ETCR ETCR3520

ETCR ETCR3520 High Voltage Insulation Resistance Meter User Manual

Model: ETCR3520
Brand: ETCR

1. Introduction

This manual provides essential instructions for the safe and effective operation of the ETCR ETCR3520 High Voltage Insulation Resistance Meter. This instrument is designed for precise measurement of insulation resistance, polarization index (PI), dielectric absorption ratio (DAR), step voltage (STEP), ramp voltage (RAMP), dielectric discharge (DD), distributed capacitance (CAP), and AC/DC voltage. Please read this manual thoroughly before use to ensure proper functionality and user safety.

Image 1.1: The ETCR ETCR3520 High Voltage Insulation Resistance Meter, shown in its protective yellow case with red, green, and black test leads attached.

2. Safety Information

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

- **High Voltage Hazard:** This instrument generates high voltage. Exercise extreme caution when operating. Never touch test leads or the circuit under test during operation.
- **Qualified Personnel:** Only trained and qualified personnel should operate this device.
- **Inspect Before Use:** Before each use, inspect the instrument, test leads, and accessories for any damage. Do not use if any part is damaged.
- **Proper Connections:** Ensure all test leads are securely connected before applying voltage.
- **Automatic Discharge:** The instrument features an automatic discharge function. However, always verify that the circuit is fully discharged before handling.
- **Environmental Conditions:** Operate the meter in dry conditions. Avoid exposure to moisture, dust, or corrosive gases.

- **Voltage Monitoring:** The device automatically monitors live voltage. If the voltage exceeds 36V, testing will be prohibited to protect the instrument and operator.

3. Product Overview

3.1 Key Features

- Touch color screen for clear display of test data and historical records.
- Strong anti-interference technology for stable testing in environments with large distributed capacitance (e.g., long cables) and strong electromagnetic interference (e.g., substations).
- Comprehensive measurement indices: Insulation Resistance (IR), Polarization Index (PI), Dielectric Absorption Ratio (DAR), Step Voltage (STEP), Ramp Voltage (RAMP), Dielectric Discharge Index (DD), Distributed Capacitance (CAP), and AC/DC Voltage (V).
- Customizable measurement modes, including optional PI and DAR calculation formulas, adjustable test voltage, and custom test duration.
- Automatic monitoring of live voltage; testing is prohibited if voltage exceeds 36V for safety.
- Automatic display of test circuit current and internal temperature/humidity.
- Automatic discharge function for quick and safe release of charge after testing.
- Large-capacity memory for 1000 sets of real-time test data with date and time.
- USB communication for uploading recorded data to a computer for analysis.

3.2 Component Identification

Image 3.2: Front panel and lid components of the ETCR ETCR3520 meter.

Refer to Image 3.2 for the location of the following components:

- **Touch Color Screen:** Displays test results, settings, and historical data.
- **LINE High Voltage Port:** Connection point for the high voltage test lead.
- **GUARD Protection Port:** Used for guarding against surface leakage currents during insulation resistance measurements.
- **EARTH Earth Port:** Connection point for the ground test lead.
- **Anti-Water Tank:** Protective casing feature.
- **USB Interface:** For data transfer to a computer.
- **Charger Interface:** For connecting the power adapter to charge the internal battery.
- **Mode Selection Buttons:** Includes buttons for Step voltage mode (STEP), Ramp mode (RAMP), Polarization Index (PI), Dielectric Absorption Ratio (DAR), and Dielectric Discharge Index (DD).
- **Test Button:** Initiates and stops the measurement process.
- **Output Voltage Gear Selector:** Rotary switch to select the desired test voltage (e.g., 50V, 100V, 250V, 500V, 1kV, 2.5kV, 5kV).
- **Wiring Diagram (on lid):** Provides visual guidance for connecting test leads for various measurements.

4. Package Contents

Upon unpacking, verify that all items listed below are present and undamaged:

- ETCR3520 Insulation Resistance Meter Host
- Instrument Package (Carrying Bag)
- Strap
- Charger
- USB Data Cable
- High Voltage Test Rod (Red)
- Alligator Clip Test Lead (Green)
- Alligator Clip Test Lead (Black)
- High-Pressure Rod Replacement Hook
- High-Pressure Rod Replacement Clip
- User Manual
- Warranty Card

Image 4.1: Contents of the ETCR3520 Insulation Resistance Meter set.

Image 4.2: The ETCR3520 meter and accessories stored within the provided carrying bag.

5. Setup

5.1 Charging the Battery

Before initial use, ensure the internal battery is fully charged. Connect the provided charger to the Charger Interface on the meter and plug it into a suitable power outlet. The charging indicator will illuminate. Disconnect once fully charged.

5.2 Connecting Test Leads

Proper connection of test leads is crucial for accurate and safe measurements. Refer to the wiring diagrams on the meter's lid (Image 5.1) for specific measurement types.

Image 5.1: Wiring diagrams for various insulation resistance measurements.

1. Connect the red high voltage test rod to the**LINE** high voltage port.
2. Connect the green alligator clip test lead to the**GUARD** protection port (if required for the measurement).
3. Connect the black alligator clip test lead to the**EARTH** earth port.
4. Attach the free ends of the test leads to the circuit or component under test according to the specific wiring diagram for your measurement type.

6. Operation

6.1 Basic Insulation Resistance Measurement

1. Ensure the meter is powered on and test leads are correctly connected to the circuit under test.
2. Rotate the **Output Voltage Gear Selector** to the desired test voltage (e.g., 500V, 1kV, 5kV).
3. Press the **TEST** button to initiate the measurement. The screen will display the insulation resistance value, current, and other relevant parameters.
4. Observe the voltage monitor. If the live voltage of the measured object exceeds 36V, the test will automatically be prohibited for safety.
5. After the test is complete, the instrument will automatically discharge the circuit. Wait for the discharge

process to finish before disconnecting the leads.

6.2 Advanced Measurement Modes

The ETCR3520 supports various advanced measurement modes accessible via dedicated buttons:

- **Polarization Index (PI):** Measures the ratio of insulation resistance at 10 minutes to insulation resistance at 1 minute. Used to assess insulation quality.
- **Dielectric Absorption Ratio (DAR):** Measures the ratio of insulation resistance at 1 minute to insulation resistance at 30 seconds. Provides insight into insulation condition.
- **Step Voltage (STEP):** Applies a series of increasing test voltages to detect voltage-dependent insulation weaknesses.
- **Ramp Voltage (RAMP):** Gradually increases the test voltage to identify insulation breakdown points.
- **Dielectric Discharge Index (DD):** Measures the current discharged from the insulation after a period of charging, indicating insulation degradation.
- **Distributed Capacitance (CAP):** Measures the capacitance of the object under test.
- **AC/DC Voltage (V):** Allows for measurement of AC and DC voltages present in the circuit.

To use these modes, select the desired mode button, configure any specific parameters (e.g., test duration, voltage steps) via the touch screen, and then press the **TEST** button.

6.3 Data Storage and USB Communication

The meter automatically stores up to 1000 sets of real-time test data. To review data, navigate through the menu on the touch screen. To transfer data to a computer:

1. Connect the meter to a computer using the provided USB data cable.
2. Follow the on-screen prompts or refer to the software instructions (if applicable) to upload the stored data.
3. The data can then be used for statistical analysis and record-keeping.

7. Specifications

The ETCR3520 offers robust performance for high voltage insulation resistance testing. Below is a summary of its key specifications:

Parameter	Value
Model	ETCR3520
Output Voltage Range	50V - 5kV (Adjustable)
Resistance Measurement Range	0.005 MΩ - 10 TΩ
Test Current	7 mA
Display	Touch Color Screen
Measurement Functions	IR, PI, DAR, STEP, RAMP, DD, CAP, AC/DC Voltage
Data Storage	1000 sets of real-time data

Parameter	Value
Communication Interface	USB
Power Source	Corded Electric (Internal rechargeable battery)
Manufacturer	ETCR

For a comparison of ETCR models, refer to the table below:

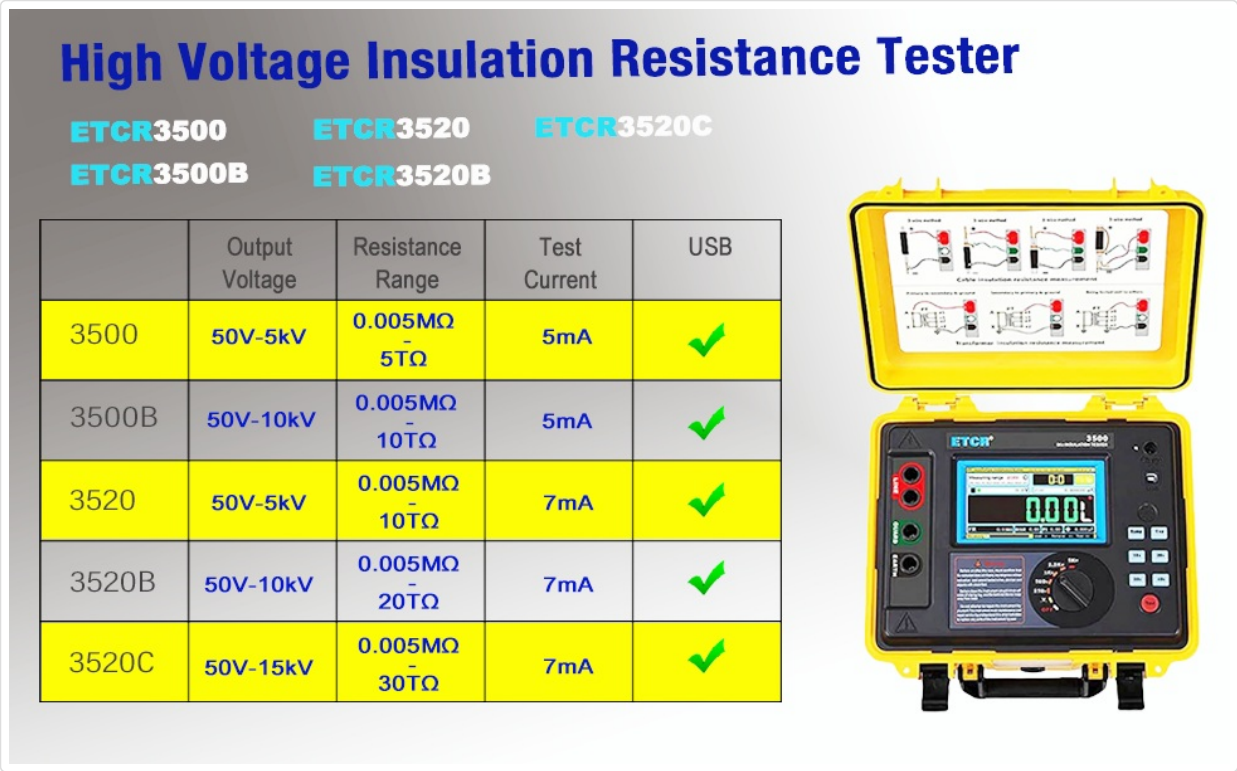


Image 7.1: Comparison of ETCR High Voltage Insulation Resistance Tester models.

8. Maintenance

Regular maintenance ensures the longevity and accuracy of your ETCR3520 meter.

- **Cleaning:** Use a soft, dry cloth to clean the instrument's exterior. Do not use abrasive cleaners or solvents. Ensure no moisture enters the device.
- **Storage:** Store the meter in its protective carrying case in a cool, dry place, away from direct sunlight and extreme temperatures.
- **Battery Care:** For optimal battery life, charge the battery regularly, even if the device is not in frequent use. Avoid fully discharging the battery for extended periods.
- **Calibration:** Periodic calibration by qualified service personnel is recommended to maintain measurement accuracy.

9. Troubleshooting

If you encounter issues with your ETCR3520, refer to the following common problems and solutions:

Problem	Possible Cause	Solution
Meter does not power on	Low battery; Power switch off	Charge the battery; Ensure power switch is in the ON position
No reading or "OL" displayed	Open circuit; Resistance too high; Incorrect lead connection	Check test lead connections; Verify circuit continuity; Ensure resistance is within meter's range
Test prohibited message	Live voltage detected exceeding 36V	Ensure the circuit under test is de-energized and safe before proceeding.
Inaccurate readings	Poor lead contact; Environmental interference; Out of calibration	Clean lead contacts; Move away from strong electromagnetic fields; Consider professional calibration
Data transfer failure	Faulty USB cable; Driver issues; Incorrect software settings	Try a different USB cable; Install necessary drivers; Check software configuration

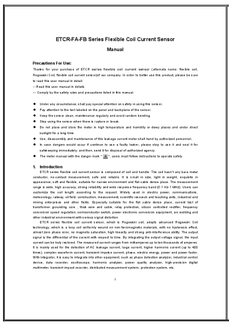
If the problem persists after attempting these solutions, please contact customer support.

10. Warranty and Support

The ETCR ETCR3520 Insulation Resistance Meter comes with a standard manufacturer's warranty. Please refer to the warranty card included in your package or your purchase documentation for specific terms and conditions.
For technical support, service, or warranty claims, please contact your authorized dealer or the manufacturer directly. Keep your purchase receipt and product serial number readily available when seeking support.

Related Documents - ETCR3520

	[ETCR3500/3500B High Voltage Insulation Resistance Tester - Specifications & Features] Detailed overview of the ETCR3500 and ETCR3500B High Voltage Insulation Resistance Testers, including features, functions, technical specifications, and measurement accuracy for electrical testing.
	[ETCR5000 Power Quality Analyzer: Features, Functions, and Specifications] Comprehensive overview of the ETCR5000 Power Quality Analyzer, detailing its product features, advanced functions, technology specifications, optional current sensor characteristics, and instrument accuracy. Essential for electrical power analysis.
	[ETCR-FA-FB Series Flexible Coil Current Sensor: User Manual & Technical Specifications] User manual and technical specifications for the ETCR-FA-FB Series Flexible Coil Current Sensor, a Rogowski coil technology device for measuring AC leakage current, large AC currents, harmonics, and transient impulses across various industrial applications. Features include high accuracy, wide frequency response, and customizable coil lengths.
	[ETCR3500/3500B High Voltage Insulation Resistance Tester - Specifications & Features] Detailed overview of the ETCR3500 and ETCR3500B High Voltage Insulation Resistance Testers, including features, functions, technical specifications, and measurement accuracy for electrical testing.
	[ETCR5000 Power Quality Analyzer: Features, Functions, and Specifications] Comprehensive overview of the ETCR5000 Power Quality Analyzer, detailing its product features, advanced functions, technology specifications, optional current sensor characteristics, and instrument accuracy. Essential for electrical power analysis.

	[ETCR-FA-FB Series Flexible Coil Current Sensor: User Manual & Technical Specifications] User manual and technical specifications for the ETCR-FA-FB Series Flexible Coil Current Sensor, a Rogowski coil technology device for measuring AC leakage current, large AC currents, harmonics, and transient impulses across various industrial applications. Features include high accuracy, wide frequency response, and customizable coil lengths.

Documents - ETCR – ETCR3520

[pdf] Datasheet

ETCR   etcr ETCR3520 Datasheet ETCR3520C High Performance Voltage Insulation Resistance Tester with True Colour Touch Screen and Robust Lithium Battery rapid tech au 2023 12 |||

ETCR3520/3520B/3520C High Voltage Insulation Resistance Tester Output Voltage 50V- 15kV Test Resistance 0.005M- 30T Max Short Circuit Current 7mA Polarization Index TestPI DielectricAbsorption Ratio TestDAR Step Test Mode STEP Ramp Test Mode RAMP Dielectric discharge index DD Capacitanc...

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