

Version	Change Description	Date dd/mm/yyyy
1	First edition	14/05/2020

Item	Charging standard	Product name	Model NO.
1	IEC	2 in 1 2.5kWDCDC+6.6 kW OBC IEC charging Standard	AR2K5D6K6B-220S350L-I

6.6kw 2 in 1 Voltage Range

Items	Mode type	Input Voltage range	Rated input voltage	Output voltage
1	OBC charging mode (Vac)	85~265Vac	220Vac	240~450Vdc
2	OBC inverter mode (Vdc)	300~450Vdc	350V	220Vac
3	DCDC Mode (Vdc)	240~450Vdc	350V	9~16Vdc, rating:14Vdc (2.5kw)

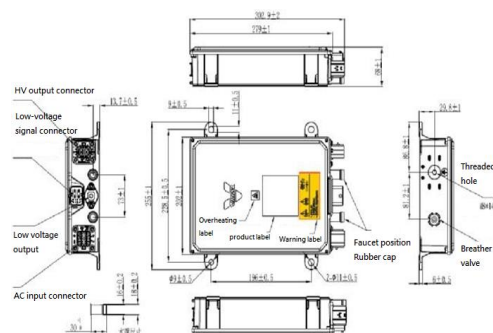
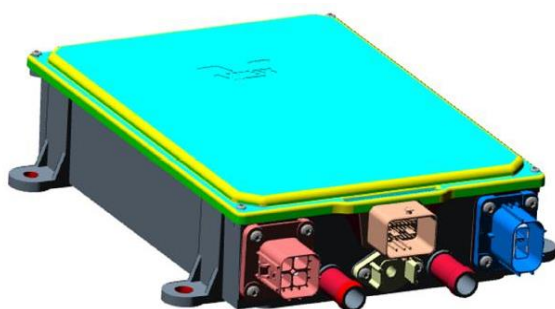
1 Product Overview

1.1 Description

The 2-in-1 product assembly consists of OBC and DCDC. OBC converts AC power to high-voltage DC power to charge the vehicle 's power battery; on-board DCDC converters convert high-voltage DC power to the required low-voltage DC power to power the vehicle 's low-voltage network and charge low-voltage batteries.

1.2 Structural Parameters

Dimensions (mm)	279 * 202 * 68 (without coolant path nozzle, connector, mounting bracket)
Weight (KG)	5.3





2 Electrical characteristics

2.1 OBC Charging mode :

Item	specification
AC input	
Input voltage range	85 ~ 265 Vac
Rated input voltage	220 Vac
Input frequency range	45-65 Hz
Input Current	32 A max
Power Factor	0.99@ Rated
High voltage output	
Output voltage range	240~450Vdc
Rated output voltage	350 Vdc
Output current	22 A
Output voltage accuracy	≤±1%
Output current accuracy	≤±3%@ > 10A; ≤±0.3A @ < 10A
Output voltage ripple coefficient	≤±5% (CV mode)
Output Power	6.6 kW max
Efficiency	94%
Low-voltage input	
Input voltage range	9 ~ 16 Vdc (normal work)
Quiescent Current	≤1 mA(Total 2 in 1)
communication method	CAN2.0, 500kbs
Wake up	CC wake up, CP wake up
With or without termination resistor	no
Protective function	
Input over and under voltage protection, output over and under voltage protection, over temperature protection, short circuit protection, reverse output protection	

2.2 OBC Inverter mode :

Item	specification
High voltage input	
Input voltage range	300V ~ 450 Vdc
Input Current	22 A max
AC output	
The output voltage	220 AC (±5%)
Output voltage frequency	50 Hz (±2%)
Output Power	6 KVA
Output efficiency	93%
Low-voltage input	

Input voltage range	9 ~ 16 Vdc (normal work)
Quiescent Current	≤1 mA(Total 2 in 1)
communication method	CAN2.0, 500kbs
Wake up	2K CC Resistive wakeup
Protective function	
Input over and under voltage protection, output over and under voltage protection, over temperature protection, short circuit protection	

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2.3 DCDC mode:

Item	specification
High voltage input	
Input voltage range	240 ~ 450 Vdc
Rated input voltage	350 Vdc
Input current	12 A
Low voltage output	
Output rated voltage	14±0.25 Vdc
Output current	180 A continuous
Output Power	2.5 KW continuous
Efficiency	92%
Output voltage accuracy	≤±2%
Output voltage ripple coefficient	≤800 mV@20 MHz
Output voltage overshoot	≤5% Vout
Low-voltage input	
Input voltage range	9 ~ 16 Vdc (normal operation)
Quiescent Current	≤1 mA (2 in 1 total)
communication method	CAN2.0, 500kbs
Wake up	Hard-wired wake

With or without termination resistor	no
Protective function	
Input over and under voltage protection, output over and under voltage protection, over temperature protection, short circuit protection	

2.4 Environmental conditions

Item	specification
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Working temperature	-40 ~ +85°C
Ambient storage	-40 ~ +105°C
Working environment	5% ~ 95%, no condensation, no condensation
cooling method	Liquid cooling
IP Rating	IP67

2.5 Cooling requirements

Item	specification
Cooling water outlet	Cooling port diameter 16mm (outer diameter)
Coolant requirements	50% water and 50% glycol
Coolant temperature	Normal work: -40 ~ + 65 °C; Derating work: + 65 ~ + 85 °C;
Coolant flow	≥6L/min

Item	specification
Dielectric strength	AC side to high voltage output side: 2800 Vdc AC side to low voltage output side (case): 2800 Vdc High-voltage output side to low-voltage output side (housing): 2800 Vdc

2.6 Safety Features

Insulation characteristics	Test voltage 500 Vdc AC side to high voltage output side: ≥10 MΩ AC side to low voltage output side (case): ≥10 MΩ
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2.7 Temperature derating curve

Thermal Performance Parameters

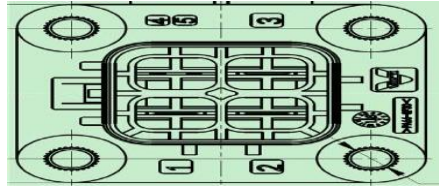
1 Product interface requirements

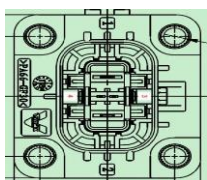
1.1 Connector Information

Pinout definition	Receptacle		Plug model	
	Model	Maker	Model	Maker
AC input	YGC1174-EV-P(3+2)R	Yonggui	YGC1174-EV-S(3+2)P	Yonggui
High voltage	YGC1174-EV-P(2+2)RA	Yonggui	YGC1174-EV-S(2+2)PA	Yonggui
Low voltage	GH01-F200-1NNB-T02	Guoweitong	M8 hole OT terminal	
Low voltage signal	64334-0100	MOLEX	64319-3211	MOLEX

1.2 Connector pin definition (component side)

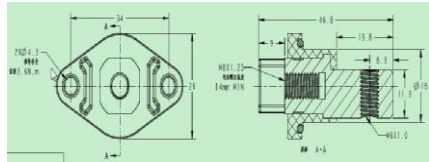
1.2.1 AC input

Position	Description				Picture
1	L	Fire Wire	Power supply	32A	
2	N	Zero line	power supply	32A	
3	PE	Ground	Ground	32A	
4	HVIL_in	Interlock	signal	20mA	
5	HVIL_out	Interlock	signal	20mA	

Position	Description				Picture	
1	HV+	High voltage	output is positive	power supply	22A	
2	HV-	High voltage	output is negative	power supply	22A	
3	HVIL_in	Interlock in		signal	20mA	
4	HVIL_out	Interlock out		signal	20mA	

1.2.2 High voltage output

1.2.3 Low-voltage output positive

Position	Description				Picture	
/	14V+	Low voltage	14V output positive	power supply	180A	

1.2.4 Low voltage signal



Position	Description				Picture
1A	NC				
1B	NC				
1C	NC				
1D	NC				
1E	NC				
1F	NC				
1G	NC				
1H	KL30	Normal power(12V+)	power input	3A	
2A	WAKEUP_OUT	OBC Wake-up output AC charging stand temperature detection 1 AC charging stand temperature detection 2 AC charging stand temperature detection 1, 2	Analog output	100mA	
2B	NTC1+		Analog input	20mA	
2C	NTC2+		Analog input	20mA	
2D	NTC_GND		Analog input	20mA	
2E	NC				
2F	NC				
2G	NC				
2H	NC				
3A	CP	Charging facility power confirmation	Analog input	20mA	
3B	CC	Confirmation of charging cable connection	Analog input	20mA	
3C	OBC_Wakeup_in	OBC hard-wire wake-up input, continuous high active	Analog input	20mA	
3D	DCDC_Wakeup_in	DCDC hard-wire	Analog input	20mA	



3E	NC	wake-up input, active high			
3F	NC				
3G	NC				
3H	Elock+	Actuator drive positive	Analog output	3A	
4A	CAN_H	CAN high	digital	20mA	
4B	CAN_L	CAN low	digital	20Ma	
4C	HVIL_in	High-voltage interlocking in	Analog input	20mA	
4D	HVIL_out	High-voltage interlock out	Analog output	20mA	
4E	NC				
4F	Elock_sense	Actuator lock feedback	Analog input	20mA	
4G	KL31	Ground (12V-) Actuator drive	Power ground	3A	
4H	Elock-	negative	Analog output	3A	

Note: The above valid range of medium and high voltage is 6 ~ 16V