DPM 500

The DPM 500 uses advanced components and construction techniques to provide a uniquely compact unit. The meter is in a 40 pin DIL integrated circuit format that can be plugged directly into a DIL socket or panel mounted using the snap in bezel. For single rail use, the DPM 500S-BL features a built in negative rail generator, enabling the meter to measure a signal referenced to its own power supply 0V.

- **12.5mm** (0.5") Digit Height
- Programmable Decimal Points
- Auto-zero
- Auto-polarity
- **2**00mV d.c. Full Scale Reading (F.S.R.)
- Backlit Single Rail Version (DPM 500S-BL)
- Annunciators

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. Meter will need re-calibration.

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

NOTE

Ensure link 10 is cut if fitting Ra.

SAFETY



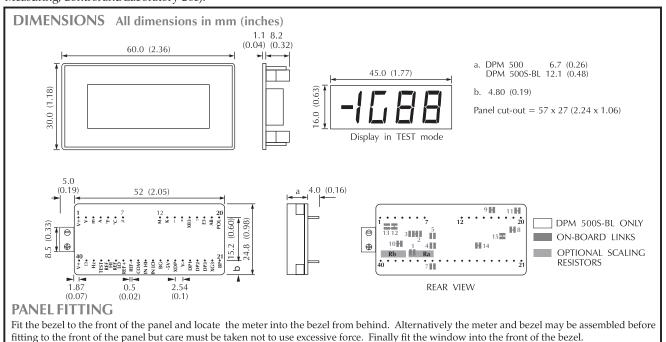
Standard Meter Backlit Single Rail Version				Stock Number DPM 500 DPM 500S-BL		
Specification		Min.	Тур.	Max.	Unit	
Accuracy (overall error)*			0.05	0.1	% (±1 count)	
Linearity				±1	count	
Sample rate			3		sample/sec	
Operating temperature range		0		50	°C	
Temperature stability			100		ppm/°C	
Supply	DPM 500	7.5	9	14		
voltage	DPM 500S-BL	3.5	5	6.5	V	
Supply current	DPM 500		150			
(not inc. backlighting)	DPM 500S-BL		250		μА	
Backlight	Voltage			5	V	
,	Current		30	60	mA	
Input leakage current (Vin = 0V)			1	10	рА	

^{*} To ensure maximum accuracy, re-calibrate periodically.

CONNECTOR SOURCING GUIDE

METHOD 40 Pin DIL IC Socket

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).





PIN FUNCTIONS

1,40. V+ Positive power supply.

2-7,12-14,17,38,39 See SPECIAL NOTE: ANNUNCIATORS.

15. -Input for the polarity annunciator. Internally linked to POL (pin 20). If this is to be externally controlled, cut link 11.

16, 18, 19, 22 XB3, E3, AB, XG3. Outputs for use in auto-ranging applications.

20. POL Drive for "-" annunciator. Internally connected by link 11.

21. BP LCD backplane drive waveform.

23. DP3 1.999

24. DP2 19.99 -See SPECIAL NOTE: ANNUNCIATORS.

25. DP1 199.9

Negative power supply. Note that if the DPM 500S-BL is being used, the voltage between V+ and V- must not exceed 6.5V. 26. V-

27. XDP Connect to required annunciators/DPs (see note).

Output from negative rail generator circuit. This output is an inversion of V+ (DPM 500S BL ONLY). 28. -5V

29. BG Input for bandgap reference. (1.22V nom).

 $\label{eq:Negative measuring input.} A nalogue inputs must be no closer than 1V to either the positive or negative supply. The negative Positive measuring input. Supply of the DPM 500S-BL is generated internally and mirrors the positive supply voltage.$ 30. IN LO

31. IN HI

32. COM The ground for the analogue section of the A/D converter, held actively at 2.8V (nom) below V+. COM must not be allowed to sink excessive current ($> 100 \mu A$) by connecting it directly to a higher voltage.

33. REF-Negative output from internal reference.

34. REF+ Positive output from internal reference. 35. REFLO Negative input for reference voltage.

36. REFHI Positive input for reference voltage. 37. TEST $Connecting this pin to V+ turns on the segments as illustrated. \ It should not be operated for more than a few seconds as the DC$

 $voltage\ applied\ to\ the\ LCD\ may\ "burn"\ the\ display.\ This\ pin\ is\ nominally\ at\ 5V\ below\ V+\ and\ is\ the\ ground\ for\ the\ digital\ section$

of the meter, it can be used as a negative supply to power external logic up to a maximum of 1mA.

40. V+/CLK Normally tied to V + via Link 12 but can be used to over ride the internal oscillator and control the sample rate by cutting Link 12 and

making Link 13.

LED BACKLIT VERSIONS: Apply 5V DC to the backlight tab on the side of the meter. Typical current is 30 mA. For higher voltages, fit a resistor in series.E.g. For 9V use 150R. Maximum current = 60mA.

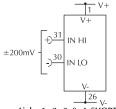
SPECIAL NOTE: ANNUNCIATORS: The DPM annunciators (DPs, °C, etc.) can be displayed by connecting them to XDP. However as these annunciators are normally 'floating', under certain conditions they may appear when not wanted. To suppress unwanted annunciators, link them to the backplane (BP). If the annunciators are being switched, connect them via a 1M resistor to the BP (pin 21). The annunciators will then operate normally when connected to XDP. Ensure that an annunciator is not connected directly to the XDP and BP at the same time.

VARIOUS OPERATING MODES

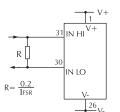
ON-BOARD LINKS: In order to quickly and easily change operating modes for different applications, the meter has several "on-board links". They are designed to be easily opened(cut) or shorted (soldered).

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.



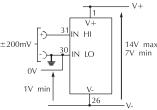


Measuring a floating voltage source of 200mV full scale.



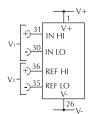
Links 1, 2, 3, 4 SHORTED.

Measuring current (supply MUST be isolated).



Links 1, 3 & 4 SHORTED.

Split supply operation (DPM 500).

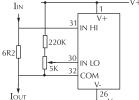


Measuring the ratio of two voltages. Reading = $1000 \text{ V}_1/\text{V}_2$

 $50mV < V_2 < 200mV$ $V_1 < 2V_2$.



Measuring a single ended input referenced to supply (DPM 500S-BL).



Links 1, 3 & 4 SHORTED.

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

Specifications liable to change without prior warning

DPM 500

Issue 11

06/2010

S.L.

Applies to DPM 500/7