User Manual

Digital Thermometer PCE-T 318

User manuals in various languages (français, italiano, español, português, nederlands, türk, polski, русский, 中文) can be found by using our product search on: www.pce-instruments.com

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Contents

1   Safety notes

Please read this manual carefully and completely before you use the device for the first time. The device may only be used by qualified personnel and repaired by PCE Instruments personnel. Damage or injuries caused by non-observance of the manual are excluded from our liability and not covered by our warranty.

- The device must only be used as described in this instruction manual. If used otherwise, this can cause dangerous situations for the user and damage to the meter.
- The instrument may only be used if the environmental conditions (temperature, relative humidity, …) are within the ranges stated in the technical specifications. Do not expose the device to extreme temperatures, direct sunlight, extreme humidity or moisture.
- Do not expose the device to shocks or strong vibrations.
- The case should only be opened by qualified PCE Instruments personnel.
- Never use the instrument when your hands are wet.
- You must not make any technical changes to the device.
- The appliance should only be cleaned with a damp cloth. Use only pH-neutral cleaner, no abrasives or solvents.
- The device must only be used with accessories from PCE Instruments or equivalent.
- Before each use, inspect the case for visible damage. If any damage is visible, do not use the device.
- Do not use the instrument in explosive atmospheres.
- The measurement range as stated in the specifications must not be exceeded under any circumstances.
- Non-observance of the safety notes can cause damage to the device and injuries to the user.

We do not assume liability for printing errors or any other mistakes in this manual.

We expressly point to our general guarantee terms which can be found in our general terms of business.

If you have any questions please contact PCE Instruments. The contact details can be found at the end of this manual.

2 Introduction

This instrument is a digital thermometer for use with platinum-type temperature sensor.
Temperature indication follows IEC751 temperature table for PT-type sensor.

3 Specifications

|	
Numerical Display	4 digital liquid crystal display
Measurement Range	-100 °C … 300 °C; -148 °F … 572 °F
Resolution	0.1 °C; 0.1 °F
Sensor types	Platinum resistance temperature sensor for pt-100, pt-500, pt-1000 (selectable) 4 wires. ALPHA = 0.003850
Measurement current	Approx 0.53mA
Maximum Voltage at Temperature couple Input	60V DC or 24Vrms AC
Environmental	- Operating Temperature and Humidity: 0 °C … 50 °C (32 °F … 122 °F); 0 … 80% RH - Storage Temperature and Humidity: -10 °C … 60 °C (14 °F … 140 °F); 0 … 80% RH - Altitude up to 2000 meters.
Accuracy	-148 °F … 572 °F ±(0.1% reading + 0.8°F) -100 °C … 300 °C ±(0.1% reading + 0.4°C)
Temperature Coefficient	For ambient temperatures from 0°C ~ 18°C and 28°C ~ 50°C, for each °C ambient below 18°C or above 28°C add the following tolerance into the accuracy spec. 0.01% of reading + 0.03°C (0.01% of reading + 0.06°F)
Sample Rate	2 times per second
Water resistance	IP67
Dimension	150 × 66 × 31mm
Weight	175g
Option	Connection Cable
Power requirement	Battery 1.5V X 3 size AAA
Battery Life	Approx. 100hours with alkaline battery

> **Note:**
> The basic accuracy Specification does not include the error of the probe please refer to the probe accuracy specification for additional details.

4   Symbol Definition and Button Location
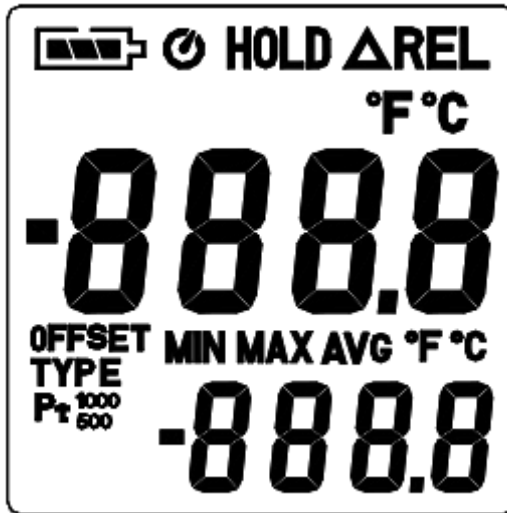
–	: This indicates that the minus temperature is sensed.
°C °F	: Centigrade and Fahrenheit indication.
Pt xxx	: Platinum Type Indication
HOLD	: This indicates that the display data is being hold.
MAX	: The Maximum value is now being displayed
MIN	: The Minimum value is now being displayed
AVG	: The Average value is now being displayed.
△**REL**	: The reading is now under Relative Mode.
🔋	: The Battery power potential indication.
⏀	: This indicates Auto Power Off is enabled.
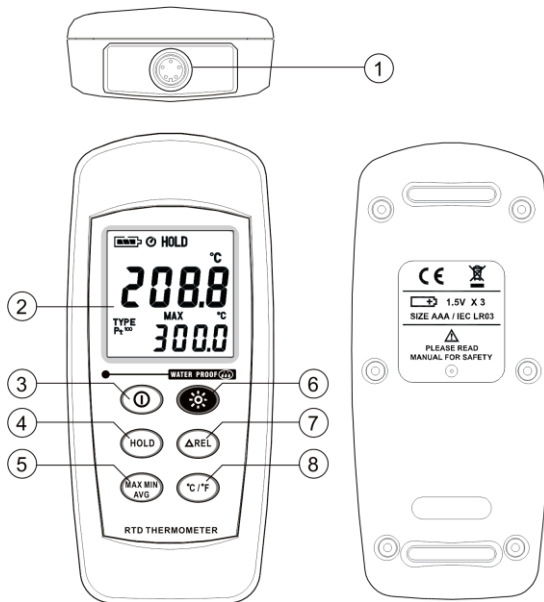
| |
|---|
| ○,1 Pt type temperature sensor connector |
| ○,2 LCD display |
| ○,3 Power ON/OFF button |
| ○,4 HOLD button |
| ○,5 MAX MIN Average control button |
| ○,6 Back light button |
| ○,7 Relative readout button |
| ○,8 °C , °F control button |

5 Operation Instructions

5.1 Power-Up

Press the **ON/OFF** key to turn the thermometer ON or OFF.

5.2 Connection of the temperature probe

For measurement, plug the temperature probe into the input connectors.
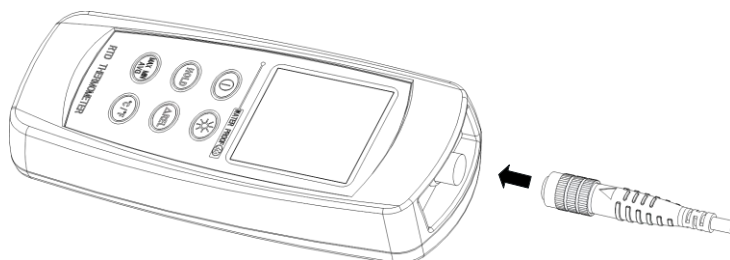
6 Selecting the Temperature Scale

When the meter was first power on, the default scale setting is set at Celsius (°C) scale. The user may change it to Fahrenheit (°F) by pressing " **°C/°F** " button and vice versa to Celsius.

7 Data-Hold Operation

The user may hold the present reading and keep it on the display by pressing the "**HOLD**" button. When the hold data is no longer needed, one may release the data-hold operation by pressing "**HOLD**" button again.
When the meter is under Data Hold operation, the **"ΔREL",** AVG MAX MIN and " **°C/°F** " button are disabled.

8 Back light Operation

Press the "Back Light" button will turn back light on and Press it once again will turn off.
The meter will turn back light off if there is no push "Back Light" button for 10 seconds.

9 Relative Operation

When one press the "**ΔREL**" button, the meter will memorize the present reading and the difference between the new reading and the memorized data will be shown on the display. Press the "**ΔREL**" button again to exit the Relative operation.

10   MAX/MIN/AVG Operation

When you press the "MAX MIN" button the meter will enter the MAX/MIN/AVG mode. Under this mode the maximum value, minimum value and average value of latest 8 data is kept in the memory simultaneously and updated with every new data.

When the MAX symbol is display, the Maximum is shown on the display.

Press "MAX MIN" again, then the NIN symbol is on the display and also the minimum reading.

Press "MAX MIN" again, the AVG symbol is on the display and also the average reading.

Press "MAX MIN" again, MAX, MIN and AVG will blink together. This means that all these data is updated in the memory and the reading is the present temperature.

One may press "MAX MIN" to circulate the display mode among these options.

When the meter is under "MAX MIN" operation, "∆**REL**" and **" °C/°F "** are disabled.

To exit the MAX/MIN mode, one may press and hold "MAX MIN" for two seconds.

11   Auto Power Off

By default, when the meter is powered on, it is under auto power off mode. The meter will power itself off after 30 minutes if no key operation.

One may press and hold "HOLD" button and then power on the meter and there will be two successive beeps to indicate that auto power off is disabled.

12   Low Battery Condition

The temperature meter incorporates visual low battery indication as follows:

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▇▇▇	Battery OK, measurements are possible.
▪	Battery Low, battery needs to be replaced, measurements are still possible.
	Battery exhausted, the battery need to replaced with new one(size AAA, 1.5V x 3).

13 Temperature Measurement

13.1 Correct Measurement Method

The temperature sensor is located at the end of the metal sheath of the sheath type TEMPERATURE PROBE. To accurately test internal temperature insert the probe into the item you want to measure to a distance at least 15 times the diameter of the sheath.
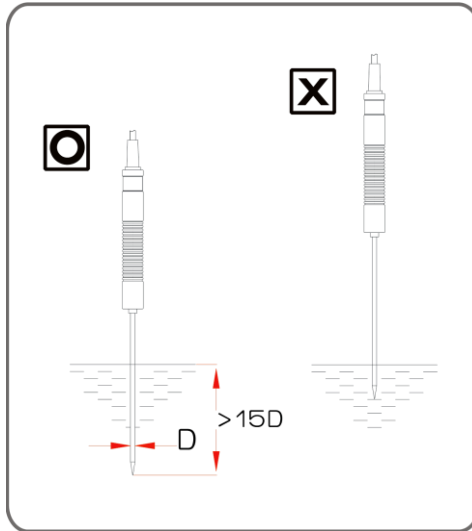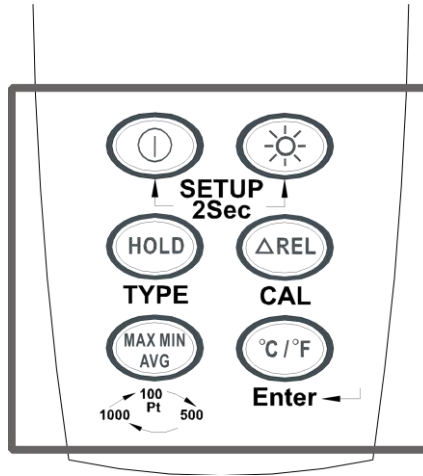

13.2 Connector Configuration
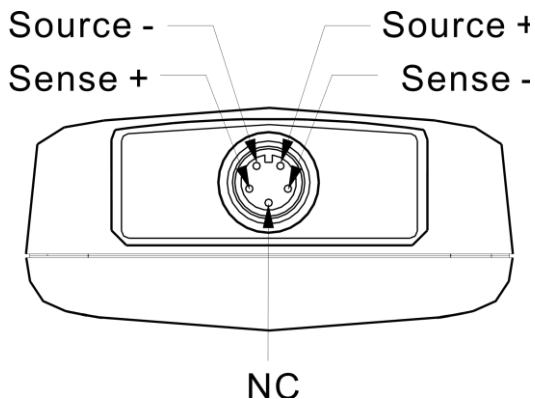
14 Temperature Meter Calibration Setup

Below table diagram shows each button function when user enter into calibration mode.

Note:
Turn the Power "OFF" before attempting following SETUP.
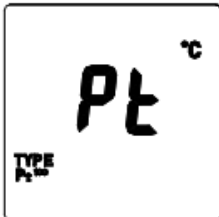*Setup mode is cancelled during below procedure if "POWER" button is pressed.*

15 Pt type selection
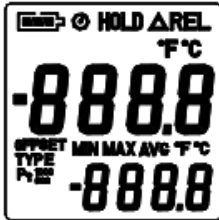
Press and hold "Power" + "Light" buttons for 2 seconds to enter setup mode.

Press "Hold" button to enter Pt selection mode.

Press "Max" button to select between Pt probe type.
(Pt100, Pt500, Pt1000 is circulate)

Press "°C/°F" button to confirm selection.

16   0 °C Calibration
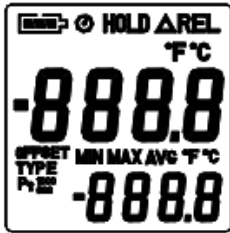
Press and hold "Power" + "Light" buttons for 2 seconds to enter setup mode.

Press "REL" button to enter calibration mode. Enter Pt selection first.

Press "°C/°F" button to confirm Pt selection

Press "REL" button to enter calibration mode.

Press "REL" button to confirm present calibration value.

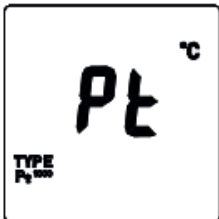Press "°C/°F" button to confirm selection.

17 Recall Default factory setting value

Press and hold "Power" + "Light" buttons for 2 seconds to enter setup mode.

Press "REL" button to enter calibration mode. Enter Pt selection first.

Press "°C/°F" button to confirm Pt selection.
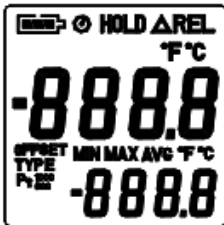
Press "Light" button to enter recall mode.

Press "°C/°F" button to confirm revert back to "Default factory setting value"

Press "°C/°F" button to confirm selection.

18   Maintenance

18.1   Replacing the Batteries

(1) Remove back cover screw to remove cover. Verify polarity and install new LR03(AAA size) alkaline batteries.
(2) Fit cover properly and tighten screw.

The unit's back cover is fitted with rubber rings. After replacing the battery, check that the rubber rings are properly seated before reinstalling the back cover. Improper seating of the rubber rings will compromise the unit's water-resistant structure, and possibly result in damage to the equipment.
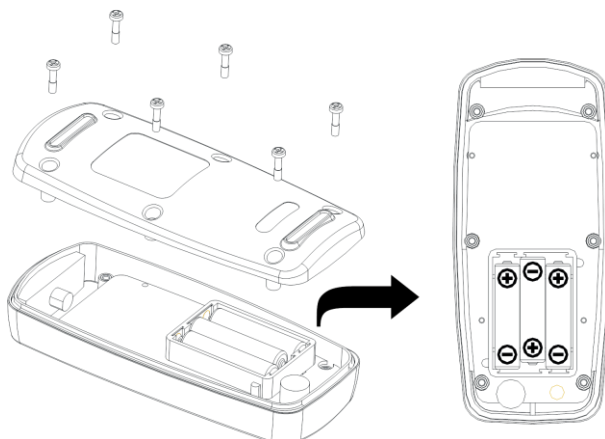
18.2   Cleaning

In order to ensure the accuracy of the thermometer for a longer period of time you should calibrate it once a year.

Clean the device and the window of the display with a clean, lint-free, antistatic and dry cleaning cloth.

Do no use cleaning agents that contain carbon or benzenes, alcohol or anything similar to clean the product since these substances damage the surface of the measuring instrument. Moreover, these fumes are hazardous to health and explosive. Do not use tools with sharp edges, screwdrivers, metal brushes or anything similar to clean the device.

19 Temperature Probe

19.1 Piercing type temperature probe
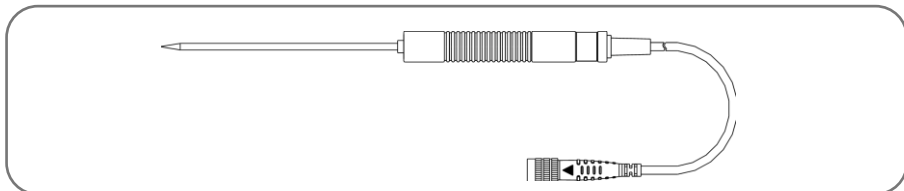
19.2 Piercing type temperature probe Specification

Sensor Type	Platinum resistance thermometer sensor Pt 100(4 wires)
Accuracy	IEC751, class A ±0.15°C±0.002t (t: measurement temperature)
Measurement Range	-100 to 400°C
Temperature Sensor Dimensions	Approx. ∅3.2mm(∅0.125")
Temperature Sensor Length	Approx. 120 mm(4.72")
Cable Length	Approx. 1100 mm(43.3")
Water-resistant	EN60529:1991 IP67

20 Delivery contents

1 x digital thermometer PCE-T 310
1 x Pt-100 Probe (class A)
3 x AAA battery
1 x user manual

21   Contact

If you have any questions, suggestions or technical problems, please do not hesitate to contact us. You will find the relevant contact information at the end of this user manual.

22   Disposal

For the disposal of batteries in the EU, the 2006/66/EC directive of the European Parliament applies. Due to the contained pollutants, batteries must not be disposed of as household waste. They must be given to collection points designed for that purpose.

In order to comply with the EU directive 2012/19/EU we take our devices back. We either re-use them or give them to a recycling company which disposes of the devices in line with law.

For countries outside the EU, batteries and devices should be disposed of in accordance with your local waste regulations.

If you have any questions, please contact PCE Instruments.

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