DLRO10HD
10 Amp Digital Low Resistance Ohmmeter



- **High or low output power selection for condition diagnosis**
- **Rechargeable battery or line power supply, continuous operation, even with dead battery**
- **10 A for 60 seconds, less time waiting to cool, great for charging inductance**
- **High input protection to 600 V, inadvertent connection to line or UPS voltage will not blow a fuse**
- **Heavy duty case: IP 65 lid closed, IP54 operational (battery operation only)**
- **Rotary switch selects one of five test modes, including auto start on connection, giving ease of use**

DESCRIPTION

Augmenting Megger's DLRO10 and 10X range the DLRO10HD combines ultimate simplicity of operation with a rugged IP65 case designed for stable ground and bench operation.

The unit is powered from either its rechargeable battery or line power making it suitable for continuous testing in production line/repetitive use environments.

Rotary switch controls are simple and easy to operate in all weather conditions and with gloved hands. A large, clear, backlit LCD display is easy to read from a distance.

The DLRO10HD provides significantly enhanced compliance and is capable of delivering 10 A into measurements up to 250 mΩ and 1A into measurements up to 2.5 Ω. The duration of each test may be up to 60 seconds.

The DLRO10HD is rated CAT III 300 V. A range of test leads is available to suit the application.

The DLRO10HD provides five test modes each of which is selected through a simple rotary control.

ADDITONAL FEATURES AND BENEFITS

- Rugged case well suited to transportation with shoulder strap and lead set pouch
- Removable lid facilitates easy test lead connection
- Operational ingress protection is IP 54 (battery power only) ensuring protection from the elements
- 7Ah lead acid battery provides extended operation and can be charged whilst operating from line power
- Rotary mode switch with bidirectional (current reversal with averaging cancels thermal EMFs), unidirectional, automatic, continuous and inductive modes
- Large, clear LCD display with backlight and contrast adjustment
- Auto power off function conserves battery

APPLICATIONS

The DLRO10HD measures low resistance values in applications ranging from railways and aircraft to resistance of components in industry.

Any metallic joint can be measured but users must be aware of measurement limitations depending on application. For example, if a cable manufacturer plans to make resistive measurements on a thin wire, a low test current should be selected to prevent heating the wire thereby changing its resistance.

Measurements on electric motors and generators will be inductive and require the user to understand the inductive mode and charging process before a correct result is achieved.

The DLRO10HD is well suited to measuring thick conductors, bonds and quality of welding because of its 10 A range for resistance values up to 250 mΩ.

Electromagnetic noise induced into the leads can interfere

with a reading. A noise symbol alerts the user and prevents a measurement when the instrument detects noise above its threshold.

When dissimilar metals are joined a thermocouple effect is created. Users should select a bidirectional mode to ensure cancellation of this effect. The instrument measures with current flowing in both directions and averages the result.

Normal mode is initiated by pressing the 'Test' button after connecting the test leads to the unit under test. Continuity of all four connections is checked. Current is applied in both forward and reverse direction following which measurement is displayed.

Automatic mode is started as soon as the probes make contact. Forward and reverse current measurements are made and the average value is displayed. This mode is ideal when working with the supplied DH4 handspikes. Each time the probes are removed and reconnected to the load a new test will be performed without the need to press the test button.

TEST MODES

Automatic unidirectional mode applies current in one direction only to speed up the measurement process. However thermal EMF resulting from dissimilar metal bonds can cause lower accuracy. Test starts automatically when probes are connected.

Continuous mode allows repeated measurements to be made on the same sample. Simply connect the test leads and press the test button. The measurement is updated every three seconds until the circuit is broken.

Inductive mode is selected when measuring resistance on, for example, motors and generators. When measuring inductive loads it is necessary to wait for the voltage to stabilise as the inductive element is charged. Test leads are firmly connected to the device under test and the 'Test' button pressed. The instrument will pass the selected current through the sample continuously in one direction only and take repetitive readings that will gradually decrease to the true value as the voltage stabilises. The operator decides when the result is stable and presses the 'Test' button to terminate the test.

ELECTRICAL SPECIFICATIONS

Resistance/Current Ranges

The green resistance ranges on the keypad indicate low output power (<0.25 W) outputs. Red ranges indicate higher 2.5 W (1 A) and 25 W (10 A) power outputs.

Resolution and Accuracy

Test current accuracy ±10%

Voltmeter input impedance >200 kΩ

Test Current	Resistance Range	Resolution	Basic Accuracy *	Full Scale Voltage	Max. Power Output
0.1 mA	0 to 2500.0 Ω	100 mΩ	±0.2% ±200 mΩ	25 mV	2.5 µW
0.1 mA	0 to 250.00 Ω	10 mΩ	±0.2% ±20 mΩ	25 mV	2.5 µW
1 mA	0 to 25.000 Ω	1 mΩ	±0.2% ±2 mΩ	25 mV	25 µW
10 mA	0 to 2500.0 mΩ	100 µΩ	±0.2% ±200 µΩ	25mV	250 µW
100 mA	0 to 250.00 mΩ	10 µΩ	±0.2% ±20 µΩ	25 mV	2.5 mW
1 A	0 to 25.000 mΩ	1 µΩ	±0.2% ±2 µΩ	25 mV	25 mW
10 A	0 to 2500.0 µΩ	0.1 µΩ	±0.2% ±0.2 µΩ	25 mV	0.25 W
1 A	0 to 2500.0 mΩ	100 µΩ	±0.2% ±200 µΩ	2.5 V	2.5 W
10 A	0 to 250.00 mΩ	10 µΩ	±0.2% ±20 µΩ	2.5 V	25 W

* The accuracy stated assumes forward and reverse measurements.

Inductive mode or undirectional mode will introduce an undefined error if an external EMF is present.

Basic accuracy at reference conditions.

GENERAL SPECIFICATIONS

Temperature Coefficient
< 0.01% per °C, from 5 °C to 40 °C

Maximum Altitude 2000m (6562 ft) to full safety specifications

Display size/type Main 5 digit + 2 x 5 digit secondary displays

Battery type 6 V, 7Ah sealed lead acid

Voltage input range 90 - 264 V, 50-60 Hz

Charge time 8 hours

Backlight LED backlight

Battery life 1000 Auto (3 sec) tests

Auto power down 300s

Mode Selection Rotary switch

Range selection	Rotary switch
Weight	6.7 kg
Case dimensions	L315mm x W285mm x H181mm
Pouch for test leads	Yes (lid mounted)
Test leads	DH4 lead set included
IP rating	IP65 case closed, IP54 battery operation
Safety rating	In accordance with IEC61010-1, CATIII 300 V when used with DH7 leads
Operating temperature and humidity	-10°C to +50°C (14°F to 122°F) <90% RH
Reference conditions	20°C ±3°C
Storage temperature and humidity	-25°C to +60°C, <90%RH

EMC

In accordance with IEC61326-1 (Heavy industrial)

Noise rejection

Less than 1% ±20 digits additional error with 100 mV peak 50/60 Hz. on the potential leads. Warning will show if hum or noise exceeds this level.

Maximum lead resistance

100 mΩ total for 10 A operation irrespective of battery condition.

ORDERING INFORMATION

Item (Qty)			Order No.
DLRO10HD Low Resistance Ohmmeter			1000-348
Included accessories			
DH4 duplex handspike 1.2m			6111-503
Test lead pouch (lid mounted)			1000-036
DLRO10HD user guide CD			2000-869
Warranty book.			6170-618
Optional Accessories at extra cost			
Calibration Shunt,10 Ω, current rating 1 mA.			249000
Calibration Shunt, 1 Ω, current rating 10 mA.			249001
Calibration Shunt, 100 mΩ current rating 1A.			249002
Calibration Shunt, 10 mΩ current rating 10 A.			249003
Certificate of Calibration for Shunts, NIST			CERT-NIST
Replacement tips for DH4, DH5 and DH7 handspikes.			
Needle point			25940-012
Serrated end			25940-014
Optional Test Leads at extra cost			
Duplex Leads			
DH5 straight duplex handspikes (2). One has indicator lights.		2.5m/8ft	6111-517
DH7 Duplex handspikes (2) suitable for working on 600 V. systems.		2.5m/8ft	1001-035
Duplex Handspikes (2) with spring loaded helical contacts.		2m/7ft	242011-7
	DH1	2.5m/8ft	6111-022
		5.5m/18ft	242011-18
only 1 lead supplied	DH2	6m/20ft	6111-023
		9m/30ft	242011-30
	DH3	9m/30ft	6111-024

Item (Qty)		Order No.
Straight Duplex Handspikes (2) Heavy Duty with fixed contacts.	2m/7ft	242002-7
	5.5m/18ft	242002-18
	9m/30ft	242002-30
Duplex Heavy Duty 5cm (2") C-Clamps. (2)	2m/7ft	242004-7
	5.5m/18ft	242004-18
	9m/30ft	242004-30
Duplex handspikes with replaceable Needle Points	2m/7ft	242003-7
Duplex 1.27 cm (1/2 ") Kelvin Clips. (2) gold plated	2m/7ft	241005-7
silver plated	2m/7ft	242005-7
Duplex 3.8 cm (11/2") Kelvin Clips. (2)	2m/7ft	242006-7
	5.5m/18ft	242006-18
	9m/30ft	242006-30
Single Leads		
Single handspike (1) for potential measurement.	2m/7ft	242021-7
	5.5m/18ft	242021-18
	9m/30ft	242021-30
Current clip (1) for current connections.	2m/7ft	242041-7
	5.5m/18ft	242041-18
	9m/30ft	242041-30

Note: For more details of optional leadsets see separate test lead datasheet DLRO_TL_DS_en_V01.pdf

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