EVCC300 Charger Checker
Electric Vehicle Charger Checker

- **Checks mode 2 and single phase mode 3 (level 1 and two phase level 2) chargers**
- **Checks chargers with SAE J1772 Type 1 and Type 2 connectors**
- **Performs four EV charger safety checks**
- **Performs four EV charger operation checks**
- **Checks to see if nuisance tripping or RCD/GFCI is likely to occur**
- **Reads control pilot state response from EV Charger to IEC61852-1**

DESCRIPTION

The new EVCC300 introduces a new and convenient way of checking Electric Vehicle charge points. A simple all in one concept provides an easy to use solution to check both the safety and operation of mode 2 and single phase mode 3 (level 1 and two phase level 2) EV chargers. The instrument is ideal for those wishing to perform a fault finding check on an EV charger following manufacture or repair, or just part of a maintenance schedule / inspection.

FEATURES

- Four important safety checks:
  1. PE touch pad to check ground connection and hazardous voltages
  2. PE resistance (RPE) test to check any exposed metal work is properly grounded / earthed
  3. Touch voltage test to ensure the charger ground / earth does not rise to a hazardous level when charger output is on
  4. RCD / GFCI protection check by timing the device tripping speed. This test causes a calibrated ground / earth leakage current appropriate to the trip rating of the device to flow and time how long it takes for the device to break the supply. If an RCD / GFCI was to take too long to trip it would not protect the charger user from electrocution, so it is an important safety check
- Nuisance charger supply tripping check. This test will help determine whether the EV charger user is likely to experience nuisance tripping of the RCD or GFCI. The EVCC300 slowly increases ground / earth leakage current until the protective device trips to ensure it trips at the correct leakage current level. If the leakage current that trips the device is too low it will indicate either an issue with the device or there is already a high level of leakage present.
- Four key EV charger operation checks:
  1. Proximity detection operation check. The EVCC300 can check that proximity is detected and also whether, when testing a type 1 connection, that latching detection has worked correctly
  2. Control pilot operation check. Not only can the EVCC300 set CP states to operate the EV charger, the instrument can read the response state of the charger. The codes A, B, C, D, E and F can be set by the EVCC300 and the response of the charger displayed on the instruments colour display.
     The charger PC state is displayed together with the chargers indicated maximum charge current, all to IEC61851-1 requirements
  3. Control pilot signal check. The EVCC300 measures the CP signal Voltage, Frequency and Duty cycle. Repeated measurements will highlight instability in the signal.
  4. EV charger output check. The EVCC300 measures the output voltage and frequency of the EV charger when charging in is in progress.
     When appropriate the EVCC300 also checks for correct L – N supply polarity.

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APPLICATION

- Safety and operation checks on mode 2 and single phase mode 3 charge points (level 1 and two phase level 2 in the USA)
- Connects to SAE J1772 Type 1 and Type 2 charger connectors only
- Checking charger following installation before hand over to customer. **This cannot be used for Installation Certification without the use of the EVCA210 and MFT1741+**
- Checking charger as part of a regular maintenance schedule
- Checking charger following repair before hand over to customer
- Checking chargers following manufacturing as part of a QA inspection
- Fault checking when customer reports charger issues to car dealership/service centre

SPECIFICATIONS

EVSE STANDARD IEC 61851-1:2017

EVSE SUPPLY OPTIONS (set in settings)

1. 230 V single phase (EU / UK)
2. 120 V single phase (US)
3. 208 V / 240 V two phase (US)

SUPPLY MEASUREMENT

Voltage range	5 V to 300 V
Voltage resolution	1 V
Voltage accuracy	± 5%, ± 2 digits
Voltage measurement	L to N, L to PE and N to PE
Reverse polarity indication	L to N, for single phase option only
Frequency range	45 Hz to 65 Hz
Frequency resolution	1 Hz
Frequency accuracy	± 1 digit

EVSE INTERFACE (EV charger function) tests:

1. Proximity detection (PP) states

Read only

- No proximity
- Proximity detected, unlatched
- Proximity detected, latched

2. Control pilot (CP)

Set and read states:

- State A – Disconnected
- State B – Connected
- State C – Charging
- State D – Charging without ventilation
- State E – CP short to PE

Read only state: State F – EVSE charger fault condition

Maximum voltage	± 14 V
Frequency range	940 Hz to 1040 Hz
Duty cycle range	8% to 97%

Maximum charging current indication according to IEC 61851-1:2017, tables A.7 and A.8

RESISTANCE OF EARTH PROTECTIVE CONDUCTOR (RPE)

Test current:	200 mA
Resistance range:	0 to 10 Ω
Resistance resolution:	0.01 Ω
Resistance accuracy:	± 5%, ± 2 digits

RCD/GFCI TESTS:

Trip time accuracy:	± 1%, ± 1 ms
Trip current accuracy:	± 3% (apply to all RCD/GFCI tests)

PERSONAL PROTECTION TESTS, 230 V SINGLE PHASE:

1. RCD 30 mA AC TEST

Test current:	31.5 mA AC (5% above nominal trip current)
Test current accuracy:	±1.0 mA
Max. test time:	300 ms
Polarity selection:	0° and 180° of an input sine wave

2. RCD 6 mA DC TEST

Test current ramp	up at rate of 6 mA in 2.5 s, then held at 6 mA DC
Test current accuracy:	±0.5 mA
Ramp polarity	positive and negative ramp
Max. test time:	12.5 s
Polarity selection:	0° and 180° of an input sine wave

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PERSONAL PROTECTION TESTS, 120 V SINGLE PHASE / 240 V TWO PHASE

1. GFCI/CCID 5 mA AC test

Test current:	6 mA AC
Test current accuracy:	±0.5 mA
Max. test time:	5.59 s
Polarity selection:	0° and 180° of an input sine wave

2. GFCI/CCID 20 mA AC test

Test current:	21 mA AC (5% above nominal trip current)
Test current accuracy:	±0.5 mA
Max. test time:	5.59 s
Polarity selection:	0° and 180° of an input sine wave

NUISANCE TRIPPING TESTS, 230 V SINGLE PHASE

1. RCD AC ramp test

Test current	AC current ramp up to 30 mA in 2 mA steps
Test current accuracy:	±0.5 mA
Step time:	300 ms
Max. test time:	4.5 s

2. RCD DC ramp test

Test current ramp	up at rate of 6 mA in 2.5 s, then held at 3 mA DC.
Max. test time:	11.25 s

NUISANCE TRIPPING TESTS, 120 V SINGLE PHASE / 240 V TWO PHASE

1. GFCI/CCID 5 mA AC test

Test current	AC current ramp up to 6 mA in 0.5 mA steps
Test current accuracy:	±0.5 mA
Step time:	100 ms
Max. test time:	1.2 s

2. GFCI/CCID 20 mA AC test

Test current	AC current ramp up to 20 mA in 1 mA steps
Test current accuracy:	±0.5 mA
Step time:	100 ms
Max. test time:	2 s

TOUCH VOLTAGE TEST

Options: 25 V or 50 V limit

Test current typically 1/3 of RCD nominal test current

TOUCH CONTACT PAD TEST

Dangerous voltage indication at PE conductor

POWER SUPPLY

Battery: Four AA cells

CONNECTIONS

Type 2 male – main test connection

4 mm shrouded socket on base of handle – RPE test return connection

LANGUAGES

User Interface:	English, French, German and Spanish
User guide:	English, French, German and Spanish

DIMENSIONS AND WEIGHTS

Dimensions are (L x H x W)
24 x 18 x 8.6 cm.

Weight (without batteries)
583 g

SAFETY

Standards	IEC 61010-1:2010
Safety category	CAT II 300 V

ENVIRONMENT

Operational temperature	0 °C to 40 °C
Storage temperature	-10 °C to 70 °C
Operating humidity	90% R.H. at +40 °C max
Maximum altitude:	2000 m

Dust and moisture ingress:
IP40 to IEC60529 in use

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ORDERING INFORMATION

Description	Part number
EVCC300	1013-576
Included Accessories	
Continuity/earth bond lead	
Blow moulded case	
EVA-T1 Type 2 to Type 1 connector adaptor	

Description	Part number
Additional Accessories	
Continuity/earth bond lead	1001-233
Blow moulded case	1014-480
EVA-T1 Type 2 to Type 1 connector adaptor	1014-481

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