Irfora ST212

Irfora ST212 Smart Digital Clamp Multimeter User Manual

Model: ST212

1. Introduction

The Irfora ST212 Smart Digital Clamp Multimeter is a versatile and portable instrument designed for accurate electrical measurements. It features a 6000-count VA color display, automatic ranging, and various functions including AC/DC current and voltage, resistance, capacitance, frequency, diode, continuity, and Non-Contact Voltage (NCV) detection. This manual provides essential information for safe and effective operation of the device.

2. Safety Information

Please read and understand all safety information before operating this device. Failure to do so may result in electric shock, injury, or damage to the meter or equipment under test.

- This meter complies with CAT II 600V and CAT III 300V overvoltage standards, pollution level II, double insulation protection, and full-range overload protection.
- Do not apply more than the rated voltage, as marked on the meter, between the terminals or between any terminal and earth ground.
- Use caution when working with voltages above 30V AC RMS, 42V peak, or 60V DC. Such voltages pose a shock hazard.
- Always disconnect power to the circuit and discharge all high-voltage capacitors before performing resistance, continuity, diode, or capacitance measurements.
- Ensure the test leads are in good condition, without damaged insulation or exposed metal.
- Do not operate the meter if it appears damaged or if the case is open.
- Replace the batteries immediately when the low battery indicator appears to ensure accurate readings.

3. Product Overview

The Irfora ST212 features a compact design with a clear VA color display and intuitive controls.


CATII
600V
CATIII
300V
MAX
400A
ANENG
ST212
AC/DC Clamp Meter
AUTO
DC
AC
Mk Ω nμm AVF °C
T-RMS 6000Counts
AUTO
Hz
Ω
SEL
Live
mV
NCV
SEL
REL
NCV
COM
MAX 600V
VΩ
Hz

Figure 3.1: Front view of the Irfora ST212 Smart Digital Clamp Multimeter, showing the clamp jaw, display, function buttons, and input terminals.

Figure 3.2: Overview of the multimeter's key features, including data retention, VA reverse display, flashlight, and automatic shut-down.

3.1 Components

- **Clamp Jaw:** Used for non-contact AC/DC current measurement. Maximum opening: 31.5mm (1.24 inches).
- **NCV Sensor:** Located at the top of the clamp for Non-Contact Voltage detection.
- **VA Color Display:** High-definition screen showing measurement readings, units, and function indicators.
- **Function Buttons:**
  - **SEL (Select):** Toggles between different measurement modes within a function (e.g., AC/DC, Resistance/Diode/Continuity).
  - **REL/NCV:** Short press for Relative mode (if applicable), long press for NCV detection.

- **HOLD/Flashlight:** Short press to hold data on the display, long press to activate/deactivate the built-in flashlight.

- **Input Terminals:**
  - **COM:** Common (negative) input terminal for test leads.
  - **VΩHz:** Positive input terminal for voltage, resistance, frequency, capacitance, diode, and continuity measurements.

Figure 3.3: The high-definition VA color reverse display screen, offering clear readability with up to 6000 counts.

Figure 3.4: The integrated flashlight function, useful for illuminating measurement areas in low-light conditions.

4. Setup

4.1 Battery Installation

The Irfora ST212 requires two 1.5V AAA batteries (not included) for operation.

1. Locate the battery compartment cover on the back of the meter.
2. Use a screwdriver to open the battery compartment.
3. Insert two 1.5V AAA batteries, ensuring correct polarity (+ and -).
4. Replace the battery compartment cover and secure it with the screw.

Note: Remove batteries if the meter is not used for an extended period to prevent leakage and damage.

5. Operating Instructions

The meter features automatic ranging for most functions, simplifying operation. Use the 'SEL' button to switch between AC/DC modes or different sub-functions (e.g., resistance, diode, continuity).

5.1 Power On/Off

Press the **Power button** (usually integrated with the SEL button) to turn the meter on. The meter will automatically shut down after approximately 15 minutes of inactivity to conserve battery life. Press the Power button again to turn it off manually.

5.2 AC/DC Current Measurement (Clamp)

Figure 5.1: Non-contact current measurement using the clamp jaw, capable of measuring up to 400A.

1. Turn on the meter.
2. Select the current measurement mode (usually indicated by 'A' or 'ACA/DCA'). Use the **SEL** button to switch between AC and DC current if necessary.
3. Open the clamp jaw and enclose only one conductor of the circuit. Ensure the jaw is fully closed.
4. Read the current value on the display.
5. The meter supports up to 400A AC/DC current measurement.

5.3 AC/DC Voltage Measurement

1. Insert the red test lead into the **VΩHz** terminal and the black test lead into the **COM** terminal.
2. Select the voltage measurement mode (usually indicated by 'V' or 'ACV/DCV'). Use the **SEL** button to

switch between AC and DC voltage.
3. Connect the test leads in parallel to the circuit or component you wish to measure.
4. Read the voltage value on the display.

5.4 Resistance, Diode, and Continuity Measurement

1. Insert the red test lead into the **VΩHz** terminal and the black test lead into the **COM** terminal.
2. Select the resistance/diode/continuity mode (usually indicated by 'Ω', 'Diode symbol', or 'Continuity symbol').
3. Use the **SEL** button to cycle through Resistance (Ω), Diode Test, and Continuity Test.
4. **For Resistance:** Connect the test leads across the component. Read the resistance value.
5. **For Diode Test:** Connect the red lead to the anode and the black lead to the cathode. Read the forward voltage drop. Reverse the leads to check for open circuit.
6. **For Continuity:** Connect the test leads across the circuit. A built-in buzzer will sound if continuity is detected (resistance below a certain threshold).

5.5 Capacitance Measurement

1. Insert the red test lead into the **VΩHz** terminal and the black test lead into the **COM** terminal.
2. Select the capacitance measurement mode (usually indicated by 'F' or 'Capacitance symbol').
3. Connect the test leads across the capacitor. Ensure the capacitor is discharged before testing.
4. Read the capacitance value on the display.

5.6 Frequency Measurement

1. Insert the red test lead into the **VΩHz** terminal and the black test lead into the **COM** terminal.
2. Select the frequency measurement mode (usually indicated by 'Hz').
3. Connect the test leads across the circuit where frequency needs to be measured.
4. Read the frequency value on the display.

5.7 Non-Contact Voltage (NCV) Detection

1. Long press the **REL/NCV** button to activate NCV mode.
2. Bring the NCV sensor (located at the top of the clamp jaw) close to the wire or outlet you want to test.
3. If AC voltage is detected, the NCV alarm light will flash, and the buzzer will sound. The intensity of the alarm indicates the strength of the detected voltage.

5.8 Data Hold

Press the **HOLD/Flashlight** button briefly to freeze the current reading on the display. Press it again to release the data hold function.

5.9 Flashlight

Long press the **HOLD/Flashlight** button to turn the built-in flashlight on or off. This is useful for illuminating dark work areas.

6. Maintenance

6.1 Cleaning

Wipe the meter's case 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 as described in Section 4.1. Always use two new 1.5V AAA batteries.

6.3 Test Lead Care

Inspect test leads for damaged insulation or exposed metal before each use. Replace damaged leads immediately to prevent electric shock.

7. Troubleshooting

If the meter does not function correctly, perform the following basic checks:

- **No display or dim display:** Check battery installation and replace batteries if necessary.
- **Incorrect readings:** Ensure the correct function is selected. Check test lead connections and their condition. Verify the circuit under test is within the meter's specified range.
- **No continuity beep:** Ensure the meter is in continuity mode and the resistance is below the threshold for continuity.
- **NCV not detecting:** Ensure NCV mode is activated (long press REL/NCV).

If the problem persists after these checks, contact customer support.

8. Specifications

Parameter	Specification
AC Current Range	60A / 400A
DC Current Range	60A / 400A
DC Voltage Range	600V / 600mV
AC Voltage Range	600V / 600mV
Resistance	600Ω / 6kΩ / 60kΩ / 600kΩ / 6MΩ / 60MΩ
Capacitance	60nF / 600nF / 6uF / 60uF / 600uF / 6mF / 60mF
Temperature	-40~1000°C / -40~1832°F
Frequency	60Hz / 1000Hz
Display	LCD, 6000 counts
Sampling Time	Approx. 3 times/second (bar graph 10 times/second)
Automatic Shut-off	15 minutes of inactivity
Operating Temperature	18~28°C
Storage Temperature	-10~50°C
Operating Height	Max. 2000m

Parameter	Specification
Power Supply	2 x 1.5V AAA batteries (not included)
Item Size	182 x 62.1 x 33.4 mm (7.17 x 2.44 x 1.31 inches)
Item Weight	150g (5.29 oz)

9. Package Contents

The Irfora ST212 Smart Digital Clamp Multimeter package includes:

- 1 x Clamp Multimeter (Irfora ST212)
- 1 x Pair of Test Leads
- 1 x K-Type Thermocouple
- 1 x User Manual (English)

10. Warranty and Support

Warranty information for the Irfora ST212 Smart Digital Clamp Multimeter is not explicitly provided in the product details. Please refer to your point of purchase or the manufacturer's official website for specific warranty terms and conditions.
For technical support or inquiries, please contact Irfora customer service through their official channels or the retailer from whom you purchased the product.