# USER MANUAL

# Multifunction Process Calibrator

**MODEL PRC30**

# User Manual (en)

**INTRODUCTION**

Thank you for selecting the Extech Model PRC30. This device is shipped fully tested and calibrated and, with proper use, will provide years of reliable service. Please visit the Extech website (www.extech.com) to check for the latest version of this User Manual.

**SAFETY**

***International Safety Symbols***

| | |
|---|---|
|  | This symbol, adjacent to another symbol or terminal, indicates that 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***

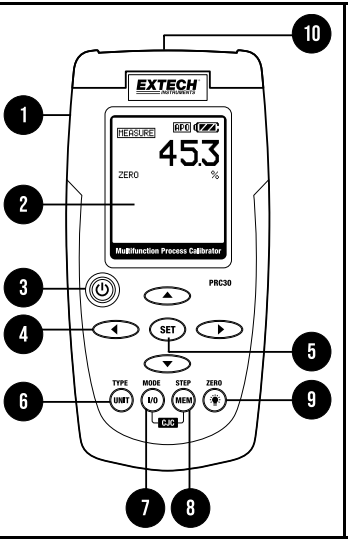
- Do not exceed the maximum allowable input range.
- Turn the unit OFF when the device is not in use.
- Remove the batteries if the device is to be stored > 60 days.
- Never dispose of batteries in a fire. Batteries may explode or leak.
- Never mix battery types. Always install new batteries of the same type.

***Safety Warnings***

- Improper use of this meter can cause damage, shock, injury or death. Read and understand this user manual before operating the meter.
- Always remove the test leads before replacing the battery.
- Inspect the condition of the test leads and the meter for any damage before use. 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.

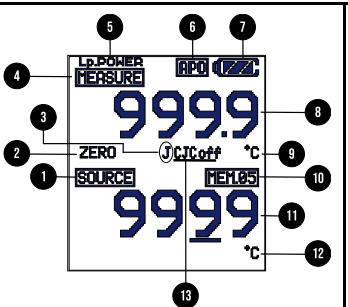
## DESCRIPTION

***Meter***




1. AC power adaptor jack
2. Display
3. Power ON-OFF button
4. Output adjustment arrow buttons
5. SET button
6. UNIT and thermocouple type button
7. Input/Output and MODE button
8. Memory and STEP button
9. Backlight and ZERO button
10. Input/Output and thermocouple jacks

***Display***




1. SOURCE mode
2. ZERO status
3. Thermocouple type
4. MEASURE mode
5. Loop power status
6. APO active
7. Battery status
8. MEASURE mode value
9. MEASURE mode unit
10. Preset memory location
11. SOURCE mode value
12. SOURCE mode unit
13. Cold junction compensation status

***Control Buttons***

| | |
|---|---|
|  | Short press to power ON/OFF. |
| **UNIT** | Short press to select °F or °C (in temperature mode), mA or % (in current mode), or mV/V (in voltage mode). The meter automatically selects the voltage range in the MEASURE mode. |
| **TYPE** | Long press to select thermocouple type (J, K, T, E, C, R, S, N, or mV) in the temperature mode. |
| **I/O** | Short press to select SOURCE (output) or MEASURE (input) mode. |
| **MODE** | Long press in the MEASURE mode to select the measurement function (temperature, voltage, current, or current with loop power). |
| **CJC** | In the temperature function, simultaneously press the I/O and MEM buttons to switch the CJC (cold junction compensation) ON-OFF. The CJC icon will indicate the status. Note: CJC should normally be ON. |
|  | Short press to switch display backlight ON-OFF. |
| **ZERO** | In MEASURE mode, long press to null the displayed reading. |
| **OFFSET** | The offset adjustment can be used to correct thermocouple linearity errors.<br>1. Select MEASURE mode and thermocouple type (explained above).<br>2. Long press SET to access the offset adjustment mode.<br>3. Press the ▲ or ▼ button to change the offset value.<br>4. Long press SET to ZERO the offset value.<br>5. Short press SET to save the change and exit. |
| ◀▶▼▲ | In the SOURCE mode, adjust the output value.<br>1. Select the SOURCE mode, as explained above.<br>2. Use the ◀ ▶ buttons to select a digit for adjustment. The blinking underline cursor identifies the selected digit.<br>3. Press the ▼ or ▲ button to adjust the digit value. Long press the buttons to rapidly scroll. |

| | |
|---|---|
| **SET** | Manually step through the five output presets.<br>1. Select the SOURCE mode, as explained above.<br>2. Press the SET button. The value stored in memory location 01 will be sourced. "**MEM.01**" appears.<br>3. Each press of the SET button will step through the presets.<br>4. The arrow buttons can be used to adjust the value in each memory location. |
| **STEP/MEM** | Automatically scroll through the five output presets. The meter can be set for a single cycle of the presets or a continuous cycle.<br>1. Select the SOURCE mode, as explained above.<br>2. Long press STEP/MEM. "**STEPS**" (single cycle) and "**STEPC**" (continuous cycle) will alternately appear. Release the button when the desired mode is displayed.<br>3. In single cycle mode the meter will source the value displayed in **MEM01** for 5 seconds. The meter will then advance to **MEM02** for 5 seconds. This will continue through to **MEM05** and then reverse direction through the memory locations. The cycle will end when **MEM01** is reached.<br>4. In the continuous mode the cycle will continue until manually stopped.<br>5. Momentarily press the MEM button to stop the cycle. "**END**" will briefly appear. |

#### BATTERY POWER AND AUTO POWER OFF (APO)

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.

This instrument is equipped with APO that switches the meter OFF after 10 minutes of inactivity. To override this feature, long press the POWER button until the display icon "**APO**" switches OFF.

#### TEMPERATURE AND CURRENT/VOLTAGE PRESETS

There are five (5) presets for each function. Refer to the STEP/MEM control button description, above, for operation instructions. Refer to the tables below for the preset values.

To change the values in memory:

1. Select the SOURCE mode, as explained above.
2. Press SET to select a memory location.
3. Use the arrow buttons to adjust the value.
4. Short press MEM to store the value. The preset number will blink while the value is being stored.

***Temperature Presets***

| Memory Location | Types J, K, C, R, S, N | Type T | Type E | mV |
|---|---|---|---|---|
| MEM 1 | 0.0°C<br>32.0°F | 0.0°C<br>32.0°F | 0.0°C<br>32.0°F | 0 |
| MEM 2 | 100.0°C<br>212.0°F | 100.0°C<br>212.0°F | 100.0°C<br>212.0°F | 10.00 |
| MEM 3 | 500.0°C<br>932.0°F | 200.0°C<br>392.0°F | 200.0°C<br>392.0°F | 25.00 |
| MEM 4 | 750.0°C<br>1382.0°F | 300.0°C<br>572.0°F | 500.0°C<br>932.0°F | 40.00 |
| MEM 5 | 1000.0°C<br>1832.0°F | 400.0°C<br>752.0°F | 750.0°C<br>1382.0°F | 50.00 |

***Current and Voltage Presets***

| Memory Location | mA | % | mV | V |
|---|---|---|---|---|
| MEM 1 | 4.00 | 0.0 | 0 | 0 |
| MEM 2 | 8.00 | 25 | 500 | 5 |
| MEM 3 | 12.00 | 50 | 1000 | 10 |
| MEM 4 | 16.00 | 75 | 1500 | 15 |
| MEM 5 | 20.00 | 100 | 2000 | 20 |

**MEASURE AND SOURCE OPERATION**

***Temperature MEASURE (Input) Mode***

1. Switch the meter ON.
2. "**MEASURE**" will appear.
3. Long press MODE to select the Temperature function.
4. Long press TYPE to select the thermocouple type.
5. Short press UNIT to select °F or °C.
6. Connect the thermocouple to the meter.
7. Read the measurement on the display.

Note: See the Control Button description section, above, for instructions on switching the cold junction compensation (CJC) ON-OFF.

***Temperature SOURCE (Output) Mode***

In this mode, the unit can source the equivalent mV value for the temperature and the thermocouple type selected. The values can be sourced manually or stepped from memory as described in the Control Button description section (for the STEP/MEM button) and the Preset section, above.

1. Switch the meter ON.
2. "**MEASURE**" will appear.
3. Long press MODE to select the temperature function.
4. Long press TYPE to select the thermocouple type.
5. Short press UNIT to select °F or °C.
6. Short press the I/O button to select SOURCE.
7. Connect the meter to the device under test using the calibration cable.
8. Use the ▲ ▼ buttons to set the output value (shown in the lower display). The upper display indicates the actual sourced temperature or voltage. If the upper display value does not match the set value, check the batteries and the connections.

***Current and Voltage MEASURE (Input) Mode***

In this mode, the unit will measure up to 50 mA DC or 20 V DC.

1. Switch the meter ON.
2. "**MEASURE**" will appear.
3. Long press MODE to select mA, mA with loop power, or mV.
4. Connect the calibration cable to the meter.
5. Connect the calibration cable to the device or circuit under test.
6. Read the measurement on the display.

***Current and Voltage SOURCE (Output) Mode***

In this mode, the unit can source current up to 24 mA DC at 1000 ohms or voltage up to 20.00 V DC. The current or voltage can be sourced manually or stepped from memory as described in the Presets section, above.

1. Switch the meter ON.
2. "**MEASURE**" will appear.
3. While still in MEASURE mode, long press MODE to select current or voltage mode.
4. Short press the I/O button to select SOURCE.
5. Short press UNIT to select **%** or mA (in current mode) or select mV or V (in voltage mode).
6. Connect the calibration cable to the meter
7. Connect the calibration cable to the device or circuit under test
8. Use the arrow buttons to set the output value (shown in the lower display). The upper display indicates the actual sourced current or voltage. If the upper display value does not match the set value, the load impedance may exceed the specified range and/or the battery voltage may be low.

**METER MOUNTING**

The rear stand provides two methods for mounting the meter.

1. Tilt stand (the bottom of the stand extends).
2. Wall mounting. Extend the top and bottom sections of the tilt stand, and then rotate the stand into position for mounting.

**MAINTENANCE**

***Battery Replacement***

When the battery icon appears on the display, the six (6) AA batteries must be replaced. The battery compartment is located on the rear of the meter.

1. Expand the tilt stand, loosen the Phillips screw, and remove the battery cover.
2. Replace the batteries, observing correct polarity.
3. Secure the battery cover before use.

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.

***Cleaning and Storage***

Periodically wipe the case with a damp cloth and mild detergent; do not use abrasives or solvents. If the meter is not to be used for 60 days or more, remove the batteries and store separately.

**SPECIFICATIONS**

***General Specifications***

| | |
|---|---|
| Display type | Dot matrix LCD |
| Cold junction compensation | 0.03°C per °C (0.02°F per °F) |
| Thermocouple standard and scale | NIST 175, ITS-90 |
| Current output | 24 mA DC (maximum) at 1000 ohms |
| Voltage output impedance | 10k ohms (minimum) |
| Battery power | 6 x AA batteries or AC adaptor |
| Auto Power OFF | After ten (10) minutes of inactivity |
| Operating temperature | 5 to 40°C (41 to 104°F) |
| Storage temperature | -20 to 60°C (–4 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% RH |
| Operating altitude | 2000 m (7000 ft.) maximum |
| Dimensions | 159 x 80 x 44 mm (6.3 x 3.2 x 1.7 in.) |
| Weight | 225 g (8 oz.) without batteries |

***Range Specifications***

| **Thermocouple** (Source and Measure) | | **Resolution** | **Accuracy** (% reading) |
|---|---|---|---|
| TYPE J | -50 to 1000°C (-58 to 1832°F) | 0.1° (measure)<br>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: –10 mV to 60 mV<br>Source: –5 mV to 55 mV | 0.01 mV | ± (0.01% + 1 digit) |

| MODE | FUNCTION | RANGE | ACCURACY (% reading) |
|---|---|---|---|
| DC Measure | Current | 0.00 to 50.00 mA | ± (0.01% + 1 digit) |
| | % | -25.0 to 230.0 % | |
| | Voltage | 0 to 1999 mV | |
| | (Auto Range) | 2.00 to 20.00 V | |
| DC Source | Current | 0.00 to 24.00 mA | |
| | % | -25.0 to 125.0 % | |
| | Voltage | 0 to 2000 mV | |
| | | 0.00 to 20.00 V | |
| Loop Power | 24 to 30 V DC (< 50 mA DC) | | |

**CUSTOMER SUPPORT**

Customer Support Local Telephone List:

https://support.flir.com/contact

Returns (RMA):

https://customer.flir.com/Home

**WARRANTY**

Teledyne FLIR warrants this Extech brand instrument to be free of defects in parts and workmanship for two years from date of shipment. To view the full warranty text, please visit the support site, link below.

https://www.flir.com/support-center/warranty/

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**Website**
http://www.flir.com

**Customer support**
http://support.flir.com



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