



Temperature Rise vs. Current – 5mm RAST 3 Position Plug Housing

1. INTRODUCTION

1.1. Purpose

The purpose of this test was to evaluate the Performance of various wire combinations outside of 114-2074 spec per customer harness requirements. Wires used was provided from the customer's application.

1.2. Scope

This report covers the Current Rating of TE Connectivity (TE) connector housings and terminals described in paragraph 1.4 when tested to the requirements as identified by the requestor for current rating. The full report can be viewed under TP-18-01669 Rev A. Crimp Verification information can be found under PRJ-17-000906305 Files.

1.3. Conclusion

The Current rating results for Test Sets 1 through 3 were returned to the requestor for further evaluation.

1.4. Test Specimens

All positive lock terminals were inserted into Rast 5.0 3 Position plug housing 2292843-3 and then mated to 3P header 2232043-3. The specimen labeled in Table 1 described the terminal and wire size that was used when evaluating the current rating of the terminal.

Table 1 – Test Specimens

Test Set	Qty	Part Number	Test Specimen Attributes
1	3	2238136-2	LIF Positive Lock Terminal Crimp to 0.75mm ² Wire
2	3	2238136-2	LIF Positive Lock Terminal Crimp to 22 AWG Wire
3	3	2238135-2	LIF Positive Lock Terminal Crimp to 0.75mm ² + 22AWG Wire

1.5. Test Sequence

The specimens listed in Table 1 were subjected to testing as outlined in Table 2.

Table 2 – Testing Sequence

Test or Examination	Test Sets
	1 through 3
Temperature Rise vs. Current	Test Sequence
	1

1.6. Environmental Conditions

Unless otherwise stated, the following environmental conditions prevailed during testing:

Temperature: 15°C to 35°C

Relative Humidity: 20% to 80%

2. SUMMARY OF TESTING

2.1. Temperature Rise vs. Current

Test Set 1: 2238136-2 LIF Positive Lock Terminal Crimped to 0.75mm² wire

Table 3 – Crimp Verification Results

Category	Measurement	Specification
Crimp Height (Inches)	0.0473"	0.047" +/- 0.002"
Crimp Width (Inches)	0.0801"	0.080"
Crimp Pull Test (Lbs.)	36.99	20

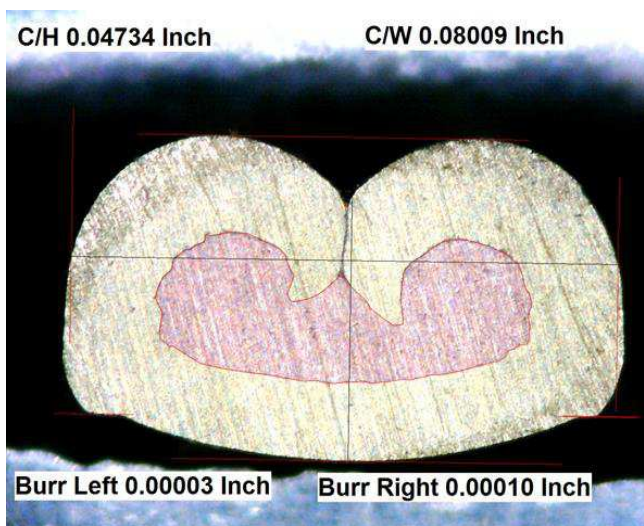


Figure 1: Typical Crimp Cross Section

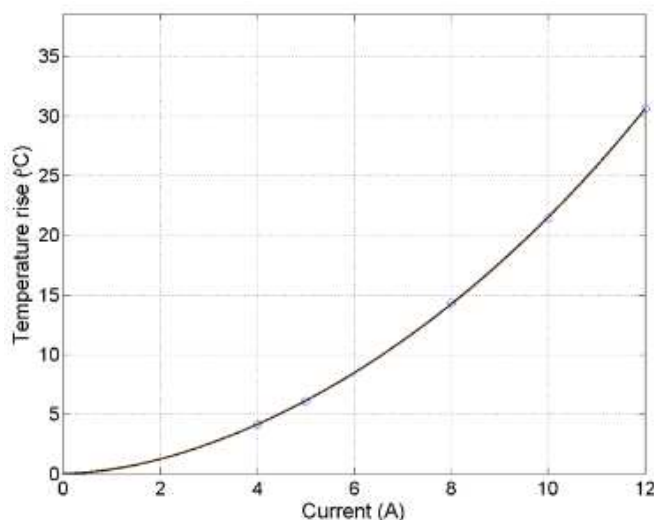


Figure 2: Temperature Rise vs. Current

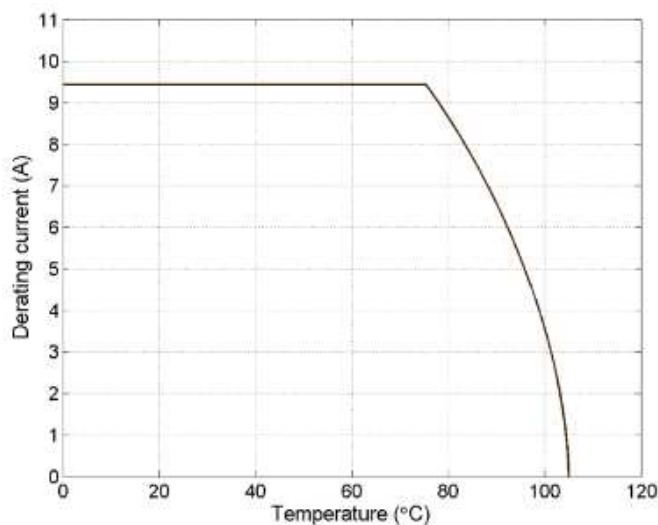


Figure 3: Calculated Current Derating Curve

Temperature rise value = 30 °C while the loading current arise to 11.8A during actual test

Test Set 2: 2238136-2 LIF Positive Lock Terminal Crimped to 22AWG wire

Table 4 – Crimp Verification Results

Category	Measurement	Specification
Height (Inches)	0.0409"	0.041"+/-0.002"
Width (Inches)	0.080"	0.080"
Pull Test (Lbs.)	21	8

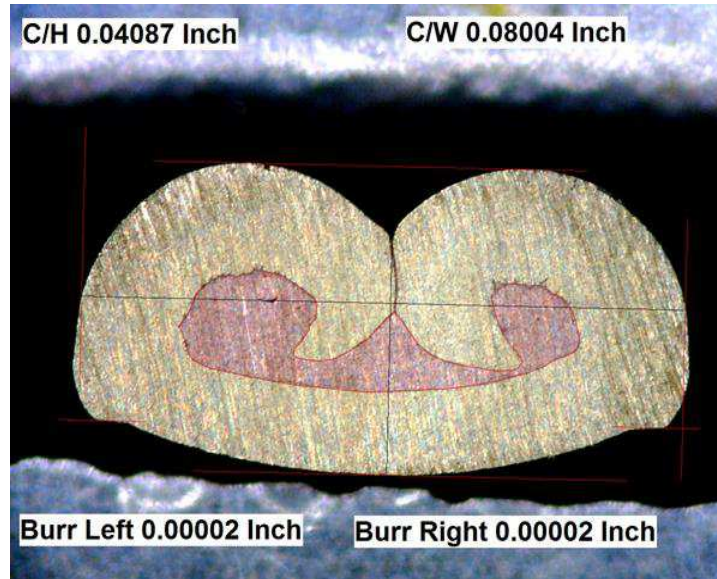


Figure 4: Typical Crimp Cross Section

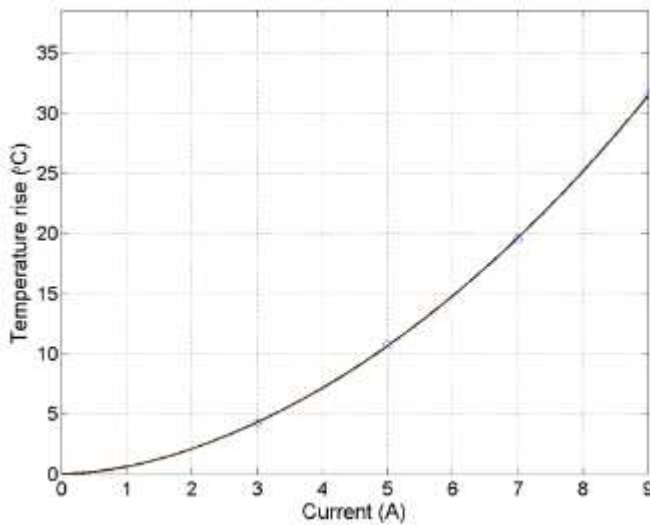


Figure 5: Temperature Rise vs. Current

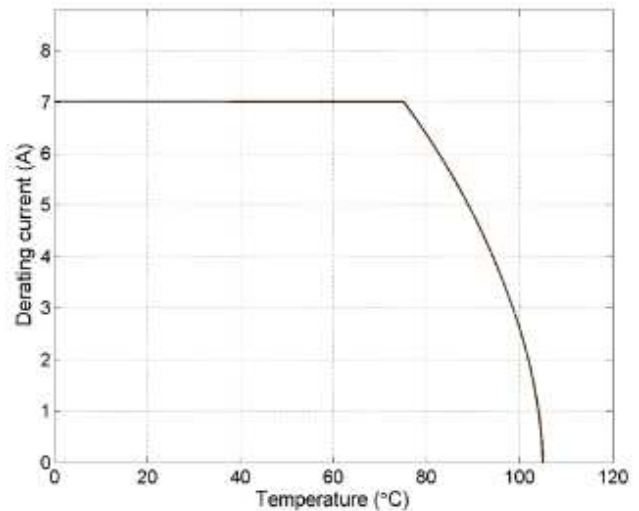


Figure 6: Calculated Current Derating Curve

Temperature rise value =30 °C while the loading current arise to 8.8A during actual test.

Test Set 3: 2238135-2 LIF Positive Lock Terminal Crimped to 0.75mm² + 22AWG wire

Table 5 – Crimp Verification Results

Category	Measurement	Specification
Height (Inches)	0.0498"	0.050" +/-0.002"
Width (Inches)	0.110"	0.110"
Pull Test (Lbs.)	18.95	8

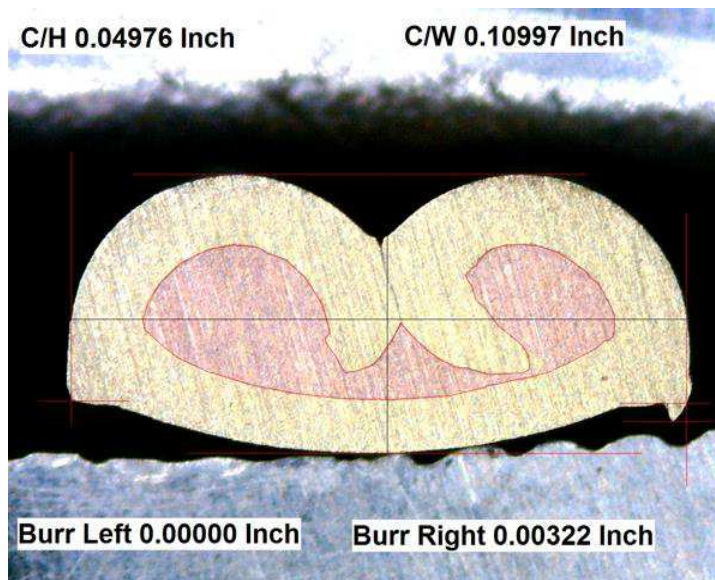


Figure 7: Typical Crimp Cross Section

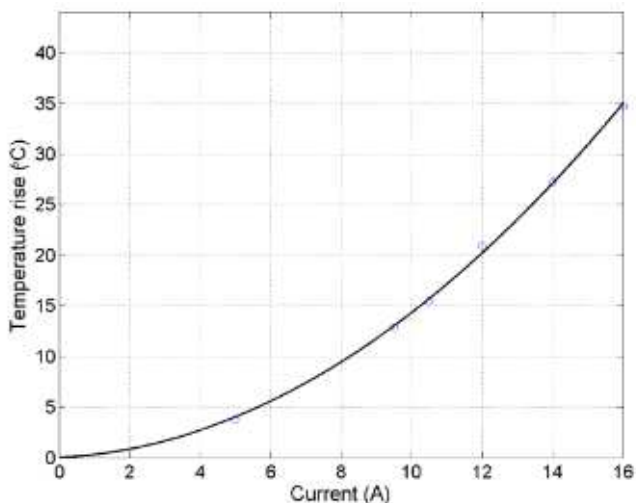


Figure 8: Temperature Rise vs. Current

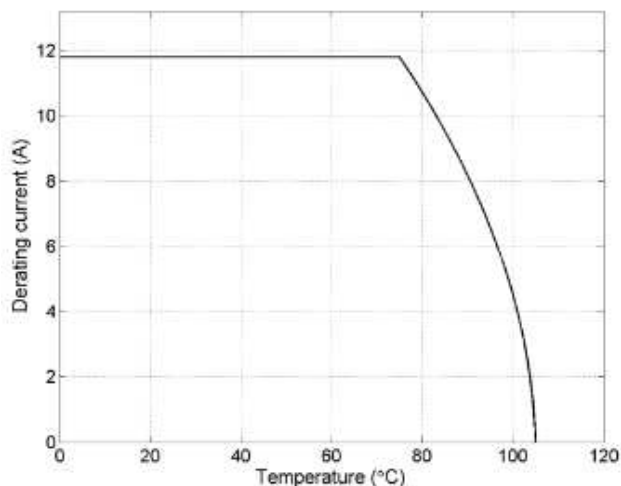


Figure 9: Calculated Current Derating Curve

Temperature rise value =30° C while the loading current arise to 14.8A during actual test.

3. TEST METHODS

3.1. Temperature Rise Vs Current

- The test specimens were tested in the as specified state, thermocouple was soldered on the crimp.
- Wire all terminal poles and connect to DC power supply, measure and record the temperature rising when the temperature is steady
- Thermal stability was achieved when the temperature rises of a minimum of three consecutive reading taken at 5 minutes intervals minimum does not differ by more than $\pm 1^{\circ}\text{C}$ for each thermocouple.
- The current shall be maintained for a period over 1 h during the test.

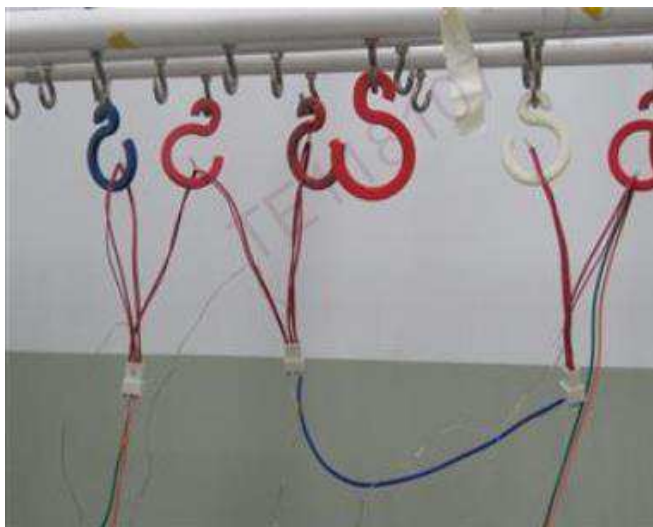


Figure 10: Typical Test Set-up



Figure 11: Typical Thermocouple Location