



Advanced Charging Station Tester CST-322



The CST-322 Advanced charging station test adapter is designed to test functionality and safety of Mode 2 and Mode 3 single phase and three phase Electric Vehicle Supply Equipment (EVSE) with fixed cable or direct socket connection. EVSE could be tested in accordance with IEC/EN 61851-1 and IEC/EN 60364-7-722 functional standards.

- AUTOTEST functionality
- Evaluation of measuring results according to IEC 61851-1
- Schuko socket for connecting an installation tester or mains loading (selectable phase L1, L2, L3)
- L1, L2, L3, N, PE 4 mm output terminals for connection of an installation tester
- Battery or mains power supply
- Connection to the smartphone App for data transfer

CST-322 allows user for detailed Control Pilot signal investigation. Built-in colour TFT LCD with embedded microcontroller allows AUTOTEST functionality. Automatic tests of Mains voltages, Control Pilot signal and Error states can be performed together with EVSE RCD (type AC, A, B) and RDC-DD tests. AUTOTEST steps can be arbitrary defined by the user.

Built-in Bluetooth module can be used to transfer measurement data to smartphone application for saving or report generation.

CST-322 allows user to conduct tests also in combination with appropriate test instruments like Installation Testers without using the advanced functionality of the instrument. Also Control Pilot signal output sockets are provided if even more detailed Control Pilot signal analysis is required.

CST-322 can be supplied from 4x AA batteries (it can be chargeable) or mains voltage which makes the instrument usable for indoor or field use.

CST-322 AUTOMATIC TESTS

- Visual inspection
- Mains voltage
- Mains voltage (3P sequence)
- CP State analysis
- PE Error
- CP Error
- CP Diode Error
- RCD trip time tests
- CP State hysteresis

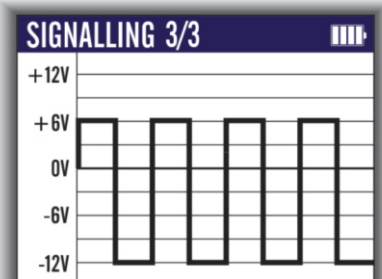
KEY FEATURES

- Supports Mode 2 and Mode 3 single phase or three phase EVSE with fixed or detachable cable
- AUTOTEST functionality
- Mains voltage measurements
- Three phase sequence indication
- Detailed Control Pilot signal analysis
- Connection to the smartphone App for data transfer
- PE Pre-Test test pad with a warning indicator
- Control Pilot state simulation
- Proximity Pilot state simulation
- Diode, CP, PE Error simulation
- RCD trip time test (RCD type AC, A, B and RDC-DD)
- Sunlight readable color TFT LCD
- Battery or mains power supply
- L1, L2, L3, N, PE 4 mm output terminals for connection of an installation tester
- CP signal 4 mm output terminals
- Schuko socket for connecting an installation tester or mains loading (selectable phase L1, L2, L3)
- Evaluation of measuring results according to IEC 61851-1

This adapter complies with requirements of LVD Directive 2014/35/EU, EMC Directive 2014/30/EU, RED Directive 2014/53/EU, Directive 2011/65/EU (RoHS) and Directive 2012/19/EU (WEEE).

REGULATIONS

- **Functionality:**
- IEC/EN 61851-1, IEC/EN 60364-7-722
- **Safety:**
- IEC/EN 61010-1, IEC/EN 61010-2-30
- **EMC:**
- IEC/EN 61326-1



| MAINS 1/2 | | |
|-----------|-------|--|
| UL1/L2 | UL1/N | |
| 441 V | 231 V | |
| UL2/L3 | UL2/N | |
| 442 V | 232 V | |
| UL3/L1 | UL3/N | |
| 440 V | 230 V | |

TECHNICAL SPECIFICATIONS

| | |
|---------------------------------|---|
| Input voltage | Max. 250 V~/480V 3~; 50/60 Hz |
| Overvoltage category | CAT II 300 V |
| Maximum load current | 10 A (continuous) Schuko socket and 4 mm sockets |
| PE Pre-Test | Test pad with a warning LED |
| CP (Control Pilot) simulation | A (no connection) |
| | B (connected, no charging) |
| | C (charging without ventilation) |
| | D (charging with ventilation) |
| | E (CP Error) |
| PP (Proximity Pilot) simulation | Open, 13 A, 20 A, 32 A, 63 A |
| Error state simulation | Diode short-circuit |
| | CP short to PE (via 0 W) |
| | PE open |
| | RCD trip out |
| Pollution degree | IP54 (closed case), IP40 (open case) |
| IP protection | 2 |
| Protection classification | Class II (double insulation) |
| Max. altitude | 2000 m |
| Working temperature range | -10 °C to 40 °C |
| Working humidity range | 10 % to 85 % RH, non-condensing |
| Storage temperature range | -20 °C to 50 °C |
| Storage humidity range | 10 % to 85 % RH |
| Overall size (W x D x H) | 258 x 230 x 123 mm |
| Length of detachable cable | 2 m |
| Mass of equipment | 2.1 kg + 0.8 kg (adapter + cable) |
| Battery size | 4 x AA (IEC LR6 or HR6) |
| Battery chemistry | Alkaline or rechargeable NiMH |
| Mains Supply | AC 100-240V, 50/60Hz, 10 VA max. |
| Schuko socket protection fuse | T10A / 250V(H) (5 x 20 mm) |
| Display type | TFT colour 2.4 inch |
| Display resolution | 320 x 240 |
| Connectivity | Bluetooth 5.2 (connection to |
| | Smartphone App for data transfer) |

Phase voltage (L1/N, L2/N, L3/N)

| | |
|---------------------|-----------------------|
| Display/meas. range | 0 ... 250 V |
| Resolution | 1 V |
| Accuracy | ± (3 % of rdg. + 3 D) |

Phase-Phase voltage (L1/L2, L2/L3, L3/L1)

| | |
|---------------------|-----------------------|
| Display/meas. range | 0 ... 480 V |
| Resolution | 1 V |
| Accuracy | ± (3 % of rdg. + 3 D) |

Frequency of mains voltage

| | |
|---------------------|------------------|
| Display/meas. range | 40.0 ... 70.0 Hz |
| Resolution | 0.1 Hz |
| Accuracy | ± (0.1 Hz) |

Phase sequence

| | |
|---------------|--------------------------|
| Display range | Left / Right / Undefined |
|---------------|--------------------------|

CP signal frequency

| | |
|---------------------|-------------------|
| Display/meas. range | 800 ... 1200 Hz |
| Resolution | 1 Hz |
| Accuracy | ± (0.1 % of rdg.) |

CP signal voltage

(separate positive and negative values)

| | |
|---------------------------|-------------------------|
| Display/meas. range | ± (0.00 ... 15.00 V) |
| Resolution | 0.01 V |
| Accuracy (0.00...2.00 V) | ± (0.5 % of rdg. + 3 D) |
| Accuracy (2.01...15.00 V) | ± (0.5 % of rdg.) |

CP signal duty cycle

(max. charging current calculated and displayed)

| | |
|---------------------|----------------|
| Display/meas. range | 3.0 ... 97.0 % |
| Resolution | 0.1 % |
| Accuracy | ± (5 D) |

RCD, RDC-DD TRIP OUT time (t_{RCD}, t_{RDC-DD})

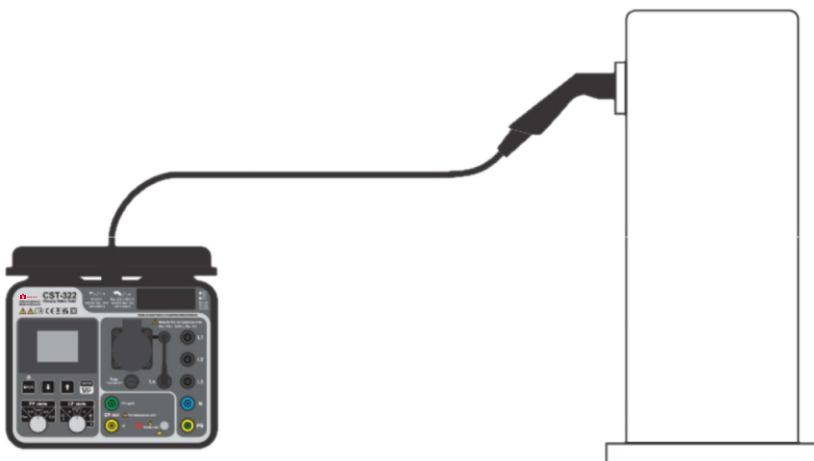
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|---------------------|-------------------------------|
| RCD test current | 30 mA (AC), 42 mA (pulse) |
| | 60 mA (DC), 6 mA (DC) |
| Type | RCD (AC, A, B), RDC-DD |
| Display/meas. range | 0 ... 350 ms / 0.0 ... 11.0 s |
| Resolution | 1 ms / 0.1 s |
| Accuracy | ± (3 % of rdg. + 3 D) |
| Standard limit | 300 ms / 10.0 s |

EVSE SWITCH OFF time (t_{PE}) - PE Error

| | |
|---------------------|-----------------------|
| Display/meas. range | 0 ... 1000 ms |
| Resolution | 1 ms |
| Accuracy | ± (3 % of rdg. + 3 D) |
| Standard limit | 100 ms |

EVSE SWITCH OFF time (t_{CP}, t_b) - CP, Diode Error

| | |
|---------------------|-----------------------|
| Display/meas. range | 0.0 ... 10.0 s |
| Resolution | 0.1 s |
| Accuracy | ± (3 % of rdg. + 3 D) |
| Standard limit | 3 s |



WHY CST-322?

- Currently CST-322 is the most advanced device within its range on the market
- It covers practically all demands coming from the market
- IEC/EN 611851-1 and IEC/EN 60363-7-722
- It offers a lot more than Standard EV Adapters

Main difference between standard EV Adapter and CST-322:

- Standard EV Adapter can only simulate Electric Vehicle (EV) and thus trigger Electric Vehicle Supply Equipment (EVSE) to apply mains voltage to its output connector enabling further testing by using an Installation Tester.
- CST-322 besides above described functionality offers also analysis of a wide range of EVSE parameters like:
 - Single and Three-phase mains voltages
 - Phase rotation
 - Detailed analysis of CP signal including with graph diagrams in all EV states
 - Detailed RCD analysis
 - Detailed RDC-DD analysis

CST-322 offers also additional features in comparison with a Standard EV Adapter like:

- AUTOTEST functionality for quick and simple testing.
- Smart phone App for creation of test reports
- Sunlight-visible display for presentation of test results and parameters
- Operation without batteries (all functions as offered by Standard EV Adapter) or with batteries (additional analysis and tests)
- Standard batteries or rechargeable batteries or mains supply can be used for additional analysis and tests

SCOPE OF DELIVERY

- 1 pc CST-322 Advanced Charging Station Test Adapter
- 1 pc User Manual CST-322 booklet in English language
- 1 pc T2-322 Type 2 connection cable for CST-322
- 1 pc Mains supply cable with Euro Plug, black, 2m
- 1 pc Soft accessory bag
- 4 pcs Alkaline battery (LR6)



OPTIONAL ACCESSORIES

- LA-322-D Load Adapter for CST-322 Tester. Extension cable with two additional Schuko sockets, 1.5 m.
- T1-322 Type 1 connection cable adapter for CST-322 Tester, 2 m.
- NiMh rechargeable battery HR6 (4 pcs).
- NiMh battery charger (for 4 HR6 cells).

