

<b>TITLE</b>  MULIT-TRAK PRODUCT SPEC MULTI-TRAK CONN.	<b>DOC No.</b>	
	<b>REVISION :</b> A0	<b>STATUS :</b> OFFICIAL RELEASE
	<b>DATE :</b> 2023/11/28	<b>CLASSIFICATION :</b>

## 1.0 OBJECTIVE 目的

This Specification defines the performance, test, quality and reliability requirement of the Multi-Trak Card Edge and Multi-Trak Connector..

本規格書定義了Multi-Trak通用型產品的性能,測試,品質以及可靠性要求。

## 2.0 SCOPE 範圍

2.1 This Specification Covers the Performance Requirements For The Multi-Trak Card Edge and Multi-Trak Connector.

本規範涵蓋了Multi-Trak 插卡和連接器系列產品的性能要求。

## 3.0 APPLICABLE DOCUMENTS 可適用的文件

The Following Documents From Part Of This Specification To The Extent Specified Herewith. In The Event Of Conflict Between The Requirements Of The Specification And The Product Drawing, The Product Drawing Shall Take Precedence. In the Event Of Conflict Between The Requirements Of The Specification And The Referenced Documents, This Specification Shall Take Precedence.

來自本規範部分的以下文件在指定的範圍內，規範的要求和產品圖有沖突時，以產品圖為準。在規範的要求和所引用的文件有沖突時，以本規範優先。

### 3.1 INDUSTRY DOCUMENTS 行業文件

EIA-364 Standard: Test methods for electrical connectors 電連接器的試驗方法

SFF-TA-1016: Internal Unshielded High Speed Connector System 內部非屏蔽高速連接器系統

PCI-Express Revision 4.0 & 5.0 PCI-E 4.0和5.0版本

## 4.0 RATINGS 項目要求

ITEM 項目	REQUIREMENT 要求
Current 電流	10.5Amps per power pin,0.5Amps per other pins 每個電源引腳 10.5 安培，第個其它引腳 0.5 安培

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Voltage 電壓	30Volts DC 30 伏直流
Temperature 溫度	Field:65°C
None operating Temperature 無工作溫度	-20°C to +80°C

## 5.0 PERFORMANCE

### 5.1 ELECTRICAL REQUIREMENTS 電氣要求

Item 項目		Test methods 試驗方法	Requirement 要求
5-1-1	Low level Contact Resistance 接觸阻抗	EIA-364-23 20 mV DC maximum 100mA maximum To include wire termination or connector-to-board termination 最大 20m V 直流, 最大 100mA, 包括線端或連接器到板端。	Baseline(Initial) △20milliohms Max. from baseline 初期最大 20 毫歐
5-1-2	Dielectric Withstanding Voltage 耐電壓	EIA-364-20 Unmated connectors:apply a voltage of 300 VDC for 1 minute between adjacent terminals 未配對連接器: 在相鄰端子之間施加 300V 直流電壓 1 分鐘	No creeping discharge or flashover shall occur Cument leakage:5m A Max 不應該發生蠕變放電或漏電流, 最大 5mA .
5-1-3	Insulation Resistance 絕緣阻抗	EIA-364-21 Unmated and unmount connectors:apply a voltage of 100 VDC between adjacent terminals and between terminals to ground 未配對連接器: 在相鄰端子之間施加 300V 直流電壓	1000Megohm MINIMUM 最小 1000 兆歐

#### Notes: 備注

- The first low level contact resistance reading in each test sequence is used to determine a baseline measurement. Subsequent measurements in each sequence are measured against this baseline.  
每個測試序列中的第一個低電平接觸阻抗讀數用於確定基準測量。每個序列中的後續測量值都是根據該基準進行測量的。

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5.2 MECHANICAL REQUIREMENTS 機械要求

Item 項目	Test methods 試驗方法	Requirement 要求
5-2-1	<p>Latched Mating force 插入力</p> <p>To be tested with connector (with integrated latch shroud) and module (plug) without any heat sinks. Latching mechanism deactivated (locked out) Per EIA-364-13 Operation Speed : 25.4mm/minute 用連接器進行測試(用集成式鎖舌護罩)和模塊(插頭)而沒有任何散熱片。閉鎖機構失效(鎖在外面) 依據 EIA-364-13 操作速度: 25.4 毫米/分鐘</p>	<p>1.1N (112.17)g max per contact pair 每對觸點最大1.1N(112.17克)</p>
5-2-2	<p>Latched Unmating force 拔出力</p> <p>To be tested with connector (with integrated latch shroud) and module (plug) without any heat sinks. Latching mechanism deactivated (locked out) Per EIA-364-13 Operation Speed : 25.4mm/minute 用連接器進行測試(用集成式鎖舌護罩)和模塊(插頭)而沒有任何散熱片。閉鎖機構失效(鎖在外面) 依據 EIA-364-13 操作速度: 25.4 毫米/分鐘</p>	<p>0.1N (10.2)g min per contact pair 每接觸對 0.1N(10.2 克)</p>
5-2-3	<p>Latch Retention 卡扣固定</p> <p>To be tested with connector (with integrated latch shroud) and module (plug) without any heat sinks. Latching mechanism engaged (not locked out) Per EIA-364-13 Rate: 25.4 mm/minute Pull in direction parallel to insertion, hold for minimum of 60 seconds 用連接器進行測試(用集成式鎖舌護罩)和模塊(插頭)而沒有任何散熱片。鎖定機構接合(未鎖定) 依據 EIA-364-13 操作速度: 25.4 毫米/分鐘 沿平行于插入方向拉動, 保持最少 60 秒</p>	<p>50N Min. 最小50N</p>

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5-2-4	Durability 耐久性	To be tested with connector and module (Latches should be locked out per EIA-364-1000) Per EIA-364-09 Cycle Rate: 500 ± 50 cycles per hour Perform cycles: 200 cycles for 30μ" gold plating 100 cycles for 15μ" gold plating 用連接器和模塊進行測試 (根據 EIA-364-1000, 應將門鎖上) 依據EIA-364-09 循環速度: 每小時 500±50 次 鍍金 30u: 200 次 鍍金 15u: 100 次	No visual damage to mating interface or latching mechanism. 產品接口或閉鎖機構無視覺損傷
5-2-5	Durability (preconditioning) 耐久性(預處理)	To be tested with connector and module (Latches should be locked out) Per EIA-364-09 用連接器和模塊進行測試 (門鎖應鎖在外面) 依據EIA-364-09	No evidence of physical damage. 外觀無損傷
5-2-6	Random Vibration 隨機振動	EIA-364-28, Test Condition VII, Condition D Subject mated specimens to 3.10 G's rms between 20-500 Hz for 15 minutes in each of 3 mutually perpendicular planes 依 EIA-364-28 測試條件 D 在 3 個相互垂直的平面中的每一個平面中, 受試者配對樣本在 20-500Hz 之間的 3.10G 均方根下工作 15 分鐘	No evidence of physical damage No electrical discontinuity < 1μsec 20 milliohm maximums change from initial (baseline) contact resistance 外觀無損傷 無電氣不連續性小于 1 毫秒 接觸阻抗從初始值(基準) 變化最大 20 毫歐
5-2-7	Mechanical Shock 機械沖擊	EIA-364-27 Condition A Mated Connectors. Shock pulse: Half-sine, 50G, ± 10% Duration: 11 milliseconds Quantity: Three drops in each of six directions. Total 18 drops per connector 依 EIA-364-27 試條件 A 配對連接器 沖擊脈沖: 正半弦, 50G ± 10% 持續時間: 11 毫秒 數量: 6 個方向各沖擊 3 次, 每個連接器共沖擊 18 次	No evidence of physical damage 20 milliohm maximums change from initial (baseline) contact resistance 外觀無損傷 接觸阻抗從初始值(基準) 變化最大 20 毫歐
5-2-8	Reseating	Manually mate and un-mate the connector with P.C.B for 3 such cycles	No damage in appearance

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	復測	手動用PCB板插拔3次循環	外觀無損傷
5-2-9	Wrenching Strength 扭轉強度	Bend cable 90° at minimum bend radius. Pull 25N Min. in each of 4 axis directions for round cable. Pull 25N Min. in each of 2 axis directions for flat cable. 以最小彎曲半徑將電纜彎曲90度，在圓形電纜的4個軸的每一個方向最小拔25N。	No damage to plug / cable assembly 插頭和電纜組件無損傷
5-2-10	Contact Normal Force 端子正向力	EIA-364-04 Rate: 5.0 mm/minute 依EIA-364-04 速率：5.0毫米/分鐘	0.098 N (10 grams) Minimum at nominal 最小0.098N(10克)

Notes: 備注

1. If the durability requirement on the connector is greater than that of the module, modules may be replaced after their specified durability rating.

如果連接器的耐久性要求大于模塊的耐久性要求，則可以在達到指定的耐久性等級后更換模塊。

**5.3 ENVIRONMENTAL REQUIREMENTS 環境要求**

Item 項目		Test methods 試驗方法	Requirement 要求
5-3-1	Thermal Shock 熱沖擊	Mate connectors exposed 5 cycles of: 配對連接器暴露 5 個周期 Temperature °C      Duration(MIN) 溫度                      持續時間(電小值) -20 0/-3                      30 +25 +10/-5                      5.0 +80 +3/0                      30 +25 +10/-5                      5.0 per EIA-364-32 依據 EIA-364-32	No evidence of physical damage 20 milliohm maximums change from initial (baseline) contact resistance 產品外觀無損傷 接觸阻抗(與初始基準相比)變化值最大20毫歐

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5-3-2	Thermal Disturbance 熱擾動	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 連接器在15 ±3 °C and 85 ±3 °C之間循環，斜度應至少為2 °C/分鐘，濕度不受控制，在配對條件下執行10個循環	No evidence of physical damage 20 milliohm maximums change from initial (baseline) contact resistance 產品外觀無損傷 接觸阻抗(與初始基準相比)變化值最大 20 毫歐
5-3-3	Cyclic Temperature & Humidity 循環溫度和濕度	Cycle the connector between 25 °C and 65 °C, with RH of 80 to 50%. Ramp times should be 30 minutes and dwell times should be 60 minutes. Dwell times start when the temperature and humidity have stabilized within the specified levels Perform 24 such cycles Per EIA-364-31 連接器在溫度 25 °C 至 65 °C，濕度 80% 至 50%之間循環，爬升時間應為 30 分鐘，停留時間應為 60 分鐘，停留時間從溫室度和濕度開始。 依據 EIA-364-31	No evidence of physical damage 20 milliohm maximums change from initial (baseline) contact resistance 產品外觀無損傷 接觸阻抗(與初始基準相比)變化值最大20毫歐
5-3-4	Temperature life 溫度壽命	Expose mated connectors to a temperature of 105 °C +/-3 °C for 120hrs. Per EIA-364-17 將配對連接器暴露在溫度為 105 °C +/-3 °C 環境中 12 個小時。 依據 EIA-364-17	No evidence of physical damage 20 milliohm maximums change from initial (baseline) contact resistance 產品外觀無損傷 接觸阻抗(與初始基準相比)變化值最大20毫歐
5-3-5	Temperature life (preconditioning) 溫度壽命(預處理)	Expose mated connectors to a temperature of 105 °C +/-3 °C for 72hrs. Per EIA-364-17 將配對連接大暴露在溫度為 105 °C +/-3 °C 環境中 72 小時 依據 EIA-364-17	No evidence of physical damage 產品外觀無損傷
5-3-6	Solderability 可焊性	J-STD-002 Unmated connector: Steam age for 8 hours ± 15 minutes. Dip tails into flux for 5 second, drain, and then dip into the solder pot of 245+5°C for 5±0.5seconds.	95% Minimum solder coverage 吃錫面積最小95%。



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		未配對連接器 蒸汽老化 8 小時± 15 分鐘，將尾部浸入助焊劑中 2 秒，瀝干后放入 245+5°C 錫爐中 50 ±0.5 秒	
5-3-7	Resistance to Solder Heats 耐熱焊	EIA-364-56 Pre Heat : 150~200°C, 90±30sec. Heat : 217°C Min., 60~150sec. Peak Temp. : 260+0/-5°C, 20~40sec. Duration : 3 cycles 預熱 150~200°C，時間 90±30 秒 加熱 217°C，時間 60-150 秒 最高溫度260+0/-5°C，20~40秒。 持續時間：3 個周期	No evidence of physical damage 產品外觀無損傷
5-3-8	Current Rating/ Temperature Rise 額定電流/溫升	EIA-364-70 Maximum of 6 adjacent pins per side and 12 pins in total are connected in series, the thermocouple shall be placed as close as possible to the contact interface. Supply the rated current for a duration of 1 hour before measurement is taken 依據EIA-364-70 每邊最多6個相鄰的插腳，總共有12個插頭串聯連接，熱電偶應盡可能靠近接觸界面放置 測量前提供額定電流1小時	10.5A per power pin MAX. Maximum temperature rise :30 °C above ambient condition of 25 °C still air 電源pin電流最大10.5A 溫升:高于25 °C的環境條件下溫升小于30度。
5-3-9	Salt Spray 鹽霧	EIA-364-26 Subject mated connectors to 35±2°C and 5±1% salt condition for 48hours. After test, rinse the sample with water and recondition the room temperature for 1 hour. 依據EIA-364-26 將配對連接器置于35±2°C和5±1%鹽水條件下48小時，試驗結束後，用清水沖洗樣品，并重新室溫放置1小時	No evidence of physical damage 20 milliohm maximums change from initial (baseline) contact resistance 產品外觀無損傷 接觸阻抗(與初始基準相比)變化值最大20毫歐

**Notes:**

1. Test option, temperature, duration must be reported. 測試選項，溫度，持續時間必須報告





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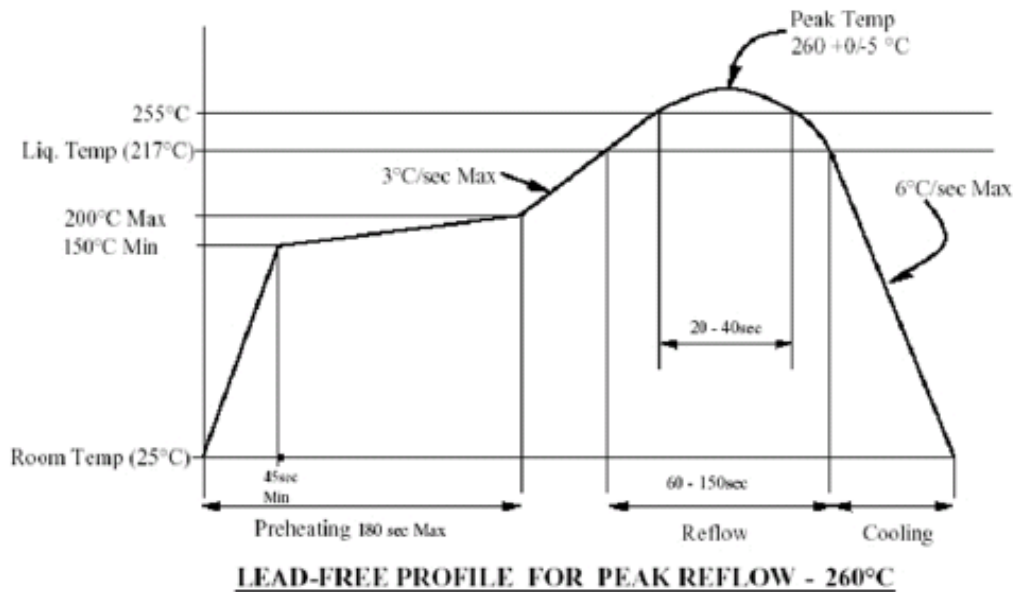
### 7.0 PACKAGING 包裝

Parts shall be packed in hard trays and protected against damage during handling, transportation and storage

產品必須用硬托盤包裝，并在搬運和儲存過程中防止損壞

### 8.0 RECOMMENDED LEAD-FREE REFLOW PROFILES

推薦的無鉛回流焊曲線圖形



### Notes 備注

- Temperature indicated refers to the PCB surface temperature at the solder tail area.  
顯示的溫度是指焊尾區域的PCB表面溫度
- Connector can withstand up to 3 reflow cycles with a cool-down to room temperature in-between.  
連接器最多可承受3次回流焊循環，其間可冷卻至室溫
- Actual reflow profile also depends on equipment, solder paste, PCB thickness, and other components on the board. Please consult your solder paste and reflow equipment manufacturer for their recommendations to adopt a suitable process.  
實際回流曲線還取決于設備、錫膏、PCB板厚度和電路板上的其它組件。請諮詢您的錫膏和回流焊設備製造商，以獲得他們的建議，從而采用合適的工藝。