

5.0 CALIBRATION

Accurate measurement is achieved by comparing the resistance of the sensor to an accurate, stable, integral resistor standard. The unique design of the patented circuitry means that any errors introduced by the measurement circuit are negligible, the net result being that there is no need to calibrate the instrument during its entire life.

If a calibration error is suspected, first check the probe and if correct, the instrument should be checked using a standard calibrated resistance box. If an error is found, the instrument should be returned to your supplier.

6.0 TROUBLESHOOTING

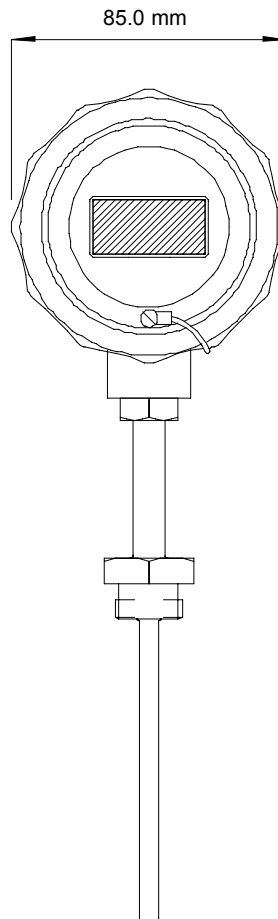
A number of self checking and diagnostic routines are included in the instrument which assist fault finding in the event of error conditions occurring.

DISPLAY	POSSIBLE CAUSE	ACTION
No display	Batteries completely dead	Replace batteries
Erratic display	Poor connections Excessive electrical noise Water ingress	Check wiring Re-site instrument Clean, dry & re-fit glands. Check seals.
"- - - -" displayed	Watchdog error - sensor open circuit or sensor short circuit.	Check wiring & sensor
"Lo" displayed	Sensor temp. less than -50°C (-58°F)	
"Hi" displayed	Sensor temp. greater than 400°C (600°F)	
.8.8.8.	All decimal points displayed Remove Link 4	Continuous run mode

If a fault persists after checking all the above points, arrange with the supplier for a returns number that should be quoted in all relevant correspondence.

7.0 MECHANICAL DETAIL

Typical example shows In-head Indicator with rotating head temperature sensor assembly.



DM440 Digital Thermometer

Designed, manufactured and supported by :



Green Lane
Tewkesbury, Gloucestershire
GL20 8DE. UK
Telephone : 01684 296818
Fax : 01684 293746
Email: support@status.co.uk

Every effort has been taken to ensure the accuracy of this specification, however we do not accept responsibility for damage, injury, loss or expense resulting from errors and omissions, and we reserve the right of amendment without notice.

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1.0 DESCRIPTION

This instrument is a battery powered indicator designed to be used in conjunction with a Pt100 temperature sensor. Temperature is indicated directly on the LCD digital display in degrees Centigrade or Fahrenheit. The instrument is supplied as a cap to fit a base unit which must be ordered separately, optionally the unit can be supplied as a complete assembly with a choice of probes for immediate use.

The unit incorporates high stability and accuracy components and has a microprocessor which continuously self calibrates, ensuring a high precision instrument which never needs calibrating during normal use.

2.0 RECEIVING AND UNPACKING

Please inspect the packaging and instrument thoroughly for any signs of transit damage. If the instrument has been damaged, please notify your supplier immediately.

3.0 SPECIFICATION

Display	3½ digit 12mm high LCD with °C, °F and low battery legends
Batteries	4 x MN1500 (AA) Approximate battery life @ 25°C ambient 32 weeks - 1 second update rate 1.5 years - 6 second update rate 2.25 years - 12 second update rate
Measuring Range	-50.0 to 400°C (or -58 to 600°F)
Resolution	0.1°C from -50/+199.9°C, 1°C from 200/400°C or °F
Accuracy	+/- 0.1°C +/- 0.15 % reading + sensor errors or +/- 1°F + sensor errors
Stability	+/- 0.01°C / year
Sensor	3 wire Pt100 to BS EN 60751 (IEC 751) BS1904 (DIN 43760) Sensor and Indicator errors must be combined to obtain overall measurement error. Sensors with a choice of accuracies are available.
Lead Effects	Insignificant for lead resistances < 10R per leg assuming all legs are equally matched
Mechanical	High profile ABS cap to fit base unit

3.0 INSTALLATION AND WIRING

3.1 General Recommendations

The instrument is a high accuracy digital thermometer. In order to ensure the correct operation the following precautions should be observed:

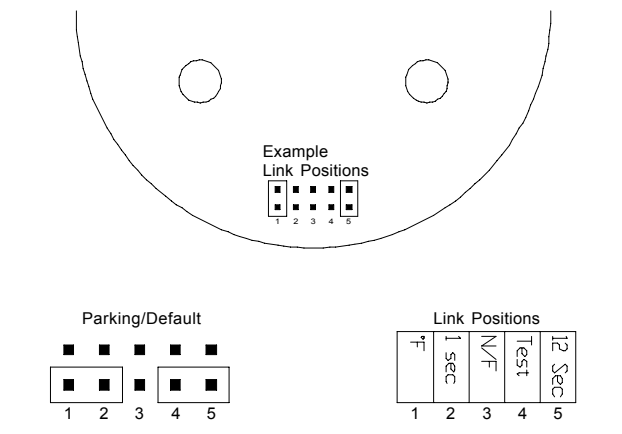
- The instrument should be stored in a dry clean environment and remain in its original packaging prior to installation.
- The indicator should not be installed adjacent to electromagnetic starters, contactors, thyristor power units or electric switch gear.
- Any cleaning of the instrument should be carried out using a mild detergent and a soft cloth. No solvents or abrasive cleaners should be used.
- Any external cable entries or cables glands used in the installation should maintain the IP67 rating.
- Any installation should ensure that the instrument does not operate outside it's recommended operating limits. If in doubt, use a remote sensor or sensor extension.

3.2 Range Selection

The instrument can display either degrees Centigrade or degrees Fahrenheit. Selection of the degrees Fahrenheit range is made by the fitting of link 1, see diagram below. The link is factory set in the "parked" position for degrees Centigrade operation i.e. between link 1 & 2.

Legends are fitted by the user into a pocket on the underside of the product label. Units are supplied with the label and legend sheet loose, the legend must be cut from the sheet provided and inserted into the pocket BEFORE the label is fixed to the indicator.

Fig 1. Connections & Links



3.3 Battery Life

The standard battery life is typically 1.5 years at 25°C ambient. The battery life may be extended by increasing the time between measurements from the standard 6 seconds to 12 seconds. This is achieved by fitting a link in position 5. When operated in the 12 second update mode, the battery life is extended to 2.25 years typically.

Additionally, the update rate can be increased to once every second by removing link 5 and inserting link 2, battery life is reduced to 32 weeks typically.

When there is approximately 1 month of battery life remaining, the low battery symbol will be displayed in the top left corner of the LCD. After this period, the correct operation of the instrument cannot be guaranteed. If the instrument is configured in 12 second update mode, the low battery indicator will show when there is approximately 2 months of battery life remaining.

Please note that operating the instrument at ambient temperatures exceeding 25°C may result in reduced battery life.

3.4 Replacing The Batteries.

Unscrew the retaining nut and carefully remove the cap. The battery box can be found resting in the base. Remove the battery box. remove the batteries and replace with new, making sure to maintain the correct polarity. Replace the battery box into the base and refit the cap and retaining nut. Carefully tighten down the nut. Check that the display operates correctly.

- **Note** : An incorrect reading may appear for the first update period.

3.5 Sensor Wiring.

The instrument will operate with optimum accuracy with a three wire sensor. A two wire sensor can be used but this may result in reduced accuracy. The sensor is connected to the instrument via a 2 part connector located on the PCB. The socket can be unplugged from the card and the wires from the sensor connected to the screw terminals as follows.

