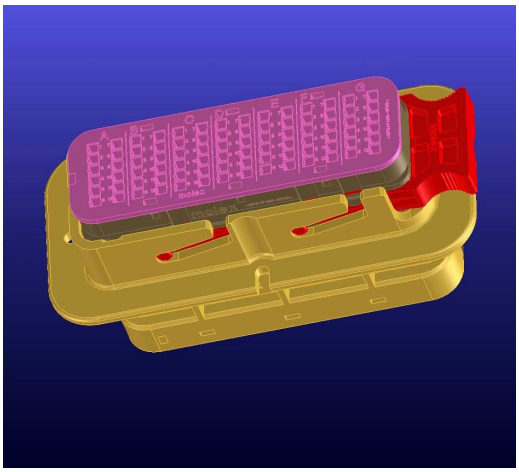
PRODUCT SPECIFICATION

MLX SRC HEAVY DUTY CONNECTOR SYSTEM



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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

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**

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

5.0 PERFORMANCE

5.1 ELECTRICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
1	**Contact Resistance (Low Level)** ***EIA-364-23B***	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** ***EIA-364-21D***	Apply a voltage of **500** VDC between adjacent terminals and between terminals to ground.	**20** MΩ Minimum
4	**Temperature Rise (via Current Cycling)** ***SAE/USCAR-2, section 5.3.4***	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** Cº Maximum

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** ***EIA-364-13D***	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)** ***EIA-364-29C***	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** ***USCAR-2, 5.4.4***	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** ***SAE J2030, 6.16***	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** ***SAE J2030, 6.15***	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

5.3 ENVIROMENTAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
14	**Thermal Shock** ***SAE J2030, 6.13***	Mate connectors; expose to **10** cycles of: Temperature °C Duration (Minutes) **-55 +0/-5 30** **+125 +5/-0 30**	**20** mΩ Maximum change in contact resistance
15	**Temperature/ Humidity** ***SAE J2030, 6.24***	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** ***SAE J2030, 6.12***	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** ***SAE J2030, 6.12***	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** ***DIN 40050-9***	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

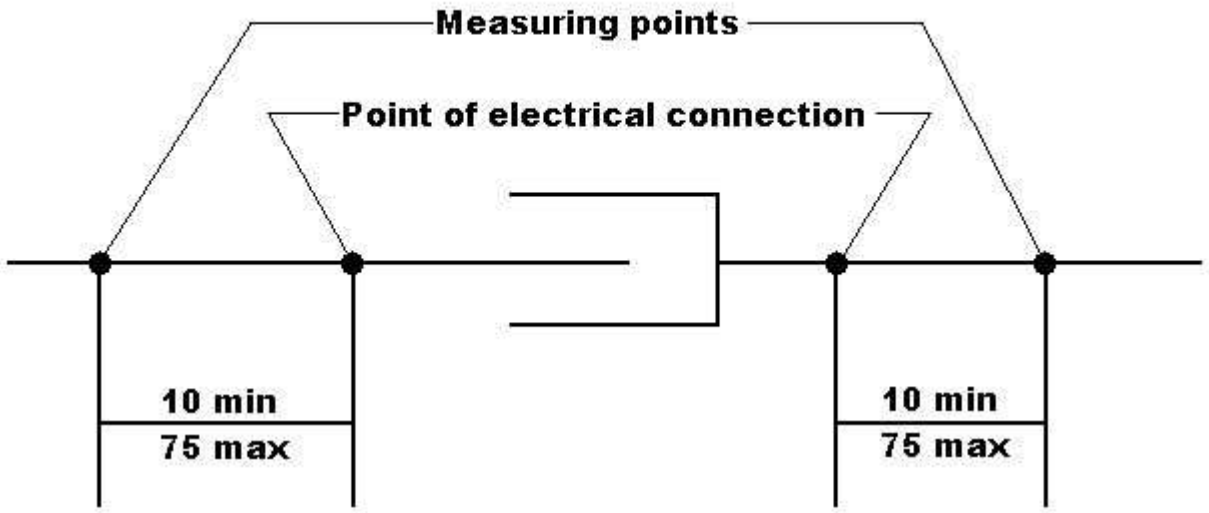
6.0 QUALIFICATION TESTING

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	

7.0 PACKAGING

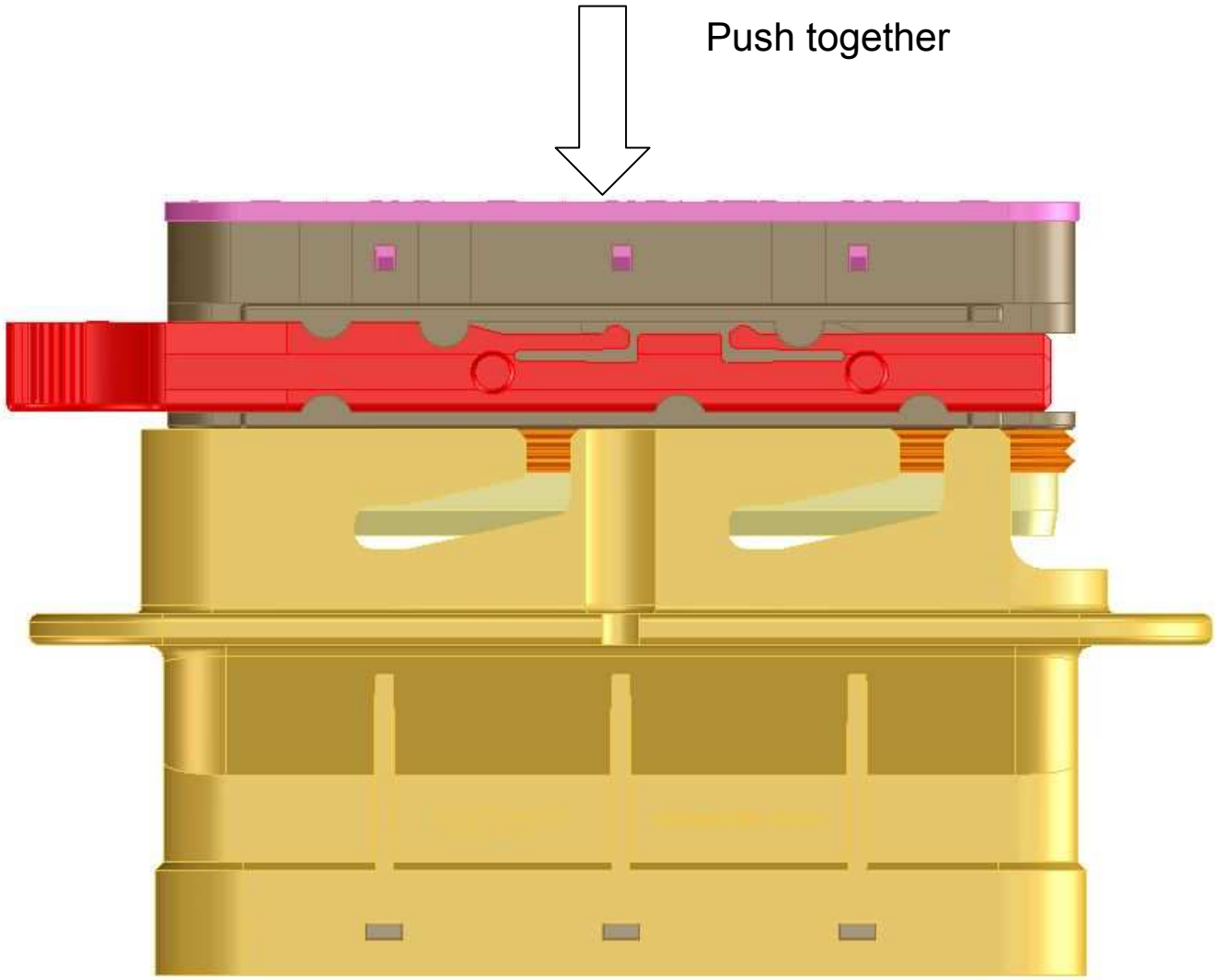
Parts shall be packaged to protect against damage during handling, transit and storage.
Please refer to packaging spec.: PK 85070-001 (Female); PK 85071-001 (Male)

Appendix 1: Contact resistance measurement



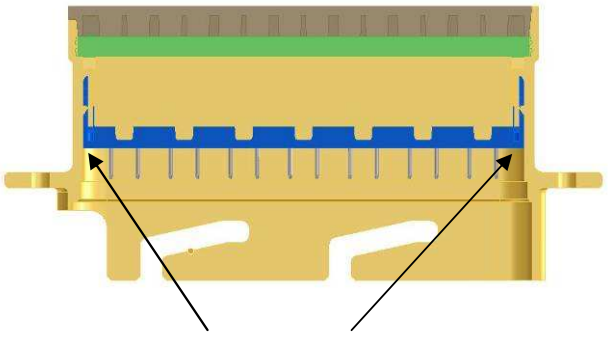
Notes:
- All dimensions are in millimeter
- Measuring points are on the cable
- Points of electrical connection are typically the joint of the cable to the terminal

Appendix 2: Polarization effectiveness – test orientations

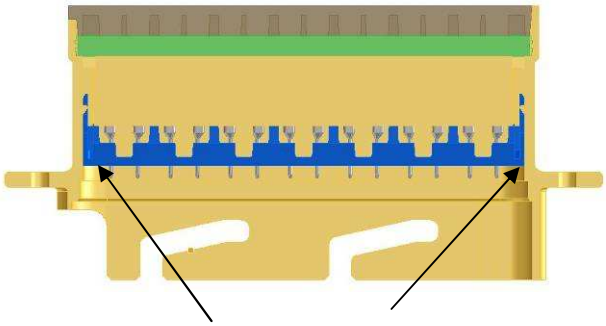


Appendix 3: Methods to measure the TPA force of insertion and retention.

A. MALE SIDE



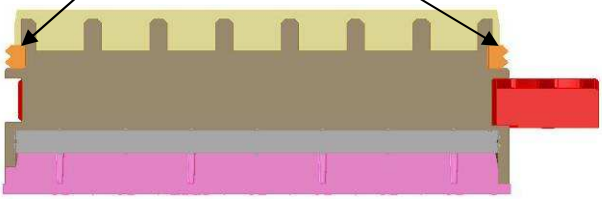
Insert hooks and pull



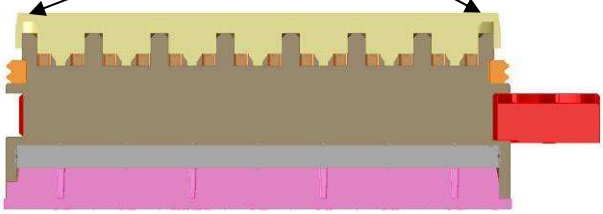
Use bolts to press

B. FEMALE SIDE

Use hooks and pull



Use bolts to press



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