

# DET2/3

## Advanced Earth (Ground) Tester



- **High resolution of 1 mΩ, ideal for large earth (ground) systems**
- **Versatile test modes**
- **High accuracy for earth (ground) electrode grid and soil resistivity tests**
- **Rechargeable battery power that can last all day with a fast re-charge (up to 10 hours)**
- **Robust instrument with IP65 protection**
- **Automatic test frequency selection, with filters and high current features**
- **Diagnostic trace display**
- **Data storage**
- **Large colour display that shows numeric and graphical results**

### DESCRIPTION

The Megger® DET2/3 automatic earth (ground) test instrument is robust, compact and designed to measure earth Electrode Resistance and Soil Resistivity. It provides a full range of test methods and excels at the four terminal method of measurement, which eliminates the resistance of the current circuit from the measurement.

The DET2/3 is a reliable instrument for use on large or more complex earth systems, which include communications earth systems and difficult test environments. It can be used to test in accordance with BS 7430 (earthing / grounding), BS-EN-62305 (Lightning Protection), IEEE Standard 81 and Railway Applications.

Soil Resistivity measurements are used to establish the optimum electrode design and site, as well as archaeological and geological investigations.

### FEATURES

#### High accuracy earth (ground) measurements

The DET2/3 provides accurate 1 mΩ resolution measurements of earth (ground) electrode resistance.

With its microprocessor controlled system it provides a flexible and 'user-friendly' approach to earth tests by the provision of excellent error detection capabilities and full test information shown on a large colour display.

Test frequency, test voltage and filtering can be quickly and easily adjusted so that adverse conditions, which can influence the test, can be overcome.

A wide band of test frequencies, with a resolution of 0.5 Hz, can be used to eliminate errors caused by noise in the earth.

The DET2/3 also includes an automatic frequency selection feature that scans for frequencies with the lowest noise level and then runs a test at that frequency.

#### Continuity measurements and bonding

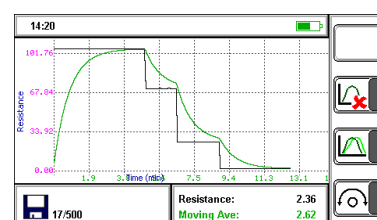
- **Single resistance range:** One fully automatic range from 0.01 Ω to 1.0 kΩ
- **Display:** Three digit display
- **Accuracy:** ±3% (±2 digits)
- **Short circuit current:** 200 mA continuity test currents
- **Lead null:** Lead resistance compensation (NULL) operates with a lead resistance up to 10 Ω

#### Trace display and data storage

Utilising the latest processors, the DET2/3 can provide a live trace of its measurements, which graphically shows the amount of noise from the system under test - a powerful diagnostic tool for the expert earth (ground) test engineer.

Use of the latest processors and a large internal memory allows for immediate calculations of resistivity (Wenner or Schlumberger method) and the ability to save a complete day's worth of test results.

Test result data can be downloaded directly through a USB flash drive or straight to a Windows PC running PowerDB™ software.



**Weatherproof and rugged**

The DET2/3 is sealed to IP54 standard, which provides weatherproofing during operation (case lid open). When the case lid is closed its protection standard is to IP65 (water and dust damage).

The case is made of a tough and light copolymer polypropylene, which can withstand the rough and tumble of outdoor use.

**Portable power**

An internal Li-ion battery provides for a full day of tests.

The Li-ion battery has a fast recharge facility that allows a flat battery to provide an afternoon of tests, if charged during a lunch break.

The DET2/3 can also operate from a standard 12 V DC battery supply.

**SPECIFICATION**

**2, 3 and 4 pole resistance measurements**

<b>Range</b>	0.001 Ω to 20.00 kΩ auto range
<b>Display</b>	Four digit display
<b>Accuracy</b>	at 23 °C ±0.5% of reading ±2 digits
<b>3P</b>	±10 mΩ
<b>2P</b>	±20 mΩ

<b>Operational uncertainty</b>	±2% of reading, ±2 digits (meets IEC61557 operational uncertainty requirement with readings over 10 mΩ) when spike resistances are below 100 Ω ±5% of reading, ±2 digits ±10 mΩ (meets IEC61557 operational uncertainty requirement with readings over 50 mΩ)
--------------------------------	--

<b>Test standards</b>	BS 7430 (Earthing) BS 62305 (Lightning) BS EN50122 (Railway) IEEE Standard 81
-----------------------	--

<b>Test frequency 2P, 3P &amp; 4P resistivity</b>	10 Hz to 200 Hz in steps of 0.5 Hz
---	------------------------------------

<b>Test frequency dual clamp, 3p ART &amp; 4P ART</b>	70 Hz to 200 Hz (steps of 0.5 Hz)
---	-----------------------------------

<b>Test current</b>	50 mA max.
<b>Maximum output voltage</b>	Less than 50 V rms
<b>Maximum interference</b>	Up to 50 V pk to pk

**3 and 4 pole ART (selective) resistance measurements**

<b>Range</b>	0.01 Ω to 10.00 kΩ Auto range
<b>Accuracy</b>	±5% of reading ±3 digits at 23 °C ±2 °C

**Stakeless resistance measurement**

<b>Range</b>	0.01 Ω to 200 Ω
<b>Accuracy</b>	±7% accuracy, ±3 digits

**Continuity**

<b>Range</b>	0.01 Ω to 1 kΩ (3 digits)
<b>Accuracy</b>	±3% (±2 digits)
<b>Test Current</b>	Up to 205 mA
<b>Lead Null</b>	< 10 Ω

**Leakage current**

<b>Range</b>	0.00 A to 2.00 A
<b>Accuracy</b>	±5% (±3 digits)

**Instrument specifications**

<b>Display</b>	5.25 inch QWVGA, daylight viewable backlit colour
----------------	---

<b>Operating temperature and humidity</b>	-10 to 40 °C 90% RH max at 40 °C
---	-------------------------------------

<b>Storage temperature</b>	-20 to 60 °C
<b>Temperature coefficient</b>	< ±0.1% per °C over operating temp

<b>Altitude</b>	Up to 2000 m above sea-level.
<b>IP rating</b>	IP54 operational (lid open), IP65 storage (lid closed)

<b>Measurement rating</b>	CAT IV 300 V
<b>Measurement output rating</b>	±50 V 1 A, ac or dc.
<b>Power supply</b>	Internal Li-ion battery or external 12-18 V, 65 W, DC supply

<b>Battery life</b>	Up to 10 hrs use
<b>Battery charging time</b>	Fast recharge to 50%, 3 hrs for 100%

<b>Ambient temperature (battery charge)</b>	0 - 40 °C
---	-----------

<b>Safety</b>	Meets IEC 61010
<b>EMC</b>	Meets IEC 61326

<b>Dimensions</b>	L 315 x W 285 x H 181 mm (12.4 x 11.2 x 7.1 in)
-------------------	--

<b>Weight</b>	4.5 kg (9.9 lb)
---------------	-----------------

<b>Data download</b>	To PC through USB 2.0
----------------------	-----------------------

<b>Data storage</b>	On board 500 record storage downloadable as *.txt
---------------------	--

<b>USB type A</b>	Data download to USB drive
-------------------	----------------------------

<b>USB type B</b>	Data download to PC
-------------------	---------------------

<b>Secondary measurement display</b>	Noise, voltage and current
--------------------------------------	----------------------------

<b>Resistivity calculation</b>	Wenner: $PE = 2 \pi a R_w$ Schlumberger: $PE = \pi \frac{b(b+a)}{a} R$
--------------------------------	--

<b>Test modes</b>	Internally set 2P, 3P, ART (Selective), 4P, Stakeless (clamp) modes
-------------------	---

<b>Aux inputs</b>	MCC1010, MVC1010
-------------------	------------------

<b>RoHS compliant</b>	Yes
-----------------------	-----

**ACCESSORIES**

**MCC1010 and MVC1010**

- For Stakeless tests
- For ART tests

**Cable reels with spike**

- Sturdy handle and a smooth unwind and wind action
- Cable 'feed through'
- 20 m, 30 m, 50 m, 60 m or 100 m cables
- Attachable 25 cm (10") earth spike
- Spike can be hammered into the ground
- Unique daisy-chain feature to create longer lengths

**Continuity test cables and clips**

- 1.4 m cables
- 2 wire connection cable
- Crocodile clips
- Probes

**Accessories bag**

- Holds a full suite of accessories
- Water resistant
- Toughened bottom for outdoor use

	DET2/3	DET2/3 with ETK50 C	DET2/3 with ETK100 C
DET2/3	■	■	■
Charger	■	■	■
MCC1010, current clamp		■	■
MVC1010, voltage clamp		■	■
User guide	■	■	■
Calibration checker, instrument	■	■	■
Calibration checker, clamps		■	■
Reel with 50 m test cable (x2)		■	
Reel with 30 m test cable (x2)		■	
Reel with 100 m test cable (x2)			■
Reel with 60 m test cable (x2)			■
Test spikes (x4)		■	■
100 m tape measure			■
1.4 m leads with connectors and clips (x2)		■	■
Pouch	■	■	■
Carry strap	■	■	■

		ETK30 1010-176	ETK50 1010-177	ETK100 1010-178	ETK50C 1010-179	ETK100C 1010-180
Test lead on reel	Red	30 m	50 m	100 m	50 m	100 m
	Yellow	20 m	50 m	100 m	50 m	100 m
	Black		30 m	60 m	30 m	60 m
	Green		30 m	60 m	30 m	60 m
Test lead 2 m with croc clip black		■				
Earth test spikes *		2	4	4	4	4
Interconnection lead (Reel to spike) *	Red	■	■	■	■	■
	Yellow	■	■	■	■	■
	Black		■	■	■	■
	Green		■	■	■	■
MCC1010					■	■
MCC1010 test lead					■	■
MVC1010					■	■
MVC1010 test lead					■	■
1.4 m leads with connectors and clips (x2)					■	■
Measuring tape			100 m	100 m	100 m	100 m
Holdall to contain kit		■	■	■	■	■

\* Supplied with reels

