LCD 3½ Digit Meter Instruction Sheet IS1

Covers the following meters

DPM 100, DPM 116, DPM 125, DPM 400, DPM 500 **(Normal)**
DPM 100S, DPM 500S **(S-type)**
DPM 100 BL, DPM 500 BL ***(LED Backlit)***
DPM 100S BL, DPM 500S BL **(S-type LED Backlit)**

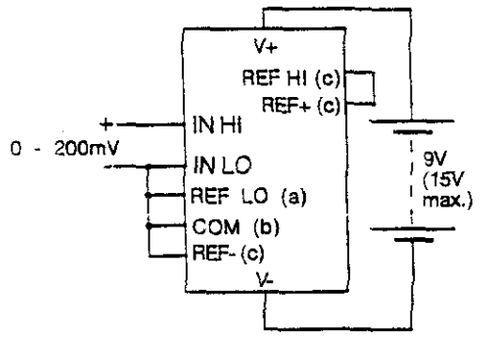
Basic Applications

The following diagrams show the basic measuring configurations. In order to simplify connection, all meters feature on board links. They are either "open" or "short" but may be easily changed by the user. E.g. To connect REF HI to REF+ on the DPM 500 short out Link 1 with a blob of solder.

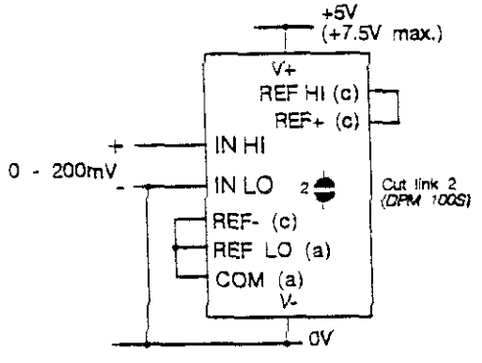
Ensure that inputs are not taken beyond the supply voltage. With non-"S" type meters, use a battery or an isolated supply because V- cannot be connected to signal ground. Do not connect more than one meter to the same power supply if the meters cannot use the same signal ground.

For advice on other operating modes contact Lascar or appointed agent.

Measuring voltage



Floating Input

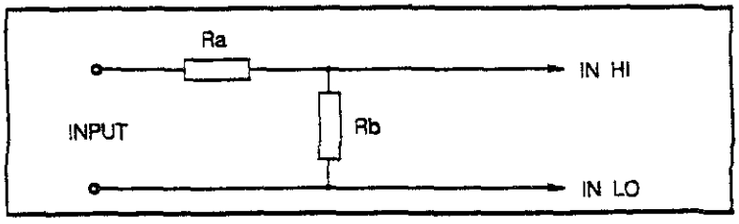


Single ended "S" type Input - DPM 100S & DPM 500S only

Note: (a) Except DPM 100 and DPM 116
(b) Except DPM 100
(c) DPM 500 only

Input Scaling

The meter has a full scale reading (F.S.R.) of 200mV. This may be changed by the use of two resistors.



REQUIRED F.S.R.	Ra	Rb
2V	910k	100k
20V	1M	10k
200V	1M	1k
2kV	1M	100R
200µA	0R	1k
2mA	0R	100R
20mA	0R	10R
200mA	0R	1R

Driving Decimal Points/Annunciators

DPM 100, 116, 125, - Connect relevant "DP" Pin to V+.

DPM 400, 500 and DPM 100 annunciators - Connect relevant pin to "XDP".

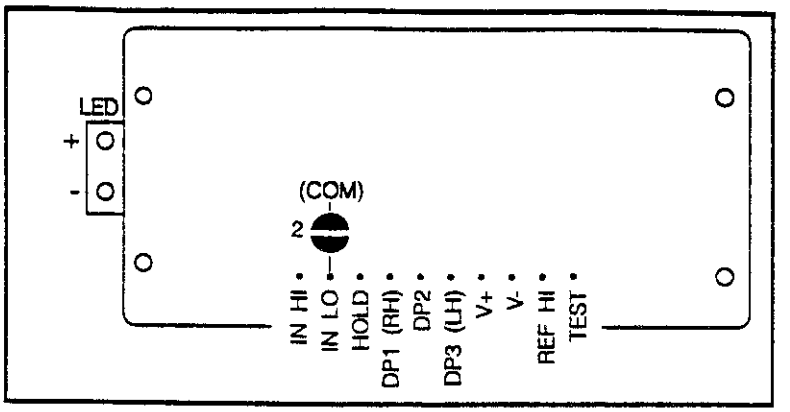
LED Backlit Versions

Apply 5V D.C. to the backlight tab on the side of the meter. Typical current is 30mA. For higher voltages fit a resistor in series. *E.g. for 9V use R= 150Ω. Maximum current* = 60mA.

Pin Connections - Rear View

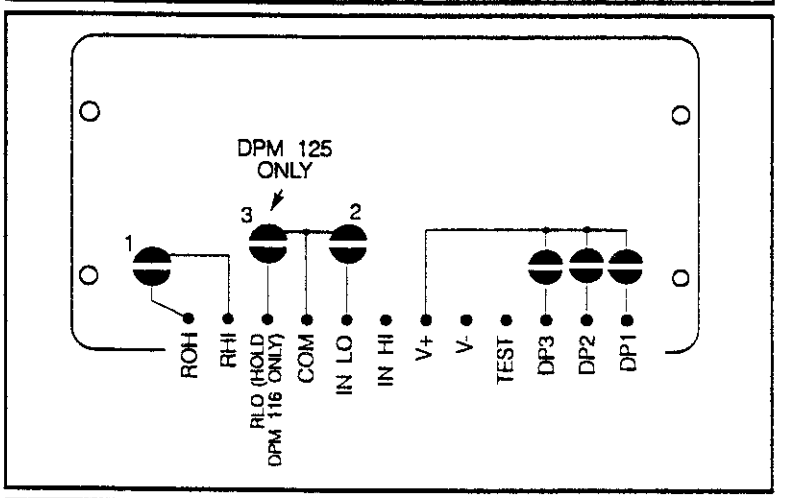
DPM 100 (S) (BL)

Panel cut-out 57mm x 27mm
(2.24" x 1.06")



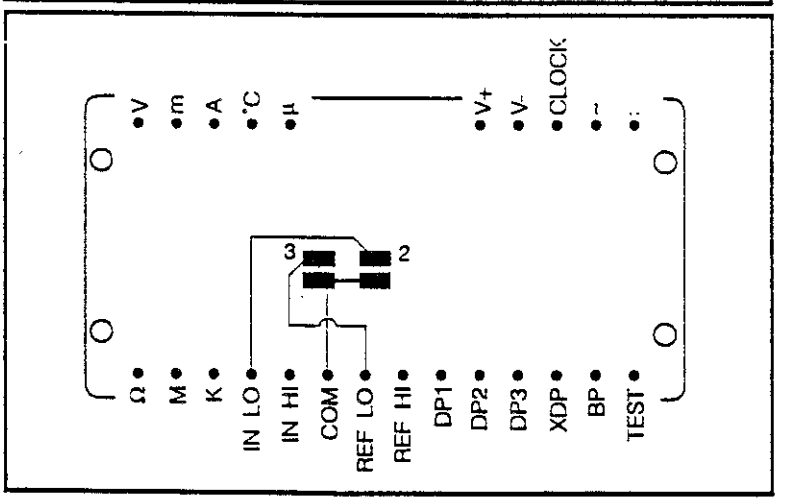
DPM 116/125

Panel cut-out 45mm x 22.2mm
(1.77" x 0.87")



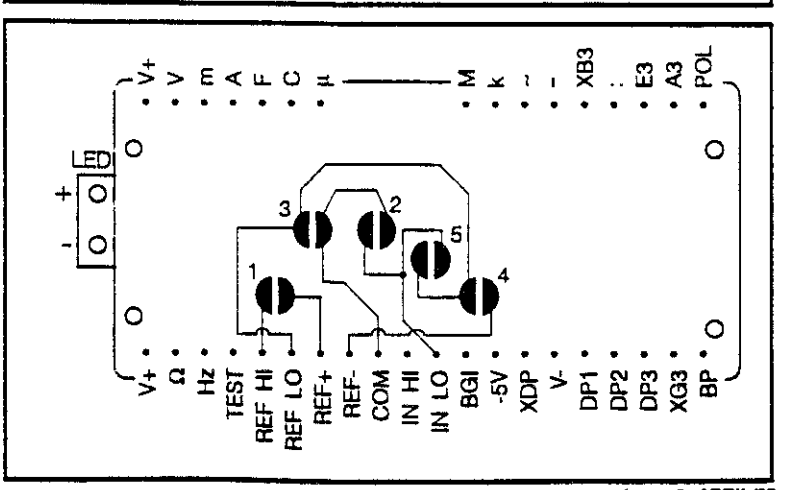
DPM 400

Panel cut-out 45mm x 22.2mm
(1.77" x 0.87")



DPM 500 (S) (BL)

Panel cut-out 57mm x 27mm
(2.24" x 1.06")



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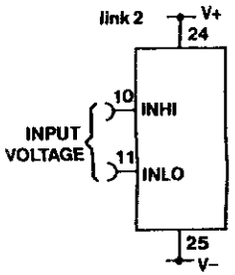
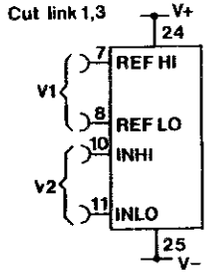
ANALOGUE INPUTS
IN HI, IN LO and REF HI, REF LO are differential inputs. They respond only to the voltage across them and not their voltage with respect to the power supply. However, no input must be higher than 0.5V below V+ or lower than 1.0V about V−. If the power supply is floating with respect to the circuit being monitored, connect IN LO and REF LO to AN COM for best results. If there is any danger that an input may be taken beyond the power supply rails, a series resistor MUST be fitted to limit the input current to less than 100uA.

CIRCUIT CONNECTIONS
The meter can be configured for any of the applications shown below. Interconnections can be made by one of two methods:
1. Via the user's conditioning PCB, terminating at the meter edge connector.
2. Bridging solder across the appropriate solder pad links provided (see circuit diagram).

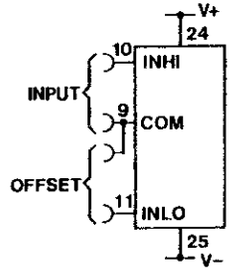
PANEL FITTING
Fit the bezel to the front of the panel and then locate the meter into the bezel from behind. Alternatively the meter and bezel may be assembled before fitting into the front of the panel but care must be taken not to use excessive force.



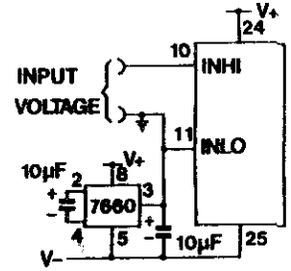
Measuring a floating voltage source of 200mV full scale.



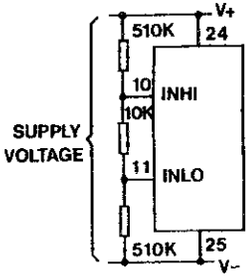
Measuring the ratio of two voltages.
Reading = 1000 V2/V1.



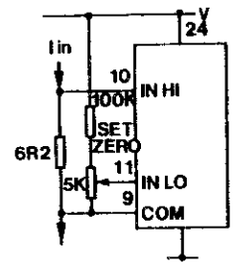
Zero display when the applied input is not zero. The offset and input voltages should be applied as shown.



Measuring a single ended input referenced to supply.



Measuring a supply voltage (min 5V, max 15V).



Measuring 4–20mA to read 0–999.

RS 3½ DIGIT LCD DPM
Stock No. 260-274

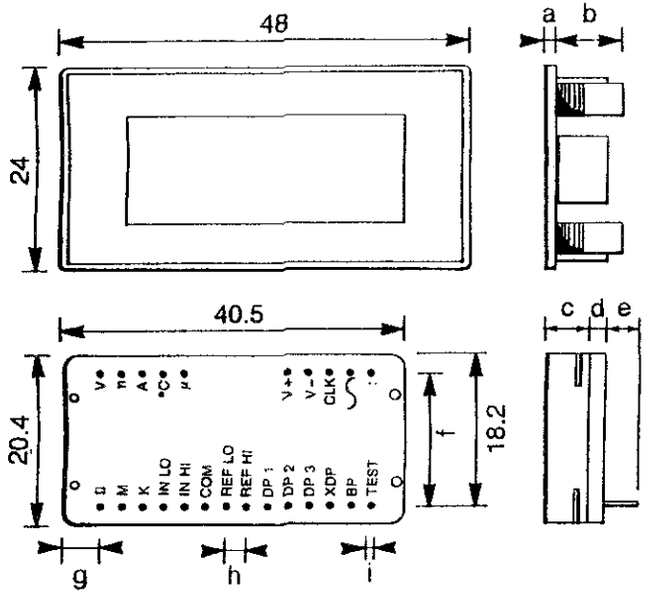
Features:

- △ Ultra-Low Power
- △ Ultra Compact
- △ Annunciators
- △ Snap In Bezel

A uniquely compact LCD DPM ideally suited for low or high volume applications. The meter has a 28 pin DIL integrated circuit format and can be plugged directly into a DIL socket or panel mounted using the snap-in bezel provided. The low profile bezel incorporates a flat reverse printed window giving a superb appearance that cannot be damaged or rubbed off by contact.

The meter features Auto-Zero, Auto-Polarity, 200mV FSD, 10mm digit height and Programmable Decimal Points. On card solder pads for essential interconnections make selection of operating modes quick and easy with the minimum of external wiring. Very low current consumption allows long battery life making it especially useful in portable equipment.

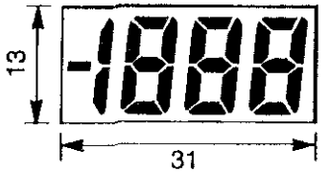
SPECIFICATION	MIN	TYP	MAX	UNIT
Accuracy (±1 count)		0.05	0.1	%
Linearity			±1	Count
Sample Rate		3		per sec
Temp. Stability		100		ppm/°C
Temp. Range	0		50	°C
Supply Voltage	7.5	9	15	V
Supply Current		150	200	µA
Max D.C. Input Voltage			±20	V
Input Leakage Current (Vin = 0V)		1	10	pA
Low Battery Threshold		7.5		V



a. 1.5
b. 8.5
c. 5.0
d. 1.6
e. 4.0
f. 15.24
g. 3.7
h. 2.54
i. 0.5

Panel cut-out
45 × 22

Actual viewing area showing display in TEST mode.

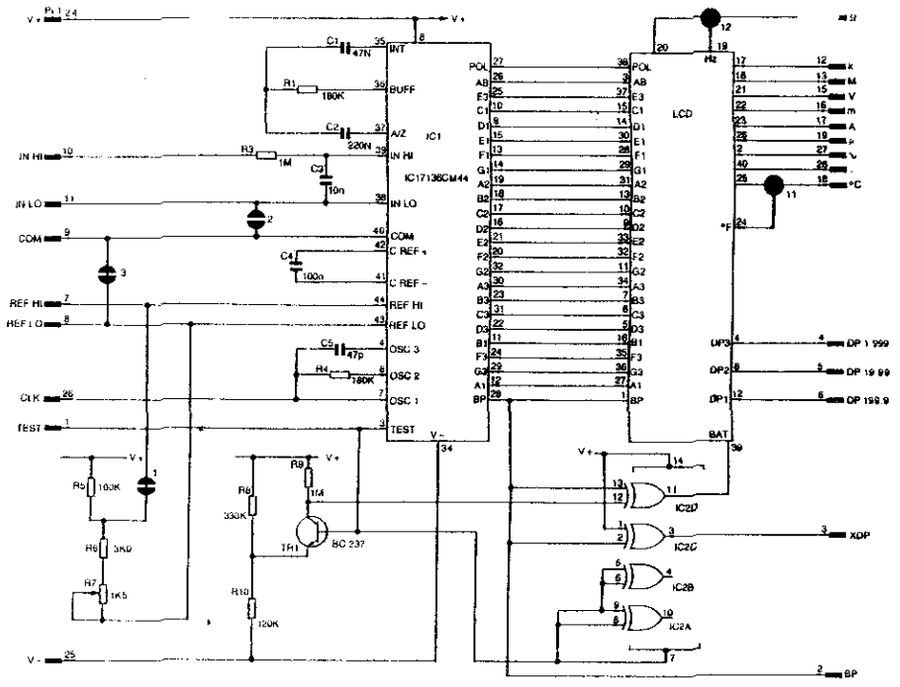


PIN FUNCTIONS

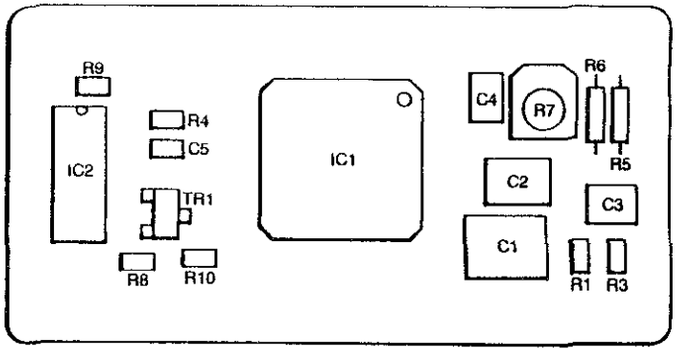
1. TEST. Connect to V+ to display segments as illustrated. It should NOT be operated for more than a few seconds as the DC voltage applied to the LCD may "burn" the display. This pin is normally at 5V below V+ and is the ground f or the digital section of the meter. It can be used to power external logic up to a maximum of 1mA.
2. BP. LCD Back Plane drive waveform.
3. SDP. Connect to required annunciators/DPs (see note).
4. DP3. 1.999
5. DP2. 19.99
6. DP1. 199.9
7. REF HI. Positive input for reference voltage (connected via link 1 to internal reference).
8. REF LO. Negative input for reference voltage (connected via link 3 to com).
9. COM. The ground for the analogue section of the converter, held actively at 2.8V (nom) below V+. COM must not be allowed to sink, excessive current (>100uA) by connecting it directly to higher voltage.
10. IN HI. Positive measuring input.
11. IN LO. Negative measuring input.
24. V+. Positive power supply.
25. V–. Negative power supply.
26. CLOCK. Clock output may be used for systems timing or as an input to override the internal oscillator and control the sample rate.

SPECIAL NOTE: ANNUNCIATORS
The DPM annunciators (DPs, °C, etc.) can be shown by connecting them to XDP. However, as these annunciators are normally "floating", under certain conditions they may appear when not wanted. To suppress unwanted annunciators link them to the Back Plane (pin 2). If the annunciators are being switched, connect them via a 1M resistor to pin 2. The annunciators will operate normally when connected to XDP. Ensure that an annunciator is NOT connected directly to the XDP and BP at the same time.

CIRCUIT DIAGRAM

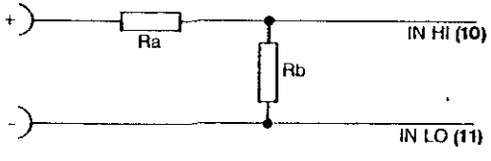


COMPONENT LAYOUT



APPLICATIONS

Input Scaling: Two resistors may be used to alter the full scale reading of the meter – See Table.



Required F.S.D.	Ra	Rb
2V	910K	100K
20V	1M	10K
200V	1M	1K
2000V	1M	100R
2µA	LINK	1K
2mA	LINK	100R
20mA	LINK	10R
200mA	LINK	1R