



PRODUCT SPECIFICATION

1.0 SCOPE

This Product Specification covers Micro-Change, M12 receptacle assembly's with grounded shell and horizontal or vertical mounting.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND SERIES NUMBER: MICRO- CHANGE PCB MOUNT RECEPTACLE
SERIES NUMBER: 130299

2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS
SHELL: DIE-CAST ZINC, TRI-M3 (WHITE BRONZE) PLATING
PANEL NUT: DIE-CAST ZINC, CHROME/NICKEL/NICKEL PLATING

3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

ASSEMBLY DRAWING: E-130299-001, -002, -003, -004
ENGINEERING SPEC: ES-130299-001
PACKAGING SPEC: PK-130299-001

4.0 RATINGS

4.1 VOLTAGE
250Volts AC /DC

4.2 CURRENT
4 Amps

4.3 TEMPERATURE
Operating: -40°C to +85°C (-40°F to 185°F)
Storage: -40°C to +85°C (-40°F to 185°F)

5.0 VISUAL REQUIREMENTS

5.1 EXAMINATION OF PRODUCT
MISSING PARTS
INSERT SEATED INTO RECEPTACLE PER ASSEMBLY DRAWING
CONTACTS SEATED INTO INSERT PER ASSEMBLY DRAWING
BENT OR MISALIGNED CONTACTS
SCRATCHED OR MISSING PLATING

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DOCUMENT NUMBER: PS-130299-001	CREATED / REVISED BY: Randy Stone	CHECKED BY: Joe Muhlbauer	APPROVED BY: Joe Murphy



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6.0 PERFORMANCE REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	TEST METHOD/ACCEPTABILITY
1	Low Voltage Resistance	Mate connectors: apply a maximum voltage of 20 mV and a current of 100 mA	10 mΩ (max. initial) @ 3σ With average <=5Ω J2030 sect. 6.2
2	Insulation Resistance	Using a 1000VDC insulation resistance test device check insulation resistance between adjacent contacts or housing edge	Insulation resistance >20MΩ J2030 sect. 6.3
3	Dielectric Withstanding Voltage	Must withstand two times the rated voltage plus 1000 volts VAC for 1 minute between adjacent terminals and between terminals to ground.	No failures and no leakage IEC 60512-4-1 Except current not greater than 5mA
4	Connection Resistance	Measure voltage drop at specified current based on cable size	Must meet connection resistance per J2030 sect. 6.4
5	Pressure Washing	Mated connector mounted in normal operating position. Test device to provide 100% coverage over exposed surface of mated connection. Pressure: 1020lbf/in ² Flow rate: 150GPH, cycles: 375 @ 40°C (104°F) Using water/detergent mix.	Must pass insulation resistance per sect. 6.2 J2030 sect 6.5 Test method SAE J1455
6	Mating forces	Test for maximum force required to mate the plug and receptacle and engage latching mechanism.	force not to exceed 135N (30.3 lbs) J2030 sect. 6.9

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6.0 PERFORMANCE continued

ITEM	DESCRIPTION	TEST CONDITION	TEST METHOD/ACCEPTABILITY
7	Un-mating forces	Test for maximum force required to un-mate the plug and receptacle and disengage latching mechanism.	force not to exceed 135N (30.3 lbs) J2030 sect. 6.10
8	Salt Fog	Mate connectors: Duration: 96 hours exposure Atmosphere: salt spray from a 5% solution Temperature: 35°C ±3° (95°F ± 37.4°)	Visual: no visible breakdown of plating. Minor discoloration is acceptable Must pass insulation resistance per sect. 6.2 J2030 sect 6.12 or ASTM B117
9	Thermal Shock	10 cycles of: -40°C to 85°C to -40°C (-40°F to 185°F to -40°F)	Must pass insulation resistance per sect 6.2 J2030 sect 6.13
10	Fluid Immersion	Each mated connector is immersed in 1 fluid only. Submerge mated connector in fluid per table 4 in J2030 at specified temp. ±3°C (±37.4°F) for 5 minutes. Remove and air dry for 24 hrs. This equals 1 cycle each connector is subjected to 5 cycles.	No damage J2030 sect 6.14
11	Connector Retention	Apply a pulling force to cable or wire bundle of mating connector at 111N (25 lbs.) times the number of contacts for 30 seconds	Connector must remain connected, no damage to coupler or mating threads J2030 sect. 6.20
12	Mis-mating	Connectors with 2 or more contacts are to be keyed or designed that any intended polarization will not be defeated by improper assembly during installation	Polarization key must resist 40-44N (9-10lbs) axial force J2030 sect. 6.21
13	Visual Examination	Conduct visual examination to detect torn or damaged seals, cracked plastic, charring, melting, arcing or anything that could affect the performance and serviceability of product.	J2030 sect. 6.27

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7.0 Additional mechanical requirements

ITEM	DESCRIPTION	TEST CONDITION	TEST METHOD/ACCEPTABILITY
1	Initial Mate Torque Withstand	Polarization key must withstand an axial force of 1.4 to 1.5 Nm (12.4 to 13.3 in. lbs.)	No damage to key or contacts J2839 sect 4.2.3.21.2
2	Assembly Torque	Install receptacle onto a .125 thick Steel panel and torque panel nut to recommended torque spec. 9.5±1.3 Nm (7.0 ±1 ft. lbs.) Note: mounting face is smooth	No failure of mounting threads Breakaway torque for panel nut to be a minimum of 2.7 Nm (24 in lbs)
3	Water Ingress	Mated connector is submerged under water at a depth of 1M (3.28 ft.) for 30 min (IP X7)	No moisture intrusion IEC 60529, sect 14.2.7
4	Temp Rise	Mated connectors: Measure for temp rise at rated maximum current. Ref. sample: 5C A-code 22 awg	Temperature rise +30° C (86°F)Max. UL 2238 sect. 25
5	Straight pull (axial)	Receptacle must withstand axial pull of 445N (100 lbs.) for 1 min.	No damage to mating interface

8.0 PACKAGING

Parts shall be packaged to protect against damage during handling, transit and storage.

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10.0 QUALIFICATION TEST SEQUENCE (ADDITONAL)

Test Activity (sect X-x)	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7
Initial Mate Torque Withstand (7.1)	1						
Assembly Torque (7.2)	2						
Water Ingress (7.4)		1					
Temp Rise (7.5))			1				
Straight (axial) pull				1			
Visual Examination (6.13)	3	2	2	2	2		

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