NUMBER: 108-5421

SECURITY CLASSIFICATION: Customer Release

Product Specification

108-5421

2.5 MIS (Metric Interconect System) AMP-IN

1. Scope :

1.1 Contents :

This specification covers the requirements for product performance, test methods and quality assurance provisions of 2.5 MIS AMP-IN.
Applicable product description and part numbers are as shown in Appendix 1.

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. 109-5000 Test Specification, General Requirements for Test Methods

B. 114-5174 Application Specification

C. 501-5126 Qualitication Test Report

2.2 Commercial Standards and Specifications :

A. Military Standard and Specifications : MIL-STD-202 Test Methods for Electronic and Electrical Component Parts

3. Requirements :

3.1 Design and Construction :

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

LTR	REVISION RECORD	DR	CHK	DATE
C	Revised FJ00-4074-96	A.O	S.K	7 FEB 96
B	Revised FJ00-3803-95	A.O	S.K	12.26'95
A	Released FJ00-1062-94	A.O	S.K	9 19'94
0	Released	A.O	J.T	4 7'94

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AMP (Japan), Ltd.
Kawasaki, Japan

LOC	LOC	NO.	REV.
J	A	108-5421	C

NAME 2.5 (MIS Metric Interconect System) AMP-IN

02-07-'96

3.2 Materials:

A. Contact:

Receptacle Contact : Pretinned Phosphor Bronze (0.8 μm min. thick)

B. Housing:

Receptacle Housing : 66 Nylon (UL94V-0)

C. Others:

3.3 Raitings:

A. Voltage Rating (MAX) 250 VAC

B. Current Rating (MAX) AWG #22 ..... 4 A
AWG #24 ..... 3.5 A
AWG #26 ..... 3 A

C. Temperature Rating: -25 °C to 105 °C
The upper limit of the temperature includes the temperature rising resulted by the energized electrical current.

3.3.1 Applicable Wires (Note : For compatibility of the wires for termination, the wires must be evaluated respectively, by the manufacturers, brand, tradenames and product catalog numbers.)

A. Wires Size ..... #26 AWG, #24 AWG, #22 AWG (0.14 mm^2 / 0.2 mm^2 / 0.37 mm^2)

B. Insulation Diameter ... 1.00 mm / 1.5 mm

3.3.2 Applicable Printed Circuit Board

A. Board Thickness ..... 1.6 mm

B. Hole Diameter ..... $\phi 1.0^{\pm 0.05}$ mm

3.4 Performance and Test Descriptions:

The product shall be designed to meet the electrical, mechanical and environmental performance requirements specified in Fig. 2. All tests shall be performed in the room temperature, unless otherwise specified.

3.5 Test Requirements and Procedures Summary :

Para.	Test Items	Requirements	Procedures
3.5.1	Confirmation of Product	Product shall be conforming to the requirements of applicable product drawing and Application Specification.	Visually, dimensionally and functionally inspected per applicable quality inspection plan.
	Electrical Requirements		
3.5.2	Termination Resistance (Low Level)	10 mΩ Max. (Initial) 20 mΩ Max. (Final) Without wire only	Subject mated contacts assembled in housing to closed circuit current of 50 mA Max. at open circuit voltage of 50 mV Max. Fig. 3. AMP Spec. 109-5311-1
3.5.3	Dielectric Strength	No creeping discharge nor flashover shall occur. Current leakage : 5 mA Max.	1 kVAC for 1 minute. Test between adjacent circuits of mated. AMP Spec. 109-5301 Method 3
3.5.4	Insulation Resistance	1000 MΩ Min. (Initial)	Impressed voltage 500 V DC. Test between adjacent circuits of mated. AMP Spec. 109-5302-4 Method 3
3.5.5	Temperature Rising	30 ℃ Max. under loaded specified current.	Measure temperature rising by energized current. Fig. 3 AMP Spec. 109-5310-1

Fig. 2 (to be continued)

Para.	Test Items	Requirements	Procedures
		Physical Requirements	
3.5.6	Vibration (Frequency)	No electrical discontinuity greater than 1 μsec. shall occur. Termination Resistance (Low Level) 20 mΩ Max. (Final)	Subject mated connectors to 10-55-10 Hz traversed in 1 minute at 1.52 mm amplitude 2 hours each of 3 mutually perpendicular planes. 1 mA applied. AMP Spec. : 109-5201
3.5.7	Physical Shock	No electrical discontinuity greater than 1 μsec. shall occur. Termination Resistance (Low Level) 20 mΩ Max. (Final)	Accelerated Velocity : 490 m/s² 50 G Waveform : halfsine Duration : 11 msec. Velocity Change : 3.44 m / s Number of Drops : 18 Drops AMP Spec. 109-5208 Condition A
3.5.8	Hammering Shocks	Termination Resistance (Low Level) 20 mΩ Max. (Final) No evidence of abnormalities	Subject mated connectors to under 10000 cycles of repeated hammering shocks. DC 10 V, 1 mA applied. During the test, the circuit shall be monitored for fluctuation of electrical resistance. as shown in Fig. 6
3.5.9	Panel Mounting Force and Board Retention Force	No of Pos. / Mounting Force / Retention Force 2 3 4 5 — (3.0 kg) Max 29.4 N — (0.3 kg) Min. 2.94 N 6 7 8 9 — (5.0 kg) Max 49 N — (0.7 kg) Min. 6.86 N 10 11 12 13 — (7.0 kg) Max. 68.6 N — (1.1 kg) Min. 10.78 N	By using standard PCB conforming to AMP customer drawing, measure the force required to mount PCB, and the force required to retain PCB.

Fig. 2 (to be continued)

Para.	Test Items	Requirements	Procedures
3.5.10	Solderability	Wet Solder Coverage : 95 % Min.	Solder Temperature : 230 ± 5 °C Immersion Duration : 5 ± 1/2 seconds Flux : Alpha 100 AMP Spec. 109-5203
3.5.11	Tensile Strength of Wire Termination	19.6 N (2.0 kgf) Min.	Apply an axial pull-off load to terminated wire of contact Fig. 4, 109-5205 Condition B
3.5.12	Contact Retention Force	19.6 N (2.0 kgf) Min.	Apply an axial pull-off load to terminated wire. Fig. 4
	Environmental Requirements		
3.5.13	Resistance to Soldering Heat	No physical damage shall occur. 20 mΩ Max. (Final)	Test connector on PCB. Solder Temperature : 260 ± 5 °C Immersion Duration : 10 ± 1 sec. AMP Spec. 109-5204 Condition B
3.5.14	Thermal Shock	20 mΩ Max. (Final)	− 55 °C / 30 min., 85 °C / 30 min. Making this a cycle, repeat 5 cycles. AMP Spec. 109-5103 Condition A
3.5.15	Humidity, Steady State	Insulation resistance (Final) 500 MΩ Min. Termination resistance 20 mΩ Max. (Final)	Mated Connector, 90 ~ 95 % R. H., 40 °C 96 hours AMP Spec. 109-5105-1 Condition A
3.5.16	Salt Spray	20 mΩ Max. (Final)	Subject mated to 5 ± 1 % salt concentration for 48 hours : MIL-STD-202, Method 101 AMP Spec. 109-5101 Condition A

Fig. 2 (to be continued)

Para.	Test Items	Requirements	Procedures
3.5.17	Industrial Gas (SO_2)	20 mΩ Max. (Final)	SO_2 Gas : 3 ± 1 ppm, 95 % R. H., 40 ± 2 °C, 240 hours
3.5.18	Industrial Gas (H_2S)	20 mΩ Max. (Final)	H_2S Gas : 3 ppm, 96 hours
3.5.19	Anmonia	20 mΩ Max. (Final)	28 % anmonia solution placed in a desiccator for 48 minute.
3.5.20	Temperature Life (Heat Aging)	20 mΩ Max. (Final)	85 ± 2 °C, Duration : 4 days AMP Spec. 109-5104-2 Condition A
3.5.21	Resistance to Cold	20 mΩ Max. (Final)	− 25 °C ± 3 °C, 48 hours AMP Spec. 109-5208-2 Condition B
3.5.22	Humidity-Temperature Cycling	20 mΩ Max. (Final)	25~65 °C, 95 % R.H. 5 cycles. AMP Spec. 109-5106

Fig. 2 (End)

3.6 Product Qualification and Requalification Tests.

Test or Examination	Test Group									
	1	2	3	4	5	6	7	8	9	10
	Test Sequence (a)									
Confirmation of Product	1, 4	1, 3	1, 5	1, 5	1, 5	1, 3	1	1	1, 3	1, 3
Termination Resistance (Low Level)			2, 4	2, 4	2, 4					
Dielectric Strength	3									
Insulation Resistance	2									
Temperature Rising		2								
Vibration (Frequency)			3							
Physical Shock					3					
Hammering Shocks				3						
Panel Mounting and Retention Force						2				
Solderability									2	
Tensile Strength of Wire Termination							2			
Contact Retention Force								2		
Resistance to Soldering Heat										2
Thermal Shock										
Humidity, Steady State										
Salt Spray										
Industrial Gas (SO_2)										
Ammonia										
Temperature Life (Heat Aging)										
Resistance to Cold										
Humidity-Temperature Cycling										
H_2S Gas										

(a) Discontinuities shall not take place in this test group, during tests.

Fig. 1 (To be Continued)

Test or Examination	Test Group								
	11	12	13	14	15	16	17	18	19
	Test Sequence (a)								
Confirmation of Product	1, 5	1, 5	1, 5	1, 5	1, 5	1, 5	1, 5	1,4,7	1,5
Termination Resistance (Low Level)	2, 4	2, 4	2, 4	2, 4	2, 4	2, 4	2, 4	3, 6	2,4
Dielectric Strength									
Insulation Resistance									
Temperature Rising									
Vibration (Frequency)									
Physical Shock									
Hammering Shocks									
Panel Housing and Retention Force									
Solderability									
Tensile Strength of Wire Termination									
Contact Retention Force									
Resistance to Soldering Heat								2	
Thermal Shock	3								
Humidity, Steady State		3							
Salt Spray			3						
Industrial Gas (SO_2)				3					
Anmonia					3				
Temperature Life (Heat Aging)						3			
Resistance to Cold							3		
Humidity-Temperature Cycling								5	
H_2S Gas									3

(a) Discontinuities shall not take place in this test group, during tests.

Fig. 1 (End)

4. Quality Assurance Provisions :

4.1 Test Conditions

Unless otherwise specified, all the tests shall be performed under any combination of the following test conditions.

Temperature	15 ~ 30 ℃
Relative Humidity	45 ~ 75 %
Atmospheric Pressure	650 ~ 800 mmHg

4.2 Test Specimens :

The test specimens to be used for the performance evaluation testing, shall be prepared in accordance with AMP Application Specification, 114-5174, Termination of MIS Connector, by suing the samples selected from the current production at random, and conforming to the requirements of the applicable product drawing.

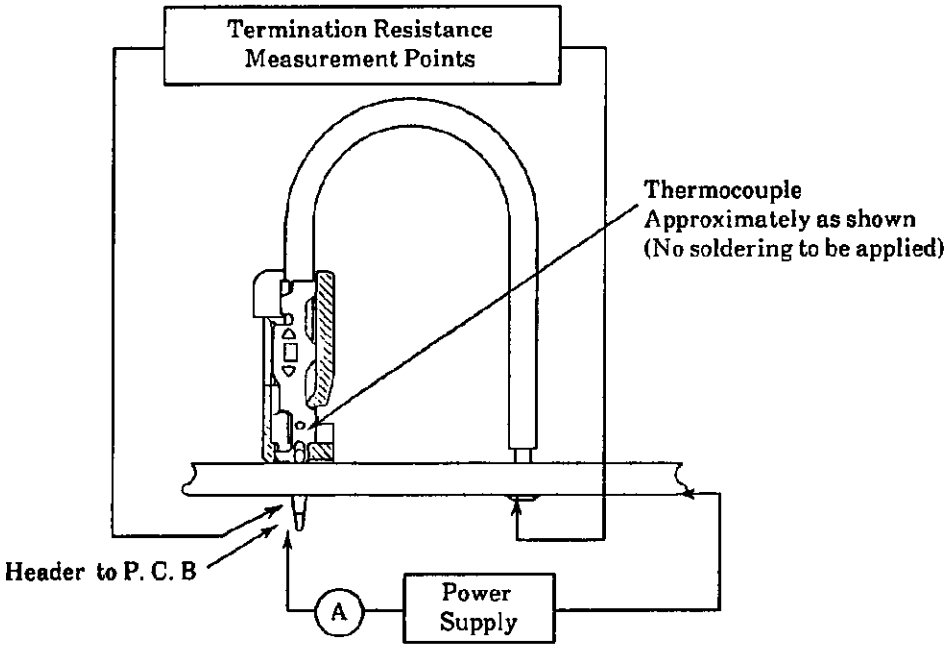


Fig. 3

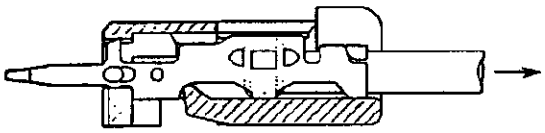


Fig. 4

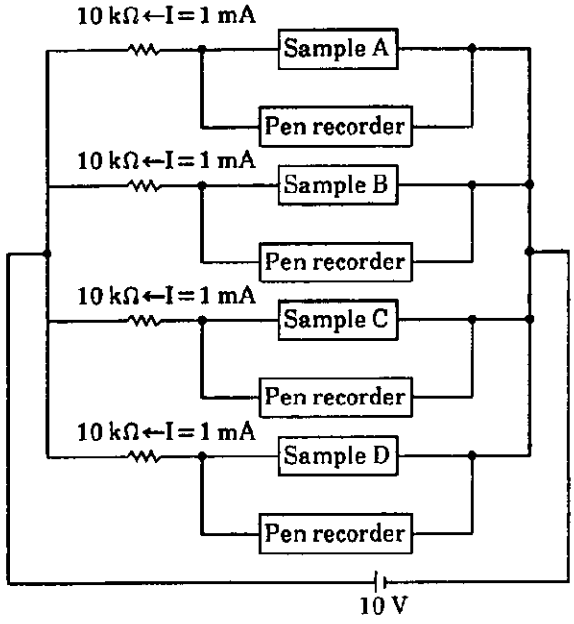
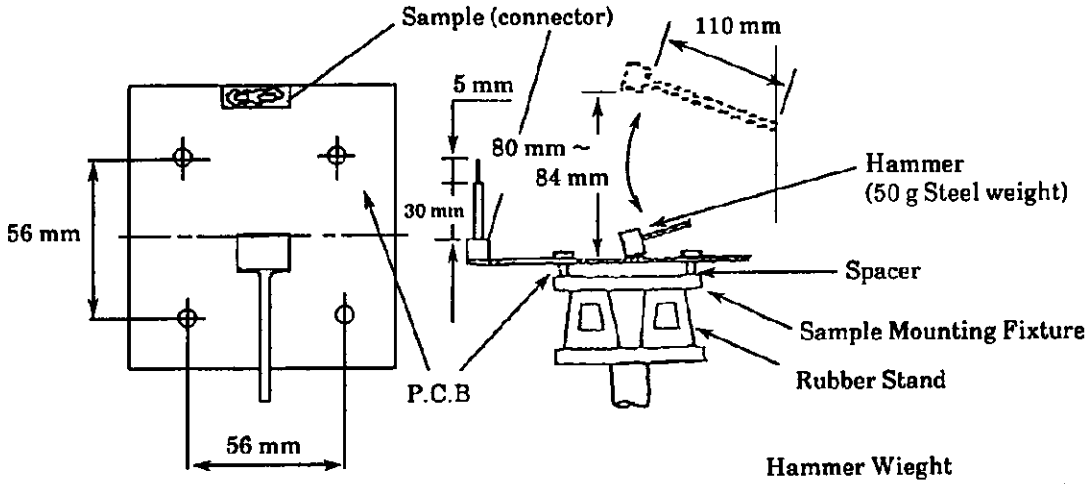


Fig. 5



Hammer Wieght
Striking Frequency : 1 stroke / Sec

Fig. 6

SHEET	AMP	AMP (Japan), Ltd. Kawasaki, Japan		
10 OF 11	LOC J	LOC A	NO. 108-5421	REV. C

NAME
2.5 (MIS Metric Interconect System)
AMP-IN

The applicable product descriptions and part numbers are as shown in Appendix 1.

Appendix 1

Prod. P/N	Description		
179414	MIS AMP-IN	#26 Type	2~13 Position
179436	MIS AMP-IN	#24 Type	2~13 Position
179548	MIS AMP-IN	#26 Type Polarized	3~12 Position
179549	MIS AMP-IN	#24 Type Polarized	3~12 Position
917859	MIS AMP-IN	#22 Type	2~13 Position
917860	MIS AMP-IN	#22 Type Polarized	3~12 Position