DUCTER® D201

- **Four terminal low resistance measurements**
- **Internal rechargeable cells**
- **Tests current up to 10 A**
- **Readings shown on 3¾ digit L.E.D. display**
- **Momentary 'On' position**
- **Lightweight, robust and compact**

Low Resistance Ohmmeter

DESCRIPTION

The DUCTER® D201 Low Resistance Ohmmeter is a portable test set suitable for measurements down to 1 μΩ at 10 A d.c. It uses the four terminal measurement principle and test leads with duplex hand spikes are provided for making the current and potential connections to the item under test. Alternative types of test lead are available.

The instrument will measure up to 59,99 Ω, and this resistance span is divided into five ranges each of which is selected by a five position rotary switch. The lowest range is 0-5,999 mΩ and the minimum value that can be shown on the display is 1 μΩ. The readings are given directly in ohms, with the units of measure-ment and the value of the test current indicated by the range switch. The display is a $3^3/_4$ digit L.E.D. with $^1/_2$ in high characters, decimal point, negative sign, and has a maximum display of 59.99. It is easy to read in poor lighting conditions.

The 'On/Off' switch has two 'On' positions; a locked position for continuous operation and a momentary spring-held position that helps conserve battery power when taking a series of readings on the high current ranges.

Variations in the test current or battery condition will not result in loss of accuracy. The connections to the potential terminals can be reversed by the operation of a switch, therefore differences in reading caused by a suspected zero offset can be eliminated from a measurement. The condition of the battery is shown on a separate analogue panel meter so that the operator may easily see when recharging is necessary. A two position switch allows a check to be made on the batteries supplying the digital meter and those supplying the measuring circuit.

The D201 is contained in two separate strong plastic cases each with a detachable protective cover. One contains the instrument itself with its internal rechargeable battery cells and the other holds the battery charging unit and the duplex handspike test leads.

APPLICATIONS

Instruments which measure low resistance accurately and give the result directly are invaluable in many applications. The DUCTER® D201 Low Resistance Ohmmeter is well suited to the workshop environment, installation and commissioning and field servicing work.

Examples of its uses are:–

(a) In commissioning and maintenance of substation equipment, where measurements can be made on such things as:–

busbar joints

switch and circuit breaker contact resistance

fuse resistance

cold lap welded joints in aluminium earthing strip earth bonding

(b) For testing transformer and motor windings.

(c) In maintenance of overhead transmission lines, where 'hot' joints can be tested before and after their remaking or recompression.

(d) For bond testing aircraft frames, including the bonding of electronic discharges and fuel tanks.

(e) For testing earth bonds in mines.

(f) for rail bond testing, where a rail is used as part of a communications system or for power transmission.

(g) For testing the integrity of lightning conductors.

Certain applications require specific test current levels. Different test currents can be provided on other DUCTER® and BIDDLE® instruments, namely BT51, D007, D203 and DLRO Low Resistance Ohmmeters with test currents ranging from 1 A to 100 A.

Tests carried out with the D201 conform to the U.K. Mines and Quarries' Act 1954 Conductance Tests. (The instrument is not recommended for use in explosive atmospheres.)

SPECIFICATION

Resistance Ranges

Resistance range	Lowest reading	Test current (±20%)
0-5,999 mΩ	1 µΩ	10 A
0-59,99 mΩ	10 µΩ	1 A
0-599,9 mΩ	100 µΩ	0,1 A
0-5,999 Ω	1 mΩ	0,01 A
0-59,99 Ω	10 mΩ	0,001 A

Accuracy

±0,25% of reading ±1 digit
(15°C to 35°C)

±0,5% of reading ±1 digit
(0°C to 50°C)

Display

Red 3¾ digit light emitting diode display, 12 mm high characters, maximum reading 59,99, decimal point and negative sign, plus overrange indication.

Zero Off-Set

Typically 0 to 1 digit over 15°C-35°C. Full accuracy can be achieved by using the 'REVERSE' switch to average the readings.

On/Off

Toggle switch, which energizes all circuits. 'MOMENTARY' and 'LOCK' positions.

Response Time

2 seconds to final reading after On/Off switch closed.

Input Protection

1 V peak may be applied between any two terminals.

Effect of Inductive Test Item

No damage caused by inductive kicks.

Temperature Range

Operation 0°C to +50°C.
Storage –40°C to +60°C.

Batteries must be removed if instrument is stored at high temperatures.

Calibration Adjustments

None external. Internal zero and span adjustments for all ranges.

Test Lead Resistance Requirements

Potential Leads: No limitation.

Current Leads: 20 mΩ nominal for each lead. Deviations affect test current but do not affect accuracy unless the resistance is large compared with the top of the measuring range. Accuracy begins to be affected where the total lead resistance is approx. 18 times the f.s.d. value of the range, i.e. 100 mΩ on the 6 mΩ range and 1 kΩ on the 60 Ω range.

Fuse

100 mA 32 mm x 6 mm quick acting.

Power Supply

Internal rechargeable NiCad cells

Display circuit: 4 cells

Measuring circuit: 2 cells

Capacity

Range	Continuous operating time between charges		Continuous operating time while on charge	
	Measuring circuit battery	Display battery	Measuring circuit battery	Display battery
6 mΩ	1 hour	15 hours	1 hour (a)	No limit
60 mΩ	10 hours	15 hours	No limit (b)	No limit
600 mΩ	100 hours	15 hours	No limit (c)	No limit
6 Ω	1000 hours	15 hours	No limit (c)	No limit
60 Ω	1000 hours	15 hours	No limit (c)	No limit

(a) Battery is discharging.
(b) Battery can be either charging or discharging.
(c) Battery is receiving a charge. Approximately 300 full charge/discharge cycles.

Battery Charger

Full charge time: 14 hours for 240 V supply; 30 hours for 200 V supply. Instrument may be used while charging takes place, but increased charging time is necessary. Charger operates from 220 V/240 V ±10%, 50 Hz/60 Hz.

Safety

The instrument meets the requirements for IEC 10101-1 (1992), EN61010-1 (1993).

The instrument is intended for use with non powered circuits only.

EMC

The instrument meets EN50081-1 and EN50082-1 (1992)

Dimensions

Instrument
224 mm x 206 mm x 206 mm
(8⅞ in x 8⅛ in x 8⅛ in approx.)

Charger Unit
224 mm x 206 mm x 188 mm
(8⅞ in x 8⅛ in x 7⅜ in approx.)

Weight

Instrument 3,4 kg (7½ lb approx.)

Charger Unit 1,7 kg (3¾ lb approx.)

ORDERING INFORMATION

Item (Qty) — **Order Code**

Low Resistance Ohmmeter D201

Included Accessories

2,5 m (8 ft) test leads with duplex handspikes (2 used).....6111-022
Operating instruction book

Optional Accessories — **Order Code**

1,8 m (6 ft) test leads with single handspikes 6130-516
6,0 m (20 ft) test leads with duplex handspikes (2 used).....6111-023
9,0 m (30 ft) test leads with duplex handspikes (2 used).....6111-024
Four terminal lead set with clip connectors.....6110-220