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 m Ω 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.

History of 'Ducter' testing

For over 100 years the 'Ducter test' has been used to describe a simple test for measuring very low contact resistances and "Ducter", which is still used as a trade mark, was the name originally given to the low resistance ohmmeter manufactured by Megger. The name Ducter was registered by Megger in June 1908 and 'Ducter' has since become the industry standard.

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



10 A Digital Low Resistance Ohmmeter

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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 m Ω .

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 k Ω

Maximum lead resistance at 10 A < 100 m Ω

Test current	Resistance range	Resolution (as displayed)	Basic accuracy*	Full scale voltage	Max. power output
100 μΑ	0 - 2.5 kΩ	0.1 Ω	±0.2% ±200 mΩ	25 mV	25 μW
100 μΑ	0 - 250 Ω	0.01 Ω	±0.2% ±20 mΩ	25 mV	2.5 μW
1 mA	0 - 25 Ω	1 mΩ	±0.2% ±2 mΩ	25 mV	25 μW
10 mA	0 - 2.5 Ω	0.1 mΩ	±0.2% ±200 μΩ	25mV	250 μW
100 mA	0 - 250 mΩ	0.01 mΩ	±0.2% ±20 μΩ	25 mV	2.5 mW
1 A	0 - 25 mΩ	1 μΩ	±0.2% ±2 μΩ	25 mV	25 mW
10 A	0 - 2.5 mΩ	0.1 μΩ	±0.2% ±0.2 μΩ	25 mV	0.25 W
1 A **	0 - 2.5 Ω	0.1 mΩ	±0.2% ±200 μΩ	2.5 V	2.5 W
10 A **	0 - 250 mΩ	0.01 mΩ	±0.2% ±50 μΩ	2.5 V	25 W

^{*} Basic 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.



^{**} Higher 2.5 W (1 A) and 25 W (10 A) power outputs.



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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 selectionRotary switchRange selectionRotary switchMemory features selectionRotary 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

FMC

In accordance with IEC61326-1 (Heavy industrial)

Noise rejection

Less than $1\% \pm 20$ 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

 $100\ m\Omega$ 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

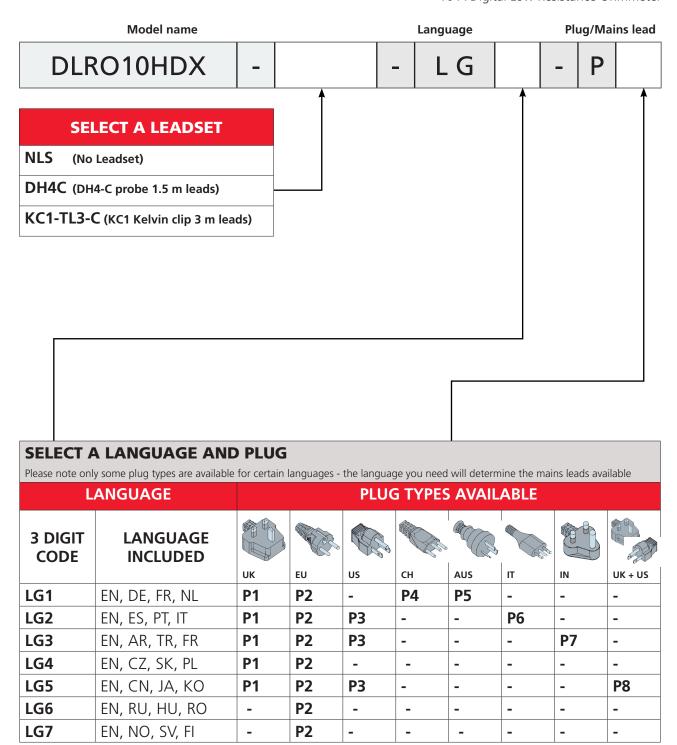
+ No test leads supplied

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DLRO10HDX

10 A Digital Low Resistance Ohmmeter





Item (Qty)	Order No.	Item (Qty)
DLRO10HDX	Configured*	Straight Duplex H
* See ordering configuration on previous page		fixed contacts 9n
Standard included accessories		Duplex Heavy Du 2m/7ft
DLRO10HDX user guide CD		Duplex Heavy Du 5.5m/18ft
Optional Accessories at extra cost		Duplex Heavy Du 9m/30ft
Calibration Shunt,10 Ω , current rating 1 mA.	249000	311/3010
Calibration Shunt, 1 Ω , current rating 10 mA.	249001	Duplex handspike
Calibration Shunt, 100 m Ω current rating 1A.	249002	Needle Points 2m
Calibration Shunt, 10 m Ω current rating 10 A.	249003	
Certificate of Calibration for Shunts, NIST	CERT-NIST	Duplex 1.27 cm (
Replacement tips for DH4 and DH5 handspikes. Needle point	1008-024	gold plated 2m/7 Duplex 1.27 cm (
Replacement tips for DH4 and DH5 handspikes. Serrated end	1010-929	silver plated 2m/7
Transport case	1009-744	Duplex 3.8 cm (1 2m/7ft
Optional Test Leads at extra cost Normal test leads not fitted with in-line	connector:	Duplex 3.8 cm (1 5.5m/18ft
Industrial application kit	1011-376	Duplex 3.8 cm (1
Terminal cover (use in conjunction with DH4 test supplied as standard, or optional DH5 test leads f	or	9m/30ft
CATIII 300 V compliance)	1002-390	Single handspike
Duplex Handspikes (2) with spring loaded helical 2m/7ft	242011-7	2m/7ft Single handspike
		5.5m/18ft
DH1 2.5m/8ft	1006-442	Single handspike 9m/30ft
DH1 5.5m/18ft	242011-18	Current clip (1) for 2m/7ft
DH2 6m/20ft (only 1 lead supplied)	1006-443	Current clip (1) fo
DH2 9m/30ft (only 1 lead supplied)	242011-30	5.5m/18ft
6m ext	1006-460	Current clip (1) fo 9m/30ft
Straight Duplex Handspikes (2) Heavy Duty with f contacts. 2m/7ft	ixed 242002-7	Note: For more d
Straight Duplex Handspikes (2) Heavy Duty with f contacts 5.5m/18ft	ixed 242002-18	For detailed infor
Test lead pouch (lid mounted)	1005-623	to the supplied " (DLROTestLeads
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Item (Qty)	Order No.
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 sep datasheet DLRO_TL_DS_V##.pdf	arate test lead
For detailed information on connecting lead access to the supplied "accessory important information solution (DLROTestLeads2007-431_UG_EN-DE-FR-ES-IT_V	sheet"



