



JONHON
AVIC JONHON OPTRONIC TECHNOLOGY CO.,LTD

Jonhon electrical vehicle BD



Charging Connector

EUR、US Charging Connector

GB AC Charging plug

GB DC Charging plug

GB Charging receptacle

EUR Charging Connector

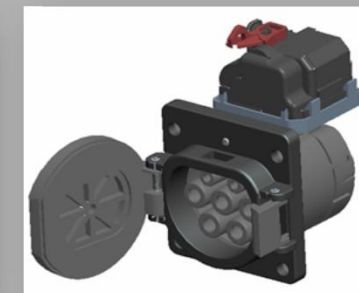
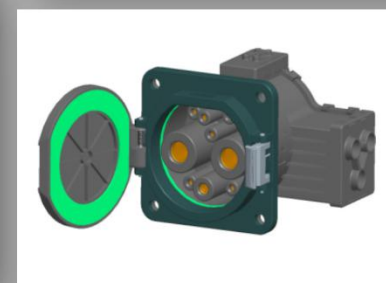
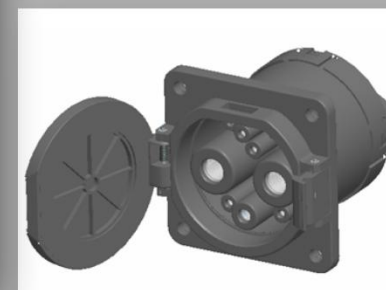
US Charging Connector

mode2

mode3

GB DC Charging receptacle

GB AC Charging receptacle





Type1 plug (US-Standard)

Comply with IEC62196

Current: 16A~32A AC Single phase



Type2 plug (Euro-Standard)

Comply with IEC62196

Current: 16A~32A AC Single phase and three phase
70A~125A DC.



GB plug (China-Standard)

Comply with GB/T 20234

Current: 16A~63A AC Single phase and three phase
70A~200A DC.

The corresponding socket can be customized according to customer requirements.

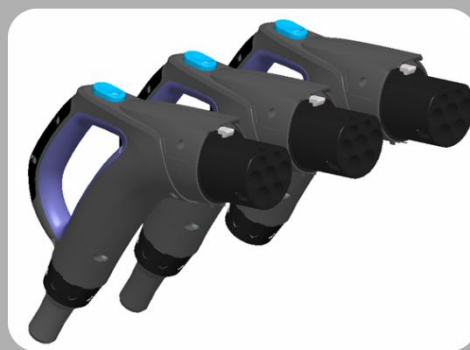
GB/T Vehicle connector and plug: AC

Designed according to GB /T20234.2-2015

Shell three-color, the overall deep plane gray, handle grasp the use of blue, black soft plastic injection molding



Vehicle connector



Plug

Performance:

L1、N、PE、L2、L3:
Rated current:16A 32A 63A
Rated voltage: 250/440V

CC、CP:
Rated current:2A
Rated voltage: 30V

Insulation resistance: $\geq 1000M\Omega$ 500V DC

Withstanding voltage: 2000V AC

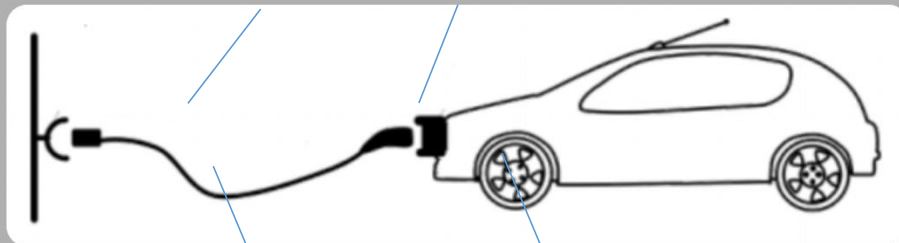
(L1, N, PE, L2, L3 between the terminals and between the power pole and signal pole)

Withstanding voltage: 500V AC (between CC、CP)

Mechanical life: 10000cycles

Protection level: IP55 (after mated)

Socket-outlet Vehicle inlet



Plug

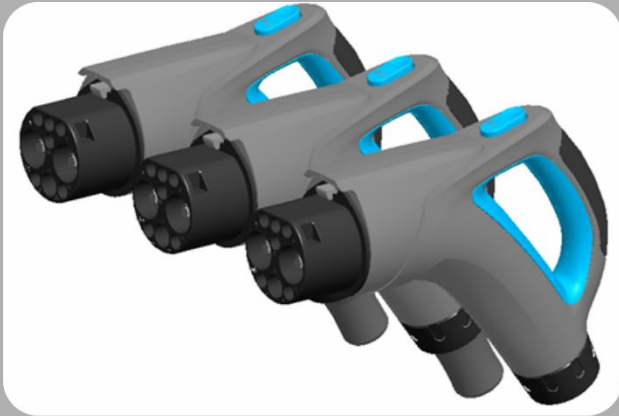
Vehicle connector

GB/T Vehicle connector: DC

Designed according to GB/T 20234.3-2015

Shell three-color, the overall deep plane gray, handle grasp the use of blue, black soft plastic injection molding .

With electronic locking, temperature sensing function



Vehicle connector

Performance:

DC+, DC-:

Rated current:32A 80A 125A 180A

Rated voltage: 750V

CC1、CC2、S+、S-:

Rated current:2A

Rated voltage:30V

A+、A-:

Rated current:20A

Rated voltage: 30V

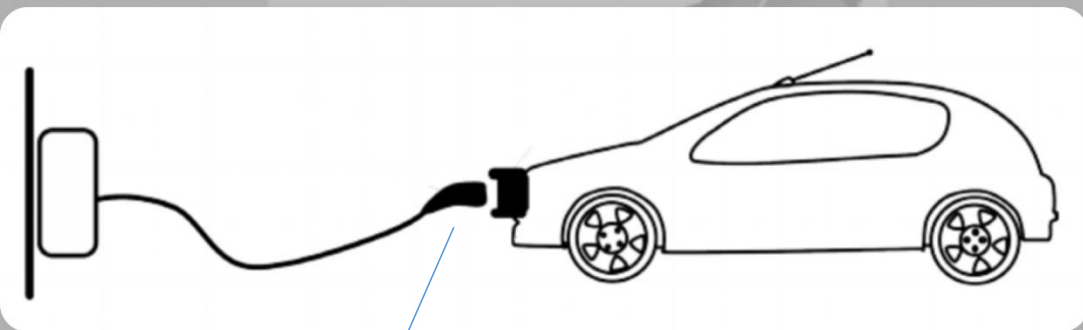
Insulation resistance: $\geq 5000\text{M}\Omega$ 500V DC

(DC+, DC-, PE between the terminals and between the power pole and signal pole)

Withstanding voltage: 2000V AC (between signal poles)

Mechanical life: 10000cycles

Protection level: IP55 (after mated)



Vehicle connector

GB/T Vehicle connector: DC

Designed according to GB/T 20234.3-2015

Integrated injection molding black shell design, the second injection of soft plastic technology used in button



Vehicle connector

Performance:

DC+, DC-:

Rated current: 32A 80A 125A 180A

Rated voltage: 750V

CC1, CC2, S+, S-:

Rated current: 2A

Rated voltage: 30V

A+, A-:

Rated current: 20A

Rated voltage: 30V

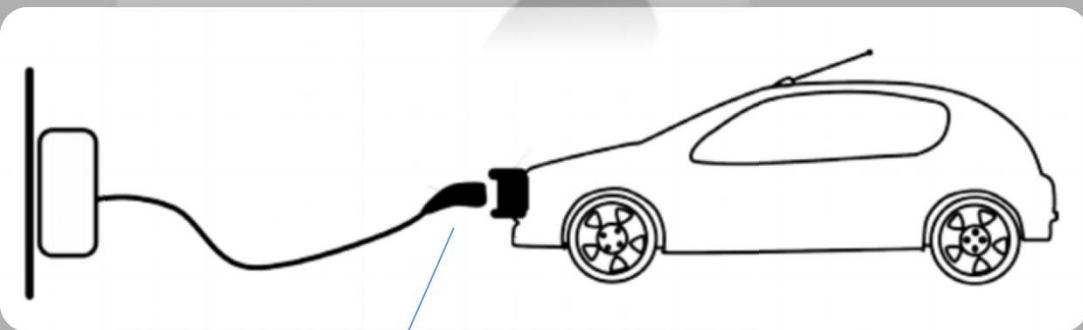
Insulation resistance: $\geq 5000\text{M}\Omega$ 500V DC

(DC+, DC-, PE between the terminals and between the power pole and signal pole)

Withstanding voltage: 2000V AC (between signal poles)

Mechanical life: 10000cycles

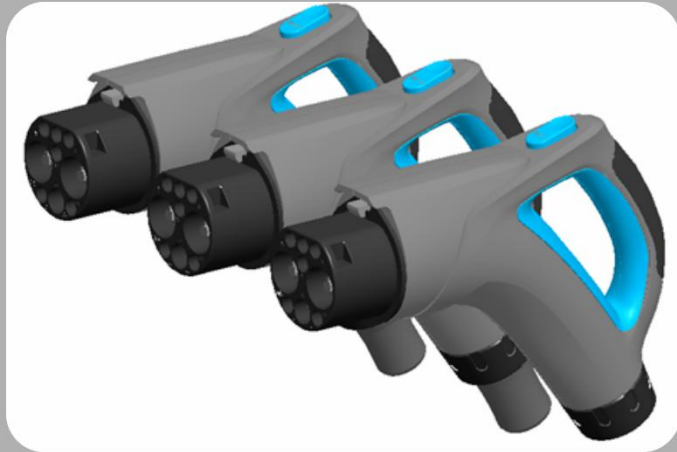
Protection level: IP55 (after mated)



Vehicle connector

GB/T Vehicle connector: DC

E-lock(Electromagnetic lock) for DC vehicle connector



Vehicle connector

Electronic lock control is divided into two kinds :

- 1、 Continuous power supply control
- 2、 Positive and negative pulse voltage control

- Continuous power supply control:

When the lock to provide continuous power, unlock the power automatically unlock.

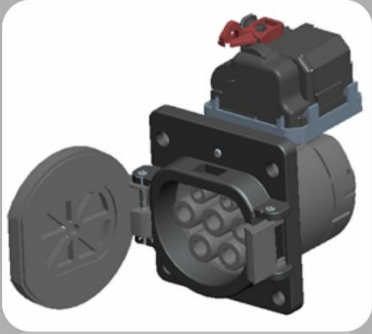
- Positive and negative pulse voltage control:

Locking and unlocking require positive and negative pulses. After the system is powered off the emergency relief need to charge the pile design circuit, the use of energy storage components discharge unlock.

GB/T Vehicle inlet and socket outlet: AC

Design according to GB/T 20234.2 -2015

The product contains electronic lock, temperature sensor device



Left open cover



Right open cover

Performance:

L1、N、PE、L2、L3:

Rated current:10A 16A 32A 63A

Rated voltage: 250/440V

CC、CP:

Rated current:2A

Rated voltage: 30V

Insulation resistance: $\geq 5000\text{M}\Omega$ 500V DC

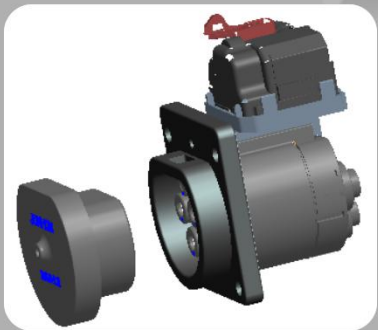
Withstanding voltage: 2000V AC

(L1, N, PE, L2, L3 between the terminals and between the power pole and signal pole)

Withstanding voltage: 500V AC (between CC、CP)

Mechanical life: 10000cycles

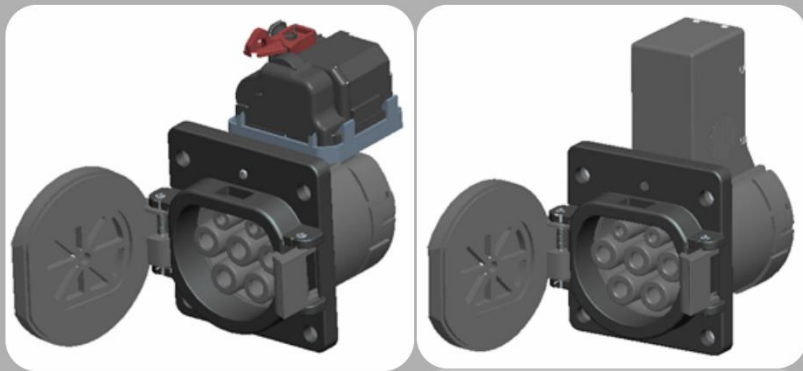
Protection level: IP55 (after mated)



Push and pull cover

GB/T Vehicle inlet and socket -outlet: AC

E-Lock for AC vehicle inlet and socket outlet



Vehicle inlet

Socket outlet

Electronic lock control is divided into two kinds :

1、 Vehicle Inlet(Motor-lock) side

2、 Socket outlet(Electromagnetic lock) side

- **Vehicle Inlet (Motor-lock)**

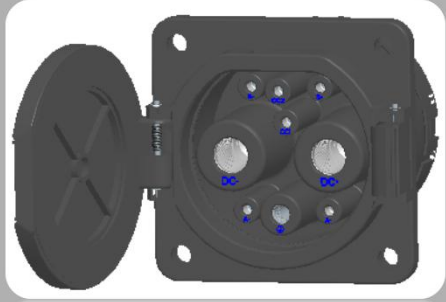
Locking and unlocking require positive and negative pulses

Emergency shutdown after the system requires a vehicle design circuit, the use of energy storage components discharge unlock.

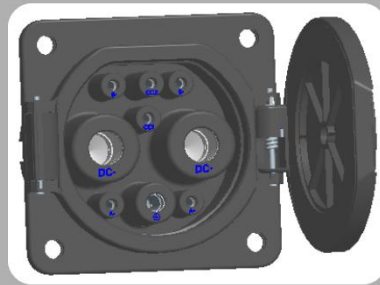
The product provides a manual unlocking device when all electronic control conditions fail.

- **Socket outlet(Electromagnetic lock)**

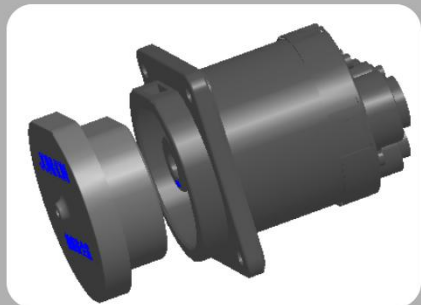
When the lock to provide continuous power, unlock the power automatically unlock



Left open cover



Right open cover



Push and pull cover

GB/T Vehicle inlet : DC

Design according to GB/T 20234.3 -2015

The product contains temperature sensor device

Performance:

DC+, DC-:

Rated current:32A 80A 125A 200A

Rated voltage: 750V

CC1、CC2、S+、S-:

Rated current:2A

Rated voltage:30V

A+、A-:

Rated current:20A

Rated voltage: 30V

Insulation resistance: $\geq 5000M\Omega$ 500V DC

(DC+, DC-, PE between the terminals and between the power hole and signal hole)

Withstanding voltage: 2000V AC (between single holes)

Mechanical life: 10000cycles

Protection level: IP55 (after mated)

US standard vehicle connector: Type1 AC

Designed according to SAE J1772

Shell three-color, the overall deep plane gray, handle grasp the use of blue, black soft plastic injection molding



Vehicle connector

Performance:

L1、PE、L2:

Rated current:16A 32A 63A

Rated voltage: 240V

CS、CP:

Rated current:2A

Rated voltage: 30V

Insulation resistance: $\geq 1000M\Omega$ 500V DC

Withstanding voltage: 2000V AC

(L1, PE, N between the terminals and between the power pole and signal pole)

Withstanding voltage: 500V AC (between CS、CP)

Mechanical life: 10000cycles

Protection level: IP55 (after mated)

US standard DC vehicle connector

Designed according to SAE J1772 IEC61196-3

Integrated injection molding black shell design, the second injection of soft plastic technology used in button



Vehicle connector

Performance:

DC+, DC-:

Rated current: 70A 125A

Rated voltage: 600V

PP, CP:

Rated current: 2A

Rated voltage: 30V

Insulation resistance: $\geq 1000M\Omega$ 500V DC

Withstanding voltage: 2500V AC

(DC+, DC-, PE between the terminals and between the power pole and signal pole)

Withstanding voltage: 500V AC (between PP, CP)

Mechanical life: 10000cycles

Protection level: IP55 (after mated)

US standard vehicle inlet: Type1 AC

Design according to SAE J1772 、 IEC 62196-2

The product contains temperature sensor device

Performance:

L1、 PE、 L2:

Rated current:16A 32A 63A

Rated voltage: 240V

CS、 CP:

Rated current:2A

Rated voltage: 30V

Insulation resistance: $\geq 1000M\Omega$ 500V DC

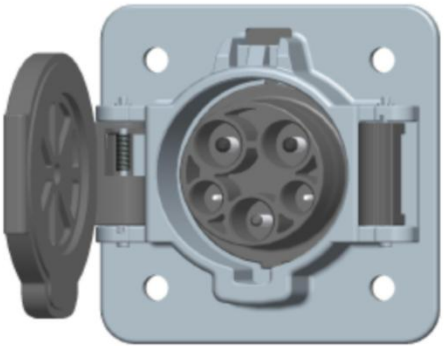
Withstanding voltage: 2000V AC

(L1, PE, N between the terminals and between the power pole and signal pole)

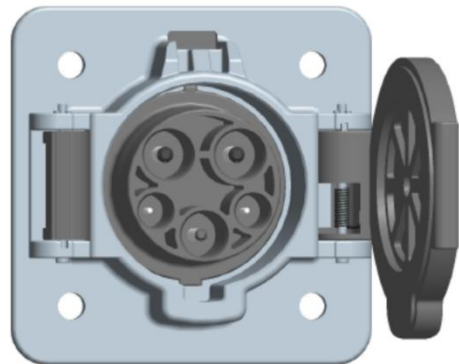
Withstanding voltage: 500V AC (between CS、 CP)

Mechanical life: 10000cycles

Protection level: IP55 (after mated)



Left open cover



Right open cover

US standard AC & DC vehicle inlet

Design according to SAE J1772 、 IEC 62196-3

The product contains electronic lock, temperature sensor device

Performance:

DC+, DC-:

Rated current: 80A 115A 125A

Rated voltage: 600V

L1、 PE、 L2:

Rated current: 16A 32A 63A

Rated voltage: 240V

CS、 CP:

Rated current: 2A

Rated voltage: 30V

Insulation resistance: $\geq 1000M\Omega$ 500V DC

Withstanding voltage: 3000V AC

DC+, DC- , PE between the terminals and between the power pole and signal pole)

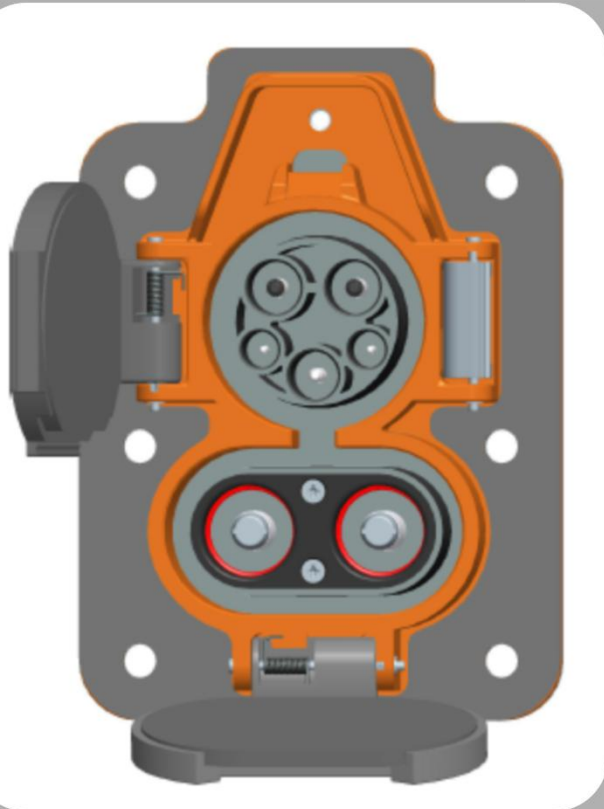
Withstanding voltage: 2000V AC

(L1, PE, L2 between the terminals and between the power pole and signal pole)

Withstanding voltage: 500V AC (between CS、 CP)

Mechanical life: 10000cycles

Protection level: IP55 (after mated)



US standard AC & DC vehicle inlet

Euro standard vehicle connector and plug: Type2 AC

Designed according to IEC62196-1、IEC61196-2

Shell three-color, the overall deep plane gray, handle grasp the use of blue or black, black soft plastic injection molding



Vehicle connector



Plug

Performance:

L1、N、PE、L2、L3:

Rated current:16A 32A 63A

Rated voltage: 250/480V

PP、CP:

Rated current:2A

Rated voltage: 30V

Insulation resistance: $\geq 1000M\Omega$ 500V DC

Withstanding voltage: 2000V AC

(L1, N, PE, L2, L3 between the terminals and between the power pole and signal pole)

Withstanding voltage: 500V AC (between PP、CP)

Mechanical life: 10000cycles

Protection level: IP55 (after mated)

Euro standard vehicle inlet : Type2 AC

Designed according to IEC62196-1、IEC61196-2

The product contains electronic lock, temperature sensor device

Performance:

L1、N、PE、L2、L3:

Rated current:16A 32A 63A

Rated voltage: 250/480V

PP、CP:

Rated current:2A

Rated voltage: 30V

Insulation resistance: $\geq 1000M\Omega$ 500V DC

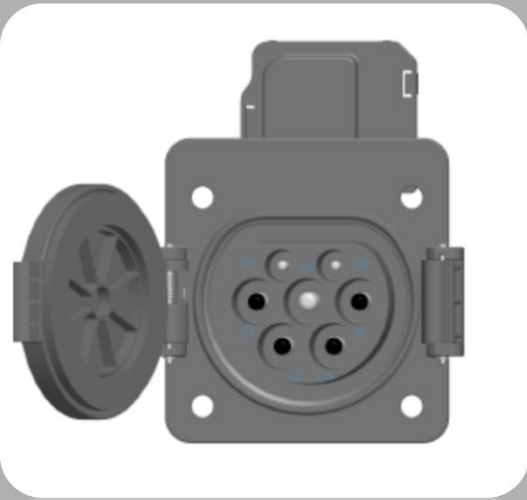
Withstanding voltage: 2000V AC

(L1, N, PE, L2, L3 between the terminals and between the power pole and signal pole)

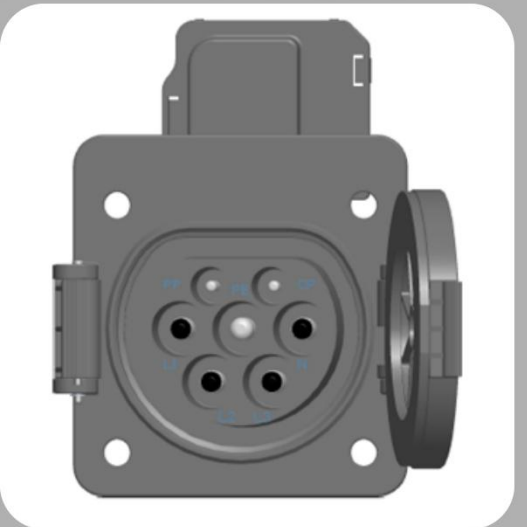
Withstanding voltage: 500V AC (between PP、CP)

Mechanical life: 10000cycles

Protection level: IP55 (after mated)



Left open cover



Right open cover

Euro and US standard socket-outlet: Type2 AC

Designed according to IEC62196-1、IEC61196-2

The product contains electronic lock, temperature sensor device

Performance:

L1、N、PE、L2、L3:

Rated current:16A 32A 63A

Rated voltage: 250/480V

PP、CP:

Rated current:2A

Rated voltage: 30V

Insulation resistance: $\geq 1000M\Omega$ 500V DC

Withstanding voltage: 2000V AC

(L1, N, PE, L2, L3 between the terminals and between the power pole and signal pole)

Withstanding voltage: 500V AC (between PP、CP)

Mechanical life: 10000cycles

Protection level: IP55 (after mated)



Up open cover

Euro standard DC vehicle connector

Designed according to IEC62196-1、IEC61196-3

Shell three-color, the overall deep plane gray, handle grasp the use of blue, black soft plastic injection molding



Vehicle connector

Performance:

DC+, DC-:

Rated current: 70A 125A

Rated voltage: 750V

PP、CP:

Rated current: 2A

Rated voltage: 30V

Insulation resistance: $\geq 1000M\Omega$ 500V DC

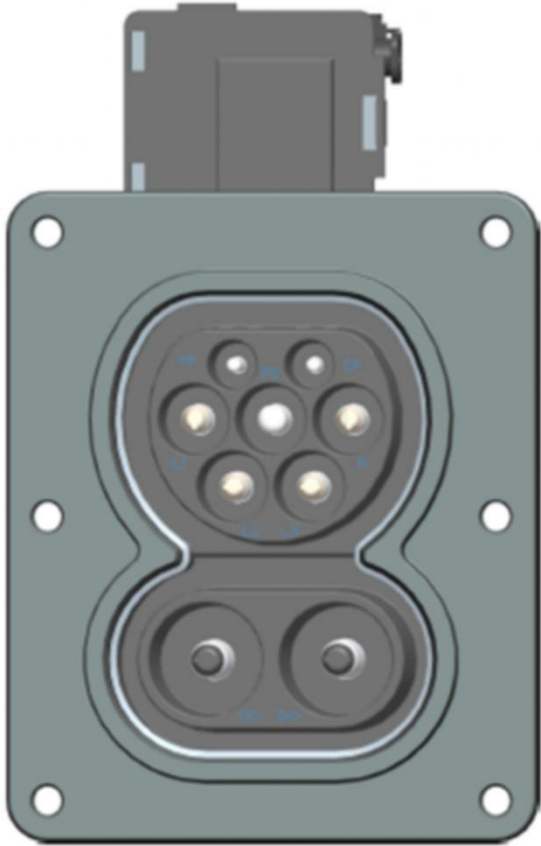
Withstanding voltage: 2500V AC

(DC+, DC-, PE between the terminals and between the power pole and signal pole)

Withstanding voltage: 500V AC (between PP、CP)

Mechanical life: 10000cycles

Protection level: IP55 (after mated)



Euro standard AC & DC vehicle inlet

Euro standard AC & DC vehicle inlet

Design according to IEC62196-1 、 IEC 62196-3

The product contains electronic lock, temperature sensor device

Performance:

DC+, DC-:

Rated current: 70A 125A

Rated voltage: 750V

L1、N、PE、L2、L3:

Rated current:16A 32A 63A

Rated voltage: 250/480V

PP、CP:

Rated current:2A

Rated voltage: 30V

Insulation resistance: $\geq 1000M\Omega$ 500V DC

•Withstanding voltage: 2500V AC

•DC+, DC- , PE between the terminals and between the power pole and signal pole)

Withstanding voltage: 2000V AC

(L1, N, PE, L2, L3 between the terminals and between the power pole and signal pole)

Withstanding voltage: 500V AC (between PP、CP)

Mechanical life: 10000cycles

Cooperative Enterprise

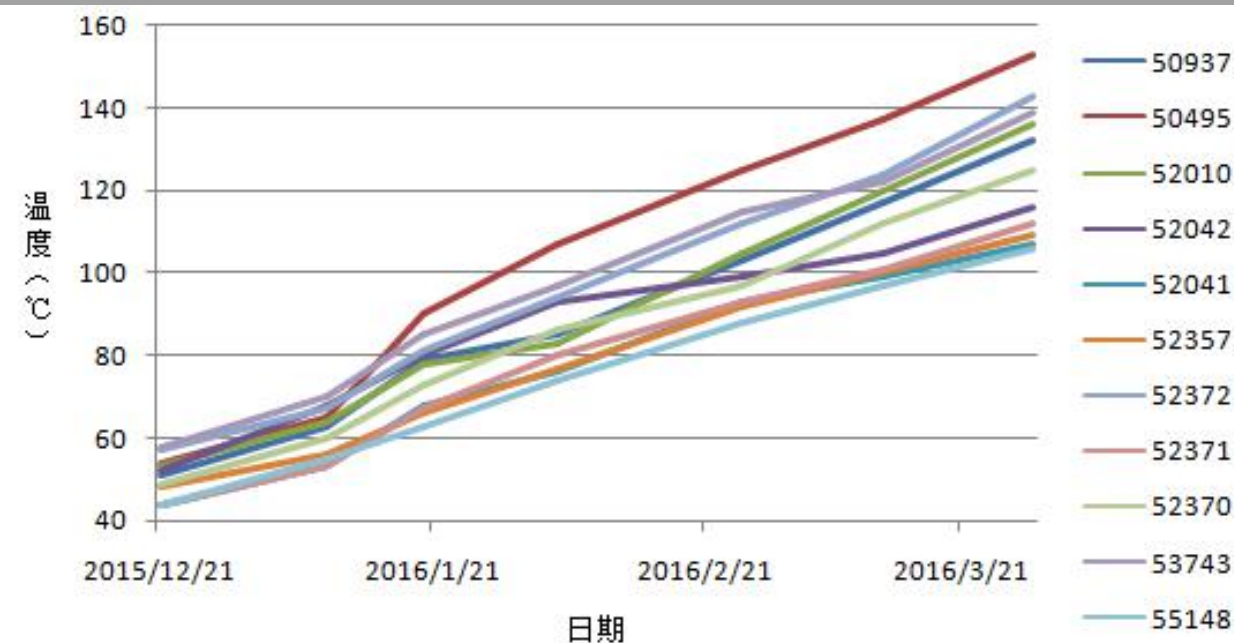


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Existing charging technology problems

- over-Heating : If the charging time is long, the terminals and cables will be over-heating.
- Difficult to operate : Cable weight is too heavy, inconvenient to operate.
- Charging time is too long: Charge current needs to be further improved



Liquid-cooled charging interface

Analysis of the main heating parts on the charging interface

- 1.the crimping point between terminal and the cable
2. the contacting point between the male terminal and female terminal

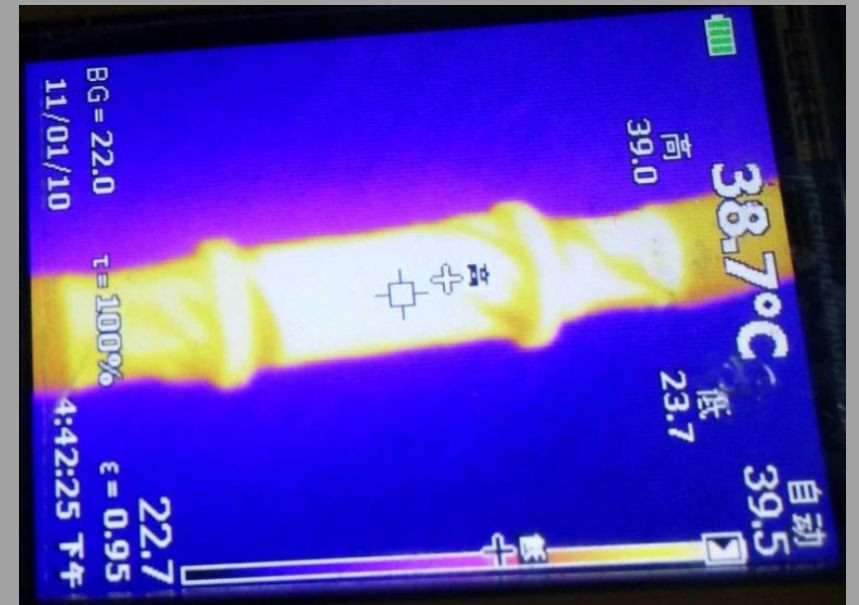
Analysis on liquid cooling structure scheme

- 1.Crimping point cooling solution
2. Contacting point cooling solution

Male terminal crimping

the contact point between the male terminal and female terminal

Female terminal crimping



Cooling fluid analysis

Aqueous coolant (conductive)

Advantage

Low cost, low viscosity, high specific heat capacity.

Disadvantages

Cooling structure need to increase the insulation material, the structure is complex, reduce the cooling effect

Insulation coolant (non-conductive)

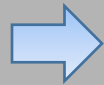
Advantage

Coolant can be directly contact with the heating element, the structure is simple, the cooling effect is good.

Disadvantages

High cost, high viscosity, low specific heat

Liquid-cooled combination of programs



Liquid-cooled charging interface program		
Coolant	Cool location	
	Crimping point	Contacting point
Aqueous coolant	Program 1	Program 2
Insulation coolant	Program 3	Program 4

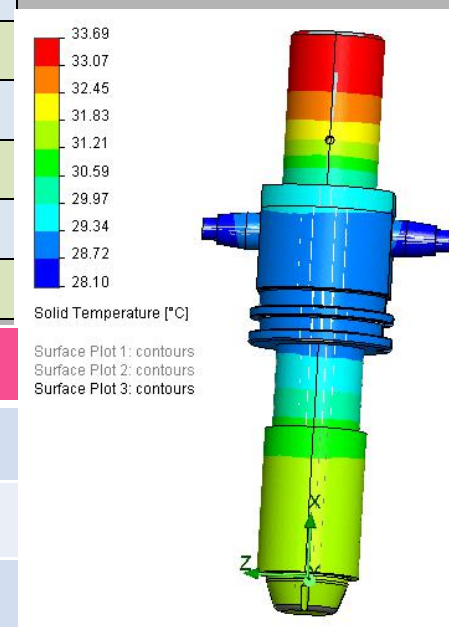
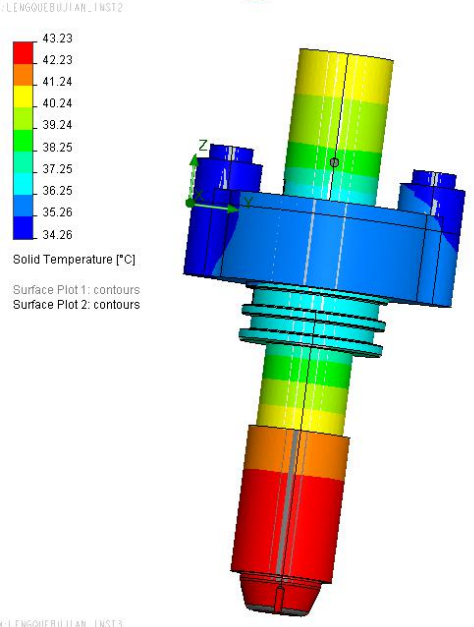
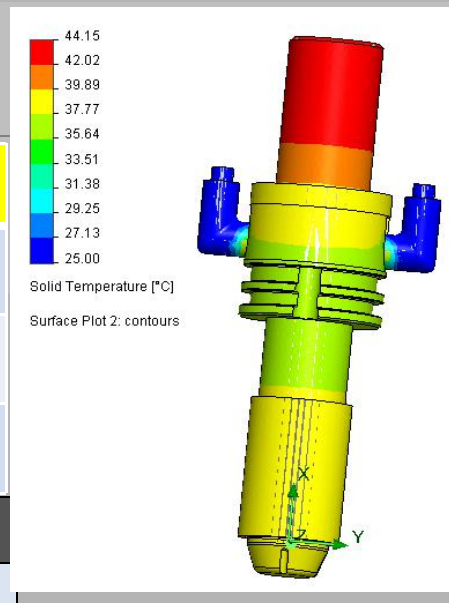
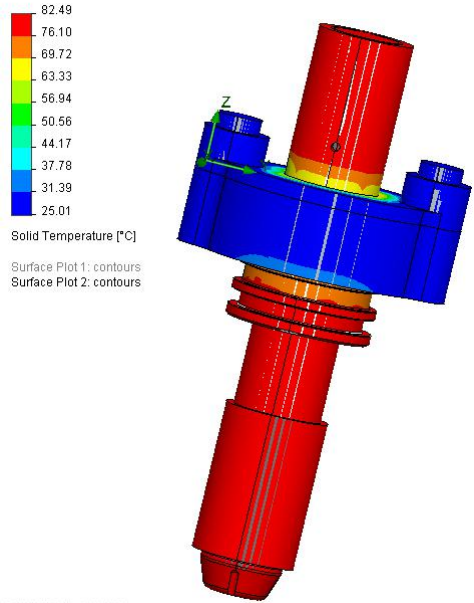
Liquid cooling scheme simulation analysis

Program 1		Program 2	
Coolant	Aqueous coolant	Coolant	Aqueous coolant
Material	insulation	Material	insulation
Temperature	82.5°C	Temperature	44.2°C

Basic parameters

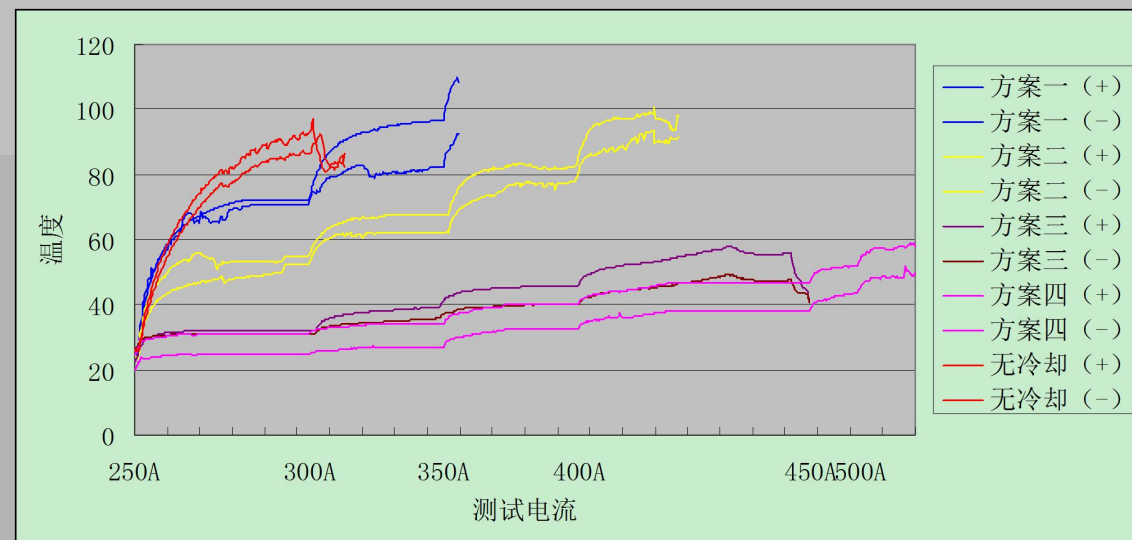
Current	250A
Ambient temperature	25°C
Entrance temperature	25°C
Flow	2L/min
Crimp resistance / heat consumption	0.2mΩ/12.5W
Contact resistance	0.2mΩ/12.5W

Program 3		Program 4	
Coolant	Insulation coolant	Coolant	Insulation coolant
Material	metal	Material	metal
Temperature	43.2°C	Temperature	34.3°C



Comparison of test data before and after cooling

Curve name	Program	Curve color	Test location
Program 1 (DC+)	Aqueous coolant Crimping point	Blue curve	DC + terminal
Program 1 (DC-)			DC - terminal
Program 2 (DC+)	Aqueous coolant Contacting point	Yellow curve	DC + terminal
Program 2 (DC-)			DC - terminal
Program 3 (DC+)	Insulation coolant Crimping point	Brown curve	DC + terminal
Program 3 (DC-)			DC - terminal
Program 4 (DC+)	Insulation coolant	Pink curve	DC + terminal
Program 4 (DC-)			DC - terminal
No cooling (DC+)	No cooling solution	Red curve	DC + terminal
No cooling (DC-)			DC - terminal



液冷充电接口不同方案测试数据对比										
传感器 Current	无冷却 DC+	无冷却 DC-	方案一 DC+	方案一 DC-	方案二 DC+	方案二 DC-	方案三 DC+	方案三 DC-	方案四 DC+	方案四 DC-
	250A	86.4	93.7	70.74	72.16	54.97	52.39	30.6	31.9	30.9
300A	89.34	99.1	82.37	96.81	67.52	62.13	39.2	41.3	35.6	27.2
350A			92.6	108.2	85.66	80.5	44.3	45.8	43.4	32.4
400A					98.12	91.64	55.4	55.7	51.3	38.2
450A									61.2	44.7
500A									69.7	48.8

- CNAS and DILAC National Accreditation Laboratory
- AVIC –QMS Standard Laboratory
- RoHS Testing Laboratory
- Fluid Testing Laboratory
- Has high voltage interconnected system monitoring capability for the whole vehicle, such as withstanding voltage, load temperature, vibration, aging resistance, oil resistance, salt spray resistance and other electrical, mechanical, environmental capabilities.



Testing Capacity



Insulation resistance test



High & low temperature box



Vibration test



Harmful Substance detection



X-ray spectrometer



EMS immunity comprehensive test



Salt spray test



EMI receiver

CERTIFICATION



JONHON
AVIC JONHON OPTRONIC TECHNOLOGY CO.,LTD



Certificate no. **TU 50392986 01**

License Holder: AVIC JONHON OPTRONIC TECHNOLOGY CO., LTD. No.10, Zhoushan Rd. Hi-Tech New Zone Luoyang, Henan 471003 P. R. China	Manufacturing Plant: AVIC JONHON OPTRONIC TECHNOLOGY CO., LTD. No.26, Yuwenkai St. Luolong District Luoyang, Henan 471000 P. R. China
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Test report no.: USA-LY 16082894 001 Client Reference:
Tested to: UL 2251:2013

Certified Product: Vehicle inlet for Electric Vehicles	License Fee - Units
Type Designation : EVCL-VR-115A/600V(32A/240V)-2L Trademark : JONHON Rated Voltage : 600V DC / 240V AC Rated Current : 115A DC / 32A AC Kind of Construction: SAE J1772 Sheet A-1,C-1, C-2 Type of enclosure : Type 3S	6

Appendix: 1

Licensed Test mark:



Date of Issue
(day/mo/yr)
04/12/2017

TÜV Rheinland(China) Co., Ltd.
Unit 707, AVIC Building, No.10B, Central Road, East 3rd
Ring Road,
Chaoyang District, Beijing China



Certificate no. **TU 50392990 01**

License Holder: AVIC JONHON OPTRONIC TECHNOLOGY CO., LTD. No.10, Zhoushan Rd. Hi-Tech New Zone Luoyang, Henan 471003 P. R. China	Manufacturing Plant: AVIC JONHON OPTRONIC TECHNOLOGY CO., LTD. No.26, Yuwenkai St. Luolong District Luoyang, Henan 471000 P. R. China
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Test report no.: USA-LY 16086134 001 Client Reference:
Tested to: UL 2251:2013

Certified Product: Vehicle connector for Electric Vehicles	License Fee - Units
Type Designation : EVCL-VC-125A-600V Trademark : JONHON Rated Voltage : 600V DC Rated Current : 125A DC Kind of Construction: SAE J1772 Sheet C-3, C-4 Type of enclosure : Type 3S	6

Appendix: 1

Licensed Test mark:



Date of Issue
(day/mo/yr)
04/12/2017

TÜV Rheinland(China) Co., Ltd.
Unit 707, AVIC Building, No.10B, Central Road, East 3rd
Ring Road,
Chaoyang District, Beijing China

Zertifikat

Certificate



Zertifikat Nr. / Certificate No. Blatt / Sheet
R 50381149 0001

Das Zeichen / Client Reference	Unser Zeichen / Our Reference	Ausstellungsdatum / Date of Issue
05-chenalle-50065067	001	28.06.2017

Genehmigungsinhaber / License Holder AVIC JONHON OPTRONIC TECHNOLOGY CO., LTD. No.10, Zhoushan Rd. Hi-Tech New Zone Luoyang, Henan 471003 P. R. China	Fertigungsstätte / Manufacturing Plant AVIC JONHON OPTRONIC TECHNOLOGY CO., LTD. No.26, Yuwenkai St. Luolong District Luoyang, Henan 471000 P. R. China
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Prüfzeichen / Test Mark



Geprüft nach / Tested acc. to
EN 62196-1:2012+A11+A12
EN 62196-2:2012+A11+A12
IEC 62196-1:2011
IEC 62196-2:2011

Zertifiziertes Produkt (Geräteidentifikation) / Certified Product (Product Identification)

Lizenzentgelte - Einheit / License Fee - Unit

Connector (Connector for Conductive Charging of Electric Vehicles)

Type Designation : EVCL-VC-32A-240V	5
Trademark : JONHON	
Rated Voltage : AC 240V	
Rated Current : 32A	
Kind of Construction : Standard Sheet 2-1	
Configuration : Type 1	
Degree of Protection : IP54 (provided by cover) IP55 (engaged with a vehicle inlet)	

The labelling requirements acc. to EU Directive 2001/95 have to be observed for distribution within the EEA.

ANLAGE (Appendix) : 1

Das Zertifikat liegt untere Prüf- und Zertifizierungsbedingung zugrunde und es bestätigt die Konformität des Produktes mit dem oben genannten Standard und den gegebenenfalls zusätzlichen Anforderungen in Ländern, in denen das Produkt in Verkehr gebracht werden soll, sofern dies nicht anders bestimmt wurde. Die Herstellung des zertifizierten Produktes wird überwacht.
This certificate is based on our Testing and Certification Regulation and states the conformity of the product with the standards and zoning requirements as indicated above. Any additional requirements in countries where the product is going to be marketed have to be observed additionally. The manufacturing of the certified product is subject to surveillance.

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Fax. +49 221 806-3105 http://www.tuv.com





检 验 报 告

电动汽车交流充电接口

产品名称 电动汽车交流充电接口
产品型号 见附录 A “表 1: 样品型号”
受检单位 中航光电科技股份有限公司
检验类别 强制性检验

国家轿车质量监督检验中心



检 验 报 告

电动汽车直流充电接口

产品名称 电动汽车直流充电插头
产品型号 见附录 A “表 1: 样品型号”
受检单位 中航光电科技股份有限公司
检验类别 强制性检验

国家轿车质量监督检验中心



检 验 报 告

电动汽车直流充电接口

产品名称 电动汽车直流充电接口
产品型号 见附录 A “表 1: 样品型号”
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A composite image with a light gray background. At the top, a world map is faintly visible. An airplane is flying across the map from left to right, leaving a white contrail. In the center, the text "Welcome to China Welcome to Jonhon" is written in a bold, blue, sans-serif font. At the bottom, a city skyline with various skyscrapers is shown, with the buildings reflected in a horizontal line below them.

Welcome to China Welcome to Jonhon