Header, AMP-DUAC*

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for the AMP-DUAC* header. This 2 to 24 position vertical header is designed for power applications and uses female contacts in the receptacle connector mating half. 1.14 mm [0.045 inch] square posts are used in the header which has a polarized housing to prevent improper insertion of the mating half.

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

Successful qualification testing on the subject product line was completed on 01May98. The test file number for this testing is CTL 8221-000-004A. This documentation is on file at and available from the Americas Regional Laboratory.

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

- 109-1: General Requirements for Test Specifications
- 109 Series: Test Specifications as indicated in Figure 1
- 114-6067: Application Specification (wire crimp only)
- 501-434: Qualification Test Report

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

- Contact: Brass, tin-lead or duplex gold/tin-lead over nickel plating
- Housing: Thermoplastic, UL94V-0 or UL94V-2

3.3. Ratings

- Voltage: 600 vac
- Current: See Figure 3 for applicable current carrying capability
- Temperature: -55 to 105℃

3.4. 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 per Test Specification 109-1.

3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
Examination of product.	Meets requirements of product drawing and AMP Spec 114-6067 (wire crimp only).	Visual, dimensional and functional per applicable quality inspection plan.
ELECTRICAL		
Termination resistance.	10 milliohms maximum.	TE Spec 109-6-6. Subject mated contacts assembled in housing to 20 mv maximum open circuit at 100 ma maximum.
Insulation resistance.	1000 megohms minimum.	TE Spec 109-28-4. Test between adjacent contacts of unmated samples.
Dielectric withstanding voltage.	1500 vac at sea level. 1 minute hold with no breakdown or flashover.	TE Spec 109-29-1. Test between adjacent contacts of unmated samples.
Temperature rise vs current.	30°C maximum temperature rise at specified current.	TE Spec 109-45-1. Measure temperature rise vs current. See Figure 3.
MECHANICAL		
Vibration, sinusoidal.	No discontinuities of 1 microsecond or longer duration. See Note.	TE Spec 109-21-1. Subject mated samples to 10-55-10 Hz traversed in 1 minute with 1.5mm [.06 inch] DA maximum excursion. 2 hours in each of 3 mutually perpendicular planes.
Mechanical shock, specified pulse.	No discontinuities of 1 microsecond or longer duration. See Note.	TE Spec 109-26-1. Subject mated samples to 50 G's half-sine shock pulses of 11 milliseconds duration. 3 shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks.
Durability.	See Note.	TE Spec 109-27. Manually mate and unmate samples for 30 cycles at a maximum rate of 600 cycles per hour.
Mating force.	6.9 Newtons [1.54 pounds] average per contact maximum.	TE Spec 109-42, Condition A. Measure force necessary to mate samples at a maximum rate of 12.7 mm [0.5 inch] per minute.

Figure 1 (continued)

Test Description	Requirement	Procedure
Unmating force.	0.5 Newton [0.11 pound] average per contact minimum.	TE Spec 109-42, Condition A. Measure force necessary to unmate samples with locking latches disengaged at a maximum rate of 12.7 mm [0.5 inch] per minute.
ENVIRONMENTAL		
Thermal shock.	See Note.	TE Spec 109-22. Subject unmated samples to 5 cycles between -55 and 105℃.
Humidity-temperature cycling.	See Note.	TE Spec 109-23-3, Condition B. Subject mated and unmated samples to 10 cycles between 25 and 65℃ at 95% RH.
Temperature life.	See Note.	TE Spec 109-43. Subject mated samples to temperature life at 105℃ for 500 hours.

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)

3.6. Product Qualification and Requalification Test Sequence

Test or Examination	Test Group (a)		
	1	2	3
	Test Sequence (b)		
Examination of product	1,9	1,9	1,8
Termination resistance	3,7	2,7	
Insulation resistance			2,6
Dielectric withstanding voltage			3,7
Temperature rise vs current		3,8	
Vibration	5	6(c)	
Mechanical shock	6		
Durability	4		
Mating force	2		
Unmating force	8		
Thermal shock			4
Humidity-temperature cycling		4(d)	5
Temperature life		5	

NOTE

(a) See paragraph 4.1.A.
(b) Numbers indicate sequence in which tests are performed.
(c) Discontinuities shall not be measured. Energize at 18℃ level for 100% loadings per Test Specification 109-151.
(d) Precondition samples with 10 cycles durability.

Figure 2

4. QUALITY ASSURANCE PROVISIONS

4.1. Qualification Testing

A. Sample Selection

Samples 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 samples. Test groups 1 and 2 shall each consist of mated pairs of AMP-DUAC headers and the proper AMP-DUAC socket connector (e.g. 106527 series receptacle housing and 106528 or 106529 series contacts) unless otherwise required by the test procedure. Test group 1 shall be terminated to the maximum wire size. Samples for test groups 1 and 2 shall be mounted on printed circuit board PN 60-469228-1. Samples for test group 3 shall be unmounted and unmated.

B. Test Sequence

Qualification inspection shall be verified by testing samples as specified in Figure 2.

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. When product failure occurs, corrective action shall be taken and samples 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.

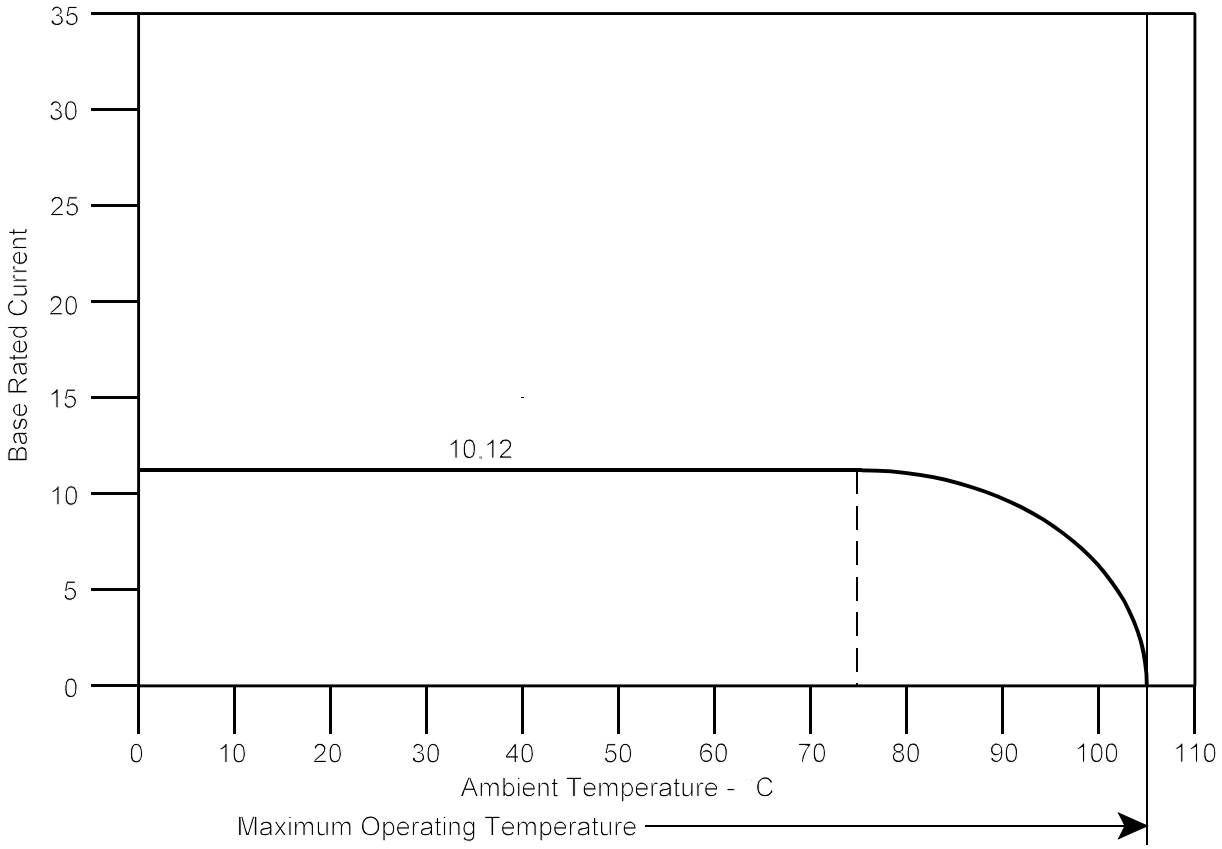

Figure 3A
Current Carrying Capability

Percent Connector Loading	Wire Size AWG				
	26	24	22	20	18
Single Contact	.45	.59	.72	.86	1
50	.38	.50	.61	.73	.85
100	.34	.44	.54	.65	.76

NOTE

To determine acceptable current carrying capacity for percentage connector loading and wire gage indicated, use the Multiplication Factor (F) from the above chart and multiply it times the Base rated Current for a single circuit at the maximum ambient operating temperature shown in Figure 3A.

Figure 3B
Current Rating