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## ANENG SZ301

# ANENG Digital Multimeter and Clamp Meter User Manual

Models: SZ301 Multimeter, ST181 Clamp Meter

## 1. INTRODUCTION

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This user manual provides comprehensive instructions for the safe and effective operation of your ANENG Digital Multimeter (Model SZ301) and ANENG Clamp Meter (Model ST181). These instruments are designed for measuring various electrical properties, including AC/DC voltage, current, resistance, capacitance, frequency, and continuity. Please read this manual thoroughly before use to ensure proper functionality and safety.

## 2. SAFETY INFORMATION

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

- Do not exceed the maximum input values for any function.
- Ensure the test leads are in good condition and properly connected before making measurements.
- Do not use the meters if they appear damaged or are not operating correctly.
- Exercise extreme caution when working with voltages above 30V AC RMS, 42V peak, or 60V DC. These voltages pose a shock hazard.
- Always disconnect power to the circuit and discharge all high-voltage capacitors before measuring resistance, continuity, or diodes.
- Replace batteries when the low battery indicator appears to ensure accurate readings.
- The meters are designed with anti-burn features, double fuses, and overload protection for enhanced safety.

## 3. PRODUCT OVERVIEW

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### 3.1 Package Contents

Your package includes the following items:

- 1 x ANENG SZ301 Digital Multimeter
- 1 x ANENG ST181 Clamp Meter
- 2 x AAA Batteries (for SZ301)

- 2 x AA Batteries (for ST181)
- 1 x Combination Lead Set (4\*connection socket, 2\*PVC cable, 2\*copper needle, 2\*U-shaped insert, 2\*meter pen, 2\*alligator clips, 2\*puncture needle)
- 2 x Multimeter Test Leads
- 2 x Instruction Manuals (one for each device)
- 1 x Storage Bag

### 3.2 Components and Display



Figure 1: ANENG SZ301 Multimeter and ST181 Clamp Meter with all included accessories, including test leads, batteries, and a storage bag.



Figure 2: Close-up view of the ANENG SZ301 Digital Multimeter, showing its display, rotary switch, function buttons, input jacks, and included AAA batteries.



Figure 3: Close-up view of the ANENG ST181 Digital Clamp Meter, highlighting its clamp jaw, display, rotary switch, function buttons, input jacks, and included AA batteries.

### SZ301 Multimeter Key Features:

- Large LCD display with backlight for easy reading.
- Rotary switch for selecting measurement functions.
- Function buttons: SEL (Select), HOLD (Data Hold).
- Input jacks for test leads (VΩmA+, COM, 10A).

## ST181 Clamp Meter Key Features:

- Clamp jaw for non-contact AC current measurement (up to 400A).
- NCV (Non-Contact Voltage) detection.
- Large LCD display with backlight.
- Rotary switch for selecting measurement functions.
- Function buttons: H/Ξ (Hold/Hz), REL (Relative), SET.
- Input jacks for test leads (COM, INPUT).
- Jaw opening: 36mm (1.42 inches).

## 4. SETUP

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### 4.1 Battery Installation

1. Ensure the meter is turned off.
2. Locate the battery compartment cover on the back of the meter.
3. Use a screwdriver to open the battery compartment.
4. Insert the correct type and number of batteries (2x AAA for SZ301, 2x AA for ST181) observing the correct polarity (+ and -).
5. Replace the battery compartment cover and secure it with the screw.

### 4.2 Connecting Test Leads

For most measurements, connect the black test lead to the "COM" (Common) input jack and the red test lead to the appropriate input jack for the desired measurement (e.g., "VΩmA+" for voltage, resistance, capacitance, or "10A" for high current on SZ301; "INPUT" for voltage, resistance, etc. on ST181).

## 5. OPERATING INSTRUCTIONS

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Before taking any measurement, ensure the meter is set to the correct function and range. If the range is unknown, start with the highest range and work downwards.

### 5.1 Measuring AC/DC Voltage (SZ301 & ST181)

1. Turn the rotary switch to the V~ (AC Voltage) or V- (DC Voltage) position.
2. Connect the black test lead to the COM jack and the red test lead to the VΩmA+ (SZ301) or INPUT (ST181) jack.
3. Connect the test probes in parallel to the circuit or component you wish to measure.
4. Read the voltage value on the display.

# AC Voltage Test



Figure 4: The ANENG SZ301 Multimeter is shown performing an AC Voltage Test on a standard wall outlet, displaying a reading of 022.3V.

## 5.2 Measuring AC Current (ST181 Clamp Meter Only)

1. Turn the rotary switch to the A~ (AC Current) position.
2. Open the clamp jaw and enclose only one conductor of the circuit. Do not clamp around multiple conductors, as this will result in a zero reading.
3. Read the current value on the display. The ST181 can measure up to 400A.

# 400A HIGH CURRENT



Figure 5: The ANENG ST181 Clamp Meter demonstrating its capability to measure high AC current, with a visual representation of 400A flowing through wires.

# 36MM JAW DESIGN

The maximum diameter can be opened to 36mm  
1.42in, non-contact type, suitable for various wires



Figure 6: A detailed view of the ANENG ST181 Clamp Meter's 36mm (1.42 inch) jaw design, illustrating its wide opening for various wire sizes.

## 5.3 Measuring Resistance (SZ301 & ST181)

1. Turn the rotary switch to the  $\Omega$  (Resistance) position.
2. Ensure the circuit is de-energized and all capacitors are discharged.
3. Connect the test probes across the component to be measured.
4. Read the resistance value on the display.

## 5.4 Measuring Continuity (SZ301 & ST181)

1. Turn the rotary switch to the  $\text{⌚}$  (Continuity) position.
2. Ensure the circuit is de-energized.
3. Connect the test probes across the circuit or component.
4. If the resistance is below approximately  $50\Omega$ , the buzzer will sound, indicating continuity.

### **5.5 Measuring Diodes (SZ301 & ST181)**

1. Turn the rotary switch to the ▲ (Diode) position.
2. Ensure the circuit is de-energized.
3. Connect the red test lead to the anode and the black test lead to the cathode of the diode.
4. Read the forward voltage drop on the display. Reverse the leads to check for open circuit (OL) reading.

### **5.6 Measuring Capacitance (SZ301 & ST181)**

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

### **5.7 Non-Contact Voltage (NCV) Detection (ST181 Clamp Meter Only)**

1. Turn the rotary switch to the NCV position.
2. Move the top of the clamp meter near the conductor or outlet.
3. The meter will beep and the NCV indicator will light up if AC voltage is detected.



# AC Current & Backlight

Multiple functions to meet the needs of work



AC/DC voltage



Diode



Resistance



AC current



Capacitance



NCV induction



HD Backlight



Hertz



Buzzer

Figure 7: The ANENG ST181 Clamp Meter's display showing icons for various functions including AC/DC voltage, diode, resistance, AC current, capacitance, NCV induction, HD backlight, Hertz, and buzzer.

## 5.8 Data Hold Function (SZ301 & ST181)

Press the "HOLD" button (SZ301) or "H/⊞" button (ST181) to freeze the current reading on the display. Press it again to release the hold function.

## 5.9 Backlight (SZ301 & ST181)

The meters feature a backlight for improved visibility in dimly lit environments. The backlight typically activates automatically or can be toggled with a specific button press (refer to individual meter's specific manual for details).

## 6. MAINTENANCE

### 6.1 Cleaning

Wipe the meter's casing 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

When the low battery indicator appears on the display, replace the batteries immediately to ensure accurate measurements. Refer to section 4.1 for battery installation instructions.

## 6.3 Storage

If the meters are not used for an extended period, remove the batteries to prevent leakage and damage. Store the meters in a cool, dry place, away from direct sunlight and extreme temperatures.

## 7. TROUBLESHOOTING

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Problem	Possible Cause	Solution
No display or dim display	Low batteries or incorrect battery installation.	Replace batteries, ensuring correct polarity.
"OL" (Overload) displayed	Measurement exceeds the selected range or meter's maximum capacity.	Select a higher range or ensure the measurement is within the meter's specifications.
Inaccurate readings	Low batteries, incorrect function/range selection, or damaged test leads.	Replace batteries, verify function/range, check test leads for damage.
No current reading on clamp meter	Clamping around multiple conductors or DC current.	Ensure only one AC conductor is within the clamp jaw. The ST181 measures AC current only.

## 8. SPECIFICATIONS

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### General Specifications:

- **Brand:** ANENG
- **Style:** Multimeter with Clamp Meter
- **Power Source:** Battery Powered
- **Safety Features:** Anti-burn with double fuses, overload protection, insulated probes.

### ANENG SZ301 Digital Multimeter:

- **Model:** SZ301
- **Measurement Types:** AC/DC Voltage, DC Current, Resistance, Capacitance, Diode, Continuity, Frequency.
- **Display:** Digital LCD with Backlight
- **Power:** 2 x AAA Batteries

### ANENG ST181 Clamp Meter:

- **Model:** ST181
- **Measurement Types:** AC/DC Voltage, AC Current, Resistance, Capacitance, Diode, Continuity, Frequency, NCV.
- **Max AC Current:** 400A
- **Jaw Opening:** 36mm (1.42 inches)
- **Display:** Digital LCD with Backlight

- **Power:** 2 x AA Batteries

## 9. WARRANTY AND SUPPORT

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ANENG provides service and technical support for its products. For warranty claims, technical assistance, or any inquiries, please refer to the contact information provided in the original product packaging or visit the official ANENG website. The product is designed with safety features and is backed by the manufacturer's support.

**Return Policy:** 30-day refund/replacement policy (as per Amazon listing).