



TEST SUMMARY



LANGUAGE

English

1.0 SCOPE

Full qualification of connector series 121201 & 121212, External Din Valve.

2.0 REFERENCE DOCUMENTS AND SPECIFICATIONS

PS-121201-001, Rev B, PRODUCT SPECIFICATION FOR DIN VALVE CONNECTORS

E-121201-003, Rev A, TYPE A 2P ASSEMBLY W/O CIRCUIT

E-121202-002, Rev A, TYPE B IND ASSEMBLY W/O CIRCUIT

E-121206-007, Rev A, TYPE A 3P ASSEMBLY W/O CIRCUIT

E-121207-001, Rev A, TYPE A 2P ASSEMBLY W / CIRCUIT

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3.0 TEST PROCEDURE

The samples were divided into the following groups

Test Group	Number of Specimen
P	12 samples (4 Samples for each Group) 121202-0002 – Qty 6 121201-0003 – Qty 6
AP	4 Samples 121202-0002 – Qty 2 121201-0003 – Qty 2
BP	18 Samples 121202-0002 – Qty 6 121206-0003 – Qty 2 (IP only)* 121206-0007 – Qty 2 (IP only)* 121206-0020 – Qty 2 (IP only)* 121201-0003 – Qty 6
CP	4 Samples 121202-0002 – Qty 2 121201-0003 – Qty 2

*Additional samples used to cover all Grommets used.

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Figure 1: Type A



Figure 2: Type B

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GROMMETS TESTED FOR IPX7, IPX5 & IPX7



Figure 3: Grommet - 1211240145



Figure 4: Grommet - 1211240159



Figure 5: Grommet - 1211240106



Figure 6: Grommet - 1211240126

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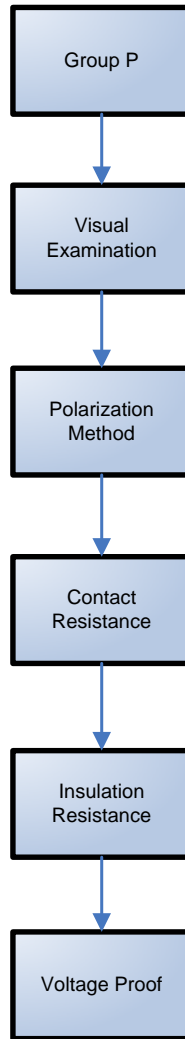


Figure 7: Test Sequence of Group P

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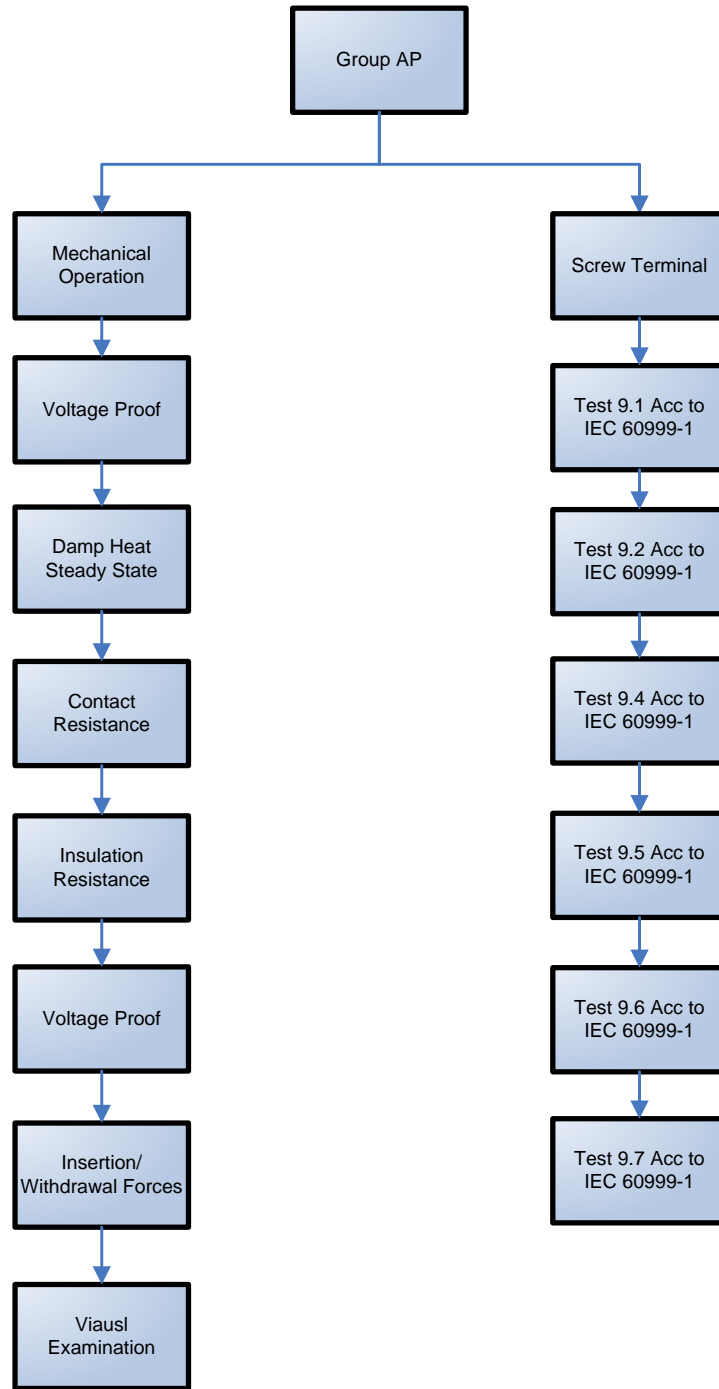


Figure 8: Test Sequence of Group AP

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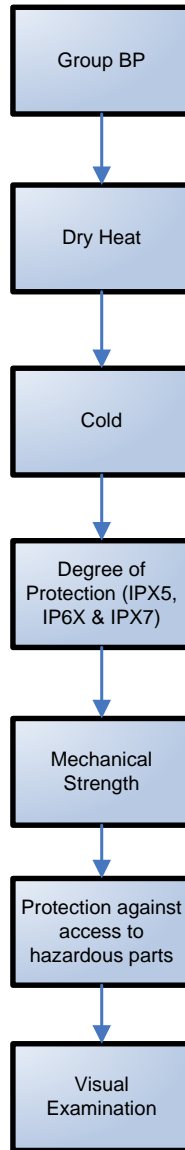


Figure 9: Test Sequence of Group BP

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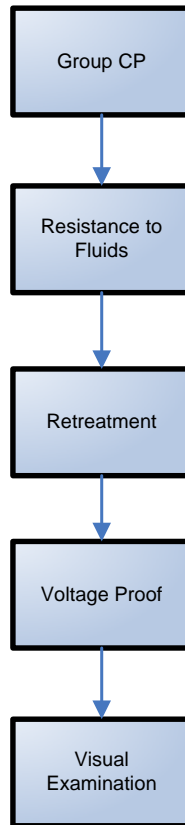


Figure 10: Test Sequence of Group CP

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4.0 RESULTS

Test Ref	Item	Specification	Results			Comment
			Max	Mean	Min	
P1	Visual Examination	There shall be no defects that would impair normal operation	No Defects			Pass
P2	Polarization method	It shall not be possible to mate connectors in any other than the correct manner 2 + PE = 60N 3 + PE = 100N	Applied force of 60N Applied force of 100N			Pass Pass
P3	Contact Resistance	4mΩ max	1.43	1.08	0.71	Pass
P4	Insulation Resistance	100 MΩ min	>50,000			Pass
P5	Voltage Proof	No breakdown or flashover	No Breakdown			Pass

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Test Ref	Item	Specification	Results			Comment		
			Max	Mean	Min			
AP1	Mechanical operation	Max speed 10 mm/s 50 operation cycles Contact Resistance	1.36	1.15	0.93	Pass		
AP2.1	Solderability	N/A				N/A		
AP2.2	Screw Terminal	Test acc. to EN 60999-1						
	9.1	Insertion of 1.5mm ² Wire					No undue force required	Pass
	9.2	Insertion of 1.5mm ² Wire and Torque set					No wires escaped When torque set	Pass
	9.4	No damage to conductor during rotation with weight suspended					No Damaged	Pass
	9.5	Pull Test 0.34mm ² - 15N applied for 60 seconds 1.5mm ² - 40N applied for 60 seconds					No Damage	Pass
							No Damage	Pass
	9.6	Screw Torque set and loosened 5 times					No Damage	Pass
9.7	Temperature Rise	Refer to Appendix 2 for de-rating curves						

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Test Ref	Item	Specification	Results			Comment
			Max	Mean	Min	
AP3	Voltage Proof	No Breakdown	No Breakdown			Pass
AP4	Damp Heat Steady State	Electrode-Voltage 60VDC	No Breakdown			Pass
AP5	Contact Resistance	15mΩ max	1.35	1.21	0.97	Pass
AP6	Insulation Resistance	100MΩ min	>50,000 MΩ			Pass
AP7	Voltage Proof	No Breakdown	No Breakdown			Pass
AP8	Insertion / Withdrawal Forces	Insertion				
		2 + PE ≤ 60N	13.83	13.50	13.18	Pass
		3 + PE ≤ 80N	22.20	21.44	20.68	Pass
		Withdrawal				
	2 + PE ≤ 60N	13.56	10.54	7.53	Pass	
	3 + PE ≤ 80N	8.04	7.88	7.72	Pass	
AP9	Visual Examination	No Damage due to conditioning	No Damage			Pass

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Test Ref	Item	Specification	Results			Comment
			Max	Mean	Min	
BP1	Dry Heat	Contact Resistance 15mΩ Max	1.72	1.18	0.73	Pass
BP2	Cold	Contact Resistance 15mΩ Max	1.68	1.16	0.74	Pass
BP3	Degree of Protection	IPX5 IP6X IPX7	No Water Ingress No Dust Ingress No Water Ingress			Pass Pass Pass
BP4	Mechanical Strength impact	Drop Height 1m (8 Cycles)	No Damage			Pass
BP5	Protection against access to hazardous parts	IPxxB Protect against access with a finger test	No finger access possible			Pass
BP6	Visual Examination	No Damage due to conditioning	No Damage			Pass

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Test Ref	Item	Specification	Results	Comment
CP1	Resistance to Fluids	Hydraulic oil HM 22	No Damage	Pass
CP2	Retreatment	Cleaning of specimen by washing briefly in light petrol.	No Damage	Pass
CP3	Voltage Proof	2 KV r.m.s. No Breakdown	No Breakdown	Pass
CP4	Visual Examination	No Damage due to conditioning	No Damage	Pass

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5.0 CONCLUSION

All tests meet the requirements of PS-121201.

6.0 APPENDIX 1 – EQUIPMENT USED

Item	Equipment used
<i>Contact Resistance</i>	HP Milliohmmeter 4338B, Cal # 1650 Xantrex Cal: 3403
<i>Polarization / Insertion – withdrawal forces</i>	ZWICK/ROELL Cal:3711
<i>Insulation resistance / Voltage proof</i>	Omnia Cal:3010
<i>Damp Heat</i>	CTS Cal:3189
<i>Dry Heat Cold</i>	WEISS SB1 160 Cal: 1035
<i>IP6X Testing</i>	External Lab Particle Technology
<i>Torque Screwdriver</i>	BMS Paddy Cal: 3646
<i>Temperature rise</i>	Pico Logger Cal: 3535 Xantrex Power supply Cal: 3403
<i>Resistance to Fluids</i>	WEISS WK11 ¹⁸⁰ Cal: 2351

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7.0 APPENDIX 2: DERATING CURVES

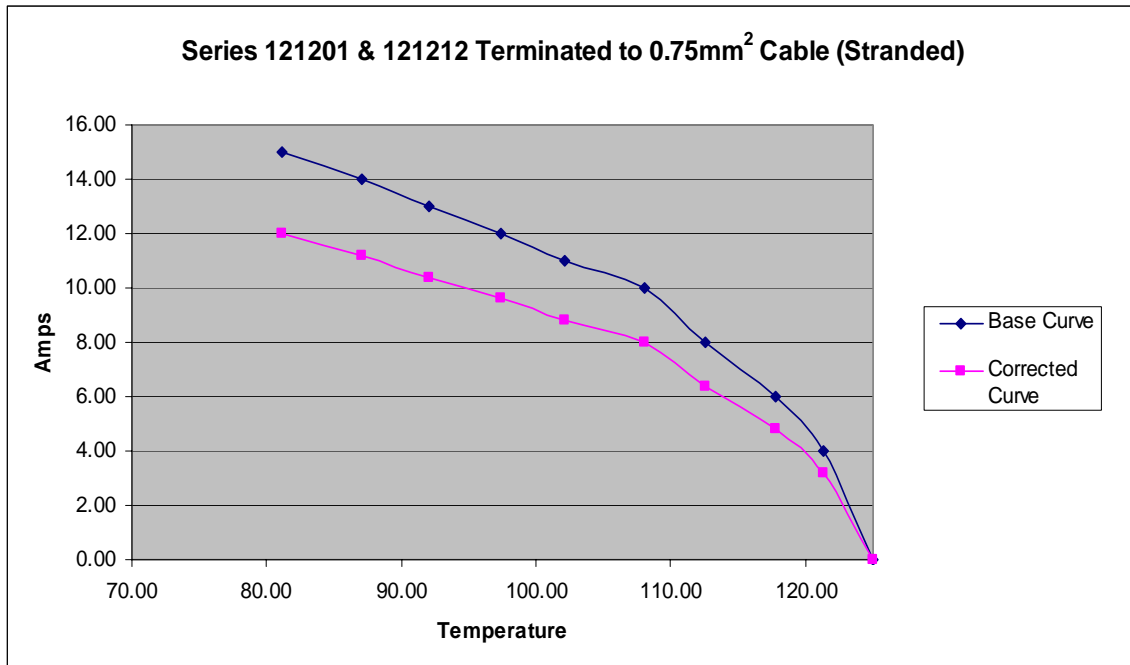


Figure 11: De-rating curve of 0.75mm² cable

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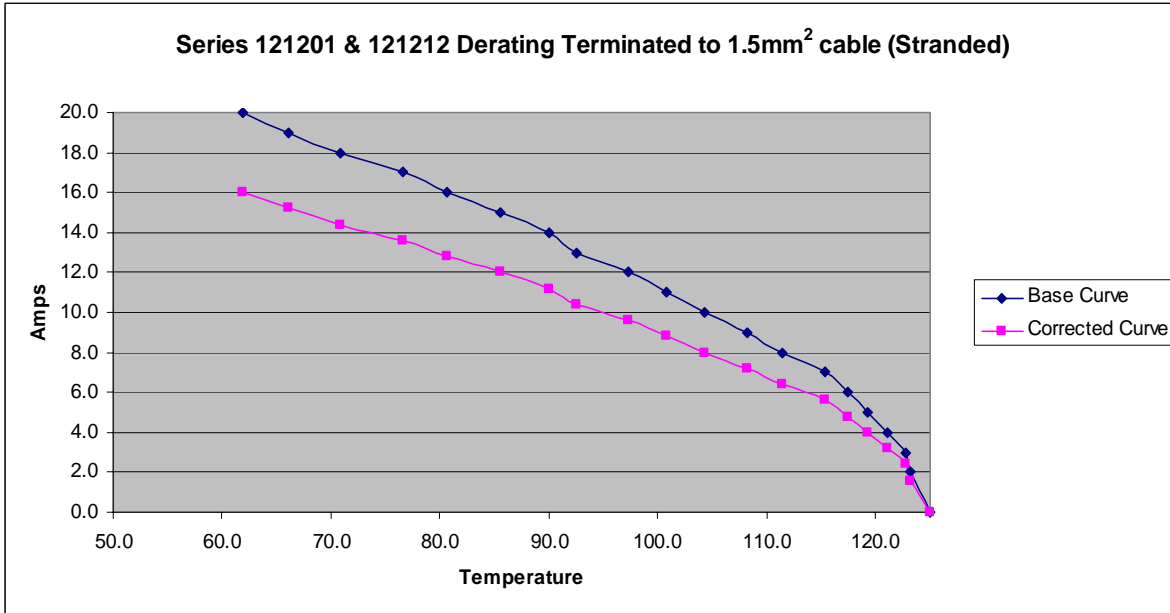


Figure 12: de-rating curve for 1.5mm² cable

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