

DC / DC converter specification

Product model number: GW-DC

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catalogue

1. An Overview.....	4 -
1.1 Abstract.....	4 -
1.2 Main characteristics.....	4 -
1.3 Industry terms.....	4 -
2. Size and appearance.....	5 -
2.1 Dimensions and quality.....	5 -
2.2 Appearance.....	5 -
3.DC / DC, converter technical index.....	6 -
3.1 Environmental requirements.....	6 -
3.2 Regulatory requirements and reference standards for on-board DC / DC converters.....	7 -
4. DC / DC, converter safety gauge.....	7 -
5. Electrical performance of DC / DC converter.....	8 -
5.1 Electrical characteristics.....	8 -
5.2 Environmental test.....	8 -
6. Interface.....	9 -
6.1 High-pressure input interface and its definition.....	9 -
6.2 Signal interface and definition.....	10 -
6.3 Low-voltage output cathode interface and definition.....	10 -
6.3.1 Low-voltage output cathode interface and definition style 1:-	10 -
6.3.2 Low-voltage output cathode interface and defined styles 2:.....	11 -
6.3.3 Low voltage output cathode Interface and Defining Style 3:.....	11 -
6.4 Low-voltage output negative electrode interface and definition style:-	12 -
7. Basic block diagram.....	12 -
7.1 Block diagram of CAN communication principle.....	12 -
7.2 Hardware principle block diagram.....	13 -
7.3 Vehicle connection block diagram.....	13 -
8. Nameplate, warning signs, packaging, transportation and storage.....	13 -
8.1 Nameplate and bar code (nameplate label is traceable).....	13 -
8.2 Warning signs.....	14 -
8.3 Packaging.....	14 -
8.4 Transportation.....	15 -
8.5 Storage.....	15 -
9. Safety guidelines.....	15 -

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1. Overview

1.1 Abstract

GW-DC series 1KW /1.2KW on-board DC converter is designed according to national standards to provide 12V /24v low-voltage DC power supply for vehicles. The output end can be attached to the 12V battery, and the DC / DC converter automatically charges the battery for management. The product not only has the advantages of high efficiency, small volume, high stability, long life, but also has the characteristics of high protection level, high reliability, complete protection function, which is the ideal power supply for electric vehicle charging. Built-in heat induction device, with overheating protection function, can be automatically restored. The fully sealed process, up to IP67 protection level, ensures to work in any complex environment without failure.

1.2 Main characteristics

1.2.1 Forced cooling of the fan

1.2.2 Built-in temperature sensor, under dangerous operation conditions (internal 95℃), turn off output

1.2.3, The protection level reaches IP67, and it can work safely under short-term immersion conditions

1.2.4 Compliance with CAN 2.0 communication specification, bus display working status, fault code, etc

1.2.5 With input and output over voltage, under voltage protection, short circuit protection, hardware fault protection, over temperature protection and recovery functions

2. Size and appearance

2.1 Dimensions and quality

cooling-down method	long (mm)	wide (mm)	Height (mm)	quality (KG)
air cooling	254±1	131±1	95±5	

2.2 Appearance

The surface of the parts is smooth, without layer rise, rust, cracks, spots, burr, deformation and hand accessibility. Complete connecting parts, the parts are fastened and reliable, no rust, burr, crack and other defects and damage. The connector sheath and pin are intact and free from damage, and all parts are fastened.



Product appearance

3. Technical indicators of DC / DC converter

3.1 Environmental requirements

▲ operating ambient temperature

area	minimum temperature	maximum temperature
Global	-40℃	85℃ (internal temperature)

▲ Storage of ambient temperature

area	minimum temperature	maximum temperature
Global	-55℃	100℃

▲ Humidity: relative humidity of 5%~95%, no condensation, no condensation

▲ Altitude: 5000m

▲ Working noise: the maximum noise is 70dB, meeting the GB-T24347-2009 standard

3.2 Regulatory requirements and reference standards for on-board DC / DC converters

order number	Standard number	Standard name	remarks
1	GB/T 24347-2009	Electric vehicle DC / DC converter	/
2	GB/T 18488.1-2015	Electric motors and their controllers for electric vehicles- -Part 1: Technical conditions	/
3	GB/T 18384.2-2015	Safety requirements for electric vehicles- -Part 2: Functional safety and fault protection	/
4	GB/T 18384.3-2015	Safety requirements for electric vehicles- -Part 3: Personnel protection against electric shock	/
5	GB/T 18387-2008	Limits and measurement methods of the electromagnetic field emission intensity in electric vehicles	/
6	GB/T 31498-2015	EV post-crash safety requirements	/
7	GB 9254-2008	Radio harassment limits and measurement methods for information technology equipment	/
8	GB/T 18655-2010	Vehicle ships and internal combustion engines, radio nuisance characteristics, limits for protecting vehicles, carrying vers, and measurement methods	/
9	GB 29743-2013	Motor vehicle engine coolant	/
10	GB 4208	Housing protection level (IP code)	/
11	GB/T 28046-2	Environmental conditions and tests for electrical and electronic equipment of road vehicles- -Part 2: Electrical loads	/
12	GB/T 28046-3	Environmental conditions and tests for electrical and electronic equipment of road vehicles- -Part 3: Mechanical loads	/
13	GB/T 28046-4	Environmental conditions and tests for electrical and electronic equipment for road vehicles-Part 4: Climate loads	/
14	GB/T 2423.34-2012	Environmental tests- -Part 2: Test method tests Z / AD: Temperature / humidity combination cycle test	/
15	GB/T 2423.1-2008	Environmental tests of electrical and electronic products- -Part 1: Test Methods Test B: Low temperature	/
16	GB/T 2423.2-2008	Environmental tests of electrical and electronic products- -Part 2: Test Methods Test B: high temperature	/
17	GB/T 2423.3-2008	Environmental tests of electrical and electronic products- -Part 2: Test method Cab: Constant humidity and heat test	/
18	GB/T 2423.17-2008	Environmental tests of electrical and electronic products- -Part 2: Test Methods Test Ka: salt spray	/
19	GB/T 30512-2014	Automobile prohibited material requirements	/
20	QC/T 413	Basic technical conditions of automotive electrical equipment	/

4. DC / DC converter safety regulations

project	condition	standard
Ground resistance test	@25A/AC	$\leq 100\text{m}\Omega$
Input insulation test	@1000V/DC	$\geq 20\text{M}\Omega$
Input voltage withstand test	@2000V/DC 1min	Leakage current of 10ma

5. Electrical performance of DC / DC converter

5.1 Electrical characteristics

electrical character									
Model No.	GW-DC-48-12	GW-DC-72-12	GW-DC-108-12 GW-DC-120-12 GW-DC-144-12	GW-DC-216-12	GW-DC-360-12	GW-DC-540-12	GW-DC-144-24	GW-DC-360-24	GW-DC-540-24
Rated input voltage	48V	72V	108v/120v/144V	216V	360V	540V	114V	360V	540V
input voltage range V	40-80	50-100	80-200	170-300	250-450	400-700	80-200	250-450	400-700
Input pre charging circuit	built-in								
Input pre charge resistor	30R	30R	30R	120R	120R	120R	30R	120R	120R
Bus capacitor	20uF	20uF	20uF	10uF	10uF	7uF	20uF	10uF	7uF
output rating	800W	1.0KW	1.2KW			1.0KW	1.2KW		
Rated output voltage	14V						27V		
Output voltage range	0-16V						0-27V		
Output current range	0-57A	0-71A	0-85A			0-71A	0-44A		
Stable pressure accuracy	± 0.2V (lead root test)						± 0.4V (lead root test)		
Output response time	≤200mS								
Typical efficiency	≥90%		≥91%				≥92%		
defensive function									
Input overvoltage protection value	>80V	>100V	>190V	>300V	>450V	>700V	>200V	>450V	>700V
Input overvoltage recovery value	<70V	<90V	<180V	<290V	<400V	<680V	<190V	<440V	<680V
Input undervoltage protection value	<30V	<50V	<80V	<170V	<250V	<400V	<80V	<250V	<400V
Input undervoltage recovery value	>40V	>60V	>90V	>180V	>260V	>420V	>90V	>260V	>420V
Output the overvoltage protection value	>16V						>33V		
Output the overvoltage recovery value	<15V						<32V		
Output the	<8V						<18V		<16V

undervoltage protection value			
Output the undervoltage recovery value	>9V	>19V	>17V
Output the overcurrent protection value	Stop the output when the output current is greater than the maximum current		
Output reverse connection and short-circuit protection	Output short circuit, reverse connection protection shutdown, troubleshooting can be restored		
Overtemperature protection	When the output power is reduced when the radiator temperature is higher than 75℃, the circuit is disconnected when the temperature is higher than 95℃, and the output is restored when the temperature is restored below 85℃		

5.2 Environmental test

humid test	Meet the GB / T 24347-2009 6.1.2
Low temperature test	Meet the GB / T 24347-2009 6.1.1.1
High temperature test	Meet the GB / T 24347-2009 6.1.1.2

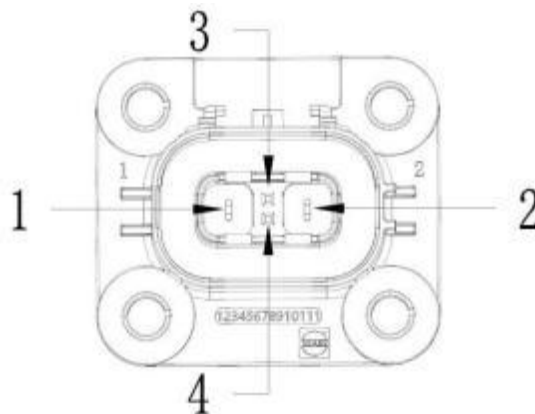
salt spray test	Meet the GB / T 2423.17
Electromagnetic disturbance immunity	Meet chapter 4 in GB / T17619-1998
Electromagnetic harassment sex	See the limits specified in chapters 12 and 14 in GB18655-2002
levels of protection	IP67
vibration resistance	From 10 to 25 Hz amplitude, 1.2mm, 25-500Hz 30m / S ² , 8 hours in each direction
durability	Not less than the relevant provisions of GB / T 24347-2009
MTBF	150000H

6. Interface

The interface of ON Board DC / DC converter to the vehicle electrical appliances and battery includes low voltage interface and high voltage interface, low voltage interface includes CAN communication signal line and DC / DC output, high voltage interface is DC / DC input; the interface connector model can be selected by the automobile manufacturer,

Note: Attention: Install a high-voltage fuse with a maximum voltage/current of 1.5 times the DCDC input in the high-voltage distribution box.

6.1 High-volt input interface and its definition



The DC / DC input side

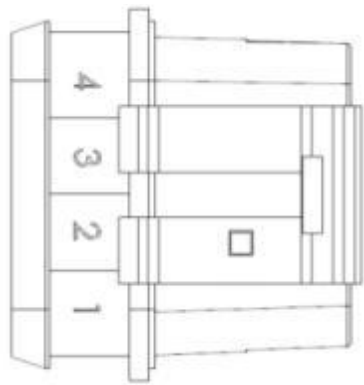
Product end: 3030202

Client: 3020202

brand	Pin	definition	Line color and line diameter
Xiamen Weien	1	positive pole	Red / 2.5
	2	negative pole	Black / 2.5

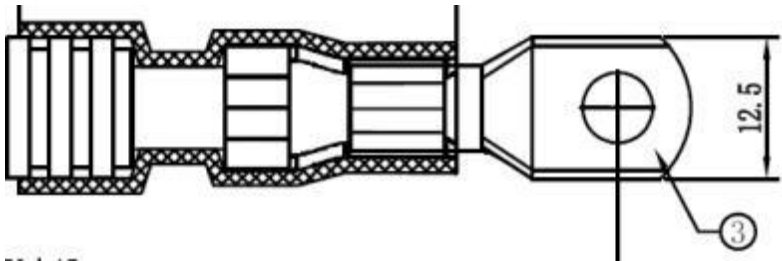
	3	/	/
	4	/	/

6.2 Signal interface and definition



Product side(female side): DJ7041-1.5-21		Client(male side): DJ7041-1.5-11	
brand	Pin	definition	Wire color and wire diameter
JINCHAO	1	CAN/H	Brown / 0.5
	2	CAN/L	Grey / 0.5
	3	Hard wire enable	Red / 0.5
	4	/	/

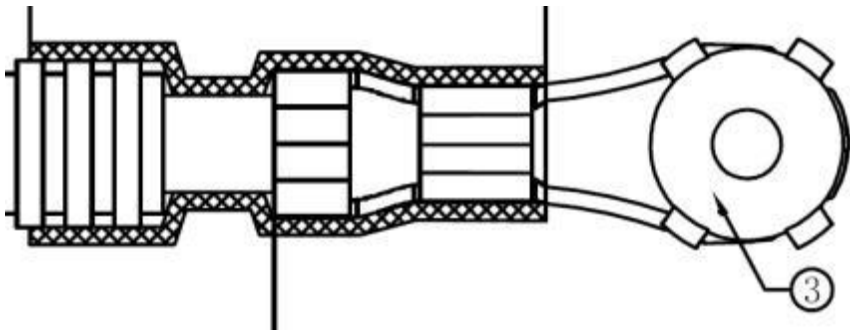
6.3 Low-voltage output cathode interface and definition style 2



Product side: swing line-SC16-6	Client side: M6 bolt
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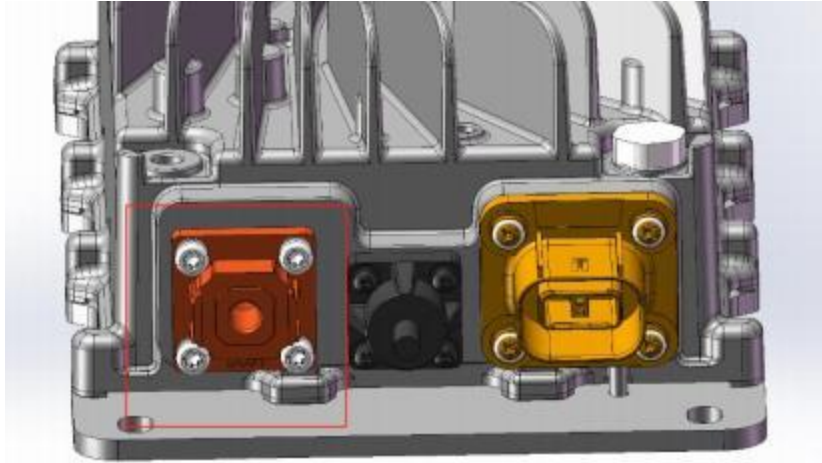
brand	Pin foot	definition	Line color and line diameter
	The DC / DC output positive pole	14V	Orange / 16

6.3.2 Low-voltage output cathode interface and defined styles 2:



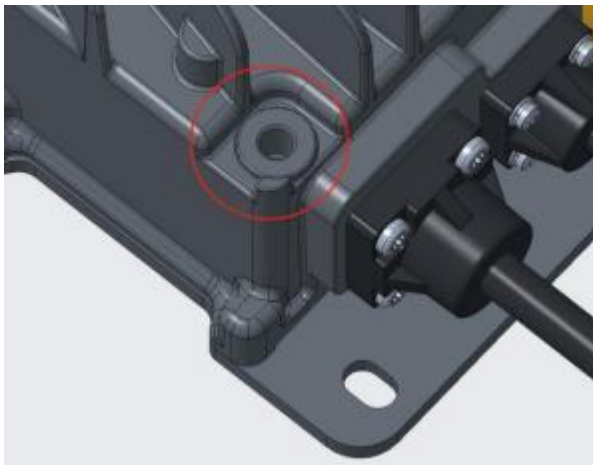
Product end: swing line-M6 nut terminal		Client: M6 bolt	
brand	Pin	definition	Line color and line diameter
	The DC / DC output positive pole	14V	Orange / 16

6.3.3 Low voltage output cathode Interface and Defining Style 3:



Product end: M8 thread hole		Client: M8 bolt	
brand	Pin foot	definition	Line color and line diameter
	The DC / DC output positive pole	14V	Orange / 16

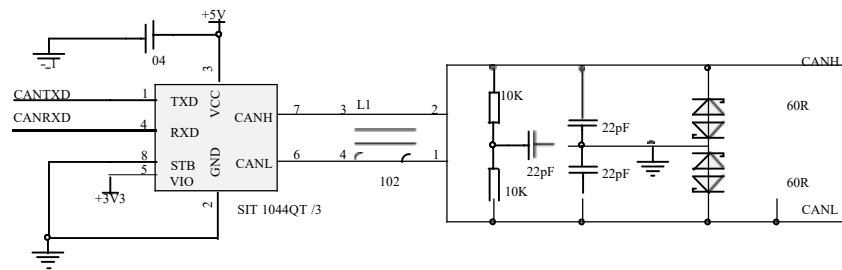
6.4 Low-voltage output negative electrode interface and definition style:



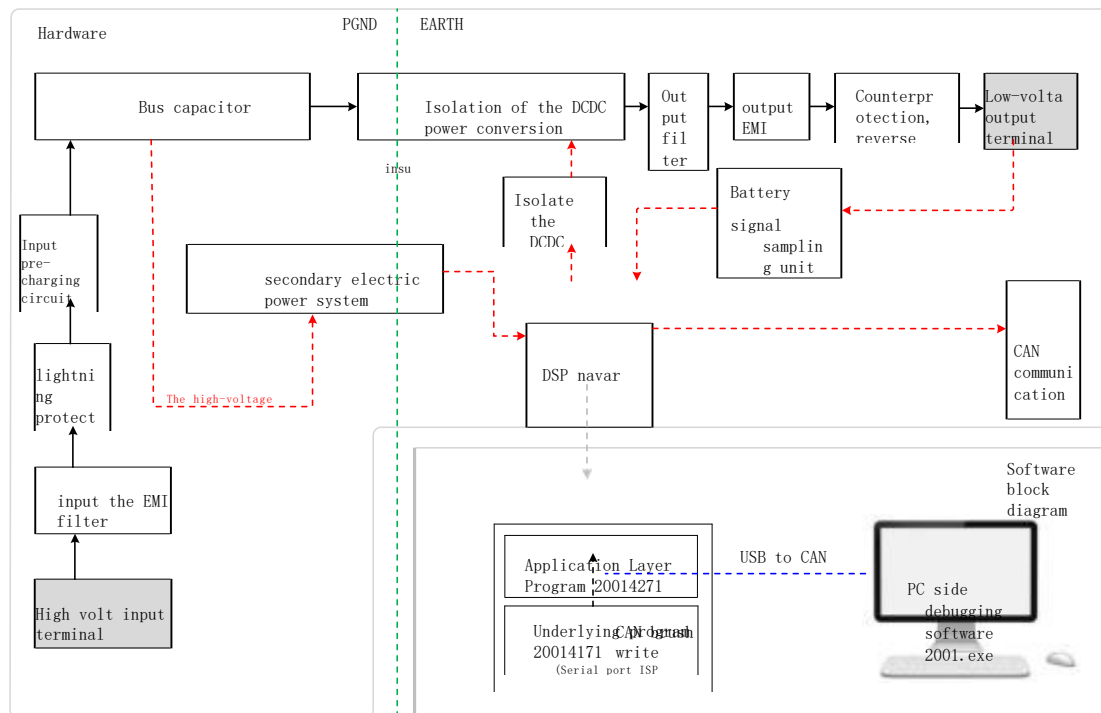
Product end: M8 thread hole		Client: M8 bolt	
brand	Pin foot	definition	Line color and line diameter
	The DC / DC output negative pole	14V	Orange / 16

7. Basic block diagram

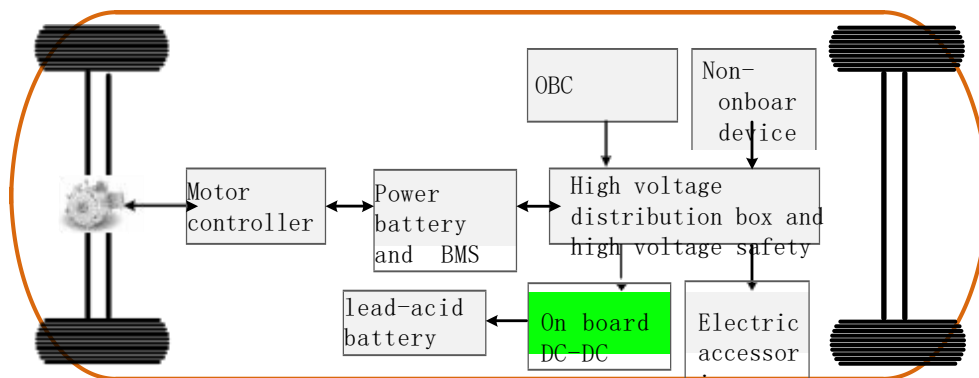
7.1 Block diagram of CAN communication principle



7.2 Hardware principle block diagram



7.3 Vehicle connection block diagram



8. Nameplate, warning signs, packaging, transportation and storage

8.1 Nameplate and bar code (nameplate label is traceable)

The basic parameters of the nameplate include: model, rated voltage, rated power, production date, serial number, etc. The following formats are available for your reference:

Product model: GW-DC-XX-XX

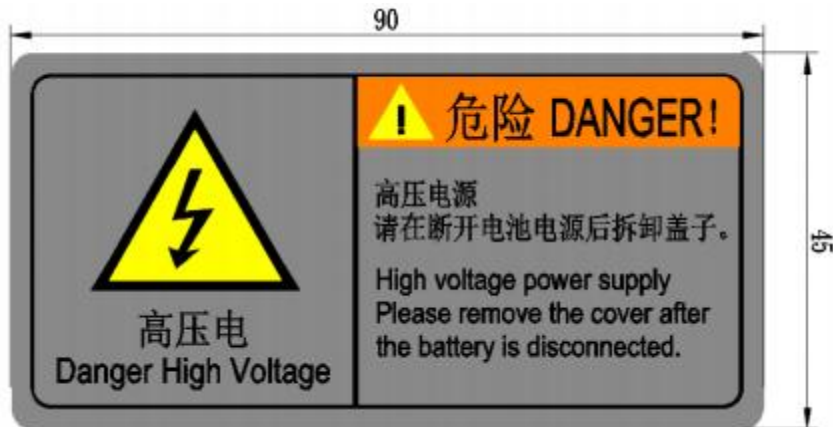
Configuration code: CANXXXX

DC / DC input range: XX-XXXVDC

DC / DC output: 14V71A



8.2 Warning signs



High volt warning sign

8.3 Packaging

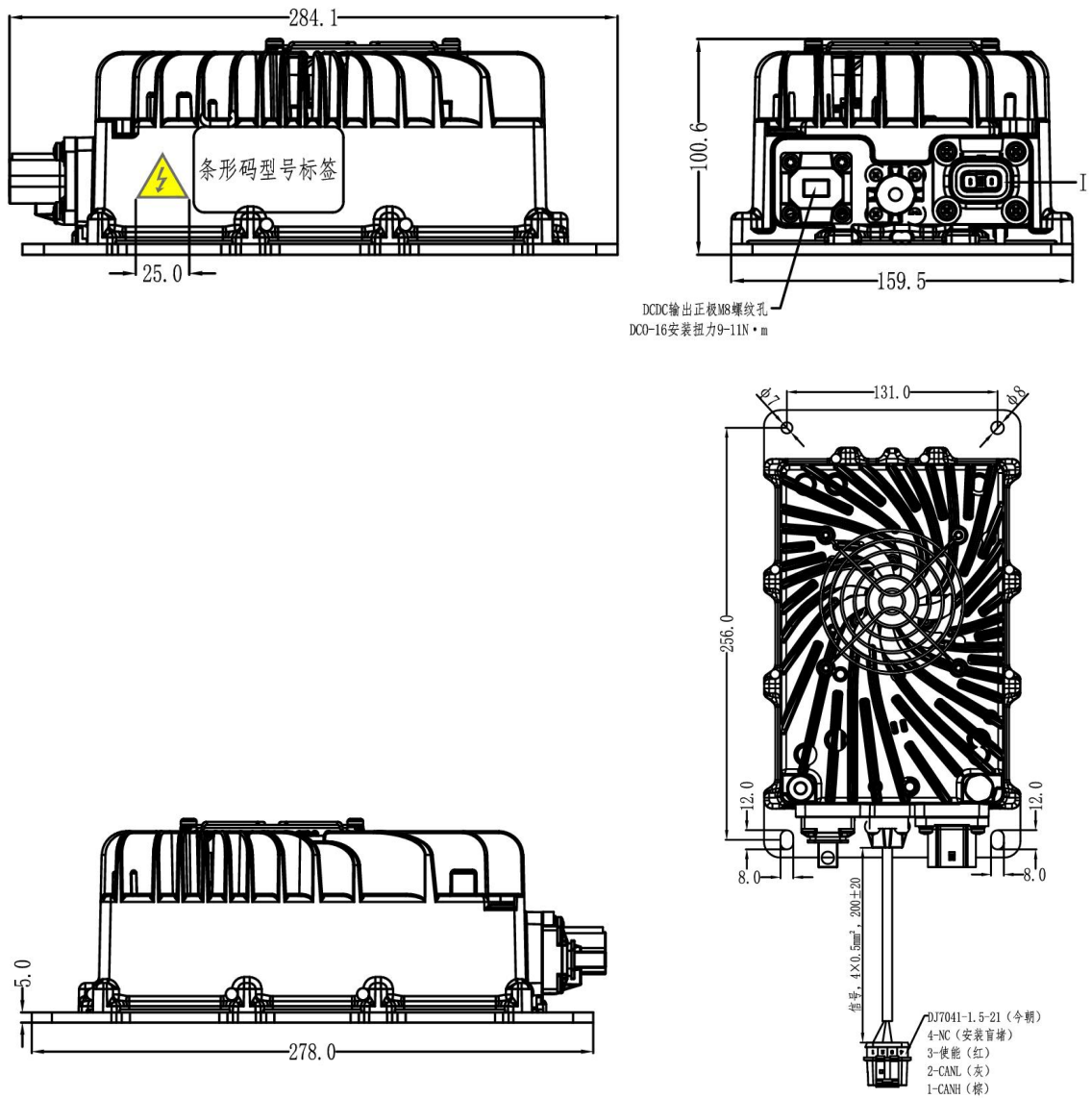
The packing box has the product name, model, manufacturer identification, inspection certificate of the manufacturer's quality department, manufacturing date, etc.

There is a list of accessories inside the packaging box

NO.	name	quantity	unit	remarks
1	DC / DC converter	1	PCS	
2	test report	1	sheet	
3	M8 * 16 The mounting screws	1	Pcs	Used for installing DC/DC negative terminal harness

4	ϕ 8 flat pad	1	pcs	Used for installing DC/DC negative terminal harness
5	ϕ 8 pad	1	pcs	Used for installing DC/DC negative terminal harness

Dimension



8.4 Transportation

Product transportation has a firm packing box, the corresponding use of the relevant national standards and should be "careful light", "moisture-proof" and other marks. Packaging boxes containing the products allow for transportation

by various means of transport. Direct shower and mechanical impact of rain and snow should be avoided in transportation.



transport mark

8.5 Storage

The products shall be stored in the packing box, the ambient temperature in the warehouse -10~40°C and relative humidity is not more than 80%, the warehouse allows no harmful gases, flammable, explosive products and corrosive chemicals, and no strong mechanical vibration, impact and strong magnetic field, the packing box shall be at least 20cm off the ground, high, at least 50cm from the wall, heat source, window or air inlet, and the storage period is generally 2 years, and shall be inspected again after more than 2 years.

Products shall be stored in a ventilated, dry place. At the same time, high temperature sources, fire sources and chemicals must be avoided. Store them neatly and avoid throwing them away

9. Safety guidelines

Warning: Remind the user that the live operation is dangerous

- * It is strictly prohibited to open and modify the device for repair or debugging without authorization
- * Do not place the parts in a rainy position
- * Before installation, please confirm that the shell is intact. If there is any damage, please replace it immediately or contact the after-sales service
- * Each plug and socket should be connected and fastened. If damaged or loose, please replace it immediately

- * It is strictly prohibited to plug and pull the connector when the product is electrified, otherwise personal injury may be caused

- * Do not open the product shell during the power process, otherwise personal injury may be caused

- * It is strictly prohibited to touch the high-voltage live parts of the product with naked hands. Please wear insulating gloves, insulating shoes and insulating clothing. Live maintenance and testing are strictly prohibited

- * In the process of replacing the fuse and contactor, brutal operation is strictly prohibited to avoid damaging the product and causing potential safety risks

- * When the battery is charged normally, please stay away from the fire source and flammable and explosive items

- * Do not charge damaged or nonrechargeable batteries

Note: Remind the user that the lower operation is an important operation of this product

- * Do not block the air inlet and outlet to prevent overheating

- * Please confirm that the output cable is not too long to avoid the impact of line pressure drop on charging

- * Please disconnect the power cord and the charging plug when moving the charging product

- * The battery voltage must match the nominal voltage of the converter

- * Avoid collision, compression, or pull, twist, or shake the charging cables

- * Products should be placed in a safe, dust-free and rainy environment

- * Please pack and store it for a long time

