

640P & 640TC

BATTERY POWERED DIGITAL THERMOMETERS

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

Stock code 52-314-2394-01



Important - Please read this document before any installing.

1.0 DESCRIPTION

The 640 series is a range of battery powered temperature indicators. The 640P accepts an RTD sensor. The 640TC accepts a thermocouple sensor.

The sensor type, temperature units and other flexible configuration settings are selectable via a simple to use menu system, which is navigated by the use of three push-button keys located on the rear of the display. This is described over the page in detail.

The entire assembly is sealed into a cap that fits directly onto the SCH4 series of connecting heads. Please refer to the SCH4 data sheet for further information. ATEX approved versions will be available for hazardous, dust and gas areas.

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 @ 20 °C

640P

Accuracy $\pm 0.2\text{ }^\circ\text{C} \pm 0.1\%$ of reading (plus sensor error)
 Resolution 0.1 °C (User configurable)
 Measuring range (-100 to +800) °C
 Stability Zero 0.01 °C / °C
 Span 0.005 %/°C
 Sensor 3 wire Pt100 to BS EN 60751 (adjustable), or Ni120
 Lead effect 10 Ω per leg insignificant effect
 Units °C (default) or °F
 Sensor type Pt100 (default) or Ni120

640TC

Accuracy $\pm 0.1\%$ of FS $\pm 0.5\text{ }^\circ\text{C}$ (plus sensor error)
 Resolution 0.1 °C (User configurable)
 Measuring range See table
 Stability Zero 0.02 °C / °C
 Span 0.01 %/°C
 Cold Junction Tracking $\pm 0.05\text{ }^\circ\text{C} / \text{ }^\circ\text{C}$
 Units °C (default) or °F
 Sensor type K (default), J, T, R, S, E, L, N, B

Sensor	Range (°C)
K	-200 to 1370
J	-100 to 1200
T	-210 to 400
R*	-10 to 1760
S*	-10 to 1760
E	-200 to 1000
L	-100 to 600
N	-180 to 1300
B*	0 to 1800

* For type R, S and B sensors, accuracy only applies between 800 and 1760°C

640 General

Display 4 digit LCD
 Battery Standard ANSI AA ER14505: IEC ER6
 Dimensions Diameter 14.5 mm, length 50.5 mm
 Type 3.6 V Lithium Thionyl Chloride (2.4 Ahr)
 Operating Current 80 µA average
 Battery Life > 1 year @ 20 °C
 Ambient Temperature (-10 to 70) °C [Storage (-20 to 85)°C]
 EMC Approval Tested to BS EN 61326
 Mechanical Low profile SCH4 Head ABS, IP67 rating when used with base unit
 Connection Sensor three way screw terminal block to accept 18-22 AWG wire

4.0 INSTALLATION AND WIRING

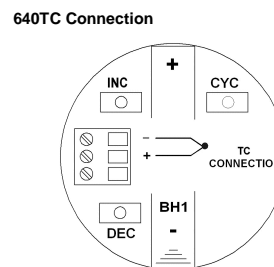
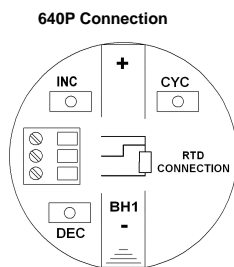
4.1 Configuration

Fit the battery as described in section 4.4, then follow the simple configuration menus printed on the reverse side of this sheet. This procedure can be performed with or without the sensor connected. Fit the correct units legend to the front panel face.

4.2 Enclosure

The SCH4 case offers various options for sensor entry. Please refer to the SCH4 data sheet for further details. The sensor may be fixed directly to the SCH4 housing, or remotely connected using cable and gland. Cable length must be no greater than 10 metres to comply with CE certification. All external cabling/sensor entries must maintain IP67 rating.

4.3 Wiring



Use correct compensating wire

4.4 Battery

BATTERY WARNING

- Fire, explosion and severe burn hazard, DO NOT recharge, crush, disassemble, heat above 100 °C (212 °F), incinerate or expose contents to water.
- Never short circuit the battery.
- Disposal of the battery may be regulated by national and local regulations. Please follow the instructions of the proper regulator.

To install the battery, first gain access to the battery by unscrewing the SCH4 cap retaining the nut and removing the cap from the base. To remove the old battery, ease out the positive end of the battery from the holder, using a screw driver blade. To fit the new battery, insert battery negative into the spring contact end of the battery holder BH1, then press the battery into place. Replace the cap and secure the nut. Listed below are suitable battery types.

Manufacturer	Part Number	Capacity Ahr
Saft	LS-14500, LS-14500C	2.25/2.75
Xeno Energy	XL-060F	2.4
Maxell	ER6	2.0
Tadiran	TI-2100	2.1
RS	596-602	2.1
Tekcell	SBAA11-TC	2.2

The 640 devices monitor their batteries. When the battery approaches the end of its lifetime (over 1 year under normal conditions), the display will toggle the message "LO BAT".

5.0 MAINTENANCE

Apart from battery replacement this equipment requires no user maintenance. If re-calibration is required, please contact your supplier for further information. Under certain circumstances, it may be possible to re-calibrate the device while it is in an application.

6.0 GENERAL RECOMMENDATIONS

Please observe the battery warning.

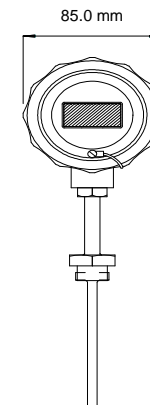
Ensure the instrument is installed with adequate protection against the environment. IP67 rating must be maintained.

Avoid installing the equipment close to sources of extreme temperature and electrical or electromagnetic interference.

Any cleaning of the instrument should be carried out using a mild detergent and a soft cloth. No solvents or abrasive cleaner should be used.

7.0 MECHANICAL DETAIL

The example below shows an in-head indicator with rotating head temperature sensor assembly.



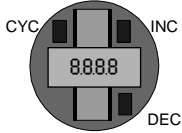
8.0 CONFIGURATION MENUS

The two sections overleaf describe the menus accessible on (1) the 640P, and (2) the 640TC.

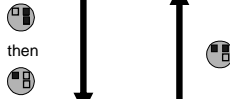
8.1 640P CONFIGURATION MENU GUIDE

Run-time

There are three buttons, which the operator must press in various combinations in order to configure and/or calibrate the device. These buttons are located on the underside of the indicator's circuit board.

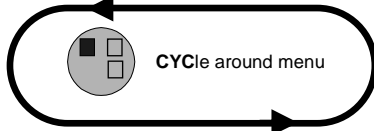


Viewed from the front, the three buttons (CYCLE, INCRement and DECRement) are shown in black and located as shown in the diagram to the left. Pressing 2 buttons simultaneously causes ENTER or ESCAPE actions.

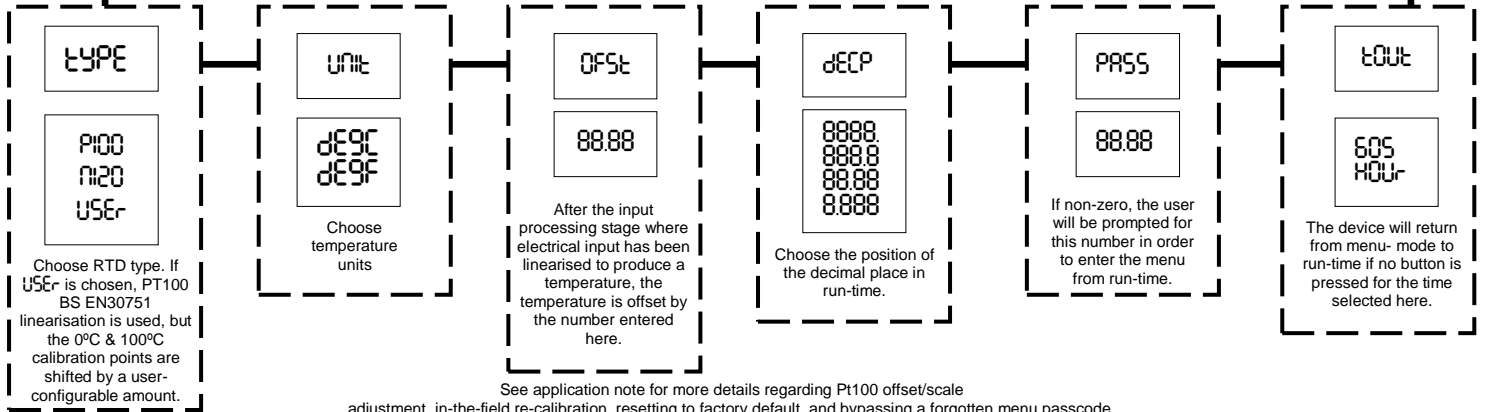


If no buttons are pressed for a minute or more, the device assumes run-time mode. The LCD shows the temperature (if the input is in range) or shows or to indicate over/under range. In order to access menu configuration mode, the user must press ENTER followed immediately by CYCLE. In order to exit the menu and return to run-time, a user must press ESCAPE.

When cycling around the menu, the title (e.g. TYPE, UNIT, etc.) is displayed for some time. To edit the chosen parameter, the user should press INCRement or DECRement.



- INCRement menu entry
- DECRement menu entry
- ENTER to confirm entry, or:
- CYCLE to reject and move on.

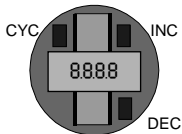


See application note for more details regarding Pt100 offset/scale adjustment, in-the-field re-calibration, resetting to factory default, and bypassing a forgotten menu passcode. PTO for details of device specification, wiring connections and other important information.

8.1 640TC CONFIGURATION MENU GUIDE

Run-time

There are three buttons, which the operator must press in various combinations in order to configure and/or calibrate the device. These buttons are located on the underside of the indicator's circuit board.

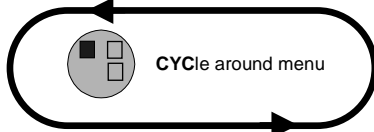


Viewed from the front, the three buttons (CYCLE, INCRement and DECRement) are shown in black and located as shown in the diagram to the left. Pressing 2 buttons simultaneously causes ENTER or ESCAPE actions.

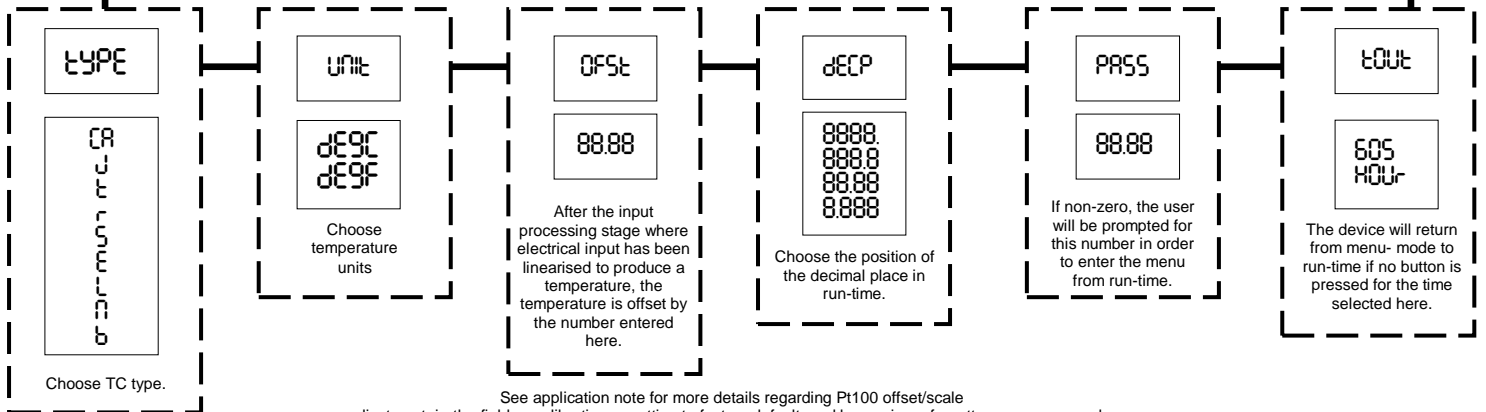


If no buttons are pressed for a minute or more, the device assumes run-time mode. The LCD shows the temperature (if the input is in range) or shows or to indicate over/under range. In order to access menu configuration mode, the user must press ENTER followed immediately by CYCLE. In order to exit the menu and return to run-time, a user must press ESCAPE.

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- ENTER to confirm entry, or:
- CYCLE to reject and move on.



See application note for more details regarding Pt100 offset/scale adjustment, in-the-field re-calibration, resetting to factory default, and bypassing a forgotten menu passcode. PTO for details of device specification, wiring connections and other important information.