

Revision	Description	Date	PM
V0	First released	2019/08/01	Alisa Chen

Model No.: AR2K5D6K6B-230450

6.6 KW OBC with Inverter Mode+ 2.5 KW DCDC

COMBO Liquid Cooled System

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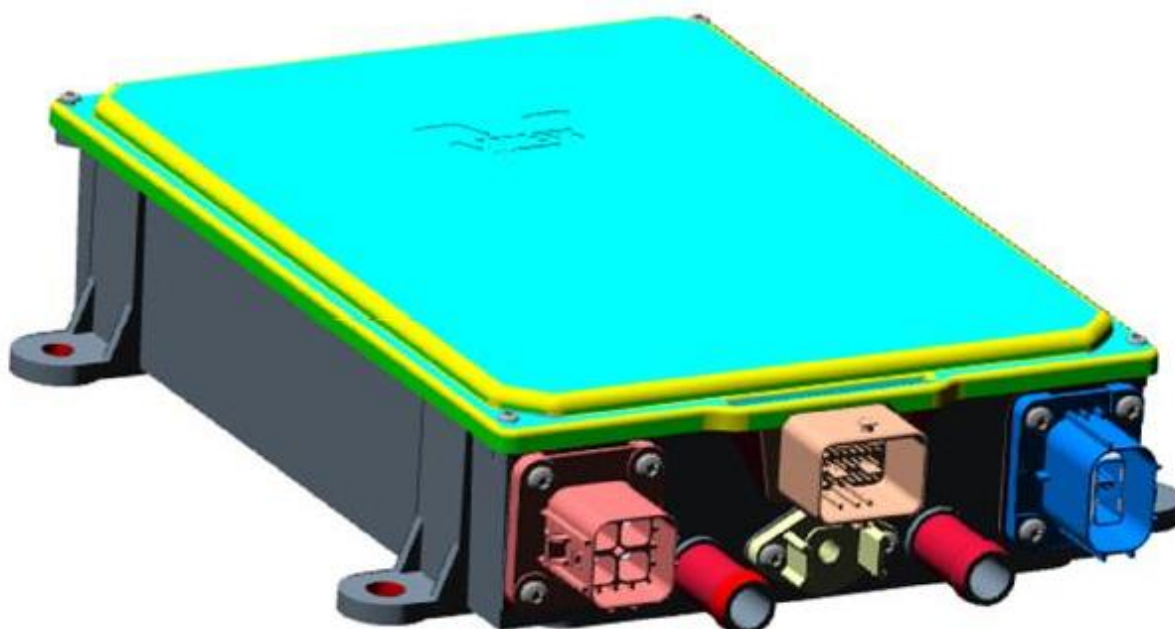
1 Product Overview

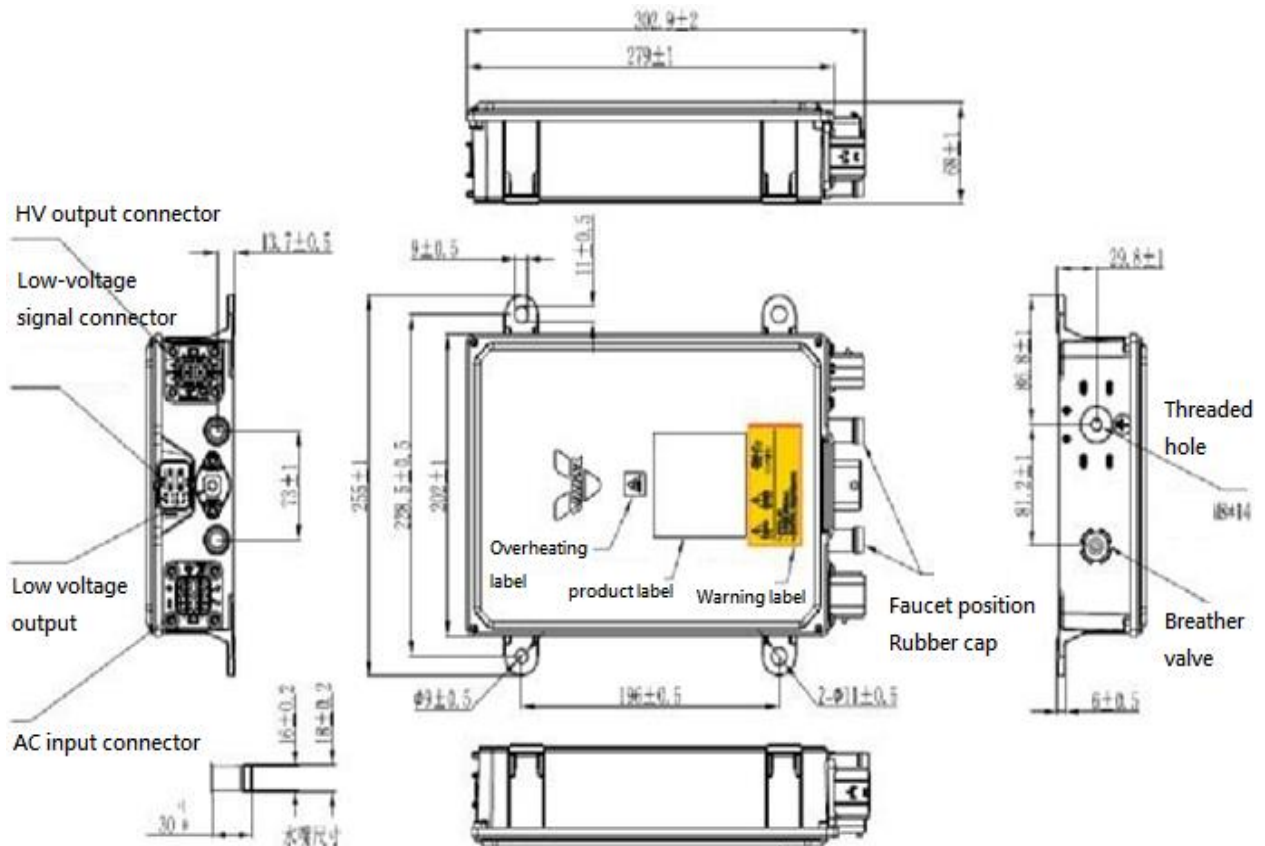
1.1 Description

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 dimensions

Dimensions: 279 * 202 * 68mm (without water nozzle, connector, mounting bracket); Weight: 5.3KG





2 Specifications

2.1 Electrical characteristics

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	230V ~ 450 Vdc
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
effectiveness	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	

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	

DCDC mode:

Item	specification
High voltage input	
Input voltage range	230 ~ 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
effectiveness	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	

2.2 Environmental conditions

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

2.3 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

2.4 Safety Features

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

Insulation characteristics	Test voltage 500 Vdc AC side to high voltage output side: $\geq 10 \text{ M}\Omega$ AC side to low voltage output side (case): $\geq 10 \text{ M}\Omega$ High voltage output side to low voltage output side (case): $\geq 10 \text{ M}\Omega$
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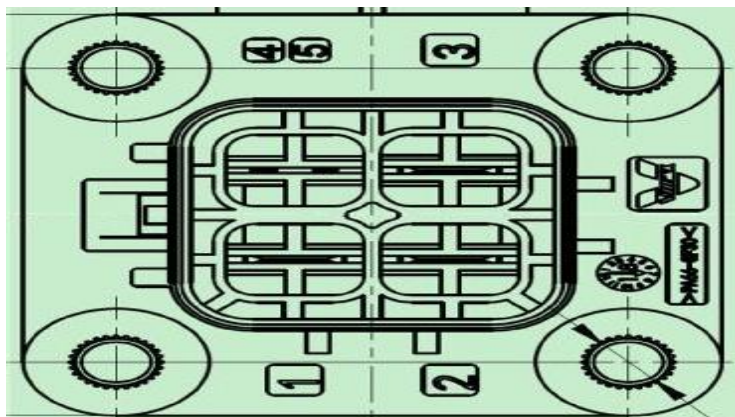
3 Product interface requirements

3.1 Connector Information

category	Component side		Harness side	
	model	factory	model	factory
AC input	YGC1174-EV-P(3+2)R	Yonggui	YGC1174-EV-S(3+2)P	Yonggui
High voltage output	YGC1174-EV-P(2+2)RA	Yonggui	YGC1174-EV-S(2+2)PA	Yonggui
Low voltage output	GH01-F200-1NNB-T02	Guoweitong	M8 hole OT terminal	
Low voltage signal	64334-0100	MOLEX	64319-3211	MOLEX

3.2 Connector pin definition (component side)

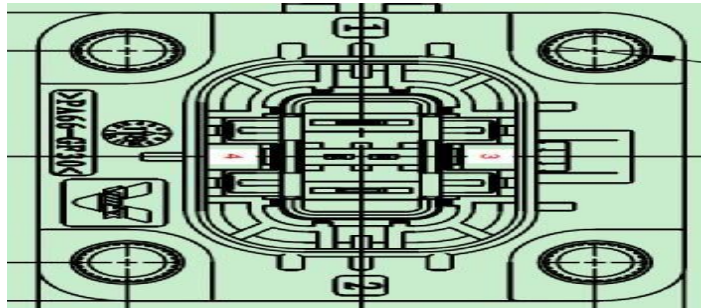
3.2.1 AC input



Pin definition:

Pin number	name	description	signal type	Current capacity
1	L	Fire Wire	power supply	32A
2	N	Zero line	power supply	32A
3	PE	Ground	Ground	32A
4	HVIL_in	Interlock in	signal	20mA
5	HVIL_out	Interlock out	signal	20mA

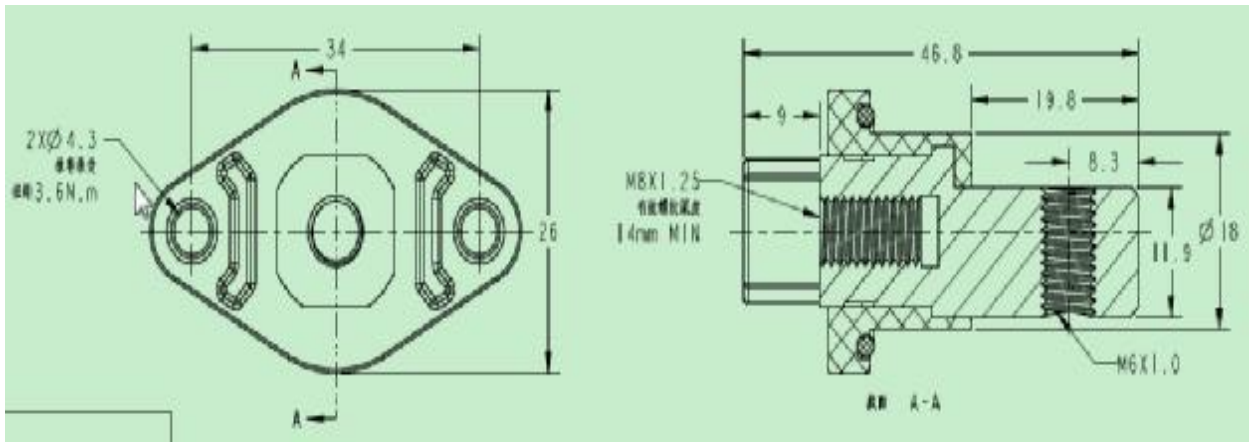
3. 2. 2 High voltage output



Pin definition:

Pin number	name	description	signal type	Current capacity
1	HV+	High voltage output is positive	power supply	22A
2	HV-	High voltage output negative	power supply	22A
3	HVIL_in	Interlock in	signal	20mA
4	HVIL_out	Interlock out	signal	20mA

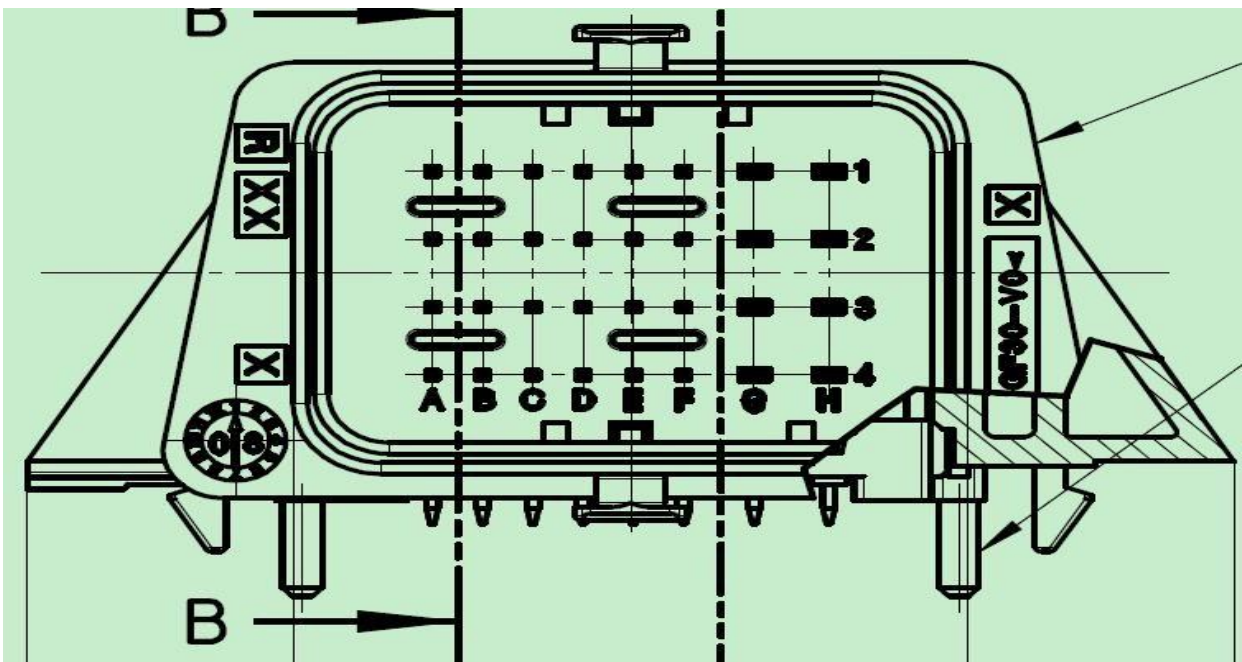
3. 2. 3 Low-voltage output positive



Pin definition:

Pin number	name	description	signal type	Current capacity
/	14V+	Low voltage 14V output positive	power supply	180A

3. 2. 4 Low voltage signal



Pin definition:

Items	Pin #	name	description	signal type	Current capacity
1	1A	NC			
2	1B	NC			
3	1C	NC			
4	1D	NC			
5	1E	NC			
6	1F	NC			
7	1G	NC			
8	1H	KL30	Normal power (12V +)	power input	3A
9	2A	WAKEUP_OUT	OBC wake-up output	Analog output	100mA
10	2B	NTC1+	AC charging stand temperature detection 1	Analog input	20mA
11	2C	NTC2+	AC charging stand temperature detection 2	Analog input	20mA
12	2D	NTC_GND	AC charging stand temperature detection 1, 2 public ground	Analog input	20mA
13	2E	NC			
14	2F	NC			
15	2G	NC			
16	2H	NC			
17	3A	CP	Charging facility power confirmation	Analog input	20mA
18	3B	CC	Confirmation of charging cable connection	Analog input	20mA
19	3C	OBC_Wakeup_in	OBC hard-wire wake-up input, continuous high active	Analog input	20mA
20	3D	DCDC_Wakeup_in	DCDC hard-wire wake-up input, active high continuously	Analog input	20mA
21	3E	NC			
22	3F	NC			

23	3G	NC			
24	3H	Elock+	Electronic lock drive positive	Analog output	3A
25	4A	CAN_H	CAN high	digital	20mA
26	4B	CAN_L	CAN low	digital	20mA
27	4C	HVIL_in	High-voltage interlocking in	Analog input	20mA

Pin #	name	description	signal type	Current capacity
4D	HVIL_out	High-voltage interlock out	Analog output	20mA
4E	NC			
4F	Elock_sense	Electronic lock lock feedback	Analog input	20mA
4G	KL31	Ground (12V-)	Power ground	3A
4H	Elock-	Electronic lock drive negative	Analog output	3A

Note: The above valid range of medium and high level voltage is 6 ~ 16Vdc.