

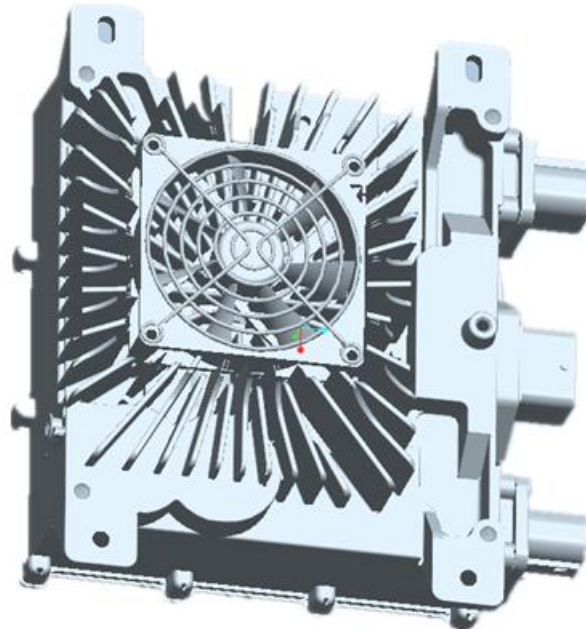
## HK-M Series Charger Main Parameter

### ● Overview

HK-M series 3.3KW charger is a product designed by Hangzhou Tiecheng Information & Technology Co., Ltd. according to the national standard of charger, specially designed for electric vehicle power battery to supplement electric energy. This product not only has the advantages of high efficiency, small size, high stability, long life, etc., but also has the characteristics of high protection level, high reliability, and complete protection functions. It is an ideal power source for electric vehicle charging. The charger has a built-in thermal induction device with overheat protection function and can automatically recover. The fully sealed potting process and the protection level of up to IP67 can ensure that it can work in any complex environment without causing failure.

### Main features:

1. Support UDS diagnosis      CAN wake-up function
2. Fully sealed process can work reliably under the conditions of  $-40^{\circ}\text{C}$ - $+85^{\circ}\text{C}$
3. Built-in temperature sensor to shut down output under hazardous operating conditions (internal  $90^{\circ}\text{C}$ )
4. Protection class IP67 Can work safely under short-term water immersion conditions



### Water -cooling

- **Models**

Models	Cooling method	Voltage Platform	Hardware	Power	Weight (kg)
HK-MF-48-40	Air cooling	48V	48V/40A	3.3KW	
HK-MF-72-40	Air cooling	72V	72V/40A	3.3KW	
HK-MF-108-32	Air cooling	108V	108V/32A	3.3KW	
HK-MF-144-23	Air cooling	144V	144V/23A	3.3KW	

**Label Definition :**



- Notes:
1. For the product model, see the model definition table
  2. The configuration code changes according to customer needs
  3. See the following technical specifications for the output range of OBC

## 1. Main parameter

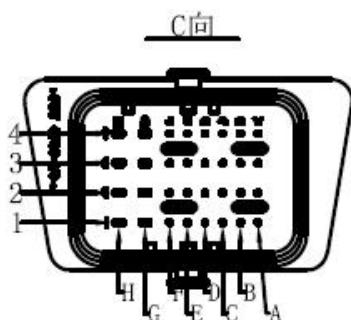
Voltage Platform		48V	72V	96V/108V	144V
Output	Output voltage range	30~66V	50-99V	65~140V	90~195V
	Output current	40A	40A	32A	23A
	Output power	3300W@220VAC 1600W@110VAC			
	Output Mode	CC / CV			
	CV Accuracy	±1%			
	CC Accuracy	±2%			
	Ripple Voltage Coefficient	5%			
Input	Input voltage range	AC 90~265V			
	Frequency	45-65Hz			
	Input current	16A			
	Power factor	≥0.99 more than half load			
	Effeciciency	≥93% full -load			
	Stand-by Consumption	≤5W			
Low Voltage Output	Output Mode	Constant Voltage			
	Output Voltage	13.8V			
	Rated Current	5A			
	CV Accuracy	±2%			
	Output Power	≥62.5W			
	Ripple Voltage Coefficient	1%			
Protection function	Input Over-voltage Protection	AC270±5V			
	Input Under-voltage Protection	AC85±5V			
	Output Over-voltage Protection	Stop the output when exceeds + 2% 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 + 5% of the maximum output current			

	Over-temperature Protection	Power down from 85 °C and turn off at 90°C
	Short-circuit Protection	Stop Output
	Battery Reverse Connect Protection	Yes
	Ground Protection	≤100mΩ
	CAN communication Protection	Automatically stop the output when CAN communication fails
	Power-off Protection	Yes
<b>Signal Port</b>	CC signal detection	100Ω—3.3k-Infinite
	CP signal detection	0%—100%, 5V—15V Vpp
	CC Singal output	220Ω or 680Ω
	Temperature detection	Two inputs, support 1K and 10K
	12V wakeup input	≤10mA
	12V wakeup output	Max 0.2A
	12V constant power	Sleep current≤1mA, peak current≤5A
	Electromagnetic lock drive	Maximum peak current 5A
	Electromagnetic lock in position signal	Switch
	CAN Cmmunication	Yes
	Baud rate	125Kbps、250Kbps、500Kbps
	Terminal Resistance	No
<b>Safety &amp; others</b>	Withstand Voltage	Input to Output: 2500VAC≤10mA Input to Ground: 2000VAC≤10mA Output to Ground: 2000VAC≤10mA, all 1min
	Ground resistance	<100MΩ Testing current 25A AC
	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%-10%≤50mS, 100%- 0%≤200mS
Protection Level	IP67
Vibration Resistance	10—25Hz Amplitude1.2mm, 25—500Hz 30m/s <sup>2</sup> , 8hrs per direction
Noise	≤60dB(Grade A )
MTBF	150000H
Work Environment	Relative Temp 5%-95% No condensation
Working Temperature	-40 ~ 85℃
Storage Temperature	-40℃ ~ +105℃
Over temperature protection	The module stops working when the temperature reaches 90 degrees, and the power supply automatically resumes normal operation after cooling

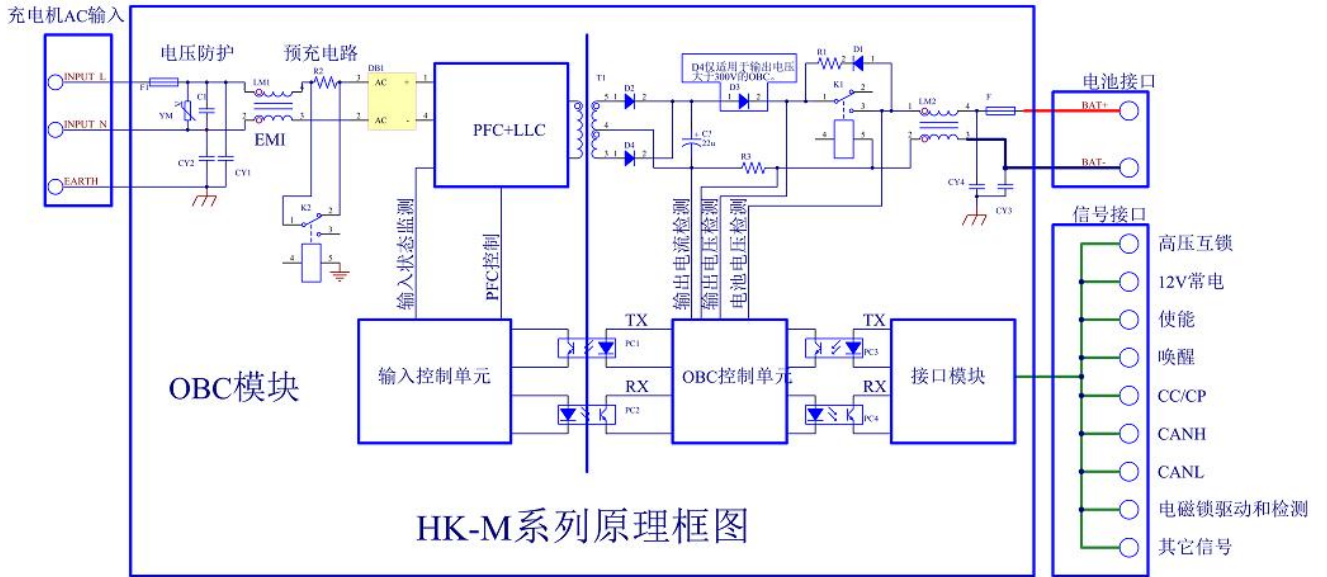
## 2. Interface definition diagram

Items	Port	Terminal Definition	Connector model	manufacturer
1	Input AC	1: Naught wire 2: Earth wire 3: LiveWire	X02-S03-TE30A-N20	XINXI
2	Output DC	1: charger output positive 2: output negative	X02-S02-TE301-N60	XINXI
3	Signal	As belows	064334011	Molex

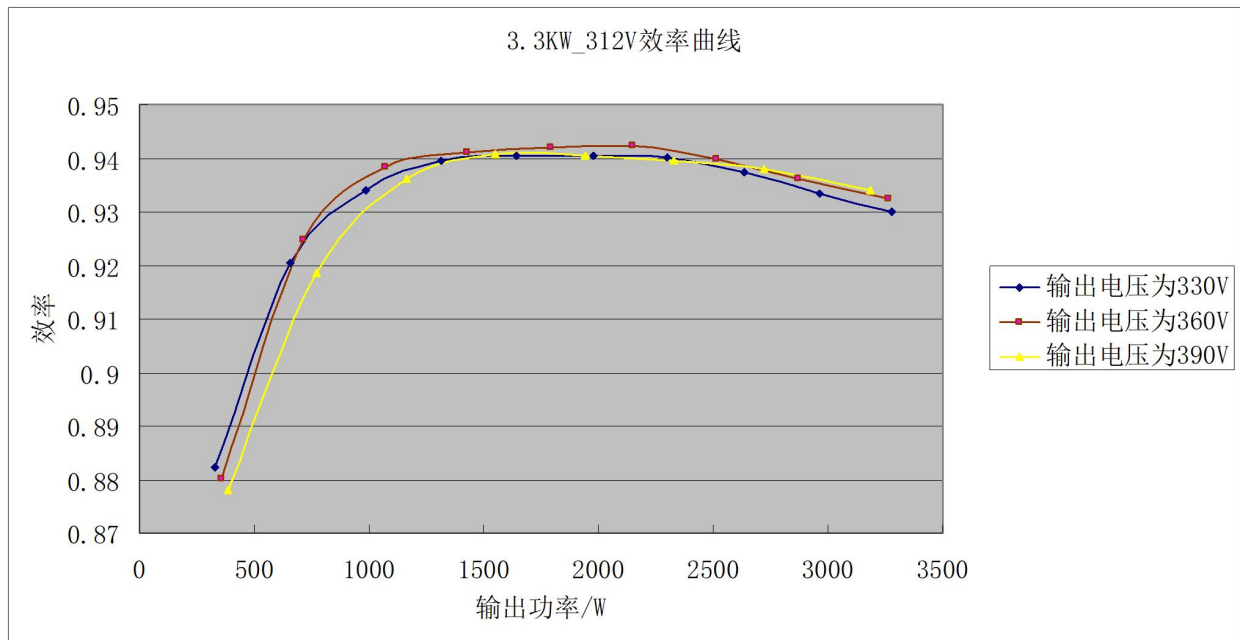
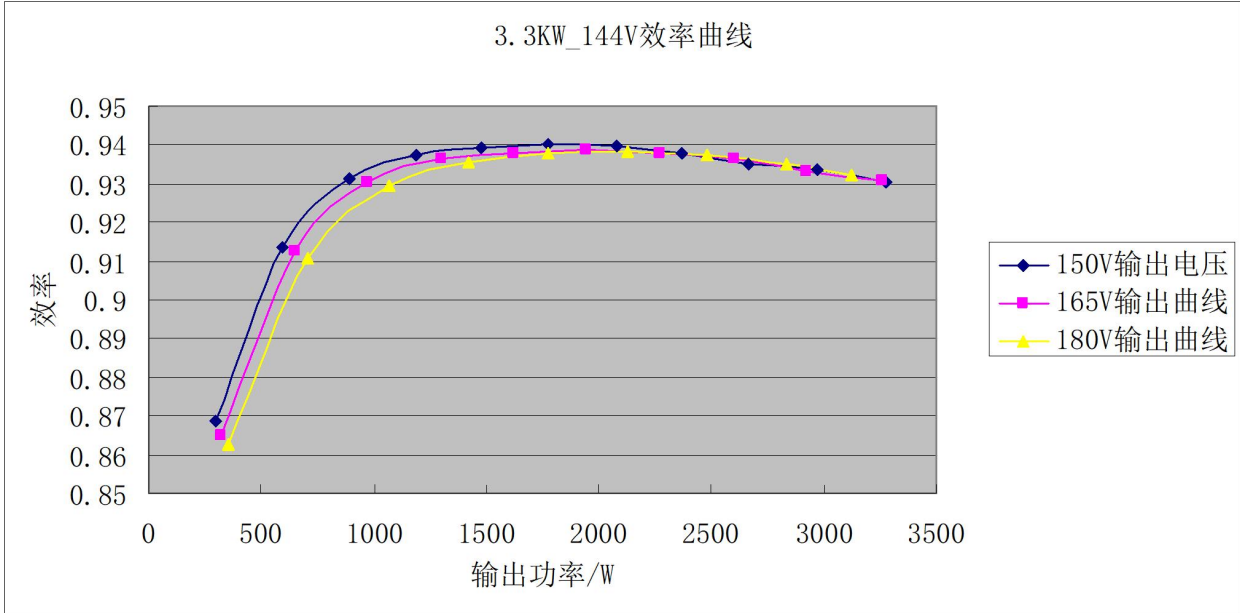


643340100 信号端口			
品牌	PIN	定义	备注
莫仕	1E	外接红色指示灯	充电状态显示
	1F	外接绿色指示灯	充电状态显示
	2H	12V5A输出	辅助电源
	4A	CNAH	CAN通信
	4B	CANL	
	其余	/	预留
对插643193211			

### 4. Principle Diagram



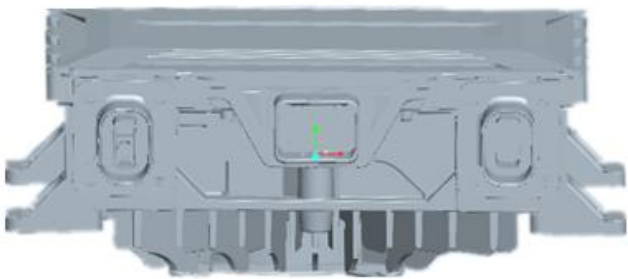
### 5. Efficiency Curve



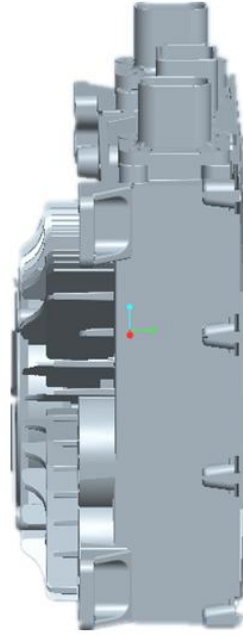


## 6. Installation Dimensions

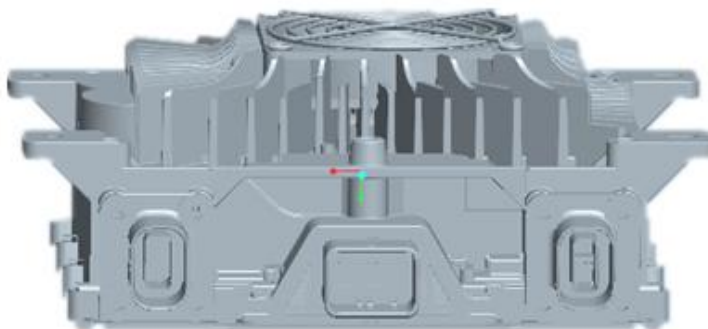
**Air-cooled installation requirements:**



**Best installation method**



**General installation method**



**Prohibited installation method**

**7. Standard CAN protocol** (can also be customized according to customer requirements)

<b>Can protocol NO.</b>	<b>1000</b>
<b>CAN baud rate</b>	<b>250K</b>

<b>OUT</b>	<b>IN</b>	<b>CAN ID</b>	<b>Cycle (ms)</b>
BMS	Charger	0x1806E5F4	1000
<b>Datas</b>			
<b>Position</b>	<b>Data Name</b>		
BYTE1	Max Allowable Charging Terminal Voltage High Byte		0.1V/bit offset: 0 e.g.: Vset =3201, its corresponding 320.1v。
BYTE2	Max Allowable Charging Terminal Voltage Low Byte		
BYTE3	Max Allowable Charging Current High Byte		0.1A/bit offset: 0 e.g.: Iset =582, its corresponding 58.2A。
BYTE4	Max Allowable Charging Current Low Byte		
BYTE5	Control		0: Start charging. 1: battery protection, stop charging
BYTE6	Reserved		
BYTE7	Reserved		
BYTE8	Reserved		

<b>OUT</b>	<b>IN</b>	<b>CAN ID</b>	<b>Cycle (ms)</b>
CCS	BCA	0x18FF50E5	1000
<b>Data</b>			
<b>Position</b>	<b>Data name</b>		
BYTE1	Max Allowable Charging Terminal Voltage High Byte		0.1V/bit offset: 0 e.g.: Vout =3201, its corresponding 320.1v
BYTE2	Max Allowable Charging Terminal Voltage Low Byte		
BYTE3	Max Allowable Charging Current High Byte		0.1A/bit offset: 0 e.g.: Iout =582, its corresponding 58.2A

BYTE4	Max Allowable Charging Current Low Byte	The highest BIT indicates the symbol, 0: charging 1 : discharging.
BYTE5	STATUS	
BYTE6	Reserved	
BYTE7	Reserved	
BYTE8	Reserved	

STATUS	Mark	Description
Bit0	Hardware Failure	0: Normal. 1: Hardware Failure
Bit1	Temperature of Charger	0: Normal. 1: Over temperature protection
Bit2	Input Voltage	0: Input voltage is normal. 1. Input voltage is wrong, the charger will stop working
Bit3	Starting state	0: Battery is connected normally. 1: Battery is not connected or the battery is connected reversely.
Bit4	Communication State	0: Communication is normal. 1: Communication receive time-out.
Bit5		
Bit6		
Bit7		

## Control Mode

1. The BMS sends operating information(Message 1) to charger at fixed interval of 1s. After receiving the message, the charger will work under the Voltage and Current in Message. If the Message is not received within 5s, it will enter into communication error state and stop charging.
2. The charger send broadcast message (Message 2) at intervals of 1s. The display meter can show the status of the charger according to up-to-date information.