BTMETER BTMETER 3 in 1 Oscilloscope

BTMETER 3-in-1 Handheld Oscilloscope Multimeter & DDS Generator User Manual

Model: BTMETER 3 in 1 Oscilloscope | Brand: BTMETER

Introduction

The BTMETER 3-in-1 Handheld Oscilloscope Multimeter & DDS Generator is a versatile and essential tool designed for professionals and enthusiasts in electronics, automotive diagnostics, and household electrical testing. This compact device integrates the functionalities of a dual-channel digital oscilloscope, a full-featured multimeter, and a DDS signal generator into a single, portable unit, enhancing efficiency and convenience for various measurement and testing tasks.

Its robust design, intelligent anti-burning protection, and user-friendly interface make it a reliable instrument for accurate signal analysis, electrical parameter measurement, and waveform generation.

Image: The BTMETER 3-in-1 device shown with its included accessories, including probes, test leads, and charging cable.

Key Features

- **Dual Channel Digital Oscilloscope:** Features independent 2 channels with 10MHz analog bandwidth and a 50MS/s sampling rate. Supports peak voltage measurement up to ±400V with built-in high-voltage protection.
- **Multimeter Functionality:** Accurately measures AC/DC voltage, current, resistance, capacitance, and temperature. Includes diode test, continuity test, and neutral/live line distinction.
- **DDS Signal Generator:** Generates waveforms up to 2MHz with amplitude from 0.1-3.3V. Supports 7 waveform options: sine, square, triangle, full wave, half wave, noise, and DC.
- **Data Saving & Exporting:** Allows saving and viewing of waveform screenshots directly on the device or exporting them to a computer for further analysis.
- **Portable Design:** Equipped with a 3000mAh rechargeable lithium battery for up to 6 hours of continuous operation, a 2.8-inch HD color screen, and a durable ABS silicone jacket.

Image: Visual representation of the device's three core functions: Oscilloscope, Multimeter, and Signal Generator.

Image: Detail of the dual channel inputs (CH1, CH2) and the DDS signal generator output on the top of the device.

Setup

Unpacking and Initial Inspection

Carefully unpack all components from the packaging. Verify that all items listed below are present and undamaged. If any items are missing or damaged, please contact customer support.

What's in the Box:

- 1 * BTMETER BT-2C23T 3 in 1 Oscilloscope
- 1 * 10X Probe
- 1 * Crocodile Clip Probe
- 1 * Multimeter Test Leads
- 1 * USB Charging Cable (Type-C)
- 1 * Exquisite Packaging Box
- 1 * Multi-language User Manual (this document)

Image: An illustration showing all items included in the product package.

Charging the Device

Before first use, fully charge the device. Connect the provided USB Type-C charging cable to the charging port on the side of the device and plug the other end into a standard USB power adapter (not included) or a computer USB port. The charging indicator light will illuminate during charging and turn off when fully charged. A full charge provides approximately 6 hours of continuous operation.

Image: A detailed view of the device's side, highlighting the Type-C charging port, charging indicator, and reset button.

Operating Instructions

General Operation

The device features a 2.8-inch HD color screen and intuitive button controls. The main power button is located on the front panel. Navigation buttons (up, down, left, right, enter) are used to select modes and adjust parameters. The 'MENU' button accesses settings, and 'SAVE' allows for waveform screenshot capture.

Oscilloscope Mode

To enter Oscilloscope mode, ensure the appropriate probes are connected to the CH1 and/or CH2 inputs. Use the 'AUTO' button for automatic waveform adjustment. Adjust vertical sensitivity (V/div) and time base (s/div) using the navigation buttons. The device supports various trigger modes (Auto/Normal/Single) and trigger types (Rising edge, Falling edge) for stable waveform display.

- **Connecting Probes:** Connect the 10X probe or crocodile clip probe to the CH1 or CH2 BNC connectors. Ensure proper grounding.
- **Adjusting Parameters:** Use the navigation buttons to adjust vertical scale (voltage per division) and

horizontal scale (time per division).

- **Triggering:** Set the trigger level and mode to stabilize the waveform. The 'AUTO' function can quickly set optimal display parameters.
- **Waveform Saving:** Press the 'SAVE' button to capture a screenshot of the current waveform. Saved images can be reviewed on the device or exported to a computer via USB.

Image: The device screen displaying saved waveform screenshots, indicating the ability to view and export data.

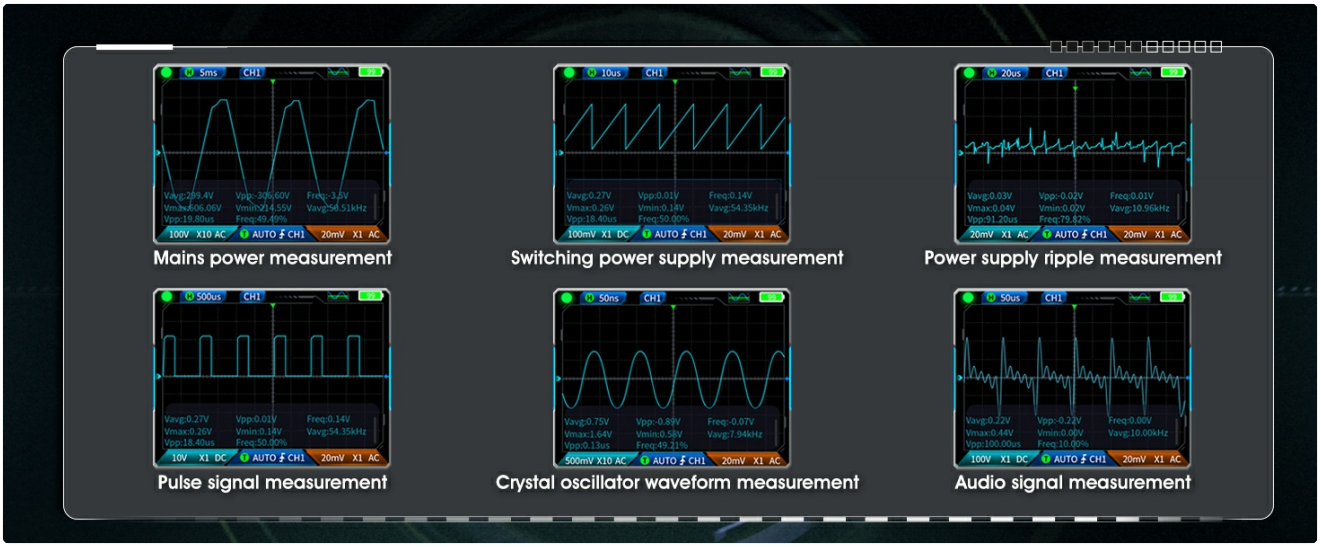


Image: Examples of different types of waveforms that can be measured and displayed by the oscilloscope, such as mains power, switching power supply, and ripple.

Multimeter Mode

Connect the multimeter test leads to the appropriate input jacks (VΩHz, mA, 10A, COM). Select the desired measurement function (Voltage, Current, Resistance, Capacitance, Temperature, Diode, Continuity) using the mode selection buttons. The device features an autorange function for ease of use.

- **Voltage Measurement (AC/DC):** Connect leads in parallel to the circuit.
- **Current Measurement (AC/DC):** Connect leads in series with the circuit. Ensure correct current range (mA or 10A).
- **Resistance, Capacitance, Diode, Continuity:** Connect leads across the component.
- **Temperature Measurement:** Use the included temperature probe.

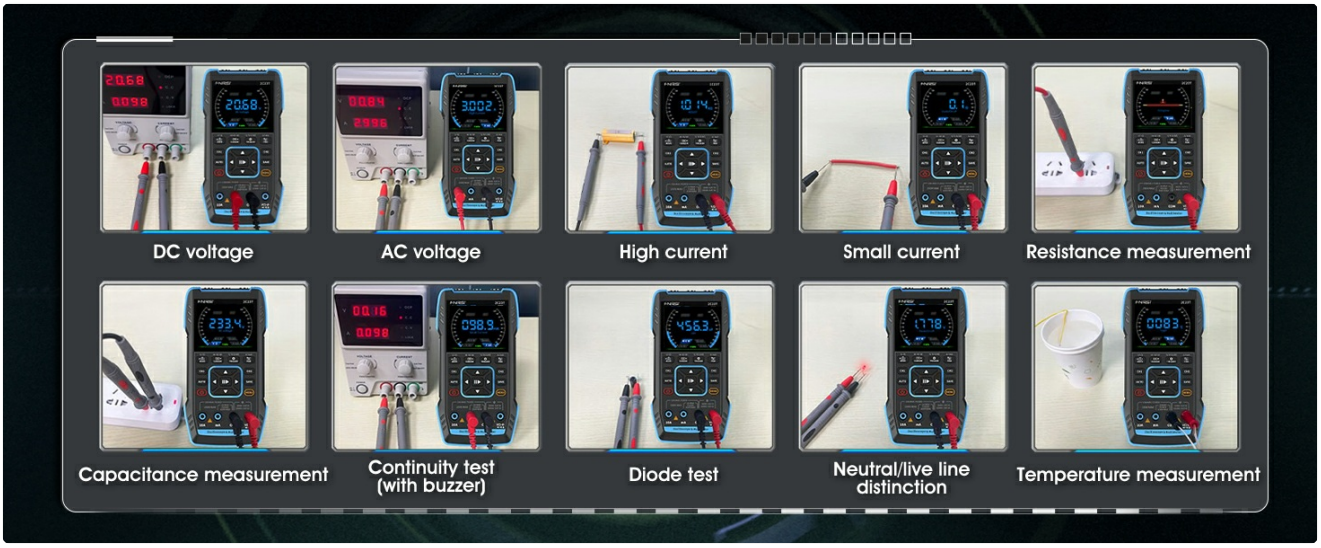


Image: Visual examples of the multimeter performing various measurements such as DC voltage, AC voltage, high current, resistance, capacitance, and diode testing.

DDS Signal Generator Mode

Connect the DDS output port to the circuit requiring a signal. Select the desired waveform type (sine, square, triangle, etc.), frequency (up to 2MHz), and amplitude (0.1-3.3V) using the device controls. This function is ideal for testing circuits and components.

- **Waveform Selection:** Choose from 7 available waveform types.
- **Frequency and Amplitude Adjustment:** Set the desired output frequency and amplitude for the generated

signal.

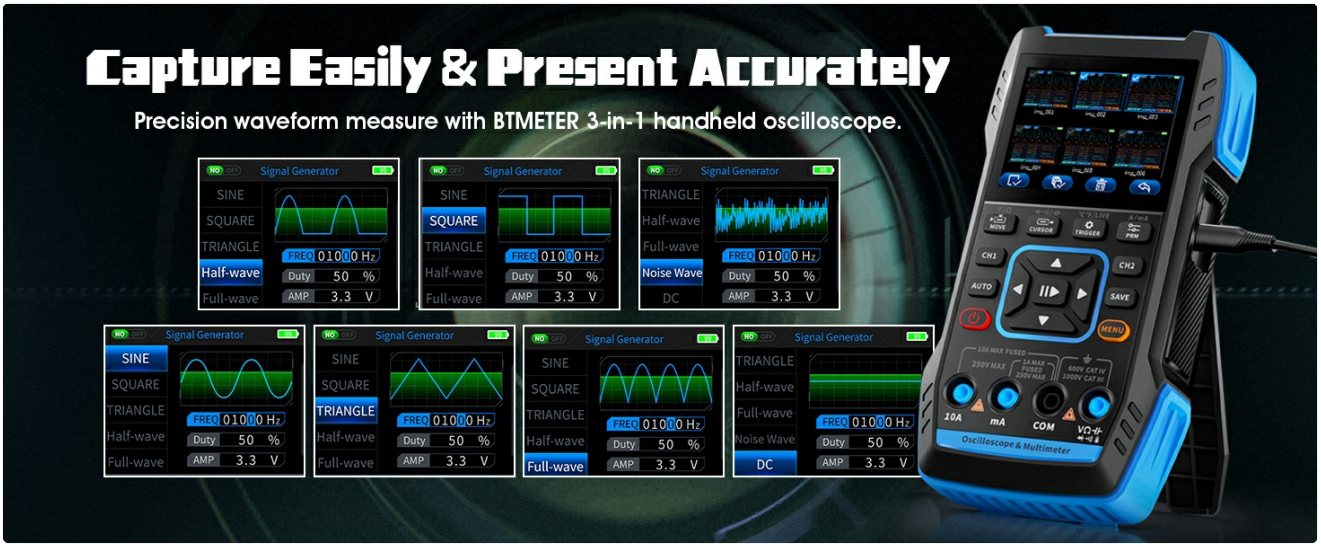


Image: A display of the various waveform types that can be generated by the DDS function, including sine, square, triangle, and more.

Maintenance

Cleaning

To clean the device, use a soft, dry cloth. For stubborn dirt, a slightly damp cloth with mild detergent can be used. Do not use abrasive cleaners or solvents, as these may damage the casing or screen. Ensure the device is powered off and disconnected from any power source before cleaning.

Battery Care

The device is powered by a built-in 3000mAh rechargeable lithium battery. For optimal battery life, avoid fully discharging the battery frequently. Recharge the device when the low battery reminder appears. If storing the device for an extended period, charge it to approximately 50% and store in a cool, dry place.

Storage

Store the device in a clean, dry environment, away from direct sunlight, extreme temperatures, and high humidity. The device comes with a protective ABS silicone jacket that provides shockproof and drop-proof protection. Always use this protective case during storage and transport to prevent damage.

Image: Features of the device's physical design, including the expandable stand for easy viewing, Type-C charging port, comfortable silicone buttons, and the durable ABS silicone jacket for protection.

Troubleshooting

This section provides general guidance for common issues. For detailed troubleshooting steps or issues not covered here, please refer to the comprehensive user manual provided with your product or contact BTMETER customer support.

- **Device does not power on:** Ensure the battery is sufficiently charged. Connect the device to a power source using the USB Type-C cable and allow it to charge for at least 30 minutes before attempting to power on again.
- **Inaccurate Multimeter Readings:** Check that the test leads are correctly connected to the appropriate input jacks for the measurement type. Ensure the function mode is correctly selected. Verify that the component being tested is functioning correctly.
- **Unstable Oscilloscope Waveform:** Adjust the trigger level and trigger mode (Auto, Normal, Single) to stabilize the waveform. Ensure the probe compensation is correctly set if using a 10X probe. Check for proper grounding.
- **Signal Generator Output Issues:** Verify that the DDS output port is correctly connected. Check the selected waveform type, frequency, and amplitude settings.

- **Screen is dim or unresponsive:** Adjust the brightness settings in the device menu. If unresponsive, try performing a soft reset by pressing the reset button (if available, typically a small pinhole button).

Specifications

General Device Parameters

Parameter	Value
Product Dimensions	3.5 x 1.38 x 6.57 inches (89 x 35 x 167 mm)
Item Weight	7.05 ounces (200 Grams)
Power Source	Battery Powered (3000mAh Lithium Battery)
Screen	2.8-inch true color screen
Resolution	320*240
Charging	Type-C (5V/1A)
Standby time	6 hours (maximum value in laboratory theory)
Language Support	5 languages (English, German, Portuguese, Russian, Japanese)
Automatic Shutdown	Adjustable (15mins/30mins/1hour)

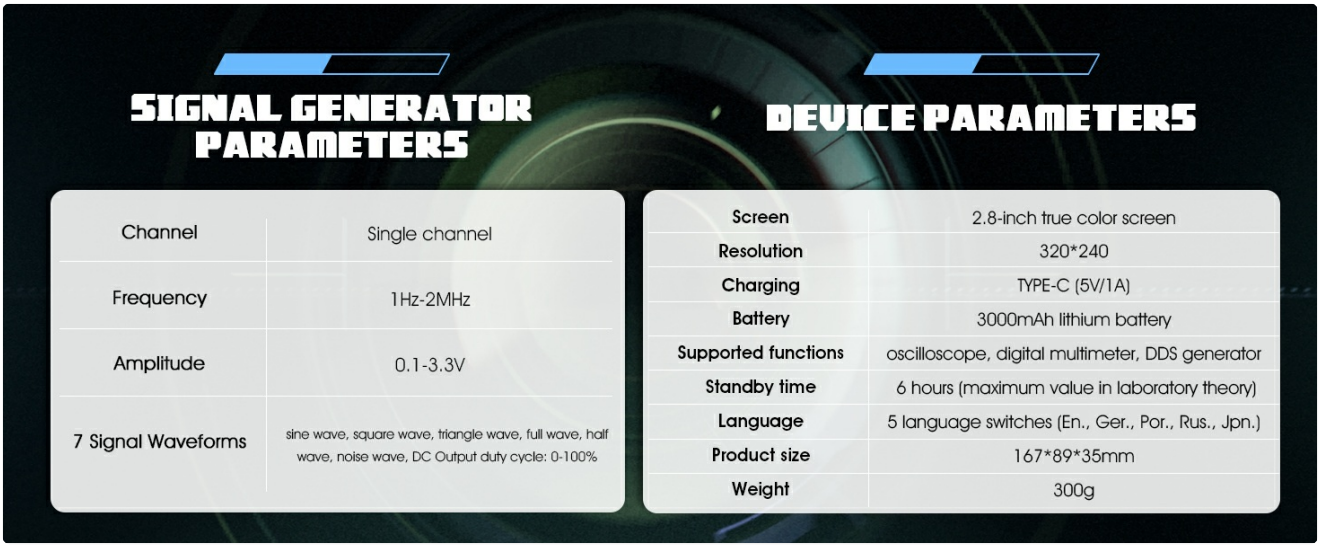


Image: A table summarizing the Signal Generator and Device Parameters.

Oscilloscope Measurement Parameters

Parameter	Value
Channel	Dual channel
Analog Bandwidth	10MHz (Dual channel Independent 10M)
Sampling Rate	50MS/s
Storage Depth	32KB
Max Measured Voltage	±400V

Parameter	Value
Impedance	1MΩ
Time Base Range	50ns-10s
Vertical Sensitivity	20mV/div-10V/div (X1)
Trigger Mode	Auto/Normal/Single
Trigger Type	Rising edge, Falling edge
Display Mode	YT/Scroll
Coupling Method	AC/DC
Save Waveform Screenshot	Yes
Export Waveform Images	Yes

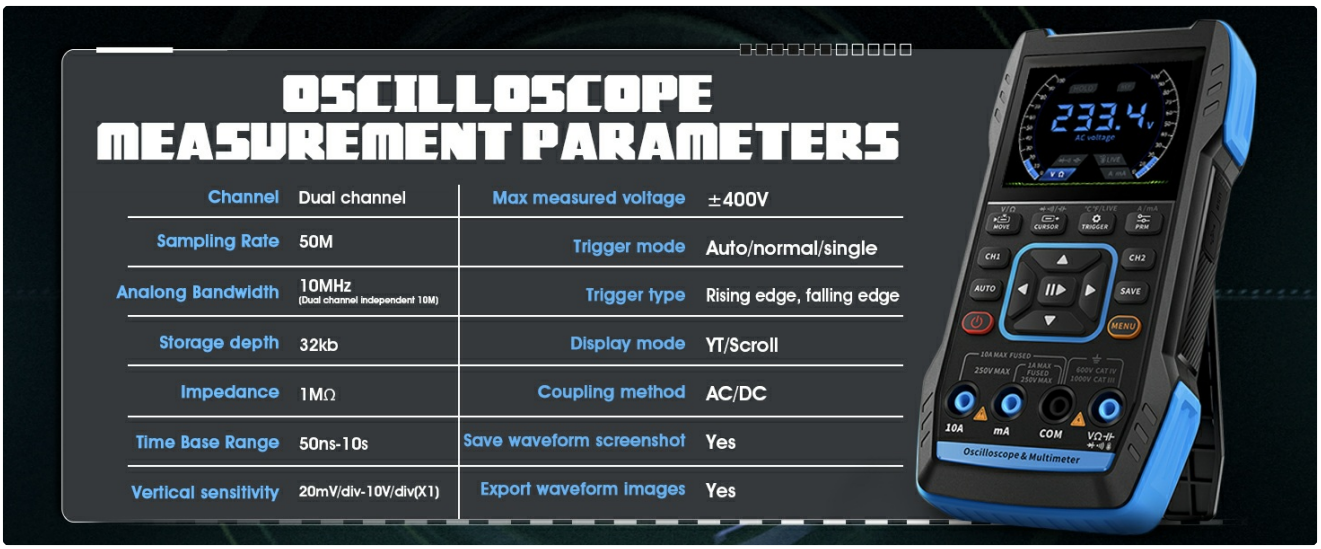


Image: A table summarizing the Oscilloscope Measurement Parameters.

Multimeter Measurement Parameters

Function	Range	Accuracy
DC Voltage	9.999V/99.99V/999.9V	±(0.5%+3)
AC Voltage	9.999V/99.99V/750.0V	±(1%+3)
DC Current	9999uA/99.99mA/999.9mA/9.999A	±(1.2%+3)
AC Current	9999uA/99.99mA/999.9mA/9.999A	±(1.5%+3)
Resistance	9.999MΩ/99.99KΩ/999.9KΩ/9.999Ω	±(0.5%+3)
Capacitance	999.9nF/9.999uF/99.99uF/999.9uF/9.999mF	±(2.0%+5)
Temperature	(-55~1300)°C / (-67~2372)°F	±(2.5%+5)
Diode Test	Yes	-
Continuity Test	Yes	-
Neutral/Live Line Distinction	Yes	-

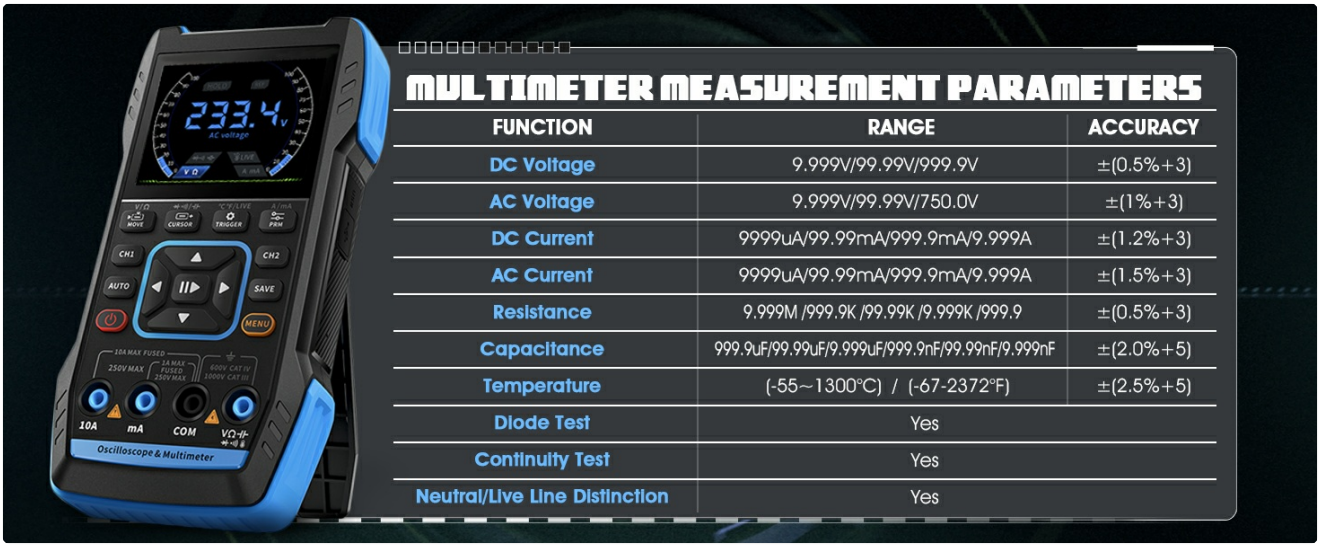


Image: A table summarizing the Multimeter Measurement Parameters.

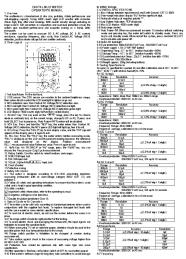
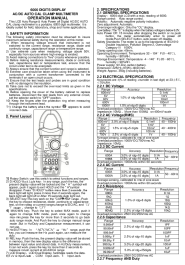
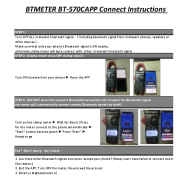
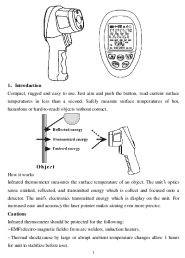
Signal Generator Parameters

Parameter	Value
Channel	Single channel
Frequency	1Hz-2MHz
Amplitude	0.1-3.3V
Supported Waveforms	Sine wave, Square wave, Triangle wave, Full wave, Half wave, Noise wave, DC Output duty cycle 0-100%

Warranty and Support

BTMETER is committed to providing high-quality products and excellent customer service. Your BTMETER 3-in-1 Handheld Oscilloscope Multimeter & DDS Generator comes with a **365-day warranty** from the date of purchase. For any questions, technical assistance, or warranty claims, please do not hesitate to contact BTMETER customer service. We offer **7*24 hours customer service** and **lifetime technical support** to ensure your satisfaction.
You can find more information and contact details on the official BTMETER store page on Amazon:BTMETER Amazon Store.

Related Documents

	[Digital Multimeter Operator's Manual - BTMETER BT-39K] Operator's manual for the BTMETER BT-39K Digital Multimeter, detailing its features, specifications, operating instructions, safety precautions, and maintenance.
	[6000 Digits Clamp Multimeter Operation Manual] Operation manual for the 6000 Digits AC/DC Auto Cal Clamp Multimeter, detailing safety information, specifications, measuring instructions, and maintenance.
	[BTMETER BT-570CAPP Bluetooth Connection Guide] Step-by-step instructions for connecting the BTMETER BT-570CAPP clamp meter to your smartphone via Bluetooth.
	[BTMETER BT-1500 Non-Contact Infrared Thermometer User Manual] User manual for the BTMETER BT-1500 non-contact infrared thermometer, covering its introduction, how it works, safety warnings, quick start guide, maintenance procedures, and detailed specifications.