Product Specification

AW40 series Connector Module Specification

Revision: A5

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PROPRIETARY NOTE

1. Scope

This specification covers the material and performance requirements for the AW40 series quick fit Power connector module.

2. Applicable documents

In the event of conflict between requirements of this specification and product drawing, product drawing shall take precedence. In the event of conflict between requirements of this specification and referenced documents, this specification take precedence.

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 Material

Housing: High Temperature Thermoplastic UL94-V0;
Contact: High Conductivity Copper Alloy,
Gold plated and all over Nickel;

3.3 Ratings

Voltage Rating: 250V DC @ Power Pin,
Current Rating: 35A @ Power Pin or 15A @ Power Pin.
Operating Temperature: -40℃ ~ +125℃.

4. Test requirement and procedures summary

4.1 Examination of product

Test	Requirements	Test Procedure
Examination of product	Meets requirements of applicable product drawing and specification	Visual, dimensional and functional per applicable quality inspection plan

4.2 Electrical Performance requirements

Test	Requirements	Test Procedure
Contact Resistance (Low Level)	1.2 mΩ Max @ per pair (initial); 20 mΩ Max (final);	Mated contacts assembled in housing; 20mV Max, 100mA max. (EIA-364-23)
Insulation Resistance	5000 MΩ Min.	Impress Voltage 500V DC. Test between adjacent circuits of unmated connectors. (EIA-364-21)
Dielectric withstanding Voltage	1500 VDC RMS, No discharge, flashover or breakdown.	Test between adjacent circuits of unmated connectors for 1 minutes. (EIA-364-20)
Temperature rise	Mate connectors Measure T-Rise @ Rated Current After 0.5 Hours min.	EIA-364-70

Figure-1 Temperature Rise | 温升趋线

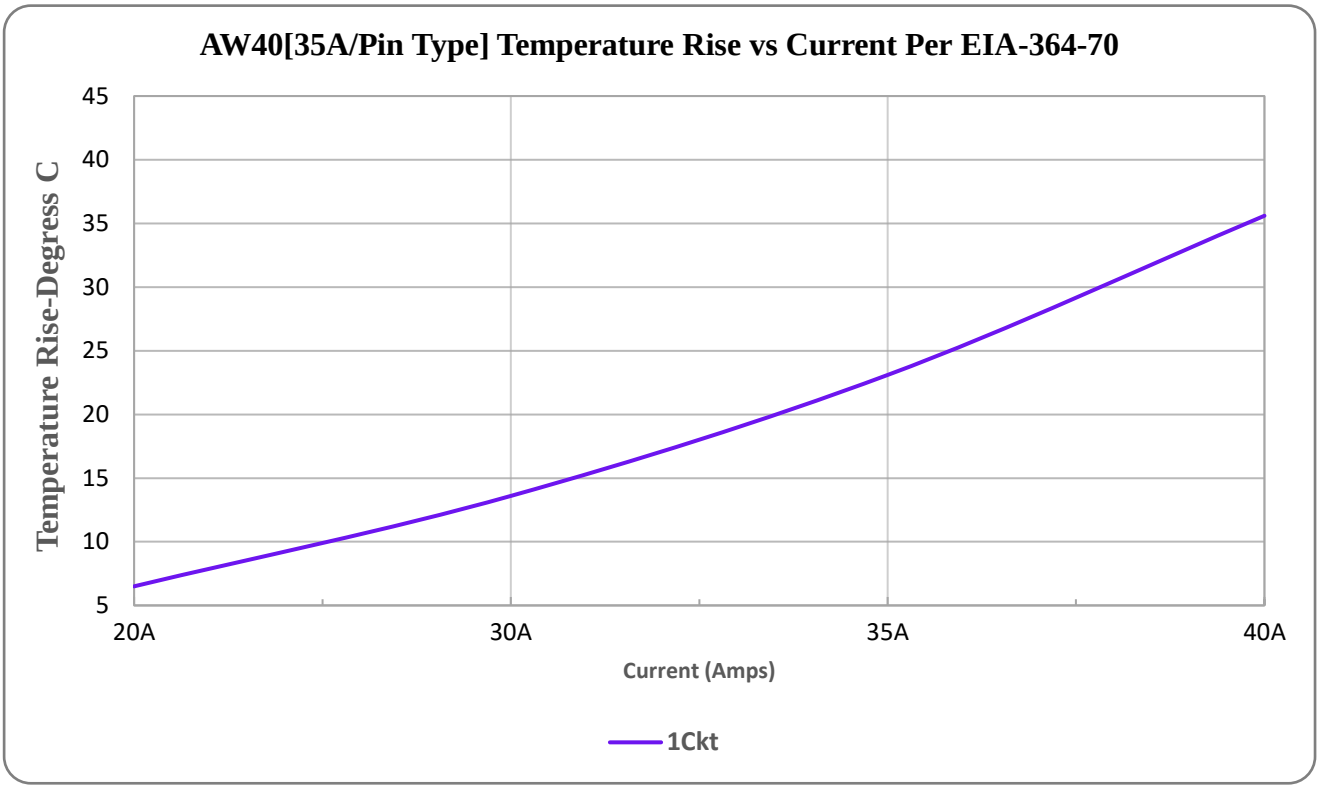
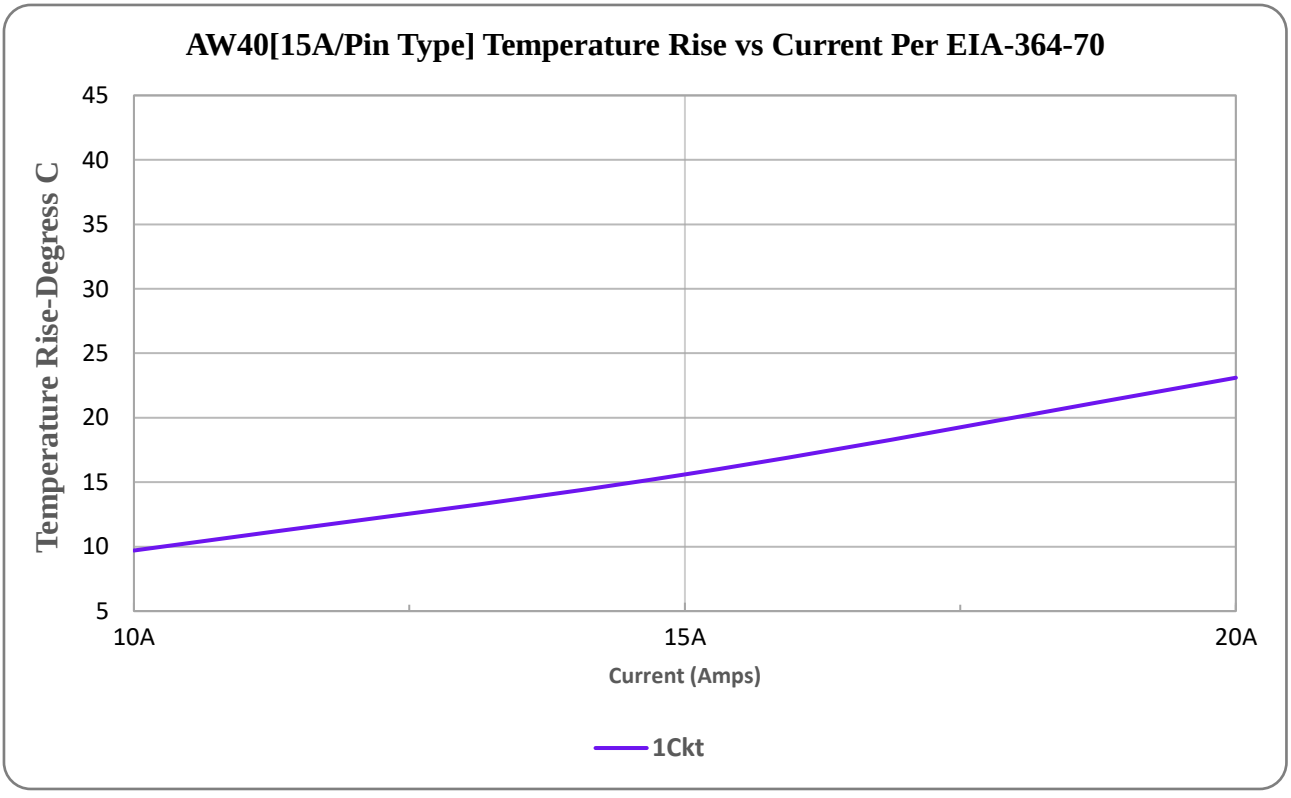


Figure-2 Temperature Rise



4.3 Mechanical performance requirements

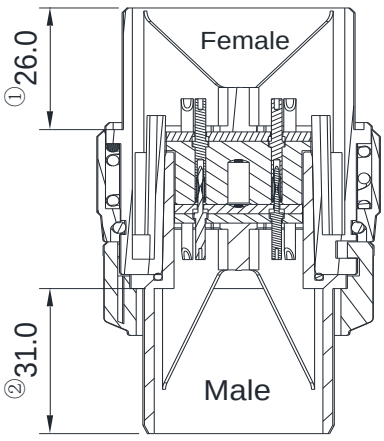
Test	Requirements	Test Procedure
Mating force	78.4N (8.0Kgf) Max. | PAW07+08 78.4N (8.0Kgf) Max. | PAW11+12 68.6N (7.0kgf) Max. | PAW09+10	Operation speed: 25.4mm/ minute Measure the force required to mate connector. (EIA-364-13)
Withdrawal force	19.6(2.0Kgf) Min.	Operation speed: 25.4mm/ minute Measure the force required to unmate connector (EIA-364-13)
Durability	Contact Resistance : 1.2 mΩ Max. @ per pair (initial) , 20 mΩ Max.@ per pair (final).	Mating/Unmating 5,000 cycles. (Reference, confirm after the test results) at a max rate of 10 cycles per minute. (EIA-364-09)
Contact retention	5kgf/Per pin Min.	Axial pullout force on the terminal in the housing at a rate of 25.4±6 mm per minute (EIA-364-29)
Reseating	1.Contact Resistance: 1.2 mΩ Max. @ per pair (initial) , 20 mΩ Max.@ per pair (final). 2.No evidence of physical damage	Manually unplug/plug the connector or socket. Perform 3 such cycles.
Solderability test	Prolanv test method	Solder area shell have Min of 95% solder coverage (Hand soldering, 60~100W electric ferrochrome, 370~430°C,2~4 seconds)

4.4 Environmental performance requirements

Test	Requirements	Test Procedure
Vibration	Maximum Change: 20 mΩ Max. Discontinuities less 1ms.	Mate connectors and vibrate per EIA-364-28 test condition VII-D | 15 minutes each axis.
Thermal Shock	1.Contact Resistance: 1.2 mΩ Max. @ per pair (initial) , 20 mΩ Max.@ per pair (final). 2.No evidence of physical damage	Mated connectors. -55°C ~ +85°C for 30 Minutes/cycle, repeat 10 cycles. (EIA-364-32 test condition I)
Temperature Life	1.Contact Resistance: 1.2 mΩ Max. @ per pair (initial) , 20 mΩ Max.@ per pair (final). 2.No evidence of physical damage	Mated connector. 105°C Duration: 240H (EIA-364-17)

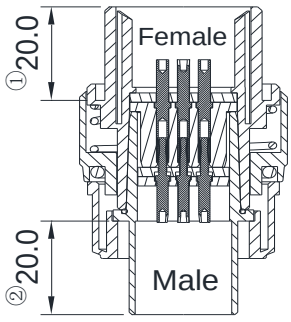
Test	Requirements	Test Procedure
Cycle Temperature and Humidity	1. Maximum Change: 20 mΩ 2. No evidence of physical damage	Mate connectors: expose to 24 cycles from 25 °C / 80% RH to 65 °C / 50% RH Ramp times should be 0.5 hour and dwell times should be 1.0 hour. Dwell times start when the temperature and humidity have stabilized within the specified levels. Perform 24 such cycles. EIA-364-31, method III
Salt Spray	1. Maximum Change: 20 mΩ 2. No evidence of physical damage	Subject mated connectors to 5% salt concentration for 48 hours. (EIA-364-26)
IPX5 waterproof grade test	No water enters inside the sample and enters the live parts.	Mate connectors Water flow rate: 12.5L/min Distance from sample surface to nozzle: 2.5-3m Diameter of the nozzle: 6.3mm The rotation speed of the turntable: 1r/min Test duration: 3min (GB/T 4208-2017)

Figure-3 Typical Mating Sequence | 对配行程设定



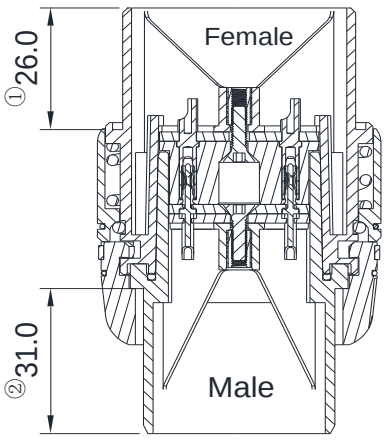
PAW07+08 Type

depth of penetration
①②插入深度



PAW09+10 Type

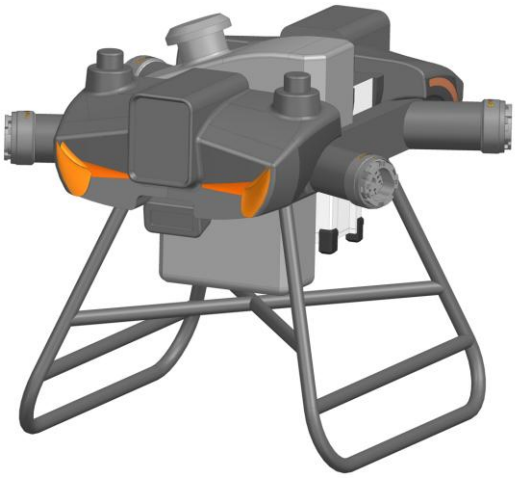
depth of penetration
①②插入深度

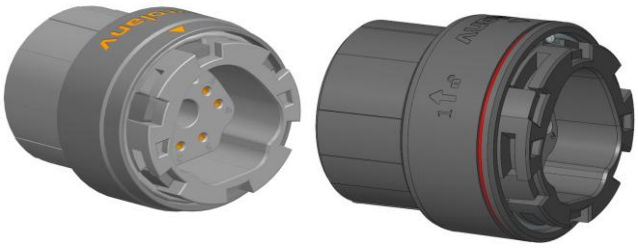


PAW11+12 Type

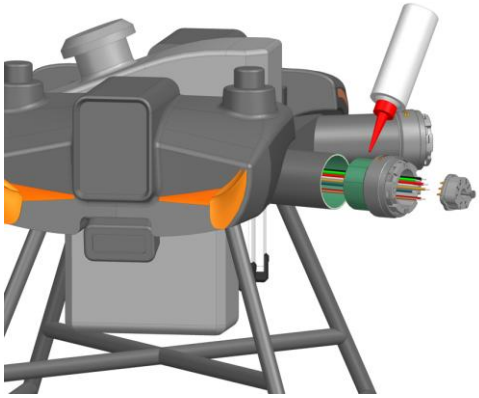
depth of penetration
①②插入深度

Figure-4 Assembly sequence with Device | 装配示意

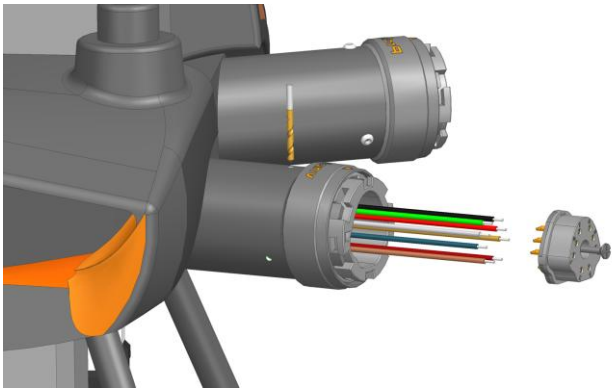




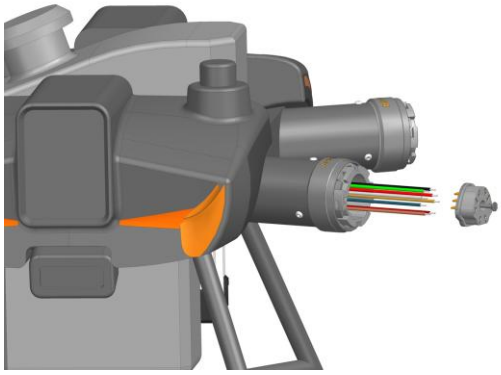
①结构胶粘合 | Structural adhesive



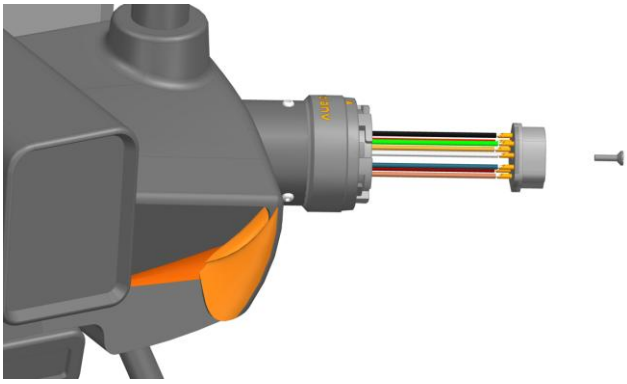
②(Option) 钻孔 | drilling



③拉铆钉 | Pull rivet



④ 焊线 | Soldering



⑤锁螺丝 | Lock screw

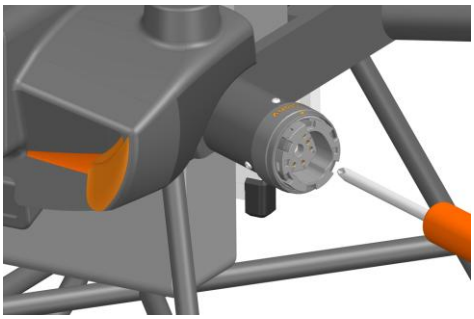
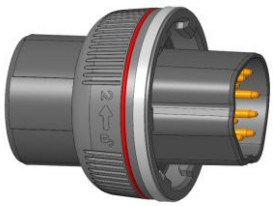
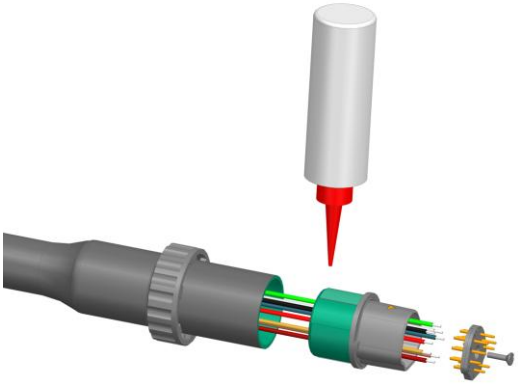


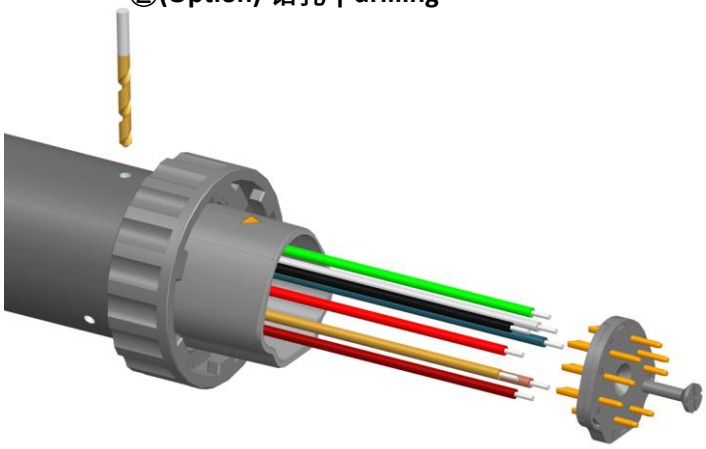
Figure-5 Assembly sequence with Device | 装配示意



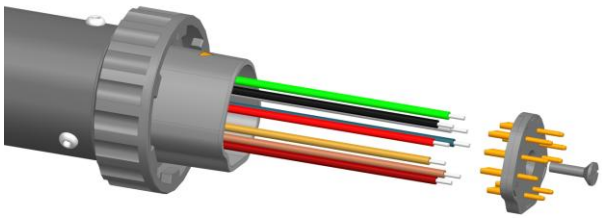
①结构胶粘合 | Structural adhesive



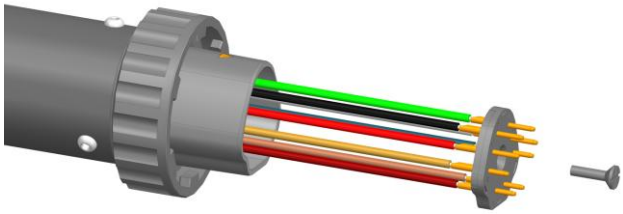
②(Option) 钻孔 | drilling



③拉铆钉 | Pull rivet



④ 焊线 | Soldering



⑤锁螺丝 | Lock screw

4.5 Product qualification and requalification test

Test or Examination	Test Group						
	A	B	C	D	E	F	G
Examination of product	1, 8	1, 8	1, 11	1, 10	1, 8	1, 6, 9	1, 10
Contact Resistance (low level)	2,	2, 4, 7	2, 6, 8, 10	2, 5, 7, 11	2, 5, 6	2, 5, 8	2, 4, 7
Insulation Resistance							3
Dielectric withstanding Voltage							5
Temperature rise (Current Rating)	7	5			7	7	
Mating force	3		3	3	3		
Withdrawal force	4		4	4	4		
Durability		3				3	
Reseating	6	6	9	9		4	
Contact Retention							6
Thermal Shock			5		5		
Temperature Life				6			
Cycle Temperature and Humidity			7				
Vibration				8			
Solderability							8
IPX5 waterproof grade test	5						9