



# PRODUCT SPECIFICATION

## PRODUCT SPECIFICATION FOR FEMALE (70430) & MALE (70431) FLEX-C-TERM SYSTEM

### **1.0 SCOPE**

This Product Specification covers the single row (2.54)/.100 centerline flat flexible cable connector 70430 series with female terminals and 70431 series with male terminals.

### **2.0 PRODUCT DESCRIPTION**

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

Series 70430: F.F.C. Female Single Row Connector

Series 70431: F.F.C. Male Single Row Connector

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

##### **2.2.1 Female series 70430**

**2.2.1.1** This product will mate with (5.08-8.13)/.200-.320 long (0.64).025 square or round pins arranged on the same (2.54)/.100 grid. This product is stackable "side to side" on (2.54)/.100 centers.

**2.2.1.2** Plastic insulator housing is manufactured from black Glass Filled polyester material with U.L. 94V-0 rating.

**2.2.1.3** The terminal (40391-\*\*\*\*) is manufactured from phosphor bronze alloy.

**2.2.1.3.1** See Sales Drawing(s) for platings

##### **2.2.2 Male Series 70431**

**2.2.2.1** Product is a single row product on .100/(2.54) centers and is available in 4-25 circuits.

**2.2.2.2** Connector assembly is supplied with 70153-\*\*\*\* male terminal, preloaded in a plastic insulator housing (70030-\*\*\*\*).

**2.2.2.3** Connector assemblies will mate with various .100/(2.54) center female products and 70018, 70022, and 70104 panel mount housings.

**2.2.2.4** Plastic insulator housing is manufactured from black Glass Filled polyester material with U.L. 94V-0 rating.

**2.2.2.5** The terminal (70153-\*\*\*\*) is manufactured from phosphor bronze alloy.

**2.2.2.5.1** See Sales Drawing(s) for platings

**2.2.3** The opposite end of the terminal has three piercing points configured for .014/(0.36) maximum thick flat flex circuit or cable.

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<u>DOCUMENT NUMBER:</u> <b>PS-70430</b>	<u>CREATED / REVISED BY:</u> <b>MG/MIBARRA</b>	<u>CHECKED BY:</u> <b>DMORGAN</b>	<u>APPROVED BY:</u> <b>SMILLER</b>



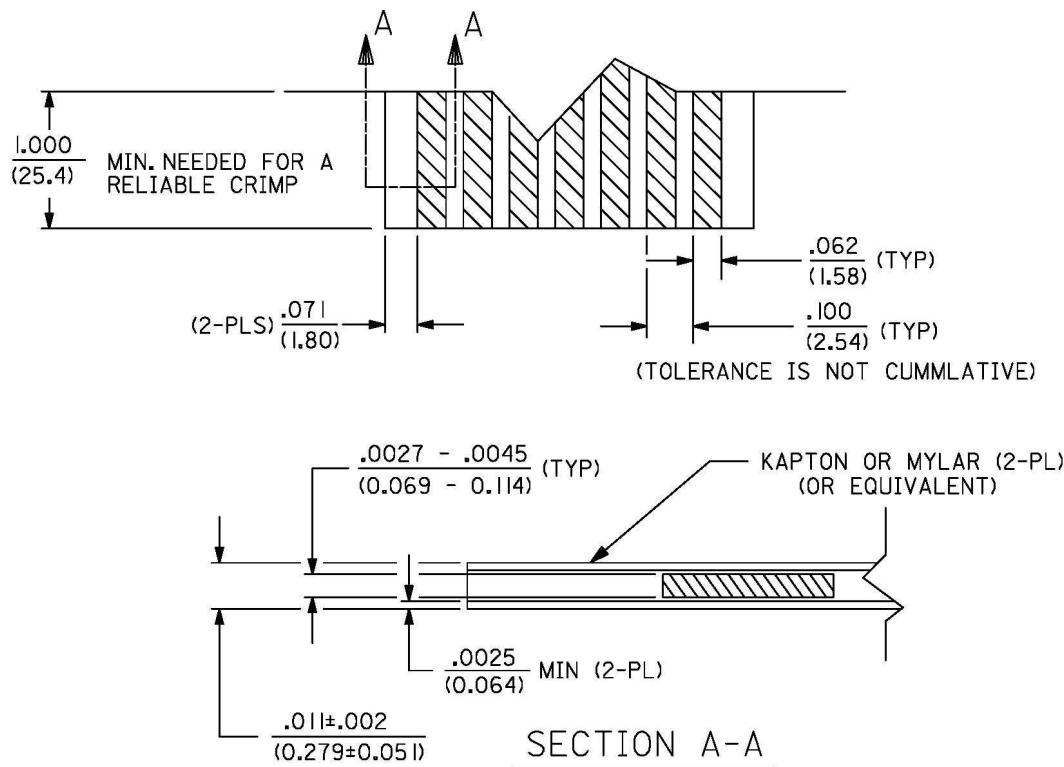
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## 2.2.4 Flat Flex Cable

The cable, not supplied by Molex, is an important integral part of this interconnection system. Its process and component materials must be controlled. The cable design along with this interconnection must be tested in the application for which it is intended.

### 2.2.4.1 Flat Flex Cable With Copper Conductors

The adhesive used in this type of cable must be compatible with the environment in which it is used. Failure of the adhesive by softening or cohesive or adhesive failure can cause failure in the electrical connection.



**2.2.4.1.1** Cable length required to successfully terminate assemblies in Molex equipment is 1.00/(25.4) minimum.

**2.2.4.1.2** Cable width required to successfully terminate assemblies in Molex equipment is .071/(1.80) each end.

**2.2.4.1.3** If customer deviates from .071/(1.80) width or the 1.00/(25.4) overall length needed for space constraints (such as interim clip or system related constraints), the customer will need to test their design to insure that the adhesive supplied by the flex-circuit vendor does not delaminate and cause failure in the flex circuit.

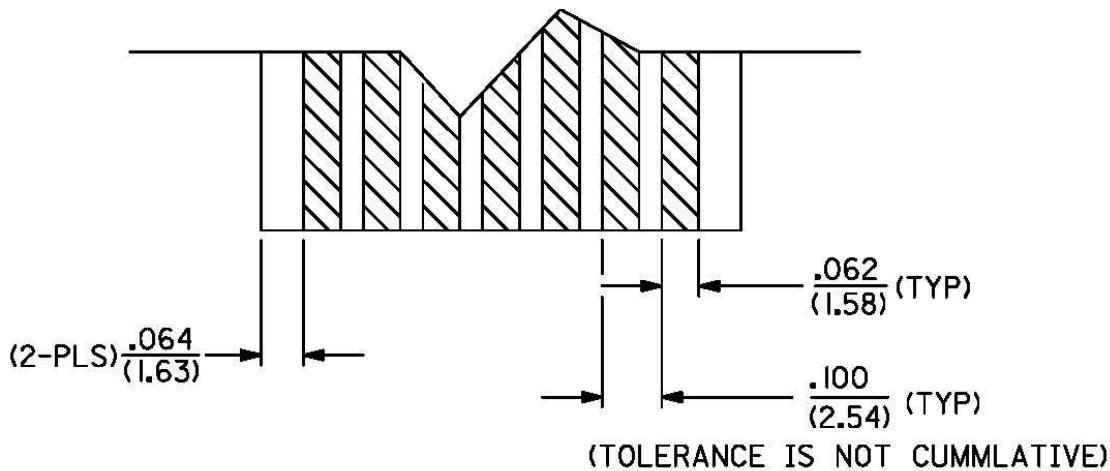
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## 2.2.4.2 Flat Flex Cable With Silver Ink Conductors

Polyester substrate to be (0.127-0.279)/.005-.011 thick Mylar or type "s" Melinax or equivalent. The ink to be Amicon c-229-1 (60% silver) or equivalent.



**2.2.4.2.1** Cable length required to successfully terminate assemblies in Molex equipment is 1.00/(25.4) minimum.

**2.2.4.2.2** Cable width required to successfully terminate assemblies in Molex equipment is .064/(1.63) each end.

**2.2.4.2.3** If customer deviates from .064/(1.63) width or the 1.00/(25.4) overall length needed for space constraints (such as interim clip or system related constraints), the customer will need to test their design to insure that the adhesive supplied by the flex-circuit vendor does not delaminate and cause failure in the flex circuit.

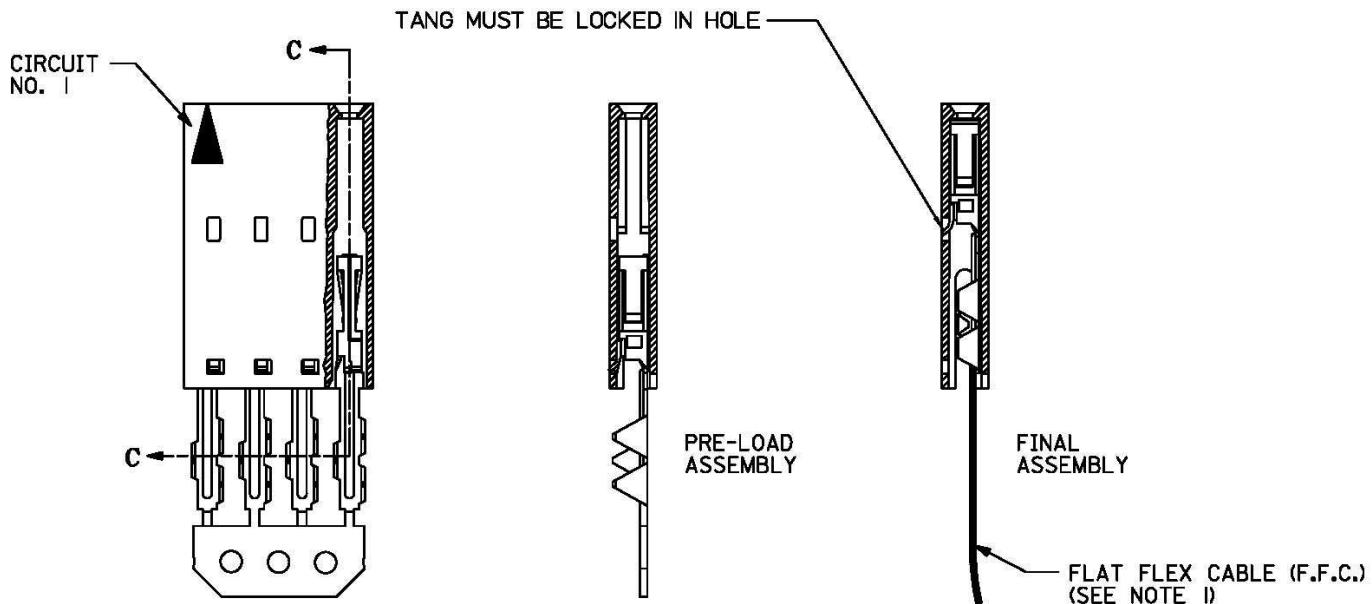
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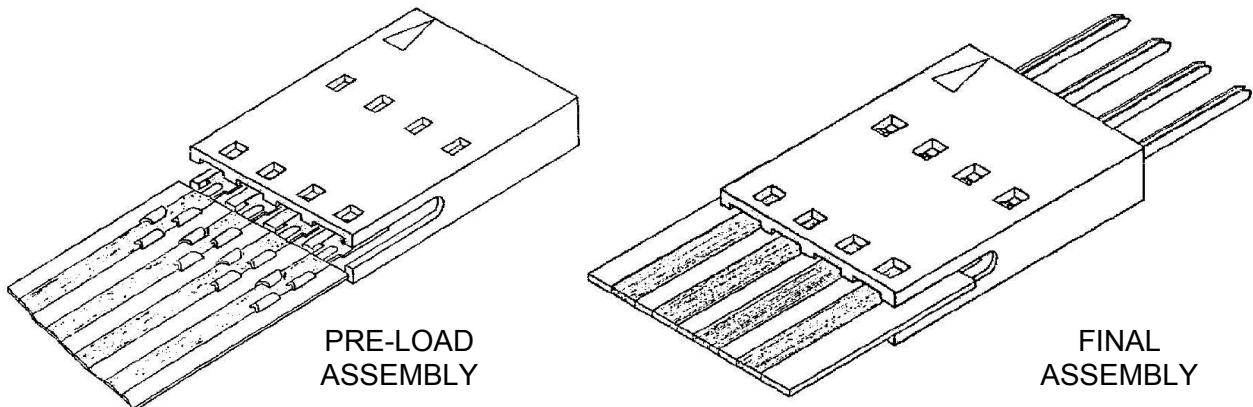
## 2.2.5 Connector Assembly

### 2.2.5.1 Female series 70430



#### SECTION C-C

### 2.2.5.2 Male Series 70431



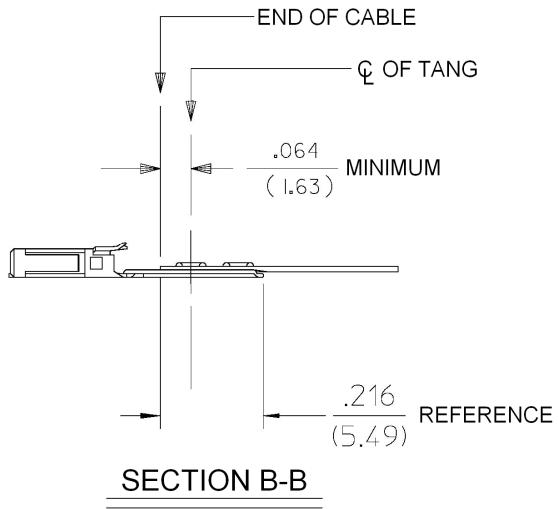
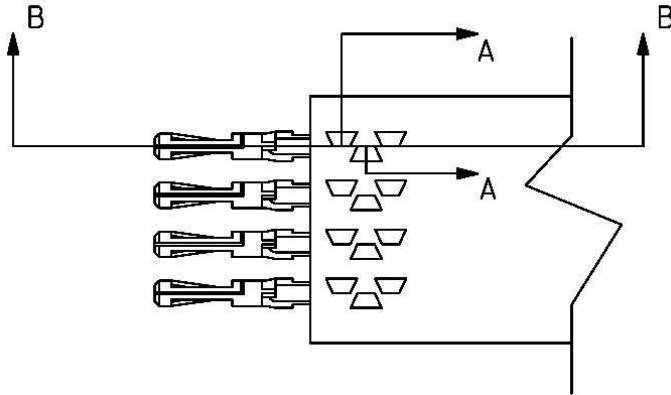
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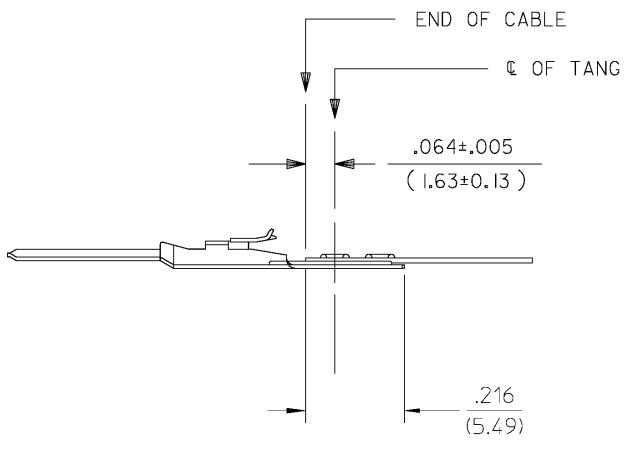
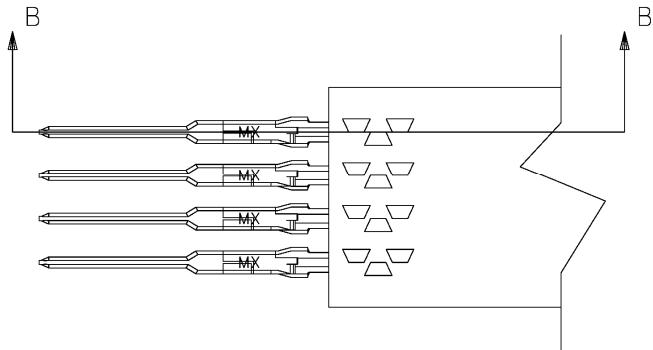
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## 2.2.6 Crimping Requirements

### 2.2.6.1 Female Series 70430



### 2.2.6.2 Male Series 70431

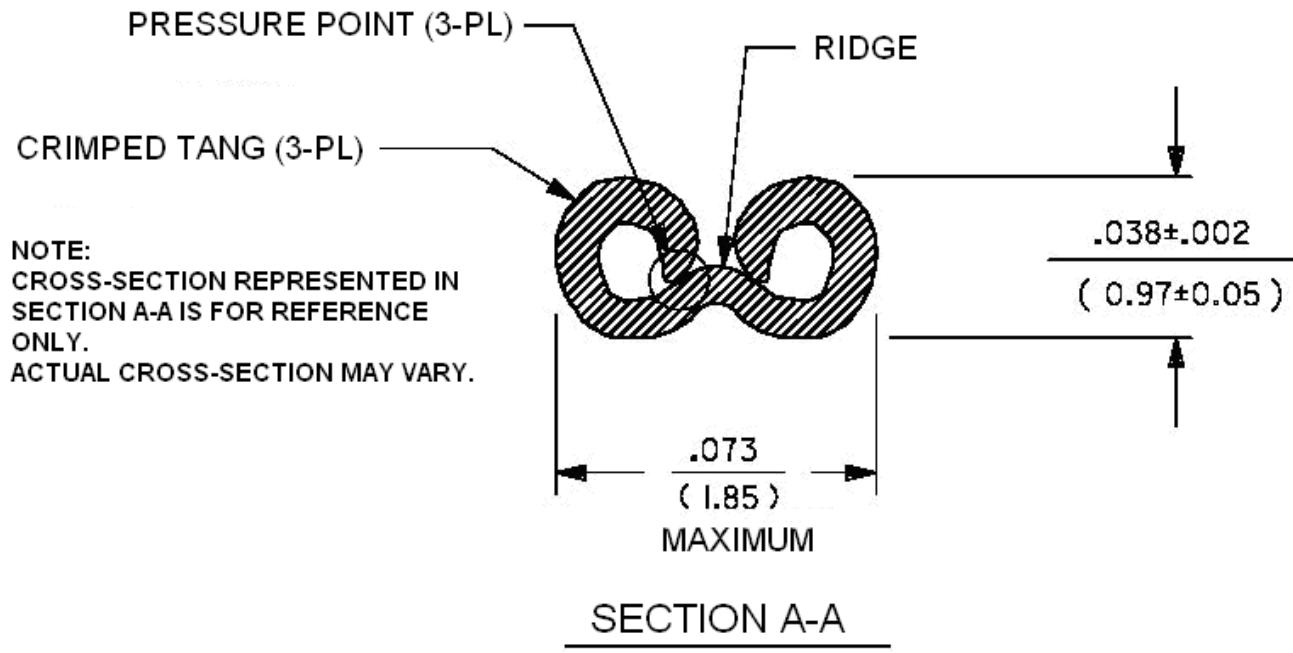


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## 2.2.6.3 Crimping Requirements



**2.2.6.1** Crimped tangs must not be fractured.

**2.2.6.2** Crimps can be evaluated by cross-sectioning them and/or electrical testing.

**2.2.6.3** All three tangs must pierce the conducting element.

**2.2.6.4** All three tangs must be curled beyond the ridge. Also, in the region of the pressure point, the conducting element must be in contact with either the tang or the ridge.

## 2.3 SAFETY AGENCY APPROVALS

**2.3.1** Underwriters Laboratory: UL# E29179

**2.3.2** Canadian Standards Association: CSA# LR19980

## 3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

### 3.1 MOLEX DOCUMENTS

#### 3.1.1 FEMALE SERIES 70430

SD-70430-002

4 CIRCUIT FFC WITH P LATCH OPTION

SD-70430-003

ASSEMBLY CONNECTOR F.F.C. FEMALE SINGLE ROW  
(2.54)/.100 GRID

SD-70430-004

ASSEMBLY CONNECTOR F.F.C. FEMALE SINGLE ROW  
(2.54)/.100 GRID

SD-70430-005

ASSEMBLY CONNECTOR F.F.C. FEMALE SINGLE ROW  
(2.54)/.100 GRID

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SD-70430-900	FLAT FLEX CONNECTOR FEMALE SINGLE ROW WITH VOIDS
SDA-70430-****	ASSEMBLY CONNECTOR F.F.C. FEMALE SINGLE ROW (2.54)/.100 GRID
SDA-70430-0001-0024	ASSEMBLY CONNECTOR F.F.C. FEMALE SINGLE ROW (2.54)/.100 GRID
SDA-70430-0036-0059	ASSEMBLY CONNECTOR F.F.C. FEMALE SINGLE ROW (2.54)/.100 GRID
SDA-70430-0071-0094	ASSEMBLY CONNECTOR F.F.C. FEMALE SINGLE ROW (2.54)/.100 GRID
SDA-70430-0141-0164	ASSEMBLY CONNECTOR F.F.C. FEMALE SINGLE ROW (2.54)/.100 GRID
SDA-70430-0176-0199	ASSEMBLY CONNECTOR F.F.C. FEMALE SINGLE ROW (2.54)/.100 GRID
SDA-70430-0211-0234	ASSEMBLY CONNECTOR F.F.C. FEMALE SINGLE ROW (2.54)/.100 GRID
SDA-70430-0246-0269	ASSEMBLY CONNECTOR F.F.C. FEMALE SINGLE ROW (2.54)/.100 GRID
SDA-70430-0316-0339	ASSEMBLY CONNECTOR F.F.C. FEMALE SINGLE ROW (2.54)/.100 GRID
SDA-70430-0351-0374	ASSEMBLY CONNECTOR F.F.C. FEMALE SINGLE ROW (2.54)/.100 GRID
SDA-70430-386-0409	ASSEMBLY CONNECTOR F.F.C. FEMALE SINGLE ROW (2.54)/.100 GRID
SDA-70430-0421-0444	ASSEMBLY CONNECTOR F.F.C. FEMALE SINGLE ROW (2.54)/.100 GRID
SDA-70430-0491-0514	ASSEMBLY CONNECTOR F.F.C. FEMALE SINGLE ROW (2.54)/.100 GRID
SDA-70430-9001	ASSEMBLY CONNECTOR F.F.C. FEMALE SINGLE ROW (2.54)/.100 GRID

## 3.1.2 MALE SERIES 70430

SD-70431-001	ASSEMBLY CONNECTOR F.F.C. MALE SINGLE ROW (2.54)/.100 GRID
SDA-70431-****	ASSEMBLY CONNECTOR F.F.C. MALE SINGLE ROW (2.54)/.100 GRID
SDA-70431-0001-0074	ASSEMBLY CONNECTOR F.F.C. MALE SINGLE ROW (2.54)/.100 GRID
SDA-70431-0071-0094	ASSEMBLY CONNECTOR F.F.C. MALE SINGLE ROW (2.54)/.100 GRID
SDA-70431-0246-0199	ASSEMBLY CONNECTOR F.F.C. MALE SINGLE ROW (2.54)/.100 GRID
SDA-70431-0351-0374	ASSEMBLY CONNECTOR F.F.C. MALE SINGLE ROW (2.54)/.100 GRID
SDA-70431-0421-0444	ASSEMBLY CONNECTOR F.F.C. MALE SINGLE ROW (2.54)/.100 GRID

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## 3.2 OTHER DOCUMENTS

MIL-STD-1344A  
MIL-STD-202F  
RS-186-D

## 4.0 RATINGS

### 4.1 VOLTAGE

250 Volts AC (RMS)

### 4.2 CURRENT

2.0 Amps Maximum (Copper conductor cable or circuits)  
0.5 Amps Maximum (Conductive Ink)

### 4.3 TEMPERATURE

Operating: -40°C to +105°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>10 mA</b> . Per MIL-STD-1344A Method 3004.1. (Applies to copper conductors only, the silver inks have high resistances and are not stable enough for resistance measurements at this level).	<b>10</b> milliohms MAXIMUM [initial]
2	<b>Insulation Resistance</b>	Mate Connectors with a voltage of 500 VDC between adjacent terminals and between terminals to ground, per MIL-STD-1344A Method 3003.1.	<b>1000</b> Megohms MINIMUM
3	<b>Dielectric Withstanding Voltage</b>	Mate Connectors with a voltage of 500 VAC for 1 min. between adjacent terminals and between terminals and ground. Per MIL-STD-1344A Method 3003.1.	No breakdown;

### 5.2 MECHANICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
4	<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. Per MIL-STD-1344A Method 2013.1.	<b>2.22 N (.50 lbf)</b> MAXIMUM insertion force & <b>0.28 N (.06 lbf)</b> MINIMUM withdrawal force

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## 5.2 MECHANICAL REQUIREMENTS (Continued)

5	<b>Durability</b>	Mate connectors up to {25 cycles for tin (non-noble) plating OR 50 cycles for gold (noble) plating} at a maximum rate of 10 cycles per minute prior to Environmental Tests. Per MIL-STD-1344A Method 2016.	<b>10</b> milliohms MAXIMUM (change from initial)
6	<b>Terminal Retention Force (in Housing)</b>	Axial pullout force on the terminal in the housing at a rate of <b>25 ± 6</b> mm ( <b>1 ± ¼</b> inch) per minute. Per MIL-STD-1344A Method 2012.1	<b>13.34</b> N (3 lbf) MINIMUM retention force
7	<b>Cable Pullout Force</b>	Follow Procedures per E.I.A. RS-186-D, Metho9d 6 and MIL-STD-202F, Method 211A the cable shall satisfy a gradually applied force of 6 pounds minimum over a two circuit terminated assembly for 15 seconds.	<b>26.69</b> N (6 lbf) MINIMUM pullout force {Recommended minimum value: 75% of tensile strength of the wire}
8	<b>Vibration (Random)</b>	Amplitude: 1.5mm (.060 inches) peak to peak Sweep: 10-55-10 Hertz in one minute Duration: 2 hours in each ±X,±Y,±Z axes Per MIL-STD-1344A Method 2005.1, Test Condition I.	<b>10</b> milliohms MAXIMUM (change from initial) & Visual: No Damage Discontinuity: 1 microsecond maximum (CU conductors only)
9	<b>Shock (Mechanical)</b>	Mate connectors and shock at <b>50</b> in the ±X,±Y,±Z axes, Per MIL_STD_1344A Method 2004.1, Test Condition A.	<b>10</b> milliohms MAXIMUM (change from initial) & Visual: No Damage (CU conductors only)

## 5.3 ENVIRONMENTAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
10	<b>Shock (Thermal)</b>	Mate connectors; expose to 10 cycles of: <u>Temperature °C</u> <u>Duration (Minutes)</u> <b>-40</b> <b>+0/-3</b> <b>30</b> <b>+25</b> <b>±10</b> <b>5</b> MAXIMUM <b>+105</b> <b>+3/-0</b> <b>30</b> <b>+25</b> <b>±10</b> <b>5</b> MAXIMUM	<b>10</b> milliohms MAXIMUM (change from initial) & Visual: No Damage (CU conductors only)
11	<b>Thermal Aging</b>	Mate connectors; expose to: <b>250</b> hours at <b>105 ± 2°C</b> Per MIL-STD-202F Method 108A Test Condition B.	<b>10</b> milliohms MAXIMUM (change from initial) & Visual: No Damage (CU conductors only)

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## 5.3 ENVIRONMENTAL REQUIREMENTS (Continued)

12	Humidity (Cyclic)	Mate connectors: cycle per MIL-STD-1344A Method 1002.1, Type II without cold dip: Temperature cycles between $25 \pm 3^{\circ}\text{C}$ at $95 \pm 5\%$ relative humidity and $65 \pm 3^{\circ}\text{C}$ at $95 \pm 5\%$ relative humidity. {Note: Remove surface moisture and air dry for 1 hour prior to measurements.}	<b>10</b> milliohms MAXIMUM (change from initial) (CU conductors only) & Dielectric Withstanding Voltage: No Breakdown & Insulation Resistance: <b>100</b> Megohms MINIMUM & Visual: No Damage
13	Corrosive Atmosphere: Sulfur Dioxide Gas (SO <sub>2</sub> )	Mate connectors: Duration: <b>24</b> hours exposure; Atmosphere: <b>50</b> parts per million (ppm) SO <sub>2</sub> gas; Temperature: <b>40</b> $\pm 3^{\circ}\text{C}$	<b>10</b> milliohms MAXIMUM (change from initial) & Visual: No Damage

## 6.0 PACKAGING

Parts are packaged to protect against damage during handling, transit, and storage. Connector housing assemblies are packaged in plastic tubes in the "pre-loaded" condition.

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