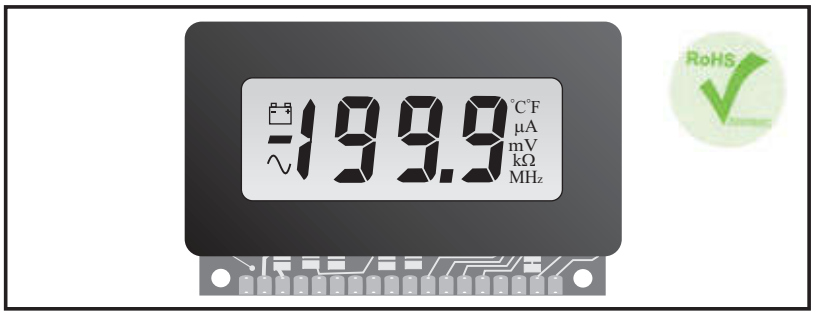
DPM 700

3½ Digit Backlit LCD Module

An ultra-low profile LCD meter using advanced components and construction techniques to provide an unrivalled combination of high performance, elegant appearance and low cost. The meter is pin for pin compatible with many existing DPMs but offers several advantages including long life LED backlighting which provides a clear display in poor light conditions. The very low current consumption results in a long battery life and makes it especially suitable for portable equipment.

- 12.7mm (0.5“) Digit Height
- Logic Selectable Decimal Points
- Auto-zero
- Auto-polarity
- 200mV d.c. Full Scale Reading (F.S.R.)
- User Adjustable Low Battery Indication
- Single Rail Version (DPM 700S)



SCALING

Two resistors Ra and Rb may be fitted in order to alter the full scale reading (F.S.R.) of the meter - see table.
The meter will need re-calibration by adjusting R14.

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

NOTE
Ensure that Link La across Ra is open.

Standard Meter Single Rail Version					Stock Number DPM 700 DPM 700S
Specification		Min.	Typ.	Max.	Unit
Accuracy (overall error)**			0.05	0.1	% (±1 count)
Linearity				±1	count
Sample rate			3		samples/sec
Operating temperature range		0		50	°C
Temperature stability			30		ppm/°C
Supply voltage (V+ to V-)	DPM 700	5	9	14	V
	DPM 700S	3.5	5	7	
Supply current	DPM 700		150		µA
	DPM 700S		500		
Backlight current (IL)*	VL=5V		50	75	mA
	VL=9V		20	35	
Input leakage current (Vin= 0V)			1	10	pA

* Note: Factory configured for 5V d.c. operation. 9V d.c. operation available on request.
** To ensure maximum accuracy, re-calibrate periodically.

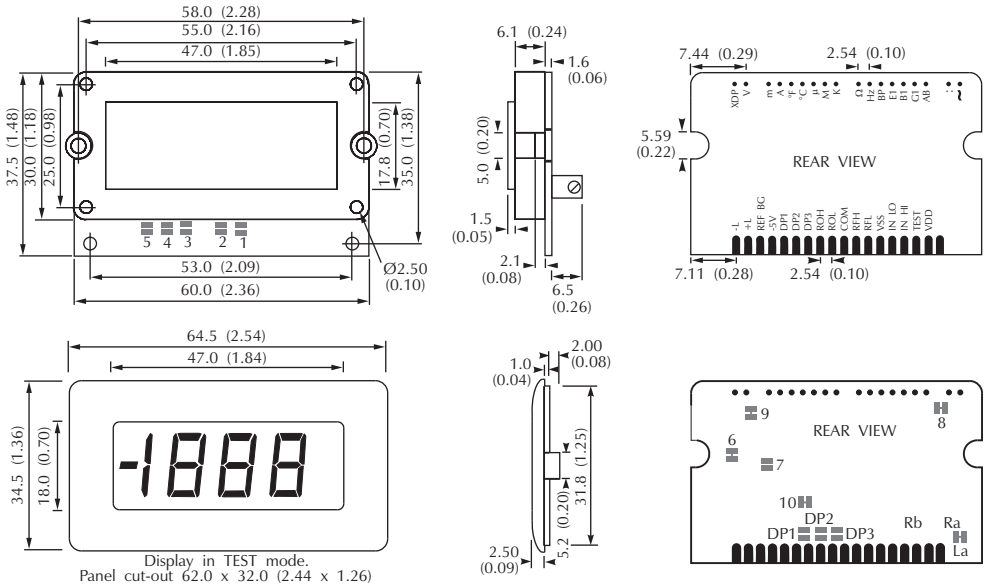
CONNECTOR SOURCING GUIDE

METHOD	Solder wires or standard 0.1" square pin header to PCB

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).

DIMENSIONS All dimensions in mm (inches)



PANEL FITTING

Fit the bezel to the front of the panel, then locate the meter to the bezel from behind the panel. Using the screws provided, secure the two plastic spring clips to the rear of the meter. The meter is designed to fit directly onto OKW Type M, P and Veronex size 3 enclosures.

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PIN FUNCTIONS

0. N.C
1. VDD — Positive power supply connection.
2. TEST — Connecting this pin to VDD turns on the segments as illustrated. DO NOT operate for more than a few seconds as the DC voltage applied to the LCD may 'burn' the display. This pin is held nominally at 5V below VDD and is the ground for the digital section of the meter. It can be used to power external logic up to a maximum of 1mA.
3. IN HI — Positive measuring differential input.
4. IN LO — Negative measuring differential input.

Analogue inputs must be no closer than 1V to either the positive or negative supply. The negative supply of the DPM 700S is generated internally and mirrors the positive supply voltage.

5. VSS — Negative power supply connection.
6. RFL — Negative input for reference voltage (can be connected to COM via Link 3).
7. RFH — Positive input for reference voltage.
8. COM — The ground for the analogue section of the A/D converter, held actively at 2.8V (nom) below VDD. COM must not be allowed to sink excessive current (>100µA) by connecting it directly to a higher voltage.
9. ROL — Negative output from internal reference.
10. ROH — Positive output from internal reference.
11. DP3 — DP 199.9
12. DP2 — DP 19.99
13. DP1 — DP 1.999

Connect to VDD to display required decimal point.

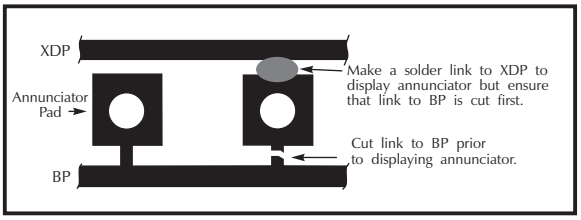
14. -5V — Output from negative rail generator circuit (DPM 700S only) which mirrors the voltage applied to VDD. DPM 700 - N.C.
15. REF BG — Output from bandgap reference (1.22V nom).
16. +L — Positive backlight voltage connection.
17. -L — Negative backlight voltage connection.

Factory configured for 5V DC operation. 9V DC operation available on request.

28 (BP), 29 (E1), 30 (B1), 31 (G1), 32 (AB): Outputs for autoranging applications.

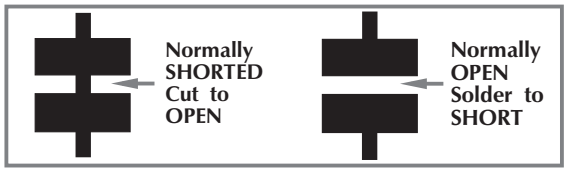
SPECIAL NOTE - ANNUNCIATORS

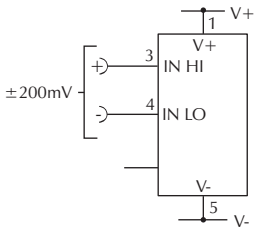
The DPM 700 annunciators (A, °F, °C, etc.) can be displayed by applying a solder link to the drive pad (XDP) located alongside the annunciator input pads. These input pads are tied via links to the backplane (BP) to suppress the annunciators when not required. Care should be taken to ensure that links to BP are cut before connecting annunciator inputs to the drive pad (XDP).



VARIOUS OPERATING MODES

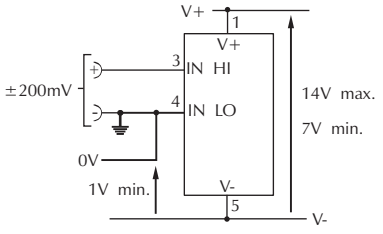
ON-BOARD LINKS: In order to quickly and easily change operating modes for different applications, the meter has several on-board links. They are designed to be easily opened (cut) or shorted (soldered). Do not connect more than one meter to the same power supply if the meters cannot use the same signal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





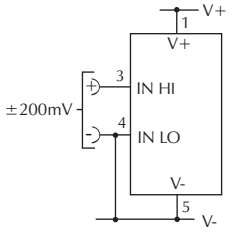
SHORT Links 1, 2, 3 & 5.

Measuring a floating voltage source of 200mV full scale.



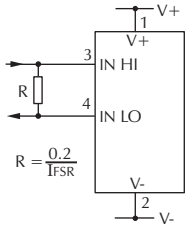
SHORT Links 1, 2, 3 & 5.

Split supply operation (DPM 700).



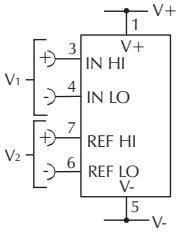
SHORT Links 1, 2, 3 & 5.

Measuring a single ended input referenced to supply (DPM 700S).



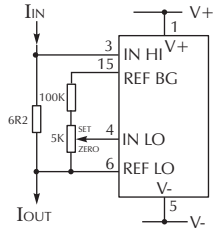
SHORT Links 1, 2, 3 & 5.

Measuring current (supply MUST be isolated).



SHORT Link 5.

Measuring the ratio of two voltages.
Reading = 1000 V_1/V_2
50mV < V_2 < 50mV
$V_1 < 2V_2$



SHORT Link 1, 2 & 3.

Measuring 4-20mA to read 0-999 (supply MUST be isolated).