

PRODUCT SPECIFICATION

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for COAXICON\* size 1 modified ARINC contacts for use in ARINC 600 series traffic alert and collision avoidance system (TCAS) connectors.

1.2. Qualification

When tests are performed on subject product line, procedures specified in AMP 109 series specifications shall be used. All inspections shall be performed using applicable inspection plan and product drawing.

2. APPLICABLE DOCUMENTS

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

2.1. AMP Documents

- A. 109-1: General Requirements for Test Specifications
- B. 109 Series: Test Specifications as indicated in Figure 1. (Comply with MIL-STD-202, MIL-STD-1344 and EIA RS-364)
- C. Corporate Bulletin 401-76: Cross-reference between AMP Test Specifications and Military or Commercial Documents
- D. 114-9017: Application Specification
- E. 501-233: Test Report

2.2. Military Standard

MIL-C-39012: Connectors, Coaxial, Radio Frequency, General Specification For

3. REQUIREMENTS

3.1. Design and Construction

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

\* Trademark

Product Code: 3313

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<p><b>CONTROLLED DOCUMENT</b> This specification is a controlled document per AMP Specification 102-21. It is subject to change and Corporate Standards should be contacted for latest revision.</p>				<p>DR <i>[Signature]</i></p>		<p><b>AMP</b> AMP Incorporated Harrisburg, PA 17105-3608</p>		
				<p>CHK <i>At Emerald 2/8/94</i></p>				
				<p>APP <i>David A. J. [Signature]</i> 10/15/94</p>		<p>NO <b>108-1427</b></p>	<p>REV 0</p>	<p>LOC B</p>
<p>0</p>	<p>Release per EC 0600-1530-93</p>	<p><i>BHB</i></p>	<p><i>17 FEB 94</i></p>	<p>PAGE 1 OF 7</p>	<p>TITLE CONTACTS, COAXICON, MODIFIED SIZE 1 FOR USE IN ARINC 600 SERIES TCAS CONNECTORS</p>			
<p>LTR</p>	<p>REVISION RECORD</p>	<p>APP</p>	<p>DATE</p>					

### 3.2. Materials

- A. Contact: Brass or beryllium copper, gold over nickel plating
- B. Dielectric: Polytetrafluoroethylene
- C. Ferrule: Annealed copper, tin plating
- D. Outer shell: Brass or beryllium copper, gold over nickel plating;  
or stainless steel, passivated

### 3.3. Ratings

- A. Voltage: 335 volts alternating current at sea level
- B. Current: Signal application only
- C. Temperature: -65 to 165°C
- D. Characteristic Impedance: 50 ohms
- E. Frequency Range: 0 to 2 Ghz

### 3.4. Performance and Test Description

Product is designed to meet electrical, mechanical and environmental performance requirements specified in Figure 1. All tests are performed at ambient environmental conditions per AMP Specification 109-1 unless otherwise specified.

### 3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
Examination of product.	Meets requirements of product drawing and AMP Spec 114-9017.	Visual, dimensional and functional per applicable quality inspection plan.
ELECTRICAL		
Termination resistance, dry circuit.	5 milliohms maximum center contact. 10 milliohms maximum outer contact.	Subject mated contacts assembled in housing to 20 mv open circuit at 100 ma. See Figure 5. AMP Spec 109-6-6.
Dielectric withstanding voltage.	1000 vac at sea level. 500 vac at 50000 feet. No breakdown or flashover.	Test between inner and outer contacts of mated contacts assembled in housings. AMP Spec 109-29-1.
Insulation resistance.	5000 megohms minimum initial. 1000 megohms minimum final.	Test between inner and outer contacts of mated contacts assembled in housings. AMP Spec 109-28-4.
Voltage standing wave ratio (VSWR).	1.5 maximum.	Measure VSWR of mated contacts assembled in housings over rated frequency range. AMP Spec 109-9.

Figure 1 (cont)

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Test Description	Requirement	Procedure
RF insertion loss.	.3 dB maximum at 2 GHz.	Measure insertion loss of mated contacts assembled in housings. AMP Spec 109-174.
MECHANICAL		
Vibration, random.	No discontinuities greater than 1 microsecond. See Note (a).	Subject mated contacts assembled in housings to 16.91 G's with 100 ma current applied. 8 hours in each of 3 mutually perpendicular planes. See Figure 6. AMP Spec 109-21-5, Test level E. Outer conductors shall not be series wired. Monitor discontinuities on individual outer conductors only.
Physical shock.	No discontinuities greater than 1 microsecond. See Note (a).	Subject mated contacts assembled in housings 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. See Figure 6. AMP Spec 109-26-1.
Mating force.	15 pounds maximum average per contact.	Measure force necessary to mate connector assemblies at rate of .5 inch per minute. Calculate force per contact. AMP Spec 109-42, Condition A.
Unmating force.	1 pound minimum average per contact.	Measure force necessary to unmate connector assemblies at rate of .5 inch per minute. Calculate force per contact. AMP Spec 109-42, Condition A.

Figure 1 (cont)

Test Description	Requirement	Procedure
Crimp tensile.	60 pounds minimum with RG-142/U cable.	Determine crimp tensile at rate of 1 inch per minute. AMP Spec 109-16.
Durability.	See Note (a).	Mate and unmate contacts assembled in housings for 500 cycles at maximum rate of 250 cycles per hour. AMP Spec 109-27.
ENVIRONMENTAL		
Thermal shock.	See Note (a).	Subject mated contacts assembled in housings to 5 cycles between -65 and 165°C. AMP Spec 109-22.
Humidity-temperature cycling.	See Note (a).	Subject mated contacts assembled in housings to 10 humidity-temperature cycles between 25 and 65°C at 95% RH. AMP Spec 109-23-4, Condition B, except samples shall be conditioned for minimum of 24 hours at room ambient after final cycle.
Mixed flowing gas.	See Note (a).	Subject mated contacts assembled in housings to environmental class III for 20 days. AMP Spec 109-85-3.
Temperature life.	See Note (a).	Subject mated contacts assembled in housings to temperature life at 165°C for 1000 hours. AMP Spec 109-43.
Salt spray corrosion.	See Note (a).	Subject mated contacts assembled in housings to 5% salt concentration for 48 hours. AMP Spec 109-24.

(a) Shall meet visual requirements, show no physical damage and shall meet requirements of additional tests as specified in Test Sequence in Figure 2.

Figure 1 (end)

### 3.6. Product Qualification and Requalification Test Sequence

Test or Examination	Test Group (a)					
	1	2	3	4	5	6
	Test Sequence (b)					
Examination of product	1,12	1,5	1,7	1,5	1,8	1
Termination resistance, dry circuit	4,8	2,4	2,4	2,4		
Dielectric withstanding voltage					3,7	
Insulation resistance					2,6	
Voltage standing wave ratio						3
RF insertion loss						2
Vibration	6					
Physical shock	7					
Mating force	2,10		5			
Unmating force	3,9		6			
Crimp tensile	11					
Durability	5					
Thermal shock					4	
Humidity-temperature cycling					5	
Mixed flowing gas				3		
Temperature life		3				
Salt spray corrosion			3			

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

Figure 2

## 4. QUALITY ASSURANCE PROVISIONS

### 4.1. Qualification Testing

#### A. Sample Selection

Connector housings and contacts shall be prepared in accordance with applicable Instruction Sheets and shall be selected at random from current production. All contacts shall be assembled into connector housings for testing purposes. Test groups 1, 2, 3, 4 and 5 shall each consist of minimum of 8 mated contact pairs per Figure 3. Cable length for test group 1 shall be 24 inches. Cable length for test groups 2, 3, 4 and 5 shall be minimum of 8 inches. Test group 6 shall consist of 5 samples per Figure 4.

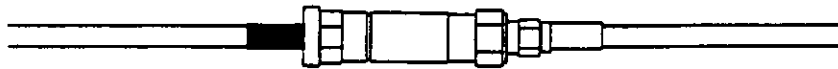


Figure 3

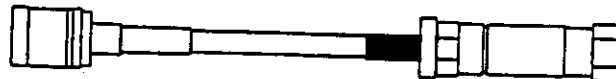


Figure 4

#### 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 product or manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of original testing sequence as determined by development/product, quality and reliability engineering.

#### 4.3. Acceptance

Acceptance is based on verification that product meets requirements of Figure 1. Failures attributed to equipment, test setup or operator deficiencies shall not disqualify 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

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

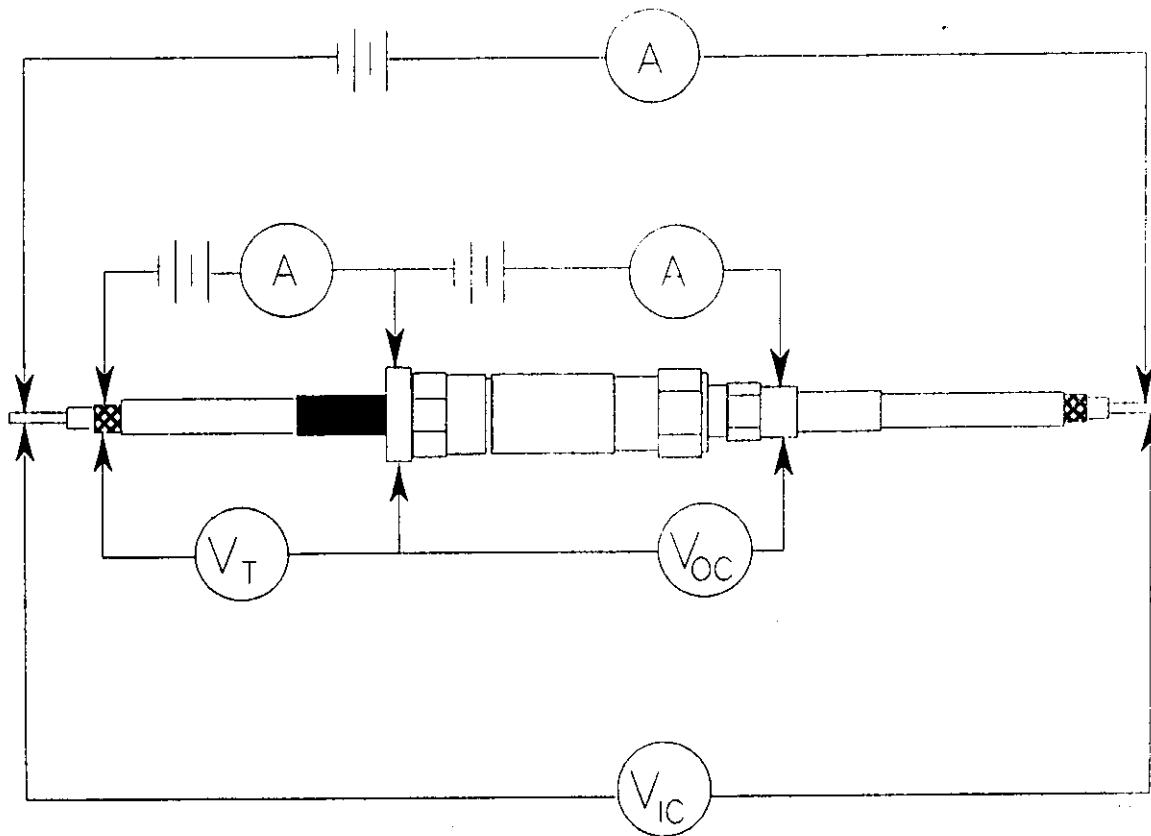


Figure 5  
Termination Resistance Measurement Points

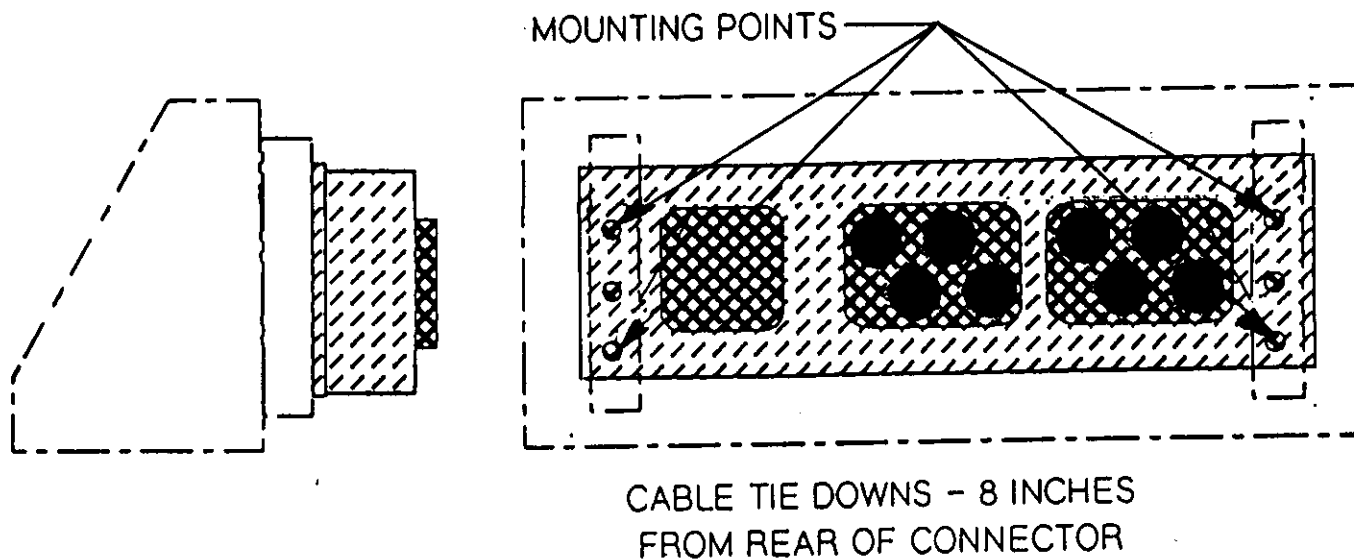


Figure 6  
Vibration & Physical Shock