



**BUCHANAN WireMate Two-Piece Connector System**

**1. SCOPE**

1.1. Content

This specification covers performance, tests, and quality requirements for the TE Connectivity (TE) WireMate 2-Piece Connector System. This system has two components for connecting discrete wires to a printed circuit board; connector assembly, header assembly. The connector has a "Poke-In" style wire connection and a separable interface for mating header connection. The header has "blade" style contacts and SMT solder connection to the pc board.

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

Qualification testing on the subject product line has not been completed. The Qualification Test Report number will be issued upon completion of qualification testing.

**2. APPLICABLE DOCUMENTS AND FORMS**

The following documents constitute a part of this specification to the extent specified herein. Unless otherwise indicated, the latest edition of the document applies.

2.1. TE Documents

- 114-133105: WireMate Poke-In Connector Application Specification
- 114-133111: WireMate Poke-In Header Application Specification
- 501-134088: Qualification Test Report (TBD)

2.2. Industry Documents

- EIA-364

2.3. Reference Document

- [109-197](#) Test Specification (TE Test Specification vs EIA and IEC Test Methods)

**3. REQUIREMENTS**

3.1. Design and Construction

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

3.2. Ratings

Voltage	Current	Wire Size	Temperature
250VDC	5A	18 AWG	-40° to 85°C
250VDC	3A	20, 22, 24 AWG	

### 3.3. Performance and Test Description

Product is designed to meet the electrical, mechanical and environmental performance requirements specified in Figure 1. Unless otherwise specified, all tests shall be performed at ambient environmental conditions

### 3.4. Test Requirements and Procedures Summary.

TEST DESCRIPTION	REQUIREMENT	PROCEDURE
Initial examination of product	Meets requirements of product drawing and Application Specification 114-133105 and 114-133111	EIA-364-18. Visual and dimensional (C of C) inspection per product drawing.
Final examination of product	Meets visual requirements.	EIA-364-18. Visual inspection.
<b>ELECTRICAL</b>		
Low Level Contact Resistance (LLCR).	$\Delta$ 25 milliohms maximum.	EIA-364-23. Subject specimens to 100 milliamperes maximum and 20 millivolts maximum open circuit voltage.
Insulation Resistance.	100 meg-ohms minimum initial. 10 meg-ohms minimum final.	EIA-364-21. 500 volts DC, 2 minute hold. Test between adjacent contacts of mated specimens.
Withstanding Voltage.	One minute hold with no breakdown or flashover.	EIA-364-20, Condition I. 1500 volts AC at sea level. Test performed between adjacent contacts of mated specimens.
Temperature Rise vs Current.	33°C maximum temperature rise at specified current (100% energized). Refer to section 3.2 for current value.	EIA-364-70, Method 1. Stabilize at a single current level until 3 readings at 5 minute intervals are within 1°C.
Current Cycle	$\Delta$ 5°C maximum temperature rise between cycle 1 and cycle 84	EIA-364-55, Condition C Series connect contacts in mated connector/header. 84 cycles (on 30 minutes, off 30 minutes) at 150% of rated current. Test samples to be at maximum wire size and at minimum wire size.

**Figure 1 (continued)**

**MECHANICAL**

Random Vibration.	No discontinuities of 1 microsecond or longer duration. See Note (a).	EIA-364-28, Test Condition VII, Test Condition Letter E. Subject mated specimens to 20 to 500 Hz random levels at 4.9g. 90 minutes in each of 3 mutually perpendicular planes.															
Mechanical Shock.	No discontinuities of 1 microsecond or longer duration. See Note (a).	EIA-364-27, Condition H. Subject mated specimens to 30 G's half-sine shock pulses of 11 milliseconds duration. Three shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks.															
Wire Extraction Force	<table border="1"> <thead> <tr> <th>Min Force</th> <th>Wire Size</th> <th>Stranding</th> </tr> </thead> <tbody> <tr> <td>30 N</td> <td>18AWG/0.75mm<sup>2</sup></td> <td>Solid/Stranded</td> </tr> <tr> <td>30 N</td> <td>20AWG/0.50mm<sup>2</sup></td> <td>Solid/Stranded</td> </tr> <tr> <td>20 N</td> <td>22AWG/0.32mm<sup>2</sup></td> <td>Solid/Stranded</td> </tr> <tr> <td>13.4 N</td> <td>24AWG/0.20mm<sup>2</sup></td> <td>Solid</td> </tr> </tbody> </table>	Min Force	Wire Size	Stranding	30 N	18AWG/0.75mm <sup>2</sup>	Solid/Stranded	30 N	20AWG/0.50mm <sup>2</sup>	Solid/Stranded	20 N	22AWG/0.32mm <sup>2</sup>	Solid/Stranded	13.4 N	24AWG/0.20mm <sup>2</sup>	Solid	EIA-364-8. Measure force necessary to remove wire from poke-in contact specimens at a maximum rate of 12.7 mm per minute. Reference Figure 4
Min Force	Wire Size	Stranding															
30 N	18AWG/0.75mm <sup>2</sup>	Solid/Stranded															
30 N	20AWG/0.50mm <sup>2</sup>	Solid/Stranded															
20 N	22AWG/0.32mm <sup>2</sup>	Solid/Stranded															
13.4 N	24AWG/0.20mm <sup>2</sup>	Solid															
Durability.	See Note (a)	EIA-364-9. Mate and un-mate specimens in vertical direction (ref. fig.7) 10 cycles at a maximum rate of 360 cycles per hour.															
Header Retention Force	<table border="1"> <thead> <tr> <th>Min Force*</th> <th>Direction</th> </tr> </thead> <tbody> <tr> <td>100 N</td> <td>Push Off</td> </tr> <tr> <td>80 N</td> <td>Pull Off</td> </tr> </tbody> </table> <p>* Force per contact</p>	Min Force*	Direction	100 N	Push Off	80 N	Pull Off	EIA 364-29, Method C For 8-position, 8mm pitch header soldered to pc board, measure force necessary to overcome blade contacts solder joints and remove header from pc board. Reference Figure 5 for test directions.									
Min Force*	Direction																
100 N	Push Off																
80 N	Pull Off																
Connector Retention Force	70N min. force per contact	EIA 364-29, Method C For 8-position, 8mm pitch connector installed on test mount plate, measure force necessary to remove connector from test mount plate. Reference Figure 6 for test directions.															
Mating Force	<table border="1"> <thead> <tr> <th>Max. Force*</th> <th>Circuits</th> <th>Direction</th> </tr> </thead> <tbody> <tr> <td rowspan="2">43N</td> <td rowspan="2">8</td> <td>Horizontal</td> </tr> <tr> <td>Vertical</td> </tr> </tbody> </table> <p>* Force per contact</p>	Max. Force*	Circuits	Direction	43N	8	Horizontal	Vertical	EIA 364-13 For header soldered to pc board and connector installed on test mount plate, measure force necessary to fully mate header to connector. Reference Figure 7.								
Max. Force*	Circuits	Direction															
43N	8	Horizontal															
		Vertical															
Wire Insertion force	9.0 N max. force per contact	EIA-364-13 Measure force necessary to insert wire at a maximum rate of 12.7 mm [0.5 in.] per minute. Wire release lever shall not be depressed during wire insertion.															

**Figure 1 (continued)**

**ENVIRONMENTAL**

Thermal Shock.	See Note (a)	EIA-364-32. Subject mated specimens to 150 cycles between -40 and 90°C with 30 minute dwells at temperature extremes and 1 minute transition between temperatures.
Humidity/Temperature Cycling.	See Note (a)	EIA-364-31, Method IV. Subject mated specimens to 10 cycles (10 days) between 25 and 65°C at 80 to 100% RH
Temperature life	See Note (a)	EIA-364-17 Method A (without load), (110° ±2°C), Time Condition B (250 hrs.)



**NOTE (a):**

*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)**

## 3.5. Product Qualification and Requalification Test Sequence

TEST OR EXAMINATION	TEST GROUP (a)							
	A	B	C	D	E	F	G	H
	TEST SEQUENCE (b)							
Initial examination of product	1	1	1	1	1	1	1	1
LLCR	2,6	2,5,7,9	2, 7		2, 5			
Insulation Resistance			3,8					
Withstanding Voltage			4, 9					
Temperature Rise vs Current		3,10			3, 6			
Random Vibration	4	8						
Mechanical Shock	5							
Wire Insertion Force				3				
Wire Extraction Force (18 to 24 AWG)				4				
Current Cycling					4			
Header Retention Force, Push Off,						3		
Header Retention Force, Pull Off							2	
Connector Retention Force								2
Mating Force, Vertical				2				
Mating Force, Horizontal						2		
Durability	3							
Thermal Shock			5					
Humidity/Temperature Cycling		4	6					
Temperature Life		6						
Final examination of product	7	11	10	5	7	4	3	3


**NOTE**

- (a) See paragraph 4.1.A  
 (b) Numbers indicate sequence in which tests are performed.

**FIGURE 2**

#### 4. QUALITY ASSURANCE PROVISIONS

##### 4.1. Qualification Testing

###### A. Specimen selection

Specimens shall be prepared in accordance with applicable Instruction Sheets and shall be selected at random from current production. Minimum specimen quantities are shown in Figure 3.

Specimen Description	Test Group Quantity (Minimum)							
	A	B	C	D	E	F	G	H
2319461-8 (5mm Conn.)	4	4	8	7	8			
2318582-8 (8mm Conn.)	4	4		7		5		5
2318770-8 (5mm Hdr.)	4	4	8	7	8			
2318136-8 (8mm Hdr.)	4	4		7		5	5	
18AWG/0.75mm <sup>2</sup> Solid Copper Wire	A/R	A/R	A/R	A/R	A/R			
20AWG/0.52mm <sup>2</sup> Solid Copper Wire				A/R				
22AWG/0.32mm <sup>2</sup> Solid Copper Wire				A/R				
24AWG/0.20mm <sup>2</sup> Solid Copper Wire	A/R	A/R	A/R	A/R	A/R			
18AWG/0.75mm <sup>2</sup> Stranded Copper Wire	A/R	A/R		A/R	A/R			
20AWG/0.52mm <sup>2</sup> Stranded Copper Wire				A/R				
22AWG/0.32mm <sup>2</sup> Stranded Copper Wire	A/R	A/R		A/R	A/R			

**FIGURE 3**

###### B. Test Sequence

Qualification inspection shall be verified by testing specimens as specified in Figure 3.

##### 4.2. Requalification testing

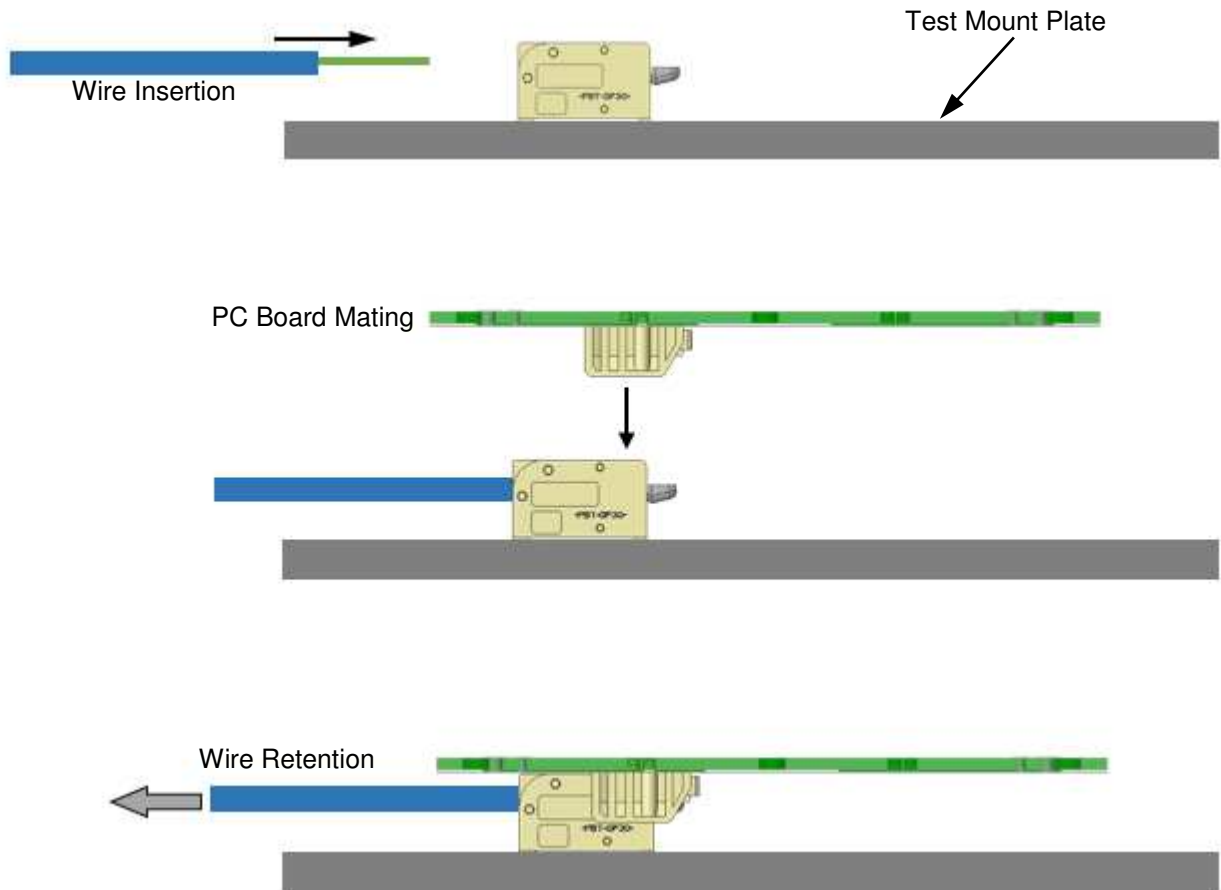
If changes significantly affecting form, fit or function are made to the product or manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of the original testing sequence as determined by development/product, quality and reliability engineering.

##### 4.3. Acceptance

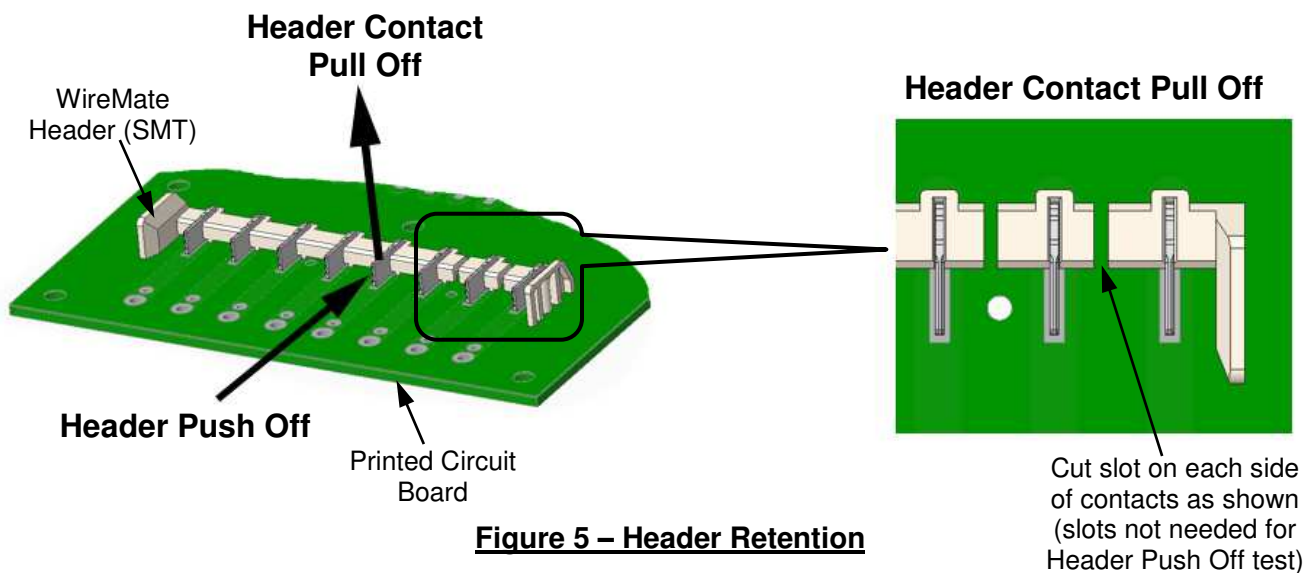
Acceptance is based on verification that the product meets the requirements of Figure 1. Failures attributed to equipment, test setup or operator deficiencies shall not disqualify the product. If product failure occurs, corrective action shall be taken and specimens resubmitted for qualification. Testing to confirm corrective action is required before resubmittal.

##### 4.4. Quality Conformance Inspection

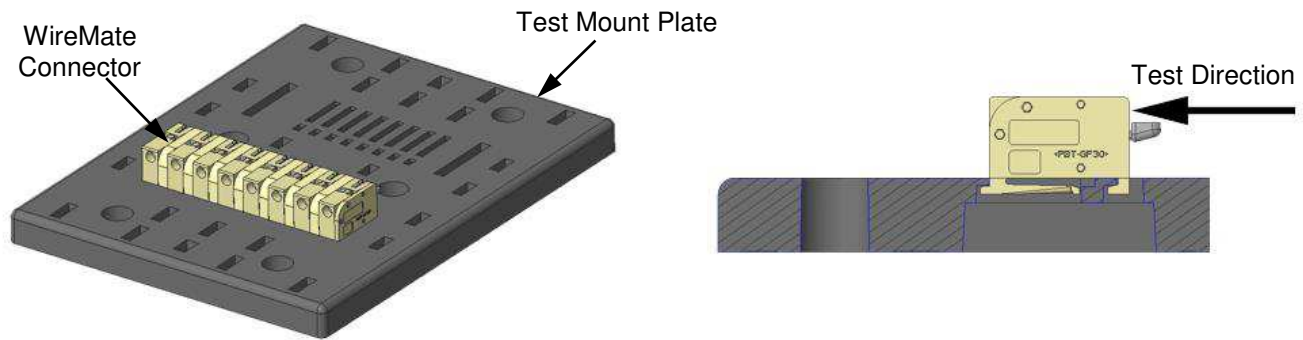
The applicable quality inspection plan shall specify the sampling acceptable quality level to be used. Dimensional and functional requirements shall be in accordance with the applicable product drawing and this specification.



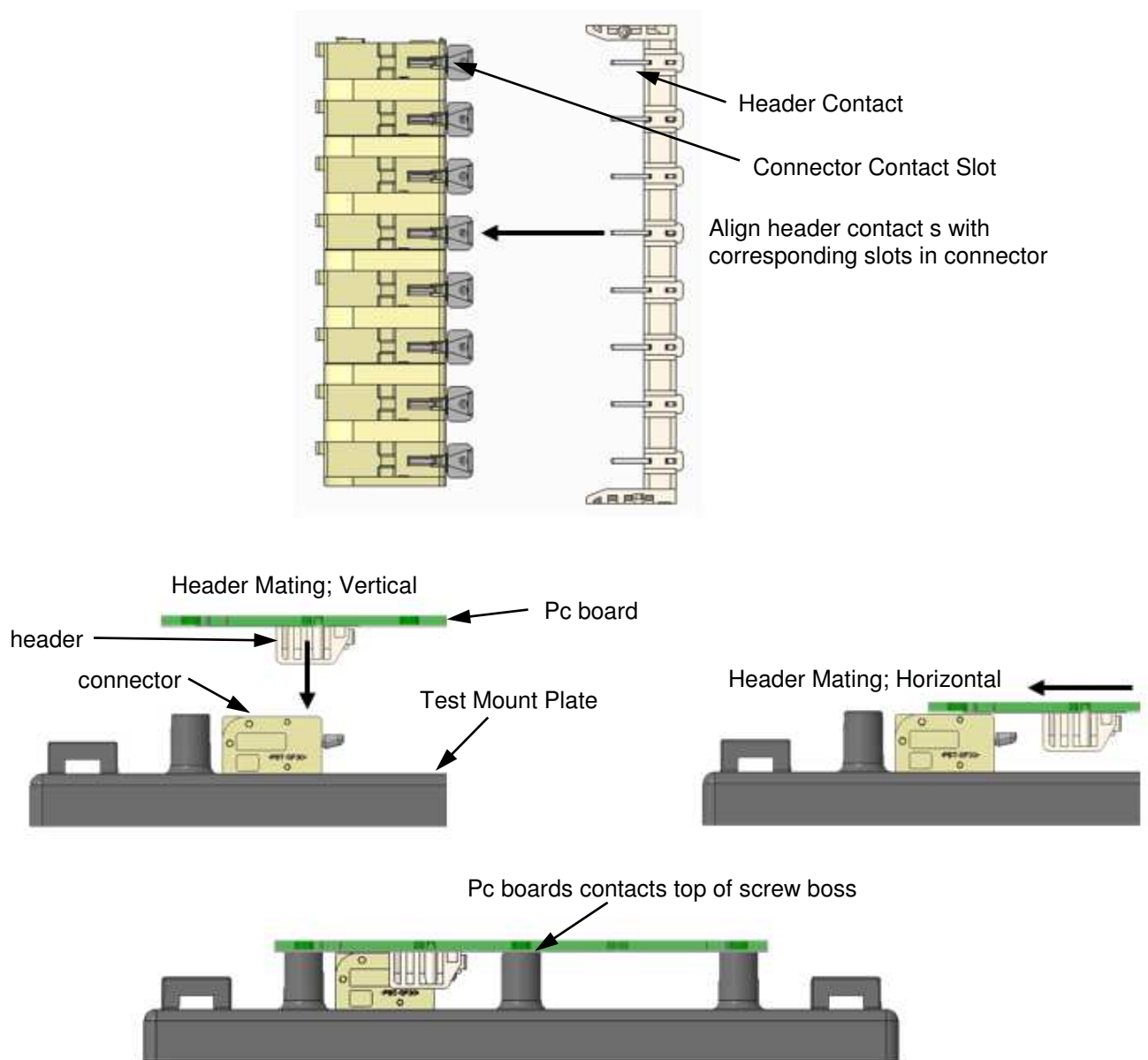
**Figure 4 – Wire Extraction**



**Figure 5 – Header Retention**



**Figure 6 – Connector retention**



**Figure 7 – Mating Force**