

EVCC300 Charger checker Electric Vehicle Charger Checker



- Checks 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 level 1 and two phase level 2 EV chargers. The instrument is ideal for those wishing to perform a check on an EV charger following manufacture, installation 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.
- 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.

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.

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APPLICATION

- Safety and operation checks on 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
- 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
2. 120 V single phase
3. 208 V two phase
4. 240 V tow phase

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) | 9.4 x 7 x 3.4 in. |
| Weight (without batteries) | 1.3 lbs |

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: | 6500 ft. |
| Dust and moisture ingress: | IP40 to IEC60529 in use |

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ORDERING INFORMATION

| Description | Part number | Description | Part number |
|-------------------------------------------|-------------|-------------------------------------------|-------------|
| EVCC300 | 1013-576 | <i>Additional Accessories</i> | |
| <i>Included Accessories</i> | | Continuity/earth bond lead | 1001-233 |
| Continuity/earth bond lead | | Blow moulded case | 1014-480 |
| Blow moulded case | | EVA-T1 Type 2 to Type 1 connector adaptor | 1014-481 |
| EVA-T1 Type 2 to Type 1 connector adaptor | | | |

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