



# PRODUCT SPECIFICATION

## 1.0 SCOPE

This Product Specification covers the the performance requirement for the Milli-Grid 2 mm Grid Wire to Board Connector terminated with 24 to 30 AWG wire using Crimp technology.

## 2.0 PRODUCT DESCRIPTION

### 2.1 PRODUCT NAME AND SERIES NUMBER

The Milli-Grid 2mm Grid Wire to Board Connector comprises of the Crimp Receptacle Housing (51110) and the Crimp Terminal (50394).

### 2.2 SAFETY AGENCY APPROVALS

UL File Number: UL E29179

CSA NUMBER: 1585720 (LR 19980)



CSA approval meets following standards/test procedures:

- a) CSA std. C22.2 No. 182.3-M1987
- b) UL-1977

\* "C" and "US" mark adjacent to CSA signifies that the product has been evaluated to the applicable CSA and ANSI/UL standards, for use in Canada and US respectively.

Series 51110, rated 2.0A (No. 24 AWG), 125V

## 3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

See Sales Drawing and the necessary referenced Documents and Specifications.

## 4.0 RATINGS AND APPLICABLE WIRE

Current rating is application dependent and each application should be evaluated by the end user for compliance to specific safety agency requirements. The ratings listed in the chart below are per Molex test method based on a 30° C maximum temperature rise over ambient temperature and are provided as a guideline. Appropriate de-rating is required based on circuit size, ambient temperature, copper trace size on the PCB, gross heating from adjacent modules/components and other factors that influence connector performance. Wire size & stranding, tin coated or bare copper, wire length & crimp quality are other factors that influence current rating.

\*Indicates interpolated information from test data

Wire to Board Current Rating																										
Connector fully loaded with all circuits powered																										
AWG Wire Size	Ckt Size																									
	1	2*	4	6*	8*	10*	12*	14*	16*	18*	20*	22*	24*	26	28*	30*	32*	34*	36*	38*	40*	42*	44*	46*	48*	50
24	6.00	5.25	4.80	4.00	3.70	3.50	3.40	3.25	3.10	3.00	2.95	2.90	2.80	2.75	2.70	2.65	2.60	2.55	2.50	2.50	2.45	2.45	2.45	2.40	2.40	2.40
26	5.40	4.60	3.90	3.60	3.40	3.25	3.10	2.90	2.85	2.80	2.75	2.70	2.60	2.55	2.50	2.45	2.40	2.40	2.35	2.35	2.30	2.30	2.25	2.25	2.25	2.20
28	5.00	4.25	3.60	3.30	3.10	2.90	2.80	2.70	2.60	2.55	2.50	2.45	2.40	2.30	2.30	2.25	2.20	2.15	2.10	2.10	2.05	2.05	2.00	2.00	2.00	2.00
30	4.40	3.75	3.20	2.90	2.75	2.60	2.50	2.45	2.40	2.30	2.25	2.20	2.15	2.10	2.05	2.00	2.00	2.00	2.00	1.95	1.90	1.90	1.85	1.80	1.80	1.80

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<b>PS-51110-001</b>	<b>SCHEONG</b>	<b>GMENARLY</b>	<b>KHLIM</b>



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Item	Standard		
Rated Voltage (max.)	125V		AC (rms) / DC
Rated Current (max.) and applicable wires.	AWG	Fully Loaded (50Ckts)	Single Ckt
	#24	2.40 A	6.00A
	#26	2.20 A	5.40A
	#28	2.00 A	5.00A
	#30	1.80 A	4.40A
Operating Temperature	-40 deg.c to +105 deg.c		
Non-Operating Temperature	-55 deg.c to +105 deg.c		

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## 5.0 PERFORMANCE

### 5.1 Electrical Performance

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
5.1.1	Contact Resistance	Mate connectors, measure by dry circuit, 20 mV MAX., 10 mA (based upon JIS C5402 5.4).	40 mohm MAX.
5.1.2	Insulation Resistance	Mate connectors, apply 500V (rms) AC for 1 minute between adjacent terminal or ground (based upon JIS C5402 5.1/ MIL-STD-202 Method 301).	1000 Mohms Min.
5.1.3	Dielectric Strength	Mate connectors, apply 500V (rms) AC for 1 minute between adjacent terminal or ground (based upon JIS C5402 5.1/ MIL-STD-202 Method 301).	No breakdown
5.1.4	Contact Resistance on Crimped Portion	Crimp the applicable wire onto the terminal, measure by dry circuit, 20mV MAX., 10mA.	5 mohm MAX.

### 5.2 Mechanical Performance

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
5.2.1	Mating and Unmating Force	Mating and Unmating connectors at a rate of 25+/-3 mm/min.	Mating force: <b>1.96 N / CKT</b> MAX. Unmating force: <b>0.392 N / CKT</b> Min.
5.2.2	Crimp Terminal Insertion Force	Insertion the crimped terminal into the housing.	<b>9.8 N</b> MAX.
5.2.3	Crimp Terminal Housing Retention Force	Apply axial pull out force at a rate of 25 mm/min. on the terminal assembled in the housing.	<b>9.8 N</b> MIN.
5.2.4	Crimping Pull Out Force	Fix the crimped terminal, apply axial pull out force on the wire at the speed rate of 25 mm/min. (based on JIS C5402 6.8)	AWG#24= <b>29.4</b> MIN. AWG#26= <b>19.6</b> MIN. AWG#28= <b>9.8</b> MIN. AWG#30= <b>4.9</b> MIN. (all in Newtons)

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## 5.3 Environment Performance

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
5.3.1	Repeated Mate / Unmate	When Mate / unmate up to 50 cycles repeatedly at a rate of 10 cycles / min.	Contact Resistance: <b>60</b> mohms Max.
5.3.2	Temperature Rise	Mate connectors and measure the temperature rise of contact when the maximum DC rated current is passed.	Temperature: <b>30</b> deg. c Max.
5.3.3	Vibration	Mate connectors and subject to the following vibration conditions, for a period of two hours in each 3 mutually perpendicular axis, passing DC 1mA current during the test. Amplitude: 1.5 mm p-p Frequency: 10-55-10 Hz. Shall be transversed on 1 minute (based on MIL-STD-202 Method 201A)	Appearance: No damage Contact resistance: <b>60</b> mohm Max. Discontinuity: <b>1.0</b> $\mu$ s MAX.
5.3.4	Shock	Mate connectors and subject to the following shock conditions, 3 shocks shall be applied along 3 mutually perpendicular axis, passing DC 1mA current during the test. (Total of 18 shocks) Test pulse : Half Sine Peak value: 490 m/s sq. (50G) Duration : 11 ms (based on JIS C0041 MIL-STD-202 Method 213B Cond. A)	Appearance: No damage. Contact Resistance: <b>60</b> mohm Max. Discontinuity: <b>1.0</b> $\mu$ s Max.
5.3.5	Heat Resistance	Mate connector and expose to 85+/-2 deg. C for 96 hours. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room conditions for 1 to 2 hours, after which the specified measurements shall be performed (based on JIS C0021 / MIL-STD-202 Method 108A Cond. A).	Appearance: No damage. Contact Resistance: <b>60</b> mohm Max.
5.3.6	Cold Resistance	Mate connector and expose to -55+/-3 deg. C for 96 hours. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room conditions for 1 to 2 hours, after which the specified measurements shall be performed (based on JIS C0020).	Appearance: No damage. Contact Resistance: <b>60</b> mohm Max.

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## 5.3 Environment Performance (continued)

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
5.3.7	Humidity	Mate connector and expose to 60+/-2 deg. C, relative humidity 90-95% for 96 hours. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room conditions for 1 to 2 hours, after which the specified measurements shall be performed (based on JIS C0022 / MIL-STD-202 Method 103B Cond. B).	Appearance: No damage. Contact Resistance: <b>60</b> mohm Max. Dielectric Strength: Must meet <b>4.1.3</b> Insulation Resistance: <b>100</b> Mohm Min.
5.3.8	Temperature Cycling	Mate connectors and subject to the following conditions for 5 cycles. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room conditions for 1 to 2 hours, after which the specified measurements shall be performed. 1 cycle: a) -55+/-3 deg C 30 min. b) +105+/-2 deg C 30 min. (Transit time shall be within 5 minutes; JIS C0025)	Appearance: No damage. Contact Resistance: <b>60</b> mohm Max.
5.3.9	Salt Spray	Mate connectors and expose to the following salt mist conditions. Upon completion of the exposure period, salt deposits shall be removed by a gentle wash or dipped in the running water, after which the specified measurements shall be performed. NaCL solution concentration: 5+/-1 % Spray time: 48+/-4 hours Ambient Temperature: 35+/-2 deg. C (based on JIS C5028 / MIL-STD-202 Method 101D Condition B).	Appearance: No damage. Contact Resistance: <b>60</b> mohm Max.
5.3.10	S02 Gas	Mate connectors and expose to 50+/-5 ppm S02 gas, ambient temperature 40+/-2 deg. C for 24 hours.	Appearance: No damage. Contact Resistance: <b>60</b> mohm Max.

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