



PRODUCT SPECIFICATION

SEALED RECTANGULAR CONNECTOR (SRC) MIXED POWER ASSEMBLY

1.0 SCOPE

This Product Specification covers the SRC Mixed Power and Signal wire-to-wire connector system. This system has a combination of Power and Signal terminals in 7 different modules designated with the letters A to G. Each module contains either 12 Tin plated MX150 Signal Terminals at a standard pitch of 4.0 mm (0.157 inch) and terminated with 0.5 to 2.0mm² (20 to 14 AWG) wires using crimp technology or 3 Tin plated MX150L Power Terminals at a standard pitch of 8.0 mm (0.315 inch) and terminated with 3 to 8mm² (12 to 8 AWG) wires using crimp technology.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND SERIES NUMBER(S)

SRC Mixed Power Male Blade Assembly:	93792/85083
SRC Mixed Power Female Receptacle Assembly:	85084
SRC Male 84 Way / 84 Way 2.5	93288
SRC Female 84 Way / 84 Way 2.5	93287
MX150L Receptacle Terminal:	19434 (Tin)
MX150L Blade Terminal:	19431 (Tin)
MX150 Receptacle Terminal:	33012 (Tin)
MX150 Blade Terminal:	33000 (Tin)
MX150 Cavity Plug:	343450001
SRC Power Blind Cavity Plug:	937320001

2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

Housings:	Polystyrene/Nylon Blend, Glass filled, UL 94 HB
Seals:	Silicone Rubber
MX150 Cavity Plug:	Polybutylene Terephthalate, Glass filled, UL 94 HB
SRC Power Blind Cavity Plug:	Polybutylene Terephthalate, Glass filled, UL 94 V-0
Female Receptacle Terminal:	Copper Alloy
Male Blade Terminal:	Copper Alloy

2.3 SAFETY AGENCY APPROVALS

UL File Number:	Not Applicable
CSA File Number:	Not Applicable
TÜV License Number:	Not Applicable

3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

937921000 PSD	SRC Male Mixed Power Sales Drawing
850830300 PSD	SRC Male Mixed Power Sales Drawing
850840700 PSD	SRC Female Mixed Power Sales Drawing
932880001 PSD	SRC Male 84 Way / 84 Way 2.5 Sales Drawing
932870001 PSD	SRC Female 84 Way / 84 Way 2.5 Sales Drawing
850700010 PSK	SRC Female Packaging Specification
850710010 PSK	SRC Male Packaging Specification
937921000 PSK	SRC Male Packaging Specification
SD-19431-00*	MX150L Male Blade Terminal Sales Drawings
SD-19434-00*	MX150L Female Receptacle Terminal Sales Drawings
SD-33000-001	MX150 Male Blade Terminal Sales Drawing
SD-33012-002	MX150 Female Receptacle Terminal Sales Drawing

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SD-34345-001 MX150 Cavity Plug Sealed Sales Drawing
 937320001 PSD SRC Power Blind Cavity Plug Sales Drawing

4.0 RATINGS

4.1 VOLTAGE

500 Volts DC Maximum

4.2 CURRENT AND APPLICABLE WIRES

The current rating is dependent on the combination of Signal and Power terminals and their location, connector size, ambient temperature, terminal size and related factors. Actual maximum current rating is application dependent and shall be evaluated for each use.

4.3 TEMPERATURE

Operating: - 40°C to + 125°C
 Non-operating: - 40°C to + 125°C

5.0 PERFORMANCE

5.1 VISUAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
1	Visual Examination IEC 512-2-1a	Parts checked for: Identification, Workmanship Finish, Markings, Cosmetic issues, Tool marks, etc.	Meets requirements of product drawing. All parts shall be free of hazardous substances. All parts to be free of dirt and grease. No Defects

5.2 ELECTRICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
2	Contact Resistance (Low Level) EIA-364-23B	Mate connectors: apply a maximum voltage of 20 mV and a current of 100 mA. (Measurement locations in Section 8.1)	10 milliohms (MX150) 30 milliohms (MX150L) MAXIMUM [initial]
3	Contact Resistance @ Rated Current	Mate connectors: apply a maximum voltage of 20 mV at rated current. (Measurement locations in Section 8.1)	10 milliohms (MX150) 30 milliohms (MX150L) MAXIMUM [initial]
4	Insulation Resistance EIA-364-21D	Un-mate & unmount connectors: apply a voltage of 500 VDC between adjacent terminals and between terminals to ground.	20 Megaohms MINIMUM
5	Temperature Rise (via Current Cycling) SAE/USCAR-2, 5.3.4	Mate terminals: measure the temperature rise at the rated current after: 1008 hours of bench top testing (45 minutes ON and 15 minutes OFF per hour).	Temperature rise over ambient: +55°C MAXIMUM

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5.3 MECHANICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT	
6	Terminal Insertion and Withdrawal Forces	Insert and withdraw terminal (male to female) at a rate of 50 ± 6 mm ($2 \pm \frac{1}{4}$ inches) per minute.	MX150	MX150L
			MAXIMUM INSERTION	
			5 N	15 N
			MINIMUM WITHDRAWAL	
			1 N	9 N
7	Connector Mate and Un-mate Forces EIA-364-13D	Mate and un-mate connector (male to female) at a rate of 50 ± 6 mm ($2 \pm \frac{1}{4}$ inches) per minute.	250 N MAXIMUM	
8	Terminal Retention Force (in Housing) EIA-364-29C	Axial pull-out force on the terminal in the housing at a rate of 25 ± 6 mm ($1 \pm \frac{1}{4}$ inches) per minute.	50 N (MX150) 111 N (MX150L) MINIMUM	
9	Terminal Insertion Force (into Housing)	Apply an axial insertion force on the terminal at a rate of 25 ± 6 mm ($1 \pm \frac{1}{4}$ inches).	30 N MAXIMUM	
10	Polarisation Feature Effectiveness USCAR-2, 5.4.4	Attempt to mate connectors per orientations described in Section 8.2	220 N MAXIMUM	
11	Terminal Position Assurance (TPA) Insertion Force	Insert the Front Cover TPA (per Section 8.3) from the preload position to the final position at a rate of 50 ± 6 mm ($2 \pm \frac{1}{4}$ inches) per minute.	130 N MAXIMUM	
12	Terminal Position Assurance (TPA) Retention Force	Extract the Front Cover TPA (per Section 8.3) from the final position to the preload position at a rate of 50 ± 6 mm ($2 \pm \frac{1}{4}$ inches) per minute.	130 N MAXIMUM	
13	Shock (Mechanical) SAE J2030, 6.16	Mate connectors and shock at 50 g with $\frac{1}{2}$ sine wave (11 milliseconds) shocks in the $\pm X$, $\pm Y$, $\pm Z$ axes (10 shocks total).	10 milliohms MAXIMUM (change from initial contact resistance) & No discontinuity > 1 microsecond with a current of 100 mA	
14	Vibration SAE J2030, 6.15	Mate connectors; Sine sweep of 10 to 2,000 Hz, 1.78 mm displacement, 20 g acceleration maximum for 24 hours.	10 milliohms MAXIMUM (change from initial contact resistance) & No discontinuity > 1 microsecond with a current of 100 mA	

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5.3 MECHANICAL REQUIREMENTS (continued)

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
15	Durability between Male and Female connectors EIA-364-09	Cycle parts by hand to 25 cycles.	20 milliohms MAXIMUM (change from initial contact resistance) & Visual: No Damage

5.4 ENVIRONMENTAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT						
16	Shock (Thermal) SAE J2030, 6.13	Mate connectors; expose to 10 cycles of: <table border="1"> <tr> <td>Temperature °C</td> <td>Duration (Minutes)</td> </tr> <tr> <td>- 55 +0/-5</td> <td>30</td> </tr> <tr> <td>+125 +5/-0</td> <td>30</td> </tr> </table>	Temperature °C	Duration (Minutes)	- 55 +0/-5	30	+125 +5/-0	30	20 milliohms MAXIMUM (change from initial contact resistance) & Visual: No Damage
Temperature °C	Duration (Minutes)								
- 55 +0/-5	30								
+125 +5/-0	30								
17	Temperature/ Humidity (Cyclic) SAE J2030, 6.24	Mated connectors 24 hours as per details in Section 8.4 42 cycles	20 milliohms MAXIMUM (change from initial contact resistance) & Isolation Resistance of 20 Megaohms @ 500 VDC MINIMUM & Visual: No Damage						
18	Salt Spray SAE J2030, 6.12	Mated connectors Duration: 96 hours exposure; Atmosphere: salt spray from a 5% by weight solution; Temperature: 35 +1/-2°C; Allow to dry for 4 hours.	20 milliohms MAXIMUM (change from initial contact resistance) & Visual: No Damage						
19	Fluid Resistance SAE J2030, 6.12	Submerge mated connectors for 5 cycles of 5 minutes in the following fluids: motor oil, brake fluid, diesel fuel, gear oil, 50/50 anti-freeze mixture and Roundup original.	Visual: No Damage [†]						
20	IP 69K DIN 40050-9	IP 6X – expose mated connectors to suspended dust under pressure IP X9K – expose mated connectors to water from any direction at high temperature and pressure	According to ISO 20653						

†: Due to propensity for silicone rubber sealing materials to expand in volume as a result of absorption of diesel fuel, the use of SRC connectors in areas with high levels of exposure to diesel and similar fluids is not recommended. The diesel test in this instance is to be documented for completeness purposes only and partial lifting of the rear cover should not be considered as a failure of the connector in relation to the overall testing.

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6.0 QUALIFICATION TEST GROUPS AND SEQUENCES

No	Item	Test Group							
		A	B	C	D	E	F	G	H
1	Visual inspection	1,5	1	1	1	1,3	1,5	1,3	1
2	Contact resistance (low level)		2,5	2,5,7	2,4				2,5,7
3	Contact resistance at rated current	2,4							
4	Insulation resistance			3,8			2,4		3,8
5	Temperature rise	3							
6	Terminal insertion/extraction							2	
7	Connector mate/un-mate							2	
8	Terminal retention force in housing							2	
9	Terminal insertion force into housing							2	
10	Polarization feature effectiveness							2	
11	TPA insertion force							2	
12	TPA extraction force							2	
13	Mechanical Shock		3						
14	Vibration		4						
15	Durability								4
16	Thermal Shock			4					
17	Temperature humidity			6					6
18	Salt Spray				3				
19	Fluid resistance					2			
20	IP69K						3		

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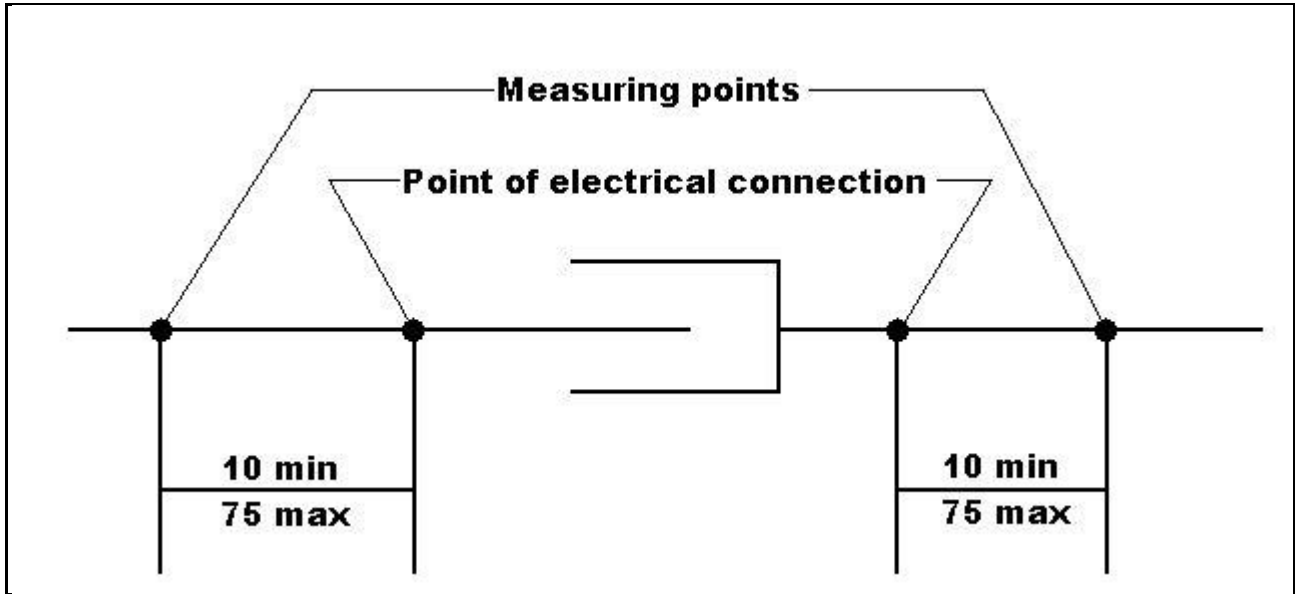
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7.0 PACKAGING

Parts shall be packaged to protect against damage during handling, transit and storage; reference the appropriate Packaging Specification.

8.0 PRODUCT DESCRIPTION

8.1 CONTACT RESISTANCE MEASUREMENT



Notes:

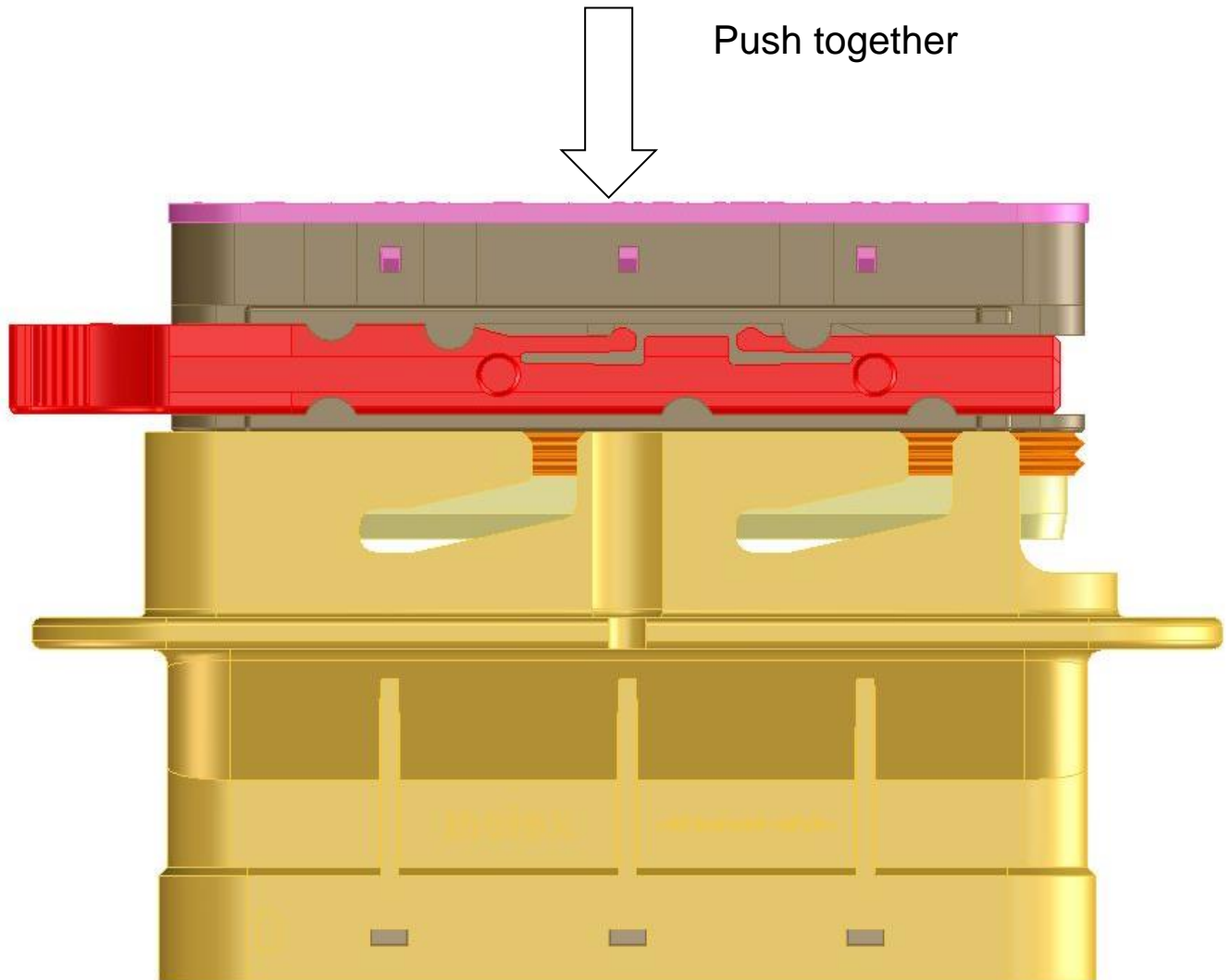
1. All dimensions are in millimetres
2. Measuring points are on the cable
3. Points of electrical connection are typically the joint of the cable to the terminal

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8.2 POLARISATION EFFECTIVENESS – TEST ORIENTATIONS



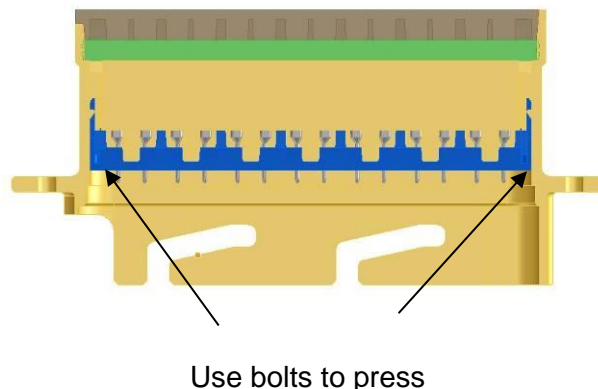
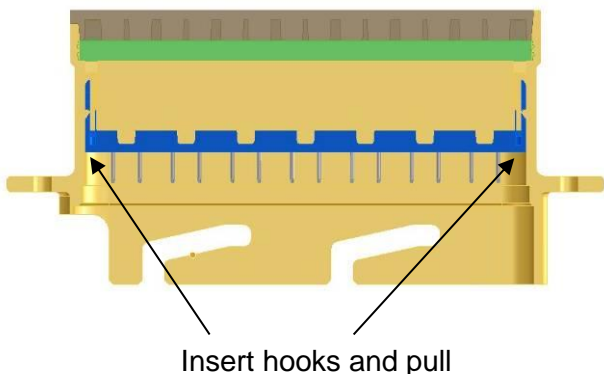
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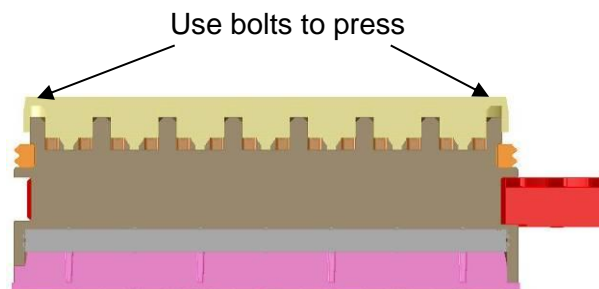
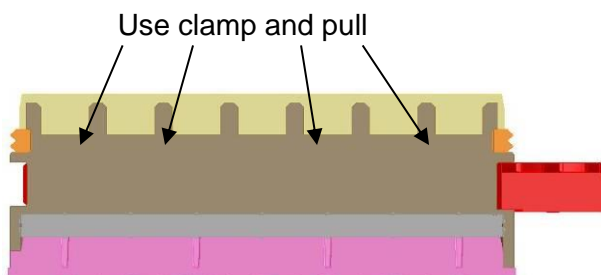
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8.3 METHODS TO MEASURE THE TPA INSERTION AND RETENTION FORCES

8.3.1 Male Side



8.3.2 Female Side



8.4 TEMPERATURE / HUMIDITY CYCLING

Test samples to be placed in a temperature/humidity chamber and shall be subjected to **42** cycles described as follows:

- Chamber temperature raised to + **55°C** at **3°C/min ± 1°C/min**.
- Chamber held for **16** hours at a relative humidity of **95% ± 5%**
- Chamber temperature lowered to - **55°C** at **3°C/min ± 1°C/min**.
- Chamber held for **2** hours
- Chamber temperature raised to + **125°C** at **3°C/min ± 1°C/min**.
- Chamber held for **2** hours
- Chamber temperature lowered to + **25°C** at **3°C/min ± 1°C/min**.
- Chamber held for remainder of **24** hour cycle

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