

JASWQXS FR705

JASWQXS FR705 Solar MPPT Power Tester

USER MANUAL

Model: FR705

1. INTRODUCTION

The JASWQXS FR705 Solar MPPT Power Tester is a portable device designed for accurately measuring the maximum power point (Pmax), open-circuit voltage (Voc), and short-circuit current (Isc) of solar panels. It features a large LCD for clear display of parameters and offers both manual and automatic testing modes. This manual provides essential information for the safe and effective operation of your FR705 tester.

2. SAFETY INFORMATION

Please read all safety warnings and instructions carefully before using this device to prevent electric shock, injury, or damage to the product.

- Always ensure the device is in good working condition before use. Do not operate if damaged.
- Do not exceed the maximum input specifications: PMAX (W): 1000W, Vmp (V): 12 ~ 80V, Amp (A): 35A, Voc (V): 12 ~ 80V, Isc (A): 35A.
- Avoid direct contact with live electrical circuits. Use appropriate personal protective equipment (PPE).
- Ensure proper polarity when connecting to solar panels. Reverse polarity can damage the device and the panel.
- Do not open the device casing unless specifically instructed for battery replacement. Refer to the warning on the back of the device.
- Keep the device away from water, moisture, and extreme temperatures.
- This device is intended for testing solar panels only. Do not use it for other electrical measurements.
- Built-in protection against overtemperature, overvoltage, overcurrent, reverse polarity, and overload is provided for safe operation.

3. PACKAGE CONTENTS

Verify that all items listed below are included in your package:

- FR705 Solar MPPT Power Tester
- Test Leads (MC4 connectors)
- Carrying Case
- Wrenches (for MC4 connectors)
- AAA Batteries (x3)
- User Manual



Image: Contents of the FR705 Solar MPPT Power Tester package.

4. PRODUCT OVERVIEW

4.1 Front Panel and Display

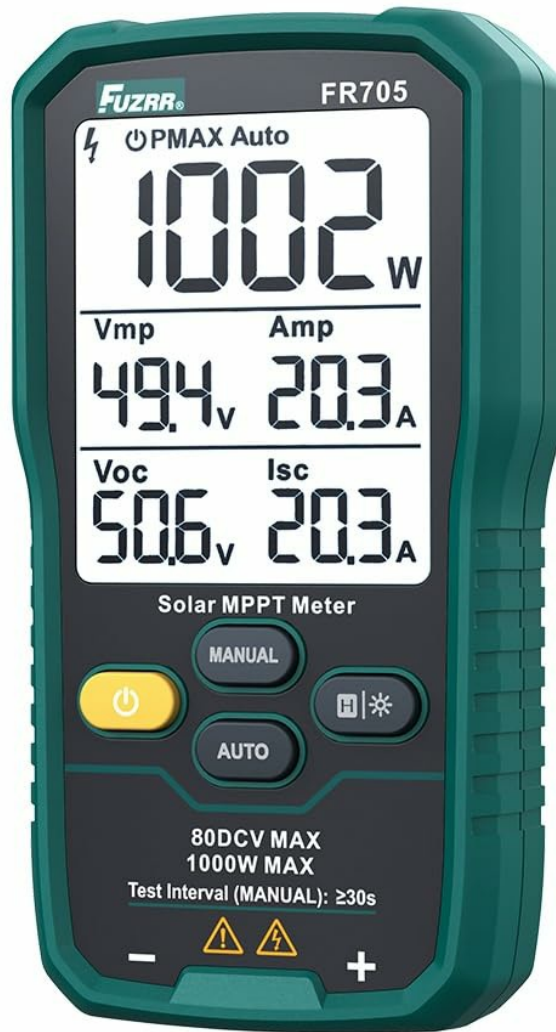


Image: Front view of the FR705 tester with its large LCD display.

- **Large LCD Display:** Shows Pmax, Vmp, Amp, Voc, Isc simultaneously.
- **Power Button:** Turns the device ON/OFF.
- **AUTO Button:** Initiates automatic MPPT scanning.
- **MANUAL Button:** Initiates manual MPPT scanning.
- **Hold/Backlight Button:** Short press to hold current readings, long press to toggle backlight.

4.2 Rear Panel



Image: Rear view of the FR705 tester.

- **Battery Compartment:** Houses 3x AAA 1.5V batteries.
- **Input Terminals:** For connecting test leads to the solar panel.
- **Warning Label:** Important safety instructions regarding voltage, current, power ratings, and battery replacement.

5. SETUP

5.1 Battery Installation

1. Ensure the device is OFF.
2. Locate the battery compartment on the rear of the device.
3. Open the battery cover.
4. Insert 3x AAA 1.5V batteries, observing correct polarity (+/-).
5. Close the battery cover securely.

5.2 Connecting Test Leads

1. Connect the red test lead to the positive (+) input terminal on the FR705.

2. Connect the black test lead to the negative (-) input terminal on the FR705.
3. Ensure the MC4 connectors on the other end of the test leads are securely attached to the positive and negative terminals of the solar panel you wish to test. Observe correct polarity.

6. OPERATING MODES

The FR705 offers two primary operating modes for testing solar panels:

6.1 Automatic MPPT Scan (AUTO Mode)

This mode automatically scans the solar panel's voltage and current to find the maximum power point (MPPT).

1. Ensure the FR705 is connected to the solar panel.
2. Press the **Power** button to turn on the device.
3. Press the **AUTO** button. The device will begin scanning.
4. The display will show the Pmax, Vmp, Amp, Voc, and Isc values once the scan is complete.
5. The test interval in AUTO mode is typically short, providing quick results.

6.2 Manual MPPT Scan (MANUAL Mode)

This mode allows for a more controlled scan, useful for observing performance over a longer period or under specific conditions.

1. Ensure the FR705 is connected to the solar panel.
2. Press the **Power** button to turn on the device.
3. Press the **MANUAL** button. The device will begin scanning.
4. The display will show the Pmax, Vmp, Amp, Voc, and Isc values. The manual test interval is typically longer ($\geq 30s$), allowing for more stable readings.
5. You can press the **Hold** button to freeze the current readings on the display. Press again to release.

7. UNDERSTANDING MEASUREMENTS

The FR705 displays the following key parameters:

- **Pmax (W):** Maximum Power. The highest power output (in Watts) the solar panel can produce under current conditions.
- **Vmp (V):** Voltage at Maximum Power. The voltage (in Volts) at which the solar panel produces its maximum power.
- **Amp (A):** Current at Maximum Power. The current (in Amperes) at which the solar panel produces its maximum power.
- **Voc (V):** Open-Circuit Voltage. The maximum voltage (in Volts) the solar panel produces when no load is connected.
- **Isc (A):** Short-Circuit Current. The maximum current (in Amperes) the solar panel produces when its terminals are short-circuited.

These values are crucial for evaluating solar panel performance, identifying potential issues, and ensuring optimal system design.

8. MAINTENANCE

8.1 Cleaning

Wipe the device with a soft, dry cloth. Do not use abrasive cleaners or solvents. Ensure no moisture enters the device.

8.2 Battery Replacement

When the battery indicator appears on the display, replace the batteries promptly. Refer to Section 5.1 for battery installation instructions. Always use 3x AAA 1.5V batteries.

WARNING: To avoid electrical shock, remove test leads before replacing battery or opening case.

9. TROUBLESHOOTING

Problem	Possible Cause	Solution
Device does not power on.	Dead or incorrectly installed batteries.	Check battery polarity and replace with fresh AAA batteries.
No readings or "----" on display.	Incorrect connection to solar panel; insufficient light; panel not producing power.	Verify test lead connections and polarity. Ensure adequate sunlight on the panel. Check the panel for damage.
Inaccurate readings.	Poor connection; environmental factors (temperature, shading).	Ensure secure connections. Retest under stable environmental conditions.
Overload protection activated.	Input parameters exceed device limits.	Disconnect immediately. Ensure the solar panel's specifications are within the FR705's limits (Max 1000W, 80V, 35A).

10. SPECIFICATIONS

- **Model:** FR705
- **Maximum Power (Pmax):** 1000W
- **Voltage at Max Power (Vmp):** 12V ~ 80V
- **Current at Max Power (Amp):** 35A
- **Open-Circuit Voltage (Voc):** 12V ~ 80V
- **Short-Circuit Current (Isc):** 35A
- **Display:** Large LCD
- **Operating Modes:** Manual / Auto
- **Protection:** Overtemperature, Overvoltage, Overcurrent, Reverse Polarity, Overload
- **Power Supply:** 3x AAA 1.5V Batteries
- **Item Weight:** Approximately 1.1 pounds (0.5 kg)
- **Package Dimensions:** Approximately 0.39 x 0.39 x 0.39 inches (1 x 1 x 1 cm) *-Note: This dimension seems incorrect from source data, likely placeholder.*

11. WARRANTY AND SUPPORT

For warranty information or technical support, please contact your retailer or the manufacturer directly. Keep your purchase receipt as proof of purchase.