



Document Number:
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产品规格书

Product Specification

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1. Scope:

This Product Specification covers the requirement of MCIO 2I cable assemblies on product performance, test methods and quality assurance provisions

2. Product Application & Features:

The MCIO 24I cable assembly is designed for in the servers, Data storage, Workstation, etc.

Product Features:

- Provide 16 channels signal transmission as per industry standard.
- Data speed: support PCIE GEN5 32Gbps.
- Meet SFF-TA-1016 Specification.

3. Ratings:

Voltage Rating:	30 V DC /contact;
Current:	1.1 A /contact;
Insulation Resistance:	10MegaOhm;
Withstanding Voltage:	300V DC 1 minute ;
Durability:	200 cycles

Item	Description	Test Condition	Requirement
1	Initial examination of product	Meets requirements of product drawing. No detrimental condition	EIA-364-18B Visual examination and dimensional inspection per product drawing.
2	Final examination of product	Meets visual requirements. No detrimental condition	EIA-364-18B Visual examination.

4. Electrical Performance

Item	Description	Test Condition	Requirement
4.1	Low Level Contact Resistance	EIA-364-23 (20 mV DC MAX, 100 MA MAX Resistance To include wire termination or connector-to-board termination)	20 mΩ MAX change from baseline
4.2	Insulation Resistance	(EIA 364-21) 300V DC 10ms	10MegaOhm Minimum
4.3	Dielectric withstanding voltage	EIA-364-20 Method B 300 V DC minimum for 1 minute Applied voltage may be product / application specific	No defect or breakdown between adjacent contacts -AND- 0.5 mA Max Leakage Current

5. Mechanical Performance

Item	Description	Test Condition	Requirement
5.1	Latched Mating Force	EIA-364-13 Latch removed, measure the connector (male to female) Mating and Un-mating forces at a speed of 25 ± 6 mm ($1 \pm \frac{1}{4}$ inch) per minute.	91.4N MAX
5.2	Latched Unmating Force	EIA-364-13 Un-mating force 3.7N min.	7.4N MIN
5.3	Latch Retention	Mated and in the direction parallel to insertion to pull cable to 50N for 1 min. Shall be not physical damage	After the test, no damage was found in visual.
5.4	Durability (preconditioning)	EIA-364-09 Perform 5 times mating & un-mating cycle in manual, after test the samples should be no physical damage in visual.	No evidence of physical damage
5.5	Durability	Per EIA-364-09, Using automatic equipment perform 200 times mating & unmating cycles with a speed of 25mm/min, there shall be no visual damage to mating interface or latching mechanism	200 cycles min No visual damage to mating interface or latching mechanism
5.6	Mechanical Vibration	EIA-364 -28: 5Hz@0.01g ² /Hz 20Hz@0.02g ² /Hz 500Hz@0.02g ² /Hz; Grms=3.1g, 15 minutes in each of 3 mutually perpendicular directions. Before the test, The cable core (GND are not included) be connected in series by the mating test PCB and fixed on test platform. During the test a monitoring current of 80mA DC for each contacts of the series loop to monitor connectivity, should without discontinuity more than 1us, no damage after test.	No damage No discontinuity longer than 1 microsecond allowed 20 milliohms maximum change from initial (baseline) contact resistance
5.7	Mechanical Shock	EIA-364-27, Test Condition A Half-sine shock of 50g, pulses of 11ms duration, 3 shocks in each axis (18 total). The cable core (GND are not included) end to end must be connected become a series circuit by the mating test PCB and fixed on test platform. During the test a monitoring current of DC 100mA maximum for each contacts of the series loop to monitor the connectivity, should without discontinuity more than 1us no damage after test.	No damage 20 milliohms maximum change from initial (baseline) contact resistance
5.8	Wrenching Strength	Bend cable 90° at minimum bend radius. Pull 25 N Min in each of 4 axis directions for round cable. Pull 25 N Min in each of 2 axis directions for flat cable.	No damage to plug / cable assembly.

6. Environmental Performance

Item	Description	Test Condition	Requirement
6.1	Storage Temperature & Humidity	EIA-364-32 -20°C to +80°C degrees 80% Relative Humidity Method A, Test Condition 1, Duration 4 Use min and max Field Temperatures listed in Table 7-1 for temperature range	After the environmental test, the electrical and mechanical properties meet the criteria
6.2	Thermal Shock	EIA-364-32, method A, condition I : -55°C to +85°C, dwell 30min, transient 5 min max, perform 5 cycles	After the environmental test, the electrical and mechanical properties meet the criteria
6.3	Cyclic Temperature and Humidity	EIA-364-31G, Method IV, Ramp times should be 2.5 hour and dwell times should be 3.0 hour. Dwell times start when the temperature and humidity have stabilized within specified levels, perform 10 cycles in mated condition, the cycle duration is 24 hours.	After the environmental test, the electrical and mechanical properties meet the criteria
6.4	Temperature Life Temperature Life (preconditioning)	EIA-364-17, Method A (without electrical load) 65°C field temperature. for 10 years Test Temperature and Test Duration per EIA 364-1000 Table 8 105°C/240hour Test Temperature and Test Duration per EIA 364-1000 Table 9 105°C/120hour	After the environmental test, the electrical and mechanical properties meet the criteria
6.5	Thermal Disturbance	EIA-364-1000 Cycle the connector between 15 ±3 °C and 85 ±3 °C, as measured on the part. Ramps should be a minimum of 2 °C/minute. Dwell times should ensure that the contacts reach the temperature extremes (a minimum of 5 minutes), humidity is not controlled; perform 10 cycles in mated condition.	After the environmental test, the electrical and mechanical properties meet the criteria
6.6	Thermal cycling	Cycle the connector or socket between 15 °C ± 3°C. and 85 °C ±3 °C, as measured on the part. Ramps should be a minimum of 2 °C per minute, and dwell times should insure that the contacts reach the temperature extremes (a minimum of 5 minutes). Humidity is not controlled. Perform 500 such cycles.	After the environmental test, the electrical and mechanical properties meet the criteria

7. High frequency Performance

7.1 PCIE 5.0:



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ITEM	PCIE5.0
Rise time	15ps(20%~80%)
SDD21/SD12	-2.5-0.3125*f for 0.05Ghz<f<=16Ghz 1.5-0.5625*f for 16Ghz<f<=24Ghz
SDD11/SDD22	-20+0.625*f for 0.05Ghz<f<=24Ghz PS:如果 SDD11/SDD22 Fail, 产品测试结果需<=iRL Spec
NEXT	PSNEXT: --55+0.4166667*f 0.05GHZ<f<=24GHZ PS:如果 PSNEXT Fail, 产品测试结果需<=ccICN_NEXT Spec
FEXT	PSFEXT: --45+0.4166667*f 0.05GHZ<f<=24GHZ PS:如果 PSFEXT Fail, 产品测试结果需<=ccICN_FEXT Spec
Effective Intra-Pair Skew	4ps Max.
Lane-to-Lane Skew	200ps Max
iRL	iRL=-25dB Max (Trise=25ps)
ccICN_NEXT	500μV
ccICN_FEXT	400μV

8. Measurement of the gap between 45° Angle and 25N tensile force

Secure the OS test board on a horizontal table. Connect one end of the cable to the OS test board. Using a force gauge, pull the other end of the cable to a force of 25N. Ensure that the cable forms an angle of approximately 45° with the PCB plane and also with the central axis of the board-end connector. Under these tension conditions, use a feeler gauge to measure the mating gap between the back of the plug and the board end. The required gap should be between 0.8 to 1.0 mm. (Unit: mm)

将 OS 测试板固定在水平桌面上, 线缆一端与 OS 测试板互配, 手持拉力计拉线缆另一端至 25N, 并且使得线缆尽可能与 PCB 平面夹角 45°、与板端连接器中心轴夹角为 45°, 在此拉力下使用塞规尺测量插头背面与板端之间的互配间隙, 要求应在 0.8~1.0mm。 (单位: mm)

9. Usage Precaution 使用禁忌或注意事项

No	Items 项目	Matter 事项
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9.1

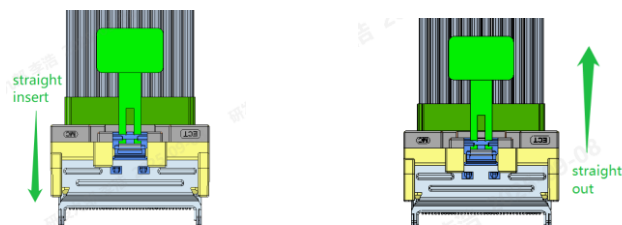
Connection/ disconnection of connectors 连接器的连接 和断开

a) Before mating the male and female connectors, it is essential to ensure that they are aligned and inserted to the dead center position, which indicates that they are fully combined.

b) When disconnecting, please try to lift the male end of the wire vertically along the axial direction of the mating opening until the two are completely separated.

a) 公母头连接器进行配合前，务必确保两者对齐，对插到死点位置为止，表示两者已完全配合在一起。

b) 断开时请尽量沿配合开口的轴向方向竖直拔起线端公头直至两者完全脱离为止。



9.2

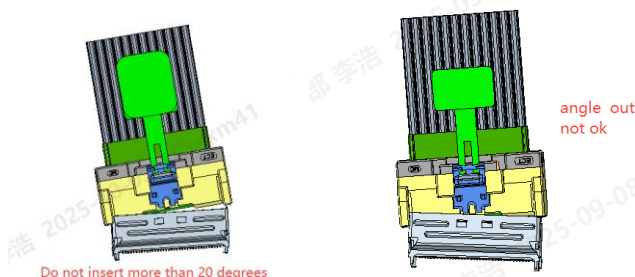
Precautions 禁忌

a) When inserting the wire-end connector into the female socket, it should be inserted directly and not exceed 20 degrees; otherwise, the connector will be damaged.

b) When pulling out the connector, it should be done upright along the direction, Pulling it diagonally may damage the connector

a) 线端连接器插入母插座时，应直插，不能超过 20° 插入，否则会损坏连接器。

b) 拔出连接器时，应沿垂直方向拔出，斜拉可能损坏连接器。



9.3

Stockpile condition 存储条件

Use this product within 6 months after receipt

Condition : Temp: -10~+40°C Humidity:15~85%

有效期：请在产品接收后的 6 个月内使用

存储环境：温度：-10~+40℃； 湿度：15%~85%

**10. Test Sequence and Sample Quantity/测试顺序及样品数量**

Test Item 测试项目	A	B	C	D	E	F	G	
Examination of product	1,	1	1	1	1	1	1	
Insulation Resistance					2	2	2	
Dielectric withstanding voltage					3	3	3	
Low Level Contact Resistance	2,11	2,8,10	2,6,8,10	2,7,9,11,13	4,9	4,9,11	4,9,11	
Durability(preconditioning)	5			5	7	7	7	
Latched Mating Force	9							
Latched Unmating Force	10							
Durability Cycles	7			6				
Latch Retention	8	7		8				
Wrenching Strength	6	6	9	12				
Mechanical Shock		5	7	10				
Vibration			5					
Temperature Life					8			
Temperature Life (preconditioning)							8	
Thermal Shock						8		
Cyclic Temp and Humidity						10		
Thermal Disturbance							10	
Thermal cycling		9						
Mixed Flowing Gas								
Cable Assembly Double 85 test								
Difference Impedance	3,12	3,11	3,11	3,14	5,10	5,12	5,12	
SDD21/SD12	4,13	4,12	4,12	4,15	6,11	6,13	6,13	
Final examination of product	14	13	13	16	12	14	14	
Measurement of the gap between 45° Angle and 25N tensile force					13			
Sample QTY(PCS)	5	5	5	5	5	5	5	
The number of group is test sequence 测试分组中的序号为试验顺序.								