comemso

Easy Chester® Ultimate

Technical Datasheet

The Easy Chester® Ultimate is an all-in-one functional testing device for checking the safety and functionality of charging stations following commissioning, maintenance, servicing, or repair.

Handling
Selection of all tests and settings via the touchscreen with intuitive menu navigation.

Inlets
Automatic detection of the charging procedure based on the inserted charging plug.
Up to 2 inlets: CCS 1, CCS 2, NACS, CHAdeMO.

Supported Charging Standard
CCS 1, CCS 2 (AC, DC): DIN 70121, ISO 15118 (optional), IEC 61851-1, CHAdeMO (DC) up to version 2.0, NACS (DC): SAE J3400.

Built-In Safety
Automatic locking mechanism to lock the charging plug at voltages > 50 V (DC CCS, NACS, CHAdeMO), emergency unlock button, and functional monitoring of all internal modules with a status display.

Selftest
An automatic selftest of the device is performed each time it is switched on.

Fault Simulation during Charging (optional)
The following fault simulations are used to check whether the charging station stops charging: PE cable break, CP short circuit, PP short circuit, PP cable break.

DC-Isolation Fault: Simulation during Cable Check (optional)
Isolation test for testing the isolation monitoring (IMD) of the charging station (DC CCS): Test DC+ to PE or DC- to PE with predefined resistance values in the range from 47 kΩ to 780 kΩ.

AC-Isolation Fault (optional)
Isolation test for testing the isolation monitoring (IMD) of the charging station (AC): Test the phases L1, L2, L3 to PE with 2.5 kΩ. The fault is simulated after 5 seconds in the charging loop.

Test report
- You can add comments, address fields, your company logo, and export a PDF file.
- Test result: PASSED or FAILED
- Detailed explanations of the individual measurement data
- Charging communication steps
- Voltage and current measurement
- Maximum charging power of the charging station
- MAC-PLC address of the charging station
- Safety test results

Software and Maintenance
If you purchase the maintenance package, you will get the following benefits:
- Firmware and software updates over the air (FOTA).
- The test report will include the test location, derived from the GPS coordinates and displayed as an address and map.
- Over-the-air remote maintenance is available, enabling our support team to assist you with troubleshooting.

You define:
- Region and charging standards
- Protocol requirements
- Safety test scope
- Extension needs for DC testing to extend charging time and/or power (LDU and DC Load)

Maintenance package:
- Remote support on the device – hotspot required (only during comemso's office hours)
- GPS data visualization: street/location + map
- Make photos of your EVSE optical inspection/damages and add to the report
- Firmware updates with new features (comfortable by FOTA – Firmware over the air)
- Further services in the report

Easy Chester Ultimate user interface (example)

Comprehensive testing of charging stations with just one device

Have you ever imagined that your e-mobility test system could have the same power supply interface as your smartphone?

- < 100 W power consumption
- USB-C power supply (20 V) or USB-C 12 V car adapter
- Optional: Use your own power bank with >100 W USB-C output (e.g., a „flight-safe" model)

Suitcase with wheels and a handle:
- Weight: 15.7 kg / 34.6 lbs
- Size : 60 x 33 x 40 cm / 24 x 13 x 16 inch

CE Made in Germany

Global Standards

Configure the Easy Chester® Ultimate by region: Europe, North America, or Asia.

AC/DC + Safety Tests

Test communication and charging (AC/DC), simulate faults, and perform safety tests – all with a single device.

Workflow

Guided operation, diagnostics, reports, Firmware Over-The-Air (FOTA) and remote support.

General specifications

Application	Portable device for mobile testing Charging test up to approx. 2 kW - Standard
Display	10.1 inch Touchscreen, Ultimate UI
Storage	128 GB
Connectivity and support	FOTA (Firmware Over-The-Air) – hotspot required. Send report via e-mail – hotspot and e-mail address required. Remote support on the device – hotspot required.
AC / DC voltage	Integrated isolated banana sockets
Measuring range	Voltage: 0 - 1.000 V; +/- 1 V resolution Current: 0 - 10 A; +/- 0.1 A resolution 0 - 200 A; +/- 0.1 A resolution (with external DC Load)
Measuring accuracy	Voltage: +/- (1 V + 0.5 % of measured value) Current: +/- 0.5 A
Power supply	Power supply via USB-C, e.g., using a USB-C 12 V car adapter, or by using your own power bank with >100 W USB-C output (e.g., a „flight-safe“ model).
Power consumption	Max. 100 W
Protection class	According to IEC 60529: IP 66 (closed case), IP 43 (opened case)
Electrical protection class	II (no accessible conductive materials and protective isolation)
Temperature range	- 15 .. + 40 °C / + 5 .. + 104 °F
Dimension (WxHxD)	60 x 33 x 40 cm / 24 x 13 x 16 inch
Weight	15.7 kg / 34.6 lbs

Functional scope and configuration

Supported charging standards options	CCS 1 and CCS 2 (DC, AC optional), CHAdeMO up to Version 2.0, NACS (DC)
Norm conformity	DC communication: DIN 70121, ISO 15118-2, -3 (optional), SAE J3400, SAE J1772 AC testing: IEC 61851-1, SAE J1772, and ISO 15118-2, -3 (optional)
DC charging capacity and DC charging time	2 kW / 6 A for up to 45 sec. Optional: In combination with Long Duration Unit 2 kW / 6 A up to 60 minutes; with DC load 30 kW / 90 A up to 4 hours; with 2 DC loads 30 kW (60 kW in total) / 180 A up to 4 hours.
DC charging technology	400 V and 800 V technology – EV battery emulation with approx. 330 V and 660 V
Configuration	Up to 2 inlets available: CCS 1, CCS 2, NACS, CHAdeMO
Lock	Locking the charging plug at voltages > 50 V (DC CCS, NACS, CHAdeMO)
Fault simulation	AC/DC isolation tests as well as AC/DC communication and protocol tests, depending on the configuration and standard.
Electrical Safety Tests	VDE/IEC electrical safety and isolation tests (optional).
Field features	Improved thermal management, GPS, sound, dynamic light indicator / status display, auto selftest, lid bag, simple power setup.

Testing and validation functions

Communication faults AC/DC CCS and NACS	CP short, PP short (short circuit), PP cut, PE cut. All test cases as fault execution, verification if EVSE stops charging. Switch-off time not validated.
Communication faults CHAdeMO	CAN High and Low cut, CS2 cut. All test cases as fault execution, verification if EVSE stops charging. Switch-off time not validated.
DC Isolation fault simulation during cable check (optional)	Isolation test to check the isolation monitoring (IMD) of the charging station (DC). Various resistance values are available for the connections between DC+ and PE as well as DC- and PE: 780 kΩ, 690 kΩ, 600 kΩ, 500 kΩ, 475 kΩ, 400 kΩ, 300 kΩ, 200 kΩ, 95 kΩ, 50 kΩ, 47 kΩ.
AC Isolation fault simulation during charging (optional)	Isolation test to check the isolation monitoring (IMD) of the charging station (AC): Test the phases L1, L2, L3 to PE with 2.5 kΩ. The fault is simulated after 5 seconds in the charging loop.
Electrical safety tests for EV-side (optional)	• Isolation resistance (R_{ISO}) • Protective conductor resistance (R_{PE}) • Fault current (t_{RCD}) • Residual voltage (U_{OFF}) • Phase rotation (AC charger)
Electrical safety tests for grid-side (optional)	• Isolation resistance (R_{ISO}) • Protective conductor resistance (R_{PE}) • Fault current (t_{RCD}) • Loop impedance (Z_S) • Phase rotation

Electrical safety tests according to VDE/IEC

In total, there are 6 test cases conducted to verify electrical safety:

- Testing of the isolation resistance (R_{ISO}) between all phases, or between all active conductors and PE; this test may optionally be performed at 250 V, 500 V, 750 V, or 1000 V. Applicable standards: VDE 0100-600, VDE 0113-1, and VDE 0413 (DC voltage measurement at 250 V, 500 V, 750 V, 1000 V) between active conductors (e.g., L1 – L2, L1 – N, or DC+ – DC-) and between active conductors and protective conductors (e.g., L1 – PE, N – PE, or DC+ – PE).
- Testing of protective conductor resistance (R_{PE}) at 200 mA or 25 A. Applicable standards: DE 0100-600, VDE 0113-1, and VDE 0413.
- Fault current test (t_{RCD}) for AC/DC, selectable at 6 mA, 30 mA, 100 mA, or 300 mA; for AC, the fault current test can be performed for each of the phases L1, L2, and L3. Applicable standards: VDE 0122-1; VDE 0100-600, VDE 0113-1, and VDE 0413 (testing of residual current devices).
- Residual Voltage Test (U_{OFF}): For this test, a standard charging process is first performed, at the termination of which the disconnection of the charging plug is simulated by switching off the PP resistor. The measurement is then carried out. The test is passed if the voltage drops below 30 V true RMS (AC) or 60 V (DC) within less than one second. Applicable standards: VDE 0113-1 (Measurement of voltage and energy between current-carrying poles following the disconnection of the charging plug).
- Determination of Loop Impedance (Z_S): A defined test current (15 mA/15 A) is briefly injected between the phase conductor and the protective conductor (or neutral conductor), and the resulting voltage drop is measured. The loop impedance is subsequently calculated from the ratio of voltage to current.
- Determination of phase rotation

"For many years, comemso has set itself high standards in the development of test and validation systems in order to deliver optimal solutions for its customers."

16 years Innovation

Understanding and simulating test processes

For 16 years, comemso has been developing test systems to optimize e-mobility systems. Today, we are more determined than ever to continue enriching the electric mobility market with innovations. To find the best possible solution, we always carry out our own practical tests. The insights gained from these tests are directly incorporated into the development of new solutions and products.

Built for standards.
Designed for people.

comemso

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