Cecomp ThermoPro® Battery Powered Digital Temperature Indicators — T16B, T16BBL

- *100 Ω Platinum RTD*
- *316 Stainless Steel Probe*
- *Capture Minimum and Maximum Readings*
- *Selectable Units and Auto Shutoff Times*
- *NEMA 4X Housing*
- *Fits Standard Thermowells*



ThermoPro T16B Battery Powered Temperature Indicator

Specifications

Ranges and Resolution
–58.0°F to 392.0°F, –50.0°C to 200.0°C or 220K to 475K
0.1 degree resolution
User selectable °F, °C or K

Accuracy
Includes linearity, hysteresis, repeatability
±0.3°C at 0°C, ±1.1°C at 150°C
11-point linearization table

Display
4 readings per second nominal display update rate
4 digit LCD, 0.5" H
5 character 0.25" H alphanumeric
BL models: red LED backlight

Batteries, Battery Life, Low Battery Indication
B: 2 AA alkaline, approx. 1000 hours
BL: 2 AA alkaline, approx. 150 to 750 hours depending on backlight usage
Button press activates backlighting for 1 minute
Low battery symbol on display

Sensor
IEC-751 Class B 100 Ω Platinum RTD, 0.00385 alpha curve
½" NPT male, 316 stainless steel
Spring-loaded probe versions fit standard thermowells

Controls & Functions
Three front buttons for power on/off, min/max functions, selection of °F, °C, or K, auto shutoff times, calibration and, configuration options
User-defined pass codes for configuration and calibration to prevent unauthorized changes

Maximum and Minimum Readings
User-configurable maximum and/or minimum temperature indication. Factory default configuration MAX/MIN disabled.
Choice of MAX only, MIN only, MAX/MIN, or none
Option to retain or clear MAX/MIN temperatures on at shutoff

Calibration
User settable pass code required to enter calibration mode
Zero and span temperature calibration
Non-interactive zero, span, and linearity, ±10% of range

Auto Shutoff Time
1, 2, 5, 10, 15, 20, 30 minutes, 1, 2, 4, 8 hours, or manual on/off
OFF warning before shutoff to allow button reset of auto shutoff timer
Factory default 5 minutes

Weight
Product: 12 ounces (approximately)
Shipping: 1 pound (approximately)

Material
ABS/polycarbonate NEMA 4X case, rear gasket, polycarbonate label

Connection, Material, Media Compatibility
1/2" NPT male fitting, 316L stainless steel
All wetted parts are 316L stainless steel
Compatible with most liquids and gases
Thermowell required for spring-loaded versions

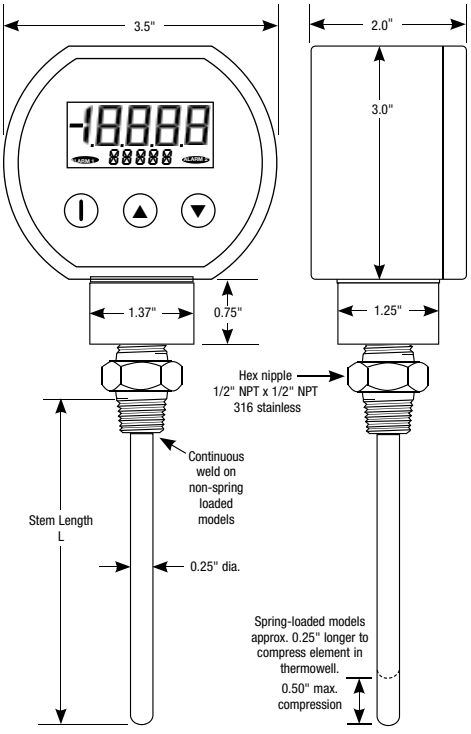
Out-of-Range
ALARM1 under range indication on display
ALARM2 over range indication on display

Storage Temperature
–40 to 203°F (–40 to 95°C)

Operating Range
–4 to 185°F (–20 to 85°C) at housing

See thermowell manufacturer's specifications. Note that stem length is NOT the same as thermowell insertion depth.

Dimensions



Battery Replacement

A low battery indication will be shown in the upper left-hand corner of the display when the battery voltage falls sufficiently. The batteries should be replaced soon after the indicator comes on to prevent unreliable readings.

If unit does not power up, replace the batteries.

1. Loosen the 6 Phillips screws on the back of the unit until the cover can be removed
2. Remove the battery cover and remove the batteries by lifting up the positive end of the battery (opposite the spring) taking care not to bend the battery holder spring.
3. Discard old batteries properly, do not discard into fire, sources of extreme heat, or in any hazardous manner.
4. Always replace both batteries at the same time with high quality alkaline batteries. Install batteries with correct orientation. The negative (flat) end of each battery should be inserted first facing the battery holder spring.
5. Replace the back cover, including the sealing gasket.

Cecomp maintains a constant effort to upgrade and improve its products. Specifications are subject to change without notice. Consult factory for your specific requirements.

How to Order

°F/°C, shutoff times and min/max functions are field configurable. If you require a certain configuration to be pre-set from the factory, please indicate it on your order.

Option—add to end of model number
-CC Conformal coating on circuit board for moisture resistance

Model	Length	Backlighting
T16B2	2.5" L fixed length	None
T16B4	4" L fixed length	
T16B6	6" L fixed length	
T16B9	9" L fixed length	
T16B12	12" L fixed length	
T16B2S	2.5" L spring-loaded	
T16B4S	4" L spring-loaded	
T16B6S	6" L spring-loaded	
T16B9S	9" L spring-loaded	
T16B12S	12" L spring-loaded	
T16BBL2	2.5" L fixed length	Red LED display backlight
T16BBL4	4" L fixed length	
T16BBL6	6" L fixed length	
T16BBL9	9" L fixed length	
T16BBL12	12" L fixed length	
T16BBL2S	2.5" L spring-loaded	
T16BBL4S	4" L spring-loaded	
T16BBL6S	6" L spring-loaded	
T16BBL9S	9" L spring-loaded	
T16BBL12S	12" L spring-loaded	

Precautions

Read these instructions before installation. Configuration may be easier before installation.

Install or remove thermometer using a wrench on the hex fitting only. Do not attempt to turn by forcing the housing.

Use a thermowell appropriate for the process.

Do not exceed maximum allowable housing temperature.

Due to the hardness of 316 stainless steel, it is recommended that a thread sealant be used to ensure leak-free operation.

Normal Operation

To turn the unit on, press the left front power button.

The display segments are tested.

The actual temperature and units are displayed and updated approximately 4 times per second.

The factory default configuration is °F, 5 minute auto shutoff and MAX/MIN disabled.

The auto shutoff timer is reset whenever any button is pressed.

To shut off the unit manually at any time, press and hold the power button until *OFF* is displayed (up to about 5 seconds total if MAX/MIN is enabled) and then release the button.

If the unit is configured with an auto shutoff time, a five second warning period is provided prior to auto shutoff, during which the display indicates *OFF*. Press any button to reset timer.

If so equipped, the optional display backlighting can be turned on by momentarily pressing a button whenever the thermometer is on. The backlighting will turn on for one minute and then automatically shut off. This also restarts the auto shutoff timer. The display backlighting will not be apparent under bright lighting conditions.

Temperature Unit Selection

To change temperature units, press and hold the ▲ (up) button until the temperature indication is blank and only the temperature units are displayed.

Then use the ▲ or ▼ buttons to select the desired temperature units. Standard units are Fahrenheit, Celsius, and Kelvin.

When the desired units are displayed, press and release the power button to save the selection and exit the change mode.

If no buttons are pressed for 15 seconds, the unit will automatically save the selection and exit the change mode.

Auto Shutoff Time Selection

To change the auto shutoff time, press and hold the ▼ (down) button until the auto shutoff time is displayed.

The lower display will indicate *AST M* if the auto shutoff time displayed on the upper segments is in minutes, and *AST H* if it in hours.

Use the ▲ or ▼ buttons to select 0, 1, 2, 5, 10, 15, 20, or 30 minutes, or 1, 2, 4, or 8 hours.

Setting the time to zero to disables the auto shutoff timer and the thermometer will stay on until manually shut off or until the batteries are depleted. Use the power button to turn the thermometer off when not in use to conserve battery life.

When the desired auto shutoff time is displayed, press and release the power button to save the selection and exit the change mode.

If no buttons are pressed for 15 seconds, the unit will automatically save the selection and exit the change mode.

User Configuration Mode

With the unit off, press and hold the ▲ button. Then press the power button. Release buttons when the display indicates *CFG*.

Before the unit enters the Configuration Mode, the display initially indicates _ _ _ _ with the first underscore blinking, and with *CFGPC* on the character display.

Note: The unit will automatically revert to normal operation if no buttons are operated for approximately 15 seconds. To cancel and return to normal operation, press and release the power button without entering any pass code numbers.

Enter the user configuration pass code (3510 factory default):

Use the ▲ or ▼ buttons to set the left-most digit to 3.

Press and release the power button to index to the next position. The 3 will remain, and the next position will be blinking.

Use the ▲ or ▼ buttons to select 5.

Press and release the power button to index to the next position. 3 5 will remain, and the third position will be blinking.

Use the ▲ or ▼ buttons to select 1.

Press and release the power button to index to the next position. 3 5 1 will remain, and the fourth position will be blinking.

Use the ▲ or ▼ buttons to select 0.

Press and release the power button to proceed with configuration procedures. Note: If an incorrect pass code is entered, the unit will return to the start of the pass code entry sequence.

MAX/MIN configuration

The upper display will be blank.

Use the ▲ or ▼ buttons to select from the following:

MX/MN	Both highest and lowest values will be captured
MX/--	Only highest value measured will be captured
--/MN	Only lowest value measured will be captured
--/--	Capture feature is disabled

Press and release the power button to move on to the next parameter.

MAX/MIN memory

The upper display will indicate *clr*.

Use the ▲ or ▼ buttons to select from the following:

AUTO Maximum and Minimum values will automatically be cleared whenever the unit shuts off.

MAN Maximum and Minimum values will be retained and must be cleared manually as desired.

Press and release the power button to save the user configuration and restart the unit.

Maximum and Minimum Readings

Thermometers are normally configured with maximum and minimum capture functions disabled. One or both can be enabled in the User Configuration mode.

If enabled, step the unit through the display modes by pressing the power button for about 1 second until the display indicates either *MAX* or *MIN* or degree units. The display mode cycles through the following steps:

MAX mode: The maximum temperature is shown with the lower display alternating between *MAX* and the degree units. The thermometer may be left in this mode if a display of the maximum reading is desired.

MIN mode: The minimum temperature is shown with the lower display alternating between *MIN* and the degree units. The thermometer may be left in this mode if a display of the minimum reading is desired.

Normal mode: The current temperature and the degree units are displayed.

To manually reset the memory, press and continue to hold the power button until the display indicates *clr* (about 3 seconds total) and then release the button. The stored maximum and minimum values are cleared. The unit returns to normal operation with the display indicating the current temperature.

The memory may be configured to be automatically cleared when the unit shuts down, or may be configured to retain the maximum and minimum values at shutoff.

Calibration Mode

Select the temperature units for calibration prior to entering the calibration mode. The use of Fahrenheit or Celsius is assumed in this procedure.

To enter the calibration mode, begin with the unit powered off, and press and hold the ▼ button. Then press the power button. Release all buttons when the display indicates *CAL*.

Before the unit enters the Calibration Mode, the display initially indicates _ _ _ _ with the first underscore blinking, and with *CALPC* on the character display.

Enter the user-modifiable pass code (3510 factory default) as described in the previous section:

The unit enters and remains in the Calibration Mode until restarted manually or power is removed. While in the Calibration Mode, the auto shutoff timer is disabled, the display backlight (if so equipped) is disabled, and the Max/Min feature is disabled.

The unit is calibrated at ice point and at a temperature above ice point. For general service, the full scale temperature is normally used for the second point. However, if a particular temperature is of critical interest it may be used instead for greatest accuracy at that point.

When the applied temperature is below approximately 12°C (or 54°F), the unit will automatically select the ice-point calibration mode.

Calibration Procedure

Upon successful pass code entry, the upper segments of the display will indicate the RTD probe temperature. The lower segments of the display will alternate as indicated below.

Note: To store the calibration parameters and exit calibration mode at any time, press and hold the power button until the display indicates - - - - .

Ice-point calibration

Apply 0.0°C or 32.0°F to the RTD.

The lower display will alternate between *ICE* and *DEG C* or *DEG F*.

Use the ▲ and ▼ buttons to adjust the display to indicate 0.0°C or 32.0°F.

Span calibration

Apply full-scale temperature to the RTD. The lower display will alternate between CAL and DEG C or DEG F.

Use the ▲ and ▼ buttons to adjust the upper display to indicate the desired temperature value.

To store the calibration parameters and exit calibration mode, press and hold the power button until the display indicates - - - - .

Changing the User-Defined Pass Codes

Configuration pass code: With the unit off, press and hold the ▲ button to view and/or change the user configuration pass code. Then press the power button. Release all buttons when the display indicates *CFG*.

Calibration pass code: With the unit off, press and hold the ▼ button to view and/or change the user calibration pass code. Then press the power button. Release all buttons when the display indicates *CAL*.

Before the unit enters the view or change pass code mode, the display initially indicates _ _ _ _ with the first underscore blinking, and *CFGPC* or *CALPC* on the character display.

Note: The unit will automatically revert to normal operation if no buttons are operated for approximately 15 seconds. To cancel and return to normal operation, press and release the power button without entering any pass code characters.

Enter access code 1220

Use the ▲ and ▼ buttons to set the left-most digit to 1.

Press and release the power button to index to the next position. The 1 will remain, and the next position will be blinking.

Use the ▲ and ▼ buttons to select 2.

Press and release the power button to index to the next position. 1 2 will remain, and the third position will be blinking.

Use the ▲ and ▼ buttons to select 2.

Press and release the power button to index to the next position. 1 2 2 will remain, and the fourth position will be blinking.

Use the ▲ and ▼ buttons to select 0.

Press and release the power button to proceed. Note: If an incorrect access code was entered, the unit will return to the start of the access code entry sequence.

Once the correct access code has been entered, the display will indicate the existing user-defined pass code with *CFGPC* or *CALPC* on the character display.

Operate the ▲ or ▼ button to select the first character of the new pass code.

When the correct first character is being displayed, press and release the power button to proceed to the next pass code character.

Repeat above until the entire pass code is complete.

To exit the view or change pass code mode, press and hold the power button. Release the button when the display indicates – – – – to restart the unit.