



PRODUCT SPECIFICATION

1.0 SCOPE

This product specification covers the 2.54 mm (0.100 inch) centerline (pitch) single row MX64 sealed product line (wire to board) connection system terminated with 22 to 18 AWG wires using crimp technology.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND SERIES NUMBERS

Product Name	Series
2 Way Female Assembly Pol 'A' Without CPA GET	31402/ 34975
2 Way Female Assembly Pol 'B' Without CPA GET	31402/ 34975
2 Way Female Assembly Pol 'C' Without CPA GET	31402/ 34975
2 Way Female Assembly Pol 'D' Without CPA GET	31402/ 34975
2 Way Female Assembly Pol 'A' w/ CPA GET	31402/ 34975
2 Way Female Assembly Pol 'B' w/ CPA GET	31402/ 34975
2 Way Female Assembly Pol 'C' w/ CPA GET	31402/ 34975
2 Way Female Assembly Pol 'D' w/ CPA GET	31402/ 34975
3 Way Female Assembly Pol 'A' Without CPA GET	31402/ 34975
3 Way Female Assembly Pol 'B' Without CPA GET	31402/ 34975
3 Way Female Assembly Pol 'C' Without CPA GET	31402/ 34975
3 Way Female Assembly Pol 'D' Without CPA GET	31402/ 34975
3 Way Female Assembly Pol 'A' w/ CPA GET	31402/ 34975
3 Way Female Assembly Pol 'B' w/ CPA GET	31402/ 34975
3 Way Female Assembly Pol 'C' w/ CPA GET	31402/ 34975
3 Way Female Assembly Pol 'D' w/ CPA GET	31402/ 34975
6 Way Female Assembly Pol 'A' Without CPA GET	31402/ 34975
6 Way Female Assembly Pol 'B' Without CPA GET	31402/ 34975
6 Way Female Assembly Pol 'C' Without CPA GET	31402/ 34975
6 Way Female Assembly Pol 'D' Without CPA GET	31402/ 34975
6 Way Female Assembly Pol 'A' w/ CPA GET	31402/ 34975
6 Way Female Assembly Pol 'B' w/ CPA GET	31402/ 34975
6 Way Female Assembly Pol 'C' w/ CPA GET	31402/ 34975
6 Way Female Assembly Pol 'D' w/ CPA GET	31402/ 34975
2 Way Female Assembly Pol 'A' Without CPA MX64	31403/ 34977
2 Way Female Assembly Pol 'B' Without CPA MX64	31403/ 34977
2 Way Female Assembly Pol 'C' Without CPA MX64	31403/ 34977

REVISION: G	ECR/ECN INFORMATION: EC No: UAU2017-0225 DATE: 2016/9/21	TITLE: 31402 CONNECTOR SYSTEM MX64 SINGLE ROW	SHEET No. 1 of 7
DOCUMENT NUMBER: PS-31402-000	CREATED / REVISED BY: Fiona Chen	CHECKED BY: Gavin Li	APPROVED BY: Jun Deng



PRODUCT SPECIFICATION

2 Way Female Assembly Pol 'D' Without CPA MX64	31403/ 34977
2 Way Female Assembly Pol 'A' w/ CPA MX64	31403/ 34977
2 Way Female Assembly Pol 'B' w/ CPA MX64	31403/ 34977
2 Way Female Assembly Pol 'C' w/ CPA MX64	31403/ 34977
2 Way Female Assembly Pol 'D' w/ CPA MX64	31403/ 34977
3 Way Female Assembly Pol 'A' Without CPA MX64	31403/34977
3 Way Female Assembly Pol 'B' Without CPA MX64	31403/34977
3 Way Female Assembly Pol 'C' Without CPA MX64	31403/34977
3 Way Female Assembly Pol 'D' Without CPA MX64	31403/34977
3 Way Female Assembly Pol 'A' w/ CPA MX64	31403/34977
3 Way Female Assembly Pol 'B' w/ CPA MX64	31403/34977
3 Way Female Assembly Pol 'C' w/ CPA MX64	31403/34977
3 Way Female Assembly Pol 'D' w/ CPA MX64	31403/34977
6 Way Female Assembly Pol 'A' Without CPA MX64	31403/34977
6 Way Female Assembly Pol 'B' Without CPA MX64	31403/34977
6 Way Female Assembly Pol 'C' Without CPA MX64	31403/34977
6 Way Female Assembly Pol 'D' Without CPA MX64	31403/34977
6 Way Female Assembly Pol 'A' w/ CPA MX64	31403/34977
6 Way Female Assembly Pol 'B' w/ CPA MX64	31403/34977
6 Way Female Assembly Pol 'C' w/ CPA MX64	31403/34977
6 Way Female Assembly Pol 'D' w/ CPA MX64	31403/34977
2 Way Female Assembly Pol 'A' Without CPA Kaizen	31404
2 Way Female Assembly Pol 'B' Without CPA Kaizen	31404
2 Way Female Assembly Pol 'C' Without CPA Kaizen	31404
2 Way Female Assembly Pol 'D' Without CPA Kaizen	31404
2 Way Female Assembly Pol 'A' w/ CPA Kaizen	31404
2 Way Female Assembly Pol 'B' w/ CPA Kaizen	31404
2 Way Female Assembly Pol 'C' w/ CPA Kaizen	31404
2 Way Female Assembly Pol 'D' w/ CPA Kaizen	31404
3 Way Female Assembly Pol 'A' Without CPA Kaizen	31404
3 Way Female Assembly Pol 'B' Without CPA Kaizen	31404
3 Way Female Assembly Pol 'C' Without CPA Kaizen	31404
3 Way Female Assembly Pol 'D' Without CPA Kaizen	31404
3 Way Female Assembly Pol 'A' w/ CPA Kaizen	31404
3 Way Female Assembly Pol 'B' w/ CPA Kaizen	31404

REVISION: G	ECR/ECN INFORMATION: EC No: UAU2017-0225 DATE: 2016/9/21	TITLE: 31402 CONNECTOR SYSTEM MX64 SINGLE ROW	SHEET No. 2 of 7
-----------------------	--	---	----------------------------

DOCUMENT NUMBER: PS-31402-000	CREATED / REVISED BY: Fiona Chen	CHECKED BY: Gavin Li	APPROVED BY: Jun Deng
---	--	--------------------------------	---------------------------------



PRODUCT SPECIFICATION

3 Way Female Assembly Pol 'C' w/ CPA Kaizen	31404
3 Way Female Assembly Pol 'D' w/ CPA Kaizen	31404
6 Way Female Assembly Pol 'A' Without CPA Kaizen	31404
6 Way Female Assembly Pol 'B' Without CPA Kaizen	31404
6 Way Female Assembly Pol 'C' Without CPA Kaizen	31404
6 Way Female Assembly Pol 'D' Without CPA Kaizen	31404
6 Way Female Assembly Pol 'A' w/ CPA Kaizen	31404
6 Way Female Assembly Pol 'B' w/ CPA Kaizen	31404
6 Way Female Assembly Pol 'C' w/ CPA Kaizen	31404
6 Way Female Assembly Pol 'D' w/ CPA Kaizen	31404

2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

Connector Housing: 15% glass filled PBT
Terminal Housing: 30% glass filled SPS/nylon blend
TPAs: 20% glass filled SPS/nylon blend
CPAs: 30% glass filled PBT
Seals: Inherently lubricated silicone

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

Description	Document Number
2-6 way female sales drawing (charted)	SD-31402-211
Packaging specification (bulk)	PK-31300-256
Application specification	TBD

4.0 RATINGS

4.1 VOLTAGE

500 VDC MAXIMUM

4.2 CURRENT AND APPLICABLE WIRES

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.

AWG	Amperes	Wire range	Insulation Diameter
22	9	1.50 - 1.65 mm	(0.059 - 0.065 inch)

REVISION: G	ECR/ECN INFORMATION: EC No: UAU2017-0225 DATE: 2016/9/21	TITLE: 31402 CONNECTOR SYSTEM MX64 SINGLE ROW	SHEET No. 3 of 7
-----------------------	--	---	----------------------------

DOCUMENT NUMBER: PS-31402-000	CREATED / REVISED BY: Fiona Chen	CHECKED BY: Gavin Li	APPROVED BY: Jun Deng
---	--	--------------------------------	---------------------------------



PRODUCT SPECIFICATION

20	11	1.70 - 1.85 mm (0.067 - 0.073 inch)
18	TBD	1.91 - 2.06 mm (0.075 - 0.081 inch)

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)	Mate connectors: limiting the open circuit voltage of 20 mV and a maximum current of 100 mA.	20 milliohms MAXIMUM
2	Contact Resistance @ Rated Current (Voltage Drop)	Mate connectors: apply a 5 ampere/ 1.0 mm ² current	20 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 C° MAXIMUM

REVISION: G	ECR/ECN INFORMATION: EC No: UAU2017-0225 DATE: 2016/9/21	TITLE: 31402 CONNECTOR SYSTEM MX64 SINGLE ROW	SHEET No. 4 of 7
DOCUMENT NUMBER: PS-31402-000	CREATED / REVISED BY: Fiona Chen	CHECKED BY: Gavin Li	APPROVED BY: Jun Deng



PRODUCT SPECIFICATION

5.2 MECHANICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
5	Connector Mate/ Unmate Forces	Mate and unmate connector (male to female) at a rate of 50 ± 6 mm ($2 \pm \frac{1}{4}$ inch) per minute.	75 Newtons MAXIMUM
			Unmate 110 Newtons MINIMUM
6	Terminal Retention Force (in Housing)	Axial pullout force on the terminal in the housing at a rate of 50 ± 6 mm ($2 \pm \frac{1}{4}$ inch) per minute.	90 Newtons MINIMUM
7	Terminal Insertion Force (into Housing)	Apply an axial insertion force on the terminal at a rate of 50 ± 6 mm ($2 \pm \frac{1}{4}$ inch) per minute.	30 Newtons MAXIMUM
8	Connector Audible Feedback	The connector lock must provide audible feedback during connector mating at a rate of 50 ± 6 mm ($2 \pm \frac{1}{4}$ inch) per minute.	7dB over Ambient (C scale)
9	Polarization Feature Effectiveness	Connector must be polarized to prevent mating with similar connectors or incorrect orientation	220 Newtons MINIMUM
10	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 ($2 \pm \frac{1}{4}$ inch) per minute.	60 Newtons MAXIMUM
11	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 ($2 \pm \frac{1}{4}$ inch) per minute.	60 Newtons MAXIMUM
12	Connector Position Assurance (CPA) Insertion Force (into housing)	The force to insert the CPA from the preload (as shipped) position to the final position at a rate of 50 ± 6 mm ($2 \pm \frac{1}{4}$ inch) per minute.	40 Newtons MINIMUM (unmated)
			40 Newtons MAXIMUM (fully mated)
13	Connector Position Assurance (CPA) Extraction Force (in housing)	The force to extract the CPA from the final position to the preload (as shipped) position at a rate of 50 ± 6 mm ($2 \pm \frac{1}{4}$ inch) per minute.	60 Newtons MAXIMUM
14	Connector Position Assurance (CPA) Extraction Force (removal)	The force to completely remove the CPA from the final position at a rate of 50 ± 6 mm ($2 \pm \frac{1}{4}$ inch) per minute.	60 Newtons MINIMUM

REVISION: G	ECR/ECN INFORMATION: EC No: UAU2017-0225 DATE: 2016/9/21	TITLE: 31402 CONNECTOR SYSTEM MX64 SINGLE ROW	SHEET No. 5 of 7
DOCUMENT NUMBER: PS-31402-000	CREATED / REVISED BY: Fiona Chen	CHECKED BY: Gavin Li	APPROVED BY: Jun Deng



PRODUCT SPECIFICATION

5.3 ENVIROMENTAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT						
15	Field Correlated Life Test (FCLT)	Mate connectors up to 1 cycle and expose to environment per SAE/USCAR-20.	20 milliohms MAXIMUM						
16	Durability	Mate connectors up to 10 cycles prior to environmental tests.	20 milliohms MAXIMUM & Discontinuity < 1 microsecond						
17	Thermal Shock (Electrical)	Mate connectors per durability; expose to 100 cycles of: <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Temperature C°</th> <th>Duration (Minutes)</th> </tr> </thead> <tbody> <tr> <td>-40 +0/-3</td> <td>30</td> </tr> <tr> <td>+125 +3/-0</td> <td>30</td> </tr> </tbody> </table>	Temperature C°	Duration (Minutes)	-40 +0/-3	30	+125 +3/-0	30	20 milliohms MAXIMUM & Discontinuity < 1 microsecond
Temperature C°	Duration (Minutes)								
-40 +0/-3	30								
+125 +3/-0	30								
18	High Temperature Exposure (Sealing)	Mate connectors per durability and expose to 1008 hours at 125 ± 2°C	28 kPa for 15 seconds MINIMUM pressure/vacuum & Submersion for 30 minutes & Isolation Resistance of 20 Meg ohms @ 500 VDC MINIMUM						
19	Temperature/ Humidity (Sealing)	Mate connectors per durability and expose connector system to forty 8-hour cycles of combined heating and humidity exposure -40 °C and 125 °C at 0% to 90% RH	28 kPa for 15 seconds MINIMUM pressure/vacuum & Submersion for 30 minutes & Isolation Resistance of 20 Meg ohms @ 500 VDC MINIMUM						
20	Fluid Resistance (Sealing)	Submerge connector assemblies in the following fluids: gasoline, *diesel fuel, engine oil, ethanol, power steering fluid, automatic transmission fluid, engine coolant, and brake fluid.	Submersion for 30 minutes & Isolation Resistance of 20 Meg ohms @ 500 VDC MINIMUM						
21	Vibration/ Mechanical Shock (Electrical)	Mate connectors per durability. Connector assembly shall be vibrated for (8 hours / axes @ 12.1 Grms, 10 shocks @ 35 Gs / axes) Coupled to engine.	20 milliohms MAXIMUM & Discontinuity < 1 microsecond						

*Silicone seals swell in the presence of diesel fuel. This condition may cause excessive connector mate/unmate forces.

6.0 PACKAGING

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

REVISION: G	ECR/ECN INFORMATION: EC No: UAU2017-0225 DATE: 2016/9/21	TITLE: 31402 CONNECTOR SYSTEM MX64 SINGLE ROW	SHEET No. 6 of 7
DOCUMENT NUMBER: PS-31402-000	CREATED / REVISED BY: Fiona Chen	CHECKED BY: Gavin Li	APPROVED BY: Jun Deng



PRODUCT SPECIFICATION

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 III environment.

REVISION: G	ECR/ECN INFORMATION: EC No: UAU2017-0225 DATE: 2016/9/21	TITLE: 31402 CONNECTOR SYSTEM MX64 SINGLE ROW	SHEET No. 7 of 7
DOCUMENT NUMBER: PS-31402-000	CREATED / REVISED BY: Fiona Chen	CHECKED BY: Gavin Li	APPROVED BY: Jun Deng