	Product Name	MCS Super DC Charging Socket	File No	XM202410006
	Product No.		Version	A 1

MCS Super DC Charging Socket


Technical Specification

Prepared/Date Hu Sheng 202 4 .05. 17

Review/Date Cheng Zeyong 202 4 .05. 17

Approval/Date Feping 202 4 .05.1 7

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Changes and Revisions

<input type="checkbox"/> Change <input type="checkbox"/> Revision	Date	Change or revision of major matters	Modified/revised by	Approver
<input checked="" type="checkbox"/> Change <input type="checkbox"/> Revision	20240517	Increase the line length by 500mm and the end parts	Mr. Hu	Fei Ping
<input type="checkbox"/> Change <input type="checkbox"/> Revision				
<input type="checkbox"/> Change <input type="checkbox"/> Revision				

send

No.	Name	Department	Position	Contact information
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1 Connector model and description

1.1 Connector Model:

Basic product model	Rated voltage Rated current	Cable specifications	Cable length	Temperature detection device	Actual current range
YGC1500	1000V DC 1500A	6×150mm ² +25mm ² +4×× 0.5mm ²	/	PT1000*2	0 ~ 1500A

1.2 Product Description:

1. This product complies with IEC 61851-1 , IEC TS61851-23-3 , IEC TS 63379 provisions;
2. Installation method: front installation
3. Overall protection level of connector: IP67 (lead end) ;
4. The product line end is crimped and tinned, and then copper busbars are used for busbar connection to achieve good contact between the terminal and the cable, ensuring that the temperature rise meets the requirements;
5. The temperature control is embedded inside the terminal to realize real-time monitoring of temperature rise ;
6. The product terminals and wiring harnesses are connected by bolts, and the signal terminals are connected by PCBA boards and plug-ins, which makes assembly and replacement convenient;

2. Technical parameters

2.1 Electrical performance

- Rated voltage: 1000V DC;
- Rated current: 1500A;
- Insulation resistance: ≥500MΩ 1000V DC 1min;
- Withstand voltage: 4000V AC for 1 minute without breakdown or flickering;
- Leakage current: ≤10mA ;


2.2 Mechanical properties

- Mechanical life: ≥10000 times;
- Insertion and separation force: ≤ 100N;
- Retention force of the pin in the housing: DC terminal ≥250N , PE terminal ≥250N , signal terminal ≥50N;

2.3 Protection level

- Waterproof level: IPX 4 (after plugging in) ;

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- Dustproof grade: IP67 (lead end)

2.4 Usage Environment

- Ambient temperature: -30°C~+50°C

2.5 Materials and surface treatment


- Socket material: PA66+GF ;
- Flame retardant grade: UL94-V0 ;
 - Pin material and surface treatment: copper silver-plated + passivation, brass silver-plated + passivation;

2.6 Product Specifications

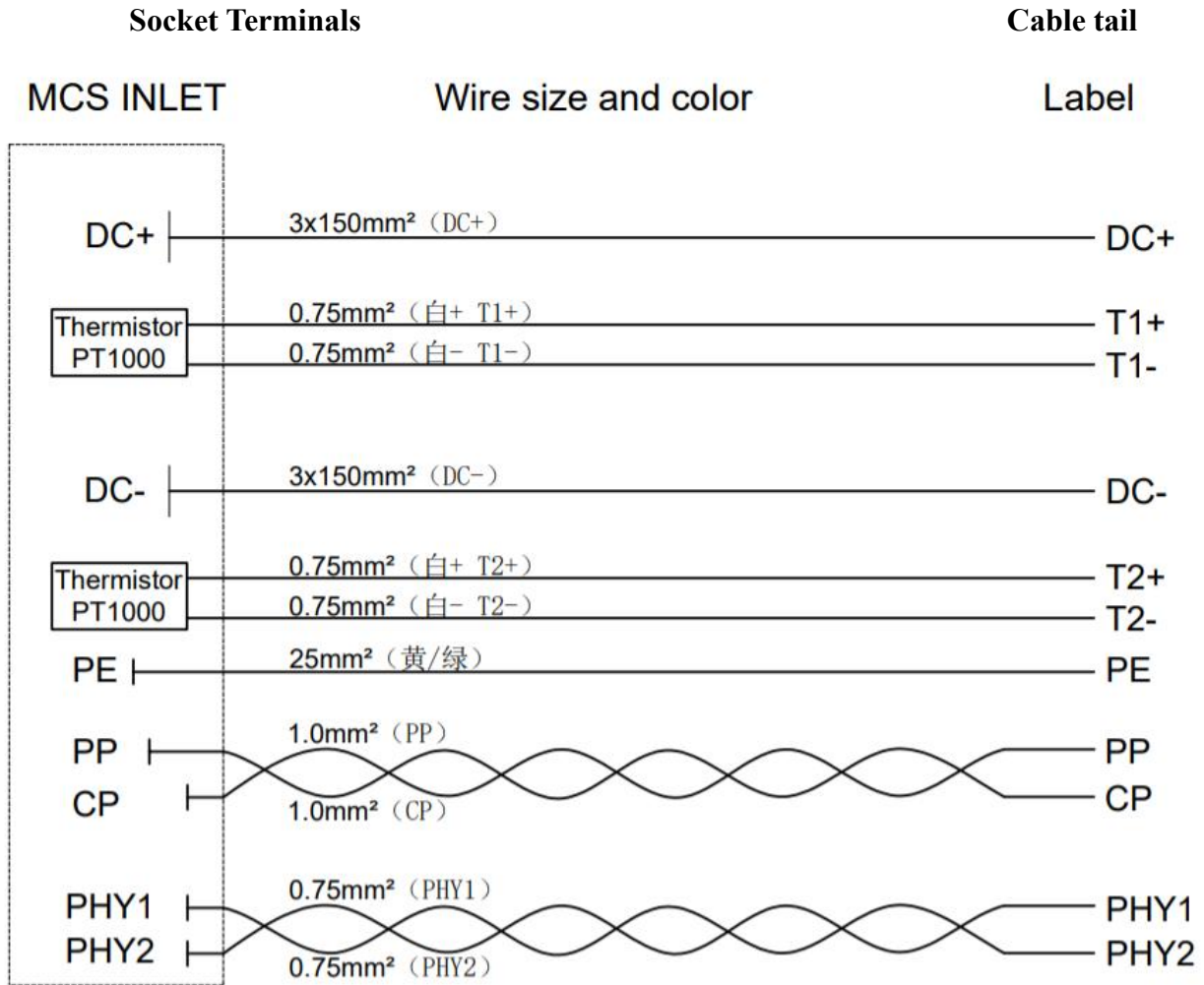
Product name	MCS Super DC Charging Socket
Model	YGC****A.....xxx
	**** indicates rated current, ... indicates cable length, and xxx indicates serial number
Rated voltage	1000V DC
Current	DC: 1500A (rated current)
	Signal: 10 A (max)
Contact	Power: 2 Ground: 1 Signal: 4
Working environment	-35~+50°C
	Use below 2000m above sea level
Protection level	IP67 (lead end)
Size	Charging stand: 181(L)*207(D)* 145 (H)
	Cable: Length can be customized

Note: The product complies with RoHS2.0 and REACH requirements

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2.7 Wiring principle:



2.8 Cable identification definitions and specifications

Serial number	Function Definition	Core wire color	Terminals	Conductor cross-sectional area
1	DC power supply positive pole	/	DC+	3 * 150mm ²
2	DC power supply negative pole	/	DC-	3 * 150mm ²
3	Equipment ground wire	yellow-green	PE	25mm ²

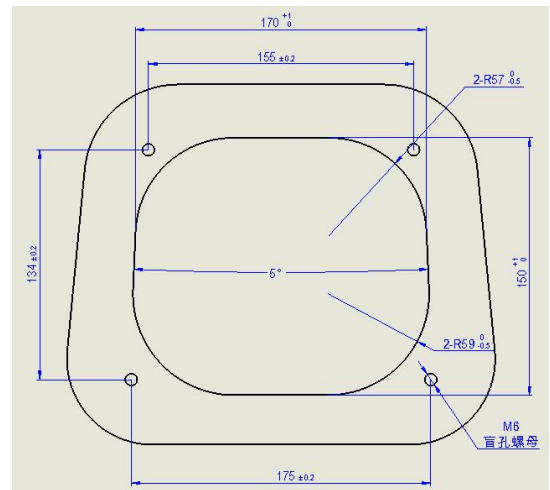
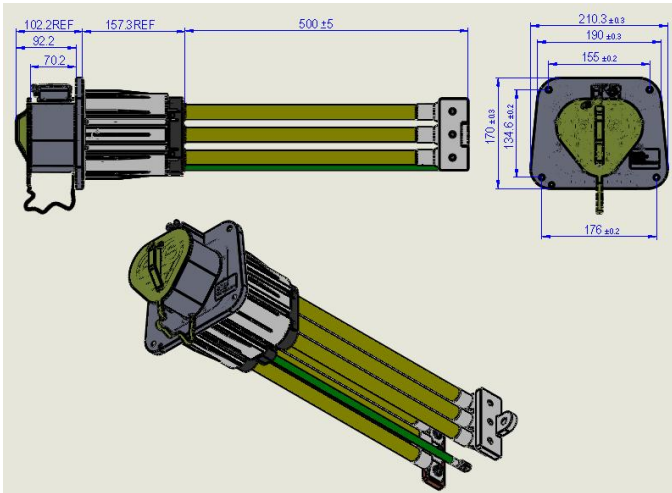
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4	Charging connection confirmation	White - (PP)	PP	0.5mm ²
5	Charging Control Guide	White - (CP)	CP	0.5mm ²
6	Temperature sensor (DC+)	White + T 1 + / White - T 1 - White + T 3 + / White - T 3 -	T 1+ / T 1 - T 3+ / T 3 -	0.5 mm ²
7	Temperature sensor (DC-)	White + T 2 + / White - T 2 - White + T 4 + / White - T 4 -	T 2+ / T 2 - T 4+ / T 4 -	0.5 mm ²
8	Signal interface 1	white- PHY 1	PHY 1	0.5 mm ²
9	Signal interface 2	white- PHY 2	PHY 2	0.5 mm ²

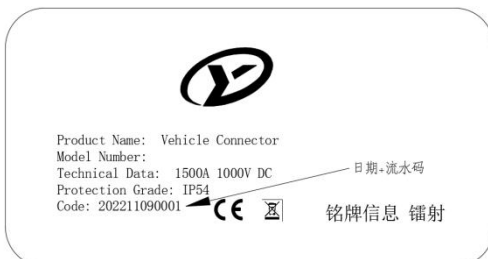
3 Product images:

3.1. Outline view




开口面板建议尺寸

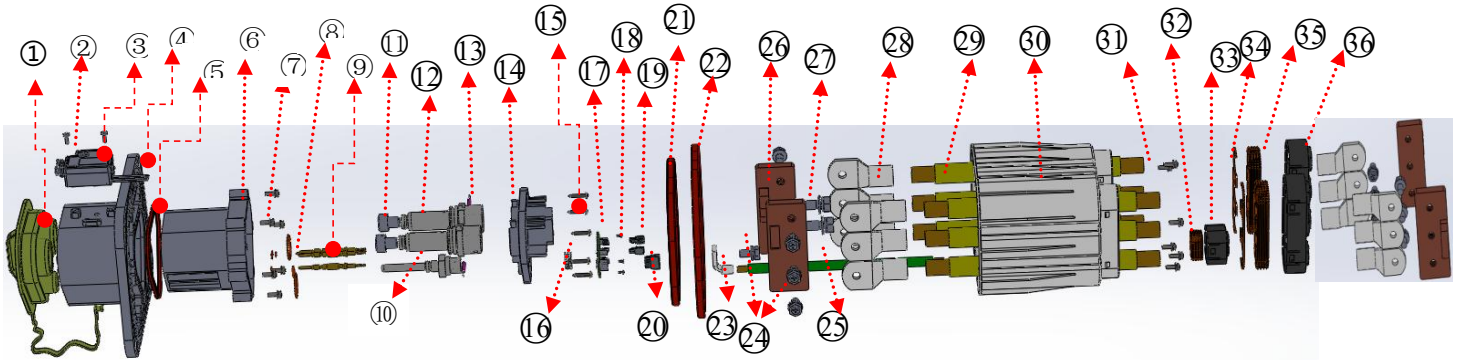
3.2. Nameplate information:



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3.3. Product structure diagram:



Serial number	name	Material	Remark
1	Dust cover	TPE	
2	Electronic lock fixing screw	SUS304	
3	Electronic locks	Components	
4	Flange housing	PA66+25GF	
5	Gasket	Silicone Rubber	
6	Socket housing	PA66+25GF	
7	M4 bolt	SUS304	
8	Terminal O-ring	Silicone Rubber	
9	Signal Terminal	copper	
10	PE terminal	copper	
11	DC terminal finger proof	PA66+25GF	
12	DC Terminal	copper	
13	Temperature control element	Components	
14	Terminal fixing plate	PA66+25GF	
15	ST3.5 self-tapping screws	SUS304	
16	PE spring	SUS304	
17	PCBA board	Components	
18	ST2.2 self-tapping screws	SUS304	
19	Thermistor Connector	Components	
20	Signal Connector	Components	
twenty one	Rear cover gasket	Silicone Rubber	
twenty two	Flange mounting gasket	Silicone Rubber	

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twenty three	25 flat 90 degree copper tube terminal	copper	
twenty four	M8 combination screw	SUS304	
25	25 square PE cable	Components	
26	DC busbar	copper	
27	M10 combination screw	SUS304	
28	150-8 Copper Nose	copper	
29	150 square copper wire	Components	
30	Rear cover	PC	
31	M4 bolt	SUS304	
32	PE, signal line seal	Silica gel	
33	PE, signal line end cap	PA66+25GF	
34	DC Cable Mounting Pads	PA66+25GF	
35	DC line seal	Silica gel	
36	DC cable end cap	PA66+25GF	

3.4. Harness parameters:

Tail feature definition:

No.	Function Definition	Core color/markings	Functional Description	Parameter
1	DC power supply positive pole	DC+	DC+	M10 bolt fixing
2	DC power supply negative pole	DC-	DC-	M10 bolt fixing
3	Equipment ground wire	yellow-green	PE	M8 bolt fixing
4	Charging connection confirmation	White - (PP)	PP	PCBA board transfer
5	Charging Control Guide	White - (CP)	CP	PCBA board transfer
6	Temperature sensor (DC+)	White + T 1 + / White - T 1 - White + T 3 + / White - T 3 -	T 1+ / T 1- T 3+ / T 3-	PCBA board transfer
7	Temperature sensor (DC-)	White + T 2 + / White - T 2 - White + T 4 + / White - T 4 -	T 2+ / T 2- T 4+ / T 4-	PCBA board transfer
8	Physical interface 1	white- PHY 1	P HY1	PCBA board transfer

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9	Physical interface 2	white- PHY 2	P HY2	PCBA board transfer
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4 Implementation standards:

■ ISO 5474 , IEC 61851-23 , IEC 61851-23-3 , IEC 61851-1 , IEC 62196-1 , IEC 62196-3 , IEC TS62196-3-1 , IEC TS 63379 , ISO 15118-20 , ISO 15118-6 , SAE J3271 , UL 2251 , UL 2231 , UL 2202 .

appendix

Appendix 1: Reference standards and tests


Table B: Test items and standards

project		judgement standard
1	Exterior	The easily accessible surfaces of the charging station should be free of burrs, flash and similar sharp edges; the dust cover of the charging station or the socket shell should be marked with information such as the manufacturer's
2	size	The charging dock dimensions are based on the MCS standard.
3	Temperature rise	The maximum allowable temperature rise should not exceed 50K
4	Insulation resistance	> 500MΩ (Applied voltage: DC + / DC - : 1000V DC, others : 500 V DC, 1 minute)
5	Pressure resistance	4000V AC leakage current ≤10mA, no breakdown or flashover for 1 minute
6	Charging	< 100N
7	Terminal retention force	The terminals must not fall out of the charging station housing .
8	Service life test	10,000 plug-in and unplug without power supply , After the test, the following should not occur: 1. No deterioration of casing or partitions; 2. No electrical or mechanical connections are loose ; 3. Maintain the continuity of signal transmission between contacts ; 4. There should be no flashover or breakdown during the dielectric strength test (voltage reduction 500V) ;
9	Anti-touch finger retention	Anti-touch finger holding force ≥ 40N
1 0	High temperature resistance test	The sample is not damaged and can be used normally (Check samples after returning to room temperature.)
1 1	Low temperature resistance test	The sample is not damaged and can be used normally (Check the sample after returning to room temperature.)

Appendix 2: Test methods

Test conditions

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-Ambient temperature $20\pm 5^{\circ}\text{C}$, relative humidity $65\pm 20\%$

Table C test methods

project		experiment method
1	Exterior	Visual and manual inspection of surface condition.
2	size	Interoperability test
3	temperature rise	Provide current according to product specifications and measure the temperature at the following points. Test point: -DC terminal contact point surface - Shell surface - Cable surface
4	Insulation resistance	Use an insulation resistance tester to apply 1000V DC voltage to measure the insulation resistance between adjacent terminals and between each terminal and the shell.
5	Pressure resistance	Apply 4000V AC voltage between adjacent power terminals and between the power terminals and the housing for 1 minute.
6	Charging plugging force	With the vehicle charger stationary , measure the insertion /extraction force of the charger tip at a specified speed (excluding the insertion / extraction force on the vehicle charger rubber seal).
7	Cable retention	The retention force between the cable and the welding terminal meets the requirements of Table 7 of USCAR38, $\geq 3600\text{N}$
8	Service life test	10,000 plugging and unplugging without power on .
9	High temperature resistance test	Place the charging stand in a constant temperature box ($105^{\circ}\text{C}\times 1000$ hours).
10	Low temperature resistance test	Place the charging station in a constant temperature box ($-35^{\circ}\text{C} \times 120$ hours).
11	Temperature rise after test	Supply current according to product specifications and measure the temperature at the following points. Test point: - DC terminal contact surface - Shell surface - Cable surface

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Appendix 3 : Temperature Monitoring

1. Short-circuit DC+ and DC- with a 2-meter 3X150 flat cable copper busbar assembly, and connect the charging gun to the power supply equipment.
2. DC+ and DC- are monitored by PT1000 temperature resistance sensors. It is recommended that the threshold values of pile end temperature T 1 , T 2 , T 3 , and T 4 be set to $\leq 110^{\circ}\text{C}$;
3. The relationship between temperature and impedance is shown in the figure below;


Tolerance class: 2B

PT1000 TC 3850ppm

Permissible deviation : $Dt = \pm 2(0.3^{\circ}\text{C} + 0.005 \cdot |t|)$


Temperature °C	Resistance Rt Q	Sensibility Q°C	Permissible deviation	
			°C	Q
-40	846.580	3.863	1.000	3.863
-39	850.440	3.861	0.990	3.823
-38	854.300	3.860	0.980	3.783
-37	858.160	3.858	0.970	3.743
-36	862.010	3.857	0.960	3.703
-35	865.870	3.856	0.950	3.663
-34	869.730	3.854	0.940	3.623
-33	873.580	3.853	0.930	3.583
-32	877.430	3.851	0.920	3.543
-31	881.280	3.850	0.910	3.503
-30	885.130	3.849	0.900	3.464
-29	888.980	3.847	0.890	3.424
-28	892.830	3.846	0.880	3.384
-27	896.670	3.844	0.870	3.345
-26	900.510	3.843	0.860	3.305
-25	904.360	3.842	0.850	3.266
-24	908.200	3.840	0.840	3.226
-23	912.040	3.839	0.830	3.186
-22	915.880	3.838	0.820	3.147
-21	919.710	3.836	0.810	3.108
-20	923.550	3.835	0.800	3.068
-19	927.380	3.834	0.790	3.029
-18	931.220	3.833	0.780	2.989

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-17	935.050	3.831	0.770	2.950
-16	938.880	3.830	0.760	2.911
-15	942.710	3.829	0.750	2.872
-14	946.540	3.827	0.740	2.832
-13	950.360	3.826	0.730	2.793
-12	954.190	3.825	0.720	2.754
-11	958.010	3.824	0.710	2.715
-10	961.840	3.822	0.700	2.676
-9	965.660	3.821	0.690	2.637
-8	969.480	3.820	0.680	2.598
-7	973.300	3.819	0.670	2.559
-6	977.120	3.817	0.660	2.520
-5	980.930	3.816	0.650	2.481
-4	984.750	3.815	0.640	2.442
-3	988.560	3.814	0.630	2.403
-2	992.380	3.813	0.620	2.364
-1	996.190	3.811	0.610	2.325
0	1000.000	3.810	0.600	2.286
1	1003.810	3.809	0.610	2.323
2	1007.620	3.808	0.620	2.361
3	1011.430	3.807	0.630	2.398
4	1015.230	3.805	0.640	2.435
5	1019.040	3.804	0.650	2.473
6	1022.840	3.803	0.660	2.510
7	1026.640	3.802	0.670	2.547
8	1030.440	3.801	0.680	2.584
9	1034.240	3.799	0.690	2.622
10	1038.040	3.798	0.700	2.659
11	1041.840	3.797	0.710	2.696
12	1045.640	3.796	0.720	2.733
13	1049.430	3.795	0.730	2.770
14	1053.220	3.793	0.740	2.807
15	1057.020	3.792	0.750	2.844
16	1060.810	3.791	0.760	2.881
17	1064.600	3.790	0.770	2.918
18	1068.390	3.789	0.780	2.955

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19	1072.180	3.787	0.790	2.992
20	1075.960	3.786	0.800	3.029
21	1079.750	3.785	0.810	3.066
22	1083.530	3.784	0.820	3.103
23	1087.320	3.783	0.830	3.139
24	1091.100	3.781	0.840	3.176
25	1094.880	3.780	0.850	3.213
26	1098.660	3.779	0.860	3.250
27	1102.440	3.778	0.870	3.287
28	1106.210	3.776	0.880	3.323
29	1109.990	3.775	0.890	3.360
30	1113.760	3.774	0.900	3.397
31	1117.540	3.773	0.910	3.433
32	1121.310	3.772	0.920	3.470
33	1125.080	3.770	0.930	3.507
34	1128.850	3.769	0.940	3.543
35	1132.620	3.768	0.950	3.580
36	1136.390	3.767	0.960	3.616
37	1140.150	3.766	0.970	3.653
38	1143.920	3.764	0.980	3.689
39	1147.680	3.763	0.990	3.726
40	1151.440	3.762	1.000	3.762
41	1155.210	3.761	1.010	3.798
42	1158.970	3.760	1.020	3.835
43	1162.730	3.758	1.030	3.871
44	1166.480	3.757	1.040	3.908
45	1170.240	3.756	1.050	3.944
46	1174.000	3.755	1.060	3.980
47	1177.750	3.754	1.070	4.016
48	1181.500	3.752	1.080	4.053
49	1185.250	3.751	1.090	4.089
50	1189.010	3.750	1.100	4.125
51	1192.750	3.749	1.110	4.161
52	1196.500	3.748	1.120	4.197
53	1200.250	3.746	1.130	4.233

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54	1204.000	3.745	1.140	4.270
55	1207.740	3.744	1.150	4.306
56	1211.480	3.743	1.160	4.342
57	1215.230	3.742	1.170	4.378
58	1218.970	3.740	1.180	4.414
59	1222.710	3.739	1.190	4.450
60	1226.450	3.738	1.200	4.486
61	1230.180	3.737	1.210	4.521
62	1233.920	3.736	1.220	4.557
63	1237.650	3.734	1.230	4.593
64	1241.390	3.733	1.240	4.629
65	1245.120	3.732	1.250	4.665
66	1248.850	3.731	1.260	4.701
67	1252.580	3.730	1.270	4.737
68	1256.310	3.728	1.280	4.772
69	1260.040	3.727	1.290	4.808
70	1263.760	3.726	1.300	4.844
71	1267.490	3.725	1.310	4.879
72	1271.210	3.724	1.320	4.915
73	1274.940	3.722	1.330	4.951
74	1278.660	3.721	1.340	4.986
75	1282.380	3.720	1.350	5.022
76	1286.100	3.719	1.360	5.057
77	1289.820	3.718	1.370	5.093
78	1293.530	3.716	1.380	5.129
79	1297.250	3.715	1.390	5.164
80	1300.960	3.714	1.400	5.199
81	1304.680	3.713	1.410	5.235
82	1308.390	3.711	1.420	5.270
83	1312.100	3.710	1.430	5.306
84	1315.810	3.709	1.440	5.341
85	1319.520	3.708	1.450	5.376
86	1323.230	3.707	1.460	5.412
87	1326.930	3.705	1.470	5.447

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88	1330.640	3.704	1.480	5.482
89	1334.340	3.703	1.490	5.518
90	1338.040	3.702	1.500	5.553
91	1341.740	3.701	1.510	5.588
92	1345.440	3.699	1.520	5.623
93	1349.140	3.698	1.530	5.658
94	1352.840	3.697	1.540	5.693
95	1356.540	3.696	1.550	5.729
96	1360.230	3.695	1.560	5.764
97	1363.930	3.693	1.570	5.799
98	1367.620	3.692	1.580	5.834
99	1371.310	3.691	1.590	5.869
100	1375.000	3.690	1.600	5.904
101	1378.690	3.689	1.610	5.939
102	1382.380	3.687	1.620	5.974
103	1386.070	3.686	1.630	6.009
104	1389.750	3.685	1.640	6.043
105	1393.440	3.684	1.650	6.078
106	1397.120	3.683	1.660	6.113
107	1400.800	3.681	1.670	6.148
108	1404.480	3.680	1.680	6.183
109	1408.160	3.679	1.690	6.217
110	1411.840	3.678	1.700	6.252
111	1415.520	3.677	1.710	6.287
112	1419.190	3.675	1.720	6.322
113	1422.870	3.674	1.730	6.356
114	1426.540	3.673	1.740	6.391
115	1430.210	3.672	1.750	6.426
116	1433.880	3.671	1.760	6.460
117	1437.550	3.669	1.770	6.495
118	1441.220	3.668	1.780	6.529
119	1444.890	3.667	1.790	6.564
120	1448.560	3.666	1.800	6.598
121	1452.220	3.665	1.810	6.633

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	Product Name	MCS Super DC Charging Socket	File No	XM202410006
	Product No.		Version	A 1

122	1455.890	3.663	1.820	6.667
123	1459.550	3.662	1.830	6.702
124	1463.210	3.661	1.840	6.736
125	1466.870	3.660	1.850	6.770
126	1470.530	3.659	1.860	6.805
127	1474.190	3.657	1.870	6.839
128	1477.840	3.656	1.880	6.873
129	1481.500	3.655	1.890	6.908
130	1485.150	3.654	1.900	6.942
131	1488.810	3.653	1.910	6.976
132	1492.460	3.651	1.920	7.010
133	1496.110	3.650	1.930	7.045
134	1499.760	3.649	1.940	7.079
135	1503.410	3.648	1.950	7.113
136	1507.050	3.646	1.960	7.147
137	1510.700	3.645	1.970	7.181
138	1514.350	3.644	1.980	7.215
139	1517.990	3.643	1.990	7.249
140	1521.630	3.642	2.000	7.283
141	1525.270	3.640	2.010	7.317
142	1528.910	3.639	2.020	7.351
143	1532.550	3.638	2.030	7.385
144	1536.190	3.637	2.040	7.419
145	1539.820	3.636	2.050	7.453
146	1543.460	3.634	2.060	7.487
147	1547.090	3.633	2.070	7.521
148	1550.730	3.632	2.080	7.555
149	1554.360	3.631	2.090	7.588
150	1557.990	3.630	2.100	7.622

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