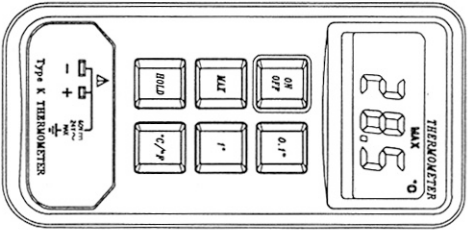


DIGITAL THERMOMETER

INSTRUCTION MANUAL



I. INTRODUCTION

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

II. SPECIFICATIONS

2-1 Electrical Specifications

Measurement Range : -50°C to 1300°C / -50°F to 1999°F

Resolution : 0.1°C, 1°C, 0.1°F, 1°F

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

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

Environmental :

Operating Temperature and Humidity:

0°C to 50°C (32°F to 122°F)

10 - 80%RH

Storage Temperature and Humidity:

-10°C to 60°C (14°F to 140°F)

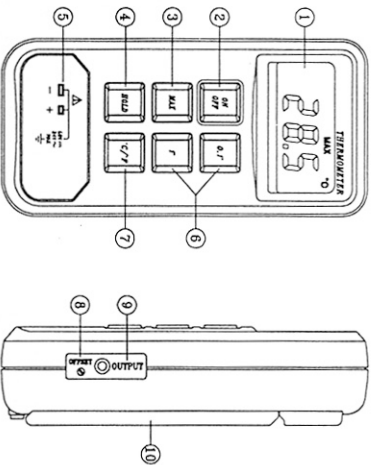
10 - 70%RH

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

Accuracy are± (...% of reading + .degree) at 18°C to 28°C with relative humidity up to 80%

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III. NAME OF PARTS AND POSITIONS



【Fig 1】

For single thermocouple measurements

Function	Resolution	Range	Accuracy	Output Signal
°C	0.1°C	-50°C ~ 1999.9°C	± (0.3%+1°C)	± (0.3%+2mV)
°C	1°C	-50°C ~ 1000°C	± (0.5%+1°C)	± (0.75%+0.2mV)
°C	1300°C	1001°C ~ 1300°C	± (0.75%+1°C)	± (0.75%+0.2mV)
°F	-50°F ~	-50°F ~ 1999.9°F	± (0.3%+2°F)	± (0.5%+5mV)
°F	1°F	-50°F ~ 1999°F	± (0.5%+2°F)	± (0.75%+0.5mV)

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 50°C

(32°F to 64°F and 82°F to 122°F)

For each °C (°F) ambient below 18°C (64°F) or above 28°C (82°F),

add to the accuracy specifications:

0.01% of reading + 0.03°C

(0.01% of reading + 0.06°F)

2-2 General Specifications

Numerical Display : 3 1/2 digital liquid crystal display (LCD)

14mm height, maximum reading 1999.

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Unit and Sign Display :

- Decimal point

°F : Fahrenheit temperature scale

°C : Celsius temperature scale

: Low Battery

: Negative polarity

: Data hold

MAX : Max hold

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

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

Display Rate : Approximately 2.5 times per second.

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

Battery Life (typical) : 200hours (Alkaline Battery)

Dimensions : 135 (L) × 72(W) × 31(H)mm

5.3 (L) × 2.8(W) × 1.2(H)inches

Weight: Approx. 235g with battery

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

① LCD Display: 3 1/2 digits with a maximum reading of 1999, and indications or minus sign "—", Data hold

"[HOLD]", MAX HOLD "MAX"; "T1", "T2", "T1-T2", "°C", "°F", low battery "", etc.

② ON/OFF Switch: The ON/OFF key turns the thermometer on or off.

③ MAX HOLD Button : A Push Button (Push on/push off, push on :LCD appear MAX sign)

④ HOLD: Pressing the HOLD key selects DATA HOLD mode, and "[HOLD]" symbol appears on the display. Pressing the HOLD key again cancels HOLD mode, and causes the thermometer to resume taking measurements.

⑤ Thermocouple Input Connector.

⑥ 0.1° : Pressing the 0.1 key selects 0.1 degree resolution. Range from -50°C to 199.9°C or -50°F to 199.9°F

1° : Pressing the 1° key selects 1 degree resolution Range from -50.0°C to 1300°C or -50°F to 1999°F

⑦ °F/°C: The °F/°C key switches between the Celsius (°C) and Fahrenheit (°F) scales on the display.

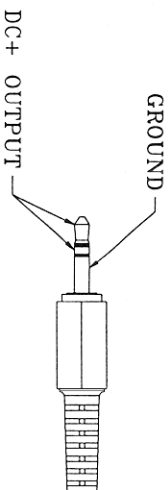
⑧ OFFSET: The OFFSET controls allow you adjust offset value to optimize measurement accuracy for a particular thermocouple at a particular. The OFFSET Controls are adjusted using a small screwdriver.

⑨ OUTPUTS:

OUTPUTS from standard 3 pole 3.5mm Coaxial socket with DC+ on pin, and Intermediate. (Internal Connector Pin and intermediate), Ground on Sleeve. [Fig2]

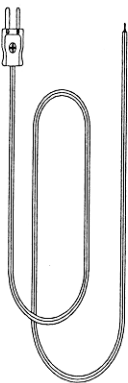
1mVdc / °C (°F).....at 0.1°C / 0.1°F resolution.
 0.1mVdc / °C (°F).....at 1°C / 1°F resolution.
 Output Impedance ≈ 50Ω

⑩ Tilt stand

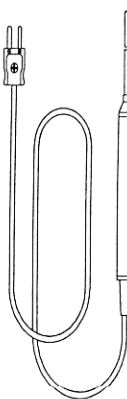


[Fig 2]

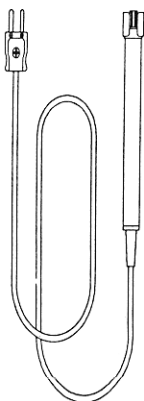
TP-K01: Available for general condition, especially for complex and any place hard to reach.



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



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



IV. TEMPERATURE MEASUREMENT

1. Turn on the thermometer.
2. Plug the thermocouple into the thermocouple input connector.
3. Set the thermometer to desired function (°C or °F scale & 0.1° or 1° resolution)
4. Perform measurements by contacting the object being measured 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.

V. ERROR INDICATION

- The "OL" is display if any of the following conditions occurs:
1. If no thermocouple is plugged into the thermocouple input connector.
 2. If the thermocouple connected to the input is broken or open circuited.

VI. RECALIBRATION PROCEDURE:

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

- ① 0.0°C adjust VR1
- ② 0.0°F adjust VR2
- ③ 165.0°F adjust VR5
- ④ 952°F adjust VR4
- ⑤ 511°C adjust VR3
- ⑥ OUTPUTS 0.0mVDC adjust VR7 (at 0.0°C)

VII. 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 : 260°C
TP-K02 Immersion probe	-50°C to 1000°C -58°F to 1832°F	± 2.2°C or ± 0.75% (± 3.6°F or ± 0.75%)	3.2 φ x 150 mm metal sheath 100 cm 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 cm Compensating wire 12.5 φ x 94 mm handle