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› ANENG Clamp Meter and Digital Multimeter User Manual

ANENG ST181/SZ02

ANENG Clamp Meter and Digital Multimeter User Manual

Model: ST181 / SZ02

Brand: ANENG

1. INTRODUCTION

This user manual provides detailed instructions for the safe and effective operation of your ANENG Clamp Meter (ST181) and Digital Multimeter (SZ02). These tools are designed for quickly detecting electrical values and troubleshooting various electrical problems. They are suitable for both professional and DIY use, offering a wide range of measurement capabilities.

Key features include:

- Measurement of AC current (Clamp Meter only), AC and DC voltage, resistance, capacitance, continuity, diode, and frequency (Hz).
- Non-Contact Voltage (NCV) detection.
- Live/Zero wire identification.
- Data hold function.
- Low battery indicator.
- Continuity buzzer.
- LCD Backlit Screen and Dual Torch Lighting for use in dimly lit areas.
- Auto-ranging capabilities for ease of use.

2. PACKAGE CONTENTS

Please verify that all items listed below are present in your package:

- 1 x ANENG Clamp Meter (ST181)
- 1 x ANENG Digital Multimeter (SZ02)
- 2 x AAA Batteries (pre-installed)
- 1 x Combination Lead (includes 4 connection sockets, 2 PVC cables, 2 copper needles, 2 U-shaped inserts, 2 meter pens, 4 alligator clips, 2 puncture needles)

- 1 x Multimeter Test Lead
- 1 x Temperature Line
- 1 x Instruction Manual (this document)
- 1 x Storage Bag



Figure 2.1: Complete package contents including the clamp meter, digital multimeter, and various test leads and accessories.

3. SPECIFICATIONS

Feature	Specification
Brand	ANENG
Model Numbers	ST181 (Clamp Meter), SZ02 (Digital Multimeter)
Power Source	Battery Powered (2 x AAA batteries)

Feature	Specification
Minimum Operating Voltage	3 Volts
Display	LCD with Backlight
Clamp Jaw Opening (ST181)	Max 36mm / 1.42in
Measurement Capabilities	AC Current (ST181 only), AC/DC Voltage, Resistance, Capacitance, Continuity, Diode, Frequency (Hz), NCV, Live/Zero Wire
Counts (SZ02)	9999 Counts True RMS



Figure 3.1: The clamp meter features a 36mm jaw opening for various wire sizes.

4. SETUP

4.1 Battery Installation

The ANENG Clamp Meter and Digital Multimeter come with 2 AAA batteries pre-installed. If the low battery indicator appears on the display, or if the device does not power on, follow these steps to replace the batteries:

1. Ensure the device is powered off and disconnect all test leads from the device and any circuits.
2. Locate the battery compartment cover on the back of the device.
3. Use a screwdriver to open the battery compartment.
4. Remove the old batteries and insert two new AAA batteries, observing the correct polarity (+/-) as indicated inside the compartment.
5. Securely close the battery compartment cover.

4.2 Connecting Test Leads

For most measurements (voltage, resistance, capacitance, continuity, diode), you will need to connect the test leads to the multimeter. The clamp meter primarily uses its jaw for AC current measurements but also has ports for voltage and other functions.

- Insert the black test lead into the "COM" (Common) input jack.
- Insert the red test lead into the appropriate input jack for your desired measurement:
 - For voltage, resistance, continuity, diode, capacitance, and frequency, use the "VΩHz" or "INPUT" jack (refer to the specific markings on your device).
 - For current measurements (on the multimeter SZ02), use the "mA" or "A" input jack as appropriate for the expected current range.

5. OPERATING INSTRUCTIONS

5.1 Power On/Off

To power on the device, rotate the rotary switch (on the clamp meter) or press the power button (on the multimeter) to the desired function. To power off, rotate the switch to the "OFF" position or press and hold the power button.

Professional Multimeter True RMS 9999 counts



Figure 5.1: The digital multimeter showing its display and various function indicators.

5.2 AC Current Measurement (Clamp Meter ST181)

The clamp meter is designed to measure AC current without breaking the circuit. This function is only for AC current, not DC current.

1. Rotate the rotary switch to the "A~" (AC Current) position.
2. Press the jaw release trigger to open the clamp jaw.
3. Enclose only one conductor (wire) of the circuit within the clamp jaw. Do not clamp around multiple conductors, as this will result in an inaccurate reading (the magnetic fields will cancel out).
4. Release the trigger to close the jaw securely around the conductor.
5. Read the AC current value on the display.



Figure 5.2: The clamp meter in use, measuring AC current on a single conductor.

5.3 Voltage Measurement (AC/DC)

To measure AC or DC voltage:

1. Connect the black test lead to the "COM" jack and the red test lead to the "VΩHz" or "INPUT" jack.
2. Rotate the rotary switch (on ST181) or select the appropriate function (on SZ02) to "V~" for AC voltage or "V=" for DC voltage. The SZ02 multimeter may auto-range between AC/DC voltage.
3. Connect the test probes in parallel across the component or circuit you wish to measure.
4. Read the voltage value on the display.

5.4 Resistance Measurement

To measure resistance:

1. Ensure the circuit or component is de-energized before measuring resistance.
2. Connect the black test lead to "COM" and the red test lead to "VΩHz" or "INPUT".
3. Rotate the rotary switch or select the "Ω" (Resistance) function.

4. Connect the test probes across the component.
5. Read the resistance value on the display.

5.5 Continuity Test

The continuity test checks for a complete circuit path and is indicated by a buzzer sound.

1. Ensure the circuit is de-energized.
2. Connect the black test lead to "COM" and the red test lead to "VΩHz" or "INPUT".
3. Rotate the rotary switch or select the continuity function (often indicated by a speaker icon).
4. Touch the test probes to the two points you want to check for continuity.
5. If a continuous path exists (low resistance), the buzzer will sound. The display will show a low resistance value or "0". An open circuit will show "OL" (Over Load).

5.6 Diode Test

To test a diode:

1. Ensure the diode is disconnected from any circuit.
2. Connect the black test lead to "COM" and the red test lead to "VΩHz" or "INPUT".
3. Rotate the rotary switch or select the diode function (often indicated by a diode symbol).
4. Connect the red probe to the anode and the black probe to the cathode of the diode. A forward voltage drop (e.g., 0.5V to 0.7V for silicon diodes) should be displayed.
5. Reverse the probes. The display should show "OL" (open circuit) for a good diode.

5.7 Capacitance Measurement

To measure capacitance:

1. Ensure the capacitor is fully discharged before testing to avoid damage to the meter.
2. Connect the black test lead to "COM" and the red test lead to "VΩHz" or "INPUT".
3. Rotate the rotary switch or select the "F" (Capacitance) function.
4. Connect the test probes across the capacitor terminals.
5. Read the capacitance value on the display.

5.8 Non-Contact Voltage (NCV) Detection

The NCV function allows you to detect the presence of AC voltage without direct contact.

- Press the NCV button (on SZ02) or rotate the switch to the NCV position (on ST181).
- Move the top of the meter close to the wire or outlet you suspect has AC voltage.
- The meter will beep and/or flash an indicator light if AC voltage is detected. The frequency of beeps/flashes may increase with stronger voltage.

5.9 Live/Zero Wire Identification (SZ02 Multimeter)

The SZ02 multimeter can help identify live and zero (neutral) wires.

- Select the "Live" function (often indicated by a lightning bolt icon or "Live").
- Insert the red test probe into the suspected wire or outlet slot.
- The display will indicate "Live" or "Zero" and may provide an audible or visual alert.

5.10 Additional Functions

- **Data Hold:** Press the "HOLD" button to freeze the current reading on the display. Press again to release.
- **Backlight:** Press the backlight button (often indicated by a lightbulb icon) to illuminate the LCD display for better visibility in dark conditions.



Figure 5.3: The multimeter's LCD display with its bright backlight activated.

- **Torch Light:** The SZ02 multimeter features dual torch lights at the top for illuminating your work area. Press the flashlight button (often indicated by a flashlight icon) to turn them on/off.

Top double Flashlight



Figure 5.4: The top of the multimeter with its dual flashlights illuminated.

6. MAINTENANCE

6.1 Cleaning

To clean the device, wipe the case with a damp cloth and a mild detergent. Do not use abrasives or solvents. Ensure the device is powered off and disconnected from any circuits before cleaning.

6.2 Battery Replacement

Refer to Section 4.1 for instructions on replacing the AAA batteries when the low battery indicator appears.

6.3 Storage

When not in use for extended periods, remove the batteries to prevent leakage. Store the device and its accessories in the provided storage bag in a cool, dry place, away from direct sunlight and extreme temperatures.

7. TROUBLESHOOTING

Problem	Possible Cause	Solution
Device does not power on.	Dead or incorrectly installed batteries.	Check battery polarity; replace batteries if necessary (refer to Section 4.1).
"OL" (Over Load) displayed.	Measurement range exceeded; open circuit (for continuity/diode).	Ensure the measured value is within the device's range. For continuity/diode, "OL" indicates no connection or a reverse-biased diode.
Inaccurate AC current reading on clamp meter.	Clamping around multiple conductors; external magnetic fields.	Ensure only one conductor is within the clamp jaw. Move away from strong magnetic interference.
No continuity buzzer sound.	Open circuit; high resistance.	Verify the circuit path is complete and resistance is low.
NCV function not detecting voltage.	Voltage too low; shielded wires; incorrect distance.	Ensure the voltage is sufficient for detection. Move the sensor closer to the unshielded part of the wire.

8. WARRANTY AND SUPPORT

ANENG provides service and technical support for this product. For any inquiries, technical assistance, or warranty claims, please contact ANENG customer service through the official channels provided at the point of purchase or on the ANENG official website.

Please retain your purchase receipt as proof of purchase for warranty purposes.

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