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OPERATING INSTRUCTIONS

DIGITAL THERMOMETER

MODEL#-52228



52228 DIGITAL THERMOMETER

Instruction Manual

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

1. LCD Display: 3 1/2 digits with a maximum reading up to 1999, indication of Minus Sign (-), Data Hold (HOLD), Max Hold (MAX), (T1),(T2), (T1-T2), (°C), (°F) and Low Battery () etc.
2. ON/OFF button
3. MAX button
4. HOLD button: Press the HOLD button to select the DATA HOLD mode. Press the HOLD button again to cancel DATA HOLD mode. The thermometer will resume taking measurements.
5. T1: Thermocouple Input Connector.
6. T2: Thermocouple Input Connector.
7. °C / °F button: The °C / °F button switches between Celsius (°C) and Fahrenheit (°F).
8. T1-T2 button: Use the T1-T2 button to select differential temperature measurement. The thermometer will measure the temperature of T1 and T2 and display the difference (T1 minus T2). To use this feature, you must connect two thermocouples to the thermometer.
9. T1/T2 button: The T1/T2 button can select thermocouple T1 as the input or thermocouple T2 as the input.
10. OFFSET: The OFFSET CONTROL allows you to optimize measurement accuracy for a particular thermocouple at a particular temperature.
11. OUTPUT: OUTPUT from standard 3 pole 3.5mm socket (Fig 1).

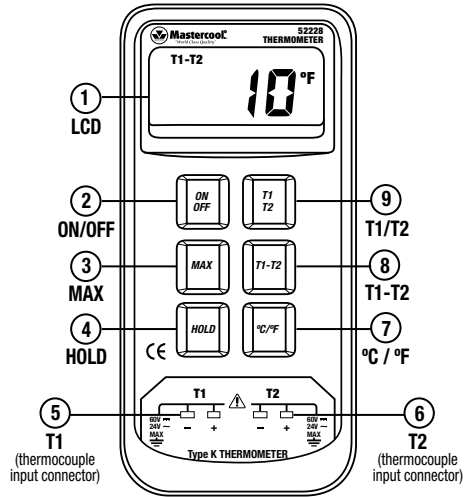
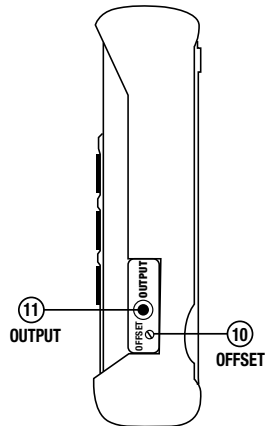
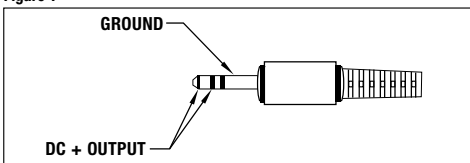


Figure 1



OPERATING INSTRUCTIONS

1. POWER

Pressing the ON/OFF button turns the thermometer ON or OFF.

2. CONNECTING THE THERMOCOUPLES

The thermometer is used with one or two thermocouples. The thermocouples plug into the T1 and T2 input connectors.

3. SELECTING THE TEMPERATURE SCALE

Reading is displayed in either Celsius (°C) or Fahrenheit (°F). To change the temperature scale, press the °C / °F button.

4. SINGLE-THERMOCOUPLE TEMPERATURE MEASUREMENT

The thermometer displays the temperature of the thermocouple that is connected to the selected input. Press the T2 button to display the temperature of the thermocouple connected to the T2 input. Press the T1 button to display the temperature of the thermocouple connected to the T1- input. If the selected thermocouple is unplugged or open-circuited, the thermometer displays an error.

5. DIFFERENTIAL TEMPERATURE MEASUREMENT

Differential temperature measurement is selected by pressing the T1 – T2 button. This causes the thermometer to display the temperature difference between the two thermocouples (the temperature of thermocouple T1 minus the temperature of thermocouple T2). If either thermocouple is unplugged or open-circuited, the thermometer displays an error. To return to single-thermocouple temperature measurement, press the T1 or T2 button.

NOTE: In T1 – T2 mode, the incorrect value (or flickering) will occur when either T1 input or T2 input is without the temperature probe/open circuit. Please check T1 and T2 function to make sure the T1 and T2 are in normal condition before proceeding to the T1-T2 mode.

WARNING!

To avoid electrical shock, DO NOT use this instrument when voltages exceed 24V AC or 60V DC. The probe tip is electrically connected to the output terminals.

6. HOLD MODE

Pressing the HOLD button selects the HOLD mode. When HOLD mode is selected, the thermometer stops all further measurements. Pressing the HOLD button again cancels HOLD mode, causing the thermometer to resume taking measurements.

OPEN THERMOCOUPLE INDICATION (Error Indication)

T1 or T2 Mode

The highest digit of (1) is displayed if any of the following conditions occur:

1. If no thermocouple is plugged into the thermocouple input connector.
2. If the thermocouple connected to the input is broken or open-circuited.

T1 – T2 Mode

If no thermocouple is plugged into the thermocouple input connectors, the thermometer will display 000.

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°C adjust VR0
2. OUTPUTS Sign 0.0mVDC adjust VR4 (at 0°C)
3. 0°F adjust VR2
4. 952°F adjust VR3
5. OUTPUTS Sign 952mVDC adjust VR5 (at 952°F)
6. 511°C adjust VR6

SPECIFICATIONS

1. ELECTRICAL

- Measurement Range: -50°C to 1300°C (-50°F to 1999°F)
- Resolution: 1°C (1°F)
- Maximum Voltage at Thermocouple Input: 60V DC, 24V AC
- RF Field Derating: Strong RF fields can adversely affect measurement accuracy.

ENVIRONMENTAL

- Operating Temperature and Humidity: 0°C to 50°C (32°F to 122°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 is ±(...% of reading + ...degree) at 18°C to 2°C (64.4°F to 82.4°F) with relative humidity up to 80% for single-thermocouple measurements.

Function	Resolution	Range	Accuracy	Output Signal
°C -50°C 300°C	1°C	-50°C ~ 500°C 501°C ~ 1200°C 1201°C ~ 1300°C	±(0.3% + 1°C) ±(0.5% + 1°C) ±(0.75% + 1°C)	±(0.75% + 2mV)
°F -50°F 1999°F	1°F	-50°F ~ 1000°F 1001°F ~ 1999°F	±(0.3% + 2°F) ±(0.5% + 2°F)	±(0.75% + 5mV)

For T1-T2 Measurements, accuracy is: ±03% T1-T2 reading ±3°F, (±03% T1-T2 reading ±2°C)

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:

- 0°C to 18°C (32°F to 64.4°F) and 28°C to 50°C (82.4°F to 122°F) ambient, multiply the basic accuracy specification by 0.1 for each degree above 28°C (82.4°F) or below 18°C (64.4°F).

2. GENERAL SPECIFICATIONS

- Numerical Display: 3 1/2 digital liquid crystal display (LCD), 14mm height. Maximum reading 1999.
- Unit and Sign Display:
 - (.) Decimal point.
 - °C Celsius temperature scale
 - °F Fahrenheit temperature scale
 - () Low Battery
 - Negative polarity
 - HOLD 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 nominal.
- Power Requirement: 9-Volt battery, NEDA 1604 or JIS 006P IEC6f22
- Battery Life (typical): Alkaline Battery 200 hours
- 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

52331

Thermocouple Probe: 3 ft (1m) long

52332

Thermocouple Probe: 10 ft (3m) long

Use for general condition, especially for complex and hard to reach places.



52333

Piercing/Penetration Probe

Use for temperature measurement of liquid, gels or air.



52334

Surface Probe

Use for flat or curved surface measurement.



52335

Air Probe

