

Thermocouple Calibrator

Model PRC20



Introduction

Thank you for selecting the Extech Model PRC20. This device is shipped fully tested and calibrated and, with proper use, will provide years of reliable service. Please visit the Extech Instruments website (www.extech.com) to check for the latest version of this User Guide. Extech Instruments is an ISO-9001 certified company.

Safety

International Safety Symbols



This symbol, adjacent to another symbol or terminal, indicates the user must refer to the manual for further information.



This symbol, adjacent to a terminal, indicates that, under normal use, hazardous voltages may be present



Double insulation

Safety Notes

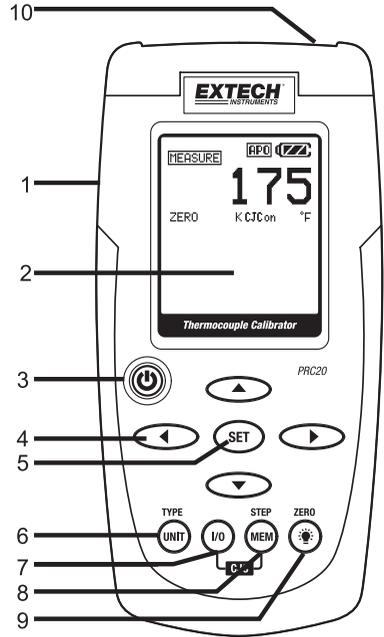
- Turn the unit OFF when the device is not in use.
- Remove the batteries if the device is to be stored for longer than 60 days.
- Never dispose of batteries in a fire. Batteries may explode or leak.
- Never mix battery types. Always install new batteries of the same type.

Cautions

- Improper use of this meter can cause damage, shock, injury or death. Read and understand this user manual before operating the meter.
- Inspect the condition of the thermocouples and the meter itself for any damage before operating the meter. Repair or replace any damage before use.
- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

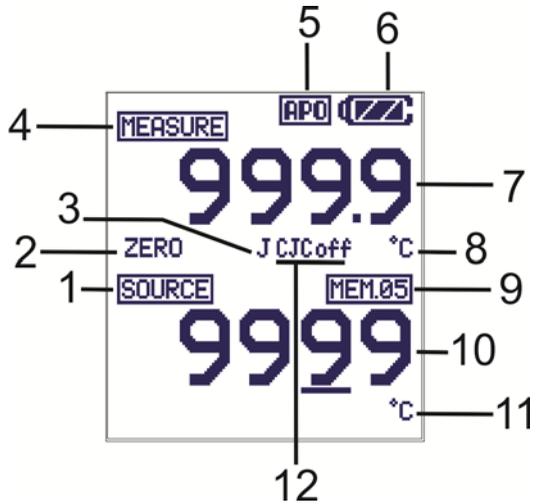
Meter Description

1. AC adaptor input jack
2. Display
3. Power ON/OFF
4. Source output adjustment arrow buttons
5. Set and exit the adjustment mode button
6. Unit button (thermocouple type, °F or °C)
7. I/O button
8. MEM (memory STEP button)
9. Backlight/ZERO button
10. Thermocouple mini-connector



Display Layout

1. SOURCE mode icon
2. ZERO function status icon
3. Thermocouple type
4. MEASURE mode icon
5. Auto Power OFF active icon
6. Battery status icon
7. Measure mode value
8. Measure mode units icon
9. Datalogger memory location
10. Source mode value
11. Source mode units icon
12. Cold Junction Compensation (CJC) circuit status (ON or OFF)



Keypad Descriptions and Operation

POWER BUTTON and AUTO POWER OFF FEATURE

1. Use the POWER button to turn the unit ON or OFF. When the unit is powered up, a short self-test will ensue after which the display will stabilize.
2. When the battery symbol flashes on the display, replace the battery as soon as possible. Low battery power may cause inaccurate readings and erratic meter operation.
3. This instrument is equipped with Auto Power OFF which turns the meter off after 10 minutes of inactivity. To override this feature; press and hold the POWER button until the display icon "ATP" turns off.

UNIT BUTTON

Momentarily press the UNIT button to select °F or °C units.

TYPE BUTTON

Press and Hold the TYPE/UNIT button for 1 second to change the thermocouple type (J, K, T, E, C, R, S, N or mV).

I/O BUTTON

Momentarily press the I/O button to select either SOURCE (output) or MEASURE (input).

CJC ON/OFF

Simultaneously press the IO and MEM buttons to turn the CJC (cold junction compensation) on or off. The CJC icon will indicate the status.

Note: CJC should normally be ON.

(Backlight) BUTTON

Momentarily press the Backlight button to turn the backlight on or off.

ZERO BUTTON

In the MEASURE or SOURCE mode, Press and Hold the ZERO () button for 1 second to zero the meter.

OFFSET ADJUSTMENT

The offset adjustment can be used to correct any known linearity errors with the thermocouple.

1. Select the measure mode and a thermocouple type (J/K/T/E/C/R/S/N).
2. Press and Hold the SET button for 1 second to enter the offset adjust mode.
3. Press the ▲ or ▼ button to change the offset value.
4. Press and Hold the SET button for 1 second to zero the offset value.
5. Momentarily press the SET button to save the change and exit the function.

► ◀ ▼ and ▲ **BUTTONS**

The arrow buttons are used to set the output value in the SOURCE mode.

1. Select the SOURCE mode
2. Press the ► or ◀ button select a digit for adjustment. The blinking underline cursor identifies the digit selected.
3. Press the ▼ or ▲ button to adjust the value of the digit. Press and Hold the ▼ or ▲ button to rapidly adjust the value.

SET BUTTON

The SET button is used to manually step through the 5 stored output values.

1. Select the SOURCE mode
2. Momentarily press the SET button and the value stored in memory location 01 will be sourced. "MEM.01" appears in the display.
3. Each press of the SET button will step through the 5 memory locations.
4. The arrow buttons can be used to adjust the value in each memory location.

STEP/MEM BUTTON

The STEP/MEM button is used to automatically step through the 5 stored output values. The meter can be set for a single cycle of the stored values or a continuous cycle.

1. Select the SOURCE mode
2. Press and Hold the STEP/MEM button. "STEPSS" (single cycle) and "STEPSC" (continuous cycle) will alternately appear in the display. Release the button when the desired mode is displayed.
3. In single cycle mode the meter will source the current or voltage displayed in MEM01 for 5 seconds. The meter will then advance to MEM02 for 5 seconds. This will continue through MEM05 and then step down through the memory locations. The cycle will end when MEM01 has been reached.
4. In the continuous mode the cycle will continue until manually stopped.
5. Momentarily press the MEM button to stop the cycle. "END" will briefly appear in the display.

STORING VALUES INTO MEMORY

There are 5 memory locations for each thermocouple type and for mV. The default values stored in these locations are:

Memory Location	Type J, K, C, R, S, N	Type T	Type E	mV
M1	0.0°C (32.0°F)	0.0°C (32.0°F)	0.0°C (32.0°F)	0mV
M2	100.0°C (212.0°F)	100.0°C (212.0°F)	100.0°C (212.0°F)	10.00mV
M3	500.0°C (932.0°F)	200.0°C (392.0°F)	200.0°C (392.0°F)	25.00mV
M4	750.0°C (1382.0°F)	300.0°C (572.0°F),	500.0°C (932.0°F)	40.00mV
M5	1000.0°C (1832.0°F)	400.0°C (752.0°F)	750.0°C (1382.0°F)	50.00mV

To change the values in memory:

1. Select the SOURCE mode
2. Press the SET button to select the memory location to be changed.
3. Press the arrow buttons to adjust to the new value
4. Momentarily press the MEM button to store the value. The memory location icon will blink while the value is being stored.

Modes of Operation

MEASURE (Input) Mode of Operation

1. Turn the meter ON.
2. "MEASURE" will appear in the display.
3. Momentarily press the UNIT button to select °F or °C.
4. Press and Hold the UNIT button for 1 second to change the thermocouple type (or mV).
5. Connect the thermocouple to the meter.
6. Read the measurement on the display.

Note: See the keypad description section to turn CJC on/off.

SOURCE (Output) Mode of Operation

In this mode, the unit can source the equivalent mV value for the temperature and the thermocouple type selected. The values can be output either manually or stepped from memory as described earlier.

1. Turn the meter ON
2. MEASURE" will appear in the display.
3. Momentarily press the UNIT button to select °F or °C.
4. Press and Hold the UNIT button for 1 second to change the thermocouple type (or mV).
5. Press the "I/O" button to select SOURCE.
6. Connect the Calibration Cable from the meter to the device to be calibrated.
7. Use the **ARROW** buttons to set the desired output value in the lower display. The upper display indicates the actual temperature or voltage value being sourced. If the upper display does not match the set value, check the batteries or the connections to the device being calibrated.

Tilt Stand / Hanger

The rear stand provides two methods for convenience in viewing.

1. Pull the bottom portion of the stand out to place the unit on a flat surface for viewing.
2. Pull the bottom and top portions of the stand out, and then rotate the stand to allow the unit to be hung.

Battery Replacement

When the battery icon appears on the display, the six AA batteries must be replaced.

The battery compartment is located on the rear of the meter.

1. Open the tilt stand, loosen the captive Philips head screw and remove the battery cover.
2. Remove and replace the batteries, observing polarity.
3. Replace and secure the battery cover.



Never dispose of used batteries or rechargeable batteries in household waste.

As consumers, users are legally required to take used batteries to appropriate collection sites, the retail store where the batteries were purchased, or wherever batteries are sold.

Disposal: Do not dispose of this instrument in household waste. The user is obligated to take end-of-life devices to a designated collection point for the disposal of electrical and electronic equipment

Specifications

General Specifications

Display	Dot matrix LCD
Cold junction compensation	0.03°C per °C (0.02°F per °F)
Thermocouple Standard and Scale	NIST 175, ITS-90
Meter Power	6 AA batteries or AC adaptor
Auto Power OFF	Meter automatically powers off after 10 minutes of inactivity
Operating Temperature	5°C to 40°C (41°F to 104°F)
Storage Temperature	-20°C to 60°C (-4°F to 140°F)
Operating Humidity	Max 80% up to 31°C (87°F) decreasing linearly to 50% at 40°C (104°F)
Storage Humidity	<80%
Operating Altitude	2000 meters (7000ft) maximum
Dimensions	159 x 80 x 44 mm (6.3 x 3.2 x 1.7")
Weight	225g (8 oz.) without batteries

Range Specifications

Source and Measure Ranges		Resolution	Accuracy (% of reading)
Type J	-50 to 1000°C (-58 to 1832°F)	0.1° (measure) 1° (source)	± (0.05% + 1°C / 1.8°F)
Type K	-50 to 1370°C (-58 to 2498°F)		
Type T	-120 to 400°C (-184 to 752°F)		
Type E	-50 to 750°C (-58 to 1382°F)		
Type C	0 to 1750°C (32 to 3182°F)		
Type R	0 to 1750°C (32 to 3182°F)		
Type S	0 to 1750°C (32 to 3182°F)		
Type N	-50 to 1300°C (-58 to 2372°F)		
mV	Measure: -10mV to 60mV Source: -5mV to 55mV	0.01mV	± (0.01% + 1digit)

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