
Loop-Powered scalable digital panel meter

88-PRO


Connection details, scaling and general information



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Keep a note of your settings here.

Some time in the future, you or a colleague may need to recalibrate or replace this meter. We suggest you write down all your settings now to avoid problems later.

Meter Serial number	<input type="text"/>
Input signal range (for example 4-20 mA)	<input type="text"/>
Display range (for example 0-100.0 %)	<input type="text"/>

If you change any switch settings, mark your changes in the manual where that switch is described.



Important Warnings

Carefully read all warnings and ONLY install the meter when you are sure that you have properly covered each point.

- * Connect the meter according to current IEE regulations and separate all wiring according to IEC1010.
- * Power to this equipment comes from the input signal. You should fit a 63 mA (T) fuse to protect the meter from signal surges.
- * Check that the model number suits your application before you install the meter.
- * Don't touch any circuitry after you have connected the meter , because there may be lethal voltages on the circuit board.
- * We designed this meter for Installation Class II service only. This is because it has exposed electrical and power terminals, so you must install it in an enclosure to protect users from electric shock.
- * We designed this meter for Pollution-Degree 2 environments only. This means you must install it in a clean, dry environment, unless it has extra protection from a splashproof cover, such as our IPC.
- * Only adjust on-board switches or connections with the power turned off
- * Make sure all screw terminals are tight before you switch the meter on.
- * Only clean the meter with a soft damp cloth. Only lightly dampen with water. Do not use any other solvents.

***Safety FirstDon't assume anything..... Always double check.
If in doubt, ask someone who is QUALIFIED to help you in the subject.***

Introductory Notes

Please contact us if you need help, if you have a complaint, or if you have suggestions to help us improve our products or services for you.

If you contact us about a product you already have, please tell us the full model number and serial number, so that we can give you accurate and fast help.

This product has a 1-year warranty. We will put right or replace any meter which is faulty through bad workmanship or materials. This warranty does not cover damage caused by misuse or accident.

IMPORTANT

If this equipment is important to your process, you may want to buy a spare to cover possible failure or accidental damage in the future.

This is because at some times, for example during our factory shutdown periods, you may have to wait several weeks for an equivalent replacement. Or, we may have no stock at the time you urgently need it.

You may also need to pay extra carriage charges if you want a fast, guaranteed courier service. Warranty repairs or replacements are normally returned with a standard courier service.

We do not offer any compensation for losses caused by failure of this instrument.

If you do not agree with these conditions, please return this item now, in unused, clean condition, in its original packaging and we will refund the purchase price, excluding any carriage paid.

We thought you'd prefer to know about possible delays and extra charges now, rather than during a panic.

We always try to improve our products and services, so these may change over time. You should keep this manual safely, because future manuals, for new designs, may not describe this product accurately.

We believe these instructions are accurate, and that we have competently designed and manufactured the product, but please let us know if you find any errors.

Meter Specifications

Input Signal.....	4-20 mA, 10-50 mA, 1-5 mA
Resolution.....	1 part in 2000 max. resolution
Input Resistance.....	Maximum equivalent resistance 12.5 Ohms
CMRR.....	120 dB DC to 100 Hz.
NMRR.....	50 dB, 40 to 60 Hz.
Open Circuit Input Response.....	Display blanks
Speed of Response.....	0.5 Second time constant
Decimal Point Selection.....	Jumper selection behind bezel
Accuracy.....	$\pm 0.1\%$ of reading ± 1 count
Temperature Coefficient, Zero.....	± 0.2 count/ $^{\circ}$ C
Temperature Coefficient, Span.....	$\pm 0.015\%$ / $^{\circ}$ C
A/D Technique.....	Dual slope integrator
Conversion Rate.....	2-1/2 readings per second
Integration Time.....	100 milliseconds
Display Type.....	Reflective LCD
Digit Height.....	12.7 mm (0.50")
Digit Colour.....	Black, on a light gray background
Excitation Supply.....	none provided
Power Supply.....	None. Input signal powers the meter.
AC Supply.....	None
DC Supply.....	None
Power Consumption.....	Input current x max. voltage drop of 2.5V
Bezel.....	1/8 DIN bezel
Bezel Size.....	48 mm high x 96 mm wide
Cutout Size.....	45 mm high x 92 mm wide
Depth behind Panel.....	80 mm
Weight.....	100 g (3.5 oz)
Case Material.....	Polycarbonate UL rating 94V-0
Environmental	
Operating Temperature.....	-10 to +50 $^{\circ}$ C (14 to 122 $^{\circ}$ F)
Storage Temperature.....	-20 to +70 $^{\circ}$ C (-4 to 158 $^{\circ}$ F)
Humidity.....	90% at 50 $^{\circ}$ C (122 $^{\circ}$ F), non condensing

Panel & Connection Requirements



Separate all power carrying and signal cables according IEC 1010

Installation Class II

Pollution degree 2

Install this meter in a secure enclosure, to prevent accidental access by people to the connections on the meter's rear terminals. These may, under plant fault conditions, be at a dangerous voltage above ground potential.

Cutout Dimensions: Cut a hole 45 mm high by 92 mm wide, with minimal radius.

Connections

You don't need POWER connections for this meter. The meter gets its operating energy from the current loop input signal. Only use this meter with 4-20 mA, 10-50 mA, or 1-5 mA signals. The current should always be less than 55 mA, or you may damage the input circuit.

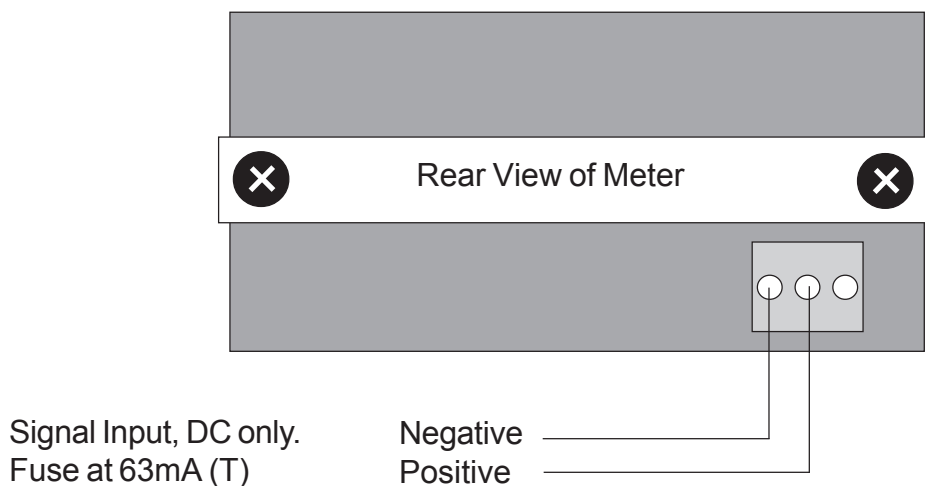
Wire Specifications

Solid wire csa: 0.13 to 1.5 mm²

Multistrand wire csa: 0.5 to 1.5mm²

[AWG conductor range: 22 to 16

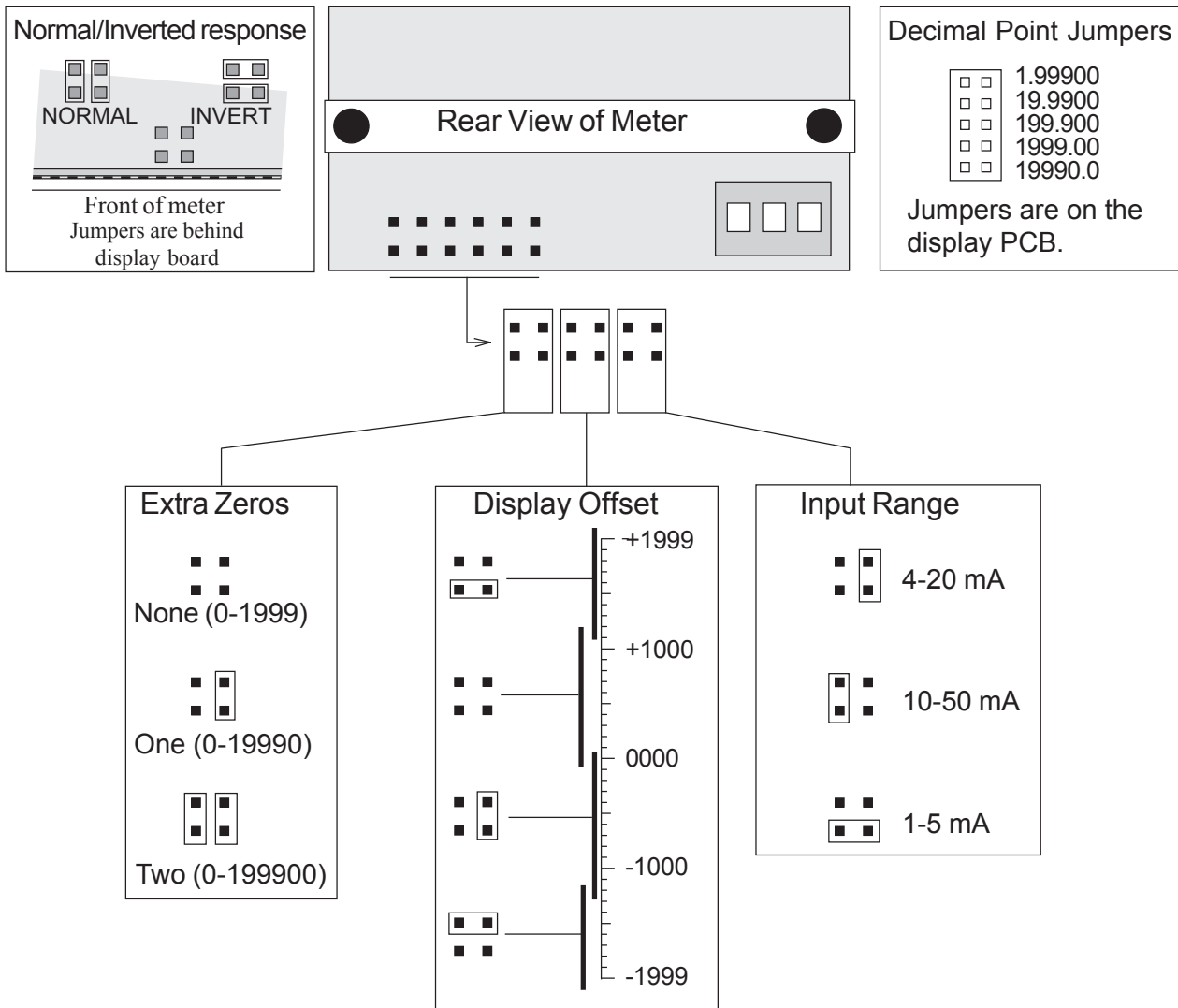
Gauge to DIN/EN50027: Size A1



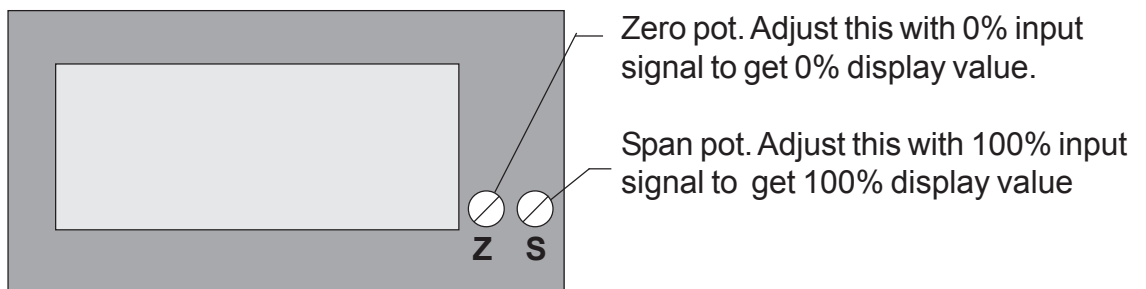
Important: Don't run signal wires near any power-carrying cables. Power-carrying cables could interfere with the small signals you want to measure. Use screened cable, in its own separate conduit or tray. Connect the screen to a clean earth point as near to the meter as possible.

Adjustment & Calibration

You can scale this 3 1/2 digit meter to suit most process measurements. You may add one or two fixed zeros after the active digits. This gives you a X10 or X100 multiplication factor, so you can scale the meter for maximum readings up to 19990 or 199900. You can also scale the meter to act in reverse. For example 4 mA = 100.0 and 20 mA = 0.0



The display offset range is the reading range you can get if you adjust the Zero potentiometer, with the input at 0% (eg 4mA). When you have set all the jumpers, to suit your application, you can calibrate the meter.



Declaration of Conformity

Declaration Number : 88-PRO Iss. 2
Issue Date : 21 April 1997
Product Covered : 88-PRO
Title 1/8 DIN loop powered DPM

The 88=PRO was designed and manufactured to meet the following specifications :

EN55022:1987 Conducted Emissions:	Class B
EN55022:1987 Radiated Emissions:	Class B
IEC801-2:1984 Electro-Static Discharge Immunity:	8kV Air
IEC801-3:1984 Radiated ElectroMagnetic field Immunity:	3V/m

The 88-PRO conforms with these standards:

EN50081-1:1992 (normative)
EN50082-1:1992 (normative)

and complies with the requirements of Council Directive 89/336/EEC for Electro-Magnetic Compatibility, and is designed to meet the 72/23/EEC safety directive.

To confirm EMC compliance, models within the range have been independently tested and certified by the Marconi Instruments EMC Department.

MARCONI CERTIFICATE # TC96/0029B
MARCONI CERTIFICATE Issue # 1
MARCONI Certificate Issue Date 14 February 1996

Conditions

The meters are allowed a worst case error of 1% of A/D range during electro-magnetic disturbance, and must recover automatically when disturbance stops, without the need for human intervention, such as resetting, power-down etc.

The meters covered by this certificate must be installed according to the following condition:

- 1 Signal cabling must be routed separately to power carrying cabling (includes relay output wiring).
- 2 All signal cabling must be screened. The screen must only be connected to the power earth terminal.

Signed as true and correct, for and on behalf of Laurel Electronics, Inc.