Proster AK3-AT1-GL-M-X

Proster TRMS 9999 Counts Digital Multimeter

Model: AK3-AT1-GL-M-X

Introduction

This manual provides detailed instructions for the safe and effective use of your Proster TRMS 9999 Counts Digital Multimeter. This device is designed for measuring AC/DC voltage, AC/DC current, resistance, capacitance, frequency, duty cycle, diode, continuity, non-contact voltage (NCV), and temperature. Its True RMS capability ensures accurate readings for non-sinusoidal waveforms. The EBTN LCD with analog bar graph offers clear and comprehensive display of measurement results.

Safety Information

To ensure safe operation and service of the meter, follow these instructions. Failure to observe these safety warnings can result in severe injury or death.

- Always ensure the meter is in the correct function and range before making measurements.
- Do not apply more than the rated voltage, as marked on the meter, between the terminals or between any terminal and earth ground.
- Use caution when working with voltages above 30V AC RMS, 42V peak, or 60V DC. These voltages pose a shock hazard.
- Before measuring current, ensure the circuit is de-energized and the meter is connected in series with the load.
- Never measure resistance, capacitance, or diode on a live circuit. Disconnect power and discharge all capacitors before testing.
- Replace batteries when the low battery indicator appears to ensure accurate readings.
- Do not operate the meter if it appears damaged or if the test leads are damaged.
- Always use the correct terminals, function, and range for measurements.
- Keep fingers behind the finger guards on the test probes during measurements.

Product Overview

The Proster Digital Multimeter features a compact design with an intuitive button layout and a clear EBTN LCD. Below is a diagram illustrating the main components and their functions.

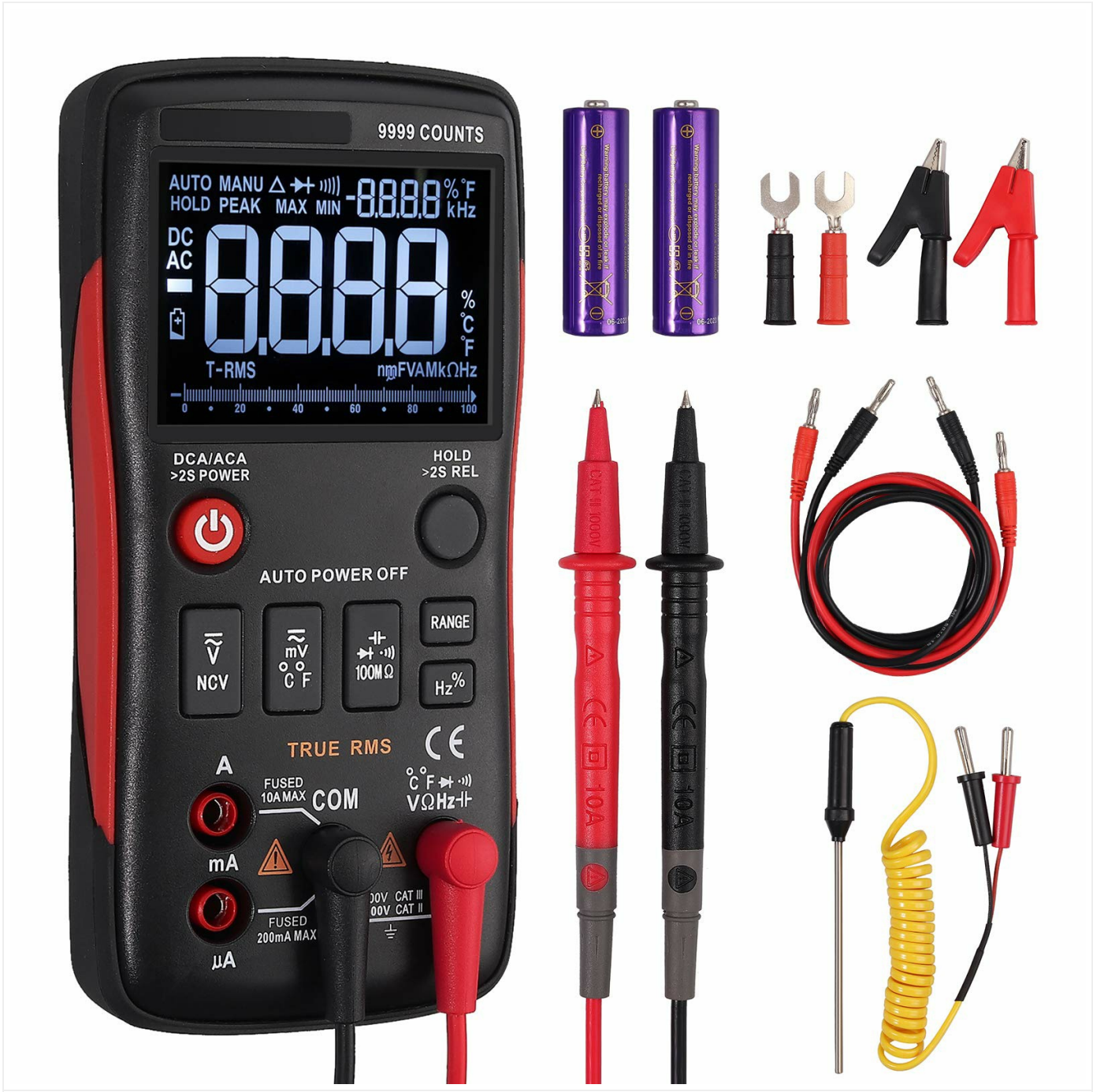

Figure 1: Front panel layout of the Proster Digital Multimeter, showing display, buttons, and input jacks.

Key Components:

- **EBTN LCD Display:** Shows measurement values, units, and an analog bar graph.
- **Power Button:** Long press to turn on/off.
- **DC/AC/ACA Button:** Switches between DC and AC voltage/current modes.
- **HOLD Button:** Freezes the current display reading. Long press for 2 seconds to clear data.
- **REL Button:** (Hold >2S) Relative measurement mode.
- **RANGE Button:** Switches between automatic and manual ranging.
- **NCV Button:** Activates Non-Contact Voltage detection.
- **mV/°C/°F Button:** Selects millivolt, Celsius, or Fahrenheit temperature measurement.
- **10MΩ/100MΩ Button:** Selects resistance range.
- **Hz/% Button:** Selects frequency or duty cycle measurement.
- **Input Jacks:**

- **mA/µA:** Input for milliampere and microampere current measurements.
- **A:** Input for ampere level current measurements (up to 10A).
- **COM:** Common (negative) input for all measurements.
- **VΩHz:** Input for voltage, resistance, frequency, capacitance, diode, continuity, and temperature measurements.

Setup

1. Battery Installation

The multimeter requires batteries for operation. To install or replace batteries:

1. Ensure the multimeter is turned off and test leads are disconnected.
2. Locate the battery compartment cover on the back of the device.
3. Unscrew the retaining screw(s) and remove the cover.
4. Insert the batteries, observing the correct polarity (+ and -) as indicated inside the compartment.
5. Replace the battery cover and secure it with the screw(s).

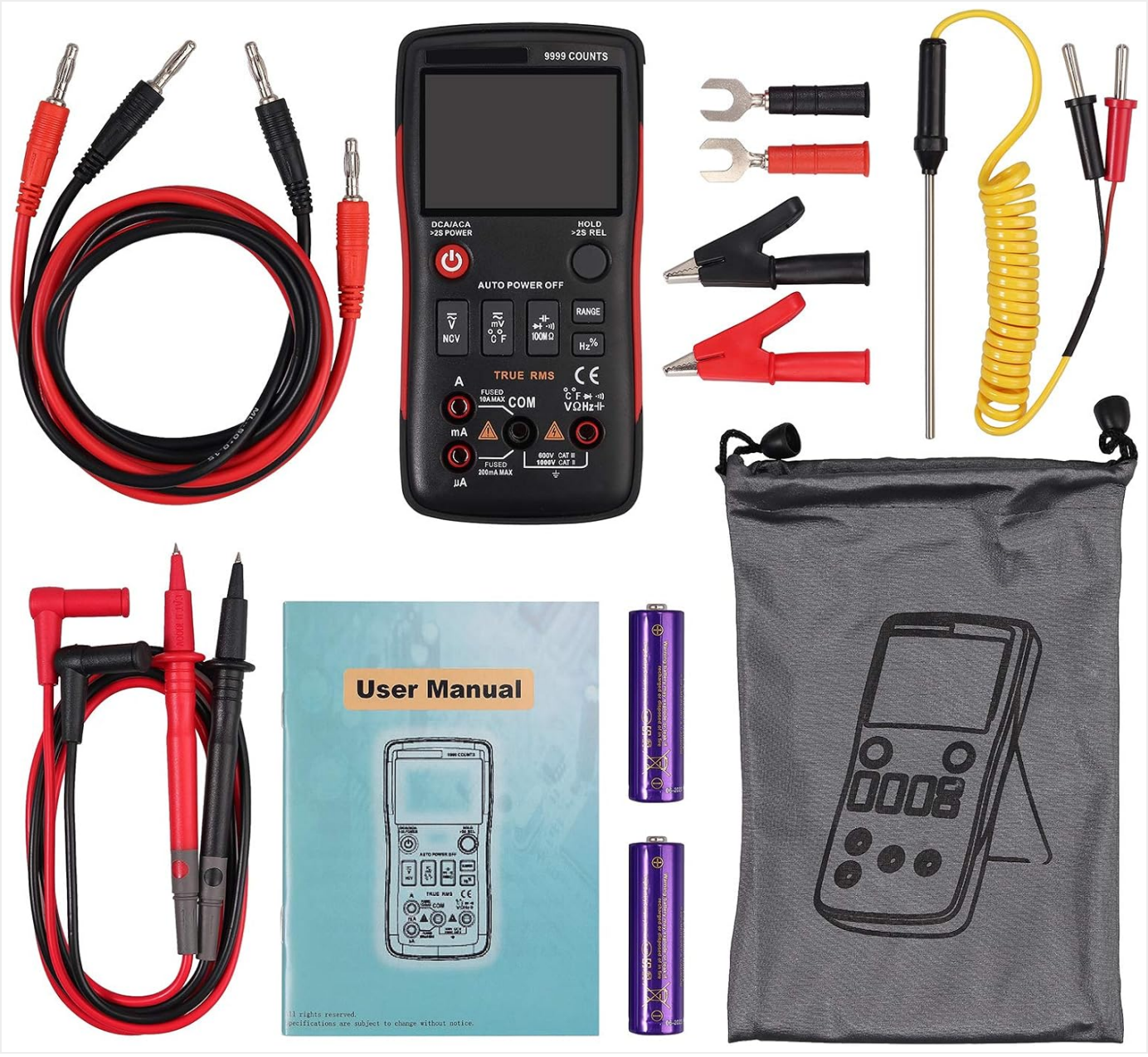

Figure 2: Rear view of the multimeter showing the battery compartment and kickstand.

2. Connecting Test Leads

Always connect the black test lead to the COM jack. Connect the red test lead to the appropriate input jack based on the measurement type:

- For Voltage, Resistance, Capacitance, Frequency, Diode, Continuity, and Temperature: Connect the red lead to the **VΩHz** jack.
- For Current (mA/µA): Connect the red lead to the **mA/µA** jack.
- For Current (A): Connect the red lead to the **A** jack.

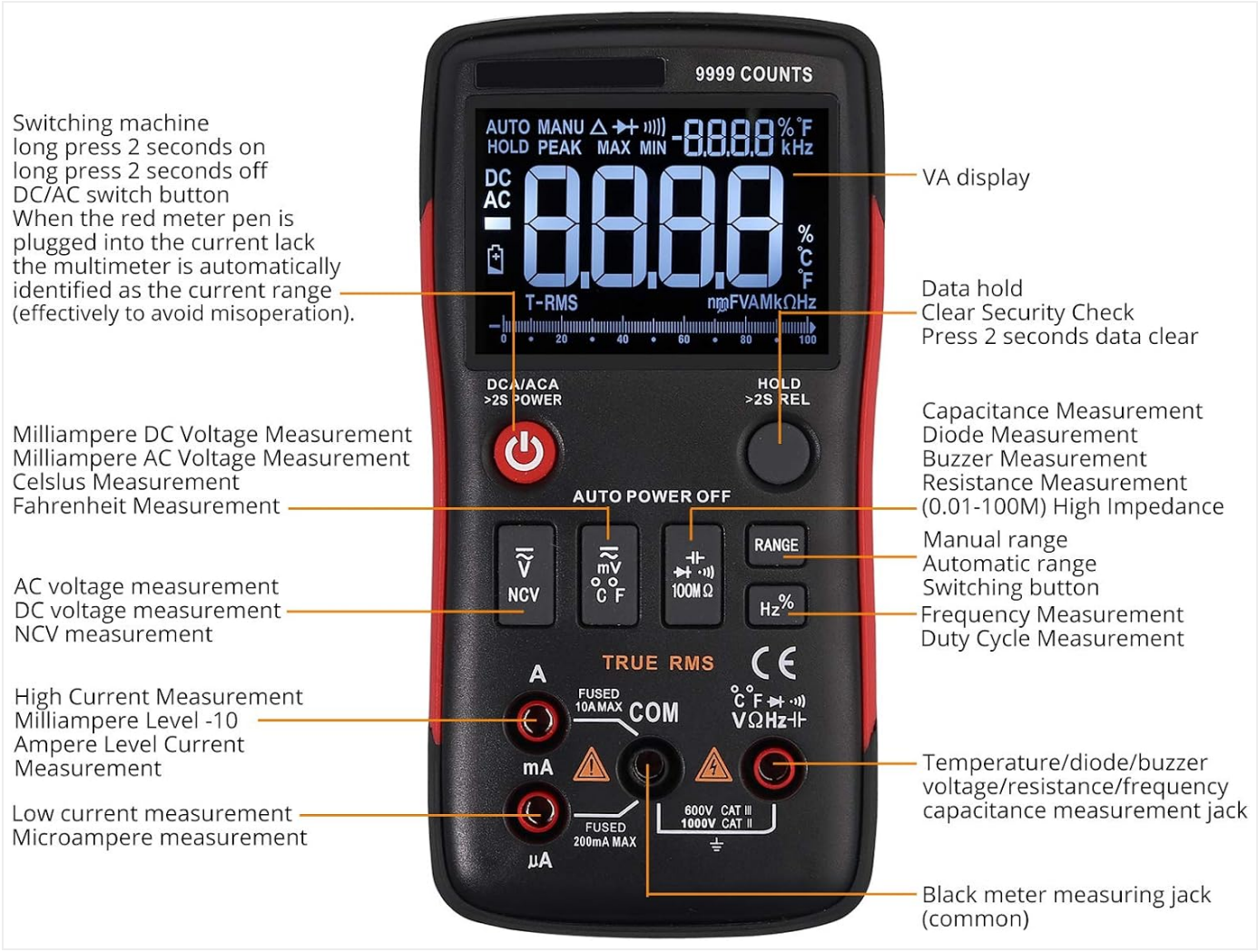

Figure 3: Multimeter with red and black test leads properly connected to the input jacks.

Operating Instructions

Turn on the multimeter by long-pressing the power button. The meter will typically start in auto-ranging mode for voltage measurement.

1. DC/AC Voltage Measurement

1. Connect the red test lead to the **VΩHz** jack and the black lead to the **COM** jack.
2. Press the **DC/AC/ACA** button to select between DC or AC voltage mode.
3. Connect the test probes in parallel to the circuit or component under test.
4. Read the voltage value on the display.

2. DC/AC Current Measurement

1. **Important:** De-energize the circuit before connecting the meter.

2. For mA/µA current, connect the red test lead to the **mA/µA** jack. For A current, connect to the **A** jack. Connect the black lead to the **COM** jack.
3. Press the **DC/AC/ACA** button to select between DC or AC current mode.
4. Connect the meter in series with the circuit load.
5. Re-energize the circuit and read the current value.

3. Resistance Measurement

1. **Important:** Ensure the circuit is de-energized and all capacitors are discharged.
2. Connect the red test lead to the **VΩHz** jack and the black lead to the **COM** jack.
3. Press the **10MΩ/100MΩ** button to select the resistance measurement mode.
4. Connect the test probes across the component to be measured.
5. Read the resistance value on the display.

4. Capacitance Measurement

1. **Important:** Ensure the capacitor is fully discharged before testing.
2. Connect the red test lead to the **VΩHz** jack and the black lead to the **COM** jack.
3. Select the capacitance measurement mode (often shared with diode/continuity, cycle through with the function button).
4. Connect the test probes across the capacitor terminals.
5. Read the capacitance value on the display.

5. Frequency and Duty Cycle Measurement

1. Connect the red test lead to the **VΩHz** jack and the black lead to the **COM** jack.
2. Press the **Hz/%** button to select frequency or duty cycle mode.
3. Connect the test probes in parallel to the signal source.
4. Read the frequency (Hz) or duty cycle (%) value.

6. Diode Test and Continuity Check

1. **Important:** Ensure the circuit is de-energized.
2. Connect the red test lead to the **VΩHz** jack and the black lead to the **COM** jack.
3. Select the diode/continuity mode (often shared with capacitance, cycle through with the function button).
4. **For Diode Test:** Connect the red probe to the anode and the black probe to the cathode. A forward voltage drop will be displayed. Reverse the probes; an open circuit (OL) should be displayed.
5. **For Continuity Check:** Connect the probes across the component. A continuous beep indicates continuity (low resistance).

7. Non-Contact Voltage (NCV) Detection

The NCV function allows for detection of AC voltage without direct contact with conductors.

1. Press the **NCV** button to activate the NCV mode.
2. Move the top end of the multimeter close to the conductor or outlet.
3. The meter will indicate the presence of AC voltage with an audible beep and visual segments on the display. More segments and faster beeps indicate stronger voltage.

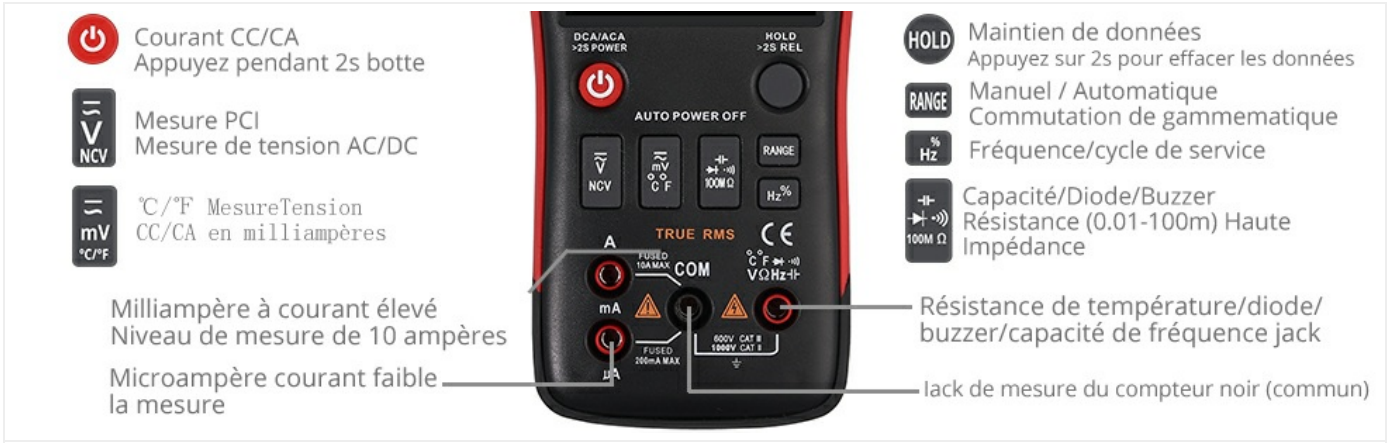

Figure 4: Demonstrating the Non-Contact Voltage (NCV) detection function.

8. Temperature Measurement

The multimeter can measure temperature using the included thermocouple probe.

1. Connect the thermocouple probe to the **VΩHz** and **COM** jacks, observing polarity.
2. Press the **mV/°C/°F** button to select Celsius (°C) or Fahrenheit (°F).
3. Place the tip of the thermocouple probe on or in the object whose temperature is to be measured.
4. Read the temperature value on the display.

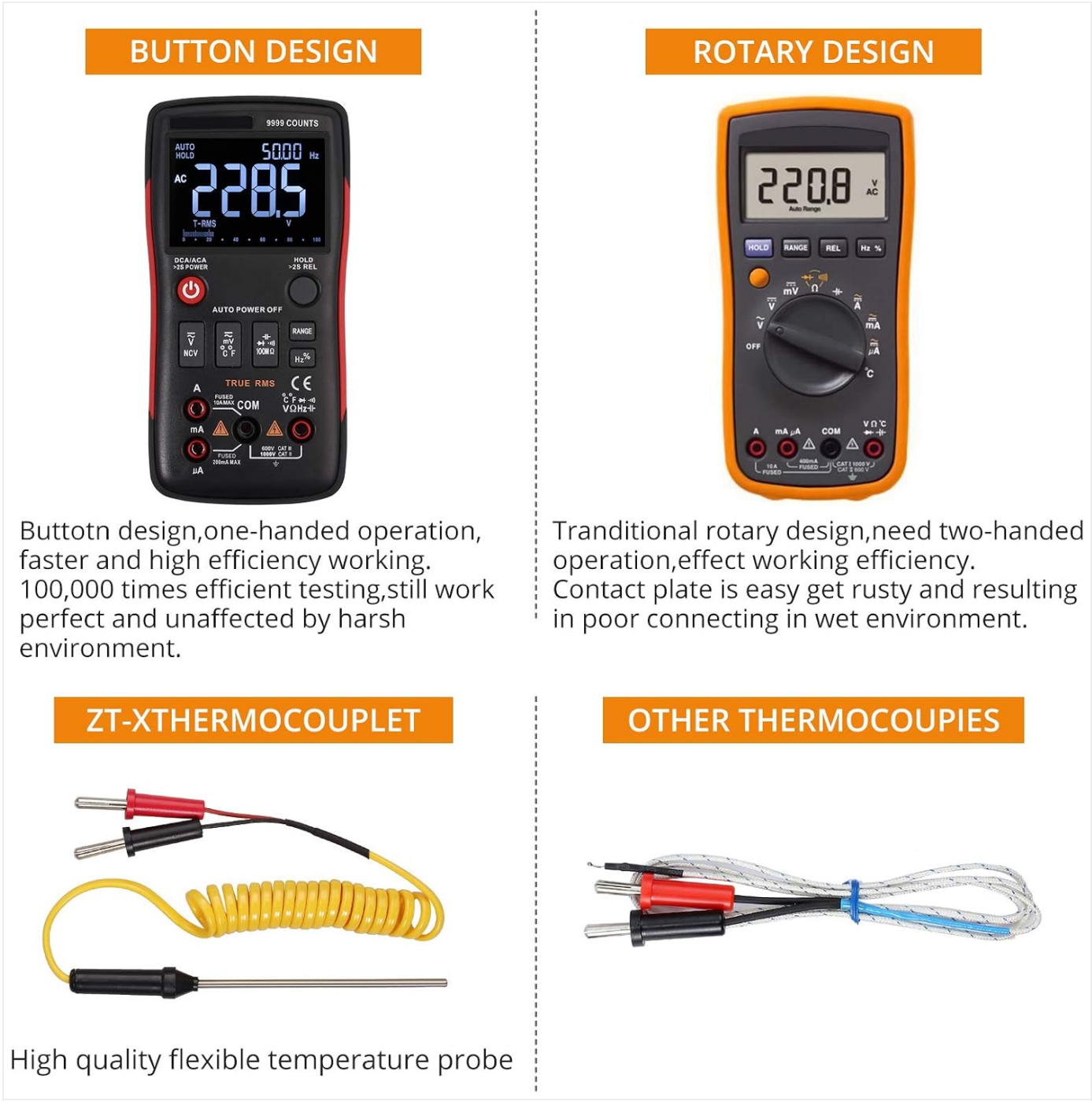

Figure 5: Temperature measurement using the provided thermocouple probe.

Maintenance

1. Cleaning

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

2. Battery Replacement

When the low battery indicator appears on the display, replace the batteries as described in the "Battery Installation" section under Setup. Always use the specified battery type.

3. Fuse Replacement

If the current measurement function fails, the fuse may need replacement. Refer to the specifications for the correct fuse type and rating. Fuse replacement should only be performed by qualified personnel.

Troubleshooting

Problem	Possible Cause	Solution
Meter does not turn on.	Dead or incorrectly installed batteries.	Check battery polarity, replace batteries.
"OL" (Overload) displayed.	Measurement exceeds selected range or meter's maximum capacity.	Switch to a higher range (if in manual mode) or ensure measurement is within meter's limits.
Inaccurate readings.	Low battery, incorrect function/range, poor test lead connection.	Replace batteries, select correct function/range, ensure secure connections.
Current measurement not working.	Blown fuse, incorrect input jack.	Check fuse (replace if necessary), ensure red lead is in the correct current jack (mA/µA or A).
NCV not detecting voltage.	Voltage too low, NCV sensor not close enough, or NCV function not activated.	Ensure NCV mode is active, bring meter closer to the source, verify voltage presence with direct contact if safe.

Specifications

Brand	Proster
Model	AK3-AT1-GL-M-X
Display	9999 Counts EBTN LCD with Analog Bar Graph
Measurement Type	True RMS Digital Multimeter
Power Source	Battery Powered
Weight	5.93 Ounces (approx. 168g)
Color	Black
Manufacturer Part Number	TL618TOP
ASIN	B082MCG5JZ
Temperature Range	-20°C to 1000°C / -4°F to 1832°F

Warranty and Support

For warranty information or technical support, please refer to the documentation included with your product or contact Proster customer service directly. Details can typically be found on the manufacturer's official website or through your point of purchase.