DPM 1

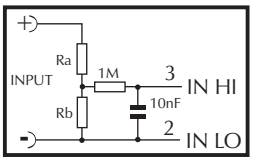
3½ Digit Subminiature LCD Module

The DPM 1 uses the latest miniaturisation techniques to produce the world's smallest DPM module. Miniature size means the meter can be integrated into the smallest enclosures for local indication. Its low cost means it will suit high and low volume applications. The snap-in integral bezel makes installation easy. For single rail operation, the DPM 1S features a negative rail generator which enables the meter to measure a signal referenced to its own power supply 0V.

- **5.5mm (0.22") Digit Height**
- **Programmable Decimal Points**
- **Auto-zero**
- **Auto-polarity**
- **200mV d.c. Full Scale Reading (F.S.R.)**

SCALING

A potential divider may be used to alter the full scale reading (F.S.R.) of the meter - see table.



NOTES

The meter will have to be re-calibrated by adjusting the calibration potentiometer at the rear of the module.

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

Note

Ensure that Ra is rated for high voltage use.

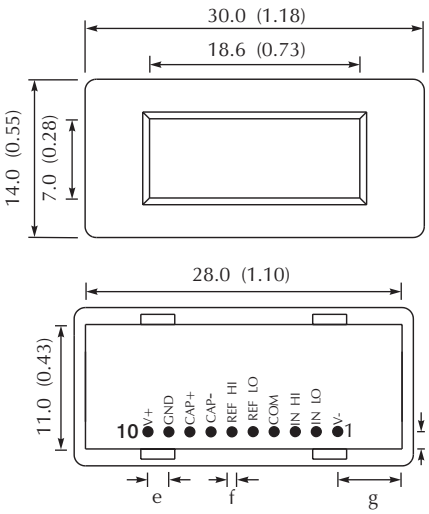
Standard Meter Single Rail Version					Stock Number DPM 1 DPM 1S
Specification		**Min.**	**Typ.**	**Max.**	**Unit**
Accuracy (overall error) *			0.1		% (±1 count)
Linearity				±1	count
Sample rate			3		samples/sec
Operating temperature range		0		50	°C
Temperature stability	DPM 1		200		ppm/°C
	DPM 1S		100		
Supply voltage	DPM 1	7	9	14	V
	DPM 1S	3	5	7	
Supply current	DPM 1		150		µA
	DPM 1S		250		
Input leakage current (Vin = 0V)			1	10	pA

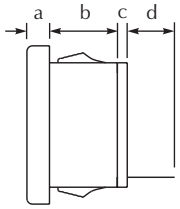
* To ensure maximum accuracy, re-calibrate periodically.

CONNECTOR SOURCING GUIDE

METHOD	SUPPLIED WITH PRODUCT

DIMENSIONS All dimensions in mm (inches)

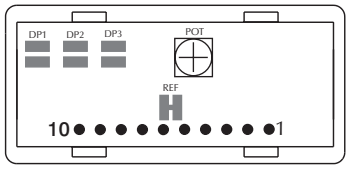




a. 2.00 (0.08)
b. 6.00 (0.23)
c. 1.60 (0.06) max
d. 6.00 (0.23)
e. 2.00 (0.08)
f. 0.50 (0.02)
g. 5.00 (0.20)
h. 1.26 (0.05)

Panel cut-out
28.4 x 11.4 (1.12 x 0.45)

Panel thickness
1.0 to 2.5 (0.04 to 0.1)



ON BOARD SOLDER LINKS

PANEL FITTING

Locate the meter by passing it through the front of the panel cut-out, gently pushing until the rear of the bezel is flush with the panel (DO NOT PUSH ON THE LCD). The snap-in lugs will now automatically hold the meter firmly in position. A hole cutter is available for the cut-out.

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PIN FUNCTIONS

1. V- DPM 1 - negative power supply connection.
   DPM 1S - C2 negative connection.
2. IN LO] Negative measuring input.
3. IN HI] Positive measuring input.
   Analogue inputs must be no closer than 1V to either the positive or negative supply.
   The negative supply of the DPM 1S is generated internally and mirrors the positive supply voltage.
4. COM Ground for analogue section of A/D converter, it is actively held at 2.8V below V+ and must not be allowed to sink excessive current (>100µA) by, for instance, connecting to a higher voltage.
5. REF LO Negative input for reference voltage.
6. REF HI Positive input for reference voltage (connected via Link REF to internal reference).
7. CAP-]
8. CAP+] Charge pump capacitor connections (DPM 1S only).
9. GND DPM 1 - no connection.
   DPM 1S - 0V power supply connection.
10. V+ Positive power supply connection.

ON BOARD LINKS

On board links can be made with a solder link to implement features.

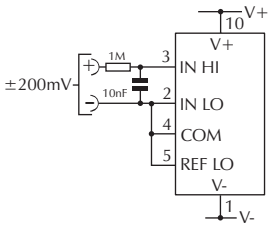
DP1 Make to turn on DP1 (199.9).
DP2 Make to turn on DP2 (19.99).
DP3 Make to turn on DP3 (1.999).
REF Factory made - Connects internal reference to REF HI. It should only be opened if an external reference is used.

SAFETY

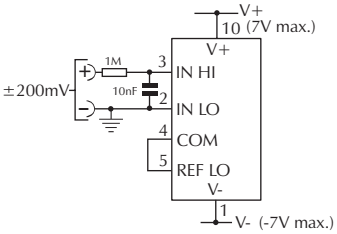
To comply with the Low Voltage Directive (LVD 93/68/EEC), input voltages to the module's pins must not exceed 60Vdc. If voltages to the measuring inputs do exceed 60Vdc, then fit scaling resistors externally to the module. The user must ensure that the incorporation of the DPM into the user's equipment conforms to the relevant sections of BS EN 61010 (Safety Requirements for Electrical Equipment for Measuring, Control and Laboratory Use).

VARIOUS OPERATING MODES

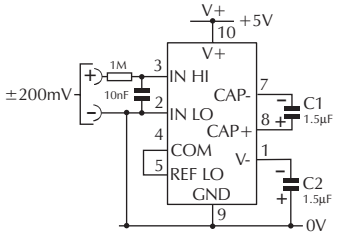
ON-BOARD LINKS: In order to quickly and easily change operating modes for different applications, the meter has several "on-board links". They are designed to be easily opened (de-soldered) or shorted (soldered).
Do not connect more than one meter to the same power supply if the meters cannot use the same signal ground. Input filter should be as close as possible to the meter.
Taking any input beyond the power supply rails will damage the meter.



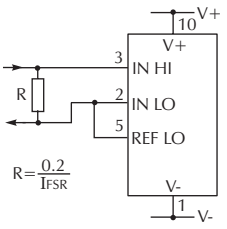
Check Link REF is SHORTED
Measuring a floating voltage source of 200mV full scale (DPM 1).



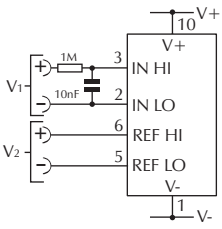
Check Link REF is SHORTED
Split supply operation (DPM 1).



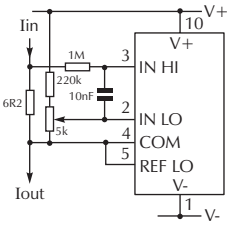
Check Link REF is SHORTED
Measuring a single ended input referenced to supply (DPM 1S).



Check Link REF is SHORTED
Measuring current. Supply MUST be isolated. (DPM 1)



Check Link REF is OPEN
Measuring the ratio of two voltages.
Reading = $1000V_1/V_2$
$50mV < V_2 < 200mV$
$V_1 < 2V_2$. (DPM 1)



Check Link REF is SHORTED
Measuring 4-20mA to read 0-999.
Supply MUST be isolated. (DPM 1)