1. SCOPE .

This specification covers the performance, test and quality requirements for AMP Surface Mount Modular Jacks.

2. APPLICABLE DOCUMENTS.

The following documents form a part of this specification to the extend 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.

IEC 68	Basic environmental testing procedures.
IEC 512	Basic testing procedures and measuring methods for electromechanical components for electronic equipment.
IEC 603-7	Connectors for frequencies below 3 Mhz for use with printed circuit board.
FCC 68	Rules for Registration of Telephone Equipment Part 68, Subpart F, Connectors.
114-19041	Application Specification for Surface Mount Modular Jacks.
501-19008	Testreport 6 position Side Entry for Surface Mount Modular Jacks.
501-19009	Testreport 4 and 6 position Top Entry & 6 position Bottom Entry for Surface Mount Modular Jacks.

3. REQUIREMENTS.

3.1 Design and Construction.

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

3.2 Ratings.

A. Voltage : 150 Vac Maximum
B. Current : 1,5 Amps at max 30°C.
C. Operating temp.: -40°C to 70°C
D. Derating curve: IEC 512-3 Test 5b, standard atmospheric conditions. See figure 1.

NOTE:
The operating temperature can be upgraded to 85°C if, for the termination of the Modular Plug, a cable is applied with a high temperature resistant conductor insulation. The 70°C maximum value is valid for e.g. PVC insulated conductors on the Modular Plug lead.

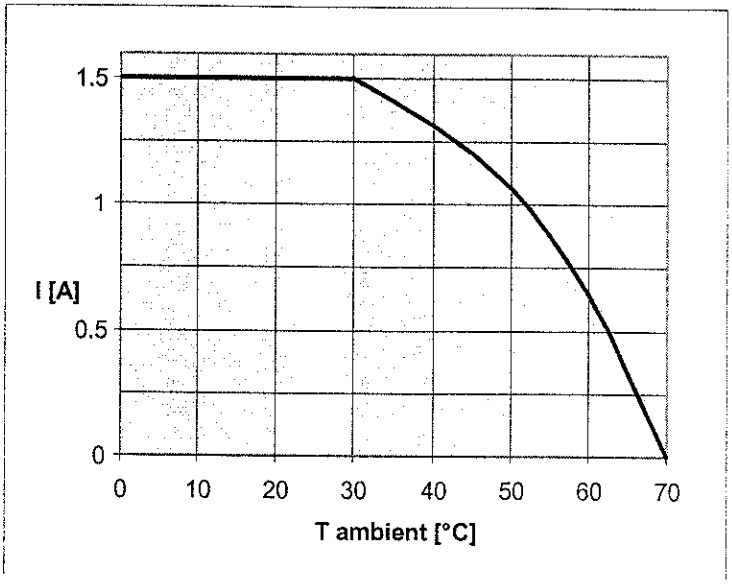

Figure 1: Current derating curve.

3.3 Performance and Test Description.

Connectors shall be designed to meet the electrical, mechanical and environmental performance requirements specified in par. 3.4.

3.4 Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
	VISUAL	
Examination of product	Meet requirements of product drawing and AMP spec. 114-19041	Visual, dimensional and functional per applicable inspection plan.
Solderability	Max. 5% dewetting on the solder tines. Max. 10% dewetting on the flat surface of the extra metal bracket. Inspection with 10 times magnification.	Inspect surfaces of solder tines and the flat surface of the metal bracket visually after samples have been immersed in flux and solderbath. Temperature of bath: 235°C Duration: 2 seconds Ageing: 4 hours at 155°C Ref.: IEC 68-2-58, test Td
Resistance to reflow soldering heat.	After exposion to test no deformation nor defects, that are detrimental to connector functions shall be evident.	Expose to heat at 260°C in an oven for 3 minutes.

Test Description	Requirement	Procedure
ELECTRICAL		
Contact resistance, low level	Contact resistance ΔR 20 mΩ max.	Measure voltage drop of mated contacts with an open circuit voltage of max. 20 mV at 100 mA, Calculate resistance. See figure 2. Ref.: IEC 512-2, test 2a
Contact resistance, rated current.	Contact resistance ΔR 20 mΩ max.	Measure voltage drop of mated contacts while carrying 1,5 A current. Calculate resistance. See figure 2. Ref.: IEC 512-2, test 2b
Voltage proof	1,0 kVac RMS dielectric withstanding voltage, 1 minute hold. Max. leakage current: 1 mA	Subject adjacent contacts of mated Plug and Jack to the specified voltage. Ref.: IEC 512-2 test 4a, method B.
Insulation resistance.	500 MΩ minimum initial. 100 MΩ minimum final.	Test at 100V test voltage between adjacent contacts of mated Plug and Jack. Ref.: IEC 512-2, test 3a, method B
Current cycling	Contact resistance, rated current.	Subject mated Plug and Jack to 500 cycles at 125% of rated current for 15 minutes "ON" and 15 minutes "OFF". All contacts in series.
MECHANICAL		
Plug retention in Jack	Plug shall not dislodge from Jack and shall maintain electrical continuity.	Apply axial load of 90N to the cable which is terminated to the Plug at a rate of 25 mm per minute with Plug mated in Jack and latch engaged. Jack housing shall be supported (on the panel stops if applicable).
Vibration	No discontinuity greater than 1 microsecond. Contact resistance low level. Shall remain mated and show no evidence of physical damage	Subject Modular Jack and Modular Plug to sinusoidal vibration along each of 3 mutually perpendicular axes. 10 cycles at a level of 50 m/s^2 from 10-500 Hz at a rate of 1 octave/minute. D=0,35.(Duration approx. 3x2 hours) Ref.: IEC 68-2-6, test Fc
Mating and unmating force	25N max.	Measure force necessary to mate Plug and Jack and to unmate with Plug latch depressed, at a rate of 25 mm per minute. Ref.: IEC 512-7, test 13b.
Mechanical operation	Contact resistance, low level. No functional damage.	Mate and unmate Plug and Jack for 750 cycles at a maximum rate of 500 cycles/hour and a speed of 10 mm/s, latch inoperative. Ref.: IEC 512-5, test 9a
6 position Plug in 8 position Jack	Terminal resistance, low level. No functional damage.	Resistance measurements shall be done with 6 and 8 position Plug. Durability and dry heat to be tested with a 6 position Plug.

Test Description	Requirement	Procedure
ENVIRONMENTAL		
Rapid change of temperature	Insulation resistance. Contact resistance, low level. No functional damage.	Subject mate Plug and Jack to 25 cycles between -40°C and 70°C. The duration at the extreme temperatures shall be 30 minutes. Ref.:IEC 68-2-14, test N
Damp/Heat Cyclic	Insulation resistance after final cycle. Contact resistance, low level.	Subject mated Plug and Jack to 10 temperature humidity cycles between 25°C and 55°C at 95% RH. Ref.: IEC 68-2-30, test Db.
Heat Age test	Contact resistance, low level	Subject mated Plug and Jack to a temperature of 70°C during 500 hours. Ref.: IEC 68-2-2, test Ba

3.5 Connector Qualification, Requalification Tests and Sequences.

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

Test or Examination	Test Group (a)									
	1	2	3	4	5	5a	6	7	8	9
	Test sequence (b)									
Examination of product	1	1	1	1	1		1	1	1	1
Termination/connection resistance, low level	2,4		2,4		4,7, 9		2,4			
Termination/connection resistance, rated current		2,4								
Insulation resistance				2,5				2,5		
Dielectric withstanding voltage				3,6				3,6		
Current cycling		3								
Damp Heat Cyclic			3	4						
Thermal shock							3	4		
Heat age					6					
Vibration	3									
Mating force					2					
Unmating force					3					
Durability					5,8					
Plug retention in Jack									2	
Solderability										2
Resistance to reflow soldering heat										3
6 position Plug in 8 position Jack										
- Termination/connection resistance, low level 8 pos. Plug						2,9				
- Termination/connection resistance, low level 6 pos. Plug						3,6, 8				
- Durability, 6 position Plug						4,7				
- Dry heat, 6 position Plug						5				

4. QUALITY ASSURANCE PROVISIONS.

4.1 Qualification Testing.

A. Sample Selection.
Modular Jack test samples shall be selected at random from current production lots. They shall be prepared for testing in accordance with current application specification and instruction sheets.
Test groups shall be configured as shown below.

Test Groups	Terminated Plugs	Jacks mounted on PCB	Jacks not mounted on PCB
1,2,3,5, 5a and 6	10 (C)	10	
4,7,8 and 9	10		10

(C) Only for testing of 8 pos. Modular Jack, 10 terminated 6 pos. Jacks shall be available.

B Test Sequence.
Qualification testing shall be conducted as specified in par. 3.5.

C. Acceptance.
1. All samples tested in accordance with this specification shall meet the requirements as indicated in the requirements portion of par. 3.4.
2. Failures attributed to equipment, test set-up or operator-deficiencies shall not disqualify the product. When product failure occurs, corrective action shall be taken and samples resubmitted for qualification.

4.2 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.

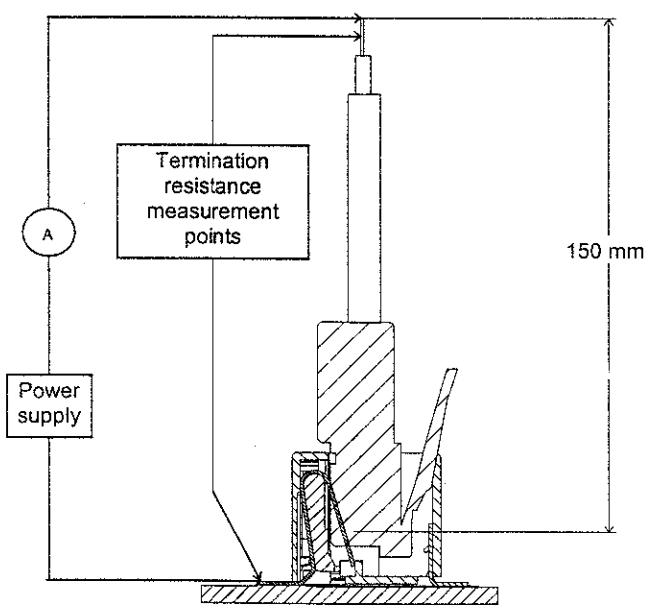

Figure 2: Contact resistance measurement points.