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› [B&K Precision](#) /

› B&K Precision 890C Dual Display Handheld Capacitance Meter, 50 mF Max Range User Manual

## B&K Precision 890C

# B&K Precision 890C Dual Display Handheld Capacitance Meter

User Instruction Manual

## 1. INTRODUCTION

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The B&K Precision 890C is a high-performance, dual-display handheld capacitance meter designed for accurate measurement of capacitance up to 50 mF. It features various operation modes including tolerance sorting, relative mode, and compare mode, making it suitable for a wide range of applications from component sorting to general electrical testing. Its backlit LCD ensures clear readability in diverse lighting conditions.

## 2. SAFETY INFORMATION

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**WARNING: Always discharge capacitors before testing. Failure to do so may result in damage to the meter or personal injury.**

- Read all instructions carefully before operating the meter.
- Do not apply voltage to the input terminals. This meter is designed for capacitance measurement only.
- Ensure the meter is turned off before connecting or disconnecting test leads.
- Do not operate the meter if it appears damaged or if the case is open.
- This meter is safety certified in compliance with IEC 1010-1 standards. Adhere to all local and national safety codes.

## 3. WHAT'S IN THE BOX?

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- B&K Precision 890C Capacitance Meter
- Mini USB Interface Cable
- Red and Black Banana-to-Alligator Test Leads
- 9V Battery
- Instruction Manual (this document)

## 4. PRODUCT OVERVIEW

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Figure 4.1: Front view of the B&K Precision 890C Capacitance Meter.

## 4.1. Front Panel Layout

- **Dual LCD Display:** Features an 11,000-count primary display and a 10,000-count secondary display for simultaneous measurement readings. Backlit for visibility.
- **POWER Button:** Turns the meter on or off.
- **HOLD Button:** Freezes the current display reading.
- **RANGE/AUTO Button:** Toggles between manual and auto-ranging modes.
- **SET Button:** Used for setting parameters in various modes, such as compare limits.
- **TOL Button:** Activates and cycles through tolerance sorting modes (1%, 5%, 10%, 20%).
- **HOLD/SAVE Button:** Used to save readings or activate the Min/Max/Average function.
- **REC Button:** Initiates data recording.
- **REL Button:** Activates the relative mode, subtracting a stored value from subsequent measurements.
- **Input Terminals (+, -, GUARD):** Connect test leads for capacitance measurements. The GUARD terminal helps reduce stray capacitance effects.

## 5. SETUP

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### 5.1. Battery Installation

1. Ensure the meter is turned off.
2. Locate the battery compartment on the rear of the meter.
3. Open the compartment cover.
4. Connect the 9V battery to the battery clip, observing correct polarity.
5. Place the battery into the compartment and close the cover securely.

### 5.2. Connecting Test Leads

1. Insert the red banana plug of the test lead into the '+' terminal.
2. Insert the black banana plug of the test lead into the '-' terminal.
3. For precision measurements, especially with small capacitance values, connect the third lead (if available and required) to the 'GUARD' terminal.

## 6. OPERATING INSTRUCTIONS

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## 6.1. Basic Capacitance Measurement

1. Press the **POWER** button to turn on the meter.
2. Ensure the capacitor to be measured is fully discharged.
3. Connect the test leads to the capacitor terminals.
4. The primary display will show the capacitance value, and the secondary display may show additional parameters like dissipation factor (D) or quality factor (Q) if applicable.

## 6.2. Auto-Ranging and Manual Ranging

By default, the meter operates in auto-ranging mode, automatically selecting the appropriate measurement range. To switch to manual ranging:

- Press the **RANGE/AUTO** button. The 'AUTO' indicator on the display will disappear.
- Each subsequent press of the **RANGE/AUTO** button will cycle through the available manual ranges.
- To return to auto-ranging, press and hold the **RANGE/AUTO** button until 'AUTO' reappears on the display.

## 6.3. Relative Mode (REL)

Relative mode allows you to subtract a reference value from subsequent measurements, useful for nulling out stray capacitance from test leads or fixtures.

1. With the test leads open or connected to a known reference, press the **REL** button. The display will show 'REL' and the current reading will be stored as the reference.
2. Subsequent measurements will display the difference from this reference value.
3. To exit relative mode, press the **REL** button again.

## 6.4. Tolerance Sorting Mode (TOL)

This mode is ideal for sorting components based on predefined tolerance percentages.

1. Press the **TOL** button to activate tolerance mode.
2. Use the **TOL** button to cycle through available tolerance percentages (e.g., 1%, 5%, 10%, 20%).
3. The display will indicate if the measured capacitor falls within, above, or below the selected tolerance range.

## 6.5. Compare Mode

The compare mode supports 25 sets of High/Low limits, enabling efficient sorting of capacitors without needing to manually set the meter each time.

- Refer to the detailed instructions in the full manual for setting and recalling compare limits using the **SET** button.
- Once limits are set, the meter will provide an indication (e.g., Pass/Fail, High/Low) for each measured component.

## 6.6. Data Hold and Min/Max/Average Function

- **Data Hold:** Press the **HOLD** button to freeze the current reading on the display. Press again to release.
- **Min/Max/Average:** Press and hold the **HOLD/SAVE** button to activate the Min/Max/Average recording function. The meter will continuously record the minimum, maximum, and average readings. Press the button repeatedly to cycle through these values. Press and hold again to exit.

## 6.7. PC Connectivity

The 890C includes a mini-USB interface cable for connecting to a PC. Software for configuring, viewing, and logging results can be downloaded from the B&K Precision website. This allows for data analysis and remote control of the meter.

## 7. MAINTENANCE

### 7.1. Cleaning

Wipe the meter's case with a damp cloth and mild detergent. Do not use abrasives or solvents. Ensure no moisture enters the meter.

### 7.2. Battery Replacement

When the low battery indicator appears on the display, replace the 9V battery as described in Section 5.1.

### 7.3. Storage

If the meter is not to be used for an extended period, remove the battery to prevent leakage and store the meter in a cool, dry place.

## 8. TROUBLESHOOTING

| Problem                        | Possible Cause                                                             | Solution                                                                                                                  |
|--------------------------------|----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| Meter does not turn on         | Dead or improperly installed battery                                       | Check battery installation; replace battery.                                                                              |
| No reading or unstable reading | Open circuit; capacitor not discharged; poor lead connection; out of range | Ensure proper connection; discharge capacitor; check leads; switch to auto-ranging or appropriate manual range.           |
| Display shows "OL" (Overload)  | Capacitance value exceeds selected range                                   | Switch to a higher range or use auto-ranging.                                                                             |
| Inaccurate readings            | Stray capacitance; uncalibrated meter; damaged leads                       | Use relative mode to null out stray capacitance; consider professional calibration; inspect and replace leads if damaged. |

## 9. SPECIFICATIONS

| Feature                | Detail                                                                     |
|------------------------|----------------------------------------------------------------------------|
| Capacitance Range      | Up to 50 mF                                                                |
| Display                | 4-1/2 digit LCD, Dual Level (11,000-count primary, 10,000-count secondary) |
| Dimensions (H x W x D) | 7.5 x 3.5 x 1.6 inches (190 x 90 x 41 mm)                                  |
| Weight (with battery)  | 0.77 lbs (350 g)                                                           |

| Feature           | Detail                                                                                     |
|-------------------|--------------------------------------------------------------------------------------------|
| Power Source      | 9V Battery                                                                                 |
| Safety Compliance | IEC 1010-1                                                                                 |
| Interface         | Mini USB                                                                                   |
| Operation Modes   | Tolerance Sorting, Relative Mode, Manual/Auto-Ranging, Compare Mode, Hold, Min/Max/Average |

## 10. WARRANTY AND SUPPORT

The B&K Precision 890C Capacitance Meter is covered by B&K Precision's standard product warranty. For detailed warranty terms, technical support, service, or calibration, please visit the official B&K Precision website or contact their customer service department. Contact information can typically be found on the manufacturer's website or in the product packaging.