



**MEGGER®  
DET3/2**

- Three- or four-terminal measurement selected by a switch
- 50 volt maximum output voltage for safety and convenience
- Direct-reading 3½-digit L.C.D.
- Four ranges covering measurements from 0,01 Ω to 19,99 kΩ

## Digital Earth Tester

### DESCRIPTION

The MEGGER® DET3/2 Digital Earth Tester is a compact instrument designed to measure earth electrode resistance and soil resistivity. The instrument uses the four-terminal method of measurement, in which the resistance of the current circuit does not affect the reading. The instrument circuit has been designed so the resistance of the potential circuit also does not affect the measurement. Pressing a latching button converts the instrument from its four-terminal measurement mode to a three-terminal one. The reversing d.c. test current has a frequency of 128 Hz, which avoids possible interference from other 50 and 60 Hz stray currents in the vicinity of the earth electrode under test. In the interests of safety, the maximum test voltage has been limited to 50 V.

There are four measuring ranges (20 and 200 Ω and 2 and 20 kΩ) selected by a rotary switch that incorporates an OFF position. The instrument is simple to use and there is no test button to hold down. The readings are displayed quickly, directly and accurately on the 3½-digit L.C.D. Annunciators on the display indicate if:

- Noise interference in the soil passing the test current is excessive
- Current test spike resistance is too high
- Potential test spike resistance is too high
- Generator is being cranked too slowly

The potential spike resistance is

checked by pressing a separate button. The direct indication of these factors speeds the testing procedure and gives assurance of valid measurements. The low service error and the wide operating temperature range enable accurate results to be achieved in real on-site conditions.

Powered by an easy-to-turn, hand-cranked generator, the DET3/2 instrument power is always available and very convenient for work in remote locations.

Each instrument is built into a small, lightweight, yet robust plastic case with a fold-down carrying handle. Four recessed terminals, marked C1, P1, P2 and C2, are mounted at the top of the case. Right-angled terminal connectors are supplied, enabling test leads with spade, hook or 4 mm plug connectors to be used.

### APPLICATIONS

The DET3/2 Digital Earth Tester is a reliable instrument, able to measure the earth resistance of both simple and complex electrode systems. They may be used to test in accordance with BS 7430 (1991), BS7671, the IEE wiring regulations, NFC15-100, IEC364 and German specification VDE 0413 Part 7 (1982). The instrument is suitable for soil resistivity measurements, which are used to establish the optimum earth electrode system design and location, to avoid expensive reworking of electrical installations. It is also suitable for performing archaeological and geological investigations.

The direct indication of excessive noise and high spike resistances avoids measurement errors, lengthy separate testing of these parameters and the need for high resistance ranges on the instruments. The direct, digital reading is unambiguous, avoids errors and assists in faster, more economic testing.

Earth testing kits, which include suitable test spikes and test leads, are available separately. Also available is the detailed publication "A Simple Guide to Earth Testing" which describes the various methods of earth testing.

### FEATURES AND BENEFITS

- Direct indication of noise and high spike resistance (current and potential)
- Comply with the testing requirements of British and VDE specifications
- Powered by a hand-cranked generator for field independence

**SPECIFICATIONS****Earth Resistance Ranges**

0,01 to 19,99  $\Omega$   
 0,1 to 199,9  $\Omega$   
 1,0  $\Omega$  to 1,999 k $\Omega$   
 10  $\Omega$  to 19,99 k $\Omega$

**Accuracy (23° C  $\pm$ 2° C)**

$\pm$ 2% of reading  $\pm$ 3 digits

**Total Service Error:**  $\pm$ 5% of reading  
 $\pm$ 3 digits

**Comply With Standards**

BS 7430  
 VDE 0413 Part 7 (1982)

**Test Frequency**

128 Hz  $\pm$ 0,5 Hz

**Test Current**

**20-Ohm Range:** 10 mA a.c. rms

**200-Ohm Range:** 1 mA a.c. rms

**2- and 20-k $\Omega$  Ranges:** 100  $\mu$ A a.c. rms

Test current (= short-circuit current) is constant throughout the range.

**Interference**

Interference voltages of 20 V  $\pm$ 5% peak-to-peak, 50 Hz in the potential circuit will have a maximum effect of  $\pm$ 1% on the reading obtained for the 20  $\Omega$  to 2 k $\Omega$  ranges. For the 20 k $\Omega$  range, this interference voltage is reduced to 16 V  $\pm$ 1,0 V peak-to-peak at full-scale deflection.

**Maximum Current Spike Resistance**

The spike resistance that will introduce an additional 1% error is:

20 $\Omega$ range	4 k $\Omega$ $\pm$ 0,5 k $\Omega$
200 $\Omega$ range	25 k $\Omega$ $\pm$ 3 k $\Omega$
2 and 20 k $\Omega$ ranges	50 k $\Omega$ $\pm$ 5 k $\Omega$

**Maximum Potential Spike Resistance**

The spike resistance that will introduce an additional 1% error is:

20 $\Omega$ range	10 k $\Omega$ $\pm$ 1 k $\Omega$
200 $\Omega$ range	25 k $\Omega$ $\pm$ 3 k $\Omega$
2 and 20 k $\Omega$ ranges	100 k $\Omega$ $\pm$ 10 k $\Omega$

(The current and potential spike resistances are loop values; therefore, the resistance under test must be subtracted from these figures.)

**Maximum Output Voltage**

50 V

**Display**

3 $\frac{1}{2}$ -digit L.C.D., max. reading 1999

**Temperature Effect**

<  $\pm$ 0,2% per  $^{\circ}$ C over the temperature range  $-15$  to  $+55^{\circ}$ C

**Temperature Range**

**Operating:**  $-15$  to  $+55^{\circ}$ C

**Storage:**  $-40$  to  $+70^{\circ}$ C

**Humidity**

**Operating:** 95% RH max. at  $40^{\circ}$ C

**Storage:** 93% RH max. at  $55^{\circ}$ C

**Flash Test**

3 kV a.c.

**Voltage Withstand**

In the event of a system fault, the instrument will withstand 240 V a.c. applied between any two terminals.

**Safety**

The instrument meets the requirements of the IEC 1010-1 (1992) specification.

**EMC**

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

**Dimensions**

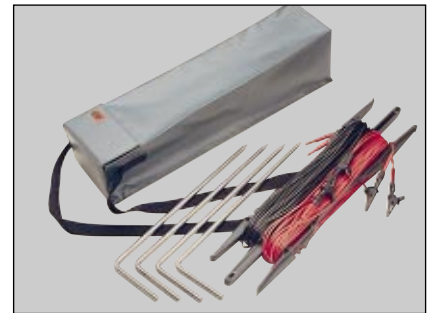
128 H x 210 W x 125 D mm  
 (5 H x 8,25 W x 5 D in. approx)

**Weight**

1 kg (2,25 lb approx)

**Power Supply**

Internal, hand-cranked a.c. generator (minimum cranking speed 160 rpm)



Four terminal earth testing kit  
 Part no. 6210-161

**ORDERING INFORMATION**

<b>Item (Qty)</b>	<b>Order Code</b>	Earth testing kit.....6310-755
Digital Earth Tester .....	DET3/2	Comprising carrying case and pouch containing; Four galvanised steel spikes 12 mm ( $\frac{1}{2}$ in. approx.) square section, 450 mm (17 in. approx.) long Two spike extractors 30 m (98,5 ft approx.) of cable on a winder 50 m (164 ft approx.) of cable on a winder Two 3 m leads complete with connectors and clips
<b>Included Accessories</b>		
Right-angled terminal adaptors to enable test leads with spade connectors, as in the accessory kit, or test leads with bare ends to be used (4)		
Operating instruction book.....	6171-524	
<b>Optional Accessories</b>		
Carrying case, for instrument only .....	6420-043	
Three terminal Earth testing kit .....	6210-160	Four terminal Earth testing kit.....6210-161
Comprising carrying bag containing; Two push-in galvanised steel spikes 10 mm round section, 450 mm long 3 m, 15 m and 30 m of cable on a winder		Comprising carrying bag containing; Four push-in galvanised steel spikes 10 mm round section, 450 mm long 3 m, 15 m, 30 m and 50 m of cable on a winder
		Reel of cable (50 m long) .....
		6121-119
		<b>Publications</b>
		'Getting Down to Earth' .....
		AVTM25-Ta