E-SPRING CONTACT *

The product described in this document has not been fully tested to ensure conformance to the requirements outlined below. Therefore, Tyco Electronics AMP makes no representation or warranty, express or implied, that the product will comply with these requirements. Further, Tyco Electronics AMP may change these requirements based on the results of additional testing and evaluation. Contact Tyco Electronics AMP Engineering for further details.

1. SCOPE

1.1 Content

This specification covers the performance requirements, tests and quality requirements for E-SPRING CONTACT* that mate with tab size 6,3 mm with hole and that is according to the commercial standard EN61210, IEC 760 and/or UNE 20-680-87. PN Involved are the brass and brass tin plated versions of: 336074, 336075 and 336076.

These terminals are suitable for Consumer Goods applications in which low insertion and high retention forces are needed.

1.2. Classification

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

2. APPLICABLE DOCUMENTS

The following documents form a part of this specification to the extent specified herein. 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. AMP Specifications

A. 109-1 : General Requirements for Test Specifications
B. 114-22017 : 6.35 SRS E-Spring Contacts, Application of

2.2. Commercial Standards

IEC Publication 512
IEC " 760, first edition (1983)
UNE " 20-606
UNE " 20-680-87 (equivalent to IEC 760, 1983)
EN 61210
VDE 06.13

3. REQUIREMENTS

3.1. Design and Construction

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

3.2. Materials
Terminals: Brass, Brass tin plated, tin plated. (For Pre-Ni Steel Version see 108-22150)

3.3. Ratings

A. Current/Voltage: 240 Vac at 16 amperes maximum
B. Operating Temperature: -55ºC to 105ºC tin plated connection
-55ºC to 90ºC Plain connection

Maximum operating temperature, included the temperature increasing due to working current flow.

4. PERFORMANCE AND TEST DESCRIPTION

Terminals shall be designed to meet the electrical, mechanical and environmental performance requirements specified in Figure 1.

4.1 Test Requirements and Procedures Summary

TEST DESCRIPTION	REQUIREMENTS			PROCEDURE
Examination of Product	Meets requirements of product drawing and AMP Specification 114-22017			Visual, dimensional and functional per applicable inspection plan
ELECTRICAL				
Termination Resistance Rated Current	Wire Size mm^2	Test Current Ampere	Max.Initial Resistance(Milliohms) for each 12 samples to be used. Brass plain / Brass Tin	Measure potential drop of mated contacts according to UNE 20-606-2, test 2b with details specified in UNE 20680 part 13.1 or according to test 2b of IEC 512-2 with details specified in IEC 760 part 13.1.
	0,32	3	3 / 1,8	
	0,35	3	3 / 1,7	
	0,5	4	2,1 / 1,4	
	0,75	6	1,6 / 1,1	
	1,0	8	1,3 / 0,95	
	1,25	9	1,2 / 0,85	
	1,5	10	1,1 / 0,75	
	2,5	16	0,8 / 0,63	
Temperature Rise (a)	Temperature rise of any individual termination shall not exceed 30ºC. To use the same 12 samples (temp rise= temp of conn - room temp)			Temp rise at rated current; procedure according to test 5a of UNE 20606/3 or IEC 512-3 with details specified in part 14.1 of UNE 20680 or IEC 760
Electrical Overload Resistance	After 24 cycles and at the completion of 500 cycles for the same 12 samples, the following			Subject mated contacts to 500 cycles at 200% rated current for 45 minutes 'ON' - 15 minutes

	requirements shall be met a) Termination resistance of each sample shall not exceed the following limits: wire size / termination resistance Brass plain / Brass Tin 0,32 — 3,5 — 2,5 0,35 — 3,5 — 2,4 0,5 — 2,7 — 1,9 0,75 — 1,9 — 1,5 1 — 1,6 — 1,3 1,25 — 1,5 — 1,1 1,5 — 1,4 — 1,0 2,5 — 1 — 0,8 b)Temperature rise of each termination shall not exceed 85º C	'OFF'. Test shall be performed in accordance with test 10d of UNE 20606-5 or IEC 512-5. Details specified in part 15.1 of UNE 20680 and IEC 760.
Current Temperature Derating	Test the greater section of each PN. The max. temperature will be the max. operating temperature specified in point 3.3. Wire section — Test current 0,75 mm^2 — 6 A 1,5 mm^2 — 10 A 2,5 mm^2 — 16 A	Contact without housing. Procedure according to test 5b of the IEC 512-3 or UNE 20606-3. (See figure 4)

TEST DESCRIPTION	REQUIREMENTS		PROCEDURE
MECHANICAL			
Crimp Tensile	Wire Size Mm^2 0,32 0,35 0,5 0,75 1,0 1,5 2,5	Crimp Tensile Min. Force for each of the 10 samples to be used (N) 60 60 60 80 110 150 230	Determine crimp tensile at a rate of 50 mm minute, according to test method 16d of UNE 20606-8 or IEC 512-18, with details specified in part 17 of UNE 20680 or IEC 760. In double crimping case, the crimp tensile test must be done pulling only the less wire section and the minimum force to test will be the same with simple crimping with the same wire section.

Insertion Forces	Contact insertion forces, initial Number of samples is 10 1st Insertion (N) 35 N max for each sample 25 N Average as reference.	Test shall be performed in accordance with test 13b of UNE 20606-7 or IEC 512.7 • Male tabs AMP PN 928814 without any plating shall be used. • Insertion withdrawal speed shall be 10 mm/min. Maximum. Other details, as specified in part 16d of UNE 20680 or IEC 760.
Withdrawal Forces	The same 10 samples to be used 1st withdrawal (N) 80 max. For each sample For plain contacts: 45 min. For each sample 50 N Average as reference. For tinned contacts: 35 min For each sample 40 N Average as reference. 6th withdrawal (N) 20 min. for each sample 25 N Average as reference. 8th withdrawal (N) 20 min. for each sample 25 N Average as reference. 10th withdrawal (N) 20 min. for each sample 22 N Average as reference.	Test shall be performed in accordance with test 13b of UNE 20606-7 or IEC 512.7 • Male tabs AMP PN 928814 without any plating shall be used. • Insertion withdrawal speed shall be 10 mm/min. Maximum. Other details, as specified in part 16d of UNE 20680 or IEC 760.

End Figure 1

(a) Maximum rated current that can be carried by this product is limited by maximum operating temperature of housings, which is 105º C, and temperature rise of contacts, which is 30ºC. Variables which shall be considered for each application are: wire size, connector size, contact material and ambient temperature.

4.2. Connector Test and Sequences Figure 2

TEST OR EXAMINATION	TEST GROUP (a)					
	1	2	3	4	5	6
	TEST SEQUENCE (b)					
Examination of product	1	1	1-5	1	1	1
Termination Resistance Specified Current	2		2-4			
Temperature Rise vs Current		2				
Current Cycling			3			
Derating Curve						2
Crimp Tensile				2		
Insertion Forces					2	
Withdrawal Forces					3	

5. QUALITY ASSURANCE PROVISIONS

5.1. Qualification Testing

A. Sample Selection

Samples shall be prepared in accordance with applicable Instruction Sheets. They shall be selected at random from current production. Each group shall consist of 10 or more samples per wire size.

B. Test Sequence

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

C. Acceptance

Failure attributed to equipment, test group, or operator deficiencies shall not disqualify the product. When product failure occurs, corrective action shall be taken and samples resubmitted for qualification.

5.2. Re-qualification Testing

Re-qualification shall be established by the cognizant divisional engineering function and may consist of all or any part of the overall qualification program provided that it is conducted within the required time period.

5.3. Quality Conformance Inspection

The applicable AMP inspection plan will 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