

The DPM 750S-BL features a 200mV d.c. measurement range with auto-zero and auto-polarity. Decimal points are user selectable. The meter features a negative rail generator which enables the meter to measure a signal referenced to its own power supply GND. A low drift bandgap reference circuit ensures accurate readings over a wide temperature range. LED backlighting ensures excellent readability under low light conditions. The module's low cost means it will suit high and low volume applications. This module is supplied with a plastic mounting bezel. A waterproof seal to IP67 / NEMA 4X is achievable, using the optional BEZ 700-IP bezel.

### FEATURES

- 12.7mm (0.5") Digit Height
- 200mV d.c. Full Scale Reading
- 3.0 to 7.5V or 6.0 to 15V d.c. Operation
- Auto-zero and Auto-polarity
- Programmable Decimal Points
- LED Backlighting (30mA @ 5V typ.)
- Low Battery Warning
- Bandgap Reference



### TYPICAL APPLICATIONS

- Precision Instrumentation Systems
- Power Supply Monitoring
- Test Boxes
- Panel-Mount Indication
- Low Power Voltage Measurement

### ORDERING INFORMATION

Standard Meter  
IP67 / NEMA 4X Bezel

Stock Number  
DPM 750S-BL  
BEZ 700-IP

### ELECTRICAL SPECIFICATIONS

Specification			Min.	Typ.	Max.	Unit
Accuracy (overall error) *				0.1		% (±1 count)
Linearity					±1	count
Sample rate				2.5		samples/sec
Operating temperature range			0		50	°C
Temperature stability				50		ppm/°C
Supply voltage	V+ to GND configuration		3	5	7.5	V d.c.
	V+ to V- configuration		6	9	15	V d.c.
Supply current	V+ to GND configuration			500		μA
	V+ to V- configuration			350		μA
Backlight supply voltage			4.75	5.0	**	V d.c.
Backlight supply current @ 5V d.c.				30	50 ***	mA
Input leakage current (Vin = 0V)				1	10	pA

\* To ensure maximum accuracy, re-calibrate periodically.

\*\* An external series resistor is required above 5V, see Applications.

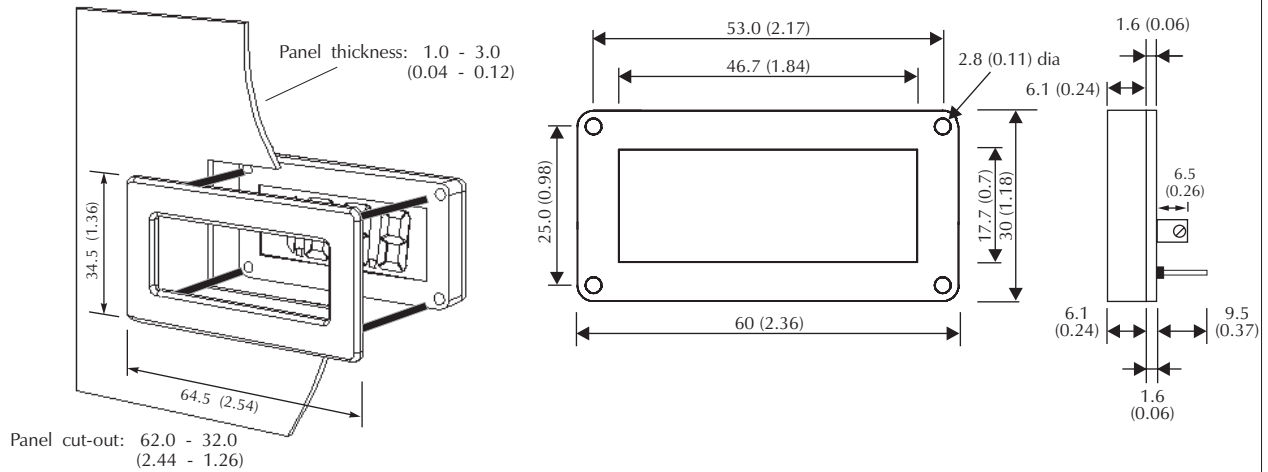
\*\*\* This specification linearly derates to 30mA @ 50°C.

### SAFETY

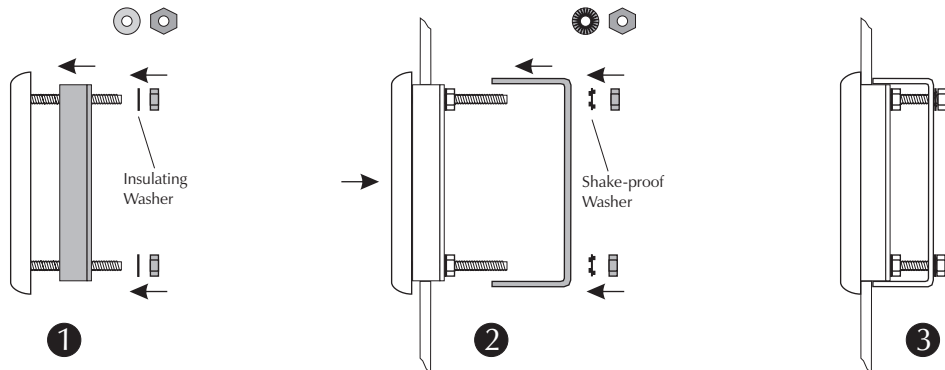
To comply with the Low Voltage Directive (LVD 93/68/EEC), input voltages to the module's pins must not exceed 60Vdc. The user must ensure that the incorporation of the panel meter into the user's equipment conforms to the relevant sections of BS EN 61010 (Safety Requirements for Electrical Equipment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

### DIMENSIONS

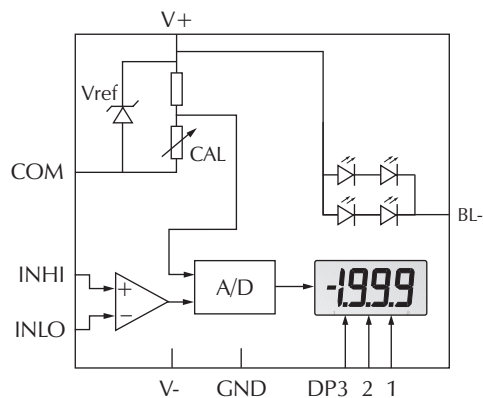
All dimensions in mm (inches)



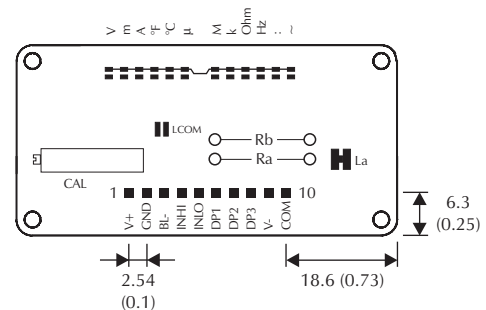
### PANEL FITTING



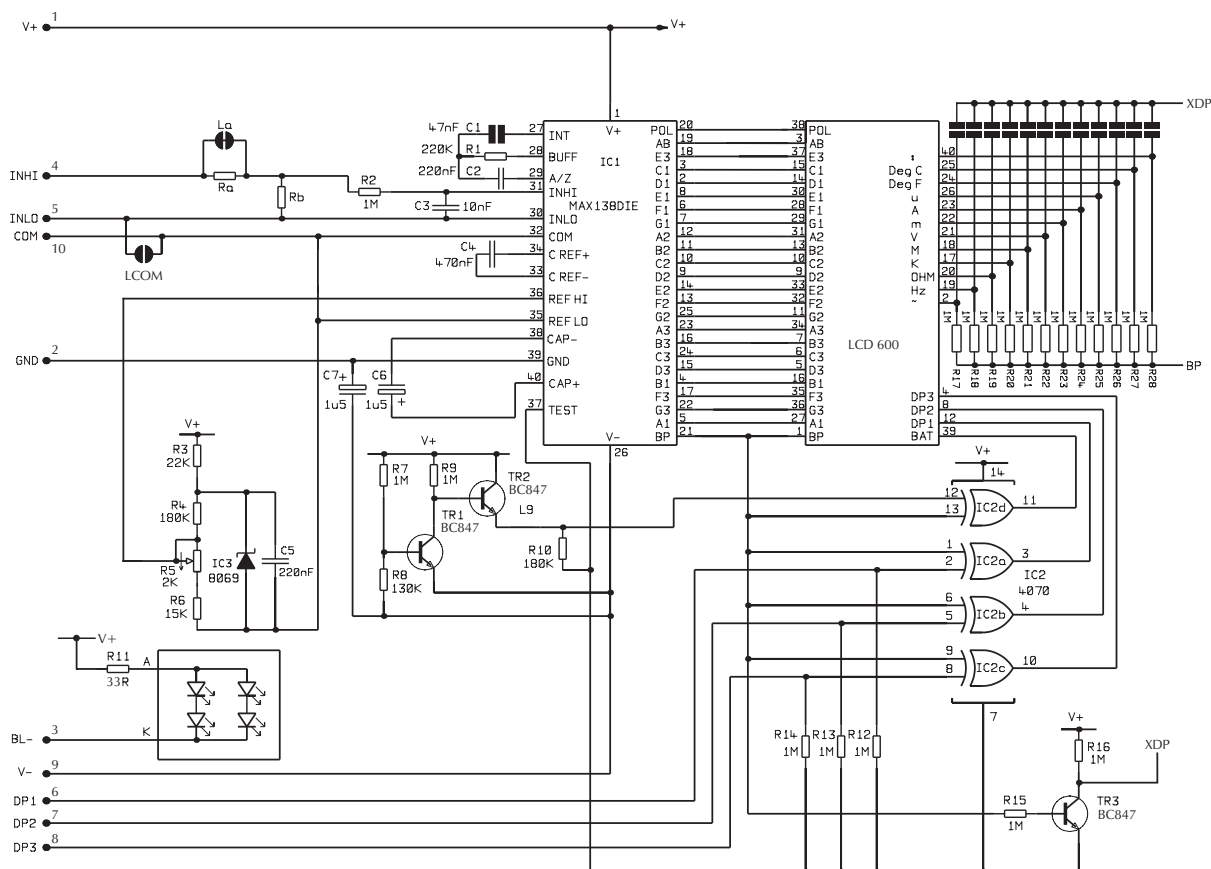
### FUNCTIONAL BLOCK DIAGRAM



### PIN CONFIGURATION (rear view)



## CIRCUIT DIAGRAM



## PIN FUNCTIONS

- |     |      |  |
|-----|------|--|
| 1.  | V+   | Positive power supply to the meter and LED backlighting.   |
| 2.  | GND  | 0V power supply to the meter.  |
| 3.  | BL-  | Negative power supply connection to the LED backlighting.  |
| 4.  | INHI | Positive measuring input.  |
| 5.  | INLO | Negative measuring input.  |
| 6.  | DP1  | Connect to V+ to display DP1 (199.9).  |
| 7.  | DP2  | Connect to V+ to display DP2 (19.99).  |
| 8.  | DP3  | Connect to V+ to display DP3 (1.999).  |
| 9.  | V-   | Negative power supply to the meter.  |
| 10. | COM  | Ground for analogue section of A/D converter.<br>It is actively held at 3.05V (nom.) below V+ and must not be allowed to sink excessive current (>100µA) by, for instance, connecting to a higher voltage. |

Note:

A negative supply is generated internally and mirrors the positive supply. For example: if V+ is +5V, then the internally generated V- is -5V. When measuring with the input referenced to the same supply rail as that of the panel meter, then the limitations on the input range are (V- + 1.5V) to (V+ - 1.5V).

## SOLDER LINKS

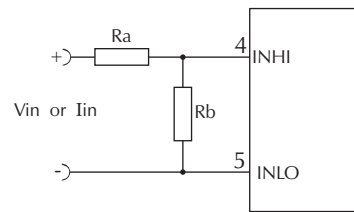
- |      |                  |   |
|------|------------------|---|
| LCOM | Normally Open.   | When soldered, connects COM to INLO.    |
| La   | Normally Closed. | Short circuits the scaling resistor Ra. |

## SCALING

Two resistors  $R_a$  and  $R_b$  may be used to alter the full scale reading (FSR) of the meter - see table. The meter will have to be re-calibrated by adjusting the calibration potentiometer on the rear of the module.

	FSR	$R_a$	$R_b$
Voltage $V_{in}$	2V	910k	100k
	20V	1M	10k
	200V	1M	1k
	2000V*	1M	100R
Current $I_{in}$	200µA	0R	1k
	2mA	0R	100R
	20mA	0R	10R
	200mA	0R	1R

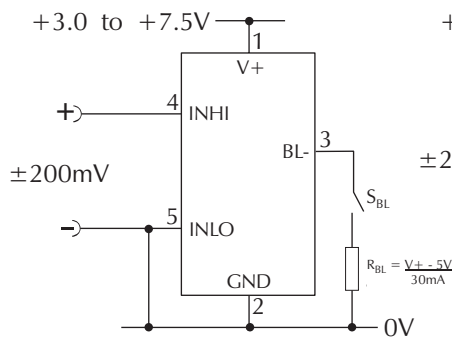
\*Ensure that  $R_a$  is rated for high voltage use.



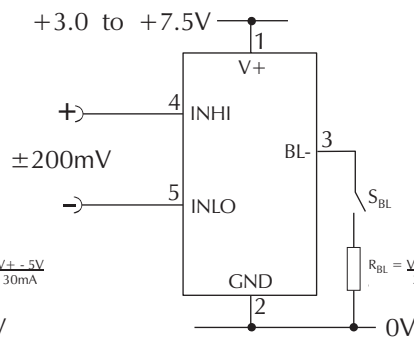
## APPLICATIONS

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.

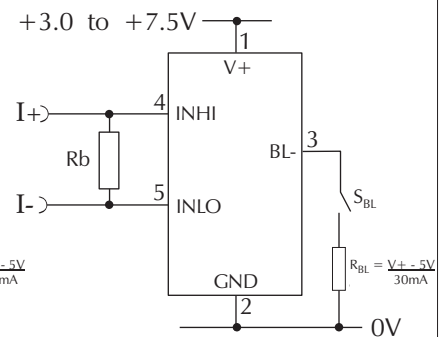
### 3.0 to 7.5V Meter Power Supply



Measuring a single ended input voltage referenced to supply, i.e. the input voltage and the meter's power supply share the same 0V rail. Ensure solder link LCOM is open.

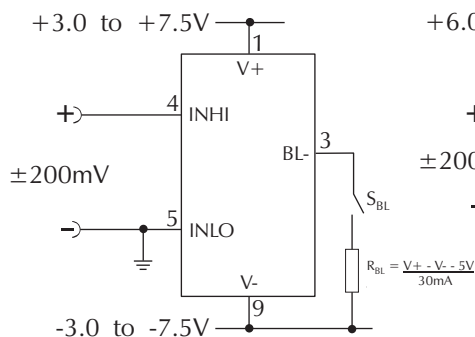


Measuring an input voltage referenced to a floating supply, i.e. the input voltage and the meter's power supply are isolated from each other. Ensure solder link LCOM is closed.

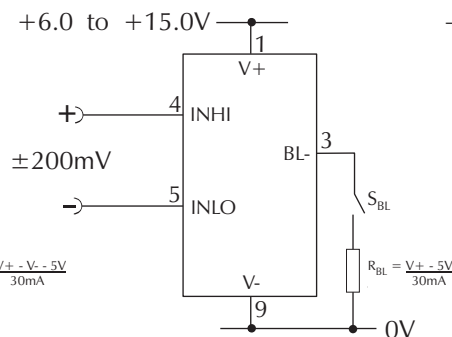


Measuring a current from a circuit which is floating with respect to the DPM's supply, i.e. the current and the meter's power supply are isolated from each other. Ensure solder link LCOM is closed.

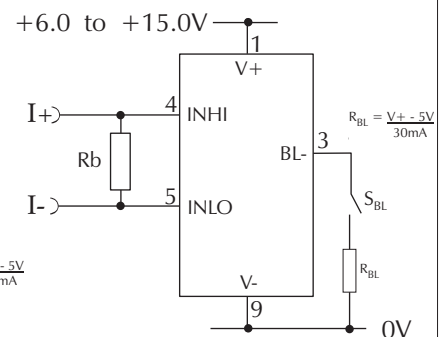
### 6.0 to 15.0V Meter Power



Measuring a single ended input voltage referenced to a split supply, i.e. the input voltage and the meter's power supply share the same 0V rail. Ensure solder link LCOM is open.



Measuring an input voltage referenced to a floating supply, i.e. the input voltage and the meter's power supply are isolated from each other. Ensure solder link LCOM is closed.



Measuring a current from a circuit which is floating with respect to the DPM's supply, i.e. the current and the meter's power supply are isolated from each other. Ensure solder link LCOM is closed.