comemso

EVCA Flex

Technical datasheet

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EVCA Flex

The comemso EVCA Flex combines the most common charging standards AC + DC CCS 1, AC + DC CCS 2, AC + DC NACS, CHAdeMO, and AC + DC GB/T. The EVCA Flex is MCS-ready and supports up to 1200 A / 1500 V.

A maximum of 3 AC inlets and 4 DC inlets is available in one system. The system is directly ready for use without the need of prior plugging or replacing of inlets. Once the desired charging standard has been set, the EVCA Flex measures and checks communication and load circuit for standard conformity over the entire charging period and records any deviations.

The CCS 1, CCS 2, NACS, CHAdeMO, and GB/T China parts of the EVCA Flex all share the same power supply. Therefore you can only operate one of them at a time. The desired charging procedure is selected by software means.

CE

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Features

· Simulation of conductive AC EV/EVSE according to IEC 61851-1 and ISO 15118.
· Verification of AC voltage and current to check if EVSE has closed its contactors to forward grid power.
· Simulation of conductive DC EV/EVSE according to DIN 70121 and ISO 15118.
· Simulation of conductive EV/EVSE according to CHAdeMO 2.0 or lower.
· Verification of DC voltage and current to check if EVSE has closed its contactors to forward power.
· Insulation test to check insulation monitoring functionality of EVSE (DC CCS).
· Automatic lock of Combo inlet on DC voltage > 50 V. Locking and unlocking the charging cable can be done by an additional button on the device.
· Liquid cooling for cables optional.
· Includes the required hardware modules for easy hardware exchange. Depending on your requirements, different chassis, cores, and bases are available.
Chassis:
Flex-Control-Unit, Power-Safety-Chassis, RCD-FI-Chassis, AC-Chassis, DC-Chassis, HV-Connect-Chassis
Cores:
CCS-Core, Asia-Core, HV-Measure-Core
Bases:
AC-Base, RISO-Base, FIUnit-Base, RCDUnit-Base, AUX-Base, CAN-Etest-Base
· Different source/loads available (e.g. grid emulator, battery emulator, bidirectional DC source).

CCS Core

Control part of CCS simulations for conductive charging of electric vehicles, including data recording and controlling on CAN interface as remote control. The CCS Core works only together with the Inlet Chassis inside the Flex Rack. It can be used as ComOnly variant inside the Flex Control Unit (FCU) Rack.

The CCS Core includes a PP simulator, CP simulator, and two CP measurment moduls for synchronous measurment of EV and EVSE CP signal behaviour.
The PP, R2, and R3 resistors can be simulated in the range of 0-8 kOhm in 1 Ohm steps.

Control Pilot (CP)

· Long-term analysis throughout the charging process (e.g. as man-in-the-middle)
· Analysis / examination of the CP in all parameters
· Analysis / testing according to IEC 61851, SAE J1772, GB/T 18487.1-2015 Annex A
· Comfortable EV test / EVSE test in all parameters, stress tests, etc.

Power Line Communication (PLC)

· 2x PLC modules each with RJ45 socket for PC connection
· Connection of the PLC modules to the CP signal can be switched on/off, controllable over CAN
· Integrated hardware possibilities for PLC passive gateway, which can be activated over CAN bus
· Analysis according to DIN EN 70121 2014 and ISO 15118 (basic included, for more additional software required)
· PLC Sniffer for PLC monitoring available

ASIA Core

The ASIA Core incorporates the control part for CHAdeMO and GB/T simulations.
This core module works only as communication module with the Inlet Chassis inside the Flex Rack.

CHAdeMO

Monitoring function of all communication signals. Voltage and current monitoring of all 12 V signals, CAN termination, statistics for good/bad cycles of CAN communication: cycle timing + message order. State monitoring and timing measurement according to the standard
(supported standard rev. 0.9.1, 1.0.0, 1.0.1, 1.1, 1.2, 2.0).

Emulation of EV and Charger

· Standard EV and charger behaviour (ideal behaviour according to the standard)
· Adjustable settings for EV and charger simulation
· Signal voltages with a 5 - 15 V setting range for 12 V signals
· Set values of communicated information, e.g. charge voltage, charge current
· Parallel measurement and analysis with monitoring function for verification
· Automated measurement report of message timings, voltages, currents, signals (statistics) for man-in-the-middle and similar for EV/charger simulation

GB/T

Monitoring function of all signals e.g. DC voltage, DC current, signal measurement of CC1 and CC2, A+ and A-, CAN termination, state monitoring and timing measurement according to the standard (supporting standard rev. 2011 and 2015).

Emulation of EV and Charger

- Standard EV and charger behaviour (ideal behaviour according to the standard)
- A variety of adjustable settings for EV and charger simulation. Set values of communicated information, e.g. charge voltage, charge current, etc.

Parallel measurement and analysis with monitoring function for verification

- Automated measurement report of message timings, voltages, currents, signals (statistics) for man-in-the-middle and similar for EV/charger simulation

Software Features

- Reports can be generated via the provided software.
- The EVCA Flex can be remotely controlled via its own RS232 interface (with SCPI commands and REST API).

Measurement and Communication

EV Charging Analyzer AC	Voltage: AC 0 V rms ... 400 V rms, split phase Current: max. 80 A Communication: CAN-Bus CAN Baudrate: 1 MBd
EV Charging Analyzer DC-CCS/NACS	Voltage: max. 1500 V Current: max. 600 A Communication: CAN-Bus CAN Baudrate: 1 MBd
MCS Analyzer	Under development
CHAdeMO Analyzer	Voltage: max. 1500 V DC Current: max. 600 A Communication: CAN-Bus CAN Baudrate: EV/EVSE CAN: 500 kBd; Main CAN: 1 MBd
DC-China Analyzer	Voltage: max. 1500 V DC Current: max. 600 A Communication: CAN-Bus CAN Baudrate: EV/EVSE CAN: 500 kBd; Main CAN: 1 MBd

Charging Limit Values

Charging Standard	Voltage DC	Current DC	Voltage AC	Current AC
CCS 1	1.000 V	600 A	240 V	80 A x 1 phase
CCS 2	1.000 V	600 A	240 V	63 A x 3 phase
NACS	1.000 V	600 A	240 V	80 A x 1 phase
MCS	1.500 V	2.000 A	-	-
CHAdeMO	500 V	200 A	-	-
GB/T DC China	750 V / 1.000 V*	250 A	240 V	63 A x 3 phase

* Depending on manufacturer of the charging cable/plug.

Specifications

Power supply	100 - 240 V AC
Max. power input	3.680 kVA (230 V x 1 phase x 16 A) 1.600 kVA (100 V x 1 phase x 16 A)
Power consumption EVCA Flex	0.710 kVA – inrush current might be higher
Power consumption Power Safety Chassis	0.060 kVA
Power consumption R-ISO-Base	0.100 kVA – inrush current might be higher
Power consumption RCD FI-Unit	0.070 kVA
Power consumption CAN-Etest	0.000 kVA
Configuration	Available in different configurations
Measuring range	Voltage: 0 - 1.000 V; +/- 1 V resolution Current: 0 - 200 A; +/- 0,1 A resolution
Measuring accuracy AC	Voltage: +/- (1 V + 0,5 % of measured value) Current: +/- (0,5 A + 0,5 % of measured value)
Measuring accuracy DC	Voltage: +/- (1 V + 0,2 % of measured value) Current: +/- (0,1 A + 1,0 % of measured value)
Measuring accuracy voltage signals	+/- 0,1 V
Measuring accuracy resistance	+/- 2 %
Protection class	IP 30
Temperature range	0 ... + 50 °C / 32 - 122 °F
Max. inlet temperature	85 °C / 185 °F (at higher temperatures, shut down is triggered)
Humidity	80 % non-condensing
Transportability	Moveable rack system
Weight	Depending on your purchased configuration
Dimension (WxHxD)	Depending on your purchased configuration

Charging Protocols

AC CCS	IEC 61851-1, ISO 15118-2, ISO 15118-3, ISO 15118-4, ISO 15118-5, ISO 15118-20, SAE J1772, GB/T 18487.1-2015 Annex A (AC)
DC CCS	IEC 61851-1, DIN 70121, ISO 15118-2, ISO 15118-3, ISO 15118-4, ISO 15118-5, ISO 15118-20, SAE J1772, ISO/IEC 61851-23 (additional hardware for electrical faults and tests required), ISO/IEC 61851-24
NACS	IEC 61851-1, DIN 70121, ISO 15118-2, ISO 15118-3
CHAdeMO	Version 0.9.1, 1.0, 1.0.1, 1.1, 1.2 and 2.0
GB/T DC China	GB/T 27930-2011, GB/T 27930-2015, GB/T 18487.1-2015

Accessories

- Different AC and DC cables
- IXXAT® CAN Device (1 Ch or 2 Ch)
- USB 3.0 Ethernet Adapter
- Software comframe
- Optional for CCS 1, CCS 2, NACS: Professional EV test (EVSE simulation) and professional EVSE test (EV simulation)
- Optional test libraries for ISO 15118, DIN 70121, and CharIN test cases available

Service

- Additional test standards available* (please contact sales@comemso.de).
- Optional calibration service according to ISO 17025
- Customer support

*The available test standards, test libraries and manual tests (half-automated tests) may differ from the table above and your purchased configuration

15 years of excellence

comemso

Understanding and Visualizing Charging Processes

comemso has been developing analysis systems for the optimization of charging processes for 15 years. Today, we are more eager than ever to continue enriching the electromobility market with innovations in the future. In order to find the best possible solution, we always carry out our own tests in the field. The knowledge gained from these tests flows directly into the development of solutions and products.

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"comemso has set itself the goal of pushing the development of analysis and test systems in order to be able to offer always the optimum solution to its customers."

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