UK

MONT-ELE
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e-MOBILITY SERIES

ME-eCHARGER

GENERAL INFORMATION

ME-eCHARGER belongs to the product family of e-MOBILITY series; it is an electric vehicle supply equipment (EVSE) focused on electric bus charge. It is composed by up to 5 independent 100kW DCDC battery charger functional units and it interfaces externally via input busbars (power input from dedicated external rectifier), output cables (power output to electric vehicle EV) and AUX terminal block (Vaux, COM, safety signals); it could be alternatively composed by up to 3 independent 100kW DCDC battery charger functional units fed by dedicated internal AC/DC converter. Communication with external charge supervisor "SECC" is provided via ethernet (charging process managing and diagnostic), whereas internal diagnostic is managed using RS485 (information about charger status – PLC interfacing). Charger is prearranged for bi-directional charging.

MAIN FEATURES

100KW DCDC BATTERY CHARGER FUNCTIONAL UNITS ARE BASED ON 50KW DCDC BASE MODULES. THESE ARE ISOLATED DCDC CONVERTERS BASED ON SIC MOSFET TECHNOLOGY AND EQUIPPED WITH FORCED VENTILATION; THEY CAN BE PARALLEL CONNECTED TO ACHIEVE HIGHER CHARGING POWER (MULTIPLE OF 50KW). THIS CONFIGURATION PROVIDES ME-eCHARGER WITH THE FOLLOWING ADVANTAGES:

- Low noise due to switching frequency at the limit of human perception
- Modular approach
- Galvanic isolation
- Low losses due to DCDCs in DAB configuration (quasi-resonant converter)
- Wide charging voltage range
- HW ready for bidirectional charging

100KW DCDC BATTERY CHARGER FUNCTIONAL UNITS ARE MANAGED BY A DEDICATED CONTROL BOARD (PECC), WHICH IS IN CHARGE TO:

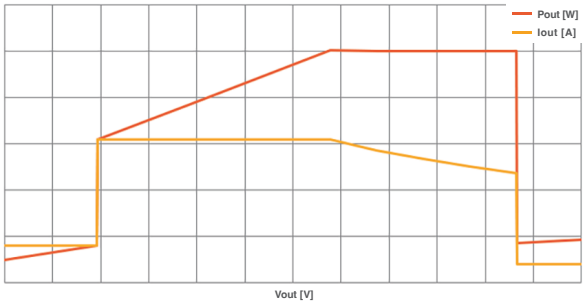
- Acquire charging voltage and current measurements
- Manage analog and digital inputs and outputs of charger functional units
- Command and supervise the operation of DCDC base modules during battery charging
- Command and coordinate protections (circuit breaker, surge arrester, contactors, IMD...)
- Manage external communication (PLC, SECC supervisor...)
- Report charger functional unit anomalies (watchdog)
- Receive SECC supervisor anomaly and stop charging accordingly (Safety Relay management)

100KW DCDC BATTERY CHARGER FUNCTIONAL UNIT SAFETY IS PROVIDED BY INPUT 3P CIRCUIT BREAKER, OUTPUT DC CONTACTORS, IMD MODULE AND SURGE PROTECTION DEVICE.

GENERAL ELECTRICAL FEATURES

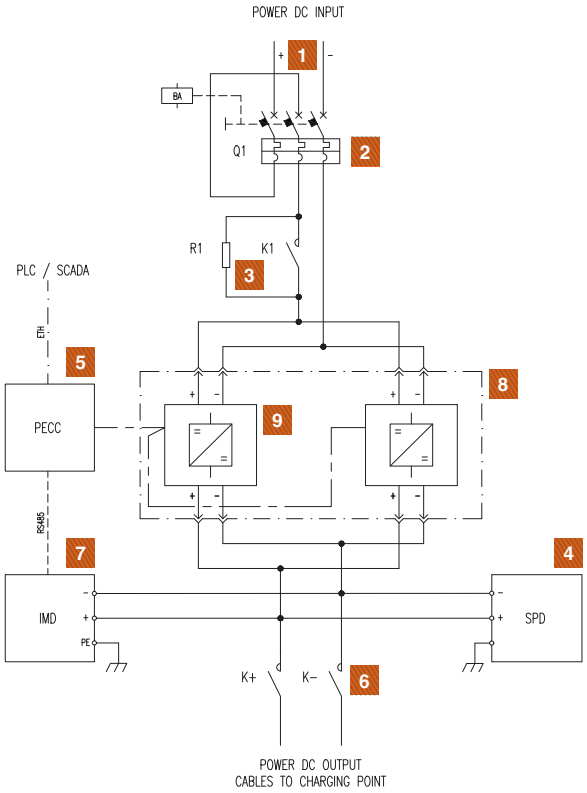
Power supply characteristics	DC in – DC out – Permanently connected
Electric shock protection [according to IEC61140]	Class II
Charging mode [according to IEC61851-1]	Mode 4
Input voltage (nominal range)	540Vdc ±10%
Input voltage (derating limits)	400÷690Vdc
Output voltage (nominal range)	400÷850Vdc
Output voltage (derating limits)	150÷920Vdc
Rated power	Up to 5 x 100kW
Max Efficiency on load	97%
Ics (relative to 100kW module)	50kA ÷ 100kA
Rated insulation voltage	4.4kVrms (50Hz 1min)
Rated auxiliary voltage	24Vdc

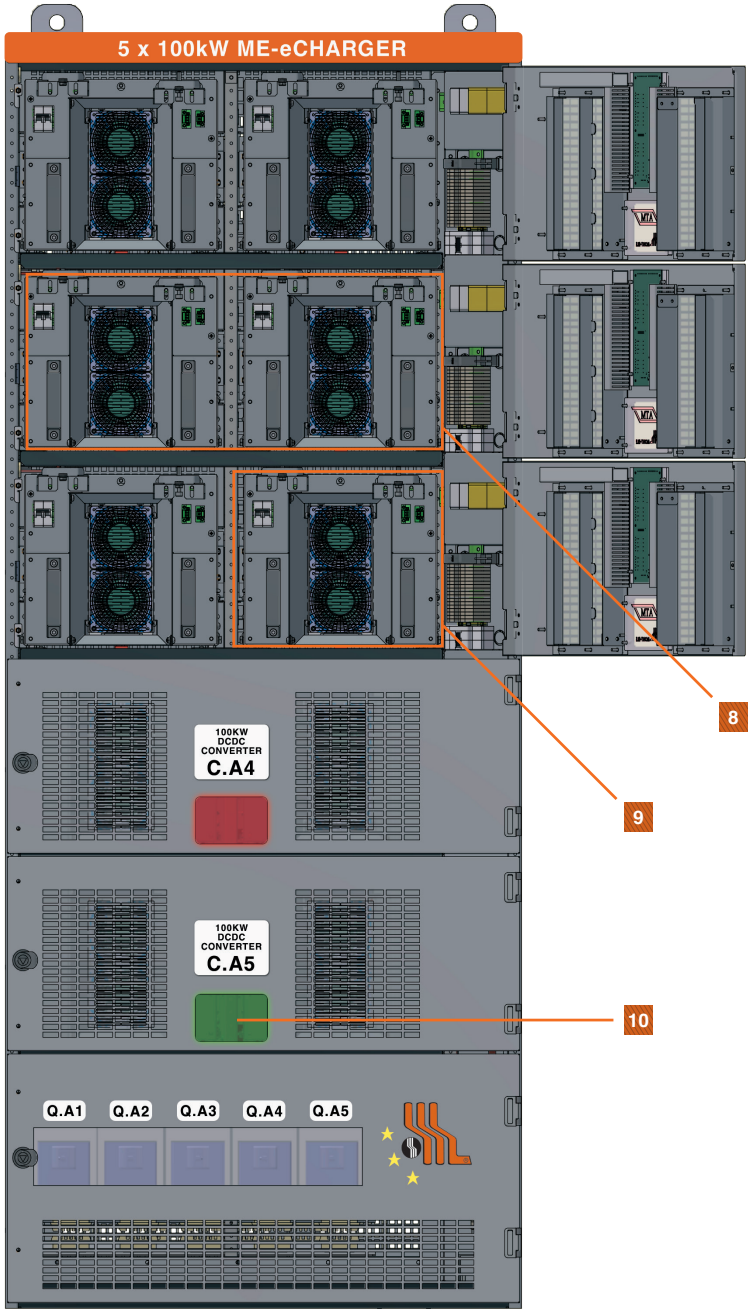
100kW functional unit output characteristics



PROTECTION FEATURES

Overvoltage
Overcurrent and short circuit current
Overload
Leakage current to earth
Insulation monitoring (IMD)
Overtemperature
Surge protection



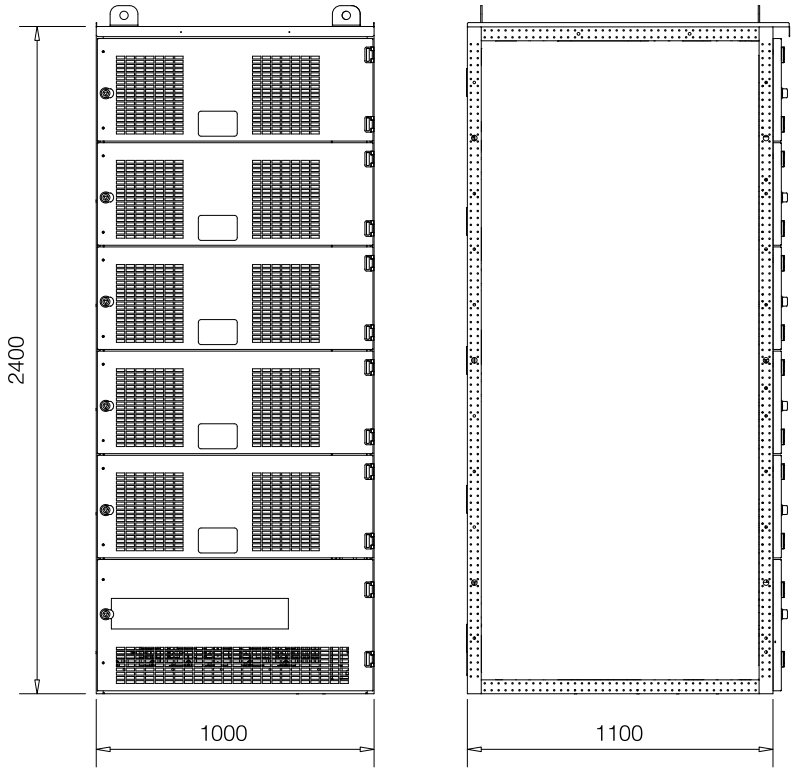


N°	COMPONENT
1	Power DC input
2	Circuit breaker
3	Contactor+pre-charge resistor
4	SPD – Surge Protection Device
5	Power Electronics Communication Controller
6	Output DC contactor
7	IMD – Insulation Monitoring Device
8	100kW DCDC converter
9	50kW DCDC base modules
10	Status charger LED indicator

CONNECTIONS

Power DC Input	Cables or bus bar
Power DC Output	Cables to charging point (Pantograph Up/Down-CCS2 plug)
ModBus RTU - RS485 and TCP - Ethernet	To SCADA / PLC remote system
WebSocket - Ethernet	To SECC (Supply Equipment Communication Controller)
Wired IOs	Internal devices, safety IOs and Emergency pushbutton

ENVIRONMENT AND MECHANICAL FEATURES



Dimensions (width*height*depth)	1000x2400x1100mm
Weight (cubicle) / Weight (module)	850kg / 65kg
Protection degree	IP41/IK10
Installation	Indoor
Cooling	AF
Operating temperature	-35°C ÷ +45°C
Maximum altitude	2500m a.s.l.

TEST AND CERTIFICATION

ELECTRIC VEHICLE SUPPLY EQUIPMENT ME-eCHARGER HAS BEEN DEVELOPED AND TESTED FOR:

- Functional test
- Safety test
- Climatic test
- EMC test

ACCORDING TO EUROPEAN AND INTERNATIONAL STANDARDS:

- CEI EN IEC 61851-1 – Electric vehicle conductive charging system – Part 1: General requirements
- CEI EN IEC 61851-21-2 – Electric vehicle conductive charging system – Part 21-2: Electric vehicle requirements for conductive connection to an AC/DC supply – EMC requirements for off board electric vehicle charging systems
- CEI EN IEC 61851-23 – Electric vehicle conductive charging system – Part 23: DC electric vehicle charging station

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