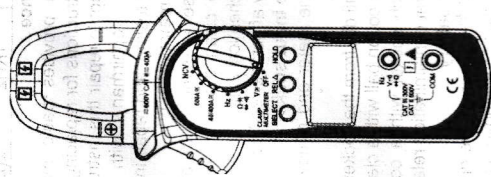


OPERATOR'S INSTRUCTION MANUAL

DIGITAL CLAMP METER



MODEL:

☒ ST203



WARNING

READ AND UNDERSTAND THIS MANUAL
BEFORE USING THE INSTRUMENT.

INTRODUCTION

This manual provides all safety information, operation instruction, specifications and maintenance for the meter, which is compact, hand-held, and battery operated.

This digital multimeter has been designed according to EN61010-1 oncoming electronic measuring instruments with an over voltage category (CAT III 300V, CAT II 600V) and Pollution degree 2.

Warning

To avoid possible electric shock or personal injury, and to avoid possible damage to the Meter or to the equipment under test, adhere to the following rules:

- Before using the meter inspect the case. Do not use the Meter if it is damaged or the case (or part of the case) is removed. Look for cracks or missing plastic. Pay attention to the insulation around the connectors.
- Inspect the test leads for damaged insulation or exposed metal. Check the test leads for continuity.
- Do not apply more than the rated voltage, as marked on the Meter, between the terminals or between any terminal and grounding.
- The rotary switch should be placed in the right position and no any changeover of range shall be made during measurement is conducted to prevent damage of the Meter.
- When the Meter working at an effective voltage over 60V in DC or 30V rms in AC, special care should be taken for there is danger of electric shock.
- Use the proper terminals, function, and range for your

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measurements.

- Do not use or store the Meter in an environment of high temperature, humidity, explosive, inflammable and strong magnetic field. The performance of the Meter may deteriorate after dampened.
- When using the test leads, keep your fingers behind the finger guards.
- Disconnect circuit power and discharge all high-voltage capacitors before testing resistance, continuity, diodes or capacitors.
- Replace the batteries as soon as the battery indicator  appears. With a low battery, the Meter might produce false readings that can lead to electric shock and personal injury.
- Remove the connection between the testing leads and the circuit being tested, and turn the Meter power off before opening the Meter case.
- When servicing the Meter, use only the same model number or identical electrical specifications replacement parts.
- The internal circuit of the Meter shall not be altered at will to avoid damage of the Meter and any accident.
- Soft cloth and mild detergent should be used to clean the surface of the Meter when servicing. No abrasive and solvent should be used to prevent the surface of the Meter from corrosion, damage and accident.
- The Meter is suitable for indoor use.
- Turn the Meter power off when it is not in use and take out the battery when not using for a long time.
- Constantly check the battery as it may leak when it has

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been using for some time, replace the battery as soon as leaking appears. A leaking battery will damage the Meter.

1. General operations

1.1 Data hold function

This function can hold reading data, when rotate function switch or repress HOLD button will exit.

- Press HOLD button, reading hold and  icon shown.
- Press Hold button again, it will exit hold status.

1.2 Battery energy-saving function

If you don't operate the meter for about 15 minutes, it will turn off automatically. To turn on it again, just rotate the function switch.

1.3 Button introduce

- SELECT** button: Press this button to select desire function, when the function switch on , voltage and current range. The select function unit icon would be display on the LCD.
- HOLD** button: Press this button and turn on meter, it will disable auto power off function. Press this button to hold data, and repress it to release.
- RELA** button: Press this button to zero reading, start relative measure mode, and LCD will show Δ icon. This button is enable for current and capacitance measure function.

2. Operation instruction

2.1 Voltage measurement

- 1) Connect the black test lead to the "COM" jack and the red test lead to the "V Ω " jack

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- 2) Set the function switch to V $\overline{\sim}$ range, press SELECT button to select DC or AC function.
- 3) Connect the test leads across the source or load to be measured.
- 4) Read LCD display. The polarity of the red lead connection will be indicated when making a DC measurement.

2.2 Current measurement

- 1) Set the function switch to the desire A $\overline{\sim}$ range, press SELECT button to select DC or AC function.
- 2) Press the trigger to open the transformer jaws and clamp one conductor only it is impossible to make measurements, when two or three conductors are clamped at the same time.
- 3) Display reading is flowing the conductor DC or AC current.

2.3 Resistance measurement

- 1) Connect the black test lead to the "COM" jack and the red to the "V Ω " jack.
- 2) Set the function switch to desire  range, press SELECT button to select Ω function.
- 4) Connect the test leads across the load to be measured.
- 5) Read the reading on the display.

2.4 Continuity buzzer test

- 1) Connect the black test lead to the "COM" jack and the red to the "V Ω " jack.

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4. SPECIFICATIONS

Accuracy is guaranteed for 1 year 23±5°C and ≤ 80%RH

4.1 DC voltage

Range	Resolution	Accuracy
400mV	0.1mV	±(1.5% of rdg + 5dgt)
4V	1mV	
40V	10mV	±(1.0% of rdg + 3dgt)
400V	100mV	
600V	1V	±(1.2% of rdg + 5dgt)

Input impedance: 10MΩ

4.2 AC voltage

Range	Resolution	Accuracy
4V	1mV	
40V	10mV	±(1.2% of rdg + 5dgt)
400V	100mV	
600V	1V	±(1.5% of rdg + 5dgt)

Input impedance: 10MΩ

Frequency range: 40Hz ~ 1KHz

Response: Average, calibrated in rms of sine wave

4.3 Resistance

Range	Resolution	Accuracy
400Ω	0.1Ω	±(1.2% of rdg + 2dgt)
4KΩ	1Ω	
40KΩ	10Ω	±(1.0% of rdg + 2dgt)
400KΩ	100Ω	
4MΩ	1KΩ	±(1.2% of rdg + 2dgt)
40MΩ	10KΩ	±(1.5% of rdg + 2dgt)

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- 4) Connect test leads across the capacitor under measure and be sure the polarity of connection is observed. Note: When the capacitance under measure is more than 200uF, it needs at least 10 seconds to make readings stable.

2.7 Frequency measurement

- 1) Set the function switch to Hz range.
- 2) Connect the BLACK test lead to the "COM" jack and the RED to the "VΩ" jack.
- 3) Connect the test leads across the load to be measured.
- 4) Read the reading on the display.

2.8 NCV test

- 1) Set the function switch to NCV range, LCD display "EF".
- 2) Close the front end of the clamp to the measured socket.
- 3) When meter detects AC voltage between 90~1000v, it will sound and light alarms at the same time.

3. GENERAL CHARACTERISTICS

Display: 4000 counts LCD with units icon.

Polarity indication: "-" displayed automatically

Over-range indication: Only "OL" displayed

Low battery indication: "BAT" displayed

Range select: Manual

Operation temperature: 0°C to 40°C, less than 80%RH

Storage temperature: -10°C to 50°C, less than 85%RH

Battery type : Two 1.5V AAA size batteries

Dimension(H×W×D): 208×76×30mm

Weight: Approx 260g with batteries

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- 2) Set the function switch to Ω range.
- 3) Press the SELECT button to select continuity buzzer mode, and the symbol "•||" will appear as an indicator on LCD.
- 4) Connect the test leads across the load to be measured.
- 5) If the circuit resistance is lower than about 30±20Ω, the built-in buzzer will sound.

2.5 Diode test

- 1) Connect the black test lead to the "COM" jack and the red to the "VΩ" jack (Note: The polarity of the red test lead is positive "+").
- 2) Set the function switch to Ω range.
- 3) Press the SELECT button to select diode test mode, and the symbol "•|•" will appear as an indicator.
- 4) Connect the red test lead to the anode of the diode to be tested and the black test lead to the cathode.
- 5) The meter will show the approximate forward voltage of the diode. If the connections are reversed, "OL" will be shown on the display.

2.6 Capacitance measurement

- 1) Connect the black test lead to the "COM" jack and the red to the "VΩ" jack.
- 2) Set the function switch to Ω range.
- 3) Press the SELECT button to select capacitance measurement function, and the symbol "•|•" will appear as an indicator.

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4.4 DC current

Range	Resolution	Accuracy
40A	10mA	$\pm(3.0\% \text{ of rdg} + 20\text{dgt})$
400A	100mA	$\pm(2.5\% \text{ of rdg} + 10\text{dgt})$
600A	1A	$\pm(3.0\% \text{ of rdg} + 15\text{dgt})$

4.5 AC current

Range	Resolution	Accuracy
40A	10mA	$\pm(3.0\% \text{ of rdg} + 20\text{dgt})$
400A	100mA	$\pm(2.5\% \text{ of rdg} + 10\text{dgt})$
600A	1A	$\pm(3.0\% \text{ of rdg} + 15\text{dgt})$

Frequency range: 50Hz ~ 60Hz

Response: average, calibrated in rms of sine wave

4.6 Diode and continuity

Range	Introduction	Remark
→	The approximate forward voltage drop will be displayed	Open circuit voltage: about 1.5V
•	The built-in buzzer will sound if the resistance is less than about 30 $\pm$ 20 Ω .	Open circuit voltage: about 0.5V

4.7 Capacitance

Range	Resolution	Accuracy
40nF	10pF	$\pm(4.0\% \text{ of rdg} + 10\text{dgt})$
400nF	100pF	
4 μ F	1nF	
40 μ F	10nF	$\pm(4.5\% \text{ of rdg} + 10\text{dgt})$
400 μ F	100nF	
4mF	1 μ F	$\pm(5.0\% \text{ of rdg} + 15\text{dgt})$

4.8 Frequency

Range	Resolution	Accuracy
400Hz	0.1Hz	$\pm(1.5\% \text{ of rdg} + 5\text{dgt})$
4KHz	1Hz	
40KHz	10Hz	
400KHz	100Hz	$\pm(2.0\% \text{ of rdg} + 5\text{dgt})$
4MHz	1KHz	

5. Maintenance

This section provides basic maintenance information, including instructions for replacing the fuse and battery. Do not attempt to repair this instrument unless you are an experienced repairman with relevant calibration, performance testing, and repair information.

5.1 General maintenance

Regularly use a damp cloth and a small amount of detergent to clean the instrument casing. Do not use abrasive or chemical solvents. If the input socket is dirty or damp, it may affect the reading.

To clean the input socket:

a) Turn off the meter and remove all test leads from the input socket.

b) Remove all dirt from the socket.

c) Dip a new cotton ball with a cleaning agent or lubricant.

d) Clean each socket with a cotton ball. Lubricant can prevent socket contamination related to moisture.

5.2 Replace battery

If the sign "⎓" appear on the display, it indicates battery should be replaced. Remove screws and open the back case, replace the exhausted battery with new battery.