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PRO-J

3 1/2 digit scalable process meter

(Zero & Span pot. adjustment method)

IEC 1010

CE

89/336/EEC

Document Ref:pm65\manuals\PROJ_newformat_lon Rev. 1 Dated: 15 Feb 2002

Rev. 1

Alphabetic Index

Important Introductory Notes

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

If you contact us about a product you already have, please give us as much information as you can, so we can give you accurate and swift help.

Your new meter has a 2 year warranty, and we will put right or replace any meter found to be faulty through bad workmanship or materials. This warranty does not cover damage caused by misuse or accident.

IMPORTANT If the meter is a vital component in your process, you may wish to buy a spare to cover possible failure or accident, as we cannot guarantee instant repair or replacement.

We always try to improve our products and services, so changes to instruments will inevitably occur. Please keep this manual safely for future reference, as future manuals, covering revised designs may no longer describe your product accurately.

We do not make any claims as to the suitability of this product for any particular application. The choice of product and responsibility for the choice lies with the User.

Let us know if you would like our full terms and conditions of trading.

Warnings

Please carefully read all warnings and ONLY install the meter when you are sure that you've covered all aspects.

* Connect the meter according to current IEE regulations and separate all wiring according to IEC1010.

* Power supplies to this equipment must be anti-surge fused at 125mA for 230V supply, 250mA for 110V supply or 1A for DC supplies in the range 11-30VDC.

* Check that model number and supply voltage suit your application before you install the meter.

* Don't touch any circuitry when the meter is powered, because lethal voltages may be present on the circuit board.

* Only use insulated screwdrivers for adjusting the Zero and Span pots

* We have designed this product for Installation class II service.

* We have designed this product for use in Pollution-Degree 2 environments.

* Only adjust switches or connections with the power removed.

* Ensure all screw terminals are tight before applying power.

Safety First .....Don't assume anything..... Always double check. If in doubt, ask someone who is QUALIFIED to assist you in the subject.

General Description

The PRO-J offers you a simple process indicator, which you can use to monitor and scale 4-20mA, 0-10V and 1-5V DC process signals.

Its wide range scalability allows you to display many different physical variables, such as temperature, pressure, weight, humidity etc.

You can choose from a wide selection of self-adhesive labels, supplied with every meter, to allow you to identify your reading units.

You can also use the meter's internal regulated DC excitation output to power your sensor. Choose either 10V or 24V, by placing jumper switches. The excitation output supply is available on the input connector.

The PRO-J uses a dual slope integration method to give +/- 1999 count resolution of +/-20mA or +/-10V analogue input signals. You can include a decimal point within the display. You can select where the decimal point appears with a push-on jumper switch.

Optional features include remote decimal point selection, by way of remote switching, variable display brightness control, and an extra fixed 0 digit to multiply the reading by 10.

Getting Started

First, check that the meter will suit your application and the available power source (either 110 VAC, 230 VAC or 11-30 VDC).

If you asked us to configure the meter for you, please check that the scaling and settings agree with your requirements.

We fully tested and calibrated your meter for you, but a pre-installation test may be useful to check that everything works as you intended.

Check that your panel cutout is correct , 92mm wide, 45mm high. You must fit the meter in a protective enclosure for installation class II service. Remove the 2 screws holding the U clamp at the rear of the case and all the connectors. Slide the meter into the cutout and re-fit the U clamp and screws. Tighten the screws just enough to hold the meter firmly in place.

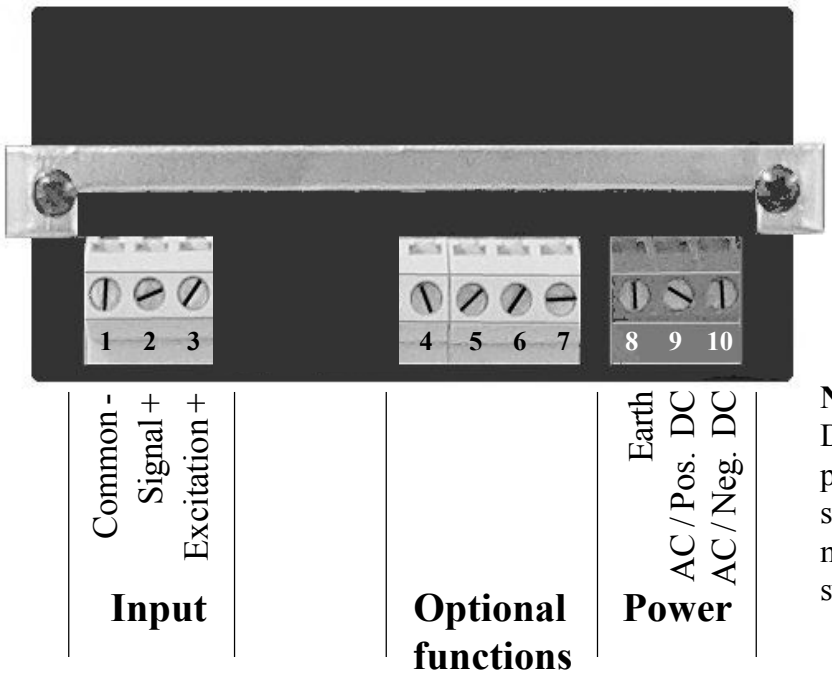
Connect the signal and power cables to the appropriate screw terminal connectors. See our connection drawing to check that you are using the correct terminals.

Check, before switching on, that the power is suitable for the unit.

The display should then show a steady reading relating to zero input signal; for the factory default 4-20mA=0-100.0 scaling, this should be between -24.9 and -25.1.

Connections

This meter has detachable screw terminal connectors to make installation as easy as possible for you. We suggest you use multistrand insulated wire with ferrules to DIN46228/1. You can use stripped wire with cross sectional area from 0.5 to 2.5mm^2. Strip back insulation 7mm.

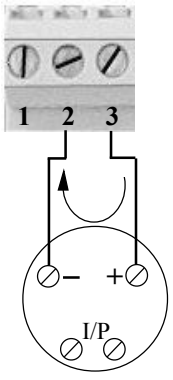


Note for DC Power:
DC powered meters will draw a peak current of up to 1Amp. at switch-on. Your power supply must be able to cope with this surge.

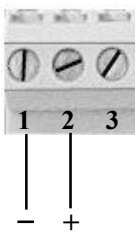
Use screened cable for your input signal and connect the screen to power earth at the meter end of the cable only. For best performance, keep the signal cable well away from power cables, which could carry electrical noise likely to interfere with your measurement.

Input Connection Examples:

Loop powered 2 wire
4-20mA transmitter

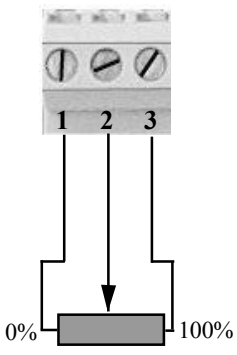


Direct signal I/P



4-20mA or 0-10V
from active source.

Slidewire
(configure for 10V
excitation and 10V input)

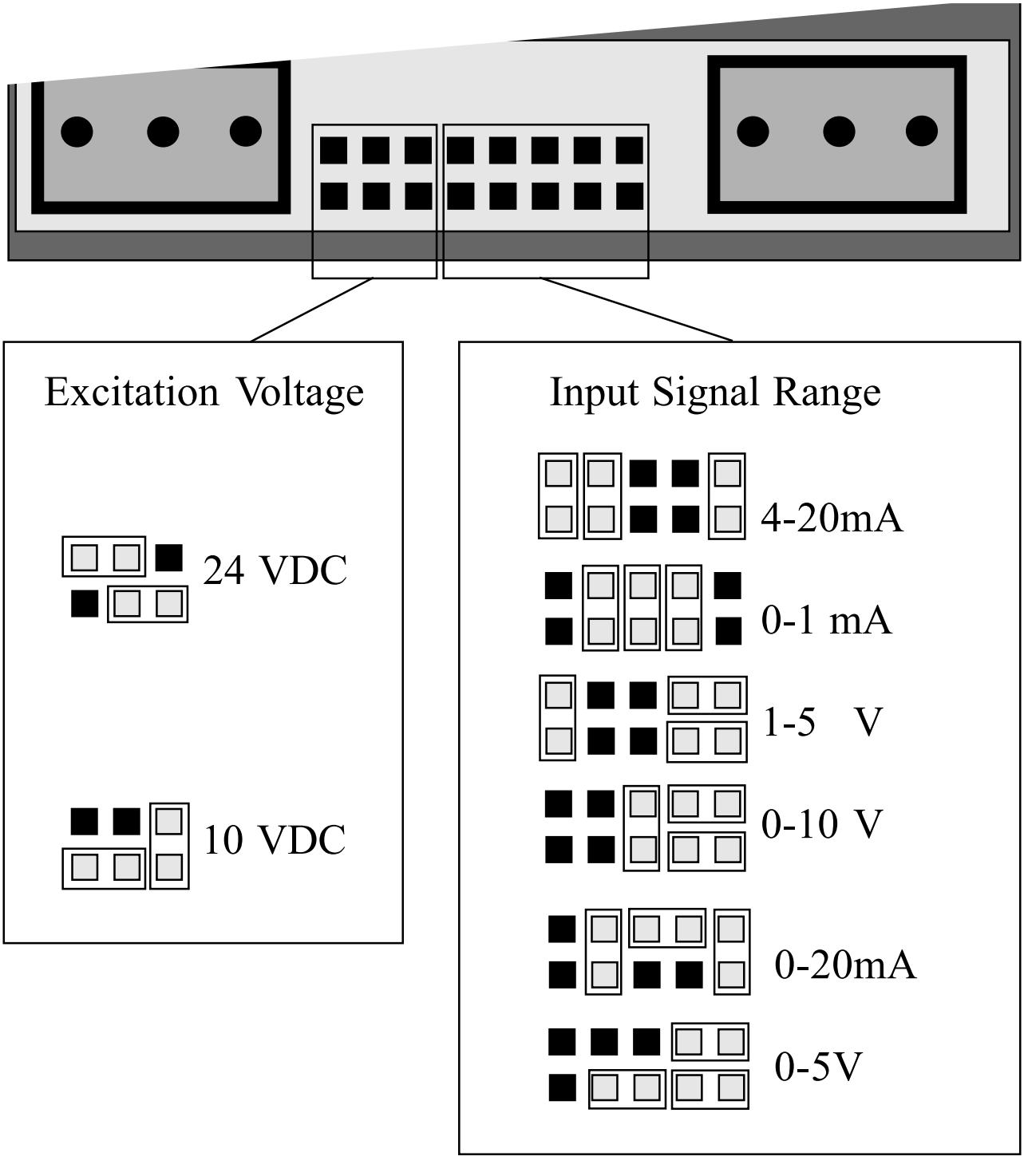


How to select Input Signal and Excitation voltage

You can choose from 6 input signal ranges and 2 excitation voltage ranges. Look on the meter's back panel, where you will see a collection of jumpers.

You must remove power from the meter when you change jumper positions

Use pointed pliers to change the position of jumpers to suit your application.



How to remove the front lens

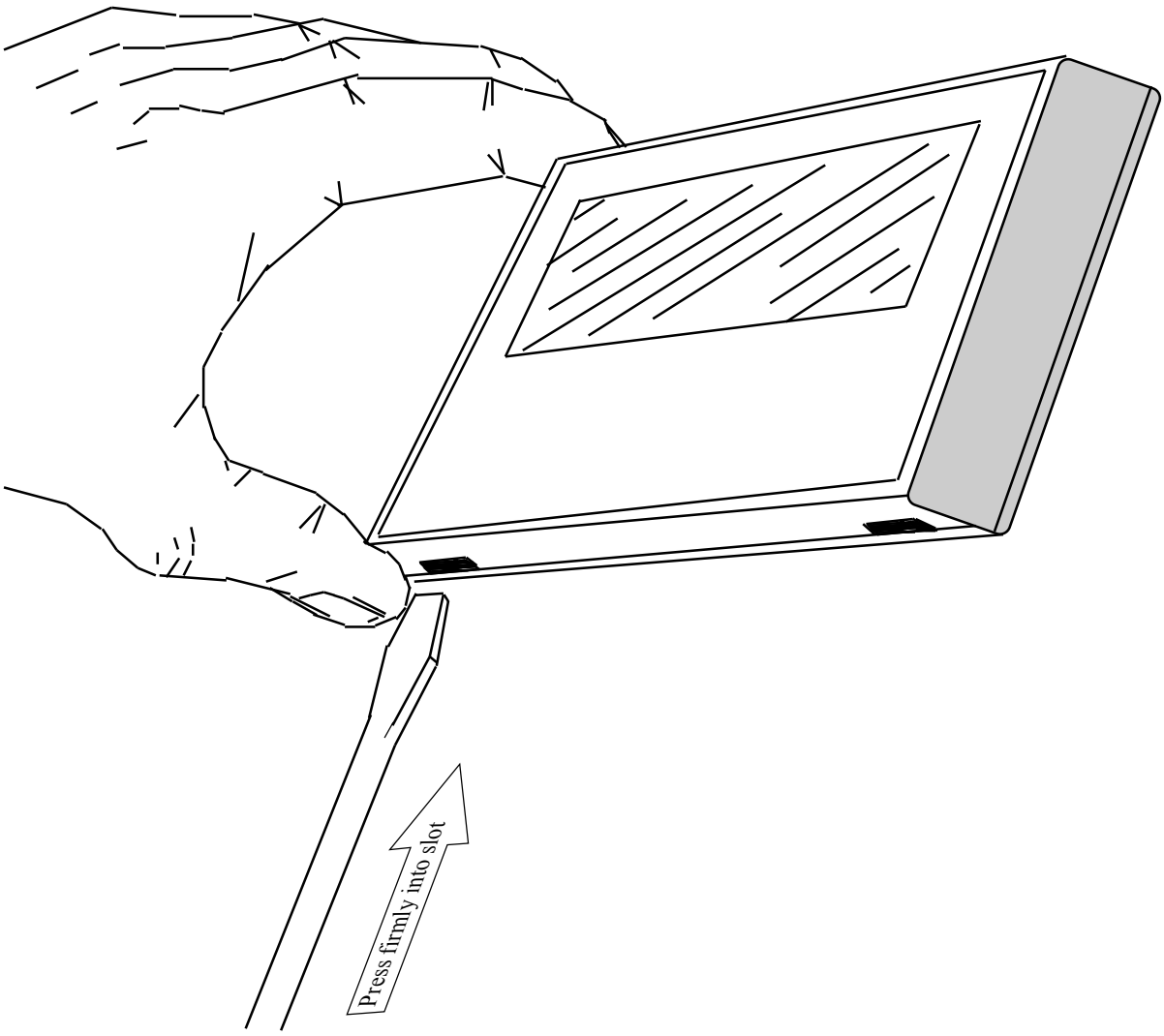
You will need to remove the front lens if you want to calibrate your meter, or if you want to change its power supply voltage or decimal point position.

The lens is designed to remain firmly in place under normal operating conditions to prevent accidental or casual removal.

Look under the bezel surface and you will see two small slots. Push a terminal screwdriver firmly up into the left slot and gently pull the bezel forward on its lower left corner. Then repeat for the slot on the right side and the lens should detach.

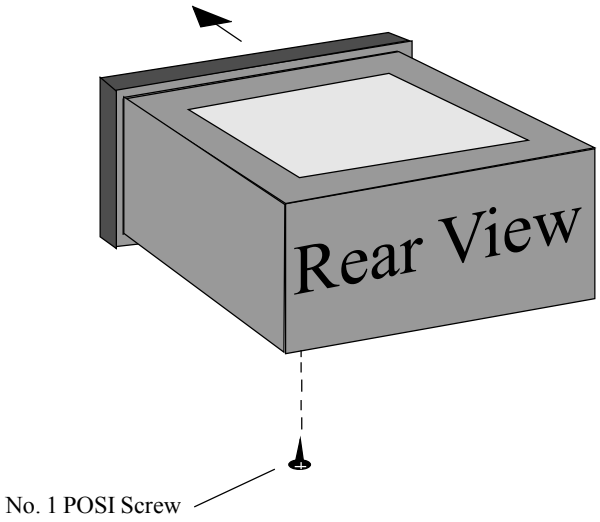
To replace, simply press the lens back into position, and test to ensure it has clipped on firmly.

You should never leave the meter unattended with the lens removed.



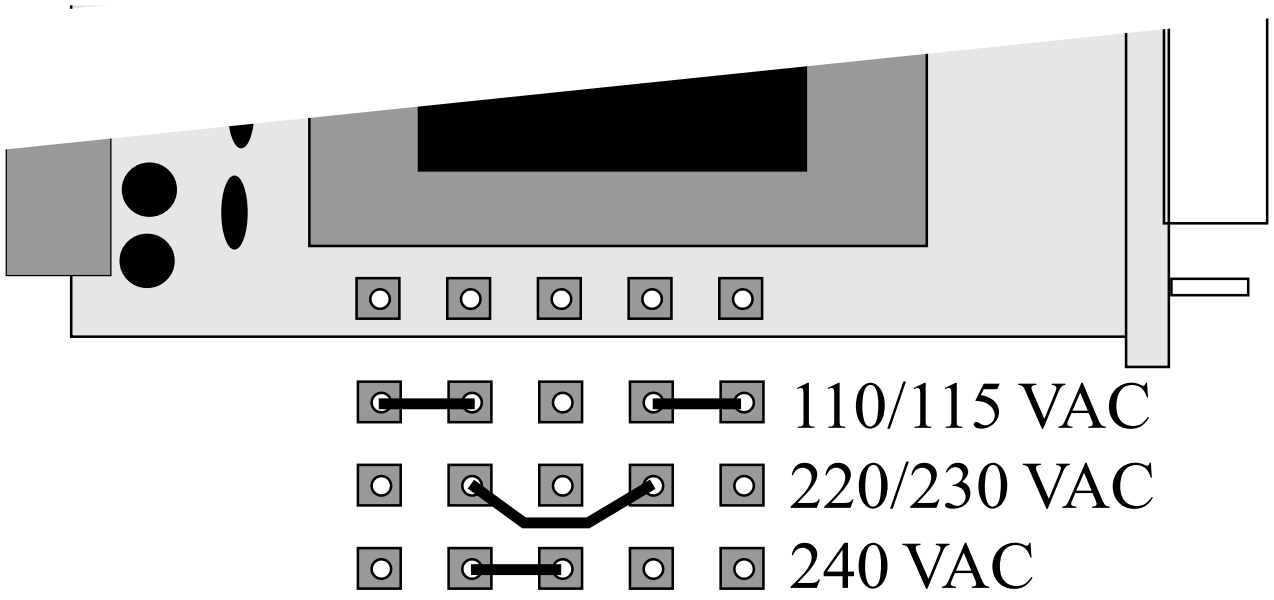
AC Power Voltage Selection

If you need to change the AC power voltage setting , remove the front panel, and the small #1 POSI screw in the bottom surface of the case, near the back.



Withdraw the whole assembly from the front. Cut and solder links in new position, as required, and replace assembly, screw and front cover.

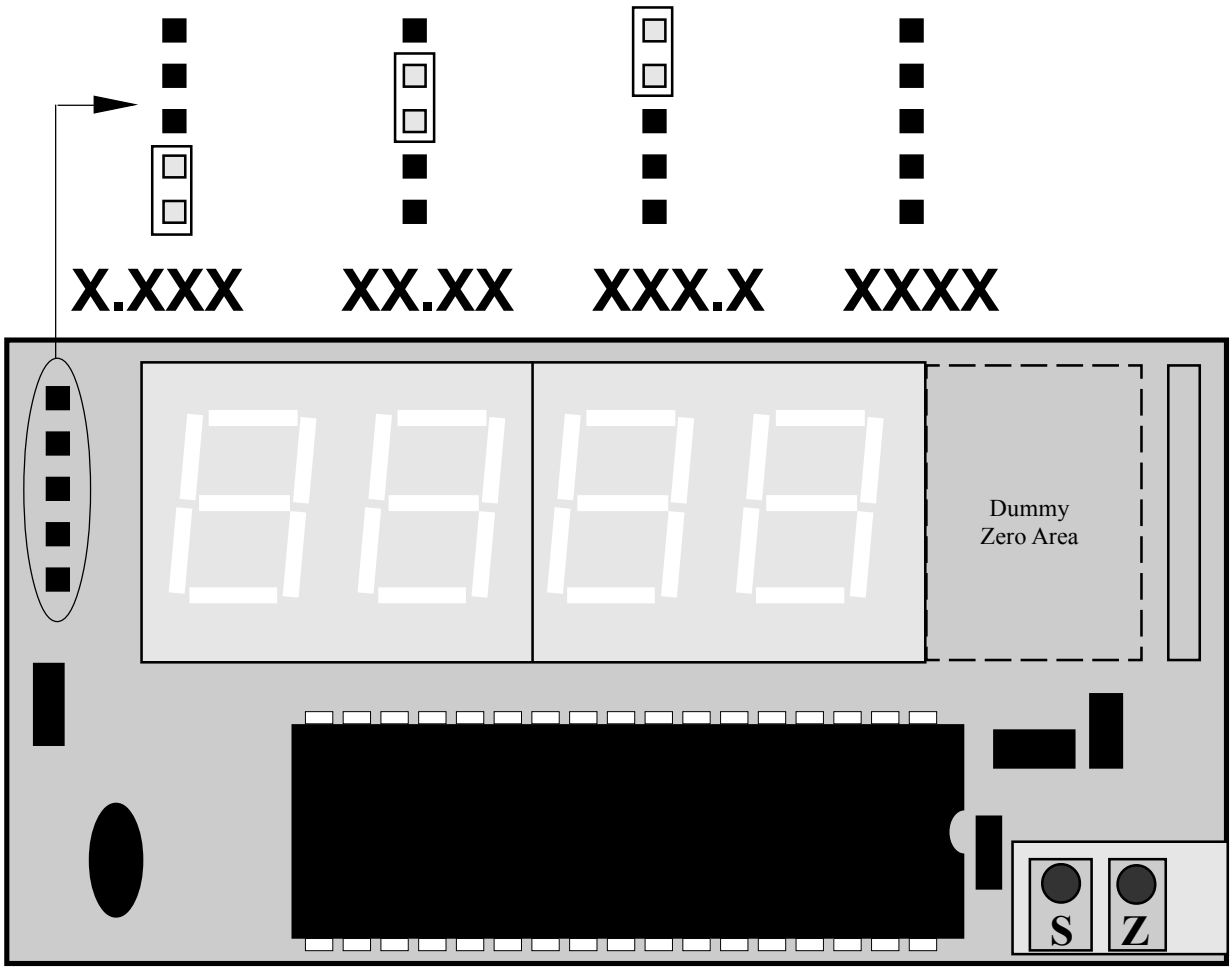
Please remember to amend any labelling on the meter to show the new power voltage.



Decimal Point Selection and calibration

You can select the decimal point position by removing the front lens, which reveals a set of push-on jumpers .. see below. An add-on connector option allows the decimal point to be selected remotely with contact closures. Please see the 'Connection Details' page.

Before you start to calibrate your meter, please check that the input range and excitation voltage jumpers are correctly positioned for your application.



1) Apply 0% input and adjust the zero pot " Z " for 0% of display range.
2) Apply 100% input and adjust the span pot " S " for 100% of display range.
3) Repeat steps 1) and 2) until you are happy with the calibration.
4) Apply 50% input and you should see the display shows 50% range.

If the dummy zero option is installed, this will be added to the RIGHT of the digits shown.

Specifications

Bezel size	48mm high by 96 mm wide (1/8 DIN)
Panel Cutout	45 mm high by 92 mm wide
Case Depth	93 mm behind panel, including connectors
Weight	300 grammes
Case Material	Black polycarbonate
Connectors	Detachable Screw Terminal connectors
Operating Temp.	0 to 50 degrees C, non condensing humidity
Storage Temp.	-25 to 70 degrees C
Power supply	110 or 240 VAC or 11-30 VDC with optional inverter
Power consumption	4 watts maximum

Input Signal Ranges	+/- 1 mA	+/-20mA	+/-10V
Operating Overload	+/-1.3mA	+/-22mA	+/-12V
Maximum Overload	+/-50mA	+/-150mA	+/-100V
Input Resistance	200 Ohms	13 Ohms	1 Megohm nominal

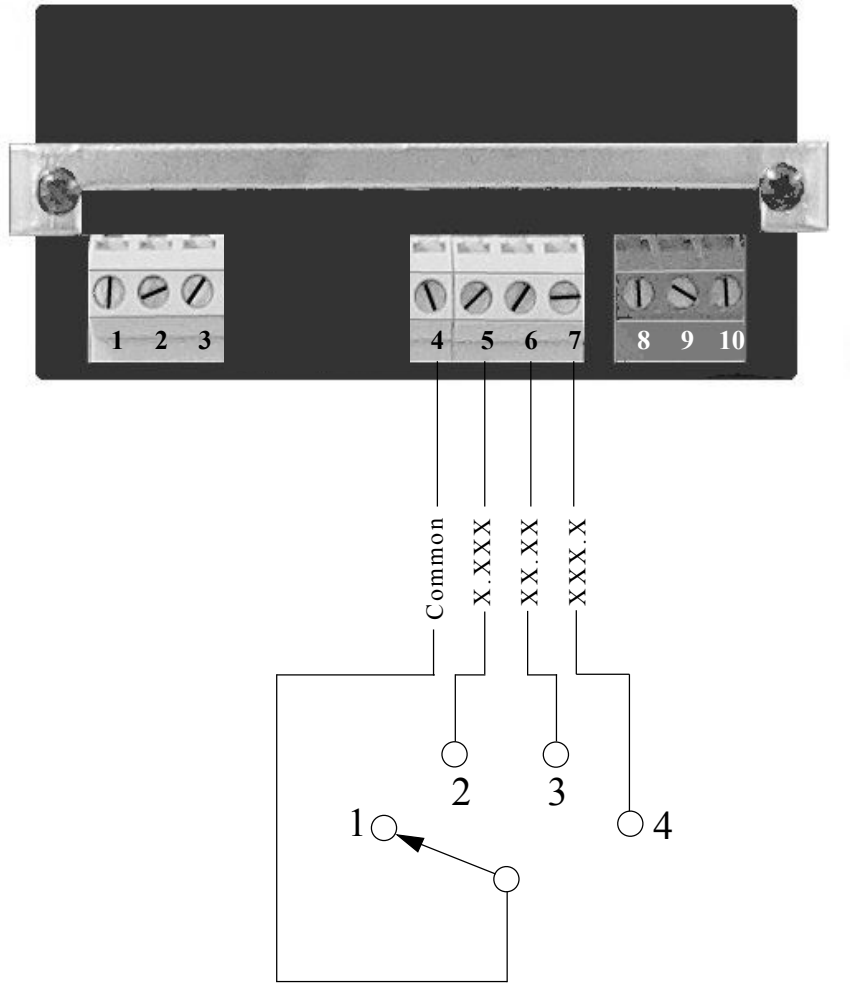
Display type	High efficiency LED, red or green
Accuracy	+/-0.1% of range +/-2 counts
Span tempco	100ppm/Degree Celsius max
Zero Tempco	50ppm/Degree Celsius
Excitation voltage	24VDC +/- 20% rated at 30mA, or 10V rated 50mA
A/D conversion	Dual slope +/-1999 count maximum resolution
CMRR	100dB 0-60Hz. 250V max.
NMRR	60 db at 50/60 Hz.
Display update rate	2.5 readings per second

Remote Decimal Point selection option

If you ordered your display with the Remote Decimal point selection option you will be able to change the decimal point position by way of external contact closures.

On the unit's model number, a suffix 'DPCC' will be present, if this option has been included.

WARNING !
The decimal point selection connector will be at the same potential above ground as the input signal and could present a shock hazard if accessible to users.



In the example shown, a 4 way rotary switch allows 4 decimal point choices to be selected, 1] XXXX 2] X.XXX 3] XX.XX 4] XXX.X

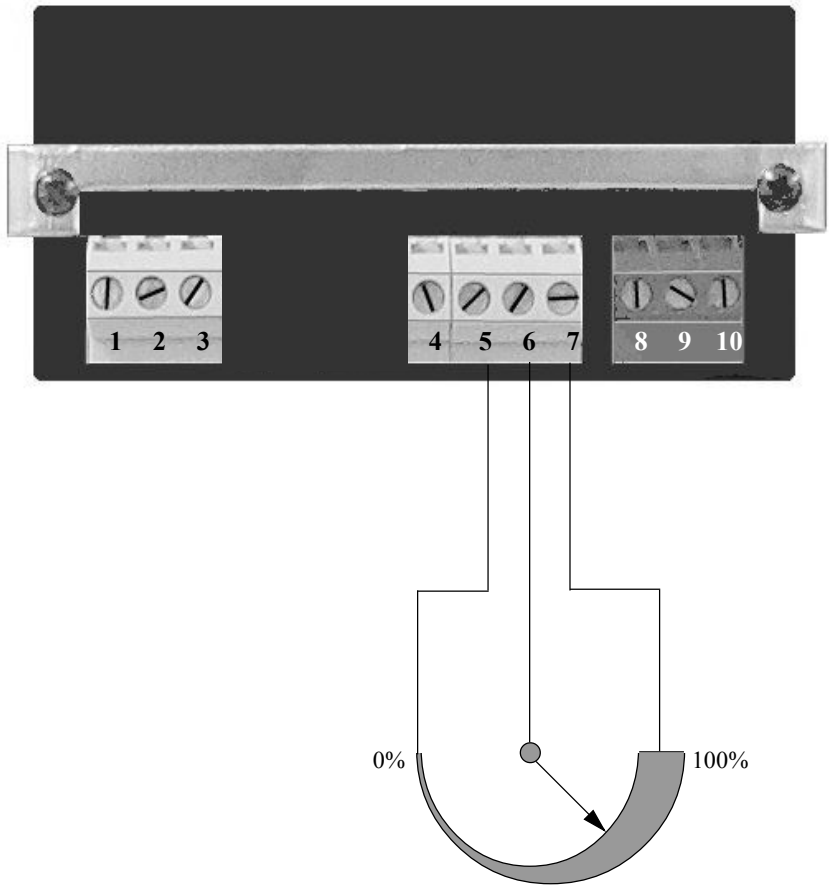
The switched signals are 5V DC at approximately 1mA switched current.

Variable Brightness option

If you ordered your display with the Variable Brightness option you will be able to change the display brightness by way of an external potentiometer.

On the unit's model number, a suffix 'VB' will be present, if this option has been included.

WARNING !
The variable brightness connector will be at the same potential above ground as the input signal and could, therefore present a shock hazard if accessible to users



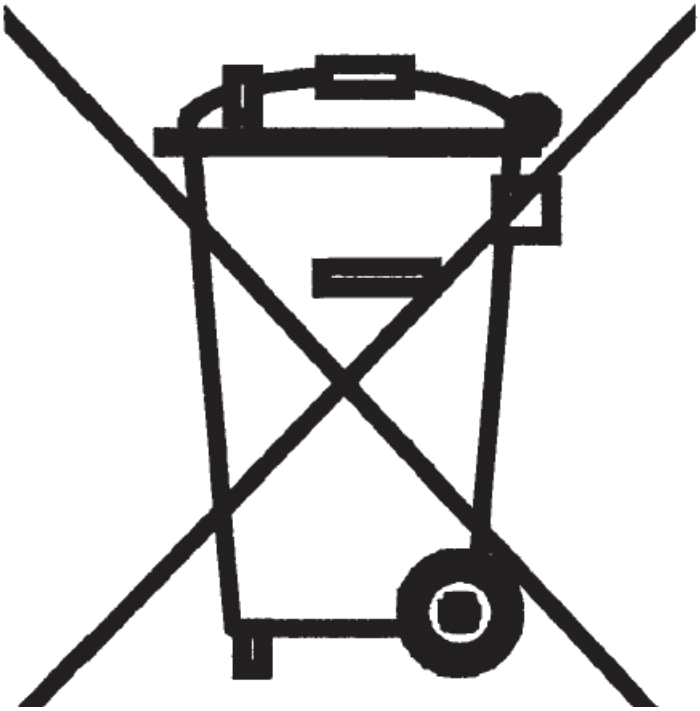
In the example shown, a 1Kilohm linear potentiomer allows adjustment from 0% to 100 % brightness.

The adjusted signal is 5VDC across the potentiometer.

Record of Revisions

15 February 2002 Manual re-formatted from fanfold to bound

Waste Electrical and Electronic Equipment (WEEE)



In Europe, this equipment must be disposed of in accordance with European Parliamentary Directive 2002/96/EC

This directive encourages recycling and the reduction of waste materials in the environment.

This means it must be sent to an approved recycling plant if you want to dispose of it.

It must not be thrown away in general rubbish.

If you are unable to dispose of this item locally, you may send it to us for recycling.

Conditions:

1. We will only accept items of our manufacture.

2. You must pay for the transport of the goods to us.

3. We will only accept items if they include a signed declaration by an authorised person in your organisation, stating that :-

   i. The item is safe to handle and has no contaminants which may be harmful to health.
   ii. You wish us to dispose of or destroy the item(s)

Declaration of Conformity

Declaration Reference : PRO-J
Issue Date : 18 October 1995
Products Covered : PRO-J
Title : Low Cost Process Meter

This is to confirm that the Products covered by this declaration have been designed and manufactured to meet the following limits :

EN55011:1998 Conducted Emissions: Class B
EN55011:1998 Radiated Emissions : Class B
IEC50082-1:1992 Electro-Static Discharge Immunity: 8kV Air
IEC50082-1:1992 Radiated ElectroMagnetic field Immunity: 3V/m
IEC50082-1:1992 Fast Transient Immunity : AC 1kV, cable 500V

The product is designed to conform with the applicable sections of the following standards:

EN 61010-1:1995

and comply with the requirements of Council Directive 89/336/EEC relating to Electro-Magnetic Compatibility, & are designed to meet 73/23/EEC Low voltage Directive.

Conditions

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

The meters covered by this Declaration must be installed in adherence to the following conditions :-

Signal cabling shall be routed separately to power carrying cabling (includes relay output wiring) All signal cabling shall be screened. The screen shall only be terminated to the power earth terminal

Signed as true and correct, for and on behalf of London Electronics Ltd.

J.R.Lees Director