

---

**BATTERY CONNECTOR****1.SCOPE****1.1 Contents**

This specification covers the performance, tests and quality requirements for the Deren Electronics Battery Connector, this product can't support hot line work.

**1.2 Qualification**

When tests are performed on the subject product line, the procedures specified in Figure 1 shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

**2. APPLICABLE DOCUMENT**

The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the latest edition of the document applies. In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of this specification and the referenced documents, this specification shall take precedence.

**2.1 Industry Standard**

EIA-364 : Electrical Connector/Socket Test Procedures Including Environmental Classifications.

**3. REQUIREMENTS****3.1 Design and Construction**

Product shall be of the design, construction and physical dimensions specified on the applicable product drawing.

**3.2 Materials**

Materials used in the construction of product shall be as specified on the applicable product drawing.

**3.3 Rating**

A.Voltage : 30V Max.

B.Current : 7A Max(per pin) .

C.Operating Temperature Range : -25°C to 60°C

D.Storage Temperature Range:-25°C to 85°C

E.Test Conditions

Unless otherwise specified, the test and measurements are to be carried out in the following standard conditions.

Temperature: 5~35°C.

Relative Humidity: 25~85%.

Air Pressure: 86~106 KPa.

However, if doubts arise concerning Judgment, perform under the following standard conditions:

Temperature: 20±2°C.

Relative Humidity: 60~70%.

Air Pressure: 86~106 KPa.

F. Appearance, Construction and Dimension.

Appearance:

Each area must be finished well and there must be not rust, scratches, cracks and inferior or peeling plating, etc. There may prove harmful in terms of product functioning.

Construction and Dimension:



See the separate product drawing.

### 3.4 Performance and Test description

The product is designed to meet the electrical, mechanical and environmental performance requirements specified in Figure 1. Unless otherwise specified, all tests shall be performed at ambient environmental conditions per EIA-364 .

#### Test Requirements and Procedures Summary

TEST ITEM		REQUIREMENT	PROCEDURE
1	Examination of product	Meets requirements of product drawing. No physical damage.	Visual inspection.
<b>ELECTRICAL REQUIREMENT</b>			
2	Low Level Contact Resistance	Initial: 10 milliohms maximum After test: 15 milliohms. maximum	With regard to measurement, conductor resistance down to the soldered parts of the terminals are not included. Mate plug and rec. Apply 100mA MAX, 20mV MAX. Follow EIA-364-23
3	Dielectric Withstanding Voltage	No breakdown	apply 500V AC (rms) for 1 minute to between adjacent terminals or ground. Follow EIA-364-20
4	Insulation Resistance	1000 M Ohm Min (initial value). 100 M Ohm Min (after test)	apply 500V DC for 60±5s to between adjacent terminals or ground. Follow EIA-364-21

5	Temperature Rising	30°C Max. Rising Under loaded rating current.	Contact series-wired, apply test current of loaded rating current to the circuit, and measure the temperature rising by probing on soldered areas of contacts, after the temperature becomes stabilized deduct ambient temperature from the measured value. (EIA-364-70) Test Method As Figure 5 shown.
<b>MECHANICAL REQUIREMENT</b>			
6	Mating Force	6N~15N (FOR 40-42557-01012RHF-DJ)  10N~25N (FOR 40-42466-01002RHF)	Using a push-pull Gage, Insert the plug at a speed of approximately 2.5 mm/s (must between 1mm/s to 5mm/s). 
7	Unmating Force	6N~10N (FOR 40-42557-01012RHF-DJ)  10N~20N (FOR 40-42466-01002RHF)	Pull the plug at a speed rate of approximately 2.5 mm/s (must between 1mm/s to 5mm/s). 
8	Durability	Contact resistance: see the test item 2. Mating Force: see the test item 6. Unmating Force: see the test item 7.	At a level equivalent to EIA-364-09, Perform mating and unmating 1,000 times, Perform insertion and removal at a rate of 2.5 mm/s (must between 1mm/s to 5mm/s)
9	Vibration	Appearance: no damage. Discontinuity: 1 microsecond Max.	Mate plug and rec, then place them on the vibrator, then apply the following vibration. Then it shall be measured. In accordance with EIA-364-28. Frequency : 10Hz→55Hz→10Hz. Direction : Three mutually perpendicular directions. Total amplitude : 1.50mm Sweep duration : 2 hours for each direction, a total of 6 hours.

10	Mechanical Shock	Appearance: no damage. Discontinuity: 1 microsecond Max.	Mate plug and rec, then place them on the shock machine, then apply the following shock. Then it shall be measured. Accelerate velocity: $490\text{m/s}^2$ Standard duration : 11msec. Test times : 3times for each direction, total of 18 times Follow EIA-364-27
<b>ENVIRONMENTAL REQUIREMENTS</b>			
11	Solder ability	More than 95% of the dipped surface shall be wet and less than 5% of the pinhole that shall not gather at a point	Dip soldered terminals into flux and melted solder as follows. Soldering time: $3\pm 0.5$ sec. Solder temperature: $245\pm 5^\circ\text{C}$
12	Soldering Heat Resistance	No abnormality adversely affecting the performance shall not occur. Contact resistance: see the test item 2.	Reflow soldering : Pre Heat : $150\sim 180^\circ\text{C}$ , $90\pm 30\text{sec}$ . Heat : $230^\circ\text{C}$ Min., $30\pm 10\text{sec}$ . Peak Temp. : $260+0/-5^\circ\text{C}$ , $10\text{sec}$ . Duration : 3 times. Manual soldering: Wattage of soldering iron : 15 w Diameter of soldering iron tip: $\varnothing 1$ mm Temperature of soldering iron tip: $350+5^\circ\text{C}$ Soldering time: 3-5s. Do not give power which causes the terminal the adverse effect as the Terminal side is suppressed with solder..
13	Thermal Shock	No abnormality Contact resistance: see the test item 2. Insulation resistance: see the test item 4.	In according with EIA-364-32 , put the connector through 10 cycles of temperature change, 1 cycle consisting of $-25^\circ\text{C} \rightarrow 85^\circ\text{C}$ for each 1hour. Perform measurements before the first cycle and after completion of the final cycle, outside the test chamber for between one and two hours.

14	Humidity	No abnormality Contact resistance: see the test item 2. Insulation resistance: see the test item 4.	In accordance with EIA-364-31 , leave the connector in a test chamber at 40°C and 90~95%(RH) for 96 hours. Measure the sample before the start of the test and after completion, outside the chamber for between one and two hours. Water drops shall be removed.
15	Low Temperature Storage Test	No abnormality Contact resistance: see the test item 2. Insulation resistance: see the test item 4.	In accordance with EIA-364-59, leave the connector in a test chamber at -25°C for 96 hours. Measure the sample before the start of the test and after completion. Outside the chamber for between one and two hours water drops shall be removed.
16	High Temperature Life	No abnormality Contact resistance: see the test item 2. Insulation resistance: see the test item 4.	In accordance with EIA-364-17 test condition A, leave the connector in a test chamber at 85°C for 96 hours. Measure the sample before the start of the test and after completion, outside the chamber for between one and two hours.
17	Salt Spray	No detrimental corrosion allowed in contact area and base metal exposed.	Mate plug and rec, then expose them to the following environment in accordance with EIA-364-26. Temperature : 35± 2°C Relative Humidity: 95~98%RH Salt water density: 5+/-1 % (by weight) Duration : 24 hours
18	Thermal Cycling	No abnormality Contact resistance: see the test item 2. Insulation resistance: see the test item 4.	Cycle the connector between -15°C+/-3°C and 85°C+/-3°C. Ramps should be 1°C min. per minute, and dwell times should ensure the contacts reach the temperature extremes (5 minutes min.). Humidity is not controlled. Perform 100 such cycles. Follow EIA-364-110

Figure 1

Note 1 : Shall meet visual requirements, show no physical damage, and meet requirement of additional tests as specified in the test sequence in Figures 2

Note 2 : Resistance to soldering process is indicated on notes of customer drawing. Select the appropriate test type which drawing notes are matched with.

## Product Qualification and Requalification test

Test or Examination	TEST GRPUP												
	A	B	C	D	E	F	G	H	I	J	K	L	M
	Test Sequence												
Examination of product	1,4	1,9	1,5	1,5	1,6	1,5	1,6	1,3	1,5	1,6	1,6	1,6	1
Low level Contact resistance		2,8	2,4	2,4	2,4	2,4	2,4		2,4	2,4	2,4	2,4	
Dielectric withstanding Voltage	3												
Insulation Resistance	2				5		5			5	5	5	
Temperature Rising													2
Mating Force		3,6											
Unmating Force		4,7											
Durability		5											
Vibration			3										
Mechanical Shock				3									
Solder ability								2					
Soldering Heat Resistance									3				
Thermal Shock							3						
Humidity					3								
Low temperature storage test										3			
High Temperature Life											3		
Salt Spray						3							
Thermal Cycling												3	

NOTE : ( a ) Numbers indicate sequence in which tests are performed.

( b ) Discontinuities shall not take place in this test group, during tests.

Figure 2

Figure 3. Contact Resistance

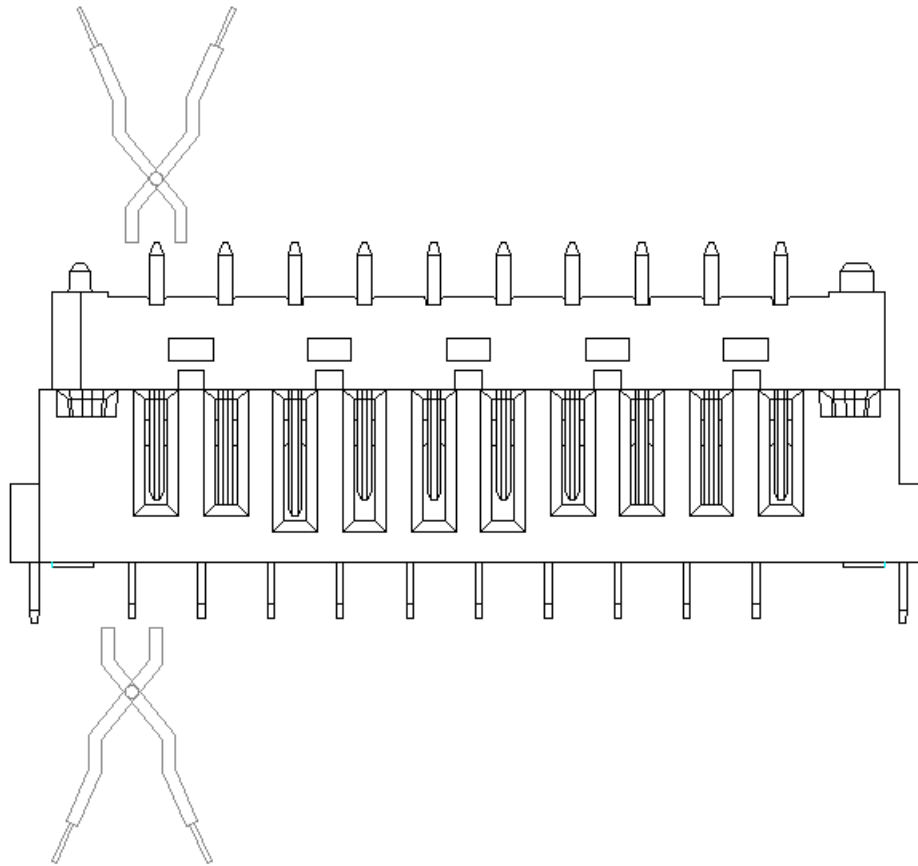


Figure 4. Resistance to flow solder heat

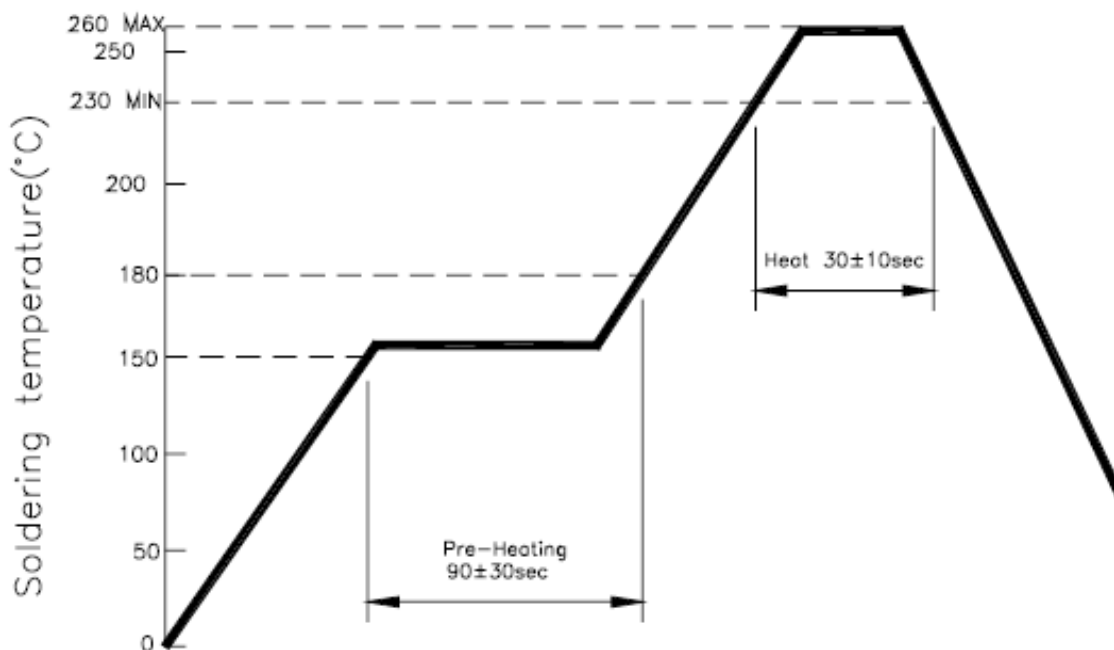
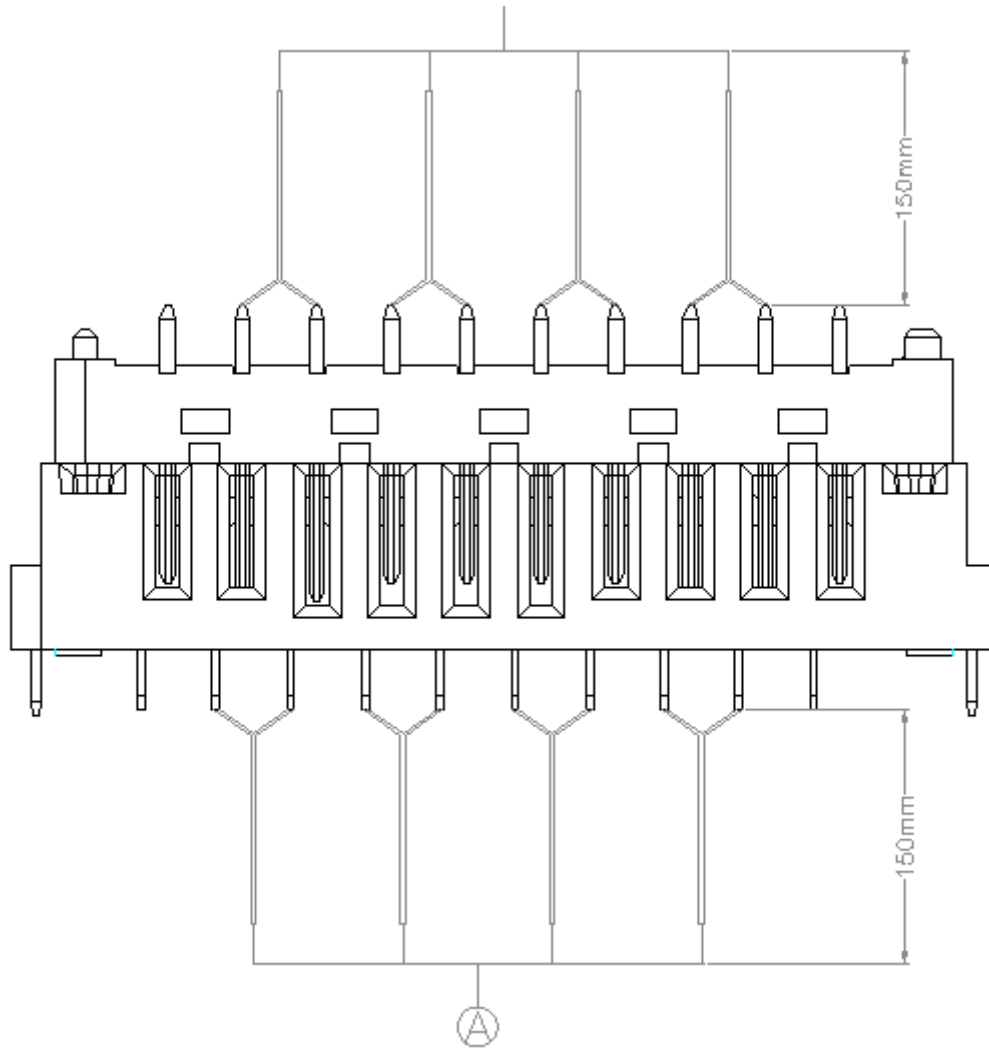


Figure 5. Temperature Rising test method(For product 40-42557-01012RHF-DJ)

1. Solder the product tail as below shown , the wire length is 150mm, the wire type is AWG14(following customer demand)



2. Place the product in the box(customer presented)

