

ECONOLATCH CONNECTOR SYSTEM

1.0 SCOPE

This Product Specification covers the 3.68 mm center line (pitch) Wire-to-Wire Connector system terminated with 16 to 22 AWG wire using Crimp technology.

2.0 PRODUCT DESCRIPTION

The connector is made in 1, 2 and 3, single row and 4, 6, 8 and 10 dual row circuit sizes. Connector plugs and receptacles are nylon and provided with and without panel mount on Plug side (except 1ckt). The housings accept wire ranges 16 AWG UL 1061 style, 18-22 AWG UL 1007 styles and UL1061 style.

2.1 PRODUCT NAME AND SERIES NUMBER(S):

SL NO	DESCRIPTION	SERIES
1	Single Row Plug Housing	150176
2	Dual Row Plug Housing	150177
3	Single Row Receptacle Housing	150178
4	Dual Row Receptacle Housing	150179
5	Male Crimp Terminal	150180
6	Female Crimp Terminal	150181

2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

Refer SD-150180-0001 for Male terminal and SD-150181-0001 for Female terminal and SD-150176-001 for (Single Row Plug Housing), SD-150177-001 for (Dual Row Plug Housing), SD-150178-001 for (Single Row Receptacle Housing) and SD-150179-001 for (Dual Row Plug Receptacle Housing).

2.3 SAFETY AGENCY APPROVALS

UL FILE NUMBER: E29179

3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

Application Tooling Specification Sheet 16 AWG- UL1061: ATS-639036100
 Application Tooling Specification Sheet 18 AWG- UL1061: ATS-639036200
 Application Tooling Specification Sheet 18 AWG- UL1007: ATS-639036100
 Application Tooling Specification Sheet 20 AWG- UL1061: ATS- 639036400
 Application Tooling Specification Sheet 22 AWG- UL1061: ATS- 639036500
 Application Tooling Specification Sheet 20-22 AWG- UL1007: ATS- 639036300
 Refer section 7.0 for Environmental Test Sequences

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4.0 RATINGS

4.1 VOLTAGE

250Volts AC/DC

4.2 APPLICABLE WIRES

AWG	Outside Insulation Diameter	
	UL1007	UL1061
16	NA	2.02mm ±0.1
18	2.10mm ±0.1	1.70mm±0.1
20	1.80mm ±0.1	1.46mm±0.1
22	1.60mm ±0.1	1.28mm±0.01

Note: Above mentioned wire outer diameter is for reference. Refer Application spec for details.

4.3 CURRENT AND APPLICABLE WIRES

Ratings shown below represent maximum current carrying capacity of a fully loaded connector with all circuits powered using UL1061/UL1007 stranded wire. Ratings are based on a 30 °C maximum temperature rise limit over ambient (see section 5.1.4 for specification) without derating. Current is dependent on connector size, ambient temperature and related factors. Actual current rating is application dependent and should be evaluated for each use.

AWG	1 CIRCUIT	2 CIRCUIT	3 CIRCUIT	4 CIRCUIT	6 CIRCUIT	8 CIRCUIT	10 CIRCUIT
16	11.5 A*	11.5 A	10 A*	9 A*	8.5 A	8.0 A*	7.5 A
18	8.5 A*	8.5 A*	7 A*	6.5 A*	6.5 A*	6.0 A*	6.0 A*
20	7.5 A*	7.5 A*	6 A*	5.5 A*	5.5 A*	5.0 A*	5.0 A*
22	6.5 A*	6.5 A	5.5 A*	5.0 A*	5.0 A	4.5 A*	4.5 A

* interpolated values

5.0 TEMPERATURE

Operating: - 40°C to + 105°C

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6.0 PERFORMANCE

6.1 ELECTRICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
1	Contact Resistance (Low Level)	Mate connectors: apply a maximum voltage of 20 mV and a current of 100 mA . EIA-364-23C	10 milliohms MAXIMUM [initial]
2	Insulation Resistance	Mate connectors: Apply a voltage of 500 VDC between adjacent terminals and between terminals to ground. EIA-364-21C	1000 Megaohms MINIMUM
3	Dielectric Withstanding Voltage	Apply a voltage of 1500 VAC for 1 minute between adjacent terminals and between terminals to ground. EIA-364-20D	No breakdown; current leakage < 5 mA
4	Temperature Rise	Mate connectors: measure the temperature rise at the rated current EIA-364-70 Method 2	Temperature rise: +30°C MAXIMUM Above ambient
5	Temperature Rise (18day Current Cycling) EIA-364-55	Mate connectors: measure the temperature rise at the rated current after: 1) 96 hours (steady state) 2) 240 hours (45 minutes ON and 15 minutes OFF per hour) 3) 96 hours (steady state)	Temperature rise: +30°C MAXIMUM

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6.2 MECHANICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
6	Connector mate and Unmate forces (initial)	Mate and unmate connector (male to female) at a rate of 25 ± 6 mm ($1 \pm \frac{1}{4}$ inch) per minute. EIA-364-13E	Mate force : 9 N/circuit maximum and Un mate force :4.5 N/circuit Minimum
7	Terminal Retention Force (in Housing)	Axial pullout force on the terminal in the housing at a rate of 25 ± 6 mm ($1 \pm \frac{1}{4}$ inch) per minute.	50 N MINIMUM retention force (Derived based on actual terminal check)
8	Durability EIA-364-1000 Test Group-7	Insert and withdraw connectors 25 times at a maximum rate of 10 cycles per minute prior to environmental tests.	Contact Resistance 10 milliohms MAXIMUM (change from initial) & Visual: No Damage
9	Vibration (Random) Test Group-3	Mate connectors and vibrate per EIA 364-28, test condition VII. Letter D. (Acceleration 3.1 g)	10 milliohms MAXIMUM (change from initial) & Discontinuity < 1 microsecond
10	Shock (Mechanical) Test Group-3	Mate connectors and shock at 50 g's with $\frac{1}{2}$ sine wave (11 milliseconds) shocks in the $\pm X$, $\pm Y$, $\pm Z$ axes (18 shocks total). EIA-364-27, Test Condition A	10 milliohms MAXIMUM (change from initial) & Discontinuity < 1 microsecond
11	Wire Pullout Force (Axial)	Apply an axial pullout force on the wire at a rate of 25 ± 6 mm ($1 \pm \frac{1}{4}$ inch) as Per EIA-364-08	MINIMUM pullout forces 16 AWG - 89 N 18 AWG - 89 N 20 AWG - 36 N 22 AWG - 36 N (Per UL 1977)
12	Terminal Insertion Force (into Housing)	Apply an axial insertion force on the terminal at a rate of 25 ± 6 mm ($1 \pm \frac{1}{4}$ inch).	11 N Maximum
13	Panel Insertion Force	Insert the connector at a rate of 25 ± 6 mm ($1 \pm \frac{1}{4}$ inch) per minute.	52 N Max.

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6.2 MECHANICAL REQUIREMENTS contd...

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
14	latch Retention force with Panel	Insert the connector in to panel and pull at a rate of 25 ± 6 mm ($1 \pm \frac{1}{4}$ inch) per minute.	200 N Min
15	Impact Housings	Drop the housings from 1meter height.	No Breakage, No Damage

6.3 ENVIRONMENTAL REQUIREMENTS

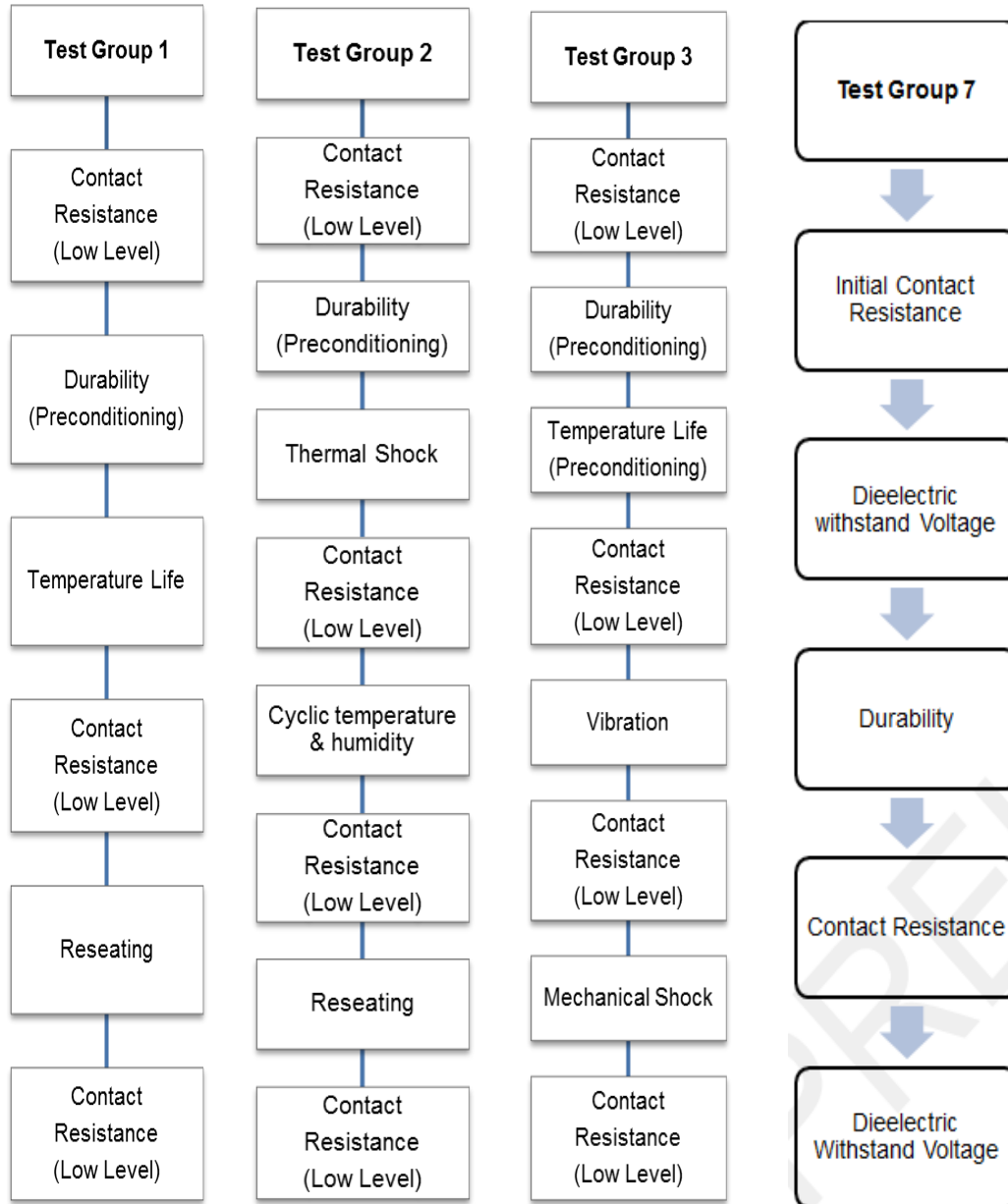
ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT										
17	Temperature Life Group-1	See next page for the test condition details	10 milliohms MAXIMUM (change from initial) & Visual: No Damage										
18	Shock (Thermal) Group 2	Mate connectors; expose to 5 cycles of: <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Temperature °C</th> <th>Duration (Minutes)</th> </tr> </thead> <tbody> <tr> <td>-55 +0/-3</td> <td>30</td> </tr> <tr> <td>+25 ±10</td> <td>5 MAXIMUM</td> </tr> <tr> <td>+85 +3/-0</td> <td>30</td> </tr> <tr> <td>+25 ±10</td> <td>5 MAXIMUM</td> </tr> </tbody> </table>	Temperature °C	Duration (Minutes)	-55 +0/-3	30	+25 ±10	5 MAXIMUM	+85 +3/-0	30	+25 ±10	5 MAXIMUM	10 milliohms MAXIMUM (change from initial) & Visual: No Damage
Temperature °C	Duration (Minutes)												
-55 +0/-3	30												
+25 ±10	5 MAXIMUM												
+85 +3/-0	30												
+25 ±10	5 MAXIMUM												
19	Humidity (Cyclic) Group 2	Mate connectors: And Perform 24 cycles between Temperature $25 \pm 3^\circ\text{C}$ at $80\% \pm 3\%$ Relative humidity and $65 \pm 3^\circ\text{C}$ at $50\% \pm 3\%$ Relative humidity; Ramp time of 0.5 hours and dwell time of 1.0 hour; Dwell times start when the temperature and humidity have Stabilized within the specified levels.	10 milliohms MAXIMUM (change from initial) & Dielectric Withstanding Voltage: No Breakdown at 500 VAC & Insulation Resistance: 1000 Megohms MINIMUM & Visual: No Damage										

7.0 PACKAGING

Parts shall be packaged to protect against damage during handling, transit and storage. Refer Packaging specification.

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8.0 TEST SEQUENCES



Temperature Life:

Mate connectors and expose to +105°C for 132hrs (preconditioning) and then +105°C for 228hrs (Temperature Life).

Note: Temperature preconditioning applied for Test group 3 is +105°C for 132hrs.

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