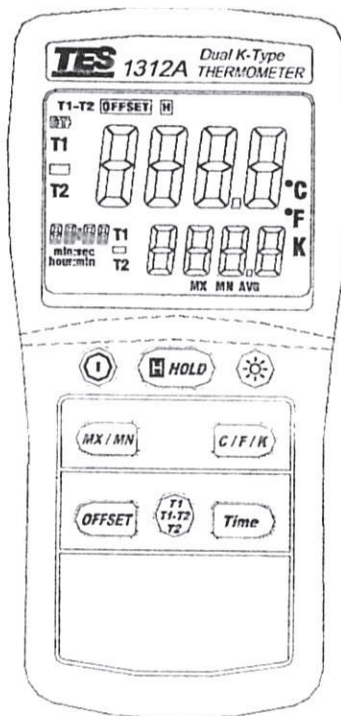


TES DIGITAL THERMOMETER

TES-1312A INSTRUCTION MANUAL



TES ELECTRICAL ELECTRONIC CORP.

1. INTRODUCTION

This instrument is a digital thermometer for working with any K-type thermocouple as temperature sensor. Temperature indication follows the international temperature scale of 1990. (ITS-90)

- ❑ Read the following safety information carefully before attempting to operate or service the meter.
- ❑ Use the meter only as specified in this manual; otherwise, the protection provided by the meter may be impaired.

Environment conditions

- ① Altitude up to 2000 meters
- ② Relatively humidity 80% max.
- ③ Operation Ambient $0\sim 50^{\circ}\text{C}$ ($32^{\circ}\text{F}\sim 122^{\circ}\text{F}$)

U.S. Pat. No. Des. 446,135

Safety symbols

When servicing, use only specified replacement parts.



Comply with EMC

2. SPECIFICATIONS

2-1 Electronical Specifications

Measurement Range : -200 to 1360°C
-200 to 1999°F

Resolution : 0.1°C, 0.1°F at (0 ~ ±200)
1°C, 1°F at (±200 ~ 2000)

Basic Accuracy: (@23 ± 5°C Calibration)

Function	Range	Accuracy ± (% of reading + degrees)
°C	-200°C to -93°C	0.3% ± 5°C
°C	-93°C to 1000°C	0.3% ± 1°C
°C	1000°C to 1360°C	0.5% ± 1°C
°F	-200°F to 1832°F	0.3% ± 2°F
°F	1832°F to 1999°F	0.5% ± 2°F

NOTE

This basic accuracy specification does not include the error of the temperature probe. Please refer to the temperature probe accuracy specification for additional details.

Temperature Coefficient:

0.1 %specified accuracy / per°C.

at 0°C ~ 18°C & 28°C ~ 50°C.

(32°F ~ 64.4°F & 50.4°F ~ 122°F)

2 General Specifications

Power Supply : 6 pcs size AAA battery.

Battery life : approx. 200hours (carbon zinc battery).

Auto Power off : 30 minutes. (If no key press.)

Low Battery Indication : The (BT) is displayed when
the battery voltage drops
below the operating voltage.

Measurement Rate : One time per second.

Weight : 235 gm (8.29 oz)

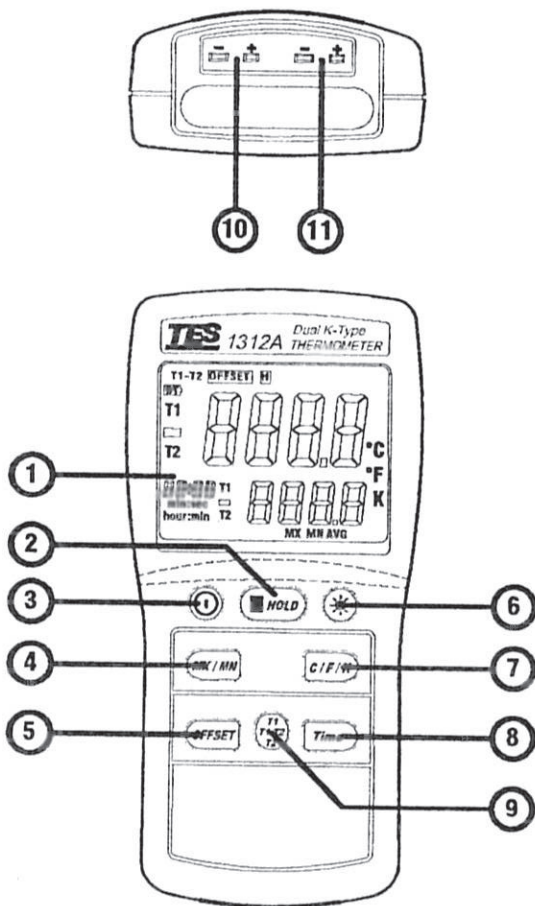
Dimension : 5.91"L x 2.83"W x 1.38"H
(150 x 72 x 35mm)

Operating Temperature : 0 to 50°C (32 to 122°F)
and Humidity below 80% RH

Storage Temperature : -10 to 60°C , 14 to 140°F
and Humidity below 70% RH

Accessories: 6 pcs Battery, Instruction Manual.

3. NAME OF PARTS AND POSITIONS



① **LCD Display :**

- ⇒ Main display : T1, T2 or T1-T2 reading.
- ⇒ Secondary display : T1 or T2 reading and MAX, MIN, AVG reading.
- ⇒ Third display : Time display (24-hour clock), shows elapsed time when MAX, MIN or AVG is on or before time key has been push.

② **Data hold key :** Press **HOLD** key to hold the reading and sign **[H]** will appear, Press again, to release the holding.

③ **Power ON/OFF key :** Press **①** key to turn the meter on or off.

④ **MX/MN key :** Press **MX/MN** key to step through the maximum (MAX), minimum (MIN) or the true average (AVG-true 9.7 hours reading average) readings and disabled auto power off function. The main display is present reading. The elapsed time since entering recording mode, or the time at which the MAX, MIN or AVG occurred, appears on the display. Press and hold down **MX/MN** key 1 second to exit MX/MN mode.

- ⑤ **OFFSET key** : Press **OFFSET** key to turn the meter present value to zero, press again to exit OFFSET (Relative function) mode.
- ⑥ *** key** : Press **backlight** key to turn the backlight on and off. The backlight turns off after 1 minute.
- ⑦ **C/F/K key** : Press **C/F/K** key to select Celsius ($^{\circ}\text{C}$), Fahrenheit ($^{\circ}\text{F}$) or Kelvin (K) temperature scale.
- ⑧ **Time key** : Press **Time** key to turn on the time mode and step through minute : second and hour : minute displays.
- ⑨ **T1/T2/T1-T2 key** : Press **T1/T2/T1-T2** key to toggle showing the T1, T2 and T1-T2 in the main or secondary display.
- ⑩ **T1 input** : K-type thermocouple T1 input.
- ⑪ **T2 input** : K-type thermocouple T2 input.

4. OPERATING INSTRUCTIONS

- ① Turn on the thermometer.
- ② Plug the thermocouple into the thermocouple input.
- ③ Set the thermometer to desired temperature scale.
- ④ Perform measurements by contacting the object being measure with the probe sensor.
- ⑤ Read the temperature on the display.

WARNING

To avoid electrical shock, do not use this instrument when voltages exceeding 24V AC or 60V DC are present. The probe tip is electrically connected to the output terminals.

5. OPEN THERMOCOUPLE INDICATION (ERROR INDICATION)

The highest digits (OL) is display if any of the following conditions occur :

- ① If no thermocouple is plugged into the thermocouple input.
- ② If the thermocouple to the input is broken or open-circuit.
- ③ If the temperature exceed measurement ranges.

6. MAINTENANCE

6-1 Cleaning

Periodically wipe the case with a damp cloth and mild detergent.

Do not use abrasives or solvents. Clean and dry as required.

6-2 Battery Replacement

When LCD display shows “ **BT** ”, the battery has had insufficient power to support an accurate test. At this moment, replace it with new battery from the battery compartment.

6-3 Prevention of battery fluid leakage

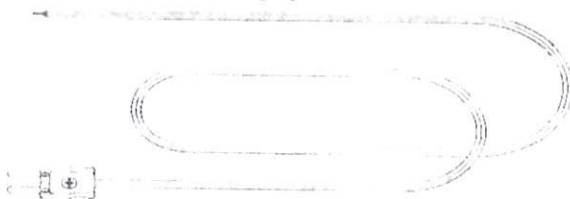
- ① When the battery power is low, replace the new battery in order to avoid the further battery fluid leakage possibility.
- ② When the meter will not be in use for the long period of time, please remove the batteries out of meter to prevent the possibility of battery fluid leakage damage.

7. OPTIONAL ACCESSORY

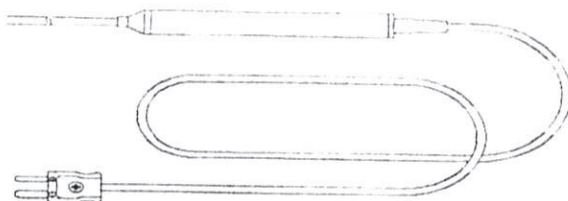
K (CA) type thermocouple.

Model	Range	Tolerances	Description
TP-K01 Bead probe	-50°C to 200°C -58°F to 392°F	±2.2°C or ±0.75% (±3.6°F or ±0.75%)	with Teflon tape insulation. Maximum insulating temperature: 200°C
TP-K02 Immersion probe	-50°C to 600°C -58°F to 1112°F	±2.2°C or ±0.75% (±3.6°F or ±0.75%)	130mm handle with 100cm Compensating wire
TP-K03 Surface probe	-50°C to 400°C -58°F to 752°F	±2.2°C or ±0.75% (±3.6°F or ±0.75%)	100mm handle with 100cm Compensating wire

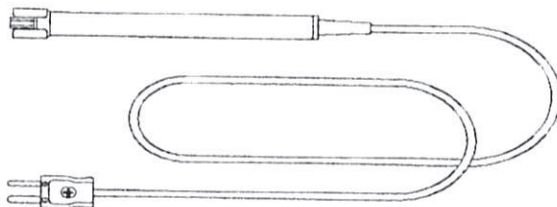
TP-K01: Available for general condition, especially for complex and any place hard to reach.



TP-K02: Available for temperature measurement of liquid, gels or air.



TP-K03: Available for flat or curved surface measurement.



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