Instruction Leaflet

3½ Digit LCD DPM

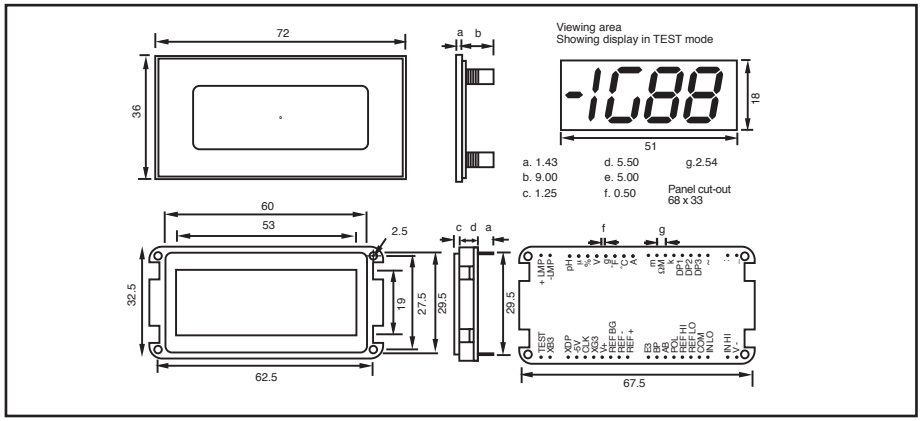
DPM 2000 RS stock no. 255-963

- Ultra-low power
- Ultra-low profile
- Annunciators

The meter uses advanced components and construction techniques to provide a unrivalled combination of high performance, elegant appearance and low cost. It can be mounted from the rear of the panel, or front mounted using a bezel provided. The low profile snap-in bezel incorporates a flat window giving a superb appearance.

The meter features auto-zero, auto polarity, 200mV FSD, 15 mm digit height and programmable decimal points. There are many useful engineering symbols and outputs for use in auto-ranging. It uses an external bandgap reference for extra stability with connections brought out allowing use in single ended differential or ratiometric mode. On card solder pads essential inter-connections make a selection of operating mode quick and easy with the minimum of external wiring. Very low current consumption allows long battery life making it especially useful in portable equipment.

Specification	Min.	Typ.	Max.	Unit
Accuracy (±1 count)		0.05	0.1	%
Linearity			±1	Count
Sample rate		3		per sec
Temp stability		30		ppm/°C
Temp range	0		50	°C
Supply voltage V+ V-	5	9	15	V
Supply current		150		μA
Max d.c. input voltage			±20	V
Input leakage current (Vin = 0V)		1	10	pA
Low battery threshold (may be altered by user)		6.4		V



Pin functions

1. V-. Negative power supply connection.
2. IN HI. Positive measuring input.
3. I N LO. Negative measuring input
4. 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.
5. REF LO. Negative input for reference voltage.
6. REF HI. Positive input for reference voltage (connected via link 1 to REF +).
7. POL. Drive for negative (-) annunciator. Internally connected via link 11 to the annunciator.
8. 10, 15, 19. Outputs for Auto-ranging applications (see back page).
9. BP. LCD Back plane drive waveform.
11. REF+. Positive output from internal reference (connected via link 1 to REF HI).
12. REF-. Negative output from internal reference. MUST be tied to a suitable ground to return to bias bandgap (normally COM).
13. REF BG. Output of Bandgap reference (1.22V nom).
14. V+. Positive power supply connection.
16. CLOCK. Clock output may be used for systems timing or as an input to override the internal oscillator and control the sample rate.
17. -5V. No connection.
18. XDP Connect to required annunciators/DPs (see note).
20. TEST. Connect to V+ to momentarily turn on segments as illustrated. It should not be operated for more than a few seconds as the d.c. voltage applied to the LCD may ''burn'' the display. this pin is 5 volts (nom) below V+ 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.

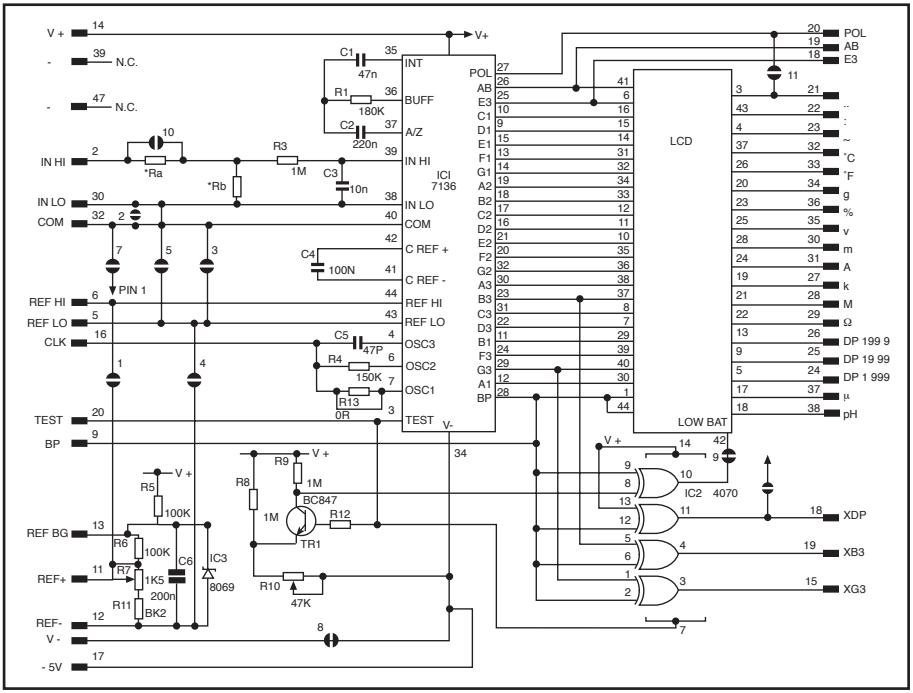
Special note: Annunciators

The DPM annunciators (DPs. °C etc.) can be shown either by connecting them to the XDP(18). However, as these annunciators are normally ''floating'', under certain conditions they may appear when not wanted. To suppress unwanted. To suppress unwanted annunciators, apply a solder blob link to the Back plane pads above the annunciator input pins. If the annunciators are being switched, connect them via a 1M

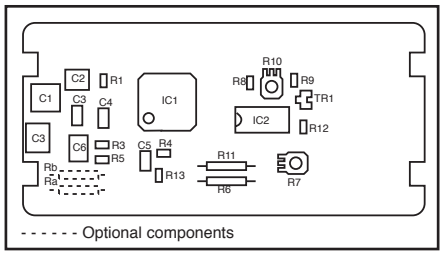
resistor to the BP (pin 9), the annunciators will operate normally when connected to XDP. Ensure that an annunciator is NOT connected directly to the XDP and BP at the same time.

Note: If suppressing (-) annunciator by direct connection to BP link 11 MUST be disabled first.

Circuit diagram



Component layout



Required F.S.D.		Ra	Rb
2V	2	910K	100K
20V	2	1M	10K
200V	2	1M	10K
2000V	1,2	1M	100R
200µA		LINK	1K
2mA		LINK	10R
20mA		LINK	10R
200mA		LINK	1R

Applications

Input scaling: Two resistors Ra and Rb may be fitted to alter the full scale reading of the meter (see table).

Low battery indication: To raise or lower the voltage at which the LOW BATT symbol turns on adjust R10.

Notes:

1. Input must not exceed ±500V.
2. Ensure link 10 across Ra is cut if fitting Ra. Note that the meter will have to be re-calibrated.

Analogue inputs

IN HI, IN LO and REF HI, 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 however, known as the Common Mode Range. Any input must be no higher than V+ -0.5V and no lower than V- +1.0V. If the power supply is floating with respect to the circuit being monitored connect IN LO and REF LO to AN COM for best results. If there is any danger that an input may be taken beyond the power supply rails, a series resistor MUST be fitted to the limit, the input current to less than 100µA.

Circuit interconnections

The meter can be configured for any of the applications shown. Interconnections can be made by one of two methods:

1. Via the users conditioning PCB, terminating at the meter edge connector.
2. Bridging solder across the appropriate solder pad links provided (see circuit diagram).

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 the bezel may be assembled before fitting into the front of the panel but care must be taken not to use excessive force.