AMP+HVA280-2phm and 3pxm XE Plug and Header Assembly, Sealed and Shielded Connection System with 2-Stage Latching

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for the TE Connectivity AMP+ HVA280 Plug and Header Assembly, Sealed and Shielded Connection System with Two-Stage Latching for Multi-Core Wire.

1.2. Qualification

When tests are performed on the subject product line, procedures specified in Figure 2 shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

1.3. The Qualification Test Report numbers for this testing are listed in Paragraph 2.1.C. This documentation is on file at and available from Engineering Practices and Standards (EPS).

2. APPLICABLE DOCUMENTS

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. TE Connectivity Documents

A. Customer Drawings

1. C-2103014: HVA280-2phm Shunted HVIL with Sn Plated Shields Reference Drawing (available for part number relationships; not a saleable item)
2. C-2103163: HVA280-2phm Pass Thru HVIL with Sn Plated Shields Reference Drawing (available for part number relationships; not a saleable item)
3. C-2103437: HVA280-2phm Shunted HVIL with Ag Plated Shields Reference Drawing (available for part number relationships; not a saleable item)
4. C-2103436: HVA280-2phm Pass Thru HVIL with Ag Plated Shields Reference Drawing (available for part number relationships: not a saleable item)
5. C-2103309: HVA280-3pxm XE with Ag Plated Shields Reference Drawing (available for part number relationships; not a saleable item)
6. C-2103124: HVA280-2phx Header Assembly with HVIL, 1-piece
7. C-2103320: HVA280-3p Header Assembly, 2-piece - Split
8. C-2141598: Tab Contact 2.8 x 0.8 >1.0-2.5mm^2
9. C-2141600: Tab Contact 2.8 x 0.8 >2.5-4.0mm^2
10. C-929454: MQS Receptacle Contact
11. C-2357851: HVA280-2phm Shunted HVIL with Ag Plated Shields Reference Drawing (available for part number relationships; not a saleable item)

| Indicates Change

B. Specifications

1. 108-18030: Micro Quadlock System
2. 108-18063-1: 2.8 x 0.8 mm Flat Contact
3. 108-18513-1: AMP MCP 2.8 Contact System
4. 114-18021: Micro Quadlock System
5. 114-18051-1: 2.8 x 0.8 mm Flat Contact
6. 114-18148-1: AMP MCP 2.8 Contact System
7. 114-18387: AMP MCP 2.8K Contact System/AMP MCP 2.8K Kontaktsystem
8. 114-13305: AMP+ HVA280-2phm High-Voltage Plug Connector with Shunted HVIL
9. 114-13310: AMP+ HVA280-2phm High-Voltage Plug Connector with Pass Through HVIL and 2-Stage Latching
10. 114-32056: AMP+ HVA280-3pxm XE High-Voltage Plug Connector with 2-Stage Latching
11. 501-32029: AMP+ HVA280-2phm Shunted HVIL (with Tin-Plated Shields) and Pin Header

C. Qualification Test Report

501-32029: AMP+ High Voltage Accessory (HVA) 280-2phm and HVA 280-3pxm XE Sealed and Shielded Connection System with 2-Stage Latching

2.2. Industry Documents

A. IEC 60068: Environmental testing
B. IEC 60512: Connectors for electronic equipment – Tests and measurements
C. IEC 60529: Degrees of protection provided by enclosures (IP Code)
D. IEC 60664: Insulation Coordination for equipment within low-voltage systems
E. ISO 554: Standard atmospheres for conditioning and/or testing
F. ISO 6270-2: Determination of resistance to humidity
G. ISO 9227: Corrosion tests in artificial atmospheres – Salt spray tests
H. SAE/USCAR-2 Rev 5: Performance Specification for Automotive Electrical Connector Systems
I. SAE/USCAR-25 Rev 1: Electrical Connector Assembly Ergonomic Design Criteria
J. SAE/USCAR-37 2008-08: High Voltage Connector Performance Supplement to SAE/USCAR-2
K. SAE J1742 2010-03: Connections for High Voltage On-Board Vehicle Electrical Wiring Harnesses- Test Methods and General Performance Requirements
L. VG 95214-11 2002-11: Test methods for transfer impedance and screening attenuation
M. VW 75174 2010-04: Motor Vehicle Connectors Test Specification
N. VW 80302 2009-09: High Voltage Connectors in Motor Vehicles
O. VW PV1210 2010-02: Corrosion Test

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 this product shall be as specified on the applicable product drawing.

3.3. Ratings

A. Voltage at 5500m above sea level: See Figure 1

Pollution Degree	Voltage Rating (V rms)	
	2PHM Shunted	2PHM pass-through & 3PXM
1	1915	1680
2	1000	850
3	500	425

NOTE
Pollution degree and voltage rating are determined based on Paragraph 2.5.1. and Table 4 of IEC 60664-1.

Figure 1

B. Current: see Paragraph 5.1.

C. Dielectric withstand voltage acc: SAE J1742: 2700 VAC, 4320 VDC

D. Insulation resistance acc: IEC 60512-3-1: >200 MΩ at 500 VDC

E. Ambient Temperature:

1. Sn Plated Shield System: -40 to 125°C (T_{max})
2. Ag Plated Shield System: -40 to 140°C (T_{max})

F. Degrees of protection (IP-Code) against access acc. IEC 60529: IP2XB

G. Degrees of protection (IP-Code) against foreign objects and water acc. IEC 60529: IP6K9K, IP6K7

H. Color of outer housing: Orange similar to RAL2003

3.4. Performance and Test Description

Product is designed to meet the electrical, mechanical and environmental performance requirements specified in Figure 2. Unless otherwise specified, all tests shall be performed at ambient environmental conditions.

3.5. Test Requirements and Procedures Summary

Test Group No.	Test Description	Requirements	Procedures
1	Non-reversibility of housing (polarization feature effectiveness)	150 N minimum No damage to connector; no electrical contact	Acc. SAE/USCAR-2, section 5.4.4.3
2	Durability of housing latch	No electrical interruption at 75% of maximum extraction force for 15s	Acc. IEC 60512-15-6
3	Connector –to-connector mating force	75 N maximum	Acc. SAE/USCAR-2, section 5.4.2.3
	Locked connector un-mating force (mated position	110 N minimum	Acc. SAE/USCAR-2, section 5.4.2.3
	Locked connector un-mating force (intermediate position)	110 N minimum	Acc. SAE/USCAR-2, section 5.4.2.3
	Unlocked connector un-mating force (intermediate position to unmated)	75 N maximum	Acc. SAE/USCAR-2, section 5.4.2.3
	Main latch deflection force	70 N maximum	Acc. SAE/USCAR-2, section 5.4.2.3
	Floating latch deflection force	70 N maximum	Acc. SAE/USCAR-2, section 5.4.5.3
	CPA Pre-set to lock force (Connector mated)	22 N maximum	Acc. SAE/USCAR-2, section 5.4.5.3
	CPA Lock to pre-set force (Connector mated)	22 N maximum	Acc. SAE/USCAR-2, section 5.4.5.3
4	CPA Efficiency (Pre-set to lock force) (Connector unmated)	80 N minimum	Acc. SAE/USCAR-2, section 5.4.5.3
5	CPA removal force (Connector unmated)	60 N minimum	Acc. SAE/USCAR-2, section 5.4.5.3
6	Connector-to-connector audible “click”	7 dB minimum above ambient.	Acc. SAE/USCAR-2, section 5.4.7.3
	Connector-to-connector audible “click”, moisture conditioned	5 dB minimum above ambient.	
7	Drop test; Plug	No functional damage	Acc. SAE/USCAR-2, section 5.4.8.3
8	Drop test; Header	No functional damage	Acc. SAE/USCAR-2, section 5.4.8.3

Figure 2 (cont)

Test Group No.	Test Description	Requirements	Procedures
9	Coastal Climate (Corrosion Resistance)	Contact resistance (contact and terminal): • 0.63 mm terminals, 15 mΩ maximum at 2.5 A • 2.8 mm terminals, 5 mΩ maximum at 20 A for 4 mm^2 cable, 10 mΩ maximum at 12.5 A for 2.5 mm^2 cable • Shielding circuit at 10 A for information only Un-mate force (mated position to pre-lock position with main (orange) latch fully pressed). For information only Un-mate force (mated position to pre-lock position with main (orange) latch fully pressed). For information only	Contact resistance Acc. IEC 60512-2-2 Group 1-Constant Acc. ISO 9227 15 cycles of 24 h spray testing Group 2-Cyclic (VW PV1210) 15 cycles of 4h spraying (NSS acc. ISO 9227), 4h storage at standard climate (acc. ISO 554-23/50), 16h temp-humidity (acc. ISO 6270-2) Un-mate force: Acc. IEC 60512-13-1
10	Environmental Simulation 1. Connector mate/un-mate cycling 2. Thermal shock 3. Change of temperature 4. Storage under dry heat conditions 5. Humid Heat, cyclic	Contact resistance (contact and terminal): • 0.63 mm terminals, 15 mΩ maximum • 2.8 mm terminals, 5 mΩ maximum at 20 A for 4 mm^2 cable, 10 mΩ maximum at 12.5 A for 2.5 mm^2 cable • Shielding circuit for information only	Contact resistance Acc. IEC 60512-2-1 and IEC 60512-2-2 1. Group 1: 1 cycle, Group 2: 25 cycles 2. Acc. IEC 60068-2-14 Na 300 cycles, 1 cycle = 30 minutes at T_{max}, 45 minutes @ -40°C, 10s max transition time. 3. Acc. IEC 60068-2-14 Nb 20 cycles, 1 cycle = 3 h at -40°C, 3 h at T_{max}, 2 h max transition time 4. Acc. IEC 60068-2-2 120 h at T_{max} 5. Acc. IEC 60068-2-30 10 cycles, 1 cycle = 12 h at 55°C, 12 h at 25°C, 3 h ± 30 min transition, relative humidity ≥95%, during last 15 minutes ≥90%

Figure 2 (cont)

Test Group No.	Test Description	Requirements	Procedures
11	Climatic Load 1. Dry heat 2. Humid heat constant 3. Low temperature aging 4. Aging in dry heat 5. Impact test	Insulation Resistance >200 MΩ at 500 VDC for 60 s Dielectric withstand voltage No breakdown or flash-over at 4000 VDC Must be possible to unmate and mate without latching elements breaking after 4 h of pre-aging at -20°C	Insulation resistance Acc. IEC 60512-3-1 Dielectric withstand voltage Acc. SAE J1742, section 5.5.2 1. Acc. IEC 60068-2-2 120 h at 125°C 2. Acc. IEC 60068-2-30 10 days at 40°C, relative humidity ≥95%, 3. Acc. IEC 60068-2-1 48 h at -40°C 4. Acc. IEC 60068-2-2 48 h at 125°C 5. Acc. SAE/USCAR-2, section 5.4.8.3 except 1.2 m per axis on uncoated concrete floor
12	Long Term Temperature Aging	Contact resistance (contact and terminal): After 1000 h 0.63 mm terminals, 15 mΩ maximum 2.8 mm terminals, 5 mΩ maximum at 20 A for 4 mm^2 cable, 10 mΩ maximum at 12.5 A for 2.5 mm^2 cable Shielding circuit for information only After 2000 h and 3000 h 0.63 mm terminals, for information only 2.8 mm terminals, for information only at 20 A for 4 mm^2 cable, for information only at 12.5 A for 2.5 mm^2 cable Shielding circuit for information only Insulation Resistance >200 MΩ at 500 VDC for 60 s Dielectric withstand voltage No breakdown or flash-over at 4000 VDC	Contact resistance Acc. IEC 60512-2-1 and IEC 60512-2-2 Insulation resistance Acc. IEC 60512-3-1 Dielectric withstand voltage Acc. SAE J1742, section 5.5.2

Figure 2 (cont)

Test Group No.	Test Description	Requirements	Procedures
13	Chemical resistance	Insulation Resistance Pre-Test >200 MΩ at 500 VDC for 60 s Dielectric withstand voltage Pre-Test No breakdown or flash-over at 4320 VDC No specimen must exhibit signs of visible deterioration, cracks, or the loss of mechanical function	Insulation resistance Acc. IEC 60512-3-1 Dielectric withstand voltage Acc. SAE J1742, section 5.5.2 1. Undiluted commercially available cold-cleaning agent (Gunk Engine Degreaser) 2. Penetrating oil, (WD-40) 3. Undiluted commercially available washer fluid 4. Undiluted methylated spirit 5. Lubricating grease 6. Brake fluid 7. Premium-grade gasoline 8. Diesel fuel 9. Multi-grade motor oil SAE 10W−50 10. Hypoid gearbox oil, class SAE 80/90 11. Radiator antifreeze: 50% H 2 O/50% ethylene glycol 12. Battery fluid 2) : undiluted sulfuric acid, density: 1.28 g/cm 3 The specimens are immersed in the corresponding medium for 5 min. Allow to drip-dry afterwards and aged 48 h at 50 °C. Insulation resistance and dielectric withstand not performed post chemical exposure.

Figure 2 (cont)

Test Group No.	Test Description	Requirements	Procedures
14	Water Tightness 1. Dry heat 2. Thermal shock (air-air) 3. Immersion with vacuum 4. Thermal shock (air-fluid) 5. High pressure spray	Insulation Resistance >200 MΩ at 500 VDC for 60 s No fluid or corrosion in the connector The function of the locking and releasing elements must remain fully intact	Insulation resistance Acc. IEC 60512-3-1 1. Acc. IEC 60068-2-2 120 h at 130°C 2. Acc. IEC 60068-2-14 Na 144 cycles, 1 cycle = 15 minutes at -40°C, 15 minutes @ 130°C, 10s max transition time. 3. Acc. IEC 60512-14-5 and IEC 60068-2-13 a) normal pressure b) -10kPa (-1.45 psi) for 5 minutes Transition to c) of 10kPA (1.45 psi) per minute c) -50kPa (-7.25 psi) for 5 minutes d) normal pressure 4. Acc. IEC 60512-1-1 5 cycles, 1 cycle = 30 minutes @ 120°C air, 15 minutes @ 0°C in 5% NaCl 5. Acc. IEC 40050-9 IP X9K All three sides of the DUT must be exposed to the steam jet. The jet must also be directed especially at the sealing elements of the DUT. Test duration per side: 15 s Distance, nozzle-DUT: (100 – 150) mm Pressure: 80 bar Temperature: 80 °C The test is performed 3 times.
15	0.63 mm pin terminals Terminal-to-connector insertion, Forward stop	30 N maximum 50 N minimum or until wire buckles	Acc. SAE/USCAR-2, section 5.4.1.3
16	0.63 mm pin terminals Terminal-to-connector extraction, dry as molded	For information only – multi-core cable application	Acc. SAE/USCAR-2, section 5.4.1.3
160	0.63 mm shunt Terminal-to-connector extraction, dry as molded	40 N minimum	Acc. SAE/USCAR-2, section 5.4.1.3
17	0.63 mm pin terminals Terminal-to-connector extraction, moisture conditioned	For information only – multi-core cable application	Acc. SAE/USCAR-2, section 5.4.1.3

Figure 2 (cont)

Test Group No.	Test Description	Requirements	Procedures
170	0.63 mm shunt Terminal-to-connector extraction, moisture conditioned	30 N minimum	Acc. SAE/USCAR-2, section 5.4.1.3
18	2.8 mm receptacles Terminal-to-connector insertion Forward stop	75 N maximum 50 N minimum or terminal insertion force, whichever is greater	Acc. SAE/USCAR-37, section 5.4.1.3
19	2.8 mm receptacles Terminal-to-connector extraction, dry as molded	For information only – multi-core cable application	Acc. SAE/USCAR-37, section 5.4.1.3
20	2.8 mm receptacles Terminal-to-connector extraction, moisture conditioned	For information only – multi-core cable application	Acc. SAE/USCAR-37, section 5.4.1.3
21	0.63 mm receptacles Terminal-to-connector insertion Forward stop, 0.63 mm receptacles	30 N maximum 50 N minimum or until wire buckles	Acc. SAE/USCAR-2, section 5.4.1.3
22	0.63 mm receptacles Terminal-to-connector extraction, dry as molded	60 N minimum	Acc. SAE/USCAR-2, section 5.4.1.3
23	0.63 mm receptacles Terminal-to-connector extraction, moisture conditioned	60 N minimum	Acc. SAE/USCAR-2, section 5.4.1.3
24	2.8 mm terminals Terminal-to-connector insertion Forward stop	75 N maximum. 50 N minimum or terminal insertion force, whichever is greater	Acc. SAE/USCAR-37, section 5.4.1.3
25	2.8 mm terminals Terminal-to-connector extraction, dry as molded	110 N minimum	Acc. SAE/USCAR-37, section 5.4.1.3
250	2.8 mm terminals (stitched) Terminal-to-connector extraction, dry as molded	80 N minimum	Acc. SAE/USCAR-2, section 5.7.1.3
26	2.8 mm terminals Terminal-to-connector extraction, moisture conditioned	110 N minimum	Acc. SAE/USCAR-37, section 5.4.1.3
260	2.8 mm terminals (stitched) Terminal-to-connector extraction, moisture conditioned	80 N minimum	Acc. SAE/USCAR-2, section 5.7.1.3

Figure 2 (cont)

Test Group No.	Test Description	Requirements	Procedures
270	Dynamic Load (Vibration with temperature cycling/ Mechanical Shock)	Contact resistance (contact and terminal): • 0.63 mm terminals, 15 mΩ maximum • 2.8 mm terminals, 5 mΩ maximum for 4 mm^2 cable, 10 mΩ maximum for 2.5 mm^2 cable • Shielding circuit for information only Continuous Monitor Resistance > 7Ω >1 µs 100mA Current)	Contact resistance Acc. IEC 60512-2-1 Dynamic load, broad-band random vibration acc. IEC 60068-2-64 and TE 108-32020, section 5.2, Figure 10 Endurance shock acc. IEC 60068-2-27 and TE 108-32020, section 5.2 Figure 10 Mounting acc. to TE 108-32020, section 5.2, Figure 11
28	De-rating, completely assembled plug-in system	See applicable current carrying curve in Section 5.1.	Acc. IEC 60512-5-2
29	Dielectric withstanding, circuit to circuits and circuits to shields	No breakdown or flash-over at 4320 VDC HV to HV, HV to HVIL, and HV to Shield No breakdown or flash-over at 2700 VAC HV to HV, HV to HVIL, and HV to Shield	Acc. SAE J1742, section 5.5.2.3 Test plug only, header only, and mated system both AC and DC voltage
30	Protection against accidental contact, IP2XB (Finger)	No contact between HV circuits and 12mm dia. Finger probe at 10 N±10%	Acc. IEC 60529, section 12.3
31	Transfer impedance	For information only	Acc. VW VG95214-11
32	Ferrule retention Cable without HVIL circuits (2 x 4 mm^2, 2 x 2.5 mm^2, 3 x 2.5 mm^2, etc.)	150 N minimum	Acc. SAE/USCAR-37, section 5.2.4
33	Ferrule retention Cable with HVIL circuits (2 x 4 mm^2 + 2 x 0.5 mm^2)	150 N minimum	Acc. SAE/USCAR-37, section 5.2.4
34	HV contact overlap prior to HVIL contact engagement	1 mm minimum HV engagement prior to HVIL continuity	

Figure 2 (end)

3.6. Product Qualification and Requalification Test Sequences

Test or Examination	Test Group (a)										
	1	2	3	4	5	6	7	8	32	33	34
	Test Group (b)										
Visual Inspection	1	1,3	1,11								
Polarization feature effectiveness	2										
Durability of housing latch		2									
Connector to connector mate force			2								
Locked connector un-mate force (Mated position)			5								
Locked connector un-mate force (Intermediate position)			8								
Unlocked connector un-mate force (Mated position to intermediate position)			7								
Unlocked connector un-mate force (Intermediate position to unmated position),			10								
Main latch deflection force			6								
Floating latch deflection force			9								
CPA Pre-set to lock force (Connector mated)			3								
CPA Efficiency Pre-set to lock force (Connector unmated)				1							
CPA Lock to pre-set force			4								
CPA Removal force (Connector unmated)					1						
Connector-to-connector audible click.						1					
Connector-to-connector audible click, moisture conditioned						2					
Drop test, plug							1				
Drop test, header								1			
Ferrule retention, Cable without HVIL circuits									1		
Ferrule retention, Cable with HVIL circuits										1	
HV contact overlap prior to HVIL contact engagement											1

NOTE

(a) See Paragraph 4.1.A.

(b) Numbers indicate sequence in which tests are performed.

Figure 3

Test or Examination	**Test Group** (a)															
	15	16	160	17	170	18	19	20	21	22	23	24	25	250	26	260
	Test Group (b)															
Visual inspection	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Moisture conditioning - 95-98% RH @ 40°C for 6h				2	2			2			2				2	2
Terminal-to-connector insertion, 0.63 mm pin terminals	2															
Forward stop, 0.63 mm pin terminals	3															
Terminal-to-connector extraction, 0.63 mm pin terminals		2		3												
Shunt-to-connector extraction force			2		3											
Terminal-to-connector insertion, 2.8 mm receptacles						2										
Forward stop, 2.8 mm receptacles						3										
Terminal-to-connector extraction, 2.8 mm receptacles							2	3								
Terminal-to-connector insertion, 0.63 mm receptacles									2							
Forward stop, 0.63 mm receptacles									3							

Terminal-to-connector extraction, 0.63 mm receptacles										2	3					
Terminal-to-connector insertion, 2.8 mm tab terminals												2				
Forward stop, 2.8 mm terminals												3				
Terminal-to-connector extraction, 2.8 mm tab terminals													2		3	
Terminal-to-connector extraction, 2.8 mm tab terminals (stitched)														2		3

NOTE

(a) See Paragraph 4.1.A.

(b) Numbers indicate sequence in which tests are performed.

Figure 4

Test or Examination	**Test Group** (a)										
	9	10	11	12	13	14	270	28	29	30	31
	Test Group (b)										
Visual inspection	1,7,13	1,13,18, 23, 30	1,6,9, 11,13,16	1,8	1,5	1,5,8,11, 15	1			1	
Voltage Drop, 0.63 mm terminals		26					13				
Voltage Drop, 2.8 mm terminals	3,9	3,7,11, 16,21, 27		3,10			14				
Voltage Drop, Shield	4,10	29									
Dry Circuit, 0.63 mm terminals	2,8	2,6,10, 15,20, 25		2,9			2,6,10				
Dry Circuit, 2.8 mm terminals							3,7,11				
Dry Circuit, Shield		4,8,12, 17,22, 28		4,11			4,8,12				
Connector mate/un-mate cycling		5									
Unlocked connector un-mate force (Mated position to intermediate position)	11										
Unlocked connector un-mate force (Intermediate position to unmated)	12										
De-rating, completely assembled plug-in system								1			
Dielectric withstanding, circuit to circuits and circuits to shields, Plug Only, VAC									A1		
Dielectric withstanding, circuit to circuits and circuits to shields, Plug Only, VDC									B1		
Dielectric withstanding, circuit to circuits and circuits to shields, Header Only, VAC									C1		
Dielectric withstanding, circuit to circuits and circuits to shields,. Header Only, VDC									D1		
Dielectric withstanding, circuit to circuits and circuits to shields, Plug mated to header, VAC									E1		
Dielectric withstanding, circuit to circuits and circuits to shields, Plug mated to header, VDC	5		3	6,13	3				F1		
Insulation Resistance			2,5,8, 15	5,12	2	2,6,9,12, 14					
Salt spray Constant	6a										
Salt spray Cyclic	6b										
Thermal shock air-air		9				4					
Thermal shock air-fluid						10					
Change of temperature		14									
Dry heat		19	4, 12			3					
Humid heat, cyclic		24									

Humid heat, constant			7								
Low-temperature aging			10								
Impact Test			14								
Long-term temperature aging				7							
Chemical resistance					4						
Immersion with vacuum						7					
High-pressure spray test						13					
Vibration with temperature cycling, severity 2							5				
Mechanical shock, severity 2							9				
Protection against accidental contact, IP2XB (Finger)										2	
Transfer impedance											1

NOTE

(a) See Paragraph 4.1.A.

(b) Numbers indicate sequence in which tests are performed.

Figure 5

4. QUALITY ASSURANCE PROVISIONS

4.1. Qualification Testing

A. Specimen Selection

Specimens shall be prepared in accordance with applicable Instruction Sheets and shall be selected at random from current production.

1. Test group 1 shall consist of 4 plug and 4 header assemblies per key code.
2. Test group 2 shall consist of 5 plug and 5 header assemblies.
3. Test group 3 shall consist of 15 plug and 15 header assemblies. Samples are split into separate groups where destructive testing is completed.
4. Test group 4 and 5 shall consist of 10 plug sub-assemblies.
5. Test group 6, 28, 31 and 34 shall consist of 3 plug and 3 header assemblies.
6. Test group 7 shall consist of 3 plug assemblies.
7. Test group 8 shall consist of 3 header assemblies.
8. Test group 9 shall consist of 6 plug and 6 header assemblies. Samples are split into two groups for different salt spray exposures.
9. Test group 10 shall consist of 10 plug and 10 header assemblies. Samples are split into two groups for different connector cycling.
10. Test group 11 and 12 shall consist of 10 plug and 10 header assemblies.
11. Test group 13 shall consist of 12 plug and 12 header assemblies.
12. Test group 14 and 270 shall consist of 6 plug and 6 header assemblies.
13. Test group 15, 16, and 17 shall consist of 10, 0.63 mm pin terminals crimped leads and 10 plug inner housings.
14. Test group 160 and 170 shall consist of 10 inner housing sub-assemblies
15. Test group 18, 19, and 20 shall consist of 10, 2.8 mm receptacle crimped leads and 5 plug inner housings.
16. Test group 21, 22, and 23 shall consist of 10, 0.63 mm receptacle crimped leads and 10 headers.
17. Test group 24, 25, and 26 shall consist of 10, 2.8 mm tab crimped leads and 5 headers.
18. Test group 250 and 260 shall consist of 10, 2.8 mm stitched tabs and 5 headers
19. Test group 29 shall consist of 4 plug and 4 header assemblies.
20. Test group 30 shall consist of 1 plug and 1 header assembly.
21. Test group 32 and 33 shall consist of 10 crimped leads.

B. Test Sequence

Qualification inspection shall be verified by testing specimens as specified in Figure 3,4 and 5.

4.2. Requalification Testing

If changes significantly affecting form, fit or function are made to the product or manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of the original testing sequence as determined by development/product, quality and reliability engineering.

4.3. Acceptance

Acceptance is based on verification that the product meets the requirements of Figure 2. Failures attributed to equipment, test setup or operator deficiencies shall not disqualify the product. If product failure occurs, corrective action shall be taken and specimens resubmitted for qualification. Testing to confirm corrective action is required before re-submittal.

4.4. Quality Conformance Inspection

The applicable quality inspection plan shall specify the sampling acceptable quality level to be used. Dimensional and functional requirements shall be in accordance with the applicable product drawing and this specification.

5. APPENDIX

5.1. Housing influences on derating

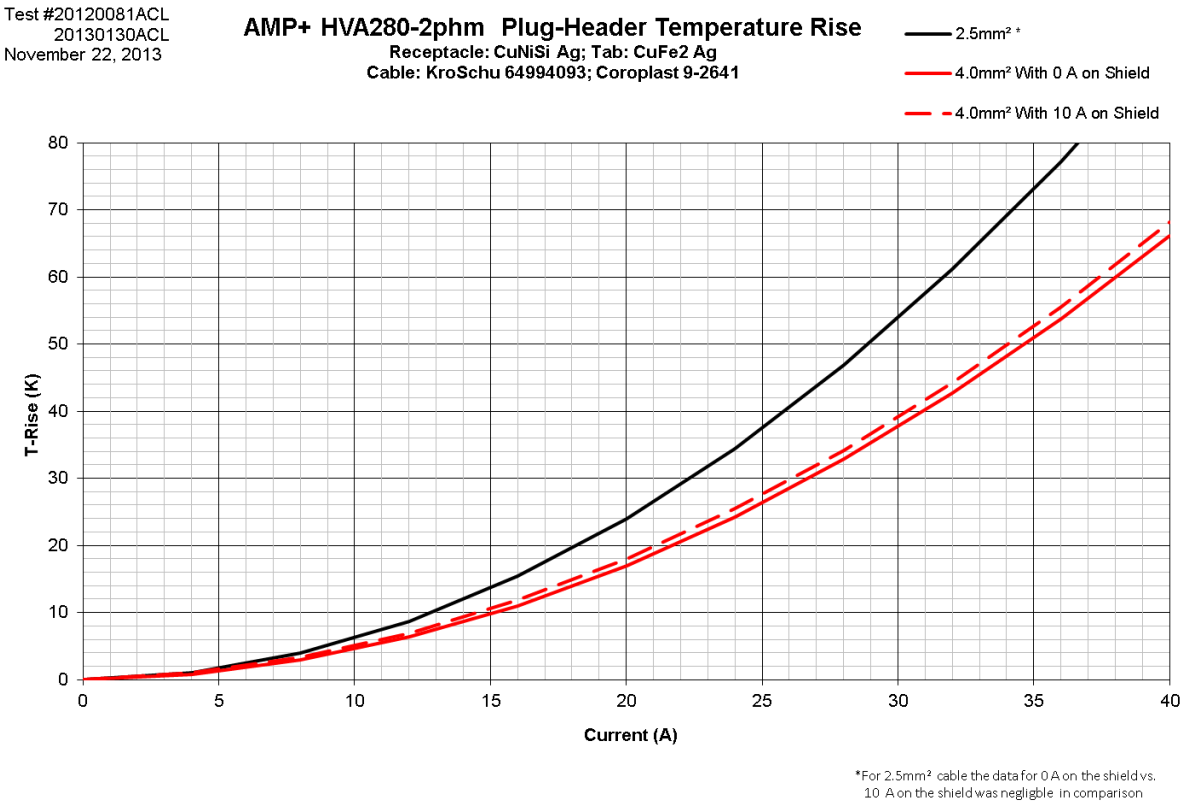

Figure 6
(2-Position Plug and Header Temperature Rise)

Test #20120081ACL
20130130ACL
November 22, 2013

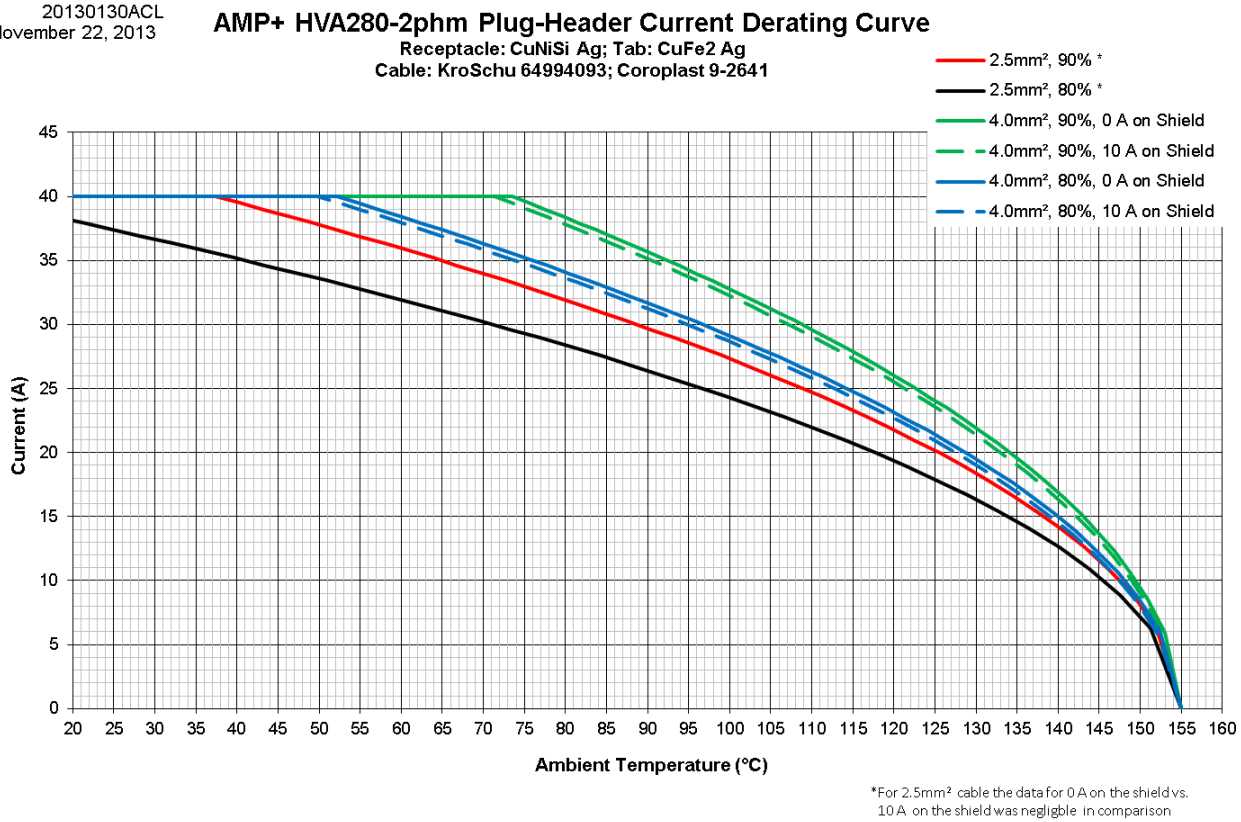

Figure 7
(2-Position Plug and Header Derating)

Test #20130172ACL
November 8, 2013

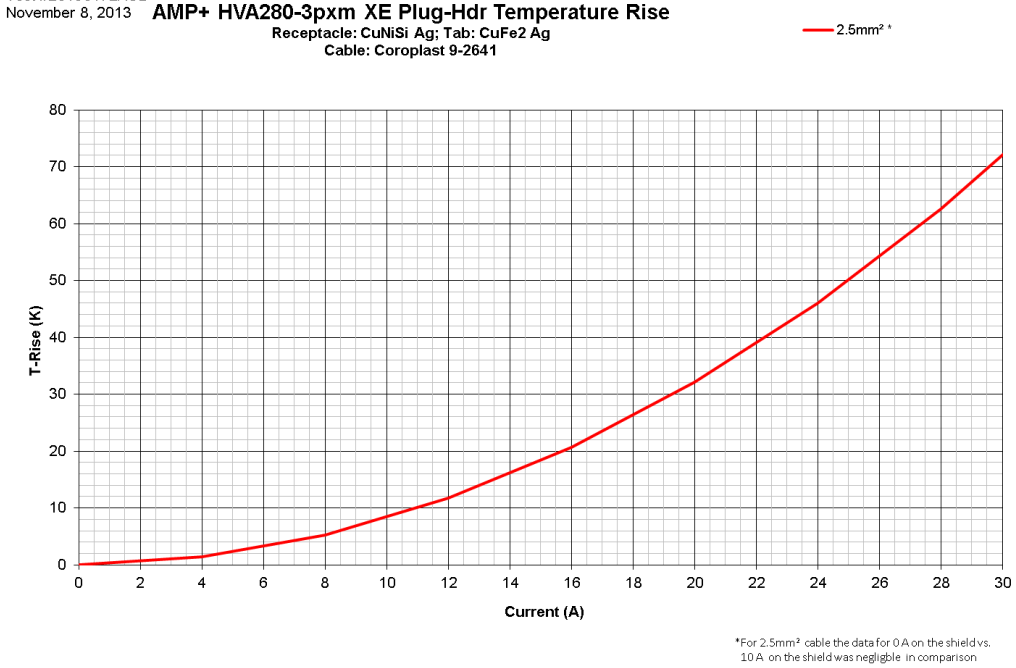

Figure 8
(3-Position Plug and Header Temperature Rise)

Test #20130172ACL
November 8, 2013

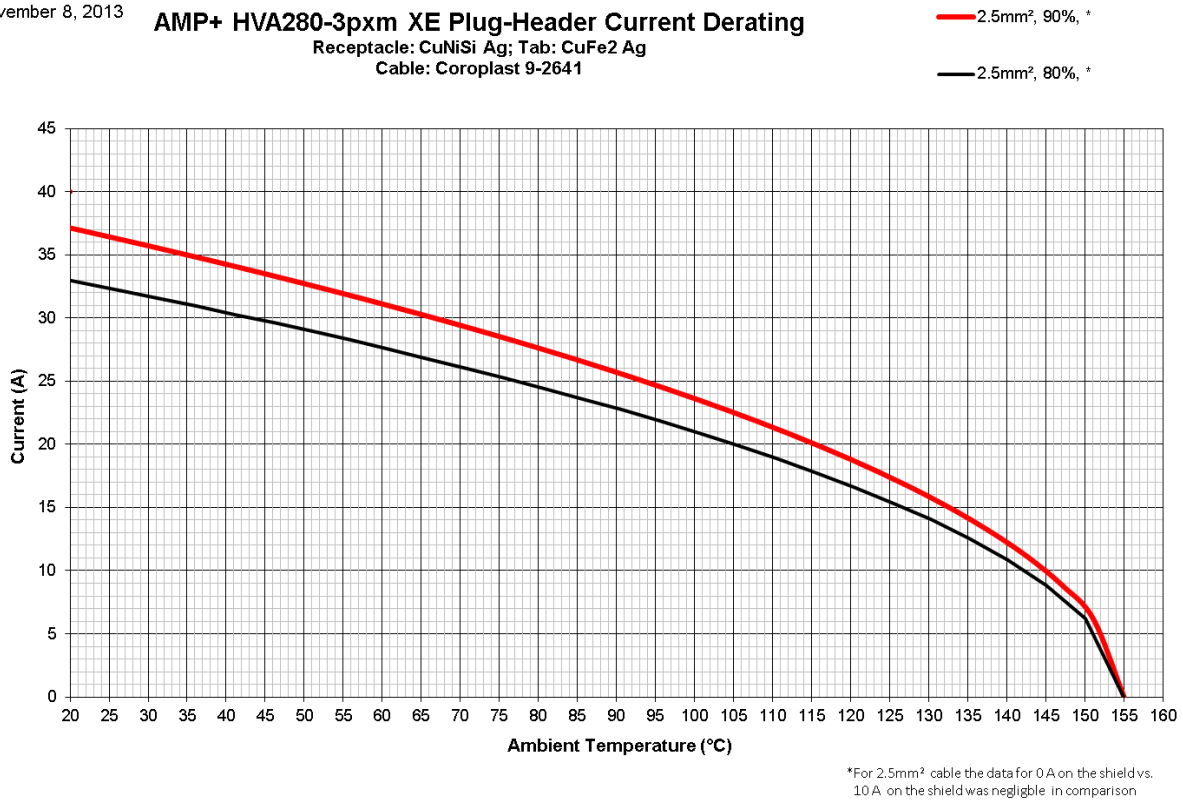

Figure 9
(3-Position Plug and Header Derating)

Test ID-No.: 97910
March 21, 2020; Figure 10
(2-Position Plug and Header)

HVA280-2phm (shunted HVIL) Plug-Header: Temperature Rise Curve
Receptacle: CuNiSi with Ag; Tab: CuFe2 with Ag
Cable: Huber+Suhner-12582308

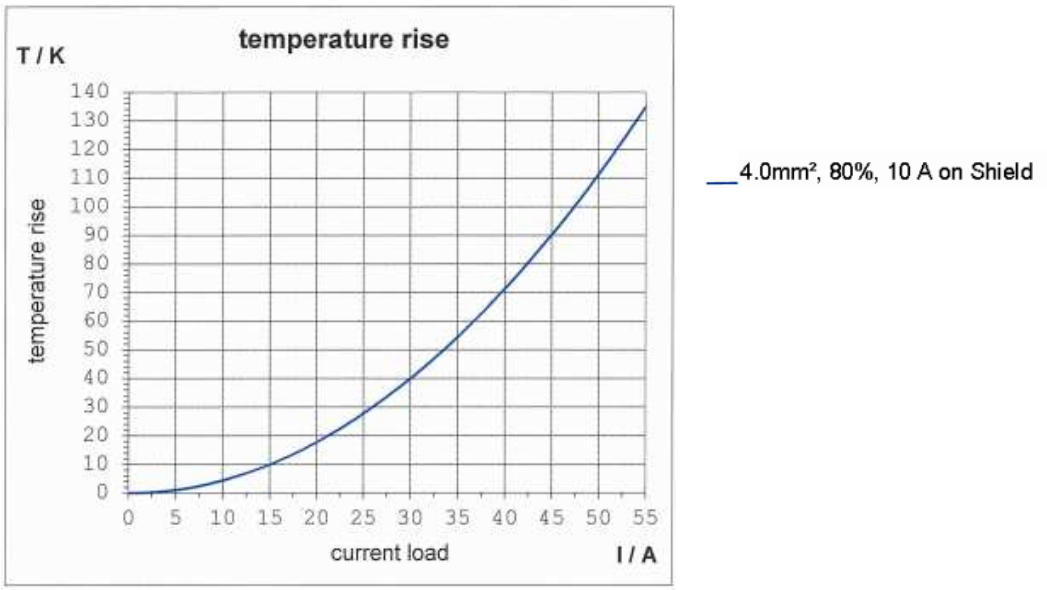

Figure 10
(2-Position Plug and Header: Temperature Rise Curve)

Test ID-No.: 97910
March 21, 2020; Figure 11
(2-Position Plug and Header)

HVA280-2phm (shunted HVIL) Plug-Header: Current Derating Curve
Receptacle: CuNiSi with Ag; Tab: CuFe2 with Ag
Cable: Huber+Suhner-12582308

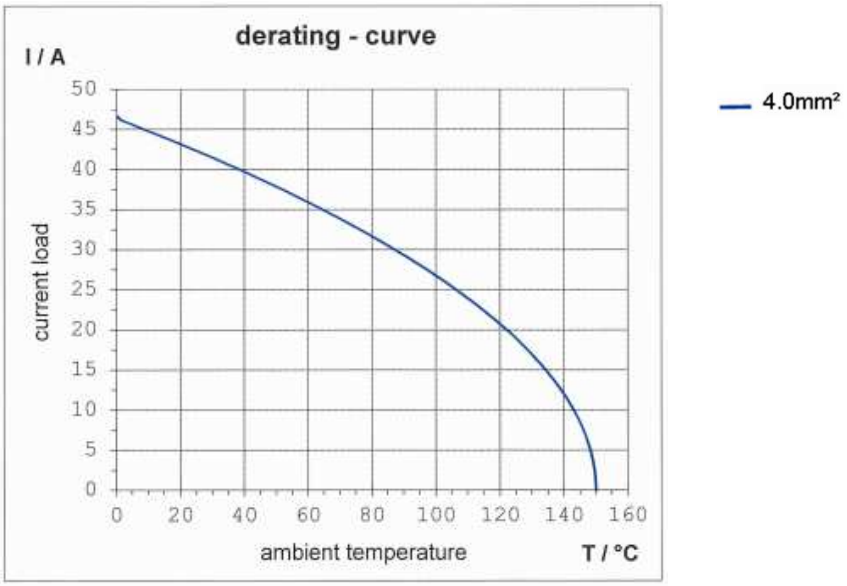

Figure 11
(2-Position Plug and Header: Current Derating Curve)

5.2. Dynamic Load

Severity	TC (Temperature cycle)	Random vibration with TC	Sine wave with TC	No. of shocks
2) "Body" sealed	0 min/20 °C 60 min/-40 °C 150 min/-40 °C 300 min/120 °C 420 min/120 °C 480 min/20 °C	20 h per axis RMS value of Acceleration: 27.8 m/s² Hz / (m/s²)²/Hz 10 / 20 55 / 6.5 180 / 0.25 300 / 0.25 360 / 0.14 1 000 / 0.14	No sine wave	A = 30 g T = 6 ms sinusoidal half-wave No. of shocks: 6 000

Figure 12

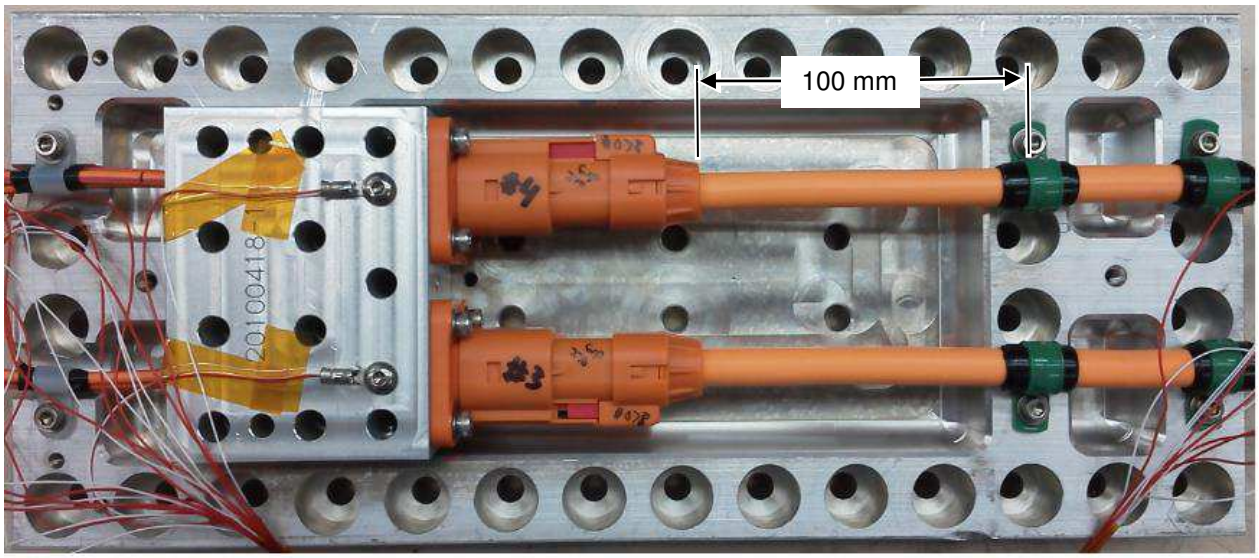

Figure 13

LTR	REVISION RECORD	DWN	APP	DATE
B	Revised Table 3.3 – Voltage Specification	P. Kolhatkar	Y. Soonavala T. Svatek	09-AUG-2018
C	Added Reference drawing PN “C-2357851” in Section 2.1.A Added test results of Derating with Cable Huber+Suhner 4mm^2 in Section 5.1	Praveen HM	S. Revankar A. Herrmann Y. Soonavala	15-JUN-2020

单击下面可查看定价，库存，交付和生命周期等信息

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