	Indicates peak displayed	---
3	MIN	Indicates valley displayed	---
4	PROG	---	Indicates programming mode
5	DISPLAY	Displays the input variable	Displays programming parameters
6	UP	Direct access to setpoints	Increments the value of the flashing digit
7	SHIFT/MAX/MIN KEY	Recalls Max/Min values	Moves to the right
8	ENTER KEY	Enters in PROG mode. Displays data	Accepts data. Advances program
9	Free space for units label	---	---
10	LED Output 4	---	---
11	LED Output 3	---	---
12	LED Output 2	Activation Output 2	Programming output 2
13	LED Output 1	Activation Output 1	Programming output 1

Return to Factory Configuration



Total Configuration Lock-out

Note: For selective lock-out configuration download complete manual from www.AutomationDirect.com



Additional Help and Support

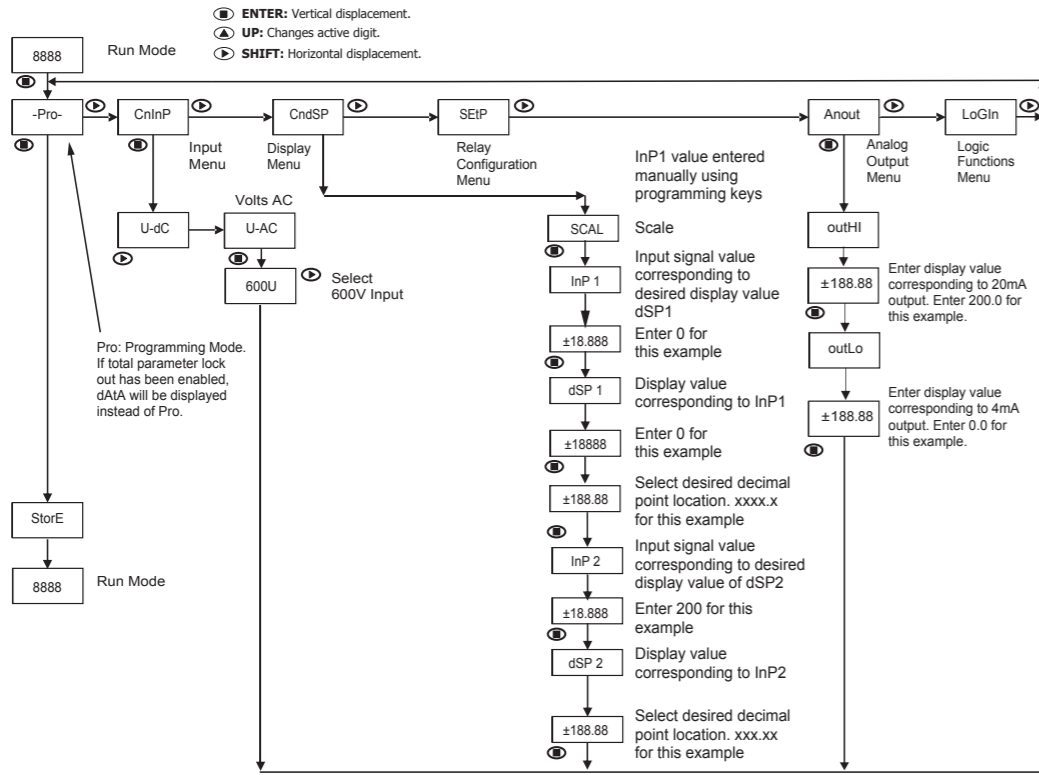
- For additional information on this product download the complete manual from www.AutomationDirect.com
- For additional technical support and questions, call our Technical Support team @ 1-800-633-0405 or 770-844-4200



Model DPM3-E-A2R-H Example Application:

0-200 VAC input display range of 0-200 with a 4-20mA output scaled to match.

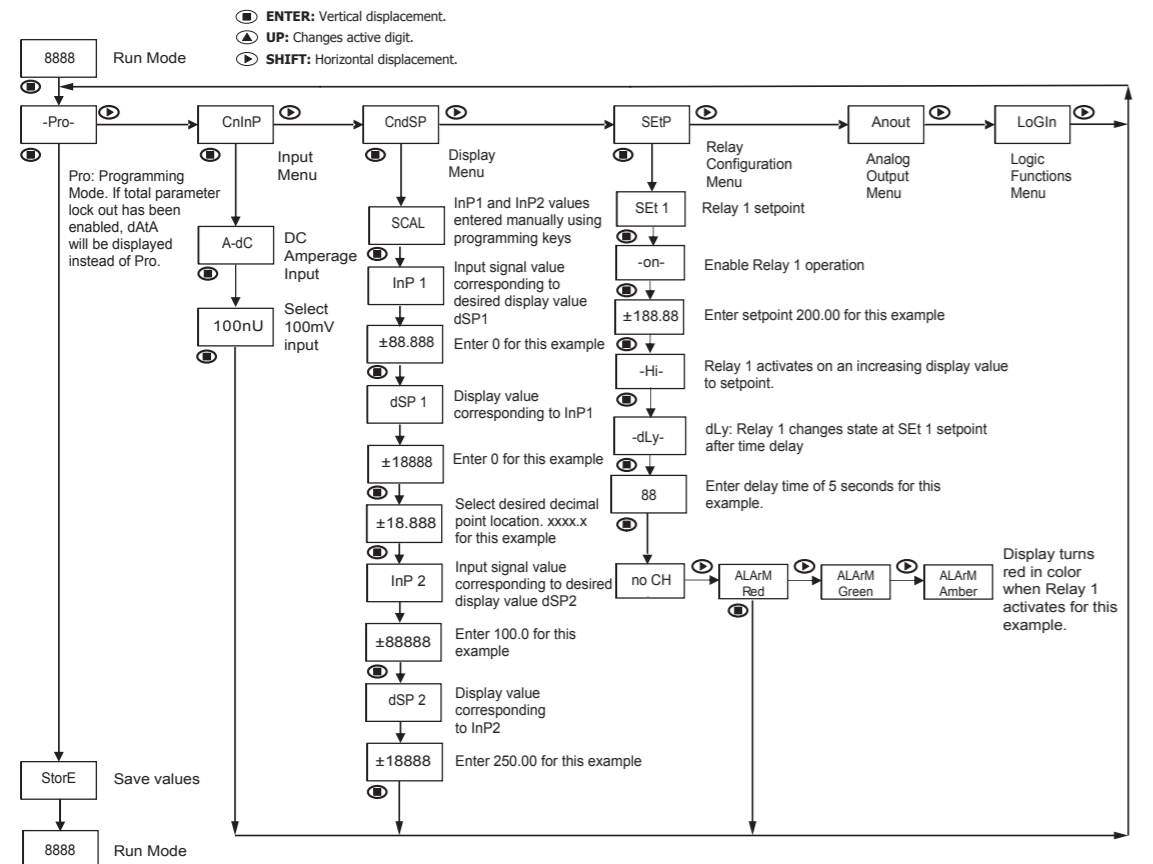
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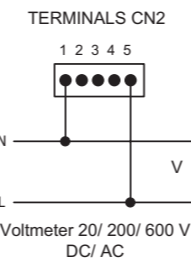
Model DPM3-E-A2R-H Example Application:

0-250A DC input via a 250A/100mV DC shunt, 0.0 to 250.0 display, relay 1 set for N.O. operation activates on an increase to a display value of 200.0 after a 5 sec. delay. Display turns red when relay activates.

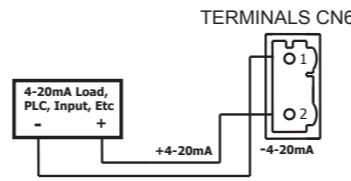
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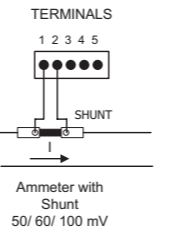
Input Wiring:



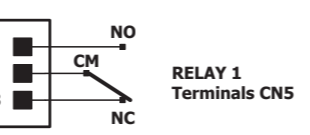
Analog Output Wiring:



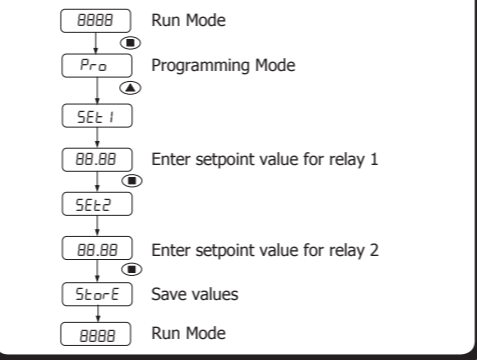
Input Wiring



Relay output wiring



Direct Access to Relay Setpoints (-A2R models only)



Technical Specifications

Input	DC Voltage	AC Voltage	DC Current	AC Current
Range... Input Impedance	2V...100kΩ 20V...1MΩ 200V...1MΩ 600V...1MΩ	2V...75kΩ 20V...850kΩ 200V...1MΩ 600V...850kΩ	200mA...0.75 Ω 1A...0.014 Ω 5A...0.014 Ω 50mV...1.8 MΩ 60mV...1.5 MΩ 100mV...1.5 MΩ	200mA...0.75 Ω 1A...0.014 Ω 5A...0.014 Ω 50mV...1.5 MΩ 60mV...1.5 MΩ 100mV...1.5 MΩ
Input Frequency Range	-	40Hz to 10kHz True RMS Measurement	-	40Hz to 10kHz True RMS Measurement
Resolution	2V...0.1 mV ±20V...1mV ±200V...10mV ±600V...0.1 V	2V...0.1 mV 20V...1mV 200V...10mV 600V...0.1 mV	200mA...0.01 mA 1A...1mA 5A...1mA 50mV...0.01 mV 60mV...0.01 mV 100mV...0.01 mV	200mA...0.01 mA 1A...1mA 5A...1mA 50mV...0.01 mV 60mV...0.01 mV 100mV...0.01 mV
Accuracy	2V...0.05% rdg ± 0.3 mV ±20V...0.05% rdg ± 3mV ±200V...0.05% rdg ± 30mV ±600V...0.05% rdg ± 0.3 V	2V...0.3% rdg ± 0.3 mV 20V...0.3% rdg ± 3mV 200V...0.3% rdg ± 30mV 600V...0.3% rdg ± 0.3 V	200mA...0.1 % rdg ± 0.05 mA 1A...0.1 % rdg ± 5mA 5A...0.1 % rdg ± 5mA 50mV...0.1 % rdg ± 0.1 mV 60mV...0.1 % rdg ± 0.1 mV 100mV...0.1 % rdg ± 0.1 mV	200mA...0.3 % rdg ± 0.05 mA 1A...0.3 % rdg ± 5mA 5A...0.3 % rdg ± 5mA 50mV...0.3 % rdg ± 0.1 mV 60mV...0.3 % rdg ± 0.1 mV 100mV...0.3 % rdg ± 0.1 mV
Accuracy Conditions	AC or DC Input: 15 minutes warmup 25°C ± 5°C ambient temperature 100 ppm/°C temperature coefficient 10-75% RH non-condensing		AC Input: 3% to 100% of input range 45 Hz to 400 Hz sine wave 40 Hz to 10 kHz Accuracy +/- (1% + 20 digits) Crest Factor: 3, Accuracy +/- (0.2% + 10 digits); 5, Accuracy +/- (1% + 20 digits)	
Conversion	Technique	Sigma-Delta		
	Resolution	±15 bits		
	Conversion rate	20 times per second		
Display	Range	-19999 / +19999, 5 LED digits 14mm (Programmable color Red, Green, Amber)		
	LEDs	8, functions and outputs status		
	Display refresh rate	20 times per second		
	Display / Input overrange indication	"oUEr", "oUEr"		
Relays -A2R Only	(2) Relays, Form C SPDT	Nominal contact rating.....8A at 250VAC / 24VDC Maximum switching current (resistive load).....8A Maximum switching power.....2000VA / 192W Maximum switching voltage.....400VAC / 125VDC Contact resistance.....≤100mΩ at 6VDC at 1A Operate time.....≤10ms		
Analog Output -A2R Only	Type	4-20 mA Sourcing		
	Maximum load	≤500Ω		
	Resolution	13 bits		
	Accuracy	0.1%FS ±1 bit		
	Response time	10ms		
	Thermal drift	0.5µA / °C		
Power Supply and Fuses	-H High Voltage: -L Low Voltage:	85-265 VAC 50/60 Hz (100-300 VDC), (recommended fusing 0.5A/250V, DIN 41661) 22-53 VAC 50/60 Hz (10.5 - 70 VDC), (recommended fusing 2A/250V, DIN 41661)		
Power Consumption		5W without options, 8W max.		
Filter	Cutoff frequency	4Hz to 0.05Hz		
	Slope	20dB/Dec.		
Environmental Conditions	Operating temperature	-10°C to +60°C (14°F to 140°F)		
	Storage temperature	-25°C to +85°C (-13°F to 185°F)		
	Relative humidity (non-condensing)	<35% @ 40°C (104°F)		
	Maximum altitude	2000m		
	Frontal protection degree	IP65		
Environmental Air		No corrosive gases permitted		
Agency Approvals		CE		