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SATMW UT204 Plus

SATMW UT204 Plus 400-600A Digital Clamp Meter Instruction Manual

Model: UT204 Plus

1. Introduction

The SATMW UT204 Plus is a high-precision digital clamp meter designed for measuring AC/DC current, AC/DC voltage, resistance, capacitance, frequency, and temperature. It features an automatic range function, True RMS measurement, Non-Contact Voltage (NCV) detection, and a live wire test, making it a versatile tool for electrical professionals and enthusiasts. This manual provides essential information for the safe and effective operation, maintenance, and troubleshooting of your device.

2. Safety Information

Always adhere to the following safety precautions to prevent electric shock, injury, or damage to the meter:

- Do not exceed the maximum input values specified for each measurement range.
- Ensure the test leads are properly connected and in good condition before use.
- Never measure voltage on circuits exceeding 600V.
- Do not use the meter if it appears damaged or if the battery cover is not properly closed.
- Exercise extreme caution when working with live circuits.
- Always disconnect power to the circuit and discharge all high-voltage capacitors before measuring resistance, continuity, or capacitance.
- Replace batteries immediately when the low battery indicator appears to ensure accurate readings.

3. Product Overview

The UT204 Plus is a robust digital clamp meter with a compact design (approximately 215mm x 63mm x 36mm) and a clear display. Key features include:

- **Display Count:** 6000
- **Auto Range:** Automatically selects the appropriate measurement range.
- **Jaw Opening:** 28mm for clamping around conductors.
- **True RMS:** Accurate measurements for non-sinusoidal waveforms.
- **NCV (Non-Contact Voltage):** Detects AC voltage without physical contact.
- **Live Wire Test:** Identifies live conductors.
- **Continuity Test:** Checks for open or closed circuits.

- **Diode Test:** Verifies diode functionality.
- **MAX/MIN Mode:** Records maximum and minimum readings.
- **Relative Mode:** Measures changes relative to a stored reference value.
- **Zero Mode:** Used for DC current measurement to eliminate residual magnetism.
- **Data Hold:** Freezes the displayed reading.
- **Low Battery Indication:** Alerts when battery replacement is needed.
- **Auto Power Off:** Conserves battery life.

Standard Accessories: The meter typically includes batteries (1.5V R03 x 2), test leads, and a thermocouple for temperature measurements.

4. Setup

4.1 Battery Installation

1. Ensure the meter is powered off.
2. Locate the battery compartment on the back of the meter.
3. Unscrew the battery compartment cover.
4. Insert two 1.5V (R03) batteries, observing the correct polarity.
5. Replace the battery cover and secure it with the screw.

4.2 Connecting Test Leads

- Insert the red test lead into the 'VΩHzCAP' input jack.
- Insert the black test lead into the 'COM' input jack.
- For temperature measurements, connect the thermocouple to the appropriate input jacks as indicated on the meter.

5. Operating Instructions

Turn the rotary switch to the desired function. The meter will automatically select the range for most measurements (Auto Range).

5.1 AC/DC Current Measurement (Clamp)

1. Set the rotary switch to the 'A~' (AC Current) or 'A=' (DC Current) position.
2. Press the trigger to open the clamp jaws.
3. Enclose only one conductor with the clamp jaws. Ensure the jaws are fully closed.
4. Read the current value on the display. For DC current, use the 'ZERO' button to eliminate residual magnetism before measurement.

5.2 AC/DC Voltage Measurement

1. Set the rotary switch to the 'V~' (AC Voltage) or 'V=' (DC Voltage) position.
2. Connect the test leads in parallel to the circuit or component under test.
3. Read the voltage value on the display.

5.3 Resistance Measurement

1. Set the rotary switch to the 'Ω' (Resistance) position.
2. Ensure the circuit is de-energized and all capacitors are discharged.
3. Connect the test leads across the component to be measured.
4. Read the resistance value on the display.

5.4 Continuity Test

1. Set the rotary switch to the 'Ω' (Resistance) position and press the 'SELECT' button until the continuity symbol (buzzer icon) is displayed.
2. Ensure the circuit is de-energized.
3. Connect the test leads across the circuit or component.
4. If continuity exists (resistance below approximately 50Ω), the buzzer will sound.

5.5 Capacitance Measurement

1. Set the rotary switch to the 'CAP' (Capacitance) position.
2. Ensure the capacitor is fully discharged before connecting the test leads.
3. Connect the test leads across the capacitor terminals.
4. Read the capacitance value on the display.

5.6 Frequency Measurement

1. Set the rotary switch to the 'Hz' (Frequency) position.
2. Connect the test leads to the circuit where frequency is to be measured.
3. Read the frequency value on the display.

5.7 Temperature Measurement

1. Set the rotary switch to the '°C/°F' (Temperature) position.
2. Connect the thermocouple to the designated input jacks, observing polarity.
3. Place the thermocouple tip on or near the object whose temperature is to be measured.
4. Read the temperature value on the display.

5.8 NCV (Non-Contact Voltage)

1. Set the rotary switch to the 'NCV' position.
2. Move the meter's NCV sensor (usually at the top of the clamp jaw) close to the conductor.
3. The meter will indicate the presence of AC voltage with an audible beep and/or visual indicator.

5.9 Live Wire Test

1. Set the rotary switch to the 'LIVE' position.
2. Insert the red test lead into the 'VΩHzCAP' jack and touch the probe to the conductor.
3. The meter will indicate if the wire is live.

6. Maintenance

6.1 Cleaning

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

6.2 Battery Replacement

Refer to section 4.1 for battery installation instructions. Replace batteries promptly when the low battery indicator is displayed to maintain measurement accuracy.

6.3 Storage

- If the meter is not used for an extended period, remove the batteries to prevent leakage.

- Store the meter in a cool, dry place, away from direct sunlight and extreme temperatures.

7. Troubleshooting

Problem	Possible Cause	Solution
No display or dim display	Dead or low batteries; incorrect battery installation.	Replace batteries; check battery polarity.
Inaccurate readings	Low battery; incorrect function selection; poor test lead connection; external interference.	Replace batteries; select correct function; ensure secure connections; move away from strong electromagnetic fields.
Meter does not respond	Meter frozen; internal fault.	Turn off and restart the meter. If issue persists, contact support.
No continuity beep	Open circuit; resistance too high; incorrect mode.	Check circuit for breaks; ensure resistance is below 50Ω; verify continuity mode is selected.

8. Specifications

The following table details the technical specifications for the UT204 Plus and related models:



This image displays a comprehensive table outlining the technical specifications for various models, including the UT204 Plus. It details ranges and accuracies for AC current, DC current, AC voltage, DC voltage, resistance, capacitance, temperature, and frequency measurements.

Measurement	Range	UT201+	UT202+	UT202A+	UT203+	UT204+

Measurement	Range	UT201+	UT202+	UT202A+	UT203+	UT204+
AC Current (A)	400A	±(2%+10)	±(2%+10)		±(2.5%+5)	
	600A			±(2%+10)		±(2.5%+5)
AC Current Frequency (Hz)	50Hz-100Hz	±(1%+5)	±(1%+5)	±(1%+5)		
DC Current (A)	400A				±(2.5%+5)	
	600A					±(2.5%+5)
AC Voltage (V)	600V	±(0.8%+5)	±(0.8%+5)	±(0.8%+5)	±(0.8%+5)	±(0.8%+5)
AC Voltage Frequency (Hz)	10Hz-10kHz	±(1%+5)	±(1%+5)	±(1%+5)		
	10Hz-60kHz				±(0.5%+2)	±(0.5%+2)
DC Voltage (V)	600V	±(0.5%+2)	±(0.5%+2)	±(0.5%+2)	±(0.5%+2)	±(0.5%+2)
Resistance (Ω)	40MΩ	±(0.8%+2)	±(0.8%+2)		±(0.8%+2)	
	60MΩ			±(0.8%+2)		±(0.8%+2)
Capacitance (F)	4mF		±(4%+5)			
	40mF				±(4%+5)	
	60mF			±(4%+5)		±(4%+5)
Temperature (°C)	-40°C-1000°C		±(1.5%+5)			±(1.5%+5)
Frequency (Hz)	10Hz~10MHz				±(0.1%+4)	±(0.1%+4)

9. Warranty and Support

For warranty information and technical support, please refer to the documentation provided with your purchase or contact SATMW customer service. Keep your purchase receipt as proof of purchase for any warranty claims.

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