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› Tyenaza ETCR2100A+ Digital Clamp Resistance Tester User Manual

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Tyenaza ETCR2100A+ Digital Clamp Resistance Tester User Manual

Model: ETCR2100A+

1. INTRODUCTION

This manual provides essential instructions for the safe and effective operation of the Tyenaza ETCR2100A+ Digital Clamp Resistance Tester. This device is designed for accurate measurement of grounding resistance and circuit resistance, featuring a dustproof and shockproof structure for reliable performance in various industrial and departmental settings.

Please read this manual thoroughly before using the instrument to ensure proper handling and to prevent damage or injury.

LCD display:

Display Size: Approx. 47 x 28.5mm / 1.85 x 1.12in(L x W)

Jaw Size: Round jaw diameter Approx. 32mm / 1.26in

Opening Size of Jaw: Long jaw Approx. 32mm / 1.26in

Clamp Size: Long jaw Approx. 260 x 90 x 56mm / 10.24 x 3.54 x 2.2in



Image 1.1: The Tyenaza ETCR2100A+ Digital Clamp Resistance Tester, showing its overall design with the clamp jaw and control panel.

2. SAFETY INFORMATION

Always observe the following safety precautions to avoid electric shock, injury, or damage to the instrument:

- Do not use the instrument if it appears damaged or is operating abnormally.
- Ensure the battery compartment is securely closed before operation.
- Do not attempt to measure live circuits beyond the specified voltage limits (CAT III 150V).
- Avoid using the instrument in wet environments or during thunderstorms.
- Refer to qualified personnel for any repairs or servicing.
- Keep the instrument away from strong magnetic fields and electric fields exceeding specified limits.

3. PACKAGE CONTENTS

Verify that all items are present in the package:

- 1 x ETCR2100A+ Digital Clamp Resistance Tester
- 1 x Accessory (likely a test ring or similar calibration aid)

- 1 x User Manual (this document)
- 1 x Storage Box

Note: 1.5V AA batteries (x4) are required and are not included in the package.



Image 3.1: The ETCR2100A+ tester shown with a standard test ring, which is typically included as an accessory for calibration or verification.

4. PRODUCT FEATURES

The ETCR2100A+ Digital Clamp Resistance Tester offers the following key features:

- **Multifunctional Display:** Resistance and current values are displayed simultaneously on a new black luxury screen.
- **High Accuracy:** Microprocessor-controlled for precise grounding resistance detection, utilizing fast filtering technology to minimize interference.
- **Data Management:** Features real-time clock, data storage for up to 99 sets, and data retrieval capabilities.
- **Audible and Visual Alarm:** "Beep beep beep" alarm sound with adjustable threshold settings for resistance (1-199 Ω) and current (1-499mA).
- **Automatic Functions:** Automatic shutdown and fully automatic gear shifting for ease of use.
- **Robust Design:** Shockproof and dustproof structure, suitable for demanding industrial environments.
- **Wide Application:** Ideal for telecommunications, power, meteorology, computer rooms, oil fields, power distribution lines, tower transmission lines, gas stations, factory grounding grids, and lightning rod systems.



Image 4.1: A close-up view of the robust clamp jaws, highlighting the double insulation and structural features designed for durability and safety.

5. SETUP

5.1 Battery Installation

The ETCR2100A+ requires four (4) 1.5V AA batteries (not included).

1. Locate the battery compartment cover on the back of the instrument.
2. Use a suitable tool (if necessary) to open the battery compartment.
3. Insert four 1.5V AA batteries, ensuring correct polarity (+/-) as indicated inside the compartment.
4. Close the battery compartment cover securely.

5.2 Initial Power On

After battery installation, press the **ON/OFF** button to power on the device. The LCD display will illuminate, indicating the device is ready for use.

6. OPERATING INSTRUCTIONS

6.1 Basic Measurement

To perform a grounding resistance test:

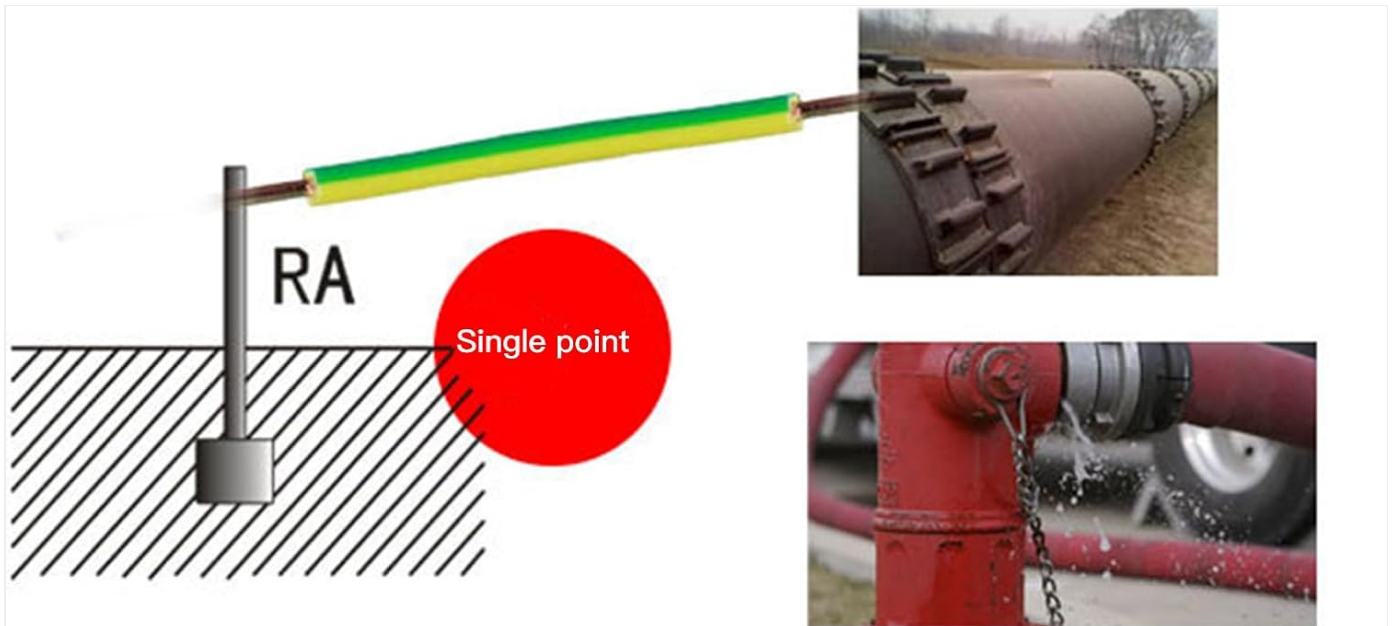
1. Ensure the instrument is powered on.
2. Open the clamp jaws by pressing the trigger.
3. Place the clamp around the grounding conductor or circuit to be measured. Ensure the jaws are fully closed around the conductor.
4. The resistance value will be displayed on the LCD screen. The device features fully automatic shifting.
5. The single measurement time is approximately 0.5 seconds.



Image 6.1: The ETCR2100A+ tester shown clamping an insulated ground wire, demonstrating its capability to accurately test even insulated conductors.

6.2 Single Point Grounding System, Auxiliary Measurement

For single point grounding systems where direct clamp measurement of the lead wire is not feasible, auxiliary methods can be used. The two-point method is illustrated below:



Single point grounding system, auxiliary measurement:

Single point grounding and direct clamp grounding cannot measure the value of the lead wire, so we can use auxiliary methods to measure it

(1) The two point method is shown in the figure above:

It is to find a natural grounding point with a low resistance value next to the grounding point to be measured as an auxiliary point, such as a water pipe, fire hydrant, or other deeply buried metal. Use a wire to connect the point to be measured and the auxiliary point, and clamp the connecting wire to measure.

Image 6.2: Diagram showing the two-point method for auxiliary grounding resistance measurement. It depicts a grounding rod (RA) connected to a single point, with a wire extending to a natural grounding point (e.g., water pipe, buried metal) for measurement.

To use this method:

- Identify a natural grounding point with a low resistance value near the grounding point to be measured. Examples include a water pipe, fire hydrant, or other deeply buried metal structure.
- Connect a wire from the point to be measured to this auxiliary grounding point.
- Clamp the ETCR2100A+ around the connecting wire to perform the measurement.



Image 6.3: The ETCR2100A+ tester positioned in an industrial substation, illustrating a typical application environment for grounding resistance measurement.

6.3 Data Storage and Retrieval

The instrument can store up to 99 sets of measurement data.

- To store data: After a measurement, press the **MEM** button to save the current reading.
- To retrieve data: Press the **MEM** button repeatedly to cycle through stored data.

6.4 Alarm Function

The ETCR2100A+ features an audible and visual alarm for out-of-range measurements.

- To activate/deactivate the alarm: Press the **AL** button.
- To set alarm thresholds: Refer to the device's on-screen menu or specific instructions for setting resistance (1-199 Ω) and current (1-499mA) alarm limits.



Image 6.4: A hand holding the ETCR2100A+ tester, demonstrating its ergonomic design and ease of handling during operation.

7. MAINTENANCE

7.1 Cleaning

Wipe the instrument's exterior with a soft, damp cloth. Do not use abrasive cleaners or solvents. Ensure the device is powered off before cleaning.

7.2 Storage

When not in use for extended periods, remove the batteries to prevent leakage. Store the instrument in its provided storage box in a cool, dry place, away from direct sunlight and extreme temperatures.

7.3 Calibration

Regular calibration by qualified personnel is recommended to maintain measurement accuracy, especially after prolonged use or if accuracy is suspected to be compromised.

8. TROUBLESHOOTING

Problem	Possible Cause	Solution
Device does not power on.	Dead or incorrectly installed batteries.	Replace batteries with new 1.5V AA batteries, ensuring correct polarity.

Problem	Possible Cause	Solution
Inaccurate readings.	Jaws not fully closed; interference from external fields; dirty jaws; need for calibration.	Ensure jaws are fully closed. Move away from strong magnetic/electric fields. Clean jaws. Consider professional calibration.
Alarm sounds continuously.	Measurement exceeds set alarm threshold.	Check the measured value against the set alarm limits. Press the AL button to silence or deactivate the alarm.
Display is blank or flickering.	Low battery power; environmental conditions (extreme temperature/humidity).	Replace batteries. Operate within specified temperature and humidity ranges (-20 °C to 55 °C; 10% RH to 90% RH).

9. SPECIFICATIONS

Model	ETCR2100A+
Function	Grounding resistance test, circuit resistance test, leakage current test
Resistance Range	0.01 Ω to 200 Ω
Resistance Resolution	0.001 Ω
Current Range	None (for leakage current test, the range is 1-499mA for alarm setting)
Data Storage	99 sets
Alarm Threshold Setting Range (Resistance)	1-199 Ω
Alarm Threshold Setting Range (Current)	1-499mA
Working Temperature and Humidity	-20 °C to 55 °C; 10% RH to 90% RH
LCD Display	4 digit LCD digital display
Display Size	Approx. 47 x 28.5mm / 1.85 x 1.12in (L x W)
Jaw Size (Round)	Approx. 32mm / 1.26in diameter
Jaw Opening Size (Long)	Approx. 32mm / 1.26in
Clamp Size (Long Jaw)	Approx. 260 x 90 x 56mm / 10.24 x 3.54 x 2.2in
Protection Level	Double insulation
Structural Features	Clamp shaped CT
Gear Shifting	Fully automatic shifting
External Magnetic Field	<40A/m

External Electric Field	<1V/m
Single Measurement Time	0.5 seconds
Resistance Measurement Frequency	Greater than 1KHz
Tested Current Frequency	50/60Hz automatic
Power Supply	4 x 1.5V AA batteries (not included)
Material	ABS
Item Weight	2.13 Kilograms / 4.69 pounds

10. WARRANTY AND SUPPORT

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

Manufacturer: Tyenaza

