BOX HEADER SYSTEM

1.

1.1. CONTENTS

This specification covers the performance, tests and quality requirements for the **BOX HEADER SYSTEM** Connector.

1.2. QUALIFICATION

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

2. APPLICABLE DOCUMENT

The following Tyco documents form a part of this specification to the extent specified herein. Unless otherwise specified, the latest edition of the document applies. 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. TYCO SPECIFICATIONS

A. 109-1: General Requirements for Test Specifications

B. 109-197：Tyco Specification vs EIA and IEC Test Methods

C. 501-57052：Test Report

3. REQUIREMENTS

3.1. DESIGN AND CONSTRUCTION

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

3.2. MATERIALS

A. Housing：Thermoplastic or Thermoplastic High Temp., UL94V-0

B. Contact：Copper Alloy, Gold plated over Nickel underplated.

3.3. RATINGS

A. Voltage: 125 VAC rms.

B. Current: 1.0 A Max

C. Temperature: - 55 °C to 105 °C

3.4. PERFOMANCE REQUEIREMENT AND TEST DESCRIPTION

The product shall be designed to meet the electrical, mechanical and environmental performance requirements specified in Figure 1. All tests shall be performed at ambient environmental conditions per Tyco Specification 109-1 test requirements and procedures summary.

3.5. TEST REQUIREMENTS AND PROCEDURES SUMMARY

TEST ITEM	REQUIREMENT	PROCEDURE
Examination of Product	Meets requirements of product drawing. No physical damage.	Visual inspection.
ELECTRICAL REQUIREMENT		
Contact Resistance	[20] m Ohm Max(Initial) [30] m Ohm Max(Final0)	Subject mated contacts assembled in housing to 20mV Max open circuit at 10mA Max. EIA-364-6B. Refer to Fig.3
Dielectric withstanding Voltage	No creeping discharge or flashover shall occur. Current leakage: 0.5 mA MAX	[1000]VAC for 1minute Test between adjacent circuits of unmated connector. EIA-364-20B
Insulation Resistance	[1*103] M Ohm Min.	Impressed voltage 500 VDC. Test between adjacent circuits of unmated connector. EIA-364-21C.
Temperature Rising	30℃ Max. Under loaded rating current	Contact series-wired, apply test current of loaded rating current to the circuit, and measure the temperature rising by probing on soldered areas of contacts, after the temperature becomes stabilized deduct ambient temperature from the measured value.
MECHANICAL REQUIREMENT		
Durability	See Note	Operation Speed：[500] cycle/hour. Durability Cycles：50 Cycles EIA-364-9C
Vibration	No electrical discontinuity greater than 0.1 or 1 μ sec shall occur. See Note.	Subject mated connectors to 10-55-10 Hz traversed in 1minutes at 1.52mm amplitude 2 Hours each of 3 mutually perpendicular planes. 100mA Max. Applied. EIA-364-28D
Mechanical Shock	No electrical discontinuity greater than 0.1 or 1 μ sec shall occur. See Note.	Accelerate Velocity：490m/s2 （50G） Waveform：Half-sine shock plus Duration：11msec No. of Drops：3 drops each to normal and reversed directions of X,Y and Z axes, totally 18 drops, passing DC 1mA current during the test. EIA-364-27B
MECHANICAL REQUIREMENT		
Contact Retention Force	800 gf Min.	Measure the contact retention force with Tensile strength tester.
Solder ability	The inspected area of each lead must have 95% solder coverage minimum.	Steam Aging Preconditioning： 93+3/-5℃、100%HR、8hrs. <J-STD-002 category 3 aging> Solder pot temperature: 245±5℃, 5sec

Figure 1（Cont.）

ENVIRONMENTAL REQUIREMENTS		
Resistance to Wave Soldering Heat	No physical damage shall occur.	Solder Temp.：240±5℃, 10±0.5sec. Tyco spec. 109-202, Condition A
Resistance to Wave Soldering Heat	No physical damage shall occur.	Solder Temp.：265±5℃, 10±0.5sec. Tyco spec. 109-202, Condition B
Resistance to Reflow Soldering Heat	No physical damage shall occur.	Pre Heat：100~150℃, 60 sec Max. Heat：210℃ Min., 30 sec Max. Peak Temp.：240℃ Max., 10±0.5sec.
Resistance to Reflow Soldering Heat	No physical damage shall occur.	Pre-soak condition, 85℃/85% RH for 168 hours. Pre Heat：150~180℃, 90±30sec. Heat：230℃ Min., 30±10sec. Peak Temp.：245+0/-5℃, 10~30sec. Duration：3 cycles Tyco spec. 109-201, Condition A
Resistance to Reflow Soldering Heat	No physical damage shall occur.	Pre-soak condition, 85℃/85% RH for 168 hours. Pre Heat：150~180℃, 90±30sec. Heat：230℃ Min., 30±10sec. Peak Temp.：260+0/-5℃, 20~40sec. Duration：3 cycles Tyco spec. 109-201, Condition B
Thermal Shock	See Note	Mated Connector -55+/-3℃(30 minutes), +85+/-2℃(30 minutes) Perform this a cycle, repeat 5 cycles EIA-364-32C
Humidity-Temperature Cycle	See Note	Mated Connector 25~65℃, 90~95% RH, 10 Cycles EIA-364-31B.
Temperature Life (Heat Aging)	See Note	Mated Connector 85℃, 250 hours, EIA-364-17B.
Salt Spray	No detrimental corrosion allowed in contact area and base metal exposed.	Subject mated connectors to 35+/-2 ℃ and 5+/-1% salt condition for 48hours. After test, rinse the sample with water and recondition the room temperature for 1 hour. EIA-364-26B.

Figure 1（End）

NOTE：Shall meet visual requirements, show no physical damage, and meet requirement of additional tests as specified in the test sequence in Figures 2.

3.6. PRODUCT QUALIFICATION AND REQUALIFICATION TEST

Test or Examination	Test Group									
	A	B	C	D	E	F	G	H	I	J
	Test Sequence（a）									
Examination of Product	1, 7	1, 9	1, 6	1, 5	1, 5	1, 5	1, 5	1, 3	1, 3	1, 3
Contact Resistance		2, 8	2, 5	2, 4	2, 4	2, 4	2, 4			
Dielectric withstanding Voltage	3, 6									
Insulation Resistance	2, 5									
Temperature Rising								2		
Mating Force		3, 7								
Unmating Force		4, 6								
Durability		5								
Vibration			3							
Mechanical Shock			4							
Contact Retention Force									4	
Solderability										2
Resistance to Soldering Heat									2	
Thermal Shock				3						
Humidity Temperature Cycling	4				3					
Temperature Life						3				
Salt Spray							3			

Figure 2

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