

1. Requirements:

1.1 Design and Construction:

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

1.2 Materials:

Material used in the construction of this product should be as specified on the applicable product drawing.

- 1.3 Ratings:
- 1.3.1 Electrical
 - A. Voltage Rating : M12: 250V (≤4 way)/60V (5 way)/30V (>5 way)

M8: 60V (3 way/4way)/30V (≥5 way)

- B. Current Rating: Refer to Fig.3.
- C. Temperature Rating: -25°C to 85°C (For cable assembly& Y/T Distributor Connector)
 -40°C to 85°C (Screw Type Connector & Panel mount Connectors)
- D. Insulation Resistance: 100MΩMin.
- 1.3.2 Environmental

Sealing Requirements: IP67

Durability: 100 cycles

1.4 Performance Requirements and Test Descriptions :

The product shall be designed to meet the electrical, mechanical and environmental performance requirements specified in Fig 1.

All tests shall be performed at the ambient environmental conditions per IEC 512, unless otherwise specified.



1.5 Test Requirements and Procedures Summary

Para	equirements and Proc Test Items	Requirements	Procedures	
1.5.1	Examination of	No defect would impair normal	Visual inspection	
1.0.1	product	operation	No physical damage.	
	product	operation	IEC 60512, Test 1a	
		Electrical Requireme	, ,	
1.5.2	Voltage proof	1 minute hold with no breakdown	For M8:	
1.0.2	(withstanding voltage)	or flashover.	650 volts AC or DC, hold for 1 minute	
	(·····································	S. 1136116 VS.11	between adjacent contacts/between contacts	
			and shield	
			For M12:	
			1400(4 pins) /1000(5 pins) /650(8 pins)/	
			500(12pins) volts AC or DC, hold for 1 minute	
			between adjacent contacts/ between contacts	
			and shield	
			IEC 60512-4-1	
1.5.3	Insulation Resistance	100MΩMin.	500V DC between adjacent contacts	
			IEC 60512, Test 3a, Method A	
1.5.4	LLCR	Initial value: 10mΩ max.	Subject specimens to 100 milliamps	
			maximum and 20 millivolts maximum open	
		For M8 Y/T Distributor:	circuit voltage	
		Initial value: Ref	Test points refer to Fig.4	
			IEC 60512-2-1, Test 2a	
1.5.5	Temperature Rising	30°C MAX under loaded rating	Stabilize at rate current level until 3 readings	
		current. (See fig.3)	at 5 minutes intervals are within 1℃	
			IEC 60512-5-2	
		Mechanical Requireme	ents	
1.5.6	Impacting water	No ingress of water	IEC 60529, Test 14.2.7	
1.5.7	Dust (IP6X)	No deposit dust on contact	IEC 60529, Test 6,table 7	
1.5.8	Durability	Contact resistance: Δ15mΩ max.	Mate and un-mate specimens for cycles at a	
			maximum speed of operations=10mm/s,	
		For M8 Y/T Distributor:	Rest:30s,unmated	
		Contact resistance: $\Delta 30 \text{m}\Omega$ max.	100 cycles for gold plating	
			50 cycles for silver plating	
			20 cycles for tin plating	
			EIA364-09-1	



1.5.9	Mating/Un-mating	15N/15N Max. for 2-5 pins	Operation speed: 10mm/min.
	Force	23N/30N Max. for 6-12 pins	Measure force necessary to mate samples.
		30N/30N Max. for 13-17 pins	EIA364-13
1.5.10	Sinusoidal vibration	1: Duration of disturbance 1µs	10Hz to 500Hz and 0.35mm or 50 m/s ²
		max.	Sweep cycles:10
		2: Contact resistance:	Full duration:6H
		Δ15mΩ max.	IEC60512, Test 6d
		For M8 Y/T Distributor:	
		Contact resistance: Δ30mΩ	
		max.	
		3:There shall be no defect that	
		would impair normal operation	
1.5.11	Mechanical Shock	1:No discontinuities of 1	Subject mated specimens to 50G's half-sine
		microsecond or longer duration	shock pulses of 11 milliseconds duration with
		2: Contact resistance:	3.44m/s velocity change.
		Δ 15mΩ max.	Three shocks in each direction applied along
		For M8 Y/T Distributor:	3 mutually perpendicular planes, 18 total
		Contact resistance: $\Delta 30 m\Omega$	shocks.
		max.	EIA364-27
		3:There shall be no defect that	
		would impair normal operation	
		Environmental Require	ements
1.5.12	Rapid change in	See Note.	IEC 60512-11-4
	temperature		Subject specimens to 5 cycles between
			-40°C to 85℃ or -25°C to 85℃ with
			30 minutes dwells at temperature
			extremes
1.5.13	Dry heat	See Note.	IEC 50512-11-9
		Insulation resistance at high	Subject mated specimens to 85℃ for 16
		temperature	hours
1.5.14	Damp heat, cyclic	See Note.	IEC 60512-11-12
			Subject specimens to 5 cycles(5 days)
			Temperature:40℃
			Recovery time:2h
1.5.15	Cold	See Note.	IEC 60512-11
			Temp.:-40℃ or -25°C
	İ		Duration:2h
			Recovery time:2h
			Refer to 1.3.1.C: Temperature Rating
1.5.16	Mixed flowing gas	See Note.	Refer to 1.3.1.C: Temperature Rating IEC 60068-2-60, Method 4
1.5.16	Mixed flowing gas	See Note.	Refer to 1.3.1.C: Temperature Rating



NOTE

Shall meet visual requirements, show no physical damage, and meet requirements of additional

tests as specified in the Product Qualification and Re qualification Test Sequence shown in Figure 2.

Fig. 1 (END)

1.6 Product Qualification Test Sequence

		Test Group				
Test or Examination	A(a)	В	С	D	E(f)	
		Test Sequence				
Examination of product	1	3,6,11,20,26	8	9	1	
Voltage proof(withstanding voltage)	4	10,19,25	4,7	4,8		
Insulation resistance	3	9,13,18,24	3,6	3,7		
LLCR	2	2,5,8,17,23	2	2	2,6	
Temperature Rising				5(e)		
Impacting water		21	5	6		
Dust(IP6X)		22(b)				
Durability					4	
Mating and Un-mating Force					3,5	
Sinusoidal vibration		1				
Mechanical shock		4				
Rapid change in temperature		7		1		
Dry heat		12				
Damp heat, cyclic		14(c),16(d)				
Cold		15				
Mixed flowing gas			1			

NOTE:

- (a) When the initial test group A has been completed, the specimens are divided in the 3 groups B, C, D. All connectors in each group shall undergo the tests specified for the relevant group numbers indicate sequence in which tests are performed.
- (b) It's allowed to perform with an additional specimen, extending the total number of specimen by 1.
- (c) First cycle
- (d) Remaining cycles
- (e) Test with additional specimen for over-molding type cable assembly
- (f) This test group should be tested without the screw nut

Fig.2

2. QUALITY ASSURANCE PEOVISIONS



2.1 Qualification Testing

A. Specimen Selection

Plugs and receptacles should be prepared in accordance with applicable Instruction Sheet and should be elected at random from current production. Each test group shall consist of 3 specimens Min. unless otherwise stated.

B. Test Sequence

Qualification inspection shall be verified by testing specimens as specified in figure 2.

2.2 Requalification testing

If changes significantly affecting form, fit or function are made to the product or manufacturing process or controlling industry specification, product assurance, shall coordinate requalification testing, consisting of all or part of the original testing sequence as determined by development/product, quality and reliability engineering.

2.3 Acceptance

Acceptance is based on verification that the product meets the requirements of Figure 1. Failures attributed to equipment, test setup or operator deficiencies shall not disqualify the product. If product failure occurs, corrective action shall be taken and samples resubmitted for qualification. Testing to confirm corrective action is required before resubmitted.

2.4 Quality conformance Inspection

The applicable quality inspection plan shall 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.

For M12:	
A-coding 2- 5 ways	=4 A
6- 8 ways	=2 A
9- 17 ways	=1.5 A
B-coding 5 ways	=4A
C-coding 3 ways (2+PE)	=4A
4 ways (3+PE)	=4A
5 ways (4+PE)	=2A
6 ways (5+PE)	=2A
D-coding 4 ways	=4A
P-coding 5 ways (4+PE)	=4A
For M8: 3A	

Fig.3 (Rating Current)

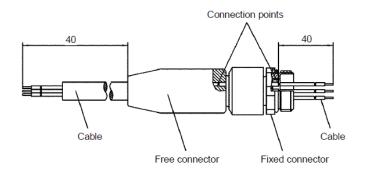


Fig.4 Contact resistance arrangement

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