PRODUCT SPECIFICATION

1.0 SCOPE

This product specification covers the 10 circuit dual row STAC64 1.50, & 2.80mm hybrid unsealed wire to board connection system terminated using wire crimp technology.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND SERIES NUMBERS

Product Name	Series
10 Way Hybrid Right Angle Header Assembly	34696
10 Way Hybrid Vertical Header Assembly	34695
10 Way Hybrid Receptacle Connector Assembly	31372

2.2 ASSOCIATED TERMINALS

Product Description	Vendor Part Number
Molex MX150 Female Receptacle Terminal (14 AWG)	33012-2001
Molex MX150 Female Receptacle Terminal (16/18/20 AWG)	33012-2002
Molex MX150 Female Receptacle Terminal (22 AWG)	33012-2003
Tyco 2.8mm Female Receptacle Terminal (10/12 AWG)	1326030-4
Tyco 2.8mm Female Receptacle Terminal (14/16 AWG)	1326030-3
Tyco 2.8mm Female Receptacle Terminal (18/20 AWG)	1326030-2
Tyco 2.8mm Female Receptacle Terminal (22 AWG)	1326030-1

2.3 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

Harness Housings: 30% glass fiber SPS/nylon blend
TPAs: 15% glass filled polyester
Header Housing: 30% glass fiber SPS
Pins & Blades: Copper
Tin Plating: Matte tin with nickel under-plate
Pin Alignment Plate: Mylar

2.4 SAFETY AGENCY APPROVALS

UL File Number	Not Applicable
CSA File Number	Not Applicable
TUV License number	Not Applicable

3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

Description	Document Number
10 way right angle sales drawing (charted)	SD-34696-100
10 way vertical sales drawing (charted)	SD-34695-100
10 way harness sales drawing (charted)	SD-31372-900
Female MX150 Receptacle Terminal Molex Sales Drawing (charted)	SD-33012-001
Female 2.8mm Receptacle Terminal Ford Sales Drawing (charted)	1F1T-14474-BA
Tray Packaging Specification	PK-31300-892
Tube Packaging Specification	PK-31301-063
Bulk Packaging Specification	PK-31300-044
Application Specification	TBD

4.0 RATINGS

4.1 VOLTAGE

500 VDC MAXIMUM

4.2 CURRENT AND APPLICABLE WIRES

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

AWG	Amperes	Wire range Insulation Diameter
1.50mm TERMINAL SYSTEM:		
22	TBD	1.50 – 1.65 mm (0.059 – 0.065 inch)
20	TBD	1.70 – 1.85 mm (0.067 - 0.073 inch)
18	TBD	1.91 – 2.06 mm (0.075 – 0.081inch)
16	14	2.18 – 2.34 mm (0.086 - 0.092 inch)
14	18	2.54 – 2.69 mm (0.100 - 0.106 inch)
2.80mm TERMINAL SYSTEM:		
22	TBD	1.50 – 1.65 mm (0.059 – 0.065 inch)
20	TBD	1.70 – 1.85 mm (0.067 - 0.073 inch)
18	TBD	1.91 – 2.06 mm (0.075 – 0.081inch)
16	TBD	2.18 – 2.34 mm (0.086 - 0.092 inch)
14	21	2.54 – 2.69 mm (0.100 - 0.106 inch)
12	TBD	3.10 – 3.30 mm (0.122 - 0.129 inch)
10	36.2	3.84 – 4.04 mm (0.151 - 0.159 inch)

4.3 TEMPERATURE

Operating: - 40 Cº to + 100 Cº
Non-operating: - 40 Cº to + 100 Cº

5.0 PERFORMANCE

5.1 ELECTRICAL PERFORMANCE

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
1	**Contact Resistance (Low Level)**	Mate connectors: the open circuit voltage at current of **100** mA.is as follows:	**1.5mm Terminal** **10** milliohms MAXIMUM
			2.8mm Terminal **5** milliohms MAXIMUM
2	**Contact Resistance @ Rated Current (Voltage Drop)**	Mate connectors: apply a **5** ampere/ **1.0** mm^2 current	**1.5mm Terminal** **10** milliohms MAXIMUM
			2.8mm Terminal **5** milliohms MAXIMUM
3	**Isolation Resistance**	Apply a voltage of **500** VDC between adjacent terminals and between terminals to ground.	**20** Meg ohms MINIMUM
4	**Temperature Rise (via Current Cycling)**	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** Cº MAXIMUM

5.2 MECHANICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
1	**Connector Mate/ Unmate Forces**	Mate and unmate connector (male to female) at a rate of **50 ± 6** mm (**2 ± ¼** inch) per minute.	Mate **75** Newtons MAXIMUM
			Unmate w/o latch **75** Newtons MAXIMUM
			Unmate w/latch **110** Newtons MINIMUM
2	**Terminal Retention Force (in Housing)**	Axial pullout force on the terminal in the housing at a rate of **50 ± 6** mm (**2 ± ¼** inch) per minute.	1.50 mm: TPA in Pre-Lock 50 Newtons MINIMUM
			1.50 mm: TPA in Final-Lock **90** Newtons MINIMUM
			2.80 mm: TPA in Pre-Lock **60** Newtons MINIMUM
			2.80 mm: TPA in Final-Lock **90** Newtons MINIMUM
3	**Terminal Insertion Force (into Housing)**	Apply an axial insertion force on the terminal at a rate of **50 ± 6** mm (**2 ± ¼** inch) per minute.	**30** Newtons MAXIMUM
4	**Connector Audible Feedback**	The connector lock must provide audible feedback during connector mating at a rate of **50 ± 6** mm (**2 ± ¼** inch) per minute.	**7**dB over Ambient (C scale)
5	**Polarization Feature Effectiveness**	Connector must be polarized to prevent mating with similar connectors or incorrect orientation	**220** Newtons MINIMUM
6	**Terminal Position Assurance (TPA) Insertion Force (into housing)**	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) per minute.	**60** Newtons MAXIMUM
7	**Terminal Position Assurance (TPA) Extraction Force (in housing)**	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) per minute.	**60** Newtons MAXIMUM
8	**Header Pin Retention Force (in Housing)**	Axial pushout force on the terminal in the housing at a rate of **50 ± 6** mm (**2 ± ¼** inch) per minute.	**1.5mm Terminal** **50** Newtons MINIMUM
			2.80mm Terminal **50** Newtons MINIMUM

5.3 ENVIROMENTAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
1	**Durability**	Mate connectors up to **10** cycles prior to environmental tests.	**1.5mm Terminal** **10** milliohms MAXIMUM
			2.8mm Terminal **5** milliohms MAXIMUM
2	**Thermal Shock (Electrical)**	Mate connectors per durability; expose to **100** cycles of: Temperature Cº — Duration (Minutes) **-40 +0/-3** — **30** **+100 +3/-0** — **30**	**1.5mm Terminal** **10** milliohms MAXIMUM
			2.8mm Terminal **5** milliohms MAXIMUM
			Discontinuity < **1** microsecond
3	**Vibration/ Mechanical Shock (Electrical)**	Mate connectors per durability. Connector assembly shall be vibrated for (**8** hours / axes @ **1.81** Grms, **10** shocks @ **35** Gs / axes) Not coupled to engine.	**1.5mm Terminal** **10** milliohms MAXIMUM
			2.8mm Terminal **5** milliohms MAXIMUM
			Discontinuity < **1** microsecond
4	**Temperature/ Humidity Cycling (Electrical)**	Mate connectors per durability. Subject connector system to **40** cycles of: **1** hour @ -**40** C°; **4** hours @ **85** C°, **90**% RH **2** hours @ **100** C°	**1.5mm Terminal** **10** milliohms MAXIMUM
			2.8mm Terminal **5** milliohms MAXIMUM
5	**High Temperature Exposure (Electrical)**	Mate connectors per durability. Subject connector system to **100** Cº for **1008** hours.	**1.5mm Terminal** **10** milliohms MAXIMUM
			2.8mm Terminal **5** milliohms MAXIMUM
6	**Solderability**	Per **SMES-152**	Solder coverage: **95**% MINIMUM (per **SMES-152**)
7	**IR Process Soldering**	Molex IR Profile: **ES-40000-5013** Maximum Temperature: **260C**	Dimensional: Conformance to Sales Drawing requirements & Visual: No Damage

6.0 PACKAGING

Parts shall be packaged to protect against damage during handling, transit and storage.
TPA's may become seated during transit, please refer to PS-34646-001 for more information.

7.0 GAGES AND FIXTURES

All applicable gages and fixtures are referenced in the appropriate control plans.

8.0 OTHER INFORMATION

Products conform to USCAR-2 class II environment.