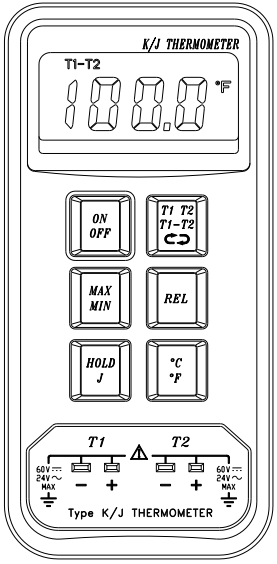
TES DIGITAL THERMOMETER

TES-1306

INSTRUCTION MANUAL



TES ELECTRICAL ELECTRONIC CORP.

1. SAFETY INFORMATION

This instrument is a digital thermometer for use with any K/J-type thermocouple as temperature sensor. Temperature indication follows National Bureau of Standards and IEC584 temperature / voltage tables for K/J-type thermocouples.

- ❑ 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 90% max.

③ Operation Ambient 0 ~ 40℃

Maintenance & Clearing

① Repairs or servicing not covered in this manual should only be performed by qualified personnel.

② Periodically wipe the case with a dry cloth. Do not use abrasives or solvents on this instruments.

Safety symbols

Meter is protected throughout by double insulation or reinforced insulation.
When servicing, use only specified replacement parts.

CE Comply with EMC

2. SPECIFICATIONS

2-1 Electrical Specifications

Measurement Range :

Type J :	Type K :
-200°C to 760°C	-200°C to 1370°C
-328°F to 1400°F	-328°F to 2498°F

Resolution : 0.1°C , 1°C , 0.2°F , 2°F

Maximum Voltage at Thermocouple Input :
60V dc ,or 24Vrms ac

RF Field Derating :
Strong RF fields and low-frequency adversely affect accurate measurement .

Operating Temperature and Humidity:
0°C to 40°C (32°F to 104°F), 0 - 80%RH

Storage Temperature and Humidity:
-10°C to 60°C (14°F to 140°F), 0 - 70%RH

Basic Accuracy: (@23± 5°C Calibration) Accuracy are± (...% of reading + degree) at 18°C to 28°C with relative humidity up to 80%

For single thermocouple measurements

Function	Resolution	Range		Accuracy
		Type K	Type J	
°C	0.1°C	-200°C~-50°C	-200°C~-50°C	±(0.5%rdg+1.0°C)
		-50°C~0°C	-50°C~0°C	±(0.2%rdg+1.0°C)
		0°C~200°C	0°C~150°C	±(0.1%rdg+ 0.8°C)
	1°C	200°C~1370°C	150°C~760°C	±(0.2%rdg+ 2°C)
°F	0.2°F	-328°F~-58°F	-328°F~-58°F	±(0.5%rdg+ 2.0°F)
		-58°F~32°F	-58°F~32°F	±(0.2%rdg+ 2.0°F)
		32°F~392°F	32°F~302°F	±(0.1%rdg+1.6°F)
	2°F	392°F~2498°F	302°F~1400°F	±(0.2%rdg+3°F)

For T1-T2 Measurements accuracy is Basic accuracy add 0.2%rdg.

NOTE

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

Temperature Coefficient:

For ambient temperatures from 0°C to 18°C and 28°C to 40°C

(32℉ to 64℉ and 82℉ to 104℉)

For each ℃ (℉) ambient below 18℃ (64℉) or above 28℃

(82℉), add to the accuracy specifications:

0.01% of reading + 0.03℃

(0.01% of reading + 0.06℉)

2-2 General Specifications

Unit and Sign Display :

■	Decimal point.
℉	Fahrenheit temperature scale
℃	Celsius temperature scale
+ −	Low Battery
–	Negative polarity
H	Data hold
MAX	MAX hold
MIN	MIN hold
REL △	Relative mode

Over Range Indication: " OL " appears on the display.

Break or no input indication: " _ _ _ _ " appears on the display.

Low Battery Indication:

The " + − " is displayed when the battery voltage drops below the operating voltage.

Power Requirement:

9-Volt battery , NEDA 1604 or JIS 006P or IEC6F22

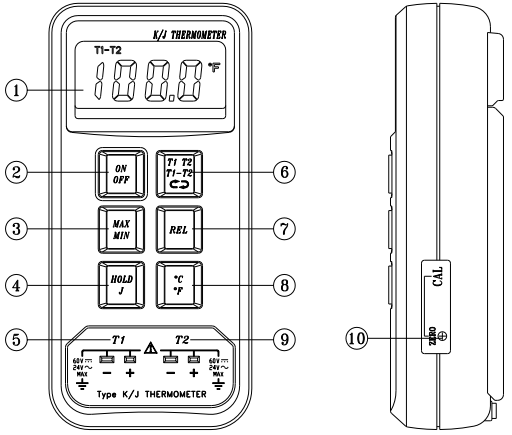
Battery Life (typical): 100hours (Alkaline Battery)

Dimensions: 135 (L)x 72(W)x 31(H)mm,
5.3 (L)x 2.8(W)x 1.2(H)inches

Weight: Approx. 235g with battery

Accessories: Battery, Instruction Manual. Holster (option).

3. NAME OF PARTS AND POSITIONS



1). **LCD Display:**

4 digits with a maximum reading of 2500, and indications or minus sign " – " , data hold " H " , maximum hold "MAX". minimum hold

"MIN" "T1" , "T2" , "T1-T2" , "℃" , "℉" ,low battery "  " etc.

2). **ON/OFF:** The on/off key will turn the thermometer on and off.

3). **MAX/MIN:**
The max/min key will turn the display into Maximum and Minimum mode. Press it once and the meter will show the Maximum reading. Press it again and the meter will show the Minimum reading. If we hold this key for 2 seconds, the meter will be back to the normal mode. If MAX/MIN mode is selected, except HOLD and ℃/℉, all function key will be disabled.

4). **HOLD:**
Press this key will hold the data. If we press and hold this key under power off then press the on/off button, the thermocouple type will be set as J-type when it is on. The default power on thermocouple type is set as K-type.

5). **T1** Thermocouple Input Connector.

6). **T1/T2/T1-T2 ⟲ :**
When we first power the meter on, T1 will be shown. If we press this key once, the meter will show T2.
If we press it again, T1-T2 will be shown.
If we press it again, the meter will show T1, T2, T1-T2 in circulation.
If this key been pressed again, it will turn the meter to default reading (that will be T1).

7). **REL:**
Press this key will turn the meter into relative mode. The reading will first show zero and then the reading change relate to the setting time will be shown.
Press it again will show relative value.
If hold this key 2 seconds the meter will be back to the normal mode.

8). **℃/℉:**
Press this key will change the temperature scale between ℃ and ℉.

9). **T2** Thermocouple Input Connector.

10). **ZERO:** The ZERO controls allow you adjust offset value to optimize measurement accuracy for a particular thermocouple at a particular temperature.

4. RECALIBRATION PROCEDURE

The thermometer should be calibrated once a year to ensure its accuracy is within specifications. The required equipment is listed below:

① Type J: 0.0℃ adjust VR4.

② Type K: 0.0℃ adjust VR1.

③ Type K:199.0℃ adjust VR3.

④ Type K: 1000℃ adjust VR2.

WARNING

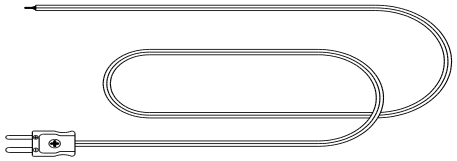
o avoid electrical shock, do not use this instrument when voltages exceeding 24VAC or 60VDC are present. The probe tip is electrically connected to the output terminals.

5. OPTIONAL ACCESSORY

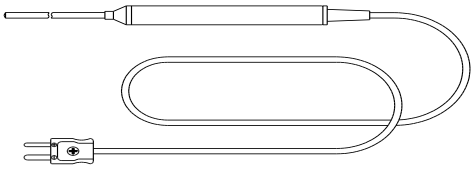
K (CA) type thermocouple.

Model	Range	Tolerances	Description
TP-K01 Bead probe	-50°C to 200°C -58°F to 392°F	±2.2°Cor±0.75% (±3.6°F or ±0.75%)	with Teflon tape insulation. Maximum insulating temperature : 260°C
TP-K02 immersion probe	-50°C to 1000°C -58°F to 1832°F	±2.2°Cor±0.75% (±3.6°F or ±0.75%)	3.2φ ×150 ㎜ metal sheath 100 ㎝ Compensating wire
TP-K03 Surface probe	-50°C to 750°C -58°F to 1382°F	±2.2°C or±0.75% (±3.6°F or ±0.75%)	100 ㎝ Compensating wire 12.5φ x 94 ㎜ handle

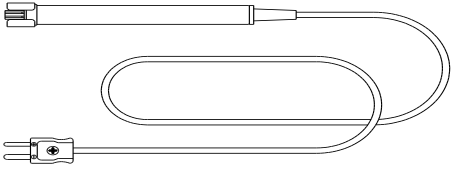
TP-K01: Available for general condition, especially for complex and any place hard to reach.



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



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



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