




Product Specification

108-101234

Rev. A

Connectors with AMP MCP 2.8 contact, unsealed

	Page
1. Scope	2
1.1. Content	2
1.2. Qualification	2
2. Applicable Documents	2
2.1. TE Documents	2
2.2. General Documents	3
3. Requirements	3
3.1. Design and Construction	3
3.2. Materials	3
3.3. Ratings	3
3.4. Performance and Test Description	4
3.5. Requirements and Test Procedure Summary	4
4. Quality Assurance provisions	8
4.1. Qualification Testing	8
4.2. Requalification Test	9
4.3. Acceptance	10
4.4. Quality Conformance Inspection	10

					PR: H.XU DATE: 05APR12	 TE Connectivity Shanghai, China		
					CHK: Z.ZHOU DATE: 27JUE12			
					APP: W.YUAN DATE: 27JUE12	Document No.: 108-101234	LOC: ES	REV: A
A	Released	WY	HX	27JUE12	Title			
LTR	REVISION RECORD	AP	PR	DATE	Connectors with AMP MCP 2.8 contact, unsealed			

Connectors with AMP MCP 2.8 contact, unsealed

1. Scope

1.1 Content

This specification covers the performance, tests and quality requirements for the unsealed motor-vehicle-connectors with secondary locking device in which the AMP MCP 2.8 contact is used. Application sites are the cabin and sealed electronic boxes.

1.2 Qualification

When tests are performed, the following specified specifications and standards shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

2. Applicable Documents

The following documents form a part of this specification to the extent specified herein. In the events of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence. In the events of conflict between the requirements of this specification and the reference documents, this specification shall take precedence.

2.1 TE Documents

- A. 109-1: Test Specification, General Requirements for Test Methods.
- B. Product drawings, naming and part numbers.
 - 2137352 AMP MCP 2.8 Tab hsg., 18pos.
 - 2137354 AMP MCP 2.8 2nd locking device, 18pos.
 - 2137358 AMP MCP 2.8 Rec. hsg., 18pos.
 - 1355036 AMP MCP 2.8 contacts
 - 1355046 JPT 2.8 contacts
 - 1355052 Tab 2.8 contacts
- C. Product specifications
 - 108-18619-3 Connectors with AMP MCP 2.8 contact, unsealed
 - 108-18513-1 AMP MCP 2.8 contact system
- D. Application specifications
 - 114-18085-025 Interface drawing, 6-21pos.
 - 114-18221-3 Housings for AMP MCP 2.8 contact, un-
 - 114-18148-1 AMP MCP 2.8 contact system

Connectors with AMP MCP 2.8 contact, unsealed

116-18018-001 AMP MCP 2.8 contact system specification

2.2 General Documents

- A. IEC 60512: Connectors for electronic equipment - Tests and measurements.
 - Part 1:** General
 - Part 1-1:** General examination - Test 1a: Visual examination
 - Part 1-2:** General examination - Test 1b: Examination of dimension and mass
 - Part 2-1:** Electrical continuity and contact resistance tests - Test 2a: Contact resistance - Millivolt level method
 - Part 5-1:** Current-carrying capacity tests - Test 5a: Temperature rise
 - Part 5-2:** Current-carrying capacity tests - Test 5b:
- B. ISO 8092-2: Road vehicles - Connections for on-board electrical wiring harnesses -
 - Part 2:** Definitions, test methods and general performance requirements
- C. IEC 60068: Environmental testing, Part 2: Tests
 - Part 2-1** Test A: Cold
 - Part 2-2** Test B: Dry Heat
 - Part 2-2** Test B: Dry Heat
 - Part 2-27** Test Ea and guidance: Shock
 - Part 2-52** Test Kb and guidance: Salt Spray and recycling
- D. DIN 40050 part 9 Road vehicles, degree of protection
- E. IEC 529 Degree of protection provided by enclosures (IP code)
- F. IEC 60352-2 Solderless connections, part 2: Solderless crimped connections general requirements, test methods and practical guidance

3. Requirements

3.1 Design and Construction

The product shall be of the design, construction and physical dimensions of the applicable product drawing.

3.2 Material

- A. Housing:
 - Material: PA66-GF15
- B. Secondary Locking Device:
 - Material: PBT/ASA-GF20

3.3 Rating

- A. Voltage:

Connectors with AMP MCP 2.8 contact, unsealed

28V DC (<50V)

- B. Current carrying capability:
See derating curves in product specifications of the AMP MCP 2.8 contact 108-18513-0(charts 1-24).
- C. Temperature range:
 - 1) At terminals: see product specification of contact system
 - 2) Housings, long time:
-30°C (1,000h) to +100°C (10,000h)
 - 3) Housings, short time (120h):
-40 to +120°C
- D. Degree of Protection:
IP 30 (except of cable outlet side of housings → IP20)
- E. Durability:
≤10 cycles (tinned contact surface)

3.4 Performance and Test Requirements

The products are designed to meet the mechanical, electrical and environmental performance specified in Table.1. All testes must be performed at the test condition per IEC 60512 unless otherwise specified.

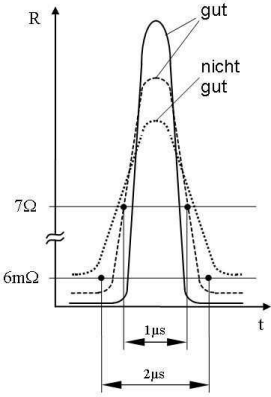
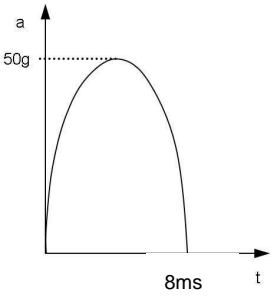
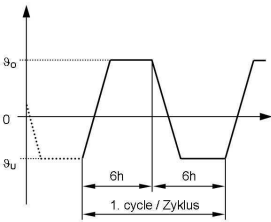
3.5 Requirements and Test Procedures Summary

Test Description	Requirement	Procedure
3.5.1 Visual inspection	Meets requirements of product drawing	Acc. to IEC 60512-1-1, test 1a and IEC 60512-1-2, test 1b
ELECTRICAL INSPECTIONS		
3.5.3 Voltage proof	Value and nature of the test voltage: 500V _{eff} with 50Hz in 1min. No flash-over or breakdown between adjacent contacts and outside contour permitted	Acc. to IEC 60512-2, test 4a, Method to be used: C, Time of testing: 60s
3.5.4 Insulation resistance	Value and nature of the test Voltage: 500 V direct voltage (Resistance=100MΩ)	Acc. to IEC 60512-2, test 3a Method to be used: C

Connectors with AMP MCP 2.8 contact, unsealed

3.5.5 Measuring of resistance	Over all resistance: $R_{max}=6m\Omega$ (Refer to 108-18513-1)	Acc. to IEC 60512-2, test 2a
MECHANICAL INSPECTIONS		
3.5.6 Mating and unmating force of single contact	Mating: max. 7N	Acc. to IEC 60512-7, test 13a, Actuating speed: 25mm/min,
3.5.7 Contact retention in the housing	Primary locking: min. 100N in both directions Secondary locking: min. 60N in wire Direction Tabs in header 2137358-X: min. 75N in mating direction of counter-Part	Acc. to IEC 60512-8, test 15a, Testing speed: 25mm/min
3.5.8 Mating and unmating force of connector	Mating: max. 7N x number of ways(18) Unmating: max. 7N x number of ways(18)	Acc. to IEC 60512-7, test 13a, Actuating speed: 25mm/min Number of matings: 20 (for surface Sn)
3.5.9 Steady state carrying capacity of connection locking	min. 250N in pull-off direction	Suitable test apparatus with a constant speed within the range of 25mm/min to 50 mm/min
3.5.10 Static load of the connector housings	$F=300N$ in every stable position No physical damage of housing parts for new state and aged*	Ref. to ISO 15170-2,; With two plane, parallel steel plates; Acting time: 10s
3.5.11 Fall test (resistance against impact)	No physical damage	Ref. to VW_75174, LV214-1, NO 2 nd locking device installed before terminals assembled; (Because no pre-lock status) . Height of fall: 1m Rotation Cycles: 30

Connectors with AMP MCP 2.8 contact, unsealed

<p>3.5.12 Vibration</p>  <p>Figure 1</p>	<p>No physical damage of housings and contacts, no derogation of function, connection has to stay closed during the test,</p> <p>max. short-time rise of resistance:</p> <ul style="list-style-type: none"> · 7Ω in max. 1μs, · 6mΩ in max. 2μs with no repeat within 10s <p>No response of output-level control during and after test,</p> <p>Function acc. chapter „Electrical inspections“ ensured after the test.</p>	<p>R/t chart see figure 1, f =10-200Hz, f_ü=30Hz, amplitude = 2,5mm for f<f_ü, a=3g(with tab hsg. resp. header, tab surface Sn) for f>f_ü, cycling time: 1 octave/min, Vibration endurance: 3 levels 100h each, with temperature overlay: 20h with -40°C, 80h with +100°C</p>
<p>3.5.13 Physical shock</p>  <p>Figure 2</p>	<p>Function acc. chapter „Electrical inspections“ ensured after the test</p>	<p>3 successive shocks in both directions each of the 3 perpendicular axes → 18 shocks with course acc. to figure 2</p>
<h3>Environmental Requirements</h3>		
<p>3.5.14 Operating temperature with single tests:</p>  <p>Figure 3</p>		<p>U_o =+120°C, U_u =-40°C, Δ u=(1,5±0.5)°C /min., min. 10 cycles acc. to figure 3</p>

(Tabel.1)

Connectors with AMP MCP 2.8 contact, unsealed

4. Quality Assurance Provisions

4.1 Qualification Testing

A. Sample Selection

The samples shall be prepared in accordance with product drawings. They shall be selected at random from current production. Except of TG1, Each test group must consist of at least 5 pieces of specimen.

B. Test Sequence

Qualification inspection must be conducted as the sequence specified in Table 2.

(Tabel.2) ** 6 samples

Nr	Test	TG1 **	TG3	TG4	TG5	TG6	TG7	TG8
3.5.1	Visual inspection	1,7, 10	1,5, 8,	1, 3, 6	1, 3, 6	1, 3	1, 3	1, 3
3.5.3	Voltage proof		3					
3.5.4	Insulation resistance		6					
3.5.5	Measuring of resistance	2, 4 6, 9	2, 4, 7					
3.5.7	Contact retention in the housing						2	
3.5.8	Mating and unmating forces							2
3.5.9	Steady state carrying capacity of connection locking			2, 5				
3.5.10	Static load of the connector housings				2, 5			
3.5.11	Fall test					2		
3.5.12	Combined vibration and temperature cycling	5						
3.5.13	Physical shock	8						
3.5.14	Operating temperature (pre-aging) Temperature change stress	3		4	4			

Connectors with AMP MCP 2.8 contact, unsealed

4.2 Requalification Testing

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

4.3 Acceptance

Acceptance is based on verification that product meets requirements of Table 1. Failures attributes to equipment, test setup, or operator deficiencies shall disqualify the product. When product failure occurs, corrective action shall be taken and samples resubmitted for qualification. Testing to confirm corrective action is required before resubmitted.

4.4 Quality Conformance Inspection

The applicable Tyco quality inspection plan will 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.