

DLRO-H200 Micro-ohmmeter



- Bluetooth headset for audible pass/fail testing against adjustable limits
- Up to 240 amps
- Battery supplied
- Lightweight – 1 kg
- Safe test – DualGround™
- Auto range: 1 $\mu\Omega$ to 1000 m Ω
- Bluetooth® PC communication
- Complies with IEEE and IEC standards
- PowerDB Lite included for data management and collection

DESCRIPTION

The DLRO-H200 is designed to measure the resistance of circuit breaker contacts, bus-bar joints and other high-current links. This product is designed with safety, ease of use and versatility in mind.

This Micro-ohmmeter can be used anywhere to measure a low resistance value with high accuracy.

With DLRO-H200, it is possible to make measurements according to the DualGround™ method. This means that the test object will be grounded on both sides throughout the test giving a safer, faster and easier workflow.

Rugged and lightweight, the handheld DLRO-H200 is very suitable for field work, in substations and similar locations. The unit comes with a strong rubber holster that makes it extra durable. The DLRO-H200 is designed to carry out a full day of testing without recharge. It can store 190 test values and transfer test data to a PC via Bluetooth.

The Bluetooth feature can also be used in conjunction with the wireless headset (supplied) to provide an audible pass/fail signal against user adjustable limits as tests are performed.

DLRO-H200 micro-ohmmeters are supplied with a copy of the PowerDB Lite software package. This intuitive software offers powerful features for storing, analyzing and archiving test results, and it supports reporting a wide range of industry standard formats. It also makes it easy to integrate results from the DLRO-H200 with results from other instruments to produce uniform reports.

APPLICATIONS

The DLRO-H200 test system is designed to serve a number of applications. The most common are contact resistance measurements of low-, medium- and high-voltage breakers and also at bus-bar joints and other high current links.

If the contact resistance is too high this will lead to power loss and temperature rise, which often leads to serious trouble. To avoid such problems, it is necessary to check the resistance at regular intervals.

The following table demonstrates how important low resistance is at high currents:

| Current | Contact resistance | Power loss |
|---------|--------------------|------------|
| 10 kA | 1 m Ω | 100 kW |
| 10 kA | 0.1 m Ω | 10 kW |
| 1 kA | 1 m Ω | 1 kW |
| 1 kA | 0.1 m Ω | 100 W |

At 10 kA, a contact with the resistance 0.1 m Ω gives a power loss of 10 kW. This power loss in one single point will definitely confer a temperature rise, which may result in overheating and possibly premature failure.

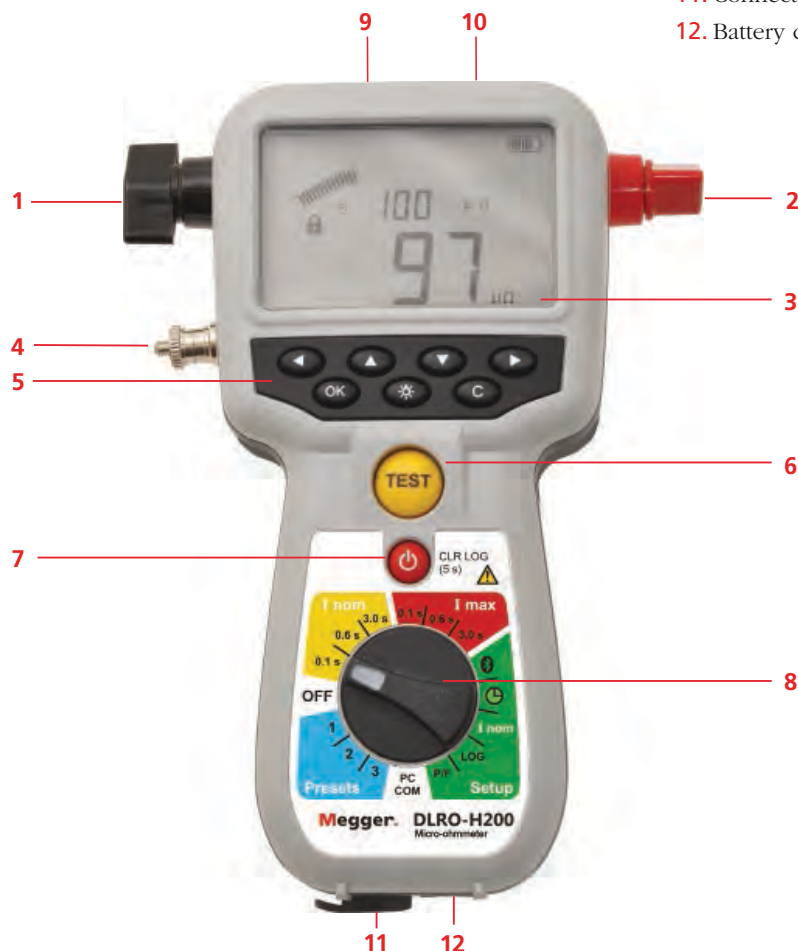
FEATURES AND BENEFITS

1. Current output terminal (-)
2. Current output terminal (+)
3. Display
 - The display offers a combination of analog arc and a dual digital readout:
 - Analog arc: Indicates level of the capacitor charge
 - Dual digital display: Large main digital readout for good visibility of all main measurement results
Second digital display for additional data
4. Ground (earth) terminal
5. Keys for navigation and to make settings in the display
6. TEST button
7. "Wake up," Clear log

8. Function selector

| | | |
|---------------|-------|---|
| OFF | | |
| I nom | 0.1 s | Measurement time with minimum current guarantee |
| | 0.6 s | |
| | 3 s | |
| I max | 0.1 s | Measurement time with max. charge |
| | 0.6 s | |
| | 3 s | |
| Setup | | Bluetooth "pair units" |
| | CLK | Set Date/Time |
| | I min | Minimum current guarantee setting |
| | LOG | Data log settings |
| | P/F | Pass/Fail settings |
| PC COM | | PC communication (dump data to PC) |
| Preset | 1 | Stored settings (Set from PC SW) |
| | 2 | |
| | 3 | |

9. Connector for the voltage (-) sense lead
10. Connector for the voltage sense (+) lead and the trig function
11. Connector for the battery charger
12. Battery charger indicator



Application examples

Circuit breaker testing

- Test of circuit breaker contacts
- Test of the connections to the breaker

Testing of bus-bar

- Test of bus-bar joints
- Test of connections

Everywhere you need to test a low resistance/ high current connection

- Switches
- Disconnecting devices
- Safety ground connections
- Welding points
- Fuses
- Cables

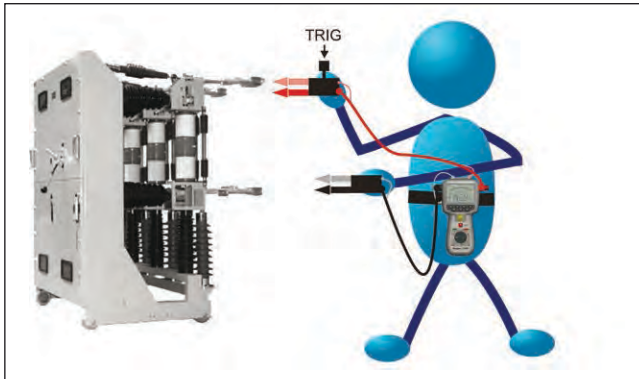
Both Sides Grounded

Many utilities require safety grounds to remain in place during station outages; therefore, the DLRO-H200 was designed with this field safety constraint in mind.

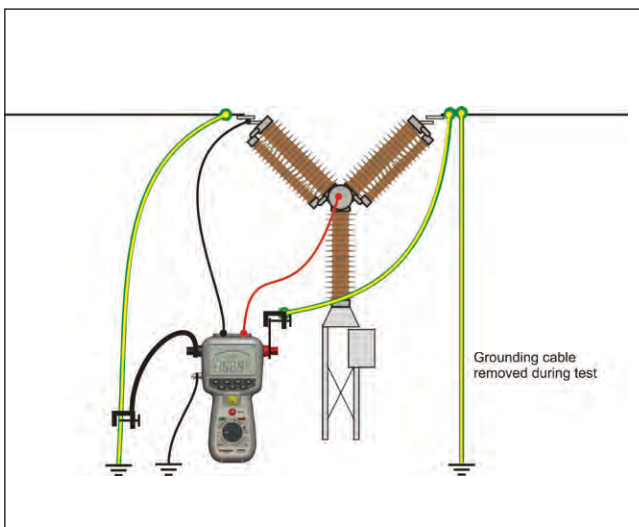
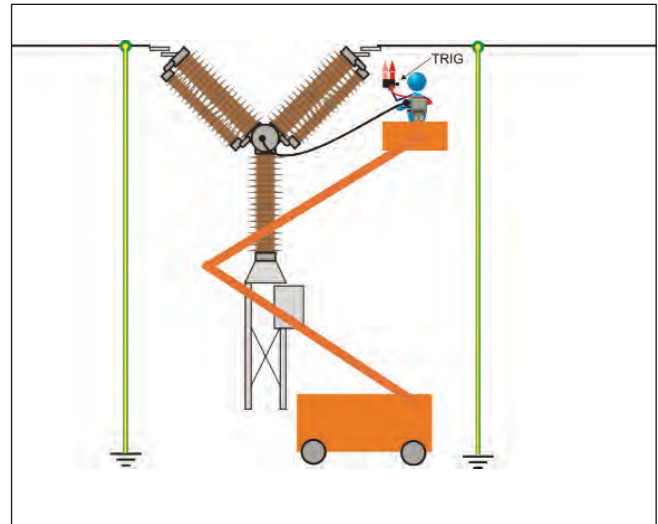
Minimum time shall be spent in the substation and focus shall be on the test rather than the equipment.



Equipment and methods that supports DualGround™ testing are associated with the DualGround™ symbol. This symbol certifies the use of groundbreaking technology and methods that enable a safe, fast and easy workflow with both sides grounded throughout the test.



Hold probes/attach Kelvin clamps to CB and press trig/TEST button. A signal indicates pass or fail and the result is logged in the unit for download to a PC.



Traditional measurement from ground. Injection is done through existing grounding cable (earthing). Optional cable kit is needed. Available kits have 5, 10 or 15 m cables.

SPECIFICATIONS

Specifications are valid at fully charged batteries and an ambient temperature of +25° C, (77° F). Specifications are subject to change without notice.

Environment

| | |
|------------------------------|---|
| Application field | For use in high-voltage substations and industrial environments |
| Installation category | CAT I |
| Temperature | |
| Operation | -20°C to +50°C (-4°F to +122°F) *) |
| Storage | -40°C to +70°C (-40°F to +158°F) |
| Relative humidity %RH | 5%-95%, non condensing |
| Pollution degree | 2 |
| Shock | IEC 60068-2-27 |
| Vibration | IEC 60068-2-6 |
| Transport | ISTA 2A |
| Flammability class | V0 |

*) Battery operation temperature 0°C to +50° (32°F to +122°F)
 Battery charging temperature +10°C to +40° (50°F to +104°F)

CE-marking

| | |
|------------|-------------|
| EMC | 2004/108/EC |
| LVD | 2006/95/EC |

General

| | |
|---|--|
| Battery power | Five AA (HR6) 2700 mAh NiMH cells |
| Recharge time | < 12 h |
| Typical recharge time at 25° C | 4 h |
| Battery charger | |
| Power supply voltage | 100-250 V AC, 50 / 60 Hz |
| Power consumption | 60 W |
| Protection | Against wrong battery type, low/high temperature |
| Real-time clock battery life | ≥10 years |
| Audible feedback | Different buzzer sounds |
| User presets | 3 |
| Field calibration | Yes |
| Encapsulation | IP54 |
| Dimensions (excl. binding posts) | 217 H x 92 B x 72 D mm 8.5 H x 3.6 B x 2.8 D in. |
| Weight | 1.0 kg (2.2 lbs) instrument only 5.0 kg (11 lbs) with accessories and carrying case |

Measurement section

| | |
|--|--|
| Minimum current guarantee | Selectable 50 A/100 A Valid at resistance ≤2mΩ |
| Pass/Fail | Settable from 1 μΩ to 1999 mΩ |
| Number of measurements on fully charged batteries | typ. 2200 at I min = 50 A typ. 800 at I min = 100 A |
| Interference suppression | Yes |
| Range | 0 - 1000 mΩ |
| Range selection | Auto |
| Resolution | |
| 0 – 999 μΩ | 1 μΩ |
| 1.0 – 9.99 mΩ | 0.01 mΩ |
| 10.0 – 99.9 mΩ | 0.1 mΩ |
| 100 – 1000 mΩ | 1 mΩ |
| Inaccuracy | |
| 0 – 1999 μΩ | ±1 % of reading ±1 digit |
| 2 – 1000 mΩ | ±2 % of reading ±1 digit |

Outputs + / -

| | |
|-----------------------------|-------------------------------|
| Range | > 100 A DC (R < 2 mΩ) |
| Output voltage (max) | 2.5 V DC |
| Generation duration | Selectable: 0.1 s, 0.6 s, 3 s |

| Recovery time at I min set to 100 A and load 100 μΩ | | |
|---|-------|-------|
| Generation time | Max | Typ |
| 0.1 s | 10 s | 8 s |
| 0.6 s | 20 s | 16 s |
| 3 s | 130 s | 100 s |

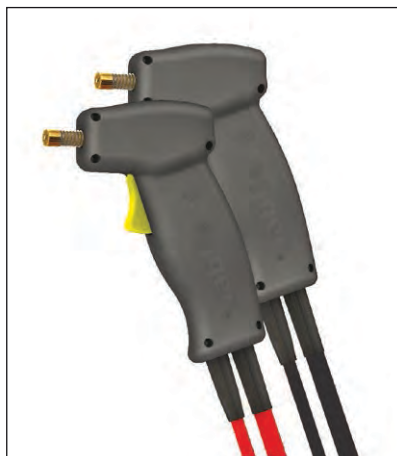
Inputs

| | |
|-------------------------|---|
| SENSE + / - | |
| Connector | 4 mm banana jack |
| Voltage | ±3 V DC |
| Trigger input | Threshold 8 V DC |
| DC IN | 12 – 24 V DC, 2 A max |
| Logger | |
| Logger, data | Label, Timestamp, I max, I min, I Limit, Resistance, Meas.time, P/F limit |
| Labeling schemes | Circuit breaker oriented or diary number |
| Capacity | 190 measurements |

Wireless communication

| | |
|-------------------------|-----------|
| Headset | Bluetooth |
| PC communication | Bluetooth |

Included accessories



Kelvin probes with cables

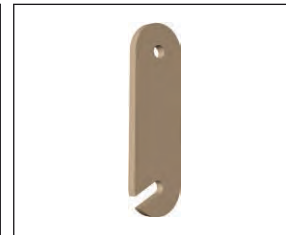
Optional accessories



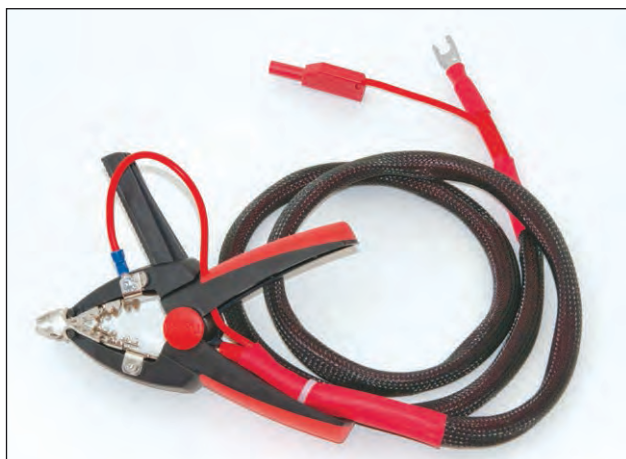
Bluetooth headset



Bluetooth dongle



Connection plate, used together with the cable kits



Kelvin clamps with cables

ORDERING INFORMATION

| Item (Qty) | Cat. No. |
|---|-------------|
| Included Accessories | |
| DLRO-H200 2 x 1.3 m (4 ft) test cables with Kelvin probes (one with trig button) Transport case, charger, rubber holster, carrying strap, belt clip, DLRO-H200 Win, and PowerDB Lite software | BD-59190-US |
| DLRO-H200 1.3 m (4 ft) test cable red with Kelvin clamp 3 m (10 ft) test cable black with Kelvin clamp Transport case, charger, rubber holster, carrying strap, belt clip, DLRO-H200 Win, and PowerDB Lite software | BD-59192-US |
| DLRO-H200 1.3 m (4 ft) test cable red with Kelvin clamp 5 m (16 ft) test cable black with Kelvin clamp Transport case, charger, rubber holster, carrying strap, belt clip, DLRO-H200 Win, and PowerDB Lite software | BD-59193-US |
| Optional Accessories | |
| Test cables with Kelvin probes 2 x 1.3 (4 ft) m (one with trig button) | GA-90000 |
| Test cables with Kelvin clamps 1.3 m (4 ft) red, 3 m (10 ft) black | GA-90001 |
| Cable kit 5 m Current cable 0.5 m (1.6 ft), connection plate and sense cables 5 m (16 ft), ground cable | GA-00380 |
| Cable kit 10 m Current cable 0.5 m (1.6 ft), connection plate and sense cables 10 m (33 ft), ground cable | GA-00382 |
| Cable kit 15 m Current cable 0.5 m (1.6 ft), connection plate and sense cables 15 m (49 ft), ground cable | GA-00384 |
| Test cable with Kelvin clamp 5 m (16ft) black only | GA-00374 |
| Bluetooth kit Bluetooth headset and dongle for PC | XC-06000 |
| Calibration kit | BD-90002 |
| Soft carrying case For DLRO-H200, charger and cables | GD-00620 |



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