ETCR ETCR3700

ETCR3700 Intelligent Equipotential Bonding Resistance Meter User Manual

Model: ETCR3700

1. Introduction

The ETCR3700 4-Wire Intelligent Equipotential Bonding Resistance Meter is a high-precision instrument designed for measuring the bonding resistance between metal components and grounding systems. It is suitable for a wide range of applications including buildings, electrical circuits, lightning protection systems, water and gas pipes, radiators, and even vehicle, ship, and aircraft structures. This manual provides comprehensive instructions for the safe and effective operation, maintenance, and troubleshooting of your ETCR3700 meter.

Figure 1.1: Front view of the ETCR3700 Equipotential Bonding Resistance Meter. This image shows the main display, function keys, and rotary knob.

2. Safety Information

Please read and understand all safety warnings and operating instructions before using this instrument. Failure to follow these instructions may result in injury or damage to the meter.

- Always ensure the meter is turned off before connecting or disconnecting test leads.
- Do not use the meter in wet environments or near flammable gases.
- Do not attempt to disassemble or modify the meter. Refer all servicing to qualified personnel.
- Use only the specified charger (DC 8.4V) for charging the battery.
- If the meter will not be used for a long period, charge the battery regularly to maintain its lifespan.
- Ensure proper connection of test leads to avoid incorrect readings or damage.

Figure 2.1: Back view of the ETCR3700 meter, showing the battery compartment and important warning labels regarding charging and disassembly.

3. Product Components

The ETCR3700 meter comes with a complete set of accessories to facilitate its use in various environments.

3.1 What's in the Box

- ETCR3700 Equipotential Bonding Resistance Meter
- Test Lines (Red and Black)
- USB Cable
- Special Charger
- Tool Bag / Meter Bag
- Pen Probe (Red and Black)

Figure 3.1: Overview of all items included in the ETCR3700 package, including the meter, test leads, USB cable, charger, and carrying bag.

3.2 Meter Overview

Familiarize yourself with the various parts of the ETCR3700 meter for proper operation.

Figure 3.2: Labeled diagram of the ETCR3700 front panel, indicating the Current Positive Interface (C1), Voltage Positive Interface (P1), Voltage Negative Interface (P2), Current Negative Interface (C2), USB Interface, Charge port, Meter Body, LCD, Function Keys, Function Gear Knob, and Test Indicator Light.

3.3 Accessories Overview

Understanding the accessories and their functions is crucial for effective testing.

Figure 3.3: Labeled diagram of the ETCR3700 accessories, showing the Meter Bag, Tester, USB Data Cable, Charger, Pen Probe, and Test Leads.

4. Setup and Preparation

4.1 Battery Installation and Charging

The ETCR3700 is powered by a high-capacity rechargeable battery pack. Ensure the battery is sufficiently charged before use.

1. Open the battery cover on the back of the meter.
2. Insert the battery pack, ensuring correct polarity.
3. Close the battery cover securely.
4. To charge, connect the special charger to the "CHARGE" port on the meter and plug it into a power outlet. The charge indicator light will show charging status.

4.2 Connecting Test Leads

The ETCR3700 uses a four-wire measurement method for high accuracy. Proper connection of the test leads is essential.

- Connect the red test lead to the C1 (Current Positive) and P1 (Voltage Positive) terminals.
- Connect the black test lead to the C2 (Current Negative) and P2 (Voltage Negative) terminals.
- Ensure all connections are firm and secure.

5. Operating Instructions

5.1 Powering On/Off

- To power on, rotate the Function Gear Knob from "OFF" to any desired resistance range (e.g., 0.3Ω, 3Ω).
- To power off, rotate the Function Gear Knob to the "OFF" position.

5.2 Selecting Measurement Range

The ETCR3700 offers 6 selectable resistance ranges:

- 0.3Ω (for 1mΩ~300mΩ)
- 3Ω (for 300mΩ~3000mΩ)
- 30Ω (for 3.000Ω~30.00Ω)
- 300Ω (for 30.00Ω~300.0Ω)
- 3kΩ (for 300Ω~3000Ω)
- 30kΩ (for 30.00kΩ~30.00kΩ)

Rotate the Function Gear Knob to select the appropriate range for your measurement. Start with a higher range if the resistance is unknown, and then decrease the range for better resolution if necessary.

5.3 Performing a Measurement

1. Ensure the meter is powered on and the correct range is selected.
2. Connect the test leads to the object or system you wish to measure. Ensure good contact.
3. Press the **TEST** button. The meter will perform the measurement.
4. The resistance value will be displayed on the LCD. The Test Indicator Light will illuminate during the measurement.
5. Press the **REST** button to clear the current measurement and prepare for a new one.

5.4 Using Function Keys

The meter features several function keys for enhanced operation:

- **SET**: Used to enter settings mode for parameters like alarm threshold or clock.
- **Arrow Keys (Up/Down/Left/Right)**: Used for navigation and adjusting values within settings.
- **Backlight Button**: Toggles the LCD backlight for improved visibility in low-light conditions.

5.5 Data Storage and Retrieval

The ETCR3700 can store up to 400 measurement records. These records can be reviewed on the device or exported to a computer.

- To review stored data, navigate through the menu using the function keys.
- To export data, connect the meter to a computer using the provided USB cable. Use the included monitoring software for data download, reporting, and printing.

6. Maintenance

Proper maintenance ensures the longevity and accuracy of your ETCR3700 meter.

- **Cleaning:** Use a soft, dry cloth to clean the meter's exterior. Do not use abrasive cleaners or solvents.
- **Storage:** When not in use, store the meter in its carrying case in a cool, dry place, away from direct sunlight and extreme temperatures.
- **Battery Care:** Recharge the battery regularly, even if the meter is not in use, to prevent deep discharge and extend battery life.
- **Calibration:** For continued accuracy, periodic calibration by a qualified service center is recommended.

7. Troubleshooting

This section addresses common issues you might encounter with your ETCR3700 meter.

Problem	Possible Cause	Solution
Meter does not power on.	Low battery or battery not installed correctly.	Charge the battery or ensure it is properly installed.
Inaccurate readings.	Poor contact with test object, incorrect range selected, or dirty test leads.	Ensure firm contact, select appropriate range, clean test leads. Consider calibration if issue persists.
Display shows "OL" (Overload).	Resistance value exceeds the selected range.	Switch to a higher measurement range.
Cannot connect to PC.	Incorrect USB cable, driver issue, or software not running.	Ensure correct USB cable is used, install necessary drivers, and launch the monitoring software.

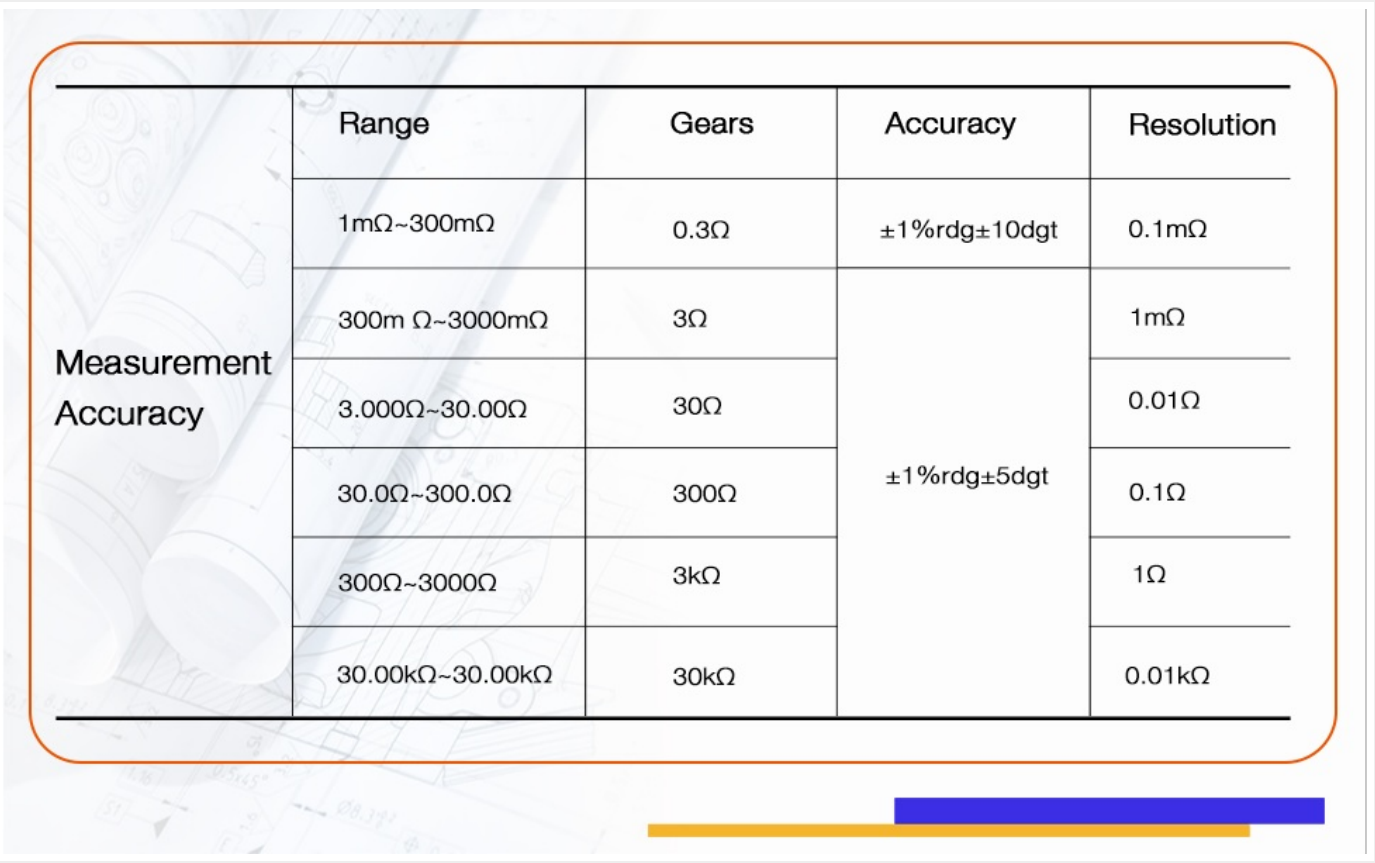
8. Specifications

Detailed technical specifications for the ETCR3700 Intelligent Equipotential Bonding Resistance Meter.

Parameter	Value
Model Number	ETCR3700
Measurement Type	Equipotential Bonding Resistance
Measuring Range	1mΩ - 30.0kΩ
Test Current	2A Max.
Power Source	Battery Powered
Data Storage	400 groups
Display	Backlit LCD with Bar Graph
Connectivity	USB
Color	Dark Grey

Parameter	Value
Manufacturer	ETCR INSTRUMENTS

8.1 Measurement Accuracy



Measurement Accuracy	Range	Gears	Accuracy	Resolution
	1mΩ~300mΩ	0.3Ω	±1%rdg±10dgt	0.1mΩ
	300m Ω~3000mΩ	3Ω	±1%rdg±5dgt	1mΩ
	3.000Ω~30.00Ω	30Ω		0.01Ω
	30.0Ω~300.0Ω	300Ω		0.1Ω
	300Ω~3000Ω	3kΩ		1Ω
	30.00kΩ~30.00kΩ	30kΩ		0.01kΩ

Figure 8.1: Detailed table outlining the measurement accuracy and resolution for each resistance range of the ETCR3700.

9. Warranty and Support

ETCR products are designed for reliability and performance. For warranty information, technical support, or service inquiries, please refer to the contact information provided with your purchase or visit the official ETCR website. Keep your purchase receipt as proof of purchase for warranty claims.

For additional resources and product information, you may visit theETCR Store on Amazon.