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KAISAL DY4100A

KAISAL DY4100A Earth Resistance Tester User Manual

Model: DY4100A

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1. INTRODUCTION

The KAISAL DY4100A is an advanced Earth Resistance Tester designed for accurate and efficient measurement of earth resistance, AC ground voltage, and DC photovoltaic (PV) voltage. This instrument incorporates microprocessor control technology, offering high precision, strong anti-interference capabilities, and reliable measurement results. It is suitable for various applications in electrical power, communication, and solar energy fields.

Key features include:

- 2-wire and 3-wire earth resistance measurement methods.
- Measurement of 0~600V AC ground voltage.
- Measurement of 0~1500V DC photovoltaic voltage.
- One-key automatic measurement and timed testing.
- Data hold function and automatic shutdown for power saving.
- Data validity indication (OK/NG) and over-range warning.
- Large, backlit LCD display for clear readability.

2. SAFETY INFORMATION

Please read all safety warnings and instructions carefully before using this product. Failure to follow these instructions may result in electric shock, fire, or serious injury.

- Always wear appropriate personal protective equipment (PPE) when performing electrical measurements.
- Do not use the tester if it appears damaged or is operating abnormally.

- Ensure all test leads are securely connected before initiating any measurement.
- Avoid contact with live circuits. This device measures earth resistance and voltage, which can involve high voltages.
- Do not exceed the maximum input ratings specified for each function.
- Keep the device dry and clean. Do not operate in wet or explosive environments.
- Replace batteries only with the specified type and ensure correct polarity.
- Always disconnect test leads from the circuit before changing functions or ranges.

3. PACKAGE CONTENTS

Verify that all items listed below are included in your package. If any items are missing or damaged, please contact your vendor.

- DY4100A Main Unit
- Ground Rods (2 PCS)
- Set of Test Leads (Red 15m, Yellow 10m, Green 5m)
- Test Leads for Voltage Measurement
- Crossbody Nylon Carry Bag
- User Manual (German, French, and English)



Image: The KAISAL DY4100A Earth Resistance Tester shown with its complete set of accessories, including test leads, ground rods, and a carry bag.

4. PRODUCT OVERVIEW

The DY4100A features a robust design with a large, clear display and intuitive controls for ease of use.

4.1 Main Components

- **LCD Display:** Large, backlit screen for displaying measurement results, units, and status indicators (e.g., 'OK', 'NG', 'H', battery level).
- **Function Buttons:** 'TEST' button to initiate measurements, 'FN' for function selection, 'ENTER/▲' and '▼' for navigation or range adjustment.
- **Rotary Switch:** Used to select measurement ranges (2Ω, 20Ω, 200Ω, 2000Ω) and turn the device ON/OFF.
- **Input Terminals:** Clearly labeled ports for connecting test leads (V, P, E/COM, C).
- **Robust Casing:** Made from high-quality ABS material, providing durability and drop resistance.

Medidor automático digital de puesta a tierra mejorado



Image: An overview of the DY4100A tester highlighting its key features such as 2- and 3-wire testing, earth resistance and voltage testing, solar voltage testing, automatic measurement, data lock, and automatic shutdown.

5. SETUP

5.1 Battery Installation

The device is powered by batteries. Open the battery compartment on the back of the unit, insert the required batteries (typically AA or AAA, refer to the manual for exact type) ensuring correct polarity, and close the compartment securely.

5.2 Connecting Test Leads and Ground Rods

Proper connection of test leads and auxiliary ground rods is crucial for accurate measurements. The DY4100A supports both 2-wire and 3-wire methods.

5.2.1 2-Wire Method (Simple Earth Measurement)

This method is typically used for quick checks or when auxiliary ground rods cannot be deployed. Connect the test leads to the 'E/COM' and 'P' terminals on the tester, and then connect them to the earth body being measured.

5.2.2 3-Wire Method (Precision Earth Measurement)

For more precise measurements, the 3-wire method requires two auxiliary ground rods. Connect the test leads as follows:

- Connect the 'E/COM' terminal to the earth body under test.
- Connect the 'P' terminal to the potential auxiliary ground rod.
- Connect the 'C' terminal to the current auxiliary ground rod.

Ensure the auxiliary ground rods are placed at a distance of 5-10 meters from the measured earth body and from each other. For optimal results, especially in dry or rocky soil, moisten the area around the auxiliary ground rods with water. If testing on concrete, place the auxiliary electrode flat and soak it with water or use a damp cloth over it.

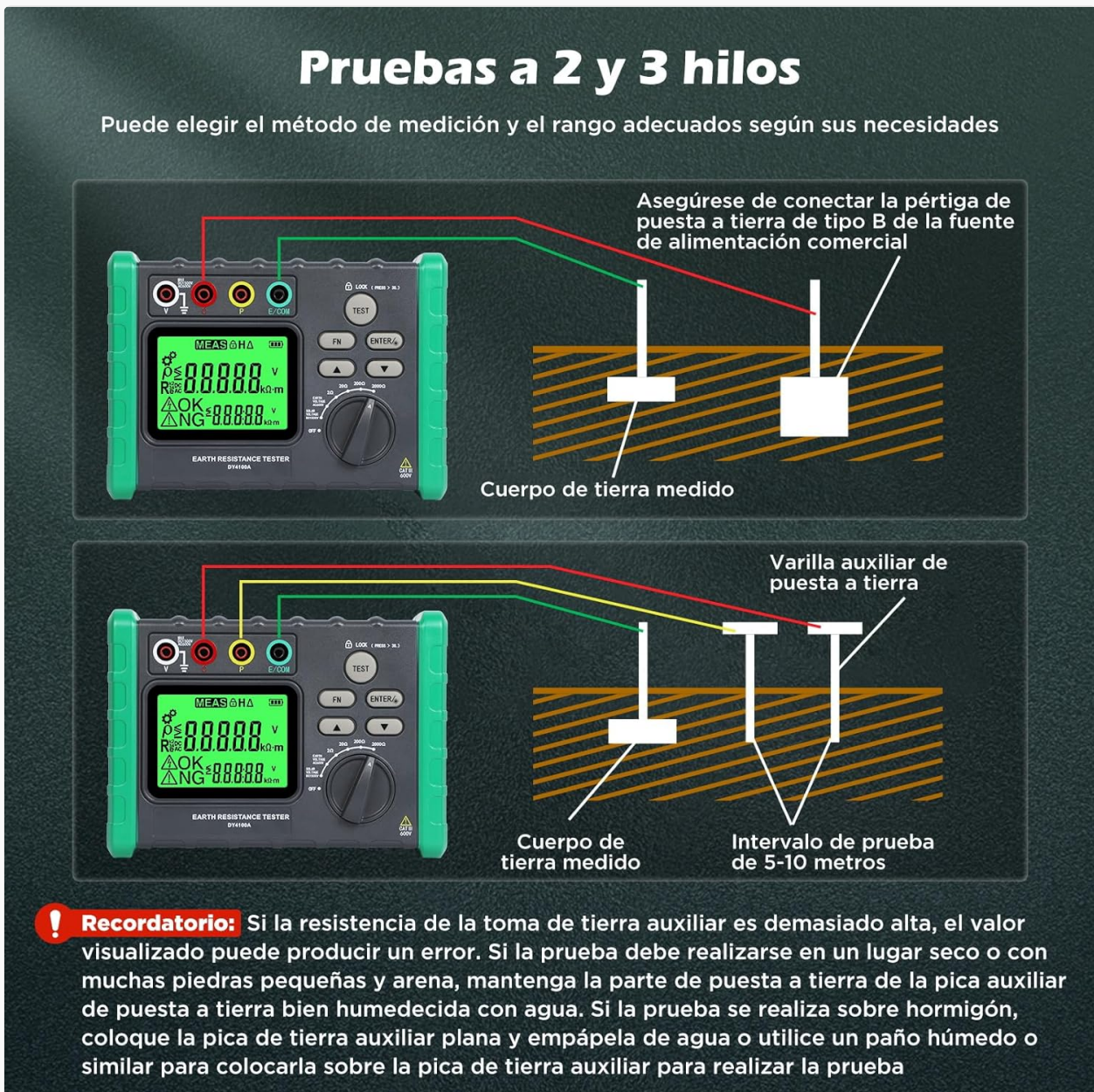


Image: Visual guide for connecting the DY4100A for both 2-wire and 3-wire earth resistance tests, showing the placement of auxiliary ground rods.

6. OPERATING INSTRUCTIONS

6.1 Powering On/Off

Rotate the rotary switch from 'OFF' to any measurement range (e.g., 2 Ω , 20 Ω , 200 Ω , 2000 Ω) to power on the device. To power off, rotate the switch back to 'OFF'. The device also features an automatic shutdown function

after 5 minutes of inactivity to conserve battery life.

6.2 Earth Resistance Measurement

1. Connect the test leads and auxiliary ground rods according to the 2-wire or 3-wire method as described in Section 5.2.
2. Rotate the rotary switch to the desired earth resistance range (2Ω , 20Ω , 200Ω , 2000Ω). Start with a higher range if the resistance is unknown.
3. Press the 'TEST' button briefly. The measurement will start automatically, and the result will be displayed on the LCD.
4. Observe the data validity indicator: 'OK' signifies a valid measurement, while 'NG' indicates an invalid result, often due to high auxiliary electrode resistance or interference.
5. To hold the displayed reading, press and hold the 'TEST' button for 3 seconds. An 'H' indicator will appear on the screen, locking the main numerical display while showing real-time values in a secondary area.

6.3 AC Ground Voltage Measurement

1. Connect the test leads to the 'V' and 'E/COM' terminals.
2. Rotate the rotary switch to the '600V AC' position.
3. Connect the test leads to the points where AC ground voltage needs to be measured.
4. The voltage reading will be displayed on the LCD.

6.4 DC Photovoltaic (PV) Voltage Measurement

1. Connect the test leads to the 'V' and 'E/COM' terminals.
2. Rotate the rotary switch to the '1500V DC' position.
3. Connect the test leads to the positive and negative terminals of the photovoltaic module or system.
4. The DC voltage reading will be displayed on the LCD. The tester can accurately and quickly obtain the open-circuit voltage of PV modules.

Medición de la tensión fotovoltaica (medición de la tensión solar)

1500V
amplio rango

Rango de prueba de tensión fotovoltaica: - 1500V~ 1500V, puede obtener con precisión y obtener rápidamente la tensión de circuito abierto del módulo fotovoltaico



EARTH RESISTANCE TESTER
DY4100A

CAUTION
600V

Image: The DY4100A connected to a solar panel setup, demonstrating its capability for photovoltaic voltage measurement up to 1500V.

7. MAINTENANCE

7.1 Cleaning

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

7.2 Storage

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

7.3 Battery Replacement

When the low battery indicator appears on the LCD, replace the batteries promptly to ensure accurate measurements. Refer to the battery compartment for the correct battery type and polarity.

8. TROUBLESHOOTING

Problem	Possible Cause	Solution
Device does not power on.	Dead or incorrectly installed batteries.	Check battery installation; replace with new batteries.
Measurement displays 'NG' or erratic readings.	High auxiliary electrode resistance; poor contact; strong interference voltage.	Moisten soil around auxiliary rods; ensure secure connections; check for external electrical interference. The device will alert for series interference voltage.
Display shows 'OL' (Overload).	Measurement value exceeds selected range.	Switch to a higher measurement range.
Data Hold ('H') not working.	Button not pressed long enough.	Press and hold the 'TEST' button for at least 3 seconds.

9. SPECIFICATIONS

Parameter	Value
Model Number	DY4100A
Earth Resistance Test Range	0~2000 Ω
Earth Resistance Ranges & Resolution	2 Ω : 0.03~2.000 Ω (0.001 Ω resolution) 20 Ω : 0.03~20.00 Ω (0.01 Ω resolution) 200 Ω : 0.3~200.0 Ω (0.1 Ω resolution) 2000 Ω : 3~2000 Ω (1 Ω resolution)
AC Ground Voltage Test Range	0~600V AC (1V resolution)

Parameter	Value
DC Photovoltaic Voltage Test Range	0~1500V DC (1V resolution)
Measurement Method	2-wire and 3-wire
Display	Large Backlit LCD
Data Hold	Yes
Automatic Shutdown	After 5 minutes of inactivity
Over-range Indication	Yes
Data Validity Indication	OK/NG
Power Source	Battery (Solar power mentioned in original description likely refers to its application, not direct power source for the device itself, as it's a tester for solar systems)
Dimensions	25.2 x 21.7 x 13.9 cm
Weight	1.98 kg
Compliance	CE

Alta precisión y rango ajustable

Prueba de resistencia de tierra	2Ω: 0.03~2.000Ω/0.001Ω 200Ω: 0.3~200.0Ω/0.1Ω	20Ω: 0.03~20.00Ω/0.01Ω 2000Ω: 3~2000Ω/1Ω
Prueba de tensión de tierra	600V: 0~600AC/1V	
Prueba de tensión solar	1500V: 0~1500DC/1V	



Image: Detailed table showing the measurement ranges and resolutions for earth resistance, ground voltage, and solar voltage tests.

10. APPLICATIONS

The KAISAL DY4100A Earth Resistance Tester is versatile and can be used in a wide range of industrial and commercial settings, including:

- Lightning protection grounding in buildings.
- Grounding of general electrical equipment.
- Grounding of electric vehicle charging piles.
- Testing photovoltaic solar voltage systems.
- Electrical power, telecommunications, railway, petroleum, chemical industry, and mining sectors.

aplicación más amplia

Aplicable a la energía eléctrica, correos y telecomunicaciones, ferrocarriles, petróleo, industria química, comunicaciones, minería y otros sectores Medición



**Puesta a tierra de protección
contra rayos en edificios**



puesta a tierra de equipos eléctricos



**puesta a tierra de pilas de
carga de automóviles**



tensión solar fotovoltaica

Image: Examples of the DY4100A's broad applications, including building lightning protection, electrical equipment grounding, EV charging pile grounding, and solar PV voltage testing.

11. WARRANTY AND SUPPORT

11.1 Warranty Information

KAISAL products are manufactured to high-quality standards. This product comes with a standard manufacturer's warranty against defects in materials and workmanship. Please refer to the warranty card included in your package or contact your retailer for specific warranty terms and conditions.

11.2 Customer Support

For technical assistance, troubleshooting, or service inquiries, please contact KAISAL customer support or your authorized dealer. You can also visit the [KAISAL Brand Store](#) for more information and product updates.

