

NUMBER GS-12-1181	TYPE PRODUCT SPECIFICATION	Amphenol FCi	
TITLE Minitek Pwr4.2 Wire and Board Connectors		PAGE 1 of 7	REVISION E
		AUTHORIZED BY Mithun Paul	DATE 2021/05/19
CLASSIFICATION UNRESTRICTED			

1 SCOPE

This specification defines the detailed requirements for the Minitek Pwr4.2 board connector series with Tin or Gold plating, and wire connector series terminated with 16 to 28 AWG wires using crimp technology.

2 PRODUCT DESCRIPTION

2.1 Product Name and Applicable Serial Numbers

<u>Product Name</u>	<u>Series Numbers</u>
Dual Row	
Wire Connector, Receptacle HSG	10127815, 10122956
Wire Connector, Plug HSG	10127816, 10144559
Wire Conn, Receptacle Crimp Terminal	10127817, 10134170
Wire Conn, Plug Crimp Terminal	10156852
Board Connector, Right Angle Header	10127819
Board Connector, Vertical Header	10127820
Single Row	
Wire Conn, Receptacle HSG	10136644
Wire Conn, Plug Housing	10136645
Board Connector, Right Angle Header	10136646
Board Connector, Vertical Header	10136647

2.2 Dimensions, Materials, Plating and Markings

See the appropriate drawings for the information on dimensions, materials, plating and markings.

2.3 Safety Agency Approvals

UL File: E66906*, E467317*

(*Please check with manufacturing site on UL status of each individual series.)

3 APPLICABLE DOCUMENTS AND SPECIFICATIONS

3.1 See sales drawings and the other sections of this specification for the necessary referenced documents and specifications.

3.2 Application Specification: GS-20-0401

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4 RATINGS

4.1 Ratings: 600 Volts AC (RMS) (or 600 Volts DC)

4.2 Current and Applicable Wires

Applicable Wire Gauges and Maximum Insulation Diameter	16 AWG : 3.10mm MAXIMUM
	18-24 AWG : 3.10mm MAXIMUM
	22-28 AWG : 1.80mm MAXIMUM

MAXIMUM CURRENT RATING (Amperes)									
Brass					Phosphor Bronze				
Contact Size Wire	2 & 3	4 - 6	7 - 10	12 - 24	Contact Size Wire	2 & 3	4 - 6	7 - 10	12 - 24
AWG #16	9	8	7	6	AWG #16	8	7	6	5
AWG #18	9	8	7	6	AWG #18	8	7	6	5
AWG #20	7	6	5	5	AWG #20	6	5	4	4
AWG #22	5	4	4	4	AWG #22	4	3	3	3
AWG #24	4	3	3	3	AWG #24	3	2	2	2
AWG #26	3	2	2	2	AWG #26	2	1	1	1
AWG #28	2	1	1	1	AWG #28	1	1	1	1

4.3 Temperature

Operating: * -40°C ~ 105°C

Non-operating: -40°C ~ 105°C

** Including 30°C terminal temperature rise at rated current*

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5 PERFORMANCE

5.1 Electrical Requirements

Item	Description	Test Condition	Requirement
1	Contact Resistance (Low Level)	Mate connectors. Apply a maximum voltage of 20mV and a current of 100mA. Wire resistance shall be removed from the measured value.	10 milliohms MAXIMUM [initial]
2	Insulation Resistance	Mate connectors. Apply a voltage of 500VDC between adjacent terminals and between terminals to ground.	1000 Megohms MINIMUM
3	Dielectric Withstanding Voltage	Mate connectors. Apply a voltage of 1500VAC for 1 minute between adjacent terminals and between terminals to ground.	No breakdown. Current leakage < 5mA
4	Temperature Rise (via Current Cycling)	Mate connectors. Measure the temperature rise at the rated current after 96 hours, during current cycling (45 minutes ON and 15 minutes OFF per hour) for 240 hours, and after final 96-hour steady state.	Temperature rise: +30°C MAXIMUM

5.2 Mechanical Requirements

Item	Description	Test Condition	Requirement
1	Terminal Mate and Unmate Forces	Insert and withdraw terminal (male to female) at a rate of 25±6mm per minute.	14.7N MAXIMUM insertion force & 1.0N MINIMUM withdrawal force
2	Crimp Terminal Retention Force (in Housing)	Axial pullout force on the terminal in the housing at a rate of 25±6mm per minute.	30N MINIMUM retention force
3	Durability	Mate connectors up to 30 cycles at a maximum rate of 10 cycles per minute prior to Environmental Tests.	20 milliohms MAXIMUM
4	Wire Pullout Force (Axial)	Apply an axial pullout force on the wire at a rate of 25 ± 6 mm	16 Awg: 88.0N Min. 18 Awg: 88.0N Min. 20 Awg: 59.0N Min. 22 Awg: 39.0N Min. 24 Awg: 29.0N Min. 26 Awg: 19.0N Min. 28 Awg: 9.80N Min.

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5	Crimp Terminal Insertion Force (into Housing)	Apply an axial insertion force on the terminal at a rate of 25 ± 6 mm.	15.0N MAXIMUM insertion force
6	Receptacle Thumb Latch Strength	Mate connectors. Measure the force to pull connectors apart at a rate of 25 ± 6 mm per minute.	68N min.

5.3 Environmental Requirements

Item	Description	Test Condition	Requirement
1	Thermal Shock	Mate connectors. Expose for 5 cycles between -55 and 105°C; Dwell 0.5 hours at each temperature	20 milliohms MAXIMUM; Visual: No Damage; Dielectric Strength per Section 5.1, item 5; Insulation Resistance per Section 5.1, item 4;
2	Humidity (Steady State)	Mate connectors. Expose to a temperature of 60 ± 2°C with a relative humidity of 90-95% for 96 hours.	20 milliohms MAXIMUM; Visual : No Damage; Dielectric Strength per Section 5.1, item 5; Insulation Resistance per Section 5.1, item 4;
3	Solderability	Solder Wetting 95% of immersed area must show no voids & pin holes.	Dip solder tails into the molten solder(hold at 245 ± 5°C) up to 0.5mm from the tip of tails for 5 ± 0.5 sec.
4	Solder Resistance	1. Dip connector terminal tails in solder. Solder Duration: 5 ± 0.5 seconds; Solder Temperature: 260 ± 5°C 2. IR Reflow: (Fig. 1, IR Reflow Profile, for LCP HSG only) Peak temperature: 260+0 / -10 °C Preheating temperature: 150 – 200 °C, 60 to 120 sec.	Visual: No Damage to insulator material

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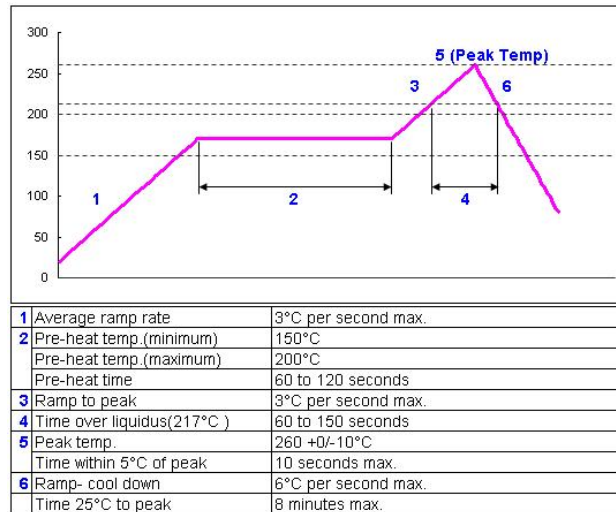


Fig. 1

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6 PRODUCT QUALIFICATION AND REQUALIFICATION TEST SEQUENCE

Test of Examination	Test Group							
	A	B	C	D	E	F	G	
	Test Sequence							
Examination of Product	1	1, 11	1, 3	1, 3	1,3	1,3	1	
Low Level Contact Resistance	2, 6	2, 6, 8						
Insulation Resistance		3, 9						
Dielectric Withstanding Voltage		4, 10						
Insertion Force (Max.)	3							
Extraction Force (Min.)	4							
Crimping Terminal Retention Force (Min.)							2	
Durability	5							
Wire Pull out force							3	
Thermal Shock		5						
Humidity Temperature Cycling		7						
Solderability					2			
Temperature Rise				2				
Resistance to soldering heat						2		
Receptacle Thumb Latch Strength			2					
Sample Size / Test Group	5	5	5	5	5	5		

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REVISION RECORD

<u>Rev</u>	<u>Page</u>	<u>Description</u>	<u>EC#</u>	<u>Date</u>
A	ALL	New Release		2013/11/25
B	ALL	Add Application Specification No., UL File No. and applicable P/N.	ELX-T-17587	2014/02/17
C	ALL	Add IR Reflow Profile for optional LCP housing; Add test group C	ELX-T-19499	2015/01/23
D	ALL	Add P/Ns for Single Row connectors	ELX-T-23032	2016/01/14
E	ALL	<ul style="list-style-type: none"> • New series Added • UL Details Updated 	ELX-I-40957	2021/05/19