DLRO10HDX
10 Amp Digital Low Resistance



- **NEW Onboard memory storage for test results up to 200 records (HDX only)**
- **Download to PowerDB**
- **NEW interchangeable test lead terminations**
- **High or low output power selection for condition diagnosis**
- **Operates from battery or AC mains supply**
- **Protected to 600 V without blowing a fuse, test lead live voltage warning light**
- **Heavy duty case: IP 65 lid closed, IP54 operational**
- **Simple rotary switch selection of five test modes, including auto start on connection**

DESCRIPTION

Augmenting Megger's DLRO10 and 10X range the DLRO10HDX combines ultimate simplicity of operation with a rugged IP65 case designed for stable ground and bench operation and provides memory storage.

These units are powered from either rechargeable battery or mains 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 DLRO10HDX provides significantly enhanced compliance and is capable of delivering 10 A into measurements up to 250 mΩ and 1 A into measurements up to 2.5 Ω. The duration of each test may be up to 60 seconds.

The DLRO10HDX is rated CAT III 300 V provided the optional terminal cover is fitted to the instrument. Details of which can be found in the ordering information panel of this data sheet.

The DLRO10HDX provides five test modes each of which is selected through a simple rotary control on the Mode selection rotary switch. All memory functions, delete, download to PowerDB and recalling test results are also accessible via the Range Selection rotary switch.

A simple control panel enables easy navigation for configuration settings.

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 DLRO10HDX 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 DLRO10HDX 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 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 (as displayed)	Basic accuracy*	Full scale voltage	Max. power output
0.1 mA	0 to 2500.0 Ω	0.1 Ω	±0.2%	25 mV	25 µW
0.1 mA	0 to 250.00 Ω	0.01 Ω	±0.2%	25 mV	2.5 µW
1 mA	0 to 25.000 Ω	1 mΩ	±0.2%	25 mV	25 µW
10 mA	0 to 2500.0 mΩ	0.1 mΩ	±0.2%	25mV	250 µW
100 mA	0 to 250.00 mΩ	0.01 mΩ	±0.2%	25 mV	2.5 mW
1 A	0 to 25.000 mΩ	1 µΩ	±0.2%	25 mV	25 mW
10 A	0 to 2500.0 µΩ	0.1 µΩ	±0.2%	25 mV	0.25 W
1 A	0 to 2500.0 mΩ	0.1 mΩ	±0.2%	2.5 V	2.5 W
10 A	0 to 250.00 mΩ	0.01 mΩ	±0.2%	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	2000 m (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	100 - 240 V 50 / 60 Hz 90 VA
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
Memory features selection	Rotary switch
Weight	6.7 kg
Case dimensions	L315 mm x W285 mm x H181 mm
Pouch for test leads	Yes (lid mounted)
Test leads	included depending on chosen option: DH4C lead set KC1 Kelvin Clip lead set
IP rating	IP65 case closed, IP54 battery operation
Record storage	200 test records

Safety rating
In accordance with IEC61010-1, CATIII 300V when used with optional terminal cover (details in ordering information)

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.

OPTIONAL TERMINAL COVER



The CAT III 300 V rating on the DLRO10HDX is only valid when the instrument is fitted with the optional terminal cover to provide the required creepage and clearances at the instrument terminals. Although the terminal cover may be used with any test leads, only the Megger DH4, DH5 and DP1-C duplex handspikes, and KC2-C insulated kelvin clips have suitable probe insulation to comply with the requirements of IEC61010-1 and the CATIII 300 V rating.





SUPPLIED LEADSET OPTIONS



DLRO10HDX



+ DH4-C probe 1.5 m leads



+ KC1 Kelvin clip 3 m leads

+ No test leads supplied

Display clearly showing large digits for test results and visible in all light conditions

IP54 for protection against dust and rain during testing

Single button to save test results and to automatically save in auto mode

CONNECTORS
C1-C2
P1-P2

Back light - for low light conditions

Contrast for clear visibility

Mains power LED



USB for downloading

Hazard warning LED during test

Quick and easy rotary switch selection of test modes.
- no configuration required

Setting for time and date

Rotary switch selection of test modes and off position

Simple navigation of setup and stored results

Test button to start and stop test

Rotary switch selection of view, download and delete test results

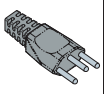
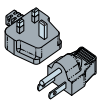
Model name				Language			Plug/Mains lead	
DLRO10HDX	-		-	L G		-	P	

SELECT A LEADSET

NLS	**(No Leadset)**
DH4C	**(DH4-C probe 1.5 m leads)**
KC1-TC3-C	**(KC1 Kelvin clip 3 m leads)**

SELECT A LANGUAGE AND PLUG

Please note only some plug types are available for certain languages - the language you need will determine the mains leads available

LANGUAGE		PLUG TYPES AVAILABLE							
3 DIGIT CODE	LANGUAGE INCLUDED	 UK	 EU	 US	 CH	 AUS	 IT	 IN	 UK + US
LG1	EN, DE, FR, NL	**P1**	**P2**	**-**	**P4**	**P5**	**-**	**-**	**-**
LG2	EN, ES, PT, IT	**P1**	**P2**	**P3**	**-**	**-**	**P6**	**-**	**-**
LG3	EN, AR, TR, FR	**P1**	**P2**	**P3**	**-**	**-**	**-**	**P7**	**-**

ORDERING INFORMATION

Item (Qty)	Order No.
DLRO10HDX	Configured*
* See ordering configuration on previous page	

Standard included accessories

Test lead pouch (lid mounted)	1000-036
DLRO10HDX user guide CD	

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 and DH5 handspikes. Needle point	25940-012
Replacement tips for DH4 and DH5 handspikes. Serrated end	25940-014

Optional Test Leads at extra cost

Normal test leads not fitted with in-line connector:

Duplex Leads	
DH5 straight duplex handspikes (2).	
One has indicator lights. 2.5m/8ft	6111-517
Terminal cover (use in conjunction with DH4 test leads supplied as standard, or optional DH5 test leads for CATIII 300 V compliance)	1002-390
Duplex Handspikes (2) with spring loaded helical contacts. 2m/7ft	242011-7
DH1 2.5m/8ft	6111-022
DH1 5.5m/18ft	242011-18
DH2 6m/20ft (only 1 lead supplied)	6111-023
DH2 9m/30ft (only 1 lead supplied)	242011-30
DH3 9m/30ft	6111-024
Straight Duplex Handspikes (2) Heavy Duty with fixed contacts. 2m/7ft	242002-7
Straight Duplex Handspikes (2) Heavy Duty with fixed contacts 5.5m/18ft	242002-18
Straight Duplex Handspikes (2) Heavy Duty with fixed contacts 9m/30ft	242002-30
Duplex Heavy Duty 5cm (2") C-Clamps. (2) 2m/7ft	242004-7
Duplex Heavy Duty 5cm (2") C-Clamps. (2) 5.5m/18ft	242004-18
Duplex Heavy Duty 5cm (2") C-Clamps. (2) 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
Duplex 1.27 cm (1/2 ") Kelvin Clips. (2) silver plated 2m/7ft	242005-7
Duplex 3.8 cm (11/2") Kelvin Clips. (2) 2m/7ft	242006-7
Duplex 3.8 cm (11/2") Kelvin Clips. (2) 5.5m/18ft	242006-18
Duplex 3.8 cm (11/2") Kelvin Clips. (2) 9m/30ft	242006-30
Single handspike (1) for potential measurement. 2m/7ft	242021-7
Single handspike (1) for potential measurement. 5.5m/18ft	242021-18
Single handspike (1) for potential measurement. 9m/30ft	242021-30
Current clip (1) for current connections. 2m/7ft	242041-7
Current clip (1) for current connections 5.5m/18ft	242041-18
Current clip (1) for current connections 9m/30ft	242041-30

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

Test leads fitted with inline connector:

Add the part numbers of the complete lead sets and refer customers to the test lead data sheet for the individual parts

For detailed information on connecting lead accessories refer to the supplied "accessory important information sheet" (DLROTestLeads--2007-431_UG_EN-DE-FR-ES-IT_V##)

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