

# DLRO100 Series

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## Megger Digital Low Resistance Ohmmeters



- CAT IV 600 VAC / 500 VDC for safe operation
- Lightweight 100 A battery powered unit for portability
- High noise immunity for stable readings
- Smooth DC Output for circuit breaker testing
- IP54 for protection against dust and moisture while testing
- Save, download and delete results (100X/H variants)
- Remote operation, Bluetooth® & asset/result tagging (100H variants)

### DESCRIPTION

A significant addition to the comprehensive range of Megger Low Resistance Ohmmeters, DLRO100 enables low resistance measurement, across multiple applications, in areas without access to AC power. The integral Li-Ion battery supplies a constant 100 A current for up to 200 manual/auto tests to enable enhanced productivity in remote locations. With a focus on user safety, advanced design features ensure the safe operation of the instrument in the most adverse conditions, including a CAT IV 600 VAC / 500 VDC safety rating in accordance with IEC61010. The rugged design, intuitive interface and IP54 (lid open) rating ensure reliability and ease of use in the most arduous of conditions.

#### Test Modes

The **manual test** mode allows the user to initiate the test procedure once the probes are in contact with the object under test. Once the TEST button is depressed the TEST lamp will illuminate and the instrument will undertake a single test to verify the resistance of the test object.

In **auto mode** the user selects the desired current, connects the current test leads and as soon as the potential leads are connected a test will start automatically. To repeat a test, simply break contact with the potential probes and remake contact.

In **continuous mode** the user connects the test leads and presses the TEST button, initiating the test procedure. The instrument will continue to test, updating the display after each new test cycle, until the TEST button is pressed or the test procedure times out.

#### 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.

#### APPLICATION

The need for accurate low resistance measurement is well known and very diverse. Typical applications include:

##### Utilities & Service Contractors – commissioning new installations & regular maintenance testing of

- Switchgear and circuit breaker contact resistance
- Busbar and cable joints
- Wire and cable resistance
- Lightning conductor bonding

##### Original Equipment Manufacturer – detecting manufacturing defects

- Production test of circuit breakers – contacts & joints
- Production test of high voltage switchgear
- Production test of welded joints & connections

##### Transport – manufacturing & maintenance

- Railway rolling stock ground connections & manufactured joints
- Railway lines & conductor rails – commissioning & maintenance
- Aircraft frame bonds and static control circuits

**MARKET SEGMENTS**

Versatility is a key feature of the DLRO100 and makes it suitable for the following market segments:

**Power Utilities**

- Power stations
- Distribution (cable)
- HV substations and switchyards
- Wind turbines
- Solar

**Service Companies**

- Electrical power utilities
- Commercial (3 phase)
- Industrial (up to 11 kV)
- Wind turbines
- Solar

**OEMs**

- Power equipment
- Automotive

**Plants**

- Chemical
- Refineries
- Miscellaneous

**Transportation**

- Airplane maintenance
- Airport maintenance
- Port
- Ship

**SPECIFICATIONS**

<b>Measurement range</b>	0.1 $\mu\Omega$ - 1.999 $\Omega$
<b>Resolution</b>	0.1 $\mu\Omega$
<b>Noise rejection</b>	Differential 100 mV @ 50-60 Hz on Test Leads
<b>DC output</b>	Smooth DC
<b>IP rating</b>	IP54 Lid open / IP65 Lid closed
<b>Operating temperature range</b>	-20°C up to 50°C
<b>Storage temperature range</b>	-30°C up to 70°C
<b>Humidity</b>	<85% R.H. non-condensing
<b>Battery life</b>	200 single 100 A tests or up to 2x 10 minutes continuous 100 A output
<b>Battery type</b>	User replaceable Li-ion battery pack
<b>Battery charge time</b>	Full charge in 2.5 Hrs from dead
<b>Maximum output voltage</b>	2 V (battery), 3 V (AC)
<b>EMC</b>	IEC61326-1
<b>Safety</b>	IEC61010 CAT IV 600 VAC / 500 VDC up to 2000 m CAT IV 300 V up to 4000 m
<b>Dimensions</b>	400 x 300 x 200 mm
<b>Weight</b>	7.0 kg (AC Only) 7.9 kg (with Battery)

**Accuracy**

Current Setting #	Resistance Range	Accuracy
50 - 110 A	0 - 100.00 m $\Omega$	Typical $\pm$ (0.2% + 0.2 $\mu\Omega$ ) Max. $\pm$ (0.2% + 0.8 $\mu\Omega$ )*
11 - 49 A	10 $\mu\Omega$ - 100.00 m $\Omega$	Typical $\pm$ (0.2% + 0.5 $\mu\Omega$ ) Max. $\pm$ (0.2% + 2.0 $\mu\Omega$ )*
10 A	10 $\mu\Omega$ - 1000.0 m $\Omega$	Typical $\pm$ (0.2% + 1.0 $\mu\Omega$ ) Max. $\pm$ (0.2% + 2.5 $\mu\Omega$ )*

# Actual test current may be limited by maximum output voltage  
\* k =  $\pm 4\sigma$

Operational uncertainty, 85% RH, -20°C to +50°C

Current setting#	Resistance range	+
50 - 110 A	0 - 100.00 m $\Omega$	$\pm$ (0.0% + 0.0 $\mu\Omega$ )
11 - 49 A	10 $\mu\Omega$ - 100.00 m $\Omega$	$\pm$ (0.0% + 1.0 $\mu\Omega$ )
10 A	10 $\Omega$ - 1000.0 m $\Omega$	$\pm$ (0.1% + 2.0 $\mu\Omega$ )

**FEATURES AND BENEFITS**

	DLRO100						
Features	E	EB	X	XB	H	HB	Benefits
CAT IV 600 VAC / 500 VDC up to 2000 m CAT IV 300 V up to 4000 m	■	■	■	■	■	■	On all test terminals for safe operation
Lightweight 100 A battery powered unit		■		■		■	Easily portable – 7.9 Kg (17 lbs) with battery
Line-powered only	■		■		■		Line-powered only units for manufacturing and production applications where AC is always available. Weight 7.0 Kg (15.5 lbs)
High noise immunity	■	■	■	■	■	■	For stable readings in noisy environments
Smooth DC Output	■	■	■	■	■	■	Circuit breaker testing
IP54 Lid open IP65 Lid closed	■	■	■	■	■	■	For protection against ingress during operation (lid open) and storage (lid closed)
Li-ion battery		■		■		■	Always ready to test with a Li-ion fast charge battery - 2.5 hours charge time from fully discharged Works from an AC supply if the battery is fully discharged Battery capacity - 200 single tests or up to 2x 10 minutes continuous 100 A output for extended use
100A Manual, Auto and Continuous test	■	■	■	■	■	■	Quick selection of test modes for different applications with 4 terminal measurement for flexibility
Custom test	■	■	■	■	■	■	Adjustable current 10 - 110 A, ramp rates configurable from 0.5s up to 30s and configurable test duration for flexibility
Range and test mode rotary switches	■	■	■	■	■	■	Quick and easy selection of current ranges and test modes
Ultra tough outer case construction	■	■	■	■	■	■	Designed for use in demanding environments with a flame retardant UL94 V0 inner case for safety
Dual Ground™			■*	■*	■*	■*	Using the optional DC clamp enables circuit breaker testing with ground protection in place for safety
Large, clear LCD	■	■	■	■	■	■	Ideal for all light conditions, with backlight
Internal memory storage with USB download capability			■	■	■	■	For effective results management, up to 220 time and date stamped records
Remote control					■	■	Control the instrument remotely over USB via a PC or laptop for added safety
Asset tagging					■	■	Running a PowerDB app on Windows tablet or smart phone to populate unique asset IDs for efficient asset management
Bluetooth®					■	■	For effective wireless communication. For download and asset tagging

\* with optional Clamp

All models. Two year warranty - second year conditional on free product registration.

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

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

IP54 for protection against dust and rain during testing

Clearly visible C and P LED's showing continuity of current and potential connections

Back light - for low light conditions

Smooth DC Output on C1 and C2 terminals

USB & Bluetooth for communications

High noise immunity on P1 and P2 terminals

Rotary switch selection of test modes and off position

CAT IV 600 VAC/ 500 VDC safety rating on all terminals

Simple navigation of setup and stored results

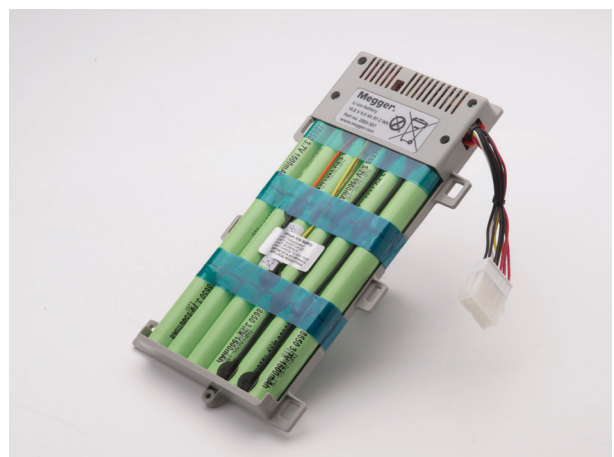
Rotary switch selection of view, download and delete test results

User configurable custom test. Adjustable :  
 ■ current ramp  
 ■ duration of test  
 ■ output current

Quick and easy rotary switch selection of 10 A, 50 A, 100 A tests - no configuration required



A new terminal adapter has been designed to enable the use of users own test leads.



A user replaceable high power lightweight Li-ion battery provides, from a single charge, 200 Manual/Auto 100 A tests or up to two 10 minutes continuous 100 A tests and takes 2.5 hours to charge when fully discharged.



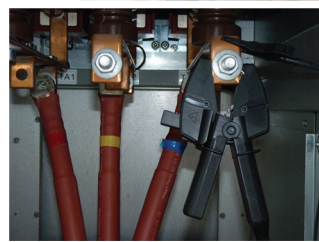
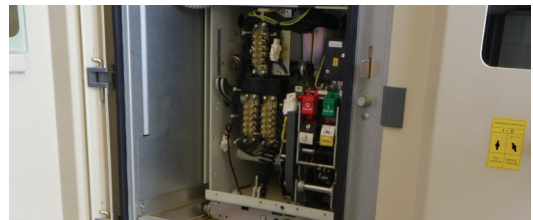
Robust, high-current CATIV leads for Kelvin configurations; current clamps for measurement on circuit breakers



DLRO100 testing circuit breaker



A new tough adjustable clamp has been designed to ensure flexibility in many applications and provides a good connection with the test piece



Optional CATIV 600 V Kelvin clips: two wire lead set (red/black) available in 5m, 10m or 15m lengths



DLRO100H testing rack-mounted, 3-phase circuit breakers

**ORDERING INFORMATION**

Description	Catalog Number	Description	Catalog Number
DLRO100E-LG2-P3 basic kit, AC-operated only	1004-858	<b>Optional Accessories</b>	
DLRO100EB-LG2-P3 basic kit, AC and battery operated	1004-879	DLRO100 CAT IV 600V Lead Set (5m)	1004-448
DLRO100X-LG2-P3 advanced kit with data logging, AC-operated only	1004-899	DLRO100 CAT IV 600V Lead Set (10m)	1004-449
DLRO100XB-LG2-P3 advanced kit with data logging, AC and battery operated	1004-919	DLRO100 CAT IV 600V Lead Set (15m)	1004-450
DLRO100H-LG2-P3 remote with Bluetooth, data logging, AC-operated only	1004-939	DLRO100 Terminal adapters (x2)	1005-555
DLRO100HB-LG2-P3 remote with Bluetooth, data logging, AC and battery operated	1004-959	DLRO100 CAT IV 600 V Kelvin Lead Set (5m)	1005-634
		DLRO100 CAT IV 600 V Kelvin Lead Set (10m)	1005-635
		DLRO100 CAT IV 600 V Kelvin Lead Set (15m)	1005-636
		DLRO100 DC Clamp (MCPD 100L) (X variant only)	1005-622
		DLRO100 ISO17025 (UKAS) Calibration Certificate	1005-888
		DLRO100 Lithium Ion Battery Pack	1005-973

*Note: All units sold in US have a suffix of LG2-P3 which distinguishes them in English-language version and having US plug on the line cord.*

**Included Items**

- Certificate of Test
- Quick Start Guide
- Calibration Certificate
- CD containing the User Guide
- Line-powered lead
- USB Cable (X, H variants only)

**Lead set is NOT included with the instrument and must be ordered as an optional accessory.**