TABLE OF CONTENTS

1.0 SCOPE

This specification is intended to define the mechanical, electrical and environmental requirements for the SL .100" (2.54) pitch modular, single row wire-to-board and wire-to-wire system.

SL is designed for high density signal applications. The system includes: low profile latching vertical and right angle headers; low profile housings for male and female crimp terminals; pre-assembled, single piece pin and receptacle connectors for Insulation Displacement Technology (IDT); panel mounts for modular wire-to-wire remote interconnections; and SL offers design flexibility and automated harness-making capabilities when combined with our tooling.

2.0 *PRODUCT DESCRIPTION:*

2.1 The following Series are covered by this product specification:

70021, male, crimp terminal
70058, female box, crimp terminal
71851, female box, high force crimp terminal
70066 & 70107, single row, crimp housing
70450 & 74130, dual row, crimp housing
70400, female, single row, insulation displacement, connector assembly
70475 & 71178 ,male, single row, insulation displacement, connector assembly

Headers:
70541, single row, .120" pocket, wire-to-board, shrouded header, vertical, split peg
70543, single row, .120" pocket, wire-to-board, shrouded header, vertical
70545, single row, .120" pocket, wire-to-board, shrouded header, vertical, tri-peg
70546, single row, .120" pocket, wire-to-board, shrouded header, vertical, tri-peg
70551, single row, .120" pocket, wire-to-board, shrouded header, right angle, split peg
70553, single row, .120" pocket, wire-to-board, shrouded header, right angle
70555, single row, .120" pocket, wire-to-board, shrouded header, right angle, tri-peg
70556, single row, .120" pocket, wire-to-board, shrouded header, right angle, tri-peg
70563, single row, .180" pocket, wire-to-board, shrouded header, vertical
70564, single row, .180" pocket, wire-to-board, shrouded header, vertical
70566, single row, .180" pocket, wire-to-board, shrouded header, vertical, tri-peg
70571, single row, .180" pocket, wire-to-board, shrouded header, right angle, board snaps
70575, single row, .180" pocket, wire-to-board, shrouded header, right angle, tri-peg
70634, single row, .120" pocket, wire-to-board, shrouded header, right angle, tri-peg, SMT
71164, single row, .120" pocket, wire-to-board, shrouded header, voided circuits
74095, single row, .120" pocket, wire-to-board, shrouded header, vertical, compliant pin
74098, single row, .120" pocket, wire-to-board, shrouded header, right angle, split peg, SMT
74099, single row, .120" pocket, wire-to-board, shrouded header, vertical, SMT
74105, single row, .120" pocket, wire-to-board, shrouded header, right angle, SMT

2.2 DIMENSIONS, MATERIALS AND SPECIFICATIONS:

2.2.1 Mating Pin Height

2.2.1.1 Maximum mating pin height: .320” (8.13 mm)
2.2.1.2 Minimum mating pin height: .200” (5.08 mm)

2.2.2 Centerline spacing (pitch): .100” (2.54 mm)

2.2.3 Wire Sizes:
For IDT: #22 - #28 AWG stranded wire, with an insulation diameter of .053” (1.35 mm) max.
For Crimp: #22-#36 AWG wire. See Termination Application Specs for insulation diameter requirements

2.2.4 Molex cable: 7307, 7767, 8996, 8997, 24226, 24241, 24369 and 24389.

2.2.5 Termination Method:

2.2.5.1 Crimp (70021, 70058, 71851)
2.2.5.2 IDT (70400, 70475)
2.2.5.3 Header
2.2.5.3.1 Thru Hole: Wave Solder
2.2.5.3.2 SMT: Reflow
2.2.5.3.3 Compliant: N/A

2.2.6 Housings:
(70066, 70450, 70107, 74130): Black Glass Filled Polyester, UL 94V-0
Header: Black Glass Filled Polyester, UL 94V-0

2.2.7 Terminals: (70021, 70058, 71851): Phosphor Bronze

2.2.8 Pins: Phosphor Bronze

2.2.9 Plating: Gold and Tin

2.2.9.1 Gold: 30 microinches minimum Gold in select area over Nickel overall with 75 microinches Tin in select area over Nickel overall
or
Gold: 15 microinches minimum Gold in select area over Nickel overall with 75 microinches Tin in select area over Nickel overall
2.2.9.2 Tin: 150 microinches minimum Tin over Nickel overall.

See the appropriate Sales Drawing(s) for additional information on dimensions, materials, platings, and markings.

2.3 SAFETY AGENCY APPROVALS:

UL File Number E29179
CSA File Number LR19980

3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS:

All documents referenced shall be of the latest revision. The order of precedence shall be as follows.

- Product Drawings
- This product specification
- Reference documents

3.1 REFERENCE DOCUMENTS:

- EIA 364 Electronic Industries Association, Recommended Standard
- MIL-STD-202: Test methods for electronics and electrical component parts.
- UL-94: Tests for flammability of plastic material

4.0 RATINGS:

4.1 VOLTAGE:

250 V

4.2 CURRENT:

1.2 A - 28 AWG
1.8 A - 26 AWG
3.0 A - 24 AWG
3.0 A - 22 AWG

4.2 TEMPERATURE:

Operating: -40 °C to +105 °C
Non-Operating -40 °C to +105 °C
Processing Temperature for Headers: 260°C Maximum for Thru Hole Wave solder only
245°C Maximum for IR reflow SMT and Thru Hole Paste

5.0 PERFORMANCE:

Note: For Specifications of individual Terminals and un-mated Headers please see their respective Product Specs:

PS-70021 – Male, crimp terminal
PS-70058 – Female box, crimp terminal
PS-71851 – Female box, high force crimp terminal
PS-70541 – Vertical and Right Angle Headers
PS-70495 – Compliant Header

5.1 ELECTRICAL PERFORMANCE:

Item	Test Condition	Requirement
Contact Resistance (Low Level)	Mate Connectors with a maximum voltage of 20mV and a current of 100 mA.	**30** milliohm Maximum Initial
Insulation Resistance	Mate Connectors with a voltage of 500 VDC between adjacent terminals and between terminals and ground.	**10000** Megohms Minimum
Dielectric Withstanding Voltage	Mate Connectors with a voltage of 1500 VAC for 1 minute between adjacent terminals and between terminals and ground. Or Mate Connectors with a voltage of 500 VDC for 1 minute between adjacent terminals	No breakdown
Voltage Drop	Mate Connectors with a current of 3 amps and the open circuit voltage set to not exceed 15 VDC. Power is applied for a minimum of 30 seconds before the first measurement	**30** millivolt Maximum Initial
Voltage Drop after Vibration	Subject mated connectors to a total of 8 hours of simple harmonic motions. (Apply 4 hours in the Z axis and 2 hours in each of the X and Y axes). Vary the frequency uniformly from 10 Hz to 50 Hz traversed continuously in 8 minutes	**30** millivolt Maximum Initial & **60** millivolt Maximum After Endurance Exposure

Item	Test Condition	Requirement
Voltage Drop after Heat Resistance	Place mated connectors in an air circulating chamber oven exposed to a temperature of 100 degrees for 120 hours.	**30** millivolt Maximum Initial & **60** millivolt Maximum After Endurance Exposure
Voltage Drop after Cold Resistance	Place mated connectors in an air circulating chamber exposed to a temperature of -40°C for 120 hours.	**30** millivolt Maximum Initial & **60** millivolt Maximum After Endurance Exposure
Voltage Drop after Dust Proofness	Place mated connectors 150mm from the walls of a chamber that measure 1000 mm in length, width, and height. Approximately 1.5kg of Portland cement is to be diffused at a rate of 10 seconds per 15 minutes by blowing air onto it. Expose for 1 hour	**30** millivolt Maximum Initial & **60** millivolt Maximum After Endurance Exposure
Leak Current	Apply a potential of 13 volts DC across the adjacent contacts of a mated pair. After 60 seconds, measure the initial leakage current. Place mated pair in a thermostatic chamber at a temperature of 60±5° C and a humidity level of 90-95% for one hour	**10** microamps Maximum Initial & **1** milliamp Maximum Post Environmental
Capacitance	Measure between adjacent terminals at **1** MHz. (Loaded: 50 ohms impedance)	Loaded: **2** picofarad maximum Unloaded: **0.5** picofarad maximum

5.2 MECHANICAL PERFORMANCE:

Item	Test Condition	Requirement
Terminal Insertion and Withdrawal Forces	Insert and withdraw a terminal (male to female) at a rate of 25 ± 6mm (1 ± 1/4 inch) per minute.	70058 - Insertion force shall be **4.45** N (**1.0** lb) maximum and withdrawal **0.56** N (**0.125** lb) minimum 71851 - Insertion force shall be **13.34** N (**3.0** lb) maximum and withdrawal **1.67** N (**0.375** lb) minimum

Item	Test Condition	Requirement
Retention Force (in Housing) for Crimped/IDT Terminals	Axial pullout force on the terminal in the housing at a rate of 25 ± 6mm (1 ± 1/4 inch) per minute.	Contact : **17.79** N (**4.0** lbs.) min.
Durability	Mate connectors up to 25 cycles for tin plating and 50 cycles for gold plating at a maximum rate of 10 cycles per minute prior to defined Environmental Tests.	Contact Resistance : **10** milliohms Maximum Change from Initial
Durability – Male Plug (30 Gold Plate Pins)	Male Plug is mated to the receptacle and then unmated at a rate of 500 cycles/hour. The receptacle was replaced every 50 cycles. The male plug was subjected to 500 mate/unmate cycles	Contact Resistance : **10** milliohms Maximum Change from Initial
Vibration Mil-Std-1344 Method 2005.1 Condition I	Amplitude: 1.50mm (.060 inch) peak to peak Sweep: 10-55-10 Hz in one minute Duration: 2 hours in each X-Y-Z axis. (Test module shall be per Section 7.0)	Contact Resistance: **10** milliohms Maximum Change from Initial Discontinuity: not greater than one microsecond
Mechanical Shock Mil-Std-1344 Method 2004.1 Condition A	50 g's with three 1/2 sine wave form shocks in each X-Y-Z axis. (Test module shall be per Section 8.2)	Contact Resistance: **10** milliohms Maximum Change from Initial Discontinuity: not greater than one microsecond
Wire Pullout Force (Axial)	Apply an axial pullout force on the wire at a rate of 25 ± 6mm (1 ± 1/4 inch) per minute.	Pullout force - **75%** tensile strength of wire, minimum.
Wire Pullout Force (Right Angle)	Apply a right angle pullout force on the wire at a rate of 25 ± 6mm (1 ± 1/4 inch) per minute.	Pullout force - **75%** tensile strength of wire, minimum. **20** Newton's and below - no plastic deformation / no electrical discontinuity Above **20** and below **60** Newton's - slight non-functional plastic deformation / no electrical discontinuity.
Insertion Force (into Housing) for Female Terminals	Apply an axial insertion force on the terminal at a rate of 25 ± 6mm (1 ± 1/4 inch) per minute.	13.34 N (3.0 lbs) maximum insertion force.
Wire Flex	Flex cable 180° for 500 cycles.	Contact resistance: 10 milliohms Maximum Change from Initial. Appearance: No Damage

Item	Test Condition	Requirement
Normal Force of Box Crimp	Apply a perpendicular force at a rate of 25 ± 6mm (1 ± 1/4 inch) per minute on the contacts in a manner simulating actual use.	0.49 N (50 grams) minimum end of life, for gold plating 0.98 N (100 grams) minimum end of life, for tin plating.
Connector Insertion	Mate connectors at a rate of 1 in/min until latch engagement was achieved	**29.4** N Maximum
Connector Retention	Unmate connectors at a rate of 1 in/min until latch defeat occurred & Unmate connectors at a rate of 0.8 in/min with latch disengaged	**45** N Minimum with latch engaged & **15** N Minimum with latch disengaged
Connector Retention	Apply a perpendicular force of 45 N to the wire harness using a free hanging weight.	No deformation or Terminal separation

5.3 ENVIRONMENTAL PERFORMANCE

Item	Test Condition	Requirement
Thermal Shock Mil-Std-202F Method 107 E	Mate connectors exposed to 10 cycles of: Temperature °C — Duration (Min) -40 +0/-3 — 30 +25 +/-10 — 5 Max +105 +3/-0 — 30 +25 +/-10 — 5 Max -40 +0/-3 — 30	Appearance: No Damage Contact Resistance: **10** milliohms maximum change from initial
Thermal Aging Mil-Std-202F Method 108	Mate connectors; expose to 240 hours at 105 ± 3° C	Appearance: No Damage Contact Resistance: **10** milliohms maximum change from initial
Humidity (Steady State) Mil-Std-202F Method 103	Mate connectors; expose to a temperature of : 85 ± 2°C with a Relative Humidity of 92 ± 3% for 96 hours. Note: Remove surface moisture and air dry for 1 hour prior to measurements.	Appearance: No Damage Contact Resistance: **10** milliohms maximum change from initial. Dielectric Withstanding Voltage: No Breakdown Insulation Resistance: **10000** Megohms Minimum

Item	Test Condition	Requirement
Humidity (Cyclic) Mil-Std-202 Method 105	Mate connectors; expose for 10 cycles at 90-98% relative humidity with a transition time of 2.5 hours between extremes: Temperature °C — Duration (Min) +25 ± 10 — 5 maximum +65 +3/-0 — 15 maximum Note: Remove surface moisture and air dry for one hour prior to measurements.	Appearance: No Damage Contact Resistance: **10** milliohms maximum change from initial. Dielectric Withstanding Voltage: No Breakdown Insulation Resistance: **10000** Megohms Minimum
Temperature Rise and Current Cycling	Temperature Rise: Mate the connectors; and measure the temperature rise at the rated current after 96 hours. Current Cycling: Mate connectors; measure the temperature rise at the rated current after 500 hours (45 minutes ON and 15 minutes OFF per hour). Measure temperature rise.	Temperature Rise: **30°**C above ambient maximum Temperature Rise: **30°**C above ambient maximum
Temperature Rise and Vibration	Temperature Rise: Mate the connectors; and measure the temperature rise at the rated current after 45 minutes. Vibration: Subject mated connectors to a total of 8 hours of simple harmonic motions. (Apply 4 hours in the Z axis and 2 hours in each of the X and Y axes). Vary the frequency uniformly from 10 Hz to 50 Hz traversed continuously in 8 minutes. Measure temperature rise.	Temperature Rise: **30°**C above ambient maximum Temperature Rise: **30°**C above ambient maximum
Temperature Rise and Heat Resistance	Temperature Rise: Mate the connectors; and measure the temperature rise at the rated current after 45 minutes. Heat Resistance: Place mated connectors in an air circulating chamber oven exposed to a temperature of 100 degrees for 120 hours. Measure temperature rise.	Temperature Rise: **30°**C above ambient maximum Temperature Rise: **30°**C above ambient maximum

Item	Test Condition	Requirement
Temperature Rise and Cold Resistance	Temperature Rise: Mate the connectors; and measure the temperature rise at the rated current after 45 minutes. Cold Resistance: Place mated connectors in an air circulating chamber exposed to a temperature of -40°C for 120 hours	Temperature Rise: **30°**C above ambient maximum Temperature Rise: **30°**C above ambient maximum
Solderability Molex SMES-152	Steam age 1 hr. Solder time 5 ± 0.5 seconds. Solder temperature: 245 ± 5°C Non activated flux.	**95%** of the immersed area must show no voids, pin holes
Flowing Mixed Gas (FMG)	Battelle Class II, 10 ppm Cl_2, 10 ppm H_2S, 100 ppm NO_2, 70 ± 1% R.H., 25 deg. C. 50-60 CFM. 10 days mated and 7 days unmated exposure.	Contact Resistance: **10** milliohms Maximum change from Initial
Resistance to Solder Heats	Solder Time 3 ± 0.5 seconds Solder Temperature: 260 ± 5°C Immerse leads to a depth of 1.57mm (.062 in.) from connector body.	Appearance: No damage or discoloration of connector materials.

6.0 PACKAGING:

Parts are packaged in trays, tubes or bulk packed, refer to appropriate Sales Drawing for specific information.

7.0 QUALITY ASSURANCE PROVISIONS:

7.1 MATERIAL INSPECTION:

Shall consist of certification supported by verifying data.

7.2 ACCEPTANCE INSPECTION:

Acceptance of ongoing production product shall be determined by inspection according to Molex approved quality plans and required PPM levels for critical characteristics.

7.3 CONFORMANCE TESTING:

Shall be performed on production quality manufactured products.

AMEYA360
Components Supply Platform

Authorized Distribution Brand :

Website :

Welcome to visit www.ameya360.com

Contact Us :

- ## Address :

401 Building No.5, JiuGe Business Center, Lane 2301, Yishan Rd
Minhang District, Shanghai , China

- ## Sales :

Direct +86 (21) 6401-6692

Email amall@ameya360.com

QQ 800077892

Skype ameyasales1 ameyasales2

- ## Customer Service :

Email service@ameya360.com

- ## Partnership :

Tel +86 (21) 64016692-8333

Email mkt@ameya360.com