



MEGGER® DET5/4D and DET5/4R

- **Simple, fully automatic operation**
- **Choice of three or four terminal measurement**
- **Autoranging from 10 mΩ to 20 kΩ**
- **Rugged, water resistant case for outdoor use**

Digital Ground Tester

DESCRIPTION

The Megger® DET5/4D and DET5/4R are fully automatic, four terminal instruments built into a rugged, water resistant case giving protection for outdoor use. The instrument is suitable for the testing of ground electrodes and measuring ground resistivity.

Operation is started by pushing one of two buttons on the front panel; one for three terminal measurement and one for four terminal testing. All other functions of the instrument are completely automatic. The instrument checks for conditions that may cause an invalid reading during a test. The low service error and wide operating temperature range enable accurate results to be achieved in real on-site conditions.

There are four ranges covering measurements from 10 mΩ to 20 kΩ. The ground resistance reading is displayed quickly, accurately and directly on a large, clear 3½ digit liquid crystal display. The display indicates when there is a high test spike resistance and also when the noise interference is too high to take a valid reading. If the batteries need replacing or recharging this will also be shown on the display.

Six 1.5 V AA dry cells provide power for the DET5/4D allowing 600 typical

15 second tests. The DET5/4R is powered by an internal rechargeable, lead acid battery. This instrument has a built in battery charger that can operate from a wide range of line voltages. The capacity of the lead acid battery enables 600 typical 15 s tests to be made from one charge.

Each instrument is built into a small, lightweight case with a handle that has been designed for outdoor use and has IP54 protection. Four large terminals allow either spade or hook connectors, 4 mm plugs or bare ended wire to be used for the test leads. Terminal shorting bars are provided for continuity testing or measurement using the 'dead ground' method. A removable cover allows access to the battery compartment in the DET5/4D or to the charger socket in the DET5/4R.

APPLICATIONS

The DET5/4D and DET5/4R digital ground testers are reliable instruments able to measure the ground resistance of both simple and complex electrode systems. Suitable for testing to the NE Code and other international wiring regulations including IEC364, VDE 0413 and BS7671, the instruments can be used for a wide variety of applications. The instruments are suitable for soil resistivity measurements

which are used to establish the optimum ground electrode system design and location, to avoid expensive reworking of electrical installations. They are also suitable for performing archaeological and geological investigations.

The direct indication of excessive noise and high spike resistances avoids measurement errors and lengthy testing of these parameters. The direct digital reading is unambiguous, avoids errors and assists in faster, more economic testing.

Ground testing kits including test spikes and leads and a book describing several testing techniques are also available.

BENEFITS

- Simple to use, one touch operation
- Auto switch off to save battery power
- Rugged, weatherproof case
- Large, clear LCD
- Noise rejection to 40 V
- Indicators show if reading may be invalid
- Terminal shorting bars supplied
- Ground testing kits available
- Optional carrying case and harness

SPECIFICATIONS**Ground Resistance Ranges (Autoranging)**

20 Ω Range:	0.01 Ω to 19.99 Ω
200 Ω Range:	0.1 Ω to 199.9 Ω
2 kΩ Range:	0.001 kΩ to 1.999 kΩ
20 kΩ Range:	0.01 kΩ to 19.99 kΩ

Accuracy (at 23° C)

±2 % of reading ±3 digits

Maximum service error

±5% of reading ±3 digits

Display

3½ digit LCD with Ω, kΩ and low battery voltage indicators. LEDs for high noise, high voltage probe resistance and high current loop resistance.

Test Frequency

128 Hz ±0.5 Hz

Test Voltage

Maximum 50 Volts peak

Test Current

(constant current within a range)

20 Ω Range:	10 mA a.c. r.m.s.
200 Ω Range:	1 mA a.c. r.m.s.
2 kΩ, 20 kΩ Range:	100 μA a.c. r.m.s.

Potential Circuit Interference

Voltages of 40 V pk to pk at 50 Hz, 60 Hz, 200 Hz or 16²/₃ Hz in the potential circuit will have a maximum effect of typically 1% on the reading in the 20Ω to 2 kΩ ranges. If the 'NOISE' LED is not showing, the maximum error due to noise on these ranges will not exceed 2%. In the 20 kΩ range this is reduced to 32 V pk to pk.

Current Loop Interference

Voltages of 60 V pk to pk, 50 Hz, 60 Hz, 200 Hz or 16²/₃ Hz in the current loop will have a maximum effect of 1% on the reading with minimal current loop resistance.

Maximum Current Loop Resistance

An additional error of typically 1% may be introduced for current loop resistances of:

20 Ω Range:	4 kΩ
200 Ω Range:	40 kΩ
2 kΩ, 20 kΩ Range:	400 kΩ

Note: with minimal current loop interference.

If the 'Rc' LED is not showing the maximum error will not exceed 2%.

Maximum Voltage Probe Resistance

An additional error of typically 1% will be introduced for voltage probe resistance of 75 kΩ. If the 'Rp' LED is not showing the maximum error will not exceed 2%.

Power Supply

DET5/4D: 6 x 1.5 V (AA) IEC LR6 cells giving 600 typical 15 s tests at 68° F (20° C).

DET5/4R: Rechargeable version (12 V, 0.8 Ah) from 110/120 V or 220/240 V (user selectable) 50/60 Hz supplies giving 600 typical 15 s.

Instrument Protection

IP54

Safety

The instruments meet the requirements of IEC1010-1.

EMC

The instruments meet the requirements of EN50081-1 and EN50082-1

Flash Test

Tested to 2.3 kV r.m.s.

Voltage Withstand

250 V a.c. between any two terminals.

Dimensions

9.4 H x 6 W x 2.75 D in. approx.
(243 H x 161 W x 70 D mm)

Weight

DET5/4D 1.5 lb approx. (0.82 kg)
DET5/4R 2.8 lb approx. (1.27 kg)

Temperature Range**Operating**

-4° F to +113° F (-20° C to +45° C)

Storage

-40° F to +158° F (-20° C to +70° C)
(DET5/4D, without batteries)

Temperature Coefficient

± 0.1% per °F over the temperature range +5° F to +113° F (-15° C to +45° C)

Humidity

Operating: 90% RH max.
at 113° F (45° C)

Storage: 70% RH max. at 131° F (55° C)

ORDERING INFORMATION

Item (Qty)	Cat. No.	Item (Qty)	Cat. No.
Battery Powered Digital Ground Tester	DET5/4D	Standard Accessory Kit	250579
Rechargeable Digital Ground Tester	DET5/4R	Includes three color-coded test leads, 25, 50 and 100 ft [8,15 and 30 m] (1 set); ground rods, 20 in. [508 mm] (1 pr); and canvas case for leads and rods only	
Included Accessories		Deluxe Accessory Kit	250581
Terminal Shorting bars (2)		Includes three color-coded test leads, 25, 50 and 100 ft [8,15 and 30 m] (1 set); ground rods, 20 in. [508 mm] (1 pr); and padded case to hold instrument, leads and rods	
Operating Instructions	6171-996	Test Lead s, Color-coded, 25, 50 and 100 ft [8,15 and 30 m] (1 set)	250576
Mains Supply Lead for Charging (DET5/4R)		Ground Rods	
Optional Accessories		11 in. [250 mm] (1 pr)	250584
Carrying Case	6420-103	20 in. [508 mm] (1 pr)	250580
Instrument Carrying Harness	6220-537	30 in. [760 mm] (1 pr)	250582
Publication: 'Getting Down to Earth'	AVTM25-Ta		
Soil Resistivity Test Kit	250586		
Includes four 50 ft [15 m] leads, 20 in. [510 m] ground rods (2 pr) and carrying case for leads and rods only			