

LCD MINIATURE VOLTMETER

- * ULTRA-LOW PROFILE
- * ULTRA-LOW POWER
- * SNAP IN BEZEL
- * SINGLE RAIL VERSION



MODULE DIMENSIONS: 52x24.8x6.7mm

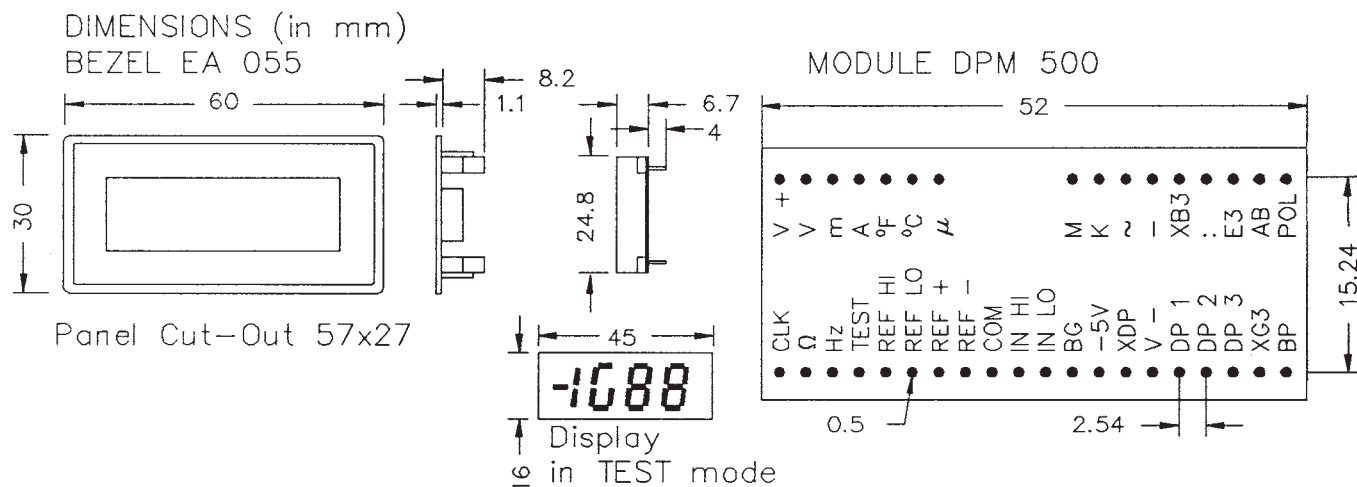
The DPM 500 uses advanced components and construction techniques to provide a uniquely compact unit of high performance, elegant appearance and low cost. The meter is in a 40 pin DIL integrated circuit format which can be plugged directly into a DIL socket or panel mounted using the snap-in bezel provided. The DPM 500 is pin compatible with the popular 7106, 26 and 36 range of A/D Converters and it can be used as a single component to directly replace LCD, A/D and numerous passive components in existing applications. The low profile snap-in bezel incorporates a flat reverse printed window giving a superb appearance that cannot be damaged or rubbed off by contact. For OEM's the bezel can be supplied with any specified colour or design to match an existing appearance. For single rail use the DPM 500S has a built in negative rail generator enabling the meter to measure a signal referenced to its own power supply 0V. The DPM 500 features Auto Zero, Auto Polarity, 200mV FSD, 12.5mm (0.5") digit height and programmable decimal points. There are many useful engineering symbols, outputs for use in auto range and a negative rail generator option. All relevant connections are brought out to pins allowing operation in all modes available for the 71X6 range including single ended ratiometric and differential measurements. On card solder pads for essential inter-connections make selection of operating mode quick and easy with a minimum of external wiring. Very low current consumption allows long battery life making it especially useful for 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/ $^{\circ}$ C
Temp Range		0		50	$^{\circ}$ C
Supply Voltage Normal		7.5	9	15	V
Supply Voltage Single Ended		3.5	5	6.5	V
Supply Current			150		μ A
Max DC Input Voltage				± 20	V
Input Leakage Current ($V_{in}=0V$)			1	10	pA
Low Battery Threshold	Normal		7.5		V
	Single Ended		3.7		V

ORDER INFORMATION:

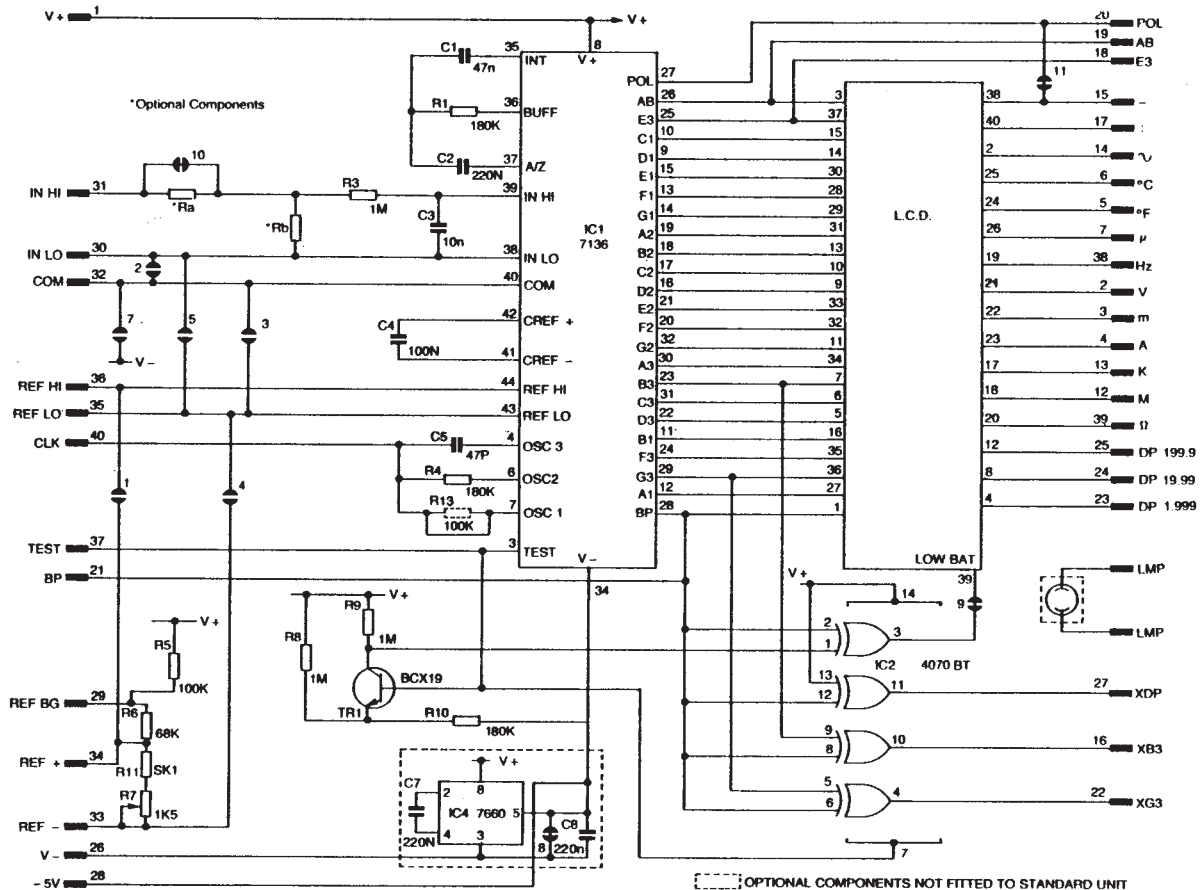
DVM-MODULE DPM 500 WITH BEZEL EA 055
DVM-MODULE DPM 500-S WITH BEZEL EA 055
ADAPTER-BOARD for solder or flat cable connections

EA 4055
EA 4055-S
EA 9055



PIN FUNCTIONS

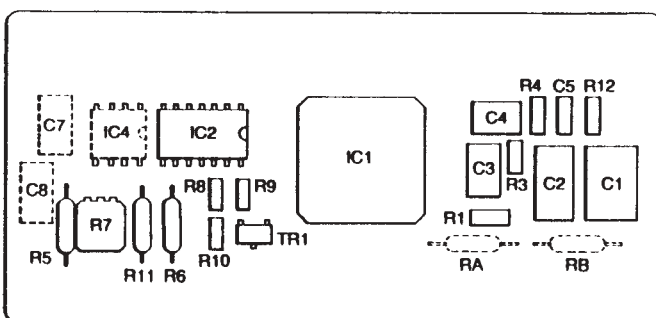
1. V+: Positive power supply.
- 2-7, 12-14, 17, 38, 39: ANNUNCIATORS, SPECIAL NOTE.
 The DPM Annunciators (DPs, °C etc.) can be illuminated by connecting to XDP (Pin 27). However, as these annunciators are normally floating under certain conditions they may appear when not wanted. If this occurs they can be suppressed either by connection to back plane (Pin 21) directly if not needed or via a 1M resistor if required at certain times. The 1M resistor does not effect normal operation and the annunciators will still appear when connected to XDP. Ensure that annunciators are not directly connected to XDP and BP at the same time.
15. "-": Input for 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 autoranging applications.
20. POL: Drive for "-" Annunciator. Internally connected via link 11.
21. BP: LCD back plane drive waveform.
23. DP3: 1.999
24. DP2: 19.99 See special note: Annunciators.
25. DP1: 199.9
26. V-: Negative power supply. Note that if the DPM 500S is being used the voltage between V+ and V- must not exceed 6.5V.
27. XDP: Connect to required annunciators/DP's (see note).
28. -5V: Output from negative rail generator circuit. This output is an inversion of V+ (500S).
29. BG: Input for bandgap reference (1.22V nom).
30. IN LO: Negative measuring input.
31. IN HI: Positive measuring input.
32. 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 (>100µA) by connecting it directly to a higher voltage.
33. REF-: Negative output from internal reference.
34. REF+: Positive output from internal reference.
35. REF LO: Negative input for reference voltage.
36. REF HI: Positive input for reference voltage.
37. TEST: Connecting this pin to VDD 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 normally 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 1 mA.
40. Clock: Clock output may be used for systems timing or as an input to override the internal oscillator and control the sample rate.



DIFFERENTIAL INPUTS

IN HI, IN LO, REF HI and REF LO are true differential inputs, they respond to the voltage across them and not to their voltage with respect to the power supply. There is a limit to this response known as the common mode range. Any input must be no higher than V_+ , -0.5V and no lower than V_- , +1V. Note that in case of the DPM 500 S it must be no lower than 1.0V above the -5V output. If the power supply is floating with respect to the circuit being monitored or the unit is being used with a bandgap reference in single-ended mode (500S), connect IN LO and REF LO to Common. If there is a danger that any input may be taken beyond the power supply rails a series resistor must be fitted to limit the input current to less than $100\mu\text{A}$. Negative Rail Generator: This option is factory fitted. Order Code DPM 500S.

COMPONENT LAYOUT



APPLICATIONS

Input Scaling: Two resistors R_a and R_b may be fitted in order to alter the full scale reading of the meter. See table.

NOTES

1. Input must not exceed $\pm 500\text{V}$.
2. Ensure link 10 is cut if fitting R_a . Meter will need re-calibration.

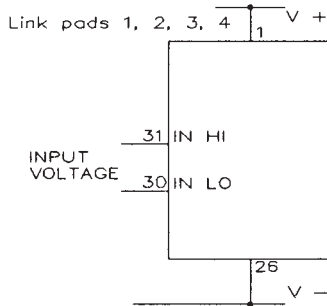
Required F.S.D.		R_a	R_b
2V	2.	910K Ω	100K Ω
20V	2.	1M Ω	10K Ω
200V	2.	1M Ω	1K Ω
2000V	1,2.	1M Ω	100 Ω
200 μA		LINK	1K Ω
2mA		LINK	100 Ω
20mA		LINK	10 Ω
200mA		LINK	1 Ω

PANEL FITTING

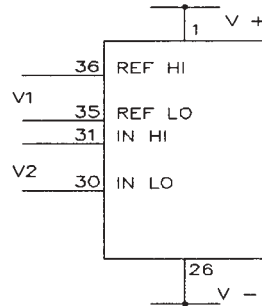
Fit the bezel to the front of the panel and then locate the meter into the bezel from behind. Alternatively the meter and bezel may be assembled before fitting into the front of the panel but care must be taken not to use excessive force.

CIRCUIT INTERCONNECTIONS

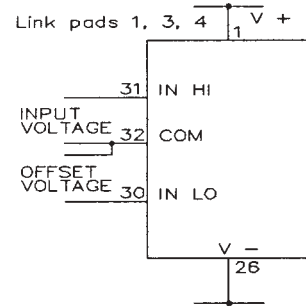
The DPM 500 can be configured for any of the applications shown below. Interconnections can be made by one of two methods. 1: Via the user's conditioning PCB, terminating at the DPM 500 edge connector or 2: Bridging solder across the appropriate solder pad links provided (see circuit diagram).



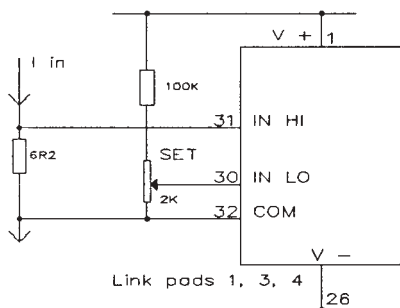
Measuring a floating voltage source of 200mV full scale.



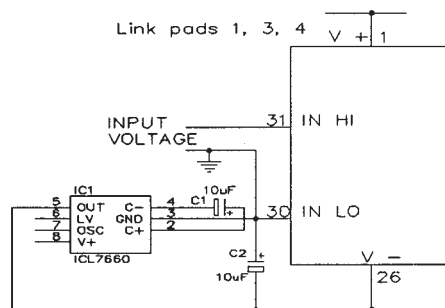
Measuring the ratio of two voltages. Reading = $1000V2/V1$.



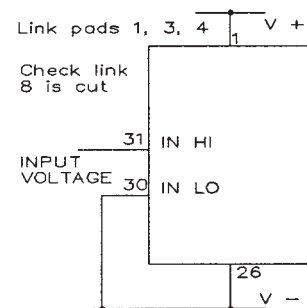
Zero display when the applied input is not zero, the offset and input voltages should be applied as shown.



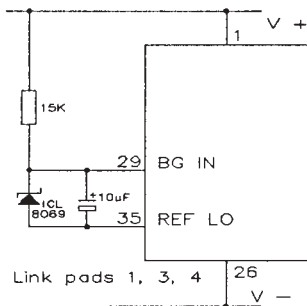
Measuring 4-20mA to read 0-999.



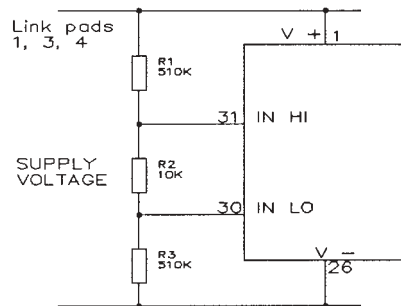
Measuring a single ended input referenced to supply.



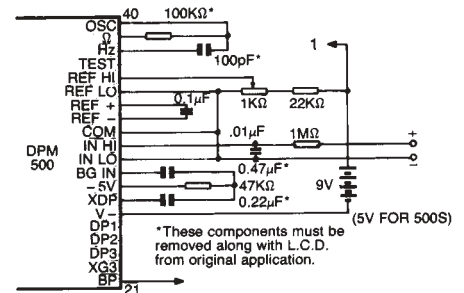
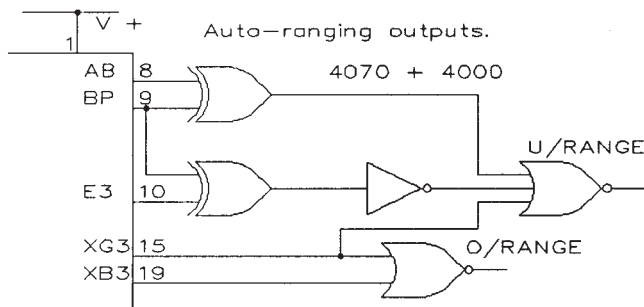
Measuring a single ended input referenced to supply (DPM 500S).



Fitting bandgap reference.



Measuring a supply voltage (min 5V, max 15V) (DPM 500).



Replacing 7106/26/36 with DPM 500.