

## PCHG-AS22000

22kW OBC



## 1. General description

The PCHG-AS22000 series OBC has been designed for larger power charger application, three phase AC input, 540VDC-700VDC output. It can use in bus, commercial truck, and can withstand harsh environments (vibration, thermal shock and extreme temperature ranges).

The PCHG-AS22000 series is design as liquid cooling with IP67 enclosure .

The PCHG-AS22000 series is programmable with the independent control unit inside, this make it flexible to achieve the individual needs of customers.

With the multi grid adaptability and the independent control unit , it is in full compliance with international standards such as SAE J1772 and EN61851.

The processor-driven charging algorithms provides optimal results in efficiency and it contributes to a longer life of the battery charger and the HV battery.

## 2. Main Feature

- Compliance with three phase AC input .
- Compliance with SAE J1772 and EN61851.
- Compact and lightweight construction.
- Constant power and constant current charging capable.
- Vibration-resistant and IP67 for on-board use.
- Firmware up-gradable over CAN bus.
- DC High Voltage Interlock Loop (HVIL) protection.
- Precise and efficient charging power.

### 3.Function and Feature

Type	
Type	22KW on-board charger
Model	PCHG-AS22000
Rate Output Voltage	540V
Charging mode	Response mode (can communicate)

AC Input	1phase/3-phase	Unit
Input voltage range	90-265/152- 480	V
Input frequency range	47 – 63	Hz
AC current THD	< 5	%
Power factor	> 0.99	
Efficiency	> 94 @ from 50% to Max load	%
Max. input current (eff)		A
Max input power	22	kVA
INRUSH current	< 40 @ 380 Vac	A

DC output		Unit
Voltage programmable range	0 - 7 0 0	Vdc
Min. voltage Constant Power range		Vdc
Charging voltage accuracy	≤1	%
Charging current accuracy	≤5	%
Charging current ripple amplitude	≤1	%
Max. output power	19.2	kW
Max. charging current	36	Adc
Output response time	≤2	S
Pre-charging	internal	

Environment Requirement		Unit
Ambient temperature range in operation	-40~85	°C
Ambient temperature range for storage	-40~95	°C
Ambient temperature range for extreme storage (less than 12 hours at a time)	- 40 to + 125	°C
Humidity	5-95	%
IP protection	IP67	
The cooling function	Liquid cooling	

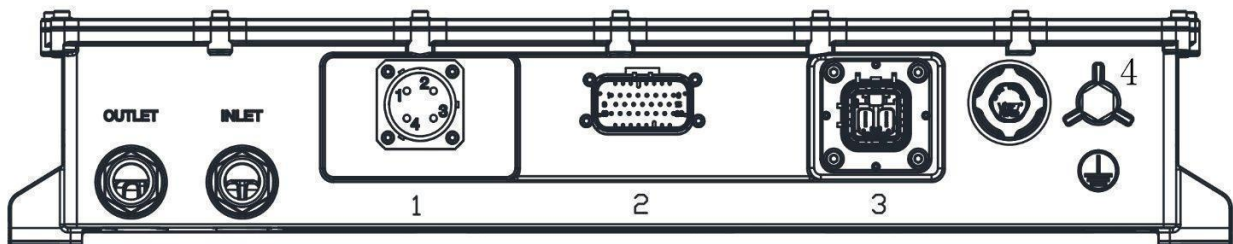
<b>Charging function</b>		support@starwell.cc
Charge function	Charging according to BMS communication	
Communication function	CAN bus control	
Communication protocol (to BMS)	By SAE J1939/Defined by customer	
CAN communication baud rate	250/500 kbps, without terminate resistor.	
AC charge control	Compliant SAE J1772 and EN 61851 When SAE J1772 is enabled, the charger is fully compliant with SAE J1772 Power Station (EVSE SAE J1772 compliant, level 1 and 2). When EN 61851 is enabled, the charger is fully compliant with EN 61851 Power Station.	
Wake-up	12V signal Hardwire wake up BMS wake-up command CP,CC signal wake up	

<b>Protection function</b>	
Over voltage protection	can be self-recovery from input or output over-voltage shutdown
Under voltage protection	can be self-recovery from input or output under-voltage shutdown
Short circuit protection	Output short circuit shutdown, self-recovery
Over temperature protection	When the temperature of the radiator is higher than 75°C, the output power is reduced, when the temperature is higher than 95°C, the circuit is disconnected, and when the charging temperature is restored to below 85°C, the output of the charger is restored.
Reverse connect protection	Output Reverse Switch-on does not start, alarm, normal work after recovery
Equilibrium potential and ground protection	The resistance between the conductive part directly touched by the human body and the potential equilibrium point in the vehicle charger is not more than 0.1Ω. The grounding point of vehicle charger should have obvious grounding mark.
Power-off protection	Cut off power supply in abnormal condition

Dielectrics trength	Input-output 3750VAC Input/Output-Grand 1500VAC
Clearance and Creepage	Input-output 4mm/6mm Input/Output-Grand 2mm/3mm
Insulation performance	20MΩ
Harmonic current	Meet standard of GB17625.1-2003 6.7.3.1

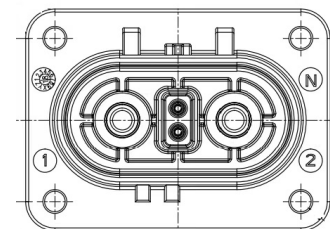
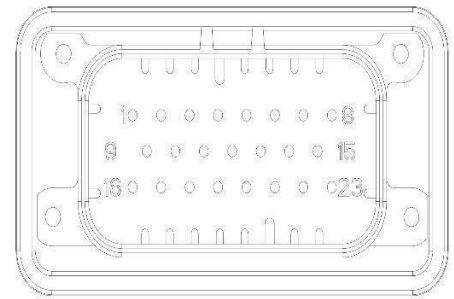
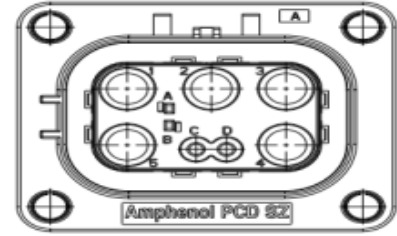
<b>Reliability</b>	
vibration resistance	Through frequency sweep vibration test in three directions of X, Y and Z, parts are not damaged and fasteners are not loosened.
impact resistance performance	Meet standard of GB/T15139-1994 6.5
Industrial solvent resistance	Metal parts have good anti-corrosive coating
Salt fog resistance	Meet standard of GB/T 2423.17
Durability	Not less than GB/T 24347-2009
Electromagnetic interference resistance	Meet standard of GB/T 18487.3 11.3.1
Electromagnetic abusive	Meet standard of GB/T 18487.3 11.3.2

#### 4 . Connection definition



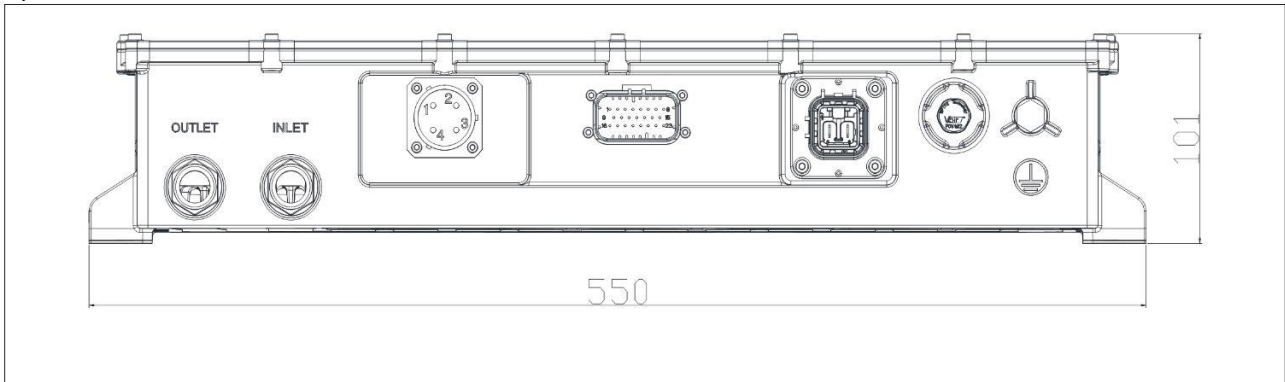
No.	
1	Input connection
2	Signal connection
3	Output connection
4	PE
INLET	Liquid cooling input
OUTLET	Liquid cooling output

编号	类型	接插件定义	接插件图纸	
1	HVSL365025A	1	A	
		2	B	
		3	C	
		4	N	
		5	PE	
		Factory		Amphenol PCD shenzhen
		Cable side		HVSL365065A
2	1-776228-1	1		
		2		
		3		
		4		
		5	CP	
		6	PP	
		7	+12V	
		8		
		9		
		10		
		11	HVIL	
		12	HVIL	
		13	-12V	
		14		
		15		
		16		
		17		
		18		
		19	CAN Shield	
		20		
		21		
		22	CAN L - Main	
		23	CAN H - Main	
Factory		TE CONNECTIVITY (TE)		
Cable side		770680-1		
3	FHV22*260CY-UM61D	1	Negative	
		2	Positive	
Factory		FUTRONICS		
Cable side				

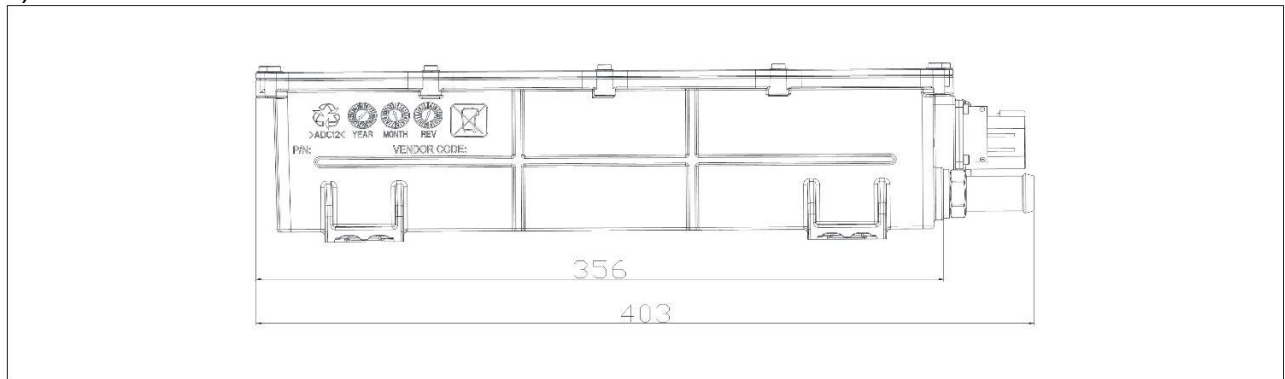


## 5 . Dimension and weight

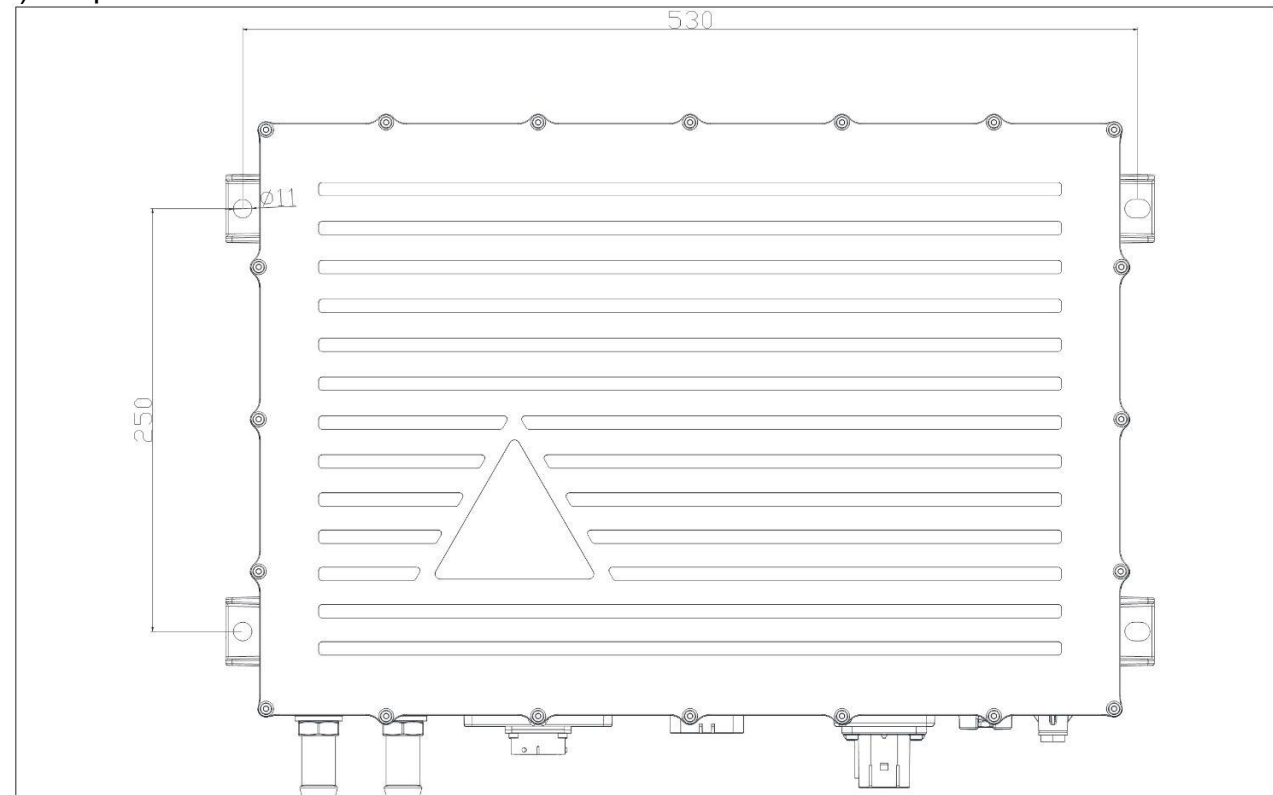
a) Front view



b) Left view



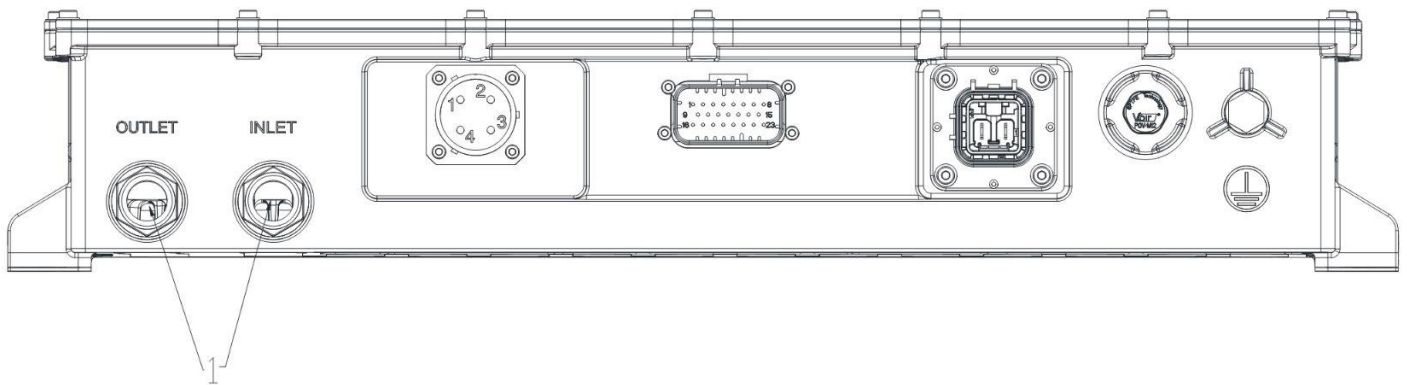
c) Top view



d) Weight

25Kg±0.5Kg

## 6 . Cooling system

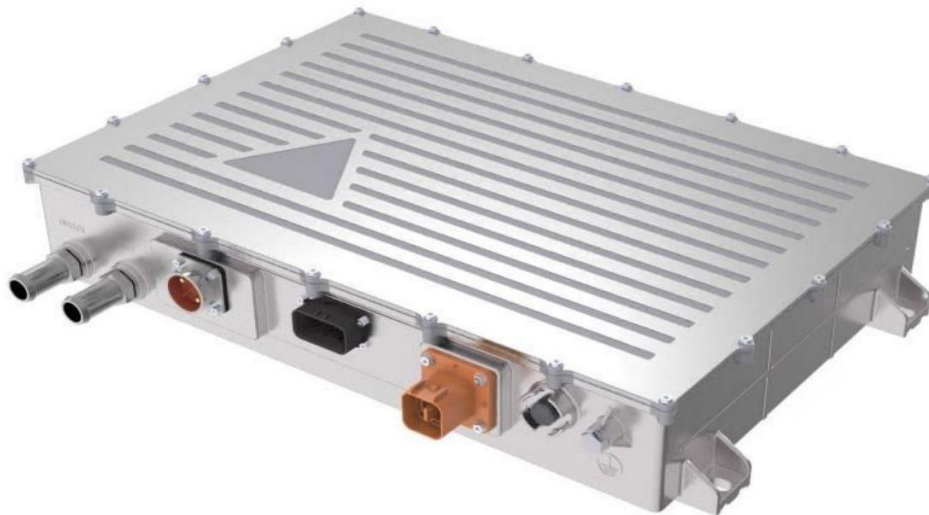


No.	Type	Size
1		

Thermal / Cooling system	PCHG-AS22000	Unit
Amount of coolant in device	1.6	L
External diameter of cooling water connection pieces	20	mm
Minimum coolant temperature at inlet	-25	°C
Maximum coolant temperature at inlet	50	°C
Coolant pressure drop @ 5l/min, Tcoolant = 25°C (with a water to glycol mixture ratio of 50 / 50)	0.4	bar
Maximum cooling system pressure	1	bar
Cooling water flow rate	6 to 20	l/min
Ambient temperature range for storage	- 40 to + 95	°C
Ambient temperature range for extreme storage (less than 12 hours at a time)	- 40 to + 125	°C
Ambient temperature range in operation	- 40 to + 85	°C
Power stage temperature range full operation	- 40 to + 110	°C
Control stage temperature range full operation	- 40 to + 80	°C



## 7 . Photograph



## 8 . Compliance standard

- QC/T 413-2002 Basic Technical Conditions for Automotive Electrical Equipment
- QC/T 895-2011 Conductive Charger for Electric Vehicle Basic Technical Conditions for Electric Equipment of Vehicle
- GB/T 18487.1 General Requirements for Conductive Charging of Electric Vehicles
- GB/T 2423.1 Environmental Testing of Electrical and Electronic Products Part 2: Test Method Test A: Low Temperature (GB/T 2423.1-2008, IEC 60068-2-1:2007, IDT)
- GB/T 2423.2 Environmental Test for Electrical and Electronic Products Part 2: Test Method Test B: High Temperature (GB/T 2423.2-2008, IEC 60068-2-2:2007, IDT)
- GB 4208-2008 Shell Protection Level (IP Code) (IEC 60529:2001, IDT)
  
- GB/T 17619-1998 Limit and Measurement Method of Electromagnetic Radiation Immunity for Motor Vehicle Electronic and Electrical Components
- GB/T 18384.1-2001 Safety Requirements for Electric Vehicles Part 1: On-board Energy Storage Devices
- GB/T 18488.1-2006 Electric motors and controllers for electric vehicles Part 1: Technical requirements
- GB18655-2002 Limits and measurement methods for protecting radio disturbance characteristics of vehicle receivers (idt IEC/CISPR 25:1995)

## 9 . Version

Version	
2022/8/19	Version 1.0
2022/8/31	Version 1.1