

USEI DT720

TEST INSTRUMENTS™

Digital Temperature Logger

INSTRUCTION MANUAL

ENGLISH



CE

FCC

ISED

RoHS
Compliant

REACH
Compliant

UK
CA



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Features

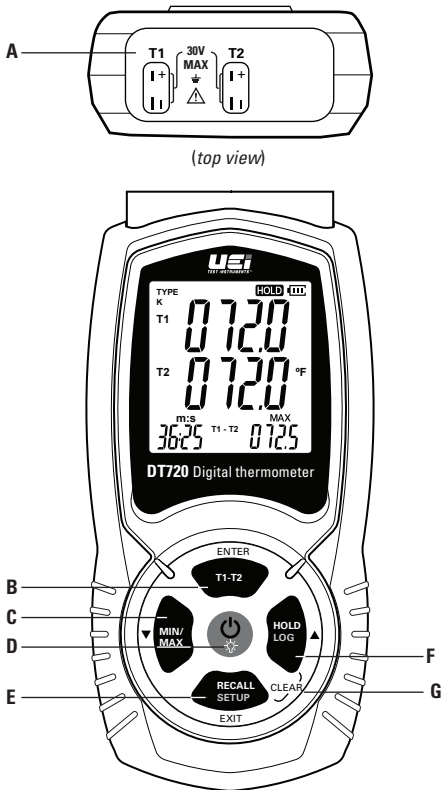
- 2 channel
- Large backlit multi-parameter display
- Accepts J, K, E, T, R, S type thermocouples
- Min/Max/Avg
- Hold
- Auto Power Off
- Fahrenheit or Celsius scale
- Temperature differential mode (T1-T2)
- Time display

Safety Notes

These are a few common safety practices for those working around temperature critical environments:

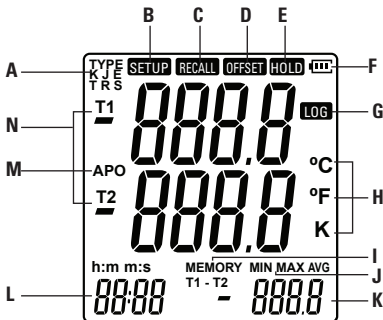
- Follow the manufacturer's maintenance procedures when servicing equipment
- Place ONLY thermocouples (type K, J, T, E, R, S) in the DT720 thermocouple ports
- Make sure your meter is set for the proper thermocouple type you are using
- Be sure the thermocouple you use can withstand the temperature extreme it may be exposed to in your service task
- Properly maintain your thermometer and calibrate it regularly

Controls and Indicators



- A. Thermocouple Inputs
- B. T1-T2 (Enter)
- C. Min/Max (down arrow)
- D. Power, Back light
- E. Recall, Setup (Exit)
- F. Hold, Log (up arrow)
- G. Clear (Recall/Setup & Hold/Log)

LCD Display Functional Description





- A. **Thermocouple type**
- B. **SETUP**: Setup in progress
- C. **RECALL**: the logged readings are displayed.
- D. **OFFSET**: the thermocouple measurement also includes an offset.
- E. **HOLD**: the display readings do not change.
- F. **BATTERY LEVEL**
- G. **LOG**: Readings are being logged.
- H. **Temperature Unit**: °F, °C, K
- I. **Memory**
- J. **Min/Max/Avg**
- K. **Temperature Differential**: T1-T2
- L. **TIME DISPLAY**: Shows time duration of test or log. Format options available in **SETUP**.
h:m, m:s 24 (military) time
- M. **APO**
- N. **T1/T2**

Overview



1. POWER (BACKLIGHT)

Press and hold the “” button to turn the thermometer on and off. Press the “” button to turn the backlight on and off. The backlight turns off automatically after 60 seconds without any button pressed. If the battery is low, the backlight is disabled.

ENTER

T1-T2

2. T1/T2/ENTER

When you press the button, the secondary display scrolls through the differential temperature and the internal temperature in order.


The “**ENTER**” function is activated in the “**SETUP**” mode only.

MIN/
MAX

3. MIN/MAX (▼)

Press the button to step through the maximum, minimum, and average readings in the secondary display.


When viewing logged readings, the maximum, minimum, and average measurements are displayed. Press and hold the “MIN/MAX” button stop viewing MIN/MAX readings.

The “” scroll function is activated in the “**RECALL**” and “**SETUP**” modes only.

HOLD
LOG

4. HOLD/LOG (▲)

Press the “**HOLD**” button to turn the “**HOLD**” function ON or OFF. Press and hold the “**LOG**” button to enter LOGGING mode, press and hold the “**LOG**” button to exit LOGGING mode.

The “” scroll function is activated in the “**RECALL**” and “**SETUP**” modes only.

HOLD
LOG

&

RECALL
SETUP

EXIT

5. LOGGING CLEAR

Press the “**RECALL**” and “**HOLD**” buttons simultaneously displays “**SURE**”.

Then, if you press the “**ENTER**” button, “**CLr**” is displayed and the logging data is cleared.

If you press any button other than the “**ENTER**” button, “**Clear**” is canceled.

RECALL
SETUP

EXIT

6. RECALL SETUP (EXIT)

Press the button to recall or stop viewing logged and MIN/MAX readings. Press and hold the button for more

than 1 second to start or exit "SETUP".The "EXIT" function is activated in the "RECALL" and "SETUP" mode only.

7. RECALL

Press the "RECALL" button to enter the recall mode.

Press the "HOLD (▲)" button to move to the next address and press the "MIN/MAX (▼)" button to move to the previous address.

In Recall mode, press and hold "MAX/MIN" to step through the recorded readings of min, max and average. Press the "HOLD (▲)" or "MIN/MAX (▼)" button to exit the MIN/MAX/AVG mode of the Recall mode.

Press "RECALL" button to exit Recall mode.



RECALL
SETUP
EXIT

Operating Instructions

Before Operating

1. Plug the thermocouple(s) into the input terminal(s).
2. Press "⏻" to turn the instrument on. After 1 second, the thermometer displays the first reading and its differential temperature. If no thermocouple is plugged into the selected input or the thermocouple is "OPEN", the display shows "----".

How to Change Setup Options

Use "SETUP" to reset the thermometer or change the temperature units, time units, time settings, thermocouple type, Auto-Power-Off mode, logging interval, and offset.

Entering and Exiting Setup

1. Temperature units.

If you press the "ENTER" button while the "Unit" icon is blinking, "C" (or F, K) will blink. With "C" (or F, K) blinking, use the "▲", "▼" buttons to change and press the "ENTER" button to save the changed value. If you do not want to save the changed value, press the "EXIT" button.

2. **Date** If you press "▲" while the "Unit" icon is blinking, "dAtE" blinks. Press "ENTER" button while "dAtE" blinks. Then press "▲" or "▼" button to move to "YEAr", "Mon", "dAtE".

Year

Press the "ENTER" button while the "YEAr" icon blinks.

Change the year with "▲" or "▼" button while "20YY" is blinking. Press the "ENTER" button to save the changed value. If you do not want to save the changed value, press the "EXIT" button.

Month

Press the "ENTER" button while the "Mon" icon blinks.

Change month with "▲" or "▼" button while "MM":dd is blinking.

Press the "ENTER" button to save the changed value. If you do not want to save the changed value, press the "EXIT" button.

Date

Press the "ENTER" button while the "dAtE" icon blinks.

Change the date with the "▲" or "▼" button while mm:"DD" is blinking.

Press the "ENTER" button to save the changed value. If you do not want to save the changed value, press the "EXIT" button.

3. Time

While the icon at the top of the LCD is blinking, press the "▲", "▼" buttons to move to the "tIME" item. With the "tIME" icon blinking, press the "ENTER" button.

Press "▲", "▼" button to move to "UnIt", "Hour", "Min", "SEC" item.

Press the "ENTER" button to save the changed value. If you do not want to save the changed value, press the "EXIT" button.

Unit ("h:m", "m:s")

Press the "ENTER" button while the "Unit" icon blinks.

While "h:m" or "m:s" is blinking, press the "▲", "▼" buttons to change.

Press the "ENTER" button to save the changed value. If you do not want to save the changed value, press the "EXIT" button.

Hour

Press the "ENTER" button while the "Hour" icon blinks.

Press the "▲" or "▼" button to change the time while "HH":mm is blinking.

Press the "ENTER" button to save the changed value. If you do not want to save the changed value, press the "EXIT" button.

Minute

Press the "ENTER" button while the "Min" icon blinks.

While hh:"MM" is blinking, press the "▲" or "▼" button to change the minute.

Press the "ENTER" button to save the changed value. If you do not want to save the changed value, press the "EXIT" button.

Second

Press the "ENTER" button while the "SEC" icon blinks.

Press "▲" or "▼" button to change seconds while "SS" blinks.

Press the "ENTER" button to save the changed value. If you do not want to save the changed value, press the "EXIT" button.

4. Type

While the icon at the top of the LCD is blinking, press the "▲", "▼" buttons to move to "tYPE".

Press the "ENTER" button while the "tYPE" icon blinks. Change the type by pressing the "▲", "▼" button while the "K" (or J, E, t, r, S) icon is blinking.

Short press the "ENTER" button to save the changed value.

If you do not want to save the changed value, press the "EXIT" button.

5. APO

While the icon at the top of the LCD is blinking, press "▲", "▼" buttons to move to "APO".

Press the "ENTER" button while the "APO" icon blinks.

While "On-1" (or ~ On-9, OFF) is flashing, use the "▲", "▼" buttons to change the content.

Press "ENTER" button to save the changed value. If you do not want to save the changed value, press the "EXIT" button.

* On-1: 10min, On-2: 20min ~ On-9: 90min, Off

6. Interval

While the icon at the top of the LCD is blinking, press the "▲", "▼" buttons to move to "Int.V".

With the "Int.V" icon blinking, press the "ENTER" button.

While the "In-1" (~In-4, uSEr, OFF) icon is blinking, press the "▲", "▼" buttons to change the content.

User setting: 00:00 00 ~ 23:59 59 (23 hours 59 minutes 59 seconds)

1) Press the "ENTER" button while the "uSEr" icon is blinking.

2) While the "HH" icon is blinking, press the "▲", "▼" buttons to change the value and then press the "ENTER" button.

3) With the "MM" icon blinking, press "▲", "▼" to change the value and then press the "ENTER" button.

4) While the "SS" icon is blinking, press the "▲", "▼" buttons to change the value, and then press the "ENTER" button. Press the "ENTER" button to save the changed value. If you do not want to save the changed value, press the "EXIT" button.

* In-1: 1sec, In-2 : 10sec, In-3 : 1min, In-4 : 10min

* User : 00:00 00~23:59 59 (00 hours 00 minutes 00 seconds to 23

hours 59 minutes 59 seconds)

7. Offset

While the icon at the top of the LCD is blinking, press the "▲", "▼" buttons to move to the "OFSt" item.

Press the "ENTER" button with the "OFSt" icon blinking.

While the "t1 ~ t4" icon is blinking, press the "▲", "▼" buttons to change the value, then press the "ENTER" button.

While the "XX" icon is blinking, press the "▲", "▼" buttons to change the value, and then press the "ENTER" button.

* °C & K: (5.0 ~ -5.0), °F = (9.0 ~ -9.0)

8. Factory Reset

While the icon at the top of the LCD is blinking, press "▲", "▼" to move to "rEst".

With the "rEst" icon blinking, press the "ENTER" button.

While the "no", "YES" icon is blinking, press the "▲", "▼" buttons to change, then press the "ENTER" button.* After selecting "YES", press "Enter" to save the factory default status.

9. Exiting or continuing the "SETUP" menu. While the icon at the top of the LCD is blinking, press "▲", "▼" buttons to move to "SUrE".

Press "ENTER" button while "SUrE" blinks.

Press "▲", "▼" button to change while "no", "YES" blink and press "ENTER" button.

NOTE: Press "▲" or "▼" to scroll to the setup option you want

Displaying Temperature

1. Press RECALL/SETUP button

Type

While the icon at the top of the LCD is blinking, press the "▲", "▼" buttons to move to "tYPE".

Press the "ENTER" button while the "tYPE" icon blinks.

Change the type by pressing the "▲", "▼" button while the "K" (or J, E, t, r, S) icon is blinking

Short press the "ENTER" button to save the changed value.

If you do not want to save the changed value, press the "EXIT" button.



2. Hold or attach the thermocouple(s) to the measurement location. The temperature reading appears in the selected display.

3. If you press the "ENTER" button, the internal temperature for T1, the

internal temperature for T2, and the differential temperature for T1-T2 are shown in the secondary display in order.




NOTE: The display shows “----” when a thermocouple is not connected. The display shows “OL ” (OVERLOAD) when the temperature being measured is outside the thermocouple’s valid range.

Holding the Displayed Temperature

1. Press “” momentarily to freeze the readings on the display. The display shows “ HOLD ”.
2. Press “” momentarily again to turn off the “ HOLD ” function.

Viewing the MIN/MAX/AVG Readings

NOTE: MIN/MAX and AVG values are captured only while this mode is active. Exiting the MIN/MAX/AVG mode will clear all values.

1. Press “” momentarily to step through the **MIN** (minimum), **MAX** (maximum), or the **AVG** (average) readings in the secondary display. The elapsed time since entering **MIN/MAX** mode appears with the average reading, or the time at which the MINIMUM or MAXIMUM occurred appears with the MINIMUM or MAXIMUM reading on the display.
2. Press “” momentarily to toggle showing the maximum (MAX) of T1, T2, or T1-T2 readings and its displayed time. The minimum (MIN) or average (AVG) reading can be displayed in the similar way.
3. Press “” for more than 1 second to exit MIN/MAX mode.

Using the Offset to Compensate for Probe Errors

Use the offset option in “**SETUP**” to adjust temperature readings to compensate for the errors of a specified thermocouple.

1. Plug the thermocouple into the input terminal.
2. Place the thermocouple in a known stable temperature environment (such as an ice bath or a dry well calibrator).
3. Allow the readings to stabilize.
4. In “**SETUP**”, change the offset until the primary display reading matches the calibration temperature. See “How to Change Setup Options”

How to Use Memory



The thermometer has 9,999 memory locations.

During logging session, the thermometer stores logged readings

in its memory. At the end of the logging session you can view the logged readings on the display.



Starting and Stopping Logging

Recall function is enabled during logging.








1. Set the time and the logging interval, see "How to Change Setup Options".
2. Press "  " for more than 1 second to start logging. The display shows " LOG ".
3. Press "  " for more than 1 second again to stop logging.

Clearing Memory

When memory is full, logging stops. You can clear memory in normal or MIN/MAX mode.

1. Press "  " and "  " buttons simultaneously display "SURE".
2. Then if you press the "ENTER" button, "CLr" is displayed and the logging data is cleared.
3. If you press any button other than the "ENTER" button, "Clear" is canceled.

Viewing Logged Readings

1. Press "  " momentarily to display the last logged reading. If there is no logged readings, the buzzer will sound twice.
2. Press "  " or "  " to scroll through the logged readings. The display shows each logged reading and its time stamp, which is displayed its memory location appeared in the secondary display.
3. Press "  " for more than 1 second to step through the minimum, maximum, average, and currently logged reading.
4. Press "  " or "  " momentarily to display the logged readings you want to view.
5. Press "  " momentarily or turn off the thermometer to stop viewing logged readings.

NOTE: *The thermometer calculates the minimum and maximum of all logging sessions in memory.*

Maintenance

Periodic service

WARNING!

Repair and service of this instrument is to be performed by qualified personnel only. Improper repair or service could result in physical degradation of the meter. This could alter the protection from electrical shock and personal injury this meter provides to the

operator. Perform only those maintenance tasks that you are qualified to do.

These guidelines will help you attain long and reliable service from your meter:

1. Calibrate your meter annually to ensure it meets original performance specifications.
2. Keep your meter dry. If it gets wet, wipe it dry immediately. Liquids damage electronic circuits.
3. Whenever practical, keep the meter away from dust and dirt, which can cause premature wear.
4. Although your meter is built to withstand the rigors of daily use, it can be damaged by severe impacts. Use reasonable caution when using and storing the meter.

Cleaning and Decontamination

Periodically clean your meter's case using a damp cloth. DO NOT use abrasives, cleaning solvents or strong detergents, as they may damage the finish or affect the reliability of the structural components.

Battery Replacement

Always use a fresh replacement battery of the specified size and type. Immediately remove the old or weak battery from the meter and dispose of it in accordance with your local disposal regulations. Old or defective batteries can leak chemicals that corrode electronic circuits.

WARNING!

To avoid electric shock, be sure to turn off the meter's power and disconnect thermocouples from any equipment before you remove or install batteries.

To install a new battery, follow these procedures:

1. Remove the screws from the battery compartment cover on the back of the meter and lift the cover.
2. Remove and discard the old batteries. Always dispose of old batteries promptly in a manner consistent with local disposal regulations.

WARNING!

Under NO circumstance should you expose batteries to extreme heat or fire as they may explode and cause injury.

3. Place a fresh batteries in the compartment.

NOTE: *If you do not plan to use the meter for a month or more, remove the battery and store it in an area that won't be damaged by a leaking batteries.*

4. Reattach the battery compartment cover to the meter and

IMPORTANT SAFETY WARNINGS

WARNING!

Read entire Safety Notes section regarding potential hazard and proper instructions before using this meter. In this manual the word “WARNING” is used to indicate conditions or actions that may pose physical hazards to the user. The word “CAUTION” is used to indicate conditions or actions that may damage this instrument.

To avoid false readings, replace the batteries if a low battery indicator appears.

WARNING!

To avoid electric shock, be sure to turn off the meter’s power and disconnect thermocouples from any equipment before you remove or install batteries.

WARNING!

This temperature tester is designed for trained trade professionals who are familiar with the hazards of their trade. Observe all recommended safety procedures and **use of personal protective equipment.**

Specifications

Environmental

Operating Temperature	32° to 122°F (0° to 50°C)
Storage Temperature	-4° to 140°F (-20 to 60°)
Humidity	Non condensing <50°F (10°C) 85% RH: 50° to 86°F (10° to 30°C) 70% RH: 86° to 104°F (30° to 40°C) 45% RH: 104° to 122°F (40° to 50°C)

General

Dimensions	6.34 x 2.95 x 1.38in (161 x 75 x 35mm)
Weight	Approx. 0.63 lb (285g)
Battery	3 x AA Batteries
Certification	CE, FCC, ISED, UKCA, RoHS, REACH, WEEE
Safety	EN66010-1; 2010/A1 2019
CAT I	OVERVOLTAGE (Installation) CATEGORY I, Pollution Degree 2 per IEC 1010-1

ATT29 K-Type Thermocouple (a standard accessory)

Type	K-Type, Chromel Alumel
Temperature range	-200° to 1370°C (-328° to 2498°F)
Accuracy	±[1.0% + 0.5°C (1.0°F)]

Electrical

Measurement range	J-type: -346° to +2192°F (-210° to +1200°C) K-type: -328° to +2498°F (-200° to +1370°C) T-type: -418° to +752°F (-250° to +400°C) E-type: -238° to +1832°F (-150° to +1000°C) R-type: +32° to +3200°F (0° to 1760°C) S-type: +32° to +3200°F (0° to 1760°C)
Display Resolution	0.1°F/°C < 1000° 1.0°F/°C ≥ 1000°
Measurement Accuracy	J, K, T, and E-type; ±[0.1% +1.4°F (0.8°C)] R and S-Type ±[0.1% +3.6°F (2.0°C)] [Below -148°F (-100°C): add 0.2% of reading for J, K, and E-type; add 0.5% of reading for R, S and T-type]
Temperature Coefficient	0.01% of reading 0.1°F per °F (+0.05°C per °C) Coefficient for <+64°F (+18°C) or +82°F (+28°C) [Below -148°F (-100°C): add 0.05% of reading for J, K, and E-type; and 0.1% of reading for R, S and T-type]
Real Time Clock Tolerance	About 1 second per day
Maximum Differential Common Mode Voltage	1V (maximum voltage difference between any pair of inputs)
Temperature Scale	ITS-90 (International Temperature Scale of 1990)
Applicable Standards	N.I.S.T. Monograph 175 revised to ITS-90
Accuracy is specified for ambient temperatures between 64°F (18°C) and 82°F (28°C) for a period of 1 year. The above specifications do not include thermocouple error.	

FCC Information

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

WARNING Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

Warranty

The DT720 is warranted to be free from defects in materials and workmanship for a period of 1 year from the date of purchase. If within the warranty period your instrument should become inoperative from such defects, the unit will be repaired or replaced at UEi's option.

This warranty covers normal use and does not cover damage which occurs in shipment or failure which results from alteration, tampering, accident, misuse, abuse, neglect or improper maintenance. Batteries and consequential damage resulting from failed batteries are not covered by warranty.

Any implied warranties, including but not limited to implied warranties of merchantability and fitness for a particular purpose, are limited to the express warranty. UEi shall not be liable for loss of use of the instrument or other incidental or consequential damages, expenses, or economic loss, or for any claim or claims for such damage, expenses or economic loss.

Warranty only covers hardware and does not extend to software applications.

A purchase receipt or other proof of original purchase date will be required before warranty repairs will be rendered. Instruments out of warranty will be repaired (when repairable) for a service charge.

For more information on warranty and service, contact:

This warranty gives you specific legal rights. You may also have other rights, which vary from state to state.