

**PRODUCT SPECIFICATION**  
**108-61039**  
**ECU 121P CONNECTOR – MQS Clean body/JPT hybrid**

**DESIGN OBJECTIVES**

The product described in this document has not been fully tested to ensure conformance to the requirements outlined below. Therefore, AMP KOREA, LTD. makes no representation or warranty, express or implied, that product will comply with these requirements. Further, AMP KOREA, LTD. May change these requirements based on the results of additional testing and evaluation. Contact AMP Engineering for further details.

In case when "Product specification" is referred to the this document, it should be read as "Design objectives" for all times as applicable.

1. SCOPE

1.1 Content

This specification covers the performance, tests and quality requirements for the AMP 40 pos. (32× MQS / 8× JPT) and 81 pos. (76× MQS / × 5 JPT ) hybrid receptacle housings.

1.2 Qualification

When tests are performed on the subject product line, the procedures specified in AMP 109 series specification shall be used unless otherwise stated. All inspections shall be performed using the applicable inspection plan and product drawing.

2. APPLICABLE DOCUMENTS

The following documents form part of this specification the extent specified herein. 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 preference.

2.1 Drawings

2.1.1 AMP Drawings

81 Pos. Rec HSG Ass'y : 368376 & C 368376

40 Pos. Rec HSG Ass'y : 368383 & C 368383

MQS Retainer for 81P : 368382 & C 368382

				ORG	AMP   AMP MFG KOREA			
				CHK				
A	FC00-0083-01	CS	09,JUL, '01	APP	NO	REV	LOC	
O	FC00-0123-00	CS	29.SEP. '00		108 - 61039	A	DS	
LTR	REVISION RECORD	APP	DATE	PAGE	TITLE			
				1 OF 9	ECU 121P CONNECTOR			

MQS Retainer for 40P : 368388 & C 368388  
 Cover HSG for 81P : 368389 & C 368389  
 Cover HSG for 40P : 368401 & C 368401  
 0.5 mm<sup>2</sup> MQS Clean body receptacle : 968220  
 0.75 mm<sup>2</sup> MQS Clean body receptacle : 968221  
 JPT receptacle : 964286 & 964273

2.1.2 Other Drawings

Pin Header (115 Pos vertical) : 368146 & C368146

2.2.1 109-1 General requirements for test specifications.

2.2.2 114-18050

Application specification for JPT receptacle 964273-2

2.2.3 114-18021-1

Application specification for Clean body MQS receptacle

3. DEFINITION OF TERMS

For the purpose of this specification, the following shall apply :

3.1 Contact

An electrically conductive member, used as a component of a connector assembly to form a circuit connection.

3.2 Housing

A dielectric component member of a connector, made of insulating material that encapsulates contacts in its cavities.

3.3 Connector

A connector is an assembly comprising of a main body housing, front body, inner seal, slider, family seal, seal retainer, secondary lock (× 2), cover housing and formed contacts.

4. MATERIALS

For both the 40 and 81 Pos. connectors the materials are as follows :

- 4.1 Front body Rec. HSG for 81 Pos (P/N 368377) : PA66 GF 15
- 4.2 Front body Rec. HSG for 40 Pos (P/N 368384) : PA66 GF 15
- 4.3 Main body Rec. HSG for 81 Pos (P/N 368378) : PBT GF 20
- 4.4 Main body Rec. HSG for 40 Pos (P/N 368385) : PBT GF 20
- 4.5 76 Pos Family seal (P/N 368904) : Silicon
- 4.6 32 Pos Family seal (P/N 368906) : Silicon
- 4.7 Slide lever for 81 Pos (P/N 368379) : PA66 GF 35
- 4.8 Slide lever for 40 Pos (P/N 368386) : PA66 GF 35

<b>AMP</b>   AMP MFG KOREA, LTD.	PAGE	<b>108 – 61039</b>	REV	LOC
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4.9 Seal Retainer for 81 Pos	(P/N 368380)	: PBT GF 15
4.10 Seal Retainer for 40 Pos	(P/N 368387)	: PBT GF 15
4.11 Inner seal for 81 Pos	(P/N 368905)	: Silicon
4.12 Inner seal for 40 Pos	(P/N 368907)	: Silicon
4.13 MQS retainer for 81 Pos	(P/N 368382)	: PBT GF 30
4.14 MQS retainer for 40 Pos	(P/N 368388)	: PBT GF 30
4.15 JPT retainer for 81 P/ 40P	(P/N 368381)	: PBT GF 30
4.16 Cover HSG for 81 Pos	(P/N 368389)	: PBT GF 15
4.17 Cover HSG for 40 Pos	(P/N 368401)	: PBT GF 15

## 5. RATINGS

5.1 Voltage : 6-18 v

5.2 Temperature : -40° C to +125° C  
Storage Temp : -20° C to +90° C (+100° C ≤ 1hour)

5.2 Relative Humidity : Up to 95 %

## 6. TEST DESCRIPTIONS

The product is designed to meet the electrical, mechanical and environmental performance requirements specified in the following sections of this document. All tests are performed at ambient environmental conditions per AMP specification 109-1 unless otherwise specified.

TEST	REQUIREMENT	METHOD
6.1 Confirmation of Product	Product shall be conforming to the requirements of applicable product drawing and application Specification.	Visually, dimensionally and functionally inspected per applicable quality inspection plan.
6.2 Connector mating force	150N Max.(40Pos) 200N Max.(81Pos)	Connectors to be mated by applying a measured force at 25mm/min to the slide lock
6.3 Disengagement force	150N Max.(40Pos) 200N Max.(81Pos)	Connectors to be unmated by applying a measured force at 25mm/min to the slide lock
6.4 Pull out strength of contacts from housing, primary interlock only.	20N Minimum – MQS Clean body 80N Minimum - JPT	Apply an axial pull-off load to crimped wire Operation speed : 25mm/min AMP SPEC : 109 – 5212
6.5 Pull out strength of contact from housing, secondary interlock only.	40N Minimum – MQS Clean body 100N Minimum - JPT	Apply an axial pull-off load to crimped wire Operation speed : 25mm/min AMP SPEC : 109 – 5212

TEST	REQUIREMENT	METHOD
6.6 Three fold removal of contacts from housing	Shall meet the requirements of subsequent tests 6.4	Extract the contacts from the receptacle HSG and replace with new lead Ass'y. Repeat this three times.
6.7 Vibration test Type 1: Sinusoidal oscillation Type 2: Wide band random (option)	Contact resistance during oscillation shall not exceed 3x initial value. No mechanical damage shall occur. During the test the permissible current interruption < 200ns. Circuit considered broken when contact resistance >150ohms. Test to be Completed with operating voltage U=10V and max. Current I=100mA.	<p>-Operating condition : not operating</p> <p>-Sweep directions : 3 sweep directions X, Y and Z. 1 unit tested for each sweep direction</p> <p>Type 1-1 :</p> <p>-Frequency: 5Hz to 60Hz</p> <p>-Magnitude: 6G peak or <math>\pm 10\text{mm}</math> Max.</p> <p>-Duration: 8h in each of the 3 perpendicular axes.</p> <p>-Sweep: logarithmic, 2-way sweep, 1 minute</p> <p>Type 1-2 :</p> <p>-Frequency: 60Hz to 200Hz</p> <p>-Magnitude: 1.5G peak or <math>\pm 0.075\text{mm}</math> Max.</p> <p>-Duration: 8h in each of the 3 perpendicular axes.</p> <p>-Sweep: logarithmic, 2-way sweep, 1 minute</p> <p>Type 1-3 :</p> <p>-Frequency: 200Hz to 500Hz</p> <p>-Amplitude: 3G</p> <p>-Duration: 8h in each of the 3 perpendicular axes.</p> <p>-Sweep: logarithmic, 2-way sweep, 1 minute</p> <p>Type 2 :</p> <p>-Frequency range : 10–1000Hz</p> <p>-Acceleration (<math>a_{\text{rms}}</math>) : 20 m/s<sup>2</sup></p> <p>-Spectral acceleration density : see figure 1.</p> <p>-Duration of stressing : 3x8 hours</p> <p>-Operating condition : not operating</p>

TEST	REQUIREMENT	METHOD
6.8 Storage under dry heat conditions	Shall met the requirements of the subsequent test.	120 DegC for 120 hours
6.9 Damp heat constant	Shall met the requirements of the subsequent test.	40 DegC for 10 days at 95%RH
6.10 Drying Time	Shall met the requirements of the subsequent test.	Leave the samples on a drying rack, at room temperature, for 30 mins.
6.11 Storage at low temperature	Shall met the requirements of the subsequent test.	-40 DegC for 48 hours.
6.12 Impact test	There shall be no damage that impairs function.	Sample is to be dropped from a height of 1.2M on an uncoated concrete floor at room temperature.
6.13 Dielectric strength	No creeping discharge and no flashover shall occur.	Measured after applying 1000VAC for 1 minute to between adjacent circuits and mated connectors. AMP SPEC. 109-5301
6.14 Insulation Resistance	40 MegaOhm Min (Final)	Measured after applying 500VDC to adjacent connected circuits of mated connector Ass'y AMP SPEC. 109-5302
6.15 Resistance to oil	Samples shall not indicate any functionally significant dimensional or structural changes	Mated connectors immersed for 60 mins., room temperature in : -Brake fluid -Diesel fuel -Gasoline -Engine oil -Spirit

TEST	REQUIREMENT	METHOD
6.16 Watertight Sealing	1.0Kg/cm <sup>2</sup>	Blow compressed air into mated pair of connectors through a small hole. Place the connectors in 30 cm deep water, and must withstand the air pressure of 9.8Kpa(0.1Kgf/cm <sup>2</sup> ) for 30 seconds/increase pressure at a rate of 9.8Kpa(0.1Kgf/cm <sup>2</sup> ) each time until air leakage takes place.
6.17 Thermal shock test	To meet the requirements of subsequent tests.	122 cycles of -40 to +125 DegC, each for 30 mins. Change over time 30 sec. Max.
6.18 Current Leakage	100μA Max	400V dc 60 degC/Humidity -90 ~ 95%/1hr AMP SPEC : 109-5312
6.19 Temperature Rising	50 degC increasing Max	Measured the temperature rising after applying regular current AMP SPEC : 109-5310
6.20 Salt spray test	No medium shall penetrate into the connector.	Duration : 6 cycles : 1 cycle consists of 8h spraying time and 16h dwell.
6.21 Contact resistance	3mohms initial – 6mohms final	The measurements shall be made during dry circuit conditions (20mV Max open circuit voltage, 100mA max current).
6.22 Kojiri	Contact resistance: 3mohms initial – 6mohms final	Repeat 30 cycles to insertion & extration AMP SPEC : 109-5215

6.7 Wide band random vibration:

- Frequency range : 10-1000Hz
- Acceleration ( $a_{rms}$ ) : 20 m/s<sup>2</sup>
- Spectral acceleration density : see figure 1.
- Duration of stressing : 3x8 hours
- Operating condition : not operating

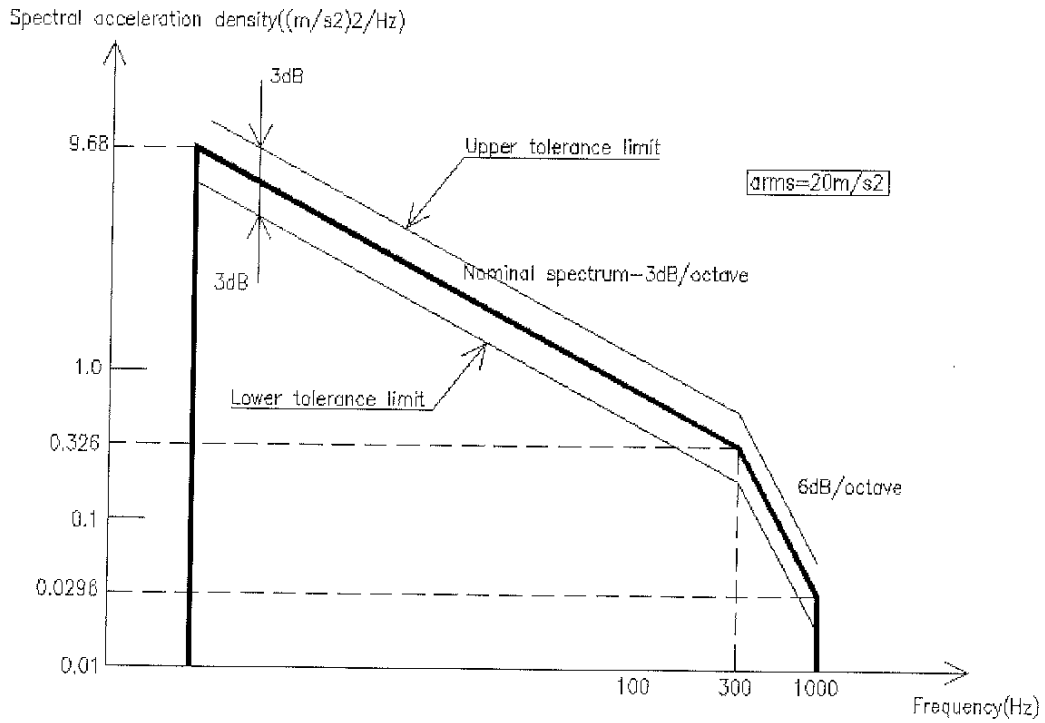


Figure 1.

7. TEST SAMPLES

The MQS receptacles terminals are to be loaded randomly into their respective cavities with the following mix of wire sizes:

81 Position : 23 terminals at 0.75 mm<sup>2</sup> and 53 at 0.5 mm<sup>2</sup>

40 Position : 10 terminals at 0.75 mm<sup>2</sup> and 22 at 0.5 mm<sup>2</sup>

(Table 1)

SAMPLE QUANTITIES										
DESCRIPTION	TEST GROUP									
	1	2	3	4	5	6	7	8	9	10
MQS RECEPTACLE With 0.5 mm <sup>2</sup> cable 0-968220-1	150	150	150	150	225	300	150	300	150	150
MQS RECEPTACLE With 0.75 mm <sup>2</sup> cable 0-968221-1	66	66	66	66	99	132	66	132	66	66
RECEPTACLE-JPT With 2.5 mm <sup>2</sup> cable 0-964273-2	26	26	26	26	39	52	26	52	26	26
40 POS. ASS'Y 368383-1	2	2	2	2	3	4	2	4	2	2
81 POS. ASS'Y 368376-1	2	2	2	2	3	4	2	4	2	2
MQS RETAINER FOR 40P 368388-1	2		2	2	3	4	2	4	2	2
MQS RETAINER FOR 81P 368382-1	2		2	2	3	4	2	4	2	2
40 POS. COVER HSG 868401-1	2				3	4	2	4	2	2
81 POS. COVER HSG 368389-1	2				3	4	2	4	2	2
HEADER ASS'Y 368146-1	2				3	4	2	4	2	2

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8. TEST SEQUENCE

All tests should be performed with the sequence as specified in the table.  
 N.B Results for test group 10 will be supplied by engineering.

(Table 2)

TEST MATRIX											
DESCRIPTION		1	2	3	4	5	6	7	8	9	10
6.1	Confirmation of Product	1,6,8	1	1	1	1,3	1,7,9,11	1,5	1,4,6	1,6	1,5
6.2	Connector mating force	3									
6.3	Disengagement force	4									
6.4	Pull out strength of contacts from housing, primary interlock only.		2		3						
6.5	Pull out strength of contact from housing, secondary interlock only.			2							
6.6	Three fold removal of contacts from housing.				2						
6.7	Vibration test					2					
6.8	Storage under dry heat conditions						3				
6.9	Damp heat constant						4				
6.10	Drying time						5				
6.11	Storage at low temperature						8				
6.12	Impact test						10				
6.13	Dielectric strength	7									
6.14	Insulation Resistance						2,6	2,4			
6.15	Resistance to oil							3			
6.16	Watertight Sealing								2,5		
6.17	Thermal shock test								3		
6.18	Current Leakage									2	
6.19	Temperature Rising										3
6.20	Salt spray test									4	
6.21	Contact resistance	2								3,5	2,4
6.22	Kojiri	5									