

Qualification Test report

DC EV Charge Gun

501-137188 Rev. A

DC EV Charge gun

1. Introduction

简介

1.1. Testing was performed on DC EV Charge gun to verify whether it meets the requirement of product specification 108-137188.

本次测试旨在验证直流充电枪性能是否符合产品规格书 108-137188。

1.2. **Scope:**

范围:

This report covers mechanical, electrical and environment performance requirements of DC EV Charge gun.

本报告主要涵盖了直流充电枪机械，电气及环境的性能要求。

1.3. **Conclusion**

结论

The DC EV Charge gun meets mechanical, electrical and environment performance requirements of product specification 108-137188

直流充电枪之机械，电气及环境性能符合产品规格书108-137188 要求。

1.4. **Product Description**

产品描述

This Gun is for DC Vehicle Charging

该充电枪主要是直流电动汽车充电所用。

1.5. Test Sample P/N: *-2271798-*

2 Test Content

测试内容

2.1 EXAMINATION:

检查

Test Description 测试项目	Requirement 要求	Procedure 规定
Examination of the product 产品检查	Meets visual requirements. 目视	Visual inspection per product drawing. Per GB20234.1-2015 符合产品图纸要求

2.2 ELECTRICAL

电气

Test Description 测试项目	Requirement 要求	Procedure 规定
Insulation resistance. 绝缘电阻	5M Ω Min. 5 M Ω 最小	Unmated connector with 500 V DC between adjacent contacts for 1 min. Per GB/T 20234.1-2015 6.10/7.10 按照 GB/T 20234.1-2015 6.10/7.10 要求，在配合后在产品相邻的端子上加 1 分钟 500 伏电压
Protection against electric shock 防触电保护	PE contact should be first touch and last break in mating/unmating process 在公母对配时，接地端子应最先连接反之则接地端子最后断开	Subject specimens to do test Per GB/T 20234.1-2015 6.5/7.5 所做测试应满足 GB/T 20234.1-2015 6.5/7.5
Provision for earthing 接地措施	1530A,6s(125A rated current) 2450A,6s(250A rated current)	Subject specimens to do test Per GB/T 20234.1-2015 6.6/7.6 所做测试应满足 GB/T 20234.1-2015 6.6/7.6

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Clearances , creepage distances and Penetration sealant distance 爬电距离, 电气间隙和穿透密封胶距离	Meet GB/T 11918.1-2014 section 26	Subject specimens to do test Per GB/T 20234.1-2015 6..17 所做测试应满足 GB/T 20234.1-2015 6.15
Dielectric withstanding Voltage 介电强度	No breakdown. 不击穿	Unmated connector with 3000 V AC between adjacent contacts for 1 min. Per GB/T 20234.1-2015 6.10/7.10 按照 GB/T 20234.1-2015 6.10/7.10 要求, 在相邻的端子间施加一分钟 3000V AC.
Breaking capacity 分断能力	No change to performance 产品性能没影响	Subject specimens to do test Per GB/T 20234.1-2015 6.11/7.11 产品应满足 GB/T 20234.1-2015 6.11/7.11 要求
Temperature Rising 温升	The temperature rise should be 50°C Max. 端子温升不超过50度	Mated connector measured at max rated current Per GB/T 20234.1-2015 6.13/7.13 产品应满足GB/T 20234.1-2015 6.13/7.13要求
Limited short withstand current 限制短路电流耐受试验	No physical damage, and meet requirements of additional tests specified in Product Qualification Test Sequence (Item 3.6.5) 无损坏, 满足产品功能	Subject specimens to do test Per GB/T 20234.1-2015 6.20/7.20 产品应满足 GB/T 20234.1-2015 6.20/7.20 要求

2.3 MECHANICAL

机械

Test Description 测试项目	Requirement 要求	Procedure 规定
Locking strength 锁止装置	200 N min. 200N 最小	Measure the force Per GB/T 20234.1-2015 6.3/7.3 产品测试按照GB/T 20234.1-2015 6.3/7.3进行
Mating force 插入力	140 N Max. 140N 最大	Measure the force Per GB/T 20234.1-2015 6.4/7.4 产品测试按照GB/T 20234.1-2015 6.4/7.4进行
Unmating force 拔出力	140 N Max. 140N 最大	Measure the force Per GB/T 20234.1-2015 6.4/7.4 产品测试按照GB/T 20234.1-2015 6.4/7.4进行
Contact 端子	1. bend test 15 min. 25mm ² 4.5kgf 35mm ² 6.8kgf 70mm ² 10.4kgf 2. load test 1min. 25mm ² 135N 35mm ² 190N 70mm ² 285N	Subject specimens to do test Per GB/T 20234.1-2015 6.7/7.7 产品测试按照GB/T 20234.1-2015 6.7/7.7进行
Durability 使用寿命	No mechanical damage No change to performance 无损坏, 满足产品功能	Mating and unmating specimens for 10000 cycles by manual, Operation speed: (0.8±0.1) m/s Per GB/T 20234.1-2015 6.12/7.12 产品测试按照GB/T 20234.1-2015 6.12/7.12进行 插拔速度: (0.8±0.1) m/s 插拔次数: 10000次
Cable pull out force 电缆及其连接	Pull out force 100 cycles 施加拉力 100 次 125A 200N 250A 300N Torque 扭矩 125A 1.5N.m 250A 3N.m The cable displacement is less than 2mm 线的位移不超过 2mm.	Subject specimens to do test Per GB/T 20234.1-2015 6.14/7.14 产品测试按照GB/T 20234.1-2015 6.14/7.14进行

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Mechanical strength 机械强度	No physical damage, and meet requirements of additional tests specified in Product Qualification Test Sequence (Item 3.6.5) 无损坏, 满足产品功能	Subject specimens to do test Per GB/T 20234.1-2015 6.15/7.15 产品测试按照GB/T 20234.1-2015 6.15/7.15进行
Screw, loading, connect 螺钉, 载流部件和连接	meet requirements of additional tests specified in Product Qualification Test Sequence 满足产品功能	Subject specimens to do test Per GB/T 20234.1-2015 6.16/7.16 产品测试按照GB/T 20234.1-2015 6.16/7.16进行
Vehicle rolling 车辆碾压	No mechanical damage No change to performance 无损坏, 满足产品功能	Subject specimens to do test Per GB/T 20234.1-2015 6.21/7.21 产品测试按照GB/T 20234.1-2015 6.16/7.16进行

2.4 Environmental

环境

Test Description	Requirement	Procedure
Rubber ,Resin ageing resistant 橡胶和热塑性材料的耐老化	No physical damage, and meet requirements of additional tests specified in Product Qualification Test Sequence (Item 3.6.5) 无损坏, 满足产品功能	Subject specimens in oven, Rubber: (70±2) °C for 240H Resin: (80±2) °C for 168H Per GB/T 20234.1-2015 6.8/7.8 产品测试按照GB/T 20234.1-2015 6.8/7.8进行 将橡胶及热塑性材料放入烘箱中 橡胶: (70±2) °C 放 240H Resin: (80±2) °C 放r 168H
Protection level 防护等级	No change to performance 满足产品功能	IP54 for EV charge gun with dust cap IP55 for mating specimens Per GB/T 20234.-2015 6.9/7.9 产品测试按照GB/T 20234.1-2015 6.9/7.9进行 带防尘盖IP54公母配合后: IP55
Thermal, flame-resisting Proof tracking 耐热, 耐燃和耐电痕化	No physical damage, and meet requirements of additional tests specified in Product Qualification Test Sequence (Item 3.6.5) 无损坏, 满足产品功能	Subject specimens to do test Per GB/T 20234.1-2015 6.18/7.18 产品测试按照 GB/T 20234.1-2015 6.18/7.18 进行
Corrosion resistance 耐腐蚀与防锈	No physical damage, and meet requirements of additional tests specified in Product Qualification Test Sequence (Item 3.6.5) 无损坏, 满足产品功能	Subject specimens to do test Per GB/T 20234.1-2015 6.19/7.19 产品测试按照GB/T 20234.1-2015 6.19/7.19进行

Remark: The text “No mechanical damage” means No structure is damaged/No connection becomes loose/The specimen still is fully functional in electricity after testing. The receptacle need to meet requirements of GB/T 20234.1-2105.

注意: 上文中的无损坏是指结构无破坏, 产品功能符合要求

与充电枪插头相配合的插座其性能应满足GB/T 20234.1-2015要求。

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3. Product Qualification and Requalification Test Sequence (Sample Size: 1pcs for each group)

产品验证及测试顺序（样品数量：每组1pcs）

Test group 测试项目	1	2	3	4	5	6	7
Examination of product 产品检查	1,13	1,5	1,4	1,6	1,3	1,5	1,3
Insulation resistance. 绝缘电阻	8			2,7		2,6	
Protection against electric shock 防触电保护	5						
Provision for earthing 接地措施	6			4			
Clearances , creepage distances and Penetration sealant distance 爬电距离, 电气间隙和穿透密封胶距离						8	
Dielectric withstanding Voltage 介电强度	9			3,8		3,7	
Breaking capacity 分断能力			2				
Temperature Rising 温升		3					
Limited short withstand current 限制短路电流耐受试验					2		
Locking strength 锁止装置	2						
Mating force 插入力	3						
Unmating force 拔出力	4						
Contact 端子							2
Durability 使用寿命	10						
Cable pull out force 电缆及其连接			3				
Mechanical strength 机械强度				5			
Screw, loading, connect 螺钉, 载流部件和连接	11						
Vehicle rolling 车辆碾压						4	
Rubber ,Resin ageing resistant 橡胶和热塑性材料的耐老化		2					
Protection level 保护等级	7						
Thermal, flame-resisting Proof tracking 耐热, 耐燃和耐电痕化	12						
Corrosion resistance 耐腐蚀和防锈		4					

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4. Test Result

测试结果

Test Group 测试组别	Test Item 测试项目	Unit 单位	Result 结果	Spec. 规格	Judgment 判断
1.1	Examination of product 产品检查		No Physical damages, no burr. 无结构性损伤, 无毛边倒刺等		Pass 合格
1.2	Locking strength锁止装置	N	200N, No Physical damages 施加200N,无结构性损伤		Pass 合格
1.3	Mating force插入力	N	115.6N	140N max.	Pass 合格
1.4	Unmating force拔出力	N	109.7N	140N max.	Pass 合格
1.5	Protection against electric shock 防触电保护		Meet GB/T 11918.1-2014 chapter 9/满足GB/T 11918.1-2014第9章要求		Pass 合格
1.6	Provision for earthing 接地措施		Subject specimens to do test Per GB/T 20234.1-2015 6.6/7.6, 2450A,6s 所做测试应满足GB/T 20234.1-2015 6.6/7.6		Pass 合格
1.7	Protection level保护等级		IP54(W/ dust cap),IP55(W/ Rec.side)		Pass 合格
1.8	Insulation resistance.绝缘电阻	MΩ	2000 MΩ Min.	5 MΩ Min.	Pass 合格
1.9	Dielectric withstanding Voltage 介电强度	V	3000V AC for 1 minute	3000V AC for 1 minute	Pass 合格
1.10	Durability使用寿命	cycle	10000 cycles with 750V		Pass 合格
1.11	Screw, loading, connect螺钉, 载流部件和连接		Subject specimens to do test Per GB/T 20234.1-2015 6.16/7.16 所做测试应满足GB/T 20234.1-2015 6.16/7.16		Pass 合格
1.12	Thermal, flame-resisting Proof tracking 耐热, 耐燃和耐电痕化		Subject specimens to do test Per GB/T 20234.1-2015 6.18/7.18 所做测试应满足GB/T 20234.1-2015 6.18/7.18		Pass 合格
1.13	Examination of product 产品检查		No Physical damages, no burr. 无结构性损伤, 无毛边倒刺等		Pass 合格

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Test Group 测试组别	Test Item 测试项目	Unit 单位	Result 结果	Spec. 规格	Judgment 判断
2.1	Examination of product 产品检查		No Physical damages, no burr. 无结构性损伤, 无毛边倒刺等		Pass 合格
2.2	Rubber ,Resin ageing resistant 橡胶和热塑性材料的耐老化		Subject specimens to do test Per GB/T 20234.1-2015 6.8/7.8 所做测试应满足GB/T 20234.1-2015 6.8/7.8 产品测试按照GB/T 20234.1-2015 6.8/7.8进行 将橡胶及热塑性材料放入烘箱中 橡胶: (70±2) °C 放 240H Resin: (80±2) °C 放r 168H		Pass 合格
2.3	Temperature Rising温升	°C	The temperature rise should be 50°C Max. 1.抓握部位最高温度不超过60°C 2.非抓握部位最高温度不超过85°C 3.端子温升不超过50度		Pass 合格
2.4	Corrosion resistance 耐腐蚀和防锈		Subject specimens to do test Per GB/T 20234.1-2015 6.19/7.19 所做测试产品应满足GB/T 20234.1-2015 6.19/7.19		Pass 合格
2.5	Examination of product 产品检查		No Physical damages, no burr. 无结构性损伤, 无毛边倒刺等		Pass 合格

Test Group 测试组别	Test Item 测试项目	Unit 单位	Result 结果	Spec. 规格	Judgment 判断
3.1	Examination of product 产品检查		No Physical damages, no burr. 无结构性损伤, 无毛边倒刺等		Pass 合格
3.2	Breaking capacity分断能力		Subject specimens to do test Per GB/T 20234.1-2015 6.11/7.11 所做测试产品应满足GB/T 20234.1-2015 6.11/7.11		Pass 合格
3.3	Cable pull out force 电缆及其连接		Pull out force 100 cycles 施加拉力 100 次 125A 200N 250A 300N Torque 扭矩 125A 1.5N.m 250A 3N.m The cable displacement is less than 2mm 线的位移不超过2mm.		Pass 合格
3.4	Examination of product 产品检查		No Physical damages, no burr. 无结构性损伤, 无毛边倒刺等		Pass 合格

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Test Group 测试组别	Test Item 测试项目	Unit 单位	Result 结果	Spec. 规格	Judgment 判断
4.1	Examination of product 产品检查		No Physical damages, no burr. 无结构性损伤, 无毛边倒刺等		Pass 合格
4.2	Insulation resistance.绝缘电阻	MΩ	2000 MΩ Min.	5 MΩ Min.	Pass 合格
4.3	Dielectric withstanding Voltage 介电强度	V	3000V AC for 1 minute	3000V AC for 1 minute	Pass 合格
4.4	Provision for earthing 接地措施		Subject specimens to do test Per GB/T 20234.1-2015 6.6/7.6, 2450A,6s 所做测试应满足GB/T 20234.1-2015 6.6/7.6		Pass 合格
4.5	Mechanical strength机械强度		在温度 (-25±2°C) 的冷冻室中16小时后, 跌落 高度75cm,跌落次数8次		Pass 合格
			施加250A电流及750V电压, 同时负重75N,弯曲 20000次		
4.6	Examination of product 产品检查		No Physical damages, no burr. 无结构性损伤, 无毛边倒刺等		Pass 合格
4.7	Insulation resistance.绝缘电阻	MΩ	2000 MΩ Min.	5 MΩ Min.	Pass 合格
4.8	Dielectric withstanding Voltage 介电强度	V	3000V AC for 1 minute	3000V AC for 1 minute	Pass 合格

Test Group 测试组别	Test Item 测试项目	Unit 单位	Result 结果	Spec. 规格	Judgment 判断
5.1	Examination of product 产品检查		No Physical damages, no burr. 无结构性损伤, 无毛边倒刺等		Pass 合格
5.2	Limited short withstand current 限制短路电流耐受试验	A	应能耐受10KA 的预期短路电流		Pass 合格
5.3	Examination of product 产品检查		No Physical damages, no burr. 无结构性损伤, 无毛边倒刺等		Pass 合格

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Test Group 测试组别	Test Item 测试项目	Unit 单位	Result 结果	Spec. 规格	Judgment 判断
6.1	Examination of product 产品检查		No Physical damages, no burr. 无结构性损伤, 无毛边倒刺等		Pass 合格
6.2	Insulation resistance.绝缘电阻	MΩ	2000 MΩ Min.	5 MΩ Min.	Pass 合格
6.3	Dielectric withstanding Voltage 介电强度	V	3000V AC for 1 minute	3000V AC for 1 minute	Pass 合格
6.4	Vehicle rolling车辆碾压	N	负载5000±250N的轮胎以8±2 km/h的速度压过产品。产品无损伤		Pass 合格
6.5	Examination of product 产品检查		No Physical damages, no burr. 无结构性损伤, 无毛边倒刺等		Pass 合格
6.6	Insulation resistance.绝缘电阻	MΩ	2000 MΩ Min.	5 MΩ Min.	Pass 合格
6.7	Dielectric withstanding Voltage 介电强度	V	3000V AC for 1 minute	3000V AC for 1 minute	Pass 合格
6.8	Clearances , creepage distances and Penetration sealant distance 爬电距离, 电气间隙和穿透密封胶距离	mm	爬电距离: 不同极性的带电部件之间: ≥16mm 带电部件与接地触头之间: ≥10mm 电气间隙: 不同极性的带电部件之间: ≥8mm 带电部件与接地触头之间: ≥8mm		Pass 合格

Test Group 测试组别	Test Item 测试项目	Unit 单位	Result 结果	Spec. 规格	Judgment 判断
7.1	Examination of product 产品检查		No Physical damages, no burr. 无结构性损伤, 无毛边倒刺等		Pass 合格
7.2	Contact端子	N	Bending test弯曲测试 :0.75mm ² : 4N, 4mm ² : 9N, 25mm ² : 45N,35mm ² :68N,70mm ² :104N Test speed: 10 rounds/min. Duration: 15 min. Force load 力量测试: 0.75mm ² : 35N, 4mm ² : 60N, 25mm ² : 135N, 35mm ² :190N,70mm ² : 285N. Test Duration: 1 min		Pass 合格
7.3	Examination of product 产品检查		No Physical damages, no burr. 无结构性损伤, 无毛边倒刺等		Pass 合格