EVT100
Electric Vehicle Tester



- **Full colour graphic display**
- **DC voltage and polarity test**
- **Insulation resistance and surface leakage current detection**
- **4 wire low resistance bonding test**
- **2 wire continuity and diode test**
- **Data storage and management**
- **CAT III 600 V up to 3000 m**
- **Environmental protection to IP54**
- **Multipurpose industrial carrycase**
- **Rechargeable batteries and charger**

DESCRIPTION

The EVT100 is a versatile hand held multi testing instrument with dedicated three wire insulation resistance, and four wire Kelvin low resistance features ideal for comprehensive industrial applications.

The EVT100 is designed to simplify the testing process for users, providing a single unit that can perform multiple tests. This unique instrument in the market, comes with more than 8 testing features and the reliability of Megger's testers, bringing greater testing possibilities to the photovoltaic and electric vehicle industries allowing effective Continuity, Bonding and Insulation Resistance testing.

The EVT100 tests DC voltage and it comes with a complete suite of insulation resistance and low resistance tests, which also incorporates temperature measurement and compensation, plus continuity.

Additionally, the EVT100 is supplied in a tough multipurpose industrial carrycase ideal to tailor additional accessories and field tools.

The EVT100 is manufactured in an over-moulded case which increases protection and robustness, achieving an IP54 weatherproof rating.

FEATURES

- Full set of detachable test leads with interchangeable clips and probes for different applications, including a remote testing probe.
- Guided lead set up diagrams.
- Rechargeable batteries with mains charger kit.
- DC voltage with polarity test.
- Unique resistance testing capabilities with two, three and four terminals, including a guard connection, to eliminate any surface leakage current
- Data storage for up to 256 tests, which can be downloaded to a USB.
- Rotary dial control, soft keys and a full graphic display, simple and easy to use.
- Meets UN ECE R100 Regulation for Electric Vehicle testing.
- Environmental protection to IP54, providing protection against moisture and dust ingress, including the battery and fuse compartment.
- Rubber over moulding housing combining a tough shock absorbing outer protection with excellent grip, on a strong modified ABS housing, providing a robust case.
- Multipurpose industrial carrycase.

INDUSTRIES

- Electric vehicles: manufacturing and workshops
- Garages and repair centres
- Insurance companies
- Crash investigation centres

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TYPICAL APPLICATIONS

- Testing and fault-finding, and regular maintenance.
- High voltage connectors and cables, Insulation Resistance, Dielectric Absorption Ratio (DAR), Polarization Index (PI), Electrical Bonding verification, DC voltage, temperature, and Diode testing.
- Electric Vehicles (HEV, PHEV, BEV, FCEV): DC voltage testing; Insulation Resistance, Continuity, and Low Resistance Bonding testing with 2, 3, and 4 test lead methods.

SAFETY

The EVT100 is designed to be exceptionally safe to use. The fast detecting circuitry reduces the likelihood of damage to the instrument if accidentally connected to live circuits or across phases.

- Meets the international requirements of IEC61010.
- Live circuit detection and test inhibit on all measurements with user notification.
- User selectable insulation test terminal lockout voltage 25 V, 30 V, 50 V, 75 V (default is 50 V).
- Detection and inhibit functions when the protection fuse has failed.
- Suitable for use on CAT III applications and supply voltages to 600 V.

Insulation resistance tests

- Resistance range 100 Ω up to 200 GΩ.
- Supports PI, DAR, Timed and Temperature Compensation.
- Stabilised insulation test voltage accurate to -0% +2% ±2 V, which provides a more accurate test voltage without the risk of over-voltage damage to circuits or components. The output voltage is maintained between 0 and 2% throughout the test range.
- Where a nonstandard test voltage is required, a variable range allows the exact test voltage to be selected from 10 V up to 999 V and is subject to the same stabilised output control.
- Dedicated buzzer button either ON, VISUAL or OFF.
- Adjustable buzzer for minimum resistance limit (0.5 MΩ up to 1000 MΩ).
- Buzzer sounds on test pass.

Voltmeter

- Measures 10 mV up to 1000 V DC.
- DC voltage polarity.

Continuity (resistance) tests

- Single automatic resistance range from 0.01 Ω to 1.0 MΩ.
- Automatic test current selection uses the preferred test current for the load resistance under test (200 mA up to 4 Ω).
- Bi-directional tests option automatically reverses the current without reconnecting leads.
- Lead resistance compensation (NULL) operates up to 10 Ω of resistance.
- Dedicated buzzer switch either ON, VISUAL or OFF.
- Adjustable buzzer for maximum resistance limit (1 Ω to 200 Ω in 12 steps).
- Buzzer sounds on test pass.

DLRO four wire Kelvin low resistance

- Automatic resistance range from 1 mΩ up to 10 Ω.
- Selectable auto or manual test.
- Bi-direction or single direction.
- Bi-directional tests option automatically reverses the current without reconnecting leads.
- 200 mA test current.

Temperature

- Thermocouple CAT III 600 V
- Temperature test and insulation resistance compensation.

Display

Full colour graphic display makes the EVT100 simple to understand and easy to use.

Guard terminal

The Guard Terminal (G) is a third terminal on the connection panel. Connection of the guard terminal, on certain applications, provides a return path for parallel leakage currents, which could otherwise create significant errors in the insulation measurement. This is especially so for surface contamination of equipment or cables.

Storage and download of results

Test results can be downloaded to a USB mass storage device , which can be accessed by connecting to a PC.

Instrument software updates

Occasional information bulletins and software updates may be issued on the Megger web site.

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SPECIFICATIONS

All quoted accuracies are at 20 °C (68 °F).

Insulation resistance

Volts	Accuracy
50 V	10 GΩ ±2% ±2 digits ±4.0% per GΩ
100 V	20 GΩ ±2% ±2 digits ±2.0% per GΩ
250 V	50 GΩ ±2% ±2 digits ±0.8% per GΩ
500 V	100 GΩ ±2% ±2 digits ±0.4% per GΩ
1000 V	200 GΩ ±2% ±2 digits ±0.2% per GΩ

Polarisation index (PI): 10 min / 1 minute ratio

Dielectric absorption ratio (DAR): User configurable 15 s or 30 s t1 start time with t2 fixed at 60 s

Guard terminal performance <5% error at 500 kΩ parallel circuit resistance with 100 MΩ load

Resolution 0.1 kΩ

Short circuit/charge current 2 mA +0% -50% (IEC61557-2)

Terminal voltage accuracy -0% +2% ±2 V

Test current 1 mA at min. pass value of insulation to a max. of 2 mA

Operation range 0.10 MΩ to 1.0 GΩ (IEC61557-2)

Leakage current display 0.1 uA resolution 10% (±3 digits)

Voltage display ±3% ±2 digits ±0.5% of rated voltage

Note: Above specifications only apply when high quality silicone leads are being used - as supplied with the instrument.

Continuity

Measurement 0.01 Ω to 1 MΩ (0 to 1000 kΩ analogue scale)

Accuracy ±3% ±2 digits (0 to 99.9 Ω) ±5% ±2 digits (100 Ω - 500 kΩ)

Test current 200 mA (–0 mA +20 mA) (0.01 Ω - 4 Ω)

Polarity Single or Dual (factory default) polarity

Lead resistance Null up to 10 Ω

Selectable current limit 20 mA and 200 mA

Voltmeter

Range DC: 0 - 1000 V

Accuracy DC: ± 2% ±2 digits (0 - 1000 V)

Diode Test Diode test accuracy: ±2% ±2 digits 0.01 V to 3.00 V

Display range: 0.00 V to 3.00 V

Temperature measurement and compensation

Thermocouple Type T (Type K and Type J)

Thermocouple range -20 °C to 200 °C (4 °F - 392 °F)

Instrument range -20 °C to 1000 °C (4 °F - 1832 °F)

Instrument resolution 0.1 °C (0.18 °F)

Instrument accuracy ±1.0 °C ±20 digits (1.8 °F). (Basic accuracy stated assumes forward and reverse measurements.)

DLRO four wire Kelvin low resistance

Test current 200 mA DC

Range 1 mΩ to 10 Ω

Resolution 0.01 mΩ

Accuracy ± 0.25% rdg. ± 10 digits, accuracy stated includes forward and reverse measurements.

Results storage

Storage capacity 256 test results (date / time stamped)

Data download USB Type A (USB Mass Storage Device)

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Power

Battery	6 x IEC LR6 1.5 V Alkaline (AA), IEC FR6 1.5 V Lithium ($LiFeS_2$), IEC HR6 1.2 V NiMH (rechargeable option).
Battery life	1200 insulation tests with duty cycle of 5 s testing on 25 s standby @ 500 V into 0.5 MΩ.
Battery charging	Mains battery charger kit.
Safety protection	IEC61010-1 CAT III 600 V
EMC	Industrial IEC61326
Temperature coefficient	<0.1% per °C up to 1 GΩ

Environment

Operating temperature range	-10 °C to 50 °C (14 °F to 122 °F)
Storage temperature range	-25 °C to 50 °C (-13 °F to 122 °F)
Humidity	90% RH at 40 °C (104 °F) max.
Calibration temperature	20 °C (68 °F)
Maximum altitude	3000 m (9843 ft.)
IP rating	IP54

Physical

Display	Full LCD colour screen with user configurable backlight
Languages	English, French, German and Spanish.
Dimensions	228 x 105 x 75 mm (8.98 x 4.1 x 2.95 in)
Weight	0.93 kg (2.02 lbs)
Fuse	x2 500 mA (FF) 1000 V 32 x 6 mm ceramic fuse, high break capacity HBC, 30 kA minimum. Glass fuses must not be installed.

ORDERING INFORMATION

Description	Part number
EVT100 Electric Vehicle Tester	1015-736
Included accessories:	
Hook strap and magnetic strap	
Multipurpose industrial carrycase	
SP5 remote probe	1007-157
Temperature probe, T type CAT III 600 V	1012-067
IR lead set (comprising of):	
3 x Grabber Clips (Red, Black and Blue) CAT III 1000 V, CAT IV 600 V	
3 x 4 mm Test leads, 2 m, 1 end Right Angle 1 end straight (red, black and blue) CAT III 1000 V, CAT IV 600 V	
3 x Test probes (red, black and blue), long reach (100 mm), CAT III 1000 V, CAT IV 600 V	
Kelvin clip lead set CAT III 600 V (comprising of):	1011-928
2 x Kelvin Clip leads, 2 meters, 4 mm Right Angled Connectors (4), Single (2-core) cable.	
Kelvin probe lead set CAT III 600 V (comprising of):	1011-929
2 x Kelvin Probe leads, 2 meters, 4 mm Right Angled Connectors (4), Single (2-core) cable.	
Replaceable Kelvin Probe Pins (Pack of 4)	1012-064

Description	Part number
EVT100 certificate of test (EN/FR/ES/DE)	
EVT100 certificate of calibration	
6 x AA rechargeable batteries NiMH (fitted)	
Battery charger	
Quick start guide	

Description	Part number
Optional accessories:	
Mains charger kit	1007-464
Grabber clip lead set CAT III 1000 V, CAT IV 600 V	1012-069
Test probe set, long reach CAT IV 600 V	1012-066
Test probe set, long reach, CAT II 1000 V	1012-065

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