



# PRODUCT SPECIFICATION

## MX150L PCB HEADER CONNECTOR SYSTEM

### 1.0 SCOPE

This Product Specification covers the 5.84mm (.236 inch) centerline (pitch) right angle, vertical, & low profile vertical through hole printed circuit board (PCB) header connector series with Tin or Tin & Select Gold plated terminals.

### 2.0 PRODUCT DESCRIPTION

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

- 2.1.1 Right Angle PCB Header Assembly Series 19427
- 2.1.2 Vertical & Low Profile Vertical PCB Header Assembly Series 19428
- 2.1.3 Vertical & Right Angle PCB Breakaway Header Assembly Series 19440

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

See applicable sales drawings for information on dimensions, materials, plating, and any other specifications.

#### 2.3 SAFETY AGENCY APPROVALS

- 2.3.1 UL File #E152602
- 2.3.2 CSA File #018689, Class #6233-01
- 2.3.3 All molded components flammability rated 94 V-0

#### 2.4 MATING CONNECTORS

- 2.4.1 Series 19418 Receptacle Assemblies, 22–14 AWG
- 2.4.2 Series 19420 Female Terminals, 22–14 AWG
- 2.4.3 Series 19417 Circuit Plugs, Standard & W-T-B

### 3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

#### 3.1 Right Angle PCB Header Assemblies

- Sales Drawing SD-19427-\*\*\*
- Packaging Drawing PK-19427-001

#### 3.2 Vertical PCB Header Assemblies

- Sales Drawing SD-19428-\*\*\*
- Packaging Drawing PK-19428-001

#### 3.3 Low Profile Vertical PCB Header Assemblies

- Sales Drawing SD-19428-\*\*\*
- Packaging Drawing PK-19428-002

#### 3.4 Vertical & Right Angle PCB Breakaway Header Assemblies

- Sales Drawing SD-19440-\*\*\*
- Packaging Drawing PK-19440-001

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DOCUMENT NUMBER: <b>PS-19427-001</b>	CREATED / REVISED BY: <b>WLEUNG</b>	CHECKED BY: <b>BRUPERT</b>	APPROVED BY: <b>JFMURPHY</b>



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## 4.0 RATINGS

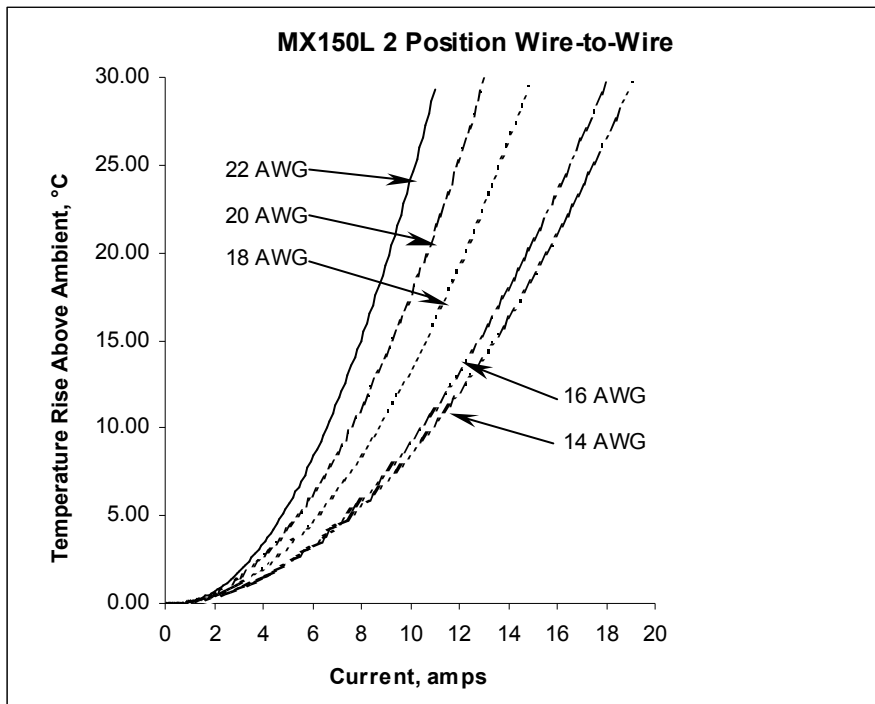
### 4.1 VOLTAGE

600 Volts AC

### 4.2 CURRENT AND APPLICABLE WIRES

AWG	Amps	Insulation Outside Diameter
22-18	See chart	2.36-2.74mm (.093-.108 inch)
16-14	See chart	2.87-3.53mm (.113-.139 inch)

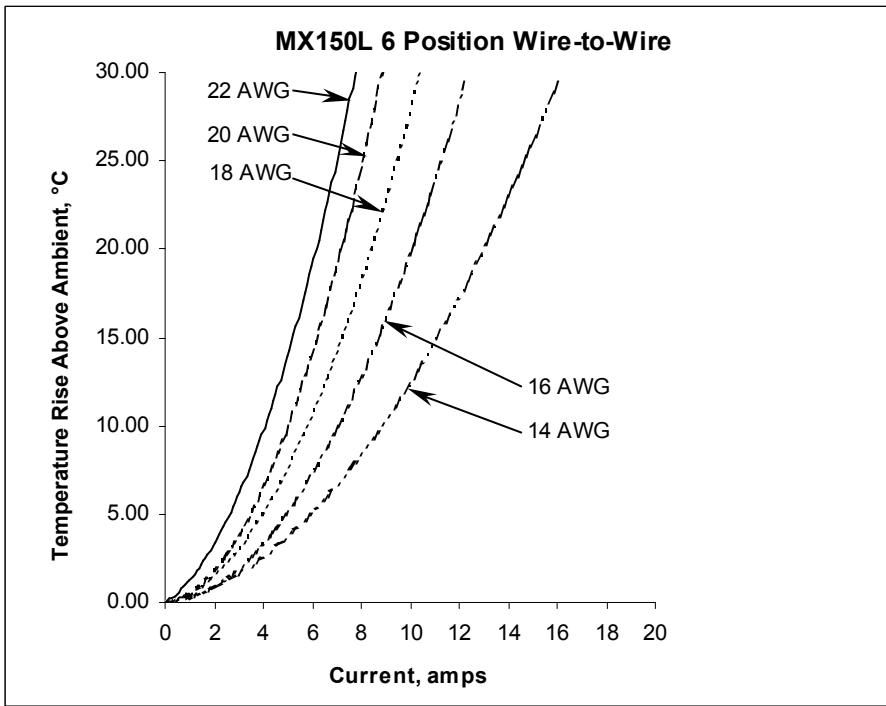
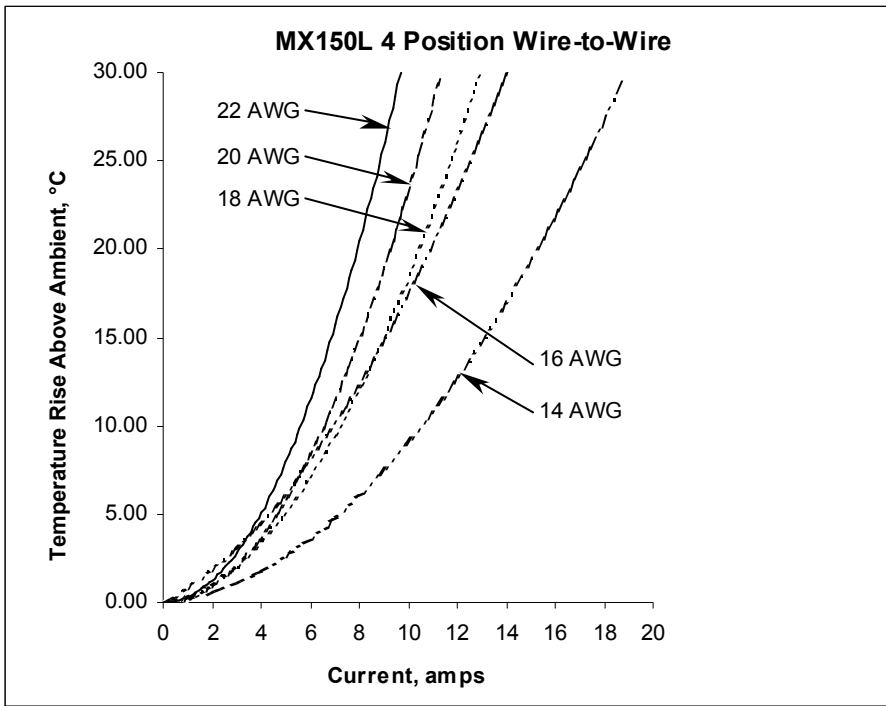
*Note: The below curves were developed using averages of fully loaded connector pairs and are presented as a guideline. The end user must evaluate the performance of the connector pair in actual application to determine the suitability and actual performance.*



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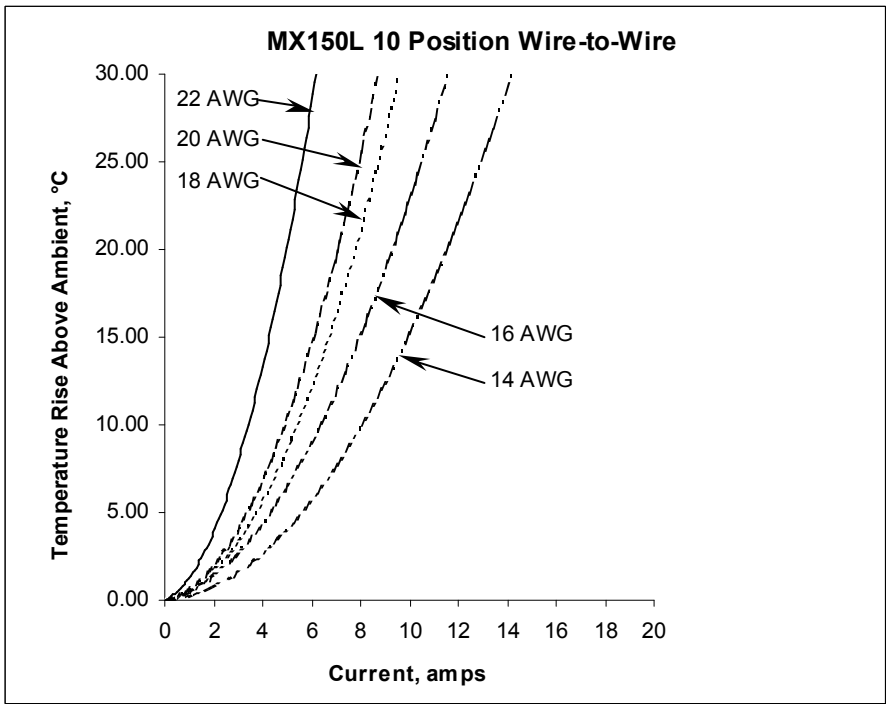
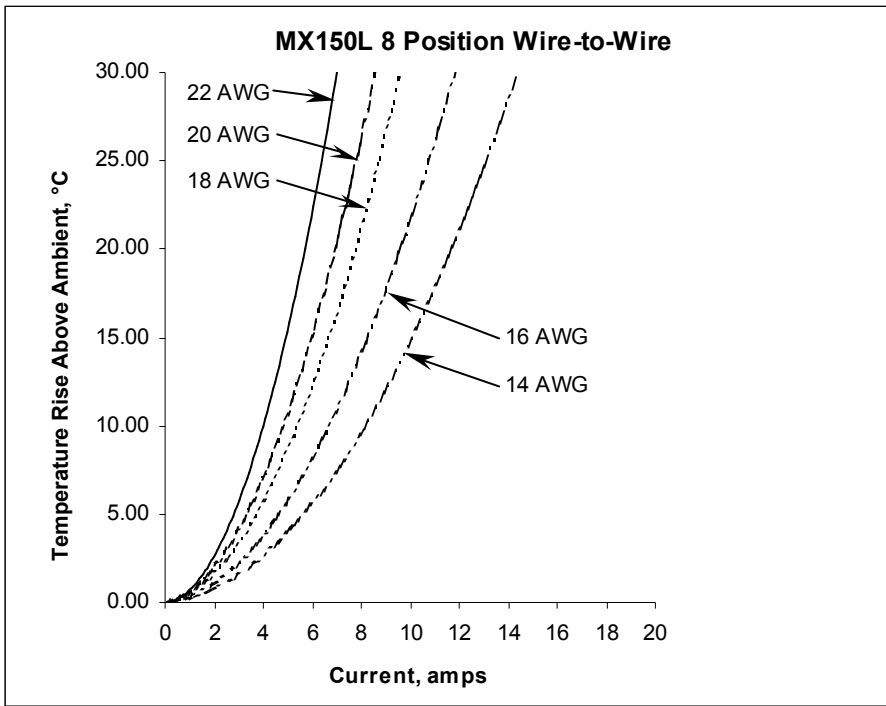
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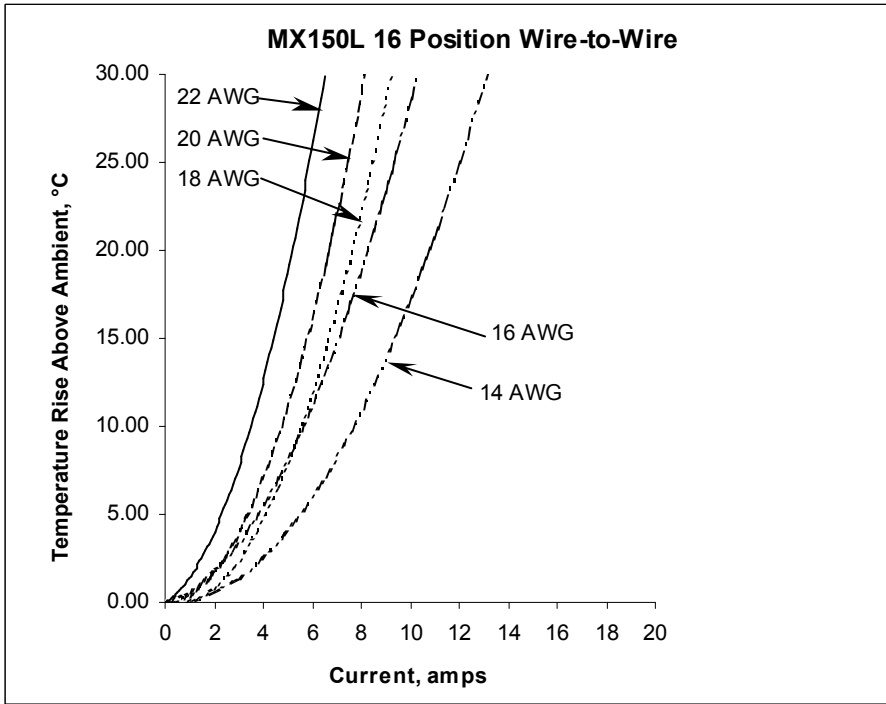
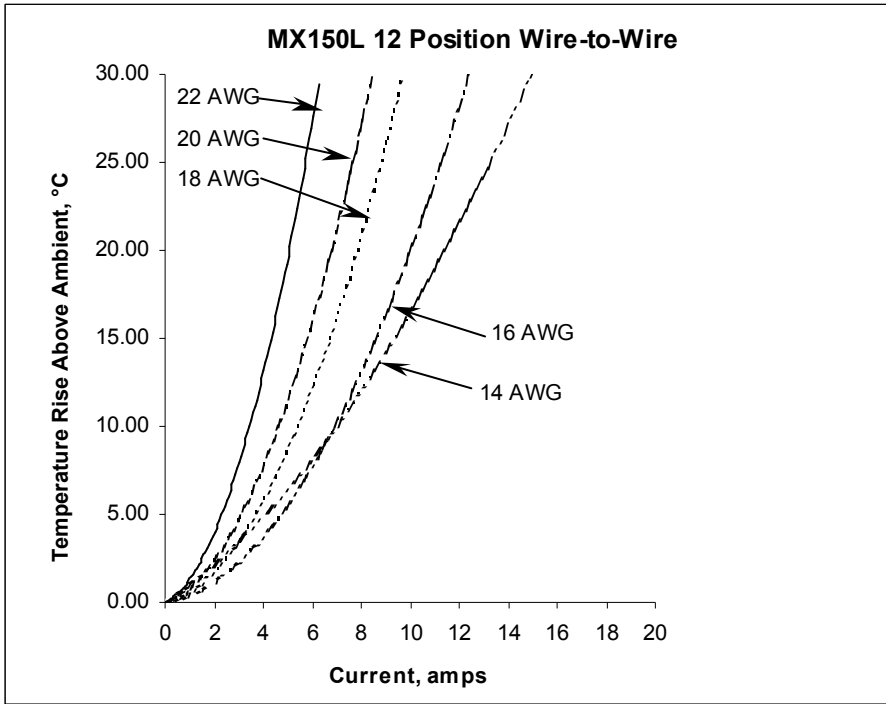
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## 4.3 TEMPERATURE

Operating: - 40°C to + 120°C

Nonoperating: - 40°C to + 120°C

## 5.0 PERFORMANCE

### 5.1 ELECTRICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
1	<b>Contact Resistance (Low Level)</b>	Mate connectors: apply a maximum voltage of <b>20 mV</b> and a current of <b>100 mA</b> .	<b>30 milliohms</b> MAXIMUM [initial]
2	<b>Insulation Resistance</b>	Unmate & unmount connectors: apply a voltage of <b>500 VDC</b> between adjacent terminals and between terminals to ground.	<b>20 Megohms</b> MINIMUM
3	<b>Dielectric Withstanding Voltage</b>	Apply a voltage of <b>{two times the rated voltage plus 1000 volts}</b> VAC for <b>1 minute</b> between adjacent terminals and between terminals to ground.	No breakdown; current leakage < <b>5 mA</b>
4	<b>Temperature Rise</b>	Mate connectors: measure the temperature rise at the rated current after 4 hours and temperature stabilizes	Temperature rise: <b>+30°C</b> MAXIMUM

### 5.2 MECHANICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
5	<b>Connector Mate and Unmate Forces</b>	Mate and unmate connector (male to female) at a rate of <b>25 ± 6 mm (1 ± ¼ inch)</b> per minute.	<b>75 N (16.9 lbf)</b> MAXIMUM insertion force & <b>110 N (24.7 lbf)</b> MINIMUM withdrawal force
6	<b>Terminal Retention Force</b>	Axial pullout force on the terminal in the housing at a rate of <b>25 ± 6 mm (1 ± ¼ inch)</b> per minute for 1 minute minimum.	<b>22 N (5 lbf)</b> MINIMUM retention force
7	<b>Durability</b>	Mate connectors up to <b>{25 cycles for tin (non-noble) plating OR 100 cycles for gold (noble) plating}</b> at a maximum rate of <b>10 cycles per minute</b> without environmental tests.	<b>10 milliohms</b> MAXIMUM (change from initial)

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## 5.2 MECHANICAL REQUIREMENTS (continued)

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
8	Vibration (Random)	Mate connectors and vibrate from 10Hz to 1000Hz for 8 hours in each of three mutually perpendicular axes (X, Y, Z).	10 milliohms MAXIMUM (change from initial) & Discontinuity < 1 microsecond
9	Shock (Mechanical)	Mate connectors and shock at 35 g's with 10 1/2 sine wave (10 milliseconds) shocks in the ±X,±Y,and ±Z axes.	10 milliohms MAXIMUM (change from initial] & Discontinuity < 1 microsecond

## 5.3 ENVIRONMENTAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT										
10	Shock (Thermal)	Mate connectors; 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>+25 ±10</td> <td>30 sec. MAXIMUM</td> </tr> <tr> <td>+125 +3/-0</td> <td>30</td> </tr> <tr> <td>+25 ±10</td> <td>30 sec. MAXIMUM</td> </tr> </tbody> </table>	Temperature °C	Duration (Minutes)	-40 +0/-3	30	+25 ±10	30 sec. MAXIMUM	+125 +3/-0	30	+25 ±10	30 sec. MAXIMUM	10 milliohms MAXIMUM (change from initial) & Visual: No Damage
Temperature °C	Duration (Minutes)												
-40 +0/-3	30												
+25 ±10	30 sec. MAXIMUM												
+125 +3/-0	30												
+25 ±10	30 sec. MAXIMUM												
11	High Temperature Exposure	Mate and un-mate connectors: 10 cycles Duration: 1008 hours exposure Temperature: +125± 3°C	10 milliohms MAXIMUM (change from initial)										
12	Salt Spray	Mate connectors: Duration: 96 hours exposure; Atmosphere: salt spray from a 5% solution; Temperature: 35 +1/-2°C	10 milliohms MAXIMUM (change from initial) & Visual: No Damage										
13	Fluid Resistance	Submerge mated connectors for 30 minutes in each of the following automotive fluids: gasoline, diesel fuel, engine oil, E85 ethanol fuel, power steering fluid, automatic transmission fluid, engine coolant, brake fluid	Insulation Resistance 20 Megohms MINIMUM & Visual: No damage or loss of mechanical function										
14	Solderability	Per SMES-152	Solder coverage: 95% MINIMUM (per SMES-152)										
15	Solder Resistance	Dip connector terminal tails in solder: Solder Duration: 5±0.5 seconds; Solder Temperature: 245±5°C {Recommend same parameters as SMES-152}	Visual: No Damage to insulator material										

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16	IPX7	IPX7 – Submerge mated connectors for 30 minutes under 1 meter of water	No dielectric breakdown; current leakage < 5 mA
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## 6.0 PACKAGING

Parts shall be packaged to protect against damage during handling, transit and storage.

## 7.0 OTHER INFORMATION

The MX150L™ Industrial Sealed Connector System is IPX7 rated and conforms to UL 1977, but it is **NOT** suitable for automotive applications with requirements such as USCAR-2, USCAR-25, GMW3191, AK Testing, J2030, Volvo Technology Requirements, and Toyota Connector Spec (TCS)

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