



Yonggui Charging System Solution

EV product center | Charging product line | 2023.07



永贵连接 | 连接专家
Yonggui Connection Connector Experts

- 01** Charging Product Portfolio
- 02** Liquid cooling charging product
- 03** Consumer products
- 04** Product Application Presentation

目录

01

Charging Product Portfolio

- 1.1 standard and application area
- 1.2 vehicle end charging product portfolio
- 1.3 pile end charging product portfolio





GB/T 2015
China only



CCS Type 1
Suitable for North America area



CCS Type 2
Suitable for European Union area

◆Yonggui products have covered the following charging scenarios, and will continue to enrich the product categories in the scenario application, improve product design performance and use experience



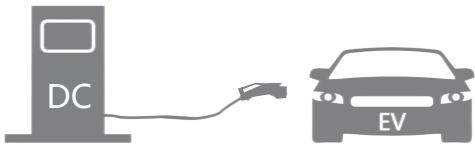
Mode2, Case B connection



Mode3, Case B connection



Mode3, Case C connection



Mode4, Case C connection

YGC-GBC series

Suitable for the electric vehicle AC/DC charging in China area.



GB mode 2 AC vehicle connector (separated type)



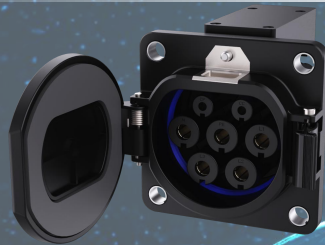
GB mode 2 AC vehicle connector (integrated)



GB AC discharge connector (separated type)



GB AC discharge connector (integrated)



GB AC vehicle inlet



GB DC vehicle inlet



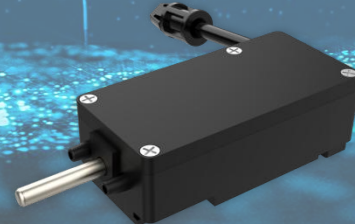
GB quick-replacing DC vehicle inlet



GB AC/DC integrated vehicle inlet



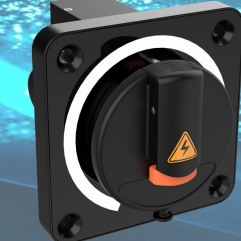
GB mini DC vehicle connector



self-developed motor type interlock device



HELLA motor type interlock device



GB AC vehicle inlet (with lamp ring)

YGC-ENC series

Suitable for the electric vehicle AC/DC charging in European Union area



EN Type2 AC vehicle connector



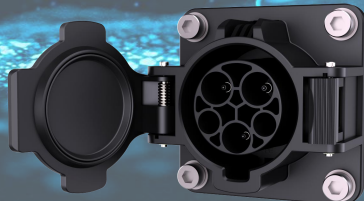
EN Type2 AC charging vehicle inlet (vehicle end)



EN CCS2 DC charging vehicle inlet

YGC-SAEC series

Suitable for the electric vehicle AC/DC charging in North America area



AS Type1 AC vehicle inlet (vehicle end)



AS CCS1 DC vehicle inlet

YGC-HPC series

Suitable for the electric vehicle high power charging(with liquid cooling vehicle connector) in China area



GB AC/DC integrated vehicle inlet (high power)



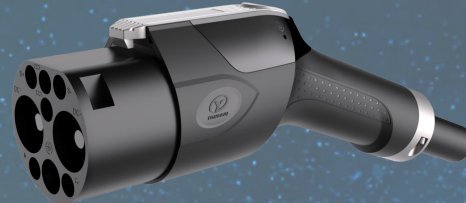
GB DC vehicle inlet (high power)

YGC-GBC series

Suitable for the charging pile AC/DC charging in China area.



GB DC vehicle connector



GB mini DC vehicle connector



GB AC vehicle connector



GB DC pile end accessories



GB AC pile end accessories

YGC-ENC series

Suitable for the charging pile AC/DC charging in European Union area



EN CCS2 DC vehicle connector



EN Type2 AC vehicle connector



EN AC socket-outlet



EN DC pile end accessories



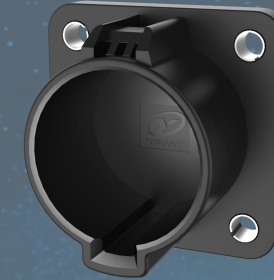
EN AC pile end accessories

YGC-SAEC series

Suitable for the electric vehicle AC/DC charging in North America area



AS Type1 AC vehicle connector



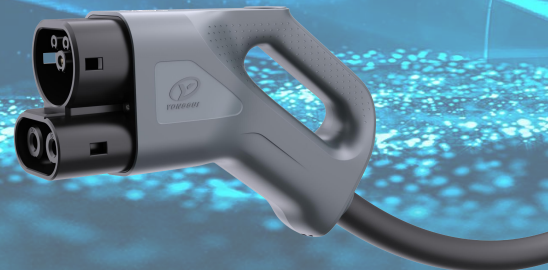
AS AC pile end accessories

YGC-HPC series

Suitable for the high power charging pile DC charging in different area



GB high power charging DC vehicle connector



EN high power charging DC vehicle connector



Chaoji high power charging DC vehicle connector

02

Liquid cooled charging product

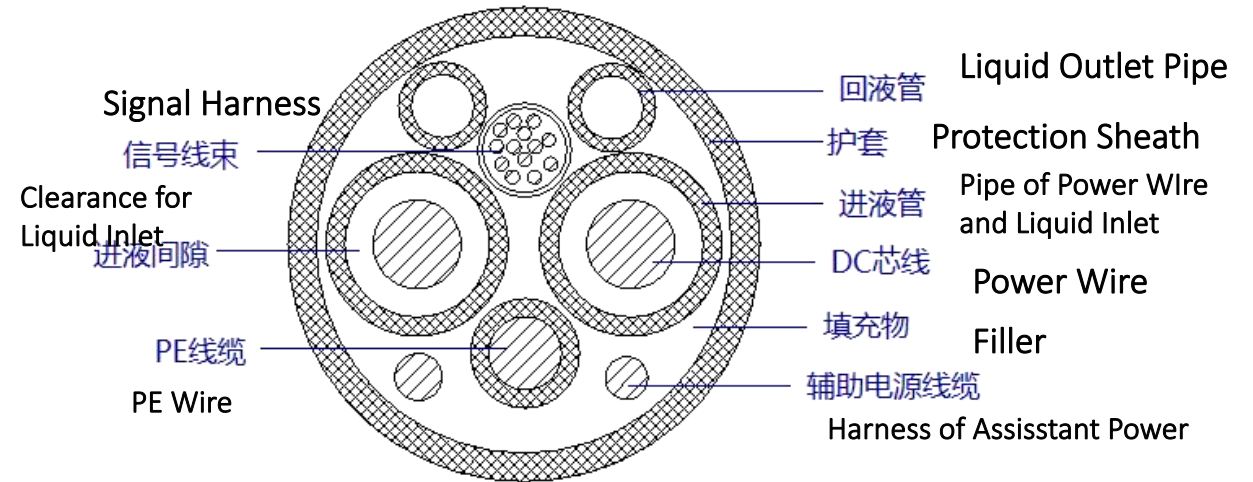
3.1 Brief of Liquid Cooling Technology

3.2 DC Liquid Cooling vehicle connector-CCS2

3.3 EN Cooling System Assembly and Coolant



◆Scheme II: Non-Separating of Electro-Liquid

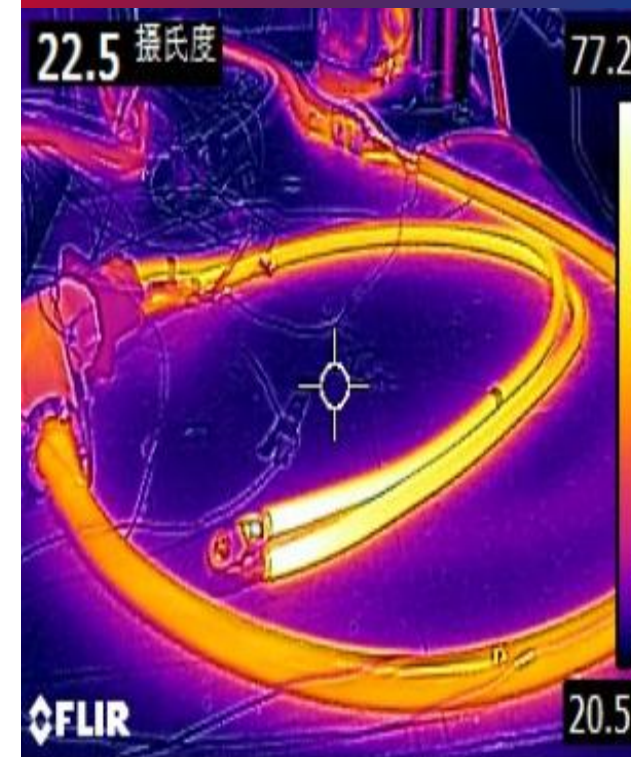


1. Above diagram only describes the general structure and principle of the cable, not represent the specific scheme.
2. The wire diameter of the power wire is the same, and the thickness of the sheath and insulation layer is the same. The wire diameter of scheme I is smaller (the internal space utilization rate is higher);
3. As the coolant in scheme II is in direct contact with the power cable, the heat exchange efficiency is higher, but the cooling medium needs to be insulated.

Constant Temperature Aging Room + Programmable Hi-Current Test System



Temperature/Current Aging Test



- For hi-power charging products, a hi-current testing system is introduced, which can edit charging strategy, set current/time program, and monitor and record the temperature of concern in real time;
- Adopt infrared thermal imager to assist in collecting and testing the heating condition of products;
- From the start of the high-power project, carry out uninterrupted bottom line testing experiments.



YG1403 EN Liquid Cooling DC vehicle connector (CCS2)



Benefits

- 1、Light Weight, Better Usage Experience
- 2、Scientific and Future Sense Modeling
- 3、Thinner & Lighter Cable,
- 4、>12000 Life Cycles
- 5、Mud Brine Insertion/Withdraw Test Passed
- 6、Signal Integrated on PCB, Cleaner of Inside Wire Layout , More reliability

Performance Datasheet

Reference Norms	IEC 62196-1 IEC 62196-3 IEC 62196-3-1
Mode	Mode 4, Connection Case C
Rated Voltage	1000V DC
Rated Current	500A DC/600A DC
Withstand Voltage	1.DC+, DC- ≥3500V AC 1min 2.DC+, DC- Between PE≥3500V AC 1min
Isolation	1.DC+, DC-≥500MΩ; 1000V DC 2.DC+, DC- Between PE ≥500MΩ; 1000V DC  YGC1403
Protection Level	Whole Assembly IP44; Electro Section: IP67 (Except Mating Interface)
Life Cycle	≥12000
Inertion Force	< 100N
Ambient Temperature	-30℃ ~+ 50℃
Temp. Sensor	PT1000 or NTC
Flame Retardant	UL 94 V-0
Plating Type of Power Contact Points	Ag
ODmeter of Cable	Φ30.5±1mm
Radius of Bending	Min. Radius of Normal Flow 10D
Cooling Pipe Mode	1 inlet and 2 outlets
Cooling Pipe Inner Diameter	Inlet: Inner Diameter Φ6mm, ODmter Φ8mm; Outlet: Inner DiameterΦ9mm, ODmeter Φ11mm
Minimum Flow Rate	1.8L/min
Maximum Working Liquid Pressure	3.4Bar
Coolant	Biodegradable organic
Coolant Temperature	≤Ambient Temp.+5℃

YG1352A GB high power vehicle connector (water cooling)



product advantages

1. Light weight and better use experience;
2. Product styling design is full of sense of science , technology and future;
- 3, the cable diameter is thinner, lighter and completely get rid of the "bulky" label;
- 4, 12000 times of life cycle, more durable;
5. Passed the mud brine insertion test, meeting more stringent operating conditions;
- 6.Integrated low-voltage signal of PCB board, internal wiring is more concise and the assembly is more reliable ;

Technical Data

Reference standard	GB/T 18487.1-2015 GB/T 20234.1-2015 GB/T 20234.3-2015
charging mode	charging mode4, caseC
rated voltage	750V/1000V DC
rated current	500A DC
withstand voltage	1.between DC+ and DC- $\geq 3500V$ AC 1min; 2.between each DC+, DC and each PE, S+, S-, A+, A- $\geq 1500V$ AC 1min; 3.between PE and each S+, S-, A+, A- $\geq 1500V$ AC 1min; 4.between each S+, S-, A+, A- $\geq 1500V$ AC 1min; 5.between each DC+, DC- and temperature control $\geq 3500V$ AC 1min; *note: a. choose one connection, CC1, CC2 or PE; b. for the test above, the leakage current is $< 5mA$.
insulation resistance	1.between DC+ and DC- $\geq 2000M\Omega$; 2.between each DC+, DC and each PE, S+, S-, A+, A- $\geq 2000M\Omega$; 3.between PE and each S+, S-, A+, A- $\geq 2000M\Omega$; 4.between each S+, S-, A+, A- $\geq 2000M\Omega$; 5.between each DC+, DC- and temperature control $\geq 2000M\Omega$; *note: a. choose one connection, CC1, CC2 or PE; b. the test voltage is: 1000V DC.
IP degree	IP54 separated ; IP55 mated electrical part: IP67 (except for the mating surface)
life cycle	≥ 10000
mating force	$< 140N$
ambient temperature	$-30^{\circ}C \sim + 50^{\circ}C$
temperature sensor type	PT1000
flame retardant rating	UL 94 V-0
power point surface plating material	Ag
cable OD	$\Phi 30 \pm 0.6mm$
bending radius	Minimum radius 10D of normal flow; Minimum storage radius 5D (coiled wire)
cooling circuit	1 inlet and 1 outlet
Cooling pipe diameter	inner diameter $\Phi 4.5mm$; ODmeter $\Phi 6.5mm$
minimum flow	1L/min
maximum working pressure	2.5Bar
coolant	Vehicle coolant (glycol solution)
coolant temperature	$\leq \text{ambient temperature} + 5^{\circ}C$



YG1352A GB high power vehicle connector (oil cooling)

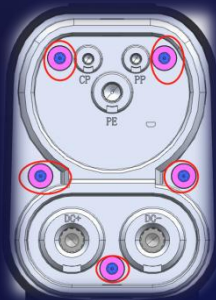


Technical Data

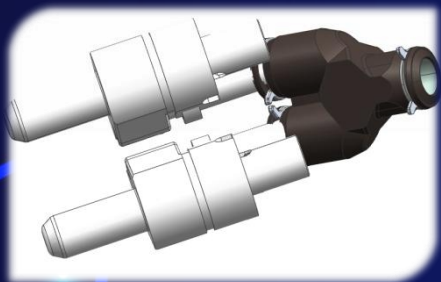
Reference standard	GB/T 18487.1-2015 GB/T 20234.1-2015 GB/T 20234.3-2015		
charging mode	charging mode4, caseC		
rated voltage	750V/1000V DC		
rated current	600A DC		
withstand voltage	1.between DC+ and DC- \geq 3500V AC 1min; 2.between each DC+, DC- and each PE, S+, S-, A+, A- \geq 1500V AC 1min; 3.between PE and each S+, S-, A+, A- \geq 1500V AC 1min; 4.between each S+, S-, A+, A- \geq 1500V AC 1min; 5.between each DC+, DC- and temperature control \geq 3500V AC 1min; *note: a. choose one connection, CC1, CC2 or PE; b. for the test above, the leakage current is <5mA		
insulation resistance	1.between DC+ and DC- \geq 2000M Ω ; 2.between each DC+, DC- and each PE, S+, S-, A+, A- \geq 2000M Ω ; 3.between PE and each S+, S-, A+, A- \geq 2000M Ω ; 4.between each S+, S-, A+, A- \geq 2000M Ω ; 5.between each DC+, DC- and temperature control \geq 2000M Ω ; *note: *note: a. choose one connection, CC1, CC2 or PE; b. the test voltage is: 1000V DC		
IP degree	IP54 separated ; IP55 mated electrical part: IP67 (except for the mating surface)		
life cycle	\geq 10000		
mating force	< 140N		
ambient temperature	-30°C ~+ 50°C		
temperature sensor type	PT1000		
flame retardant rating	UL 94 V-0		
power point surface plating material	Ag		
cable OD	Φ 30 \pm 0.6mm		
bending radius	Minimum radius 10D of normal flow; Minimum storage radius 5D (coiled wire)		
cooling circuit	1 inlet and 2 outlets		
Cooling pipe diameter	liquid inlet: inner diameter Φ 6mm, ODmeter Φ 8mm; liquid outlet: inner diameter Φ 9mm, ODmeter Φ 11mm		
minimum flow	1.8L/min		
maxi working pressure	2.5Bar		
coolant	Biodegradable organic preparation		
coolant temperature	\leq ambient temperature+5°C		

product advantages

1. Light weight and better use experience;
2. Product styling design is full of sense of science , technology and future;
- 3, the cable diameter is thinner, lighter and completely get rid of the "bulky" label;
- 4, 12000 times of life cycle, more durable;
5. Passed the mud brine insertion test, meeting more stringent operating conditions;
- 6.Integrated low-voltage signal of PCB board, internal wiring is more concise and the assembly is more reliable ;

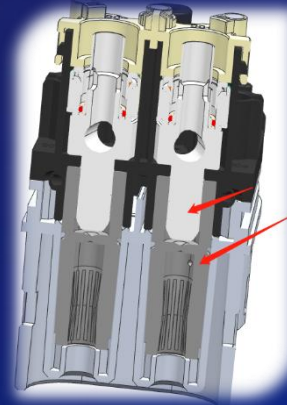


*②Utilization of Quick-Change of vehicle connector Head

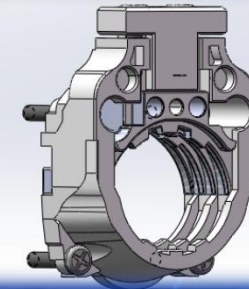


*①Cooling Component with Patent

- One-In Two-Out Cooling Pipe, Minimization of Module Size
- Thread Connection Method



*③Utilization of Quick - Change of Power Contacts



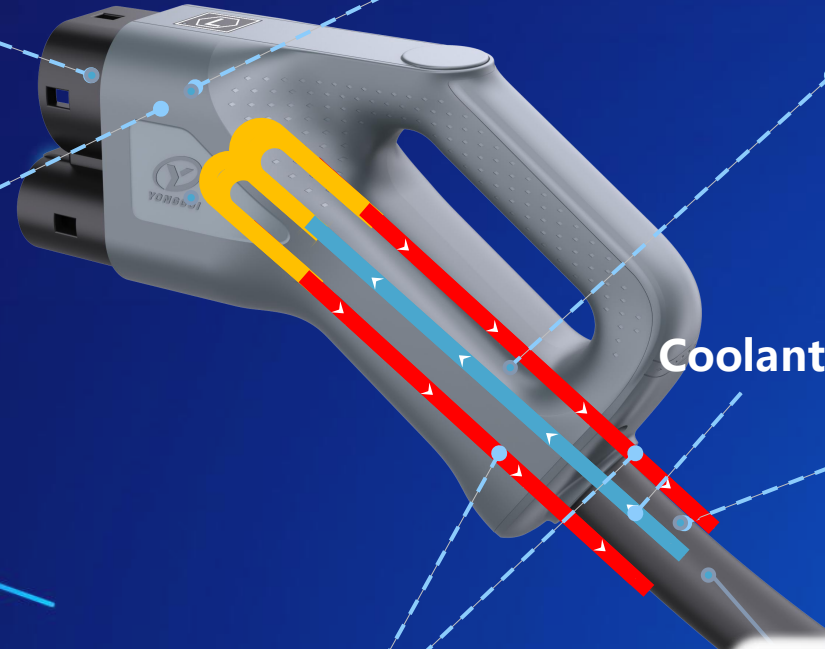
*④Rear Cable Clip with Patent

- Cable retention force >500N according to IEC requirement
- Hidden Type to ensure Coordination of appearance,
- Encapsulation for Signal Elements



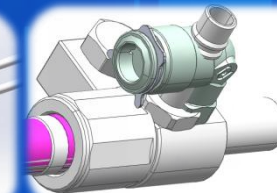
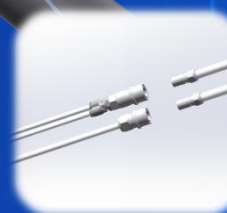
*⑤Hi-Strength Coolant Pipe

- Good Thermal-Stability, Small Deformation
- High Resistance of Liquid Pressure $\geq 7\text{bar}$; But Pressure > 21Bar



Coolant Pipe: Inlet

Coolant Pipe: Outlet



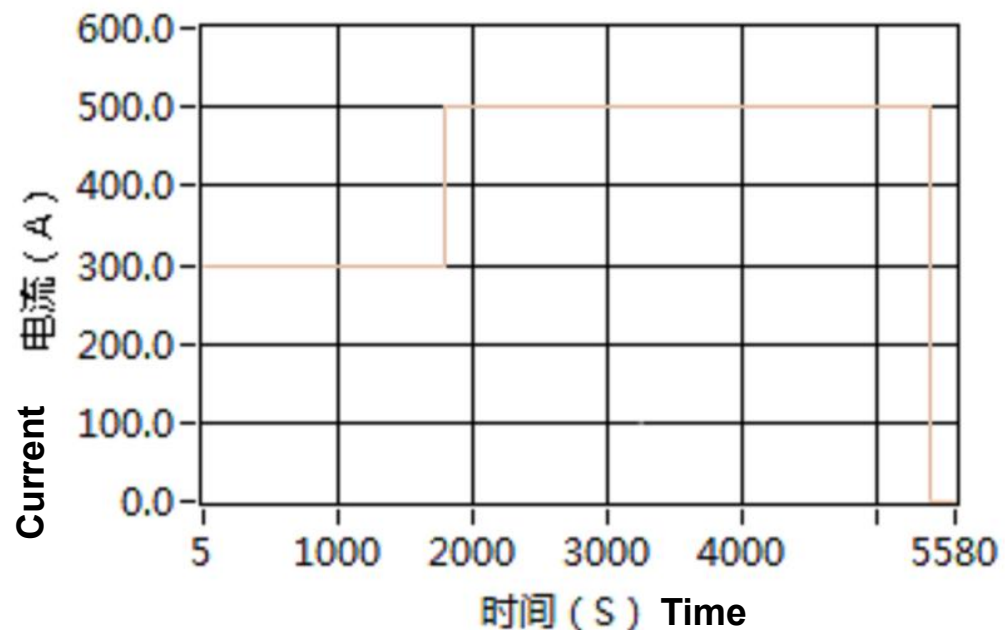
*⑥Pile Solution

- Rapid Joint (Anti-Leakage Valve)
- 360° Joint for Coolant Rapid Connection

Test Data of CCS2 Liquid Cooling vehicle connector

时间VS电流曲线 Time/Current Curve

曲线 0

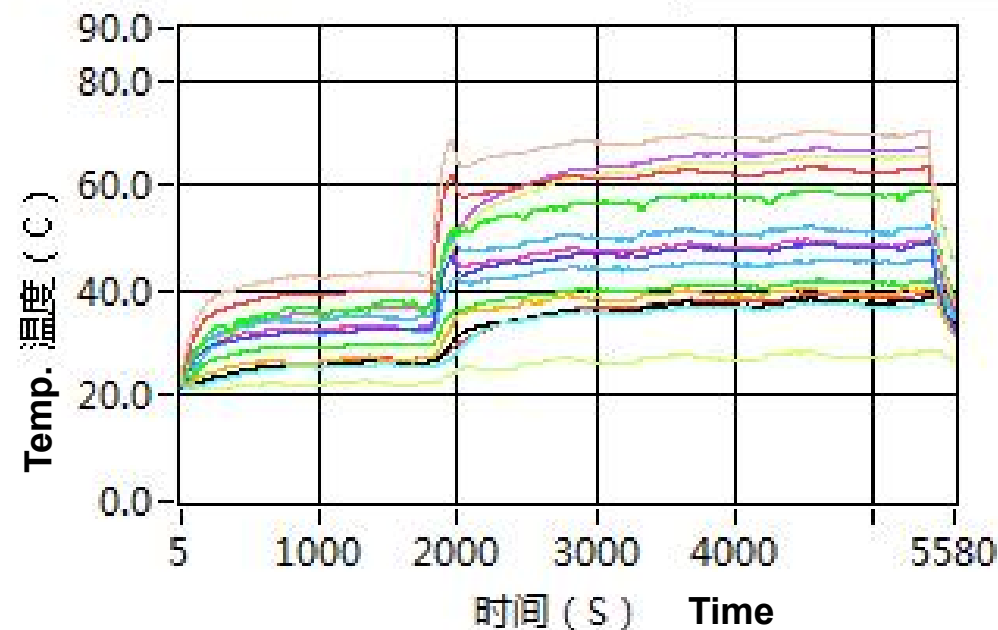
Current
Loading

时间VS温度曲线 Time/Temp. Curve

曲线 0



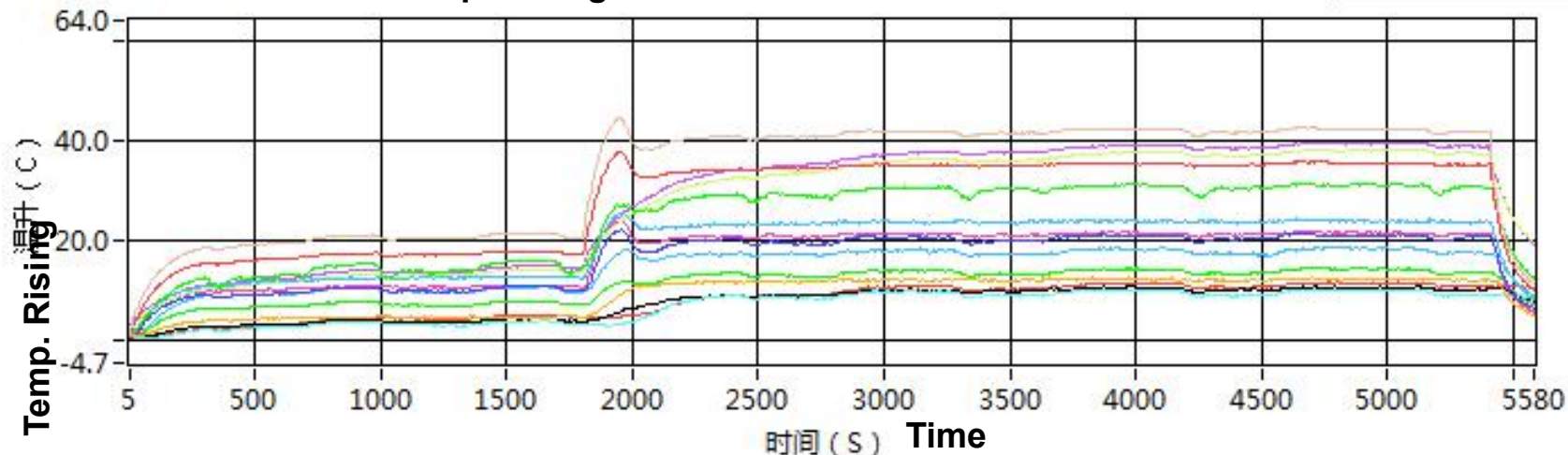
Temperature

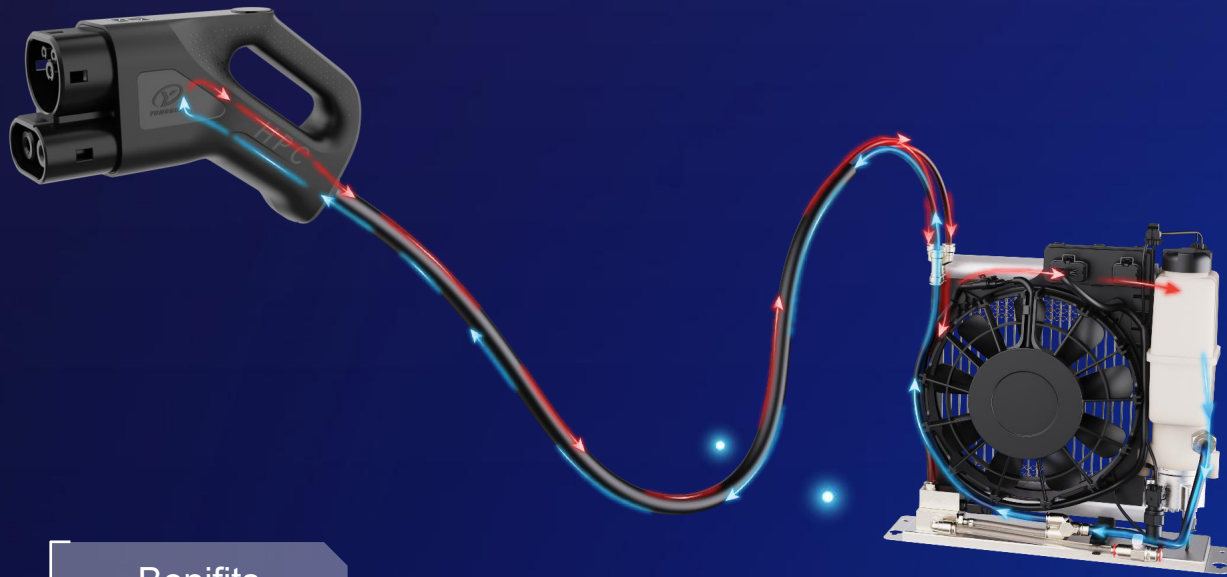


时间VS温升曲线

Time/Temp. Rising Curve

曲线 0

Temp.
Rising



Benifits

- 1.Non-Conductive Coolant, Isolation on Whole System, High Safety;
- 2.Direct Touch Between Coolant and Thermal-Contact, Good Heat Conduction, Good Cooling Efficiency
3. High Component Intergration
4. Proper Dimension Design for Friendly Usage and Simplize Layout in Charging Pile

Performance Datasheet

YGC-ENLCS-O-600

Charging Power	600kw
Cooling Method	Non-Conductive Coolant
Charging Plug	YGC-ENHPC-O-600, CCS2
Cable Length	5m

Cooling System

Size	435×155×400(mm)	Working Pressure	0~0.7MPa
Inlet Voltage	DC12V	Expansion Pot Volume	1.5 L
Coolant	Biodegradable Organic Coolant	Noise	≤60dB (A)
Liquid Pressure	0.6Mpa	Protection	IP 68
Working Temperature	-40℃-50℃	Weight	7Kg
Heat Dissipation Power	3.0KW@4L/min. 700m³/h	Communication Protocol	Based on Modbus 485/232
Power	≤200W	Control Method	Automatic
Cooling Flow Rate	4L/min@450Kpa	Life	25000h



Benifits

1. Direct touchment of Heating Point, More Uniform Distribution, Higher Cooling Efficiency
2. Realization of Direct Touch Between Metal and Coolant due to Non-Conductive Feature of the Coolant
3. Good Heat-Stability and Oxidation Stability for Longer Life
4. Biodegradable to Avoid Environmental Pollution in the event of Leakage Accident

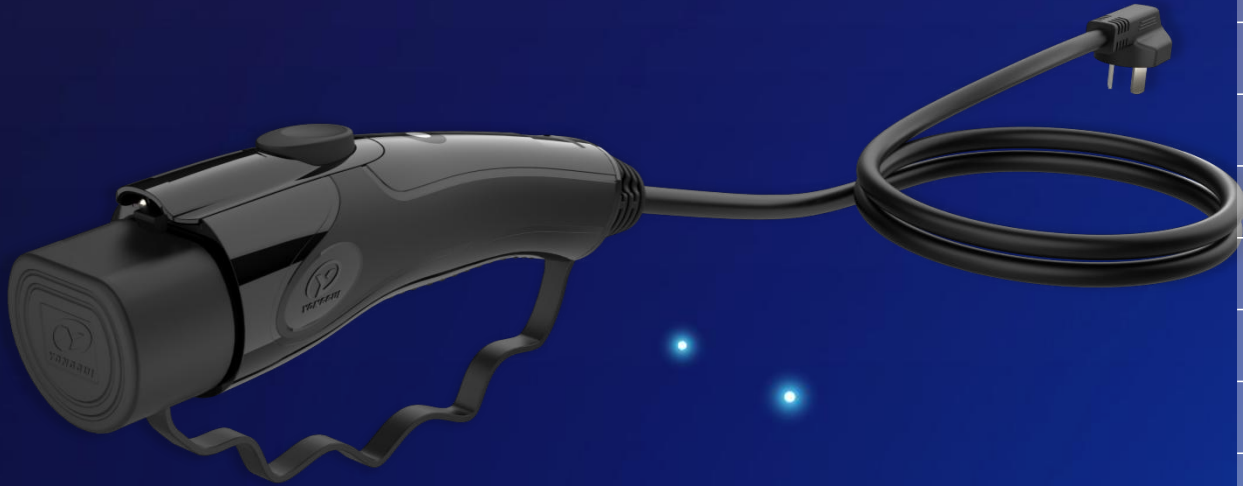
Performance Datasheet

Items	Coolant Performance	Test Method
Chroma	>+30	ASTM D156
Density	808kg/m ³ , @15°C	ASTM D4052
Flash Point	198°C	ASTM D92
Pour Point	-51°C	ASTM D97
Viscosity	9.9mm ² /s, @40°C	ASTM D445
	52.3mm ² /s, @0°C	ASTM D7042
	1292.7mm ² /s, @-40°C	ISO 3104
Acid Value	< 0.01	IEC 62021-1

03

Consumer products





product advantages

1. The overall size is small and easy to store;
2. Altitude 4000m optional;
3. The control box is cancelled, making it more convenient to carry;
4. When the cable length is the same, the weight is reduced to 60% of the original;

Technical Data

items	10A series	16A series
power phases	1 phase	1 phase
executive standard	GB/T 18487.1-2015 GB/T 20234.1-2015 GB/T 20234.2-2015	
charging mode	charging mode2, caseB	
rated voltage	220V AC	220V AC
rated current	8A AC	13A AC
withstand voltage	between each L1、N and PE≥2000V AC 1min	
insulation resistance	between each L1、N and PE≥500MΩ (*note: test voltage is : 500V DC)	
IP degree	IP54 separated ; IP55 mated electrical part: IP67 (except for the mating surface)	
life cycle	≥10000	
mating force	< 100N	
ambient temperature	-30℃ ~ +50℃	
flame retardant rating	UL94 V-0	
power point surface plating material	Ag	
cable OD	Φ11±0.3mm	Φ11±0.3mm
cable structure	3×1.5	3×2.5



YG1143 GB AC discharging connector



Technical Data

items		16A series
power phases		1 phase
executive standard		GB/T 20234.1-2015 GB/T 20234.2-2015 GB/T 2099.7-2015
discharge mode		discharging mode 1.1, caseB
rated voltage		220V AC
rated current		16A AC
withstand voltage		1.between L1 and N≥2000V AC 1min; 2.between each L1、 N and PE≥1500V AC 1min; *note: choose one connection,CC or PE
insulation resistance		between each L1、 N、 PE≥500MΩ; *note: choose one connection,CC or PE test voltage is: 500V DC.
IP degree	vehicle plug	IP54 separated ; IP55 mated electrical part: IP67 (except for the mating surface)
	discharging vehicle inlet	IPXXB
life cycle	vehicle plug	≥10000
	discharging vehicle inlet	≥5000
mating force		< 100N
ambient temperature		-30℃ ~ +50℃
flame retardant rating		UL94 V-0
power point surface plating material		Ag
cable OD		Φ8.5±0.2mm
cable structure		3×1.5

product introduction

This product is used for external discharge of electric vehicles to provide power for third party loads.
It is easy to use and the cable length can be customized.



product introduction

This product is used for external discharge of electric vehicles to provide power. This product has indicator light, which can show different using status. This product has over temperature protection, leakage protection and over current protection and other safety protection functions. The gun housing adopts two-color collocation, beautiful and fashionable, the application of blue soft glue, provides its comfortable grip experience.

Technical Data

items		16A series
power phases		1 phase
executive standard		GB/T 20234.1-2015 GB/T 20234.2-2015 GB/T 2099.7-2015
discharge mode		discharging mode 1.1, case B
rated voltage		220V AC
rated current		16A AC
withstand voltage		1.between L1 and N \geq 2000V AC 1min; 2.between each L1、 N and PE \geq 1500V AC 1min; *note: choose one connection,CC or PE
insulation resistance		between each L1、 N、 PE \geq 500M Ω ; *note: choose one connection,CC or PE the test voltage is: 500V DC.
IP degree	vehicle plug	IP54 separated ; IP55 mated
	3 holes vehicle inlet	IP55 (close the protective cover of the vehicle inlet)
life cycle	vehicle plug	\geq 10000
	3 holes vehicle inlet	\geq 5000
mating force		$<$ 100N
ambient temperature		-30 $^{\circ}$ C ~ +50 $^{\circ}$ C
flame retardant rating		UL94 V-0
power point surface plating material		Ag

04

Product Customer Applications



Geely AC vehicle inlet



BYD AC vehicle inlet



EN Type2 AC socket-outlet



Jinkang AC/DC vehicle inlet



SGMW Mode2 AC vehicle connector



Xpeng AC vehicle connector



HONDA Mode 2 AC vehicle connector



HUAWEI AITO AC vehicle connector



HUAWEI discharge connector



BYD 3rd generation AC vehicle connector



BYD 4th generation AC vehicle connector



FAW AC vehicle connector with discharging function intergrated



ZEEKR HPC vehicle connector



AVATR HPC vehicle connector



HUAWEI HPC vehicle connector



LI Auto HPC vehicle connector



EN CCS2 HPC vehicle connector



South Grid Chaoji HPC vehicle connector





The above are part of customers of Yonggui new energy charging products.

YONGGUI

CONNECTION TO FUTURE