

10kW Bidirectional Charger module

Based on years of experience PRE has developed a standard 10kW bidirectional Power concept for EV chargers with 3 phase AC Input. The charger has active PFC and is based on the latest SiC semiconductors and quasi-resonant technology which results in high efficiency and excellent overall performance. The Charger module meets today's safety and grid connectivity requirements and is compatible with the CCS and CHAdeMO Charging standards. The charger module can be fully controlled and monitored by CAN-bus Interface.



Features


- Bidirectional (V2G) operation
- CAN/BMS Control Interface
- CCS & CHAdeMO compatible
- Parallel operation for EV Fast Chargers
- Optional Solar Input with MPP-Tracker

Application

- EV (Fast) Charger
- V2G Home Charger
- Smart Grid and Peak Shaving
- Power Supply / DC Load



Key Specifications

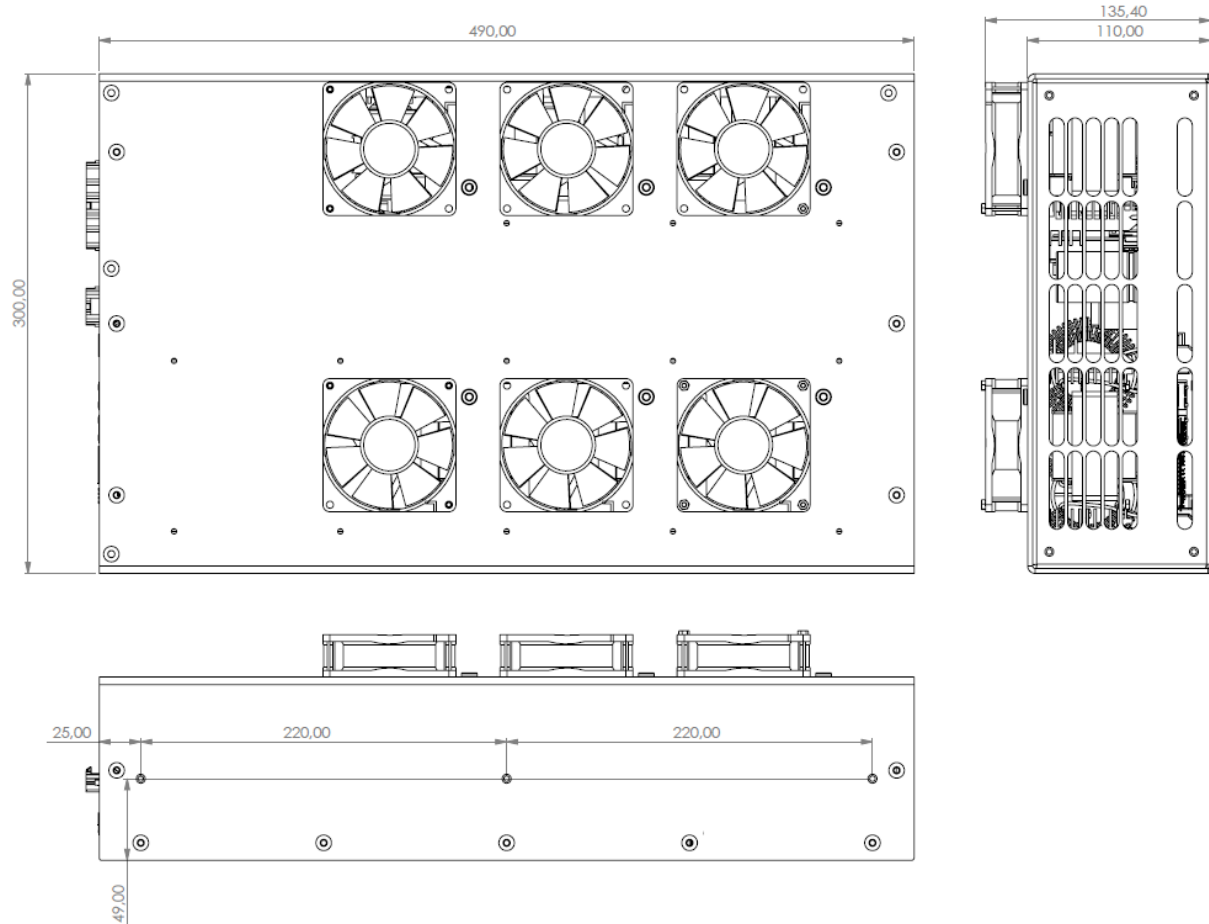
Model		V2G500V30A (Bidirectional)
Output (Battery)	Voltage Range	50 – 500Vdc
	Current Range	-30 .. +30A (-28 .. +28A with internal fuse)
	Rated Power (5)	10.000W
	Voltage Ripple + Noise (2)	500mVp-p
	Voltage & Current Tolerance (3)	<1%
	Line / Load Regulation	<2%
	Current Ripple	<1Arms @ Rated Power (measured on a resistive Load)
Input (Mains)	AC Voltage & Current Range (5)	400Vac +/-10%, 0-16A, 50Hz (11kVA max.) 3L + N + PE
	Power Factor (Control)	>0,95 @ 400Vac & Rated Power (-0.9 .. +0.9 Reactive Power Control)
	Total Harmonic Current	<5% @ 400Vac & Rated Power
	Efficiency	>95% @ 400Vac & Rated Power
	Stand-by consumption	<2W @ Mains Relay Off (St-by mode pin: Low) / 15W @ Mains Relay On (St-by mode pin: High)
	Inrush Current (max.)	50A Cold Start @ 400Vac
	Leakage Current	<3.5mA @ 400Vac
Protection	Input UVP & OVP	Voltage & Frequency Window, Phase error, DC Injection (external fuse)
	Output OVP & OCP	550V (30A 600Vdc Fuse)
	Over Temperature	80°C at main Heatsink. Output Power derating at Tamb. >45 °C
Control	Control	CAN-bus with hardware Interlock (Charge Enable) (CANopen protocol / 500kbps)
	Auxiliary supply (Input)	9V – 32V 100mA max.
General	Protection Class	Class I 
	Isolation	>100MΩ (In-Output: reinforced/PE-Input, PE-Output: Basic/ CAN/Interface: reinforced)
	Overvoltage category	Category II (internal SPD for Overvoltage cat. III for fixed installations optional)
	Cooling	Fan cooled (Temperature controlled)
	IP protection class	IP20
	Working (Storage) Temp. & Humi.	-20 .. 50°C (-20 .. 70°C) / 20 .. 90% Non Condensing
	Dimension & Weight	Approx. 500x300x110mm / 15kg (excl. fans)
	Lifetime (MTBF)	>100.000 hours @ 25 °C (Designed to meet <0.1% / Year)
Safety & EMC(4)	Safety (LVD)	IEC 62368-1 (Low-Voltage Directive 2014/35/EU)
	EMC / Applicable Standards	IEC 61851-23, EN 55022 Class A, IEC 61000-3.2, IEC 61000-4.2,3,4,5,6,8,11 (criteria: B)
	Grid connectivity	IEC 62116 (LoM), G83/2, G59/3 (UK), DIN V VDE V 0126-1-1, VDE-AR-N-4105 (D) ⁽⁶⁾



1. All parameters NOT specially mentioned are measured at 400VAC input, rated load and 20°C ambient temperature.
2. Ripple & noise are measured at 20MHz bandwidth by using a standard probe.
3. Tolerance : includes set up tolerance, line regulation and load regulation.
4. This product is considered a component which will be installed into the end product. The end product must be re-confirmed that it still meets EMC directives.
5. Derating may be needed ad lower and higher Output Voltages and higher ambient temperature. Please check the derating curve for more details.
6. This product is intended for European Mains connections. Grid connectivity settings can differentiate depending on the country.
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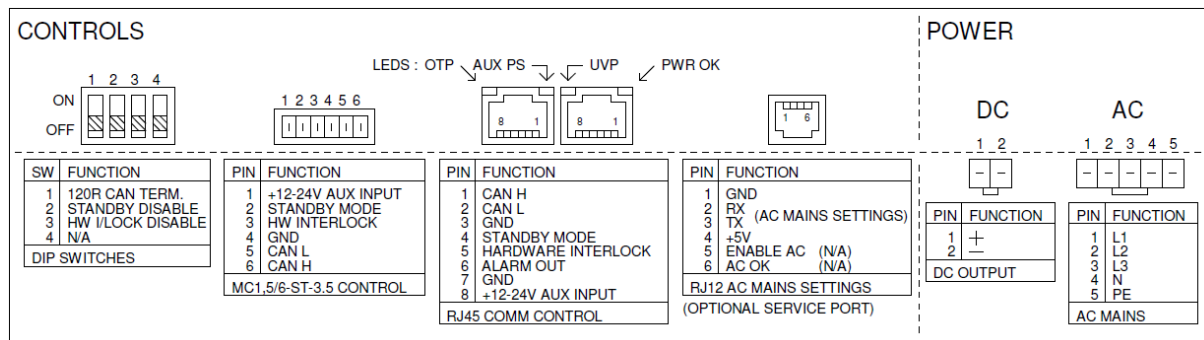


Mechanical Dimensions



Side mounting holes : M4 press nuts. Maximum of 5mm thread inside enclosure.

Electrical Connections



AC Connector : Molex Mini-Fit Sr 5 Way Housing: 42816-0512 / Crimp Terminal : 42815-0012 (12-10 AWG/4-6mm²)
DC Connector : Molex Mini-Fit Sr 2 Way Housing: 42816-0212 / Crimp Terminal : 42815-0012 (12-10 AWG/4-6mm²)
Solar Connector : Molex Mini-Fit Sr 3 Way Housing: 42816-0312 / Crimp Terminal : 42815-0012 (12-10 AWG/4-6mm²)
Control Interface : RJ45 Ethernet cable or Phoenix Contact MC1,5/6-ST-3,5 connector. (RJ12 connector for factory settings only)

Hardware I/O functions

- Dipswitch pos. 1 : 120Ω CAN bus terminator resistor.
- Dipswitch pos. 4 : Change Grid connection settings by CAN bus or serial port.
- Standby Mode : Switch between Off state (Input Low <1V) and Standby mode (Input High >3V). (Can be disabled by dipswitch pos. 2)
- Hardware Interlock : External Hardware Interlock disable (Input Low <1V) and Enable. (Input High >3V) (Can be disabled by dipswitch pos. 3)
- Alarm Out : Open collector alarm Output. (32V /5mA max.)

Ambient temp. derating. Output Current derating.

