

SSL1.1 Series

Product Specification



1. Scope / 概論

A leading professional solutions provider of waterproof connectors (overmolded with cable, receptacle, field installable) in the industry, Amphenol LTW (ALTW) always fulfills any requirements with high functionality and reliability products; even it is a very special requirement. And it is highly recommended to be applied to harsh environment.

Amphenol LTW (ALTW) 是防水連接器計設及生產的領導者,主要包含線端,板端及現場組裝式連接器以滿足各種使用求及特殊要求,產品具有高效能及高可靠性,非常適合在各種惡劣的環境條件下提供安裝及使用。

This product specification sheet describes the product application in the markets such as Renewable Energy, Industrial Automation, LED Lighting, Marine, Broadband Wireless Access, Smart Grid, Heavy Equipment, Medical, Electrical Vehicle....etc. 本規範主要描述了 Amphenol LTW(ALTW)產品的應用要求。 本產品廣泛應用於可再生能源,工業自動化,LED,船舶,寬帶無線接入,智能電網,建築機械/重型車輛,醫療設備等,電動車行業....

2. Applicable Documents / 參考文件

2.1 Industry Document / 業界標準

Amphenol LTW (ALTW) 設計及生產的產品符合各項世界標準,包括 IEC, EIA, MIL, NMEA....

3. Specification / 規格

3.1 Material / 材質

Parts / 零件	Material / 材質
Housing / 胶芯	Thermoplastic / 熱塑性塑膠
Terminal / 端子	Copper Alloy / 銅合金
Solder Peg / 固定腳	Copper Alloy / 銅合金

3.2 Rating / 操作評級

Current Voltage / 電壓	100V DC/AC. 100 伏直流/交流
Current Rating / 電流	3A 3 安培
Operating Temperature / 操作溫度	-40°C~100°C -40 攝式度~100 攝式度
IP / 防水等級	None 无
Accepted Wire Size / 適用線徑	Wire : UL1430, 22 AWG Flat Cable: UL21016, 22AWG

4. Test Requirement/測試要求

4.1 Appearance/外觀

Item / 項目	Test Condition / 測試條件	Requirement / 條件需求
Examination of product 外觀檢查	EIA-364-18 Visual inspection No physical damage 檢查外觀是否有損壞	No defect would impair normal operation 沒有缺陷會影響正常操作

4.2 Electrical/電氣

Item / 項目	Test Condition / 測試條件	Requirement / 條件需求
Low Level Contact Resistance 低電平接觸電阻	EIA-364-23, measure and record the contact resistance with a test current of 100 mA maximum and 20 millivolts open circuit (source) voltage maximum. EIA-364-23, 用最大 100 mA 和 20mV 的开路电压来测试和记录接触电阻	<ul style="list-style-type: none"> Initial: 20 mΩ maximum After test: 10 mΩ changes maximum 初始值: 20 mΩ maximum 功能測試后: Δ 10 mΩ maximum
Insulation Resistance 絕緣阻抗	EIA-364-21, apply a test voltage 500V/DC ±10% between the closet adjacent contacts EIA-364-21, 對連接器相鄰的端子施加電壓 500VDC±10%測試其絕緣阻抗	<ul style="list-style-type: none"> 1000 MΩ minimum 絕緣阻抗 1000 MΩ minimum
Dielectric Withstand Voltage 耐電壓	EIA-364-20, Test method B, apply a test voltage of 1,200VAC, 60 Hz between adjacent contacts for 1 minute EIA-364-20, 測試方法 B, 對連接器相鄰的端子施加交流電壓(60Hz) 1200VAC,保持 1 分鐘	<ul style="list-style-type: none"> No physical damage, flashover, air discharge, breakdown leakage <5mA 無物理損害,飛弧,跳火,擊穿 漏電流小于 5 毫安
Temperature Rise Test 溫升試驗	UL 1977 Section 16, Test current 3A, 6 (mated) specimens with all contacts connected with rated current. Continue for 4 hours. Measurement position Thermocouples 12 point. 參考 UL1977 標準第 16 章節, 依額定電流設定溫升測試電流負載 3A 持續通電 4 小時后量測并記錄端子的溫升	<p>Follow UL</p> <ul style="list-style-type: none"> The temperature do not exceed the RTI of insulating material. <p>Follow CSA C22.2 No.182.3</p> <ul style="list-style-type: none"> Temperature rise Δt less than 30°C <p>參考 UL 要求</p> <ul style="list-style-type: none"> 最高溫度不能超過材料的 RTI <p>參考 CSA C22.2 No.182.3</p> <ul style="list-style-type: none"> 溫升Δt 不超過 30°C

4.3 Mechanical/機械

Item / 項目	Test Condition / 測試條件	Requirement / 條件需求
<p>Durability 耐久性</p>	<p>EIA-364-09, mate and un-mate connector assemblies for 100 cycles at maximum rate of 500±50 cycles per hour.</p> <p>EIA-364-09, 插拔速率為每小時插拔 500±50 次循環</p>	<ul style="list-style-type: none"> • 100 cycles minimum • No physical damage; • Pass the sequenced tests • 插拔壽命最小 100 次循環 • 無物理損害; • 符合群組測試
<p>Mating force and Un-mating force 插拔力</p>	<p>EIA-364-13, shall be fully mated at a rate of 25.4 millimeters per minute</p> <p>EIA-364-13, 連接器需完全對插,其插拔速率為 25.4mm/分鐘</p>	<ul style="list-style-type: none"> • Mating force 2/4/6P: 0.5/ 1.5/ 2.0kgf maximum • Un-mating Force / without lock 2/4/6P: 0.1/ 0.4/ 0.5kgf minimum • Un-mating Force / with lock 2/4/6P: 2.5kgf minimum • 插入力 2/4/6P: 不超過 0.5/ 1.5/ 2.0kgf • 拔出力(無卡鉤) 2/4/6P: 至少需滿足 0.1/ 0.4/ 0.5Kgf • 拔出力(帶卡鉤) 2/4/6P: 至少需滿足 2.5kgf
<p>Mechanical Shock 物理沖擊</p>	<p>EIA-364-27, Subject mated connector to 50G ,half-sine shock pulses of 11 milliseconds duration. Three shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks.</p> <p>EIA-364-27, 重力加速度：50G</p> <p>波形:半正弦波,持续时间为 11msec 冲击次数:3 个轴 6 个面,每面 3 次共 18 次</p>	<ul style="list-style-type: none"> • No physical damages • 無物理損害 • No electrical discontinuity more than 1m second • 電氣斷訊小于 1 微秒
<p>Vibration 震動實驗</p>	<p>EIA-364-28, Test condition VII, Subject mated specimens to 3.10G's rms between 20~500HZ. fifteen minutes in each of 3 mutually perpendicular planes.</p> <p>EIA-364-28, 測試條件 VII, 在頻率 20Hz-500Hz 范围内將对插接好的样品施加 3.10G 的随机振动,并在 3 个相互垂直的平面上对每一个面保持 15 分钟</p>	<ul style="list-style-type: none"> • No physical damages • 無物理損害 • No electrical discontinuity more than 1m second • 電氣斷訊小于 1 微秒
<p>Cable Pull-Out 線材拉力</p>	<p>EIA-364-38, apply axial load of 2.0 kgf min. to the cable or wire for one minute..</p> <p>EIA-364-38, 固定被测樣品之連接器本體,對樣品之線材吊重 2.0kgf 并保持 1 分鐘</p>	<ul style="list-style-type: none"> • No physical damage, break or defect to the test samples as executing • 無物理損害, 線材不會拉出
<p>Retention Force 保持力</p>	<p>EIA-364-29, Test method B</p> <p>EIA-364-29, 測試方法 B</p>	<ul style="list-style-type: none"> • 0.3kgf (2.94N) minimum per contact • 每只端子的保持力大于 0.3kgf (2.94N)

4.4 Environmental/環境

Item / 項目	Test Condition / 測試條件	Requirement / 條件需求
Damp Heat, Cyclic 恒溫恒濕	EIA-364-31, Test method II, Test condition A, 40±2 °C at 90% ~ 95% RH, four cycles (4 days) EIA-364-31, 測試方法 II, 測試條件 A, 溫度 40±2 °C 及相對濕度 90% ~ 95% RH, four cycles (4 days)	<ul style="list-style-type: none"> • visual inspection: No Damage • DWV: 1200V AC • 無物理損壞 • 需耐电压 1200V AC
Salt Spray 鹽水噴霧試驗	EIA-364-26, 5% salt solution for 24 hours unmated. 5%鹽水溶液持續 24 小時	<ul style="list-style-type: none"> • No physical damages and shall meet requirements of sequenced tests. • 無物理損壞，應符合有序測試的要求。
Thermal Shock 冷熱衝擊試驗	EIA-364-32 Method A, Test condition VII, -40°C to +105°C; 5 cycles. 溫度-40~105°C 共 5 個循環	<ul style="list-style-type: none"> • visual inspection: No Damage • DWV: 1200V AC • Insulation resistance: >1000MΩ • 無物理損壞 • 需耐电压 1200V AC • 绝缘电阻：>1000MΩ
Thermal Aging 溫度老化	EIA-364-17, Method A, Test Condition 4, 105°C for 250 hours	<ul style="list-style-type: none"> • visual Inspection: no damage • LLCr: Δ 10 mΩ • DWV: 1200V AC • Insulation Resistance: >1000MΩ • 無物理損壞 • 低電平接觸電阻：Δ 10 mΩ • 需耐电压 1200V AC • 绝缘电阻：>1000MΩ
Solderability 焊錫性	EIA-364-52, Soldering time : 3s±0.5s, Solder temperature: 240±2°C 0.2mm from terminal tip 0.2mm from fitting nail tip EIA-364-52, 焊錫時間 : 3s±0.5s, 焊錫溫度: 240±2°C	<ul style="list-style-type: none"> • Solderable area shall have a minimum of 95% solder coverage by 10x magnification. • 以 10 倍放大檢查吃錫面積需大于 95%
Resistance to Solder Heat 耐焊錫熱試驗	EIA-364-56, Procedure 3, Test condition C, 260±5°C for 10±2 seconds (refer figure 1)	<ul style="list-style-type: none"> • No physical damages and shall meet requirements of sequenced tests by 10x magnification. • 接觸電阻: Δ 10 mΩ maximum • 以 10 倍放大檢查外觀無物理損害

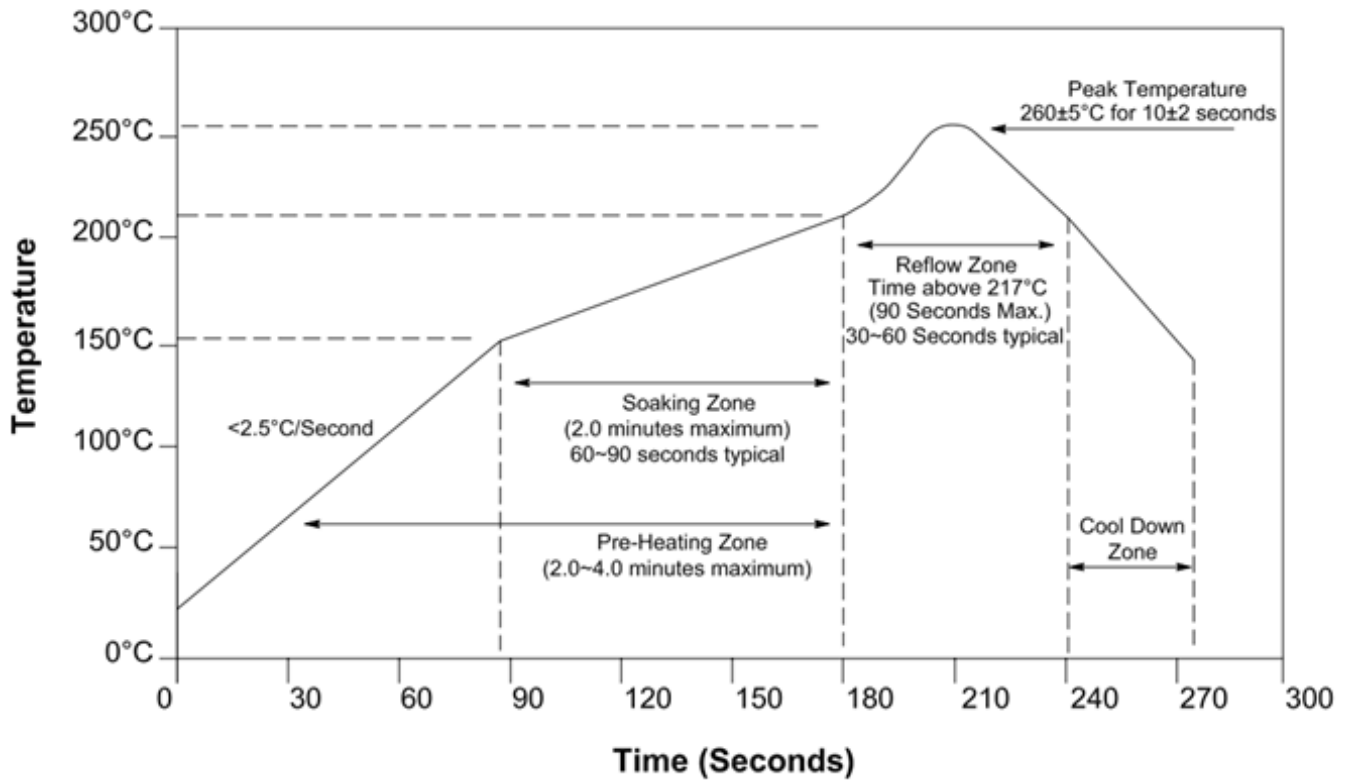


圖 1: 建議 SMT Reflow 溫度曲線

5. Product Qualification Test Sequence/測試群組及順序

	Test or Examination	Test Group								
		A	B	C	D	E	F	G	H	I
		Test Sequence								
Examination of product	Visual Examination 外觀檢查	1, 6	1, 7	1, 8	1, 5	1, 9	1, 5	1, 3	1, 5	1, 3
Electrical	Low Level Contact Resistance 低電平接觸電阻	2, 5	3, 6		2, 4	4, 8	2, 4		2, 4	
	Insulation Resistance/絕緣阻抗			3, 6		2, 6				
	Dielectric Withstand Voltage/耐電壓			2, 7		3, 7				
	Temperature Rise Test/溫升測試						3			
Mechanical	Retention Force/保持力		8							
	Durability/耐久性		4							
	Mating force and Un-mating force 插拔力		2, 5							
	Mechanical Shock/機械沖擊	3								
	Vibration/震動實驗	4								
	Cable Pull-Out/線材拉力									2
Environmental	Damp Heat, Cyclic/恒溫恒濕			5						
	Salt Spray/鹽霧測試				3					
	Thermal Aging/溫度老化					5				
	Thermal Shock/溫度沖擊			4						
	Solderability/焊錫性							2		
	Resistance to Solder Heat/耐焊錫熱試驗								3	

6. Quality Assurance Provisions/品質保證

Unless otherwise specified, in the contract or purchase order, we will be responsible for the quality of the part as it is

delivered to client. We will be responsible for having controlled processes to ensure product is in total compliance with this specification. Failing lots shall be subject to return or other corrective action.

除非在合同或採購訂單中另有規定者外，我們將對交付給客戶的部件質量負責。我們將負責控制流程，以確保產品完全符合規格。未通過的批次應退回或採取其他糾正措施。

Re-qualification Testing : 重新資格測試

If changes significantly affecting form, fit or function are made to the product or manufacturing process, 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.

如果對產品或製造過程產生顯著影響的形狀，配合或功能的變化，產品保證應協調重新認證測試，包括由開發/產品，質量和可靠性工程確定的全部或部分的原始測試順序。

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7. Revision/版本

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