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ANNREN TECHNOLOGIES CO., LTD.

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Charging Standard: GB/T(大陸國標)、SAE(美規)、IEC(歐規)。
防水等級(IP RATING) : IP67

Version: V10
Date: 16-Mar-2020

Annren DC/DC & OBC (On Board Charger) PRODUCTS LIST

Item	Product Name	Model No.	Power	Input Voltage	Output Voltage	Output Current	Efficiency	Module Low Voltage (VDC)	Module Low Current(A)	Size (mm)	Cooling System
1	1.5KW DC/DC CONVERTER	AR1K5-380S1A AR1K5-380S14W	1.5KW	250-450VDC	13.8VDC	145A	95%	\	\	180x120x50	Module
2								\	\	267x185x120	Fan
3								\	\	225x158x75	Water
4		AR1K5-540S14A AR1K5-540S14W	1.5KW	400-750VDC	13.8VDC	145A	94%	\	\	180x120x50	Module
5								\	\	267x185x120	Fan
6								\	\	225x158x75	Water
7	2.0KW DC/DC CONVERTER	AR2K-380S14W	2KW	250-450VDC	13.8VDC	145A	95%	\	\	180x120x50	Module
8								\	\	225x158x75	Water
9		AR2K-540S14W	2KW	400-750VDC	13.8VDC	145A	94%	\	\	180x120x50	Module
10								\	\	225x158x75	Water
11	2.5KW DC/DC CONVERTER	AR2K5-540S14W	2KW	400-750VDC	13.8VDC	181A	94%	\	\	180x120x50	Module
12								\	\	225x158x75	Water
13	3.0KW DC/DC CONVERTER	AR3K-540S2A	3KW	400-750VDC	27.5VDC	110A	95%	\	\	200x120x55	Module
14								\	\	267x185x120	Fan
15	300W DC/DC CONVERTER	AR300-540S24N	300W	200~800VDC	24VDC	12.5A	95%	\	\	118x129x45	Air
16		AR300-540S12N	300W	200~800VDC	12VDC	25A	95%	\	\	118x129x45	Air
17	6.6KW OBC	AR6K6-220D38014A	6.6KW	90-265VAC	250-450VDC	20A	93%	13.8	7	380x244x126	Fan
18		AR6K6-220D38027A	6.6KW	90-265VAC	250-450VDC	14A	93%	27	4	380x244x126	Fan
19		AR6K6-220S380W	6.6KW	90-265VAC	250-450VDC	20A	95%	12/24	200mA/2A	279x172x58	Module
20										314x220x92	Water
21		AR6K6-220D54014A	6.6KW	90-265VAC	420-650VDC	14A	93%	13.8	7	380x244x126	Fan
22		AR6K6-220D54027A	6.6KW	90-265VAC	420-650VDC	14A	93%	27	4	380x244x126	Fan
23		AR6K6-220S540W	6.6KW	90-265V	420-650VDC	14A	95%	12/24	200mA/2A	279x172x58	Module
24										314x220x92	Water
25		AR6K6-220S380A	6.6kw	85~265VAC	250-450VDC	20A	93%	13.8	200mAmax	380x244x126mm	Fan
26		AR-6K6-220S380A-SAE	6.6kw	90~264VAC	200-450VDC	20A	93%	13.8	200mAmax	380x244x126mm	Fan
27	11KW OBC	AR11K-380S540W	11W	304-456VDC	420-650VDC	20A	96%	12/24	200mA	300x200x60	Module
28										345x224x100	Water
29		AR11K-380S380W	11W	304-456VDC	250-450VDC	33A	96%	12/24	200mA	300x200x60	Module
30										345x224x100	Water
31	GB / IEC 11KW OBC	AR11K-380S14M	11W	304 ~ 456VAC/220 ± 15% VAC	50~450VDC	Three-phase: 32A, 3.3KW single phase: 10A, 6.6KWsingle phase: 20A	95%	13.8VDC	5Amax	300x200x60mm	
32		AR11K3S-400580L	11W	304~456VAC/90~264V AC	400~750VDC	Three phase: 32A, 6.6KW single phase: 20A	95%	13.8	4	345x224x100mm	
33		AR11K3S-250380W	11W	304~456VAC/175~265 VAC	250~450VDC	Three phase: 32A, 6.6KW single phase: 20A	95%	13.8	4	345x224x100mm	Liquid
34	GB 11KW OBC	AR-11K3S-25038014-W	11W	304~456VAC/175~265 VAC	250~450VDC	Three phase: 32A, 6.6KW single phase: 20A	95%	13.8	4	345x224x100mm	Water

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35	SAE 11KW OBC	AR11K-220S380M	11kw	0~264V	250~450VDC	32A	94%	12 or 24	200mAmax	340x220x60mm	Module
36	22KW OBC	AR22K-380S380W	22KW	304-456VDC	250-450VDC	80A	96%	12/24	200mA	390x246x151	Module
37		AR22K-380S540W			420-650VDC			12/24	200mA	390x246x151	Water
38	40KW OBC	AR40K-380S380W	40KW	304-456VDC	250-450VDC	80A	96%	12/24	200mA	448x265x157	Water
39		AR40K-380S540W			420-650VDC			12/24	200mA	448x265x157	Water
40	IEC 2.0KW DC+6.6KW OBC 2 in 1	AR2K0C6K6I-D14C380W/540W	OBC：6.6KW DCDC:2KW	OBC：90~264V DCDC： 200~450/400~750VDC	OBC： 200~450/400~670V DC DCDC：14VDC	OBC：20A DCDC：143A	OBC：95% DCDC：95%	12月24日	200mA/2A	328x208x125	Water
41	SAE 2.0KW DC+6.6KW OBC 2 in 1	AR2K0C6K6-D14C380W	OBC：6.6KW DCDC:2KW	OBC：90-265V DCDC：250-450V	OBC：250-450V DCDC：13.8VDC	OBC：20A DCDC：145A	OBC：95% DCDC：95%	12	200mA/2A	#REF!	Water
42		AR2K0C6K6-D14C540W	OBC：6.6KW DCDC:2KW	OBC：90-265V DCDC：400-750V	OBC：420-650V DCDC：13.8VDC	OBC：14A DCDC：145A	OBC：95% DCDC：95%	12	200mA/2A	#REF!	Water
43	3.3KW OBC+1.5KW DCDC+PDU 3 in 1	AR1K5C3K3-D14C380HW	OBC：3.3KW DCDC:1.5KW	OBC：90~264V DCDC：200~420V	OBC：200-420V DCDC：13.8VDC	OBC：10A DCDC：108A	OBC：95% DCDC：95%	12	200mA/2A	359X318X188	Water
44										359X318X188	
45	6.6KW OBC+1.5KW DCDC+PDU 3 in 1	AR1K5C6K6-D14C540HW	OBC：6.6KW DCDC:1.5KW	OBC：90-265V DCDC：400-750V	OBC：420-650V DCDC：13.8VDC	OBC：14A DCDC：109A	OBC：95% DCDC：95%	12	200mA/2A	430x326x218	Water
46										359X318X188	
47		AR1K5C6K6-D14C380HW	OBC：6.6KW DCDC:1.5KW	OBC：90-265V DCDC：250-450V	OBC：250-450V DCDC：13.8VDC	OBC：20A DCDC：109A	OBC：95% DCDC：95%	12	200mA/2A	430x326x218	Water
48										359X318X188	
49	6.6KW OBC+2.5KW DCDC+PDU 3 in 1	AR2K5C6K6-D14C540HW	OBC：6.6KW DCDC:2.5KW	OBC：90~264V DCDC：400~750V	OBC：500-750V DCDC：14VDC	OBC：20A DCDC：175A	OBC：95% DCDC：95%	12	200mA/2A	430X326X218	Water
50	2.5KW DC/DC Converter system	AR2.5K-380S14W	2.5K	250-450VDC	14VDC	175A	95%	\	\	260X220X75	Water
51		AR2.5K-540S14W		400-750VDC				\	\	260X220X75	
52	SAE J1772 6.6KW OBC AC/DC Converter	AR6K6-220S380A	6.6KW	90~265VAC	250-450VDC	20A	93%	13.8	7	380 x 244 x 126	Fan
53		AR6K6-220D38027A				14A		27	4		
54		AR6K6-220D54014A			420~650VDC	14A		13.8	7		
55		AR6K6-220D54027A				14A		27	4		
56	300W DC/DC converter	AR300W-2713V	300W	18~36 VDC	13±0.5V	10A		\	\	450x380x190	
57	1KW DC/DC CONVERTER	AR1K-TDC-IY-72-12	1KW	44-97V	14.0V	72A	94%	\	\	278X158X73	Nature
58		AR1K-TDC-IY-108-12		72-162V				\	\		
59		AR1K-TDC-IY-144-12		100-200V				\	\		
60		AR1K-TDC-IY-216-12		170-300V				\	\		
61		AR1K-TDC-IY-320-12		220-450V				\	\		
62	1.5KW DC/DC Converter	AR1K5-540-12JCA	1.5KW	420-650V	13.8V	70A	95%	\	\	241X136X170	Air
63		AR1K5-540-12JCN						\	\	241X136X73.8	Nature
64		AR1K5-540-12JCW						\	\	241X136X69.5	Water
65	1.8KW OBC	AR1K8-HK-H-H6625	1.8KW	AC270±5V	18-68VDC	25A		\		203x135x125	
66		AR1K8-HK-H-H99-25		AC270±5V	25-99VCD	25A		\		203x135x125	
67		AR1K8-HK-H-H132-16		AC270±5V	34-132VDC	16A		\		203x135x125	
68	3.3KW OBC	AR3K3-HK-J-H66-40	3.3KW	90～265V	18-68VDC	40A	93%	13.8/27.6	5	239x109x125	Fan
69		AR3K3-HK-J-H99-40			25-99VDC	40A		13.8/27.6	5	239x109x125	Fan
70		AR3K3-HK-J-H132-32			34-132VDC	32A		13.8/27.6	5	239x109x125	Fan
71		AR3K3-HK-J-H198-23			50-198VDC	23A		13.8/27.6	5	239x109x89	Water
72		AR3K3-HK-J-H440-10			110-440VDC	10A		13.8/27.6	5	239x109x89	Water
73		AR3K3-HK-J-H650-06			170-650VDC	6A		13.8/27.6	5	239x109x89	Water
74	6.6KW OBC	AR6K6-HK-J-H66-80	6.6KW	90～265V	18-68VDC	80A	93%	13.8/27.6	5	353x230x160	Fan
75		AR6K6-HK-J-H99-80			25-99VDC	80A		13.8/27.6	5	353x230x160	Fan
76		AR6K6-HK-J-H132-64			34-132VDC	64A		13.8/27.6	5	353x230x160	Fan
77		AR6K6-HK-J-H198-46			50-198VDC	46A		13.8/27.6	5	353x230x127	Water
78		AR6K6-HK-J-H440-20			110-440VDC	20A		13.8/27.6	5	353x230x127	Water
79		AR6K6-HK-J-H650-12			170-650VDC	12A		13.8/27.6	5	353x230x127	Water

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Model No.：AR-1K5-540/380S14-A-AR01

Product Name：1.5KW DC/DC Converter System

1.5KW DC/DC Converter Module Only

1.5KW DC/DC Converter Fan cooling System

Features

1. Output Power：1.5KW
2. Input Voltage：250~450VDC/400~750VDC
3. Output Voltage：13.8VDC
4. Dimensions：335x185x120mm
5. Cooling System：Fan
6. Protection Level：IP67（Except for fans）
7. Communication Method：CAN
8. Enclosure: Aluminum alloy made
9. Software: Digital software design

Applications

Electric Passenger Vihecles

Electric Commercial Vihecles

Specification

Description		Technical specifications	Remark
Operating temperature		-40~85℃	85~100℃，Can be derated to 40% of work
Rated output power		1.5KW (continuous operation at full load)	Peak power 1.8KW
Input voltage range		250~450VDC/400~750VDC	
Output rated voltage		13.8VDC	12~16 Adjustable
Rated output current		108A	
Auxiliary power VCC		9~18VDC	
Efficiency		≥94%	Rated voltage Full load
Output voltage ripple		≤500mVPK-PK	
Protection characteristics		Input over-voltage, output over-voltage, input anti-reverse connection, output over-current and short-circuit protection, over-temperature self-recovery	
Over temperature protection		The bottom plate temperature reaches 85 °C and starts derating output. The temperature exceeds 100 °C, shutting down; the temperature is lower than 95 °C, which can be self-recovery.	
Dielectric streng	Input to output	3000VDC/1min 1mA max	
	Input to the outer casing	3000VDC/1min 1mA max	
Insulation resist	Input to output	≥20MΩ	
	Input to the outer casing	≥20MΩ	
Battery compat	Radiation emission	GB/T 18655-2010 Class 3	
	Conducted emission	GB/T 18655-2010 Class 3	
	Static immunity	GB/T 19951-2005	Air discharge：15KV，Contact discharge 8KV
	Radiation immunity	GB/T 18655-2010 Class 3	
	High current injection	GB/T 17619-1998	
	Fast burst immunity	GB/T 17626.4-2008 1KV	

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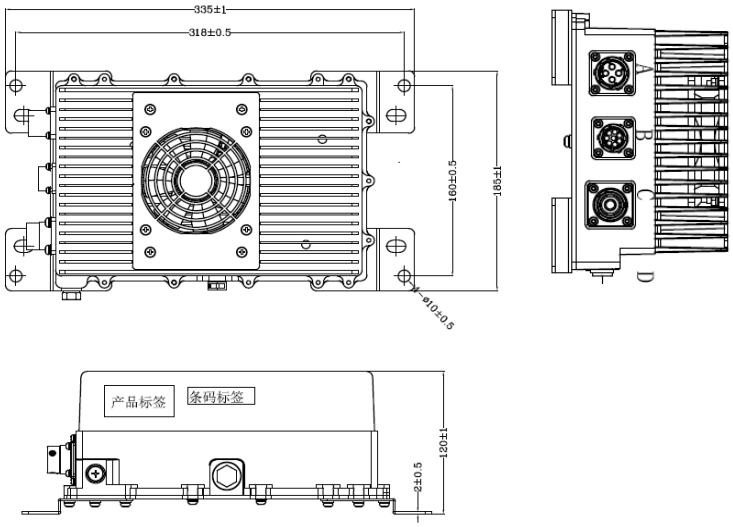
Model No.：AR-1K5-540/380S14-A-AR01
Product Name：1.5KW DC/DC Converter System

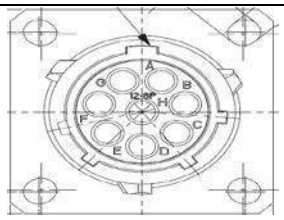
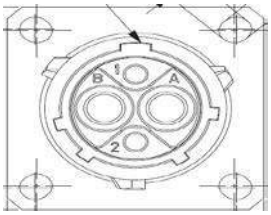
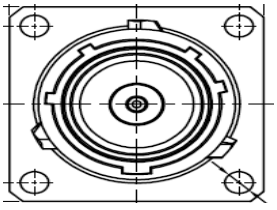
Structural parameters



Connector model

Position	Socket model	Function	Brand	Plug model
A	RT00122PN03	DC input	Amphenol	RT06122SNHEC03
B	RT00128PN03	Control terminal	Amphenol	RT06128SNHEC03
C	RTHP0141PN-H1	Output positive	Amphenol	RTHP6141SNH-25PS2
D	M8 bolt	Output negative	\	M8 Screw

Interface definition

Vendor	Model	Description		Remark
Amphenol	RT00128PN03	A	NC	
		B	CANL	
		C	CANH	
		D	Shielded wire	
		E	GND	
		F	NC	
		G	NC	
		H	Enable	
Amphenol	RT00122PN03	A	Input positive	
		B	Input negative	
		1	Interlock 1 connection 2	
		2	Interlock 2 connection 1	
Amphenol	RTHP0141PN-H1	+	Output positive	

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Product Name	1.5KW DC/DC CONVERTER
Model No.	AR-1K5-380S14-W-AR01 AR-1K5-540S14-W-AR01
Power	1.5KW
Input Voltage	250~450VDC/400~750VDC
Output Voltage	13.8VDC
Output Current	73A
Efficiency	≥95%
Module Low Voltage (VDC)	\
Module Low Current (A)	\
Size (mm)	268x220x75mm
Cooling System	Water
IP Rating	IP67
Scope	Various new energy vehicles
Hardware	Small size, light weight and stable performance
Firmware	Full digital software design, redundant protection function design

Features

- **Output power: 1.5KW**
- **Input voltage: 250~450VDC/400~750VDC**
- **Output voltage: 13.8VDC**
- **Communication method: CAN**

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Main technical parameters

Item		Technical specifications	Remark
Operating temperature		-40~85℃	85~100℃, Can be derated to 40% of work
Rated output power		1.5KW (continuous operation at full load)	Peak power 1.8KW
Input voltage range		250~450VDC/400~750VDC	
Output rated voltage		13.8VDC	9~16 Adjustable
Rated output current		73A	
Auxiliary power VCC		6~18VDC	
Efficiency		≥95%	Rated voltage Full load
Output voltage ripple		≤500mVPK-PK	
Protection characteristics		Input over-voltage, output over-voltage, input anti-reverse connection, output over-current and short-circuit protection, over-temperature self-recovery	
Over temperature protection		The bottom plate temperature reaches 85 °C and starts derating output. The temperature exceeds 100 °C, shutting down; the temperature is lower than 95 °C, which can be self-recovery.	
Dielectric strength	Input to output	2500VDC/1min 1mA max	
	Input to the outer casing	2500VDC/1min 1mA max	
Insulation resistance	Input to output	≥20MΩ	
	Input to the outer casing	≥20MΩ	
Battery compatibility	Radiation emission	GB/T 18655-2010 Class 3	
	Conducted emission	GB/T 18655-2010 Class 3	
	Static immunity	GB/T 19951-2005	Air discharge: 15KV, contact discharge 8KV
	Radiation immunity	GB/T 18655-2010 Class 3	
	High current injection	GB/T 17619-1998	

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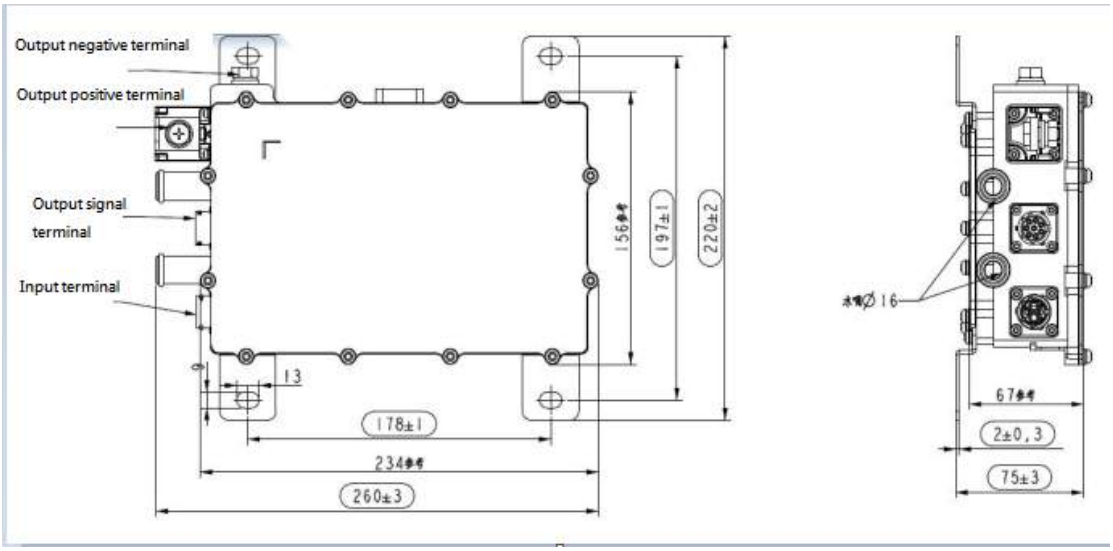
	Fast burst immunity	GB/T 17626.4-2008 1KV	

Structural parameters



Connector information:

Position	Socket model	Function	Brand	Plug model
A	RT00128PN03	Control terminal	Amphenol	RT06128SNHEC03
B	RT00122PN03	DC high voltage terminal	Amphenol	RT06122SNHEC03
C	ACTB117-C	Output positive	Connet	M8 specification copper ear
D	M8 Bolt lock housing	Output negative	/	M8 specification copper ear

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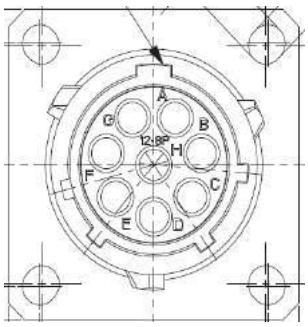
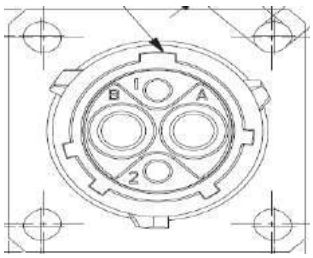
Interface definition:

Vendor	Model	Description		Remarks
Amphenol	RT00128PN03	A	CAN-H	
		B	CAN-L	
		C	KEY (high effective) reservation	
		D	VCC+	
		E	GND	
		F	NC	
		G	NC	
		H	NC	
Amphenol	RT00122PN03	A	Input positive	
		B	Input negative	
		1	Interlock 1 connection 2	
		2	Interlock 2 connection 1	

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Model No.：AR2K-250380S14L
Product Name：2KW DC/DC Converter Liquid Cooled System

2KW DC/DC Converter Liquid Cooled System

Features

1 Output Power：2KW
2 Input Voltage：250-450VDC
3 Output Voltage：13.8VDC
4 Dimensions：268x220x75mm
5 Cooling System：Liquid (water nozzie ϕ16)
6 IP Rating：IP67
7 Communication Method：CAN
8 Enclosure: Aluminum alloy made
9 Software: Digital software design

Applications

Electric Passenger Vihecles

Electric Passenger Vihecles

Specification

Description		Technical specifications	Remark
Operating temperature		-40~85℃	85~100℃ · Can be derated to 40% of work
Rated output power		2KW (continuous operation at full load)	Peak power 2.5KW
Input voltage range		250-450VDC	
Output rated voltage		13.8VDC	9~16 Adjustable
Rated output current		145A	
Auxiliary power VCC		6-18VDC	
Efficiency		≥95%	Rated voltage Full load
Output voltage ripple		≤500mVPK-PK	
Protection characteristics		Input over and under voltage, output over and under voltage, input anti-reverse connection, output over current and short circuit protection, over temperature self-recovery	
Over temperature protection		The baseplate temperature reaches 85 ° C and starts derating. If the temperature exceeds 100 ° C, it will be shut down. If the temperature is lower than 95 ° C, it can recover automatically	
Dielectric strength	Input to output	2500VDC/1min 1mA max	
	Input to the outer casing	2500VDC/1min 1mA max	
Insulation resistance	Input to output	≥20MΩ	
	Input to the outer casing	≥20MΩ	
Battery compatibility	Radiation emission	GB/T 18655-2010 Class 3	
	Conducted emission	GB/T 18655-2010 Class 3	
	Static immunity	GB/T 19951-2005	Air discharge：15KV · Contact discharge 8KV
	Radiation immunity	GB/T 18655-2010 Class 3	
	High current injection	GB/T 17619-1998	
	Fast burst immunity	GB/T 17626.4-2008 1KV	
Weight	Net weight / Gross weight	4.5KG / 5.0KG	

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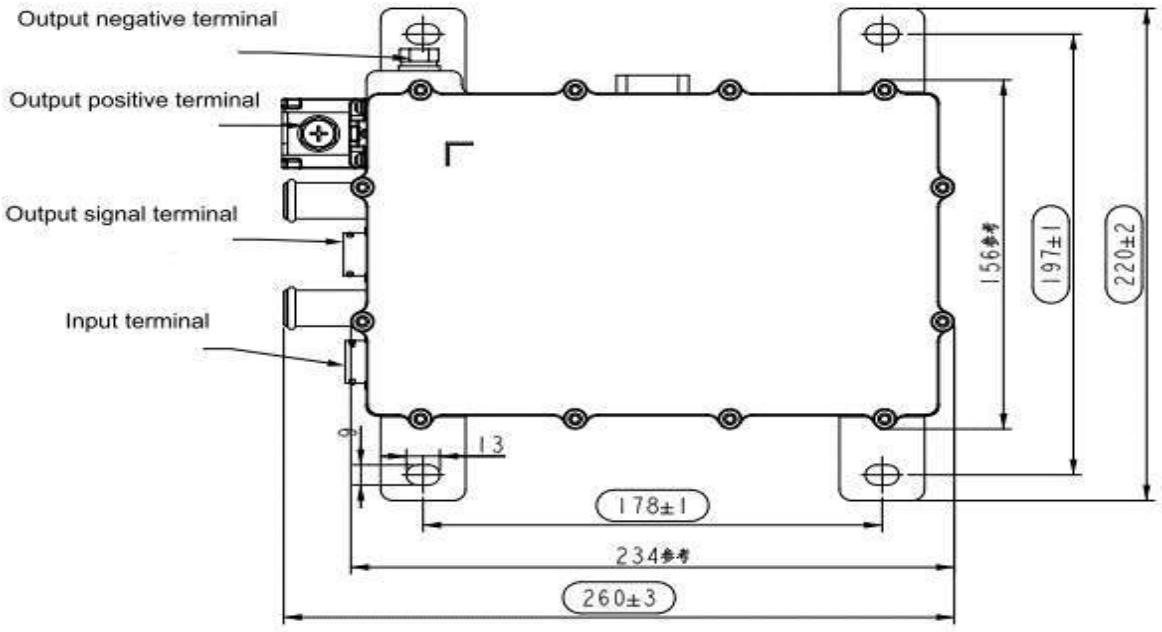
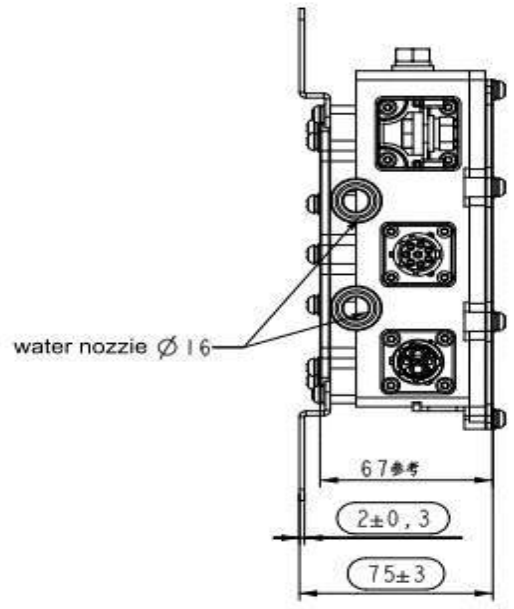
Model No.：AR2K-250380S14L

Product Name：2KW DC/DC Converter Liquid Cooled System

Structural parameters





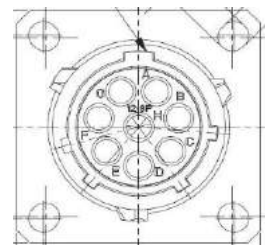
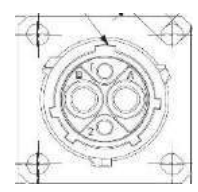
skills requirement
1. The inner dimensions of the frame are the key inspection dimensions, and the dimensions without tolerances are in accordance with GB1804-M.
2. Check whether the surface is clean, without obvious scratches, and without oil or dirt.
3. The input and output terminals are OT terminals and fixed with M8X16 screws.

Electrical Interface

Connector Table（customizable）

Item	Position	Receptacle model no.	Pinout definition	Maker	Plug model no.
1	A	RT00128PN03	Control terminal	Amphenol	RT06128SNHEC03
2	B	RT00122PN03	DC high voltage terminal	Amphenol	RT06122SNHEC03
3	C	ACTB117-C	Output positive	Connet	M8 Specification copper ear
4	D	M8 Bolt lock housing	Output negative	\	M8 Specification copper ear

Interface definition（for reference）

Maker	Receptacle model no.	Description		Connector picture
Amphenol	RT00128PN03	A	CAN-H	
		B	CAN-L	
		C	KEY（Highly effective）Reserved	
		D	VCC+	
		E	GND	
		F	NC	
		G	Interlock 3	
		H	Interlock 4	
Amphenol	RT00122PN03	A	Input positive	
		B	Input negative	
		1	Interlock 1 (connection interlock 3)	
		2	Interlock 2 (connection interlock 4)	

Label

Product Name	2KW DC/DC Converter Liquid Cooled System		
Product Part No.	e25.AR2K-250380S14L		
Product Model	AR2K-250380S14L		
Serial Number	2020XXXXXXXX		
Input Voltage	250-450VDC	Output Voltage	13.8VDC
Output Current	145A	Output power	2000W
Supplier	ANNREN TECHNOLOGIES CO., LTD.		

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Model No.：AR-2K-380/540S14-W-AR01

Product Name：2.0KW DC/DC Converter system

2.0KW DC/DC Converter Module Only

2.0KW DC/DC Converter Water cooling System

Features

1 Output Power：2KW
2 Input Voltage：250-450VDC/400-750VDC
3 Output Voltage：13.8VDC
4 Dimensions：268x220x75mm
5 Cooling System：Water
6 Protection Level：IP67
7 Communication Method：CAN
8 Enclosure: Aluminum alloy made
9 Software: Digital software design

Applications

Electric Passenger Vihecles

Electric Passenger Vihecles

Specification

Description		Technical specifications	Remark
Operating temperature		-40~85℃	85~100℃，Can be derated to 40% of work
Rated output power		2KW(Continuous operation at full load)	Peak power 2.4KW
Input voltage range		250-450VDC/400-750VDC	
Output rated voltage		13.8VDC	9~16 Adjustable
Rated output current		145A	
Auxiliary power VCC		6-18VDC	
Efficiency		≥95%	Rated voltage Full load
Output voltage ripple		≤500mVPK-PK	
Protection characteristics		Input over-voltage, output over-voltage, input anti-reverse connection, output over-current and short-circuit protection, over-temperature self-recovery	
Over temperature protection		The bottom plate temperature reaches 85 °C and starts derating output. The temperature exceeds 100 °C, shutting down; the temperature is lower than 95 °C, which can be self-recovery.	
Dielectric strength	Input to output	2500VDC/1min 1mA max	
	Input to the outer casing	2500VDC/1min 1mA max	
Insulation resistance	Input to output	≥20MΩ	
	Input to the outer casing	≥20MΩ	
Battery compatibility	Radiation emission	GB/T 18655-2010 Class 3	
	Conducted emission	GB/T 18655-2010 Class 3	
	Static immunity	GB/T 19951-2005	Air discharge：15KV，Contact discharge 8KV
	Radiation immunity	GB/T 18655-2010 Class 3	
	High current injection	GB/T 17619-1998	
	Fast burst immunity	GB/T 17626.4-2008 1KV	

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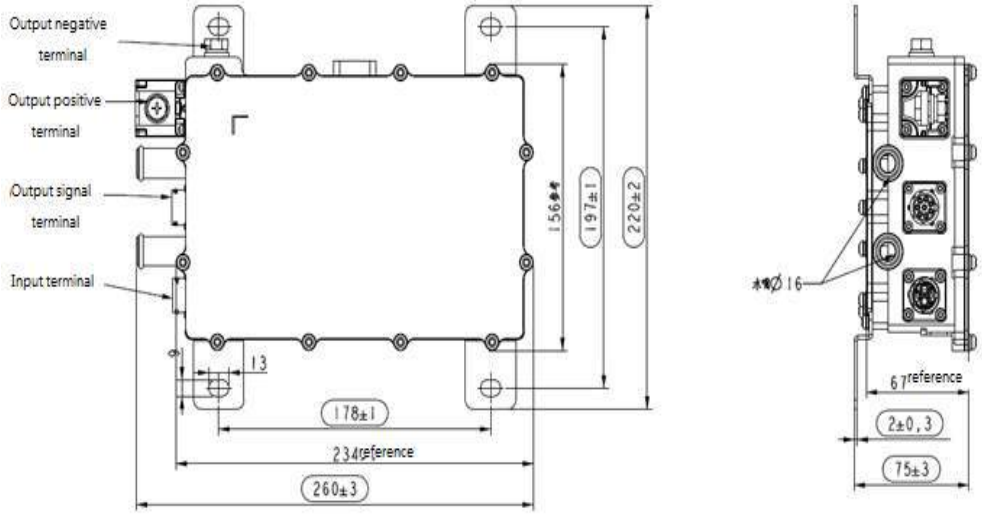
Model No.：AR-2K-380/540S14-W-AR01

Product Name：2.0KW DC/DC Converter system

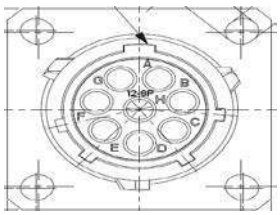
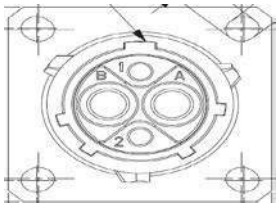
Structural parameters



Connector information（customizable）

Position	Socket model	Function	Brand	Plug model
A	RT00128PN03	Control terminal	Amphenol	RT06128SNHEC03
B	RT00122PN03	DC high voltage terminal	Amphenol	RT06122SNHEC03
C	ACTB117-C	Output positive	Connet	M8 Specification copper ear
D	M8 Bolt lock housing	Output negative	\	M8 Specification copper ear

Interface definition（for reference）

Vendor	Model	Description		Remark
Amphenol	RT00128PN03	A	CAN-H	
		B	CAN-L	
		C	KEY（Highly effective）Reserved	
		D	VCC+	
		E	GND	
		F	NC	
		G	NC	
		H	NC	
Amphenol	RT00122PN03	A	Input positive	
		B	Input negative	
		1	Interlock 1 connection 2	
		2	Interlock 2 connection 1	

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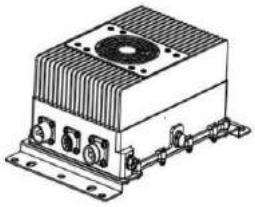
20191007_Version: V04

Model No.：AR3K-540S27F

Product Name：3KW DC/DC Converter Fan System



Module Only

3.0KW DC/DC Converter Fan cooling System

Features

1 Output Power：3KW
2 Input Voltage：400-750VDC
3 Output Voltage：27VDC
4 Dimensions：335X185X120mm
5 Cooling System：Fan
6 Protection Level：IP67
7 Communication Method：CAN
8 Enclosure: Aluminum alloy made
9 Software: Digital software design
10. Weight: 5.6Kg(Net), 6Kg(Gross)

Applications

Electric Bus 12M Low Flow

Specification

Description		Technical specifications	Remark
Operating temperature		-40~85℃	85~100℃，Can be derated to 40% of work
Rated output power		3KW(Continuous operation at full load)	Peak power 3.6KW
Input voltage range		400-750VDC	
Output rated voltage		27.5VDC	Adjustable voltage
Rated output current		110A	
Auxiliary power VCC		9-32VDC	
Efficiency		≥95%	Rated voltage Full load
Output voltage ripple		≤300mVPK-PK	
Protection characteristics		Input over-voltage, output over-voltage, input anti-reverse connection, output over-current and short-circuit protection, over-temperature self-recovery	
Over temperature protection		The bottom plate temperature reaches 85 °C to start derating output; the temperature exceeds 100 °C, shut down; the temperature is lower than 95 °C, self-recoverable	
Dielectric strength	Input to output	3000VDC/1min 1mA max	
	Input to the outer casing	3000VDC/1min 1mA max	
Insulation resistance	Input to output	≥20MΩ	
	Input to the outer casing	≥20MΩ	
Battery compatibility	Radiation emission	GB/T 18655-2010 Class 3	
	Conducted emission	GB/T 18655-2010 Class 3	
	Static immunity	GB/T 19951-2005	Air discharge：15KV，Contact discharge 8KV
	Radiation immunity	GB/T 18655-2010 Class 3	
	High current injection	GB/T 17619-1998	
	Fast burst immunity	GB/T 17626.4-2008 1KV	

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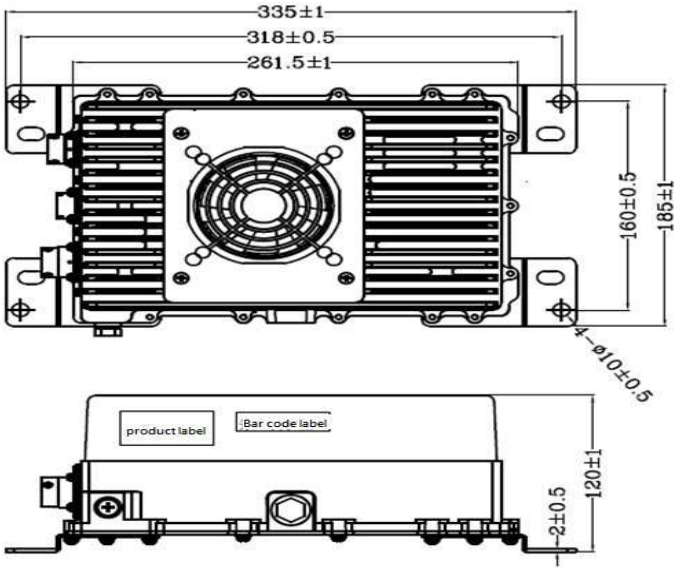
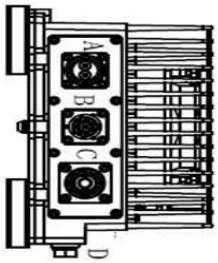
Model No.：AR3K-540S27F

Product Name：3KW DC/DC Converter Fan System

Structural parameters





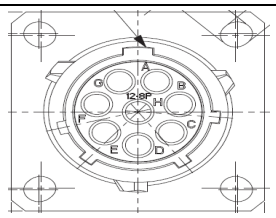
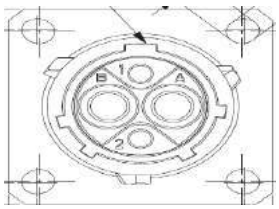
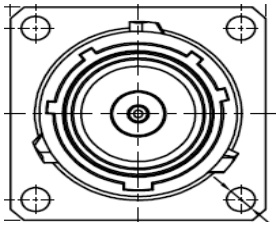
Label

Product Name	3KW DC/DC Converter Fan System
Product Part No.	E25.AR-3K-540S27-F
Product Model	AR-3K-540S27-F
Serial number	2019XXXXXXXX
Supplier	ANNREN TECHNOLOGIES CO., LTD.

Connector information（customizable）

Position	Socket model	Features	Brand	Plug model
A	RT00122PN03	DC input	Amphenol	RT06122SNHEC03
B	RT00128PN03	Control terminal	Amphenol	RT06128SNHEC03
C	RTHP0141PN-H1	Output positive	Amphenol	RTHP6141SNH-25PS2
D	M8 screw bolt	Output negative	\	M8 Screw

Interface definition（for reference）

Vendor	Model	Description		Remark
Amphenol	RT00128PN03	A	NC	
		B	CANL	
		C	CANH	
		D	Mask line	
		E	GND	
		F	NC	
		G	NC	
		H	Enable	
Amphenol	RT00122PN03	A	Input positive	
		B	Input negative	
		1	Interlock 1 connection 2	
		2	Interlock 2 connection 1	
Amphenol	RTHP0141PN-H1	+	Output positive	

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Model No.：AR-300-540S24-N-AR01

Product Name：300W DC/DC CONVERTER SYSTEM

Features

1. Output Power：300W
2. Input Voltage：200~800VDC
3. Output Voltage：24VDC
4. Dimensions：208x129x45mm
5. Cooling System：Fan
6. Machine Weight：<1.5KG
7. Communication Method：CAN
8. Software: Digital software design

Specification

Description		Technical specifications	Remark
Rated output power		300KW (continuous operation at full load)	Peak power360W
Input voltage range		200-800VDC	Rated input 540VDC
Output rated voltage		24±0.5VDC	Adjustable
Rated output current		12.5A	
Efficiency		≥92%	Rated voltage Full load
Output voltage ripple		≤500mVPK-PK	
No-load power consumption		<10W	Input high voltage power
Sleep power comsumption		<60MW	Power consumption of high voltage input during sleep state
Auxiliary source power consumption		<4W	Input power consumption when auxiliary power supply is working
Protection characteristics		Input over-voltage, output over-voltage, input anti-reverse connection, output over-current and short-circuit protection, over-temperature self-recovery	
Dielectric strength	Input to output	3000VDC/1min 1mA max	
	Input to the outer casing	3000VDC/1min 1mA max	
Insulation resistance	Input to output	≥20MΩ	
	Input to the outer casing	≥20MΩ	
Battery compatibility	Radiation emission	Limit requirements for level 3 in 6.4.4 of GB/T 18655-2010.	
	Conducted emission	Limit requirements for level 3 in 6.2.3 of GB/T 18655-2010.	
	Radio frequency immunity (free field / antenna injection)	Level 3 requirements for Appendix C of ISO 11452-2-2004.	
	Radio frequency immunity (High current injection)	Level 3 requirements for Appendix E of ISO 11452-2-2004.	

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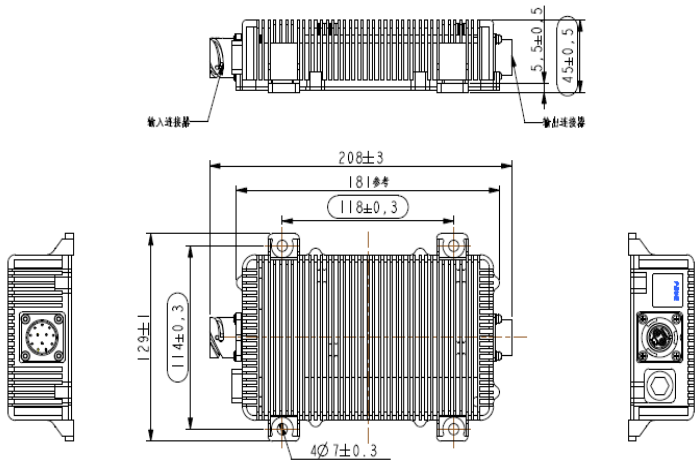
Model No.：AR-300-540S24-N-AR01
Product Name：300W DC/DC CONVERTER SYSTEM

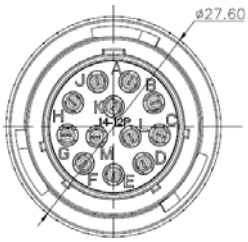
Structural parameters



Connector model

Position	Socket model	Function	Brand	Plug model
A	L52-STP083-12P-W	Control terminal	LeadWay	L52-STP063-12S-W
B	L52-BT6106-090X-C	High voltage input	LeadWay	L52-BT6105-09SX-C

Interface definition

Vendor	Model	Description		Remark
LeadWay	L52-STP063-12S-W	A	24+ low voltage output positive / 12.5A (2.5A)	
		B	24- low voltage output negative / 12.5A (2.5A)	
		C	24- low voltage output negative / 12.5A (2.5A)	
		D	24+ low voltage output positive / 12.5A (2.5A)	
		E	AUX1 (Auxiliary 1) / 20mA	
		F	DISABLE (disable output 24V) / 20mA	
		G	ALARM (hardwire alarm) 10mA	
		H	CAN (CAN communication low) / 100mA	
		J	CAN (CAN communication high) / 100mA	
		K	24- low voltage output negative / 12.5A (2.5A)	
		L	24+ low voltage output positive / 12.5A (2.5A)	
		M	AUX2 (Auxiliary 2) / 20mA	
LeadWay	L52-BT6105-09SX-C	A	High voltage input is positive	
		B	High voltage input is negative	

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Product Name	300W DC/DC CONVERTER
Model No.	AR-300W540S12
Power	300W
Input Voltage	200~800VDC
Output Voltage	12VDC
Output Current	25A
Efficiency	≥92%
Module Low Voltage (VDC)	\
Module Low Current (A)	\
Size (mm)	208x129x45mm
Cooling System	Natural air cooling
IP Rating	IP67
Scope	Various new energy vehicles
Hardware	Small size, light weight and stable performance
Firmware	Full digital software design, redundant protection function design

Features

- **Output power: 300W W**
- **Input voltage: 200-800VDC**
- **Output voltage: 12VDC**
- **Communication method: CAN**
- **Weight: ＜1.5KG**

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Main technical parameters

Item		Technical specifications	Remark
Rated output power		300W (Continuous operation at full load)	Peak power 360W
Input voltage range		200-800VDC	Rated input 540VDC
Output rated voltage		12±0.5VDC	Adjustable
Rated output current		25A	
Effectiveness		≥92%	Rated voltage full load
Output voltage ripple		≤500mVPK-PK	
No-loadpower consumption		＜10W	Input power consumption of high voltage input when not loaded
Sleep power		＜60MW	Power consumption of high voltage input during sleep state
Auxiliary source power consumption		＜4W	Input power consumption when auxiliary power supply is working
Protection characteristics		Input over-voltage, output over-voltage, input anti-reverse connection, output over-current and short-circuit protection, over-temperature self-recovery	
Dielectric strength	Input to output	3000VDC/1min 1mA max	
	Input to the outer casing	3000VDC/1min 1mA max	
Insulation resistance	Input to output	≥20MΩ	
	Input to the outer casing	≥20MΩ	
Battery compatibility	Radiation emission	GB/T 18655-2010 Class 3	
	Conducted emission	GB/T 18655-2010 Class 3	
	Static immunity	GB/T 19951-2005	Air discharge: 15KV, contact discharge 8KV
	Radiation immunity	GB/T 18655-2010 Class 3	

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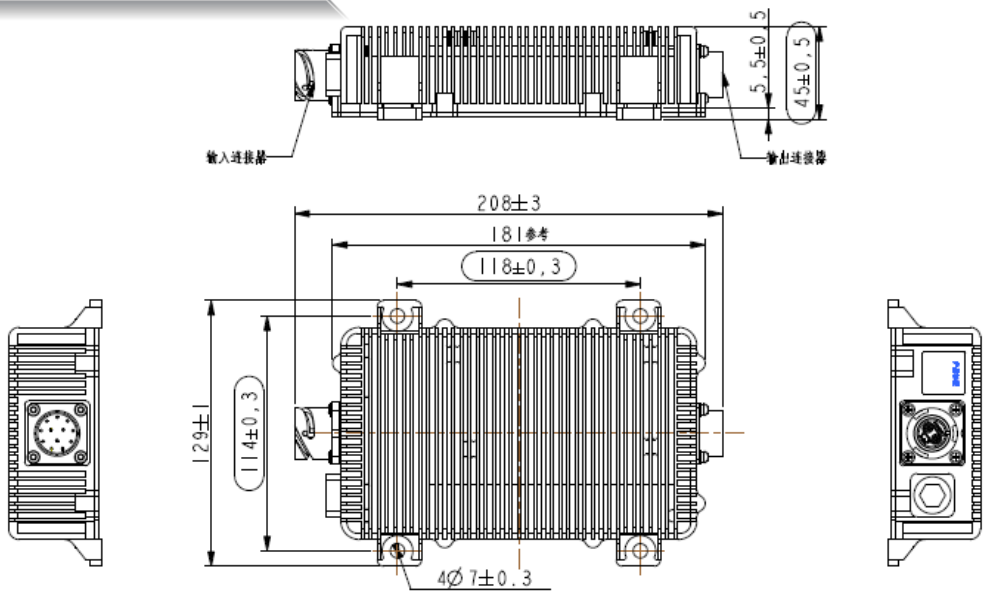
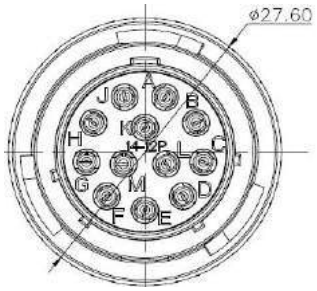
Structural parameters



Connector information:

Position	Socket model	Function	Brand	Plug model
A	L52-STP083-12P-W	Control terminal	LeadWay	L52-STP063-12S-W
B	L52-BT6106-090X-C	High voltage input	LeadWay	L52-BT6105-09SX-C

Interface definition:

Vendor	Model	Description		Remarks
LeadWay	L52-STP083-12P-W	A	12+ low voltage output positive /25A	
		B	12-low voltage output negative / 25A	
		C	12-low voltage output negative / 25A	
		D	12+ low voltage output positive /25A	
		E	AUX1 (Auxiliary 1) / 20mA	
		F	DISABLE (disable output 12V) / 20mA	
		G	ALARM (hardwire alarm) 10mA	
		H	CANL (CAN communication low) / 100mA	

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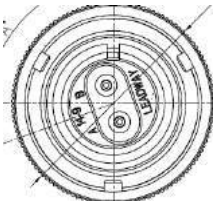
		J	CANH (CAN communication high) / 100mA	
		K	12-low voltage output negative / 25A	
		L	12+ low voltage output positive /25A	
		M	AUX2 (Auxiliary 2) / 20mA	
	L52-BT6106-090X-C	A	High voltage input is positive	
		B	High voltage input negative	

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Product Name	300W DC/DC CONVERTER
Model No.	AR-300-540S12-N-AR01
Power	300W
Input Voltage	200~800VDC
Output Voltage	12VDC
Output Current	25A
Efficiency	≥92%
Module Low Voltage (VDC)	\
Module Low Current (A)	\
Size (mm)	208x129x45mm
Cooling System	Natural air cooling
IP Rating	IP67
Scope	Various new energy vehicles
Hardware	Small size, light weight and stable performance
Firmware	Full digital software design, redundant protection function design

Features

- **Output power: 300W W**
- **Input voltage: 200-800VDC**
- **Output voltage: 12VDC**
- **Communication method: CAN**
- **Weight: ＜1.5KG**

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Main technical parameters

Item		Technical specifications	Remark
Rated output power		300KW (Continuous operation at full load)	Peak power 360W
Input voltage range		200-800VDC	Rated input 540VDC
Output rated voltage		12±0.5VDC	Adjustable
Rated output current		25A	
Effectiveness		≥92%	Rated voltage full load
Output voltage ripple		≤500mVPK-PK	
No-loadpower consumption		＜10W	Input power consumption of high voltage input when not loaded
Sleep power		＜60MW	Power consumption of high voltage input during sleep state
Auxiliary source power consumption		＜4W	Input power consumption when auxiliary power supply is working
Protection characteristics		Input over-voltage, output over-voltage, input anti-reverse connection, output over-current and short-circuit protection, over-temperature self-recovery	
Dielectric strength	Input to output	3000VDC/1min 1mA max	
	Input to the outer casing	3000VDC/1min 1mA max	
Insulation resistance	Input to output	≥20MΩ	
	Input to the outer casing	≥20MΩ	
Battery compatibility	Radiation emission	GB/T 18655-2010 Class 3	
	Conducted emission	GB/T 18655-2010 Class 3	
	Static immunity	GB/T 19951-2005	Air discharge: 15KV, contact discharge 8KV
	Radiation immunity	GB/T 18655-2010 Class 3	

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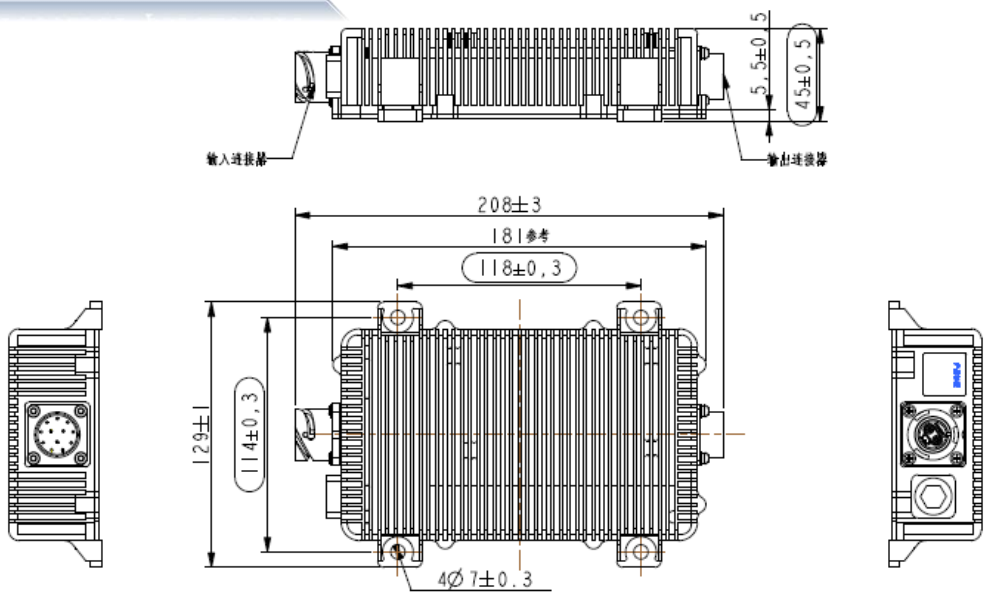
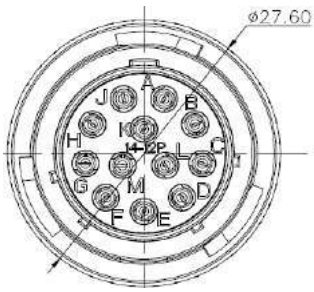
Structural parameters



Connector information:

Position	Socket model	Function	Brand	Plug model
A	L52-STP083-12P-W	Control terminal	LeadWay	L52-STP063-12S-W
B	L52-BT6106-090X-C	High voltage input	LeadWay	L52-BT6105-09SX-C

Interface definition:

Vendor	Model	Description		Remarks
LeadWay	L52-STP083-12P-W	A	12+ low voltage output positive /25A	
		B	12-low voltage output negative / 25A	
		C	12-low voltage output negative / 25A	
		D	12+ low voltage output positive /25A	
		E	AUX1 (Auxiliary 1) / 20mA	
		F	DISABLE (disable output 12V) / 20mA	
		G	ALARM (hardwire alarm) 10mA	
		H	CANL (CAN communication low) / 100mA	

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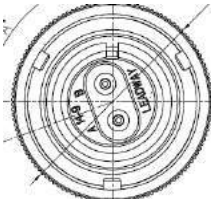
		J	CANH (CAN communication high) / 100mA	
		K	12-low voltage output negative / 25A	
		L	12+ low voltage output positive /25A	
		M	AUX2 (Auxiliary 2) / 20mA	
	L52-BT6106-090X-C	A	High voltage input is positive	
		B	High voltage input negative	

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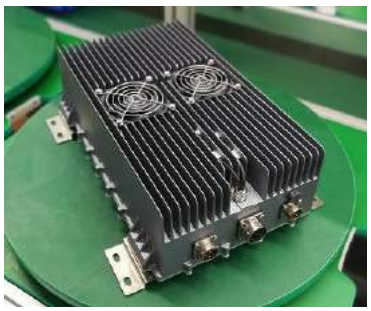
Model No.：AR6K6-220D380/54014/14/27-A-AR01

Product Name：6.6KW ON BOARD CHARGER (AC/DC)



6.6KW On Board Charger Fan cooling system

6.6KW On Board Charger Module Only

★ **Features**

1 Output Power：6.6KW
2 Input Voltage：90~264VAC
3 Output Voltage：250~450VDC/420~650VDC
4 Dimensions：472x244x126mm
5 Cooling System：Fan
6 Protection Level：IP67 (except fan)
7 Communication Method：CAN
8 Enclosure: Aluminum alloy made
9 Software: Digital software design

Applications

Electric Commercial Vihecles

Electric Commercial Vihecles

Specification

Description		Technical specifications	Remark
Environmental characteristics	Operating temperature	-40~65℃	Long-time working
	Vibration/noise	Meet the QC/T 895-2011 standard	
	Salt spray experiment	Meet the QB/T 2423.17-2008 standard	
Output Power		6.6KW max	
Input voltage range		90~264VAC	
Output voltage range		250-450VDC/420~650VDC	
Voltage accuracy		±1%	
Output maximum current		20A/14A	
Current accuracy		±3%	Half load or more
Efficiency		≥93%	Rated voltage Full load
Low voltage output		13.8VDC/7Amax or 27VDC/4Amax	Customizable
Other protection features		Input over-voltage, output over-voltage, over-temperature protection, over-current protection, output short-circuit protection, reverse battery protection, communication fault protection, internal fault protection	
Over temperature protection		When the temperature reaches 85 °C, the output power is reduced by half. The temperature is <80 °C in 10 minutes, and the full load is automatically restored. After 10 minutes, the temperature is >80 °C, then it is turned off. When the temperature is >90 °C, it will be shut down directly.。	
Dielectric strength	Output to the outer casing	2000VDC /60S 10mA Max	
	Input to the outer casing	1500VAC /60S 10mA Max	
	Input to output	3000VAC /60S 10mA Max	
Insulation resistance	Input to output	≥20MΩ	
	Input to the outer casing	≥20MΩ	
Electromagnetic compatibility	Radiation emission	GBT 18387：2008 · EN 55022 CLassB	
	Conducted emission	GBT 18387：2008 · EN 55022 CLassB	
	Radiation immunity	GBT 18387：2008 · EN 55022 CLassB	

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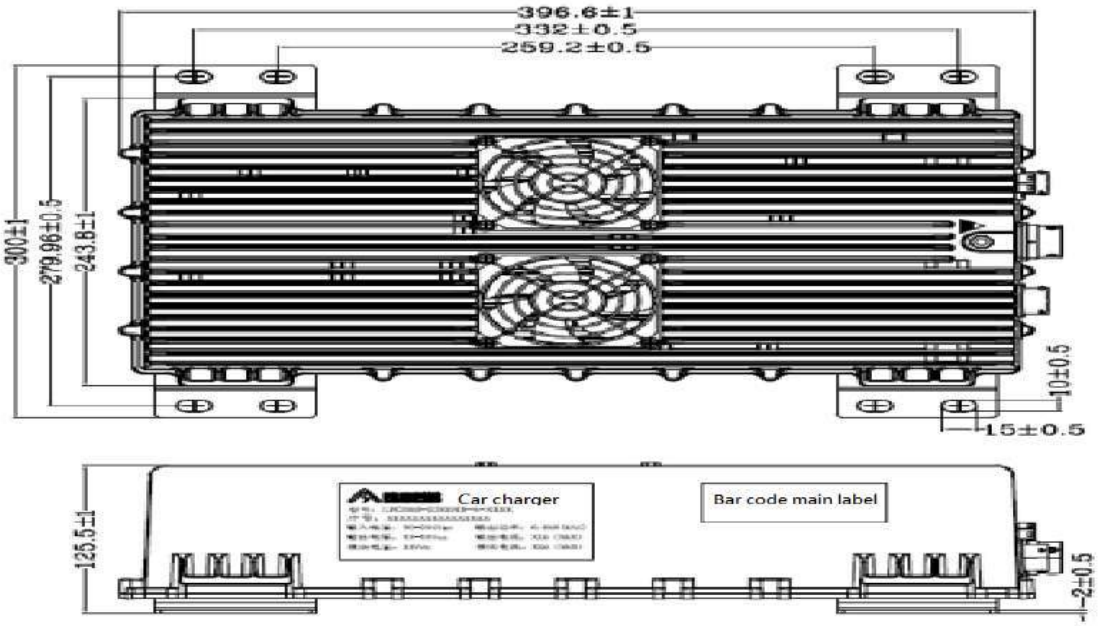
Model No.：AR6K6-220D380/54014/14/27-A-XX
Product Name：6.6KW On Board Charger system

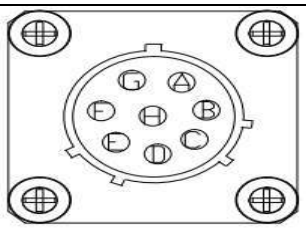
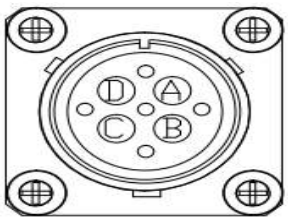
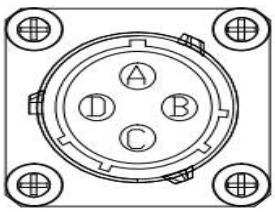
Structural parameters Connector information (can be customized)



Connector information (can be customized)

Position	Socket model	Function	Brand	Plug model
A	RT00164PN03	AC input	Amphenol	RT06164SNHEC03
B	RT00144PN03	DC output	Amphenol	RT06144SNHEC03
C	RT00128PN03	Signal socket	Amphenol	RT06128SNHEC03

Interface definition

Vendor	Model	Description		Remark
Amphenol	RT00128PN03	A	CAN-H	
		B	Output 13.8V+	
		C	Output 13.8V-	
		D	NC	
		E	NC(Aging, internal use)	
		F	NC	
		G	CANL	
		H	CAN Shielding ground	
Amphenol	RT00164PN03	A	L (Fire line)	
		B	N (Neutral line)	
		C	PE(Protected area)	
		D	NC	
Amphenol	RT00144PN03	A	Output positive	
		B	Interlock	
		C	Output negative	
		D	Interlock	

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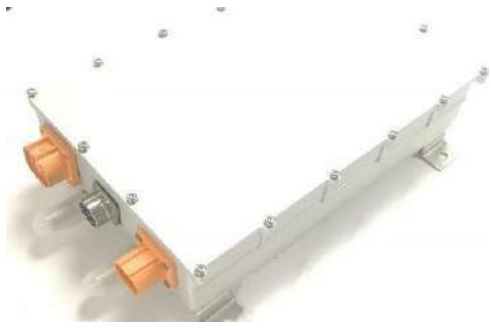
Model No.：AR6K6-220S380L

Product Name：6.6KW On Board Charger Liquid Cooled System



6.6KW On Board Charger Liquid Cooled System

★ Features

1. Output Power：6.6KW
2. Input Voltage：90~264VAC
3. Output Voltage：200~450VDC
4. Dimensions：500x300x200mm
5. Cooling System：Liquid (water nozzie ϕ20)
6. IP Rating：IP67
7. Communication：CAN
8. Enclosure: Aluminum alloy made
9. Software: Digital software design

Applications

Electric Commercial Vihecles

Electric Commercial Vihecles

Specification

Description		Technical specifications	Remark
Environmental characteristics	Operating temperature	-40~85℃	Long-time working
	Vibration/noise	Meet the QC/T 895-2011 standard	
	Salt spray experiment	Meet the QB/T 2423.17-2008 standard	
Output Power		6.6KW max	
Input voltage range		90~264VAC	
Output voltage range		200-450VDC	
Voltage accuracy		±1%	
Output maximum current		20A	
Current accuracy		±3%	Half load or more
Efficiency		≥95%	Rated voltage Full load
Low voltage (VDC)		A:12Vdc/200mAmax	
Other protection features		Input over-voltage, output over-voltage, over-temperature protection, over-current protection, output short-circuit protection, reverse battery protection, communication fault protection, internal fault protection	
Dielectric strength	Output to the outer casing	2000Vdc /60S 10mA Max	
	Input to the outer casing	1500Vac /60S 10mA Max	
	Input to output	3000Vac /60S 10mA Max	
Insulation resistance	Input to output	≥20MΩ	
	Input to the outer casing	≥20MΩ	
Electromagnetic compatibility	Radiation emission	GBT 18387：2008，EN 55022 CLassB	
	Conducted emission	GBT 18387：2008，EN 55022 CLassB	
	Radiation immunity	GBT 18387：2008，EN 55022 CLassB	
Weight	Net weight / Gross weight	8.5KG / 9.0KG	

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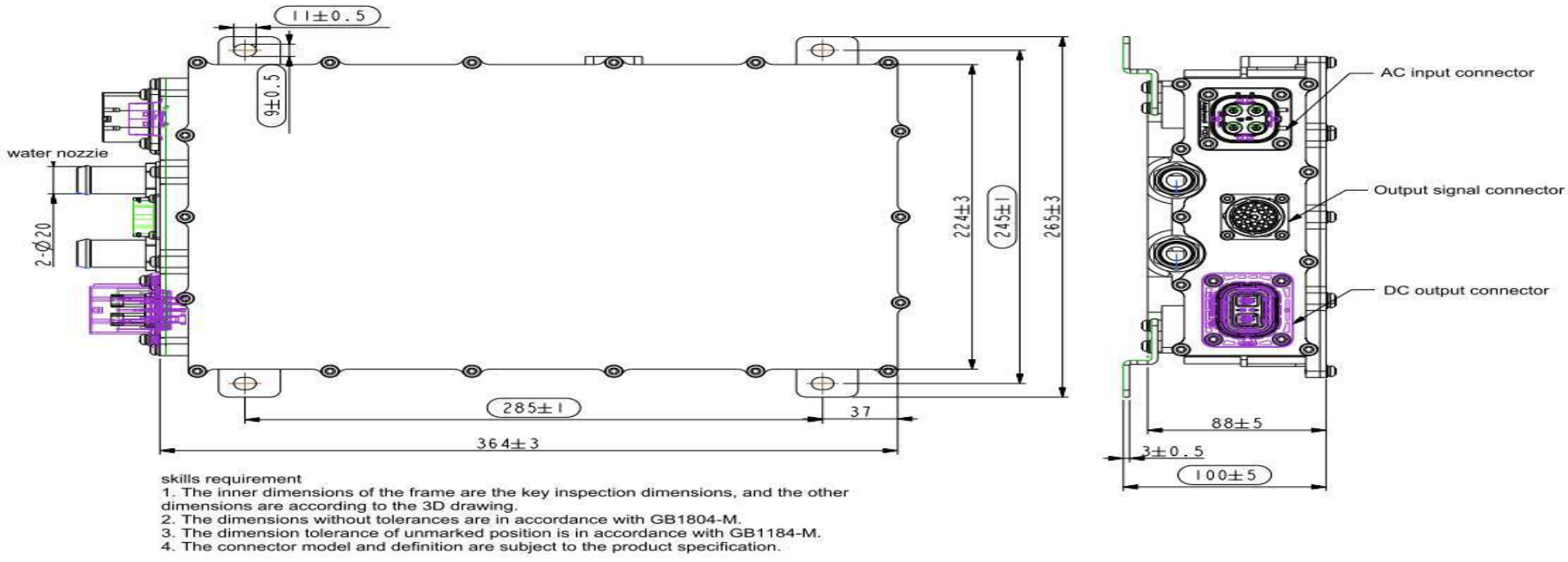
Model No.：AR6K6-220S380L

Product Name：6.6KW On Board Charger Liquid Cooled System

Structural parameters

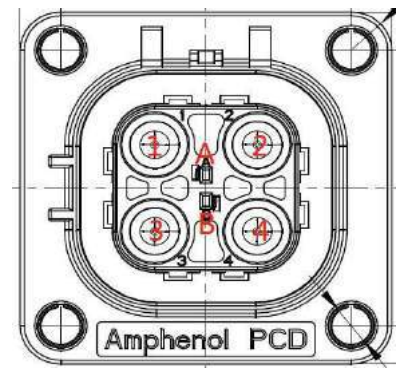
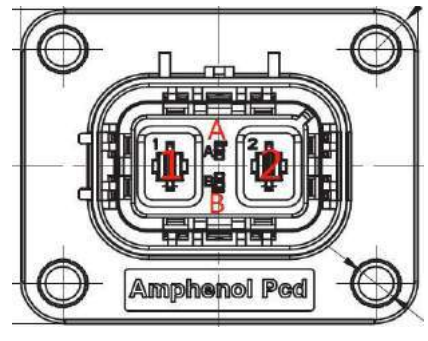


Electrical Interface

Connector Table（customizable）

Item	Position	Receptacle model no.	Pinout definition	Maker	Plug model no.
1	A	HVSL364024A1	AC input	Amphenol	HVSL364064A106I
2	B	HVSL630022A1	DC output	Amphenol	HVSL630062A
3	C	RT001823PN03	Control terminal	Amphenol	RT061823PNHEC03

Interface definition

System Load definition	Pin number	Pinout definition	Description	Connector picture
AC input (HVSL364024A1)	1	FireWire L1	L1 (Single FireWire Fixed Input)	
	2	FireWire L2	L2 (reserved, 11KW enabled)	
	3	FireWire L3	L3 (reserved, 11KW enabled)	
	4	NC	Neutral / midline	
	A	NC	NC	
	B	NC	NC	
Casing	N	Ground	Product housing identification	Machine housing terminal
DC output (HVSL630022A1)	1	Positive	Output positive	
	2	Negative	Output negative	
	A	Interlock 1	Connection Interlock 5	
	B	Interlock 2	Connection Interlock 6	
	A	CAN-L	CAN low	
	B	VCC+	Normal input is positive	
	C	VCU_EN	Hard-wired wake-up OBC, enable signal (high (Active level)	
	D	CC	CC	
	E	CP	CP	

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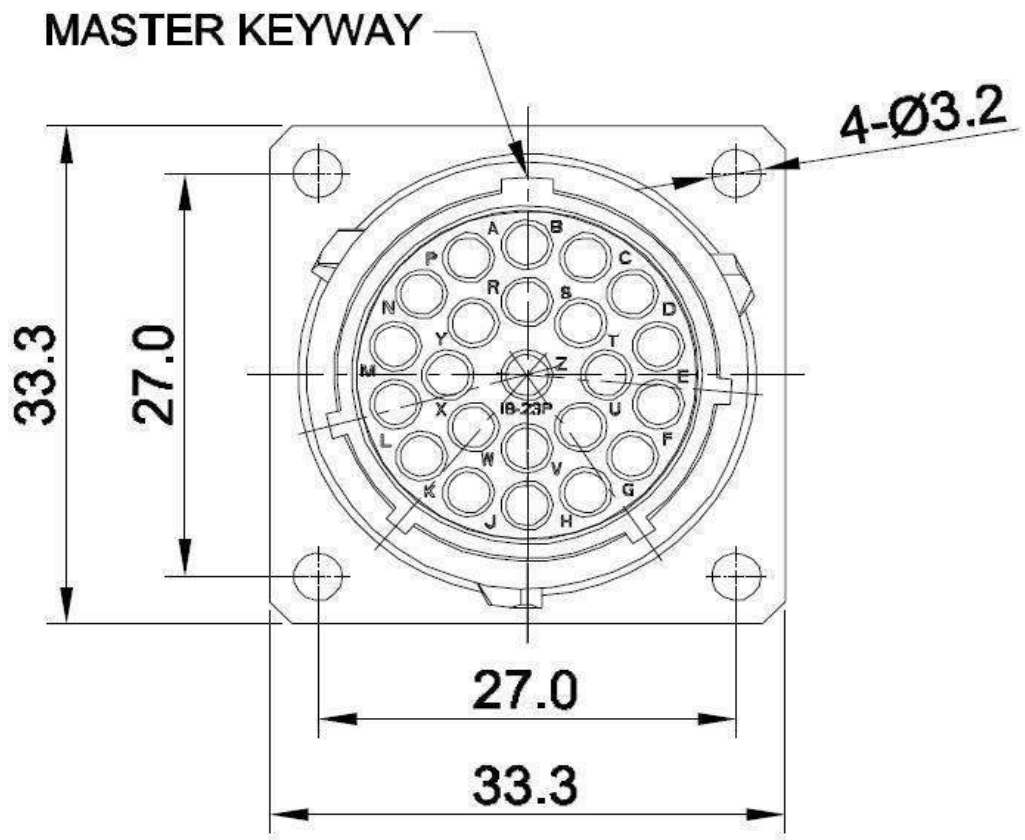
Control terminal (RT001823PN03)

F	WAKE_UP	VCU / BMS wake-up signal (100mA) Galvanically isolated from input
G	NTC1-	Temperature sensor 1 negative
H	NTC1+	Temperature sensor 1 positive
J	NTC2-	Temperature sensor 2 negative
K	NTC2+	Temperature sensor 2 positive
L	CAN1-H	CAN high
M	LOCK+	Electronic lock +
N	LOCK-	Electronic locks-
P	LOCK feedback	Electronic locks
R	CC_OUT	CC status output, low level enable
S	Interlock 5	Interlock signal detection 1
T	Interlock 6	Interlock signal detection 2
U	NC	NC
V	NC	NC
W	GND	GND
X	NC	NC
Y	NC	NC
Z	NC	NC



Label

Product Name	6.6KW On Board Charger Liquid Cooled System		
Product Part No.	e25.AR6K6-220S380L		
Product Model	AR6K6-220S380L		
Serial Number	2020XXXXXXXX		
Input Voltage	90~264v	Output Voltage	200~450VDC
Output Current	20A	Output power	6600W
Supplier	ANNREN TECHNOLOGIES CO., LTD.		

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SAE J1772 6.6KW 380V ON BOARD CHARGER

Model No.: AR-6K6-220S380A-SAE

1. Features

Product Name	6.6KW 380V ON BOARD CHARGER
Model No.	AR-6K6-220S380A-SAE
Standard	SAE J1772
Power	6.6KW
Input Voltage	90~264VAC
Output Voltage	200-450VDC
Output Current	20A
Efficiency	≥93%
Module Low Voltage (VDC)	13.8VDC
Module Low Current (A)	200mAmax
Can Bus Speed	500 kb/s
Size (mm)	380x244x126mm
Cooling System	Fan Cooling
IP Rating	IP67 (Fan is excluded)
Scope	Various new energy vehicles
Hardware	Small size, light weight and stable performance
Firmware	Full digital software design, redundant protection function design

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2. Specification

Item		Technical specifications	Remarks
Environmental characteristics	Operating temperature	-40~65℃	Long-time working
	Vibration/noise	Meet SAE J1772 2010 standard	
	Salt spray experiment	Meet SAE J1772 2010 standard	
Output Power		6.6KW max	
Input voltage range		90~264VAC	
Output voltage range		200-450 VDC	
Voltage accuracy		±1%	
Output maximum current		20A	
Current accuracy		±3%	Half load or more
Efficiency		≥93%	Rated voltage Full load
Low voltage wake-up signal		13.8VDC/200mAmax	Customizable
Other protection features		Input over-voltage, output over-voltage, over-temperature protection, over-current protection, output short-circuit protection, reverse battery protection, communication fault protection, internal fault protection	
Over temperature protection		When the temperature reaches 85 °C, the output power is reduced by half. The temperature is <80 °C in 10 minutes, and the full load is automatically restored. After 10 minutes, the temperature is >80 °C, then it is turned off. When the temperature is >90 °C, it will be shut down directly.	
Dielectric strength	Output to the outer casing	2000VDC /60S 10mA Max	
	Input to the outer casing	1500VAC /60S 10mA Max	
	Input to output	3000VAC /60S 10mA Max	
Insulation	Input to output	≥20MΩ	
	Input to the	≥20MΩ	

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resistance	outer casing		
Electromagnetic compatibility	Radiation emission	GBT 18387：2008，EN 55022 Class B	
	Conducted emission	GBT 18387：2008，EN 55022 Class B	
	Radiation immunity	GBT 18387：2008，EN 55022 Class B	

3. Structural Parameters

Structural information (installation brackets and plug-ins can be customized)

Position	Receptacle model no.	Pin out definition	Maker	Plug model no.
A	C10518N1-04-1-G001	AC input	Jonhon	C10518N1-04-1-2-G001
B	RT00144PN03	DC output	Amphenol	RT06144SNHEC03
C	RT00128PN03	Signal socket	Amphenol	RT06128SNHEC03

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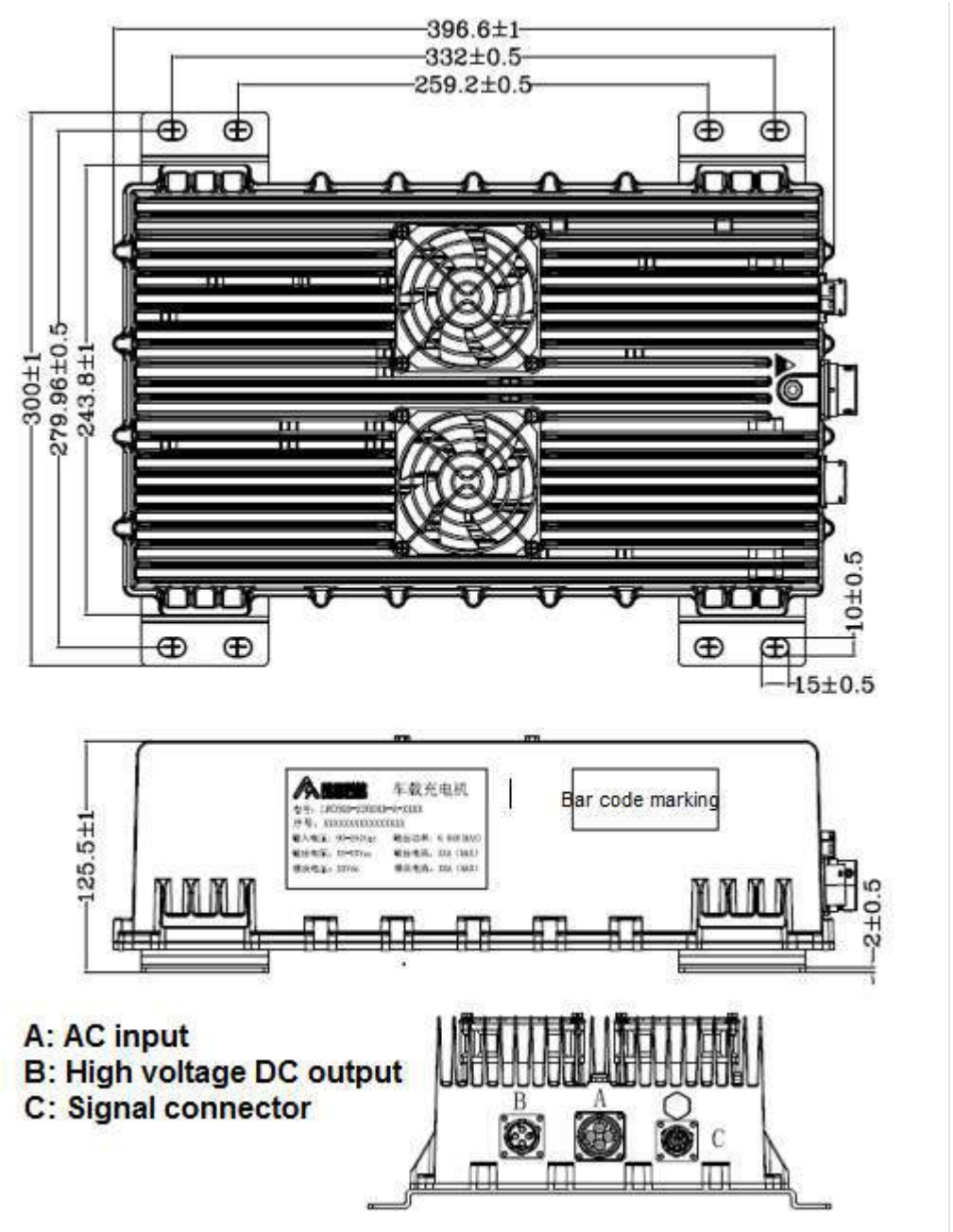
Dimension Information:



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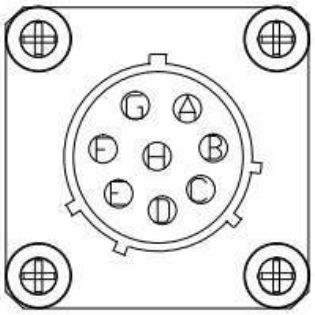
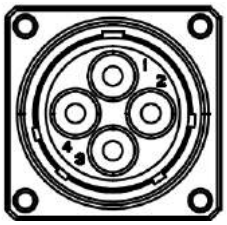
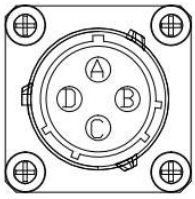
Pinout definition

Vendor	Model	Description		Remarks
Amphenol	RT00128PN03	A	CAN-H	
		B	Proximity Detection (CC)	
		C	Control pilot (CP)	
		D	Constant battery power (12V Input)	
		E	OBC-EN (Wake up signal)	
		F	J1772 mode enable (High level signal)	
		G	CANL	
		H	GND	
Jonhon	C10518N1-04-1-G001	1	L (Fire line)	
		2	N (Neutral line)	
		3	PE (Protected area)	
		4	NC	
Amphenol	RT00144PN03	A	Output positive	
		B	Interlock 1 (Reserved function)	
		C	Output negative	
		D	Interlock 2 (Reserved function)	

4. Label

安仁國際股份有限公司
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No.196-19, CHUNGHWA RD. ,YUNGKANG DISTRICT, TAINAN CITY 71069, TAIWAN

Model No.：AR-11K-380S/540-W-AR01

Product Name：11KW ON BOARD CHARGER(AC/DC)

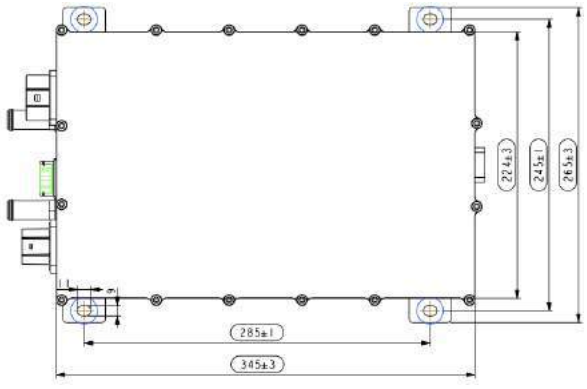
Features

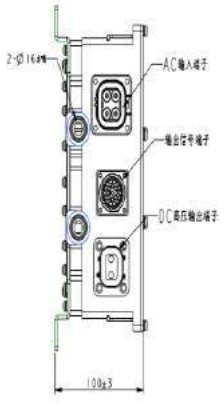
1 Output Power：11KW
2 Input Voltage：304~456Vac
3 Output Voltage：420~710VDC
4 Dimensions：279x172x58mm
5 Cooling System：Water
6 Protection Level：IP67
7 Communication Method：CAN
8 Small size, light weight and stable performance
9 Full digital software design, redundant protection

The main technical parameters

Description		Technical specifications	Remark
Operating temperature		-40~85℃	Working Long Time
Output power		11KW	
Maximum input current		25A	
Input voltage range		304~456VAC (line-line voltage · three phase four wire system)	
Output voltage range		420~710VDC	
Activation method		CP/CC/Hard line enable	
Low voltage input specification		13.8VDC(4Amax)/27VCD(2Amax)	External low voltage supplies power to OBC.
Low voltage input power		30W	
Voltage accuracy		±1%	
Maximum output current		23A	
Current accuracy		±3%	Half load or more
Efficiency		≥95%	Rated voltage Full load
Output time impact		The rise time of the output voltage of the car charger should be less than 300ms, and the overshoot should be less than 10%. After receiving the shutdown command, the current drops below 10% within 300ms and drops to 0A within 500ms.	
Other protection features		Input over-voltage, output over-voltage, over-temperature protection, over-current protection, output short-circuit protection, reverse battery protection, communication fault protection, internal fault protection.	
Over temperature protection		When the temperature reaches 85 °C, the output power is reduced by half. The temperature is <80 °C in 10 minutes, and the full load is automatically restored. After 10 minutes, the temperature is >80 °C, then it is turned off. When the temperature is >90 °C, it will be shut down directly.	
Insulation strength	Output to the outer casing	2000VDC /60S 10mA Max	
	Input to the outer casing	1500VAC /60S 10mA Max	
	Input to output	3000VAC /60S 10mA Max	
Insulation resistance	Input to output	≥20MΩ	
	Input to the outer casing	≥20MΩ	

Structural parameters





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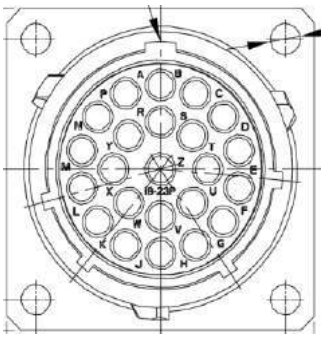
Model No.：AR-11K-380S/540-W-AR01

Product Name：11KW ON BOARD CHARGER(AC/DC)

Connector model

Position	Socket model	Function	Brand	Plug model
A	HVC4P36MV304	AC input	Amphenol	HVC4P36FS304
B	HVC2P63MV306	DC output	Amphenol	HVC2P63FS306
C	RT001823PN03	Control terminal	Amphenol	RT061823SNHEC03

Interface definition

Vendor	Model	Description			Remark
Amphenol	AC input (HVC4P36MV304)	1	L1	Live Wire 1	
		2	L2	Live Wire 2	
		3	L3	Live Wire 3	
		4	N	Naught Wire	
Amphenol	DC output (HVC2P63MV306)	1	VOUT+	Output positive	
		2	VOUT-	Output negative	
Amphenol	Control terminal (RT001823PN03)	A	NTC1-	Temperature sensor 1 negative	
		B	NTC1+	Temperature sensor 1 positive	
		C	VCC+	Normal input positive	
		D	VCC-	Normal input negative	
		E	CAHN1	CAN1 High	
		F	HVIL+	High Voltage Inter-lock positive	
		G	CANL1	CAN1 Low	
		H	HVIL-	High Voltage Inter-lock negative	
		J	NTC2-	Temperature sensor 1 negative	
		K	NTC2+	Temperature sensor 1 positive	
		L	WAKE_UP	Output wake-up signal	
		M	CAN-G	CAN shielding ground	
		N	LOCK FB2	Electronic lock feedback 2	
		P			
		R	CC_OUT	CC status output / low level enable signal	
		S	LOCK+	Electronic lock power supply positive	
		T	LOCK-	Electronic lock power supply negative	
		U	LOCK FB1	Electronic lock feedback 1	
		V	CC		
		W	CP		
		X	VCU_EN	Hardwire wake-up signal	

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Product Name：11KW ON BOARD CHARGER(AC/DC)

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Model No.：AR11K-380S14M

Product Name：11KW On Board Charger Module

Date	Mar. 6, 2020	Version	V01	Remark	1. Added the voltage range 9-32V for VCC 2. Added Vdc output 12V 200AMax wakeup connector

★ Features

1 Output Power：11KW
2 Input Voltage：
Three-phase 304 ~ 456VAC
Single phase 220 ± 15% VAC
3 Output Voltage：250~450VDC
4 Dimensions：300x200x60mm
5 Communication：CAN
6 Software: Digital software design
7 Weight：≦6.5KG

11KW On Board Charger Module

Applications

Electric Commercial Vihecles

Electric Commercial Vihecles

Specification

Description		Parameters	Remark
Environmental characteristics	Operating temperature	-40~65℃	Long-time working
	Vibration/noise	Meet the QC/T 895-2011 standard	
	Salt spray experiment	Meet the QB/T 2423.17-2008 standard	
Output Power		Three-phase 11KW / single-phase 3.3KW or 6.6KW	
Input voltage range		Three-phase 304 ~ 456VAC (line-line voltage, three-phase four-wire) Single-phase 176 ~ 264VAC	
Output voltage range		250~450VDC	
Low voltage (VDC)		13.8VDC (5Amax)	
Activation method		CP / CC / hard wire	
Voltage accuracy		±1%	
Output maximum current		Three-phase: 32A, 3.3KW single phase: 10A, 6.6KW single phase: 20A	
Voltage ripple coefficient		≤±1%	
Current accuracy		±3%	Half load or more
Efficiency		≥95%	Rated voltage Full load
Parallel function		Parallel networking through internal CAN communication, supporting up to 8 modules in parallel.	
Output response time		The rise time of the on-board charger output voltage should be less than 300ms, and the overshoot should be less than 10%. After receiving the shutdown command, the current drops below 10% in 300ms, and drops to 0A in 500ms.	
Other protection features		Input over voltage, input under voltage, output over voltage, output under voltage, short circuit, output over current, over temperature, reverse connection protection, potential equalization and ground protection, power failure protection	

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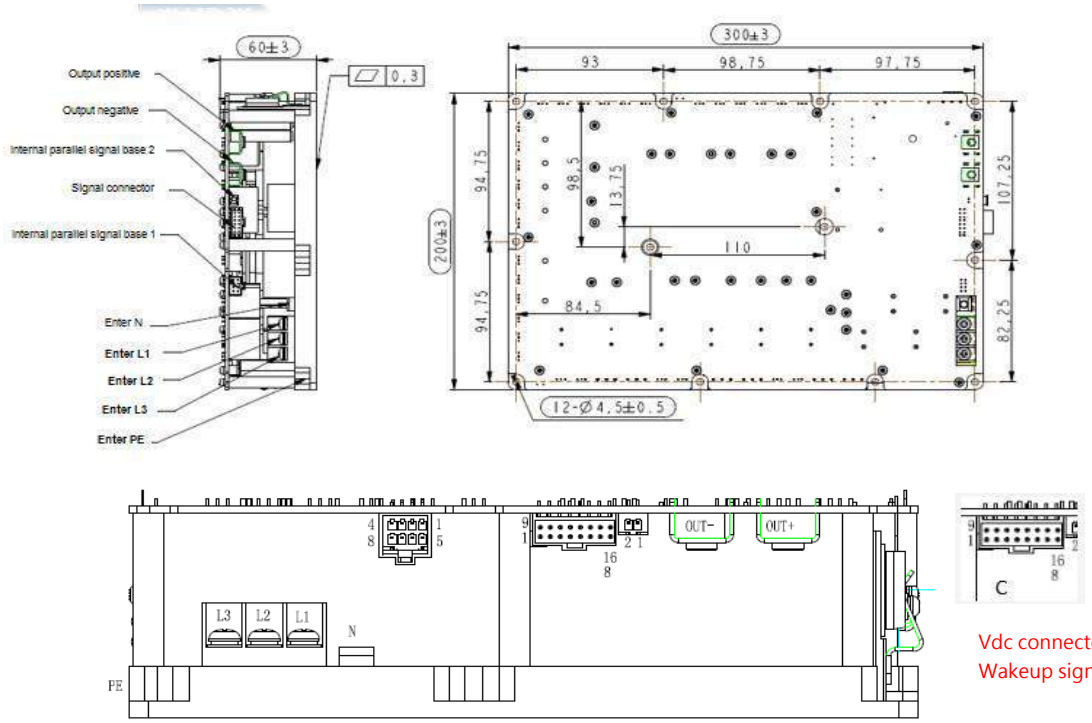
Model No.：AR11K-380S14M

Product Name：11KW On Board Charger Module

Over temperature protection		When the temperature reaches 85 ° C, the output power is halved, and the temperature is lower than 80 ° C within 10 minutes, and the load is automatically restored. After 10 minutes, the temperature is higher than 80 ° C, then the power is turned off. When the temperature is higher than 90 ° C, the power is turned off directly.	
Dielectric strength	Output to outer casing	2000VDC /60S 10mA Max	
	Input to outer casing	1500VAC /60S 10mA Max	
	Input to output	3000VAC /60S 10mA Max	
Insulation resistance	Input to output	≥20MΩ	
	Input to outer casing	≥20MΩ	
Electromagnetic compatibility	Radiation emission	GBT 18387：2008 · EN 55022 CLassB	
	Conducted emission	GBT 18387：2008 · EN 55022 CLassB	
	Radiation immunity	GBT 18387：2008 · EN 55022 CLassB	

Structural parameters



Vdc connector: 12V 200Amax
Wakeup signal connector

Connector information

Item	Receptacle model	Funtion	Maker	Plug model
A	M4 stud	AC input		M4 screw OT terminal (Outer diameter is not greater than 7mm)
B	M4 stud	DC output		M4 screw OT terminal (Outer diameter is not greater than 9mm)
C	105314-1216	Signal control	Molex	Plug: 105308-1216 Pin: 105300-2200
D	A2547WRB-2*4P	Internal parallel signal base 1	CJT	Plug: A2547HJ-2 * 4P Pin: A2547-GP
E	S2B-XH-A	Internal parallel signal base 2	JST	Plug: XHP-2 Pin: SXH-001T-P0.6N

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Model No.：AR11K-380S14M

Product Name：11KW On Board Charger Module

Pinout definition

System Load definition	Pin number	Pinout definition	Description
AC input (M5 stud)	1	L1	Firewire 1, 3PIN terminal, 16A MAX
	2	L2	Firewire 1, 3PIN terminal, 16A MAX
	3	L3	Firewire 1, 3PIN terminal, 16A MAX
	4	N	Neutral line, metal terminal block, 32A MAX (Need to check carefully to prevent wrong connection.)
	5	PE	Protective ground point, grounded through the chassis.
DC output (M4 stud)	1	VOUT+	MAX 40A
	2	VOUT-	MAX 40A
Control terminal Receptacle: 105314-1216 Plug: 105308-1216 Pin:	1	VCC-	Normal input negative (2A) Voltage range: 9-32V
	2	VCU_EN	Hard-wire wake-up and enable signals
	3	LOCK+	Electronic lock power supply +
	4	LOCK-	Electronic lock power supply-
	5	LOCK FB1	Electronic lock lock feedback 1
	6	CANH	CAN1 high
	7	CANL	CAN1 low
	8	WAKE_UP	Output wake-up signal
	9	VCC+	Normal input is positive Voltage range: 9-32V
	10	CC_OUT	CC status output, low level enable
	11	NTC1-	Temperature sensor 1 negative
	12	NTC1+	Temperature sensor 1 positive
	13	NTC2-	Temperature sensor 2 negative
	14	NTC2+	Temperature sensor 2 positive
	15	CC	CC
	16	CP	CP
Internal parallel signal base (4PIN)	1	CANL2	Internal parallel CAN2 low
	2	CANH2	Internal parallel CAN2 high
	3	TB_R	Termination resistor selection, the resistance is effective when shorted to pin 2
	4	EN2	Internal parallel enable (reserved)
	5	NC	NC
	6	NC	NC
	7	NC	NC
	8	NC	NC
Internal parallel signal base 2 Socket: S2B-XH-A	1	EN_L+	Host selection +
	2	EN_L-	Host selection-

Label

Product Name	11KW On Board Charger Module		
Product Part No.	e25.AR11K-380S14M		
Product Model	AR11K-380S14M		
Serial Number	2020XXXXXXXX		
Input Voltage	Three-phase 304 ~ 456VAC Single phase 220 ± 15% VAC	Output Voltage	250~450VDC
Output Current	32A	Output power	11000W
Supplier	ANNREN TECHNOLOGIES CO., LTD.		

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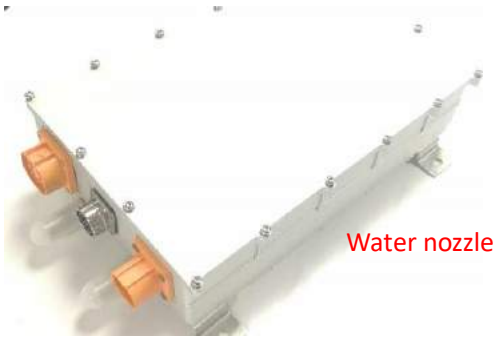
11KW ON BOARD CHARGER

Model No.: AR11K3S-400580L



Features

Product Name	11KW ON BOARD CHARGER
Model No.	AR11K3S-400580L
Standard	GB/T / IEC
Power	11KW
Input Voltage	Three-phase 304~456VAC/single phase 90~264VAC
Output Voltage	400~750VDC
Output Current	Three phase: 32A, 6.6KW single phase: 20A
Efficiency	≥95%
Module Low Voltage (VDC)	13.8VDC（4Amax）
Size (mm)	345x224x100mm
Cooling System	Liquid Cool
IP Rating	IP67
Scope	Various new energy vehicles
Hardware	Small size, light weight and stable performance
Firmware	Full digital software design, redundant protection function design
Weight	Net: 10KG Gross: 12KG

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This charger has several advantages, including:

1. The volume and weight of automotive grade products: down more than 20%.
2. Real-time monitoring: real-time control and function control are performed on the hardware by a separate “core”

 It is easy to test the international mainstream EMI standards.

 The product design conforms to the international mainstream safety and standard.

 It can be compatible with the following different types of AC charging piles, while allowing continuous charging in the case of grid disconnection

3. Meet the new national standard GBT18487.1-2015.
4. Reserve hardware interfaces for interconnection between the Internet of Vehicles, mobile Internet and car chargers.
5. Retain the hardware interface for the secondary development of ASIL functional safety in the future.
6. Compatible with charging power expansion 22KW, 40KW, 80KW, etc.

Specification

Specification			Remark
Environmental characteristics	Operating temperature	-40~85℃	long-time working
	Vibration/noise	Meet the QC/T 895-2011 standard	
	Salt spray experiment	Meet the QB/T 2423.17-2008 standard	
Output Power		Three phase 11KW / single phase 6.6KW	
Input voltage range		Three-phase 304~456VAC (line-to-line voltage, three-phase four-wire) Single phase 90~264VAC	
Output voltage range		400~750VDC	
Low voltage input auxiliary source		13.8VDC（4Amax）	
Activation method		CP/CC/hard wire	
Voltage accuracy		±1%	
Output maximum current		11KW Three phase: 32A, 6.6KW single phase: 20A	
Voltage ripple factor		≤±1%	
Current accuracy		±3%	≧Half load
Effectiveness		≥95%	Rated voltage Full load

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Output response time		The rise time of the output voltage of the car charger should be less than 300ms, and the overshoot should be less than 10%. After receiving the shutdown command, the current drops below 10% within 300ms and drops to 0A within 500ms.	
Other protection features		Input overvoltage, input undervoltage, output overvoltage, output undervoltage, short circuit, output overcurrent overtemperature, reverse connection protection potential equalization and ground protection, power failure protection.	
Over temperature protection		When the temperature reaches 85 °C, the output power is reduced by half. The temperature is <80 °C in 10 minutes, and the full load is automatically restored. After 10 minutes, the temperature is >80 °C, then it is turned off. When the temperature is >90 °C, it will be shut down directly.	
Dielectric strength	Input to the outer casing	2000VDC /60S 10mA Max	
	Input to output	1500VAC /60S 10mA Max	
	Input to output	3000VAC /60S 10mA Max	
Insulation resistance	Input to the outer casing	≥20MΩ	
	Input to the outer casing	≥20MΩ	
EMC	Electromagnetic immunity	GB/18487.3-2001 Class B	Cooperate with the whole vehicle
	Electromagnetic disturbance	GB/18487.3-2001 Class B	Cooperate with the whole vehicle

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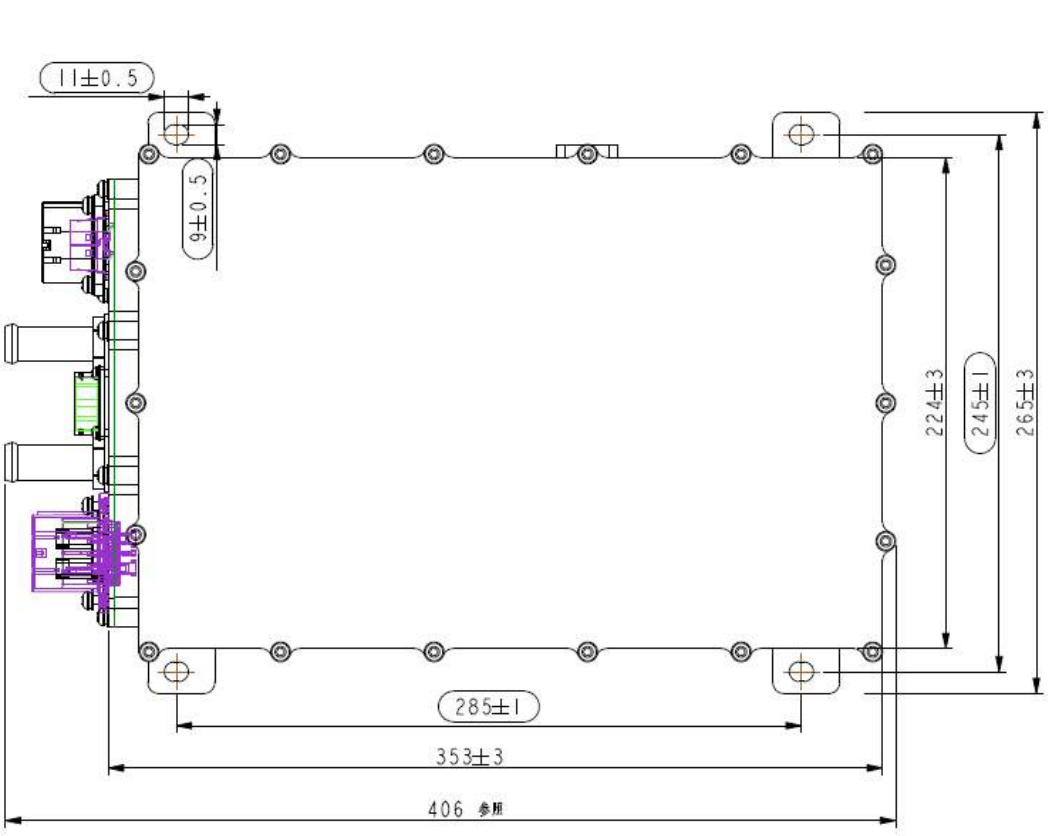
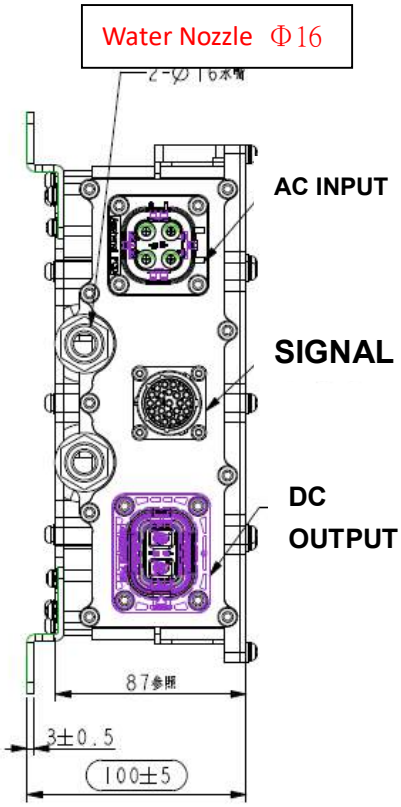
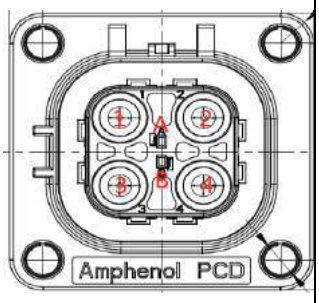
Structural parameters

Pinout	Receptacle Model no.	Function	Maker	Plug Model No.	Terminal Model No.	Stopper Model No.
A	HVSL364024A	AC input	Amphenol	HVSL364064A104I	C310026001	\
B	HVSL630022A	DC output	Amphenol	HVSL630062A	C310003623	\
C	RT001823PN03	Signal	Amphenol	RT061823PNHEC03	SS16M1F	AT13-204-2005





MAKER	Model No.	Description			Remark
AC input Amphenol	HVSL364024A	1	Fire line L1	L1	
		2	Fire line L2	L2	
		3	Fire line L3	L3 (single fire line fixed input)	
		4	N	Neutral/midline	
		A	NC	NC	
		B	NC	NC	
	casing	N	Ground line	Product enclosure	Whole machine housing terminal

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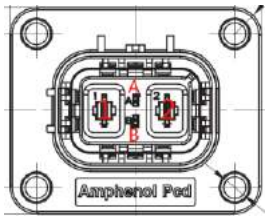
DC output Amphenol	HVSL630022A	1	positive	Output positive	
		2	negative	Output negative	
		A	Interlock 1	Connection interlock 5	
		B	Interlock 2	Connection interlock 6	
Signal Amphenol	RT001823PSN 03	A	CAN1-L	CAN LOW	
		B	VCC+	Normal input	
		C	VCU_EN	Hard-wire wake-up OBC, enable signal (active high)	
		D	CC	CC	
		E	CP	CP	
		F	WAKE_UP	VCU/BMS wake-up signal (100mA) Isolated from input constants	
		G	NTC1-	Temperature sensor 1 negative	
		H	NTC1+	Temperature sensor 1 positive	
		J	NTC2-	Temperature sensor 2 negative	
		K	NTC2+	Temperature sensor 2 is positive	
		L	CAN1-H	CAN high	
		M	LOCK+	Electronic locks	
		N	LOCK+	Electronic locks	
		P	LOCK feedback	Electronic locks	
		R	CC_OUT	CC status output, turn on low level	
		S	NC	NC	
		T	NC	NC	
		U	NC	NC	
		V	TB_R	Terminal resistance selection, short circuit to C pin, the resistance is effective	
		W	GND	GND	
		X	CAN2-L	Internal parallel CAN2 low	
		Y	CAN2-H	Internal parallel CAN2 high	
		Z	NC	NC	

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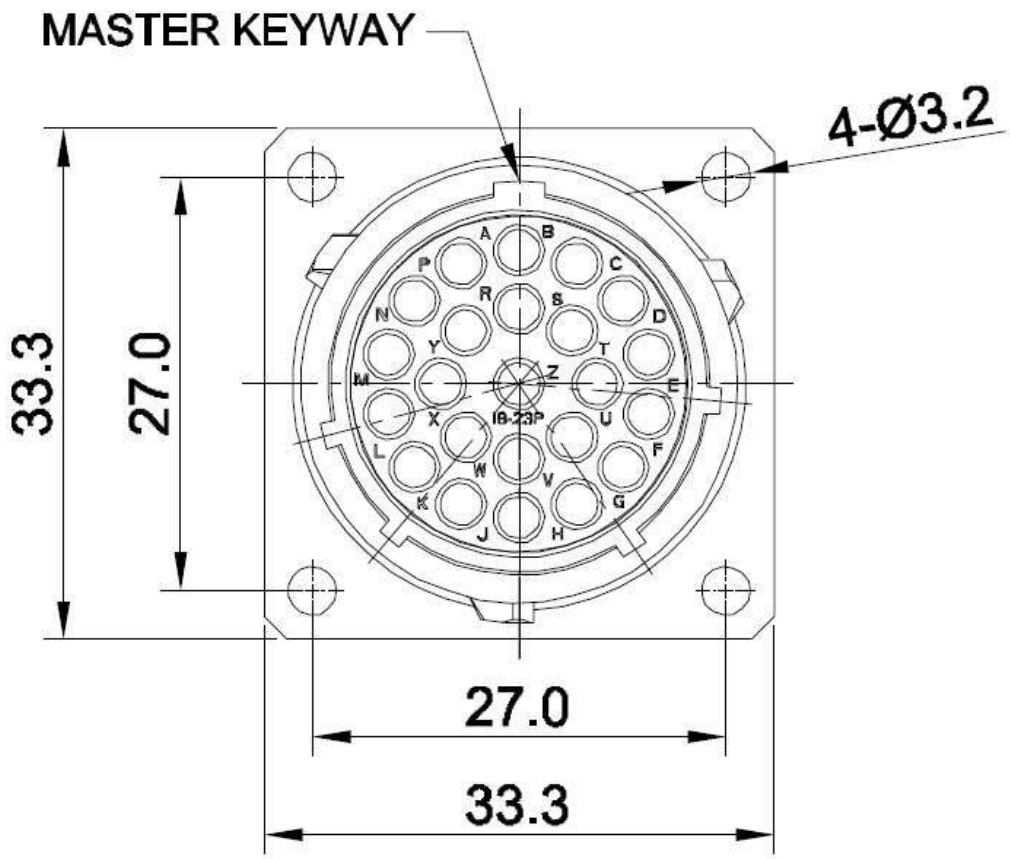

Label

Product Name	11KW ON BOARD CHARGER		
Product Part No.	E25. AR-11K3S-400580L		
Product Model	AR11K3S-400580L		
Serial number	2020XXXXXXXX		
Input Voltage	3 phase 304~456VAC 1 phase 90~264VAC	Output Voltage	400~750VDC
Output Current	3 phase: 32A 6.6KW 1 phase: 20A	Output power	11KW
Supplier	ANNREN TECHNOLOGIES CO., LTD.		

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Version: 02	Date: Oct. 25th, 2019	Remark: Label added
Version: 03	Date: Oct. 30th, 2019	Remark: Weight added
Version: 04	Date: 11th Nov., 2019	Remark: Terminal P/N added

11KW ON BOARD CHARGER

Model No.: AR11K3S-250380W

Features

Product Name	11KW ON BOARD CHARGER
Model No.	AR11K3S-250380W
Standard	GB/T / IEC
Power	11KW
Input Voltage	Three-phase 304~456VAC/single phase 175~265VAC
Output Voltage	250~450VDC
Output Current	Three phase: 32A, 6.6KW single phase: 20A
Efficiency	≥95%
Module Low Voltage (VDC)	13.8VDC（4Amax）
Size (mm)	345x224x100mm
Cooling System	Liquid Cool
IP Rating	IP67
Scope	Various new energy vehicles
Hardware	Small size, light weight and stable performance
Firmware	Full digital software design, redundant protection function design
Weight	Net: 10KG Gross: 12KG

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1. The volume and weight of automotive grade products: down more than 20%.
2. Real-time monitoring: real-time control and function control are performed on the hardware by a separate “core”

   It is easy to test the international mainstream EMI standards.

   The product design conforms to the international mainstream safety and standard.

   It can be compatible with the following different types of AC charging piles, while allowing continuous charging in the case of grid disconnection
3. Meet the new national standard GBT18487.1-2015.
4. Reserve hardware interfaces for interconnection between the Internet of Vehicles, mobile Internet and car chargers.
5. Retain the hardware interface for the secondary development of ASIL functional safety in the future.
6. Compatible with charging power expansion 22KW, 40KW, 80KW, etc.

Specification

Specification			Remark
Environmental characteristics	Operating temperature	-40~85℃	long-time working
	Vibration/noise	Meet the QC/T 895-2011 standard	
	Salt spray experiment	Meet the QB/T 2423.17-2008 standard	
Output Power		Three phase 11KW / single phase 6.6KW	
Input voltage range		Three-phase 304~456VAC (line-to-line voltage, three-phase four-wire) Single phase 176~265VAC	
Output voltage range		250~450VDC	
Low voltage input auxiliary source		13.8VDC（4Amax）	
Activation method		CP/CC/hard wire	
Voltage accuracy		±1%	
Output maximum current		11KW Three phase: 32A, 6.6KW single phase: 20A	
Voltage ripple factor		≤±1%	
Current accuracy		±3%	≧Half load
Effectiveness		≥95%	Rated voltage Full load

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Output response time		The rise time of the output voltage of the car charger should be less than 300ms, and the overshoot should be less than 10%. After receiving the shutdown command, the current drops below 10% within 300ms and drops to 0A within 500ms.	
Other protection features		Input overvoltage, input undervoltage, output overvoltage, output undervoltage, short circuit, output overcurrent overtemperature, reverse connection protection potential equalization and ground protection, power failure protection.	
Over temperature protection		When the temperature reaches 85 °C, the output power is reduced by half. The temperature is <80 °C in 10 minutes, and the full load is automatically restored. After 10 minutes, the temperature is >80 °C, then it is turned off. When the temperature is >90 °C, it will be shut down directly.	
Dielectric strength	Input to the outer casing	2000VDC /60S 10mA Max	
	Input to output	1500VAC /60S 10mA Max	
	Input to output	3000VAC /60S 10mA Max	
Insulation resistance	Input to the outer casing	≥20MΩ	
	Input to the outer casing	≥20MΩ	
EMC	Electromagnetic immunity	GB/18487.3-2001 Class B	Cooperate with the whole vehicle
	Electromagnetic disturbance	GB/18487.3-2001 Class B	Cooperate with the whole vehicle

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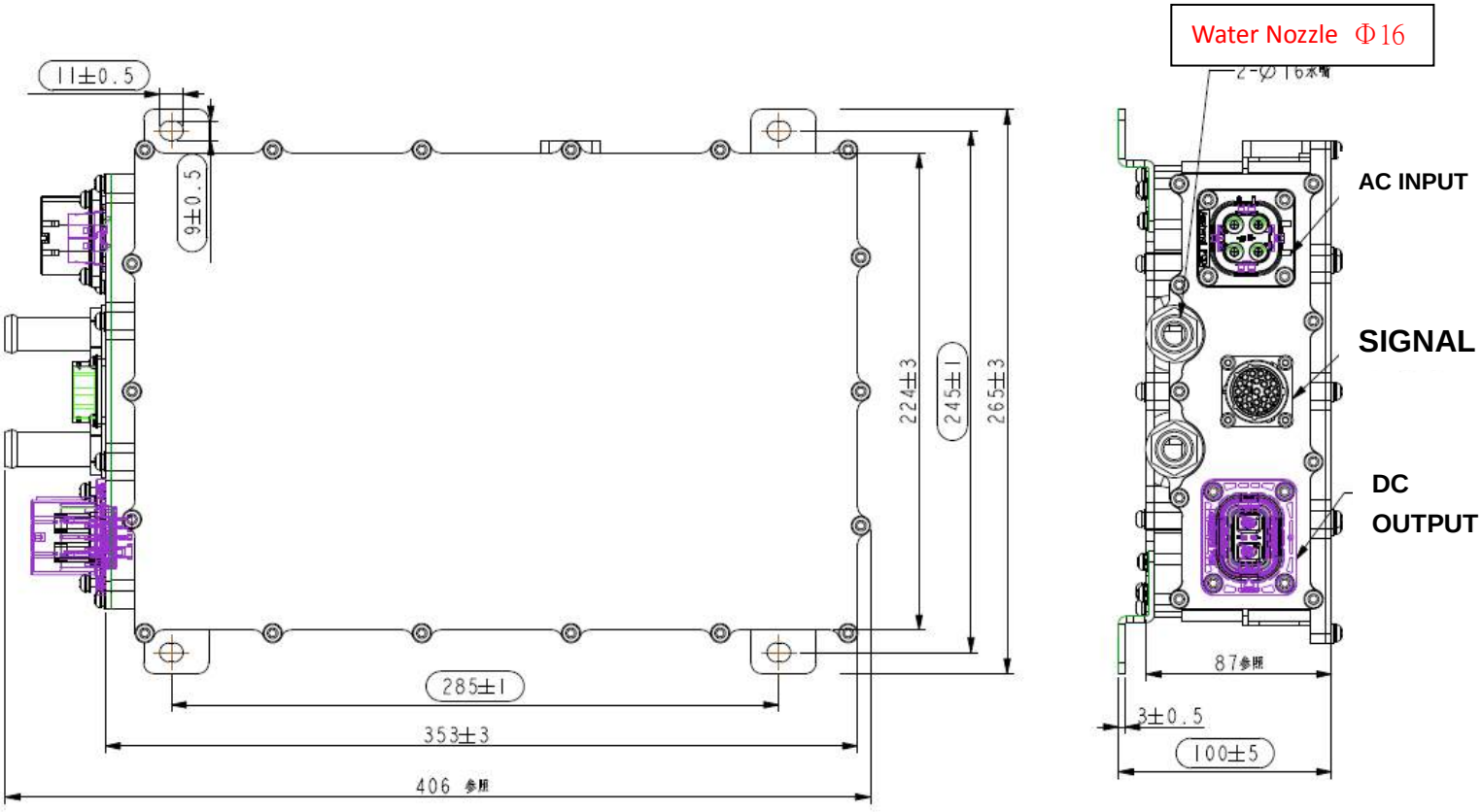
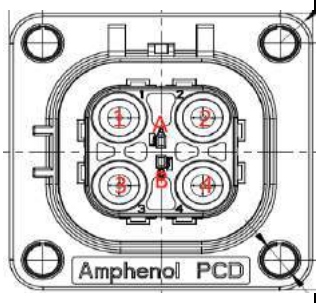
Structural parameters

Pinout	Receptacle Model no.	Function	Maker	Plug Model No.	Terminal Model No.	Stopper Model No.
A	HVSL364024A	AC input	Amphenol	HVSL364064A104I	C310026001	\
B	HVSL630022A	DC output	Amphenol	HVSL630062A	C310003623	\
C	RT001823PN03	Signal	Amphenol	RT061823PNHEC03	SS16M1F	AT13-204-2005



MAKER	Model No.	Description			Remark
AC input Amphenol	HVSL364024A	1	Fire line L1	L1	
		2	Fire line L2	L2	
		3	Fire line L3	L3 (single fire line fixed input)	
		4	N	Neutral/midline	
		A	NC	NC	
		B	NC	NC	
	casing	N	Ground line	Product enclosure	Whole machine housing terminal

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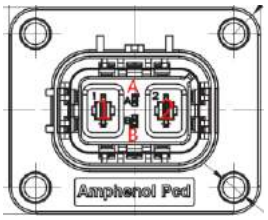
DC output Amphenol	HVSL630022A	1	positive	Output positive	
		2	negative	Output negative	
		A	Interlock 1	Connection interlock 5	
		B	Interlock 2	Connection interlock 6	
Signal Amphenol	RT001823PSN 03	A	CAN1-L	CAN LOW	
		B	VCC+	Normal input	
		C	VCU_EN	Hard-wire wake-up OBC, enable signal (active high)	
		D	CC	CC	
		E	CP	CP	
		F	WAKE_UP	VCU/BMS wake-up signal (100mA) Isolated from input constants	
		G	NTC1-	Temperature sensor 1 negative	
		H	NTC1+	Temperature sensor 1 positive	
		J	NTC2-	Temperature sensor 2 negative	
		K	NTC2+	Temperature sensor 2 is positive	
		L	CAN1-H	CAN high	
		M	LOCK+	Electronic locks	
		N	LOCK+	Electronic locks	
		P	LOCK feedback	Electronic locks	
		R	CC_OUT	CC status output, turn on low level	
		S	NC	NC	
		T	NC	NC	
		U	NC	NC	
		V	TB_R	Terminal resistance selection, short circuit to C pin, the resistance is effective	
		W	GND	GND	
		X	CAN2-L	Internal parallel CAN2 low	
		Y	CAN2-H	Internal parallel CAN2 high	
		Z	NC	NC	

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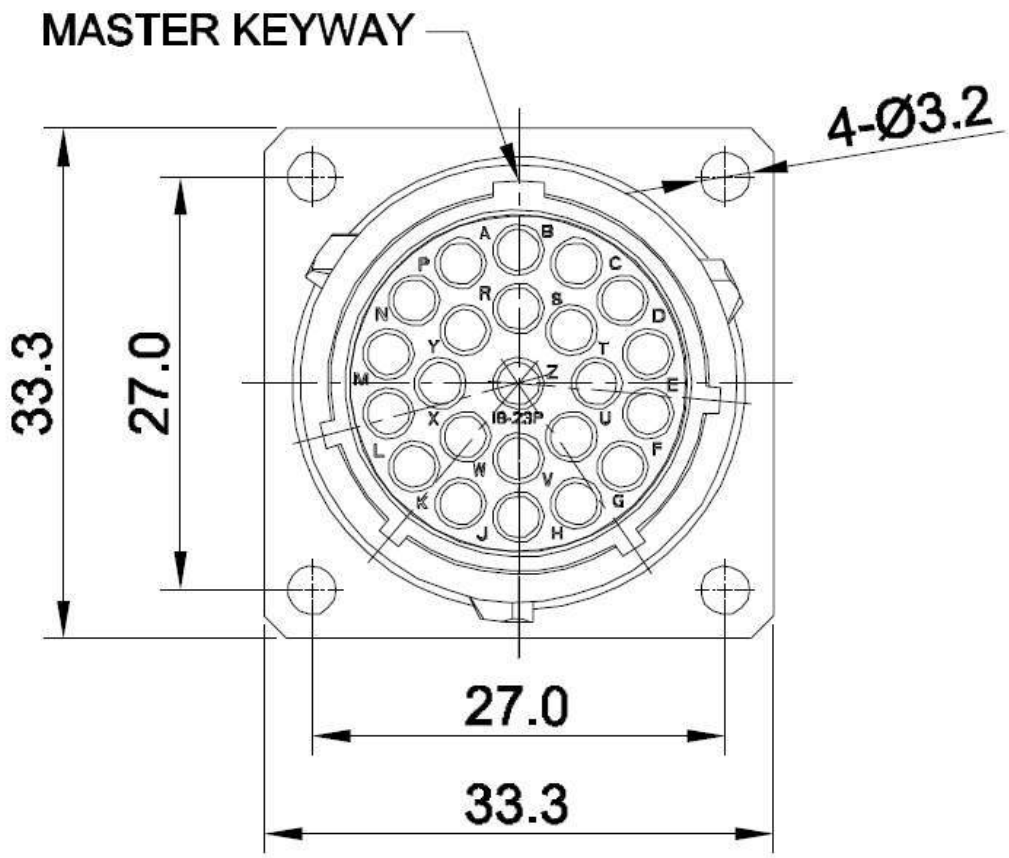

Label

Product Name	11KW ON BOARD CHARGER		
Product Part No.	E25. AR-11K3S-25038014-W		
Product Model	AR11K3S-250380W		
Serial number	2019XXXXXXXX		
Input Voltage	3 phase 304~456VAC 1 phase 175~265VAC	Output Voltage	250~450VDC
Output Current	3 phase: 32A 6.6KW 1 phase: 20A	Output power	11KW
Supplier	ANNREN TECHNOLOGIES CO., LTD.		

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Version: 02	Date: Oct. 25th, 2019	Remark: Label added
Version: 03	Date: Oct. 30th, 2019	Remark: Weight added
Version: 04	Date: 11th Nov., 2019	Remark: Terminal P/N added

11KW ON BOARD CHARGER

Model No.: AR-11K3S-25038014-W

Features

Product Name	11KW ON BOARD CHARGER
Model No.	AR-11K3S-25038014-W
Standard	GB/T
Power	11KW
Input Voltage	Three-phase 304~456VAC/single phase 175~265VAC
Output Voltage	250~450VDC
Output Current	Three phase: 32A, 6.6KW single phase: 20A
Efficiency	≥95%
Module Low Voltage (VDC)	13.8VDC（4Amax）
Size (mm)	345x224x100mm
Cooling System	Water Cooling
IP Rating	IP67
Scope	Various new energy vehicles
Hardware	Small size, light weight and stable performance
Firmware	Full digital software design, redundant protection function design
Weight	Net: 10KG Gross: 12KG

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This charger has several advantages, including:

1. The volume and weight of automotive grade products: down more than 20%.
2. Real-time monitoring: real-time control and function control are performed on the hardware by a separate “core”

It is easy to test the international mainstream EMI standards.

The product design conforms to the international mainstream safety and standard.

It can be compatible with the following different types of AC charging piles, while allowing continuous charging in the case of grid disconnection

3. Meet the new national standard GBT18487.1-2015.
4. Reserve hardware interfaces for interconnection between the Internet of Vehicles, mobile Internet and car chargers.
5. Retain the hardware interface for the secondary development of ASIL functional safety in the future.
6. Compatible with charging power expansion 22KW, 40KW, 80KW, etc.

Specification

Specification			Remark
Environmental characteristics	Operating temperature	-40~85℃	long-time working
	Vibration/noise	Meet the QC/T 895-2011 standard	
	Salt spray experiment	Meet the QB/T 2423.17-2008 standard	
Output Power		Three phase 11KW / single phase 6.6KW	
Input voltage range		Three-phase 304~456VAC (line-to-line voltage, three-phase four-wire) Single phase 176~265VAC	
Output voltage range		250~450VDC	
Low voltage input auxiliary source		13.8VDC（4Amax）	
Activation method		CP/CC/hard wire	
Voltage accuracy		±1%	
Output maximum current		11KW Three phase: 32A, 6.6KW single phase: 20A	
Voltage ripple factor		≤±1%	
Current accuracy		±3%	≧Half load
Effectiveness		≥95%	Rated voltage Full load

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Output response time		The rise time of the output voltage of the car charger should be less than 300ms, and the overshoot should be less than 10%. After receiving the shutdown command, the current drops below 10% within 300ms and drops to 0A within 500ms.	
Other protection features		Input overvoltage, input undervoltage, output overvoltage, output undervoltage, short circuit, output overcurrent overtemperature, reverse connection protection potential equalization and ground protection, power failure protection.	
Over temperature protection		When the temperature reaches 85 °C, the output power is reduced by half. The temperature is <80 °C in 10 minutes, and the full load is automatically restored. After 10 minutes, the temperature is >80 °C, then it is turned off. When the temperature is >90 °C, it will be shut down directly.	
Dielectric strength	Input to the outer casing	2000VDC /60S 10mA Max	
	Input to output	1500VAC /60S 10mA Max	
	Input to output	3000VAC /60S 10mA Max	
Insulation resistance	Input to the outer casing	≥20MΩ	
	Input to the outer casing	≥20MΩ	
EMC	Electromagnetic immunity	GB/18487.3-2001 Class B	Cooperate with the whole vehicle
	Electromagnetic disturbance	GB/18487.3-2001 Class B	Cooperate with the whole vehicle

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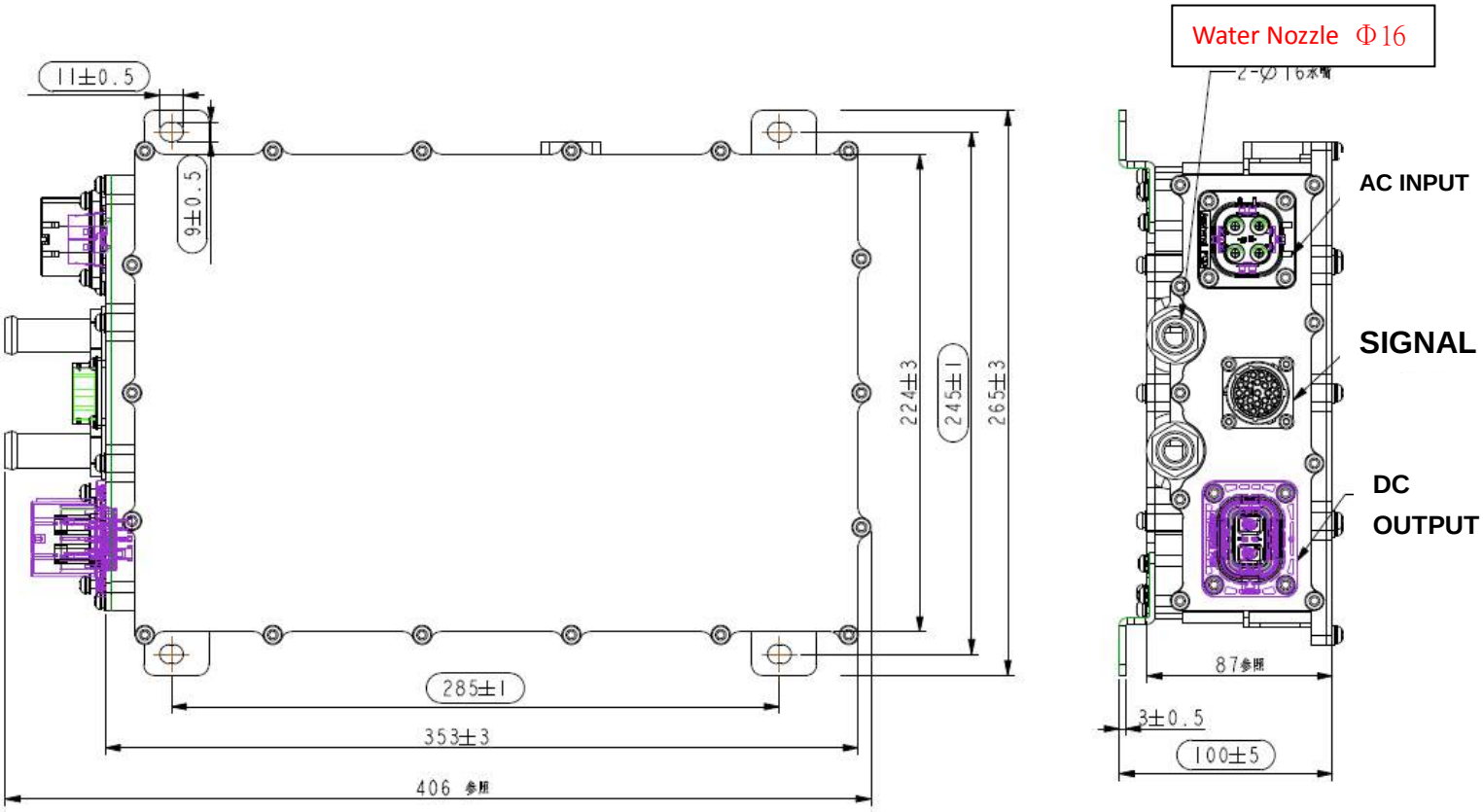
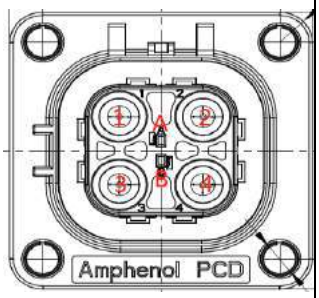
Structural parameters

Pinout	Receptacle Model no.	Function	Maker	Plug Model No.	Terminal Model No.	Stopper Model No.
A	HVSL364024A	AC input	Amphenol	HVSL364064A104I	C310026001	\
B	HVSL630022A	DC output	Amphenol	HVSL630062A	C310003623	\
C	RT001823PN03	Signal	Amphenol	RT061823PNHEC03	SS16M1F	AT13-204-2005



MAKER	Model No.	Description			Remark
AC input Amphenol	HVSL364024A	1	Fire line L1	L1	
		2	Fire line L2	L2	
		3	Fire line L3	L3 (single fire line fixed input)	
		4	N	Neutral/midline	
		A	NC	NC	
		B	NC	NC	
	casing	N	Ground line	Product enclosure	Whole machine housing terminal

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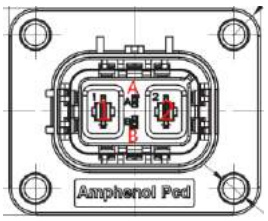
DC output Amphenol	HVSL630022A	1	positive	Output positive	
		2	negative	Output negative	
		A	Interlock 1	Connection interlock 5	
		B	Interlock 2	Connection interlock 6	
Signal Amphenol	RT001823PSN 03	A	CAN1-L	CAN LOW	
		B	VCC+	Normal input	
		C	VCU_EN	Hard-wire wake-up OBC, enable signal (active high)	
		D	CC	CC	
		E	CP	CP	
		F	WAKE_UP	VCU/BMS wake-up signal (100mA) Isolated from input constants	
		G	NTC1-	Temperature sensor 1 negative	
		H	NTC1+	Temperature sensor 1 positive	
		J	NTC2-	Temperature sensor 2 negative	
		K	NTC2+	Temperature sensor 2 is positive	
		L	CAN1-H	CAN high	
		M	LOCK+	Electronic locks	
		N	LOCK+	Electronic locks	
		P	LOCK feedback	Electronic locks	
		R	CC_OUT	CC status output, turn on low level	
		S	NC	NC	
		T	NC	NC	
		U	NC	NC	
		V	TB_R	Terminal resistance selection, short circuit to C pin, the resistance is effective	
		W	GND	GND	
		X	CAN2-L	Internal parallel CAN2 low	
		Y	CAN2-H	Internal parallel CAN2 high	
		Z	NC	NC	

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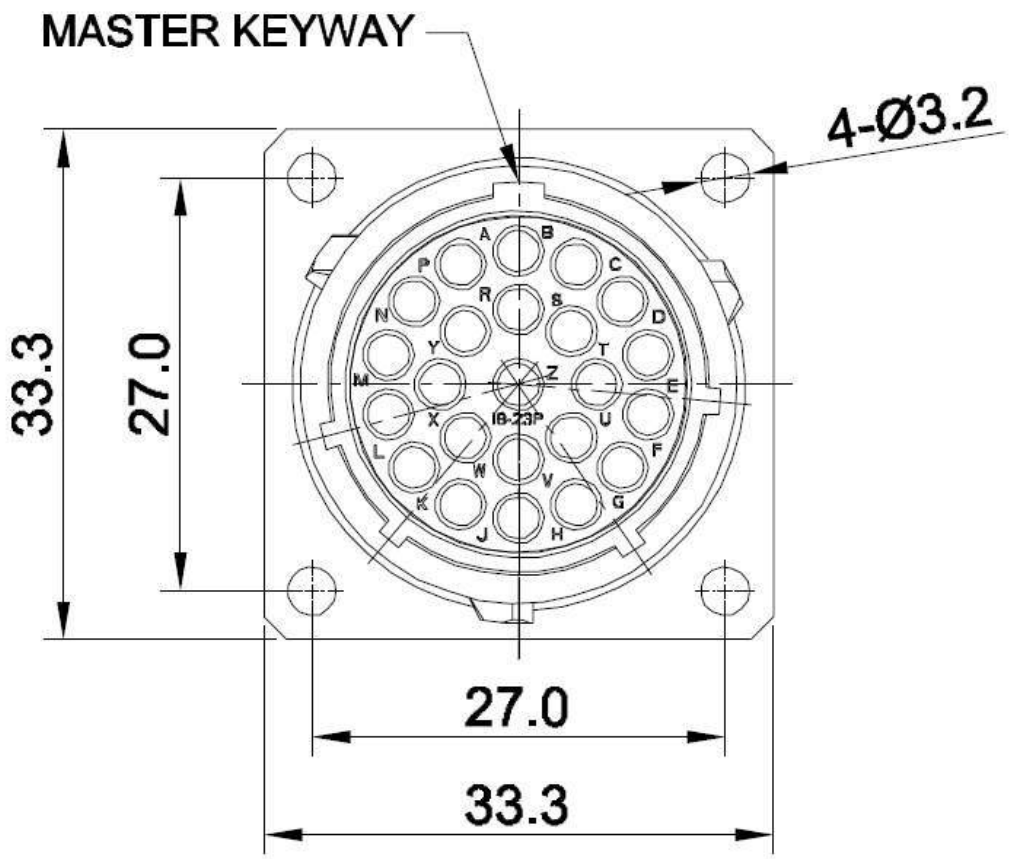

Label

Product Name	11KW ON BOARD CHARGER		
Product Part No.	E25. AR-11K3S-25038014-W		
Product Model	AR-11K3S-25038014-W		
Serial number	2019XXXXXXXX		
Input Voltage	3 phase 304~456VAC 1 phase 175~265VAC	Output Voltage	250~450VDC
Output Current	3 phase: 32A 6.6KW 1 phase: 20A	Output power	11KW
Supplier	ANNREN TECHNOLOGIES CO., LTD.		

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Model No.：AR11K-220S380M

Product Name：11KW On Board Charger Module

Date Issued: Feb. 21st, 2020

11KW On Board Charger Module

★ **Features**

1 Output Power：
11KW(Rated 220V)/5KW (Rated 110V)
2 Input Voltage：90~264VAC/50A
3 Output Voltage：250~450VDC
4 Dimensions：340x220x60mm
5 Communication：CAN
6 Charging Standard：SAE
7 Software: Digital software design
8 CAN Protocal: Intel and Motolora available
9 Weight ≤7KG

Applications

Electric Commercial Vihecles

Electric Commercial Vihecles

Specification

Description		Parameters	Remark
Environmental characteristics	Operating temperature	-40~85℃	Long-time working
	Vibration/noise	Meet the QC/T 895-2011 standard	
	Salt spray experiment	Meet the QB/T 2423.17-2008 standard	
Output Power		11KW(Rated 220V)/5KW (Rated 110V)	
Input voltage range		90~264VAC/50A	
Output voltage range		250~450VDC	
Voltage accuracy		±1%	
Output maximum current		32A	
Current accuracy		±3%	Half load or more
Efficiency		≥94%	Rated voltage Full load
Low voltage (VDC)		12 or 24Vdc / 200mAmax (WAKE_UP + signal)	
Activation method		CC, CP, CAN, hardwired, AC (optional)	
Design lifetime		20 years or 200,000 kilometers	
Protection characteristics		Input overvoltage, input undervoltage, output overvoltage, output undervoltage, short circuit, output overcurrent, overtemperature, reverse connection protection, power failure protection.	
EMC standard		GBT 20234/GBT18487 · EN 55022 CLassB	
Interface function		New GB/T CC, CP, cc_out, European standard, American standard (optional)	
Weight	Net weight / Gross weight	≤7KG	

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Model No.：AR11K-220S380M

Product Name：11KW On Board Charger Module

Pinout definition

System Load definition	Pin number	Pinout definition	Description
AC input (M5 stud)	1	L	Fire wire, metal terminal block, 64A MAX
	2	N	Neutral, metal terminal block, 64A MAX
	3	PE	Protective ground point, grounded through the chassis.
DC output (M4 stud)	1	VOUT+	MAX 32A
	2	VOUT-	MAX 32A
Control terminal Socket: 105314-1216 Plug: 105308-1216 Pin:	1	OBC~VCC-	OBC external input
	2	OBC~VCU_EN	VCU wakes up OBC (reserved)
	3	LOCK+	OBC drive electronic lock lock / unlock
	4	LOCK-	OBC drive electronic lock lock / unlock
	5	LOC feedback 1	Electronic lock feedback signal
	6	CAN-H	OBC Communications High
	7	CAN-L	OBC communication low
	8	OBC ~ J1772 mode enable (high-level signal)	VCU / BMS wake-up signal (100mA) is isolated from input
	9	OBC~VCC+	OBC external input
	10	CC_OUT	CC_OUT (reserved)
	11	NTC1-	Slow charge socket temperature 1 negative
	12	NTC1+	Slow charge socket temperature 1 positive
	13	NTC2-	Slow charge socket temperature 2 negative
	14	NTC2+	Slow charge socket temperature 2 positive
	15	Proximity Detection（CC）	Charging connection signal
	16	Control pilot（CP）	Charge control signal

Label

Product Name	11KW On Board Charger Module		
Product Part No.	e25.AR11K-220S380M		
Product Model	AR11K-220S380M		
Serial Number	2020XXXXXXXX		
Input Voltage	90~264VAC/50A	Output Voltage	250~450VDC
Output Current	32A	Output power	11000W
Supplier	ANNREN TECHNOLOGIES CO., LTD.		

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Model No.：AR-22K-380S380/540-W-XX

Product Name：22KW ON BOARD CHARGER(AC/DC)

22KW ON BOARD CHARGER(AC/DC)

13 It is easy to test the international mainstream EMI standards.
14 The product design conforms to the international mainstream safety I standard.
15 Compatible with the following different types of AC charging posts,
while allowing continued charging in the event of a grid phase
16 Meet the new national standard GBT18487.1-2015
17 Compatible with charging power expansion, 40KW, etc.

★ **Features**

1 Output Power：22KW
2 Input Voltage：Three-phase 345~415VAC/
single phase 220±15% VAC
3 Output Voltage：
250~450VDC/400~650VDC
4 Dimensions：443x346x155mm
5 Weight: ≤30KG
6 Cooling System：Water
7 Protection Level：IP67 (except fan)
8 Communication Method：CAN
9 Enclosure: Aluminum alloy made
10 Software: Digital software design
11 The volume and weight of automotive grade products: down more than 20%.
12 Real-time monitoring, real-time control and functional control are performed on the hardware by a separate "core"

Specification

Description		Technical specifications	Remark
Environmental characteristics	Operating temperature	-40~65℃	Long-time working
	Vibration/noise	Meet the QC/T 895-2011 standard	
	Salt spray experiment	Meet the QB/T 2423.17-2008 standard	
Output Power		21KW	
Input voltage range		Three-phase 345~415VAC (line-to-line voltage, three-phase four-wire) Single phase 200~240VAC	
Output voltage range		250~450VDC/400~650VDC	
Low voltage input auxiliary source		13.8VDC（2Amax）/27VDC（2Amax）	
Activation method		CP/CC/hard wire	
Voltage accuracy		±1%	
Output maximum current		Three phase: 56±2A, single phase: 20±2A	
Voltage ripple factor		≤±1%	
Current accuracy		±3%	Half load or more
Efficiency		≥94%	Rated voltage Full load
Parallel function		Networking is performed by internal CAN communication, and up to 8 modules can be connected in parallel.	
Output response time		The rise time of the output voltage of the car charger should be less than 300ms, and the overshoot should be less than 10%. After receiving the shutdown command, the current drops below 10% within 300ms and drops to 0A within 500ms.	
Other protection features		Input overvoltage, input undervoltage, output overvoltage, output undervoltage, short circuit, output overcurrent, overtemperature, reverse connection protection, potential equalization and ground protection, power failure protection.	
Over temperature protection		When the temperature reaches 85 °C, the output power is reduced by half. The temperature is <80 °C in 10 minutes, and the full load is automatically restored. After 10 minutes, the temperature is >80 °C, then it is turned off. When the temperature is >90 °C, it will be shut down directly.	

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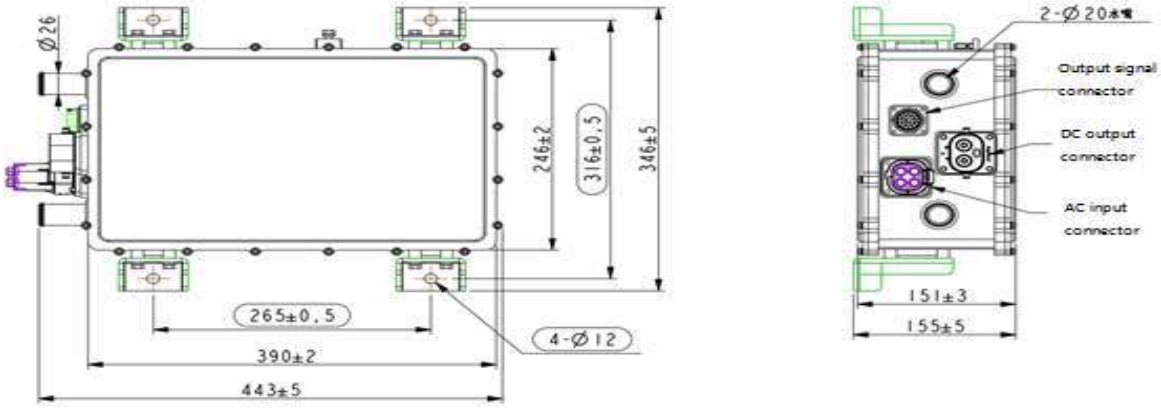
Model No.：AR-22K-380S380/540-W-XX
Product Name：22KW ON BOARD CHARGER(AC/DC)

Dielectric strength	Output to the outer casing	2000VDC /60S 10mA Max	
	Input to the outer casing	1500VAC /60S 10mA Max	
	Input to output	3000VAC /60S 10mA Max	
Insulation resistance	Input to output	≥20MΩ	
	Input to the outer casing	≥20MΩ	
Electromagnetic compatibility	Radiation emission	GBT 18387：2008 · EN 55022 CLassB	
	Conducted emission	GBT 18387：2008 · EN 55022 CLassB	
	Radiation immunity	GBT 18387：2008 · EN 55022 CLassB	

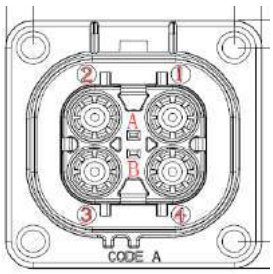
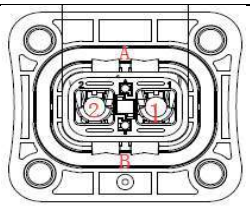
Structural parameters



Connector information (can be customized)

Position	Socket model	Function	Brand	Plug model
A	HVC4P36MV306	AC input	Amphenol	HVC4P36FS306
B	HVC2P60MV100	DC output	Amphenol	HVC2P60FS3116
C	RT001823PN03	Control terminal	Amphenol	RT061823PNH03

Interface definition

Socket definition	Pin number	Interface definition	Description	Connector picture
AC input HVC4P36MV306	1	FireWire 1	L1 (single fire line fixed input)	
	2	FireWire 2	L2	
	3	FireWire 3	L3	
	4	N	Neutral/midline	
	A	Interlock 1	Connection interlock 5	
	B	Interlock 2	Connection interlock 3/micro switch	
	N	Ground wire	Product enclosure	Whole machine housing terminal
DC output HVC2P60MV100	1	positive electrode	Output positive	
	2	negative electrode	Output negative	
	A	Interlock 3	Connection interlock 2/micro switch	
	B	Interlock 4	Connection interlock 6	

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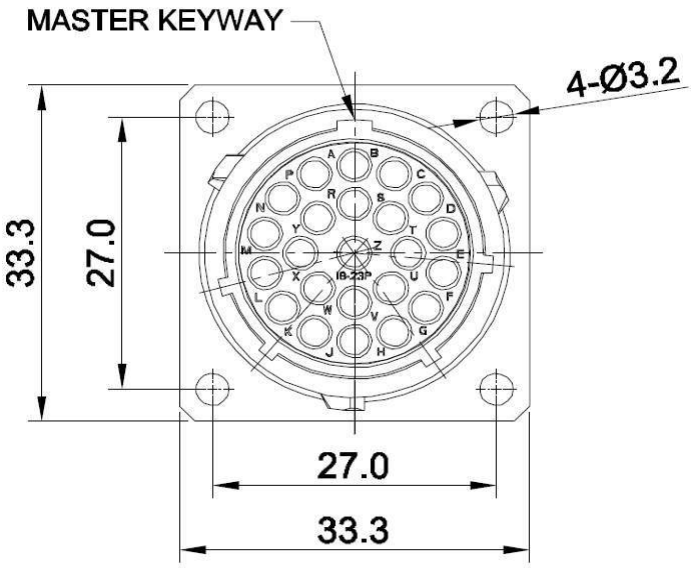
Model No.：AR-22K-380S380/540-W-XX
Product Name：22KW ON BOARD CHARGER(AC/DC)

Control terminal
RT001823PSN03

A	CAN1-L	CAN low	
B	VCC+	Normal input	
C	VCU_EN	Hard-wire wake-up OBC, enable signal (active high)	
D	CC	CC	
E	CP	CP	
F	WAKE_UP	VCU/BMS wake-up signal (1A) Isolated from input constants	
G	NTC1-	Temperature sensor 1 negative	
H	NTC1+	Temperature sensor 1 positive	
J	NTC2-	Temperature sensor 2 negative	
K	NTC2+	Temperature sensor 2 is positive	
L	CAN1-H	CAN high	
M	LOCK+	Electronic locks	
N	LOCK+	Electronic locks	
P	LOCK feedback	Electronic locks	
R	CC_OUT	CC status output, low level enable	
S	Interlock 5	Interlock signal detection 1	
T	Interlock 6	Interlock signal detection 4	
U	NC	NC	
V	TB_R	Terminal resistance selection, short circuit to C pin, the resistance is effective	
W	NC		
X	CAN2-L	Internal parallel CAN2 low	
Y	CAN2-H	Internal parallel CAN2 high	
Z	EN2	Internal parallel enable (reserved)	



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Model No.：AR-40K-380S380/540-W-AR01

Product Name：40KW ON BOARD CHARGER(AC/DC)

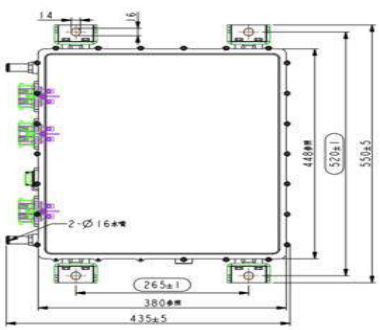
Features

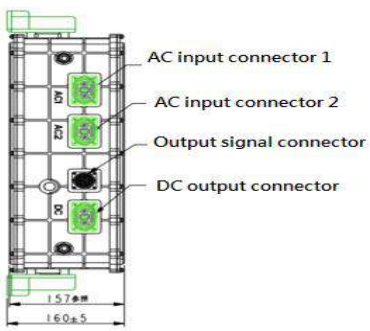
1 Output Power：40KW
2 Input Voltage：
304~456VAC(three phrase)/220±15%VAC
3 Output Voltage：250~450VDC/420~650VDC
4 Dimensions：550x443x180mm
5 Cooling System：Water
6 Protection Level：IP67
7 Communication Method：CAN
8 Small size, light weight and stable performance
9 Full digital software design, redundant protection

Specification

Description		Technical specifications	Remark
Environmental characteristics	Operating temperature	-40~85℃	Working Long Time
	Vibration/noise	Meet the QC/T 895-2011 standard	
	Salt spray test	Meet the QB/T 2423.17-2008 standard	
Output power		Theree phrase 40KW/ Single phrase6.6KW	
Maximum input current		Theree phrase 63A/ Single phrase32A	
Input voltage range		Three phrase 304~456VAC (line-line voltage · three phase four wire system) Single phrase 175~265VAC	
Output voltage range		250-450VDC/400~650VDC	
Output current accuracy		±0.5%	
Activation method		CP/CC/Hard line enable	
Low voltage input specification		13.8VDC(4Amax)/27VCD(2Amax)	External low voltage supplies power to OBC.
Low voltage input power		30W	
Maximum output current		Three phrase 128A/85A Single phrase 20A/14A	
Output current accuracy		±3%	Half load or more
Efficiency		≥95%	Rated voltage Full load
Other protection features		Input over-voltage, output over-voltage, over-temperature protection, over-current protection, output short-circuit protection, reverse battery protection, communication fault protection, internal fault protection.	
Over temperature protection		WWhen the coolant temperature exceeds 65 °C, the output current decreases linearly, and drops to 20% of the rated current when it reaches 85 °C.	
Insulation strength	Output to the outer casing	2800VDC /60S 10mA Max	
	Input to the outer casing	2121VAC /60S 10mA Max	
	Input to output	3000VAC /60S 10mA Max	
Insulation resistance	Input to output	≥20MΩ	
	Input to the outer casing	≥20MΩ	
Electromagnetic compatibility	Radiation emission	GBT 18387 : 2008, EN 55022 CLassB	
	Conducted emission	GBT 18387 : 2008, EN 55022 CLassB	
	Radiation immunity	GBT 18387 : 2008, EN 55022 CLassB	

Structural parameters





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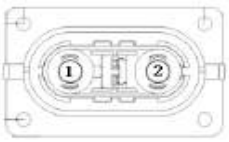
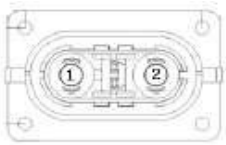
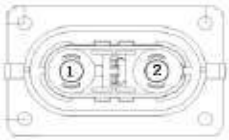
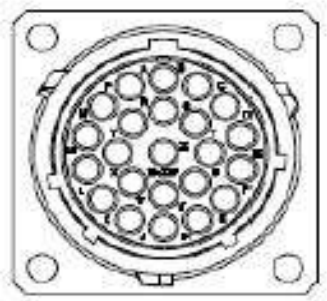
Model No.：AR-40K-380S380/540-W-AR01
Product Name：40KW ON BOARD CHARGER(AC/DC)

Connector model

Position	Socket model	Function	Brand	Plug model
A	YGC998-EV-S(2+2)R/II	AC input 1	Yong gui	YGC998-EV-P(2+2)PA/II
B	YGC998-EV-S(2+2)R/III	AC input 2	Yong gui	YGC998-EV-P(2+2)PA/III
C	YGC998-EV-S(2+2)R/I	DC output	Yong gui	YGC998-EV-P(2+2)PA/I
D	RT001823PN03	Control terminal	Amphenol	RT061823SNHEC03

Interface definition

Vendor	Model	Description			Remark
Yong gui	AC input 1 YGC998-EV-S(2+2)R/II	1	L1	Live Wire 1	
		2	L2	Live Wire 2	
Yong gui	AC input 2 YGC998-EV-S(2+2)R/III	1	L3	Live Wire 3	
		2	N	Naught Wire	
Yong gui	DC output YGC998-EV-S(2+2)R/I	1	VOUT+	Output positive	
		2	VOUT-	Output negative	
Amphenol	Control terminal (RT001823PN03)	A	NTC1-	Temperature sensor 1 negative	
		B	NTC1+	Temperature sensor 1 positive	
		C	VCC+	Normal input positive	
		D	VCC-	Normal input negative	
		E	CAHN1	CAN1 High	
		F	CANH2	CAN2 High	
		G	CANL1	CAN1 Low	
		H	CANL2	CAN2 Low	
		J	NTC2-	Temperature sensor 1 negative	
		K	NTC2+	Temperature sensor 1	
		L	WAKE_UP	Output wake-up signal	
		M	CAN-G	CAN shielding ground	
		N	LOCK FB2	Electronic lock feedback 2	
		P	EN_L	Host selection (active low)	
		R	CC_OUT	CC status output / low level enable signal	
		S	LOCK+	Electronic lock power supply positive	
		T	LOCK-	Electronic lock power supply negative	

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		U	LOCK FB1	Electronic lock feedback 1	
		V	CC		
		W	CP		
		X	VCU_EN	Hardwire wake-up signal	
		Y	VCC+	Normal input positive	
		Z	VCC-	Normal input negative	

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Standard: IEC

Feature

System	AC/DC Converter (On Board Charger)	DC/DC Converter
Product Name	2KW DC+6.6KW OBC 2 in 1	
Charging Standard	IEC	
Model No.	AR2K0C6K6I-D14C380W/540W	
Part Number	E25. AR2K0C6K6I-D14C380W/540W	
Power	OBC: 6.6KW DCDC: 2KW	
Input Voltage	OBC: 90~264V DCDC: 200~450/400~750VDC	
Output Voltage	OBC: 200~450/400~670VDC/ DCDC: 14VDC	
Output Current	OBC: 20A DCDC: 143A	
Efficiency	≥95%	
Low Voltage (VDC)	12/24VDC/200mAmax	
Low Current (A)		
Size (mm)	328*208*125	
Cooling System	Liquid Cool	
IP Rating	IP67	
Scope	Various new energy vehicles	
Hardware	Small size, light weight and stable performance	
Firmware	Full digital software design, redundant protection function design	

Output power	6.6KW	2KW
Input voltage:	90~264VAC	200~450/400~750VDC
Output voltage	200~450/400~670VDC	14VDC
Communication method	CAN	CAN

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Specification

NO	Parameters		Requirements
A	**On Board Charger and DC/DC converter**		
I	**On board Charger - OBC**		
1	***HV Max Output Power HV***		***6.6kW***
2	AC Input Voltage		90~264VAC
3	HV Output Voltage		200~450/400~670VDC
4	HV Output Voltage Accuracy		± 1%
5	HV Output Current		20A
6	HV Output Current Accuracy		± 3% (More than half load)
7	Efficiency		≥ 95%
8	Low Voltage (VDC)		12/24VDC/200mAmax
9	Auxiliary power VCC		\
10	Output voltage ripple		\
11	Other protection features		Input over and under voltage, output over and under voltage, over temperature protection, over current protection, output short circuit protection, reverse battery protection, communication fault protection, internal fault protection
12	Dielectric strength	Input to output	2000VDC /1min 10mA Max
		Input to casing	1500VAC /1min 10mA Max
		Input to output	3000VAC /1min 10mA Max
13	Insulation resistance	Input to output	≥20MΩ
		Input to casing	≥20MΩ
14	Electromagnetic compatibility	Radiation emission	GB/T18387 2008 EN55022 CLassB
II	**DCDC Converter**		
1	***HV Max Output Power HV***		***2KW***

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NO	Parameters		Requirements
2	AC Input Voltage		200~450/400~750VDC
3	HV Output Voltage		14VDC
4	HV Output Voltage Accuracy		± 0.2VDC
5	HV Output Current		143A
6	HV Output Current Accuracy		\
7	Efficiency		≥ 95%
8	Low Voltage (VDC)		\
9	Auxiliary power VCC		6~18VDC
10	Output voltage ripple		≦500mVPK-PK
11	Other protection features		Input over- and under-voltage, output over- and under-voltage, output over-current and short-circuit protection (extension and hiccup), over-temperature self-recovery
12	Dielectric strength	Input to output	2500VDC/1min 1mA max
		Input to casing	2500VDC/1min 1mA max
		Input to output	\
13	Insulation resistance	Input to output	≥20MΩ
		Input to casing	≥20MΩ
14	Electromagnetic compatibility	Radiation emission	GB/T 18655-2010 Class 3
		Conducted emission	GB/T 18655-2010 Class 3
		Static immunity	GB/T 19951-2005
		Radiation immunity	GB/T 18655-2010 Class 3
		High current injection	GB/T 17619-1998
		Fast Burst Suppression	GB/T 17626.4-2008 1KV

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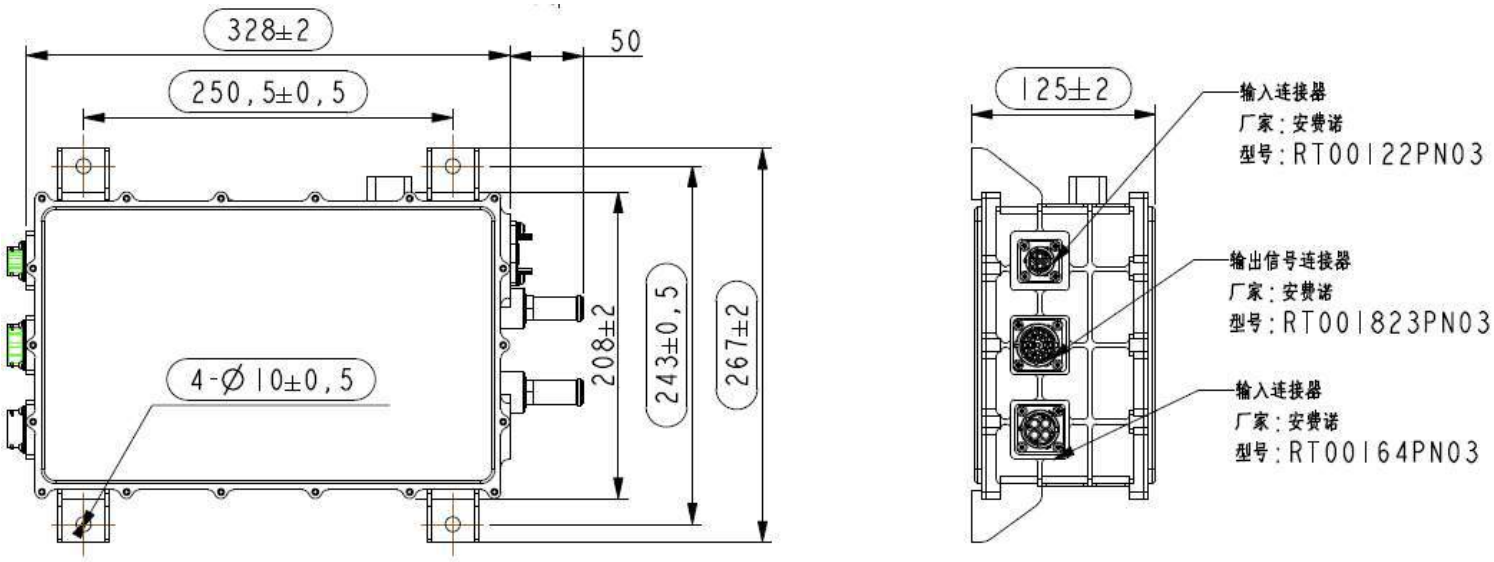
Structural parameters



Electrical Interface

一、Connector Table

Item	Position	Receptacle model no.	Pinout definition	Plug model no	Maker
1	A	RT001823PN03	Control terminal	RT061823PNH03	Amphenol
2	B	RT00164PN03	AC input	RT06164SNHEC03	Amphenol
3	C	RT00122PN03	DC high voltage	RT06122SNHEC03	Amphenol
4	D	GH01-F200-1NNB-T17	Output positive	M8 Screw bolt	Guoweiton g
5	E	Screw bolt	Output negative	/	/

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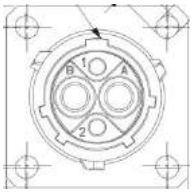
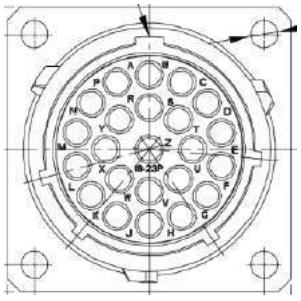
二、Pinout definition

System Load definition	Pin number	Pinout definition	Description	Connector picture
Input (RT00164PN03)	A	Fire wire	L	
	B	Zero line	N	
	C	Ground	PE	
	D	NC		
Output (RT00122PN03)	A	Positive	Output positive	
	B	Negative	Output negative	
	1	Interlock 1	Interlock signal 1	
	2	Interlock 2	Interlock signal 2	
	A	OBC~VCC+	OBC external input	
	B	DCDC~VCC+	DC / DC input auxiliary power is positive	
	C	CC	Charging connection signal	
	D	CP	Charge control signal	
	E	CC_OUT	CC_OUT	
	F	CAN-H	DC / DC and OBC communication high	
	G	CAN-L	Low DC / DC and OBC communication	
	H	CAN-GND	DC / DC and OBC communication ground	
	J	OBC~WARE_UP	VCU / BMS wake-up signal (200mA) Galvanically isolated from input	

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	K	LOCK 反馈 2	Electronic lock unlock signal (reserved)	
	L	LOCK+	OBC drive electronic lock lock / unlock	
	M	LOCK-	OBC drive electronic lock lock / unlock	
	N	LOC 反馈 1	Electronic lock feedback signal	
	P	NTC1+	Slow charge socket temperature 1 positive	
	R	NTC2+	Slow charge socket temperature 2 positive	
	S	OBC~VCC-	OBC external input	
	T	DCDC~VCC-	DC / DC input auxiliary power negative	
	U	DCDC~EN 使能	DC / DC enable (control VCC)	
	V	NTC1-	Slow charge socket temperature 1 negative	
	W	NTC2-	Slow charge socket temperature 2 negative	
	X	NC		
	Y	NC		
	Z	OBC~VCU_EN	VCU wakes up OBC (reserved)	

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Model No.：AR2KC6K6S-D14C380L

Product Name：2KW DCDC+6.6KW OBC 2 in 1

2KW DCDC+6.6KW OBC 2 in 1

★ **Features for DC/DC**

1 Output Power：2KW
2 Input Voltage：250~450VDC
3 Output Voltage：14VDC
4 Dimensions：328X208X125mm
5 Cooling System：Liquid Cool
6 IP rating：IP67
7 Communication Method：CAN
8 Charging Standard：SAE
9 Enclosure: Aluminum alloy made
10 Software: Digital software design

★ **Features for OBC**

1 Output Power：6.6KW
2 Input Voltage：90~264VAC
3 Output Voltage：200~450VDC
4 Dimensions：328X208X125mm
5 Cooling System：Liquid Cool
6 IP ratingl：IP67
7 Communication Method：CAN
8 Charging Standard：SAE
9 Enclosure: Aluminum alloy made
10 Software: Digital software design

Applications

Electric Commercial Vihecles

Electric Commercial Vihecles

Specification

Description		Parameters		Remark
System		DCDC Converter	AC/DC Converter (OBC)	
Output Power		2.5KW	6.6KW	
Input voltage range		250-450VDC	90~264VAC	
Output voltage range		13.8VDC	200-450VDC	
Output voltage accuracy		±0.2VDC	±1%	
Output current		143A	20A(max)	
Current accuracy		\	±3%	Half load or more
Efficiency		≥95%	≥95%	Rated voltage full load
Low Voltage (VDC)		\	12/24VDC/200mAmax	
Auxiliary power VCC		6-18 VDC	\	
Output voltage ripple		≤500mVPK-PK	\	
Other protection features		Input over-voltage, output over-voltage, output over-current and short-circuit protection (extension and snoring), over-temperature self-recovery	Input over-voltage, output over-voltage, over-temperature protection, over-current protection, output short-circuit protection, reverse battery protection, communication fault protection, internal fault protection	
Dielectric strength	Input to output	2500VDC/1min 1mA max	2000VDC /1min 10mA Max	
	Input to the outer casing	2500VDC/1min 1mA max	1500VAC /1min 10mA Max	
	Input to output	\	3000VAC /1min 10mA Max	
Insulation resistance	Input to output	≥20MΩ	≥20MΩ ;	
	Input to the outer casing	≥20MΩ	≥20MΩ ;	
Weight	Net weight / Gross weight			

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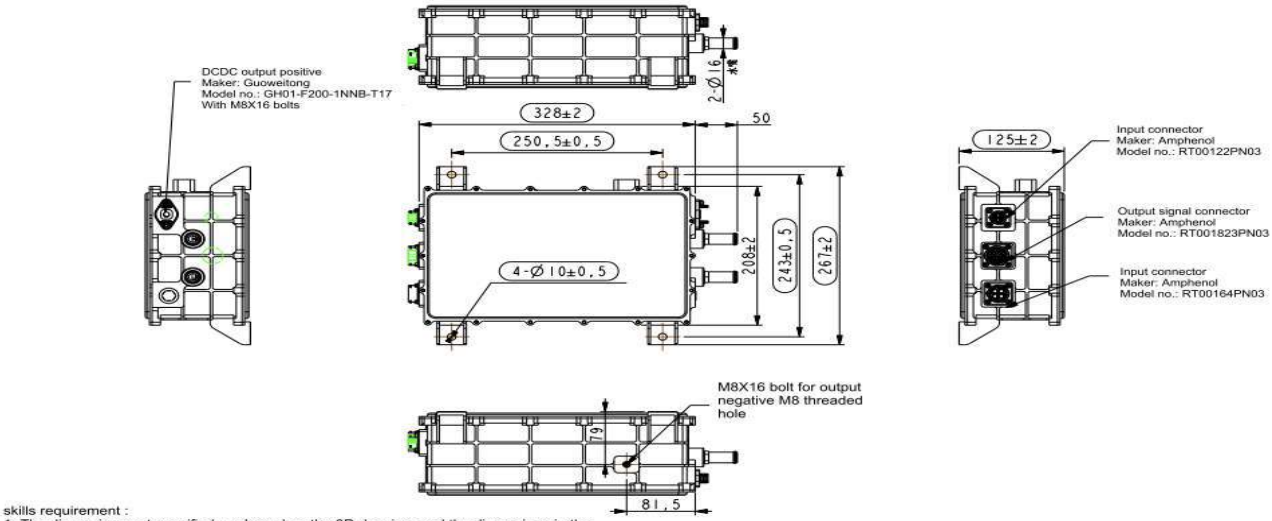
Model No.：AR2KC6K6S-D14C380L
Product Name：2KW DCDC+6.6KW OBC 2 in 1

Structural parameters



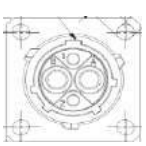
skills requirement :
1. The dimensions not specified are based on the 3D drawing, and the dimensions in the box are the key inspection dimensions.
2. The dimensions without tolerances are implemented in accordance with GB1804-2000-M. The dimension tolerance of unmarked position shall be implemented according to GB1184-1996-M.
3. The surface of the product shell is flat, smooth, beautiful, and uniform in color, without bumps, spots, cracks, burrs, and deformation.
4. Reliable parts are fastened reliably without defects and damages such as rust, burrs, cracks, etc. The connectors and pins are intact and no damage; the components are firmly connected.

Electrical Interface

Connector Table

Item	Position	Receptacle model no.	Pinout definition	Plug model no.	Maker
1	A	RT001823PN03	Control terminal	RT061823PNH03	Amphenol
2	B	RT00164PN03	AC input	RT06164SNHEC03	Amphenol
3	C	RT00122PN03	DC high voltage	RT06122SNHEC03	Amphenol
4	D	GH01-F200-1NNB-T17	Output positive	M8 Screw bolt	Guoweitong
5	E	Screw bolt	Output negative	/	/

Pinout definition

Receptacle model no.	Pin number	Pinout definition	Description	Connector picture
Input (RT00164PN03)	A	Fire wire	L	
	B	Zero line	N	
	C	Ground	PE	
	D	NC		
Output (RT00122PN03)	A	Positive	Output positive	
	B	Negative	Output negative	
	1	Interlock 1	Interlock signal 1	
	2	Interlock 2	Interlock signal 2	
	A	OBC~VCC+	OBC external input	

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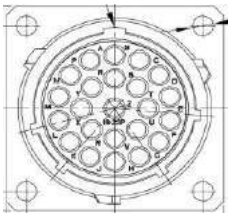
Model No.：AR2KC6K6S-D14C380L

Product Name：2KW DCDC+6.6KW OBC 2 in 1

Control terminal (RT001823PN03)	B	DCDC~VCC+	DC / DC input auxiliary power supply
	C	Proximity Detection (CC)	Charging connection signal
	D	Control pilot (CP)	Charge control signal
	E	CC_OUT	CC_OUT (reserved)
	F	CAN-H	DC / DC and OBC communication high
	G	CAN-L	DC / DC and OBC communication low
	H	CAN-GND	DC / DC and OBC communication ground
	J	OBC~J1772 mode enable (High level signal)	VCU / BMS wake-up signal (100mA) is galvanically isolated from input
	K	LOCK feedback 2	Electronic lock unlock signal (reserved)
	L	LOCK+	OBC drive electronic lock lock / unlock
	M	LOCK-	OBC drive electronic lock lock / unlock
	N	LOCK feedback 1	Electronic lock feedback signal
	P	NTC1+	Slow charge socket temperature 1 positive
	R	NTC2+	Slow charging socket temperature 2 positive
	S	OBC~VCC-	OBC external input
	T	DCDC~VCC-	DC / DC input auxiliary power negative
	U	DCDC~EN enable	DC / DC enable (control VCC)
	V	NTC1-	Slow charge socket temperature 1 min
	W	NTC2-	Slow charge socket temperature 2 negative
	X	NC	
	Y	NC	
	Z	OBC~VCU_EN	VCU wakes up OBC (reserved)



Label

Product Name	2KW DCDC+6.6KW OBC 2 in 1		
Product Part No.	e25.AR2KC6K6S-D14C380L		
Product Model	AR2KC6K6S-D14C380L		
Serial Number	2020XXXXXXXX		
Input Voltage	DCDC: 250~450VDC, OBC: 90~264VAC	Output Voltage	DCDC: 14VDC, OBC: 200~450VDC
Output Current	DCDC: 143A, OBC: 20A	Output power	DCDC: 2000W, OBC: 6600K
Supplier	ANNREN TECHNOLOGIES CO., LTD.		

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Model No.：AR2KC6K6S-D14C540L

Product Name：2KW DCDC+6.6KW OBC 2 in 1

2KW DCDC+6.6KW OBC 2 in 1

★ **Features for DC/DC**

1 Output Power：2KW
2 Input Voltage：400~750VDC
3 Output Voltage：14VDC
4 Dimensions：328X208X125mm
5 Cooling System：Liquid Cool
6 IP rating：IP67
7 Communication Method：CAN
8 Charging Standard：SAE
9 Enclosure: Aluminum alloy made
10 Software: Digital software design

★ **Features for OBC**

1 Output Power：6.6KW
2 Input Voltage：90~264VAC
3 Output Voltage：400~670VDC
4 Dimensions：328X208X125mm
5 Cooling System：Liquid Cool
6 IP ratingl：IP67
7 Communication Method：CAN
8 Charging Standard：SAE
9 Enclosure: Aluminum alloy made
10 Software: Digital software design

Applications

Electric Commercial Vihecles

Electric Commercial Vihecles

Specification

Description		Parameters		Remark
System		DCDC Converter	AC/DC Converter (OBC)	
Output Power		2.5KW	6.6KW	
Input voltage range		400~750VDC	90~264VAC	
Output voltage range		13.8VDC	400~670VDC	
Output voltage accuracy		±0.2VDC	±1%	
Output current		143A	20A(max)	
Current accuracy		\	±3%	Half load or more
Efficiency		≥95%	≥95%	Rated voltage full load
Low Voltage (VDC)		\	12/24VDC/200mAmax	
Auxiliary power VCC		6-18 VDC	\	
Output voltage ripple		≤500mVPK-PK	\	
Other protection features		Input over-voltage, output over-voltage, output over-current and short-circuit protection (extension and snoring), over-temperature self-recovery	Input over-voltage, output over-voltage, over-temperature protection, over-current protection, output short-circuit protection, reverse battery protection, communication fault protection, internal fault protection	
Dielectric strength	Input to output	2500VDC/1min 1mA max	2000VDC /1min 10mA Max	
	Input to the outer casing	2500VDC/1min 1mA max	1500VAC /1min 10mA Max	
	Input to output	\	3000VAC /1min 10mA Max	
Insulation resistance	Input to output	≥20MΩ	≥20MΩ ;	
	Input to the outer casing	≥20MΩ	≥20MΩ ;	
Weight	Net weight / Gross weight			

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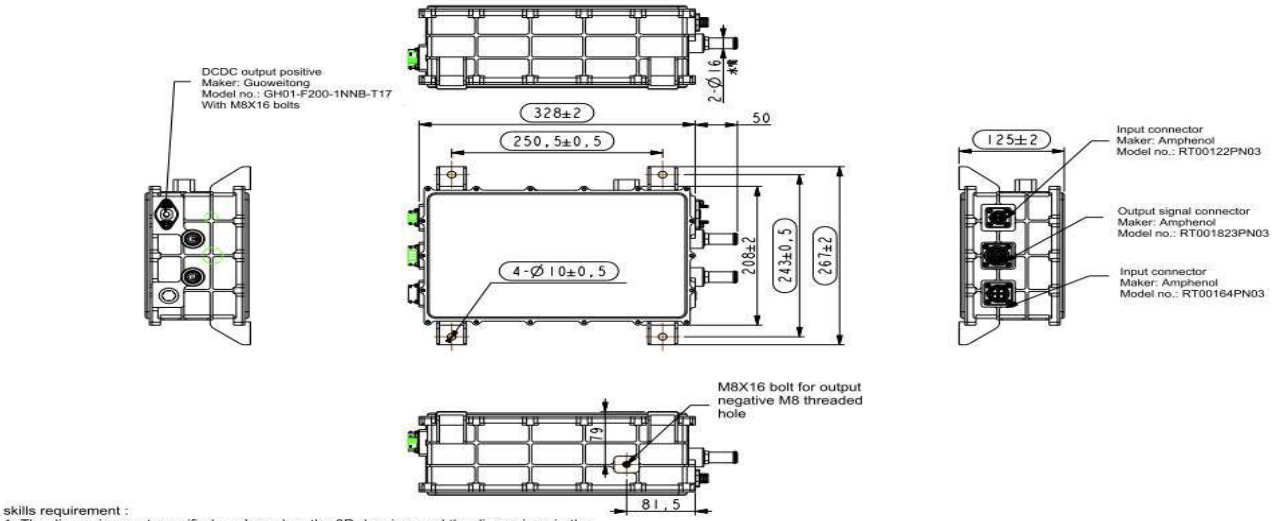
Model No.：AR2KC6K6S-D14C540L
Product Name：2KW DCDC+6.6KW OBC 2 in 1

Structural parameters



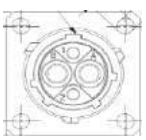
skills requirement :
1. The dimensions not specified are based on the 3D drawing, and the dimensions in the box are the key inspection dimensions.
2. The dimensions without tolerances are implemented in accordance with GB1804-2000-M. The dimension tolerance of unmarked position shall be implemented according to GB1184-1996-M.
3. The surface of the product shell is flat, smooth, beautiful, and uniform in color, without bumps, spots, cracks, burrs, and deformation.
4. Reliable parts are fastened reliably without defects and damages such as rust, burrs, cracks, etc. The connectors and pins are intact and no damage; the components are firmly connected.

Electrical Interface

Connector Table

Item	Position	Receptacle model no.	Pinout definition	Plug model no.	Maker
1	A	RT001823PN03	Control terminal	RT061823PNH03	Amphenol
2	B	RT00164PN03	AC input	RT06164SNHEC03	Amphenol
3	C	RT00122PN03	DC high voltage	RT06122SNHEC03	Amphenol
4	D	GH01-F200-1NNB-T17	Output positive	M8 Screw bolt	Guoweitong
5	E	Screw bolt	Output negative	/	/

Pinout definition

Receptacle model no.	Pin number	Pinout definition	Description	Connector picture
Input (RT00164PN03)	A	Fire wire	L	
	B	Zero line	N	
	C	Ground	PE	
	D	NC		
Output (RT00122PN03)	A	Positive	Output positive	
	B	Negative	Output negative	
	1	Interlock 1	Interlock signal 1	
	2	Interlock 2	Interlock signal 2	
	A	OBC~VCC+	OBC external input	

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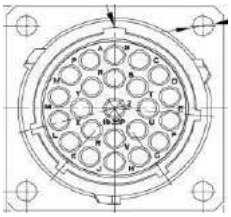
Model No.：AR2KC6K6S-D14C540L

Product Name：2KW DCDC+6.6KW OBC 2 in 1

Control terminal (RT001823PN03)	B	DCDC~VCC+	DC / DC input auxiliary power supply
	C	Proximity Detection (CC)	Charging connection signal
	D	Control pilot (CP)	Charge control signal
	E	CC_OUT	CC_OUT (reserved)
	F	CAN-H	DC / DC and OBC communication high
	G	CAN-L	DC / DC and OBC communication low
	H	CAN-GND	DC / DC and OBC communication ground
	J	OBC~J1772 mode enable (High level signal)	VCU / BMS wake-up signal (100mA) is galvanically isolated from input
	K	LOCK feedback 2	Electronic lock unlock signal (reserved)
	L	LOCK+	OBC drive electronic lock lock / unlock
	M	LOCK-	OBC drive electronic lock lock / unlock
	N	LOCK feedback 1	Electronic lock feedback signal
	P	NTC1+	Slow charge socket temperature 1 positive
	R	NTC2+	Slow charging socket temperature 2 positive
	S	OBC~VCC-	OBC external input
	T	DCDC~VCC-	DC / DC input auxiliary power negative
	U	DCDC~EN enable	DC / DC enable (control VCC)
	V	NTC1-	Slow charge socket temperature 1 min
	W	NTC2-	Slow charge socket temperature 2 negative
	X	NC	
	Y	NC	
	Z	OBC~VCU_EN	VCU wakes up OBC (reserved)



Label

Product Name	2KW DCDC+6.6KW OBC 2 in 1		
Product Part No.	e25.AR2KC6K6S-D14C540L		
Product Model	AR2KC6K6S-D14C540L		
Serial Number	2020XXXXXXXX		
Input Voltage	DCDC: 400~750VDC, OBC: 90~264VAC	Output Voltage	DCDC: 14VDC, OBC: 400~670VDC
Output Current	DCDC: 143A, OBC: 20A	Output power	DCDC: 2000W, OBC: 6600K
Supplier	ANNREN TECHNOLOGIES CO., LTD.		

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Model No.：AR-1K5C3K3-D14C380-HW-AR01

Product Name：3.3KW OBC+1.5KW DCDC+PDU 3 in 1

★ **Features for DC/DC**

1 Output Power：1.5KW
2 Input Voltage：200~420VDC
3 Output Voltage：14VDC
4 Dimensions：359X318X188mm (estimated)
5 Cooling System：Water
6 Protection Level：IP67
7 Communication Method：CA
8 Enclosure: Aluminum alloy made
9 Software: Digital software design

★ **Features for OBC**

1 Output Power：3.3KW
2 Input Voltage：90~264VAC
3 Output Voltage：200~420VDC
4 Dimensions：359X318X188mm (estimated)
5 Cooling System：Water
6 Protection Level：IP67
7 Communication Method：CAN
8 Enclosure: Aluminum alloy made
9 Software: Digital software design

Specification

Description		Technical specifications		Remark
		DCDC Parameters	OBC Parameters	
Output Power		1.5KW	3.3KW	
Input voltage range		200-400VDC	90~264VAC	
Output voltage range		13.8VDC	200-420 VDC	
Output voltage accuracy		±0.2VDC	±1%	
Output current		108A	10A(max)	
Current accuracy		/	±3%	Half load or more
Effectiveness		≥95%	≥95%	Rated voltage full load
Low voltage output		/	12VDC/200mAmax	
Auxiliary power VCC		6-18 VDC	/	
Output voltage ripple		≤500mVPK-PK	/	
Other protection features		Input over-voltage, output over-voltage, output over-current and short-circuit protection (extension and snoring), over-temperature self-recovery	Input over-voltage, output over-voltage, over-temperature protection, over-current protection, output short-circuit protection, reverse battery protection, communication fault protection, internal fault protection	
Dielectric strength	Input to output	2500VDC/1min 1mA max	2000VDC /1min 10mA Max	
	Input to the outer casing	2500VDC/1min 1mA max	1500VAC /1min 10mA Max	
	Input to output	/	3000VAC /1min 10mA Max	
Insulation resistance	Input to output	≥20MΩ	≥20MΩ ;	
	Input to the outer casing	≥20MΩ	≥20MΩ ;	
Electromagnetic compatib	Radiation emission	GB/T 18655-2010 Class 3	GB/T18387 2008 EN55022 CLassB	
	Conducted	GB/T 18655-2010 Class 3		
	Static immunity	GB/T 19951-2005		
	Radiation immunity	GB/T 18655-2010 Class 3		
	High current injection	GB/T 17619-1998		
	Fast burst immunity	GB/T 17626.4-2008 1KV		

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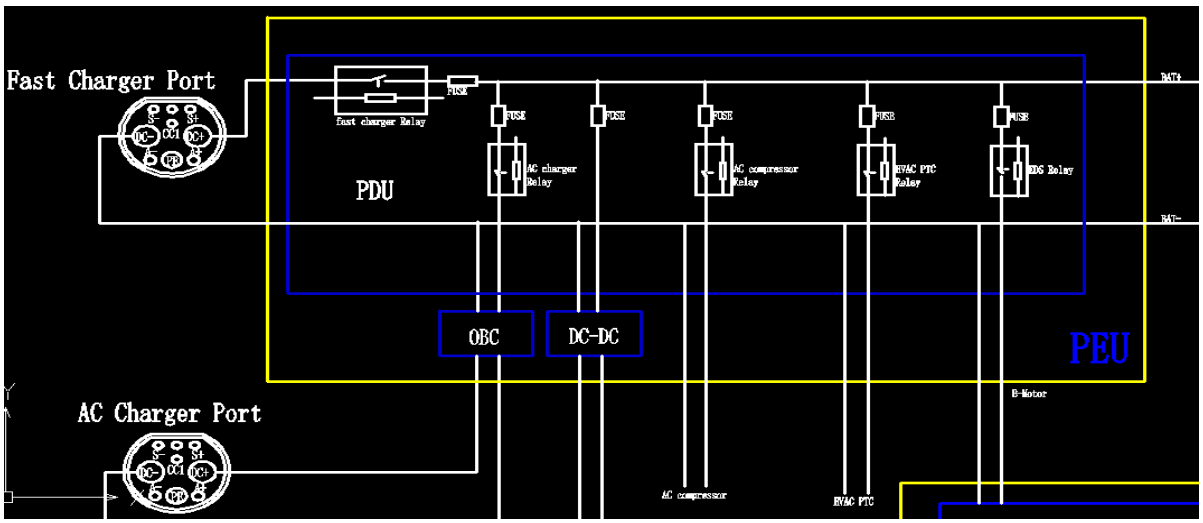
Model No.：AR-1K5C3K3-D14C380-HW-AR01
Product Name：3.3KW OBC+1.5KW DCDC+PDU 3 in 1

High voltage distribution parameters

High-voltage power distribution electrical schematic (customized by customer)



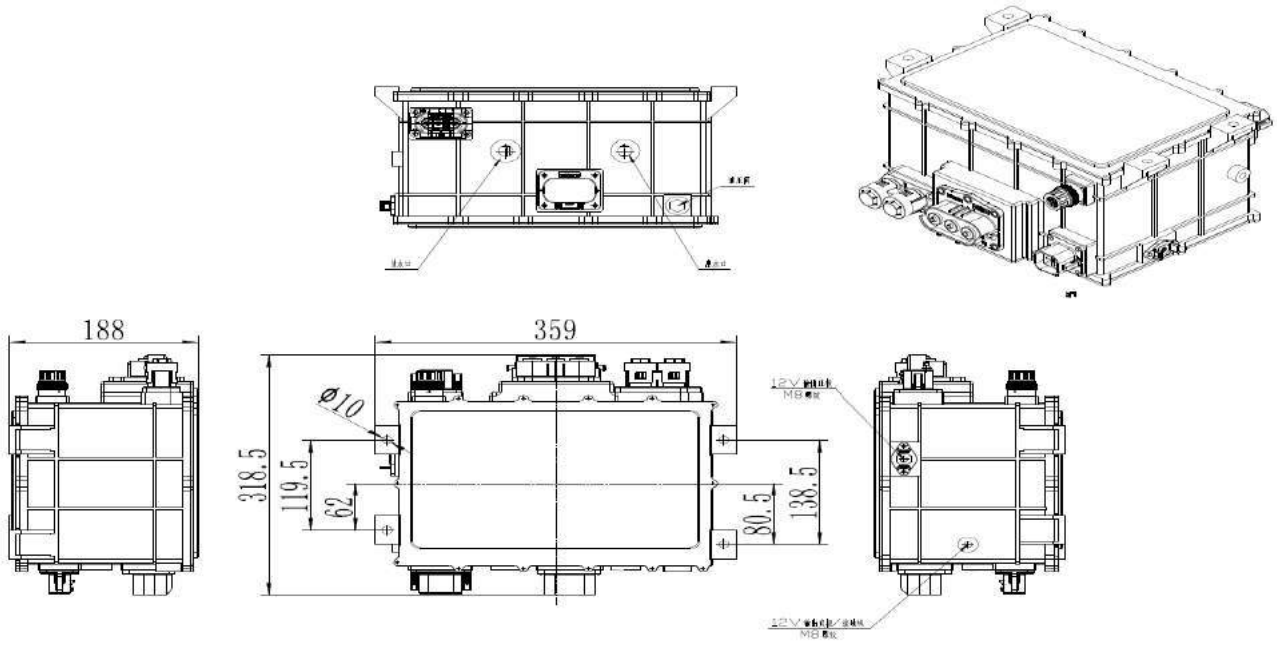
Fuse parameters (customized by customer)

Name	Specification requirements	Manufacturer model	Remarks
PTC fuse	20A 500V	HV150-20BP	
Air conditioner fuse	20A 500V	HV150-20BP	
DCDC Fuse	15A 550V	HV150-15BP	
AC charging fuse	32A 550V	HV150-35BP	
Fast charging fuse	200A 550V	EV3050-200	

Contactor parameters (customized by customer)

NameName	Specification requirements	Manufacturer model	Remarks
PTC relay	20A 550V	HFZ16-30-900-E	
Pre-charging relay	10A 550V	HFZ16-30-900-E	
HV component relay	50A 750V	HFZ16-30-900-E	

Structural parameters



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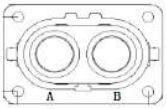
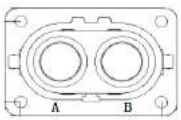
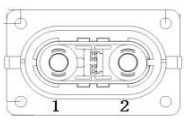
Model No.：AR-1K5C3K3-D14C380-HW-AR01
Product Name：3.3KW OBC+1.5KW DCDC+PDU 3 in 1

Electrical Interface

High voltage interface (customized by customer)

Item	Socket model	Plugin definition	Plug model	factory	Quantity	Plug note
1	YGC1127-EV-S(2+2)RD	Positive and negative battery	YGC1127-EV-S(2+2)PF	Yonggui	1	B positive A negative 35 square shielded wire
2	YGC1127-EV-S(2+2)RC	Motor controller positive and negative	YGC1127-EV-S(2+2)PE	Yonggui	1	A positive B minus 35 square shielded wire
3	YGC998-EV-S(2+2)R/I	Fast charge positive and negative	YGC998-EV-S(2+2)PW/I	Yonggui	1	2 positive 1 negative, 25 square shielded wire
4	YGC939-EV-P2RB	PTC	YGC939-EV-S2PB	Yonggui	1	1 positive 2 negative connected 2.5 square shielded wire
5	YGC939-EV-P2RC	air conditioner	YGC939-EV-S2PC	Yonggui	1	1 positive 2 negative connected 2.5 square shielded wire
6	YGC989-EV-P3RD	Slow charging three-phase input	YGC989-EV-S3PH	Yonggui	1	1 connected to L 2 to N 3 to PE
7	C-GH02-P250-1NNB-T01	12V output is positive	M8 screw column	Guoweitong	1	12VDC positive electrode

Interface definition

Socket definition	Pin number	Interface definition	Description	Connector picture
Battery	B	Power battery is positive		
	A	Power battery negative		
Motor Controller	A	Motor controller is positive		
	B	Motor controller negative		
Fast charging interface	1	Fast charge negative		
	2	Fast charge positive		

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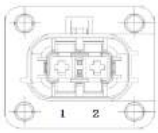
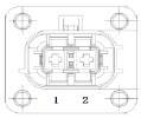
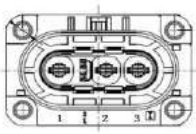
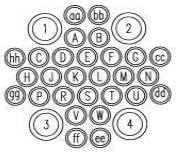
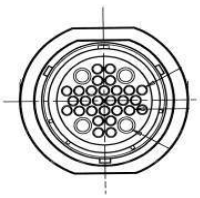
Model No.：AR-1K5C3K3-D14C380-HW-AR01
Product Name：3.3KW OBC+1.5KW DCDC+PDU 3 in 1

PTC	1	positive		
	2	negative		
air conditioner	1	positive		
	2	negative		
Slow charging interface	1	L		
	2	N		
	3	PE		
DCDC output interface	1	Low voltage output is positive		
Control signal terminal	A	VCC+		
	B	GND		
	C	Fast charge contactor feedback		
	D	Fast charge contactor coil negative		
	E	PTC contactor coil negative		
	F	DCDC EN enable		
	G	WAKE UP		
	H	CANH		
	L	CANL		
	M	CC		
	N	CP		
	P	High voltage interlock input		
	R	High voltage interlock output		
	K	AC charging electronic lock power supply positive		
	T	AC charging electronic lock feedback		
	S	AC charging socket temperature detection 2		
	J	NC		
	U	AC charging electronic lock power supply negative		
	W	AC charging socket temperature detection 1		
	V	Car charging signal ground		

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Product Name	6.6KW OBC+1.5KW DCDC+PDU 3 in 1
Model No.	AR-1K5C6K6-D14C380/540-HW-AR01
Power	OBC: 6.6KW DCDC: 15KW
Input Voltage	OBC: 90~264V DCDC: 250~450/400~750VDC
Output Voltage	OBC: 250~450/420~650VDC CDC: 14VDC
Output Current	OBC: 20A DCDC: 109A
Efficiency	OBC: 95% DCDC: 95%
Module Low Voltage (VDC)	12
Module Low Current (A)	200Ma/2A
Size (mm)	430X326X218mm
Cooling System	Water
IP Rating	IP67
Scope	Various new energy vehicles
Hardware	Small size, light weight and stable performance
Firmware	Full digital software design, redundant protection function design

Features

DC/DC Features

- **Output power : 1.5KW**
- **Input voltage : 250~450/400~750VDC**
- **Output voltage : 14VDC**
- **Communication method: CAN**

AC/DC Converter (OBC)

Output power : 6.6KW

Input voltage : 90~264VAC

Output range : 250~450/420~650VDC

Communication method: CAN c

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The main technical parameters

1. OBC, DCDC technical parameters

Item		Technical specifications		Remark
		DCDC Technical Parameters	OBC Technical Parameters	
Output Power		1.5KW	6.6KW	
Input voltage range		250-450VDC	90~264VAC	
Output voltage range		14VDC	250-450 VDC	
Output voltage accuracy		±0.2VDC	±1%	
Output current		109A	20A(max)	
Current accuracy		/	±3%	Half load or more
effectiveness		≥95%	≥95%	Rated voltage full load
Low voltage output		/	12VDC/1Amax	
Auxiliary power VCC		6-18 VDC	/	
Output voltage ripple		≤500mVPK-PK	/	
Other protection features		Input over-voltage, output over-voltage, output over-current and short-circuit protection (extension and snoring), over-temperature self-recovery	Input over-voltage, output over-voltage, over-temperature protection, over-current protection, output short-circuit protection, reverse battery protection, communication fault protection, internal fault protection	
Dielectr	Input to output	2500VDC/1min 1mA max	2000VDC /1min 10mA Max	

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ic stre ngth	Input to the outer casing	2500VDC/1min 1mA max	1500VAC /1min 10mA Max	
	Input to output	/	3000VAC /1min 10mA Max	
Insu lati on resi stan ce	Input to output	≥20MΩ	≥20MΩ；	
	Input to the outer casing	≥20MΩ	≥20MΩ；	
Elec trom agne tic comp atib ilit y	Radiation emission	GB/T 18655-2010 Class 3	GB/T18387 2008 EN55022 CLassB	
	Conducted emission	GB/T 18655-2010 Class 3		
	Static immunity	GB/T 19951-2005		
	Radiation immunity	GB/T 18655-2010 Class 3		
	High current injection	GB/T 17619-1998		
	Fast burst immunity	GB/T 17626.4-2008 1KV		

2. High voltage distribution parameters

2-1. High-voltage power distribution electrical schematic (customized by customer)

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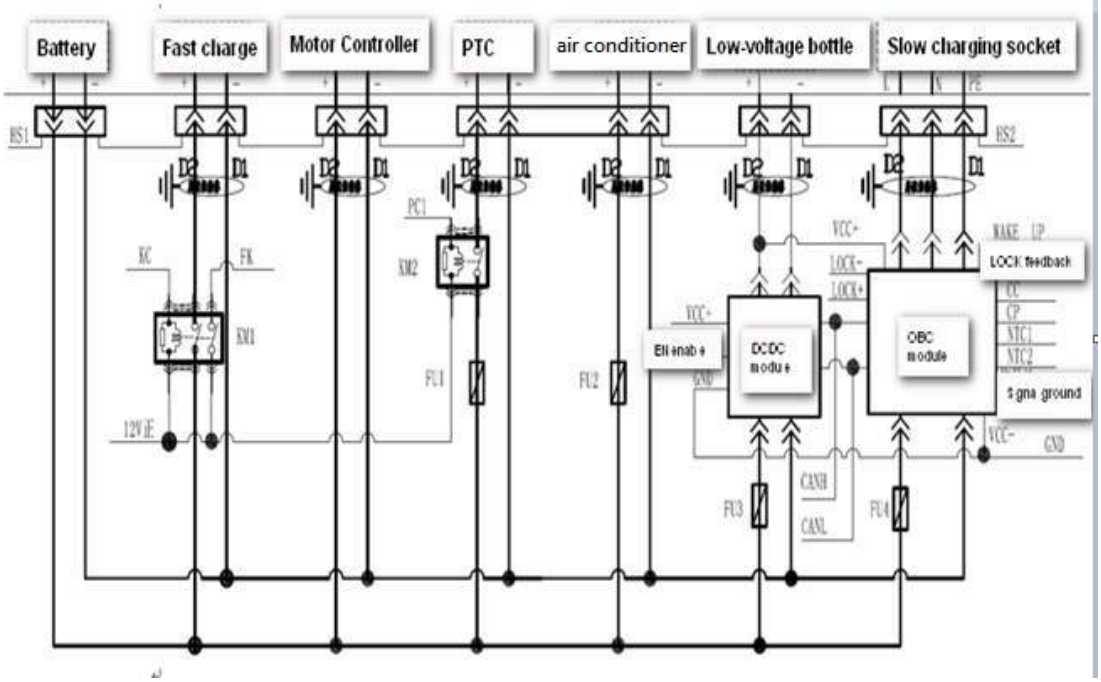

2-2. Fuse parameters (customized by customer)

Name	Specification requirements	Manufacturer model	Remarks
PTC Fuse	25A 500V	EV1845-25A-M6	
Air conditioner fuse	32A 500V	EV1845-32A-M6	
DCDC Fuse	25A 500V	EV1845-25A-M6	
OBC Fuse	32A 500V	EV1845-32A-M6	
.....			

2-3. Contactor parameters (customized by customer)

Name	Specification requirements	Manufacturer model	Remarks
Fast charge contactor	150A 500V	GL150HAANA (national power)	
PTC contactor	20A 500V	EV20(Sière)	
.....			

Structural parameters

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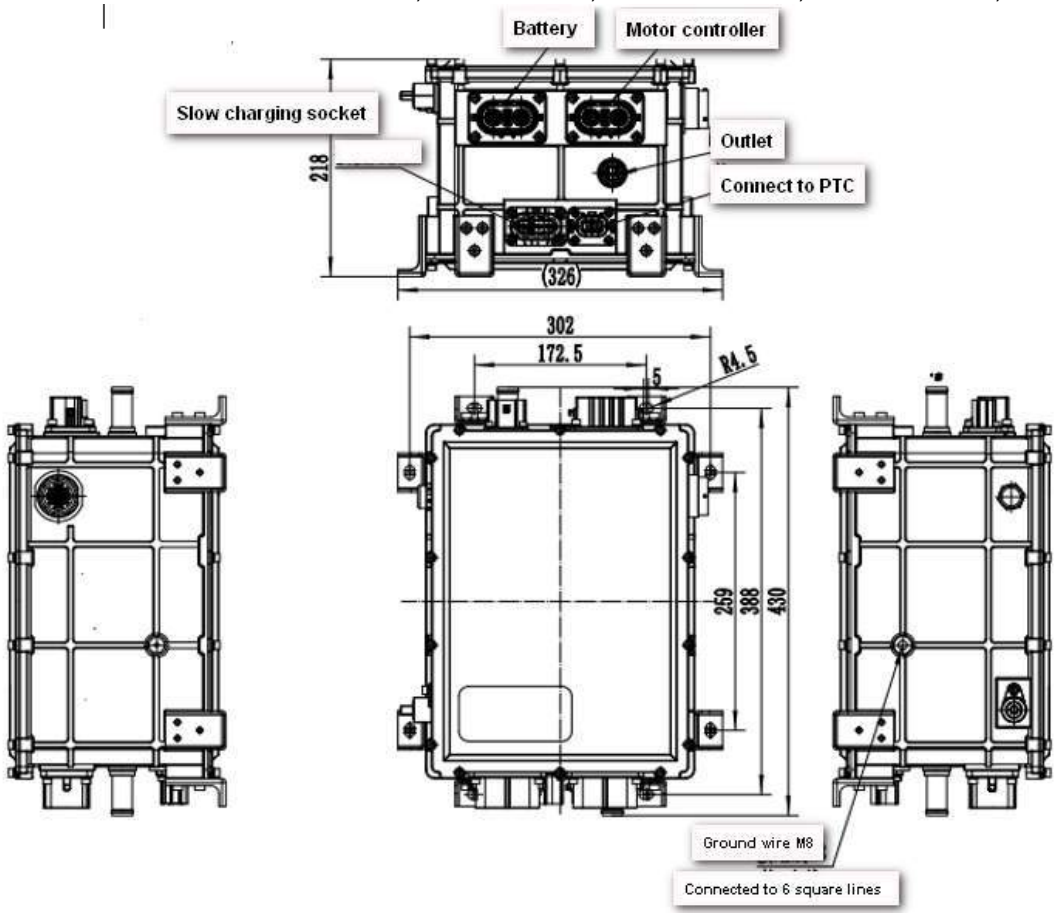

Electrical Interface

1. High voltage interface (customized by customer)

Item	Socket model	Plugin definition	Plug model	factory	Quantity	Plug note
1	YGC1127-EV-S(2+2)RD	Positive and negative battery	YGC1127-EV-S(2+2)PF	Yonggui	1	B positive A negative 35 square shielded line
2	YGC1127-EV-S(2+2)RC	Motor controller positive and negative	YGC1127-EV-S(2+2)PE	Yonggui	1	A positive B minus 35 square shielded wire

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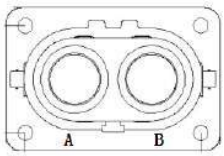
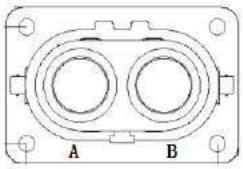
3	YGC998-EV-S(2+2)R/I	Fast charge positive and negative	YGC998-EV-S(2+2)PW/I	Yonggui	1	2 positive 1 negative, 25 square shielded wire
4	YGC939-EV-P2RB	PTC	YGC939-EV-S2PB	Yonggui	1	1 positive 2 negative connected 2.5 square shielded wire
5	YGC939-EV-P2RC	air conditioning	YGC939-EV-S2PC	Yonggui	1	1 positive 2 negative connected 2.5 square shielded wire
6	YGC989-EV-P3RD	Slow charging three-phase input	YGC989-EV-S3PH	Yonggui	1	1 connected to L 2 to N 3 to PE
7	C-GH02-P250-1NNB-T01	12V output is positive		Guoweitong	1	

2. Interface definition

Socket definition	Pin number	Interface definition	Description	Connector picture
battery	B	Power battery is positive		
	A	Power battery negative		
Motor Controller	A	Motor controller is positive		
	B	Motor controller negative		
Fast charging	1	Fast charge negative		

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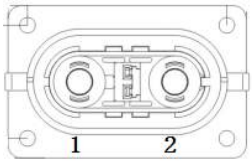
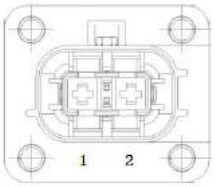
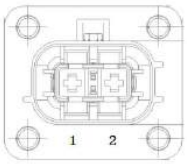
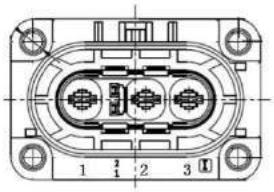
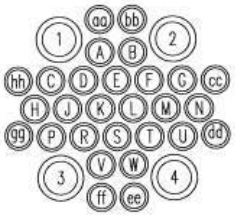
interface	2	Fast charge positive		
PTC	1	positive		
	2	negative		
air conditioning	1	positive		
	2	negative		
Slow charging interface	1	L		
	2	N		
	3	PE		
DCDC output interface	1	Low voltage 12 output is positive		
Control signal terminal	A	12V+		
	B	GND		
	C	Fast charge contactor feedback		
	D	Fast charge contactor coil negative		
	E	PTC contactor coil negative		
	F	DCDC EN enable		
	G	WAKE UP		
	H	CANH		
	L	CANL		
	M	CC		
	N	CP		
	P	High voltage interlock input		
	R	High voltage interlock output		
	K	AC charging		

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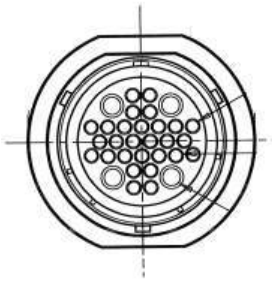
		electronic lock power supply positive		
	T	AC charging electronic lock feedback		
	S	AC charging socket temperature detection 2		
	J			
	U	AC charging electronic lock power supply negative		
	W	AC charging socket temperature detection 1		
	V	Car charging signal ground		

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Product Name	6.6KW OBC+2.5KW DCDC+PDU 3 in 1
Model No.	AR-2K5C6K6-D14C540-HW-AR01
Power	OBC: 6.6KW DCDC: 2.5KW
Input Voltage	OBC: 90~264V DCDC: 400~750V
Output Voltage	OBC: 500~750V DCDC: 14VDC
Output Current	OBC: 20A DCDC: 175A
Efficiency	OBC: 95% DCDC: 95%
Module Low Voltage (VDC)	12
Module Low Current (A)	200Ma/2A
Size (mm)	430X326X218
Cooling System	Water
IP Rating	IP67
Scope	Various new energy vehicles
Hardware	Small size, light weight and stable performance
Firmware	Full digital software design, redundant protection function design

Features

DC/DC Converter

- **Output power: 2.5KW**
- **Input voltage: 400~750VDC**
- **Output voltage: 14VDC**
- **Communication method: CAN**

AC/DC Converter (OBC)

Output power: 6.6KW
Input voltage: 90~264VAC
Output range: 500~750VDC
Communication method: CAN

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The main technical

一、OBC、DCDC technical Parameters

Item		Technical specifications		Remark
		DCDC Technical Parameters	OBC Technical Parameters	
Output Power		2.5KW	6.6KW	
Input voltage range		400-750VDC	90~264VAC	
Output voltage range		14VDC	500-750VDC	
Output voltage accuracy		±0.2VDC	±1%	
Output current		175A	20A(max)	
Current accuracy		/	±3%	Half load or more
Effectiveness		≥95%	≥95%	Rated voltage full load
Low voltage output		/	12VDC/1Amax	
Auxiliary power VCC		6-18VDC	/	
Output voltage ripple		≤500mVPK-PK	/	
Other protection features		Input over-voltage, output over-voltage, output over-current and short-circuit protection (extension and snoring), over-temperature self-recovery	Input over-voltage, output over-voltage, over-temperature protection, over-current protection, output short-circuit protection, reverse battery protection, communication fault protection, internal fault protection	
Dielectric strength	Input to output	2500VDC/1min 1mA max	2000VDC /1min 10mA Max	
	Input to the outer casing	2500VDC/1min 1mA max	1500VAC /1min 10mA Max	
	Input to output	/	3000VAC /1min 10mA Max	
Insulation resistance	Input to output	≥20MΩ	≥20MΩ;	
	Input to the outer casing	≥20MΩ	≥20MΩ;	
Electromagnetic compatibility	Radiation emission	GB/T 18655-2010 Class 3	GB/T18387 2008 EN55022 CLassB	
	Conducted emission	GB/T 18655-2010 Class 3		
	Static immunity	GB/T 19951-2005		
	Radiation immunity	GB/T 18655-2010 Class 3		

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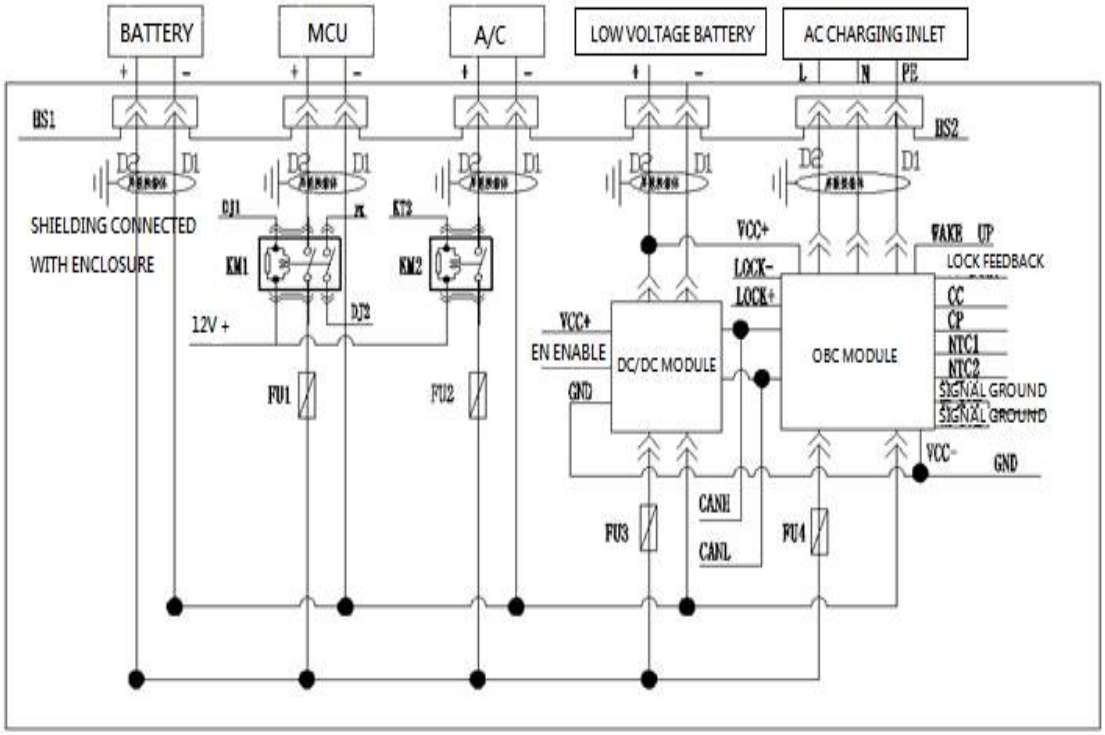
	High current injection	GB/T 17619-1998		
	Fast burst immunity	GB/T 17626.4-2008 1KV		

二、High voltage distribution parameters

1. High-voltage power distribution electrical schematic (can be customized)



2. Fuse parameters (customized by customer)

Name	Specification requirements	Manufacturer model	Remarks
Air conditioner fuse	32A 500V	EV1845-32A-M6	
DCDC fuse	25A 500V	EV1845-25A-M6	
OBC fuse	32A 500V	EV1845-32A-M6	
.....			

3. Contactor parameters (can be customized)

Name	Specification requirements	Manufacturer model	Remarks
Electronically controlled contactor	250A 500V		
Air conditioner contactor	20A 500V		

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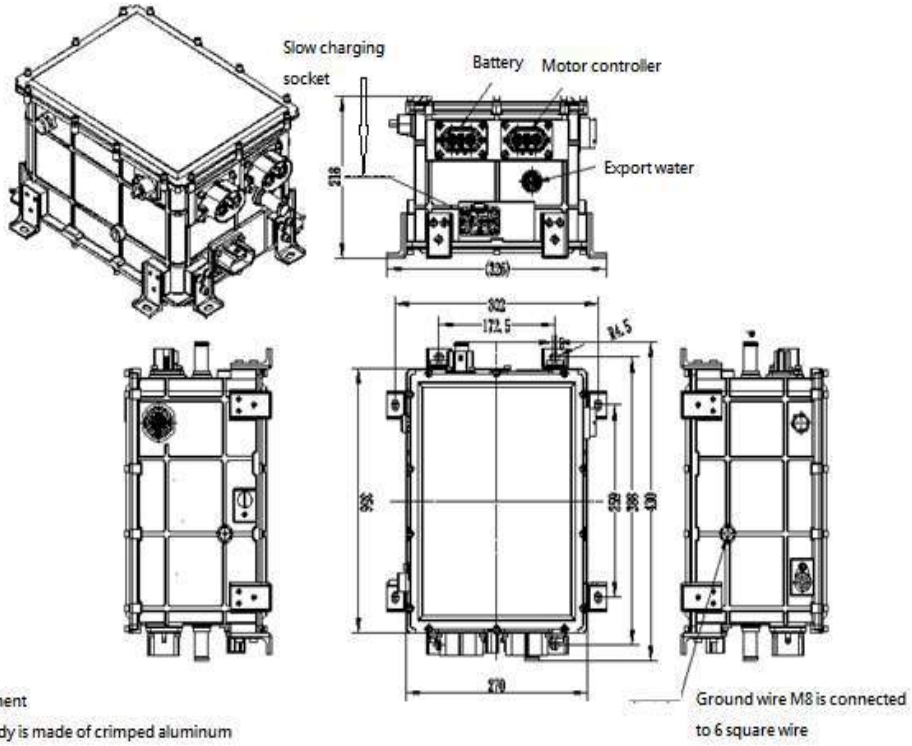
Structural parameters



skills requirement

1. The box body is made of crimped aluminum alloy
2. High-voltage connector adopts new energy high-voltage connector
3, protection grade IP67
4, insurance belongs to the loss
5, working temperature -40 ° C ~ 85 ° C
6, cooling method is cold

Electrical Interface

一、High pressure interface (customized by customer)

Item	Socket model	Plugin definition	Plug model	factory	Quantity	Plug note
1	YGC1127-EV-S(2+2)RD	Positive and negative battery	YGC1127-EV-S(2+2)PF	Yonggui	1	B positive A negative 35 square shielded line
2	YGC1127-EV-S(2+2)RC	Motor controller positive and negative	YGC1127-EV-S(2+2)PE	Yonggui	1	A positive B minus 35 square shielded wire

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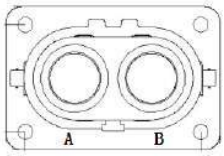
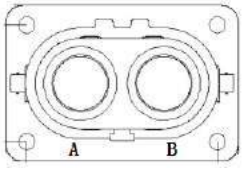
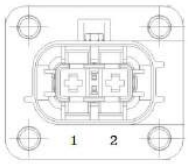
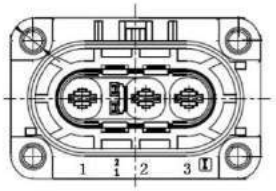
3	YGC939-EV-P2RC	air conditioning	YGC939-EV-S2PC	Yonggui	1	1 positive 2 negative connected 2.5 square shielded wire
4	YGC989-EV-P3RD	Slow charging three-phase input	YGC989-EV-S3PH	Yonggui	1	1 connected to L 2 to N 3 to PE
5	C-GH02-P250-1NNB-T01	12V output is positive		Guoweitong	1	

二、Interface definition

Socket definition	Pin number	Interface definition	Description	Connector picture
battery	B	Power battery is positive		
	A	Power battery negative		
Motor Controller	A	Motor controller is positive		
	B	Motor controller negative		
air conditioning	1	positive		
	2	negative		
Slow charging interface	1	L		
	2	N		
	3	PE		
DCDC output interface	1	Low voltage 12 output is positive		
Control signal terminal	A	12V+		
	B	GND		
	C	Fast charge contactor feedback		
	D	Fast charge contactor coil negative		
	E	PTC contactor coil negative		

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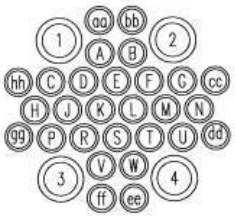
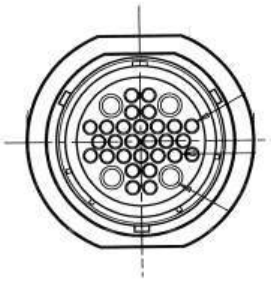
	F	DCDC EN enable		
	G	WAKE UP		
	H	CANH		
	L	CANL		
	M	CC		
	N	CP		
	P	High voltage interlock input		
	R	High voltage interlock output		
	K	AC charging electronic lock power supply positive		
	T	AC charging electronic lock feedback		
	S	AC charging socket temperature detection 2		
	J			
	U	AC charging electronic lock power supply negative		
	W	AC charging socket temperature detection 1		
	V	Car charging signal ground		

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Model No.：AR-2.5K-380/540S14-W-AR01

Product Name：2.5KW DC/DC Converter system

2.5KW DC/DC Converter Liquid cooling System

Features

1 Output Power：2.5KW
2 Input Voltage：250-450VDC/400-750VDC
3 Output Voltage：14VDC
4 Dimensions：268x220x75mm
5 Cooling System：Liquid
6 IP Rating：IP67
7 Communication Method：CAN
8 Enclosure: Aluminum alloy made
9 Software: Digital software design

Applications

Electric Passenger Vihecles

Electric Passenger Vihecles

Specification

Description		Technical specifications	Remark
Operating temperature		-40~85℃	85~100℃ · Can be derated to 40% of work
Rated output power		2.5KW	
Input voltage range		250-450VDC/400-750VDC	Optional
Output rated voltage		14VDC	9~16 Adjustable
Rated output current		175A	
Auxiliary power VCC		6-18VDC	
Efficiency		≥95%	Rated voltage Full load
Output voltage ripple		≤500mVPK-PK	
Protection characteristics		Input over-voltage, output over-voltage, input anti-reverse connection, output over-current and short-circuit protection, over-temperature self-recovery	
Over temperature protection		The bottom plate temperature reaches 85 °C and starts derating output. The temperature exceeds 100 °C, shutting down; the temperature is lower than 95 °C, which can be self-recovery.	
Dielectric strength	Input to output	2500VDC/1min 1mA max	
	Input to the outer casing	2500VDC/1min 1mA max	
Insulation resistance	Input to output	≥20MΩ	
	Input to the outer casing	≥20MΩ	
Battery compatibility	Radiation emission	GB/T 18655-2010 Class 3	
	Conducted emission	GB/T 18655-2010 Class 3	
	Static immunity	GB/T 19951-2005	Air discharge：15KV · Contact discharge 8KV
	Radiation immunity	GB/T 18655-2010 Class 3	
	High current injection	GB/T 17619-1998	
	Fast burst immunity	GB/T 17626.4-2008 1KV	

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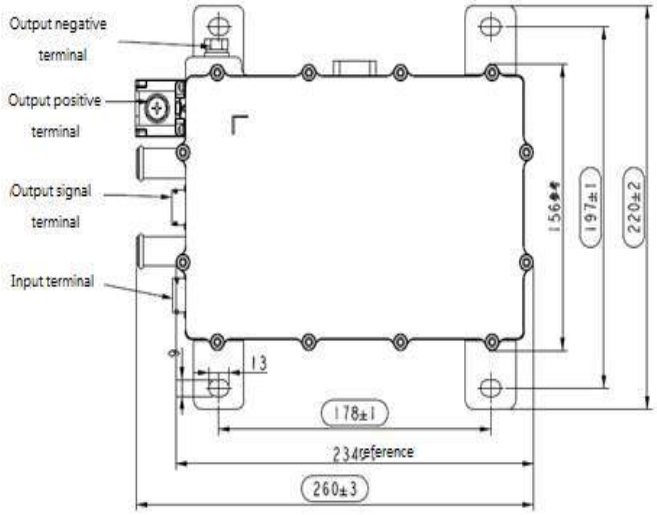
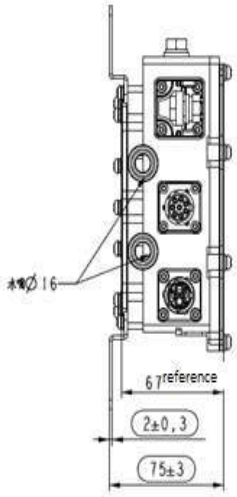
Model No.：AR-2.5K-380/540S14-W-AR01

Product Name：2.5KW DC/DC Converter system

Structural parameters

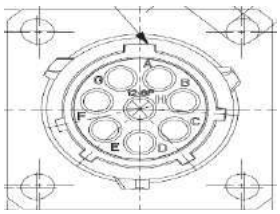
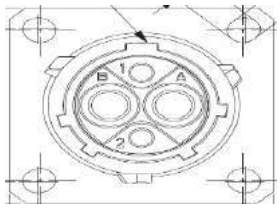




Connector information（customizable）

Position	Socket model	Function	Brand	Plug model
A	RT00128PN03	Control terminal	Amphenol	RT06128SNHEC03
B	RT00122PN03	DC high voltage terminal	Amphenol	RT06122SNHEC03
C	ACTB117-C	Output positive	Connet	M8 Specification copper ear
D	M8 Bolt lock housing	Output negative	\	M8 Specification copper ear

Interface definition（for reference）

Vendor	Model	Description		Remark
Amphenol	RT00128PN03	A	CAN-H	
		B	CAN-L	
		C	KEY（Highly effective）Reserved	
		D	VCC+	
		E	GND	
		F	NC	
		G	NC	
		H	NC	
Amphenol	RT00122PN03	A	Input positive	
		B	Input negative	
		1	Interlock 1 connection 2	
		2	Interlock 2 connection 1	

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Date: 2019/11/04	Version: V02	Remark: 1. Model No. changed from AR6K6-250D380A-SAE to AR6K6-220S38A 2. Standard changed from GB/T to SAE J1772 2010
Date: 2020/01/16	Version: V03	Remark: 1. Input Voltage changed to be 85-265 VAC from 90-264Vdc, 2. Out Voltage changed to be 250-450VDC from 200-450Vdc. 3. Output Current(Max) changed to be 20A from 14A.

SAE J1772 6.6KW 380V ON BOARD CHARGER

Model No.: AR6K6-220S380A

1. Features

Product Name	6.6KW 380V ON BOARD CHARGER
Model No.	AR6K6-220S380A
Standard	SAE J1772 2010
Power	6.6KW
Input Voltage	85~265VAC
Output Voltage	250-450VDC
Output Current(Max)	20A
Efficiency	≥93%
Module Low Voltage (VDC)	13.8VDC
Module Low Current (A)	200mAmax
Can Bus Speed	500 kb/s
Size (mm)	380x244x126mm
Cooling System	Fan Cooling
IP Rating	IP67 (Fan is excluded)
Scope	Various new energy vehicles
Hardware	Small size, light weight and stable performance
Firmware	Full digital software design, redundant protection function design

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2. Specification

Item		Technical specifications	Remarks
Environmental characteristics	Operating temperature	-40~65℃	Long-time working
	Vibration/noise	Meet SAE J1772 2010 standard	
	Salt spray experiment	Meet SAE J1772 2010 standard	
Output Power		6.6KW max	
Input voltage range		85~265VAC	
Output voltage range		250-450 VDC	
Voltage accuracy		±1%	
Output maximum current		20A	
Current accuracy		±3%	Half load or more
Efficiency		≥93%	Rated voltage Full load
Low voltage wake-up signal		13.8VDC/200mAmax	Customizable
Other protection features		Input over-voltage, output over-voltage, over-temperature protection, over-current protection, output short-circuit protection, reverse battery protection, communication fault protection, internal fault protection	
Over temperature protection		When the temperature reaches 85 °C, the output power is reduced by half. The temperature is <80 °C in 10 minutes, and the full load is automatically restored. After 10 minutes, the temperature is >80 °C, then it is turned off. When the temperature is >90 °C, it will be shut down directly.	
Dielectric strength	Output to the outer casing	2000VDC /60S 10mA Max	
	Input to the outer casing	1500VAC /60S 10mA Max	
	Input to output	3000VAC /60S 10mA Max	
Insulation resistance	Input to output	≥20MΩ	
	Input to the outer casing	≥20MΩ	
Electromagnetic compatibility	Radiation emission	GBT 18387：2008，EN 55022 Class B	
	Conducted emission	GBT 18387：2008，EN 55022 Class B	
	Radiation immunity	GBT 18387：2008，EN 55022 Class B	

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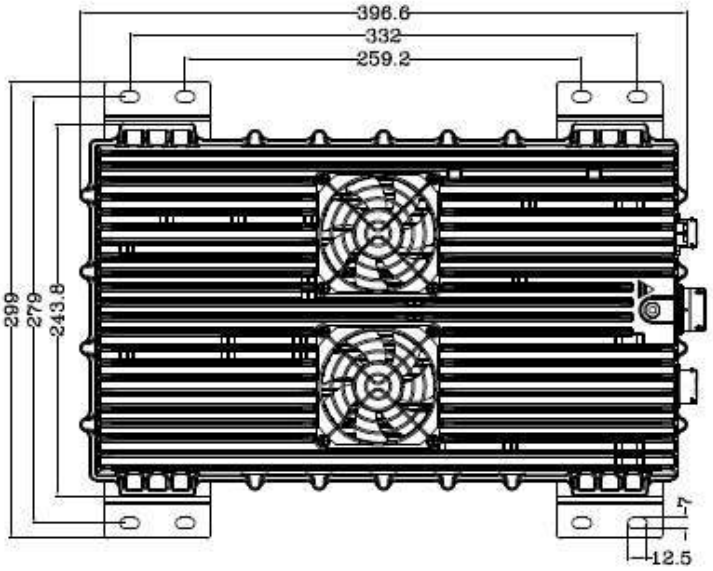
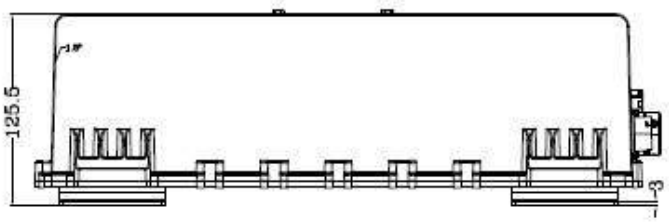
3. Structural Parameters

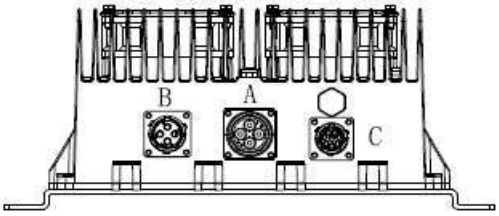
Structural information (installation brackets and plug-ins can be customized)

PINOUT	Socket model	Function	Brand	Plug model
A	C10518N1-04-1-G002	AC input	Jonhon	C10518N1-04-1-2-G002
B	RT00144PN03	DC output	Amphenol	RT06144SNHEC03 Terminal SS12A1T Waterproof stopper A114017
C	RT00128PN03	Signal socket	Amphenol	RT06128SNHEC03 Terminal SS16M1F Waterproof stopper AT13-201-2005





A：交流输入
B：高压直流输出
C：信号接插件



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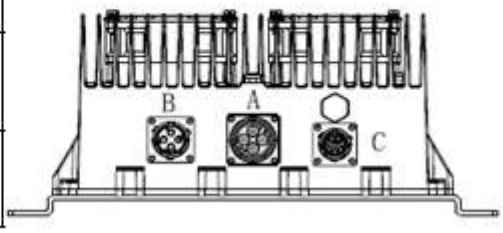
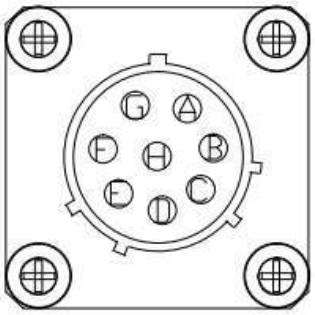
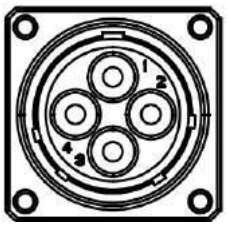
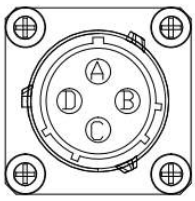
PINOUT	Socket model	Function
A	C10518N1-04-1-G002	AC input
B	RT00144PN03	DC output
C	RT00128PN03	Signal socket



Vendor	Model	Description		Remarks
Amphenol	RT00128PN03	A	CAN-H	
		B	Proximity Detection (CC)	
		C	Control pilot (CP)	
		D	Constant battery power (12V Input)	
		E	OBC-EN (Wake up signal)	
		F	J1772 mode enable (High level signal)	
		G	CANL	
		H	GND	
Jonhon	C10518N1-04-1-G001	1	L (Fire line)	
		2	N (Neutral line)	
		3	PE (Protected area)	
		4	NC	
Amphenol	RT00144PN03	A	Output positive	
		B	Interlock 1	
		C	Output negative	
		D	Interlock 2	

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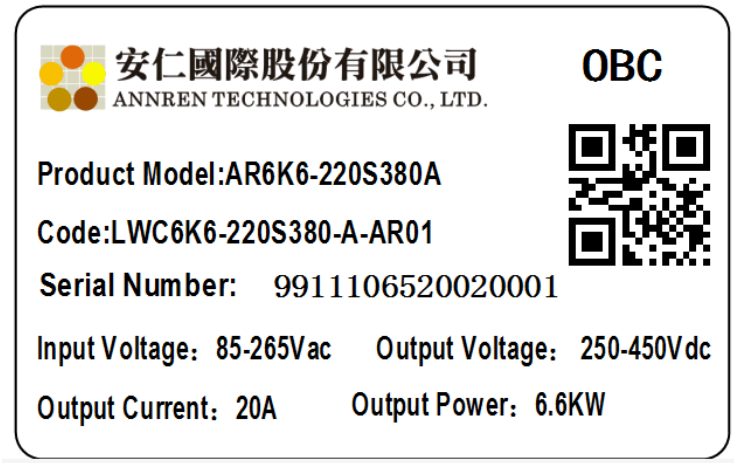
Label



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SAE J1772 6.6KW 540V ON BOARD CHARGER

Model No.: AR-6K6-220D54014-A-SAE

Features

Product Name	6.6KW ON BOARD CHARGER
Model No.	AR-6K6-220D54014-A-AR01
Standard	SAE J1772
Power	6.6KW
Input Voltage	90~264VAC
Output Voltage	420~650VDC
Output Current	14A
Efficiency	≥93%
Module Low Voltage (VDC)	13.8VDC
Module Low Current (A)	200mAmax
Can Bus Speed	500 kb/s
Size (mm)	380x244x126mm
Cooling System	Fan Cooling
IP Rating	IP67 (Fan is excluded)
Scope	Various new energy vehicles
Hardware	Small size, light weight and stable performance
Firmware	Full digital software design, redundant protection function design

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Specification

Parameters		Requirements
Environmental characteristics	Operating temperature	-40~65℃ (long-time working)
	Vibration / noise	Meet QC / T 895-2011 standard
	Salt spray test	Meet QB / T 2423.17-2008 standard
Output Power		6.6KW max
Input voltage range		90~264VAC
Output voltage range		420-650 VDC
Voltage accuracy		±1%
Output current		14A
Current accuracy		±3% (More than half load)
Efficiency		≥93% (Rated voltage, full operation)
Low voltage wake-up signal		13.8VDC/7Amax (Customized)
Other protection features		Input over and under voltage, output over and under voltage, over temperature protection, over current protection, output short circuit protection, reverse battery protection, communication fault protection, internal fault protection
Over temperature protection		When the temperature reaches 85 ° C, the output power is halved, and the temperature is lower than 80 ° C within 10 minutes, and the load is automatically restored. After 10 minutes, the temperature is higher than 80 ° C, then the power is turned off.
Dielectric strength	Output to casing	2000VDC /60S 10mA Max
	Input to casing	1500VAC /60S 10mA Max
	Input to output	3000VAC /60S 10mA Max
Insulation resistance	Input to output	≥20MΩ
	Input to casing	≥20MΩ

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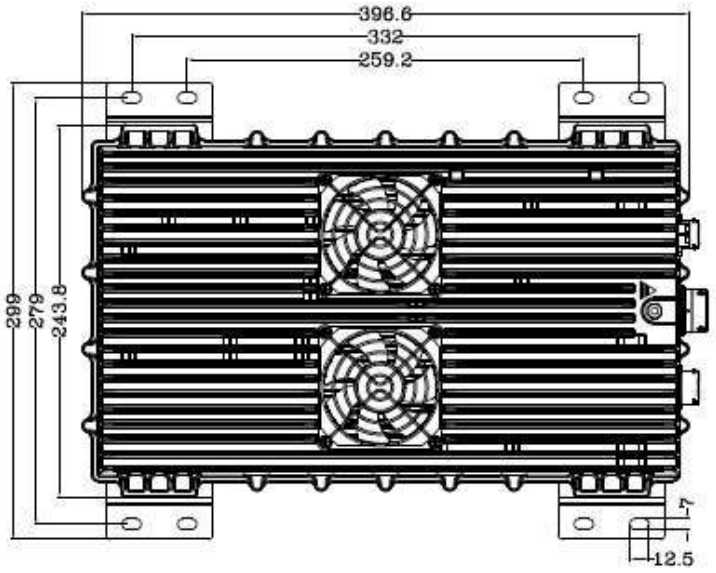
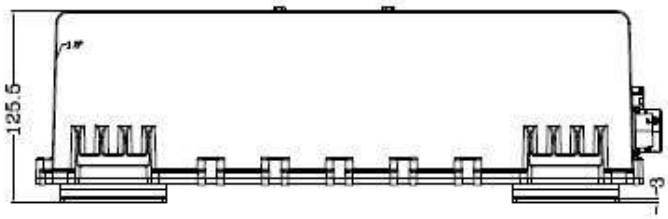
Electromagnetic compatibility	Radiation emission	GBT 18387：2008，EN 55022 Class B
	Conducted emission	GBT 18387：2008，EN 55022 Class B
	Radiation immunity	GBT 18387：2008，EN 55022 Class B

Structural parameters

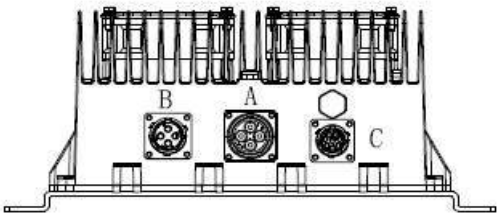
一、Connector Table (customized)

Position	Receptacle model no.	Pinout definition	Maker	Plug model no
A	C10518N1-04-1-G001	AC input	AVIC	C10518N1-04-1-2-G001
B	RT00144PN03	DC output	Amphenol	RT06144SNHEC03
C	RT00128PN03	Signal socket	Amphenol	RT06128SNHEC03





A：交流输入
B：高压直流输出
C：信号接插件



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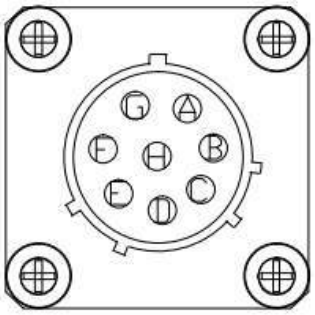
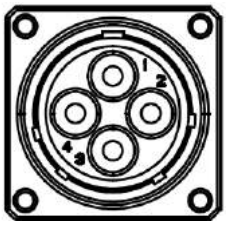
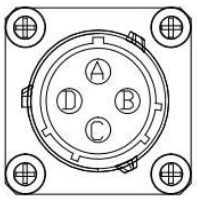
二、Pinout definition

Maker	Receptacle model no.	Description		Connector picture
Amphenol	RT00128PN03	A	CAN-H	
		B	Proximity Detection (CC)	
		C	Control pilot (CP)	
		D	Constant battery power (12V Input)	
		E	OBC-EN (Wake-up signal)	
		F	J1772 mode enable (High level signal)	
		G	CANL	
		H	GND	
AVIC	C10518N1-04-1-G001	1	L (Fire wire)	
		2	N (Zero line)	
		3	PE (Protected area)	
		4	NC	
Amphenol	RT00144PN03	A	Output positive	
		B	Interlock 1	
		C	Output negative	
		D	Interlock 2	

Label

Product Name	SAE J1772 6.6KW 540V ON BOARD CHARGER
Product Part No.	E25.AR-6K6-220D54014-A-SAE
Product Model	AR-6K6-220D54014-A-SAE
Serial number	2019XXXXXXXX
Supplier	ANNREN TECHNOLOGIES CO., LTD.

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ANNREN TECHNOLOGIES CO., LTD.

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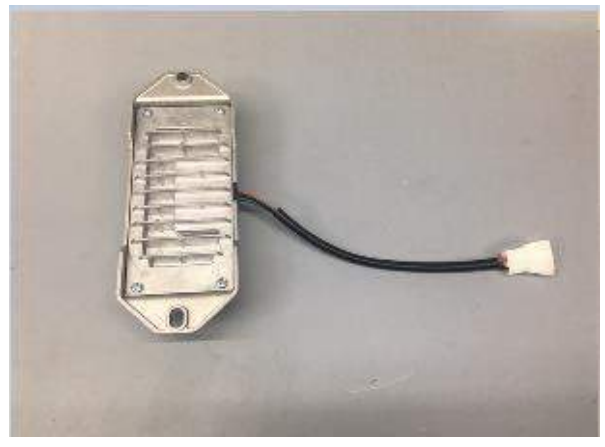
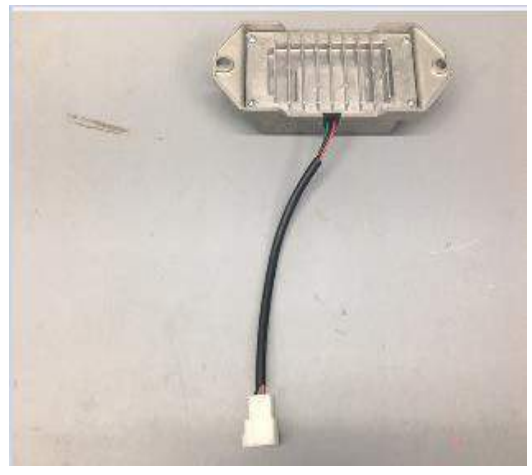
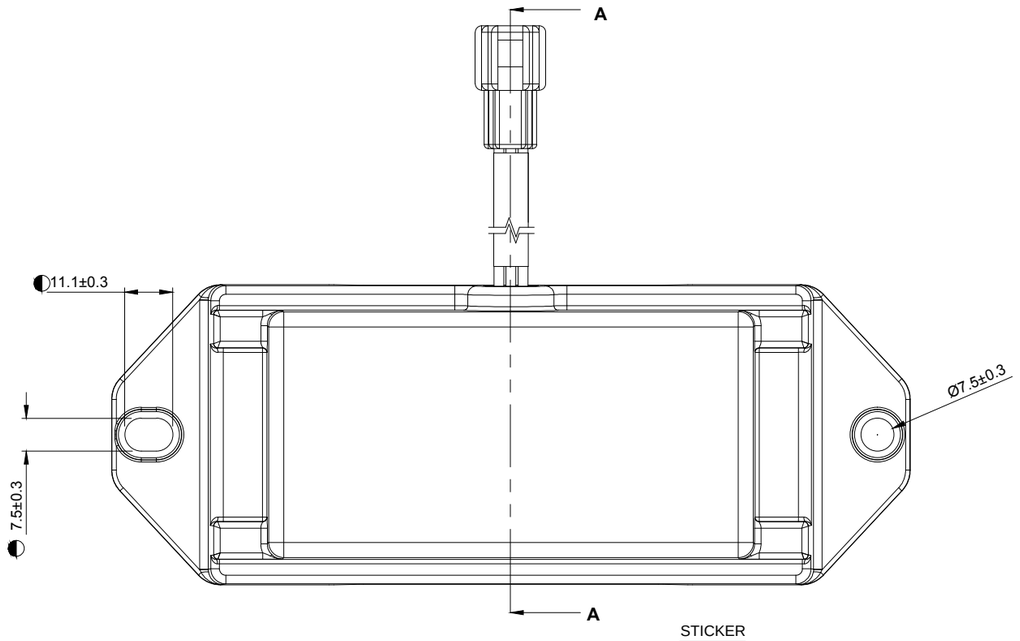
Model No.：AR300W-2713V
Product Name：300W DC/DC converter

Features

1 NOMINAL INPUT VOLTAGE :27V.
2 INPUT VOLTAGE RANGE AT RATED LOAD :18~36 VDC
3 OUTPUT VOLTAGE RANGE: 13±0.5V
4 RIPPLE VOLTAGE AT NOMINAL CONDITION:<250mVPPp AT 25˚C
5 NOMINAL OUTPUT CURRENT : 10A.
6 INSULATION RESISTANCE > 1 MEGA OHM.
7 TESTING TO BE DONE AS PER SIGNED OFF CTR
8 COMPONENT SHOULD MEET THE ELV/RoHS REQUIREMENT
9 INGRESS PROTECTION: IP65.
10 COMPONENT MEETS Pulse 5b TEST FOR 24V SYSTEM AT Us*= 65V , Ri= 1Ohm.
11 COMPONENT MEETS RADIATED EMISSION =Class 3
12 COMPONENT MEETS CONDUCTED EMISSION=Class3.
13 Box size (id)- 450x380x190
14 Qty- 18 nos.
15 Weight- 8.5 kg



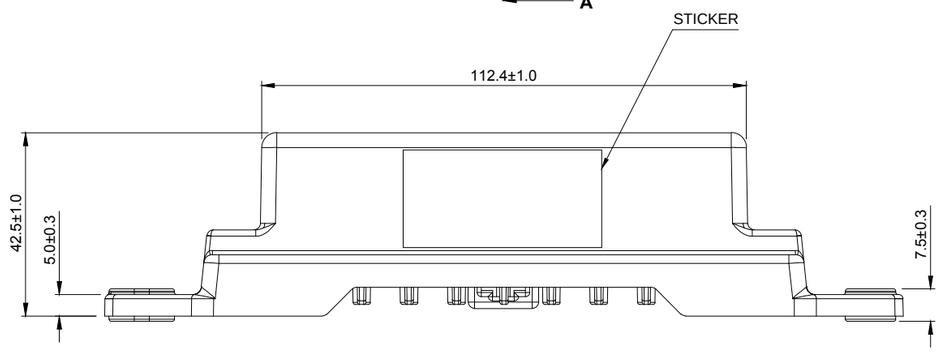




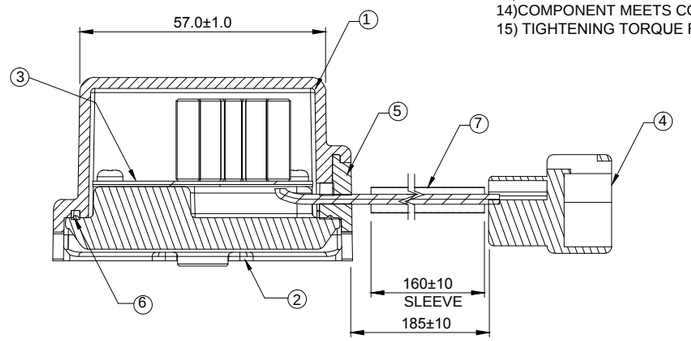


PART LIST:

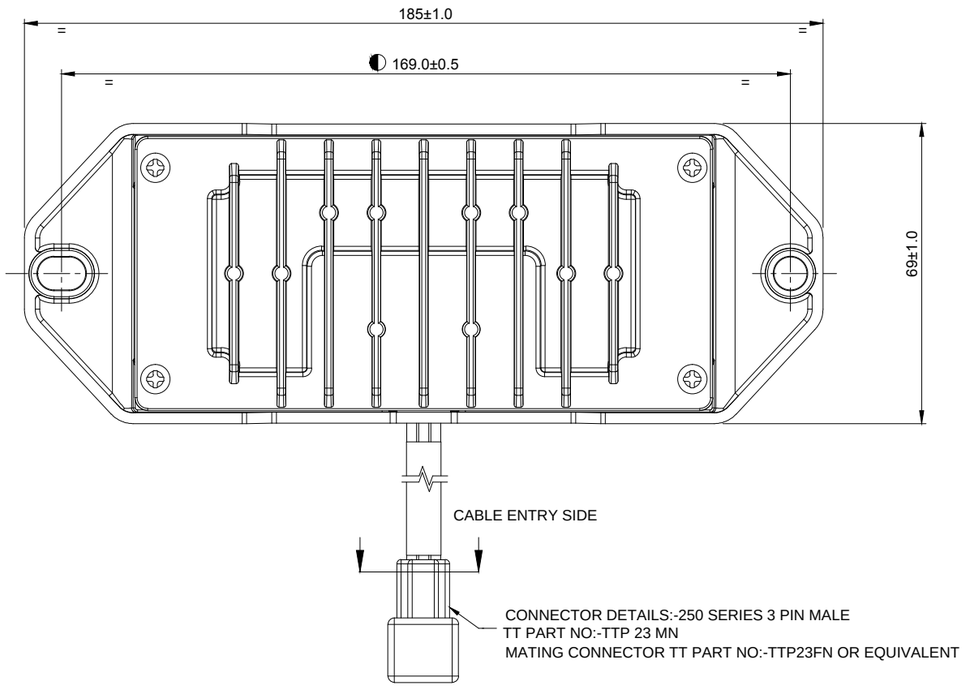
SL NO.	PART NAME	MATERIAL	SURFACE TREAMENT	QTY.	RECYCABILITY	HAZARDIOUS	REMARKS
01	HOUSING	ADC 12	SHOT BLASTED	1	✓	✗	
02	BASE	ADC 12	SHOT BLASTED	1	✓	✗	
03	PCB CP	FR-4	----------	1	✗	✗	
04	PIGTAIL	----------	----------	1	✓	✗	
05	RUBBER GROMET	EPDM BLACK	----------	1	✓	✗	
06	RUBBER SEAL	SILICONE BLACK	----------	1	✓	✗	
07	PVC SLEEVE	PVC BLACK	----------	1	✓	✗	

NOTES:-
01)NOMINAL INPUT VOLTAGE :27V.
02) INPUT VOLTAGE RANGE AT RATED LOAD :18~36 VDC.
03) OUTPUT VOLTAGE RANGE: 13±0.5V DC.
04)RIPPLE VOLTAGE AT NOMINAL CONDITION:<250mVPP AT 25°C.
05) NOMINAL OUTPUT CURRENT : 10A.
06) OPERATING TEMPERATURE : -40°C TO +85°C.
07) STORAGE TEMPERATURE : -40°C TO +85°C.
08) INSULATION RESISTANCE SHALL NOT BE LESS THAN 1 MEGA OHM.
09)TESTING TO BE DONE AS PER SIGNED OFF CTR.
10)COMPONENT SHOULD MEET THE ELV/RoHS REQUIREMENT.
11)INGRESS PROTECTION: IP65.
12)COMPONENT MEETS Pulse 5b TEST FOR 24V SYSTEM AT Us*= 65V , Ri= 1 Ohm.
13)COMPONENT MEETS RADIATED EMISSION =Class 3.
14)COMPONENT MEETS CONDUCTED EMISSION=Class3.
15) TIGHTENING TORQUE FOR SCREW M6 TO BE 1.5±0.2 N.m.



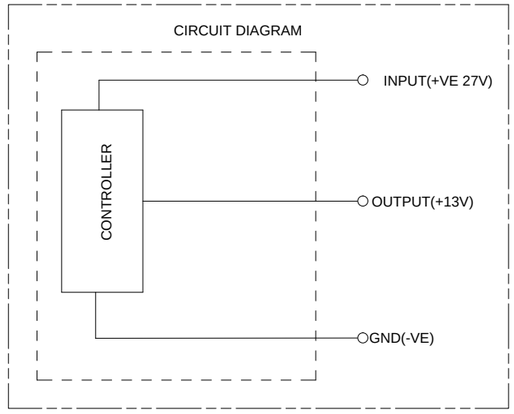


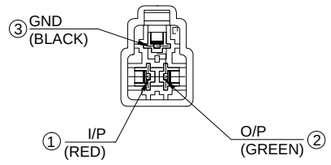
SECTION A-A



WIRE DETAILS:

SL NO.	SQ MM	COLOUR	REMARK	TYPE
01	0.75	RED	INPUT	FLRYB
02	0.75	GREEN	OUTPUT	
03	0.75	BLACK	GROUND	





CONNECTOR VIEW FROM CABLE ENTRY SIDE

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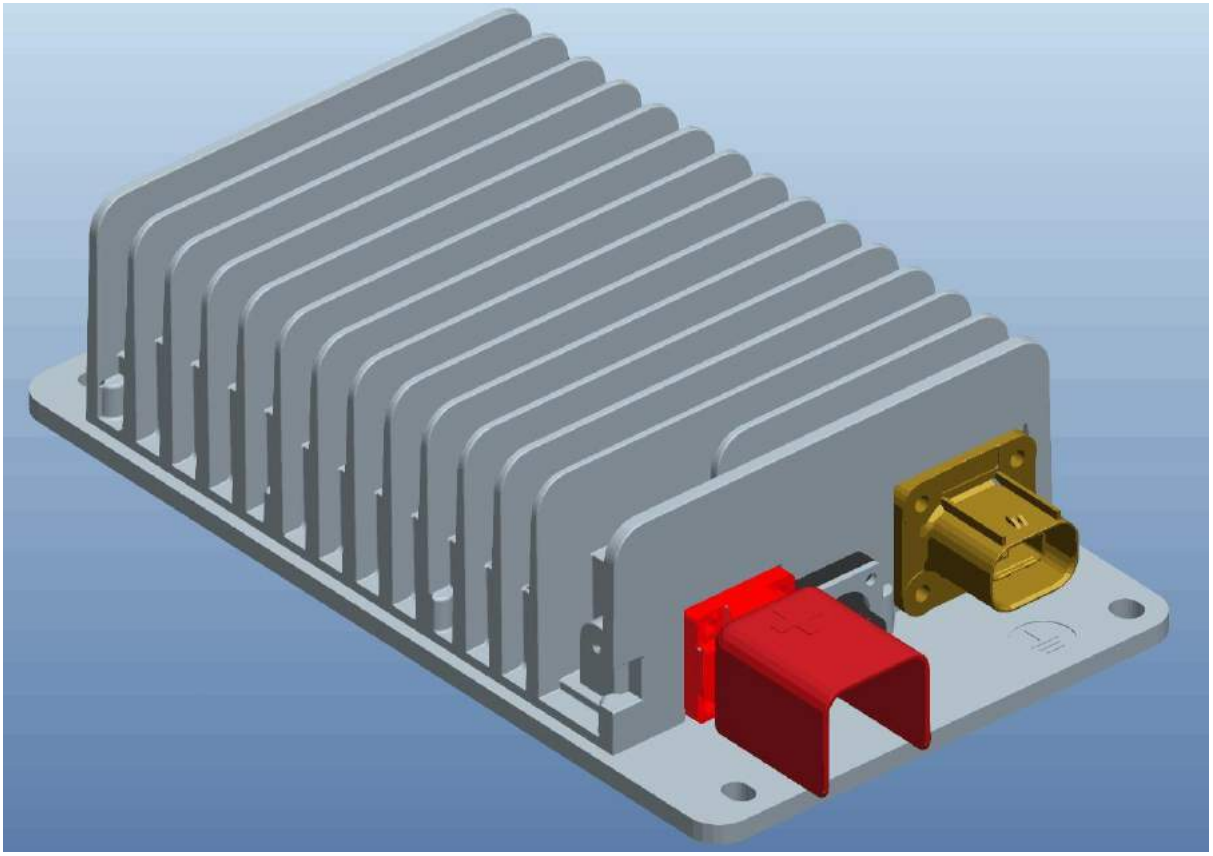
User Manual

1KW DC/DC Converter TDC-IY Series



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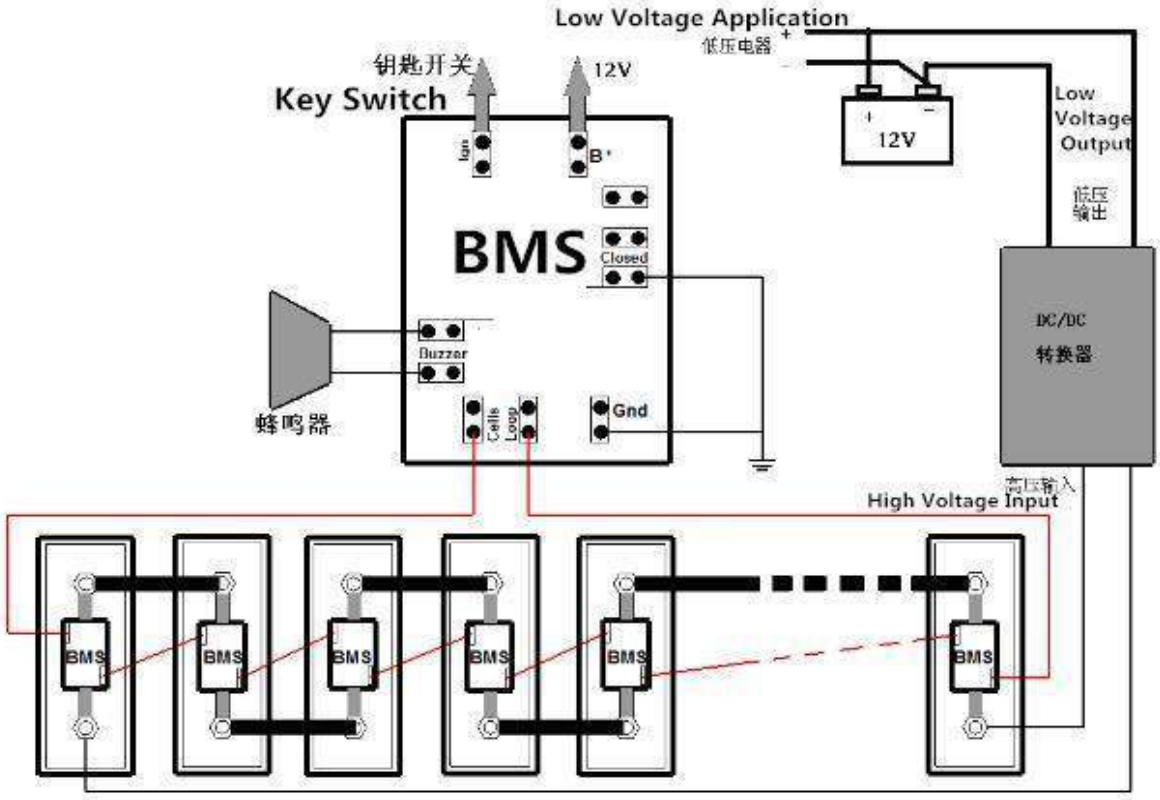
User Manual for 1000W DC/DC Converter

1. Overview

1000W DC-DC Converter, Hangzhou Tie Cheng, can install in electric vehicle, supplying 12V power to low voltage application in vehicle. Output terminal can connect directly to 12V back-up battery pack. DC-DC Converter will management the charging process of back-up battery automatically. Fully sealed potting can be highly waterproof and dust proof, highly temperature resistance, highly vibration resistance.

The diagram between DC-DC Converter,12v back-up battery pack, low voltage equipment and BMS is as below.



2. Basic Function

2.1 Converter high voltage from power battery to low voltage of 12Vdc.

2.2 Management charging process of 12v auxiliary battery.

2.3 Integrated with HVIL function. (High Voltage Internal Lock).

2.4 Compliant with CAN 2.0 regulation, display working status, fault code, etc.

2.5 Via CAN BUS, functions, OBD diagnosis, working status display, modifying working

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parameters, encoding, etc, are achievable.

2.6 Protection function including reverse protection, input lower voltage and over voltage protection, output over voltage , output over current, output short circuit protection, over heating protection etc,.

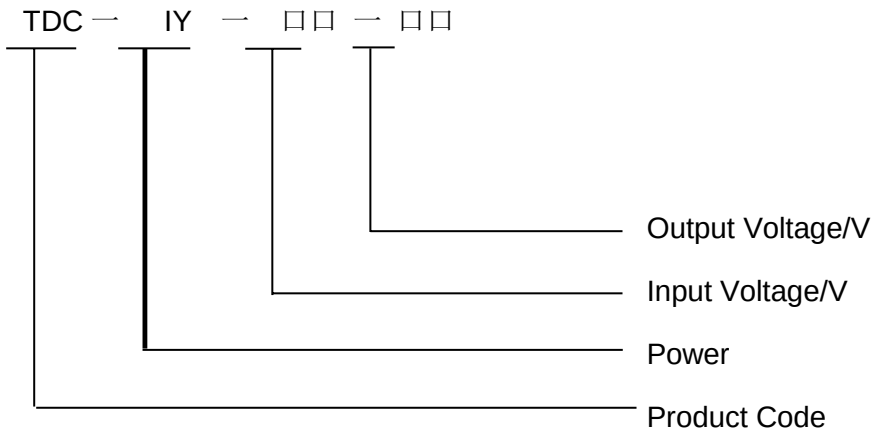
2.7 Input terminal pre-charge function.

2.8 Fully sealed waterproof structure, natural air cooling.

3. Technical Specification

3.1Product name

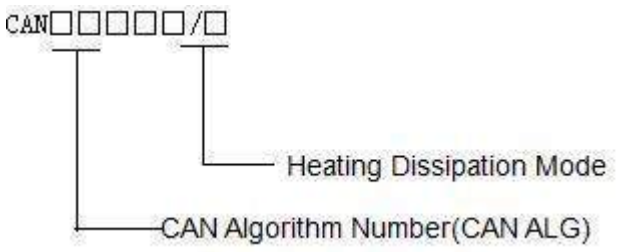
3.1.1 Model Name



3.1.2 Model name method

Item	Description
Power	I=1000W， IY+1000W, J=1500W， JH=1500W, K=2000W, L=2500W, M=3000W

3.1.3 Configuration



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3.1.4 Configuration No. Name Way

Item	Description
CAN Algorithm Number(CAN ALG)	5000-9999, e.g: CAN ALG 5100: with 12V Enable.
Cooling	F--With Fan， Forced Air Cooling. N--Natural Air Cooling，W--Water Cooling

3.1.5 Label Definition.

3.2 Model List

Nominal Input	Nominal Output	Model	Configuration	Heating Dissipation Mode
72V	14.0V	TDC-IY-72-12	CANxxxx/N	Natural Air Cooling
96V/108	14.0V	TDC-IY-108-12	CANxxxx/N	Natural Air Cooling
144V	14.0V	TDC-IY-144-12	CANxxxx/N	Natural Air Cooling
320V	14.0V	TDC-IY-320-12	CANxxxx/N	Natural Air Cooling

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3.3 Features

Model		TDC-IY-72-12	TDC-IY-108-12	TDC-IY-144-12	TDC-IY-320-12
Input	Nominal Voltage	DC72V	DC96V/DC108V	DC144V	DC320V
	Nominal Current	15A	10A/11A	5A	3.5A
	Max Working Current	≤25A	≤18A	≤12A	≤8A
	The range of input voltage	44-97V	72-162V	100-200V	220-450V
	The protection of under voltage	42V±2V	70V±2V	96V±4V	215V±5V
	The protection of over voltage	100±3V	162±4V	215±5V	455±5V
	Activation Time	≈0.5S @ VIN=72V	≈0.5S @ VIN=108V	≈0.5S @ VIN=144V	≈0.5S @ VIN=320V
Output	Nominal Voltage	14.0V±1%			
	Voltage Range	8.0-15V			
	Nominal Output Current	72A			
	Nominal Output DC Power	1000W			
	Peak Power	1200W Continues 6 Minutes			
	Max Efficiency	≥94%			
	Instant Responding	≤50ms			
	The Adjustment rate of voltage	1%			

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	The Adjustment rate of loading	≤1%
	The steady voltage accuracy	≤1%
	The steady current accuracy	≤2%
	The leaking current of output terminal	≤1mA
	The current leakage	≤1mA
	The Output Ripple	≤276mV @ 12V
Signal	12Enable Signal	6-30V
	12V Enable current	≤1mA
Safety Regulation and Other	Hi pot Test	Input to earth: 2000VAC<10ma 1 min.
	Grounding Resistance	The value of the resistor between grounding and heating sink is smaller than 100 ohm.. The testing current is 25A AC.
	Voltage Resistance	2000V Between Input terminal and shell, there is no Corona,ionization,Flying Fox,Breakdown phenomenon.
	Insulation Resistance	In ambient temperature (23±2) ℃ and humidity 80％～90％, input to shell is not smaller than 20MΩ, testing voltage is 1000VDC.
	Noisy	≤50dB @ 1m away from converter
	Electromagnetic Immunity	Compliant with GB/T 18487.3-2001 11.3.1

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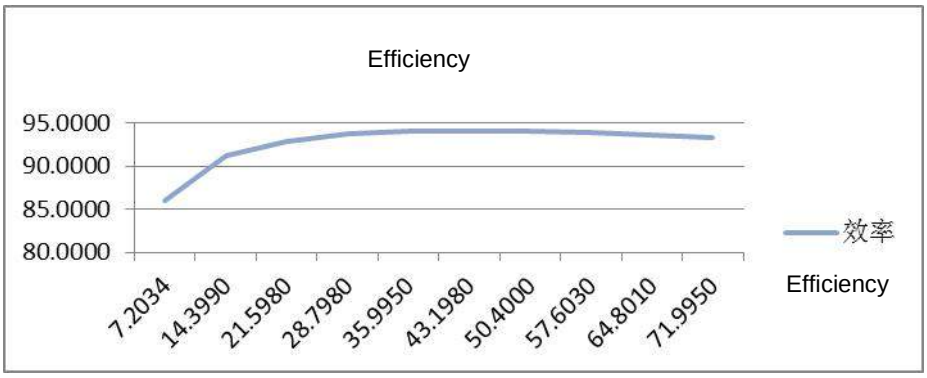
	Electromagnetic Abusive	Compliant with GB/T 18487.3-2001 11.3.2
	Harmonic Current	Compliant with GB 17625.1-2003 6.7.1.
	Activation Inrush Current	≤3A
	Current Raise Time	100% to 10% ≤50mS; 100% to 0% ≤200mS
	Protection Grade	IP67
	Anti-Vibration	10-25Hz, Amplitude 1.2mm, 25-500Hz 30m/s2, 8 h each direction
	Reliability	MTBF 150000 H
	Ambient Humidity	5％～95％ NO condensation
	Ambient Temp.	-40 ~ 65℃
	Storage Temp.	－55℃ ~ ＋85℃

3.4 Efficiency Curve

3.4.1 108V TO 12V Efficiency Curve

Input voltage 115V, nominal output voltage, the efficiency value tested result under 10 different current.



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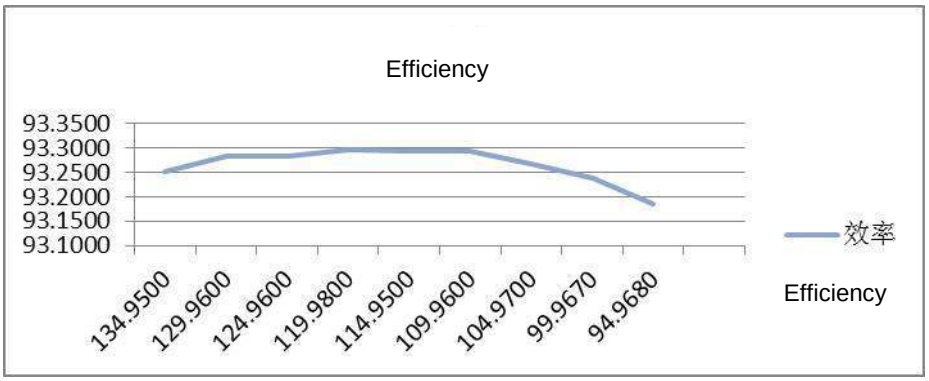
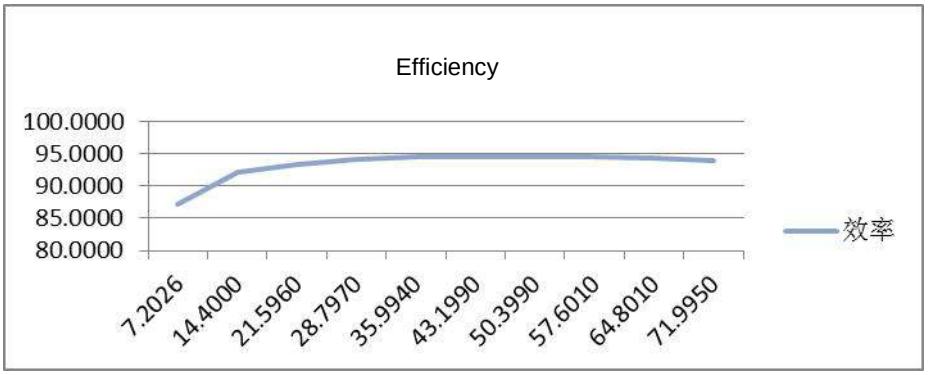
Nominal output power, the input voltage changing between min value and max value, the efficiency value tested under10 different voltage.

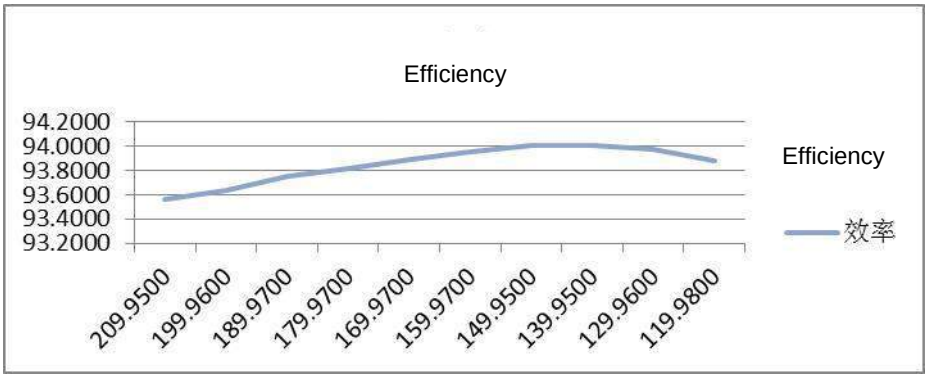


3.4.2 144V TO 12V Efficiency Curve

Input voltage 144V, nominal output voltage, the efficiency value tested result under 10 different current.



Nominal output power, the input voltage changing between min value and max value, the efficiency value tested under10 different voltage.



3.5 108V to 12V temperature drop curve.

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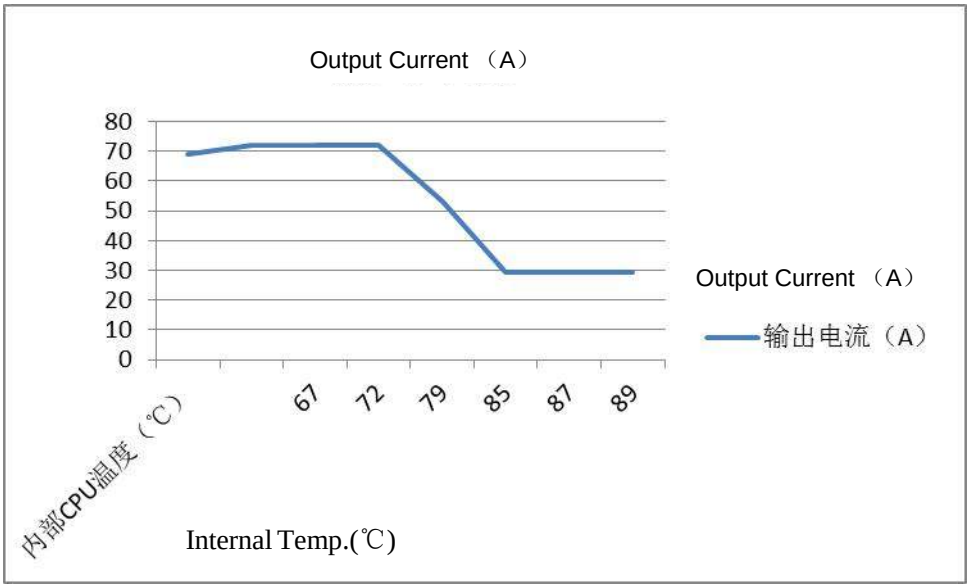

3.6 Withstand (Hi pot) Performance.

The dielectric strength between crimping to grounding and non-electric connected circuit, shall be bear the withstand testing as below table. The testing voltage is AC voltage. There should be no Corona,ionization, spark-over, ,Breakdown phenomenon.

Table 1

Items	Testing Voltage	Testing time	Current Leakage value
Input +&- to shell	2800V DC	1min	≤0.1mA
Output +&- to shell	2000V AC	1min	≤10mA

3.7 Isolation Performance

The dielectric strength between crimping to grounding and non-electric connected circuit, shall be bear the withstand testing as below table. The testing voltage is AC voltage. There should be no Corona,ionization, spark-over, ,Breakdown phenomenon.

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Table 2

Items	Testing Voltage	Testing time	Testing value
Input +&- to shell	1000V DC	1min	≥20M

4.Protection Function

The Protection of under input voltage	Shut off in 60s once Input voltage lower than protection value . Resume automatically in 120s after the fault is removed.
The Protection of over input voltage	Shut off once over input voltage is overt than the protection value; Resume automatically as long as default is removed.
The reversion protection of input connection	No damage, no working. Resume to work with normal wiring.
The short circuit protection of Output	When the output voltage is lower than 6V, output current descend to 1/4 of nominal current. .Resume automatically when the short circuit is removed , output voltage increased to above 6V.
Over temperature protection	Output power start to derating once shell temperature is over 85 deg. Shut off at 90 deg.
HVIL	Shut off if the input plug is unfasten or loose.
Communication Protection	The CAN communication invalid time is over 5s, converter shut off.

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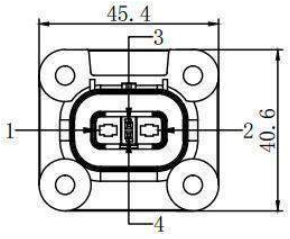
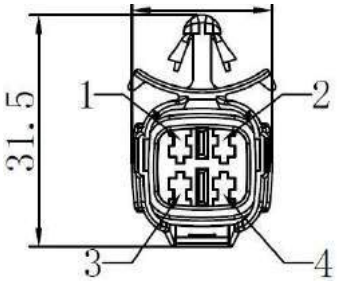
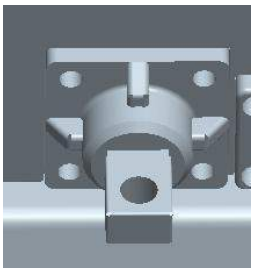
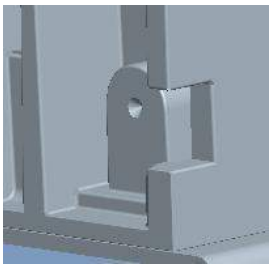
5. Interface Definition

Interface	Terminal Definition	Connector Socket	Connector Plug	Brand	Sectional View
Input Connector	1- DC+; 2- DC-; 3- HVIL 4- HVIL	2103124-4	2103177-4	Tyco	
Signal	1- Enable 2-Failure Signal 3- HVIL 4- HVIL	PP0427303	/	THB	
DC Output +	M8 Threaded hole	/	/	/	
DC Output -	outer hexagonal flange M8 pole	/	/	/	

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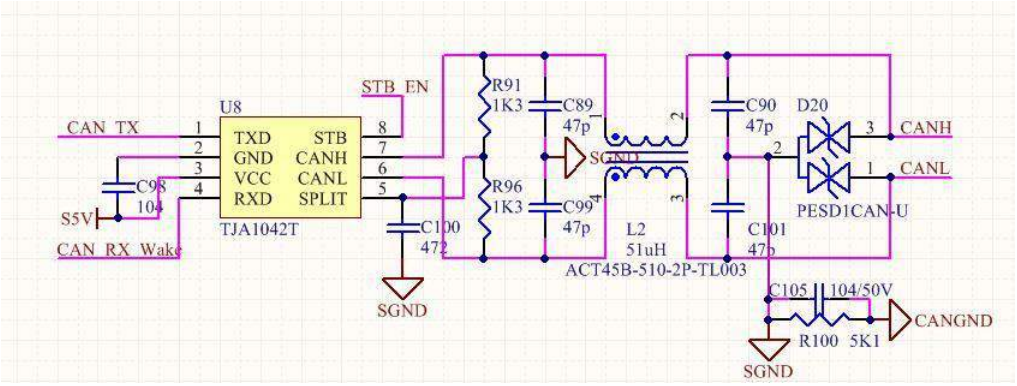
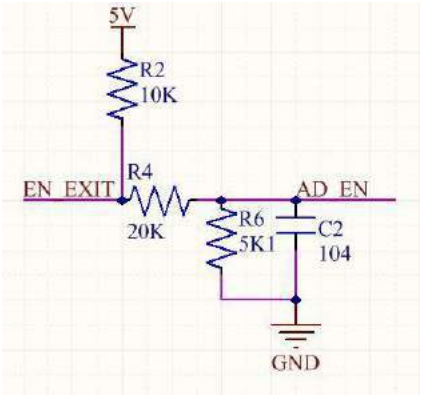
6. Signal Interface schematic

6.1 CAN Communication Interface

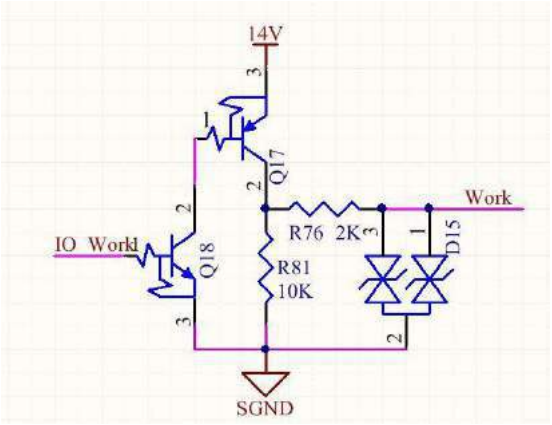


6.2 12V Enable Interface



EN_EXIT is the external Enable Signal Input. AD_EN is the detection Signal of SCM.

6.3 Failure Indication/Operating Signal Interface



Remark: TO_WORK is the output operating signal of SCM. WORK is the DC/DC output.

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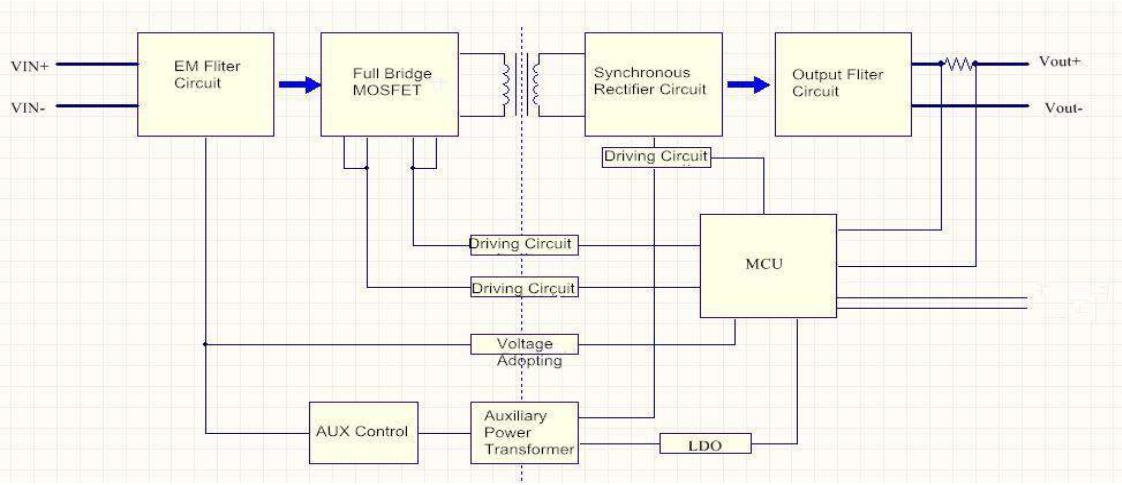
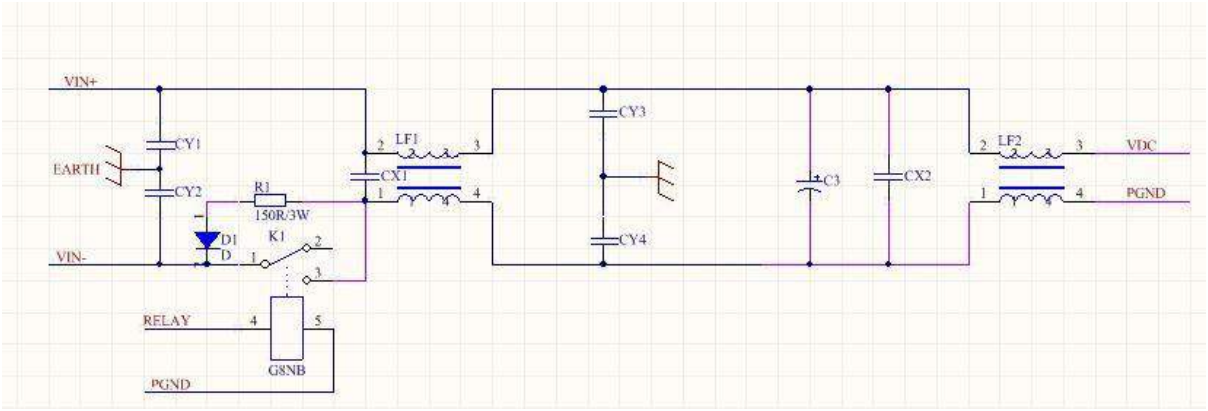
7. Schematic Diagram.



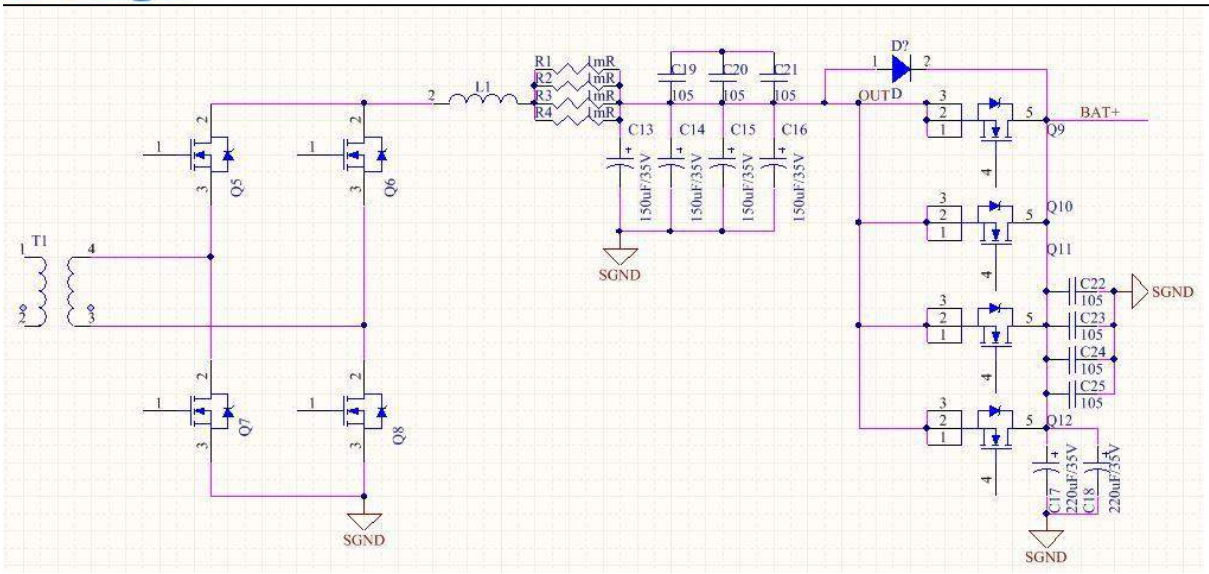
8. The Input Interface Circuit



The input interface circuit is composed with pre-charge resistor, anti-reverse diode, relay, EMI Filter and filter capacitor. Refer the below table to capacity of each voltage level and inrush current. Each pre-charge resistor is 150R.

Voltage	72V	96V	144V	216V	320V
Capacity of Capacitor	55UF	55UF	55UF	15UF	15UF
Inrush Current	≤4A	≤4A	≤4A	≤4A	≤4A

9. The Output Interface Circuit



The input interface is composed with Anti-backflow circuit, filter capacitor, synchronous rectifier circuit and LC filter. The capacity of the capacitor is 440UF.

10. Power Destiny.

	Net Weight	Volume	Unitary Mass Density	Volume Density
Unit	**kg**	**L**	**kw/kg**	**kw/L**
Value	**2.5**	**2.2**	**0.4**	**0.45**

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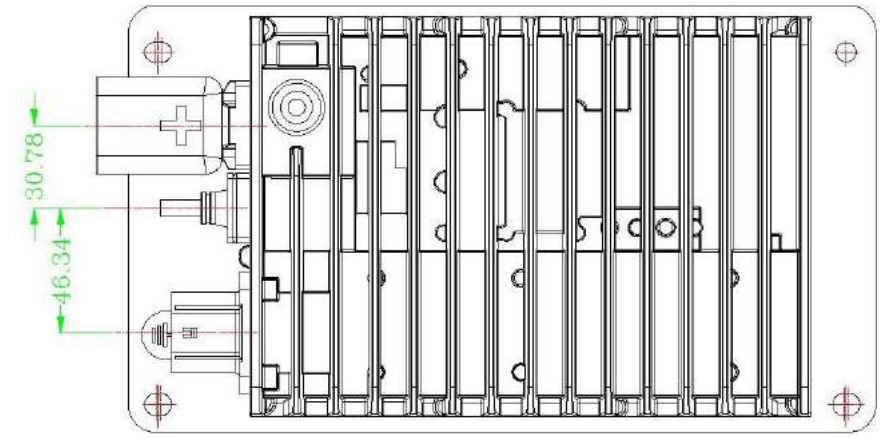
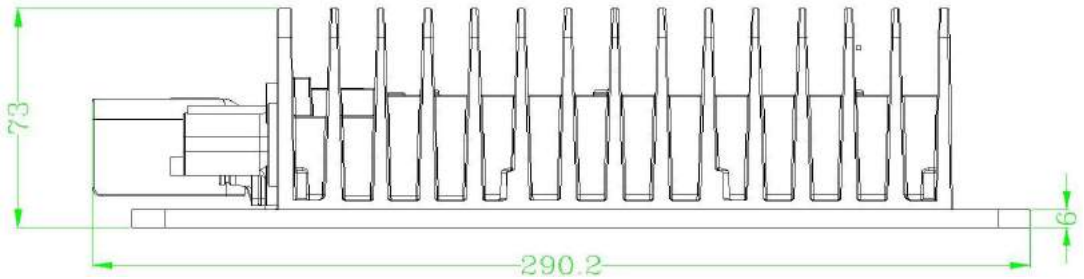
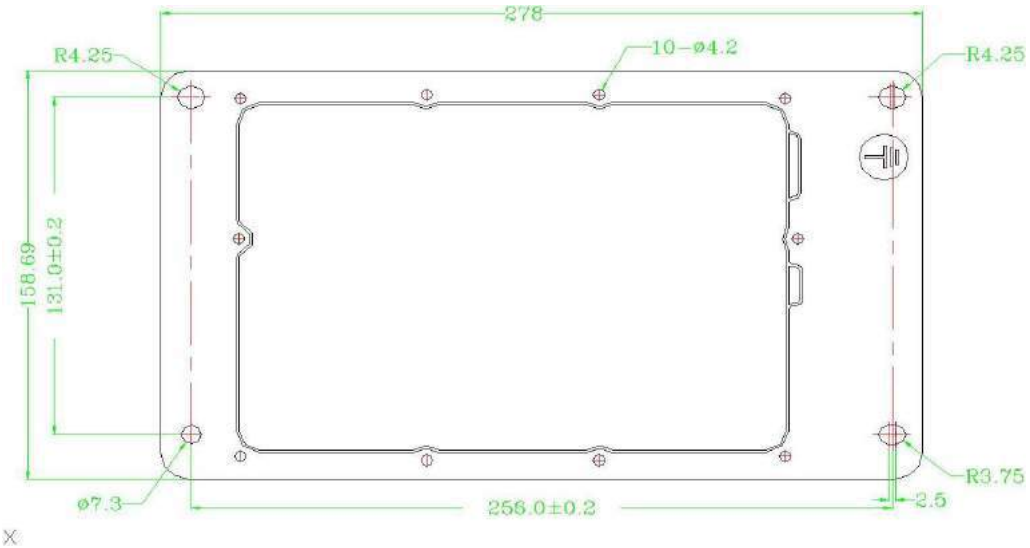
11. The Installation Dimension.







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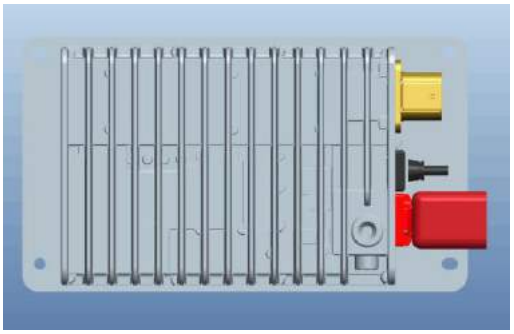
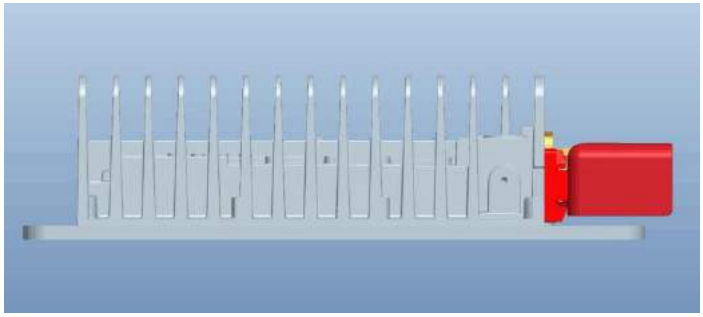
12. Installation Diagram.

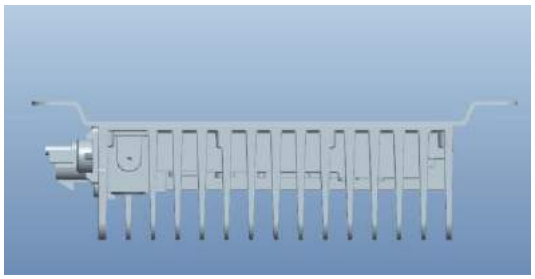
1. ok

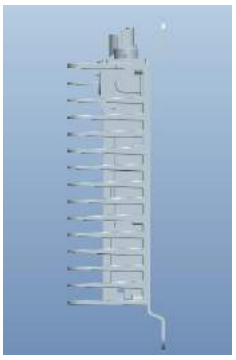


2. Best



3. Prohibited





4. Prohibited

13. Application Requirements

13.1 The HV DC fuse F1 should be installed in the PDU(Power Distribution Unit) for DC-DC input terminal. The fuse's maximum current should be 1.5-2 times than the maximum input current. The fuse of 10A 960v is suggested to TDC-IY-320-12. The fuse of 20-25A 250V is suggested to TDC-IY-144-12. The fuse of 36-50A 250V is suggested to TDC-IY-72-12.

13.2 A fuse blade is required to connect in series with DC-DC output terminal, connecting with polarity of auxiliary battery pack. Then chassis is connected to the negative pole. See below diagram. The fuse blade is decided on maximum current. Normal is above 100A.

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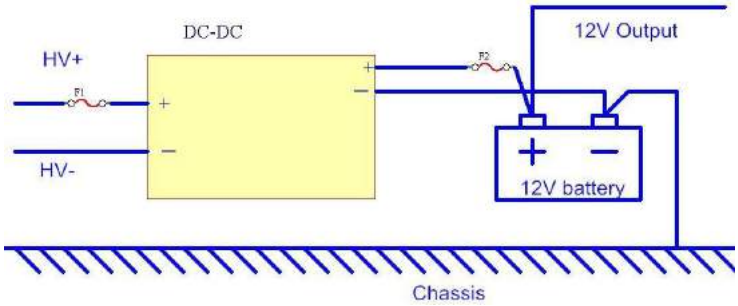

13.3 The terminals of battery pack need to be reliable, no loose. Otherwise, it may cause the damage to DC/DC converter.

14. Installation Requirements

1. The heating sink should be facing up. Reversion is prohibited. More than 10cm distance is required between heating sink and obstruction.
2. The output positive pole is M8 threaded hole, applying 14mm outer hexagonal nut. The tightening force is 14-16N.m.
3. The output negative pole is outer hexagonal flange M8 pole. The tightening force is 14-16N.m.

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Product Name: 1.5KW DC/DC Converter

Model No.:

1. AR-540-12JC-A (Air Cooling)

2. AR-540-12JC-N (Nature Cooling)

3. AR-540-12JC-W (Water Cooling)

Specification

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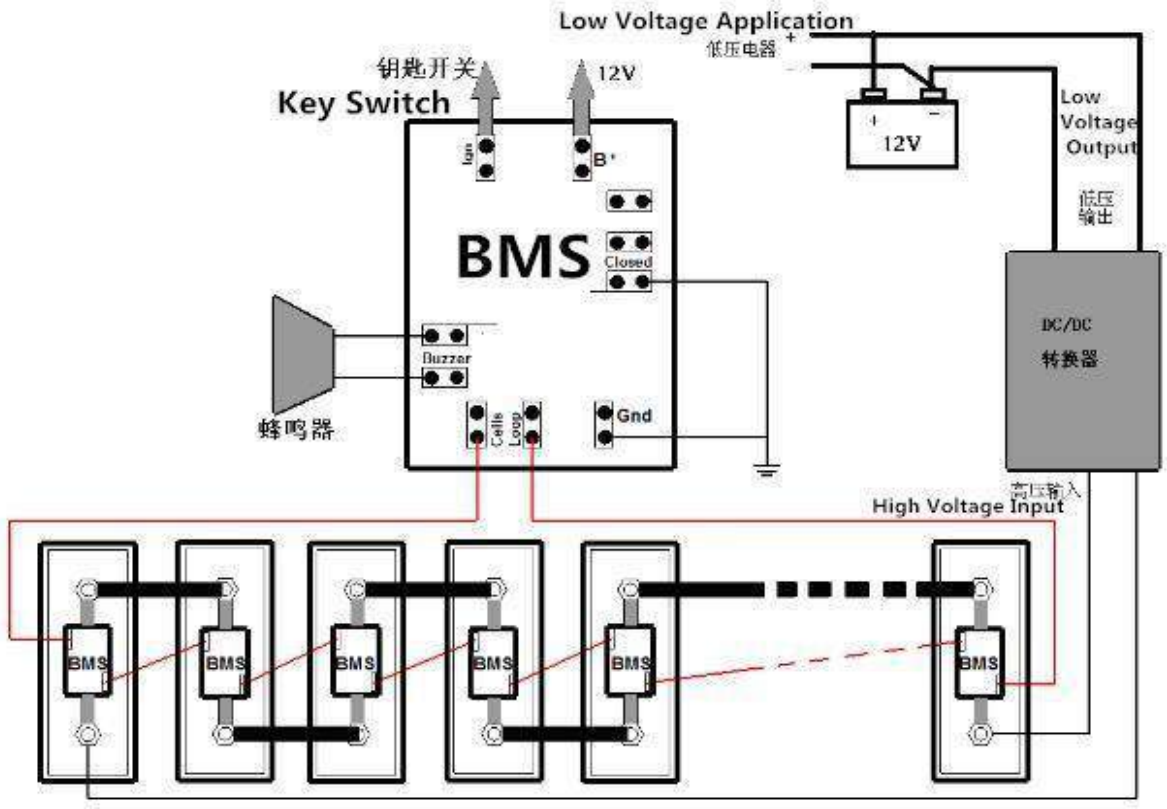
1. Overview

1.5KW DC-DC Converter can install in electric vehicle, supplying 12V power to low voltage application in vehicle. Output terminal can connect directly to 12V back-up battery pack. DC-DC Converter will management the charging process of back-up battery automatically. Fully sealed potting can be highly waterproof and dust proof, highly temperature resistance, highly vibration resistance.

The diagram between DC-DC Converter,12V back-up battery pack, low voltage equipment and BMS is as below.



2. Basic Function

2.1 Transfer high voltage from power battery into low voltage of 12V

2.2 Management charging process of 12v back-up battery

2.3 With HVIL, high voltage internal lock.

2.4 Comply with CAN 2.0, working statue and fault code is showed via BUS.

2.5 OBD, working statue display, working parameter modification and programming can be achieved via CAN BUS.

2.6 Protection function including low voltage input protection, reverse protection, output short circuit protection, over heating protection etc,.

2.7 Input terminal pre-charge function.

2.8 Fully sealed waterproof framework, three optional cooling version: Nature cooling, enforce air cooling and water cooling.

3. Technical Specification

3.1 Product name

3.1.1 Model Name

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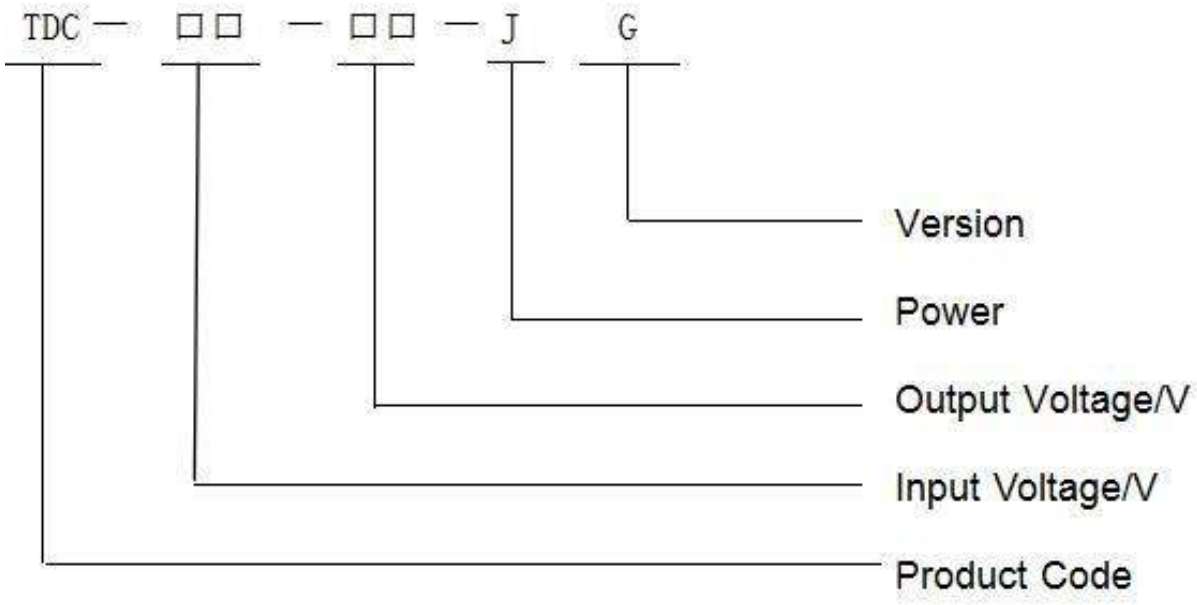
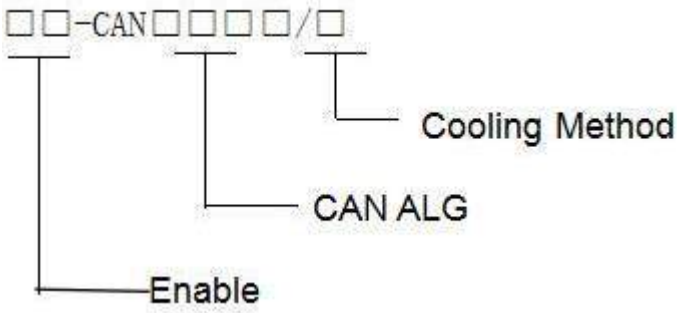


3.1.2 Model name method

Items	Description
Version	NO “G”=Non Isolated，G=Isolated，GC=Isolated with charge curve
Power	A=50W，B=100W，C=200W，D=300W，E=400W，F=500W，G=600W，H=800W，I=1000W，J=1500W，K=2000W，L=2500W，M=3000W

3.1.3 Configuration No. Name



3.1.4 Configuration No. Name Way

Item	Description
Enable Code	AF=Without Enable，AL=12VEnable
CAN ALG	5000-6000
Cooling Method	F=Enforce Air Cooling，N=Nature Cooling，W=Water Cooling

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3.1.5 Model

Model	Input Voltage Range	Nominal Output Voltage	Nominal Output Current	Configuration Number
TDC-540-12JG	350-630V	13.8V	110A	

3.2 Features

Model		TDC-540-12JG
Input	Nominal Voltage	DC540V
	Nominal Current	IN≤3A
	Input Voltage Range	420-650V
	The protection point of Low input voltage	400V±5V
	The protection point of Over input voltage	660V±10V
	Starting time	-
Output	Output Voltage	13.8V±1%
	Nominal Output Current	70A
	Peak Current	65A-70A
	Rated Power	1500W
	Peak Power	1800W Continue 6 minutes
	Max Efficiency	≥95%
	Output Voltage Instantaneous Reflecting	≤50ms
	Voltage Regulation	1%
	Load Regulation	1%
	Steady Voltage Accuracy	≤1%
	Steady Current	≤2%

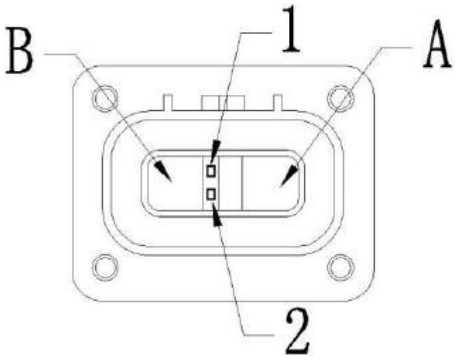
	Accuracy	
	Leaking Current of Output Terminal	≤5mA
	Output Ripple Coefficient	≤276mV @ 12V
	Over voltage Protection	15-16V @ 12V
	12V/24V Enable Voltage	6-30V
	12V/24V Enable Current	≤1mA
	DC Cable Requirements	25－30mm2 @ 12V
	Resistor Ground	The resistor of Ground to Cooling fin ≤100MΩ, testing current is 25A AC.
	Environmental Temperature	－30～60 ℃
	Storage Temperature	－40～90℃
	Working Environmental Relative Humidity	5％～95％ Non-Condensation
	Protection Level	IP67
	Voltage Resistance	Under voltage resistance of below table 1, There is no Corona,ionization,Flying Fox,Breakdown phenomenon.
	Isolated Resistor	@ (23±2) ℃and relative humidity 80％～90％, ≤2MΩ,experimental details see table 2.
	Noised	≤55dB, within distance 1.5m.
	EMC	GB/T 18655-2002- 12 or 14
	Reliability	MTBF300000 H

4 Protection

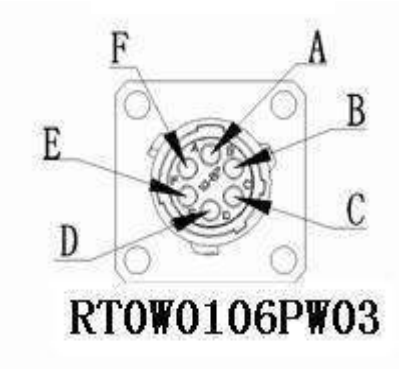
Over Current Protection	Shut off once output current over peak current
Over Voltage Protection	See Feature Table
Under output voltage protection	Output voltage under 6V, report low voltage fault after 2 seconds
Over Temperature Protection	Derating since internal 85℃, shut off at 90℃
Input under voltage Protection	See Feature Table
Input over voltage Protection	See Feature Table
Short Circuit Protection	Output Current descend to one quarter delay 10 seconds once output voltage under 6V; Resume automatically once voltage back to 6V.
Input Reverse Protection	No working, No damage, resume once wiring correctly
HVIL(High Voltage Internal Lock)	Shut off once Mating connectors is no fastening, incorrect fastening
Communication Protection	Shut off once CAN communication invalid .

5. Interface Definition

Input Terminal



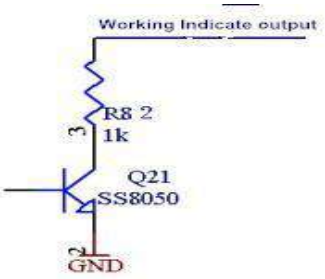
Output Terminal



Input Terminal: HV1-Z2J(40A)-00 , Mating HV1-T2K(40A)-00, Brand: Xinxi	
1	HVIL(High Voltage Internal Lock)
2	HVIL(High Voltage Internal Lock)
A	DC Input +
B	DC Output-
Output Terminal: RT0W0106PW03, Mating RT0W6106SWH03, Brand: Amphenol	
A	CANL
B	CANH
C	CANGND
D	12/24V Enable: Wiring with 12V+/24+, Wiring 12V-/24V- with Converter Housing
E	Working Indicator
F	Fault Indicator

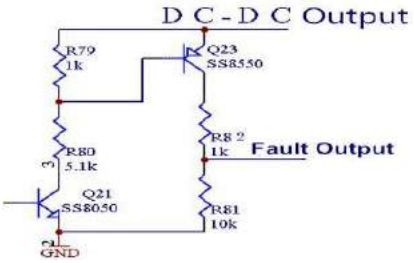
5.1 Working Indicator:

Once output voltage over 13V or working current over 1A, working indicate pin will close to show 1K impedance. When converter is not working, it is in high impedance. Max withstand Voltage is 30V. Working indicate and converter output share ground.



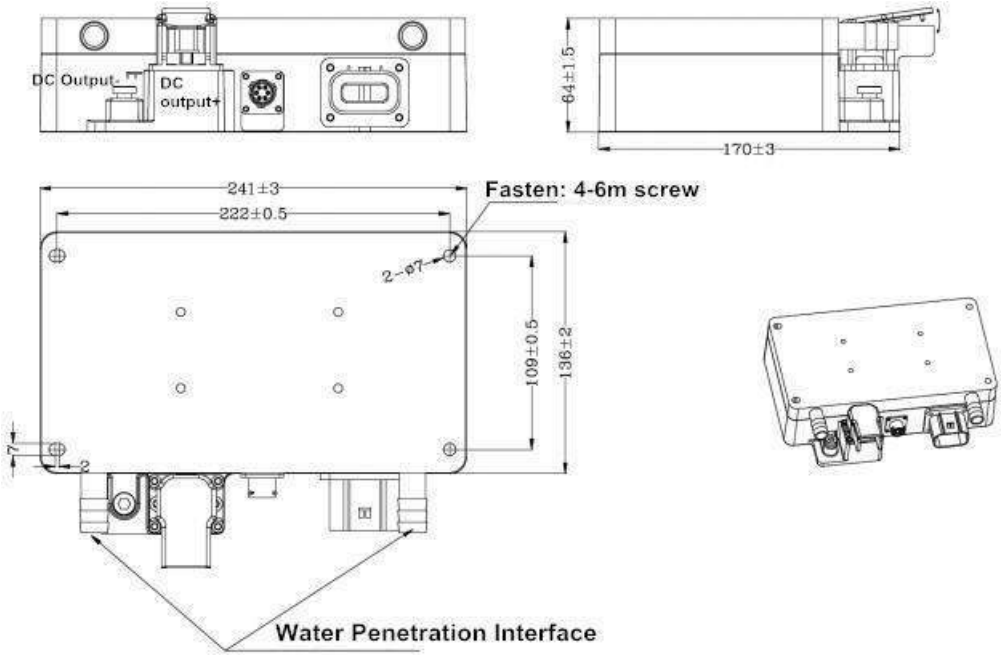
5.2 Fault Indicator:

Once converter failed, converter output voltage is below 13V, meanwhile working current is below 1A, fault signal output will be high electric potential(same as converter's output voltage, 1K impedance). When converter work normally, converter's output will be low electric potential, 10K impedance. Fault indicate and converter's output- share ground.

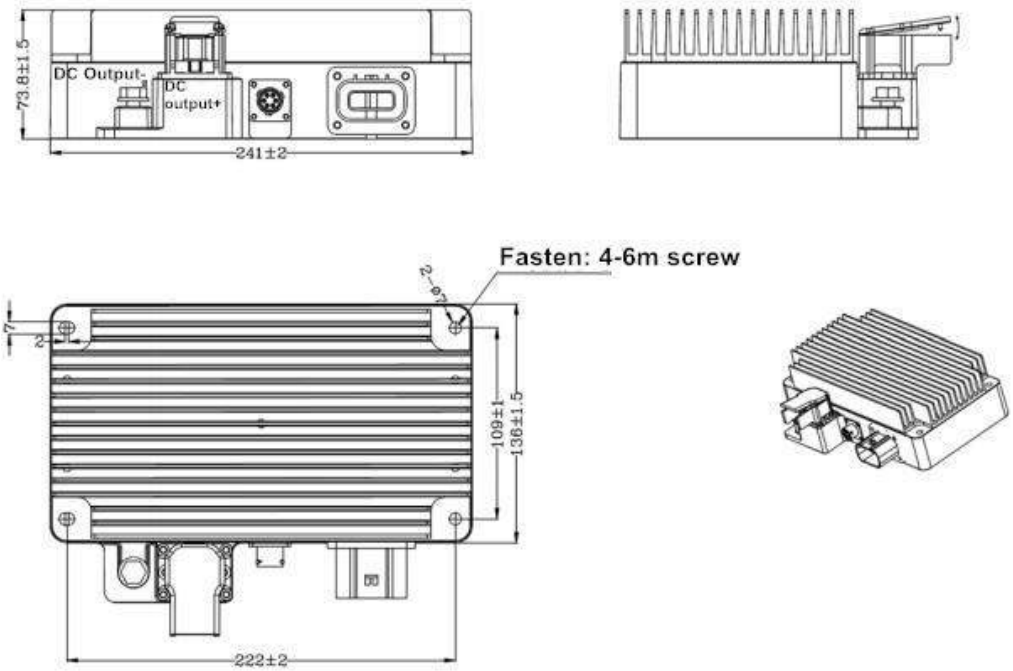


6. Installation size

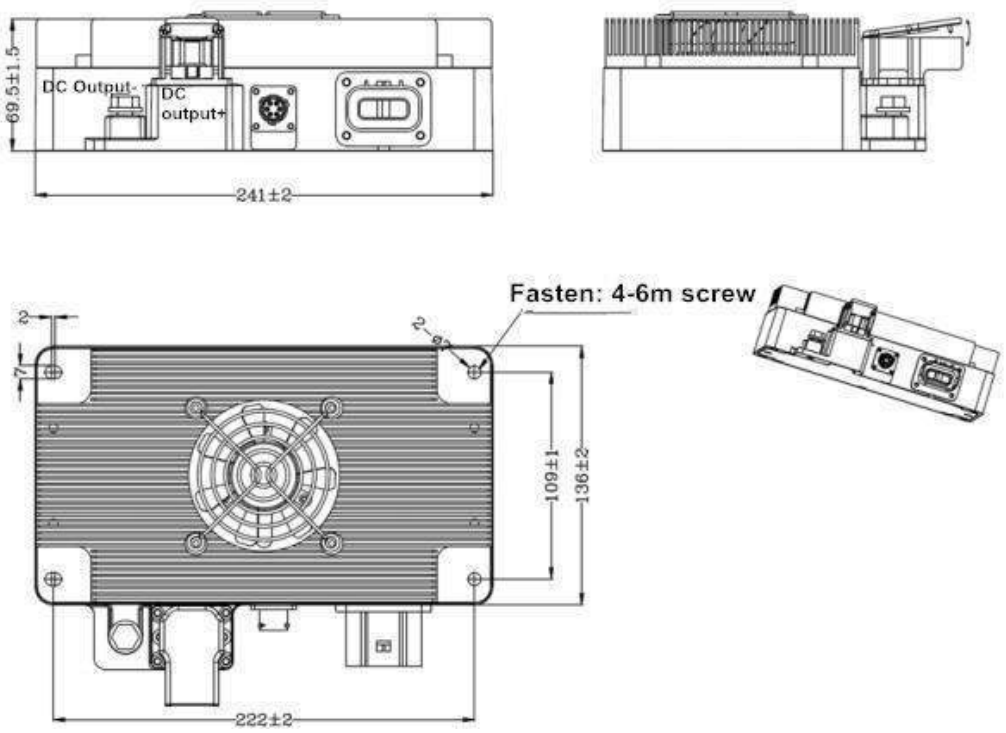
6.1 Water Cooling Dimension



62 Nature cooling Dimension



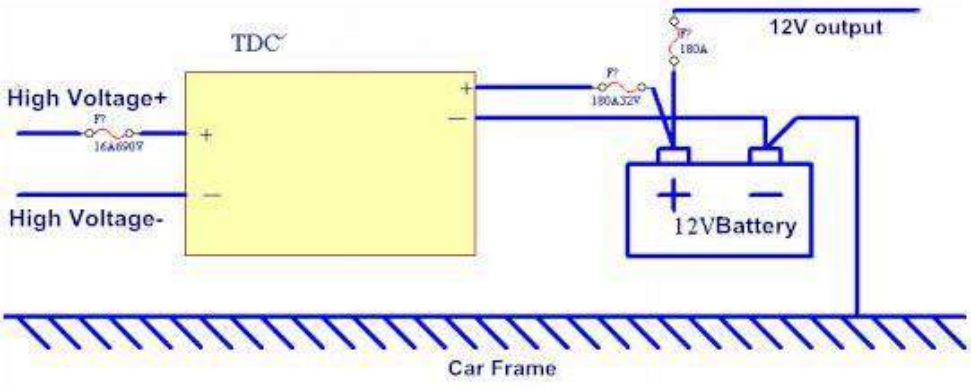
6.3 Enforce Air Cooling Dimension



7. Requirements for Application

7.1 External fast DC safety tube is required to connect with DC/DC converter's input interface. Meanwhile, keep them at position which is convenient for changing. The max current of protective pipe should be over 1.5-2 times than converter's the peak current. 16-20A & 690V is recommended to nominal 320V converter. 24-32A & 250V is recommended to nominal 144V converter. 10-16A & 750V is recommended to nominal 360V-540V converter.

7.2 A safety plate is required to connected with converter's output. Then connected with Backup battery. Batter negative is required to connect with car frame. See below diagram. Safety plate is decided by max current. Normally over 180A.



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Hardware	Output Voltage Range	Max Output Current	Lead Acid Battery Charger Model	Lithium Battery Charger Model
48V25A	18-68VDC	25A	AR-HK-H-48-25	AR-HK-H-H66-25
72V25A	25-99VDC	25A	AR-HK-H-72-25	ARHK-H-H99-25
96V16A	34-132VDC	16A	AR-HK-H-96-18	AR-HK-H-H132-16

1.8KW AR-HK-H Series Charger

1. Overview

AR-HK-H series 1.8KW charger was specially designed for supplying the electricity for electric vehicle's power battery, on the basis of the China GB/T standards for the charger. This product has the advantages of not only high efficiency, small size, high stability, long lifespan, but also high protection grade, high reliability and completed protection functions. It's definitely an ideal charging power supply for f electric vehicles.

This charger has built-in heat-sensing device and can automatic recover through the thermal protection. Fully sealed potting process and up to IP67 protection level ensures no causing trouble in any complex environment.

Key Features:

Fully sealed potting process, water cooling (modular optional)	Work reliably under -35℃- +85℃
Built in thermal sensor	Cut off output under dangerous operations conditions (internal 95℃)
Protection level IP67	Work safely in the short-term immersion conditions

2. Model

3. Features

Input	Frequency	45-65Hz
	Stand-by Consumption	≤5W
Main Output	Output Mode	CV / CC
	Output Power	1800W@220VAC 700W@110VAC
	CV Accuracy	±1%
	CC Accuracy	±2%
	Ripple Voltage Coefficient	5%
Communication Function	CAN Communication	Yes
	Baud Rate	125Kbps、250Kbps、500Kbps
	Terminal Resistance	N/A
12V Output		Load Capacity of 200 mA, Output controllable

12V5A (Optional Output Function)

Low Voltage Output	Output Mode	Constant Voltage
	Output Voltage	13.8V
	Rated Current	5A
	CV Accuracy	±2%
	Maximum Current	5.5A±0.5A
	Output Power	≥62.5W
	Ripple Voltage Coefficient	1%

4. Protection function

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Input Over-voltage Protection	AC270±5V
Input Under-voltage Protection	AC85±5V
Output Over-voltage Protection	Stop the output when exceeds + 1% of the maximum output voltage
Output Under-voltage Protection	Stop the output when below -5% of the minimum output voltage
Output Over-current Protection	Stop the output when exceeds + 1% of the maximum output current
Over-temperature Protection	Power down from 85 ℃ and turn off at 90℃
Short-circuit Protection	Stop Output
Battery Reverse Connect Protection	Fuse Burn-out
Ground Protection	≤100mΩ
CAN communication Protection	Automatically stop the output when CAN communication fails
Power-off Protection	Yes

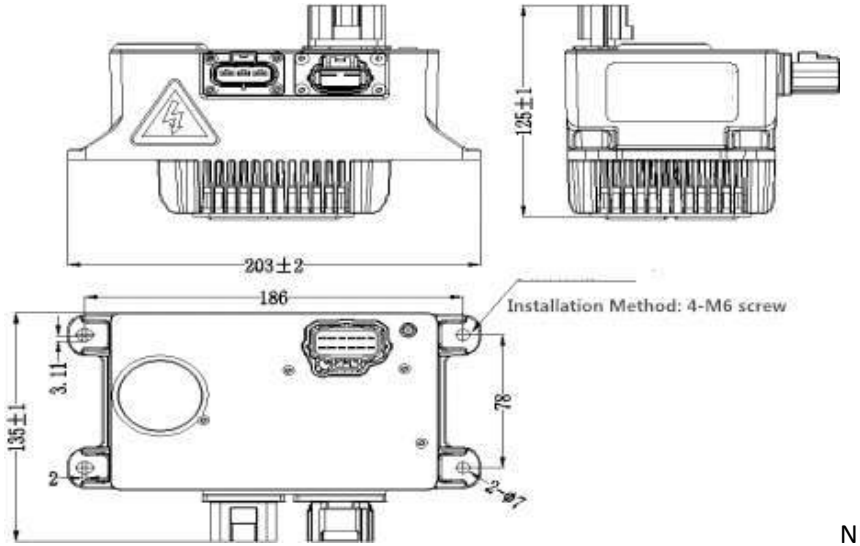
5. Safety and others

Withstand Voltage	Input to Output：2000VAC≤10mA Input to Ground：2000VAC≤12mA Output to Ground：2000VAC≤10mA，all 1min
Insulation Resistance	Input, output, signal terminal to casing≥10MΩ Testing Voltage 1000VDC
Electromagnetic Immunity	GB/T 18487.3-2001 11.3.1
Electromagnetic Abusive	GB/T 18487.3-2001 11.3.2
Harmonic Current	GB 17625.1-2003 6.7.1.1
Inrush Starting Current	≤24A
Current-rise Time	≤5S，Overshoot≤5%
Close Response time	100%到 10%≤50mS，100%到 0%≤200mS

Protection Level	IP67
Vibration Resistance	10－25Hz Amplitude1.2mm，25－500Hz 30m/s2，8hrs per direction
Noise	≤60dB(A Level)
MTBF	150000H
Work Environment	Relative Temp 5%-95% No condensation
Working Temperature	-35℃ ~ +85℃
Storage Temperature	-55℃ ~ +100℃

6. Installation size, label requirements and interface definitions

1). Installation size



NET:3kg

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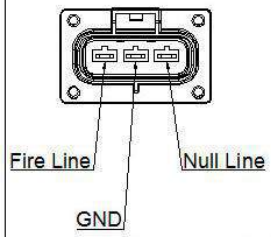
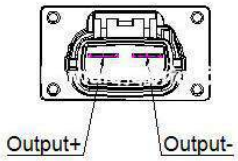
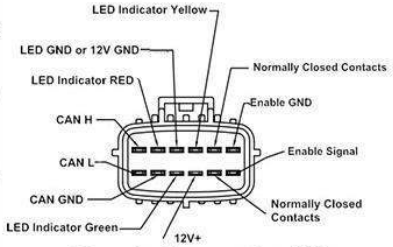
2）. Interface Definitions

Input NO.: DJ7031-4.8-11	Output NO.: DJ7021-8-11	Signal NO.: DJ7124-2-11
 Female Connector NO.: DJ7031-4.8-21	 Female Connector NO.: DJ7021-8-21	 Female Connector NO.: DJ7124-2-21

Notice: 1. The function on the signal connector are optional. It's not all available in the charger. e.g.CAN BUS control and Enable control cannot be existed at same time.

2. Pls pay attention to the position of function on the connector, don't pay attention to the numbers on the connector.[Enable wiring pin is at opposite of LED. CAN Wiring pins is close to LED.]

7. LED status

1). Initial State

Red Off Green Off Red Off Green Off Red Off Green Off Red Off Green Off

2). Charging State

Red Off Red Off Red Off Red Off Red Off Red Off Red Off Red Off

3). Stand-by State

Green Off Green Off Green Off Green Off Green Off Green Off Green Off Green Off

4). Fault State

Red Green Red Green……Other error status word error

Red Green……Wrong Battery

Red Green Red……Wrong Communication

Red Red Green Green……Wrong Enable

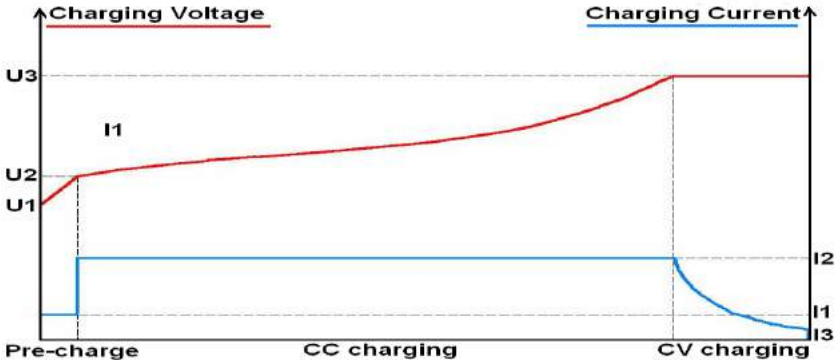
Green Red……Wrong Input Voltage

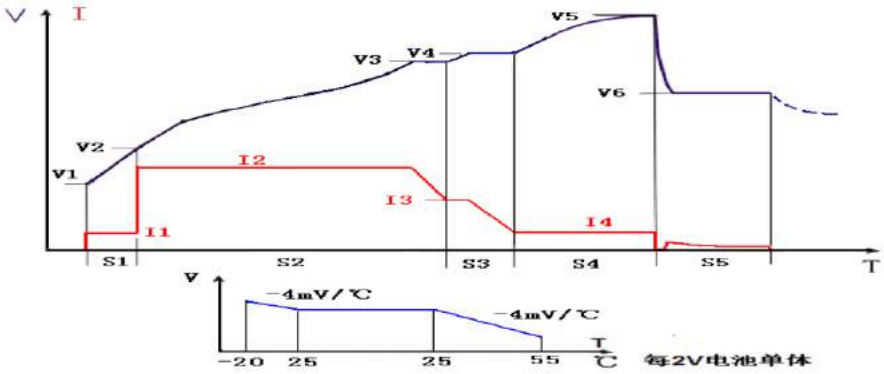
Green Red Green……Internal Temperature Protection

Green Red Green Red……Wrong Hardware

8. Charging Curve

1). CC/CV Charging mode：(for Lithium Battery)





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U1= $\frac{U3}{2}$ ， U2= $n_{串}$ ×2.5V， U3=Maximum voltage for the battery pack
I1= $\frac{I2}{2}$ ， I2=Maximum charging current for the battery pack，I3= $\frac{I2}{6}$
① Pre-charge：It only enters into pre-charging process when the battery pack voltage is under U2 (The charger does not start when battery pack is under U1), then it operates in a constant current charging I1, finally, the pre-charging process is completed when voltage rises to U2.
② CC Charging：It operates in a constant current charging I2, then the CC charging ends when voltage reaches to U3.
③CV Charging：Constant voltage charging with U3, the whole charging process is completed when current reduces to U3.

2). Different brand-name of lead-acid batteries have different kinds of charging curves.
Below shows a typical charging curve for Chilwee battery:

9. Expansion Function

Choose the accessories according to the actual needs:

1). Thermal Sensor Interface (for lead-acid battery charger)

Thermal Sensor is recommended to lead-acid battery charger, to detect the temperature of the battery and compensate charging voltage, at the same time to realize the battery overheat protection function. Suggest that the thermal sensor is fixed on the cell of the highest temperature. When the thermal sensor is not easy to install on the battery, you can fix the temperature sensor directly to the position that can detect the environmental temperature. Note that it shall not be affected by heat coming from the charger.

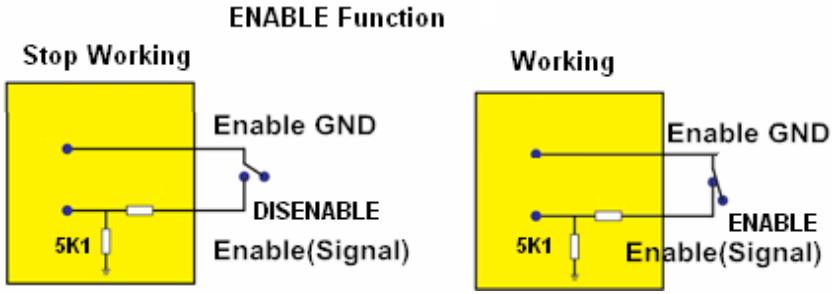
2). 12V Output

Charger provides a rating voltage 12V0.2A signal output. Its electrical connections is isolated from the interior circuit of the charger for external application function extension. Note that this 12V with LED indicator output interface are common-grounded. The independent 12V output can supply power for the battery management system. Output 12V-5A.

3). LED Output Interface

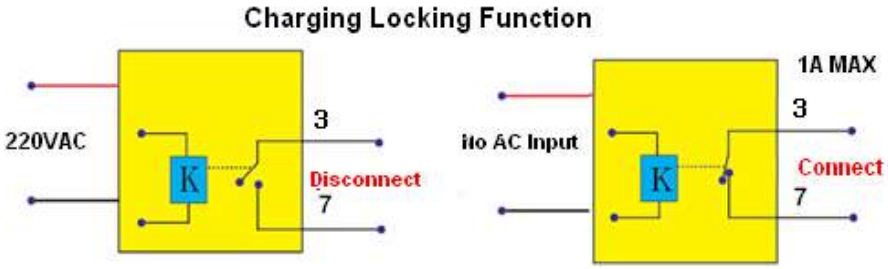
Charger provides Red, Green two LED interface or Red, Yellow, Green three LED interface. Its electrical connections is isolated from the interior circuit of the battery charger for external application function extension.

4). ENABLE Signal (for Lithium battery charger): External control circuit must be independent circuit



As for lithium battery charger, it's essential to use an enable signal to control the charger's work or close. Isolated circuit (such as Relay or Optocoupler) shall be adopted to control the charger's work or close. Note that if the control circuit is not independent, it lead to damage of the charger.

5). Charging Lock up Signal(for lead acid battery)



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Charger provides a set of relay normally closed contact as charging locking signal output. When the charger has no electricity, the contact connects, while the charger connects to the AC power supply, the contact disconnects immediately. The rated current of contact is 1A, withstand voltage 30VDC / 250VAC.

10. Appearance Requirements

1). Outer surface should be smooth without obvious defects such as scratch, deformation. Surface coating should be uniform.

2). The nameplates and signs should be installed firmly with the neat handwriting.

3). Spare parts should be fastened reliably without rust, burrs, cracks and other defects and damage.

4). Each product should be marked with product identification in obvious place, including part number, product brand, product type, production number, name of production enterprises, the warning message, etc

11. Packaging, Transport and Storage

1). Packaging

On the packing box, there are product name, product part number, product brand, product type, production number and name of manufacturer; In packing box, along with the technical documents, it includes packing list, quality certificate, product specification.

2). Transportation

Suitable for cars, boats, aircraft, transportation. The products have to be prevented against sunshine and moisture and in a civilized transportation.

3). Storage

Product should be stored in the packing box when it is not used and be maintained in a 5 ℃ to 40 ℃ clean, dry and well-ventilated environment. It should not be stored together with chemicals, acid and alkali substances etc,. Should avoid storing in the sun, fire, water and avoid storing with corrosive substances. The storage period is 2 years (from the inventory date of the factory). After the 2 years of storage period, the products should still comply with the provisions of the relevant standards.

Contact Information

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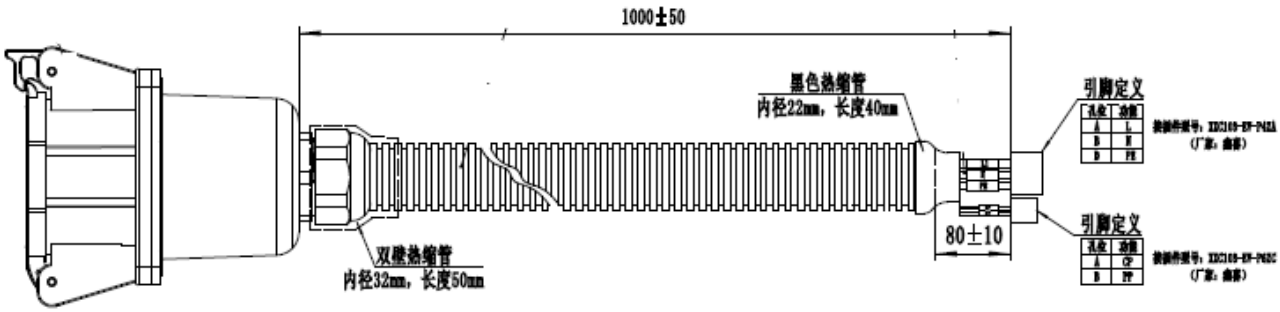
3.3KW On Board Battery Charger

Version: V02

Specification



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1. Overview

AR-HK-J series 3.3KW charger was specially designed for supplying the electricity for electric vehicle's power battery, on the basis of China GB/T standards for the charger. This product has the advantages of not only high efficiency, small size, high stability, long lifespan, but also high protection grade, high reliability and completed protection functions. It's definitely an ideal charging power supply for electric vehicles.

This charger has built-in heat-sensing device and can automatic recover through the thermal protection. Fully sealed potting process and up to IP67 protection level ensures no causing trouble in any complex environment.

Main Feature：Fully Sealed，Enforce air Cooling/Liquid Cooling（Module Optional）

Reliable working under -35℃- +85℃

Internal temperature sensor

Shut off inside temperature over 90°C

IP67 Protection Level

Working well in immersion shortly

2.Essential Parameter

Hardware	DC output Voltage Range	Max Output Current	Lead Acid Battery Charger Model	Lithium Battery Charger Model	Vehicle Inlet Model
48V40A	18-68VDC	40A	AR-HK-J-48-40	AR-HK-J-H66-40	AR190812-40
72V40A	25-99VDC	40A	AR-HK-J-72-40	AR-HK-J-H99-40	AR190812-40
96V32A	34-132VDC	32A	AR-HK-J-96-32	AR-HK-J-H132-32	AR190812-30
144V23A	50-198VDC	23A	AR-HK-J-144-23	AR-HK-J-H198-23	AR190812-16
312V10A	110-440VDC	10A	AR-HK-J-312-10	AR-HK-J-H440-10	AR190812-16
540V06A	170-650VDC	6A	AR-HK-J-540-06	AR-HK-J-H650-06	AR190812-16

3.Features

Specification		
Input	AC Input Range	AC 90~265V
	Frequency	45-65Hz
	Input Current	≤16A
	Power Factor	≥0.99 Half loading
	Efficiency	≥93% Full loading
	Standby Consumption	≤10W
Main Output	Output Mode	CV / CC
	Output Voltage	3300W @ 220VAC ; 1600W@110VAC

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	CV Accuracy	±1%
	CC Accuracy	±2%
	Ripple Voltage Coefficient	5%
Low Voltage Output	Output Mode	CV
	Output Voltage	13.8V/27.6V
	CV Accuracy	±1%
	Nominal Current	5A
	Max Current	5.5A±0.5A
	CC Accuracy	±2%
	Ripple Voltage Coefficient	1%
CAN Communication	CAN Communication	Optional
	Baud Rate	125Kbps、250Kbps、500Kbps
	Terminal Resistance	NO

4.Protection Feature

Protection	Input Over-voltage Protection	AC285±5V
	Input Under-voltage Protection	AC85±5V
	Output Over-voltage Protection	Stop the output when exceeds + 1% of the maximum output voltage
	Output Under-voltage Protection	Stop the output when below -5% of the minimum output voltage
	Output Over-current Protection	Stop the output when exceeds + 1% of the maximum output current
	Over-temperature Protection	Power down from 85 ℃ and shut off at 90℃
	Short-circuit Protection	Stop Output
	Battery Reverse Connect Protection	Fuse Burned-out
	Ground Protection	≤100mΩ
	CAN communication Protection	Automatically stop the output when CAN communication fails
	Power-off Protection	YES

5.Safety and others

Safety&Others	Withstand Voltage	Input to Output：2000VAC≤10mA Input to Ground：2000VAC≤12mA Output to Ground：2000VAC≤10mA，all 1min
	Insulation Resistance	Input, output, signal terminal to casing≥10MΩ Testing Voltage 1000VDC
	Electromagnetic Immunity	GB/T 18487.3-2001 11.3.1
	Electromagnetic Abusive	GB/T 18487.3-2001 11.3.2
	Harmonic Current	GB 17625.1-2003 6.7.1.1
	Inrush Starting Current	≤24A
	Current-rise Time	≤5S，Overshoot≤5%
	Close Response time	From 100% to10%≤50mS，From 100% to 0%≤200mS

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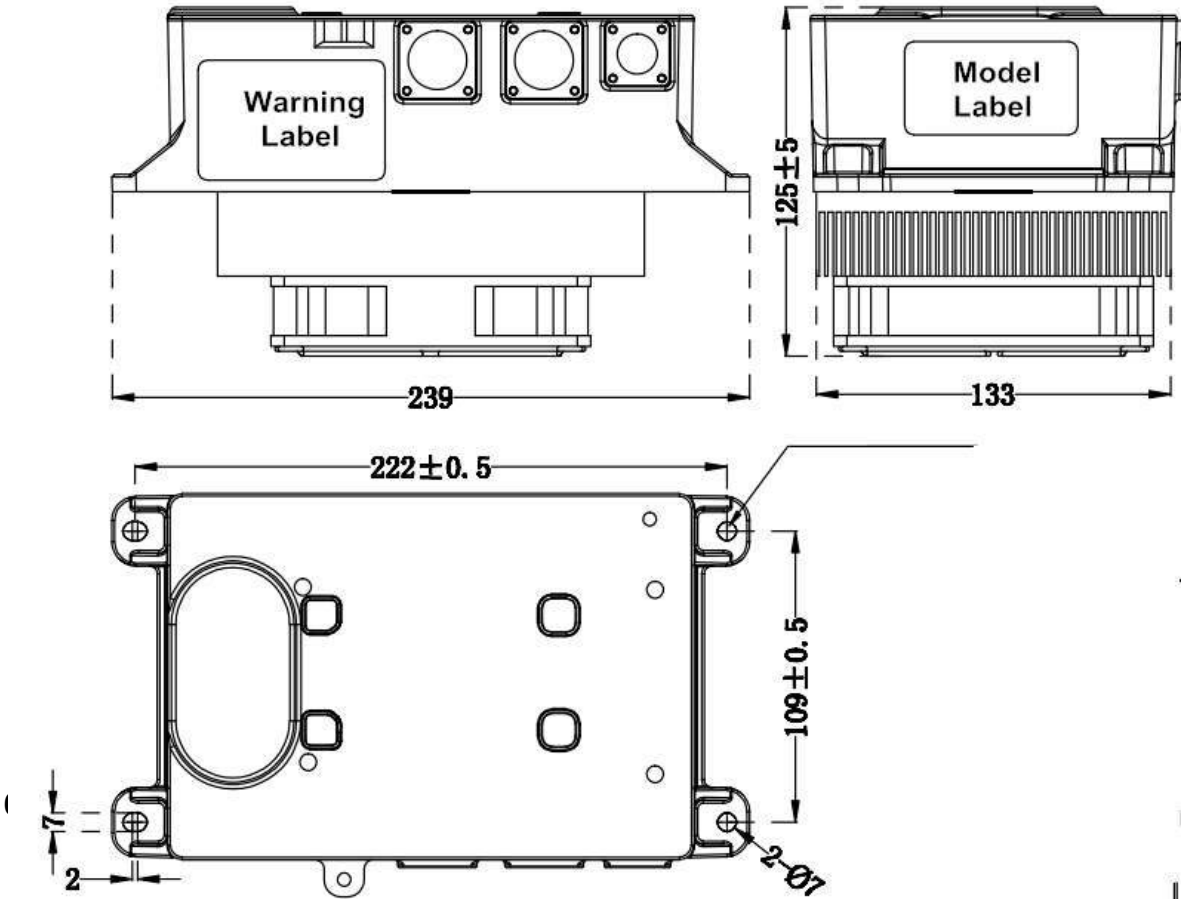
	Anti-Vibration	10－25Hz Amplitude1.2mm，25－500Hz 30m/s2，8hrs per direction
	Noise	≤60dB(Class A)
	MTBF	150000H
	Work Environment	Relative Temp 5%-95% No condensation
	Working Temperature	-35℃ ~ +85℃
	Storage Temperature	-55℃ ~ +100℃

6.Installation Dimensions and Connector Definition

6.1.1 Installation Dimensions (Enforce Air Cooling)



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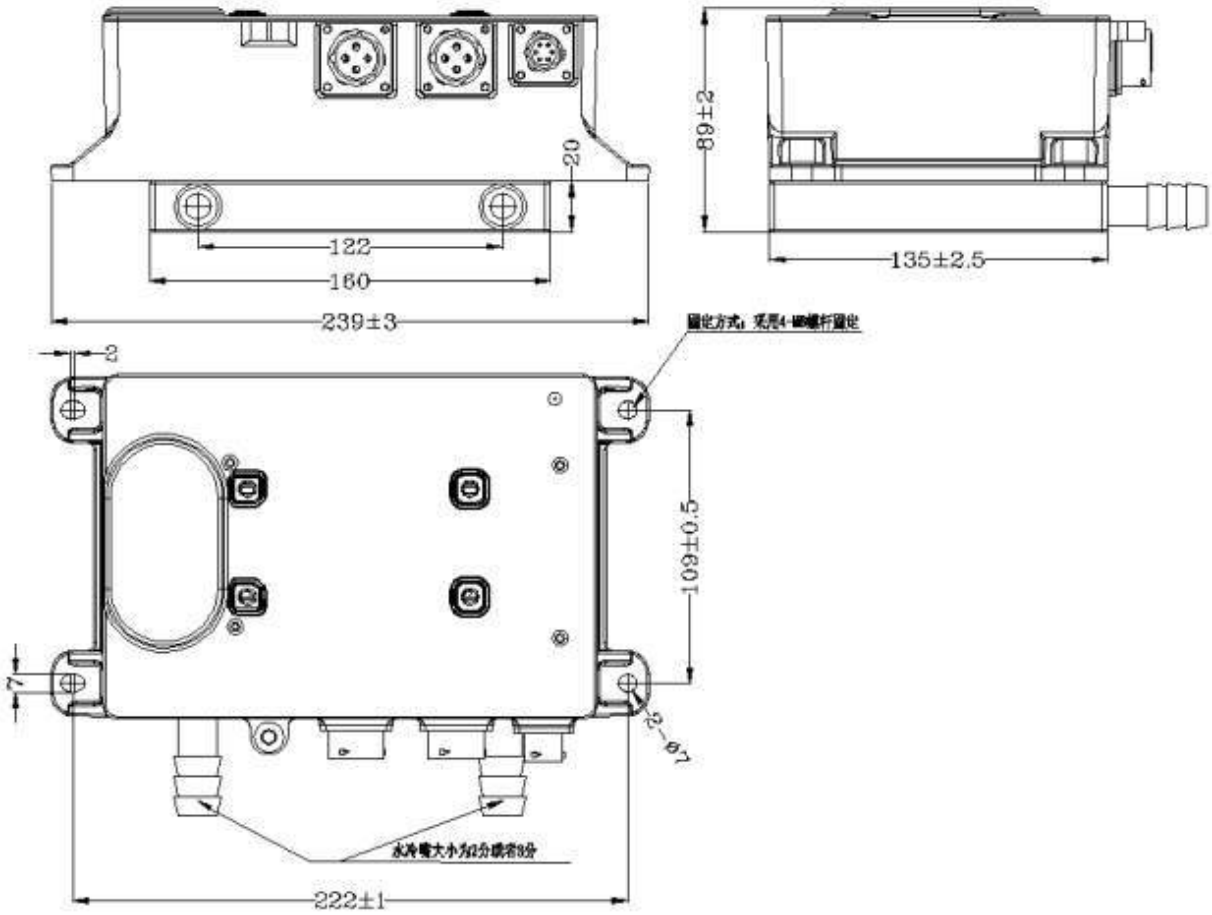
6.1.1 Installation Dimensions (Liquid Cooling)



6.2 Interface Definition(for 72v,96v,144v)

S. N.	Terminal Name	Terminal Definition	Male Connector	Female Connector	Ver.
1	Charger's AC Input	A-Null line, B-Fire Line, D-GND	XXC103-EV-P4ZA	XXC103-EV-S4TA	XINXI
2	Charger's DC Output	A.D-Positive B.C-Negative	XXC103-EV-P4ZB	XXC103-EV-S4TB	XINXI

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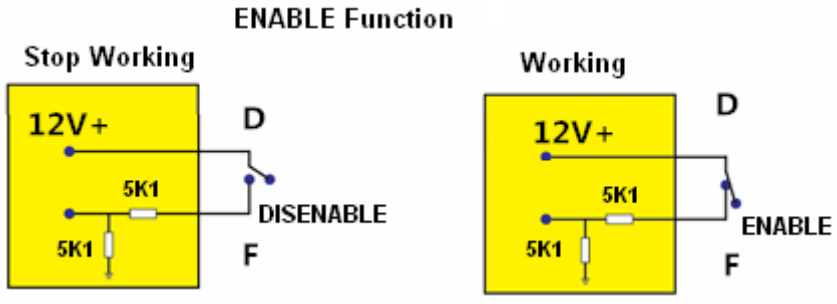
3	Signal Control	A-CANL, B-CANH, C-CANGND, D-12V+, E-12V-, F-Enable.	XXC103-EV-P6ZC	XXC103-EV-S6TC	XINXI

6.3 Interface Definition(for 312v, 540v)

S. N.	Terminal Name	Terminal Definition	Male Connector	Female Connector	Ver.
1	Charger's AC Input	A-Null line, B-Fire Line, D-GND	XXC103-EV-P4ZA	XXC103-EV-S4TA	XINXI
2	Charger's DC Output	A.-Positive B.-Negative	XXC103-EV-P4ZB	XXC103-EV-S4TB	XINXI
3	Signal Control	A-CANL, B-CANH, C-CANGND, D-12V+, E-12V-, F-Enable.	XXC103-EV-P6ZC	XXC103-EV-S6TC	XINXI

6.4 Enable Control



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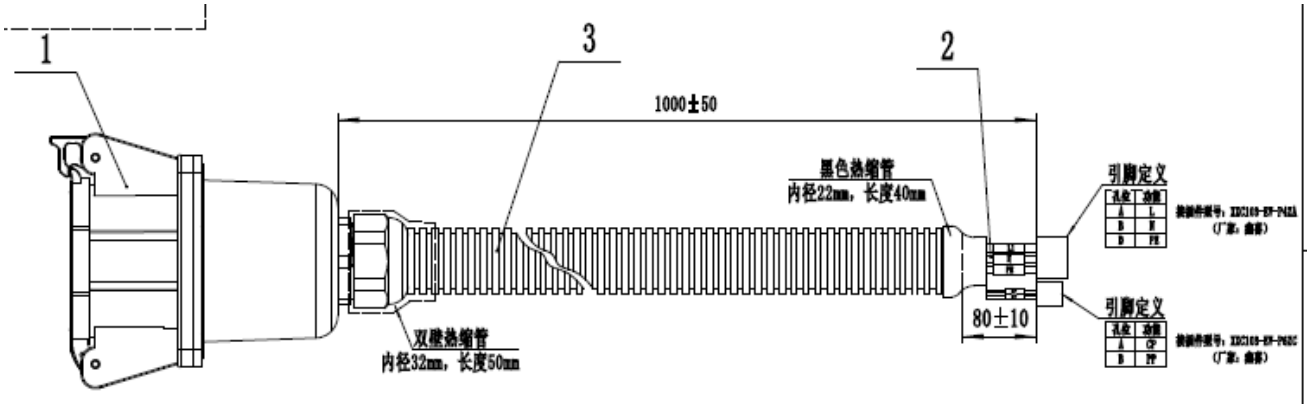
6.5 Vehicle SAE Inlet Cable Assembly Specification

Standard: SAE J1772-2010

Model no.	AR190812-16	AR190812-30	AR190812-40
Rated current	16A	30A	40A
Rated Voltage	**240V AC**		
Insulation resistance	> 1000MΩ (DC500V)		
Contact resistance:	0.5mΩ Max		
Withstand voltage:	2000V		
Housing Flammability	UL94 V-0		
Insertion force	45N<F<80N		
IP Rating	IP44		
Housing Material	Thermoplastic		
Terminal Material	Silver Plated Copper Alloy		
Operating temperature	-40°C to + 125°C		
Charging cable	1P+N+PE+PP+CP 1000mm 3*10AWG+2*18AWG mm2		



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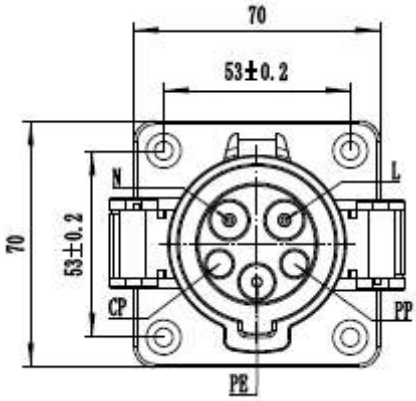

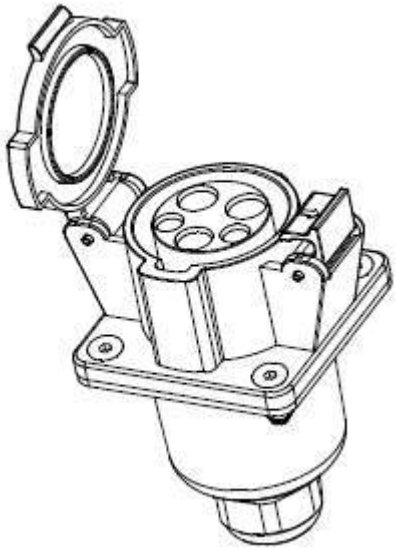

7.LED Status

1). Initial State

Red Off Green Off Red Off Green Off Red Off Green Off Red Off Green Off

2). Charging State

Red Off Red Off Red Off Red Off Red Off Red Off Red Off Red Off

3). Stand-by State

Green Off Green Off Green Off Green Off Green Off Green Off Green Off Green Off

4). Fault State

Red Green Red Green……Other error status word error

Red Green……Wrong Battery

Red Green Red……Wrong Communication

Green Red……Wrong Input Voltage

Green Red Green……Internal Temperature Protection

Green Red Green Red……Wrong Hardware

8.Schematic diagram and the efficiency curve

8.1 Schematic Diagram

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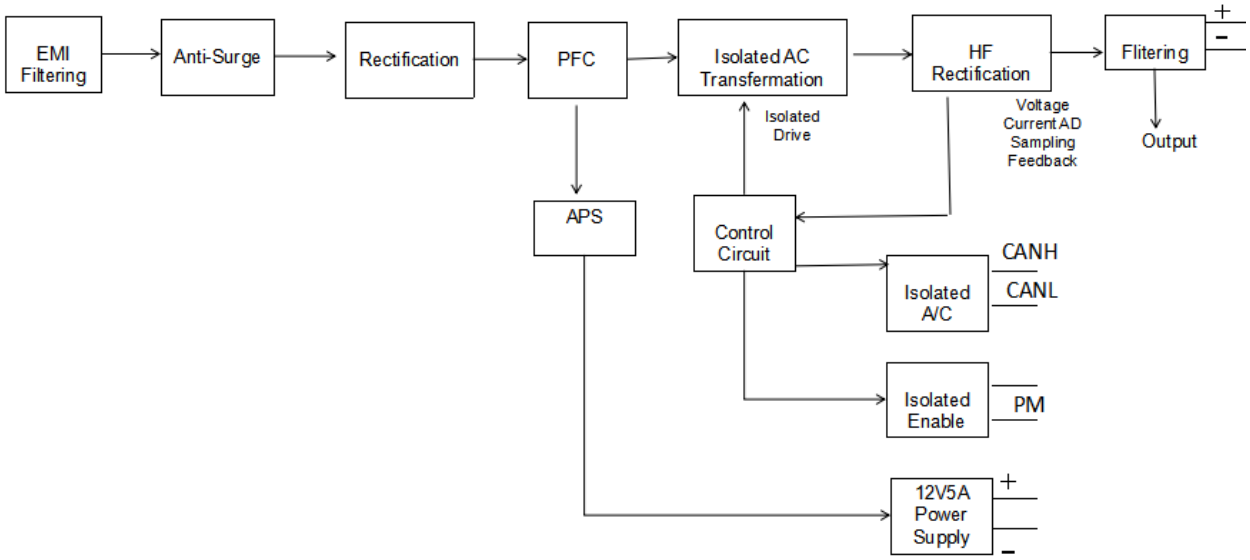

8.2 Efficiency Curve

9. Appearance Requirements

1). Outer surface should be smooth without obvious defects such as scratch, deformation. Surface coating should be uniform.

2). The nameplates and signs should be installed firmly with the neat handwriting.

3). Spare parts should be fastened reliably without rust, burrs, cracks and other defects and damage.

4). Each product should be marked with product identification in obvious place, including part number, product brand, product type, production number, name of production enterprises, the warning message, etc

10. Packaging, Transport and Storage

1). Packaging

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On the packing box, there are product name, product part number, product brand, product type, production number and name of manufacturer; In packing box, along with the technical documents, it includes packing list, quality certificate, product specification.

2). Transportation

Suitable for cars, boats, aircraft, transportation. The products have to be prevented against sunshine and moisture and in a civilized transportation.

3). Storage

Product should be stored in the packing box when it is not used and be maintained in a 5 ℃ to 40 ℃ clean, dry and well-ventilated environment. It should not be stored together with chemicals, acid and alkali substances etc,. Should avoid storing in the sun, fire, water and avoid storing with corrosive substances. The storage period is 2 years (from the inventory date of the factory). After the 2 years of storage period, the products should still comply with the provisions of the relevant standards.

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Product Name: 6.6KW On Board Battery Charger

Specification

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1. Overview

AR-HK-J series 6.6KW charger was specially designed for supplying the electricity for electric vehicle's power battery, on the basis of the national standards for the charger. This product has the advantages of not only high efficiency, small size, high stability, long lifespan, but also high protection grade, high reliability and completed protection functions. It's definitely an ideal charging power supply for f electric vehicles.

This charger has built-in heat-sensing device and can automatic recover through the thermal protection. Fully sealed potting process and up to IP67 protection level ensures no causing trouble in any complex environment.

Main Feature：Fully Sealed，Enforce air Cooling（Module Optional）

Reliable working under -35℃- +85℃

Internal temperature sensor

Shut off inside temperature over 90°C

IP67 Protection Level

Working well in immersion shortly

2. Essential Parameter

Hardware	DC output Voltage Range	Max Output Current	Lead Acid Battery Charger Model	Lithium Battery Charger Model
48V80A	18-68VDC	80A	AR-HK-J-48-80	AR-HK-J-H66-80
72V80A	25-99VDC	80A	AR-HK-J-72-80	AR-HK-J-H99-80
96V64A	34-132VDC	64A	AR-HK-J-96-64	AR-HK-J-H132-64
144V46A	50-198VDC	46A	AR-HK-J-144-46	AR-HK-J-H198-46
312V20A	110-440VDC	20A	AR-HK-J-312-20	AR-HK-J-H440-20
540V12A	170-650VDC	12A	AR-HK-J-540-12	AR-HK-J-H650-12

3.Features

Items		Data
Input	AC Input Range	AC 90~265V
	Frequency	45-65Hz
	Input Current	≤32A
	Power Factor	≥0.99 Half loading
	Efficiency	≥93% Full loading
	Standby Consumption	≤10W
Main	Output Mode	CV / CC

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Output	Output Voltage	6600W @ 220VAC; 3300W@ 220VAC
	CV Accuracy	±1%
	CC Accuracy	±2%
	Ripple Voltage Coefficient	5%
Low Voltage Output	Output Mode	CV
	Output Voltage	13.8V/27.6V
	CV Accuracy	±1%
	Nominal Current	5A
	Max Current	5.5A±0.5A
	CC Accuracy	±2%
	Ripple Voltage Coefficient	1%
CAN Communication	CAN Communication	Optional
	Baud Rate	125Kbps、250Kbps、500Kbps
	Terminal Resistance	NO

4.Protection Feature

Protection	Input Over-voltage Protection	AC285±5V
	Input Under-voltage Protection	AC85±5V
	Output Over-voltage Protection	Stop the output when exceeds + 1% of the maximum output voltage
	Output Under-voltage Protection	Stop the output when below -5% of the minimum output voltage
	Output Over-current Protection	Stop the output when exceeds + 1% of the maximum output current
	Over-temperature Protection	Power down from 85 ℃ and shut off at 90℃
	Short-circuit Protection	Stop Output
	Battery Reverse Connect Protection	Fuse Burned-out
	Ground Protection	≤100mΩ
	CAN communication Protection	Automatically stop the output when CAN communication fails
	Power-off Protection	YES

5.Safety and others

Safety&Others	Withstand Voltage	Input to Output：2000VAC≤10mA Input to Ground：2000VAC≤12mA Output to Ground：2000VAC≤10mA，all 1min
	Insulation Resistance	Input, output, signal terminal to casing≥10MΩ Testing Voltage 1000VDC
	Electromagnetic Immunity	GB/T 18487.3-2001 11.3.1
	Electromagnetic Abusive	GB/T 18487.3-2001 11.3.2
	Harmonic Current	GB 17625.1-2003 6.7.1.1
	Inrush Starting Current	≤24A
	Current-rise Time	≤5S，Overshoot≤5%

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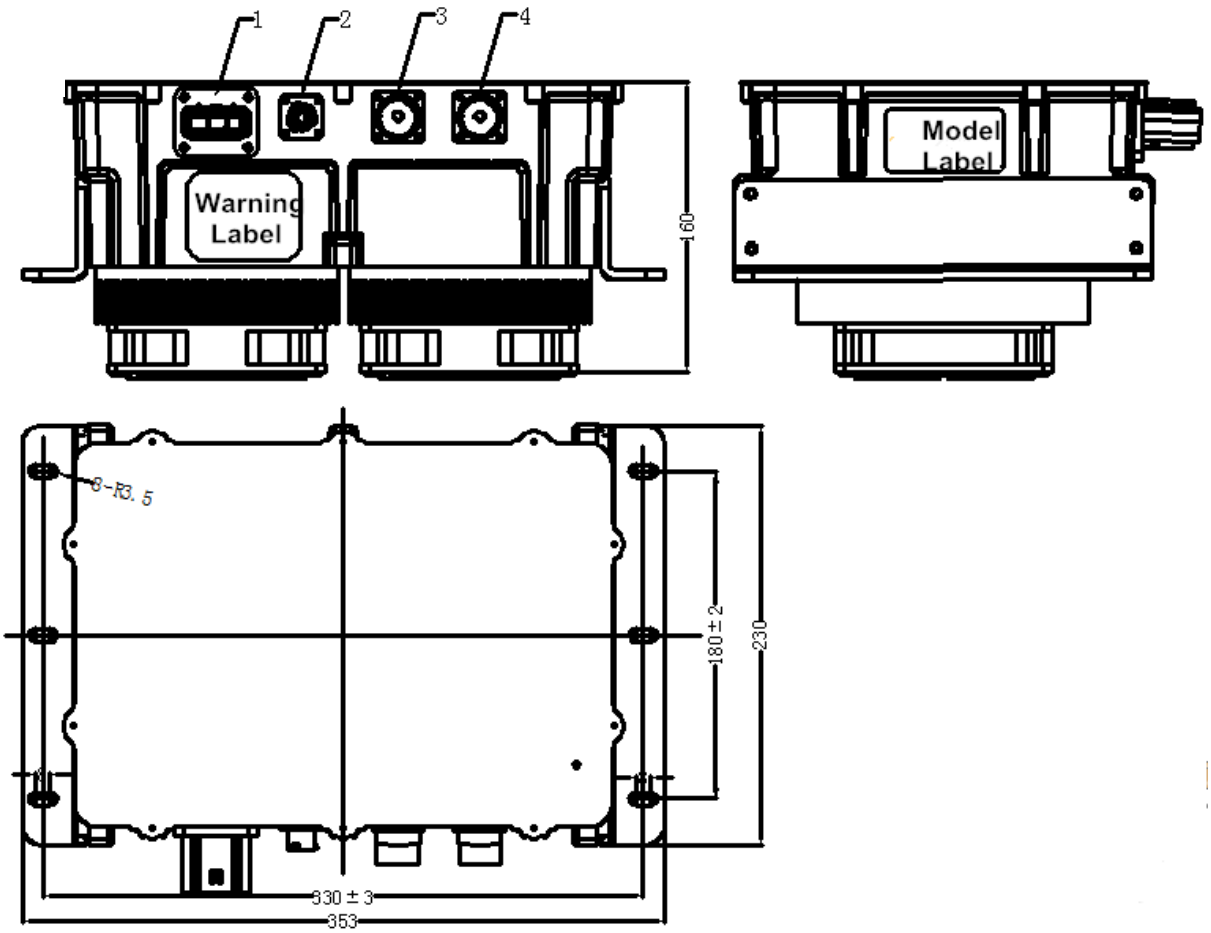
	Close Response time	100% to10%≤50mS，100% to 0%≤200mS
	Anti-Vibration	10－25Hz Amplitude1.2mm，25－500Hz 30m/s2，8hrs per direction
	Noise	≤60dB(A Class)
	MTBF	150000H
	Work Environment	Relative Temp 5%-95% No condensation
	Working Temperature	-35℃ ~ +85℃
	Storage Temperature	-55℃ ~ +100℃

6.Installation Dimensions and Connector Definition

6.1.1 Installation Dimensions (Enforce Air Cooling,)Nominal Voltage under 144V and included:



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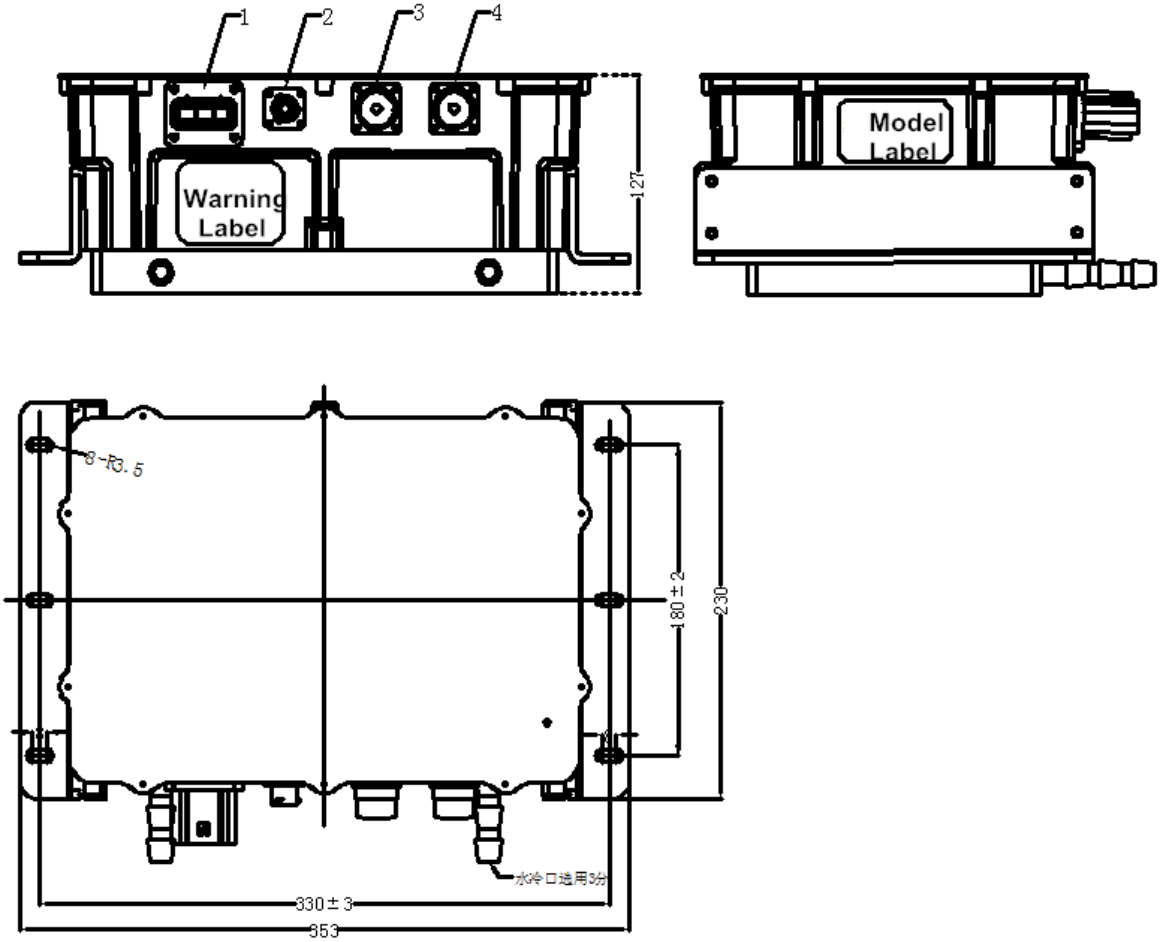
6.1.2 Installation Dimensions (Liquid Cooling)



6.2 Interface Definition

S. N.	Terminal Name	Terminal Definition	Male Connector	Female Connector	Ver.
1	Charger's AC Input	A: NULL Line B: GND Line C: Fire Line	XXC106-EV-P3Z	XXC106-EV-S3T	XINXI
2	Signal Control	A-CAN L, B-CAN H, C-CAN GND, D-12V+, E-12V-, F-Enable.	XXC103-EV-P6ZC	XXC103-EV-S6TC	XINXI
3	Charger's DC Output	Positive	DY6-1ZP(180°)	DY6-1TY(180°)	XINXI
4	Charger's DC Output	Negative	DY6-1ZP(90°)	DY6-1TY(90°)	XINXI

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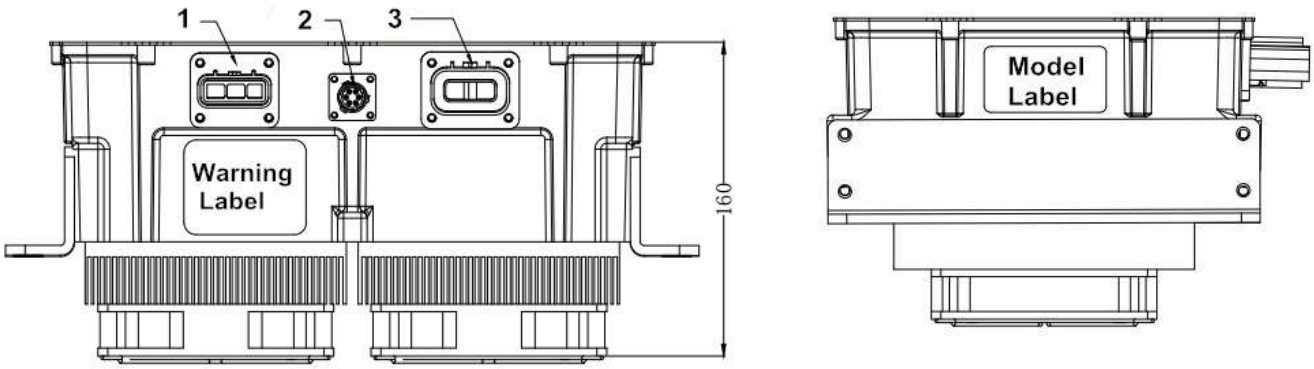
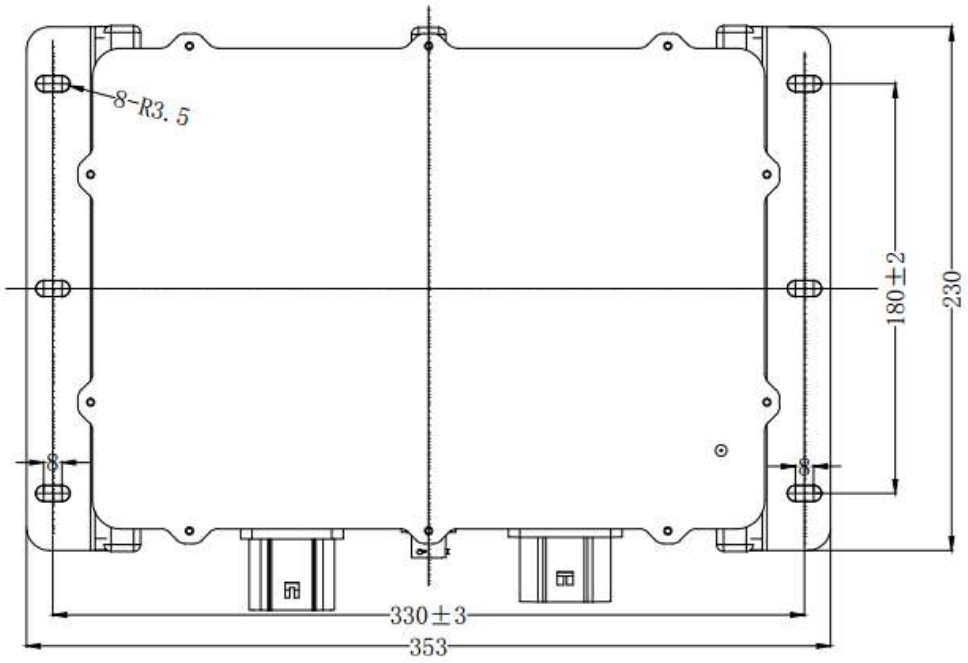
6.3 Installation Dimensions (Enforce Air Cooling,)Nominal Voltage above 312V, 540v;





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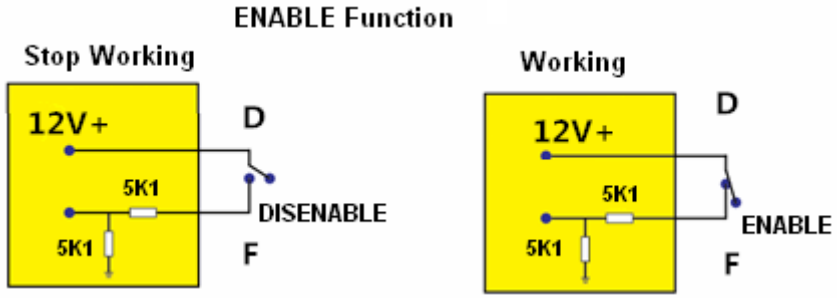
6.4 Interface Definition;

S. N.	Terminal Name	Terminal Definition	Male Connector	Female Connector	Ver.
1	Charger's AC Input	A-Null line, B- GND C-Fire Line,	XXC103-EV-P4ZA	XXC103-EV-S4TA	XINXI
2	Signal Control	A-CANL, B-CANH, C-CANGND, D-12V+, E-12V-, F-Enable	XXC103-EV-P6ZC	XXC103-EV-S6TC	XINXI
3	Charger's DC Output	A-Positive B-Negative	XXC103-EV-P4ZB	XXC103-EV-S4TB	XINXI

6.5 Enable Control



7.LED Status

1). Initial State

Red Off Green Off Red Off Green Off Red Off Green Off Red Off Green Off

2). Charging State

Red Off Red Off Red Off Red Off Red Off Red Off Red Off Red Off

3). Stand-by State

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4). Fault State

Red Green Red Green……Other error status word error

Red Green……Wrong Battery

Red Green Red……Wrong Communication

Green Red……Wrong Input Voltage

Green Red Green……Internal Temperature Protection

Green Red Green Red……Wrong Hardware

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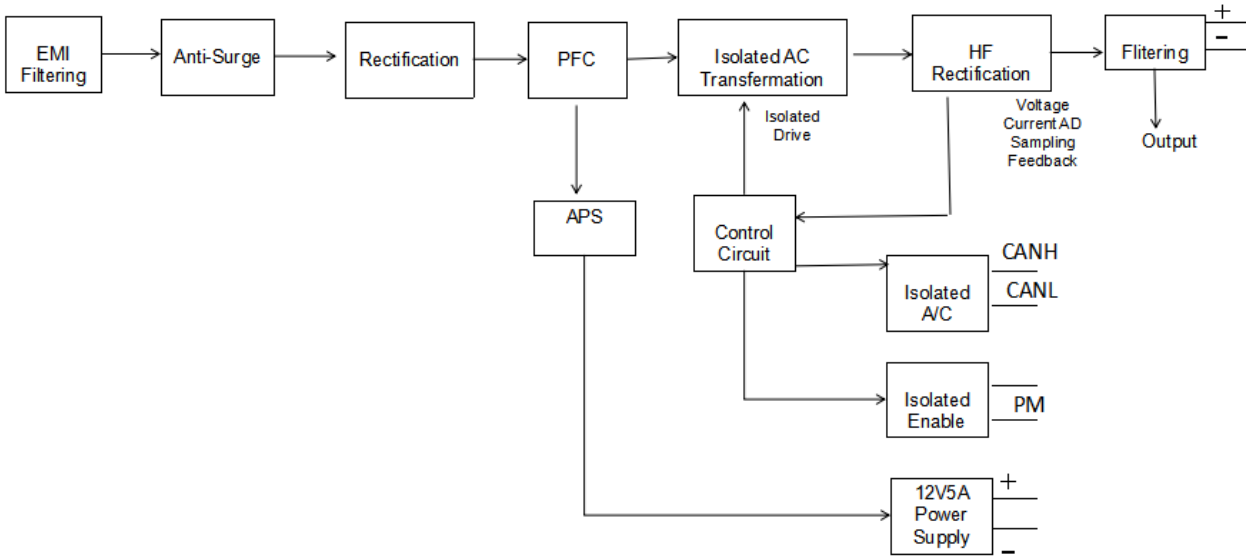
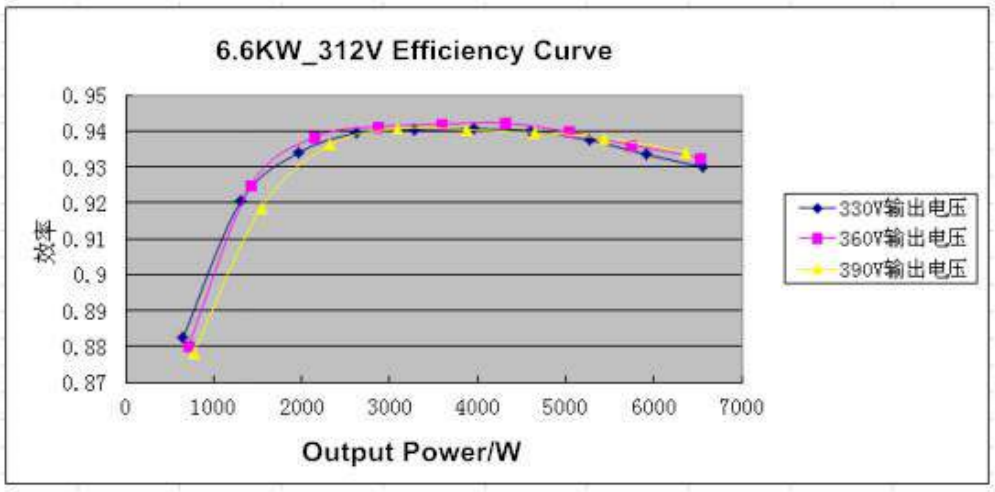
8.Schematic diagram and the efficiency curve

8.1 Schematic Diagram



8.2 Efficiency Curve



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Model No.：AR-1K5-540/380S14-A-AR01

Product Name：1.5KW DC/DC Converter System

1.5KW DC/DC Converter Module Only

1.5KW DC/DC Converter Fan cooling System

Features

1. Output Power：1.5KW
2. Input Voltage：250~450VDC/400~750VDC
3. Output Voltage：13.8VDC
4. Dimensions：335x185x120mm
5. Cooling System：Fan
6. Protection Level：IP67（Except for fans）
7. Communication Method：CAN
8. Enclosure: Aluminum alloy made
9. Software: Digital software design

Applications

Electric Passenger Vihecles

Electric Commercial Vihecles

Specification

Description		Technical specifications	Remark
Operating temperature		-40~85℃	85~100℃，Can be derated to 40% of work
Rated output power		1.5KW (continuous operation at full load)	Peak power 1.8KW
Input voltage range		250~450VDC/400~750VDC	
Output rated voltage		13.8VDC	12~16 Adjustable
Rated output current		108A	
Auxiliary power VCC		9~18VDC	
Efficiency		≥94%	Rated voltage Full load
Output voltage ripple		≤500mVPK-PK	
Protection characteristics		Input over-voltage, output over-voltage, input anti-reverse connection, output over-current and short-circuit protection, over-temperature self-recovery	
Over temperature protection		The bottom plate temperature reaches 85 °C and starts derating output. The temperature exceeds 100 °C, shutting down; the temperature is lower than 95 °C, which can be self-recovery.	
Dielectric streng	Input to output	3000VDC/1min 1mA max	
	Input to the outer casing	3000VDC/1min 1mA max	
Insulation resist	Input to output	≥20MΩ	
	Input to the outer casing	≥20MΩ	
Battery compat	Radiation emission	GB/T 18655-2010 Class 3	
	Conducted emission	GB/T 18655-2010 Class 3	
	Static immunity	GB/T 19951-2005	Air discharge：15KV，Contact discharge 8KV
	Radiation immunity	GB/T 18655-2010 Class 3	
	High current injection	GB/T 17619-1998	
	Fast burst immunity	GB/T 17626.4-2008 1KV	

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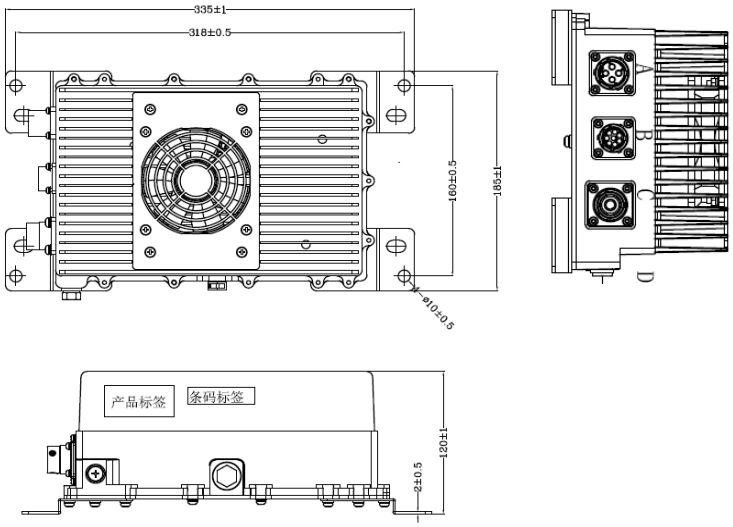
Model No.：AR-1K5-540/380S14-A-AR01
Product Name：1.5KW DC/DC Converter System

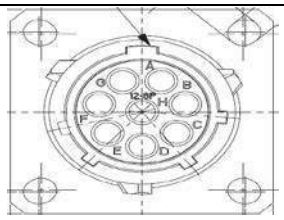
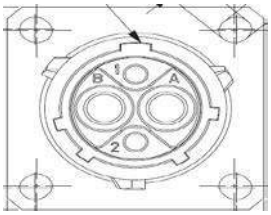
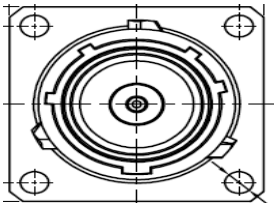
Structural parameters



Connector model

Position	Socket model	Function	Brand	Plug model
A	RT00122PN03	DC input	Amphenol	RT06122SNHEC03
B	RT00128PN03	Control terminal	Amphenol	RT06128SNHEC03
C	RTHP0141PN-H1	Output positive	Amphenol	RTHP6141SNH-25PS2
D	M8 bolt	Output negative	\	M8 Screw

Interface definition

Vendor	Model	Description		Remark
Amphenol	RT00128PN03	A	NC	
		B	CANL	
		C	CANH	
		D	Shielded wire	
		E	GND	
		F	NC	
		G	NC	
		H	Enable	
Amphenol	RT00122PN03	A	Input positive	
		B	Input negative	
		1	Interlock 1 connection 2	
		2	Interlock 2 connection 1	
Amphenol	RTHP0141PN-H1	+	Output positive	

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Product Name	1.5KW DC/DC CONVERTER
Model No.	AR-1K5-380S14-W-AR01 AR-1K5-540S14-W-AR01
Power	1.5KW
Input Voltage	250~450VDC/400~750VDC
Output Voltage	13.8VDC
Output Current	73A
Efficiency	≥95%
Module Low Voltage (VDC)	\
Module Low Current (A)	\
Size (mm)	268x220x75mm
Cooling System	Water
IP Rating	IP67
Scope	Various new energy vehicles
Hardware	Small size, light weight and stable performance
Firmware	Full digital software design, redundant protection function design

Features

- **Output power: 1.5KW**
- **Input voltage: 250~450VDC/400~750VDC**
- **Output voltage: 13.8VDC**
- **Communication method: CAN**

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Main technical parameters

Item		Technical specifications	Remark
Operating temperature		-40~85℃	85~100℃, Can be derated to 40% of work
Rated output power		1.5KW (continuous operation at full load)	Peak power 1.8KW
Input voltage range		250~450VDC/400~750VDC	
Output rated voltage		13.8VDC	9~16 Adjustable
Rated output current		73A	
Auxiliary power VCC		6~18VDC	
Efficiency		≥95%	Rated voltage Full load
Output voltage ripple		≤500mVPK-PK	
Protection characteristics		Input over-voltage, output over-voltage, input anti-reverse connection, output over-current and short-circuit protection, over-temperature self-recovery	
Over temperature protection		The bottom plate temperature reaches 85 °C and starts derating output. The temperature exceeds 100 °C, shutting down; the temperature is lower than 95 °C, which can be self-recovery.	
Dielectric strength	Input to output	2500VDC/1min 1mA max	
	Input to the outer casing	2500VDC/1min 1mA max	
Insulation resistance	Input to output	≥20MΩ	
	Input to the outer casing	≥20MΩ	
Battery compatibility	Radiation emission	GB/T 18655-2010 Class 3	
	Conducted emission	GB/T 18655-2010 Class 3	
	Static immunity	GB/T 19951-2005	Air discharge: 15KV, contact discharge 8KV
	Radiation immunity	GB/T 18655-2010 Class 3	
	High current injection	GB/T 17619-1998	

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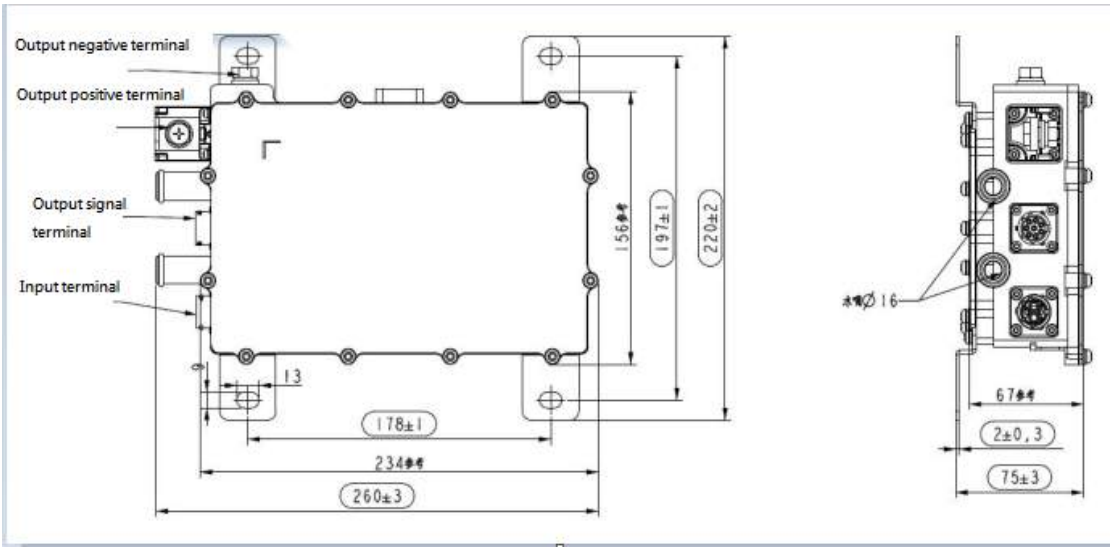
	Fast burst immunity	GB/T 17626.4-2008 1KV	

Structural parameters



Connector information:

Position	Socket model	Function	Brand	Plug model
A	RT00128PN03	Control terminal	Amphenol	RT06128SNHEC03
B	RT00122PN03	DC high voltage terminal	Amphenol	RT06122SNHEC03
C	ACTB117-C	Output positive	Connet	M8 specification copper ear
D	M8 Bolt lock housing	Output negative	/	M8 specification copper ear

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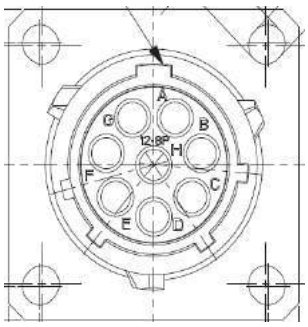
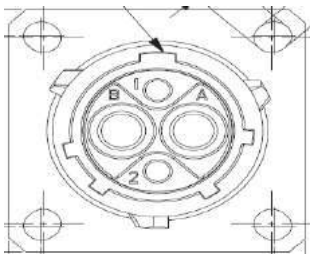
Interface definition:

Vendor	Model	Description		Remarks
Amphenol	RT00128PN03	A	CAN-H	
		B	CAN-L	
		C	KEY (high effective) reservation	
		D	VCC+	
		E	GND	
		F	NC	
		G	NC	
		H	NC	
Amphenol	RT00122PN03	A	Input positive	
		B	Input negative	
		1	Interlock 1 connection 2	
		2	Interlock 2 connection 1	

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Model No.：AR2K-250380S14L
Product Name：2KW DC/DC Converter Liquid Cooled System

2KW DC/DC Converter Liquid Cooled System

Features

1 Output Power：2KW
2 Input Voltage：250-450VDC
3 Output Voltage：13.8VDC
4 Dimensions：268x220x75mm
5 Cooling System：Liquid (water nozzie ϕ16)
6 IP Rating：IP67
7 Communication Method：CAN
8 Enclosure: Aluminum alloy made
9 Software: Digital software design

Applications

Electric Passenger Vihecles

Electric Passenger Vihecles

Specification

Description		Technical specifications	Remark
Operating temperature		-40~85℃	85~100℃ · Can be derated to 40% of work
Rated output power		2KW (continuous operation at full load)	Peak power 2.5KW
Input voltage range		250-450VDC	
Output rated voltage		13.8VDC	9~16 Adjustable
Rated output current		145A	
Auxiliary power VCC		6-18VDC	
Efficiency		≥95%	Rated voltage Full load
Output voltage ripple		≤500mVPK-PK	
Protection characteristics		Input over and under voltage, output over and under voltage, input anti-reverse connection, output over current and short circuit protection, over temperature self-recovery	
Over temperature protection		The baseplate temperature reaches 85 ° C and starts derating. If the temperature exceeds 100 ° C, it will be shut down. If the temperature is lower than 95 ° C, it can recover automatically	
Dielectric strength	Input to output	2500VDC/1min 1mA max	
	Input to the outer casing	2500VDC/1min 1mA max	
Insulation resistance	Input to output	≥20MΩ	
	Input to the outer casing	≥20MΩ	
Battery compatibility	Radiation emission	GB/T 18655-2010 Class 3	
	Conducted emission	GB/T 18655-2010 Class 3	
	Static immunity	GB/T 19951-2005	Air discharge：15KV · Contact discharge 8KV
	Radiation immunity	GB/T 18655-2010 Class 3	
	High current injection	GB/T 17619-1998	
	Fast burst immunity	GB/T 17626.4-2008 1KV	
Weight	Net weight / Gross weight	4.5KG / 5.0KG	

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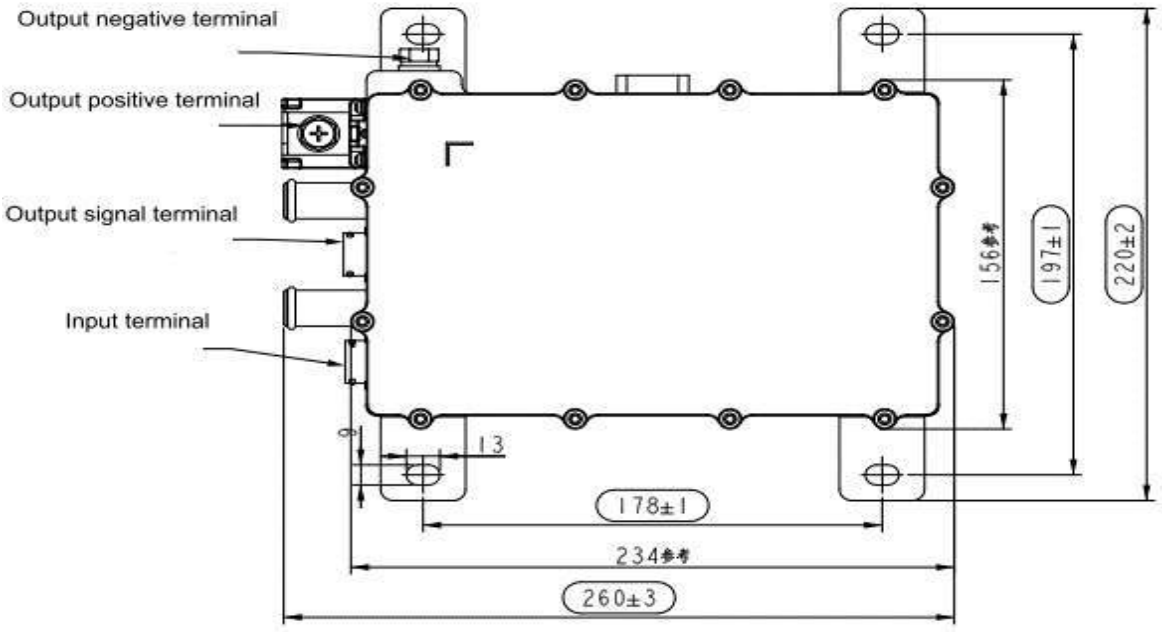
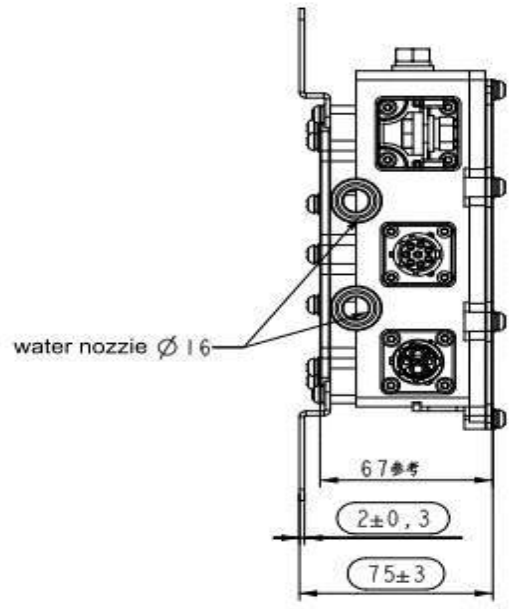
Model No.：AR2K-250380S14L

Product Name：2KW DC/DC Converter Liquid Cooled System

Structural parameters





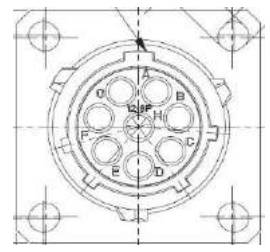
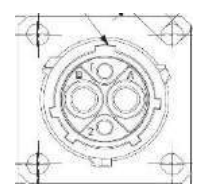
skills requirement
1. The inner dimensions of the frame are the key inspection dimensions, and the dimensions without tolerances are in accordance with GB1804-M.
2. Check whether the surface is clean, without obvious scratches, and without oil or dirt.
3. The input and output terminals are OT terminals and fixed with M8X16 screws.

Electrical Interface

Connector Table（customizable）

Item	Position	Receptacle model no.	Pinout definition	Maker	Plug model no.
1	A	RT00128PN03	Control terminal	Amphenol	RT06128SNHEC03
2	B	RT00122PN03	DC high voltage terminal	Amphenol	RT06122SNHEC03
3	C	ACTB117-C	Output positive	Connet	M8 Specification copper ear
4	D	M8 Bolt lock housing	Output negative	\	M8 Specification copper ear

Interface definition（for reference）

Maker	Receptacle model no.	Description		Connector picture
Amphenol	RT00128PN03	A	CAN-H	
		B	CAN-L	
		C	KEY（Highly effective）Reserved	
		D	VCC+	
		E	GND	
		F	NC	
		G	Interlock 3	
		H	Interlock 4	
Amphenol	RT00122PN03	A	Input positive	
		B	Input negative	
		1	Interlock 1 (connection interlock 3)	
		2	Interlock 2 (connection interlock 4)	

Label

Product Name	2KW DC/DC Converter Liquid Cooled System		
Product Part No.	e25.AR2K-250380S14L		
Product Model	AR2K-250380S14L		
Serial Number	2020XXXXXXXX		
Input Voltage	250-450VDC	Output Voltage	13.8VDC
Output Current	145A	Output power	2000W
Supplier	ANNREN TECHNOLOGIES CO., LTD.		

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Model No.：AR-2K-380/540S14-W-AR01

Product Name：2.0KW DC/DC Converter system

2.0KW DC/DC Converter Module Only

2.0KW DC/DC Converter Water cooling System

Features

1 Output Power：2KW
2 Input Voltage：250-450VDC/400-750VDC
3 Output Voltage：13.8VDC
4 Dimensions：268x220x75mm
5 Cooling System：Water
6 Protection Level：IP67
7 Communication Method：CAN
8 Enclosure: Aluminum alloy made
9 Software: Digital software design

Applications

Electric Passenger Vihecles

Electric Passenger Vihecles

Specification

Description		Technical specifications	Remark
Operating temperature		-40~85℃	85~100℃，Can be derated to 40% of work
Rated output power		2KW(Continuous operation at full load)	Peak power 2.4KW
Input voltage range		250-450VDC/400-750VDC	
Output rated voltage		13.8VDC	9~16 Adjustable
Rated output current		145A	
Auxiliary power VCC		6-18VDC	
Efficiency		≥95%	Rated voltage Full load
Output voltage ripple		≤500mVPK-PK	
Protection characteristics		Input over-voltage, output over-voltage, input anti-reverse connection, output over-current and short-circuit protection, over-temperature self-recovery	
Over temperature protection		The bottom plate temperature reaches 85 °C and starts derating output. The temperature exceeds 100 °C, shutting down; the temperature is lower than 95 °C, which can be self-recovery.	
Dielectric strength	Input to output	2500VDC/1min 1mA max	
	Input to the outer casing	2500VDC/1min 1mA max	
Insulation resistance	Input to output	≥20MΩ	
	Input to the outer casing	≥20MΩ	
Battery compatibility	Radiation emission	GB/T 18655-2010 Class 3	
	Conducted emission	GB/T 18655-2010 Class 3	
	Static immunity	GB/T 19951-2005	Air discharge：15KV，Contact discharge 8KV
	Radiation immunity	GB/T 18655-2010 Class 3	
	High current injection	GB/T 17619-1998	
	Fast burst immunity	GB/T 17626.4-2008 1KV	

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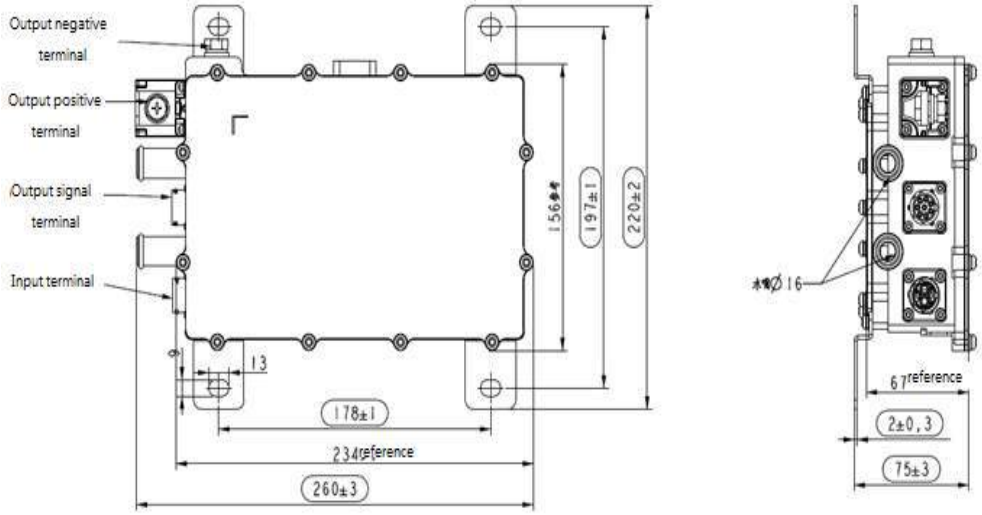
Model No.：AR-2K-380/540S14-W-AR01

Product Name：2.0KW DC/DC Converter system

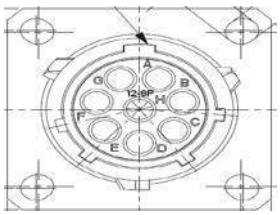
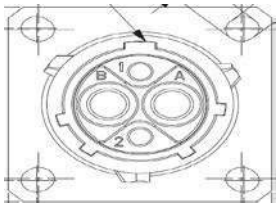
Structural parameters



Connector information（customizable）

Position	Socket model	Function	Brand	Plug model
A	RT00128PN03	Control terminal	Amphenol	RT06128SNHEC03
B	RT00122PN03	DC high voltage terminal	Amphenol	RT06122SNHEC03
C	ACTB117-C	Output positive	Connet	M8 Specification copper ear
D	M8 Bolt lock housing	Output negative	\	M8 Specification copper ear

Interface definition（for reference）

Vendor	Model	Description		Remark
Amphenol	RT00128PN03	A	CAN-H	
		B	CAN-L	
		C	KEY（Highly effective）Reserved	
		D	VCC+	
		E	GND	
		F	NC	
		G	NC	
		H	NC	
Amphenol	RT00122PN03	A	Input positive	
		B	Input negative	
		1	Interlock 1 connection 2	
		2	Interlock 2 connection 1	

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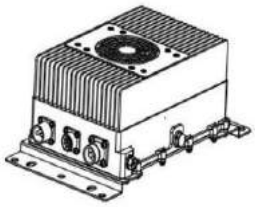
20191007_Version: V04

Model No.：AR3K-540S27F

Product Name：3KW DC/DC Converter Fan System



Module Only

3.0KW DC/DC Converter Fan cooling System

Features

1 Output Power：3KW
2 Input Voltage：400-750VDC
3 Output Voltage：27VDC
4 Dimensions：335X185X120mm
5 Cooling System：Fan
6 Protection Level：IP67
7 Communication Method：CAN
8 Enclosure: Aluminum alloy made
9 Software: Digital software design
10. Weight: 5.6Kg(Net), 6Kg(Gross)

Applications

Electric Bus 12M Low Flow

Specification

Description		Technical specifications	Remark
Operating temperature		-40~85℃	85~100℃，Can be derated to 40% of work
Rated output power		3KW(Continuous operation at full load)	Peak power 3.6KW
Input voltage range		400-750VDC	
Output rated voltage		27.5VDC	Adjustable voltage
Rated output current		110A	
Auxiliary power VCC		9-32VDC	
Efficiency		≥95%	Rated voltage Full load
Output voltage ripple		≤300mVPK-PK	
Protection characteristics		Input over-voltage, output over-voltage, input anti-reverse connection, output over-current and short-circuit protection, over-temperature self-recovery	
Over temperature protection		The bottom plate temperature reaches 85 °C to start derating output; the temperature exceeds 100 °C, shut down; the temperature is lower than 95 °C, self-recoverable	
Dielectric strength	Input to output	3000VDC/1min 1mA max	
	Input to the outer casing	3000VDC/1min 1mA max	
Insulation resistance	Input to output	≥20MΩ	
	Input to the outer casing	≥20MΩ	
Battery compatibility	Radiation emission	GB/T 18655-2010 Class 3	
	Conducted emission	GB/T 18655-2010 Class 3	
	Static immunity	GB/T 19951-2005	Air discharge：15KV，Contact discharge 8KV
	Radiation immunity	GB/T 18655-2010 Class 3	
	High current injection	GB/T 17619-1998	
	Fast burst immunity	GB/T 17626.4-2008 1KV	

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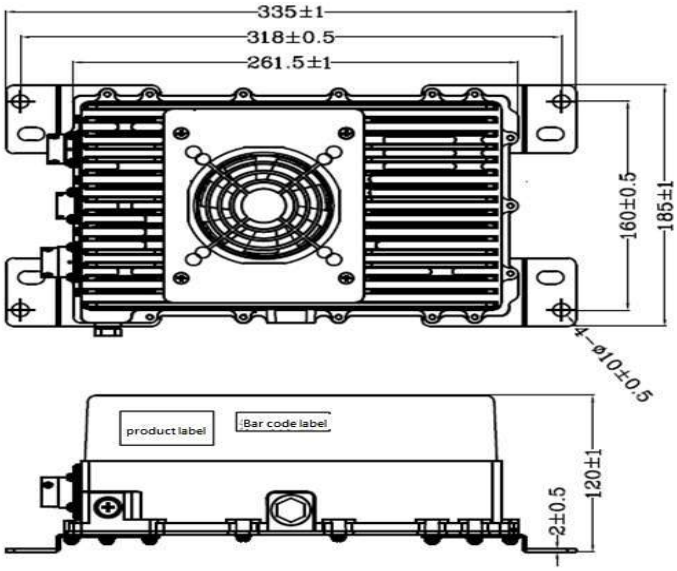
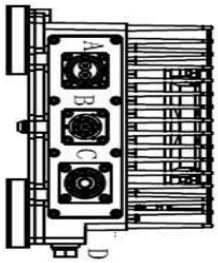
Model No.：AR3K-540S27F

Product Name：3KW DC/DC Converter Fan System

Structural parameters





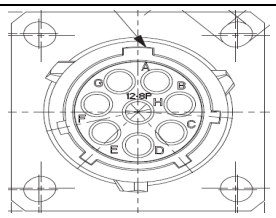
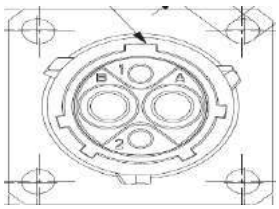
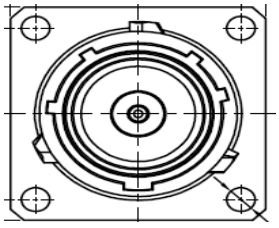
Label

Product Name	3KW DC/DC Converter Fan System
Product Part No.	E25.AR-3K-540S27-F
Product Model	AR-3K-540S27-F
Serial number	2019XXXXXXXX
Supplier	ANNREN TECHNOLOGIES CO., LTD.

Connector information（customizable）

Position	Socket model	Features	Brand	Plug model
A	RT00122PN03	DC input	Amphenol	RT06122SNHEC03
B	RT00128PN03	Control terminal	Amphenol	RT06128SNHEC03
C	RTHP0141PN-H1	Output positive	Amphenol	RTHP6141SNH-25PS2
D	M8 screw bolt	Output negative	\	M8 Screw

Interface definition（for reference）

Vendor	Model	Description		Remark
Amphenol	RT00128PN03	A	NC	
		B	CANL	
		C	CANH	
		D	Mask line	
		E	GND	
		F	NC	
		G	NC	
		H	Enable	
Amphenol	RT00122PN03	A	Input positive	
		B	Input negative	
		1	Interlock 1 connection 2	
		2	Interlock 2 connection 1	
Amphenol	RTHP0141PN-H1	+	Output positive	

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Model No.：AR-300-540S24-N-AR01

Product Name：300W DC/DC CONVERTER SYSTEM

Features

1. Output Power：300W
2. Input Voltage：200~800VDC
3. Output Voltage：24VDC
4. Dimensions：208x129x45mm
5. Cooling System：Fan
6. Machine Weight：<1.5KG
7. Communication Method：CAN
8. Software: Digital software design

Specification

Description		Technical specifications	Remark
Rated output power		300KW (continuous operation at full load)	Peak power360W
Input voltage range		200-800VDC	Rated input 540VDC
Output rated voltage		24±0.5VDC	Adjustable
Rated output current		12.5A	
Efficiency		≥92%	Rated voltage Full load
Output voltage ripple		≤500mVPK-PK	
No-load power consumption		<10W	Input high voltage power
Sleep power comsumption		<60MW	Power consumption of high voltage input during sleep state
Auxiliary source power consumption		<4W	Input power consumption when auxiliary power supply is working
Protection characteristics		Input over-voltage, output over-voltage, input anti-reverse connection, output over-current and short-circuit protection, over-temperature self-recovery	
Dielectric strength	Input to output	3000VDC/1min 1mA max	
	Input to the outer casing	3000VDC/1min 1mA max	
Insulation resistance	Input to output	≥20MΩ	
	Input to the outer casing	≥20MΩ	
Battery compatibility	Radiation emission	Limit requirements for level 3 in 6.4.4 of GB/T 18655-2010.	
	Conducted emission	Limit requirements for level 3 in 6.2.3 of GB/T 18655-2010.	
	Radio frequency immunity (free field / antenna injection)	Level 3 requirements for Appendix C of ISO 11452-2-2004.	
	Radio frequency immunity (High current injection)	Level 3 requirements for Appendix E of ISO 11452-2-2004.	

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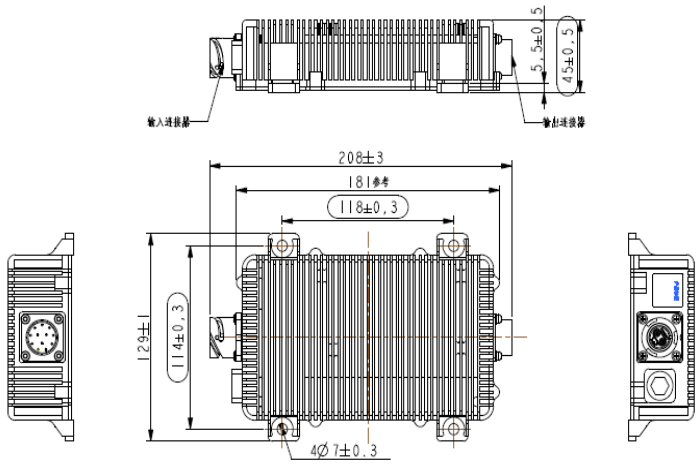
Model No.：AR-300-540S24-N-AR01
Product Name：300W DC/DC CONVERTER SYSTEM

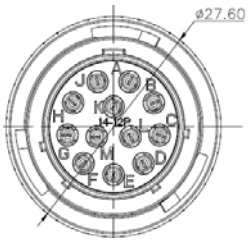
Structural parameters



Connector model

Position	Socket model	Function	Brand	Plug model
A	L52-STP083-12P-W	Control terminal	LeadWay	L52-STP063-12S-W
B	L52-BT6106-090X-C	High voltage input	LeadWay	L52-BT6105-09SX-C

Interface definition

Vendor	Model	Description		Remark
LeadWay	L52-STP063-12S-W	A	24+ low voltage output positive / 12.5A (2.5A)	
		B	24- low voltage output negative / 12.5A (2.5A)	
		C	24- low voltage output negative / 12.5A (2.5A)	
		D	24+ low voltage output positive / 12.5A (2.5A)	
		E	AUX1 (Auxiliary 1) / 20mA	
		F	DISABLE (disable output 24V) / 20mA	
		G	ALARM (hardwire alarm) 10mA	
		H	CAN (CAN communication low) / 100mA	
		J	CAN (CAN communication high) / 100mA	
		K	24- low voltage output negative / 12.5A (2.5A)	
		L	24+ low voltage output positive / 12.5A (2.5A)	
		M	AUX2 (Auxiliary 2) / 20mA	
LeadWay	L52-BT6105-09SX-C	A	High voltage input is positive	
		B	High voltage input is negative	

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Product Name	300W DC/DC CONVERTER
Model No.	AR-300W540S12
Power	300W
Input Voltage	200~800VDC
Output Voltage	12VDC
Output Current	25A
Efficiency	≥92%
Module Low Voltage (VDC)	\
Module Low Current (A)	\
Size (mm)	208x129x45mm
Cooling System	Natural air cooling
IP Rating	IP67
Scope	Various new energy vehicles
Hardware	Small size, light weight and stable performance
Firmware	Full digital software design, redundant protection function design

Features

- **Output power: 300W W**
- **Input voltage: 200-800VDC**
- **Output voltage: 12VDC**
- **Communication method: CAN**
- **Weight: ＜1.5KG**

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Main technical parameters

Item		Technical specifications	Remark
Rated output power		300W (Continuous operation at full load)	Peak power 360W
Input voltage range		200-800VDC	Rated input 540VDC
Output rated voltage		12±0.5VDC	Adjustable
Rated output current		25A	
Effectiveness		≥92%	Rated voltage full load
Output voltage ripple		≤500mVPK-PK	
No-loadpower consumption		＜10W	Input power consumption of high voltage input when not loaded
Sleep power		＜60MW	Power consumption of high voltage input during sleep state
Auxiliary source power consumption		＜4W	Input power consumption when auxiliary power supply is working
Protection characteristics		Input over-voltage, output over-voltage, input anti-reverse connection, output over-current and short-circuit protection, over-temperature self-recovery	
Dielectric strength	Input to output	3000VDC/1min 1mA max	
	Input to the outer casing	3000VDC/1min 1mA max	
Insulation resistance	Input to output	≥20MΩ	
	Input to the outer casing	≥20MΩ	
Battery compatibility	Radiation emission	GB/T 18655-2010 Class 3	
	Conducted emission	GB/T 18655-2010 Class 3	
	Static immunity	GB/T 19951-2005	Air discharge: 15KV, contact discharge 8KV
	Radiation immunity	GB/T 18655-2010 Class 3	

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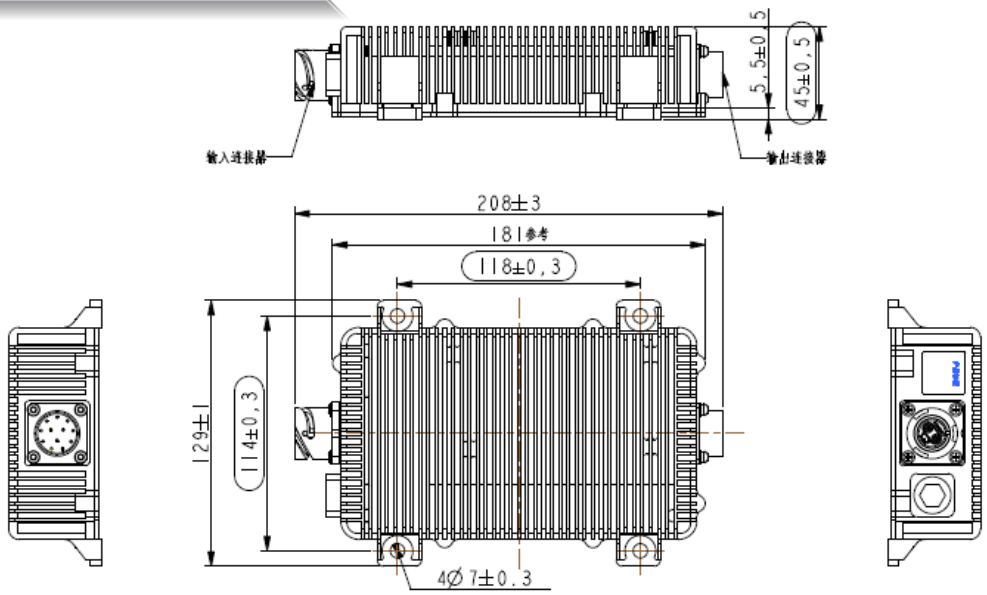
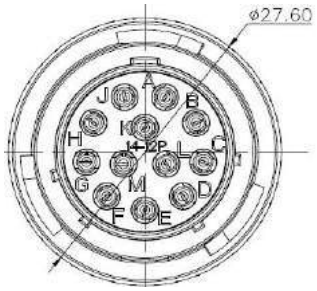
Structural parameters



Connector information:

Position	Socket model	Function	Brand	Plug model
A	L52-STP083-12P-W	Control terminal	LeadWay	L52-STP063-12S-W
B	L52-BT6106-090X-C	High voltage input	LeadWay	L52-BT6105-09SX-C

Interface definition:

Vendor	Model	Description		Remarks
LeadWay	L52-STP083-12P-W	A	12+ low voltage output positive /25A	
		B	12-low voltage output negative / 25A	
		C	12-low voltage output negative / 25A	
		D	12+ low voltage output positive /25A	
		E	AUX1 (Auxiliary 1) / 20mA	
		F	DISABLE (disable output 12V) / 20mA	
		G	ALARM (hardwire alarm) 10mA	
		H	CANL (CAN communication low) / 100mA	

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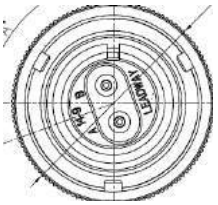
		J	CANH (CAN communication high) / 100mA	
		K	12-low voltage output negative / 25A	
		L	12+ low voltage output positive /25A	
		M	AUX2 (Auxiliary 2) / 20mA	
	L52-BT6106-090X-C	A	High voltage input is positive	
		B	High voltage input negative	

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Product Name	300W DC/DC CONVERTER
Model No.	AR-300-540S12-N-AR01
Power	300W
Input Voltage	200~800VDC
Output Voltage	12VDC
Output Current	25A
Efficiency	≥92%
Module Low Voltage (VDC)	\
Module Low Current (A)	\
Size (mm)	208x129x45mm
Cooling System	Natural air cooling
IP Rating	IP67
Scope	Various new energy vehicles
Hardware	Small size, light weight and stable performance
Firmware	Full digital software design, redundant protection function design

Features

- **Output power: 300W W**
- **Input voltage: 200-800VDC**
- **Output voltage: 12VDC**
- **Communication method: CAN**
- **Weight: ＜1.5KG**

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Main technical parameters

Item		Technical specifications	Remark
Rated output power		300KW (Continuous operation at full load)	Peak power 360W
Input voltage range		200-800VDC	Rated input 540VDC
Output rated voltage		12±0.5VDC	Adjustable
Rated output current		25A	
Effectiveness		≥92%	Rated voltage full load
Output voltage ripple		≤500mVPK-PK	
No-loadpower consumption		＜10W	Input power consumption of high voltage input when not loaded
Sleep power		＜60MW	Power consumption of high voltage input during sleep state
Auxiliary source power consumption		＜4W	Input power consumption when auxiliary power supply is working
Protection characteristics		Input over-voltage, output over-voltage, input anti-reverse connection, output over-current and short-circuit protection, over-temperature self-recovery	
Dielectric strength	Input to output	3000VDC/1min 1mA max	
	Input to the outer casing	3000VDC/1min 1mA max	
Insulation resistance	Input to output	≥20MΩ	
	Input to the outer casing	≥20MΩ	
Battery compatibility	Radiation emission	GB/T 18655-2010 Class 3	
	Conducted emission	GB/T 18655-2010 Class 3	
	Static immunity	GB/T 19951-2005	Air discharge: 15KV, contact discharge 8KV
	Radiation immunity	GB/T 18655-2010 Class 3	

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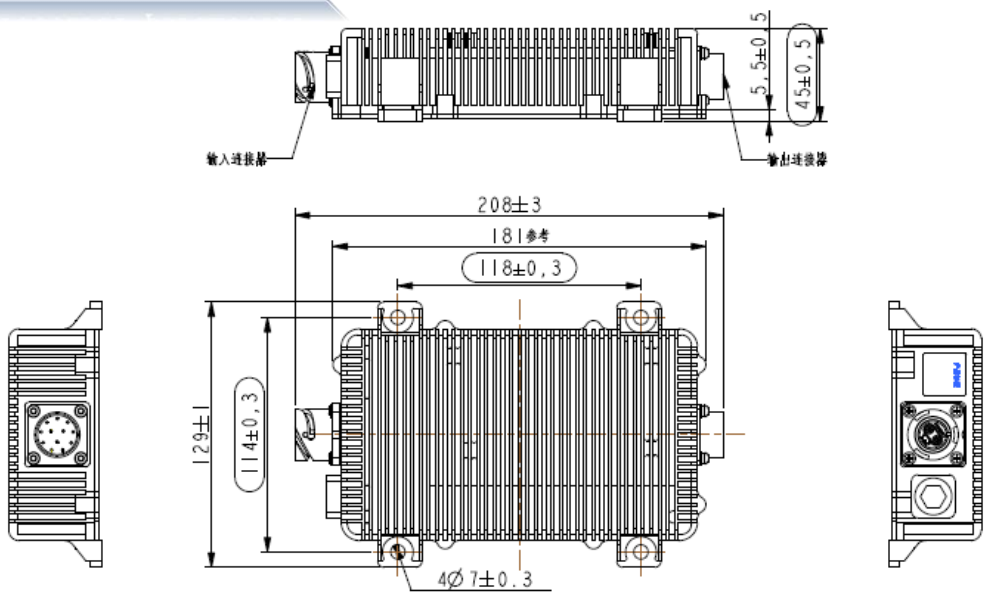
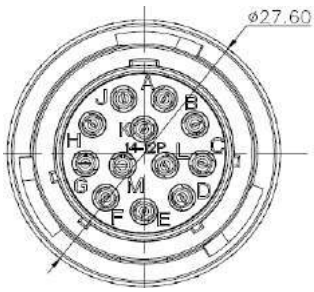
Structural parameters



Connector information:

Position	Socket model	Function	Brand	Plug model
A	L52-STP083-12P-W	Control terminal	LeadWay	L52-STP063-12S-W
B	L52-BT6106-090X-C	High voltage input	LeadWay	L52-BT6105-09SX-C

Interface definition:

Vendor	Model	Description		Remarks
LeadWay	L52-STP083-12P-W	A	12+ low voltage output positive /25A	
		B	12-low voltage output negative / 25A	
		C	12-low voltage output negative / 25A	
		D	12+ low voltage output positive /25A	
		E	AUX1 (Auxiliary 1) / 20mA	
		F	DISABLE (disable output 12V) / 20mA	
		G	ALARM (hardwire alarm) 10mA	
		H	CANL (CAN communication low) / 100mA	

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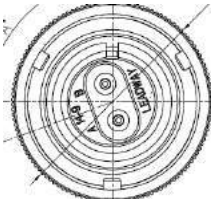
		J	CANH (CAN communication high) / 100mA	
		K	12-low voltage output negative / 25A	
		L	12+ low voltage output positive /25A	
		M	AUX2 (Auxiliary 2) / 20mA	
	L52-BT6106-090X-C	A	High voltage input is positive	
		B	High voltage input negative	

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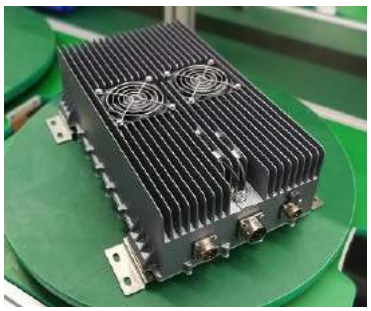
Model No.：AR6K6-220D380/54014/14/27-A-AR01

Product Name：6.6KW ON BOARD CHARGER (AC/DC)



6.6KW On Board Charger Fan cooling system

6.6KW On Board Charger Module Only

★ **Features**

1 Output Power：6.6KW
2 Input Voltage：90~264VAC
3 Output Voltage：250~450VDC/420~650VDC
4 Dimensions：472x244x126mm
5 Cooling System：Fan
6 Protection Level：IP67 (except fan)
7 Communication Method：CAN
8 Enclosure: Aluminum alloy made
9 Software: Digital software design

Applications

Electric Commercial Vihecles

Electric Commercial Vihecles

Specification

Description		Technical specifications	Remark
Environmental characteristics	Operating temperature	-40~65℃	Long-time working
	Vibration/noise	Meet the QC/T 895-2011 standard	
	Salt spray experiment	Meet the QB/T 2423.17-2008 standard	
Output Power		6.6KW max	
Input voltage range		90~264VAC	
Output voltage range		250-450VDC/420~650VDC	
Voltage accuracy		±1%	
Output maximum current		20A/14A	
Current accuracy		±3%	Half load or more
Efficiency		≥93%	Rated voltage Full load
Low voltage output		13.8VDC/7Amax or 27VDC/4Amax	Customizable
Other protection features		Input over-voltage, output over-voltage, over-temperature protection, over-current protection, output short-circuit protection, reverse battery protection, communication fault protection, internal fault protection	
Over temperature protection		When the temperature reaches 85 °C, the output power is reduced by half. The temperature is <80 °C in 10 minutes, and the full load is automatically restored. After 10 minutes, the temperature is >80 °C, then it is turned off. When the temperature is >90 °C, it will be shut down directly.。	
Dielectric strength	Output to the outer casing	2000VDC /60S 10mA Max	
	Input to the outer casing	1500VAC /60S 10mA Max	
	Input to output	3000VAC /60S 10mA Max	
Insulation resistance	Input to output	≥20MΩ	
	Input to the outer casing	≥20MΩ	
Electromagnetic compatibility	Radiation emission	GBT 18387：2008 · EN 55022 CLassB	
	Conducted emission	GBT 18387：2008 · EN 55022 CLassB	
	Radiation immunity	GBT 18387：2008 · EN 55022 CLassB	

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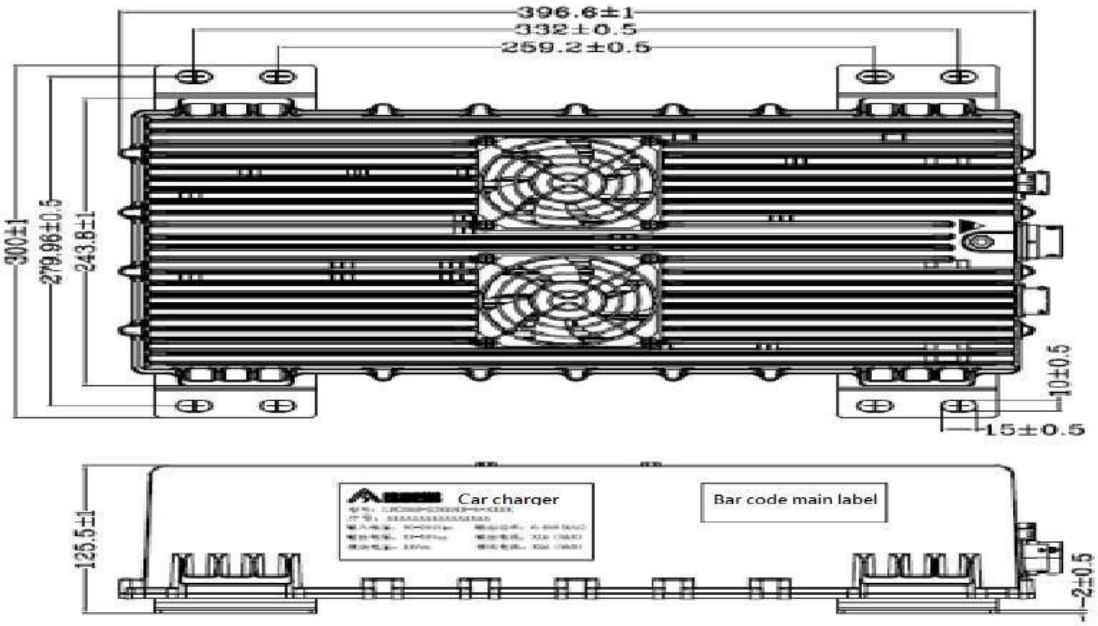
Model No.：AR6K6-220D380/54014/14/27-A-XX
Product Name：6.6KW On Board Charger system

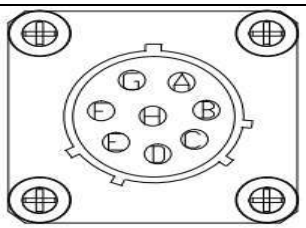
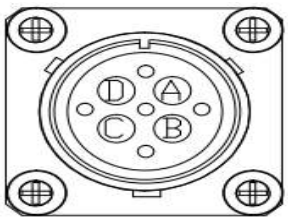
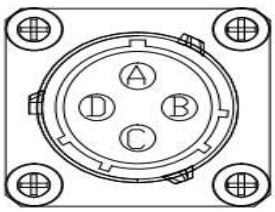
Structural parameters Connector information (can be customized)



Connector information (can be customized)

Position	Socket model	Function	Brand	Plug model
A	RT00164PN03	AC input	Amphenol	RT06164SNHEC03
B	RT00144PN03	DC output	Amphenol	RT06144SNHEC03
C	RT00128PN03	Signal socket	Amphenol	RT06128SNHEC03

Interface definition

Vendor	Model	Description		Remark
Amphenol	RT00128PN03	A	CAN-H	
		B	Output 13.8V+	
		C	Output 13.8V-	
		D	NC	
		E	NC(Aging, internal use)	
		F	NC	
		G	CANL	
		H	CAN Shielding ground	
Amphenol	RT00164PN03	A	L (Fire line)	
		B	N (Neutral line)	
		C	PE(Protected area)	
		D	NC	
Amphenol	RT00144PN03	A	Output positive	
		B	Interlock	
		C	Output negative	
		D	Interlock	

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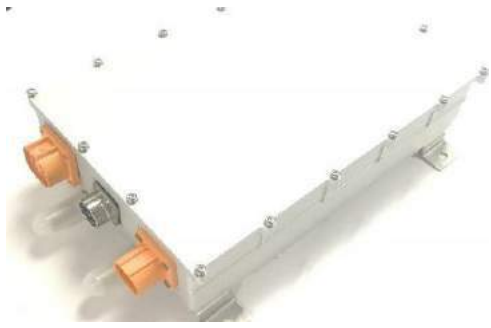
Model No.：AR6K6-220S380L

Product Name：6.6KW On Board Charger Liquid Cooled System



6.6KW On Board Charger Liquid Cooled System

★ Features

1. Output Power：6.6KW
2. Input Voltage：90~264VAC
3. Output Voltage：200~450VDC
4. Dimensions：500x300x200mm
5. Cooling System：Liquid (water nozzie ϕ20)
6. IP Rating：IP67
7. Communication：CAN
8. Enclosure: Aluminum alloy made
9. Software: Digital software design

Applications

Electric Commercial Vihecles

Electric Commercial Vihecles

Specification

Description		Technical specifications	Remark
Environmental characteristics	Operating temperature	-40~85℃	Long-time working
	Vibration/noise	Meet the QC/T 895-2011 standard	
	Salt spray experiment	Meet the QB/T 2423.17-2008 standard	
Output Power		6.6KW max	
Input voltage range		90~264VAC	
Output voltage range		200-450VDC	
Voltage accuracy		±1%	
Output maximum current		20A	
Current accuracy		±3%	Half load or more
Efficiency		≥95%	Rated voltage Full load
Low voltage (VDC)		A:12Vdc/200mAmax	
Other protection features		Input over-voltage, output over-voltage, over-temperature protection, over-current protection, output short-circuit protection, reverse battery protection, communication fault protection, internal fault protection	
Dielectric strength	Output to the outer casing	2000Vdc /60S 10mA Max	
	Input to the outer casing	1500Vac /60S 10mA Max	
	Input to output	3000Vac /60S 10mA Max	
Insulation resistance	Input to output	≥20MΩ	
	Input to the outer casing	≥20MΩ	
Electromagnetic compatibility	Radiation emission	GBT 18387：2008，EN 55022 CLassB	
	Conducted emission	GBT 18387：2008，EN 55022 CLassB	
	Radiation immunity	GBT 18387：2008，EN 55022 CLassB	
Weight	Net weight / Gross weight	8.5KG / 9.0KG	

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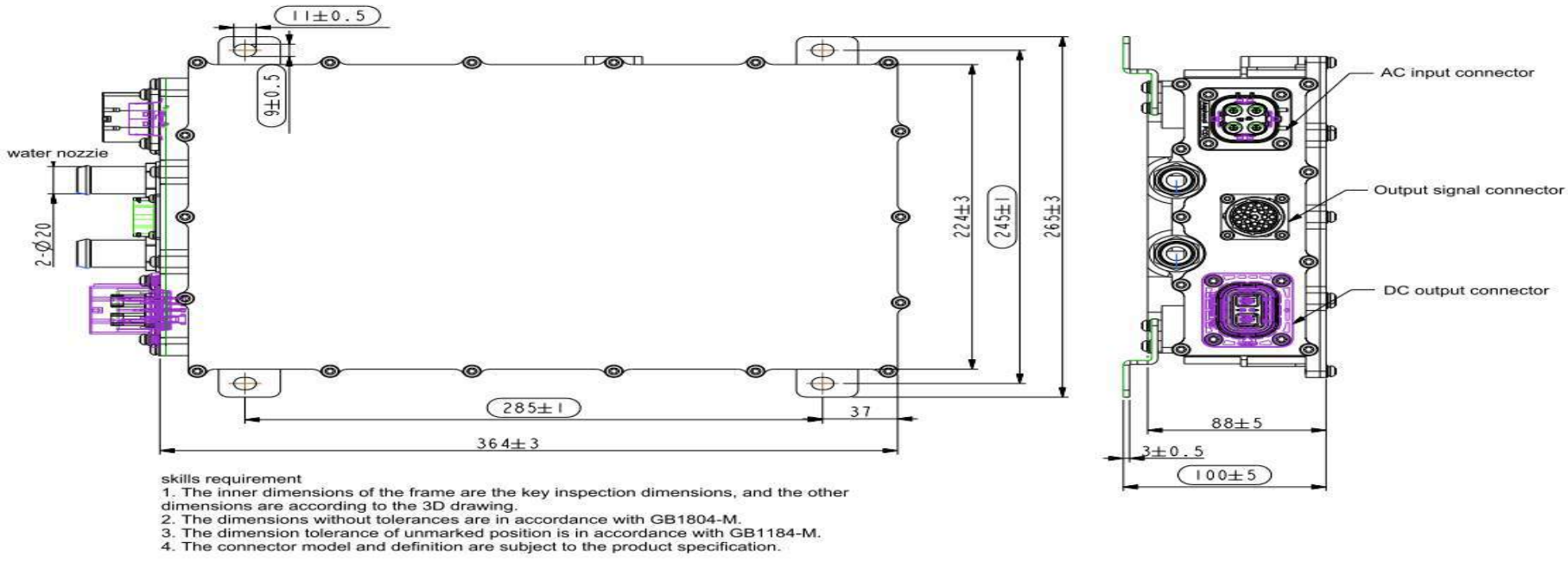
Model No.：AR6K6-220S380L

Product Name：6.6KW On Board Charger Liquid Cooled System

Structural parameters

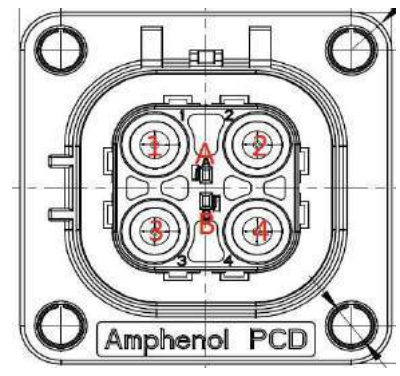
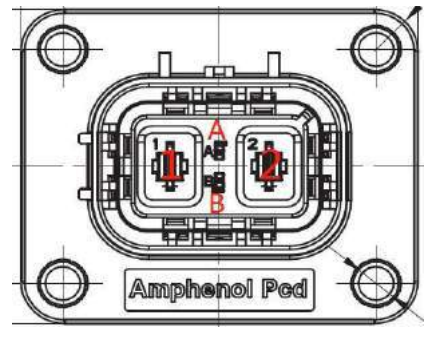


Electrical Interface

Connector Table（customizable）

Item	Position	Receptacle model no.	Pinout definition	Maker	Plug model no.
1	A	HVSL364024A1	AC input	Amphenol	HVSL364064A106I
2	B	HVSL630022A1	DC output	Amphenol	HVSL630062A
3	C	RT001823PN03	Control terminal	Amphenol	RT061823PNHEC03

Interface definition

System Load definition	Pin number	Pinout definition	Description	Connector picture
AC input (HVSL364024A1)	1	FireWire L1	L1 (Single FireWire Fixed Input)	
	2	FireWire L2	L2 (reserved, 11KW enabled)	
	3	FireWire L3	L3 (reserved, 11KW enabled)	
	4	NC	Neutral / midline	
	A	NC	NC	
	B	NC	NC	
Casing	N	Ground	Product housing identification	Machine housing terminal
DC output (HVSL630022A1)	1	Positive	Output positive	
	2	Negative	Output negative	
	A	Interlock 1	Connection Interlock 5	
	B	Interlock 2	Connection Interlock 6	
	A	CAN-L	CAN low	
	B	VCC+	Normal input is positive	
	C	VCU_EN	Hard-wired wake-up OBC, enable signal (high (Active level)	
	D	CC	CC	
	E	CP	CP	

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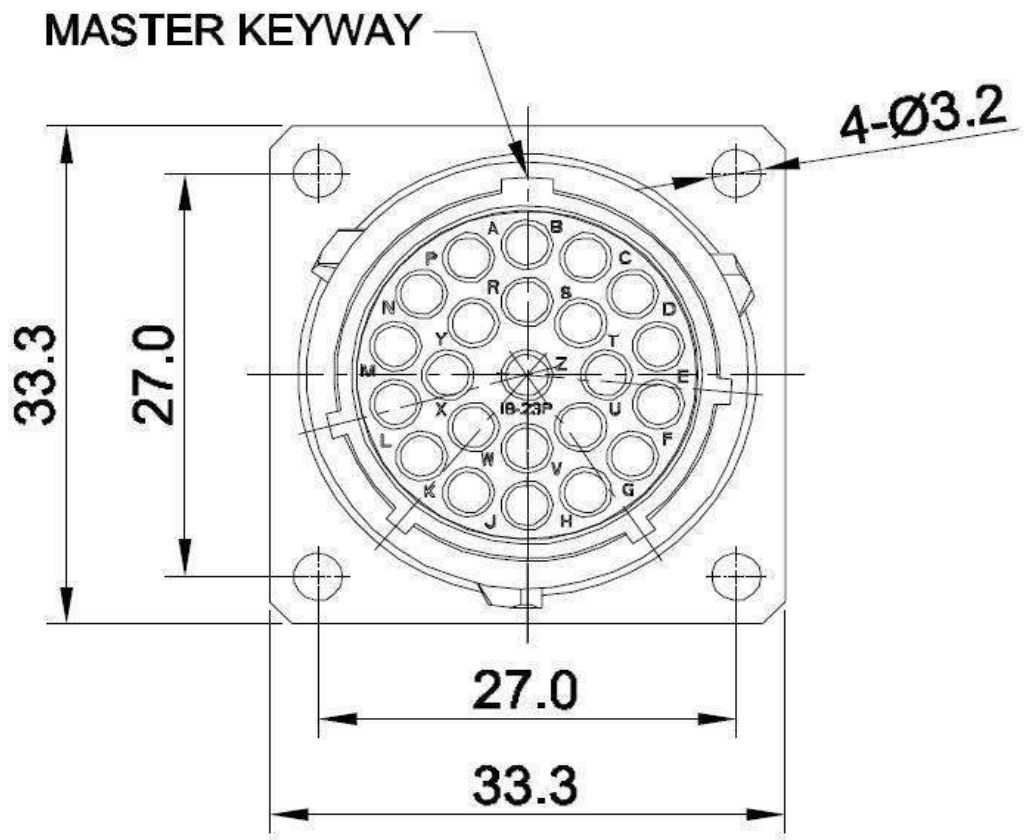
Control terminal (RT001823PN03)

F	WAKE_UP	VCU / BMS wake-up signal (100mA) Galvanically isolated from input
G	NTC1-	Temperature sensor 1 negative
H	NTC1+	Temperature sensor 1 positive
J	NTC2-	Temperature sensor 2 negative
K	NTC2+	Temperature sensor 2 positive
L	CAN1-H	CAN high
M	LOCK+	Electronic lock +
N	LOCK-	Electronic locks-
P	LOCK feedback	Electronic locks
R	CC_OUT	CC status output, low level enable
S	Interlock 5	Interlock signal detection 1
T	Interlock 6	Interlock signal detection 2
U	NC	NC
V	NC	NC
W	GND	GND
X	NC	NC
Y	NC	NC
Z	NC	NC



Label

Product Name	6.6KW On Board Charger Liquid Cooled System		
Product Part No.	e25.AR6K6-220S380L		
Product Model	AR6K6-220S380L		
Serial Number	2020XXXXXXXX		
Input Voltage	90~264v	Output Voltage	200~450VDC
Output Current	20A	Output power	6600W
Supplier	ANNREN TECHNOLOGIES CO., LTD.		

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SAE J1772 6.6KW 380V ON BOARD CHARGER

Model No.: AR-6K6-220S380A-SAE

1. Features

Product Name	6.6KW 380V ON BOARD CHARGER
Model No.	AR-6K6-220S380A-SAE
Standard	SAE J1772
Power	6.6KW
Input Voltage	90~264VAC
Output Voltage	200-450VDC
Output Current	20A
Efficiency	≥93%
Module Low Voltage (VDC)	13.8VDC
Module Low Current (A)	200mAmax
Can Bus Speed	500 kb/s
Size (mm)	380x244x126mm
Cooling System	Fan Cooling
IP Rating	IP67 (Fan is excluded)
Scope	Various new energy vehicles
Hardware	Small size, light weight and stable performance
Firmware	Full digital software design, redundant protection function design

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2. Specification

Item		Technical specifications	Remarks
Environmental characteristics	Operating temperature	-40~65℃	Long-time working
	Vibration/noise	Meet SAE J1772 2010 standard	
	Salt spray experiment	Meet SAE J1772 2010 standard	
Output Power		6.6KW max	
Input voltage range		90~264VAC	
Output voltage range		200-450 VDC	
Voltage accuracy		±1%	
Output maximum current		20A	
Current accuracy		±3%	Half load or more
Efficiency		≥93%	Rated voltage Full load
Low voltage wake-up signal		13.8VDC/200mAmax	Customizable
Other protection features		Input over-voltage, output over-voltage, over-temperature protection, over-current protection, output short-circuit protection, reverse battery protection, communication fault protection, internal fault protection	
Over temperature protection		When the temperature reaches 85 °C, the output power is reduced by half. The temperature is <80 °C in 10 minutes, and the full load is automatically restored. After 10 minutes, the temperature is >80 °C, then it is turned off. When the temperature is >90 °C, it will be shut down directly.	
Dielectric strength	Output to the outer casing	2000VDC /60S 10mA Max	
	Input to the outer casing	1500VAC /60S 10mA Max	
	Input to output	3000VAC /60S 10mA Max	
Insulation	Input to output	≥20MΩ	
	Input to the	≥20MΩ	

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resistance	outer casing		
Electromagnetic compatibility	Radiation emission	GBT 18387：2008，EN 55022 Class B	
	Conducted emission	GBT 18387：2008，EN 55022 Class B	
	Radiation immunity	GBT 18387：2008，EN 55022 Class B	

3. Structural Parameters

Structural information (installation brackets and plug-ins can be customized)

Position	Receptacle model no.	Pin out definition	Maker	Plug model no.
A	C10518N1-04-1-G001	AC input	Jonhon	C10518N1-04-1-2-G001
B	RT00144PN03	DC output	Amphenol	RT06144SNHEC03
C	RT00128PN03	Signal socket	Amphenol	RT06128SNHEC03

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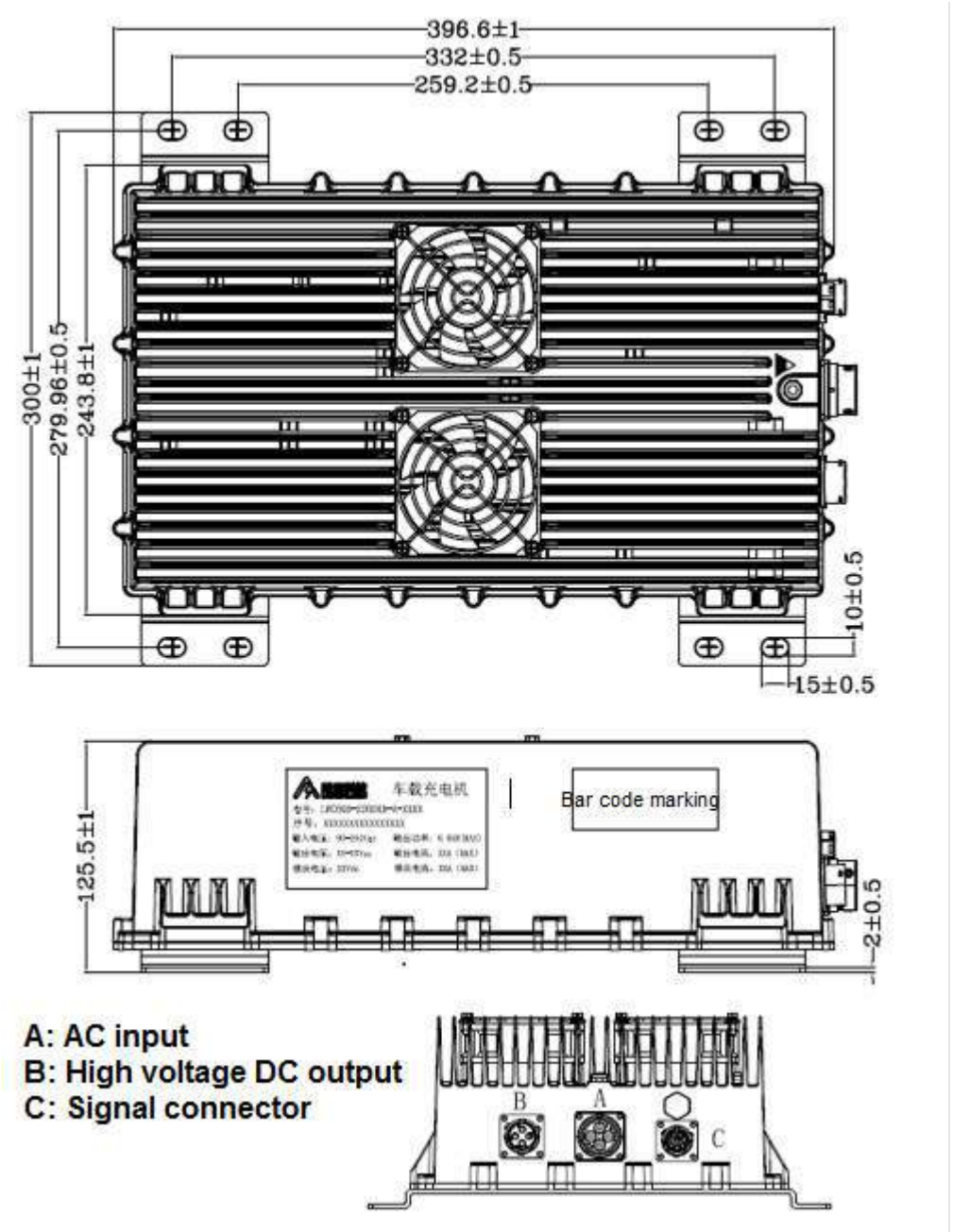
Dimension Information:



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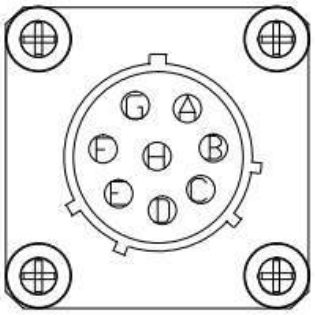
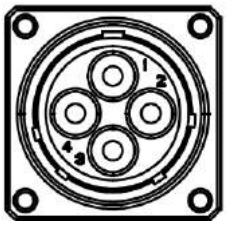
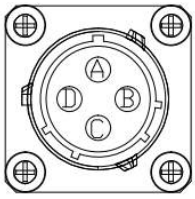
Pinout definition

Vendor	Model	Description		Remarks
Amphenol	RT00128PN03	A	CAN-H	
		B	Proximity Detection (CC)	
		C	Control pilot (CP)	
		D	Constant battery power (12V Input)	
		E	OBC-EN (Wake up signal)	
		F	J1772 mode enable (High level signal)	
		G	CANL	
		H	GND	
Jonhon	C10518N1-04-1-G001	1	L (Fire line)	
		2	N (Neutral line)	
		3	PE (Protected area)	
		4	NC	
Amphenol	RT00144PN03	A	Output positive	
		B	Interlock 1 (Reserved function)	
		C	Output negative	
		D	Interlock 2 (Reserved function)	

4. Label

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Model No.：AR-11K-380S/540-W-AR01

Product Name：11KW ON BOARD CHARGER(AC/DC)

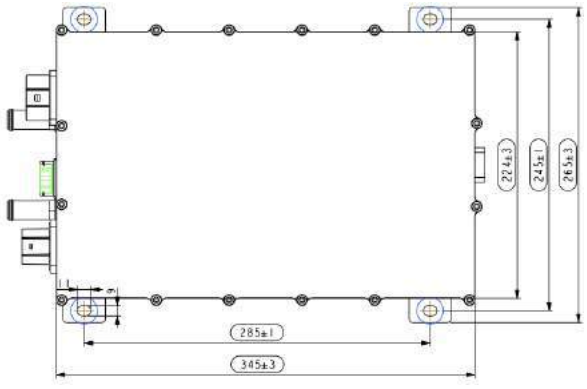
Features

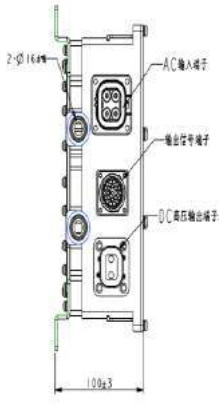
1 Output Power：11KW
2 Input Voltage：304~456Vac
3 Output Voltage：420~710VDC
4 Dimensions：279x172x58mm
5 Cooling System：Water
6 Protection Level：IP67
7 Communication Method：CAN
8 Small size, light weight and stable performance
9 Full digital software design, redundant protection

The main technical parameters

Description		Technical specifications	Remark
Operating temperature		-40~85℃	Working Long Time
Output power		11KW	
Maximum input current		25A	
Input voltage range		304~456VAC (line-line voltage · three phase four wire system)	
Output voltage range		420~710VDC	
Activation method		CP/CC/Hard line enable	
Low voltage input specification		13.8VDC(4Amax)/27VCD(2Amax)	External low voltage supplies power to OBC.
Low voltage input power		30W	
Voltage accuracy		±1%	
Maximum output current		23A	
Current accuracy		±3%	Half load or more
Efficiency		≥95%	Rated voltage Full load
Output time impact		The rise time of the output voltage of the car charger should be less than 300ms, and the overshoot should be less than 10%. After receiving the shutdown command, the current drops below 10% within 300ms and drops to 0A within 500ms.	
Other protection features		Input over-voltage, output over-voltage, over-temperature protection, over-current protection, output short-circuit protection, reverse battery protection, communication fault protection, internal fault protection.	
Over temperature protection		When the temperature reaches 85 °C, the output power is reduced by half. The temperature is <80 °C in 10 minutes, and the full load is automatically restored. After 10 minutes, the temperature is >80 °C, then it is turned off. When the temperature is >90 °C, it will be shut down directly.	
Insulation strength	Output to the outer casing	2000VDC /60S 10mA Max	
	Input to the outer casing	1500VAC /60S 10mA Max	
	Input to output	3000VAC /60S 10mA Max	
Insulation resistance	Input to output	≥20MΩ	
	Input to the outer casing	≥20MΩ	

Structural parameters





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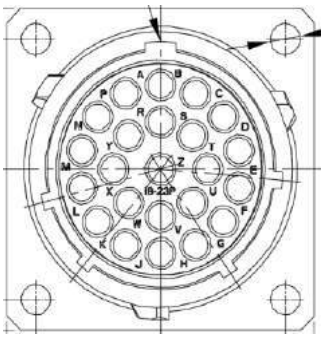
Model No.：AR-11K-380S/540-W-AR01

Product Name：11KW ON BOARD CHARGER(AC/DC)

Connector model

Position	Socket model	Function	Brand	Plug model
A	HVC4P36MV304	AC input	Amphenol	HVC4P36FS304
B	HVC2P63MV306	DC output	Amphenol	HVC2P63FS306
C	RT001823PN03	Control terminal	Amphenol	RT061823SNHEC03

Interface definition

Vendor	Model	Description			Remark
Amphenol	AC input (HVC4P36MV304)	1	L1	Live Wire 1	
		2	L2	Live Wire 2	
		3	L3	Live Wire 3	
		4	N	Naught Wire	
Amphenol	DC output (HVC2P63MV306)	1	VOUT+	Output positive	
		2	VOUT-	Output negative	
Amphenol	Control terminal (RT001823PN03)	A	NTC1-	Temperature sensor 1 negative	
		B	NTC1+	Temperature sensor 1 positive	
		C	VCC+	Normal input positive	
		D	VCC-	Normal input negative	
		E	CAHN1	CAN1 High	
		F	HVIL+	High Voltage Inter-lock positive	
		G	CANL1	CAN1 Low	
		H	HVIL-	High Voltage Inter-lock negative	
		J	NTC2-	Temperature sensor 1 negative	
		K	NTC2+	Temperature sensor 1 positive	
		L	WAKE_UP	Output wake-up signal	
		M	CAN-G	CAN shielding ground	
		N	LOCK FB2	Electronic lock feedback 2	
		P			
		R	CC_OUT	CC status output / low level enable signal	
		S	LOCK+	Electronic lock power supply positive	
		T	LOCK-	Electronic lock power supply negative	
		U	LOCK FB1	Electronic lock feedback 1	
		V	CC		
		W	CP		
		X	VCU_EN	Hardwire wake-up signal	

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Model No.：AR11K-380S14M

Product Name：11KW On Board Charger Module

Date	Mar. 6, 2020	Version	V01	Remark	1. Added the voltage range 9-32V for VCC 2. Added Vdc output 12V 200AMax wakeup connector

★ Features

1 Output Power：11KW
2 Input Voltage：
Three-phase 304 ~ 456VAC
Single phase 220 ± 15% VAC
3 Output Voltage：250~450VDC
4 Dimensions：300x200x60mm
5 Communication：CAN
6 Software: Digital software design
7 Weight：≦6.5KG

11KW On Board Charger Module

Applications

Electric Commercial Vihecles

Electric Commercial Vihecles

Specification

Description		Parameters	Remark
Environmental characteristics	Operating temperature	-40~65℃	Long-time working
	Vibration/noise	Meet the QC/T 895-2011 standard	
	Salt spray experiment	Meet the QB/T 2423.17-2008 standard	
Output Power		Three-phase 11KW / single-phase 3.3KW or 6.6KW	
Input voltage range		Three-phase 304 ~ 456VAC (line-line voltage, three-phase four-wire) Single-phase 176 ~ 264VAC	
Output voltage range		250~450VDC	
Low voltage (VDC)		13.8VDC (5Amax)	
Activation method		CP / CC / hard wire	
Voltage accuracy		±1%	
Output maximum current		Three-phase: 32A, 3.3KW single phase: 10A, 6.6KW single phase: 20A	
Voltage ripple coefficient		≤±1%	
Current accuracy		±3%	Half load or more
Efficiency		≥95%	Rated voltage Full load
Parallel function		Parallel networking through internal CAN communication, supporting up to 8 modules in parallel.	
Output response time		The rise time of the on-board charger output voltage should be less than 300ms, and the overshoot should be less than 10%. After receiving the shutdown command, the current drops below 10% in 300ms, and drops to 0A in 500ms.	
Other protection features		Input over voltage, input under voltage, output over voltage, output under voltage, short circuit, output over current, over temperature, reverse connection protection, potential equalization and ground protection, power failure protection	

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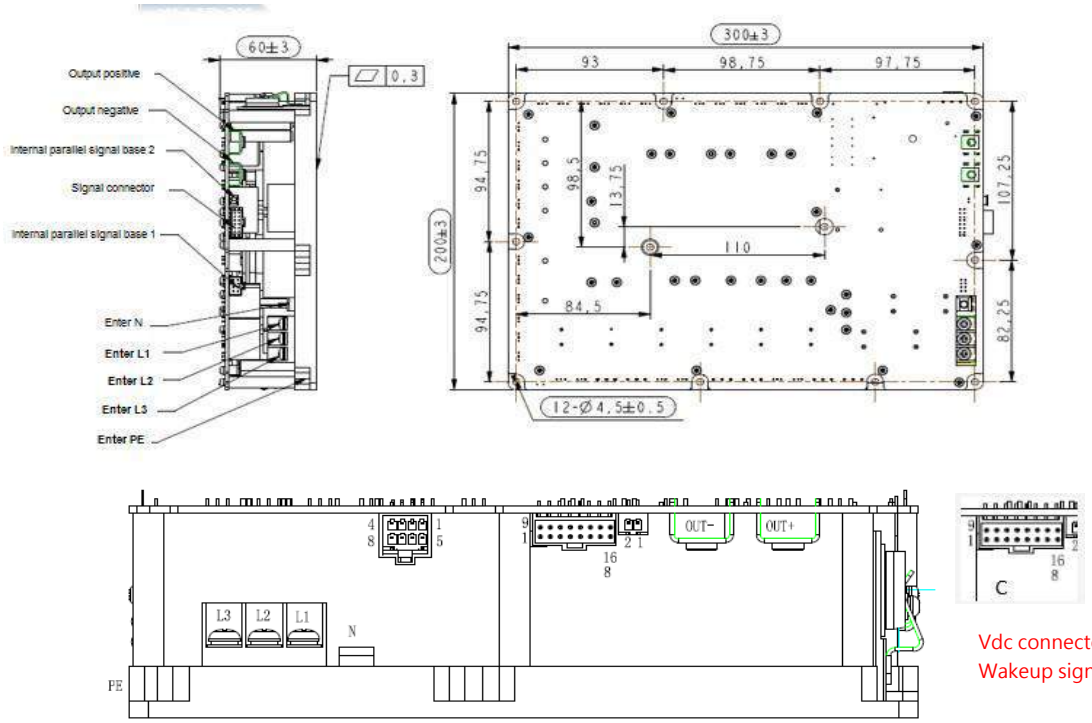
Model No.：AR11K-380S14M

Product Name：11KW On Board Charger Module

Over temperature protection		When the temperature reaches 85 ° C, the output power is halved, and the temperature is lower than 80 ° C within 10 minutes, and the load is automatically restored. After 10 minutes, the temperature is higher than 80 ° C, then the power is turned off. When the temperature is higher than 90 ° C, the power is turned off directly.	
Dielectric strength	Output to outer casing	2000VDC /60S 10mA Max	
	Input to outer casing	1500VAC /60S 10mA Max	
	Input to output	3000VAC /60S 10mA Max	
Insulation resistance	Input to output	≥20MΩ	
	Input to outer casing	≥20MΩ	
Electromagnetic compatibility	Radiation emission	GBT 18387：2008 · EN 55022 CLassB	
	Conducted emission	GBT 18387：2008 · EN 55022 CLassB	
	Radiation immunity	GBT 18387：2008 · EN 55022 CLassB	

Structural parameters



Vdc connector: 12V 200Amax
Wakeup signal connector

Connector information

Item	Receptacle model	Funtion	Maker	Plug model
A	M4 stud	AC input		M4 screw OT terminal (Outer diameter is not greater than 7mm)
B	M4 stud	DC output		M4 screw OT terminal (Outer diameter is not greater than 9mm)
C	105314-1216	Signal control	Molex	Plug: 105308-1216 Pin: 105300-2200
D	A2547WRB-2*4P	Internal parallel signal base 1	CJT	Plug: A2547HJ-2 * 4P Pin: A2547-GP
E	S2B-XH-A	Internal parallel signal base 2	JST	Plug: XHP-2 Pin: SXH-001T-P0.6N

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Model No.：AR11K-380S14M

Product Name：11KW On Board Charger Module

Pinout definition

System Load definition	Pin number	Pinout definition	Description
AC input (M5 stud)	1	L1	Firewire 1, 3PIN terminal, 16A MAX
	2	L2	Firewire 1, 3PIN terminal, 16A MAX
	3	L3	Firewire 1, 3PIN terminal, 16A MAX
	4	N	Neutral line, metal terminal block, 32A MAX (Need to check carefully to prevent wrong connection.)
	5	PE	Protective ground point, grounded through the chassis.
DC output (M4 stud)	1	VOUT+	MAX 40A
	2	VOUT-	MAX 40A
Control terminal Receptacle: 105314-1216 Plug: 105308-1216 Pin:	1	VCC-	Normal input negative (2A) Voltage range: 9-32V
	2	VCU_EN	Hard-wire wake-up and enable signals
	3	LOCK+	Electronic lock power supply +
	4	LOCK-	Electronic lock power supply-
	5	LOCK FB1	Electronic lock lock feedback 1
	6	CANH	CAN1 high
	7	CANL	CAN1 low
	8	WAKE_UP	Output wake-up signal
	9	VCC+	Normal input is positive Voltage range: 9-32V
	10	CC_OUT	CC status output, low level enable
	11	NTC1-	Temperature sensor 1 negative
	12	NTC1+	Temperature sensor 1 positive
	13	NTC2-	Temperature sensor 2 negative
	14	NTC2+	Temperature sensor 2 positive
	15	CC	CC
	16	CP	CP
Internal parallel signal base (4PIN)	1	CANL2	Internal parallel CAN2 low
	2	CANH2	Internal parallel CAN2 high
	3	TB_R	Termination resistor selection, the resistance is effective when shorted to pin 2
	4	EN2	Internal parallel enable (reserved)
	5	NC	NC
	6	NC	NC
	7	NC	NC
	8	NC	NC
Internal parallel signal base 2 Socket: S2B-XH-A	1	EN_L+	Host selection +
	2	EN_L-	Host selection-

Label

Product Name	11KW On Board Charger Module		
Product Part No.	e25.AR11K-380S14M		
Product Model	AR11K-380S14M		
Serial Number	2020XXXXXXXX		
Input Voltage	Three-phase 304 ~ 456VAC Single phase 220 ± 15% VAC	Output Voltage	250~450VDC
Output Current	32A	Output power	11000W
Supplier	ANNREN TECHNOLOGIES CO., LTD.		

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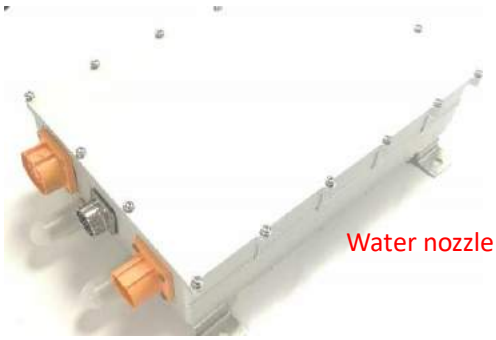
11KW ON BOARD CHARGER

Model No.: AR11K3S-400580L



Features

Product Name	11KW ON BOARD CHARGER
Model No.	AR11K3S-400580L
Standard	GB/T / IEC
Power	11KW
Input Voltage	Three-phase 304~456VAC/single phase 90~264VAC
Output Voltage	400~750VDC
Output Current	Three phase: 32A, 6.6KW single phase: 20A
Efficiency	≥95%
Module Low Voltage (VDC)	13.8VDC（4Amax）
Size (mm)	345x224x100mm
Cooling System	Liquid Cool
IP Rating	IP67
Scope	Various new energy vehicles
Hardware	Small size, light weight and stable performance
Firmware	Full digital software design, redundant protection function design
Weight	Net: 10KG Gross: 12KG

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This charger has several advantages, including:

1. The volume and weight of automotive grade products: down more than 20%.
2. Real-time monitoring: real-time control and function control are performed on the hardware by a separate “core”

 It is easy to test the international mainstream EMI standards.

 The product design conforms to the international mainstream safety and standard.

 It can be compatible with the following different types of AC charging piles, while allowing continuous charging in the case of grid disconnection

3. Meet the new national standard GBT18487.1-2015.
4. Reserve hardware interfaces for interconnection between the Internet of Vehicles, mobile Internet and car chargers.
5. Retain the hardware interface for the secondary development of ASIL functional safety in the future.
6. Compatible with charging power expansion 22KW, 40KW, 80KW, etc.

Specification

Specification			Remark
Environmental characteristics	Operating temperature	-40~85℃	long-time working
	Vibration/noise	Meet the QC/T 895-2011 standard	
	Salt spray experiment	Meet the QB/T 2423.17-2008 standard	
Output Power		Three phase 11KW / single phase 6.6KW	
Input voltage range		Three-phase 304~456VAC (line-to-line voltage, three-phase four-wire) Single phase 90~264VAC	
Output voltage range		400~750VDC	
Low voltage input auxiliary source		13.8VDC（4Amax）	
Activation method		CP/CC/hard wire	
Voltage accuracy		±1%	
Output maximum current		11KW Three phase: 32A, 6.6KW single phase: 20A	
Voltage ripple factor		≤±1%	
Current accuracy		±3%	≧Half load
Effectiveness		≥95%	Rated voltage Full load

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Output response time		The rise time of the output voltage of the car charger should be less than 300ms, and the overshoot should be less than 10%. After receiving the shutdown command, the current drops below 10% within 300ms and drops to 0A within 500ms.	
Other protection features		Input overvoltage, input undervoltage, output overvoltage, output undervoltage, short circuit, output overcurrent overtemperature, reverse connection protection potential equalization and ground protection, power failure protection.	
Over temperature protection		When the temperature reaches 85 °C, the output power is reduced by half. The temperature is <80 °C in 10 minutes, and the full load is automatically restored. After 10 minutes, the temperature is >80 °C, then it is turned off. When the temperature is >90 °C, it will be shut down directly.	
Dielectric strength	Input to the outer casing	2000VDC /60S 10mA Max	
	Input to output	1500VAC /60S 10mA Max	
	Input to output	3000VAC /60S 10mA Max	
Insulation resistance	Input to the outer casing	≥20MΩ	
	Input to the outer casing	≥20MΩ	
EMC	Electromagnetic immunity	GB/18487.3-2001 Class B	Cooperate with the whole vehicle
	Electromagnetic disturbance	GB/18487.3-2001 Class B	Cooperate with the whole vehicle

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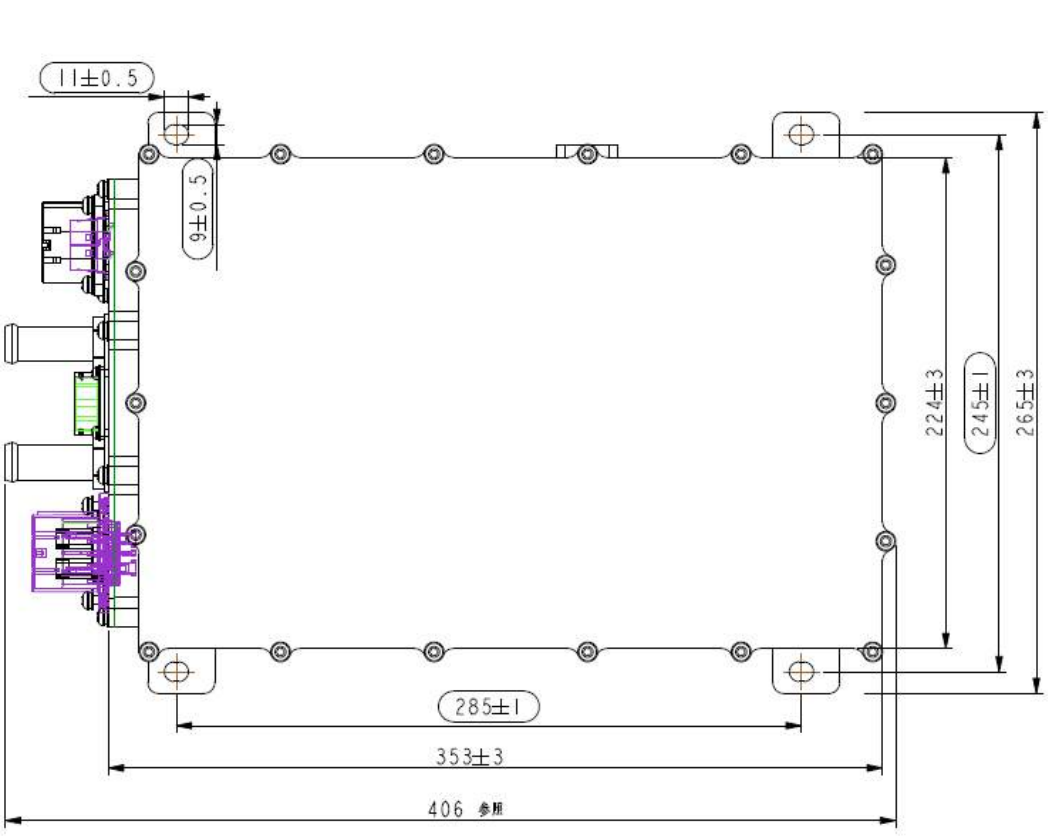
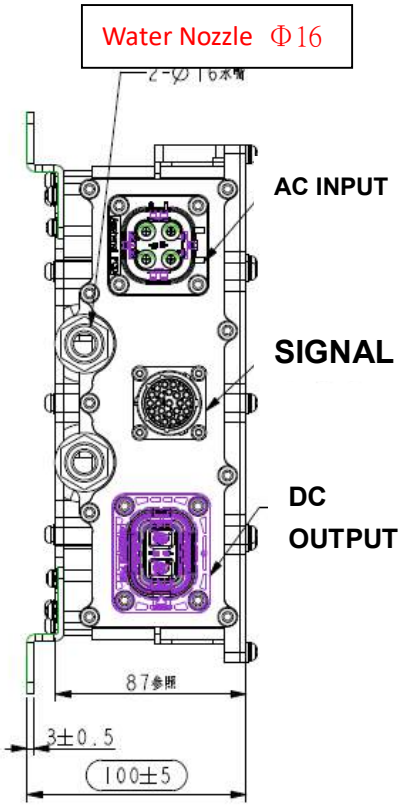
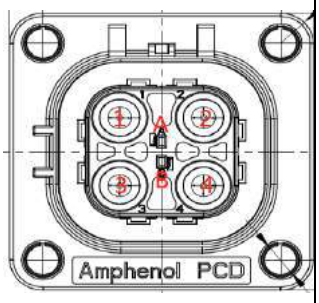
Structural parameters

Pinout	Receptacle Model no.	Function	Maker	Plug Model No.	Terminal Model No.	Stopper Model No.
A	HVSL364024A	AC input	Amphenol	HVSL364064A104I	C310026001	\
B	HVSL630022A	DC output	Amphenol	HVSL630062A	C310003623	\
C	RT001823PN03	Signal	Amphenol	RT061823PNHEC03	SS16M1F	AT13-204-2005





MAKER	Model No.	Description			Remark
AC input Amphenol	HVSL364024A	1	Fire line L1	L1	
		2	Fire line L2	L2	
		3	Fire line L3	L3 (single fire line fixed input)	
		4	N	Neutral/midline	
		A	NC	NC	
		B	NC	NC	
	casing	N	Ground line	Product enclosure	Whole machine housing terminal

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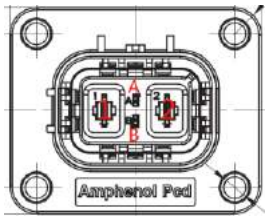
DC output Amphenol	HVSL630022A	1	positive	Output positive	
		2	negative	Output negative	
		A	Interlock 1	Connection interlock 5	
		B	Interlock 2	Connection interlock 6	
Signal Amphenol	RT001823PSN 03	A	CAN1-L	CAN LOW	
		B	VCC+	Normal input	
		C	VCU_EN	Hard-wire wake-up OBC, enable signal (active high)	
		D	CC	CC	
		E	CP	CP	
		F	WAKE_UP	VCU/BMS wake-up signal (100mA) Isolated from input constants	
		G	NTC1-	Temperature sensor 1 negative	
		H	NTC1+	Temperature sensor 1 positive	
		J	NTC2-	Temperature sensor 2 negative	
		K	NTC2+	Temperature sensor 2 is positive	
		L	CAN1-H	CAN high	
		M	LOCK+	Electronic locks	
		N	LOCK+	Electronic locks	
		P	LOCK feedback	Electronic locks	
		R	CC_OUT	CC status output, turn on low level	
		S	NC	NC	
		T	NC	NC	
		U	NC	NC	
		V	TB_R	Terminal resistance selection, short circuit to C pin, the resistance is effective	
		W	GND	GND	
		X	CAN2-L	Internal parallel CAN2 low	
		Y	CAN2-H	Internal parallel CAN2 high	
		Z	NC	NC	

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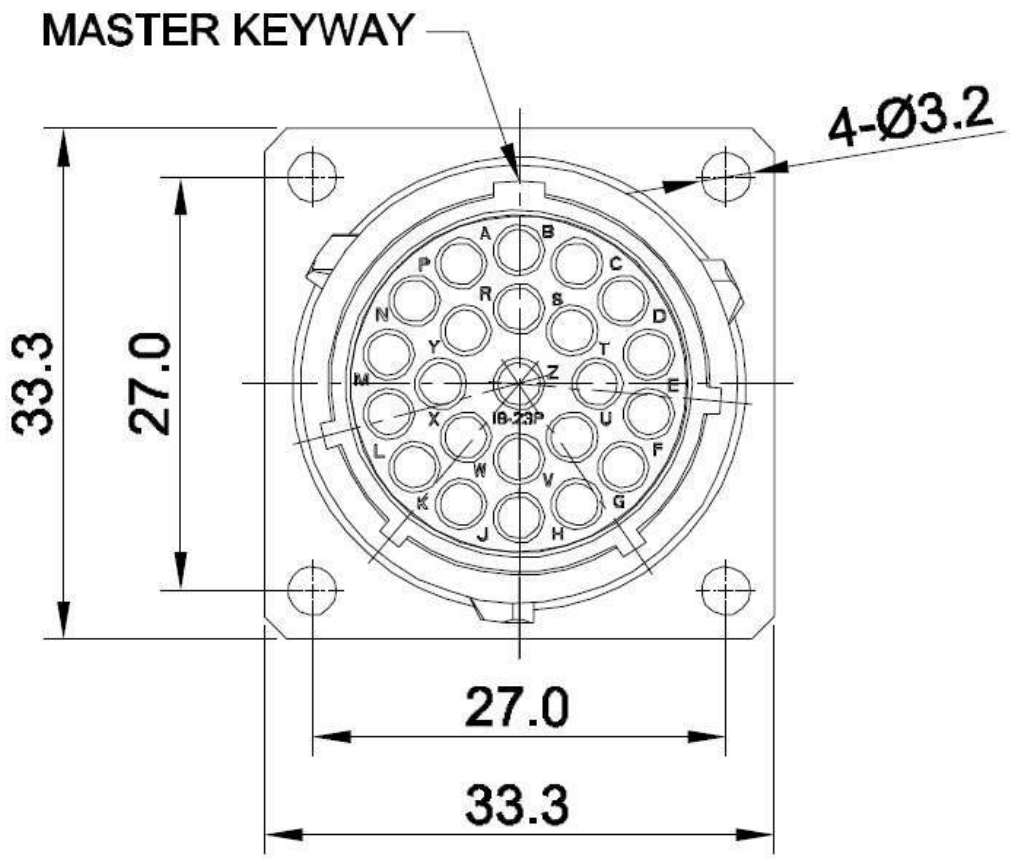

Label

Product Name	11KW ON BOARD CHARGER		
Product Part No.	E25. AR-11K3S-400580L		
Product Model	AR11K3S-400580L		
Serial number	2020XXXXXXXX		
Input Voltage	3 phase 304~456VAC 1 phase 90~264VAC	Output Voltage	400~750VDC
Output Current	3 phase: 32A 6.6KW 1 phase: 20A	Output power	11KW
Supplier	ANNREN TECHNOLOGIES CO., LTD.		

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Version: 02	Date: Oct. 25th, 2019	Remark: Label added
Version: 03	Date: Oct. 30th, 2019	Remark: Weight added
Version: 04	Date: 11th Nov., 2019	Remark: Terminal P/N added

11KW ON BOARD CHARGER

Model No.: AR11K3S-250380W

Features

Product Name	11KW ON BOARD CHARGER
Model No.	AR11K3S-250380W
Standard	GB/T / IEC
Power	11KW
Input Voltage	Three-phase 304~456VAC/single phase 175~265VAC
Output Voltage	250~450VDC
Output Current	Three phase: 32A, 6.6KW single phase: 20A
Efficiency	≥95%
Module Low Voltage (VDC)	13.8VDC（4Amax）
Size (mm)	345x224x100mm
Cooling System	Liquid Cool
IP Rating	IP67
Scope	Various new energy vehicles
Hardware	Small size, light weight and stable performance
Firmware	Full digital software design, redundant protection function design
Weight	Net: 10KG Gross: 12KG

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This charger has several advantages, including:

1. The volume and weight of automotive grade products: down more than 20%.
2. Real-time monitoring: real-time control and function control are performed on the hardware by a separate “core”

   It is easy to test the international mainstream EMI standards.

   The product design conforms to the international mainstream safety and standard.

   It can be compatible with the following different types of AC charging piles, while allowing continuous charging in the case of grid disconnection
3. Meet the new national standard GBT18487.1-2015.
4. Reserve hardware interfaces for interconnection between the Internet of Vehicles, mobile Internet and car chargers.
5. Retain the hardware interface for the secondary development of ASIL functional safety in the future.
6. Compatible with charging power expansion 22KW, 40KW, 80KW, etc.

Specification

Specification			Remark
Environmental characteristics	Operating temperature	-40~85℃	long-time working
	Vibration/noise	Meet the QC/T 895-2011 standard	
	Salt spray experiment	Meet the QB/T 2423.17-2008 standard	
Output Power		Three phase 11KW / single phase 6.6KW	
Input voltage range		Three-phase 304~456VAC (line-to-line voltage, three-phase four-wire) Single phase 176~265VAC	
Output voltage range		250~450VDC	
Low voltage input auxiliary source		13.8VDC（4Amax）	
Activation method		CP/CC/hard wire	
Voltage accuracy		±1%	
Output maximum current		11KW Three phase: 32A, 6.6KW single phase: 20A	
Voltage ripple factor		≤±1%	
Current accuracy		±3%	≧Half load
Effectiveness		≥95%	Rated voltage Full load

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Output response time		The rise time of the output voltage of the car charger should be less than 300ms, and the overshoot should be less than 10%. After receiving the shutdown command, the current drops below 10% within 300ms and drops to 0A within 500ms.	
Other protection features		Input overvoltage, input undervoltage, output overvoltage, output undervoltage, short circuit, output overcurrent overtemperature, reverse connection protection potential equalization and ground protection, power failure protection.	
Over temperature protection		When the temperature reaches 85 °C, the output power is reduced by half. The temperature is <80 °C in 10 minutes, and the full load is automatically restored. After 10 minutes, the temperature is >80 °C, then it is turned off. When the temperature is >90 °C, it will be shut down directly.	
Dielectric strength	Input to the outer casing	2000VDC /60S 10mA Max	
	Input to output	1500VAC /60S 10mA Max	
	Input to output	3000VAC /60S 10mA Max	
Insulation resistance	Input to the outer casing	≥20MΩ	
	Input to the outer casing	≥20MΩ	
EMC	Electromagnetic immunity	GB/18487.3-2001 Class B	Cooperate with the whole vehicle
	Electromagnetic disturbance	GB/18487.3-2001 Class B	Cooperate with the whole vehicle

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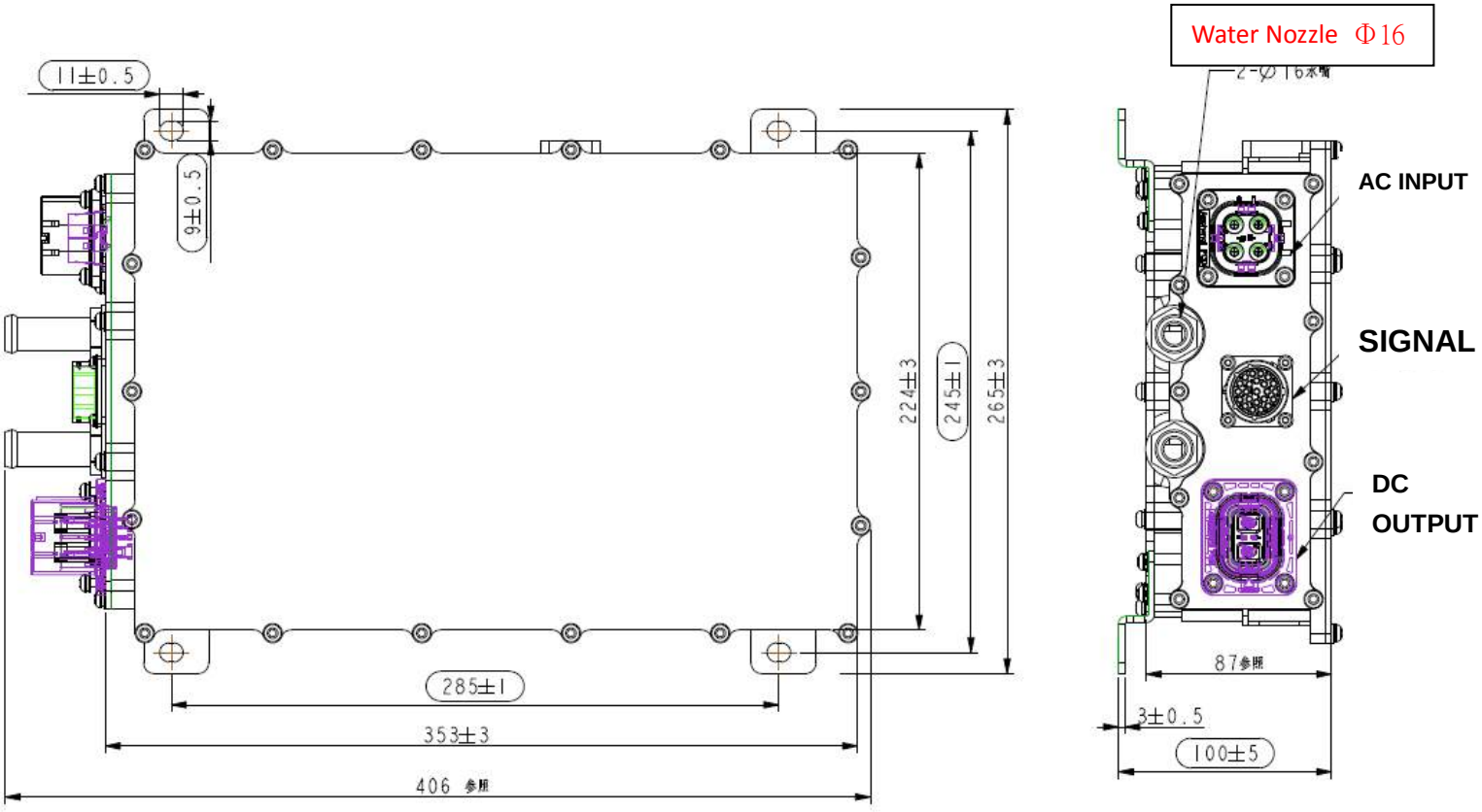
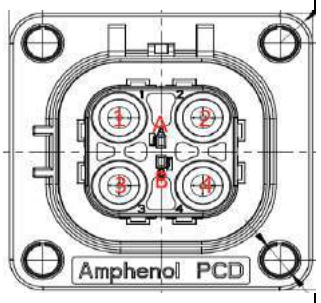
Structural parameters

Pinout	Receptacle Model no.	Function	Maker	Plug Model No.	Terminal Model No.	Stopper Model No.
A	HVSL364024A	AC input	Amphenol	HVSL364064A104I	C310026001	\
B	HVSL630022A	DC output	Amphenol	HVSL630062A	C310003623	\
C	RT001823PN03	Signal	Amphenol	RT061823PNHEC03	SS16M1F	AT13-204-2005



MAKER	Model No.	Description			Remark
AC input Amphenol	HVSL364024A	1	Fire line L1	L1	
		2	Fire line L2	L2	
		3	Fire line L3	L3 (single fire line fixed input)	
		4	N	Neutral/midline	
		A	NC	NC	
		B	NC	NC	
	casing	N	Ground line	Product enclosure	Whole machine housing terminal

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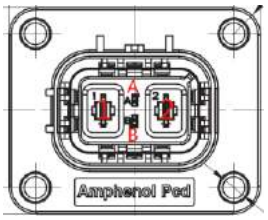
DC output Amphenol	HVSL630022A	1	positive	Output positive	
		2	negative	Output negative	
		A	Interlock 1	Connection interlock 5	
		B	Interlock 2	Connection interlock 6	
Signal Amphenol	RT001823PSN 03	A	CAN1-L	CAN LOW	
		B	VCC+	Normal input	
		C	VCU_EN	Hard-wire wake-up OBC, enable signal (active high)	
		D	CC	CC	
		E	CP	CP	
		F	WAKE_UP	VCU/BMS wake-up signal (100mA) Isolated from input constants	
		G	NTC1-	Temperature sensor 1 negative	
		H	NTC1+	Temperature sensor 1 positive	
		J	NTC2-	Temperature sensor 2 negative	
		K	NTC2+	Temperature sensor 2 is positive	
		L	CAN1-H	CAN high	
		M	LOCK+	Electronic locks	
		N	LOCK+	Electronic locks	
		P	LOCK feedback	Electronic locks	
		R	CC_OUT	CC status output, turn on low level	
		S	NC	NC	
		T	NC	NC	
		U	NC	NC	
		V	TB_R	Terminal resistance selection, short circuit to C pin, the resistance is effective	
		W	GND	GND	
		X	CAN2-L	Internal parallel CAN2 low	
		Y	CAN2-H	Internal parallel CAN2 high	
		Z	NC	NC	

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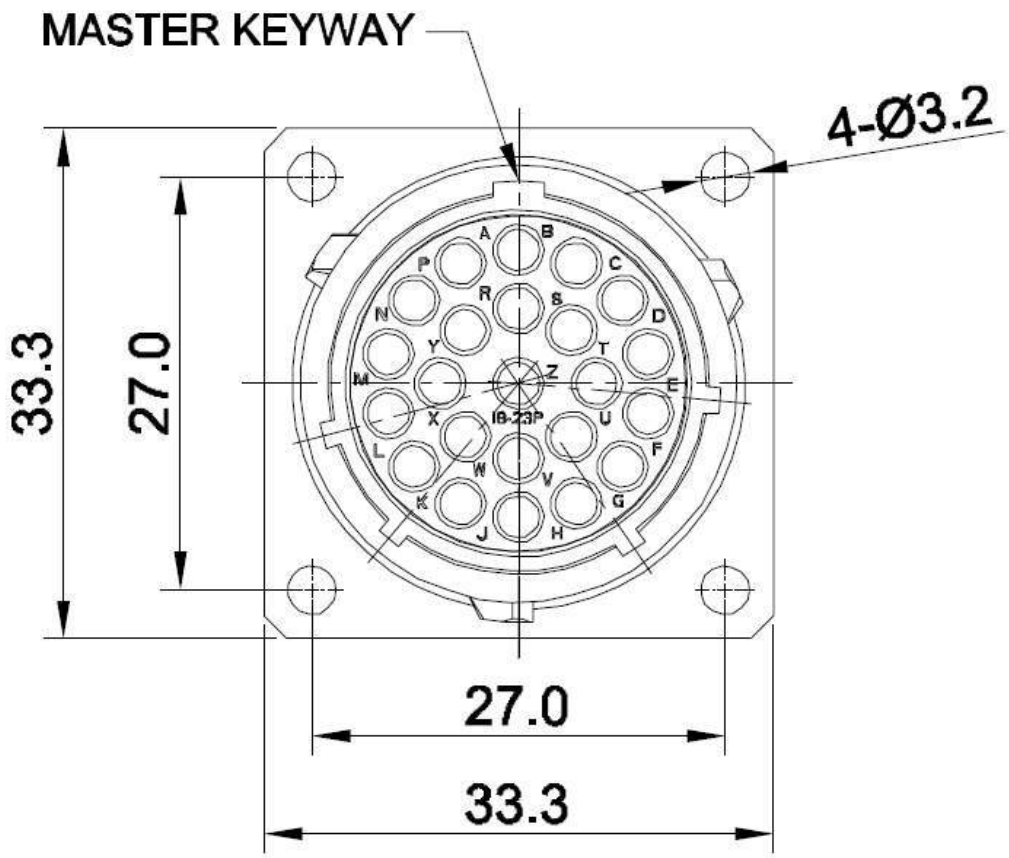

Label

Product Name	11KW ON BOARD CHARGER		
Product Part No.	E25. AR-11K3S-25038014-W		
Product Model	AR11K3S-250380W		
Serial number	2019XXXXXXXX		
Input Voltage	3 phase 304~456VAC 1 phase 175~265VAC	Output Voltage	250~450VDC
Output Current	3 phase: 32A 6.6KW 1 phase: 20A	Output power	11KW
Supplier	ANNREN TECHNOLOGIES CO., LTD.		

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Version: 02	Date: Oct. 25th, 2019	Remark: Label added
Version: 03	Date: Oct. 30th, 2019	Remark: Weight added
Version: 04	Date: 11th Nov., 2019	Remark: Terminal P/N added

11KW ON BOARD CHARGER

Model No.: AR-11K3S-25038014-W

Features

Product Name	11KW ON BOARD CHARGER
Model No.	AR-11K3S-25038014-W
Standard	GB/T
Power	11KW
Input Voltage	Three-phase 304~456VAC/single phase 175~265VAC
Output Voltage	250~450VDC
Output Current	Three phase: 32A, 6.6KW single phase: 20A
Efficiency	≥95%
Module Low Voltage (VDC)	13.8VDC（4Amax）
Size (mm)	345x224x100mm
Cooling System	Water Cooling
IP Rating	IP67
Scope	Various new energy vehicles
Hardware	Small size, light weight and stable performance
Firmware	Full digital software design, redundant protection function design
Weight	Net: 10KG Gross: 12KG

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This charger has several advantages, including:

1. The volume and weight of automotive grade products: down more than 20%.
2. Real-time monitoring: real-time control and function control are performed on the hardware by a separate “core”

It is easy to test the international mainstream EMI standards.

The product design conforms to the international mainstream safety and standard.

It can be compatible with the following different types of AC charging piles, while allowing continuous charging in the case of grid disconnection

3. Meet the new national standard GBT18487.1-2015.
4. Reserve hardware interfaces for interconnection between the Internet of Vehicles, mobile Internet and car chargers.
5. Retain the hardware interface for the secondary development of ASIL functional safety in the future.
6. Compatible with charging power expansion 22KW, 40KW, 80KW, etc.

Specification

Specification			Remark
Environmental characteristics	Operating temperature	-40~85℃	long-time working
	Vibration/noise	Meet the QC/T 895-2011 standard	
	Salt spray experiment	Meet the QB/T 2423.17-2008 standard	
Output Power		Three phase 11KW / single phase 6.6KW	
Input voltage range		Three-phase 304~456VAC (line-to-line voltage, three-phase four-wire) Single phase 176~265VAC	
Output voltage range		250~450VDC	
Low voltage input auxiliary source		13.8VDC（4Amax）	
Activation method		CP/CC/hard wire	
Voltage accuracy		±1%	
Output maximum current		11KW Three phase: 32A, 6.6KW single phase: 20A	
Voltage ripple factor		≤±1%	
Current accuracy		±3%	≧Half load
Effectiveness		≥95%	Rated voltage Full load

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Output response time		The rise time of the output voltage of the car charger should be less than 300ms, and the overshoot should be less than 10%. After receiving the shutdown command, the current drops below 10% within 300ms and drops to 0A within 500ms.	
Other protection features		Input overvoltage, input undervoltage, output overvoltage, output undervoltage, short circuit, output overcurrent overtemperature, reverse connection protection potential equalization and ground protection, power failure protection.	
Over temperature protection		When the temperature reaches 85 °C, the output power is reduced by half. The temperature is <80 °C in 10 minutes, and the full load is automatically restored. After 10 minutes, the temperature is >80 °C, then it is turned off. When the temperature is >90 °C, it will be shut down directly.	
Dielectric strength	Input to the outer casing	2000VDC /60S 10mA Max	
	Input to output	1500VAC /60S 10mA Max	
	Input to output	3000VAC /60S 10mA Max	
Insulation resistance	Input to the outer casing	≥20MΩ	
	Input to the outer casing	≥20MΩ	
EMC	Electromagnetic immunity	GB/18487.3-2001 Class B	Cooperate with the whole vehicle
	Electromagnetic disturbance	GB/18487.3-2001 Class B	Cooperate with the whole vehicle

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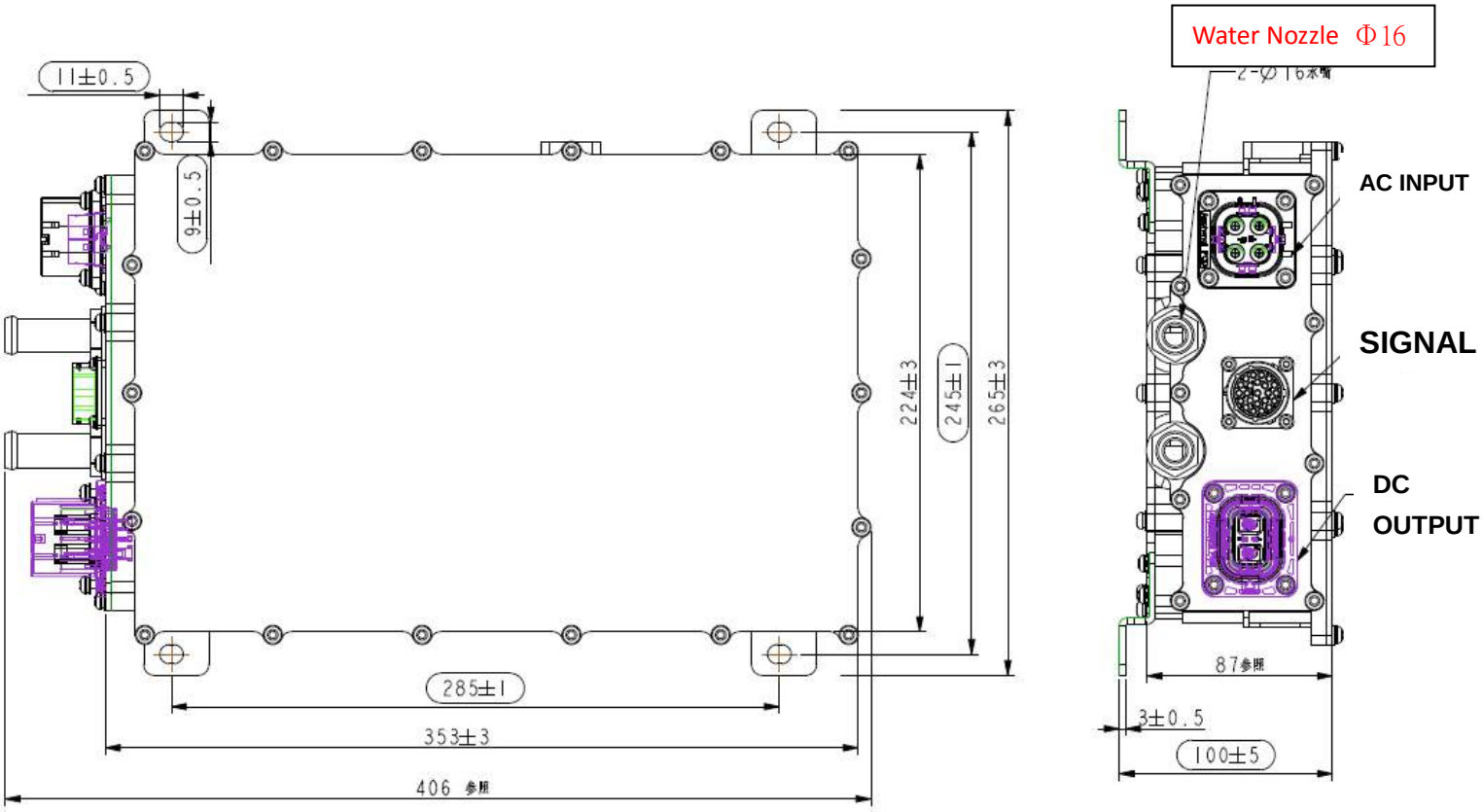
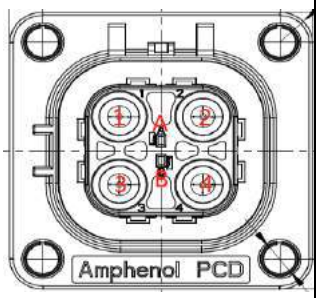
Structural parameters

Pinout	Receptacle Model no.	Function	Maker	Plug Model No.	Terminal Model No.	Stopper Model No.
A	HVSL364024A	AC input	Amphenol	HVSL364064A104I	C310026001	\
B	HVSL630022A	DC output	Amphenol	HVSL630062A	C310003623	\
C	RT001823PN03	Signal	Amphenol	RT061823PNHEC03	SS16M1F	AT13-204-2005



MAKER	Model No.	Description			Remark
AC input Amphenol	HVSL364024A	1	Fire line L1	L1	
		2	Fire line L2	L2	
		3	Fire line L3	L3 (single fire line fixed input)	
		4	N	Neutral/midline	
		A	NC	NC	
		B	NC	NC	
	casing	N	Ground line	Product enclosure	Whole machine housing terminal

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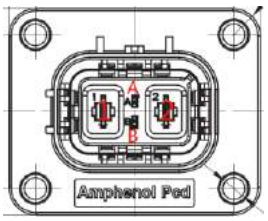
DC output Amphenol	HVSL630022A	1	positive	Output positive	
		2	negative	Output negative	
		A	Interlock 1	Connection interlock 5	
		B	Interlock 2	Connection interlock 6	
Signal Amphenol	RT001823PSN 03	A	CAN1-L	CAN LOW	
		B	VCC+	Normal input	
		C	VCU_EN	Hard-wire wake-up OBC, enable signal (active high)	
		D	CC	CC	
		E	CP	CP	
		F	WAKE_UP	VCU/BMS wake-up signal (100mA) Isolated from input constants	
		G	NTC1-	Temperature sensor 1 negative	
		H	NTC1+	Temperature sensor 1 positive	
		J	NTC2-	Temperature sensor 2 negative	
		K	NTC2+	Temperature sensor 2 is positive	
		L	CAN1-H	CAN high	
		M	LOCK+	Electronic locks	
		N	LOCK+	Electronic locks	
		P	LOCK feedback	Electronic locks	
		R	CC_OUT	CC status output, turn on low level	
		S	NC	NC	
		T	NC	NC	
		U	NC	NC	
		V	TB_R	Terminal resistance selection, short circuit to C pin, the resistance is effective	
		W	GND	GND	
		X	CAN2-L	Internal parallel CAN2 low	
		Y	CAN2-H	Internal parallel CAN2 high	
		Z	NC	NC	

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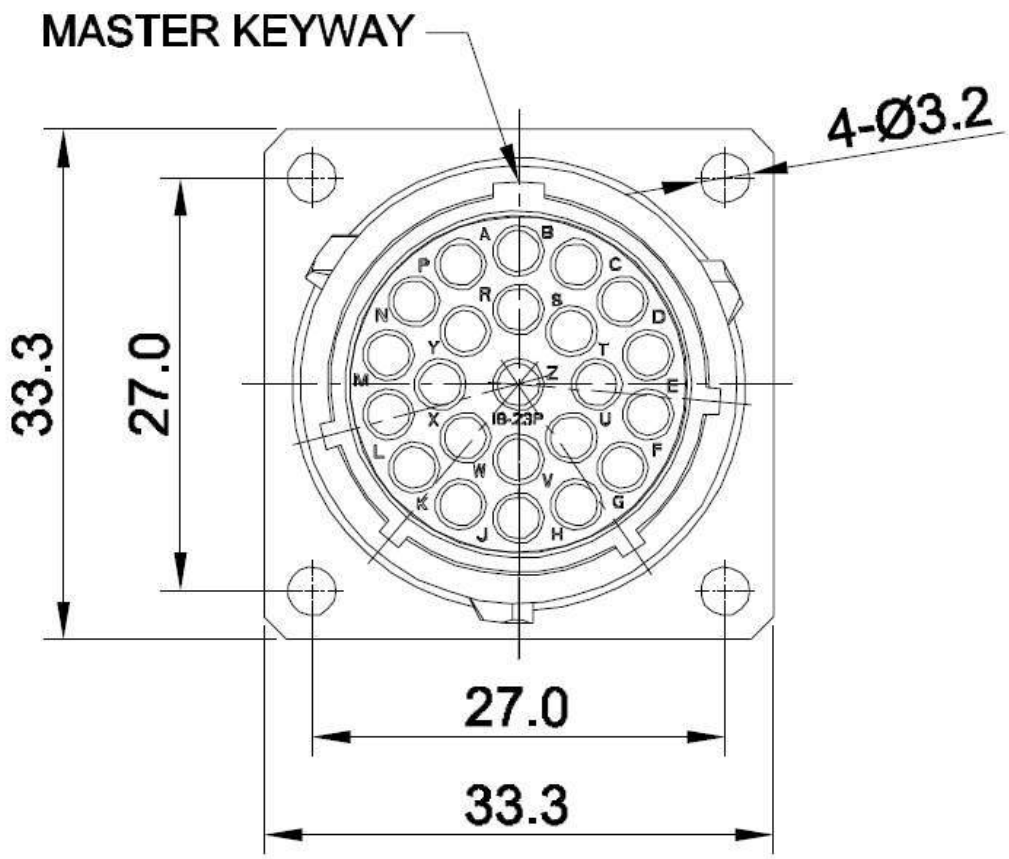

Label

Product Name	11KW ON BOARD CHARGER		
Product Part No.	E25. AR-11K3S-25038014-W		
Product Model	AR-11K3S-25038014-W		
Serial number	2019XXXXXXXX		
Input Voltage	3 phase 304~456VAC 1 phase 175~265VAC	Output Voltage	250~450VDC
Output Current	3 phase: 32A 6.6KW 1 phase: 20A	Output power	11KW
Supplier	ANNREN TECHNOLOGIES CO., LTD.		

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Model No.：AR11K-220S380M

Product Name：11KW On Board Charger Module

Date Issued: Feb. 21st, 2020

11KW On Board Charger Module

★ **Features**

1 Output Power：
11KW(Rated 220V)/5KW (Rated 110V)
2 Input Voltage：90~264VAC/50A
3 Output Voltage：250~450VDC
4 Dimensions：340x220x60mm
5 Communication：CAN
6 Charging Standard：SAE
7 Software: Digital software design
8 CAN Protocal: Intel and Motolora available
9 Weight ≤7KG

Applications

Electric Commercial Vihecles

Electric Commercial Vihecles

Specification

Description		Parameters	Remark
Environmental characteristics	Operating temperature	-40~85℃	Long-time working
	Vibration/noise	Meet the QC/T 895-2011 standard	
	Salt spray experiment	Meet the QB/T 2423.17-2008 standard	
Output Power		11KW(Rated 220V)/5KW (Rated 110V)	
Input voltage range		90~264VAC/50A	
Output voltage range		250~450VDC	
Voltage accuracy		±1%	
Output maximum current		32A	
Current accuracy		±3%	Half load or more
Efficiency		≥94%	Rated voltage Full load
Low voltage (VDC)		12 or 24Vdc / 200mAmax (WAKE_UP + signal)	
Activation method		CC, CP, CAN, hardwired, AC (optional)	
Design lifetime		20 years or 200,000 kilometers	
Protection characteristics		Input overvoltage, input undervoltage, output overvoltage, output undervoltage, short circuit, output overcurrent, overtemperature, reverse connection protection, power failure protection.	
EMC standard		GBT 20234/GBT18487 · EN 55022 CLassB	
Interface function		New GB/T CC, CP, cc_out, European standard, American standard (optional)	
Weight	Net weight / Gross weight	≤7KG	

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Model No.：AR11K-220S380M

Product Name：11KW On Board Charger Module

Pinout definition

System Load definition	Pin number	Pinout definition	Description
AC input (M5 stud)	1	L	Fire wire, metal terminal block, 64A MAX
	2	N	Neutral, metal terminal block, 64A MAX
	3	PE	Protective ground point, grounded through the chassis.
DC output (M4 stud)	1	VOUT+	MAX 32A
	2	VOUT-	MAX 32A
Control terminal Socket: 105314-1216 Plug: 105308-1216 Pin:	1	OBC~VCC-	OBC external input
	2	OBC~VCU_EN	VCU wakes up OBC (reserved)
	3	LOCK+	OBC drive electronic lock lock / unlock
	4	LOCK-	OBC drive electronic lock lock / unlock
	5	LOC feedback 1	Electronic lock feedback signal
	6	CAN-H	OBC Communications High
	7	CAN-L	OBC communication low
	8	OBC ~ J1772 mode enable (high-level signal)	VCU / BMS wake-up signal (100mA) is isolated from input
	9	OBC~VCC+	OBC external input
	10	CC_OUT	CC_OUT (reserved)
	11	NTC1-	Slow charge socket temperature 1 negative
	12	NTC1+	Slow charge socket temperature 1 positive
	13	NTC2-	Slow charge socket temperature 2 negative
	14	NTC2+	Slow charge socket temperature 2 positive
	15	Proximity Detection（CC）	Charging connection signal
	16	Control pilot（CP）	Charge control signal

Label

Product Name	11KW On Board Charger Module		
Product Part No.	e25.AR11K-220S380M		
Product Model	AR11K-220S380M		
Serial Number	2020XXXXXXXX		
Input Voltage	90~264VAC/50A	Output Voltage	250~450VDC
Output Current	32A	Output power	11000W
Supplier	ANNREN TECHNOLOGIES CO., LTD.		

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Model No.：AR-22K-380S380/540-W-XX

Product Name：22KW ON BOARD CHARGER(AC/DC)

22KW ON BOARD CHARGER(AC/DC)

13 It is easy to test the international mainstream EMI standards.
14 The product design conforms to the international mainstream safety I standard.
15 Compatible with the following different types of AC charging posts,
while allowing continued charging in the event of a grid phase
16 Meet the new national standard GBT18487.1-2015
17 Compatible with charging power expansion, 40KW, etc.

★ **Features**

1 Output Power：22KW
2 Input Voltage：Three-phase 345~415VAC/
single phase 220±15% VAC
3 Output Voltage：
250~450VDC/400~650VDC
4 Dimensions：443x346x155mm
5 Weight: ≤30KG
6 Cooling System：Water
7 Protection Level：IP67 (except fan)
8 Communication Method：CAN
9 Enclosure: Aluminum alloy made
10 Software: Digital software design
11 The volume and weight of automotive grade products: down more than 20%.
12 Real-time monitoring, real-time control and functional control are performed on the hardware by a separate "core"

Specification

Description		Technical specifications	Remark
Environmental characteristics	Operating temperature	-40~65℃	Long-time working
	Vibration/noise	Meet the QC/T 895-2011 standard	
	Salt spray experiment	Meet the QB/T 2423.17-2008 standard	
Output Power		21KW	
Input voltage range		Three-phase 345~415VAC (line-to-line voltage, three-phase four-wire) Single phase 200~240VAC	
Output voltage range		250~450VDC/400~650VDC	
Low voltage input auxiliary source		13.8VDC（2Amax）/27VDC（2Amax）	
Activation method		CP/CC/hard wire	
Voltage accuracy		±1%	
Output maximum current		Three phase: 56±2A, single phase: 20±2A	
Voltage ripple factor		≤±1%	
Current accuracy		±3%	Half load or more
Efficiency		≥94%	Rated voltage Full load
Parallel function		Networking is performed by internal CAN communication, and up to 8 modules can be connected in parallel.	
Output response time		The rise time of the output voltage of the car charger should be less than 300ms, and the overshoot should be less than 10%. After receiving the shutdown command, the current drops below 10% within 300ms and drops to 0A within 500ms.	
Other protection features		Input overvoltage, input undervoltage, output overvoltage, output undervoltage, short circuit, output overcurrent, overtemperature, reverse connection protection, potential equalization and ground protection, power failure protection.	
Over temperature protection		When the temperature reaches 85 °C, the output power is reduced by half. The temperature is <80 °C in 10 minutes, and the full load is automatically restored. After 10 minutes, the temperature is >80 °C, then it is turned off. When the temperature is >90 °C, it will be shut down directly.	

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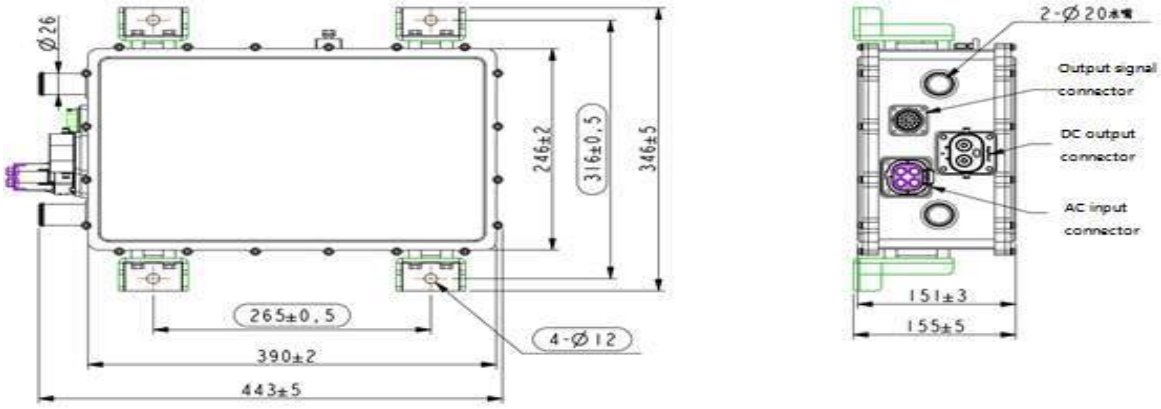
Model No.：AR-22K-380S380/540-W-XX
Product Name：22KW ON BOARD CHARGER(AC/DC)

Dielectric strength	Output to the outer casing	2000VDC /60S 10mA Max	
	Input to the outer casing	1500VAC /60S 10mA Max	
	Input to output	3000VAC /60S 10mA Max	
Insulation resistance	Input to output	≥20MΩ	
	Input to the outer casing	≥20MΩ	
Electromagnetic compatibility	Radiation emission	GBT 18387：2008 · EN 55022 CLassB	
	Conducted emission	GBT 18387：2008 · EN 55022 CLassB	
	Radiation immunity	GBT 18387：2008 · EN 55022 CLassB	

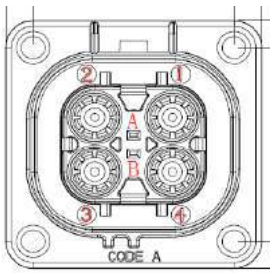
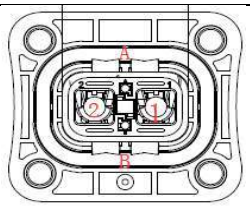
Structural parameters



Connector information (can be customized)

Position	Socket model	Function	Brand	Plug model
A	HVC4P36MV306	AC input	Amphenol	HVC4P36FS306
B	HVC2P60MV100	DC output	Amphenol	HVC2P60FS3116
C	RT001823PN03	Control terminal	Amphenol	RT061823PNH03

Interface definition

Socket definition	Pin number	Interface definition	Description	Connector picture
AC input HVC4P36MV306	1	FireWire 1	L1 (single fire line fixed input)	
	2	FireWire 2	L2	
	3	FireWire 3	L3	
	4	N	Neutral/midline	
	A	Interlock 1	Connection interlock 5	
	B	Interlock 2	Connection interlock 3/micro switch	
	N	Ground wire	Product enclosure	Whole machine housing terminal
DC output HVC2P60MV100	1	positive electrode	Output positive	
	2	negative electrode	Output negative	
	A	Interlock 3	Connection interlock 2/micro switch	
	B	Interlock 4	Connection interlock 6	

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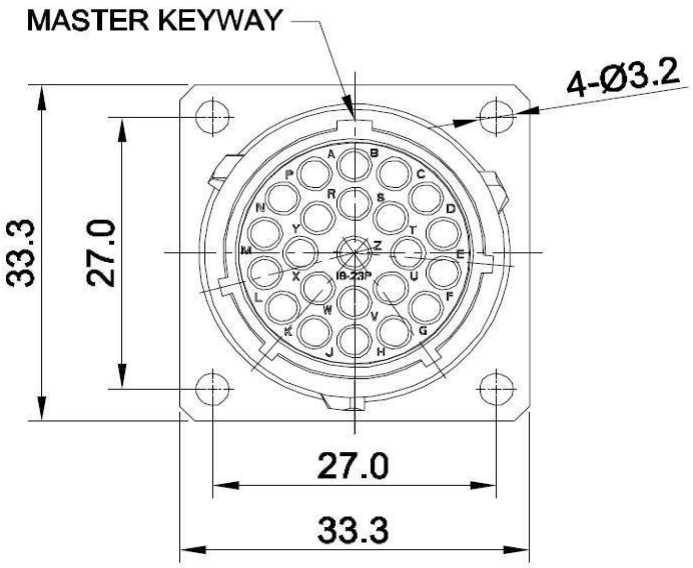
Model No.：AR-22K-380S380/540-W-XX
Product Name：22KW ON BOARD CHARGER(AC/DC)

Control terminal
RT001823PSN03

A	CAN1-L	CAN low	
B	VCC+	Normal input	
C	VCU_EN	Hard-wire wake-up OBC, enable signal (active high)	
D	CC	CC	
E	CP	CP	
F	WAKE_UP	VCU/BMS wake-up signal (1A) Isolated from input constants	
G	NTC1-	Temperature sensor 1 negative	
H	NTC1+	Temperature sensor 1 positive	
J	NTC2-	Temperature sensor 2 negative	
K	NTC2+	Temperature sensor 2 is positive	
L	CAN1-H	CAN high	
M	LOCK+	Electronic locks	
N	LOCK+	Electronic locks	
P	LOCK feedback	Electronic locks	
R	CC_OUT	CC status output, low level enable	
S	Interlock 5	Interlock signal detection 1	
T	Interlock 6	Interlock signal detection 4	
U	NC	NC	
V	TB_R	Terminal resistance selection, short circuit to C pin, the resistance is effective	
W	NC		
X	CAN2-L	Internal parallel CAN2 low	
Y	CAN2-H	Internal parallel CAN2 high	
Z	EN2	Internal parallel enable (reserved)	



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Model No.：AR-40K-380S380/540-W-AR01

Product Name：40KW ON BOARD CHARGER(AC/DC)

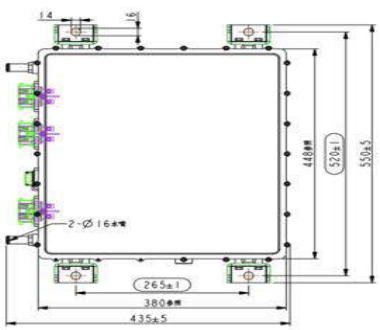
Features

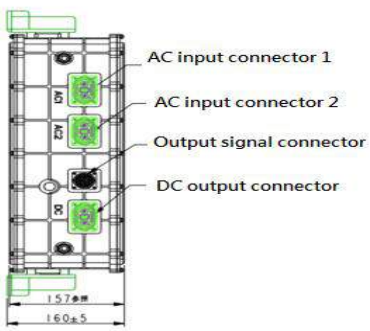
1 Output Power：40KW
2 Input Voltage：
304~456VAC(three phrase)/220±15%VAC
3 Output Voltage：250~450VDC/420~650VDC
4 Dimensions：550x443x180mm
5 Cooling System：Water
6 Protection Level：IP67
7 Communication Method：CAN
8 Small size, light weight and stable performance
9 Full digital software design, redundant protection

Specification

Description		Technical specifications	Remark
Environmental characteristics	Operating temperature	-40~85℃	Working Long Time
	Vibration/noise	Meet the QC/T 895-2011 standard	
	Salt spray test	Meet the QB/T 2423.17-2008 standard	
Output power		Theree phrase 40KW/ Single phrase6.6KW	
Maximum input current		Theree phrase 63A/ Single phrase32A	
Input voltage range		Three phrase 304~456VAC (line-line voltage · three phase four wire system) Single phrase 175~265VAC	
Output voltage range		250-450VDC/400~650VDC	
Output current accuracy		±0.5%	
Activation method		CP/CC/Hard line enable	
Low voltage input specification		13.8VDC(4Amax)/27VCD(2Amax)	External low voltage supplies power to OBC.
Low voltage input power		30W	
Maximum output current		Three phrase 128A/85A Single phrase 20A/14A	
Output current accuracy		±3%	Half load or more
Efficiency		≥95%	Rated voltage Full load
Other protection features		Input over-voltage, output over-voltage, over-temperature protection, over-current protection, output short-circuit protection, reverse battery protection, communication fault protection, internal fault protection.	
Over temperature protection		WWhen the coolant temperature exceeds 65 °C, the output current decreases linearly, and drops to 20% of the rated current when it reaches 85 °C.	
Insulation strength	Output to the outer casing	2800VDC /60S 10mA Max	
	Input to the outer casing	2121VAC /60S 10mA Max	
	Input to output	3000VAC /60S 10mA Max	
Insulation resistance	Input to output	≥20MΩ	
	Input to the outer casing	≥20MΩ	
Electromagnetic compatibility	Radiation emission	GBT 18387 : 2008, EN 55022 CLassB	
	Conducted emission	GBT 18387 : 2008, EN 55022 CLassB	
	Radiation immunity	GBT 18387 : 2008, EN 55022 CLassB	

Structural parameters





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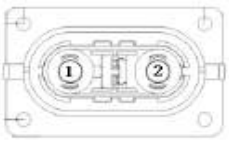
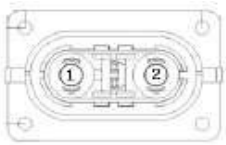
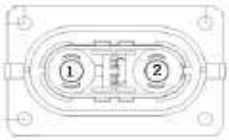
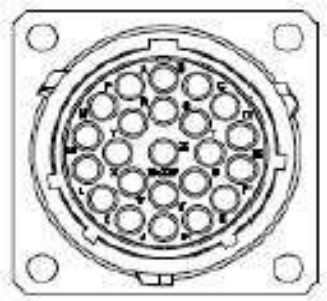
Model No.：AR-40K-380S380/540-W-AR01
Product Name：40KW ON BOARD CHARGER(AC/DC)

Connector model

Position	Socket model	Function	Brand	Plug model
A	YGC998-EV-S(2+2)R/II	AC input 1	Yong gui	YGC998-EV-P(2+2)PA/II
B	YGC998-EV-S(2+2)R/III	AC input 2	Yong gui	YGC998-EV-P(2+2)PA/III
C	YGC998-EV-S(2+2)R/I	DC output	Yong gui	YGC998-EV-P(2+2)PA/I
D	RT001823PN03	Control terminal	Amphenol	RT061823SNHEC03

Interface definition

Vendor	Model	Description			Remark
Yong gui	AC input 1 YGC998-EV-S(2+2)R/II	1	L1	Live Wire 1	
		2	L2	Live Wire 2	
Yong gui	AC input 2 YGC998-EV-S(2+2)R/III	1	L3	Live Wire 3	
		2	N	Naught Wire	
Yong gui	DC output YGC998-EV-S(2+2)R/I	1	VOUT+	Output positive	
		2	VOUT-	Output negative	
Amphenol	Control terminal (RT001823PN03)	A	NTC1-	Temperature sensor 1 negative	
		B	NTC1+	Temperature sensor 1 positive	
		C	VCC+	Normal input positive	
		D	VCC-	Normal input negative	
		E	CAHN1	CAN1 High	
		F	CANH2	CAN2 High	
		G	CANL1	CAN1 Low	
		H	CANL2	CAN2 Low	
		J	NTC2-	Temperature sensor 1 negative	
		K	NTC2+	Temperature sensor 1	
		L	WAKE_UP	Output wake-up signal	
		M	CAN-G	CAN shielding ground	
		N	LOCK FB2	Electronic lock feedback 2	
		P	EN_L	Host selection (active low)	
		R	CC_OUT	CC status output / low level enable signal	
		S	LOCK+	Electronic lock power supply positive	
		T	LOCK-	Electronic lock power supply negative	

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		U	LOCK FB1	Electronic lock feedback 1	
		V	CC		
		W	CP		
		X	VCU_EN	Hardwire wake-up signal	
		Y	VCC+	Normal input positive	
		Z	VCC-	Normal input negative	

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Standard: IEC

Feature

System	AC/DC Converter (On Board Charger)	DC/DC Converter
Product Name	2KW DC+6.6KW OBC 2 in 1	
Charging Standard	IEC	
Model No.	AR2K0C6K6I-D14C380W/540W	
Part Number	E25. AR2K0C6K6I-D14C380W/540W	
Power	OBC: 6.6KW DCDC: 2KW	
Input Voltage	OBC: 90~264V DCDC: 200~450/400~750VDC	
Output Voltage	OBC: 200~450/400~670VDC/ DCDC: 14VDC	
Output Current	OBC: 20A DCDC: 143A	
Efficiency	≥95%	
Low Voltage (VDC)	12/24VDC/200mAmax	
Low Current (A)		
Size (mm)	328*208*125	
Cooling System	Liquid Cool	
IP Rating	IP67	
Scope	Various new energy vehicles	
Hardware	Small size, light weight and stable performance	
Firmware	Full digital software design, redundant protection function design	

Output power	6.6KW	2KW
Input voltage:	90~264VAC	200~450/400~750VDC
Output voltage	200~450/400~670VDC	14VDC
Communication method	CAN	CAN

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Specification

NO	Parameters		Requirements
A	**On Board Charger and DC/DC converter**		
I	**On board Charger - OBC**		
1	***HV Max Output Power HV***		***6.6kW***
2	AC Input Voltage		90~264VAC
3	HV Output Voltage		200~450/400~670VDC
4	HV Output Voltage Accuracy		± 1%
5	HV Output Current		20A
6	HV Output Current Accuracy		± 3% (More than half load)
7	Efficiency		≥ 95%
8	Low Voltage (VDC)		12/24VDC/200mAmax
9	Auxiliary power VCC		\
10	Output voltage ripple		\
11	Other protection features		Input over and under voltage, output over and under voltage, over temperature protection, over current protection, output short circuit protection, reverse battery protection, communication fault protection, internal fault protection
12	Dielectric strength	Input to output	2000VDC /1min 10mA Max
		Input to casing	1500VAC /1min 10mA Max
		Input to output	3000VAC /1min 10mA Max
13	Insulation resistance	Input to output	≥20MΩ
		Input to casing	≥20MΩ
14	Electromagnetic compatibility	Radiation emission	GB/T18387 2008 EN55022 CLassB
II	**DCDC Converter**		
1	***HV Max Output Power HV***		***2KW***

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NO	Parameters		Requirements
2	AC Input Voltage		200~450/400~750VDC
3	HV Output Voltage		14VDC
4	HV Output Voltage Accuracy		± 0.2VDC
5	HV Output Current		143A
6	HV Output Current Accuracy		\
7	Efficiency		≥ 95%
8	Low Voltage (VDC)		\
9	Auxiliary power VCC		6~18VDC
10	Output voltage ripple		≦500mVPK-PK
11	Other protection features		Input over- and under-voltage, output over- and under-voltage, output over-current and short-circuit protection (extension and hiccup), over-temperature self-recovery
12	Dielectric strength	Input to output	2500VDC/1min 1mA max
		Input to casing	2500VDC/1min 1mA max
		Input to output	\
13	Insulation resistance	Input to output	≥20MΩ
		Input to casing	≥20MΩ
14	Electromagnetic compatibility	Radiation emission	GB/T 18655-2010 Class 3
		Conducted emission	GB/T 18655-2010 Class 3
		Static immunity	GB/T 19951-2005
		Radiation immunity	GB/T 18655-2010 Class 3
		High current injection	GB/T 17619-1998
		Fast Burst Suppression	GB/T 17626.4-2008 1KV

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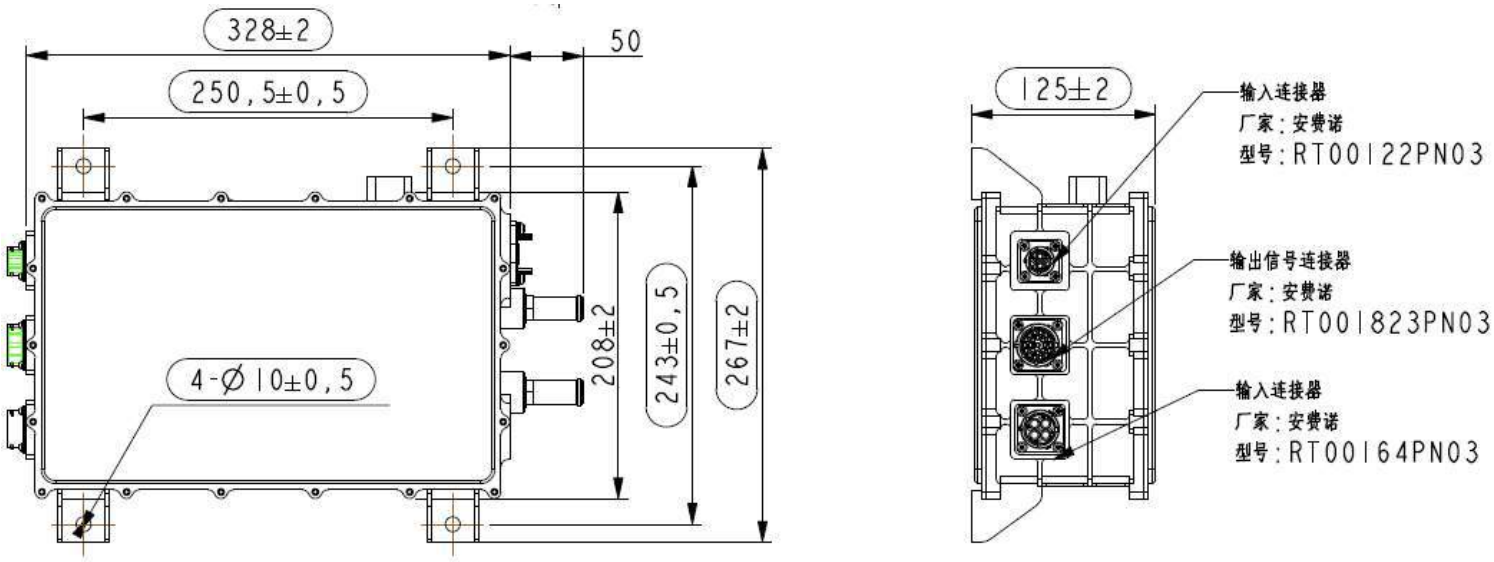
Structural parameters



Electrical Interface

一、Connector Table

Item	Position	Receptacle model no.	Pinout definition	Plug model no	Maker
1	A	RT001823PN03	Control terminal	RT061823PNH03	Amphenol
2	B	RT00164PN03	AC input	RT06164SNHEC03	Amphenol
3	C	RT00122PN03	DC high voltage	RT06122SNHEC03	Amphenol
4	D	GH01-F200-1NNB-T17	Output positive	M8 Screw bolt	Guoweiton g
5	E	Screw bolt	Output negative	/	/

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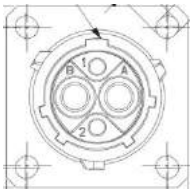
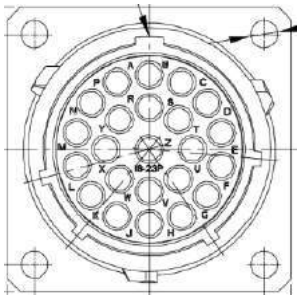
二、Pinout definition

System Load definition	Pin number	Pinout definition	Description	Connector picture
Input (RT00164PN03)	A	Fire wire	L	
	B	Zero line	N	
	C	Ground	PE	
	D	NC		
Output (RT00122PN03)	A	Positive	Output positive	
	B	Negative	Output negative	
	1	Interlock 1	Interlock signal 1	
	2	Interlock 2	Interlock signal 2	
	A	OBC~VCC+	OBC external input	
	B	DCDC~VCC+	DC / DC input auxiliary power is positive	
	C	CC	Charging connection signal	
	D	CP	Charge control signal	
	E	CC_OUT	CC_OUT	
	F	CAN-H	DC / DC and OBC communication high	
	G	CAN-L	Low DC / DC and OBC communication	
	H	CAN-GND	DC / DC and OBC communication ground	
	J	OBC~WARE_UP	VCU / BMS wake-up signal (200mA) Galvanically isolated from input	

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	K	LOCK 反馈 2	Electronic lock unlock signal (reserved)	
	L	LOCK+	OBC drive electronic lock lock / unlock	
	M	LOCK-	OBC drive electronic lock lock / unlock	
	N	LOC 反馈 1	Electronic lock feedback signal	
	P	NTC1+	Slow charge socket temperature 1 positive	
	R	NTC2+	Slow charge socket temperature 2 positive	
	S	OBC~VCC-	OBC external input	
	T	DCDC~VCC-	DC / DC input auxiliary power negative	
	U	DCDC~EN 使能	DC / DC enable (control VCC)	
	V	NTC1-	Slow charge socket temperature 1 negative	
	W	NTC2-	Slow charge socket temperature 2 negative	
	X	NC		
	Y	NC		
	Z	OBC~VCU_EN	VCU wakes up OBC (reserved)	

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Model No.：AR2KC6K6S-D14C380L

Product Name：2KW DCDC+6.6KW OBC 2 in 1

2KW DCDC+6.6KW OBC 2 in 1

★ **Features for DC/DC**

1 Output Power：2KW
2 Input Voltage：250~450VDC
3 Output Voltage：14VDC
4 Dimensions：328X208X125mm
5 Cooling System：Liquid Cool
6 IP rating：IP67
7 Communication Method：CAN
8 Charging Standard：SAE
9 Enclosure: Aluminum alloy made
10 Software: Digital software design

★ **Features for OBC**

1 Output Power：6.6KW
2 Input Voltage：90~264VAC
3 Output Voltage：200~450VDC
4 Dimensions：328X208X125mm
5 Cooling System：Liquid Cool
6 IP ratingl：IP67
7 Communication Method：CAN
8 Charging Standard：SAE
9 Enclosure: Aluminum alloy made
10 Software: Digital software design

Applications

Electric Commercial Vihecles

Electric Commercial Vihecles

Specification

Description		Parameters		Remark
System		DCDC Converter	AC/DC Converter (OBC)	
Output Power		2.5KW	6.6KW	
Input voltage range		250-450VDC	90~264VAC	
Output voltage range		13.8VDC	200-450VDC	
Output voltage accuracy		±0.2VDC	±1%	
Output current		143A	20A(max)	
Current accuracy		\	±3%	Half load or more
Efficiency		≥95%	≥95%	Rated voltage full load
Low Voltage (VDC)		\	12/24VDC/200mAmax	
Auxiliary power VCC		6-18 VDC	\	
Output voltage ripple		≤500mVPK-PK	\	
Other protection features		Input over-voltage, output over-voltage, output over-current and short-circuit protection (extension and snoring), over-temperature self-recovery	Input over-voltage, output over-voltage, over-temperature protection, over-current protection, output short-circuit protection, reverse battery protection, communication fault protection, internal fault protection	
Dielectric strength	Input to output	2500VDC/1min 1mA max	2000VDC /1min 10mA Max	
	Input to the outer casing	2500VDC/1min 1mA max	1500VAC /1min 10mA Max	
	Input to output	\	3000VAC /1min 10mA Max	
Insulation resistance	Input to output	≥20MΩ	≥20MΩ ;	
	Input to the outer casing	≥20MΩ	≥20MΩ ;	
Weight	Net weight / Gross weight			

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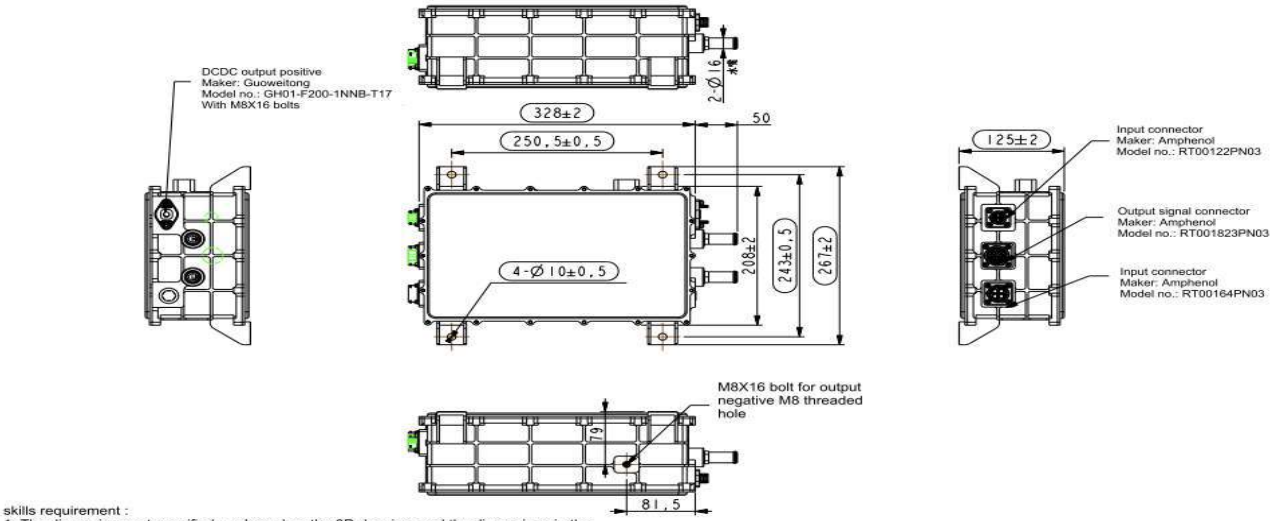
Model No.：AR2KC6K6S-D14C380L
Product Name：2KW DCDC+6.6KW OBC 2 in 1

Structural parameters



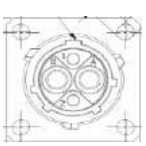
skills requirement :
1. The dimensions not specified are based on the 3D drawing, and the dimensions in the box are the key inspection dimensions.
2. The dimensions without tolerances are implemented in accordance with GB1804-2000-M. The dimension tolerance of unmarked position shall be implemented according to GB1184-1996-M.
3. The surface of the product shell is flat, smooth, beautiful, and uniform in color, without bumps, spots, cracks, burrs, and deformation.
4. Reliable parts are fastened reliably without defects and damages such as rust, burrs, cracks, etc. The connectors and pins are intact and no damage; the components are firmly connected.

Electrical Interface

Connector Table

Item	Position	Receptacle model no.	Pinout definition	Plug model no.	Maker
1	A	RT001823PN03	Control terminal	RT061823PNH03	Amphenol
2	B	RT00164PN03	AC input	RT06164SNHEC03	Amphenol
3	C	RT00122PN03	DC high voltage	RT06122SNHEC03	Amphenol
4	D	GH01-F200-1NNB-T17	Output positive	M8 Screw bolt	Guoweitong
5	E	Screw bolt	Output negative	/	/

Pinout definition

Receptacle model no.	Pin number	Pinout definition	Description	Connector picture
Input (RT00164PN03)	A	Fire wire	L	
	B	Zero line	N	
	C	Ground	PE	
	D	NC		
Output (RT00122PN03)	A	Positive	Output positive	
	B	Negative	Output negative	
	1	Interlock 1	Interlock signal 1	
	2	Interlock 2	Interlock signal 2	
	A	OBC~VCC+	OBC external input	

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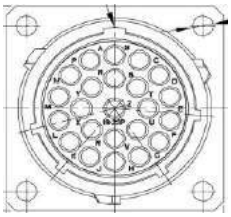
Model No.：AR2KC6K6S-D14C380L

Product Name：2KW DCDC+6.6KW OBC 2 in 1

Control terminal (RT001823PN03)	B	DCDC~VCC+	DC / DC input auxiliary power supply
	C	Proximity Detection (CC)	Charging connection signal
	D	Control pilot (CP)	Charge control signal
	E	CC_OUT	CC_OUT (reserved)
	F	CAN-H	DC / DC and OBC communication high
	G	CAN-L	DC / DC and OBC communication low
	H	CAN-GND	DC / DC and OBC communication ground
	J	OBC~J1772 mode enable (High level signal)	VCU / BMS wake-up signal (100mA) is galvanically isolated from input
	K	LOCK feedback 2	Electronic lock unlock signal (reserved)
	L	LOCK+	OBC drive electronic lock lock / unlock
	M	LOCK-	OBC drive electronic lock lock / unlock
	N	LOCK feedback 1	Electronic lock feedback signal
	P	NTC1+	Slow charge socket temperature 1 positive
	R	NTC2+	Slow charging socket temperature 2 positive
	S	OBC~VCC-	OBC external input
	T	DCDC~VCC-	DC / DC input auxiliary power negative
	U	DCDC~EN enable	DC / DC enable (control VCC)
	V	NTC1-	Slow charge socket temperature 1 min
	W	NTC2-	Slow charge socket temperature 2 negative
	X	NC	
	Y	NC	
	Z	OBC~VCU_EN	VCU wakes up OBC (reserved)



Label

Product Name	2KW DCDC+6.6KW OBC 2 in 1		
Product Part No.	e25.AR2KC6K6S-D14C380L		
Product Model	AR2KC6K6S-D14C380L		
Serial Number	2020XXXXXXXX		
Input Voltage	DCDC: 250~450VDC, OBC: 90~264VAC	Output Voltage	DCDC: 14VDC, OBC: 200~450VDC
Output Current	DCDC: 143A, OBC: 20A	Output power	DCDC: 2000W, OBC: 6600K
Supplier	ANNREN TECHNOLOGIES CO., LTD.		

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Model No.：AR2KC6K6S-D14C540L

Product Name：2KW DCDC+6.6KW OBC 2 in 1

2KW DCDC+6.6KW OBC 2 in 1

★ **Features for DC/DC**

1 Output Power：2KW
2 Input Voltage：400~750VDC
3 Output Voltage：14VDC
4 Dimensions：328X208X125mm
5 Cooling System：Liquid Cool
6 IP rating：IP67
7 Communication Method：CAN
8 Charging Standard：SAE
9 Enclosure: Aluminum alloy made
10 Software: Digital software design

★ **Features for OBC**

1 Output Power：6.6KW
2 Input Voltage：90~264VAC
3 Output Voltage：400~670VDC
4 Dimensions：328X208X125mm
5 Cooling System：Liquid Cool
6 IP ratingl：IP67
7 Communication Method：CAN
8 Charging Standard：SAE
9 Enclosure: Aluminum alloy made
10 Software: Digital software design

Applications

Electric Commercial Vihecles

Electric Commercial Vihecles

Specification

Description		Parameters		Remark
System		DCDC Converter	AC/DC Converter (OBC)	
Output Power		2.5KW	6.6KW	
Input voltage range		400~750VDC	90~264VAC	
Output voltage range		13.8VDC	400~670VDC	
Output voltage accuracy		±0.2VDC	±1%	
Output current		143A	20A(max)	
Current accuracy		\	±3%	Half load or more
Efficiency		≥95%	≥95%	Rated voltage full load
Low Voltage (VDC)		\	12/24VDC/200mAmax	
Auxiliary power VCC		6-18 VDC	\	
Output voltage ripple		≤500mVPK-PK	\	
Other protection features		Input over-voltage, output over-voltage, output over-current and short-circuit protection (extension and snoring), over-temperature self-recovery	Input over-voltage, output over-voltage, over-temperature protection, over-current protection, output short-circuit protection, reverse battery protection, communication fault protection, internal fault protection	
Dielectric strength	Input to output	2500VDC/1min 1mA max	2000VDC /1min 10mA Max	
	Input to the outer casing	2500VDC/1min 1mA max	1500VAC /1min 10mA Max	
	Input to output	\	3000VAC /1min 10mA Max	
Insulation resistance	Input to output	≥20MΩ	≥20MΩ ;	
	Input to the outer casing	≥20MΩ	≥20MΩ ;	
Weight	Net weight / Gross weight			

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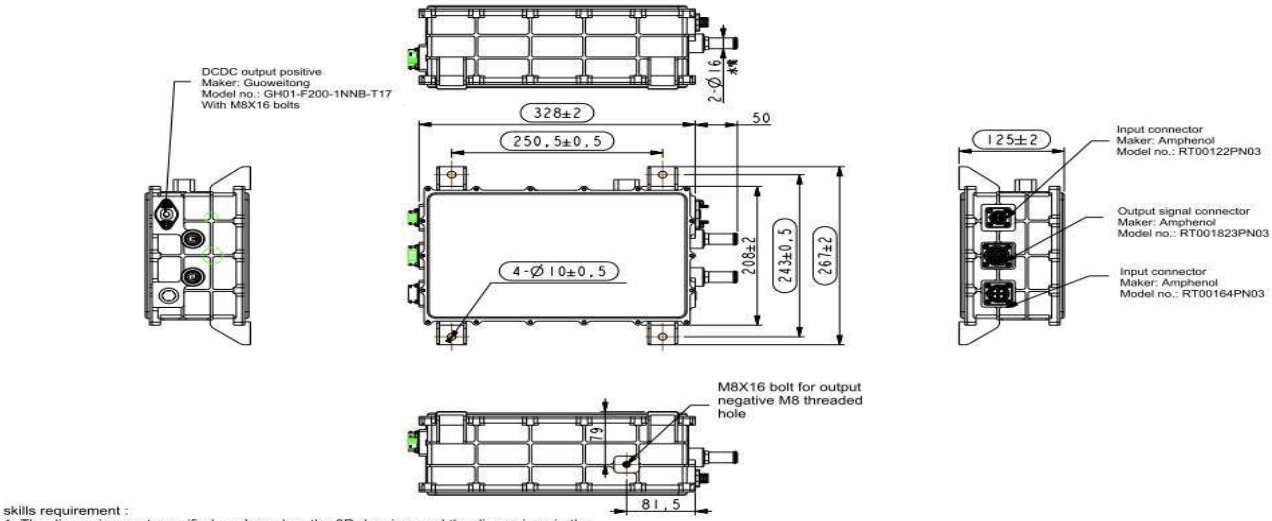
Model No.：AR2KC6K6S-D14C540L
Product Name：2KW DCDC+6.6KW OBC 2 in 1

Structural parameters



skills requirement :
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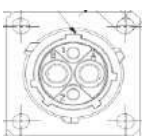
Electrical Interface

Connector Table

Item	Position	Receptacle model no.	Pinout definition	Plug model no.	Maker
1	A	RT001823PN03	Control terminal	RT061823PNH03	Amphenol
2	B	RT00164PN03	AC input	RT06164SNHEC03	Amphenol
3	C	RT00122PN03	DC high voltage	RT06122SNHEC03	Amphenol
4	D	GH01-F200-1NNB-T17	Output positive	M8 Screw bolt	Guoweitong
5	E	Screw bolt	Output negative	/	/

Pinout definition

Receptacle model no.	Pin number	Pinout definition	Description	Connector picture
Input (RT00164PN03)	A	Fire wire	L	
	B	Zero line	N	
	C	Ground	PE	
	D	NC		
Output (RT00122PN03)	A	Positive	Output positive	
	B	Negative	Output negative	
	1	Interlock 1	Interlock signal 1	
	2	Interlock 2	Interlock signal 2	
	A	OBC~VCC+	OBC external input	

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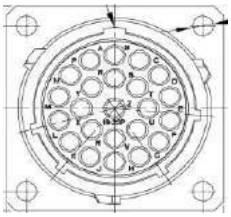
Model No.：AR2KC6K6S-D14C540L

Product Name：2KW DCDC+6.6KW OBC 2 in 1

Control terminal (RT001823PN03)	B	DCDC~VCC+	DC / DC input auxiliary power supply
	C	Proximity Detection (CC)	Charging connection signal
	D	Control pilot (CP)	Charge control signal
	E	CC_OUT	CC_OUT (reserved)
	F	CAN-H	DC / DC and OBC communication high
	G	CAN-L	DC / DC and OBC communication low
	H	CAN-GND	DC / DC and OBC communication ground
	J	OBC~J1772 mode enable (High level signal)	VCU / BMS wake-up signal (100mA) is galvanically isolated from input
	K	LOCK feedback 2	Electronic lock unlock signal (reserved)
	L	LOCK+	OBC drive electronic lock lock / unlock
	M	LOCK-	OBC drive electronic lock lock / unlock
	N	LOCK feedback 1	Electronic lock feedback signal
	P	NTC1+	Slow charge socket temperature 1 positive
	R	NTC2+	Slow charging socket temperature 2 positive
	S	OBC~VCC-	OBC external input
	T	DCDC~VCC-	DC / DC input auxiliary power negative
	U	DCDC~EN enable	DC / DC enable (control VCC)
	V	NTC1-	Slow charge socket temperature 1 min
	W	NTC2-	Slow charge socket temperature 2 negative
	X	NC	
	Y	NC	
	Z	OBC~VCU_EN	VCU wakes up OBC (reserved)



Label

Product Name	2KW DCDC+6.6KW OBC 2 in 1		
Product Part No.	e25.AR2KC6K6S-D14C540L		
Product Model	AR2KC6K6S-D14C540L		
Serial Number	2020XXXXXXXX		
Input Voltage	DCDC: 400~750VDC, OBC: 90~264VAC	Output Voltage	DCDC: 14VDC, OBC: 400~670VDC
Output Current	DCDC: 143A, OBC: 20A	Output power	DCDC: 2000W, OBC: 6600K
Supplier	ANNREN TECHNOLOGIES CO., LTD.		

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Model No.：AR-1K5C3K3-D14C380-HW-AR01

Product Name：3.3KW OBC+1.5KW DCDC+PDU 3 in 1

★ **Features for DC/DC**

1 Output Power：1.5KW
2 Input Voltage：200~420VDC
3 Output Voltage：14VDC
4 Dimensions：359X318X188mm (estimated)
5 Cooling System：Water
6 Protection Level：IP67
7 Communication Method：CA
8 Enclosure: Aluminum alloy made
9 Software: Digital software design

★ **Features for OBC**

1 Output Power：3.3KW
2 Input Voltage：90~264VAC
3 Output Voltage：200~420VDC
4 Dimensions：359X318X188mm (estimated)
5 Cooling System：Water
6 Protection Level：IP67
7 Communication Method：CAN
8 Enclosure: Aluminum alloy made
9 Software: Digital software design

Specification

Description		Technical specifications		Remark
		DCDC Parameters	OBC Parameters	
Output Power		1.5KW	3.3KW	
Input voltage range		200-400VDC	90~264VAC	
Output voltage range		13.8VDC	200-420 VDC	
Output voltage accuracy		±0.2VDC	±1%	
Output current		108A	10A(max)	
Current accuracy		/	±3%	Half load or more
Effectiveness		≥95%	≥95%	Rated voltage full load
Low voltage output		/	12VDC/200mAmax	
Auxiliary power VCC		6-18 VDC	/	
Output voltage ripple		≤500mVPK-PK	/	
Other protection features		Input over-voltage, output over-voltage, output over-current and short-circuit protection (extension and snoring), over-temperature self-recovery	Input over-voltage, output over-voltage, over-temperature protection, over-current protection, output short-circuit protection, reverse battery protection, communication fault protection, internal fault protection	
Dielectric strength	Input to output	2500VDC/1min 1mA max	2000VDC /1min 10mA Max	
	Input to the outer casing	2500VDC/1min 1mA max	1500VAC /1min 10mA Max	
	Input to output	/	3000VAC /1min 10mA Max	
Insulation resistance	Input to output	≥20MΩ	≥20MΩ ;	
	Input to the outer casing	≥20MΩ	≥20MΩ ;	
Electromagnetic compatib	Radiation emission	GB/T 18655-2010 Class 3	GB/T18387 2008 EN55022 CLassB	
	Conducted	GB/T 18655-2010 Class 3		
	Static immunity	GB/T 19951-2005		
	Radiation immunity	GB/T 18655-2010 Class 3		
	High current injection	GB/T 17619-1998		
	Fast burst immunity	GB/T 17626.4-2008 1KV		

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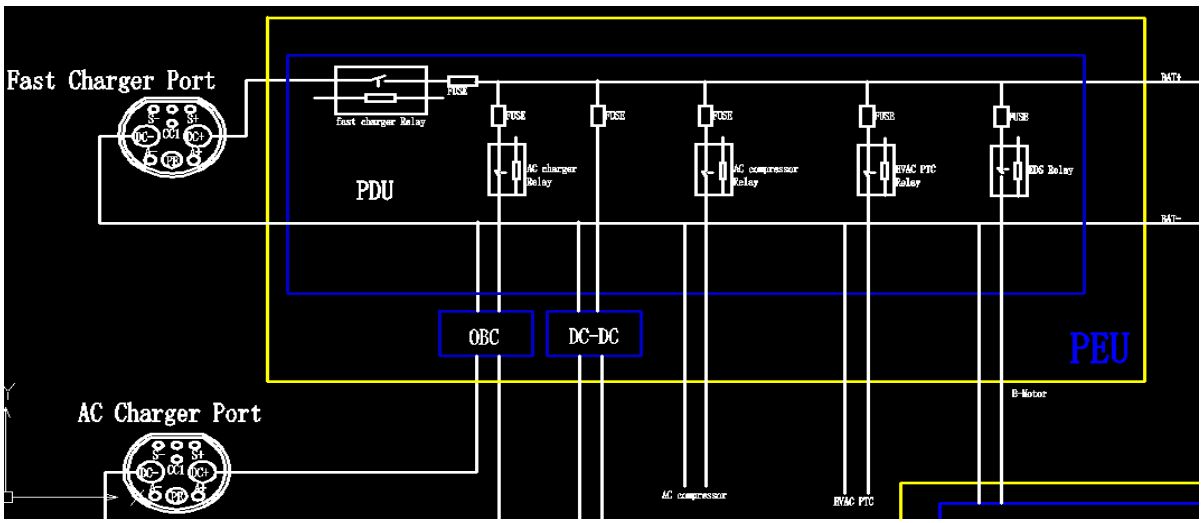
Model No.：AR-1K5C3K3-D14C380-HW-AR01
Product Name：3.3KW OBC+1.5KW DCDC+PDU 3 in 1

High voltage distribution parameters

High-voltage power distribution electrical schematic (customized by customer)



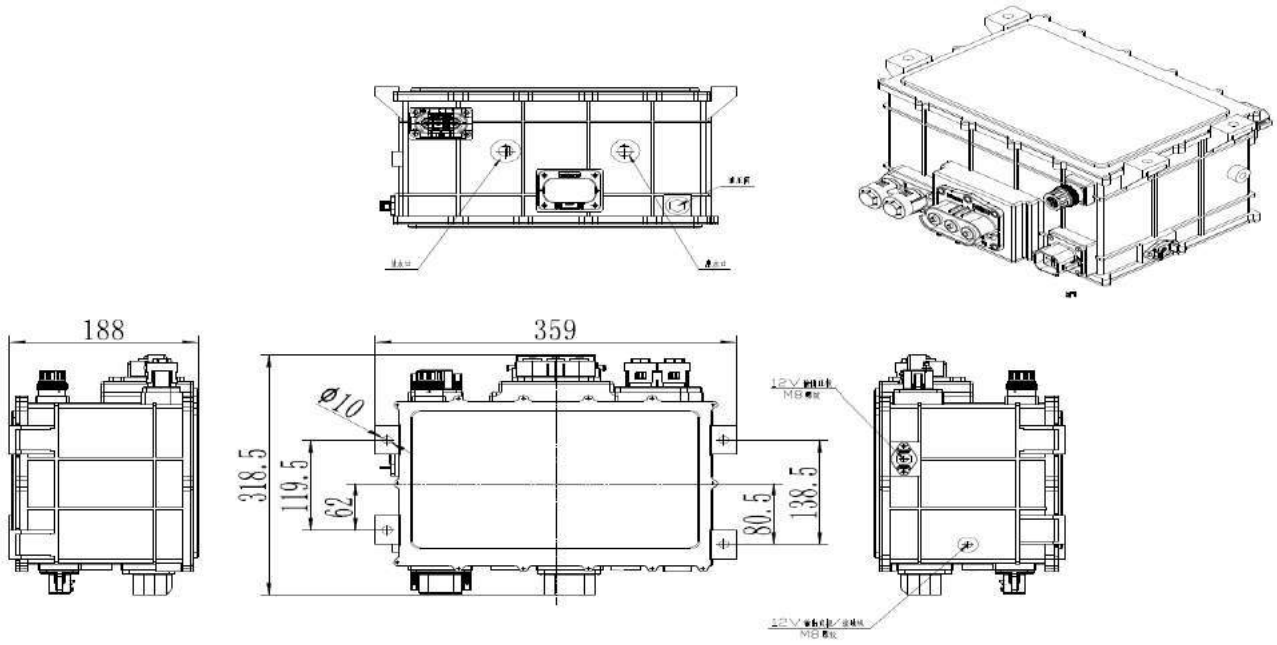
Fuse parameters (customized by customer)

Name	Specification requirements	Manufacturer model	Remarks
PTC fuse	20A 500V	HV150-20BP	
Air conditioner fuse	20A 500V	HV150-20BP	
DCDC Fuse	15A 550V	HV150-15BP	
AC charging fuse	32A 550V	HV150-35BP	
Fast charging fuse	200A 550V	EV3050-200	

Contactor parameters (customized by customer)

NameName	Specification requirements	Manufacturer model	Remarks
PTC relay	20A 550V	HFZ16-30-900-E	
Pre-charging relay	10A 550V	HFZ16-30-900-E	
HV component relay	50A 750V	HFZ16-30-900-E	

Structural parameters



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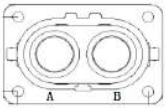
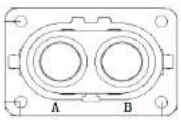
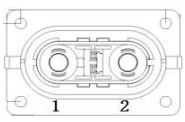
Model No.：AR-1K5C3K3-D14C380-HW-AR01
Product Name：3.3KW OBC+1.5KW DCDC+PDU 3 in 1

Electrical Interface

High voltage interface (customized by customer)

Item	Socket model	Plugin definition	Plug model	factory	Quantity	Plug note
1	YGC1127-EV-S(2+2)RD	Positive and negative battery	YGC1127-EV-S(2+2)PF	Yonggui	1	B positive A negative 35 square shielded wire
2	YGC1127-EV-S(2+2)RC	Motor controller positive and negative	YGC1127-EV-S(2+2)PE	Yonggui	1	A positive B minus 35 square shielded wire
3	YGC998-EV-S(2+2)R/I	Fast charge positive and negative	YGC998-EV-S(2+2)PW/I	Yonggui	1	2 positive 1 negative, 25 square shielded wire
4	YGC939-EV-P2RB	PTC	YGC939-EV-S2PB	Yonggui	1	1 positive 2 negative connected 2.5 square shielded wire
5	YGC939-EV-P2RC	air conditioner	YGC939-EV-S2PC	Yonggui	1	1 positive 2 negative connected 2.5 square shielded wire
6	YGC989-EV-P3RD	Slow charging three-phase input	YGC989-EV-S3PH	Yonggui	1	1 connected to L 2 to N 3 to PE
7	C-GH02-P250-1NNB-T01	12V output is positive	M8 screw column	Guoweitong	1	12VDC positive electrode

Interface definition

Socket definition	Pin number	Interface definition	Description	Connector picture
Battery	B	Power battery is positive		
	A	Power battery negative		
Motor Controller	A	Motor controller is positive		
	B	Motor controller negative		
Fast charging interface	1	Fast charge negative		
	2	Fast charge positive		

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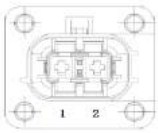
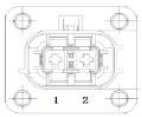
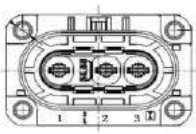
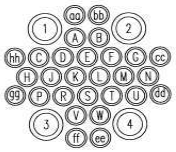
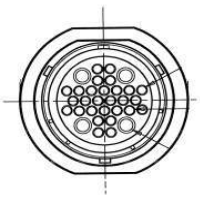
Model No.：AR-1K5C3K3-D14C380-HW-AR01
Product Name：3.3KW OBC+1.5KW DCDC+PDU 3 in 1

PTC	1	positive		
	2	negative		
air conditioner	1	positive		
	2	negative		
Slow charging interface	1	L		
	2	N		
	3	PE		
DCDC output interface	1	Low voltage output is positive		
Control signal terminal	A	VCC+		
	B	GND		
	C	Fast charge contactor feedback		
	D	Fast charge contactor coil negative		
	E	PTC contactor coil negative		
	F	DCDC EN enable		
	G	WAKE UP		
	H	CANH		
	L	CANL		
	M	CC		
	N	CP		
	P	High voltage interlock input		
	R	High voltage interlock output		
	K	AC charging electronic lock power supply positive		
	T	AC charging electronic lock feedback		
	S	AC charging socket temperature detection 2		
	J	NC		
	U	AC charging electronic lock power supply negative		
	W	AC charging socket temperature detection 1		
	V	Car charging signal ground		

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Product Name	6.6KW OBC+1.5KW DCDC+PDU 3 in 1
Model No.	AR-1K5C6K6-D14C380/540-HW-AR01
Power	OBC: 6.6KW DCDC: 15KW
Input Voltage	OBC: 90~264V DCDC: 250~450/400~750VDC
Output Voltage	OBC: 250~450/420~650VDC CDC: 14VDC
Output Current	OBC: 20A DCDC: 109A
Efficiency	OBC: 95% DCDC: 95%
Module Low Voltage (VDC)	12
Module Low Current (A)	200Ma/2A
Size (mm)	430X326X218mm
Cooling System	Water
IP Rating	IP67
Scope	Various new energy vehicles
Hardware	Small size, light weight and stable performance
Firmware	Full digital software design, redundant protection function design

Features

DC/DC Features

- **Output power : 1.5KW**
- **Input voltage : 250~450/400~750VDC**
- **Output voltage : 14VDC**
- **Communication method: CAN**

AC/DC Converter (OBC)

Output power : 6.6KW

Input voltage : 90~264VAC

Output range : 250~450/420~650VDC

Communication method: CAN c

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The main technical parameters

1. OBC, DCDC technical parameters

Item		Technical specifications		Remark
		DCDC Technical Parameters	OBC Technical Parameters	
Output Power		1.5KW	6.6KW	
Input voltage range		250-450VDC	90~264VAC	
Output voltage range		14VDC	250-450 VDC	
Output voltage accuracy		±0.2VDC	±1%	
Output current		109A	20A(max)	
Current accuracy		/	±3%	Half load or more
effectiveness		≥95%	≥95%	Rated voltage full load
Low voltage output		/	12VDC/1Amax	
Auxiliary power VCC		6-18 VDC	/	
Output voltage ripple		≤500mVPK-PK	/	
Other protection features		Input over-voltage, output over-voltage, output over-current and short-circuit protection (extension and snoring), over-temperature self-recovery	Input over-voltage, output over-voltage, over-temperature protection, over-current protection, output short-circuit protection, reverse battery protection, communication fault protection, internal fault protection	
Dielectr	Input to output	2500VDC/1min 1mA max	2000VDC /1min 10mA Max	

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ic stre ngth	Input to the outer casing	2500VDC/1min 1mA max	1500VAC /1min 10mA Max	
	Input to output	/	3000VAC /1min 10mA Max	
Insu lati on resi stan ce	Input to output	≥20MΩ	≥20MΩ；	
	Input to the outer casing	≥20MΩ	≥20MΩ；	
Elec trom agne tic comp atib ilit y	Radiation emission	GB/T 18655-2010 Class 3	GB/T18387 2008 EN55022 CLassB	
	Conducted emission	GB/T 18655-2010 Class 3		
	Static immunity	GB/T 19951-2005		
	Radiation immunity	GB/T 18655-2010 Class 3		
	High current injection	GB/T 17619-1998		
	Fast burst immunity	GB/T 17626.4-2008 1KV		

2. High voltage distribution parameters

2-1. High-voltage power distribution electrical schematic (customized by customer)

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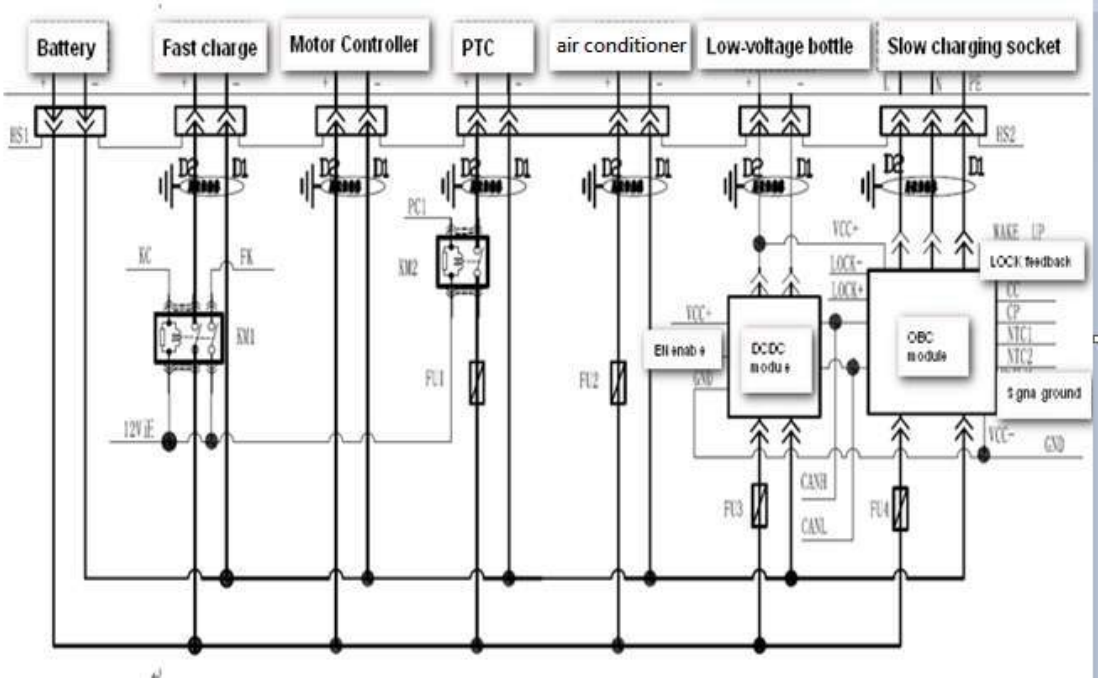

2-2. Fuse parameters (customized by customer)

Name	Specification requirements	Manufacturer model	Remarks
PTC Fuse	25A 500V	EV1845-25A-M6	
Air conditioner fuse	32A 500V	EV1845-32A-M6	
DCDC Fuse	25A 500V	EV1845-25A-M6	
OBC Fuse	32A 500V	EV1845-32A-M6	
.....			

2-3. Contactor parameters (customized by customer)

Name	Specification requirements	Manufacturer model	Remarks
Fast charge contactor	150A 500V	GL150HAANA (national power)	
PTC contactor	20A 500V	EV20(Sière)	
.....			

Structural parameters

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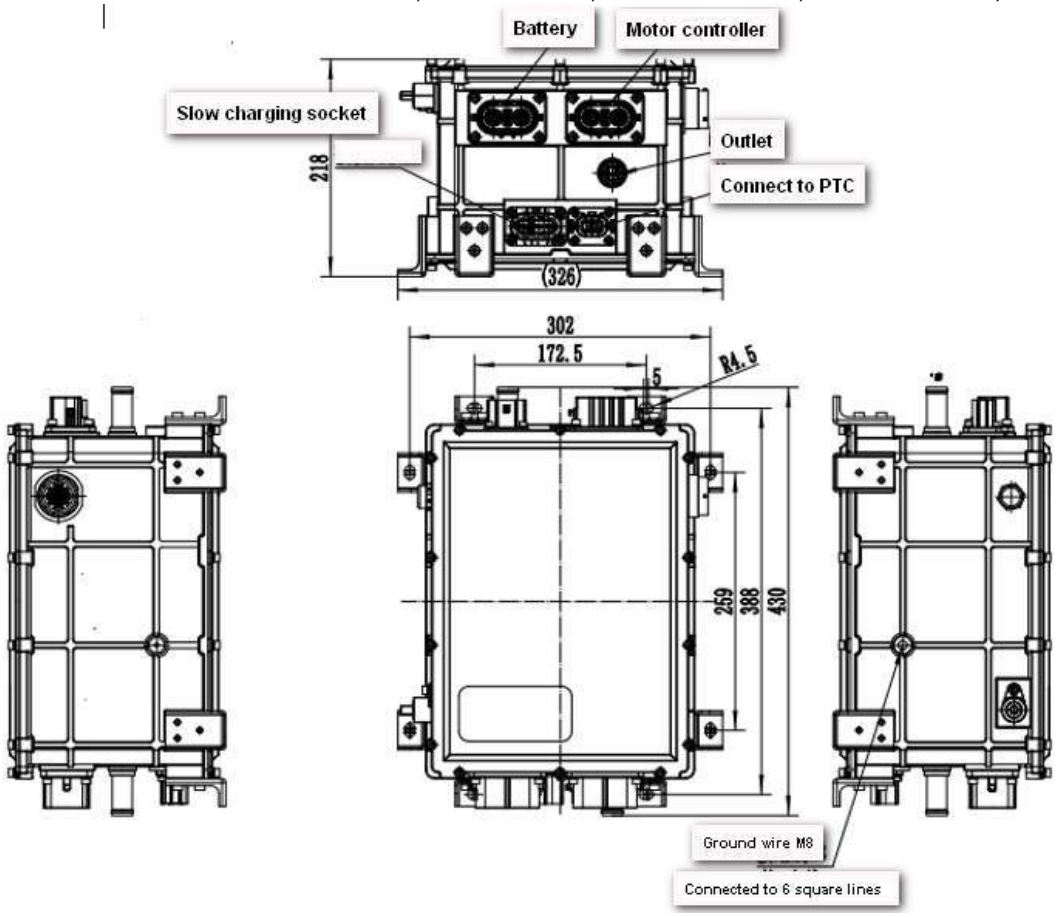

Electrical Interface

1. High voltage interface (customized by customer)

Item	Socket model	Plugin definition	Plug model	factory	Quantity	Plug note
1	YGC1127-EV-S(2+2)RD	Positive and negative battery	YGC1127-EV-S(2+2)PF	Yonggui	1	B positive A negative 35 square shielded line
2	YGC1127-EV-S(2+2)RC	Motor controller positive and negative	YGC1127-EV-S(2+2)PE	Yonggui	1	A positive B minus 35 square shielded wire

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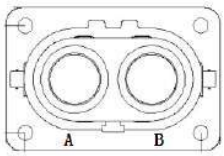
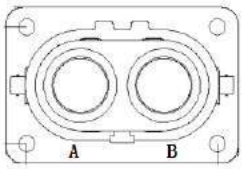
3	YGC998-EV-S(2+2)R/I	Fast charge positive and negative	YGC998-EV-S(2+2)PW/I	Yonggui	1	2 positive 1 negative, 25 square shielded wire
4	YGC939-EV-P2RB	PTC	YGC939-EV-S2PB	Yonggui	1	1 positive 2 negative connected 2.5 square shielded wire
5	YGC939-EV-P2RC	air conditioning	YGC939-EV-S2PC	Yonggui	1	1 positive 2 negative connected 2.5 square shielded wire
6	YGC989-EV-P3RD	Slow charging three-phase input	YGC989-EV-S3PH	Yonggui	1	1 connected to L 2 to N 3 to PE
7	C-GH02-P250-1NNB-T01	12V output is positive		Guoweitong	1	

2. Interface definition

Socket definition	Pin number	Interface definition	Description	Connector picture
battery	B	Power battery is positive		
	A	Power battery negative		
Motor Controller	A	Motor controller is positive		
	B	Motor controller negative		
Fast charging	1	Fast charge negative		

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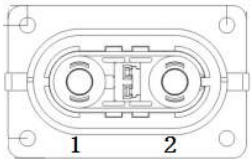
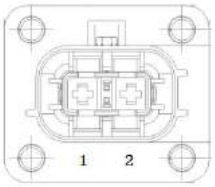
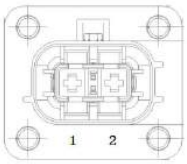
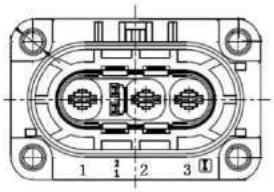
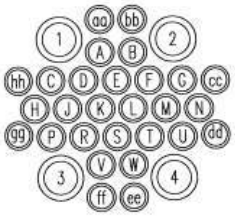
interface	2	Fast charge positive		
PTC	1	positive		
	2	negative		
air conditioning	1	positive		
	2	negative		
Slow charging interface	1	L		
	2	N		
	3	PE		
DCDC output interface	1	Low voltage 12 output is positive		
Control signal terminal	A	12V+		
	B	GND		
	C	Fast charge contactor feedback		
	D	Fast charge contactor coil negative		
	E	PTC contactor coil negative		
	F	DCDC EN enable		
	G	WAKE UP		
	H	CANH		
	L	CANL		
	M	CC		
	N	CP		
	P	High voltage interlock input		
	R	High voltage interlock output		
	K	AC charging		

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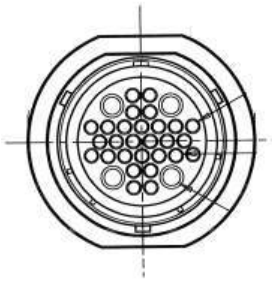
		electronic lock power supply positive		
	T	AC charging electronic lock feedback		
	S	AC charging socket temperature detection 2		
	J			
	U	AC charging electronic lock power supply negative		
	W	AC charging socket temperature detection 1		
	V	Car charging signal ground		

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Product Name	6.6KW OBC+2.5KW DCDC+PDU 3 in 1
Model No.	AR-2K5C6K6-D14C540-HW-AR01
Power	OBC: 6.6KW DCDC: 2.5KW
Input Voltage	OBC: 90~264V DCDC: 400~750V
Output Voltage	OBC: 500~750V DCDC: 14VDC
Output Current	OBC: 20A DCDC: 175A
Efficiency	OBC: 95% DCDC: 95%
Module Low Voltage (VDC)	12
Module Low Current (A)	200Ma/2A
Size (mm)	430X326X218
Cooling System	Water
IP Rating	IP67
Scope	Various new energy vehicles
Hardware	Small size, light weight and stable performance
Firmware	Full digital software design, redundant protection function design

Features

DC/DC Converter

- **Output power: 2.5KW**
- **Input voltage: 400~750VDC**
- **Output voltage: 14VDC**
- **Communication method: CAN**

AC/DC Converter (OBC)

Output power: 6.6KW
Input voltage: 90~264VAC
Output range: 500~750VDC
Communication method: CAN

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The main technical

一、OBC、DCDC technical Parameters

Item		Technical specifications		Remark
		DCDC Technical Parameters	OBC Technical Parameters	
Output Power		2.5KW	6.6KW	
Input voltage range		400-750VDC	90~264VAC	
Output voltage range		14VDC	500-750VDC	
Output voltage accuracy		±0.2VDC	±1%	
Output current		175A	20A(max)	
Current accuracy		/	±3%	Half load or more
Effectiveness		≥95%	≥95%	Rated voltage full load
Low voltage output		/	12VDC/1Amax	
Auxiliary power VCC		6-18VDC	/	
Output voltage ripple		≤500mVPK-PK	/	
Other protection features		Input over-voltage, output over-voltage, output over-current and short-circuit protection (extension and snoring), over-temperature self-recovery	Input over-voltage, output over-voltage, over-temperature protection, over-current protection, output short-circuit protection, reverse battery protection, communication fault protection, internal fault protection	
Dielectric strength	Input to output	2500VDC/1min 1mA max	2000VDC /1min 10mA Max	
	Input to the outer casing	2500VDC/1min 1mA max	1500VAC /1min 10mA Max	
	Input to output	/	3000VAC /1min 10mA Max	
Insulation resistance	Input to output	≥20MΩ	≥20MΩ;	
	Input to the outer casing	≥20MΩ	≥20MΩ;	
Electromagnetic compatibility	Radiation emission	GB/T 18655-2010 Class 3	GB/T18387 2008 EN55022 CLassB	
	Conducted emission	GB/T 18655-2010 Class 3		
	Static immunity	GB/T 19951-2005		
	Radiation immunity	GB/T 18655-2010 Class 3		

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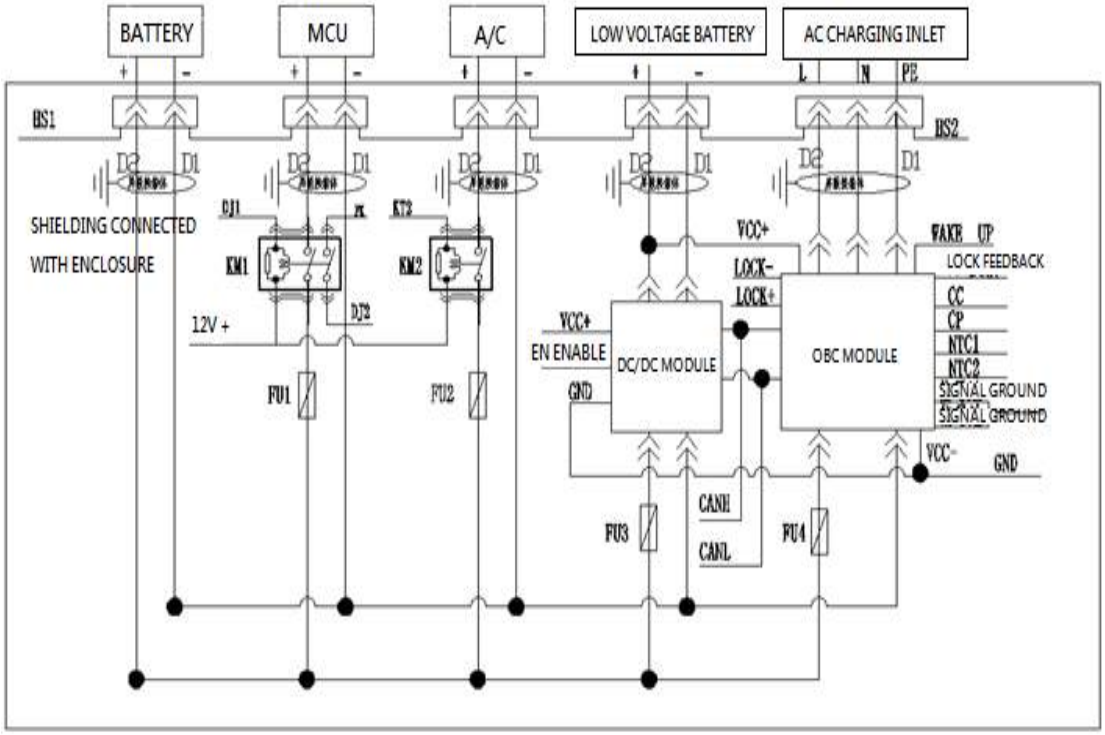
	High current injection	GB/T 17619-1998		
	Fast burst immunity	GB/T 17626.4-2008 1KV		

二、High voltage distribution parameters

1. High-voltage power distribution electrical schematic (can be customized)



2. Fuse parameters (customized by customer)

Name	Specification requirements	Manufacturer model	Remarks
Air conditioner fuse	32A 500V	EV1845-32A-M6	
DCDC fuse	25A 500V	EV1845-25A-M6	
OBC fuse	32A 500V	EV1845-32A-M6	
.....			

3. Contactor parameters (can be customized)

Name	Specification requirements	Manufacturer model	Remarks
Electronically controlled contactor	250A 500V		
Air conditioner contactor	20A 500V		

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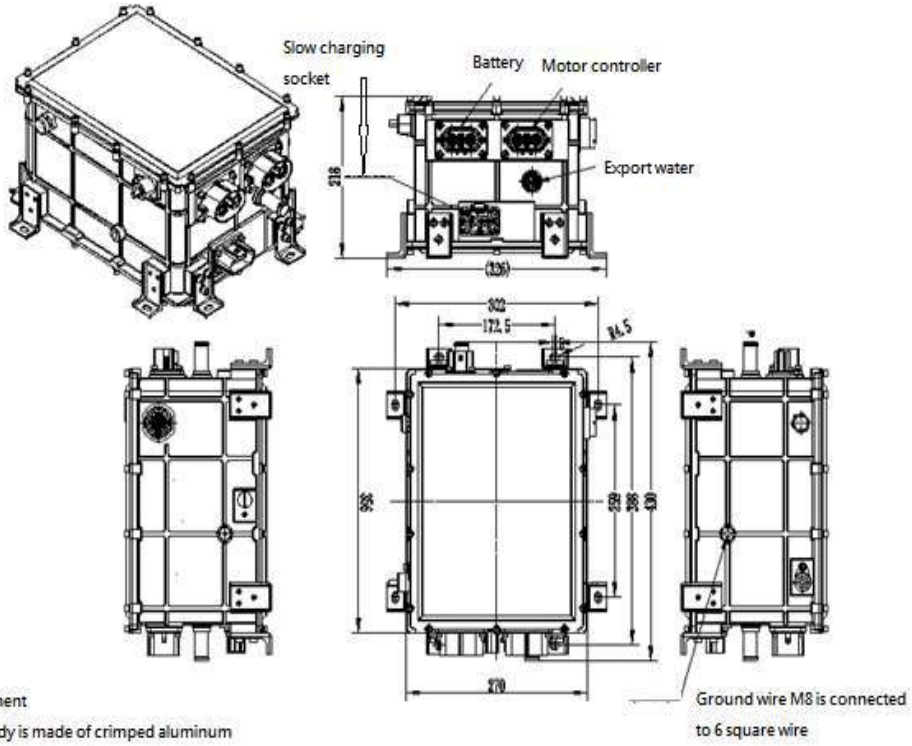
Structural parameters



skills requirement

1. The box body is made of crimped aluminum alloy
2. High-voltage connector adopts new energy high-voltage connector
3, protection grade IP67
4, insurance belongs to the loss
5, working temperature -40 ° C ~ 85 ° C
6, cooling method is cold

Electrical Interface

一、High pressure interface (customized by customer)

Item	Socket model	Plugin definition	Plug model	factory	Quantity	Plug note
1	YGC1127-EV-S(2+2)RD	Positive and negative battery	YGC1127-EV-S(2+2)PF	Yonggui	1	B positive A negative 35 square shielded line
2	YGC1127-EV-S(2+2)RC	Motor controller positive and negative	YGC1127-EV-S(2+2)PE	Yonggui	1	A positive B minus 35 square shielded wire

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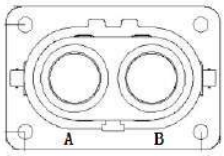
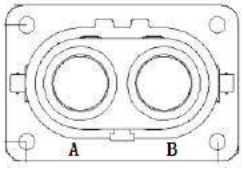
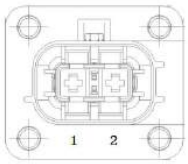
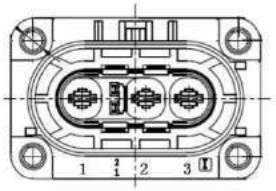
3	YGC939-EV-P2RC	air conditioning	YGC939-EV-S2PC	Yonggui	1	1 positive 2 negative connected 2.5 square shielded wire
4	YGC989-EV-P3RD	Slow charging three-phase input	YGC989-EV-S3PH	Yonggui	1	1 connected to L 2 to N 3 to PE
5	C-GH02-P250-1NNB-T01	12V output is positive		Guoweitong	1	

二、Interface definition

Socket definition	Pin number	Interface definition	Description	Connector picture
battery	B	Power battery is positive		
	A	Power battery negative		
Motor Controller	A	Motor controller is positive		
	B	Motor controller negative		
air conditioning	1	positive		
	2	negative		
Slow charging interface	1	L		
	2	N		
	3	PE		
DCDC output interface	1	Low voltage 12 output is positive		
Control signal terminal	A	12V+		
	B	GND		
	C	Fast charge contactor feedback		
	D	Fast charge contactor coil negative		
	E	PTC contactor coil negative		

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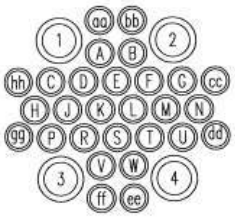
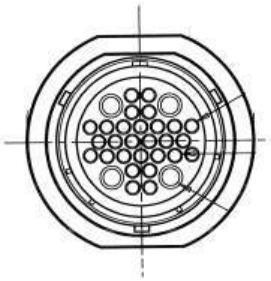
	F	DCDC EN enable		
	G	WAKE UP		
	H	CANH		
	L	CANL		
	M	CC		
	N	CP		
	P	High voltage interlock input		
	R	High voltage interlock output		
	K	AC charging electronic lock power supply positive		
	T	AC charging electronic lock feedback		
	S	AC charging socket temperature detection 2		
	J			
	U	AC charging electronic lock power supply negative		
	W	AC charging socket temperature detection 1		
	V	Car charging signal ground		

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Model No.：AR-2.5K-380/540S14-W-AR01

Product Name：2.5KW DC/DC Converter system

2.5KW DC/DC Converter Liquid cooling System

Features

1 Output Power：2.5KW
2 Input Voltage：250-450VDC/400-750VDC
3 Output Voltage：14VDC
4 Dimensions：268x220x75mm
5 Cooling System：Liquid
6 IP Rating：IP67
7 Communication Method：CAN
8 Enclosure: Aluminum alloy made
9 Software: Digital software design

Applications

Electric Passenger Vihecles

Electric Passenger Vihecles

Specification

Description		Technical specifications	Remark
Operating temperature		-40~85℃	85~100℃ · Can be derated to 40% of work
Rated output power		2.5KW	
Input voltage range		250-450VDC/400-750VDC	Optional
Output rated voltage		14VDC	9~16 Adjustable
Rated output current		175A	
Auxiliary power VCC		6-18VDC	
Efficiency		≥95%	Rated voltage Full load
Output voltage ripple		≤500mVPK-PK	
Protection characteristics		Input over-voltage, output over-voltage, input anti-reverse connection, output over-current and short-circuit protection, over-temperature self-recovery	
Over temperature protection		The bottom plate temperature reaches 85 °C and starts derating output. The temperature exceeds 100 °C, shutting down; the temperature is lower than 95 °C, which can be self-recovery.	
Dielectric strength	Input to output	2500VDC/1min 1mA max	
	Input to the outer casing	2500VDC/1min 1mA max	
Insulation resistance	Input to output	≥20MΩ	
	Input to the outer casing	≥20MΩ	
Battery compatibility	Radiation emission	GB/T 18655-2010 Class 3	
	Conducted emission	GB/T 18655-2010 Class 3	
	Static immunity	GB/T 19951-2005	Air discharge：15KV · Contact discharge 8KV
	Radiation immunity	GB/T 18655-2010 Class 3	
	High current injection	GB/T 17619-1998	
	Fast burst immunity	GB/T 17626.4-2008 1KV	

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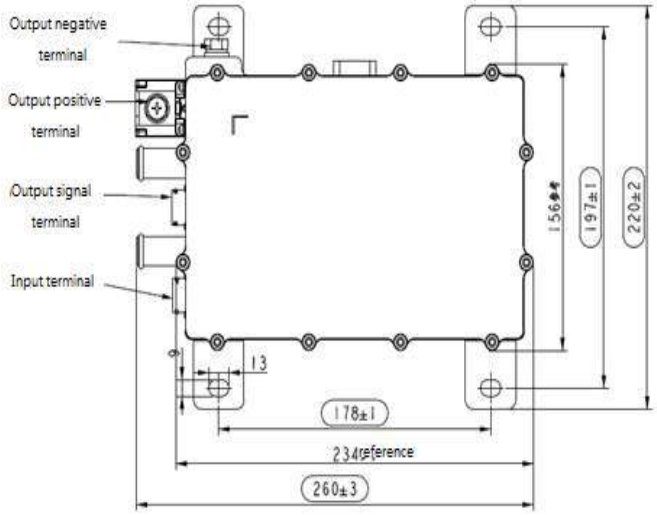
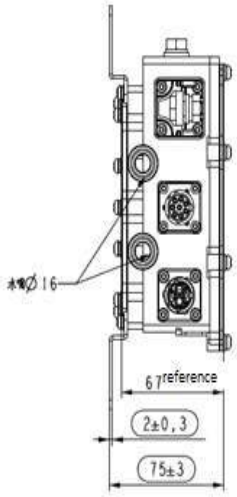
Model No.：AR-2.5K-380/540S14-W-AR01

Product Name：2.5KW DC/DC Converter system

Structural parameters

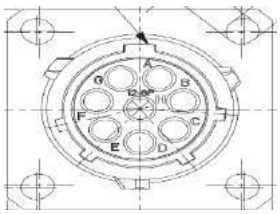
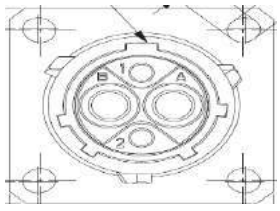




Connector information（customizable）

Position	Socket model	Function	Brand	Plug model
A	RT00128PN03	Control terminal	Amphenol	RT06128SNHEC03
B	RT00122PN03	DC high voltage terminal	Amphenol	RT06122SNHEC03
C	ACTB117-C	Output positive	Connet	M8 Specification copper ear
D	M8 Bolt lock housing	Output negative	\	M8 Specification copper ear

Interface definition（for reference）

Vendor	Model	Description		Remark
Amphenol	RT00128PN03	A	CAN-H	
		B	CAN-L	
		C	KEY（Highly effective）Reserved	
		D	VCC+	
		E	GND	
		F	NC	
		G	NC	
		H	NC	
Amphenol	RT00122PN03	A	Input positive	
		B	Input negative	
		1	Interlock 1 connection 2	
		2	Interlock 2 connection 1	

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Date: 2019/11/04	Version: V02	Remark: 1. Model No. changed from AR6K6-250D380A-SAE to AR6K6-220S38A 2. Standard changed from GB/T to SAE J1772 2010
Date: 2020/01/16	Version: V03	Remark: 1. Input Voltage changed to be 85-265 VAC from 90-264Vdc, 2. Out Voltage changed to be 250-450VDC from 200-450Vdc. 3. Output Current(Max) changed to be 20A from 14A.

SAE J1772 6.6KW 380V ON BOARD CHARGER

Model No.: AR6K6-220S380A

1. Features

Product Name	6.6KW 380V ON BOARD CHARGER
Model No.	AR6K6-220S380A
Standard	SAE J1772 2010
Power	6.6KW
Input Voltage	85~265VAC
Output Voltage	250-450VDC
Output Current(Max)	20A
Efficiency	≥93%
Module Low Voltage (VDC)	13.8VDC
Module Low Current (A)	200mAmax
Can Bus Speed	500 kb/s
Size (mm)	380x244x126mm
Cooling System	Fan Cooling
IP Rating	IP67 (Fan is excluded)
Scope	Various new energy vehicles
Hardware	Small size, light weight and stable performance
Firmware	Full digital software design, redundant protection function design

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2. Specification

Item		Technical specifications	Remarks
Environmental characteristics	Operating temperature	-40~65℃	Long-time working
	Vibration/noise	Meet SAE J1772 2010 standard	
	Salt spray experiment	Meet SAE J1772 2010 standard	
Output Power		6.6KW max	
Input voltage range		85~265VAC	
Output voltage range		250-450 VDC	
Voltage accuracy		±1%	
Output maximum current		20A	
Current accuracy		±3%	Half load or more
Efficiency		≥93%	Rated voltage Full load
Low voltage wake-up signal		13.8VDC/200mAmax	Customizable
Other protection features		Input over-voltage, output over-voltage, over-temperature protection, over-current protection, output short-circuit protection, reverse battery protection, communication fault protection, internal fault protection	
Over temperature protection		When the temperature reaches 85 °C, the output power is reduced by half. The temperature is <80 °C in 10 minutes, and the full load is automatically restored. After 10 minutes, the temperature is >80 °C, then it is turned off. When the temperature is >90 °C, it will be shut down directly.	
Dielectric strength	Output to the outer casing	2000VDC /60S 10mA Max	
	Input to the outer casing	1500VAC /60S 10mA Max	
	Input to output	3000VAC /60S 10mA Max	
Insulation resistance	Input to output	≥20MΩ	
	Input to the outer casing	≥20MΩ	
Electromagnetic compatibility	Radiation emission	GBT 18387：2008，EN 55022 Class B	
	Conducted emission	GBT 18387：2008，EN 55022 Class B	
	Radiation immunity	GBT 18387：2008，EN 55022 Class B	

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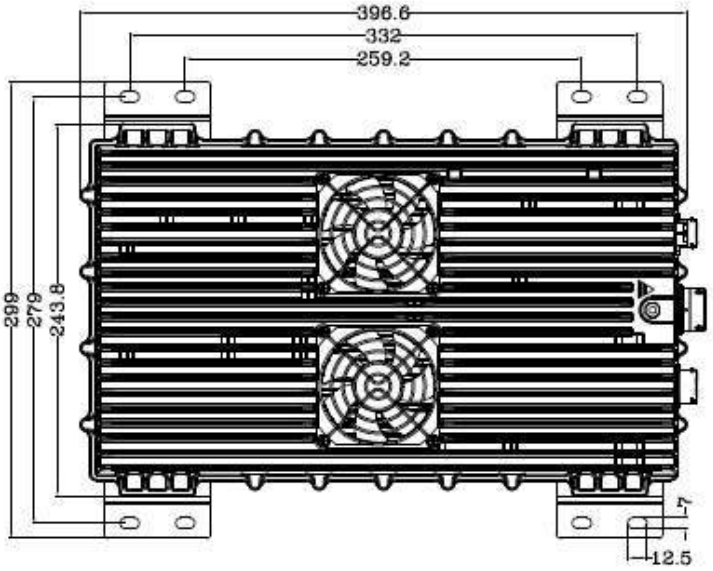
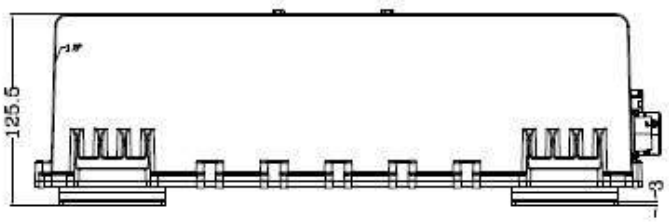
3. Structural Parameters

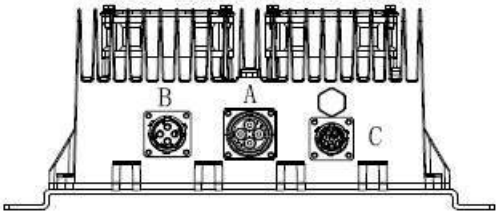
Structural information (installation brackets and plug-ins can be customized)

PINOUT	Socket model	Function	Brand	Plug model
A	C10518N1-04-1-G002	AC input	Jonhon	C10518N1-04-1-2-G002
B	RT00144PN03	DC output	Amphenol	RT06144SNHEC03 Terminal SS12A1T Waterproof stopper A114017
C	RT00128PN03	Signal socket	Amphenol	RT06128SNHEC03 Terminal SS16M1F Waterproof stopper AT13-201-2005





A：交流输入
B：高压直流输出
C：信号接插件



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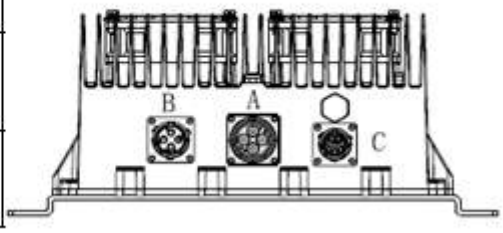
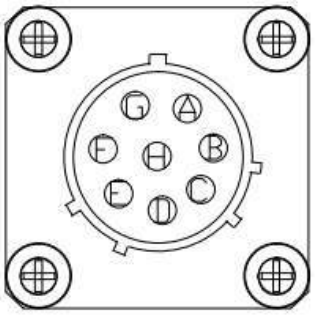
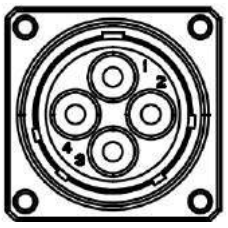
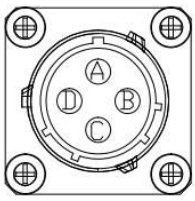
PINOUT	Socket model	Function
A	C10518N1-04-1-G002	AC input
B	RT00144PN03	DC output
C	RT00128PN03	Signal socket



Vendor	Model	Description		Remarks
Amphenol	RT00128PN03	A	CAN-H	
		B	Proximity Detection (CC)	
		C	Control pilot (CP)	
		D	Constant battery power (12V Input)	
		E	OBC-EN (Wake up signal)	
		F	J1772 mode enable (High level signal)	
		G	CANL	
		H	GND	
Jonhon	C10518N1-04-1-G001	1	L (Fire line)	
		2	N (Neutral line)	
		3	PE (Protected area)	
		4	NC	
Amphenol	RT00144PN03	A	Output positive	
		B	Interlock 1	
		C	Output negative	
		D	Interlock 2	

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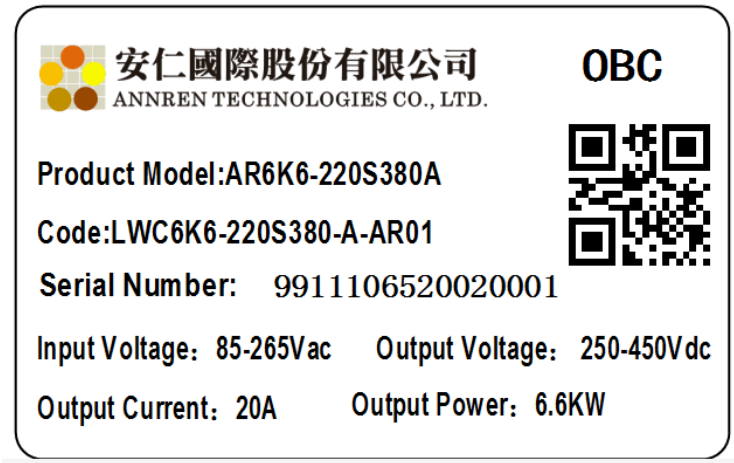
Label



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SAE J1772 6.6KW 540V ON BOARD CHARGER

Model No.: AR-6K6-220D54014-A-SAE

Features

Product Name	6.6KW ON BOARD CHARGER
Model No.	AR-6K6-220D54014-A-AR01
Standard	SAE J1772
Power	6.6KW
Input Voltage	90~264VAC
Output Voltage	420~650VDC
Output Current	14A
Efficiency	≥93%
Module Low Voltage (VDC)	13.8VDC
Module Low Current (A)	200mAmax
Can Bus Speed	500 kb/s
Size (mm)	380x244x126mm
Cooling System	Fan Cooling
IP Rating	IP67 (Fan is excluded)
Scope	Various new energy vehicles
Hardware	Small size, light weight and stable performance
Firmware	Full digital software design, redundant protection function design

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Specification

Parameters		Requirements
Environmental characteristics	Operating temperature	-40~65℃ (long-time working)
	Vibration / noise	Meet QC / T 895-2011 standard
	Salt spray test	Meet QB / T 2423.17-2008 standard
Output Power		6.6KW max
Input voltage range		90~264VAC
Output voltage range		420-650 VDC
Voltage accuracy		±1%
Output current		14A
Current accuracy		±3% (More than half load)
Efficiency		≥93% (Rated voltage, full operation)
Low voltage wake-up signal		13.8VDC/7Amax (Customized)
Other protection features		Input over and under voltage, output over and under voltage, over temperature protection, over current protection, output short circuit protection, reverse battery protection, communication fault protection, internal fault protection
Over temperature protection		When the temperature reaches 85 ° C, the output power is halved, and the temperature is lower than 80 ° C within 10 minutes, and the load is automatically restored. After 10 minutes, the temperature is higher than 80 ° C, then the power is turned off.
Dielectric strength	Output to casing	2000VDC /60S 10mA Max
	Input to casing	1500VAC /60S 10mA Max
	Input to output	3000VAC /60S 10mA Max
Insulation resistance	Input to output	≥20MΩ
	Input to casing	≥20MΩ

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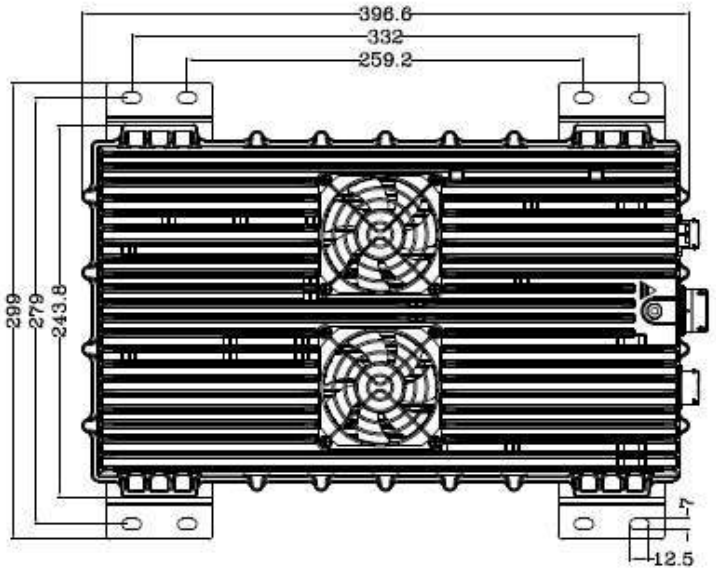
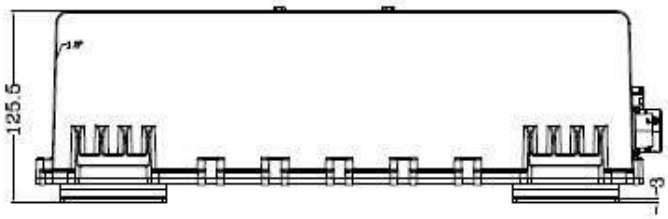
Electromagnetic compatibility	Radiation emission	GBT 18387：2008，EN 55022 Class B
	Conducted emission	GBT 18387：2008，EN 55022 Class B
	Radiation immunity	GBT 18387：2008，EN 55022 Class B

Structural parameters

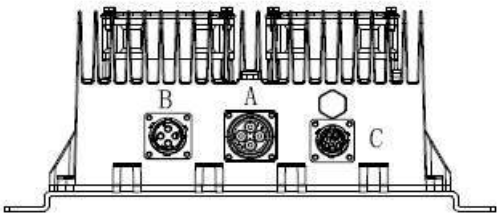
一、Connector Table (customized)

Position	Receptacle model no.	Pinout definition	Maker	Plug model no
A	C10518N1-04-1-G001	AC input	AVIC	C10518N1-04-1-2-G001
B	RT00144PN03	DC output	Amphenol	RT06144SNHEC03
C	RT00128PN03	Signal socket	Amphenol	RT06128SNHEC03





A：交流输入
B：高压直流输出
C：信号接插件



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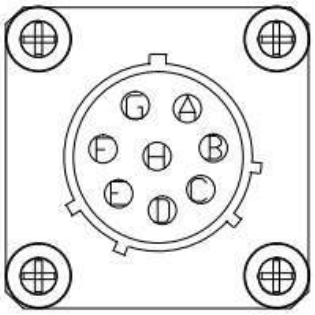
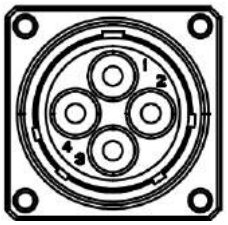
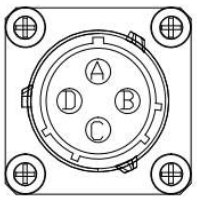
二、Pinout definition

Maker	Receptacle model no.	Description		Connector picture
Amphenol	RT00128PN03	A	CAN-H	
		B	Proximity Detection (CC)	
		C	Control pilot (CP)	
		D	Constant battery power (12V Input)	
		E	OBC-EN (Wake-up signal)	
		F	J1772 mode enable (High level signal)	
		G	CANL	
		H	GND	
AVIC	C10518N1-04-1-G001	1	L (Fire wire)	
		2	N (Zero line)	
		3	PE (Protected area)	
		4	NC	
Amphenol	RT00144PN03	A	Output positive	
		B	Interlock 1	
		C	Output negative	
		D	Interlock 2	

Label

Product Name	SAE J1772 6.6KW 540V ON BOARD CHARGER
Product Part No.	E25.AR-6K6-220D54014-A-SAE
Product Model	AR-6K6-220D54014-A-SAE
Serial number	2019XXXXXXXX
Supplier	ANNREN TECHNOLOGIES CO., LTD.

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ANNREN TECHNOLOGIES CO., LTD.

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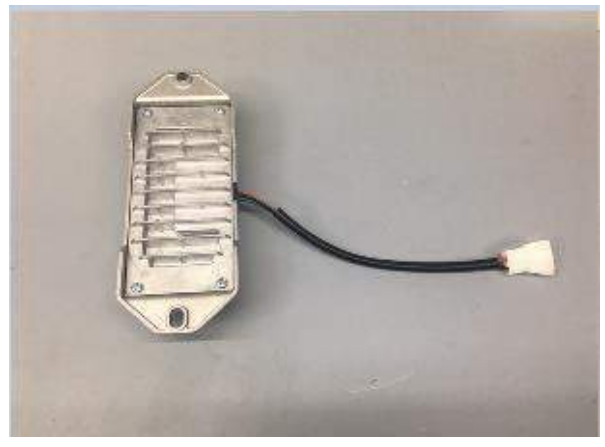
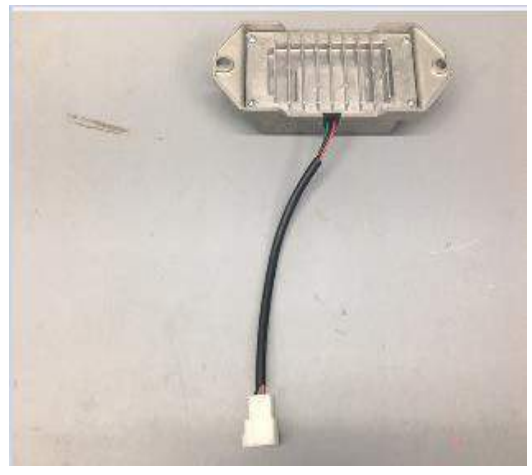
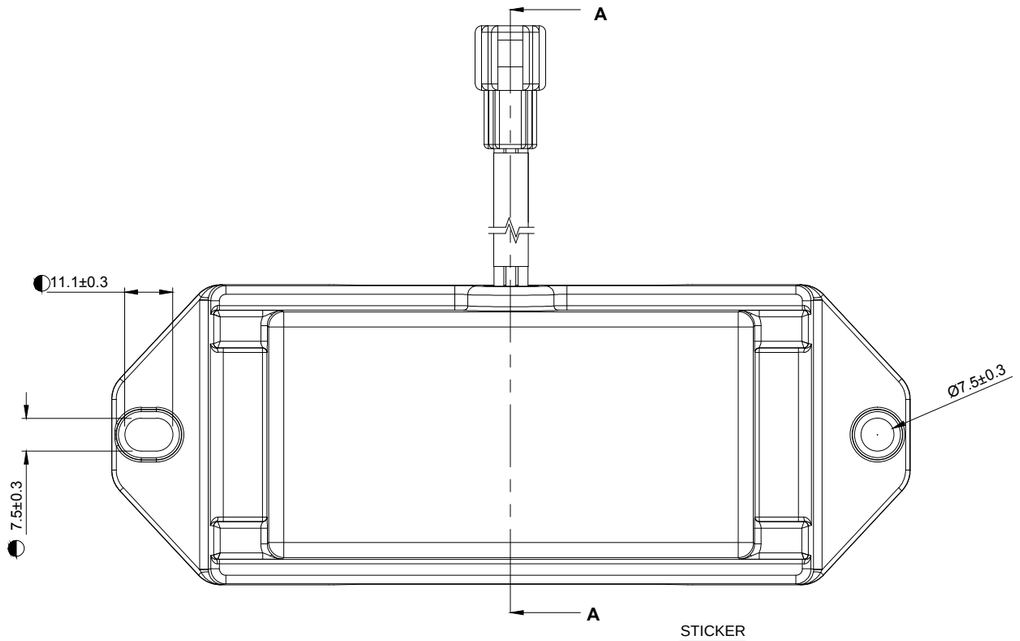
Model No.：AR300W-2713V
Product Name：300W DC/DC converter

Features

1 NOMINAL INPUT VOLTAGE :27V.
2 INPUT VOLTAGE RANGE AT RATED LOAD :18~36 VDC
3 OUTPUT VOLTAGE RANGE: 13±0.5V
4 RIPPLE VOLTAGE AT NOMINAL CONDITION:<250mVPPp AT 25˚C
5 NOMINAL OUTPUT CURRENT : 10A.
6 INSULATION RESISTANCE > 1 MEGA OHM.
7 TESTING TO BE DONE AS PER SIGNED OFF CTR
8 COMPONENT SHOULD MEET THE ELV/RoHS REQUIREMENT
9 INGRESS PROTECTION: IP65.
10 COMPONENT MEETS Pulse 5b TEST FOR 24V SYSTEM AT Us*= 65V , Ri= 1Ohm.
11 COMPONENT MEETS RADIATED EMISSION =Class 3
12 COMPONENT MEETS CONDUCTED EMISSION=Class3.
13 Box size (id)- 450x380x190
14 Qty- 18 nos.
15 Weight- 8.5 kg



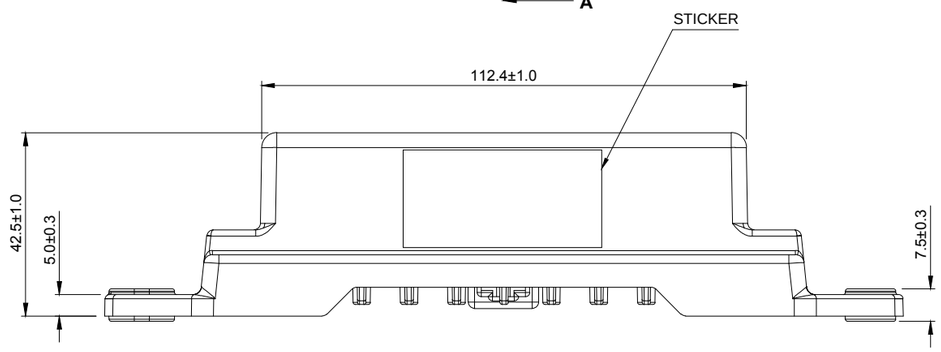




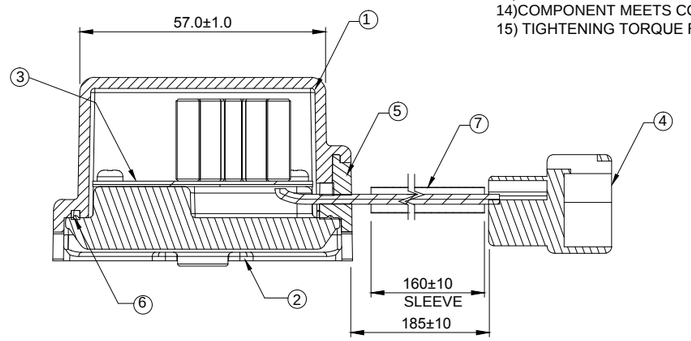


PART LIST:

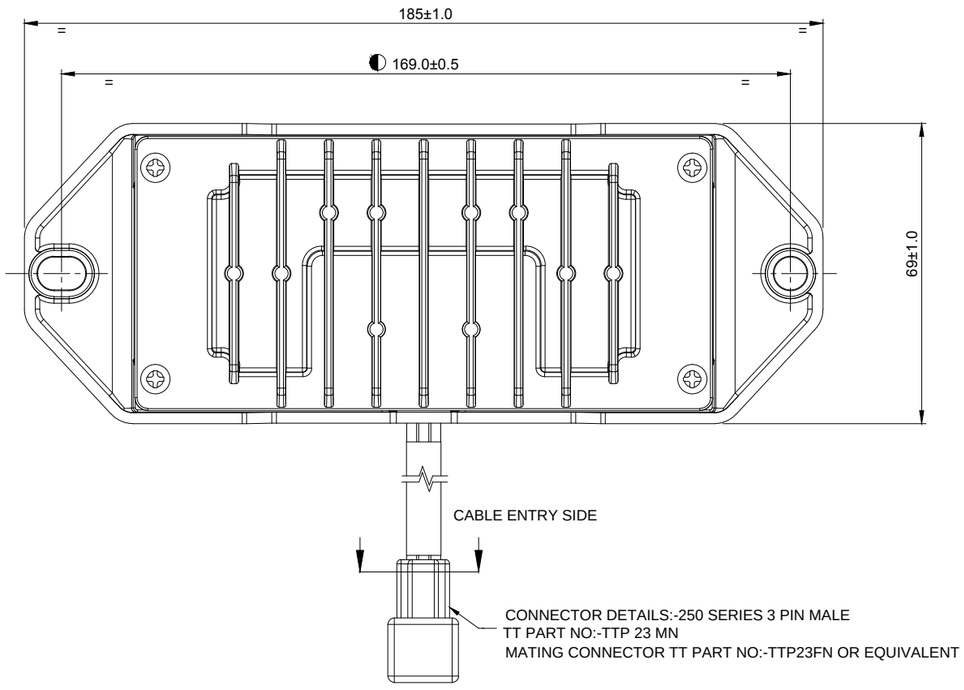
SL NO.	PART NAME	MATERIAL	SURFACE TREAMENT	QTY.	RECYCABILITY	HAZARDIOUS	REMARKS
01	HOUSING	ADC 12	SHOT BLASTED	1	✓	✗	
02	BASE	ADC 12	SHOT BLASTED	1	✓	✗	
03	PCB CP	FR-4	----------	1	✗	✗	
04	PIGTAIL	----------	----------	1	✓	✗	
05	RUBBER GROMET	EPDM BLACK	----------	1	✓	✗	
06	RUBBER SEAL	SILICONE BLACK	----------	1	✓	✗	
07	PVC SLEEVE	PVC BLACK	----------	1	✓	✗	

NOTES:-
01)NOMINAL INPUT VOLTAGE :27V.
02) INPUT VOLTAGE RANGE AT RATED LOAD :18~36 VDC.
03) OUTPUT VOLTAGE RANGE: 13±0.5V DC.
04)RIPPLE VOLTAGE AT NOMINAL CONDITION:<250mVPP AT 25°C.
05) NOMINAL OUTPUT CURRENT : 10A.
06) OPERATING TEMPERATURE : -40°C TO +85°C.
07) STORAGE TEMPERATURE : -40°C TO +85°C.
08) INSULATION RESISTANCE SHALL NOT BE LESS THAN 1 MEGA OHM.
09)TESTING TO BE DONE AS PER SIGNED OFF CTR.
10)COMPONENT SHOULD MEET THE ELV/RoHS REQUIREMENT.
11)INGRESS PROTECTION: IP65.
12)COMPONENT MEETS Pulse 5b TEST FOR 24V SYSTEM AT Us*= 65V , Ri= 1 Ohm.
13)COMPONENT MEETS RADIATED EMISSION =Class 3.
14)COMPONENT MEETS CONDUCTED EMISSION=Class3.
15) TIGHTENING TORQUE FOR SCREW M6 TO BE 1.5±0.2 N.m.



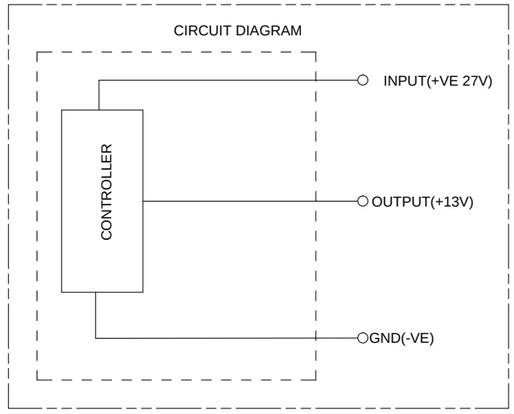


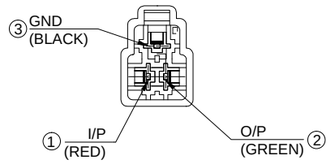
SECTION A-A



WIRE DETAILS:

SL NO.	SQ MM	COLOUR	REMARK	TYPE
01	0.75	RED	INPUT	FLRYB
02	0.75	GREEN	OUTPUT	
03	0.75	BLACK	GROUND	





CONNECTOR VIEW FROM CABLE ENTRY SIDE

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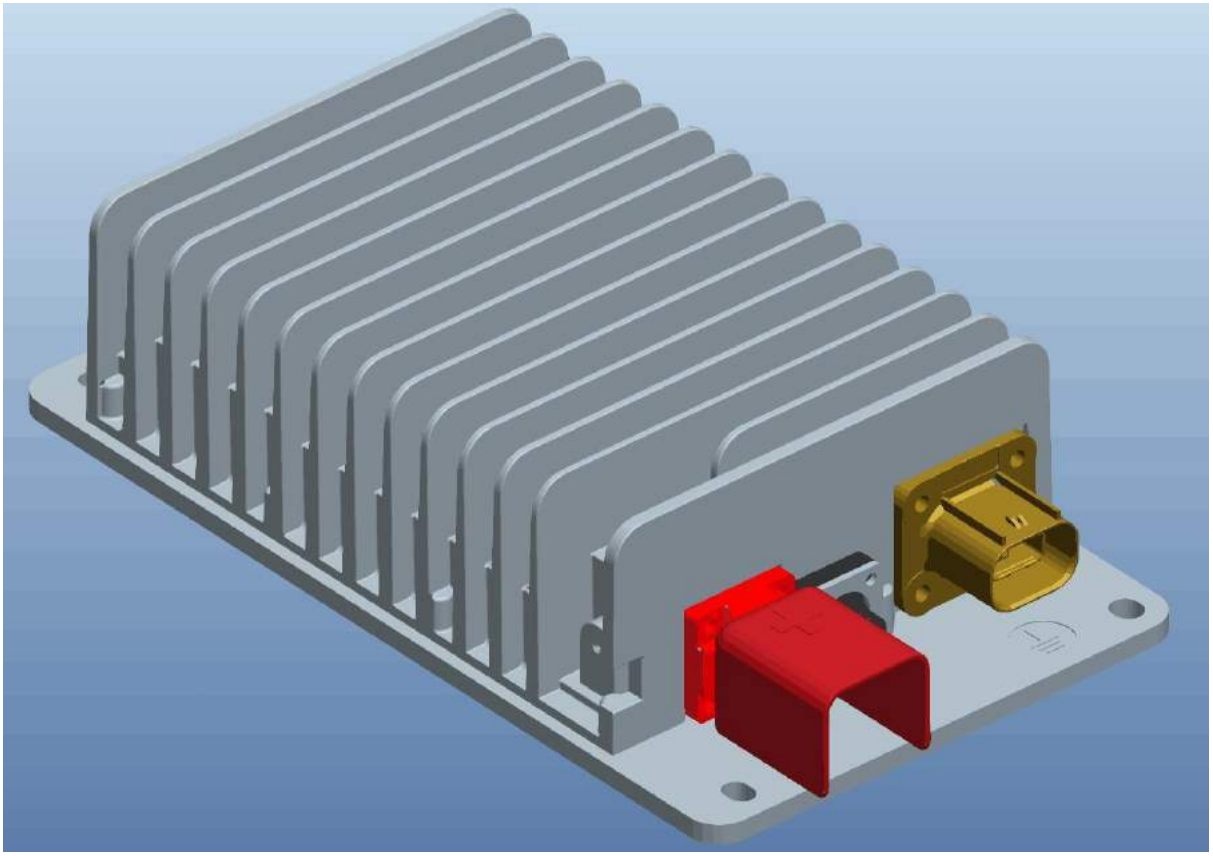
User Manual

1KW DC/DC Converter TDC-IY Series



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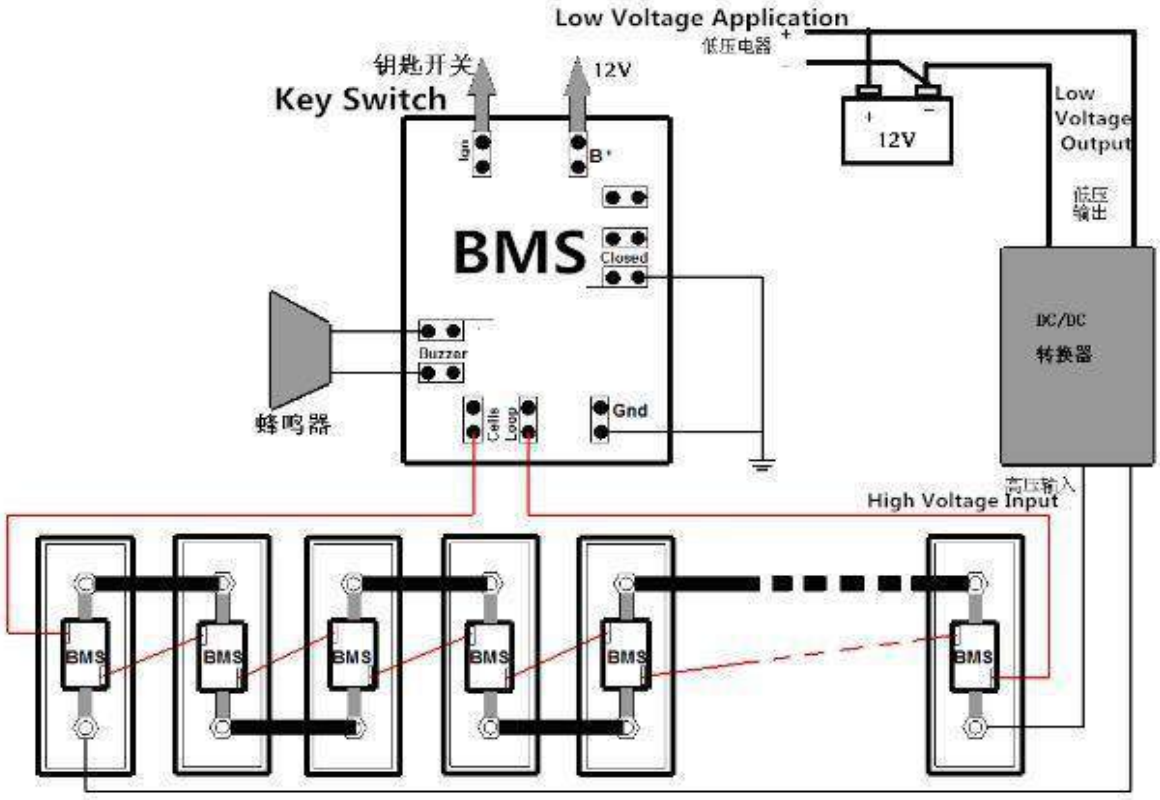
User Manual for 1000W DC/DC Converter

1. Overview

1000W DC-DC Converter, Hangzhou Tie Cheng, can install in electric vehicle, supplying 12V power to low voltage application in vehicle. Output terminal can connect directly to 12V back-up battery pack. DC-DC Converter will management the charging process of back-up battery automatically. Fully sealed potting can be highly waterproof and dust proof, highly temperature resistance, highly vibration resistance.

The diagram between DC-DC Converter,12v back-up battery pack, low voltage equipment and BMS is as below.



2. Basic Function

2.1 Converter high voltage from power battery to low voltage of 12Vdc.

2.2 Management charging process of 12v auxiliary battery.

2.3 Integrated with HVIL function. (High Voltage Internal Lock).

2.4 Compliant with CAN 2.0 regulation, display working status, fault code, etc.

2.5 Via CAN BUS, functions, OBD diagnosis, working status display, modifying working

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parameters, encoding, etc, are achievable.

2.6 Protection function including reverse protection, input lower voltage and over voltage protection, output over voltage , output over current, output short circuit protection, over heating protection etc,.

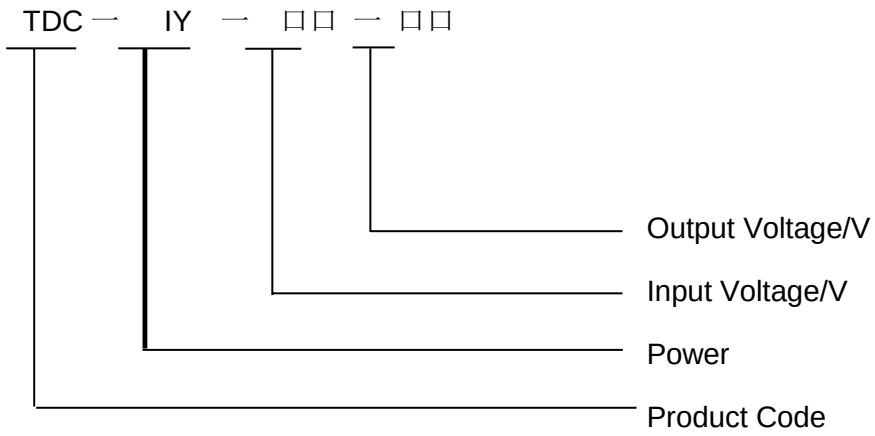
2.7 Input terminal pre-charge function.

2.8 Fully sealed waterproof structure, natural air cooling.

3. Technical Specification

3.1Product name

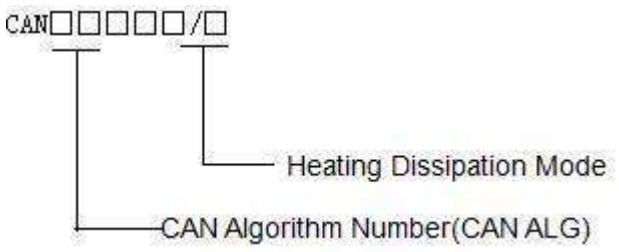
3.1.1 Model Name



3.1.2 Model name method

Item	Description
Power	I=1000W， IY+1000W, J=1500W， JH=1500W, K=2000W, L=2500W, M=3000W

3.1.3 Configuration



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3.1.4 Configuration No. Name Way

Item	Description
CAN Algorithm Number(CAN ALG)	5000-9999, e.g: CAN ALG 5100: with 12V Enable.
Cooling	F--With Fan， Forced Air Cooling. N--Natural Air Cooling，W--Water Cooling

3.1.5 Label Definition.

3.2 Model List

Nominal Input	Nominal Output	Model	Configuration	Heating Dissipation Mode
72V	14.0V	TDC-IY-72-12	CANxxxx/N	Natural Air Cooling
96V/108	14.0V	TDC-IY-108-12	CANxxxx/N	Natural Air Cooling
144V	14.0V	TDC-IY-144-12	CANxxxx/N	Natural Air Cooling
320V	14.0V	TDC-IY-320-12	CANxxxx/N	Natural Air Cooling

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3.3 Features

Model		TDC-IY-72-12	TDC-IY-108-12	TDC-IY-144-12	TDC-IY-320-12
Input	Nominal Voltage	DC72V	DC96V/DC108V	DC144V	DC320V
	Nominal Current	15A	10A/11A	5A	3.5A
	Max Working Current	≤25A	≤18A	≤12A	≤8A
	The range of input voltage	44-97V	72-162V	100-200V	220-450V
	The protection of under voltage	42V±2V	70V±2V	96V±4V	215V±5V
	The protection of over voltage	100±3V	162±4V	215±5V	455±5V
	Activation Time	≈0.5S @ VIN=72V	≈0.5S @ VIN=108V	≈0.5S @ VIN=144V	≈0.5S @ VIN=320V
Output	Nominal Voltage	14.0V±1%			
	Voltage Range	8.0-15V			
	Nominal Output Current	72A			
	Nominal Output DC Power	1000W			
	Peak Power	1200W Continues 6 Minutes			
	Max Efficiency	≥94%			
	Instant Responding	≤50ms			
	The Adjustment rate of voltage	1%			

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	The Adjustment rate of loading	≤1%
	The steady voltage accuracy	≤1%
	The steady current accuracy	≤2%
	The leaking current of output terminal	≤1mA
	The current leakage	≤1mA
	The Output Ripple	≤276mV @ 12V
Signal	12Enable Signal	6-30V
	12V Enable current	≤1mA
Safety Regulation and Other	Hi pot Test	Input to earth: 2000VAC<10ma 1 min.
	Grounding Resistance	The value of the resistor between grounding and heating sink is smaller than 100 ohm.. The testing current is 25A AC.
	Voltage Resistance	2000V Between Input terminal and shell, there is no Corona,ionization,Flying Fox,Breakdown phenomenon.
	Insulation Resistance	In ambient temperature (23±2) ℃ and humidity 80％～90％, input to shell is not smaller than 20MΩ, testing voltage is 1000VDC.
	Noisy	≤50dB @ 1m away from converter
	Electromagnetic Immunity	Compliant with GB/T 18487.3-2001 11.3.1

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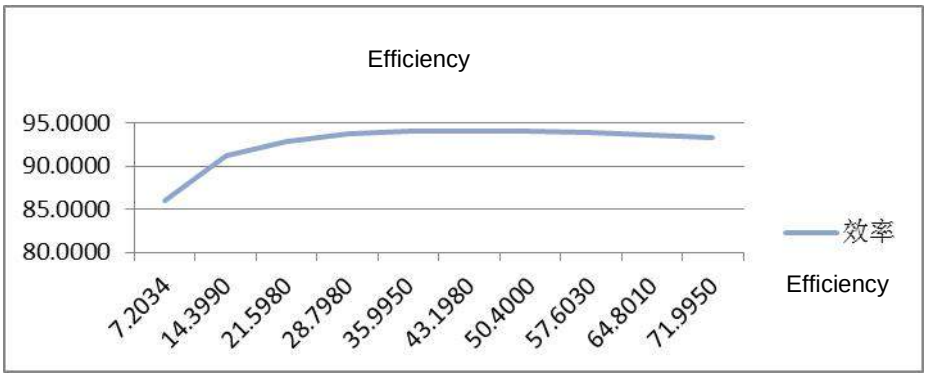
	Electromagnetic Abusive	Compliant with GB/T 18487.3-2001 11.3.2
	Harmonic Current	Compliant with GB 17625.1-2003 6.7.1.
	Activation Inrush Current	≤3A
	Current Raise Time	100% to 10% ≤50mS; 100% to 0% ≤200mS
	Protection Grade	IP67
	Anti-Vibration	10-25Hz, Amplitude 1.2mm, 25-500Hz 30m/s2, 8 h each direction
	Reliability	MTBF 150000 H
	Ambient Humidity	5％～95％ NO condensation
	Ambient Temp.	-40 ~ 65℃
	Storage Temp.	－55℃ ~ ＋85℃

3.4 Efficiency Curve

3.4.1 108V TO 12V Efficiency Curve

Input voltage 115V, nominal output voltage, the efficiency value tested result under 10 different current.



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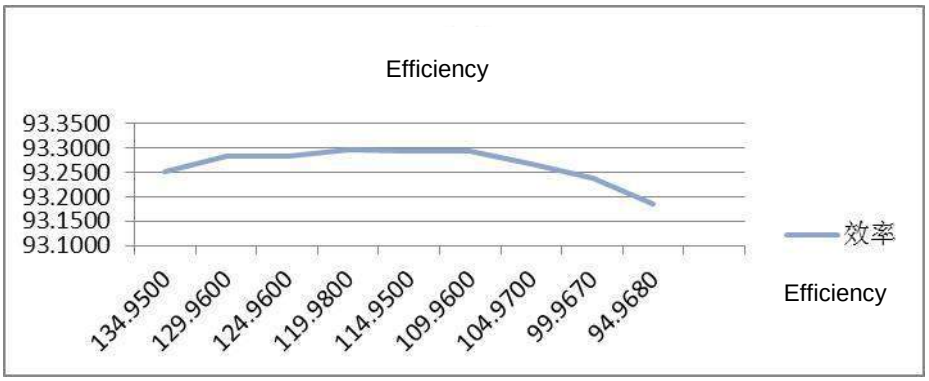
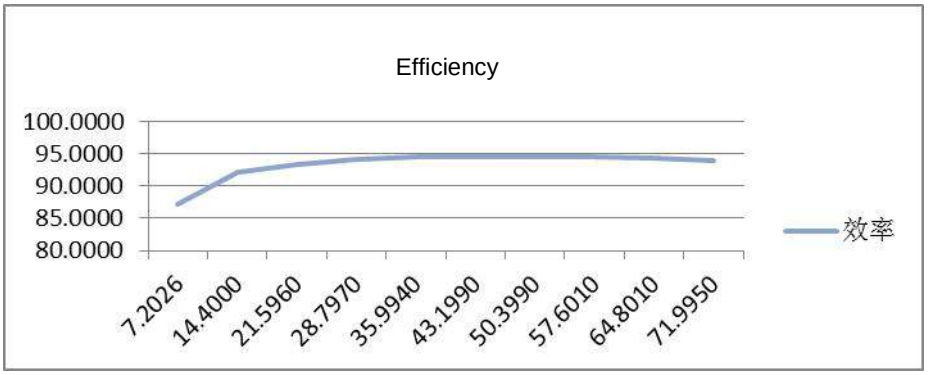
Nominal output power, the input voltage changing between min value and max value, the efficiency value tested under10 different voltage.

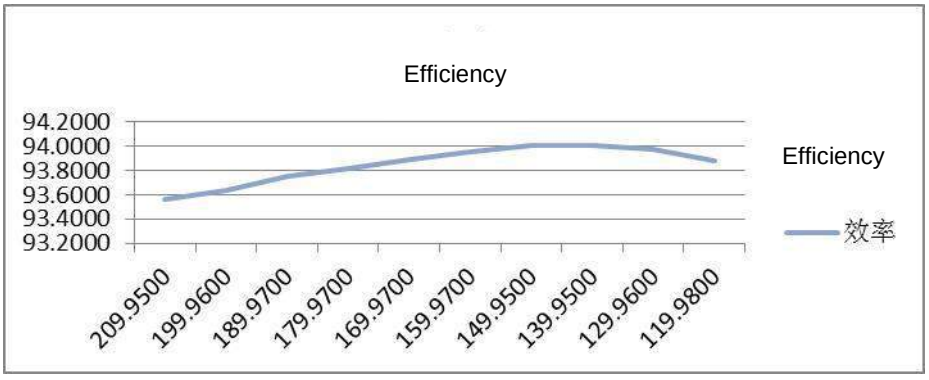


3.4.2 144V TO 12V Efficiency Curve

Input voltage 144V, nominal output voltage, the efficiency value tested result under 10 different current.



Nominal output power, the input voltage changing between min value and max value, the efficiency value tested under10 different voltage.



3.5 108V to 12V temperature drop curve.

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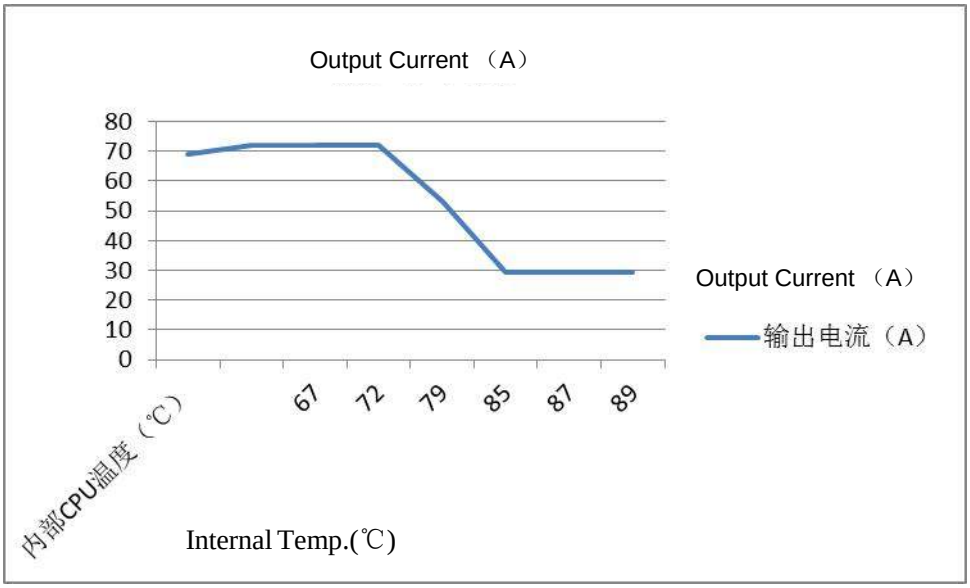

3.6 Withstand (Hi pot) Performance.

The dielectric strength between crimping to grounding and non-electric connected circuit, shall be bear the withstand testing as below table. The testing voltage is AC voltage. There should be no Corona,ionization, spark-over, ,Breakdown phenomenon.

Table 1

Items	Testing Voltage	Testing time	Current Leakage value
Input +&- to shell	2800V DC	1min	≤0.1mA
Output +&- to shell	2000V AC	1min	≤10mA

3.7 Isolation Performance

The dielectric strength between crimping to grounding and non-electric connected circuit, shall be bear the withstand testing as below table. The testing voltage is AC voltage. There should be no Corona,ionization, spark-over, ,Breakdown phenomenon.

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Table 2

Items	Testing Voltage	Testing time	Testing value
Input +&- to shell	1000V DC	1min	≥20M

4.Protection Function

The Protection of under input voltage	Shut off in 60s once Input voltage lower than protection value . Resume automatically in 120s after the fault is removed.
The Protection of over input voltage	Shut off once over input voltage is overt than the protection value; Resume automatically as long as default is removed.
The reversion protection of input connection	No damage, no working. Resume to work with normal wiring.
The short circuit protection of Output	When the output voltage is lower than 6V, output current descend to 1/4 of nominal current. .Resume automatically when the short circuit is removed , output voltage increased to above 6V.
Over temperature protection	Output power start to derating once shell temperature is over 85 deg. Shut off at 90 deg.
HVIL	Shut off if the input plug is unfasten or loose.
Communication Protection	The CAN communication invalid time is over 5s, converter shut off.

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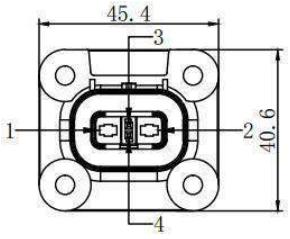
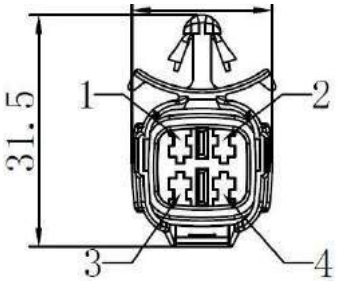
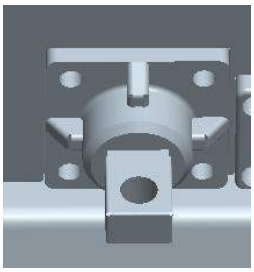
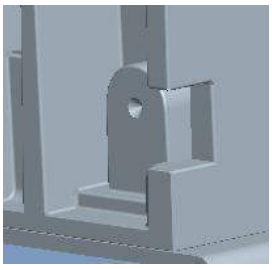
5. Interface Definition

Interface	Terminal Definition	Connector Socket	Connector Plug	Brand	Sectional View
Input Connector	1- DC+; 2- DC-; 3- HVIL 4- HVIL	2103124-4	2103177-4	Tyco	
Signal	1- Enable 2-Failure Signal 3- HVIL 4- HVIL	PP0427303	/	THB	
DC Output +	M8 Threaded hole	/	/	/	
DC Output -	outer hexagonal flange M8 pole	/	/	/	

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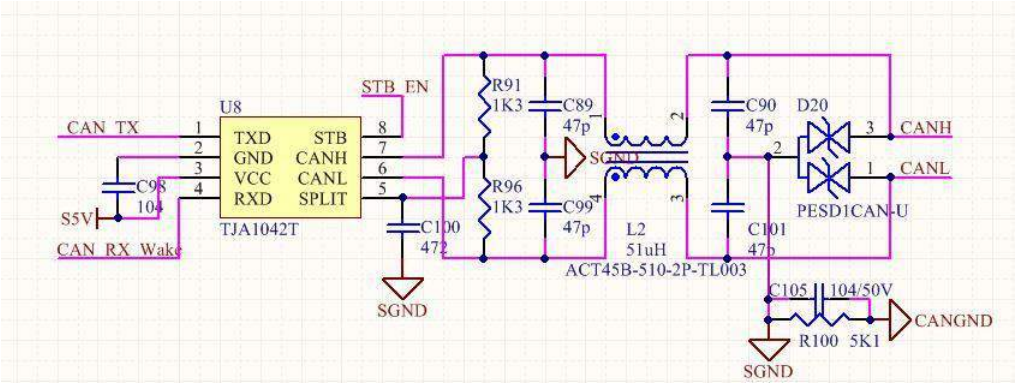
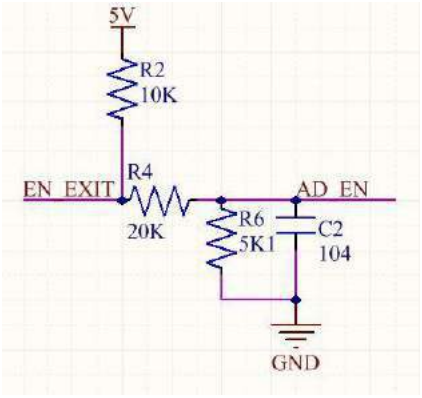
6. Signal Interface schematic

6.1 CAN Communication Interface

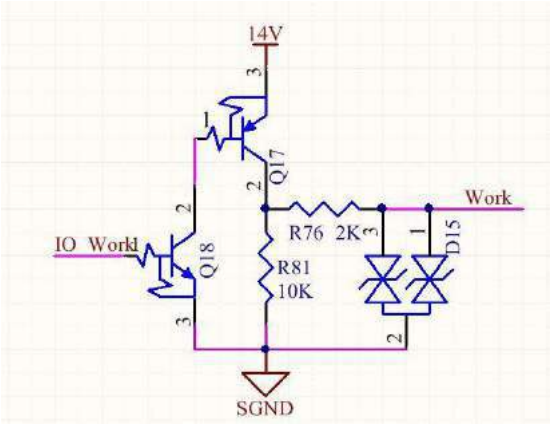


6.2 12V Enable Interface



EN_EXIT is the external Enable Signal Input. AD_EN is the detection Signal of SCM.

6.3 Failure Indication/Operating Signal Interface



Remark: TO_WORK is the output operating signal of SCM. WORK is the DC/DC output.

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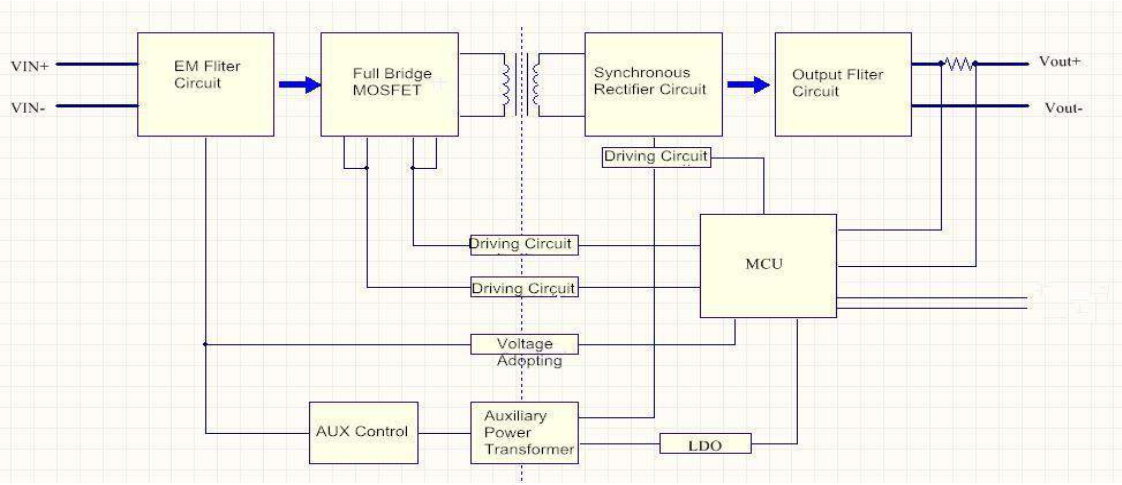
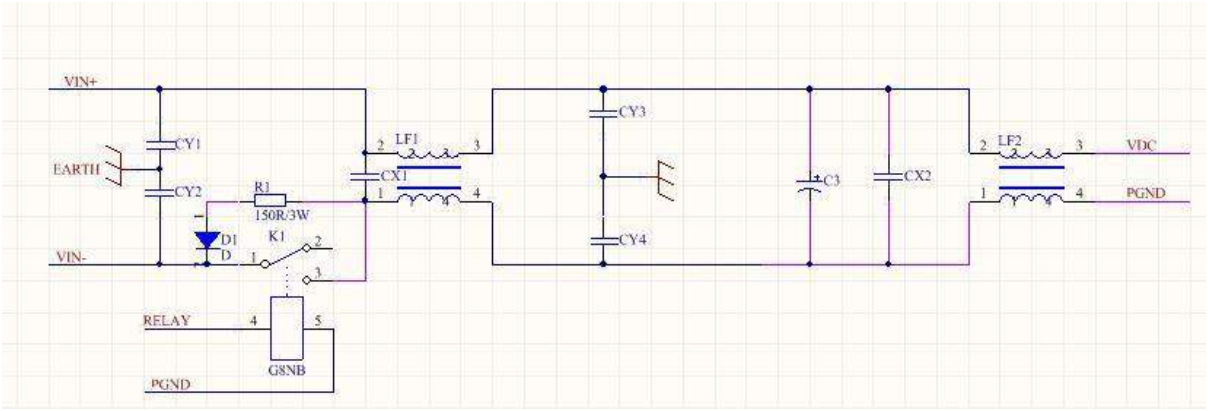
7. Schematic Diagram.



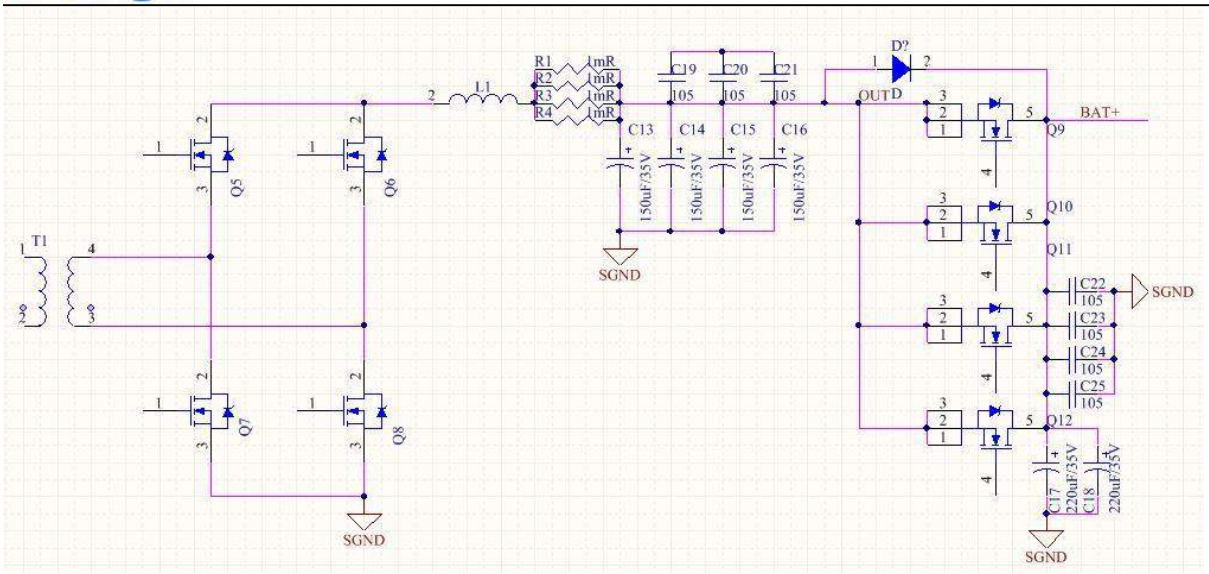
8. The Input Interface Circuit



The input interface circuit is composed with pre-charge resistor, anti-reverse diode, relay, EMI Filter and filter capacitor. Refer the below table to capacity of each voltage level and inrush current. Each pre-charge resistor is 150R.

Voltage	72V	96V	144V	216V	320V
Capacity of Capacitor	55UF	55UF	55UF	15UF	15UF
Inrush Current	≤4A	≤4A	≤4A	≤4A	≤4A

9. The Output Interface Circuit



The input interface is composed with Anti-backflow circuit, filter capacitor, synchronous rectifier circuit and LC filter. The capacity of the capacitor is 440UF.

10. Power Destiny.

	Net Weight	Volume	Unitary Mass Density	Volume Density
Unit	**kg**	**L**	**kw/kg**	**kw/L**
Value	**2.5**	**2.2**	**0.4**	**0.45**

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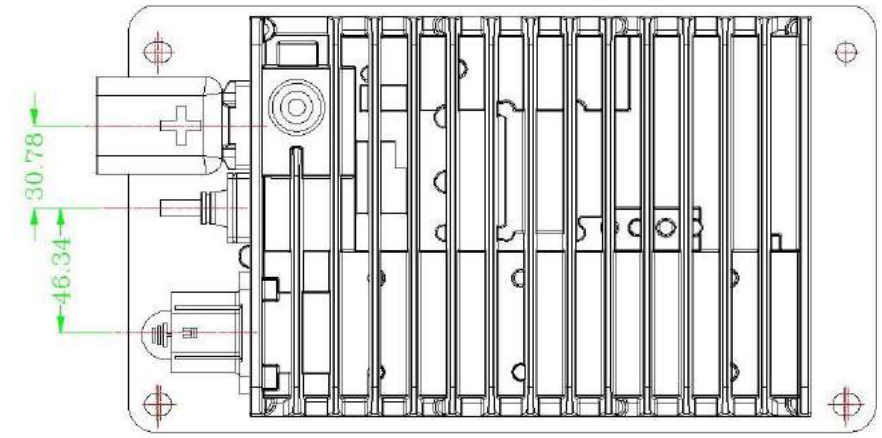
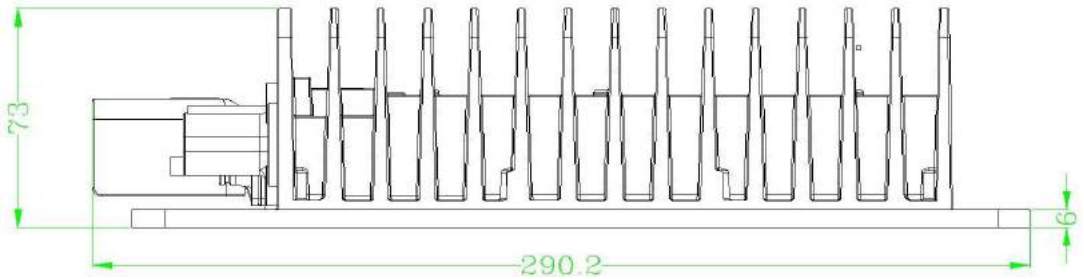
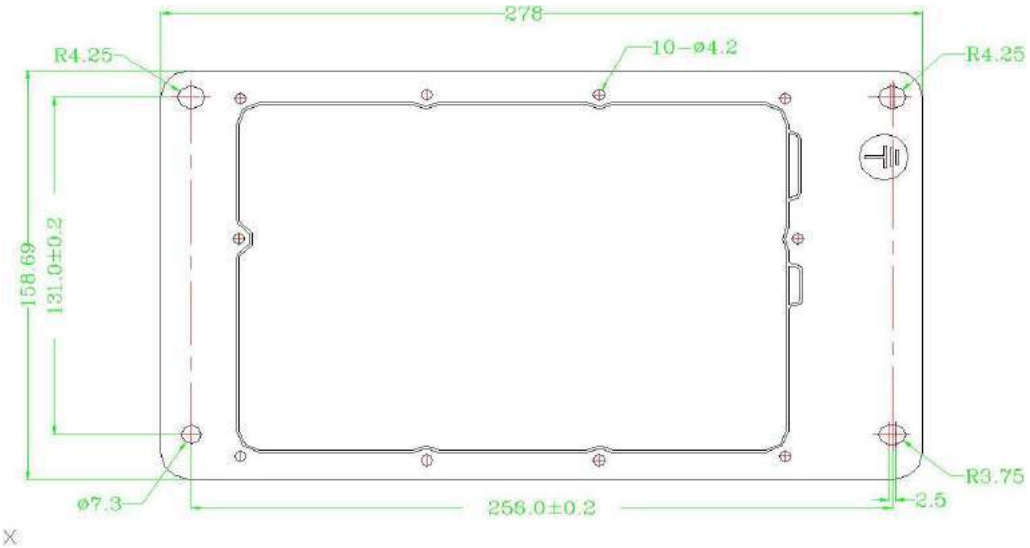
11. The Installation Dimension.







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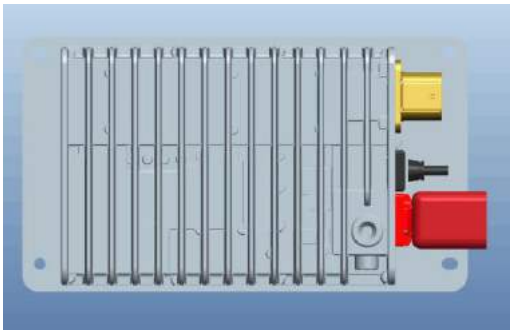
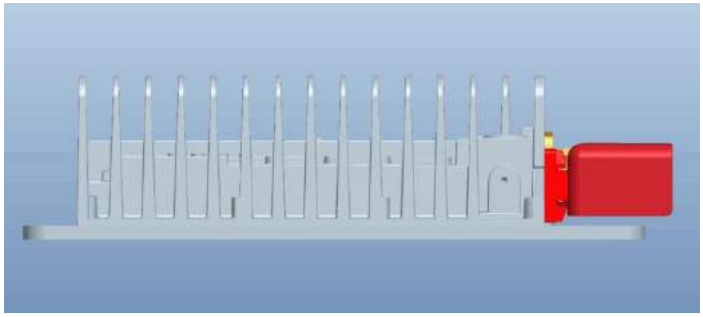
12. Installation Diagram.

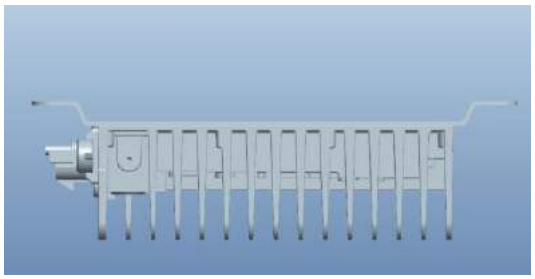
1. ok

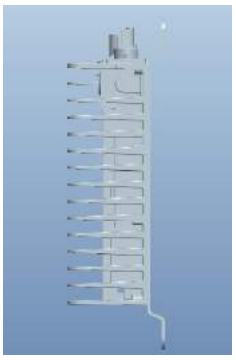


2. Best



3. Prohibited





4. Prohibited

13. Application Requirements

13.1 The HV DC fuse F1 should be installed in the PDU(Power Distribution Unit) for DC-DC input terminal. The fuse's maximum current should be 1.5-2 times than the maximum input current. The fuse of 10A 960v is suggested to TDC-IY-320-12. The fuse of 20-25A 250V is suggested to TDC-IY-144-12. The fuse of 36-50A 250V is suggested to TDC-IY-72-12.

13.2 A fuse blade is required to connect in series with DC-DC output terminal, connecting with polarity of auxiliary battery pack. Then chassis is connected to the negative pole. See below diagram. The fuse blade is decided on maximum current. Normal is above 100A.

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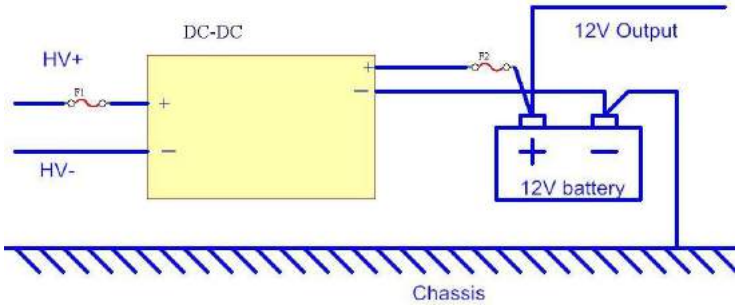

13.3 The terminals of battery pack need to be reliable, no loose. Otherwise, it may cause the damage to DC/DC converter.

14. Installation Requirements

1. The heating sink should be facing up. Reversion is prohibited. More than 10cm distance is required between heating sink and obstruction.
2. The output positive pole is M8 threaded hole, applying 14mm outer hexagonal nut. The tightening force is 14-16N.m.
3. The output negative pole is outer hexagonal flange M8 pole. The tightening force is 14-16N.m.

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No.196-19, Zhonghua Rd., Yongkang Dist., Tainan City 71069, Taiwan

Product Name: 1.5KW DC/DC Converter

Model No.:

1. AR-540-12JC-A (Air Cooling)

2. AR-540-12JC-N (Nature Cooling)

3. AR-540-12JC-W (Water Cooling)

Specification

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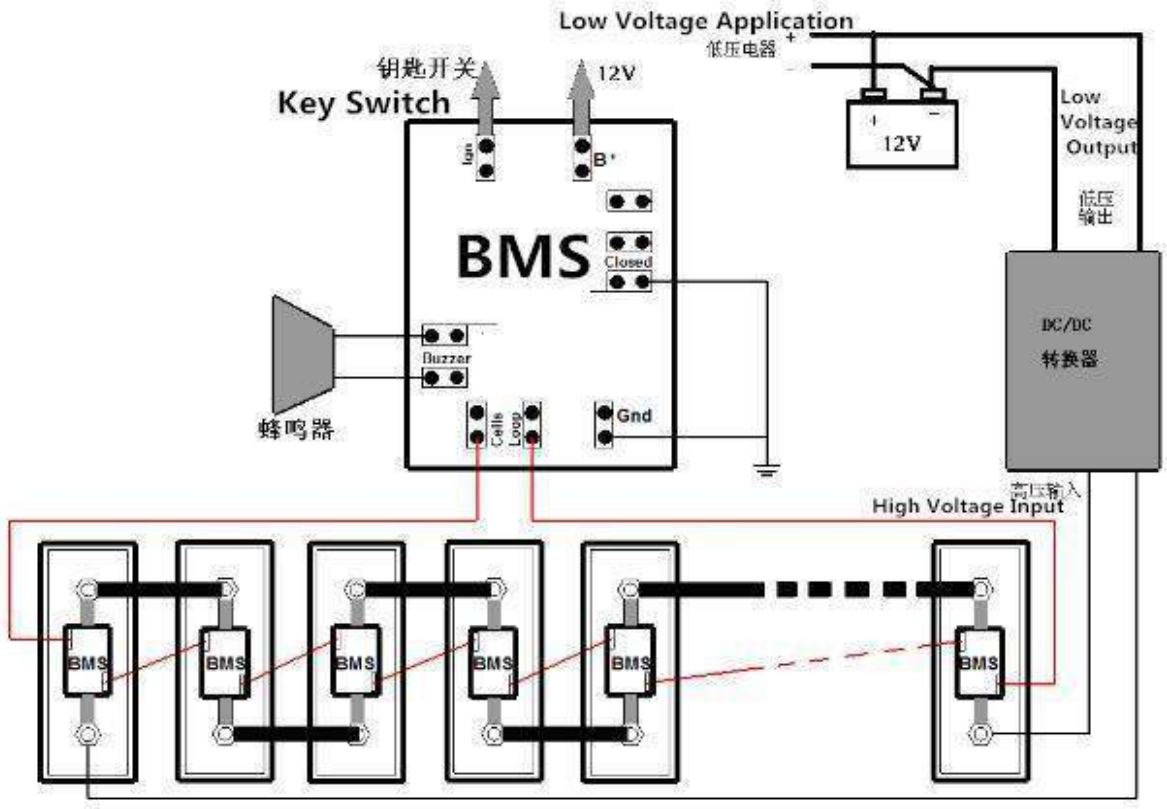
1. Overview

1.5KW DC-DC Converter can install in electric vehicle, supplying 12V power to low voltage application in vehicle. Output terminal can connect directly to 12V back-up battery pack. DC-DC Converter will management the charging process of back-up battery automatically. Fully sealed potting can be highly waterproof and dust proof, highly temperature resistance, highly vibration resistance.

The diagram between DC-DC Converter,12V back-up battery pack, low voltage equipment and BMS is as below.



2. Basic Function

2.1 Transfer high voltage from power battery into low voltage of 12V

2.2 Management charging process of 12v back-up battery

2.3 With HVIL, high voltage internal lock.

2.4 Comply with CAN 2.0, working statue and fault code is showed via BUS.

2.5 OBD, working statue display, working parameter modification and programming can be achieved via CAN BUS.

2.6 Protection function including low voltage input protection, reverse protection, output short circuit protection, over heating protection etc,.

2.7 Input terminal pre-charge function.

2.8 Fully sealed waterproof framework, three optional cooling version: Nature cooling, enforce air cooling and water cooling.

3. Technical Specification

3.1 Product name

3.1.1 Model Name

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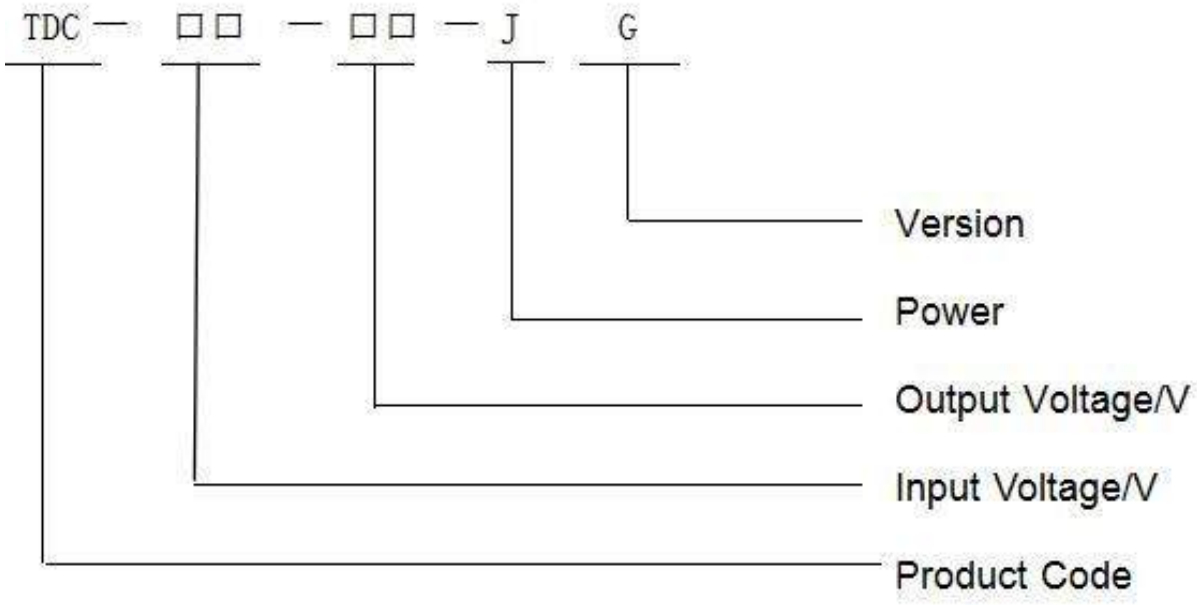
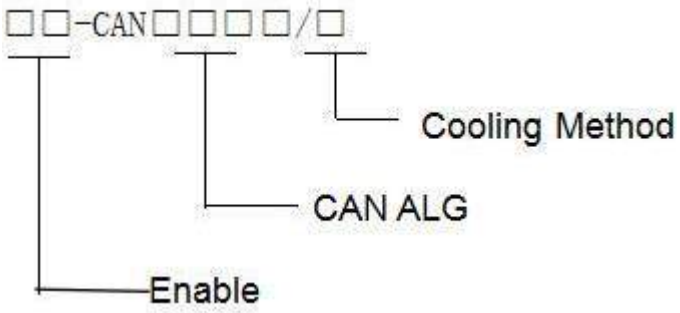


3.1.2 Model name method

Items	Description
Version	NO “G”=Non Isolated，G=Isolated，GC=Isolated with charge curve
Power	A=50W，B=100W，C=200W，D=300W，E=400W，F=500W，G=600W，H=800W，I=1000W，J=1500W，K=2000W，L=2500W，M=3000W

3.1.3 Configuration No. Name



3.1.4 Configuration No. Name Way

Item	Description
Enable Code	AF=Without Enable，AL=12VEnable
CAN ALG	5000-6000
Cooling Method	F=Enforce Air Cooling，N=Nature Cooling，W=Water Cooling

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3.1.5 Model

Model	Input Voltage Range	Nominal Output Voltage	Nominal Output Current	Configuration Number
TDC-540-12JG	350-630V	13.8V	110A	

3.2 Features

Model		TDC-540-12JG
Input	Nominal Voltage	DC540V
	Nominal Current	IN≤3A
	Input Voltage Range	420-650V
	The protection point of Low input voltage	400V±5V
	The protection point of Over input voltage	660V±10V
	Starting time	-
Output	Output Voltage	13.8V±1%
	Nominal Output Current	70A
	Peak Current	65A-70A
	Rated Power	1500W
	Peak Power	1800W Continue 6 minutes
	Max Efficiency	≥95%
	Output Voltage Instantaneous Reflecting	≤50ms
	Voltage Regulation	1%
	Load Regulation	1%
	Steady Voltage Accuracy	≤1%
	Steady Current	≤2%

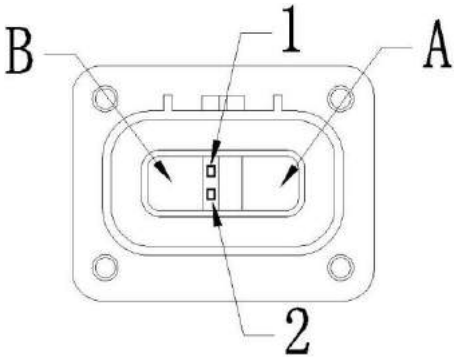
	Accuracy	
	Leaking Current of Output Terminal	≤5mA
	Output Ripple Coefficient	≤276mV @ 12V
	Over voltage Protection	15-16V @ 12V
	12V/24V Enable Voltage	6-30V
	12V/24V Enable Current	≤1mA
	DC Cable Requirements	25－30mm2 @ 12V
	Resistor Ground	The resistor of Ground to Cooling fin ≤100MΩ, testing current is 25A AC.
	Environmental Temperature	－30～60 ℃
	Storage Temperature	－40～90℃
	Working Environmental Relative Humidity	5％～95％ Non-Condensation
	Protection Level	IP67
	Voltage Resistance	Under voltage resistance of below table 1, There is no Corona,ionization,Flying Fox,Breakdown phenomenon.
	Isolated Resistor	@ (23±2) ℃and relative humidity 80％～90％, ≤2MΩ,experimental details see table 2.
	Noised	≤55dB, within distance 1.5m.
	EMC	GB/T 18655-2002- 12 or 14
	Reliability	MTBF300000 H

4 Protection

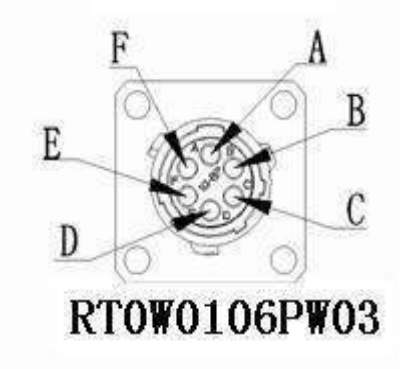
Over Current Protection	Shut off once output current over peak current
Over Voltage Protection	See Feature Table
Under output voltage protection	Output voltage under 6V, report low voltage fault after 2 seconds
Over Temperature Protection	Derating since internal 85℃, shut off at 90℃
Input under voltage Protection	See Feature Table
Input over voltage Protection	See Feature Table
Short Circuit Protection	Output Current descend to one quarter delay 10 seconds once output voltage under 6V; Resume automatically once voltage back to 6V.
Input Reverse Protection	No working, No damage, resume once wiring correctly
HVIL(High Voltage Internal Lock)	Shut off once Mating connectors is no fastening, incorrect fastening
Communication Protection	Shut off once CAN communication invalid .

5. Interface Definition

Input Terminal



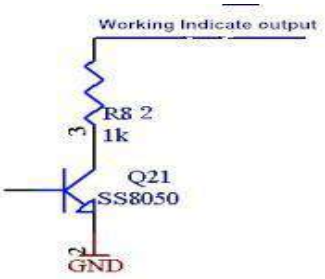
Output Terminal



Input Terminal: HV1-Z2J(40A)-00 , Mating HV1-T2K(40A)-00, Brand: Xinxi	
1	HVIL(High Voltage Internal Lock)
2	HVIL(High Voltage Internal Lock)
A	DC Input +
B	DC Output-
Output Terminal: RT0W0106PW03, Mating RT0W6106SWH03, Brand: Amphenol	
A	CANL
B	CANH
C	CANGND
D	12/24V Enable: Wiring with 12V+/24+, Wiring 12V-/24V- with Converter Housing
E	Working Indicator
F	Fault Indicator

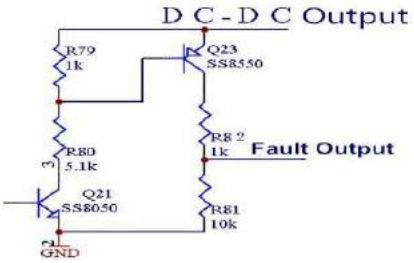
5.1 Working Indicator:

Once output voltage over 13V or working current over 1A, working indicate pin will close to show 1K impedance. When converter is not working, it is in high impedance. Max withstand Voltage is 30V. Working indicate and converter output share ground.



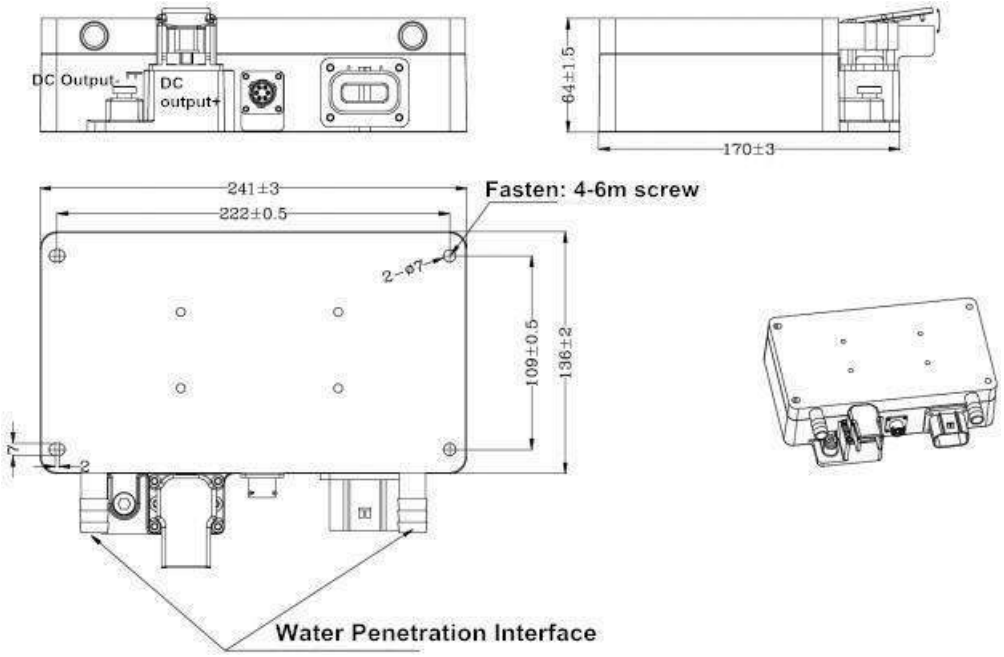
5.2 Fault Indicator:

Once converter failed, converter output voltage is below 13V, meanwhile working current is below 1A, fault signal output will be high electric potential(same as converter's output voltage, 1K impedance). When converter work normally, converter's output will be low electric potential, 10K impedance. Fault indicate and converter's output- share ground.

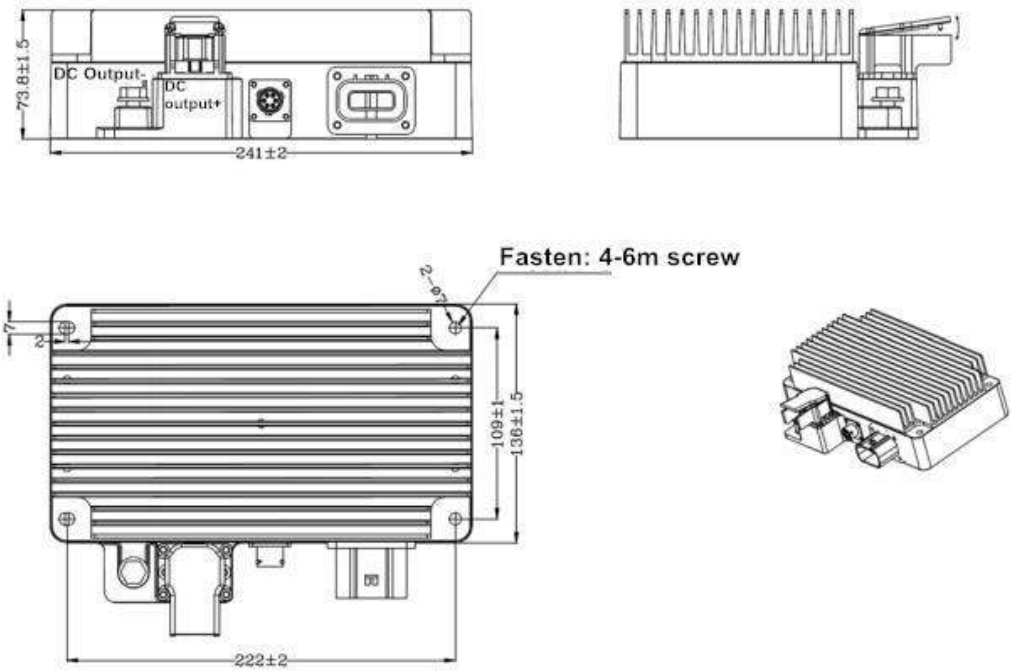


6. Installation size

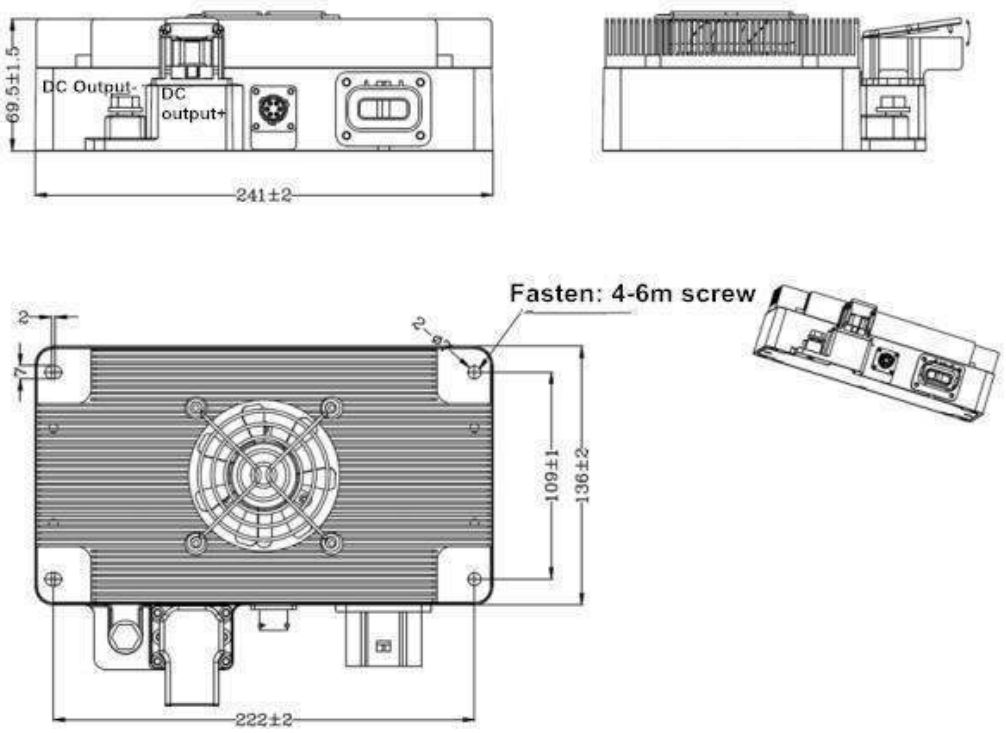
6.1 Water Cooling Dimension



62 Nature cooling Dimension



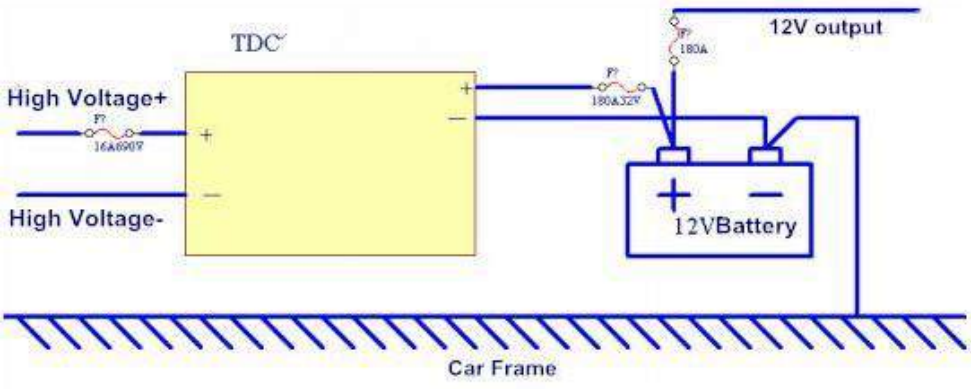
6.3 Enforce Air Cooling Dimension



7. Requirements for Application

7.1 External fast DC safety tube is required to connect with DC/DC converter's input interface. Meanwhile, keep them at position which is convenient for changing. The max current of protective pipe should be over 1.5-2 times than converter's the peak current. 16-20A & 690V is recommended to nominal 320V converter. 24-32A & 250V is recommended to nominal 144V converter. 10-16A & 750V is recommended to nominal 360V-540V converter.

7.2 A safety plate is required to connected with converter's output. Then connected with Backup battery. Batter negative is required to connect with car frame. See below diagram. Safety plate is decided by max current. Normally over 180A.



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Hardware	Output Voltage Range	Max Output Current	Lead Acid Battery Charger Model	Lithium Battery Charger Model
48V25A	18-68VDC	25A	AR-HK-H-48-25	AR-HK-H-H66-25
72V25A	25-99VDC	25A	AR-HK-H-72-25	ARHK-H-H99-25
96V16A	34-132VDC	16A	AR-HK-H-96-18	AR-HK-H-H132-16

1.8KW AR-HK-H Series Charger

1. Overview

AR-HK-H series 1.8KW charger was specially designed for supplying the electricity for electric vehicle's power battery, on the basis of the China GB/T standards for the charger. This product has the advantages of not only high efficiency, small size, high stability, long lifespan, but also high protection grade, high reliability and completed protection functions. It's definitely an ideal charging power supply for f electric vehicles.

This charger has built-in heat-sensing device and can automatic recover through the thermal protection. Fully sealed potting process and up to IP67 protection level ensures no causing trouble in any complex environment.

Key Features:

Fully sealed potting process, water cooling (modular optional)	Work reliably under -35℃- +85℃
Built in thermal sensor	Cut off output under dangerous operations conditions (internal 95℃)
Protection level IP67	Work safely in the short-term immersion conditions

2. Model

3. Features

Input	Frequency	45-65Hz
	Stand-by Consumption	≤5W
Main Output	Output Mode	CV / CC
	Output Power	1800W@220VAC 700W@110VAC
	CV Accuracy	±1%
	CC Accuracy	±2%
	Ripple Voltage Coefficient	5%
Communication Function	CAN Communication	Yes
	Baud Rate	125Kbps、250Kbps、500Kbps
	Terminal Resistance	N/A
12V Output		Load Capacity of 200 mA, Output controllable

12V5A (Optional Output Function)

Low Voltage Output	Output Mode	Constant Voltage
	Output Voltage	13.8V
	Rated Current	5A
	CV Accuracy	±2%
	Maximum Current	5.5A±0.5A
	Output Power	≥62.5W
	Ripple Voltage Coefficient	1%

4. Protection function

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Input Over-voltage Protection	AC270±5V
Input Under-voltage Protection	AC85±5V
Output Over-voltage Protection	Stop the output when exceeds + 1% of the maximum output voltage
Output Under-voltage Protection	Stop the output when below -5% of the minimum output voltage
Output Over-current Protection	Stop the output when exceeds + 1% of the maximum output current
Over-temperature Protection	Power down from 85 ℃ and turn off at 90℃
Short-circuit Protection	Stop Output
Battery Reverse Connect Protection	Fuse Burn-out
Ground Protection	≤100mΩ
CAN communication Protection	Automatically stop the output when CAN communication fails
Power-off Protection	Yes

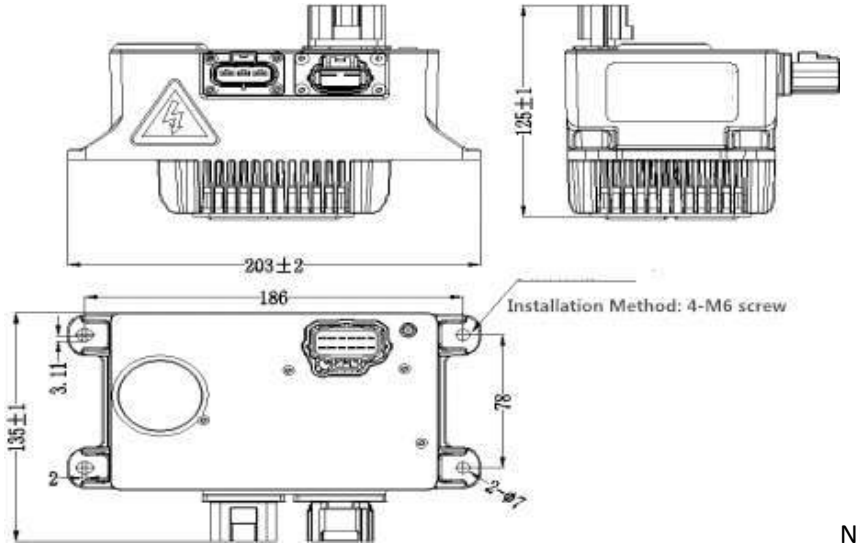
5. Safety and others

Withstand Voltage	Input to Output：2000VAC≤10mA Input to Ground：2000VAC≤12mA Output to Ground：2000VAC≤10mA，all 1min
Insulation Resistance	Input, output, signal terminal to casing≥10MΩ Testing Voltage 1000VDC
Electromagnetic Immunity	GB/T 18487.3-2001 11.3.1
Electromagnetic Abusive	GB/T 18487.3-2001 11.3.2
Harmonic Current	GB 17625.1-2003 6.7.1.1
Inrush Starting Current	≤24A
Current-rise Time	≤5S，Overshoot≤5%
Close Response time	100%到 10%≤50mS，100%到 0%≤200mS

Protection Level	IP67
Vibration Resistance	10－25Hz Amplitude1.2mm，25－500Hz 30m/s2，8hrs per direction
Noise	≤60dB(A Level)
MTBF	150000H
Work Environment	Relative Temp 5%-95% No condensation
Working Temperature	-35℃ ~ +85℃
Storage Temperature	-55℃ ~ +100℃

6. Installation size, label requirements and interface definitions

1). Installation size



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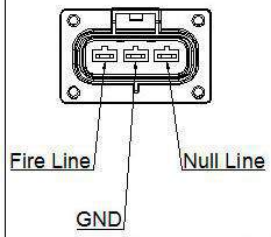
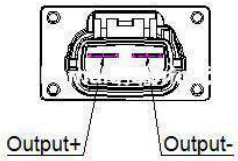
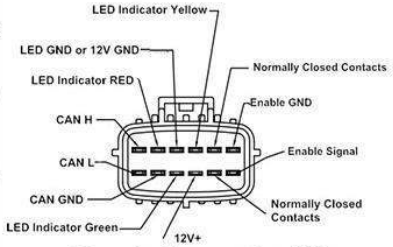
2）. Interface Definitions

Input NO.: DJ7031-4.8-11	Output NO.: DJ7021-8-11	Signal NO.: DJ7124-2-11
 Female Connector NO.: DJ7031-4.8-21	 Female Connector NO.: DJ7021-8-21	 Female Connector NO.: DJ7124-2-21

Notice: 1. The function on the signal connector are optional. It's not all available in the charger. e.g.CAN BUS control and Enable control cannot be existed at same time.

2. Pls pay attention to the position of function on the connector, don't pay attention to the numbers on the connector.[Enable wiring pin is at opposite of LED. CAN Wiring pins is close to LED.]

7. LED status

1). Initial State

Red Off Green Off Red Off Green Off Red Off Green Off Red Off Green Off

2). Charging State

Red Off Red Off Red Off Red Off Red Off Red Off Red Off Red Off

3). Stand-by State

Green Off Green Off Green Off Green Off Green Off Green Off Green Off Green Off

4). Fault State

Red Green Red Green……Other error status word error

Red Green……Wrong Battery

Red Green Red……Wrong Communication

Red Red Green Green……Wrong Enable

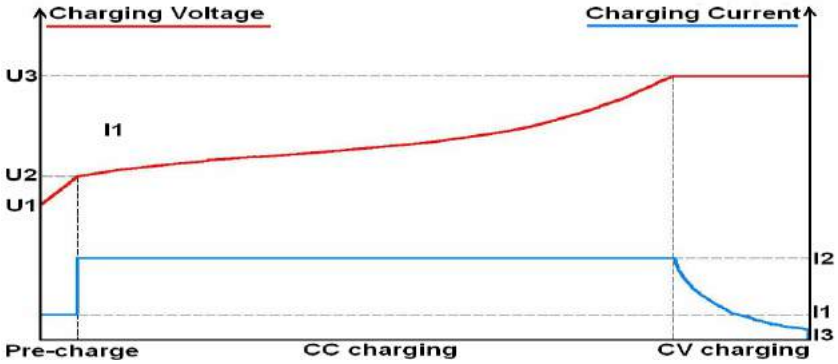
Green Red……Wrong Input Voltage

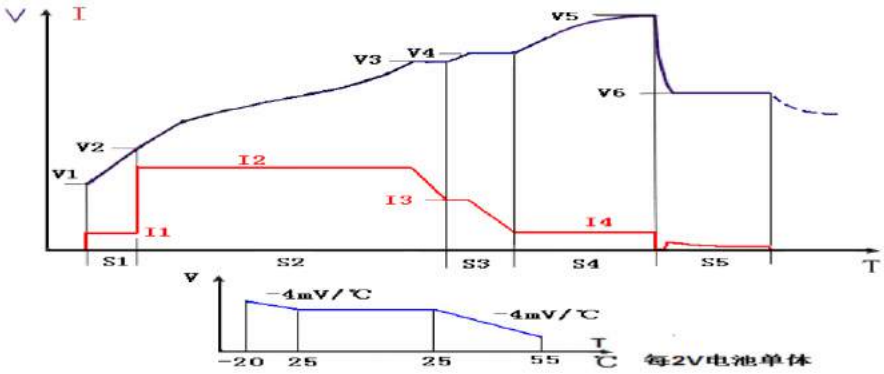
Green Red Green……Internal Temperature Protection

Green Red Green Red……Wrong Hardware

8. Charging Curve

1). CC/CV Charging mode：(for Lithium Battery)





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U1= $\frac{U3}{2}$ ， U2= $n_{串}$ ×2.5V， U3=Maximum voltage for the battery pack
I1= $\frac{I2}{2}$ ， I2=Maximum charging current for the battery pack，I3= $\frac{I2}{6}$
① Pre-charge：It only enters into pre-charging process when the battery pack voltage is under U2 (The charger does not start when battery pack is under U1), then it operates in a constant current charging I1, finally, the pre-charging process is completed when voltage rises to U2.
② CC Charging：It operates in a constant current charging I2, then the CC charging ends when voltage reaches to U3.
③CV Charging：Constant voltage charging with U3, the whole charging process is completed when current reduces to U3.

2). Different brand-name of lead-acid batteries have different kinds of charging curves.
Below shows a typical charging curve for Chilwee battery:

9. Expansion Function

Choose the accessories according to the actual needs:

1). Thermal Sensor Interface (for lead-acid battery charger)

Thermal Sensor is recommended to lead-acid battery charger, to detect the temperature of the battery and compensate charging voltage, at the same time to realize the battery overheat protection function. Suggest that the thermal sensor is fixed on the cell of the highest temperature. When the thermal sensor is not easy to install on the battery, you can fix the temperature sensor directly to the position that can detect the environmental temperature. Note that it shall not be affected by heat coming from the charger.

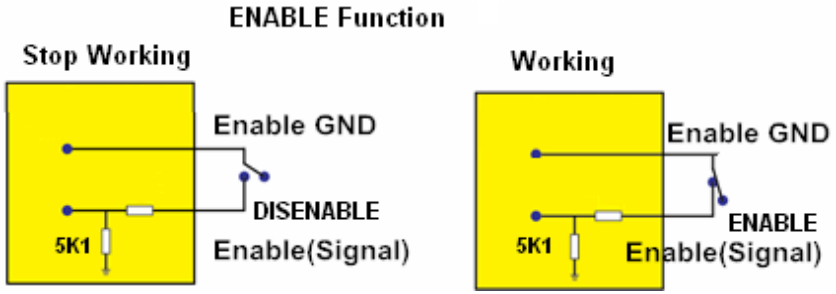
2). 12V Output

Charger provides a rating voltage 12V0.2A signal output. Its electrical connections is isolated from the interior circuit of the charger for external application function extension. Note that this 12V with LED indicator output interface are common-grounded. The independent 12V output can supply power for the battery management system. Output 12V-5A.

3). LED Output Interface

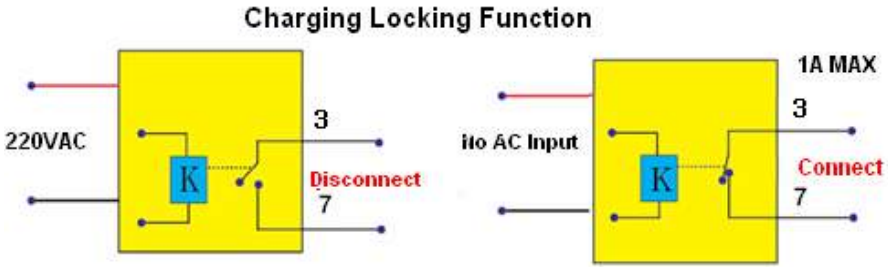
Charger provides Red, Green two LED interface or Red, Yellow, Green three LED interface. Its electrical connections is isolated from the interior circuit of the battery charger for external application function extension.

4). ENABLE Signal (for Lithium battery charger): External control circuit must be independent circuit



As for lithium battery charger, it's essential to use an enable signal to control the charger's work or close. Isolated circuit (such as Relay or Optocoupler) shall be adopted to control the charger's work or close. Note that if the control circuit is not independent, it lead to damage of the charger.

5). Charging Lock up Signal(for lead acid battery)



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Charger provides a set of relay normally closed contact as charging locking signal output. When the charger has no electricity, the contact connects, while the charger connects to the AC power supply, the contact disconnects immediately. The rated current of contact is 1A, withstand voltage 30VDC / 250VAC.

10. Appearance Requirements

1). Outer surface should be smooth without obvious defects such as scratch, deformation. Surface coating should be uniform.

2). The nameplates and signs should be installed firmly with the neat handwriting.

3). Spare parts should be fastened reliably without rust, burrs, cracks and other defects and damage.

4). Each product should be marked with product identification in obvious place, including part number, product brand, product type, production number, name of production enterprises, the warning message, etc

11. Packaging, Transport and Storage

1). Packaging

On the packing box, there are product name, product part number, product brand, product type, production number and name of manufacturer; In packing box, along with the technical documents, it includes packing list, quality certificate, product specification.

2). Transportation

Suitable for cars, boats, aircraft, transportation. The products have to be prevented against sunshine and moisture and in a civilized transportation.

3). Storage

Product should be stored in the packing box when it is not used and be maintained in a 5 ℃ to 40 ℃ clean, dry and well-ventilated environment. It should not be stored together with chemicals, acid and alkali substances etc,. Should avoid storing in the sun, fire, water and avoid storing with corrosive substances. The storage period is 2 years (from the inventory date of the factory). After the 2 years of storage period, the products should still comply with the provisions of the relevant standards.

Contact Information

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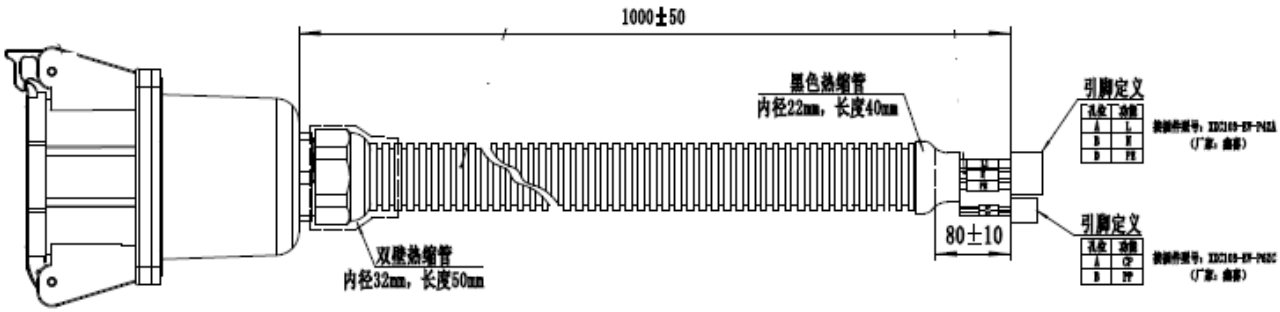
3.3KW On Board Battery Charger

Version: V02

Specification



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1. Overview

AR-HK-J series 3.3KW charger was specially designed for supplying the electricity for electric vehicle's power battery, on the basis of China GB/T standards for the charger. This product has the advantages of not only high efficiency, small size, high stability, long lifespan, but also high protection grade, high reliability and completed protection functions. It's definitely an ideal charging power supply for electric vehicles.

This charger has built-in heat-sensing device and can automatic recover through the thermal protection. Fully sealed potting process and up to IP67 protection level ensures no causing trouble in any complex environment.

Main Feature：Fully Sealed，Enforce air Cooling/Liquid Cooling（Module Optional）

Reliable working under -35℃- +85℃

Internal temperature sensor

Shut off inside temperature over 90°C

IP67 Protection Level

Working well in immersion shortly

2.Essential Parameter

Hardware	DC output Voltage Range	Max Output Current	Lead Acid Battery Charger Model	Lithium Battery Charger Model	Vehicle Inlet Model
48V40A	18-68VDC	40A	AR-HK-J-48-40	AR-HK-J-H66-40	AR190812-40
72V40A	25-99VDC	40A	AR-HK-J-72-40	AR-HK-J-H99-40	AR190812-40
96V32A	34-132VDC	32A	AR-HK-J-96-32	AR-HK-J-H132-32	AR190812-30
144V23A	50-198VDC	23A	AR-HK-J-144-23	AR-HK-J-H198-23	AR190812-16
312V10A	110-440VDC	10A	AR-HK-J-312-10	AR-HK-J-H440-10	AR190812-16
540V06A	170-650VDC	6A	AR-HK-J-540-06	AR-HK-J-H650-06	AR190812-16

3.Features

Specification		
Input	AC Input Range	AC 90~265V
	Frequency	45-65Hz
	Input Current	≤16A
	Power Factor	≥0.99 Half loading
	Efficiency	≥93% Full loading
	Standby Consumption	≤10W
Main Output	Output Mode	CV / CC
	Output Voltage	3300W @ 220VAC ; 1600W@110VAC

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	CV Accuracy	±1%
	CC Accuracy	±2%
	Ripple Voltage Coefficient	5%
Low Voltage Output	Output Mode	CV
	Output Voltage	13.8V/27.6V
	CV Accuracy	±1%
	Nominal Current	5A
	Max Current	5.5A±0.5A
	CC Accuracy	±2%
	Ripple Voltage Coefficient	1%
CAN Communication	CAN Communication	Optional
	Baud Rate	125Kbps、250Kbps、500Kbps
	Terminal Resistance	NO

4.Protection Feature

Protection	Input Over-voltage Protection	AC285±5V
	Input Under-voltage Protection	AC85±5V
	Output Over-voltage Protection	Stop the output when exceeds + 1% of the maximum output voltage
	Output Under-voltage Protection	Stop the output when below -5% of the minimum output voltage
	Output Over-current Protection	Stop the output when exceeds + 1% of the maximum output current
	Over-temperature Protection	Power down from 85 ℃ and shut off at 90℃
	Short-circuit Protection	Stop Output
	Battery Reverse Connect Protection	Fuse Burned-out
	Ground Protection	≤100mΩ
	CAN communication Protection	Automatically stop the output when CAN communication fails
	Power-off Protection	YES

5.Safety and others

Safety&Others	Withstand Voltage	Input to Output：2000VAC≤10mA Input to Ground：2000VAC≤12mA Output to Ground：2000VAC≤10mA，all 1min
	Insulation Resistance	Input, output, signal terminal to casing≥10MΩ Testing Voltage 1000VDC
	Electromagnetic Immunity	GB/T 18487.3-2001 11.3.1
	Electromagnetic Abusive	GB/T 18487.3-2001 11.3.2
	Harmonic Current	GB 17625.1-2003 6.7.1.1
	Inrush Starting Current	≤24A
	Current-rise Time	≤5S，Overshoot≤5%
	Close Response time	From 100% to10%≤50mS，From 100% to 0%≤200mS

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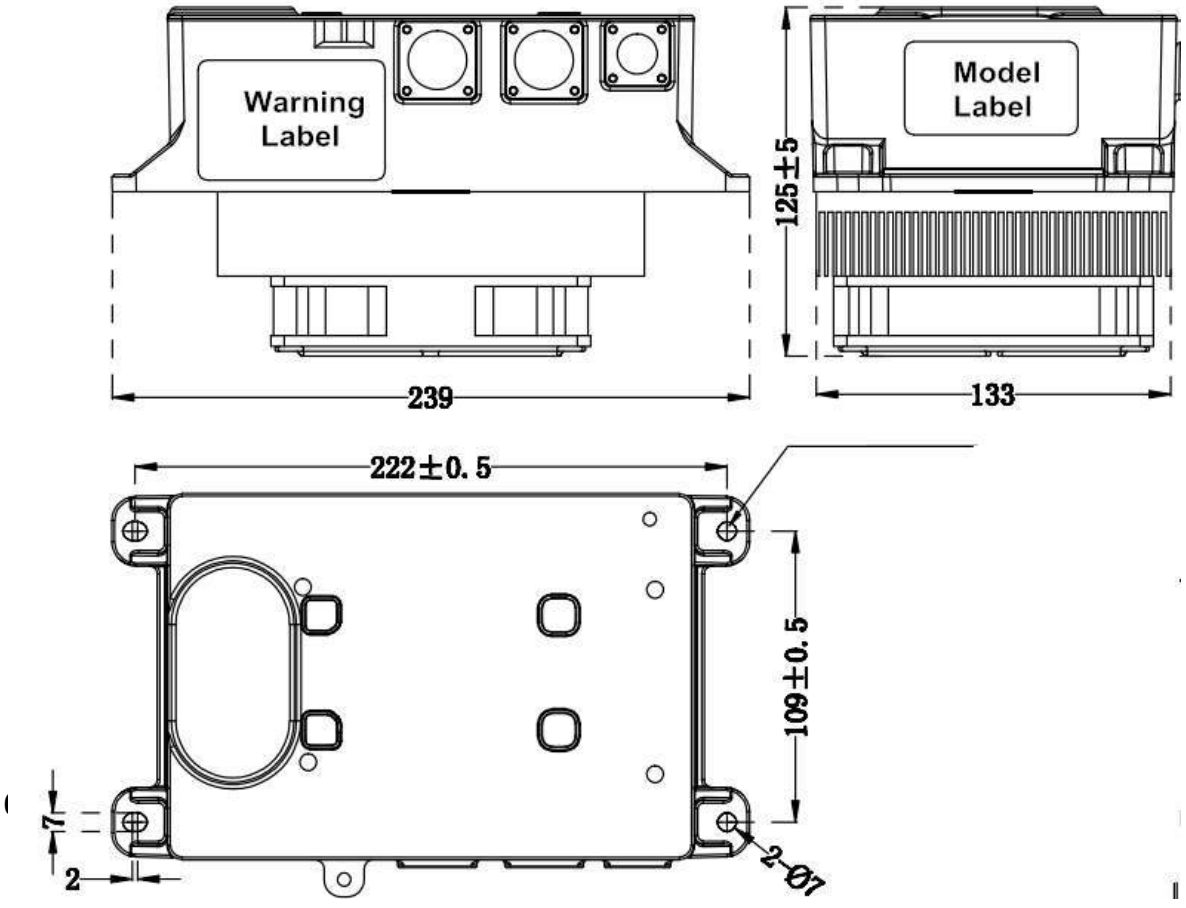
	Anti-Vibration	10－25Hz Amplitude1.2mm，25－500Hz 30m/s2，8hrs per direction
	Noise	≤60dB(Class A)
	MTBF	150000H
	Work Environment	Relative Temp 5%-95% No condensation
	Working Temperature	-35℃ ~ +85℃
	Storage Temperature	-55℃ ~ +100℃

6.Installation Dimensions and Connector Definition

6.1.1 Installation Dimensions (Enforce Air Cooling)



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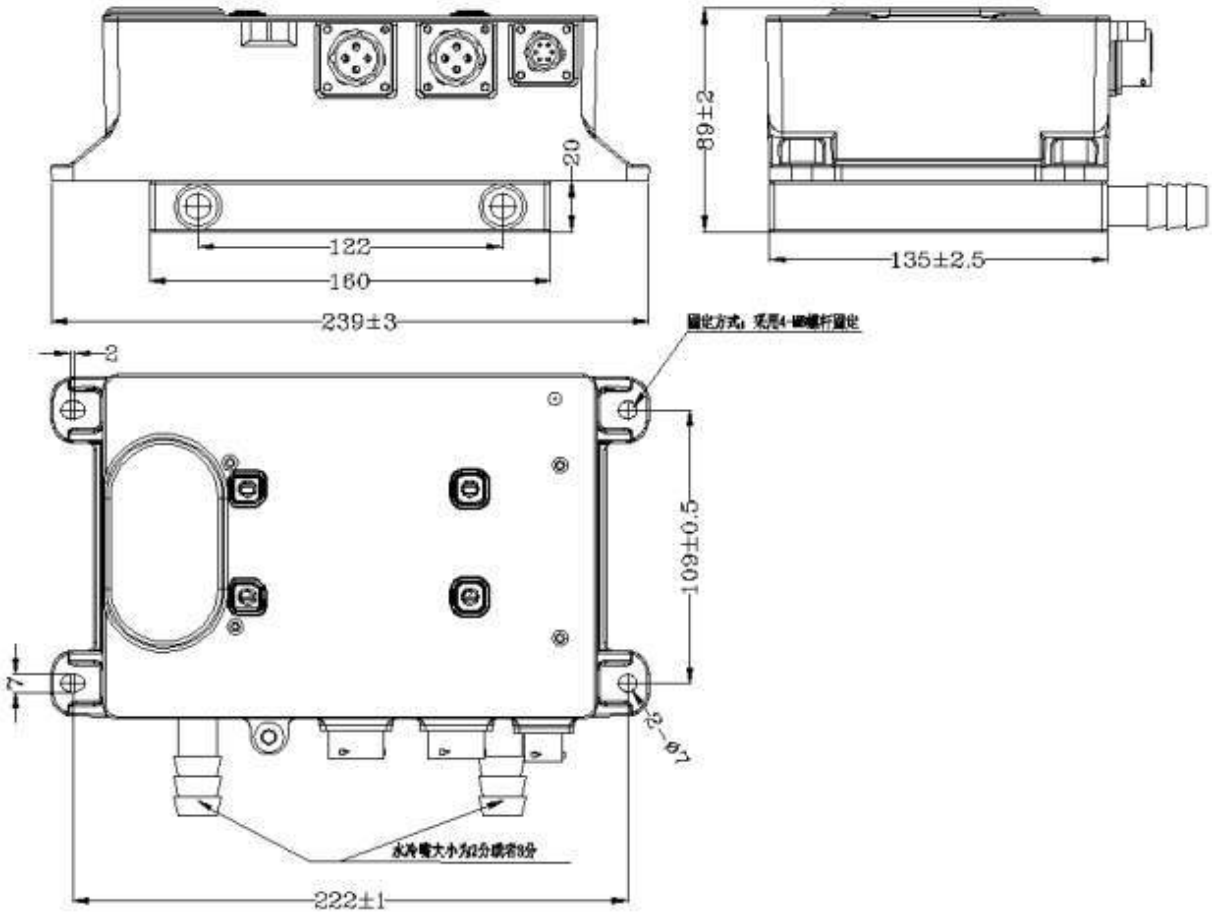
6.1.1 Installation Dimensions (Liquid Cooling)



6.2 Interface Definition(for 72v,96v,144v)

S. N.	Terminal Name	Terminal Definition	Male Connector	Female Connector	Ver.
1	Charger's AC Input	A-Null line, B-Fire Line, D-GND	XXC103-EV-P4ZA	XXC103-EV-S4TA	XINXI
2	Charger's DC Output	A.D-Positive B.C-Negative	XXC103-EV-P4ZB	XXC103-EV-S4TB	XINXI

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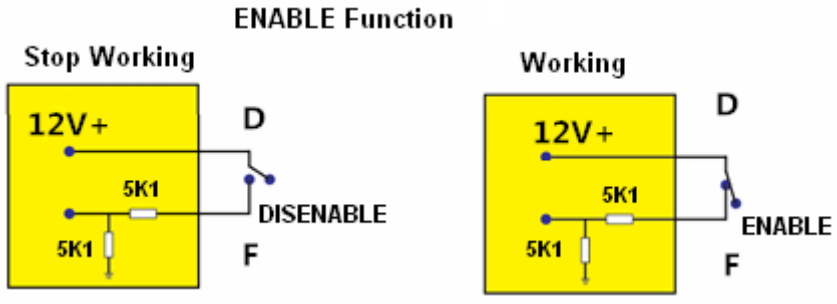
3	Signal Control	A-CANL, B-CANH, C-CANGND, D-12V+, E-12V-, F-Enable.	XXC103-EV-P6ZC	XXC103-EV-S6TC	XINXI

6.3 Interface Definition(for 312v, 540v)

S. N.	Terminal Name	Terminal Definition	Male Connector	Female Connector	Ver.
1	Charger's AC Input	A-Null line, B-Fire Line, D-GND	XXC103-EV-P4ZA	XXC103-EV-S4TA	XINXI
2	Charger's DC Output	A.-Positive B.-Negative	XXC103-EV-P4ZB	XXC103-EV-S4TB	XINXI
3	Signal Control	A-CANL, B-CANH, C-CANGND, D-12V+, E-12V-, F-Enable.	XXC103-EV-P6ZC	XXC103-EV-S6TC	XINXI

6.4 Enable Control



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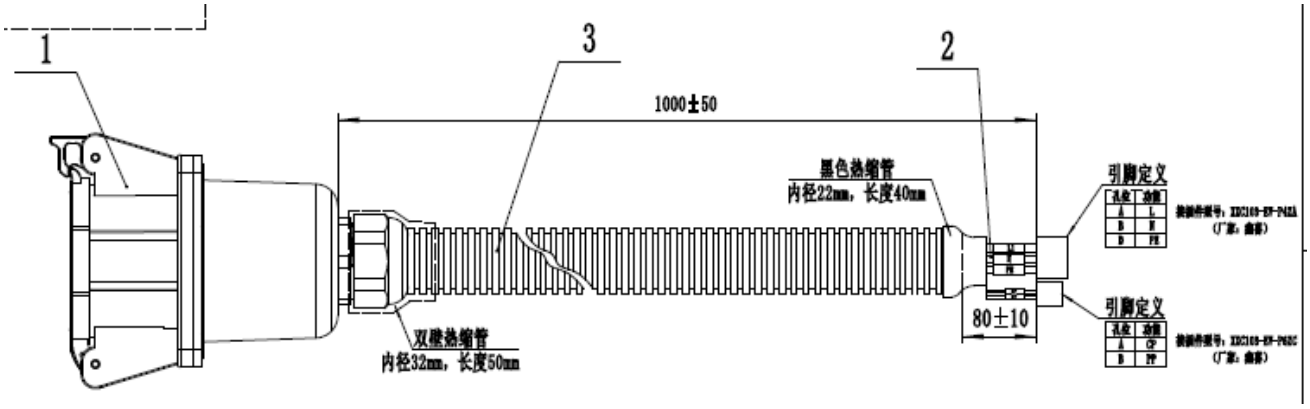
6.5 Vehicle SAE Inlet Cable Assembly Specification

Standard: SAE J1772-2010

Model no.	AR190812-16	AR190812-30	AR190812-40
Rated current	16A	30A	40A
Rated Voltage	**240V AC**		
Insulation resistance	> 1000MΩ (DC500V)		
Contact resistance:	0.5mΩ Max		
Withstand voltage:	2000V		
Housing Flammability	UL94 V-0		
Insertion force	45N<F<80N		
IP Rating	IP44		
Housing Material	Thermoplastic		
Terminal Material	Silver Plated Copper Alloy		
Operating temperature	-40°C to + 125°C		
Charging cable	1P+N+PE+PP+CP 1000mm 3*10AWG+2*18AWG mm2		



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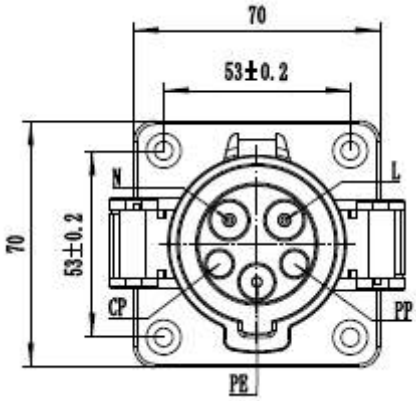

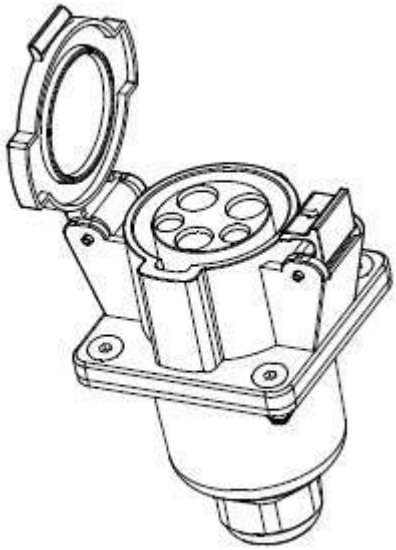

7.LED Status

1). Initial State

Red Off Green Off Red Off Green Off Red Off Green Off Red Off Green Off

2). Charging State

Red Off Red Off Red Off Red Off Red Off Red Off Red Off Red Off

3). Stand-by State

Green Off Green Off Green Off Green Off Green Off Green Off Green Off Green Off

4). Fault State

Red Green Red Green……Other error status word error

Red Green……Wrong Battery

Red Green Red……Wrong Communication

Green Red……Wrong Input Voltage

Green Red Green……Internal Temperature Protection

Green Red Green Red……Wrong Hardware

8.Schematic diagram and the efficiency curve

8.1 Schematic Diagram

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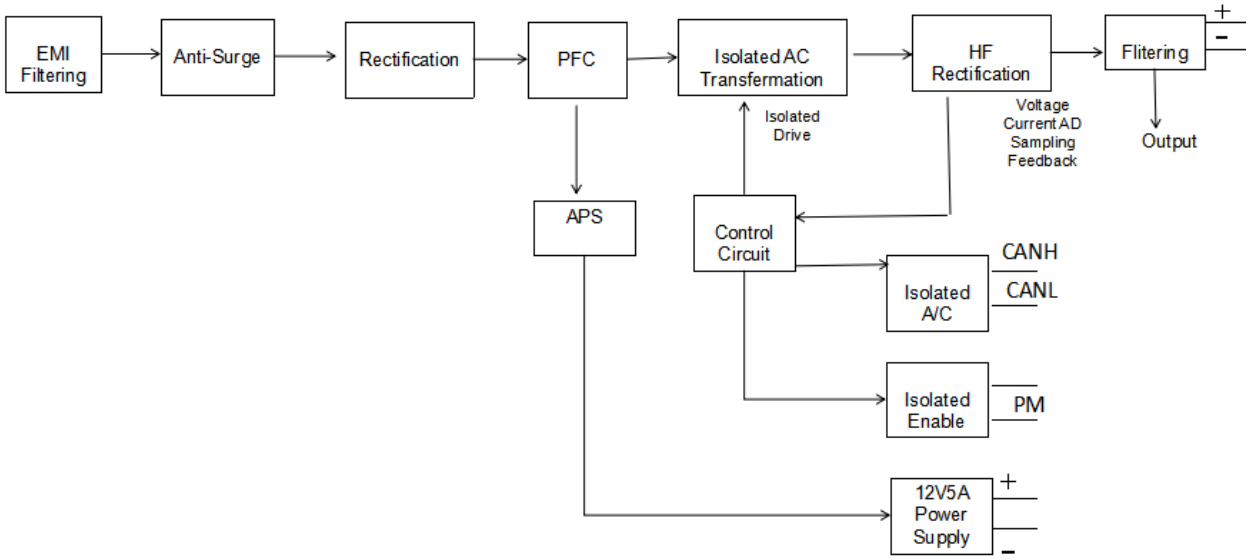

8.2 Efficiency Curve

9. Appearance Requirements

1). Outer surface should be smooth without obvious defects such as scratch, deformation. Surface coating should be uniform.

2). The nameplates and signs should be installed firmly with the neat handwriting.

3). Spare parts should be fastened reliably without rust, burrs, cracks and other defects and damage.

4). Each product should be marked with product identification in obvious place, including part number, product brand, product type, production number, name of production enterprises, the warning message, etc

10. Packaging, Transport and Storage

1). Packaging

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On the packing box, there are product name, product part number, product brand, product type, production number and name of manufacturer; In packing box, along with the technical documents, it includes packing list, quality certificate, product specification.

2). Transportation

Suitable for cars, boats, aircraft, transportation. The products have to be prevented against sunshine and moisture and in a civilized transportation.

3). Storage

Product should be stored in the packing box when it is not used and be maintained in a 5 ℃ to 40 ℃ clean, dry and well-ventilated environment. It should not be stored together with chemicals, acid and alkali substances etc,. Should avoid storing in the sun, fire, water and avoid storing with corrosive substances. The storage period is 2 years (from the inventory date of the factory). After the 2 years of storage period, the products should still comply with the provisions of the relevant standards.

Contact Information

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安仁國際股份有限公司
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Product Name: 6.6KW On Board Battery Charger

Specification

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1. Overview

AR-HK-J series 6.6KW charger was specially designed for supplying the electricity for electric vehicle's power battery, on the basis of the national standards for the charger. This product has the advantages of not only high efficiency, small size, high stability, long lifespan, but also high protection grade, high reliability and completed protection functions. It's definitely an ideal charging power supply for f electric vehicles.

This charger has built-in heat-sensing device and can automatic recover through the thermal protection. Fully sealed potting process and up to IP67 protection level ensures no causing trouble in any complex environment.

Main Feature：Fully Sealed，Enforce air Cooling（Module Optional）

Reliable working under -35℃- +85℃

Internal temperature sensor

Shut off inside temperature over 90°C

IP67 Protection Level

Working well in immersion shortly

2. Essential Parameter

Hardware	DC output Voltage Range	Max Output Current	Lead Acid Battery Charger Model	Lithium Battery Charger Model
48V80A	18-68VDC	80A	AR-HK-J-48-80	AR-HK-J-H66-80
72V80A	25-99VDC	80A	AR-HK-J-72-80	AR-HK-J-H99-80
96V64A	34-132VDC	64A	AR-HK-J-96-64	AR-HK-J-H132-64
144V46A	50-198VDC	46A	AR-HK-J-144-46	AR-HK-J-H198-46
312V20A	110-440VDC	20A	AR-HK-J-312-20	AR-HK-J-H440-20
540V12A	170-650VDC	12A	AR-HK-J-540-12	AR-HK-J-H650-12

3.Features

Items		Data
Input	AC Input Range	AC 90~265V
	Frequency	45-65Hz
	Input Current	≤32A
	Power Factor	≥0.99 Half loading
	Efficiency	≥93% Full loading
	Standby Consumption	≤10W
Main	Output Mode	CV / CC

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Output	Output Voltage	6600W @ 220VAC; 3300W@ 220VAC
	CV Accuracy	±1%
	CC Accuracy	±2%
	Ripple Voltage Coefficient	5%
Low Voltage Output	Output Mode	CV
	Output Voltage	13.8V/27.6V
	CV Accuracy	±1%
	Nominal Current	5A
	Max Current	5.5A±0.5A
	CC Accuracy	±2%
	Ripple Voltage Coefficient	1%
CAN Communication	CAN Communication	Optional
	Baud Rate	125Kbps、250Kbps、500Kbps
	Terminal Resistance	NO

4.Protection Feature

Protection	Input Over-voltage Protection	AC285±5V
	Input Under-voltage Protection	AC85±5V
	Output Over-voltage Protection	Stop the output when exceeds + 1% of the maximum output voltage
	Output Under-voltage Protection	Stop the output when below -5% of the minimum output voltage
	Output Over-current Protection	Stop the output when exceeds + 1% of the maximum output current
	Over-temperature Protection	Power down from 85 ℃ and shut off at 90℃
	Short-circuit Protection	Stop Output
	Battery Reverse Connect Protection	Fuse Burned-out
	Ground Protection	≤100mΩ
	CAN communication Protection	Automatically stop the output when CAN communication fails
	Power-off Protection	YES

5.Safety and others

Safety&Others	Withstand Voltage	Input to Output：2000VAC≤10mA Input to Ground：2000VAC≤12mA Output to Ground：2000VAC≤10mA，all 1min
	Insulation Resistance	Input, output, signal terminal to casing≥10MΩ Testing Voltage 1000VDC
	Electromagnetic Immunity	GB/T 18487.3-2001 11.3.1
	Electromagnetic Abusive	GB/T 18487.3-2001 11.3.2
	Harmonic Current	GB 17625.1-2003 6.7.1.1
	Inrush Starting Current	≤24A
	Current-rise Time	≤5S，Overshoot≤5%

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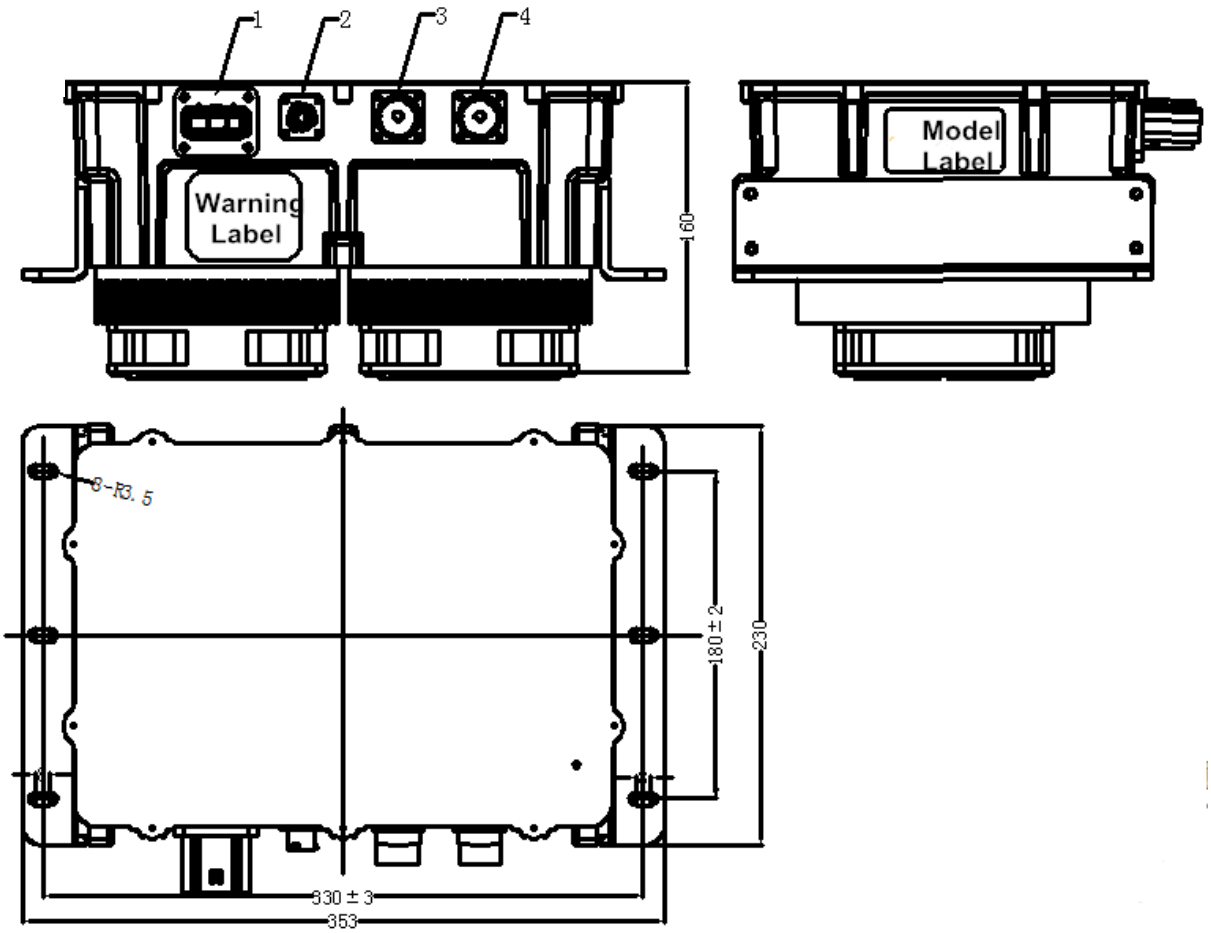
	Close Response time	100% to10%≤50mS，100% to 0%≤200mS
	Anti-Vibration	10－25Hz Amplitude1.2mm，25－500Hz 30m/s2，8hrs per direction
	Noise	≤60dB(A Class)
	MTBF	150000H
	Work Environment	Relative Temp 5%-95% No condensation
	Working Temperature	-35℃ ~ +85℃
	Storage Temperature	-55℃ ~ +100℃

6.Installation Dimensions and Connector Definition

6.1.1 Installation Dimensions (Enforce Air Cooling,)Nominal Voltage under 144V and included:



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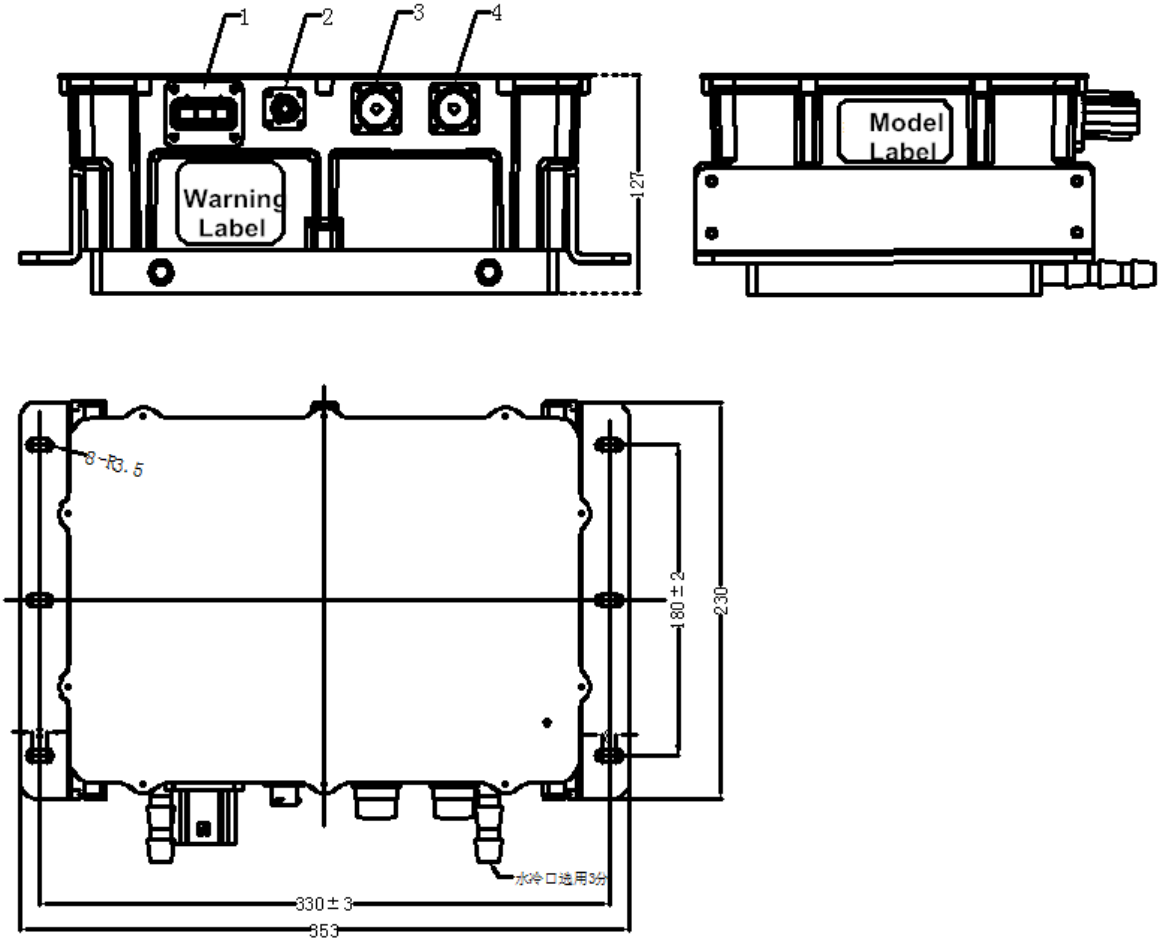
6.1.2 Installation Dimensions (Liquid Cooling)



6.2 Interface Definition

S. N.	Terminal Name	Terminal Definition	Male Connector	Female Connector	Ver.
1	Charger's AC Input	A: NULL Line B: GND Line C: Fire Line	XXC106-EV-P3Z	XXC106-EV-S3T	XINXI
2	Signal Control	A-CAN L, B-CAN H, C-CAN GND, D-12V+, E-12V-, F-Enable.	XXC103-EV-P6ZC	XXC103-EV-S6TC	XINXI
3	Charger's DC Output	Positive	DY6-1ZP(180°)	DY6-1TY(180°)	XINXI
4	Charger's DC Output	Negative	DY6-1ZP(90°)	DY6-1TY(90°)	XINXI

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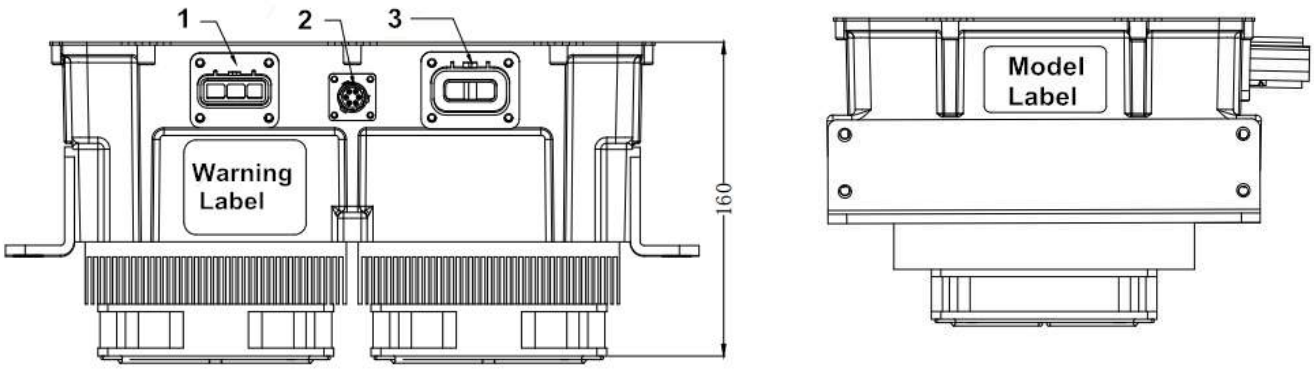
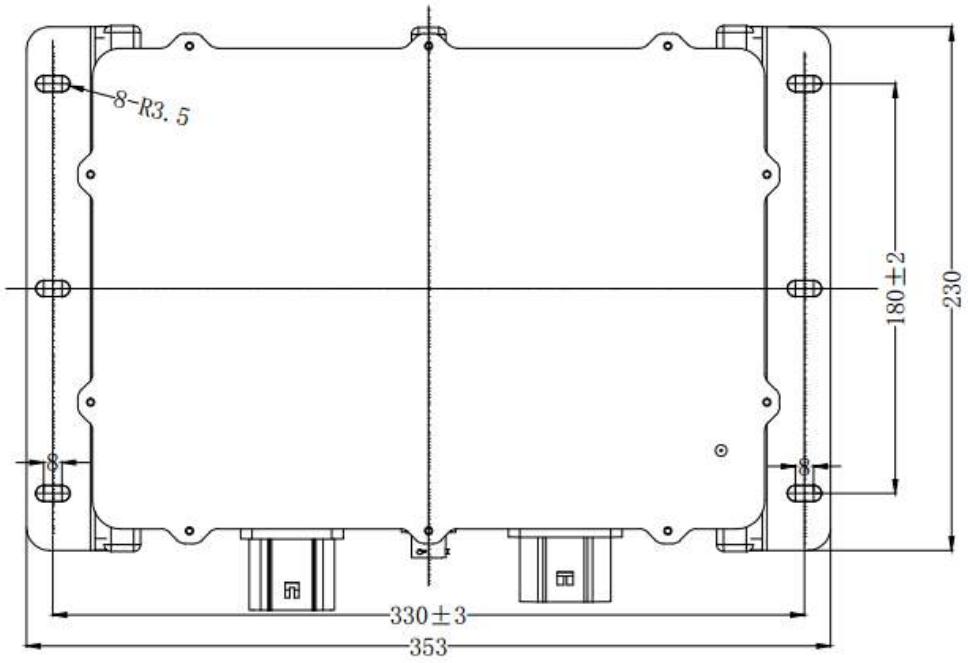
6.3 Installation Dimensions (Enforce Air Cooling,)Nominal Voltage above 312V, 540v;





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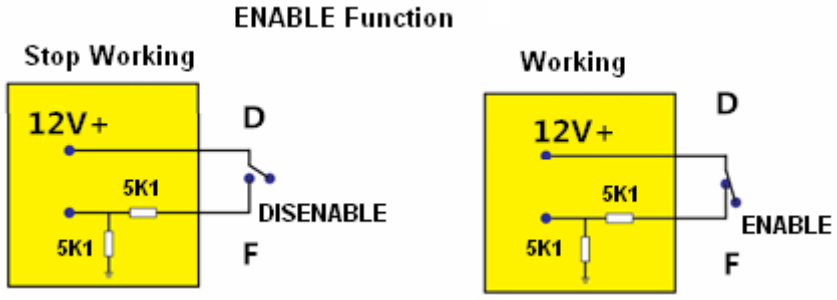
6.4 Interface Definition;

S. N.	Terminal Name	Terminal Definition	Male Connector	Female Connector	Ver.
1	Charger's AC Input	A-Null line, B- GND C-Fire Line,	XXC103-EV-P4ZA	XXC103-EV-S4TA	XINXI
2	Signal Control	A-CANL, B-CANH, C-CANGND, D-12V+, E-12V-, F-Enable	XXC103-EV-P6ZC	XXC103-EV-S6TC	XINXI
3	Charger's DC Output	A-Positive B-Negative	XXC103-EV-P4ZB	XXC103-EV-S4TB	XINXI

6.5 Enable Control



7.LED Status

1). Initial State

Red Off Green Off Red Off Green Off Red Off Green Off Red Off Green Off

2). Charging State

Red Off Red Off Red Off Red Off Red Off Red Off Red Off Red Off

3). Stand-by State

Green Off Green Off Green Off Green Off Green Off Green Off Green Off Green Off

4). Fault State

Red Green Red Green……Other error status word error

Red Green……Wrong Battery

Red Green Red……Wrong Communication

Green Red……Wrong Input Voltage

Green Red Green……Internal Temperature Protection

Green Red Green Red……Wrong Hardware

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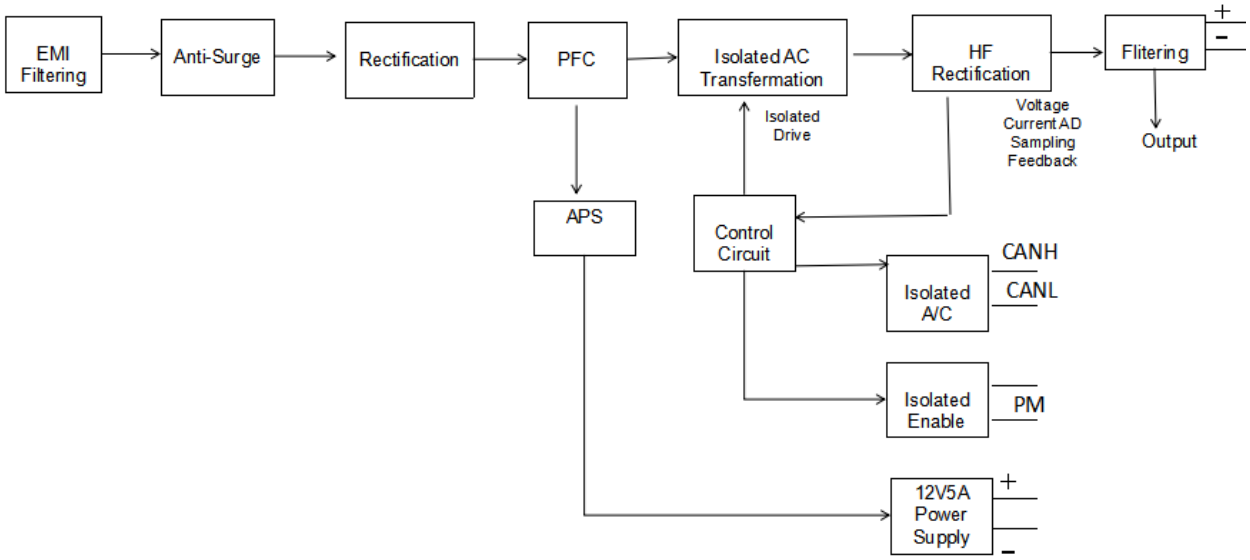
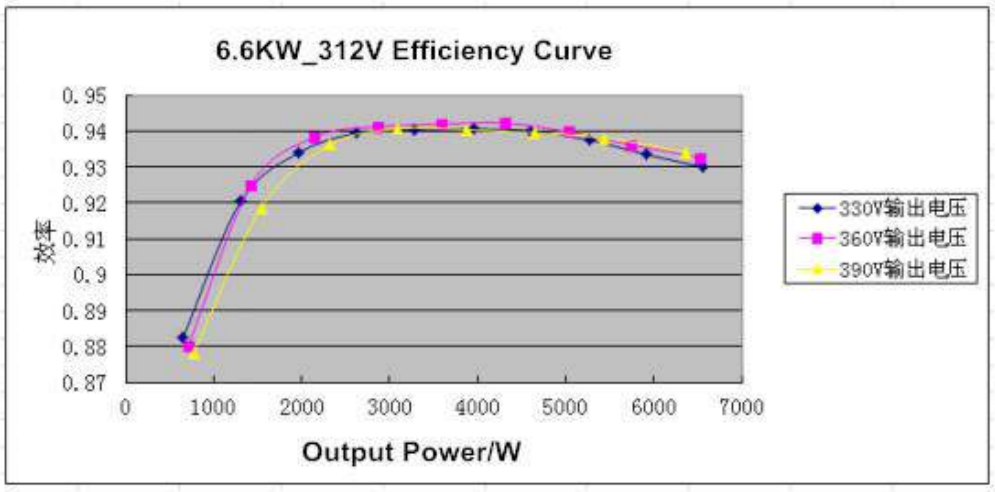
8.Schematic diagram and the efficiency curve

8.1 Schematic Diagram



8.2 Efficiency Curve



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10. Packaging, Transport and Storage

1). Packaging

On the packing box, there are product name, product part number, product brand, product type, production number and name of manufacturer; In packing box, along with the technical documents, it includes packing list, quality certificate, product specification.

2). Transportation

Suitable for cars, boats, aircraft, transportation. The products have to be prevented against sunshine and moisture and in a civilized transportation.

3). Storage

Product should be stored in the packing box when it is not used and be maintained in a 5 ℃ to 40 ℃ clean, dry and well-ventilated environment. It should not be stored together with chemicals, acid and alkali substances etc,. Should avoid storing in the sun, fire, water and avoid storing with corrosive substances. The storage period is 2 years (from the inventory date of the factory). After the 2 years of storage period, the products should still comply with the provisions of the relevant standards.

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