



SPECIFICATION

SPEC. NO: ***** REV: X1

DATE: Jan. 22 2021

PRODUCT NAME: PCIE CEN 5.0 Vertical Connector X16 (164pin)

PRODUCT NO: PIE164-3*0*-00*-0H

立讯精密工业股份有限公司

LUXSHARE-ICT PRECISION INDUSTRIAL CO.,LTD.

中国广东省东莞市清溪镇青皇村青皇工业区葵青路 17 号
No. 17, KuiQing Road, QingHuang Industrial Zone,
QingHuang Village, QingXi Town, DongGuan City,
GuangDong Province, China

TEL: 0086-769-8908-9000

FAX: 0086-769-8908 9971

	APPROVED	CHECKED	PREPARED	DCC ISSUE
Name	Hongji Chen	Hongji Chen	Daniel Lin	

Product Number: PIE164-3X00-001-0H

Product Description : PCIE Gen5 Vertical Connector X16 (164pin)

1 SCOPE

1.1 Content

1.1.1 This specification covers performance, tests and quality requirements for
PCIE CEM Gen 5.0 Vertical Connector X16 (164pin)

2 APPLICABLE DOCUMENTS

The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, latest edition of the specification applies. In the event of conflict between requirements of this specification and product drawing, product drawing shall take precedence.

2.1 Commercial standards

- 2.1.1 EIA-364-18, Initial examination of product.
- 2.1.2 EIA-364-18, Final examination of product
- 2.1.3 EIA-364-23, Low Level Contact Resistance (LLCR)
- 2.1.4 EIA-364-21, Insulation resistance
- 2.1.5 EIA-364-20, Withstanding voltage
- 2.1.6 EIA-364-28, Random vibration
- 2.1.7 EIA-364-27, Mechanical shock
- 2.1.8 EIA-364-09, Durability
- 2.1.9 EIA-364-13, Mating force & Unmating force
- 2.1.10 EIA-364-32, Thermal shock
- 2.1.11 EIA-364-31, Humidity/temperature cycling
- 2.1.12 EIA-364-17, Temperature life
- 2.1.13 EIA-364-65, Mixed flowing gas
- 2.1.14 EIA-364-10, Thermal cycling
- 2.1.15 EIA-364-91, Dust
- 2.1.16 EIA-364-70, Temperature Rise
- 2.1.17 EIA-364-26, Salt Spray
- 2.1.18 EIA-364-1000, Thermal disturbance
- 2.1.19 Temperature Life
- 2.1.20 Contact Retention

3 MECHANIC DIMENSIONS

3.1 Dimensions

See engineering drawing

Initial examination of product (EIA-364-18)

Visual and dimensional inspection per product drawing.

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Requirement: meets requirements of engineering drawing.

3.2 Final examination of product(EIA-364-18)

Visual inspection.

Requirement: meets visual requirements.

4 REQUIREMENTS

4.1 Design and Construction

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

4.2 Materials and Finish

4.2.1 Housing : thermoplastic, UL94V-0

4.2.2 Cap : thermoplastic, UL94V-0

4.2.3 Conductive Plastic : thermoplastic,UL94V-0

4.2.4 Ear : Stainless Steel , tin plating over nickel on solder area

4.2.5 Terminal : copper alloy, gold plating over nickel on contact area and tin plating over nickel on solder area

4.3 Ratings

4.3.1 Operating temperature : -40°C TO +85°C

4.3.2 Storage temperature : -20°C TO 70°C

4.3.3 Voltage: 12V

4.3.4 Current: 1.1 ampere maximum per contact

4.4 Workmanship

Connectors shall be uniform in quality and shall be free from burrs, scratches, cracks, voids, chips, blisters, sharp edges, and other defects that will adversely affect product's life or serviceability

5 ELECTRICAL CHARACTERISTIC

5.1 Low Level Contact Resistance (EIA-364-23)

Test voltage: 20mV DC Max; Test current: 100 mA Max. All contacts should be measured.

Requirement:

Initial: 30milliohms maximum. ΔR 20 milliohms maximum .

5.2 Insulation resistance (EIA-364-21)

Test voltage: 100V DC. Duration: 1 minute.

Point of Measurement: Between adjacent contacts.

Requirement: 1000 M-ohms minimum.

5.3 Withstanding voltage(EIA-364-20)

Test voltage: 500 Volts, AC RMS, 60HZ. Duration: 1 minute.

Point of Measurement: Between adjacent contacts, signal to signal and signal to ground.

Requirement: No evidence of arc-over, insulation breakdown, or excessive leakage current > 0.5 mA.

6 MECHANICAL CHARACTERISTICS

6.1 Connector solder ability (IPC/ECA J-STD-002C, Test S1)

Conditioning: 8 hours $\pm$ 15 minutes steam.

Preheat: 150° to 180°C / 60-120 seconds

Reflow: 230° to 260°C / 30-60 seconds

Requirement: solderable area shall have a minimum of 95% solder coverage.

6.2 Random Vibration(EIA-364-28, Test Condition VII, Level D)

Subject mated specimens to 3.10G's rms between 20 to 500Hz. Fifteen minutes in each of 3 mutually perpendicular planes.

Requirement: No discontinuities of 1 microsecond or longer duration; meets electrical, mechanical and environmental criteria.

6.3 Mechanical shock(EIA-364-27, Test Condition A)

Subject mated specimens to 50G's half-sine shock pulses of 11 milliseconds duration. Three shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks.

Requirement: No discontinuities of 1 microsecond or longer duration.

6.4 Durability(EIA-364-9)

127 mm per minute by using maximum thickness gauge. Number Cycle: 100 Cycle

Requirement:

6.4.1 Shall meet visual requirements, show no physical damage.

6.4.2 LLCR: ΔR 20 milliohms maximum .

6.5 Mating force (EIA-364-13, Method A.)

The force to mate a receptacle connector and card shall not exceed 1.17 N per contact pair using a steel gauge 1.70 mm thick with a tolerance + 0.00/-0.01 mm.

Requirement: 25.4mm Per Minute Max

6.6 Unmating force (EIA-364-13, Method A.)

The unmating force shall not be less than 0.15N per contact pair using a steel gauge 1.44 mm thick with a tolerance +0.01/ - 0.00 mm

Requirement: 25.4mm Per Minute Max

6.7 Contact Retention Force

Surface Mount: contacts shall withstand an axial retention load of 300 Grams minimum.

Rate of 1.27mm per minute without dislodging from the housing cavity

7 ENVIRONMENTAL CHARACTERISTICS

7.1 Thermal shock(EIA-364-32, Method A, Test Condition I)

Subject mated specimens to 10 cycles between -55 and 85°C with 30 minutes dwells at temperature extremes and 1 minute transition between temperatures.

Requirements: Shall meet visual requirement, show no physical damage, and meet requirement of additional tests as specified in the product qualification.

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7.2 Humidity/temperature cycling(EIA-364-31, method IV, condition D)

25±3 °C at 90% RH and 65±3 °C at 98% RH

24 cycles (Ramp times should be 0.5 hour and dwell times should be 1.0 hour. Dwell times start when the temperature and humidity have stabilized within the specified levels)

Requirement: Shall meet visual requirement, show no physical damage, and meet requirement of additional tests as specified in the product qualification.

7.3 Temperature life (EIA-364-17, Method A)

Subject mated specimens to 105 °C for 250 hours.

Requirement: Shall meet visual requirement, show no physical damage, and meet requirement of additional tests as specified in the product qualification.

7.4 Mixed flowing gas(EIA-364-65, Class II A)

Subject board mounted specimens to environmental Class II A for 10 days. One-half of the specimens (receptacle only) unmated for 240h followed by 80h mated. Remaining one-half of the specimens mated for 10 days.

Requirements: Shall meet visual requirement, show no physical damage, and meet requirement of additional tests as specified in the product qualification.

7.5 Temperature rise (EIA-364-70)

Wire the eight power pins(B1,B2,B3,A2,A3,B8,A9,and A10) and the eight nearest ground pins(A4,B4,B7,A12,B13,A15,B16,and B18) in a series circuit, the temperature rise above ambient shall not exceed 30 °C at any point in the system when contacts are powered at 1.1 ampere.

Requirement: Only power pin carry 1.1 A Max.

7.6 Salt Spray (EIA-364-26,Test Condition B)

Subject unmated specimens to 5% NaCl, 48h.

Requirement: All pins' contact surfaces without obvious corrosion.

7.7 Dust (EIA-364-91)

Expose unmated connectors to dust contamination. Dust composition: #1. Flow rate: 300 meters/minute. Exposure time: 1 hour

Requirement: Shall meet visual requirement, show no physical damage, and meet requirement of additional tests as specified in the product qualification.

8 SECOND LEVEL ASSEMBLY REQUIREMENTS

8.1 Reseating

- Need no evidence of physical damage was visibled as a result of 3 reseating cycles.
- LLCR and LLCR change should be accord with spec after 3 reseating cycles

9 QUALIFICATION TESTING SEQUENCES

Table 1

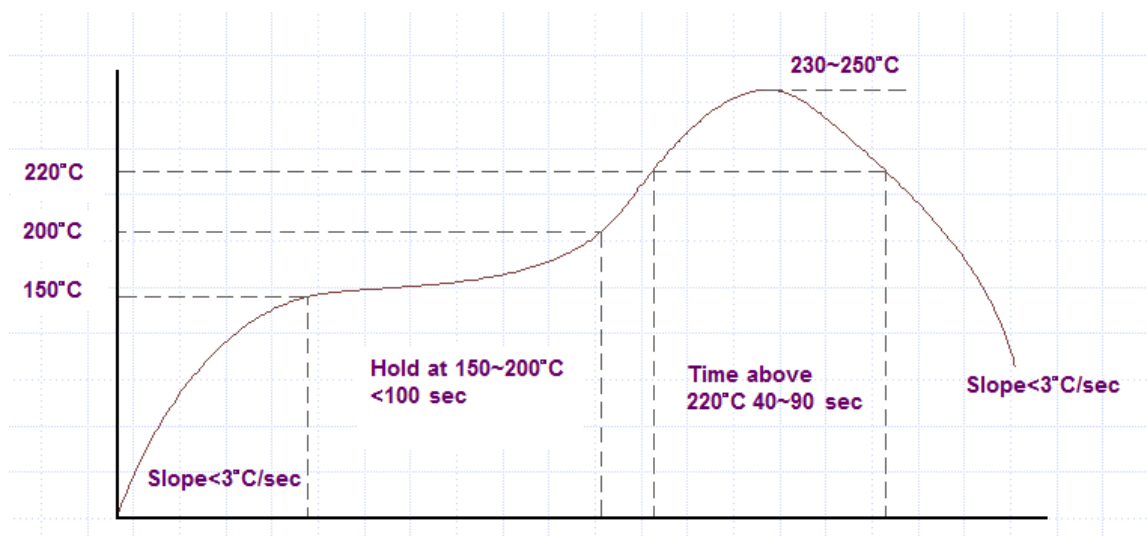
QUALIFICATION TEST											
N o.	Description	Section	Test Group & Sequence								
			1	2	3	4	5	6	7	8	9
1	Initial examination of product	3.2	1	1	1	1	1	1	1	1	1
2	Reseating	8	11		7	7					
3	LLCR	5.1	2, 5, 7 9,	2, 4, 6, 7	2, 4, 6, 8	2, 4, 6, 8					
4	Insulation resistance	5.2					2				
5	Withstanding voltage	5.3					3				
6	Connector solder ability.	6.1							2		
7	Random vibration	6.2		3							
8	Mechanical shock	6.3		5							
9	Mating force	6.5	3, 7								
10	Unmating force	6.6	4, 8								
11	Contact Retention Force	6.7								2	
11	Durability	6.4	6								
12	Resistance to reflow soldering heat	6.1									2
13	Thermal shock	7.1			3						
14	Humidity/temperature cycling	7.2			5						
15	Temperature life	7.3	8			3					
16	Mixed flowing gas	7.4				5					
17	Temperature rise	7.5						3			
18	Salt Spray	7.6					4				
19	Dust	7.7						2			
20	Final examination of product	3.3	10	8	9	9	5	4	3	3	

Note:

- (a) 5pcs samples are required in group 1, 2, 3, 5, 6, 7, 9
- (b) 10pcs samples are required in group 4, 8.
- (c) Precondition specimens with 20 durability cycles with latches engaged.

Remark:

IR reflow profile (reference)



Recommended Steel mesh thickness: 0.15 ~ 0.18mm ;

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