

NUMBER: 108-5400

Customer Release

SECURITY CLASSIFICATION:

108-5400

Product Specification AMPLIMITE CONNECTOR/III-J HD-20 ULTRA SLIM TYPE

1. Scope :

1.1 Contents :

This specification covers the requirements for product performance, test methods and quality assurance provisions of AMPLIMITE CONNECTOR/III -J HD-20 ULTRA SLIM TYPE.
Applicable product descriptions 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. 501-5150 Test Report : Qualification Test Report

2.2 Commercial Standards and Specifications :

- A. MIL-STD-202 Test Methods for Electronic and Electrical Component Parts

PRINT DST.	0	Released FJ00-2152-95	T.K	Y.H	13 JUN 1995	DR. 13 - JUN - '95	SHEET 1 OF 8	AMP AMP (Japan), Ltd. Kawasaki, Japan	LOC	LOC	NO.	REV.
	LTR	REVISION RECORD	DR	CHK	DATE	Y. FUJIMURA			13-JUN, '95	J	A	108-5400

**AMPLIMITE CONNECTOR/III-J
HD-20 ULTRA SLIM TYPE**

06/13/95

CLASSIFICATION: UNCLASSIFIED Release

3. Requirements :

3.1 Design and Construction :

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

3.2 Materials :

A. Contact :

Material : Phos Bronze (Socket), Brass (Pin)

- Finish : ② 0.1 μm Min. Thick gold-plated on contact area only over nickel under-plate.
 ③ 0.38 μm Min. Thick gold-plated on contact area only over nickel under-plate.
 ④ 0.76 μm Min. Thick gold-plated on contact area only over nickel under-plate.

B. Housing :

Material : Thermoplastic compound

C. Metal shell :

Material : Carbon steel

Finish : Nickel or tin-plated over copper under-plated.

D. Retention leg :

Material : Brass

Finish : Tin-lead plated over nickel under-plated.

3.3 Ratings :

- A. Voltage Rating : 250 VAC
 B. Current Rating : 3 A, Refer to Fig. 1 for maximum allowable current to be applied.
 C. Temperature Rating : $-55\text{ }^{\circ}\text{C}$ to $+105\text{ }^{\circ}\text{C}$

3.4 Performance Requirements 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.

Type	Wire Size	Current
Crimp Type	AWG #24	3 A
Contact	AWG #26	2 A
	AWG #28	1.5 A

Fig. 1 Current Rating for Wire Size

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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)	15 m Ω Max. (Initial) 20 m Ω Max. (Final)	Subject mated contacts assembled in housing to 50 mV Max open circuit at 50 mA Fig. 4. AMP Spec. 109-5311-1
3.5.3	Insulation Resistance	5000 M Ω Min. (Initial) 1000 M Ω Min. (Final)	Impressed voltage 500 V DC. Test between adjacent circuits of unmated connectors. AMP Spec. 109-5302-4
3.5.4	Dielectric withstanding Voltage	No creeping discharge nor flashover shall occur. Current leakage : 0.5 mA Max.	1 kVAC for 1 minute. Test between adjacent circuits of unmated connectors. AMP Spec. 109-5301
Mechanical Requirements			
3.5.5	Vibration (High Frequency)	No electrical discontinuity greater than 0.1 μ sec. shall occur. 20 m Ω Max. (Final)	Vibration Frequency : 10-500/15 min. Accelerated Velocity : 98 m / s ² (10 G) Vibration Direction : 3 drops each to normal and reversed directions of X, Y, Z axes. Duration : 3 hours each AMP Spec. 109-5202 Condition A
3.5.6	Physical Shock	No electrical discontinuity greater than 0.1 μ sec. shall occur. 20 m Ω Max. (Final)	Accelerated Velocity : 490 m/s ² (50 G) Waveform : Halfsine shock pulses Duration : 11 m sec. Velocity Change : 3.4 m/s Number of Drops : 3 drops each to normal and reversed directions of X, Y and Z axes, totally 18 drops AMP Spec. 109-5208 Condition A

Fig. 2 (To be continued)

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Para.	Test Items	Requirements	Procedures
3.5.7	Connector Mating Force (Including Grounding Indents)	9 Pos. : 78.4 N (8.0 kgf) Max. 25 Pos. : 147 N (15 kgf) Max.	Operation Speed : 25.4 mm / min. Measure the force required to mate connectors. AMP Spec. 109-5206 Condition A
3.5.8	Connector Unmating Force (Including Grounding Indents)	9 Pos. : 9.8 N (1.0 kgf) Min. 25 Pos. : 24.5 N (2.5 kgf) Min.	Operation Speed : 25.4 mm / min. Measure the force required to unmate connectors. AMP Spec. 109-5206 Condition A
3.5.9	Contact Retention Force	9.8 N (1.0 kgf) Min.	Apply an axial pull-off load to crimped wire. Operation Speed : 25.4 mm / min. AMP Spec. 109-5212
3.5.10	Durability (Repeated Mate/Unmating)	20 mΩ Max. (Final)	Operation Speed : 300 cycles/hr No. of Cycles : 500 cycles. AMP Spec. 109-5213
3.5.11	Solderability	Wet Solder Coverage : 95 % Min.	Solder Temperature : 235 ± 5 °C Immersion Duration : 5 ± 0.5 seconds Flux : Alpha 100 AMP Spec. 109-5203
3.5.12	Resistance to Soldering Heat	No physical damage shall occur.	Test connector on PCB. Solder Temperature : 260 ± 5 °C Immersion Duration : 10 ± 1 sec. AMP Spec. 109-5204 Condition B

Fig. 2 (To be continued)

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Para.	Test Items	Requirements	Procedures
Physical Requirements			
3.5.13	Thermal Shock	20 mΩ Max. (Final)	Mated connector - 55 °C/30 min, + 105 °C/30 min. Making this a cycle, repeat 5 cycles. AMP Spec. 109-5103
3.5.14	Humidity-Temperature Cycling	Insulation resistance (final) 1000 MΩ Min. Termination resistance 20 mΩ Max. (Final)	Mated connector, 25~65 °C, 90~95 % R. H. 10 cycles Cold shock - 10 °C not performed AMP Spec. 109-5106
3.5.15	Salt Spray	20 mΩ Max. (Final) No remarkable corrosion shall occur.	Subject mated connectors to 5 % salt concentration for 48 hours : MIL-STD-202, Method 101 AMP Spec. 109-5101 Condition A

Fig. 2 (End)

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3.6 Product Qualification Test Sequence

Test or Examination	Test Group									
	1	2	3	4	5	6	7	8	9	10
	Test Sequence (a)									
Confirmation of Product	1, 5	1, 4	1	1, 8	1, 4	1, 4	1, 3	1, 3	1, 4	1, 4
Termination Resistance (Low Level)		2, 5		2, 9	2, 5	2, 5			2, 5	2, 5
Dielectric withstanding Voltage	3, 6									
Insulation Resistance	2, 7									
Vibration (High Frequency)					3					
Physical Shock						3				
Connector Mating Force				3, 6						
Connector Unmating Force				4, 7						
Contact Retention Force			2							
Durability (Repeated Mate / Unmating)				5						
Solderability							2			
Resistance to Soldering Heat								2		
Thermal Shock									3	
Temperature-Humidity Cycling	4	3								
Salt Spray										3

(a) Numbers indicate sequence in which tests are performed.

Fig. 3

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

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Product Part No.	Description	Remarks
177513-□	Plug Right Angle Size 1 9 P Reversed-D Shape Type	Tine L = 2.15 mm
177597-□	Plug Right Angle Size 1 9 P Standard-D Shape Type	Tine L = 2.15 mm
177616-□	Plug Right Angle Size 1 25 P with Ferrite Reversed-D Shape Type	Tine L = 2.15 mm
177816-□	Plug Right Angle Size 1 9 P Reversed-D Shape Type	Tine L = 2.80 mm
179068-□	Plug Right Angle Size 1 9 P with Ferrite Standard-D Shape Type	Tine L = 2.15 mm
179695-□	Plug Right Angle Size 1 9 P Standard-D Shape Type	Tine L = 2.80 mm Shell : Nickel P1
179952-□	Plug Right Angle Size 1 9 P Standard-D Shape Type	Tine L = 2.80 mm
177512-□	Receptacle Right Angle Size 3 25 P Reversed-D Shape Type	Tine L = 2.15 mm
177596-□	Receptacle Right Angle Size 3 25 P Standard-D Shape Type	Tine L = 2.15 mm
177615-□	Receptacle Right Angle Size 3 25 P with Ferrite Reversed-D Shape Type	Tine L = 2.15 mm
177817-□	Receptacle Right Angle Size 3 25 P Reversed-D Shape Type	Tine L = 2.80 mm
179070-□	Receptacle Right Angle Size 3 25 P with Ferrite Standard-D Shape Type	Tine L = 2.15 mm
179185-□	Receptacle Right Angle Size 3 25 P Standard-D Shape Type	Tine L = 2.80 mm Shell : Nickel P1 with Drain Wire
179953-□	Receptacle Right Angle Size 3 25 P Standard-D Shape Type	Tine L = 2.80 mm

Appendix 1

The difference of the thickness of gold-plating is classified by the suffix square.

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4. Quality Assurance Provisions

4.1 Test Specimens

4.1.1 The Specimens to be used in the test shall be conforming to the applicable product drawing (s).

4.1.2 No sample shall be reused unless otherwise specified

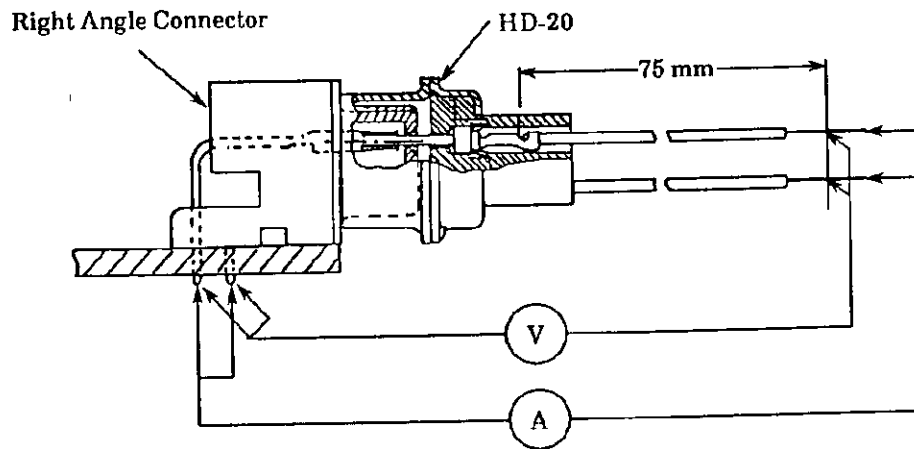
4.2 Test Conditions :

All the tests shall be performed under any combination of the following test conditions.

Temperature : 15~35 °C

Relative humidity : 45~75 %

Atmospheric Pressure : 650~800 mmHg



Termination resistance shall be found by subtracting the resistance of 75 mm long wire from the measured value.

Fig. 4 Termination resistance (Low Level) Measuring point

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