

# EV100

## A compact, easy to use and highly cost-effective EVSE test and diagnostic tool, in accordance with IEC 61851

With the world's electric vehicle sector growing rapidly in response to the need for low carbon transportation solutions, there is an increased need to ensure the charging infrastructure is operating efficiently and safely.

The EV100 is an all-in-one test and diagnostic tool, designed to ensure that all types of AC electric vehicle supply equipment (EVSE) are operating correctly and safely, in accordance with IEC 61851, both at the time of installation and as part of an ongoing periodic maintenance regime.

The simple user interface makes it fast and effortless to perform a comprehensive set of measurements at the press of a button, including output voltage, maximum available charging current, insulation resistance, earth loop impedance and RCD trip time.

The EV100 is also able to simulate a number of vehicle faults, and automatically store the EVSE fault response including the disconnection time and the amplitude, frequency and duty cycle of the PWM communication between the EVSE and simulated EV.



Whilst a basic set of measurements is clearly shown on the EV100 display, a much more comprehensive set of diagnostic data is stored in the EV100's internal memory.

For fast and instant fault diagnosis, the technician in the field can use contactless NFC (Near Field Communication) connectivity to easily transfer all test results and measured data from the EV100 to an Android app running on a portable device such as a tablet or smart phone. The technical data can then be emailed directly back to the office for immediate analysis by an engineer, or professional PDF test certificates can be produced for administration and record management purposes\*.

EVSE maintenance checks and fault finding is faster, simpler and more cost-effective than ever before with the EV100 from Seaward.

### Key Features

- Comprehensive simulation, test and diagnostic functionality in a single hand held unit
- Easy-to-use tester with simple on-screen test results
- Android app enables instant data transfer from the tester via NFC technology
- Test mains supply and earthing
- Test operation of RCD
- Test insulation of charging cables
- Capture full PWM information
- Simulate vehicle faults and measure the EVSE response
- Test venting system where fitted

### Electrical/Analysis Test Functions

- Supply voltage
- Maximum available charging current
- Insulation resistance
- Earth loop impedance
- RCD trip time
- PWM voltage
- PWM frequency
- PWM duty cycle
- EVSE state transition time

### End User Types

- Charge point installers
- Charge point maintenance technicians
- EVSE manufacturers

### EVSEMobile App

Use NFC to transfer more detailed data to the free Android app for further fault analysis.

Simply touch an NFC-enabled Android device running EVSEMobile to your EV100 and a detailed set of test and measurement data is shown on your device, ready to send back to the office\*.

### Scan QR code to find out more



\*Data export from EVSEMobile is a premium feature and requires subscription

## ► EVSEMobile app helps you get the most from your tester

Unlock the full potential of the EV100 tester with the Seaward EVSEMobile Android app.

Using NFC technology, wirelessly transfer data from the EV100 to an Android mobile device, unlocking detailed diagnostic data which can be viewed within the app and emailed back to the office for further analysis, if required\*. This unique solution saves you time and makes fault diagnosis from a remote location easy.

EVSEMobile also produces professional PDF test certificates which can be sent to clients or stored for future reference.



Find out more about the EVSEMobile app  
[www.seaward.co.uk/EVSEMobile](http://www.seaward.co.uk/EVSEMobile)



## ► Fast and comprehensive EVSE testing

The EV100 can simulate all of the commonly used charging cable ratings to quickly and easily verify the correct response from the EVSE (AC Mode 3).

No other test instruments or vehicle simulators are required.  
Everything you need to perform testing is included.

## ► Wirelessly send data back to base for immediate analysis

Remote diagnosis of problems is made easy with the ability to wirelessly transfer a comprehensive range of electrical tests and full PWM analysis back to the office from the field using the EVSEMobile app. A diagnostic engineer, back at the office, can diagnose problems and instruct the technician in the field, without having to leave the desk\*.



## ► Fuss-free and all-in-one testing solution

The EV100 is the only test instrument that can confirm correct mains supply and earthing on single or three phase systems without the need for additional equipment or to disassemble the charge point to access internal conductors.

It will also measure the trip time of the EVSE RCD. A single trip time measurement at rated RCD current is possible or alternatively, a test sequence can be used to check the RCD at half rated current, rated current and 5 times rated current.



\*Data export from EVSEMobile is a premium feature and requires subscription

### ► Reduce the risk of electric shock to EVSE users

EVSE charging cables are vulnerable to damage and this may present a risk of injury to the EVSE user. The EV100 tests the insulation of charging cables, providing peace of mind to EVSE installers, owners and manufacturers that risk of electric shock is reduced.



### ► Capture full PWM information

The EV100 performs a full analysis of the PWM signal (the method of communication between the EVSE and EV) and records the voltage levels, frequency and duty cycle.

PWM data is used to display the maximum available charging current. Full PWM data can be transferred to the Android app to provide a useful diagnostic tool in cases where the EVSE is not operating correctly.

### ► Full analysis of EVSE fault response

The EV100 checks that the EVSE responds correctly to faults within an EV and safely terminates the charging process when required. The time taken for the EVSE to respond to the various fault conditions is recorded within the EV100's on-board memory and can be downloaded into the Android App and sent back to base with the touch of a button.



### ► Check EVSE ventilation systems

Some EVs are fitted with batteries that require ventilation during charging. The EV100 simulates this type of vehicle and is able to quickly verify that the ventilation systems controlled by the EVSE are operating correctly, and that an EVSE which is not equipped with a ventilation system will not attempt to deliver charge if the EV requires ventilation.

## Technical Specifications (EV100 - non USA)

### Supply voltage measurement

Display range	0.0V – 300V AC
Measurement range	0.0V – 300V AC
Resolution	1V maximum
Frequency range	45Hz to 65Hz

### Insulation resistance

Display range	0.01M $\Omega$ to 19.9M $\Omega$
Resolution	0.01M $\Omega$ maximum
Open circuit test voltage	500V @ 1mA nominal
Short circuit test current	<2mA
Protection	Warning if $\geq$ 30V AC or DC present

### Earth loop impedance (non trip)

Supply voltage	195V – 253V 45Hz to 65Hz
Nominal Test current	<15mA (will not trip 30mA RCD)
Display range	1 $\Omega$ - 1.99k $\Omega$
Resolution	1 $\Omega$ maximum

### RCD test

Supply voltage	195V – 253V 45Hz to 65Hz
Test current (rms)	30mA sinusoidal
Trip time ranges	40ms to 2000ms
Available tests	1/2 I $\Delta$ n, I $\Delta$ n, 5 I $\Delta$ n

### Control pilot PWM measurements

Voltage range	$\pm$ 14v DC
Voltage resolution	0.1V
Frequency range	940 Hz to 1040 Hz
Frequency resolution	1Hz
Duty cycle range	2% to 98%
Resolution	1%
Response time range	1ms to 10s
Resolution	1ms

### Simulation of cable coding

EN 61851 13A capability	1.5 kohms +/- 1%
EN 61851 20A capability	680 ohms +/- 1%
EN 61851 32A capability	220 ohms +/- 1%
EN 61851 63A 3Ph capability	100 ohms +/- 1%
EN 61851 70A 1Ph capability	100 ohms +/- 1%

### Fault simulation

Open circuit diode
Short circuit diode
Short to earth
Coupler disconnection

## General Specifications

### Case dimensions and weight

Weight	0.9kg
Dimensions	260mm x 100mm x 55mm
Power Source	6 x AA Cells

### App compatibility

Compatible with Android version 4.2 Jelly Bean  
iOS devices not supported

### Connectivity

NFC (Near Field Communication)  
iOS devices not supported

### EV100 test kit, complete with Type 2 test adaptor (part no. 405A910)

EV100 tester  
Type 2 test adaptor  
Carry case  
Quick start guide  
EVSEMobile app (downloadable from Android app store)

### Optional accessories

Type 1 test adaptor	405A950
Type 2 test adaptor	405A951
Type 3 (SCAME) test adaptor	405A952
Android test data download device (NFC equipped)	Enquire

### Services

2 year warranty (subject to terms and conditions, available at [www.seaward.co.uk/warranty24](http://www.seaward.co.uk/warranty24))  
Go to [www.calibrationhouse.com](http://www.calibrationhouse.com) for more information about our services and calibration