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**CEM DT-9919**

# CEM DT-9919 Digital Multimeter User Manual

Model: DT-9919
Brand: CEM

## 1. Introduction

The CEM DT-9919 is a high-precision, True RMS autoranging digital multimeter designed for professional and industrial use. It features a 40,000-count display and is capable of measuring AC/DC voltage, AC/DC current, resistance, capacitance, frequency, and temperature. The device also includes Non-Contact Voltage (NCV) detection, peak capture, data hold, and MAX/MIN recording modes. Its robust design is IP67 waterproof and dustproof, offering enhanced durability.

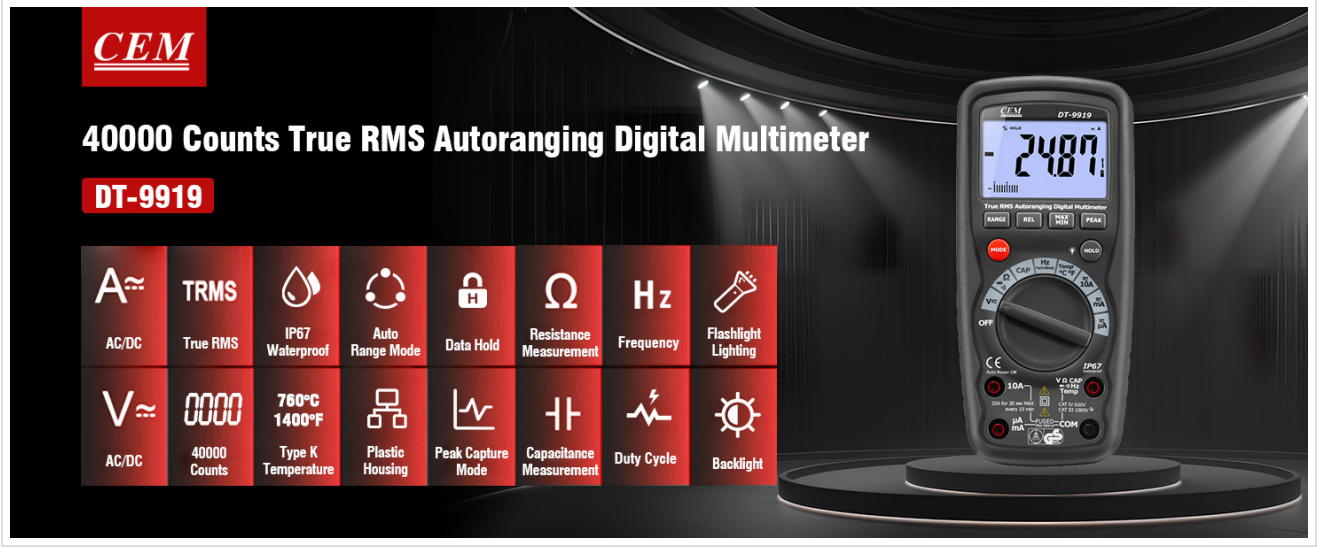



Image 1.1: Overview of the CEM DT-9919 Digital Multimeter's main features, including True RMS, IP67 rating, auto range, data hold, resistance, frequency, flashlight, AC/DC voltage, 40000 counts, Type K temperature, plastic housing, peak capture, capacitance, duty cycle, and backlight.

## 2. Safety Information

Always adhere to safety precautions when using the multimeter to prevent electric shock or damage to the

instrument. This device is rated for CAT IV 600V and CAT III 1000V environments.

- Do not apply more than the rated voltage, as marked on the meter, between terminals or between any terminal and earth ground.
- Use caution when working with voltages above 60V DC or 30V AC RMS, as these pose a shock hazard.
- Always disconnect the test leads from the circuit before changing functions or ranges.
- Inspect test leads for damaged insulation or exposed metal. Replace if damaged.
- Ensure the multimeter is in the correct function and range for the measurement being taken.
- The DT-9919 features 1000V input protection on all ranges and dual fuse protection for current measurements (10A/1000V and 0.5A/1000V).
- The IP67 rating indicates the device is protected against dust ingress and immersion in water up to 1 meter for 30 minutes. However, avoid intentional submersion and ensure input jacks are free of moisture before use.




Image 2.1: The CEM DT-9919 Multimeter highlighting its high-quality sensor and safety certifications, including EN 61010-1 CAT III 1000V and CAT IV 600V.

## 3. Setup

### 3.1 Package Contents

Verify that all items are present in the package:

- CEM DT-9919 Digital Multimeter
- Test leads (red and black)
- 9V battery
- Type K temperature probe
- Carrying case
- User's Guide (this manual)




Image 3.1: The CEM DT-9919 Digital Multimeter shown with its complete set of accessories, including test leads, 9V battery, Type K temperature probe, carrying case, and user's guide.

## 3.2 Battery Installation

1. Ensure the multimeter is turned OFF and disconnect all test leads.
2. Locate the battery compartment cover on the rear of the multimeter.
3. Use a screwdriver to loosen the screw(s) and remove the cover.
4. Connect the 9V battery to the battery clips, observing correct polarity.
5. Place the battery into the compartment and replace the cover, securing it with the screw(s).

## 3.3 Product Overview and Controls

Familiarize yourself with the multimeter's components:




Image 3.2: Detailed diagram of the CEM DT-9919 Digital Multimeter, labeling its 40,000-count LCD display, REL button, RANGE button, MODE button, mA, µA and 10A input jacks, MAX/MIN button, PEAK button, HOLD and (Backlight) button, Function switch, Positive input jack, and COM input jack.

- **LCD Display:** Shows measurement readings, units, and function indicators.
- **Function Switch:** Rotary switch to select measurement functions (Voltage, Current, Resistance, etc.).
- **Input Jacks:**
    - **COM:** Common (negative) input for all measurements.

- **VΩCAPHzTemp:** Positive input for Voltage, Resistance, Capacitance, Frequency, and Temperature measurements.
- **mAμA:** Positive input for milliampere and microampere current measurements.
- **10A:** Positive input for 10 Ampere current measurements.

- **Buttons:**
  - **MODE:** Toggles between different measurement types within a function (e.g., AC/DC voltage, Diode/Continuity).
  - **RANGE:** Manually selects measurement range (disables auto-ranging).
  - **REL:** Activates relative measurement mode.
  - **MAX/MIN:** Records maximum and minimum values during a measurement.
  - **PEAK:** Captures peak instantaneous values.
  - **HOLD:** Freezes the current display reading. Long press activates backlight.

## 4. Operating Instructions

### 4.1 Power On/Off

Turn the function switch from OFF to any desired measurement function to power on the multimeter. To power off, turn the function switch back to OFF.

### 4.2 Auto Power Off

The multimeter features an automatic power-off function to conserve battery life. If no button is pressed or the function switch is not moved for approximately 15 minutes, the device will automatically power off. Press any button or rotate the function switch to resume operation.




Image 4.1: The CEM DT-9919 Multimeter illustrating its 15-minute auto power off feature, designed for energy saving and extending battery life.

### 4.3 Automatic Ranging

The DT-9919 is an autoranging multimeter. When measuring voltage, current, or resistance, it will automatically select the appropriate measurement range. This feature simplifies operation and helps prevent damage from incorrect range selection.




Image 4.2: The CEM DT-9919 Multimeter in use, demonstrating its automatic switching range feature for voltage, current, and resistance measurements, which prevents damage to the multimeter.

## 4.4 Basic Measurements

Follow these general steps for most measurements:

1. Turn the function switch to the desired measurement function (e.g., V~ for AC Voltage, V- for DC Voltage).
2. Connect the black test lead to the COM jack.
3. Connect the red test lead to the appropriate positive input jack (VΩCAPHzTemp for voltage, resistance, etc., or mAμA/10A for current).
4. Connect the test leads to the circuit or component under test.
5. Read the measurement value on the LCD display.

## 4.5 Special Functions

- **Data Hold:** Press the **HOLD** button to freeze the current reading on the display. Press again to release.




Image 4.3: The CEM DT-9919 Multimeter in use, showing the Data Hold function which keeps the measured data intact on the LCD display.

- **MAX/MIN Recording:** Press the **MAX/MIN** button to enter recording mode. The meter will display the maximum value. Press again to cycle through minimum and current values. Hold the button to exit.




Image 4.4: The CEM DT-9919 Multimeter displaying MAX/MIN data, indicating its ability to record maximum and minimum values during a measurement.

- **Peak Capture:** Press the **PEAK** button to capture fast transient peaks.
- **Relative Measurement (REL):** Press the **REL** button to store the current reading as a reference and display subsequent measurements as a deviation from this reference.
- **Backlight:** Long press the **HOLD** button to turn the display backlight on or off.



Image 4.5: The CEM DT-9919 Multimeter's backlight LCD display, which improves readability in low-light conditions.

- **True RMS:** The DT-9919 provides True RMS measurements, which accurately measure AC voltage and current for non-sinusoidal waveforms.



Image 4.6: A graph illustrating the difference between normal measurement methods and the True RMS measurement method, highlighting the latter's accuracy for complex waveforms.

## 5. Maintenance

### 5.1 Cleaning

Wipe the case with a damp cloth and mild detergent. Do not use abrasives or solvents. Ensure the device is completely dry before use.

### 5.2 Battery Replacement

When the battery indicator appears on the display, replace the 9V battery as described in Section 3.2. A low battery can affect measurement accuracy.

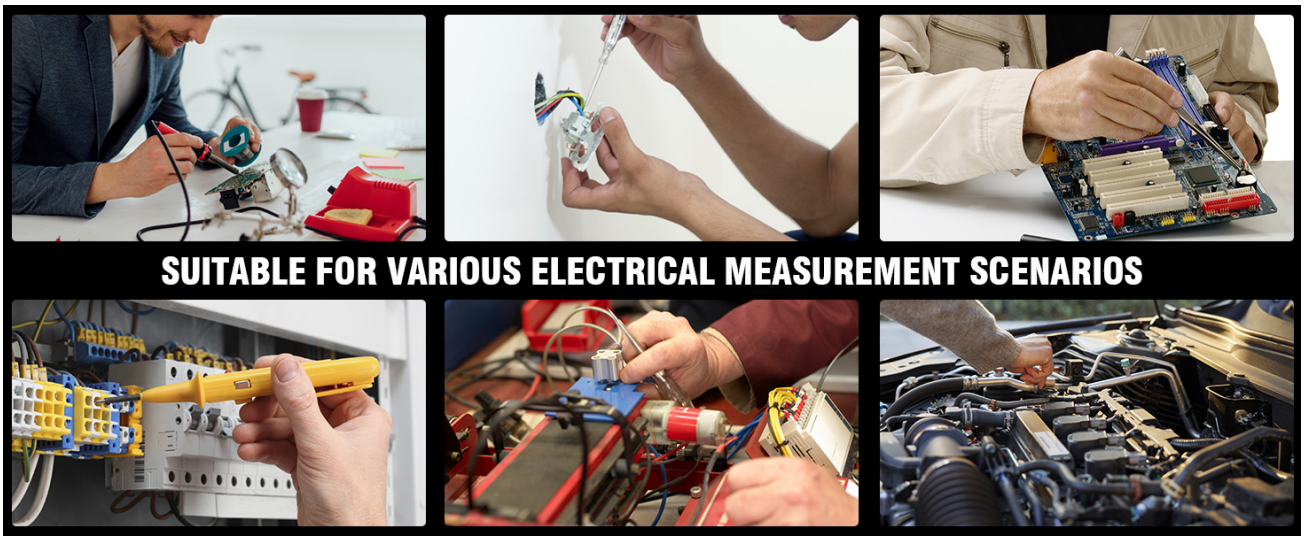



Image 5.1: The CEM DT-9919 Multimeter displaying a low battery indicator, prompting the user to replace the battery to ensure continued operation.

### 5.3 Fuse Replacement

If the current measurement functions cease to work, the fuses may need replacement. Refer to a qualified technician for fuse replacement to ensure proper safety and functionality. The fuses are rated 10A/1000V and 0.5A/1000V.

### 5.4 Storage

If the multimeter is not used for an extended period, remove the battery to prevent leakage. Store the device in a cool, dry place, away from direct sunlight and extreme temperatures.

## 6. Troubleshooting

- **No Display:** Check battery installation and charge level. Replace battery if low.
- **Incorrect Readings:** Ensure test leads are properly connected to the correct input jacks and the function switch is set to the appropriate measurement mode. Verify the circuit or component is functioning correctly.
- **Current Measurement Not Working:** Check the fuses. If blown, they need to be replaced by a qualified technician.
- **"OL" Display:** Indicates an overload or out-of-range condition. Select a higher range (if not in auto-ranging mode) or verify the input is within the meter's specifications.

## 7. Specifications

| Feature | Specification |
|---|---|
| Display | 40,000 counts LCD |
| Measurement Type | True RMS |
| AC/DC Voltage | Up to 1000V (0.01mV resolution) |
| AC/DC Current | Up to 10A (0.01µA resolution) |
| Resistance | 0.01Ω resolution |

| Feature | Specification |
|---|---|
| Capacitance | Yes |
| Frequency | Yes |
| Temperature | Type K probe included |
| Process Loop Measurement | 4-20mA with % reading |
| Input Protection | 1000V on all ranges |
| Fuse Protection | 10A/1000V and 0.5A/1000V on current ranges |
| Safety Rating | CAT IV 600V, CAT III 1000V, CE, EN 61010-1, FCC, RoHS |
| Environmental Rating | IP67 Waterproof and Dustproof |
| Drop Protection | 2M |
| Special Features | Autoranging, Data Hold, MAX/MIN, Peak Capture, NCV, Backlight |
| Power Source | 1 x 9V battery (included) |
| Auto Power Off | Approx. 15 minutes |
| Dimensions | 8.58 x 5 x 3.19 inches |
| Weight | 1.6 Pounds |

## 8. Warranty and Support

CEM products are manufactured under strict quality control standards. This product is covered by a limited warranty against defects in materials and workmanship. For specific warranty terms and conditions, please refer to the warranty card included with your product or contact CEM customer support.
For technical support, service, or replacement parts, please contact your local CEM distributor or visit the official CEM website. Ensure you have your product model number (DT-9919) and purchase information available when seeking support.


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