



Data Sheet

3 1/2 digit LCD digital panel meter

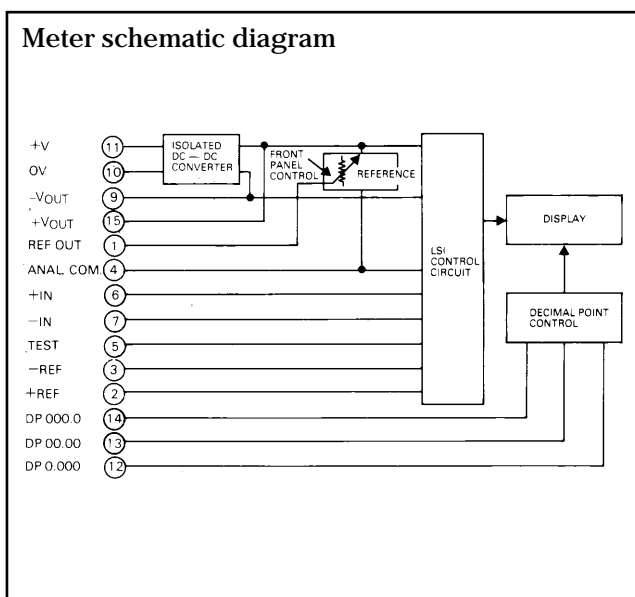
RS stock number 258-170

The RS 3 1/2 digit LCD digital panel meter combines the low power requirements of a liquid crystal display and LSI semiconductor technology to provide a high performance digital panel meter within a DIN/NEMA standard case. Connections to the meter are made via a 24 way 0.1 in. gold plated edge socket, (RS stock no. 466-545).

Features

- Auto polarity
- Internal band gap reference
- 0.1% accuracy
- 0.5 in. high LCD display
- Automatic zero
- Isolated supply input
- Programmable decimal points
- DIN standard cut-out of 92 x 45 mm
- Reverse polarity protected*
- Over-voltage protected*
- Low power less than 10 mA at 5 V supply

Meter schematic diagram



Display

Polarity: Shown by minus sign for negative inputs.

Over-range: Shown by three least significant digits blanked.

Decimal points: Programmable at edge connector. To display decimal point, connect appropriate pin to +V_{OUT}, leave unconnected if decimal point not required.

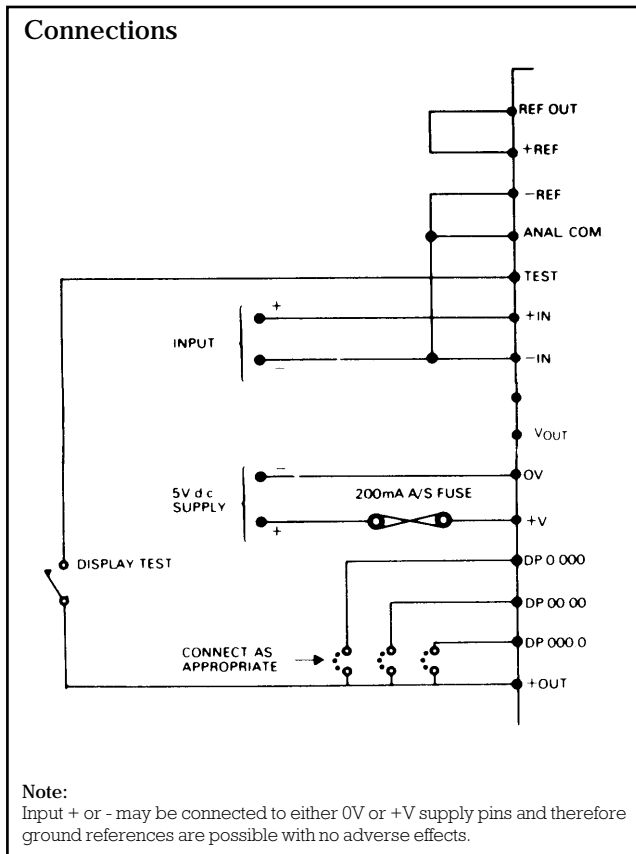
Test facility: Connect test pin to +V_{OUT} momentarily to turn on all display segments - prolonged use will 'burn' the display

Electrical characteristics

* With fuse fitted - see "connections" over.

| Parameter | Symbol | Min. | Typ | Max. | Units |
|---------------------------------|-----------------|-----------|---------|-------------|------------|
| Supply voltage | +V | 4.75 | 5 | 5.25 | Vdc |
| Supply current | | | 8 | 10 | mA |
| Output analogue common (Note 1) | | | +V -2.8 | | Vdc |
| Measurement range | V _{IN} | -199.9 | | +199.9 | mVdc |
| Temp. Coeff. | | | ±75 | ±150 | ppm/°C |
| Input impedance | | 100 | | | MΩ |
| Input over-voltage | | -100 | | +100 | V |
| Common mode rejection ratio | CMRR | | 80 | | dB |
| Common mode voltage range | CMVR | -OUT +1 | | + OUT - 0.5 | V |
| Voltage OUT | + OUT to - OUT | | 9 | | V |
| Integration time | | | 100 | | ms |
| Sampling rate | | | 3 | | per second |
| External ref. range | | - OUT + 1 | | + OUT - 0.5 | V |
| Warm-up time | | | | 10 | minutes |
| Storage temperature | | -20 | | +60 | °C |
| Operating temperature | | 0 | | +50 | °C |

Note 1: Maximum current 5 mA.



Reference

The meter incorporates a highly stable band-gap derived reference which may be adjusted by means of the ten turn potentiometer (trimmer) accessed through the hole in the display circuit board behind the filter. The meter may be used with either the internal reference or an external reference. Should the internal reference be used then the standard connections are shown above.

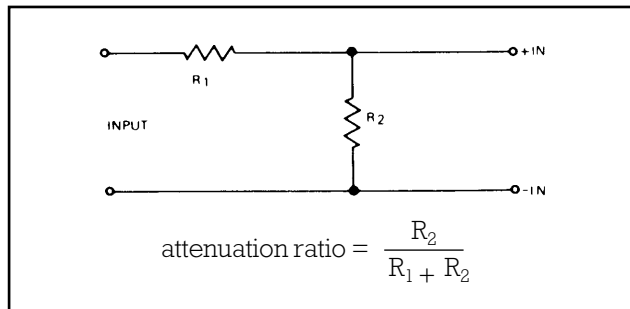
Calibration

To calibrate the meter, connect the meter as per the standard connection and adjust the reference to 100 mV. The reference voltage is measured between the + ref and - ref terminals. Alternatively apply a known voltage to the input (eg. 199.5 mV) and adjust the reference to give the correct reading.

Attenuators

For applications requiring an FSD greater than the meter's basic movement then the use of an external attenuator may be made.

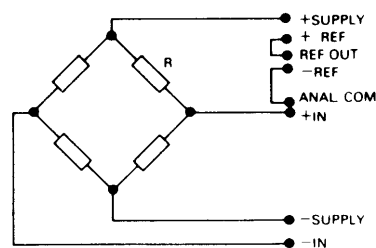
The total value of R_1 and R_2 determines the load on an external circuit connected to the input and should be chosen to reduce this loading to an acceptable level.



Applications

Bridge circuits

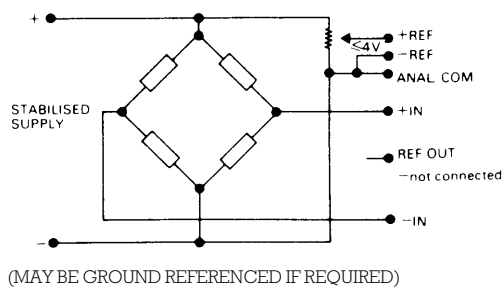
Simple bridge (for non-ratiometric measurements)



The supply to the bridge may be an externally stabilised voltage. Alternatively the analogue common pin may be used to derive this voltage. In this case +V is connected to +Supply and Anal. com. to -Supply with the following limitations.

$$I_R = \frac{2.8V}{R} \leq 5mA$$

Ratiometric bridge



N.B. To avoid common mode errors in all the above circuits, ensure that the voltage between -IN and Anal. com. (common mode voltage) does not exceed +1V.

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