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LIAMOS IT20G

LIAMOS IT20G Insulation Resistance Tester User Manual

Model: IT20G

1. Introduction

The LIAMOS IT20G Insulation Resistance Tester is a multi-functional, high-precision megohmmeter designed for measuring insulation resistance, AC/DC voltage, Polarization Index (PI), and Absorption Ratio (DAR). It is suitable for assessing the insulation quality of various electrical equipment and insulating materials, including motors, cables, switches, and electrical appliances. This manual provides detailed instructions for the safe and effective operation, maintenance, and troubleshooting of your IT20G tester.



Figure 1: LIAMOS IT20G Insulation Resistance Tester with included test leads and alligator clips.

2. Key Features

- **Insulation Resistance Measurement:** Capable of measuring insulation resistance up to 20GΩ.
- **AC/DC Voltage Measurement:** Measures both alternating and direct current voltages.
- **Polarization Index (PI):** Calculates PI using 1-minute and 10-minute insulation resistance values to assess insulator quality deterioration.
- **Absorption Ratio (DAR):** Determines if the device is affected by instrument programmed default values (15 seconds and 60 seconds) for DAR calculation.
- **Data Storage:** Stores up to 100 sets of measurement data for later review.
- **LCD Backlight:** High-definition LCD with backlight for clear readings in various lighting conditions.
- **Durable Design:** ABS shockproof double-layer insulation material for enhanced durability and protection against drops.
- **Adjustable Support Frame:** Features a 45° inner angle support frame for convenient positioning during measurements.

- **Automatic Shut-down:** Power-saving feature to extend battery life.
- **Low Voltage Alarm:** Alerts the user when battery voltage is low.



Figure 2: The adjustable 45° support frame provides convenience during operation.

3. Setup

1. **Unpacking:** Carefully remove the IT20G tester and all accessories from the packaging. Verify that all components are present: the tester unit, test leads (red and black), and alligator clips.
2. **Battery Installation:** Open the battery compartment on the back of the device and insert the required batteries, observing correct polarity.
3. **Connecting Test Leads:**
    - Connect the red test lead to the "LINE" terminal and the black test lead to the "COM" terminal for general measurements.
    - For insulation resistance measurements, connect the red lead to "LINE", the black lead to "COM", and the

green lead (if supplied, or a separate earth connection) to the "EARTH" terminal.
    - Attach the alligator clips to the test leads as needed for secure connections to the circuit or component under test.
4. **Power On:** Press the power button () to turn on the device. The LCD screen will illuminate.
5. **Adjusting Support Frame:** If desired, extend the 45° support frame from the back of the unit for comfortable viewing during operation.

4. Operating Instructions

4.1. Insulation Resistance Measurement

This function measures the resistance of insulation materials. The measurement range is 0.1MΩ to 20GΩ.

1. Ensure the test leads are correctly connected for insulation resistance measurement (LINE, COM, EARTH).
2. Select the desired insulation test voltage using the appropriate buttons (refer to the device's interface for voltage selection).
3. Connect the test leads to the component or circuit whose insulation resistance you wish to measure.
4. Press the **TEST** button to initiate the measurement. The high voltage output will be applied.
5. Read the insulation resistance value displayed on the LCD screen.
6. After measurement, the device will automatically discharge the circuit.



Figure 3: The IT20G is capable of measuring insulation resistance from 0.1MΩ to 20GΩ.

4.2. AC/DC Voltage Measurement

The IT20G can measure AC and DC voltages within a range of 10V to 600V.

1. In standby mode, short press the **SELECT** key to enter AC voltage measurement mode.
2. Connect the test leads to the AC voltage source. The AC voltage will be displayed.
3. Press the **SELECT** key again to switch to DC voltage measurement mode.
4. Connect the test leads to the DC voltage source. The DC voltage will be displayed.



Figure 4: Examples of AC voltage measurement (left) and DC voltage measurement (right).

4.3. Polarization Index (PI) Measurement

The Polarization Index (PI) helps assess the quality of insulation by comparing insulation resistance at different time intervals.

1. Perform an insulation resistance measurement.
2. The device will automatically record the insulation resistance values at 1 minute and 10 minutes.
3. The PI value is calculated as the ratio of the 10-minute insulation resistance to the 1-minute insulation resistance. A higher PI value generally indicates better insulation quality.
4. Press the **PI/DAR** button to view the PI value.

4.4. Absorption Ratio (DAR) Measurement

The Absorption Ratio (DAR) indicates the presence of moisture or contamination in insulation.

1. Perform an insulation resistance measurement.

2. The device will automatically record the insulation resistance values at 15 seconds and 60 seconds.
3. The DAR value is calculated as the ratio of the 60-second insulation resistance to the 15-second insulation resistance.
4. Press the **PI/DAR** button to view the DAR value.



Figure 5: The display shows insulation resistance values at 15 seconds (top) and 1 minute (bottom) for DAR calculation.

4.5. Data Storage and Recall

The IT20G can store up to 100 sets of measurement data.

1. After completing a measurement, press the **HOLD** key to temporarily hold the displayed data. The "HOLD" symbol will appear on the screen.
2. While in HOLD mode, press the **MEM READ** key to save the data to memory.

3. To recall stored data, press the **MEM READ** key. Use the arrow keys (▲ / ▼) to navigate through the stored records.
4. To delete a single stored data set, press the **CLR** button (if available, or refer to specific button on device).
5. To delete all stored data, press and hold the **PI/DAR** button (as per product description).



Figure 6: The IT20G can store up to 100 sets of measurement data.

4.6. Backlight Operation

The LCD backlight improves visibility in low-light conditions.

- To turn on the backlight, long press the **HOLD** button.
- To turn off the backlight, long press the **HOLD** button again.

5. Maintenance

- **Cleaning:** Use a soft, dry cloth to clean the exterior of the tester. Do not use abrasive cleaners or solvents.

- **Storage:** When not in use for extended periods, store the device in a cool, dry place, away from direct sunlight and extreme temperatures. Remove batteries if storing for a long time to prevent leakage.
- **Battery Replacement:** Replace batteries promptly when the low voltage alarm indicates. Ensure correct polarity during installation.
- **Test Leads:** Inspect test leads and alligator clips regularly for any signs of damage, fraying, or wear. Replace damaged leads immediately to ensure accurate measurements and safety.
- **Calibration:** For professional use, periodic calibration by a qualified service center is recommended to maintain accuracy.

6. Troubleshooting

Problem	Possible Cause	Solution
Device does not power on.	Batteries are dead or low. Batteries are inserted incorrectly.	Replace with new batteries. Check battery polarity and reinsert correctly.
Inaccurate readings.	Poor connection of test leads. Damaged test leads. Device needs calibration.	Ensure test leads are securely connected. Inspect and replace damaged leads. Contact service center for calibration.
LCD backlight not working.	Backlight is off. Low battery.	Long press the HOLD button to activate. Replace batteries.
Cannot save data.	Memory is full. Incorrect button sequence.	Delete old data to free up space. Ensure you press HOLD then MEM READ.

7. Specifications

Parameter	Value
Model	IT20G
Insulation Resistance Range	0.1 MΩ - 20 GΩ
AC/DC Voltage Measurement Range	10 V - 600 V
Data Storage	100 sets
Polarization Index (PI)	Supported
Absorption Ratio (DAR)	Supported
Display	LCD with Backlight
Material	ABS Shockproof
Item Weight	1000 Grams
Manufacturer	LIAMOS

8. Warranty and Support

Specific warranty information for the LIAMOS IT20G Insulation Resistance Tester is not provided in the product details. For warranty claims, technical support, or service inquiries, please contact your point of purchase or the manufacturer directly. Keep your purchase receipt as proof of purchase.
Manufacturer: LIAMOS
Date First Available: November 13, 2024

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