



PRODUCT SPECIFICATION

MLX SRC HEAVY DUTY CONNECTOR SYSTEM

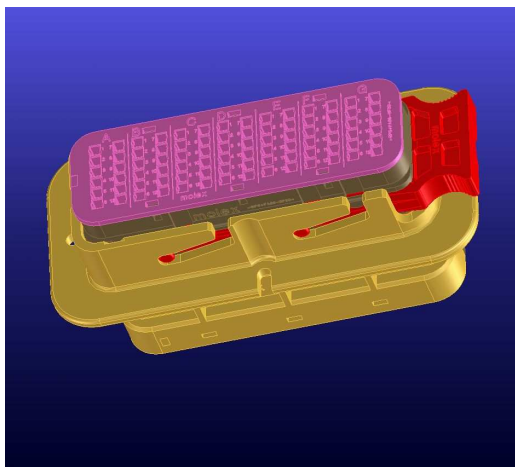


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DOCUMENT NUMBER:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:
PS-85070-001	Thorsten Vogt	Richard Siller	Franz Pacher

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1.0 SCOPE

This specification covers the MLX SRC product line. THE Standard Pitch of 4.00 mm (0.157 inch) is terminated with 22 to 14 AWG wire using crimp technology with tin or select gold plated terminals.

The high current option with a Pitch of 8.00 mm (0.315 inch) is terminated with 12 to 8 AWG Wire using crimp technology with tin plated terminals.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND SERIES NUMBER (S)

A. FEMALE CONNECTOR

I. Connector assembly:	85070-0500
II. Female terminal AWG 22 to 14	
1. Tin	33012
2. Gold	33001
III. Female terminal AWG 12 to 8	
1. Tin	19434

B. MALE CONNECTOR

I. Connector assembly:	85071-0100
II. Male terminal AWG 22 to 14	
1. tin	33000
2. gold	33011
III. Male terminal AWG 12 to 8	
1. Tin	19431

C. UNUSED CAVITY CIRCUIT PLUG

AWG 22 to 14	34345-0001
AWG 12 to 8	19431-0013

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2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

A. HOUSINGS;

Receptacle --- 20% glass filled SPS / nylon blend

Blade --- 20% glass filled SPS / nylon blend

Blind plug --- glass filled PBT (100% regrind)

B. TERMINALS;

- I. Tin receptacle terminal --- Copper alloy c19025 (0.25)/ .010" thick. plating – advanced tin barrier underplate 10/40 micro inches thick. Tin reflow overplate 20/40 micro inches.
- II. Gold receptacle terminal --- Copper alloy c19025 (0.25)/ .010" thick. plating – advanced tin barrier underplate 20/30 micro inches thick. plating contact area – gold overplate 30 micro inches minimum. crimp area – nickel underplate 5/20 microinches. electrodeposited Tin overplate 100/160 micro inches.
- III. Tin blade terminal --- Copper alloy c19025 (0.30)/ .012" thick. plating – advanced tin barrier underplate 10/40 micro inches thick. Tin reflow overplate 20/40 micro inches.
- IV. Gold blade terminal --- Copper alloy c19025 (0.30)/ .012" thick. plating – advanced tin barrier underplate 20/30 micro inches thick. plating contact area – gold overplate 30 micro inches minimum. crimp area – nickel underplate 5/10 microinches. electrodeposited Tin overplate 100/160 micro inches.

2.3 SAFETY AGENCY APPROVALS

UL FILE NUMBER	NOT APPLICABLE
CSA FILE NUMBER	NOT APPLICABLE
TUV LICENSE NUMBER	NOT APPLICABLE

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3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

A. MLX SRC FEMALE ASSEMBLY 84 PIN
SALES DRAWING SD-85070-050

B. MLX SRC MALE ASSEMBLY 84 PIN
SALES DRAWING SD-85071-010

4.0 RATINGS

4.1 VOLTAGE

≤ 500 VDC

4.2 CURRENT

Current is dependant on connector size, ambient temperature, blade size and related factors.
Actual maximum current rating is application dependent and should be evaluated for each use.

A. TERMINALS AWG 22 - 14:

AWG	Amperes
22	10
20	12.5
18	15
16	17
14	18

B. TERMINALS AWG 12 - 10 : 30.0 AMPERES

C. TERMINALS AWG 8 : 40.0AMPERES

4.3 TEMPERATURE

Operating: -40°C to + 125 °C

Non operating: -40°C to + 125 °C

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5.0 PERFORMANCE

5.1 ELECTRICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
1	Contact Resistance (Low Level) <i>EIA-364-23B</i>	Mate connectors: limiting the open circuit voltage of 20 mV and a maximum current of 100 mA . See appendix 1 for set up.	10 mΩ Maximum (initial)
2	Contact Resistance @ Rated Current	Mate connectors: apply rated current, measure mV drop across mated terminals. See appendix 1 for set up.	10 mΩ Maximum
3	Insulation Resistance <i>EIA-364-21D</i>	Apply a voltage of 500 VDC between adjacent terminals and between terminals to ground.	20 MΩ Minimum
4	Temperature Rise (via Current Cycling) <i>SAE/USCAR-2, section 5.3.4</i>	Mate terminals: measure the temperature rise at the rated current after: 1008 hours of benchtop testing (45 minutes ON and 15 minutes OFF per hour).	Temperature rise over Ambient: +55 C° Maximum

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5.2 MECHANICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
5	Terminal Insertion and Extraction Forces	Insert and withdraw terminal (male to female) at a rate of 50 ± 6 mm (2 ± ¼ inch) per minute.	5 N Maximum
6	Connector Mate and Unmate Forces <i>EIA-364-13D</i>	Mate and unmate connector (male to female) at a rate of 50 ± 6 mm (2 ± ¼ inch) per minute.	250 N Maximum
7	Terminal Retention Force (in Housing) <i>EIA-364-29C</i>	Axial pullout force on the terminal in the housing at a rate of 50 ± 6 mm (2 ± ¼ inch) per minute.	50 N Minimum
8	Terminal Insertion Force (into Housing)	Apply an axial insertion force on the terminal at a rate of 50 ± 6 mm (2 ± ¼ inch) .	30 N Maximum
9	Polarization Feature Effectiveness <i>USCAR-2, 5.4.4</i>	Secure connector halves to tensile tester. Attempt to mate connectors in orientations shown in appendix 2.	220 N Maximum force to be applied
10	Terminal Position Assurance (TPA) Insertion Force (into housing)	Measure the force to insert the TPA from the preload (as shipped) position to the final position at a rate of 50 ± 6 mm (2 ± ¼ inch) . See appendix 3 for test set up.	130 N Maximum
11	Terminal Position Assurance (TPA) Extraction Force (in housing)	Measure the force to extract the TPA from the final position to the preload position (as shipped) at a rate of 50 ± 6 mm (2 ± ¼ inch) . See appendix 3 for test set up.	130 N Maximum
12	Mechanical Shock <i>SAE J2030, 6.16</i>	10 cycles of ½ sine pulses, 50g, 11ms duration X,Y,Z. Monitor for discontinuity ≥ 1µs @100mA	20 mΩ Maximum change in contact resistance
13	Vibration <i>SAE J2030, 6.15</i>	Sine sweep 10 to 2000Hz, 1.78mm displacement, 20g max acceleration. 24h duration. Monitor for discontinuity ≥ 1µs @100mA	20 mΩ Maximum change in contact resistance

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5.3 ENVIROMENTAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT						
14	Thermal Shock <i>SAE J2030, 6.13</i>	Mate connectors; expose to 10 cycles of: <table><tr><td><u>Temperature °C</u></td><td><u>Duration (Minutes)</u></td></tr><tr><td>-55 +0/-5</td><td>30</td></tr><tr><td>+125 +5/-0</td><td>30</td></tr></table>	<u>Temperature °C</u>	<u>Duration (Minutes)</u>	-55 +0/-5	30	+125 +5/-0	30	20 mΩ Maximum change in contact resistance
<u>Temperature °C</u>	<u>Duration (Minutes)</u>								
-55 +0/-5	30								
+125 +5/-0	30								
15	Temperature/ Humidity <i>SAE J2030, 6.24</i>	Mate connectors and subject connector system to 42 cycles as per appendix	20 mΩ Maximum change in contact resistance Isolation Resistance of 20 Megohms @ 500 VDC MINIMUM						
16	Salt Fog <i>SAE J2030, 6.12</i>	Mate the connector and submerge in a fine mist of 5% by wgt salt solution for 96 hours at 35°C. Allow to air dry for 4 hours	20 mΩ Maximum change in contact resistance						
17	Fluid Resistance <i>SAE J2030, 6.12</i>	Submerge connector assemblies in the following fluids: Motor oil, Brake fluid, Diesel fuel, 50/50 antifreeze mixture, Roundup Original, Gear oil for 5 cycles of 5 minutes	Inspect for damage Isolation Resistance of 20 Megohms @ 500 VDC MINIMUM						
18	IP 69K <i>DIN 40050-9</i>	IP6X - Expose connectors to suspended dust under pressure IPX9 – Expose mated connector to water from any direction under extreme pressure/ steam jet cleaner	According to ISO 20653						

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6.0 QUALIFICATION TESTING

Item	Test Group						
	A	B	C	D	E	F	G
Visual inspection	1,5	1	1	1	1,3	1,5	1,3
Contact resistance (low level)		2,5	2,5,7	2,4			
Contact resistance at rated current	2,4						
Insulation resistance			3,8			2,4	
Temperature rise	3						
Terminal insertion/extraction							2
Connector mate/unmate							2
Terminal retention force in housing							2
Terminal insertion force into housing							2
Polarization feature effectiveness							2
TPA insertion force							2
TPA extraction force							2
Mechanical Shock		3					
Vibration		4					
Thermal Shock			4				
Temperature humidity			6				
Salt Spray				3			
Fluid resistance					2		
IP69K						3	

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7.0 PACKAGING

Parts shall be packaged to protect against damage during handling, transit and storage.
Please refer to packaging spec.: PK 85070-001 (Female); PK 85071-001 (Male)

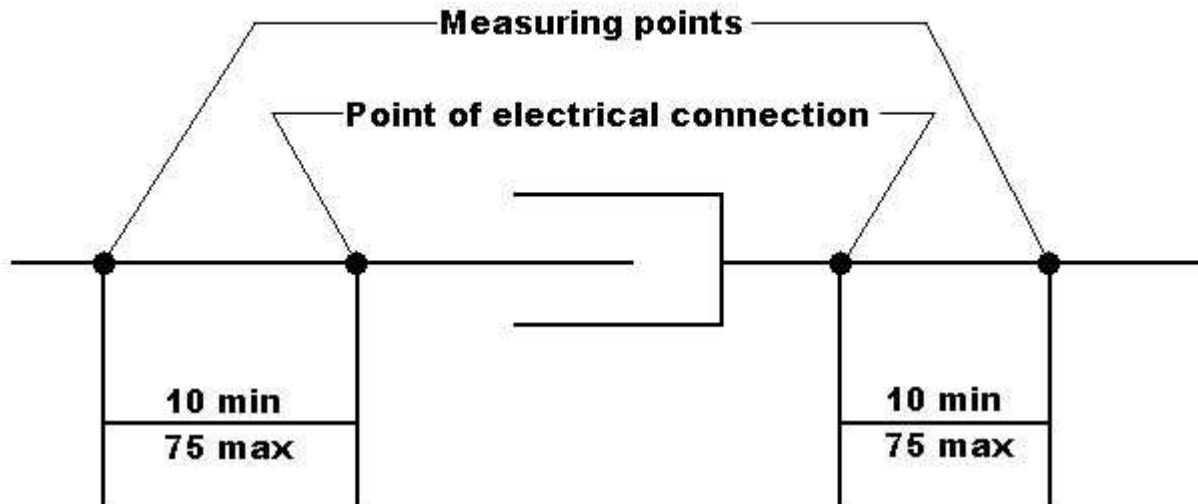
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Appendix 1: Contact resistance measurement



Notes:

- All dimensions are in millimeter
- Measuring points are on the cable
- Points of electrical connection are typically the joint of the cable to the terminal

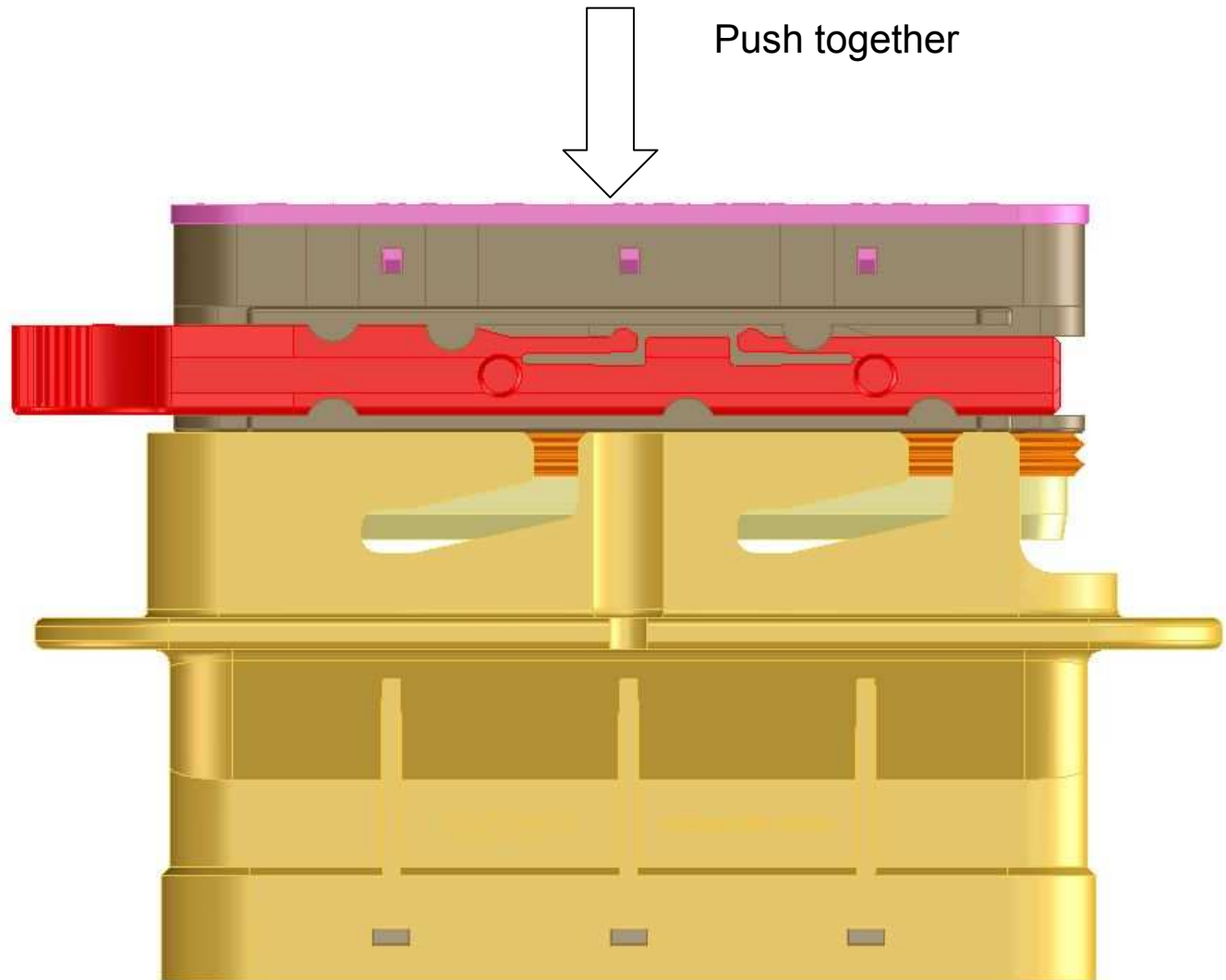
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Appendix 2: Polarization effectiveness – test orientations

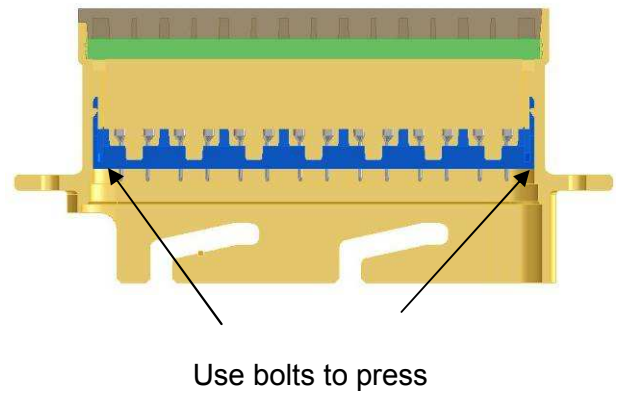
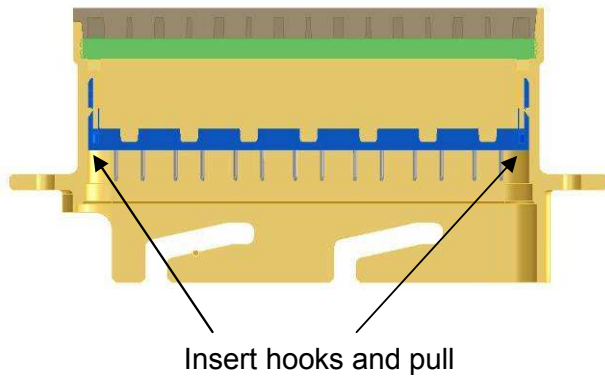


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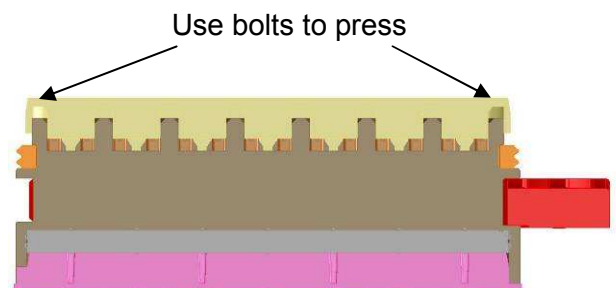
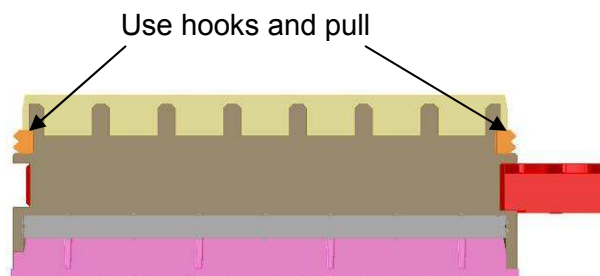
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Appendix 3: Methods to measure the TPA force of insertion and retention.

A. MALE SIDE



B. FEMALE SIDE



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Appendix 4: Temperature/humidity cycling

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

- a. Chamber temperature raised to 55°C at 3°C/min \pm 1°C/min.
- b. Chamber held for 16 h at a relative humidity of 95% \pm 5%.
- c. Chamber temperature lowered to -55°C at 3°C/min \pm 1°C/min.
- d. Chamber held for 2 h.
- e. Chamber temperature raised to 125°C at 3°C/min \pm 1°C/min.
- f. Chamber held for 2 h.
- g. Chamber temperature lowered to 25°C at 3°C/min \pm 1°C/min.
- h. Chamber held for remainder of 24h cycle.

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