

RJ Series D size

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
Connector / 連接器	Thermoplastic / 熱塑性塑膠
Pin / 端子	Copper Alloy / 銅合金
Nut / 螺帽	Thermoplastic / 熱塑性塑膠, Metal / 金屬
Clamp Ring / 夾環	Thermoplastic / 熱塑性塑膠
O-Ring / O 型環	Rubber / 橡膠
Gasket / 墊圈	
Seal / 密封圈	
Shield/Shell / 屏蔽	Metal / 金屬

3.2 Rating / 操作評級

Voltage / 電壓	44~57V D.C. Support PoE 直流 44~57 伏支援 PoE
Current / 電流	1.5Amax. 1.5 安培最大電流
Operating Temperature / 操作溫度	Receptacle: -40°C ~105°C 攝氏-40 度~105 度 Overmolded With Cable: -20°C ~80°C 攝氏-20 度~80 度 Field Installable: -40°C ~105°C 攝氏-40 度~105 度
IP / 防水等級	IP 67

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	IEC 60512, Test 1a Visual inspection No physical damage 檢查外觀是否有損壞	There shall be no defects that would impair normal operation 不得存在會影響正常運行的缺陷

4.2 Electrical/電氣

Item / 項目	Test Condition / 測試條件	Requirement / 條件需求
Contact Resistance 接觸阻抗	IEC 60512, Test 2a, Mated connectors, 對接連接器	20 m Ω MAX Initial 初始 20 m Ω MAX. change from initial 較初始變更最大 20m Ω
Voltage proof 耐電壓試驗	IEC 60512, Test 4a, Method A Standard atmospheric conditions, Mated connectors 標準大氣條件,對接連接器	1000V d.c. or a.c. peak; one contact to other contacts connected together. 1000V 直流或交流;一個接點與連接在一起的其他接點 1500V d.c. or a.c. peak; all contacts connected together to shield, (housing/mounting plate) if present 1500V 直流或交流;所有接點連接在一起對屏蔽
Input to output d.c. resistance 輸入到輸出直流電阻	IEC 60512, Test 2a, Mated connectors Connection points: Cable termination to cable termination 對接連接器 連接點:線材終端到線材終端	200m Ω maximum 200m Ω 最大
Initial Insulation Resistance 初始絕緣電阻	IEC 60512, Test 3a, Mated connectors, Test voltage:100V d.c. 對接連接器 測試電壓直流 100V	500M Ω minimum 500M Ω 最小

4.3 Mechanical/機械

Item / 項目	Test Condition / 測試條件	Requirement / 條件需求
Mechanical operation 機械操作	IEC 60512, Test 15f, Speed: 10mm/maximum Rest: 1s minimum(mated and unmated) PL 1: 750 operations PL 2: 2500 operations NOTE PL defines the performance level. This standard specifies two of them. 速度: 10mm/最大 Speed: 10mm/maximum 休息最少 1 秒(對接及未對接) PL 1: 750 操作次數 PL 2: 2500 操作次數 NOTE PL 定義特性等級, 本標準定義這兩個等級	
Insertion and withdrawal force 插拔力	IEC 60512, Test 13b Speed: 10mm/maximum	20N maximum(Unshielded) 30N maximum(Shielded) 20 牛頓最大(非屏蔽) 30 牛頓最大(屏蔽)
Vibration 震動試驗	EIA-364-28, Test condition I, Frequency: 10~55~10Hz, amplitude : 1.5 mm; Two hours in each of 3 mutually perpendicular planes. 頻率: 10~55~10Hz, 振幅: 1.5mm,每軸向測試 2 小時, 三個軸向平面均需測試	Contact disturbance 10 μ s maximum 接觸干擾 10 μ 秒最大
Effectiveness of connector coupling device 連接器耦合裝置的有效性	IEC 60512, Test 15f Rate of load application 44.5N/s maximum 負荷率 44.5 牛頓/秒最大	50N for 60s \pm 5s 50 牛頓持續 60 秒 \pm 5 秒
Gauge 量規	IEC 60603-7, Annex C	All samples tested shall pass all gauges and forces
Gauging continuity 量規訊號連續性	IEC 60603-7, Annex A	10 μ s maximum 10 μ 秒最大

4.4 Environmental/環境

Item / 項目	Test Condition / 測試條件	Requirement / 條件需求
Cyclic Humidity 溫度循環濕性測試	IEC 60068-2-38, 21 Cycles: Low temperature 25°C High temperature 65°C Cold subcycle -10°C Humidity 93% Half of the samples in mated state ; Half of the samples in unmated state 低溫攝氏 25 度,高溫攝氏 65 度,冷次週期攝氏-10 度,濕度 93%,一半樣品對接,一半樣品不對接	20mΩ maximum change from initial 與初始變化最大 20mΩ
Rapid change of temperature 溫度快速變化試驗	IEC 6068-2-14 -40 °C to 70 °C Mated connectors, 25 cycles t=30min, Recovery time 2h 溫度攝氏-40~70 度 共 25 個循環,回復時間 2 小時	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。
Electrical load and temperature 電氣負載與溫度高溫測試	IEC 60512, Test 9b 500h 70°C, Recovery period 2h 500 小時攝氏 70 度,恢復週期 2 小時	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。
Waterproof Test 防水測試	IEC 60529, IPX5: Test nozzle \varnothing 6.3 mm, Water flow rate 12.5L/min, distance 2.5 m to 3 m, duration 3 minutes. 噴嘴 \varnothing 6.3mm, 水流速 12.5L / min, 距離 2.5m 至 3m, 持續時間 3 分鐘。 IEC 60529,IPX6: Test nozzle \varnothing 12.5mm, Water flow rate 100L/min, distance 2.5 m to 3 m, duration 3 minutes. 噴嘴 \varnothing 12.5mm, 水流速 100L / min, 距離 2.5 m 至 3 m, 持續時間 3 分鐘。 IEC 60529, IPX7: Should be immersed in water at depth of at least 1 m for 30 minutes. 浸入深度至少 1 米的水中 30 分鐘。 IEC 60529, IPX8: should be immersed in water at depth of at least 1 m for 24 hours. 浸入深度至少 1 米的水中 24 小時。	No physical damages and shall meet requirements of sequenced tests. 無物理損壞 Visual inspection inside no water 目視內部無水侵入 Insulation resistance: >500MΩ 絕緣電阻 : >500MΩ

4.5 High Frequency/高頻

Item / 項目	Test Condition / 測試條件	Requirement / 條件需求
NEXT	Fluke Channel	IEC 60603-7-X
Power sum NEXT 功率總合 NEXT	Fluke Channel	IEC 60603-7-X
FEXT	Fluke Channel	IEC 60603-7-X
Power sum FEXT 功率總和 FEXT	Fluke Channel	IEC 60603-7-X
Insertion Loss 插入損失	Fluke Channel	IEC 60603-7-X
Return Loss 反射損失	Fluke Channel	IEC 60603-7-X

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

	Test or Examination	Test Group				
		A	B	C	D	E
		Test Sequence				
Examination of product	Visual Examination	1	8	4		
Electrical	Contact Resistance	2	5,10	2	5	
	Voltage proof contact/contact	4	6		3	
	Voltage proof contact/panel	5	7		4	
	insulation Resistance	3	4,14	3	2	
	Electrical load and temperature				1	
	Gauging continuity				7	
	Waterproof Test of IPX7 Grade		13			
Mechanical	Insertion Force and Withdrawal force Test		1,11			
	Effectiveness of connector coupling device		2,12			
	Vibration			1		
	Gauge				6	
Environmental	Rapid change of temperature		3			
	Cyclic damp heat		9			
High Frequency	Insertion loss					1
	Return loss					2
	NEXT					3
	Power sum NEXT					4
	FEXT					5
	Power sum FEXT					6

6. Others/其他

6.1 Torque/扭力

Panel Nut / 鎖板 (板端)	11.5-14 kgf.cm
Mating Nut (Overmolded With Cable/Field Installable) / 對插 (線端/組裝式)	4-6 kgf.cm
Sealing Nut / 尾蓋 (組裝式)	8-15 kgf.cm

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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