

## VALUSEAL SEALED CONNECTOR SYSTEM

### 1.0 SCOPE

This Product Specification covers 4.0 mm centerline pitch wire to wire sealed connector system terminated with 16 to 18 AWG wire using Crimp technology with Tin plating

### 2.0 PRODUCT DESCRIPTION

#### 2.1 PRODUCT NAME AND SERIES NUMBER(S)

PLUG HSG WITH INTEGRATED SEAL	172877
RECEPTACLE HSG WITH INTEGRATED SEAL	172878
VOID PLUG	173061
MALE CRIMP TERMINAL	173041
FEMALE CRIMP TERMINAL	173042

#### 2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

AS PER SALES DRAWING: SD-172877-0001, SD-172878-0001, SD-173061-0001, SD-173041-0001 & SD-173042-0001

#### 2.3 SAFETY AGENCY APPROVALS

UL FILE NUMBER: E29179

### 3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

Test Summary: 1728770001-TS

Sales Drawing: SD-172877-0001, SD-172878-0001, SD-173061-0001, SD-173041-0001 & SD-173042-0002

### 4.0 RATINGS

#### 4.1 VOLTAGE

750 V AC

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## 4.2 CURRENT RATING AND APPLICABLE WIRES\*

Wire to Wire Current Rating (Amp Max.) (Tested with TIN plated terminals)		
Connector fully loaded with all circuits powered		
AWG Wire Size	Circuit Size (Single Row)	Circuit Size (Dual Row)
	2	4
16	11.5***	11.0**
18	10.0***	9.5**

\*For maximum cable outside diameter details refer applicable sales drawing.

\*\*Ratings represent *maximum* current carrying capacity, based on 30°C maximum temperature rise (t-rise) above ambient. Current rating is application dependent and should be evaluated for each specific application.

\*\*\*Estimated values

## 4.3 TEMPERATURE

Operating: - 40°C to + 85°C (including t-rise)

Non-operating: - 40°C to + 85°C

## 5.0 PERFORMANCE

### 5.1 ELECTRICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
1	<b>Contact Resistance</b>	Mate connectors and apply maximum voltage of 20mV and a maximum current of 100 mA per EIA-364-23C.(Wire and terminal resistance shall be removed from the measured value)	<b>10</b> milliohms MAXIMUM [initial]
2	<b>Insulation Resistance</b>	Mate connectors, Apply a voltage of 500V DC between adjacent terminals or ground per EIA-364-21C	<b>1000</b> Mega ohms MINIMUM
3	<b>Dielectric Withstanding Voltage</b>	1000 VAC plus twice rated voltage Per UL 1977 (1500 V AC)	No breakdown Current Leakage < 5 milliamps

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4	Temperature rise versus current (step profiling)	Mate connectors, measure the temperature rise at the rated current per EIA-364-70B method 2	Temp rise: +30°C Maximum (above ambient)
5	Temperature rise versus current (18-day stability test)	Mate connectors, measure the temperature rise at the rated current, test method 4 (45 Min on & 15 min off) Per EIA-364-55 Test condition A	+30°C above ambient

## 5.2 MECHANICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
1	Connector Mate and Unmate Forces (for all Circuits and single cycle only)	Mate and Unmate connector at the rate of 12.7mm/min per EIA-364-13E	<p>50 N MAXIMUM Mate force</p> <p>90 N MINIMUM Unmate force with lock engaged &amp; 14 N MINIMUM Unmate force with lock disengaged</p>
2	Crimp Terminal Insertion Force (into Housing)	Apply an axial insertion force on terminal per EIA-364-05B	45 N MAXIMUM insertion force
3	Crimp Terminal Retention Force (in Housing)	Apply an axial load to the contact at the maximum rate of 25.4 millimeter /min per EIA-364-29	35 N MINIMUM retention force
4	Thumb latch operation force at 1.8mm deflection	Apply axial force on the latch to the depth of 1.8mm	53 N MAXIMUM
5	Thumb Latch Yield Strength	Mate loaded connectors fully. Pull connectors apart per EIA-364-98	89 N MINIMUM
6	Wire crimp Pullout Force (Axial)	Apply an axial pullout force on the wire at a rate of 25 ± 6 mm (1 ± ¼ inch) as per EIA-364-08	<p>MINIMUM pullout forces</p> <p>16 AWG - 133 N 18 AWG - 89 N</p>
7	Durability EIA-364-1000 Test group 7A	Measure DWV and IR on the mated connectors	Dielectric withstand Voltage- 1500 V AC for 60 sec IR-1000 Mega ohms Minimum

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<b>8</b>	<b>Durability</b> EIA-364-1000 Test group 7B	Mate and unmate connectors up to <b>25</b> Cycles, maximum rate of <b>10</b> cycles per min EIA-364-09C	10 milliohms MAXIMUM (change from initial)
<b>9</b>	<b>Vibration (Random)</b> EIA-364-1000 Test group 3	Mate connectors and vibrate Per EIA-364-28, test condition VII, Test condition letter D	10 milliohm MAX (change from initial) & discontinuity < 1 microsecond
<b>10</b>	<b>Shock (Mechanical)</b> EIA-364-1000 Test group 3	Mate connectors and shock at 30 g's with ½ sine wave (11 millisecond ) shocks in the ±X, ±Y, ±Z axes ( <b>18</b> shocks total) per EIA-364-27, Test Condition H	10 milliohm MAX (change from initial) & discontinuity < 1 microsecond

### 5.3 ENVIRONMENTAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
<b>1</b>	<b>Temperature life</b> EIA-364-1000 Test group 1	Mate connectors; expose to: <b>1578</b> hours at <b>105 ± 2°C</b> . Tested for field temperature of 85 °C and field life of 10 years. EIA-364-17, Method A	See Test group 1 <input checked="" type="checkbox"/> (without reseating step), 10 milliohm MAXIMUM (change from initial) for each group
			See Test group 1 <input type="checkbox"/> (with reseating step), 15 milliohm MAXIMUM (change from initial) for each group
<b>2</b>	<b>Thermal Shock</b> EIA-364-1000 Test Group 2	Mate connectors, expose to 10 cycles from -55°C to 85°C Per EIA-364-32 method A, condition 1	10 milliohms MAX (change from initial) for each group
<b>3</b>	<b>Thermal Cycling</b> EIA-364-1000 Test Group 5	Cycle the connector between 15 °C ± 3 °C and 85 °C ± 3 °C. Humidity is not controlled. EIA-364-1000, Table 5	10 milliohms MAX (change from initial) for each group

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4	<b>Humidity</b> Test group 2	Mated connector to be subjected to a Cyclic Temperature/ Humidity EIA-364-31 Method III (w/exception) 25C at 80%RH_65C at 50%RH_Ramp 0.5Hr. Dwell 1 Hr.	10 milliohms MAX (change from initial) for each group
5	<b>Cold Resistance</b> Test group -1A	Mate Connectors and expose for -40°C for 96 hours (See Section 7.0 for Test Sequence Test Group-1A)	10 milliohms MAX (change from initial) for each group
6	<b>Dust test IP 6X - Fully populated</b>	Connector exposed to the talcum powder atmosphere for a period of 8 hours, Per IEC 60529 (Category 2)	No ingress of dust in connector system post test. No breakdown when apply 1500V AC for 1 minute between adjacent terminals
7	<b>Dust test IP 6X - Void plug populated</b>	Connector exposed to the talcum powder atmosphere for a period of 8 hours ,Per IEC 60529 (Category 2)	No ingress of dust in connector system post test. No breakdown when apply 1500V AC for 1 minute between adjacent terminals
8	<b>Dust test IP 6X - Fully Populated (Temperature induced – 85°C for 24 Hrs)</b>	Connector exposed to the talcum powder atmosphere for a period of 8 hours ,Per IEC 60529 (Category 2)	No ingress of dust in connector system post test. No breakdown when apply 1500V AC for 1 minute between adjacent terminals
9	<b>Spray test IP X4 - Fully populated</b>	Spray water from all practical directions As per IEC 60529	No water drops inside the connector system post test. No breakdown when apply 1500V AC for 1 minute between adjacent terminals
10	<b>Spray test IP X4 - Void plug populated</b>	Spray water from all practical directions As per IEC 60529,	No water drops inside the connector system post test. No breakdown when apply 1500V AC for 1 minute between adjacent terminals
11	<b>Spray test IP X4 - Fully populated (Temperature induced – 85°C for 24 Hrs)</b>	Spray water from all practical directions As per IEC 60529,	No water drops inside the connector system post test. No breakdown when apply 1500V AC for 1 minute between adjacent terminals

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<b>12</b>	<b>Water jet test IP X5 - Fully populated</b>	Splash the connector, Water jet Nozzle with diameter 6.3 mm from distance of 2.5 to 3 meters, per IEC 60529	No water drops inside the connector system post test. No breakdown when apply 1500V AC for 1 minute between adjacent terminals
<b>13</b>	<b>Water jet test IP X5 - Void plug populated</b>	Splash the connector, Water jet Nozzle with diameter 6.3 mm from distance of 2.5 to 3 meters, per IEC 60529	No water drops inside the connector system post test. No breakdown when apply 1500V AC for 1 minute between adjacent terminals
<b>14</b>	<b>Water jet test IP X5 – Fully populated (Temperature induced – 85°C for 24 Hrs)</b>	Splash the connector, Water jet Nozzle with diameter 6.3 mm from distance of 2.5 to 3 meters, per IEC 60529	No water drops inside the connector system post test. No breakdown when apply 1500V AC for 1 minute between adjacent terminals

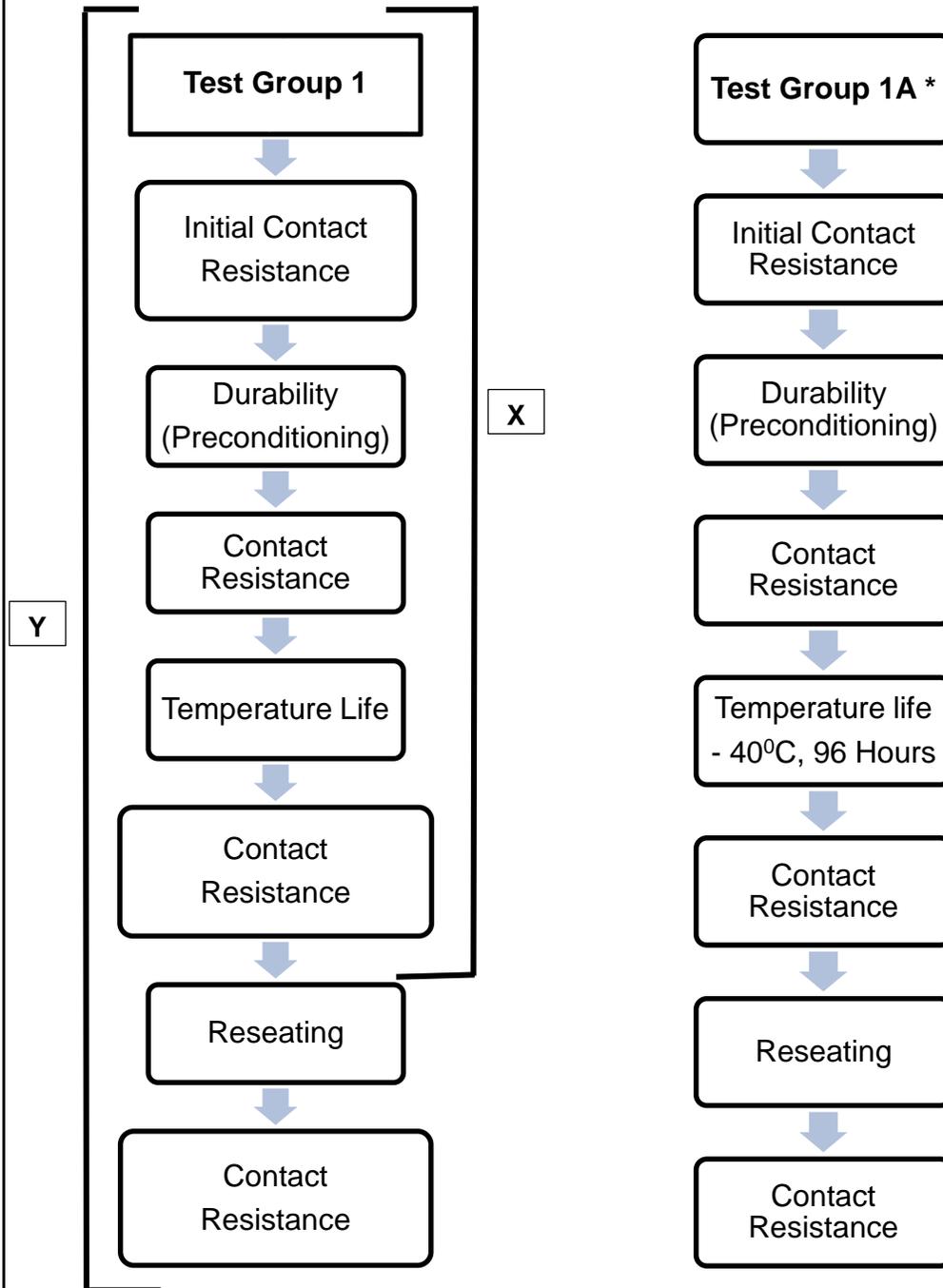
## 6.0 PACKAGING

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

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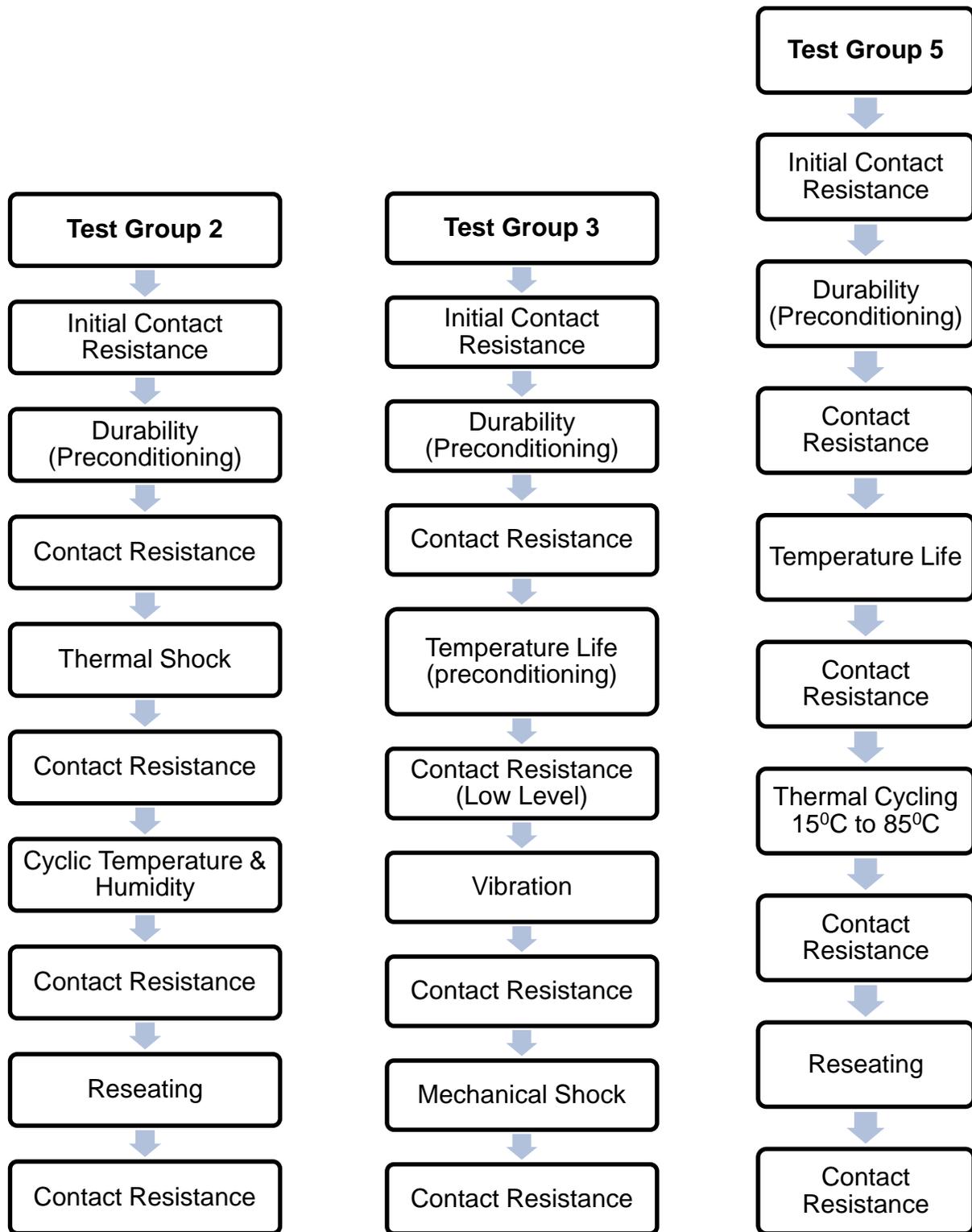
## 7.0 TESTS SEQUENCE GROUPS

Reliability Test Sequences Per 364-1000.01

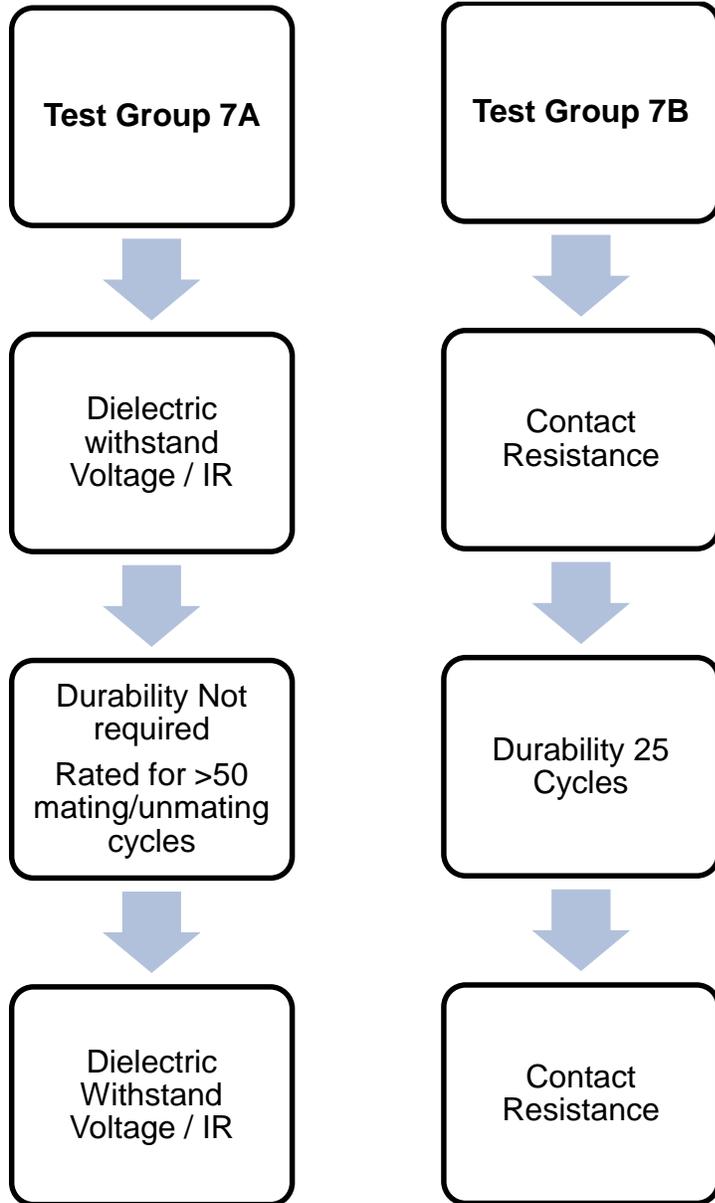


\*- Test sequence group 1A is not as per EIA -364-1000.01

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