
3 mm Micro Hi Connector

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for the 3 mm Micro Hi connector family. This connector family has wire-to-board and wire-to-wire configurations. The connectors are available in 2 to 24 positions in a double row configuration, and 2 to 12 positions in a single row configuration, with both configurations using 16 to 30 AWG wire.

1.2. Qualification

When tests are performed on the subject product line, procedures specified in Figure 1 shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

1.3. Qualification Test Results

The Qualification Test Report number for this testing is 501-152066. This documentation is on file at and available from Engineering Practices and Standards (EPS).

2. APPLICABLE DOCUMENTS

The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the latest edition of the document applies. In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of this specification and the referenced documents, this specification shall take precedence.

2.1. TE Connectivity (TE) Documents

- [109-197](#): Test Specification (TE Test Specifications vs EIA and IEC Test Methods)
- [501-152066](#): Qualification Test Report (3 mm Micro Hi Connector)

2.2. Commercial Standard

EIA-364: Electrical Connector/Socket Test Procedures Including Environmental Classifications

3. REQUIREMENTS

3.1. Design and Construction

Product shall be of the design, construction and physical dimensions specified on the applicable product drawing.

3.2. Materials

Materials used in the construction of this product shall be as specified on the applicable product drawing.

3.3. Ratings

- Voltage: 600 volts AC or DC
- Current: See Figure 1 for applicable current carrying capability
- Temperature: -40 to 105°C

3.4. Test Requirements and Procedures Summary

Unless otherwise specified, all tests shall be performed at ambient environmental

Test Description	Requirement	Procedure
Initial Examination of Product.	Meets requirements of product drawing.	EIA-364. Visual and dimensional (C of C) inspection per product drawing.
Final Examination of Product.	Meets visual requirements.	EIA-364. Visual inspection.
ELECTRICAL		
Contact Resistance(LLCR).	5 milliohms maximum (Initial). 6 milliohms maximum (After test).	EIA-364-23. Subject specimens to 100 milliamperes maximum and 20 millivolts maximum open circuit voltage. See Figure 3. Does not include wire resistance
Insulation Resistance.	1000 megohms minimum initial.	EIA-364-21. Unmate & unmount connectors: apply a voltage of 500 VDC between adjacent contacts of mated specimens.
Dielectric Withstanding Voltage.	No breakdown, flashover, or 0.5 milliampere maximum leakage.	EIA-364-20, Condition I. 1000 volts AC for 1 minute at sea level. Test between adjacent contacts of mated specimens.
Temperature Rise vs Current.	30°C maximum temperature rise at specified current (100% energized). See Figure 4.	EIA-364-70, Method 2. Mate connectors, measure the temperature rise at the rated current. The ambient condition is still air at 25°C.
MECHANICAL		
Mating and Unmating Force	8.0 N (1.8 lbf) maximum insertion force & 2.0 N (0.45lbf) minimum withdrawal force (Tin plated) 5.6 N (1.26 lbf) maximum insertion force & 1.5 N (0.34lbf) minimum withdrawal force (Gold plated).	EIA-364-13 Mate and unmate connector (male to female) at a rate of 25 ± 6 mm per minute. (Per circuit). Latch disengages.
Terminal Retention Force (in Housing)	24.5 N (5.5 lbf) minimum retention force.	EIA-364-29 Axial pullout force on the terminal in the housing at a rate of 25 ± 6 mm per minute.
Durability	LLCR is 6 milliohms maximum after test. See Note.	EIA-364-9 Mate connectors up to 30 cycles at a maximum rate of 10 cycles per minute prior to Environmental Tests.

Figure 1 Cont.

Test Description	Requirement	Procedure
Vibration (Random)	LLCR is 6 milliohms maximum after test. Discontinuity < 1 microsecond. See Note.	EIA-364-28, test condition VII, Letter D. Test Duration: 15 minutes each axis.
Shock (Mechanical)	LLCR is 6 milliohms maximum after test. Discontinuity < 1 microsecond. See Note.	EIA-364-27 Mate connectors and shock at 50 g's with ½ sine wave (11 milliseconds) shocks in the ±X,±Y,±Z axes (18 shocks total).
Wire Retension Force (Axial, wire from terminal)	Minimum pull-out force: 16 Awg: 88.0 N (19.8 lbf) 18 Awg: 88.0 N (19.8 lbf) 20 Awg: 57.8 N (13.0 lbf) 22 Awg: 35.5 N (8.0 lbf) 24 Awg: 26.6 N (6.0 lbf) 26 Awg: 13.3 N (3.0 lbf) 28 Awg: 8.9 N (2.0 lbf) 30 Awg: 6.6 N (1.5 lbf)	EIA-364-8 Apply an axial pullout force on the wire at a rate of 25 ± 6 mm per minute.
Latch Retension Force	45 N (10.125 lbf) minimum yield strength	EIA-364-98 Full mate and then Unmate the connectors at a rate of 25 ± 6 mm per minute.
ENVIRONMENTAL		
Temperature Life	LLCR is 6 milliohms maximum after test. See Note.	EIA-364-17 Mate connectors, expose to: 240 hours at 105 ± 2°C or 500 hours at 85 ± 2°C.
Humidity/Temperature Cycling	Dielectric Withstanding Voltage: No breakdown at 500 VAC and Insulation Resistance: 1000 Megohms minimum.	EIA-364-31 Mate connectors: expose to a temperature of 40 ± 2°C with a relative humidity of 90%~95% for 96 hours. Note: Remove surface moisture and air dry for 1 hour prior to measurements
Cold Resistance	LLCR is 6 milliohms maximum. See Note.	EIA-364-56 Mate connectors: Duration: 96 hours; Temperature: -40 ± 3°C
Thermal Shock	No damage. See Note.	EIA-364-32 Test cycles: 5cycles, Temperature range : -55±3°C→30 minute, 85±2°C→30 minute.


NOTE

Shall meet visual requirements, show no physical damage, and meet requirements of additional tests as specified in the Product Qualification and Requalification Test Sequence shown in Figure 2.

Figure 1 (end)

1.1. Product Qualification and Requalification Test Sequence

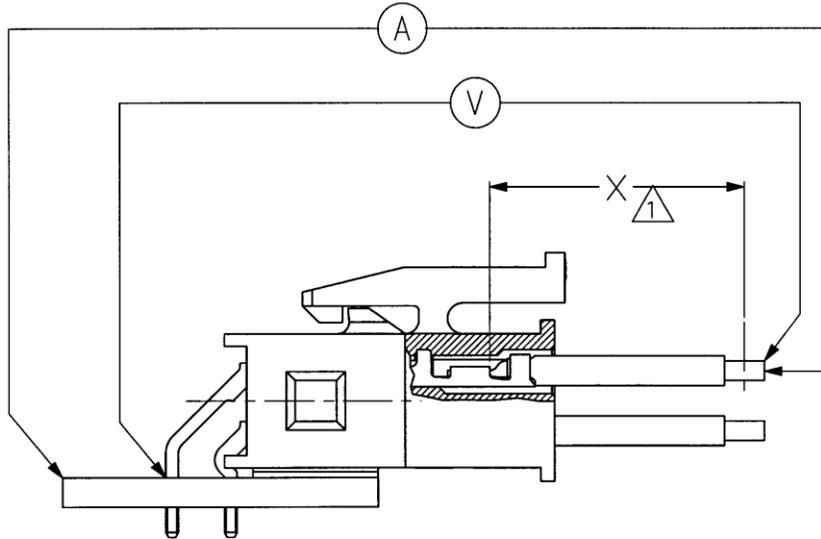
Test or Examination	Test Group (a)							
	1	2	3	4	5	6	7	8
	Test Sequence (b)							
Examination of Product	1,7	1,10	1,5	1,6	1,6	1	1	1
Contact Resistance	2,4,6	2,6	2,4	2,5	2,5			
Insulation Resistance		3,8						
Dielectric Withstanding Voltage		4,9						
Temperature Rise vs Current				3				
Mating and Unmating Force					3			
Terminal Retention Force (in Housing)						2		
Durability					4			
Vibration (Random)	3							
Shock (Mechanical)	5							
Wire Retension Force (Axial, wire form terminal)							2	
Latch Retension Force								2
Temperature Life			3					
Humidity/Temperature Cycling		7						
Cold Resistance				4				
Thermal Shock		5						



NOTE

- a. *Specimens shall be prepared in accordance with applicable Instruction Sheets and shall be selected at random from current production. All test groups shall each consist of a minimum of 5 specimens.*
- b. *Numbers indicate sequence in which tests are performed.*

Figure 2



i **NOTE** Resistance due to X length of wire is to be removed from all readings.

Figure 3
Termination Resistance Measurement Points

CURRENT DERATING REFERENCE INFORMATION (A/PER PIN)							
Circuit Size	2	4	6,8	10	12	14,16,18	20,22,24
16 AWG (A/PER PIN)	12.5A	12A	10.5A	10.5A	9.0A	8.5A	8.0A
18 AWG (A/PER PIN)	10.5A	9.5A	8.5A	8.0A	8.0A	7.5A	7.0A
20 AWG (A/PER PIN)	9.0A	9.0A	7.0A	6.5A	6.5A	6.0A	5.5A
22 AWG (A/PER PIN)	6.0A	5.0A	4.5A	4.0A	4.0A	3.5A	3.5A
24 AWG (A/PER PIN)	5.5A	5.0A	4.5A	4.0A	3.5A	3.5A	3.0A
26 AWG (A/PER PIN)	4.5A	4.0A	4.0A	3.5A	3.5A	3.0A	2.5A
28 AWG (A/PER PIN)	4.0A	3.5A	3.0A	3.0A	3.0A	2.5A	2.0A
30 AWG (A/PER PIN)	3.5A	3.0A	3.0A	2.5A	2.5A	1.5A	1.0A

Figure 4
Wire Size & Pin Number V.S. Current Rate

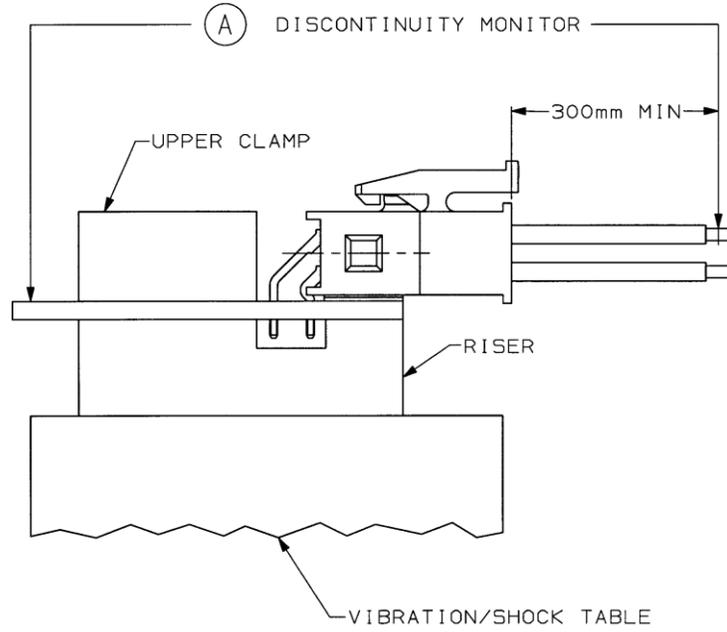


Figure 5
Vibration & Mechanical Shock Mounting
Fixture