



# PRODUCT SPECIFICATION

## MX PTL™

### 1.0 SCOPE

This Product Specification covers the MX PTL™ single key 3P, 4P and 5P male connectors with gold plating.

### 2.0 PRODUCT DESCRIPTION

#### 2.1 PRODUCT NAME AND SERIES NUMBER(S)

MIC 3P, 4P OR 5P PL M/M STR OR 90° 22 AWG TPE	121193
MIC 3P, 4P OR 5P PL M/MFE STR OR 90° 22 AWG TPE	121194

#### 2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

See sales drawings SD-121193-001 and SD-121193-002.

#### 2.3 SAFETY AGENCY APPROVALS

UL pending

### 3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

SD-121193-001 MIC MX PTL M/M STR 22 AWG TPE  
SD-121193-002 MIC MX PTL M/M 90° 22 AWG TPE  
IEC 60512 series of test standards  
UL 817 Standard for Cord Sets and Power-Supply Cords  
UL 2238 Cable Assemblies and Fittings for Industrial Control and Signal Distribution  
IEC 60529 Degrees Of Protection Provided By Enclosures (IP Code)  
ISTA 1A Packaged-Products weighing 150 lb (68 kg) or Less

### 4.0 RATINGS

#### 4.1 VOLTAGE

250 Volts DC

#### 4.2 CURRENT

4 Amps max per pin

#### 4.3 TEMPERATURE

Operating: - 25°C to + 85°C  
Non-operating: - 25°C to + 85°C

REVISION: <b>A</b>	ECR/ECN INFORMATION: EC No: <b>IPG2015-0481</b> DATE: <b>2014 / 09 / 11</b>	TITLE: <b>M12 STYLE M/M COUPLER, MX PTL™ USED ON 3-5P SINGLE KEY, SINGLE AND DOUBLE ENDED PORTABLES</b>	SHEET No. <b>1 of 4</b>
DOCUMENT NUMBER: <b>PS-121193-001</b>	CREATED / REVISED BY: <b>K. JOZWIK</b>	CHECKED BY: <b>V. OU</b>	APPROVED BY: <b>B. WOODMAN</b>



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## 5.0 PERFORMANCE

### 5.1 ELECTRICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
1	Contact Resistance (Low Level)	Per IEC 60512, Test 2a.	10 milliohms MAXIMUM [initial]
2	Insulation Resistance	Per IEC 60512, Test 3a, Method A	100 Megohms MINIMUM
3	Voltage Proof	Per IEC 60512, Test 4a, 1,500V rms between adjacent contacts and between contacts and metal housings.	No breakdown; current leakage < 2 mA
4	Current Carrying Capacity	Per UL 2238, Temperature test, section 25 when 4 amps is applied to all pins.	Temperature rise: +30°C MAXIMUM

### 5.2 MECHANICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
5	Gauge Retention Forces (female socket only)	Per IEC-60512-16e, method A Insert and remove the sizing gauge 3 times. Sizing pin diameter : 1.03 +.000/- .005 mm (.041+.0000/- .0002 in) Retention gauge pin diameter : .97 +.005/- .000 mm (.038+.0002/- .0000 in) with a 20 g mass.	Female socket must hold retention gauge pin for 5 seconds
6	Connector Mate and Un-mate Forces	Per IEC 60512-13b and includes the coupler	40.0 N (9.0 lb) MAXIMUM insertion force & 40.0 N (9.0 lb) MINIMUM withdrawal force
7	Mechanical Operation	Per 60512-9a, 25 cycles	Connector must have continuity, contact resistance 15 milliohms MAXIMUM (change from initial)

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## 5.2 MECHANICAL REQUIREMENTS (continued)

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
8	Vibration	Per IEC 60512-6d, 10-500 Hz, 0.35mm Sweep cycles: 10 Full duration: 6 hours	Contact resistance <b>15</b> milliohms MAXIMUM (change from initial) & Discontinuity < <b>1</b> microsecond
9	Shock (Mechanical)	Per IEC 60512-6c, ½ sine wave, 11 milliseconds duration, <b>50</b> g's peak acceleration In the ±X,±Y,±Z axes ( <b>18</b> shocks total)	Contact resistance <b>15</b> milliohms MAXIMUM (change from initial) & Discontinuity < <b>1</b> microsecond
10	Cable Strain Relief (Axial)	Per UL 817 section 84 strain relief test for 22awg cable. Apply an axial pullout force on a mating cable connected to the receptacle at a rate of <b>25 ± 6</b> mm ( <b>1 ± ¼</b> inch).	<b>89 N (20 lb)</b> axial force contact resistance <b>15</b> milliohms MAXIMUM (change from initial) & Discontinuity < <b>1</b> microsecond
11	Cable Strain Relief (Right Angle)	Per UL 817 section 84 strain relief test for 22awg cable. Apply a right angle pullout force on a mating cable connected to the receptacle at a rate of <b>25 ± 6</b> mm ( <b>1 ± ¼</b> inch).	<b>89 N (20 lb)</b> axial force contact resistance <b>15</b> milliohms MAXIMUM (change from initial) & Discontinuity < <b>1</b> microsecond
12	Jacket Retention	Per UL 2238, section 27	Cable assembly shall retain the jacket of the flexible cord to which it is molded.

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## 5.3 ENVIRONMENTAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
13	Thermal Shock	Per IEC 60512-11d Mated connectors; expose to 5 cycles of: <u>Temperature °C</u> <u>Dwell (Minutes)</u> -25 +0/-3                      30 +85 +3/-0                      30	Contact resistance 15 milliohms MAXIMUM (change from initial) Insulation resistance per 2 Voltage proof per 3
14	Damp Heat	Per IEC 60512-11m. Mated connectors, humidity approximately 95%, expose to 6 cycles of: <u>Temperature °C</u> <u>Dwell (Minutes)</u> +40 +3/-0                      540 +25 +3/-0                      120 180 minute transition time between each extreme.	Contact resistance 15 milliohms MAXIMUM (change from initial) Insulation resistance per 2 Voltage proof per 3
15	Dry Heat	Per IEC 60512-11i, Mated connectors Temperature 85°C Duration 16 hours	Insulation resistance per 2 while connectors are still hot.
16	Cold	Per IEC 60512-11i, Mated connectors Temperature -25°C Duration 2 hours Recovery time 2 hours	There shall be no defect that would impair normal operation
17	Industrial Atmosphere	Per IEC 60068-2-60, Method 4, 4 days	Contact resistance 15 milliohms MAXIMUM (change from initial)
18	Submersion	IP67 per IEC 60529	Insulation Resistance: Per 2

## 6.0 PACKAGING

Parts shall be packaged to protect against damage during handling, transit and storage.  
Master pack shipping carton must pass drop test per ISTA1A.

## 7.0 OTHER INFORMATION

None

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