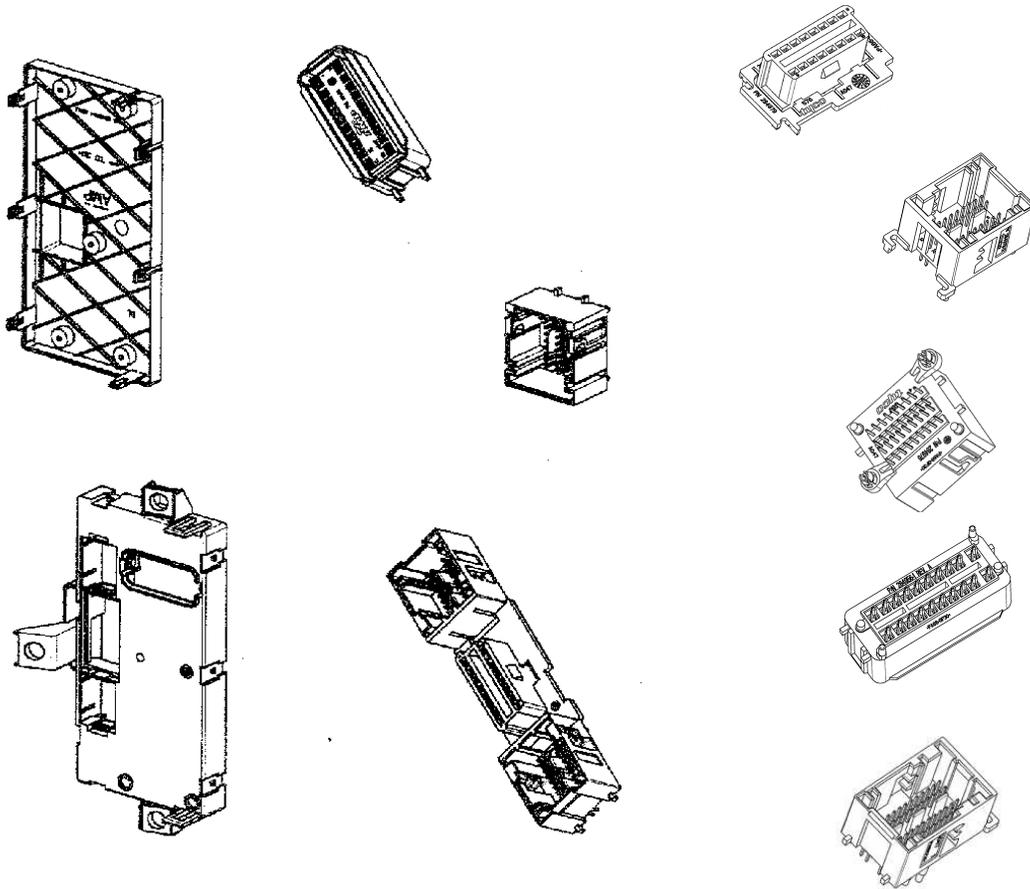


BODY COMPUTER KIT (Connectors & Housing)



rev letter	rev. record	DR	DATE	APVD	CHK	DATE
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DR.
O. Canuto

DATE APVD
July '99 A.Genta

DATE
July '99

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0.1 CONTENTS

This specification covers the requirements for product performance, test methods and quality assurance provision for the Body Computer Interconnection system, composed by the parts listed in the following table :

PN's	DESCRIPTION
284316-1, -2, -3	96 Positions Header Assembly
284317-1, -2	36 Positions Header Assembly
284976-1	36 Positions Header Assembly Reflow Soldering
284318-1, -2, -3	20 Positions Header Assembly
284977-1	20 Positions Header Assembly Reflow Soldering
284978-1,-2,-3	40 Positions Header Assembly Reflow Soldering
284975-1,-2	52 Positions Header Assembly Reflow Soldering
284979-1,-2	16 Positions Header Assembly Reflow Soldering
284319-1	Upper Cover
284320-1	Lower Cover

0.2 APPLICABLE DOCUMENTS

Product drawings should be considered part of this specification. In case of conflicts between specification and referenced documents, this specification shall take precedence.

0.3 AMP SPECIFICATIONS

- | | |
|----------------|---|
| A. 109-5000 | Test Specification, General Requirements for Test Methods |
| B. 108-18030-2 | Product Specification, Micro-Quadlock-System |

0.4 COMMERCIAL STANDARD SPECIFICATIONS

- A. FIAT Specification 9.90110 07/99
- B. ISO/WD 15031-3

0.5 DESIGN AND CONSTRUCTION

Product should comply with design, construction and physical dimensions specified in the applicable product drawing.

0.6 RATINGS

A. CURRENT

For the following MQS Pin Headers 6 A max. with 0.5 mm² wire section, as stated by Qualification Test Report Number 501-18015 for the MQS System Contact (For Reference Only).

284316-1, -2, -3
284317-1, -2
284976-1
284978-1,-2,-3
284975-1,-2

Current rating per wire section above mentioned are according to Fiat Spec. 91107-03 / 91107-18.

For the following PCB Receptacle Headers 16 A max with the appropriate PCB path and 2.8x0.8mm TAB.

284318-1, -2, -3
284977-1
284979-1,-2

Over Current rating according to Fiat Spec. 9.91815 and Fuse rated at 20A.

B1. OPERATING TEMPERATURE: -30 °C to +65 °C

B2. NOT OPERATING TEMPERATURE: -40 °C to +85 °C

C: MAXIMUM OPERATING VOLTAGE: 24 V DC. (For application at higher voltage please contact AMP)

0.7 QUALITY ASSURANCE PROVISION

No sample shall be reused, unless otherwise specified.

A. Sample preparation

The test samples to be used for the test shall be prepared by random selection from the current production. The counterpart for the P/N 284316-1;-2;-3 (Pin Header Section), P/N 284317-1;-2, P/N 284976-1, P/N 284978-1;-2;-3 and P/N 284975-1;-2 shall be prepared according to the relevant AMP Specification 114-18021.

B. Test condition

All tests shall be performed under any combination of the following test condition, unless otherwise specified:

Room temperature: $23 \pm 5^{\circ}\text{C}$

Relative humidity: $45 \div 70\%$

Atmospheric pressure: $860 \div 1060$ mbar

0.8 TEST REQUIREMENTS AND PROCEDURES

Test Description	Requirements	Procedure
8.1 PRODUCT EXAMINATION		
8.1.1 Confirmation of product	Product shall be in accordance with the requirements of applicable product drawing and Application specification.	Visual, dimensional and functional inspection as per applicable quality inspection plan.
8.1.2 Visual examination	No visible damage, cracking or defect when the product is new and even after environmental, mechanical end electrical tests.	Visual inspection.
8.2. MECHANICAL	REQUIREMENTS	PROCEDURE
8.2.1 Mating Force Body Computer to CPL unit	The Mating Force shall be $\leq 100\text{N}$ at the first mating.	Operation speed: 50 mm/min.
8.2.2 Separating Force Body Computer to CPL unit	The Separating Force shall be $\leq 60\text{N}$	Operation speed: 50 mm/min. All the retainers between Body Computer and CPL shall be removed.

8.2.3 Connectors Mechanical Retention Force	No Damage to the Retention System No Electrical Discontinuity No Pin or Receptacle Contact extraction No connector un-mating even if partial	Header Fully loaded and mated with the appropriate counterpart. Apply an axial pull-off load of 100N to the cable bundle in all direction of the hemisphere over the wire exit plane. Operating Speed: 100 mm/min.
8.2.4 Mechanical Retention of the CPL	No Damage to the Retention System No Electrical Discontinuity No Receptacle Contact extraction No CPL Disengagement, even if partial	Body Computer loaded and mated with the appropriate CPL counterpart. Apply an axial pull-off load of 100 N to the cable bundle in all direction of the hemisphere over the CPL plane. Operating Speed: 100mm/min
8.2.5 Durability	As requested in Table 1	10 cycles of mating and un-mating
8.2.6 Sinusoidal Vibration Test	No breakings, damages, deformations, partial or total disengagement Electrical discontinuity $\leq 1\mu\text{s}$ is allowed Voltage Drop increase shall be $\leq 50\%$, related to brand new contacts.	Sweep Range: 5 to 200 Hz Swept height of 5mm from 5 to 12Hz Acceleration: 30 m/s^2 from 12 to 200Hz Sweep speed: 1 Octave/minute Test duration: 8h/axis Test program: Along the Three Major Axis
8.2.7 Random Vibration Test	No breakings, damages, deformations, partial or total disengagement Electrical discontinuity $\leq 1\mu\text{s}$ is allowed Voltage Drop increase shall be $\leq 50\%$, related to brand new contacts.	Sweep Range: 5 to 1000 Hz Initial Slope $> 30 \text{ dB/Octave}$ from 5 to 10 Hz, Power Spectral density (PSD) at 10Hz: $0.213 \text{ g}^2/\text{Hz}$ Slope from 10 to 1000 Hz 3 dB/Octave , acceleration 3.15 g (RMS) Test duration: 8h
8.2.8 Force to mate the header PN 284976-1 with PCB	$F < 50\text{N}$	Apply to the header PN 284976-1 an incremental load to mate the header with PCB, registering the values.
8.2.9 Force to fit the locking pin in the board lock (PN 284976-1)	$F < 100\text{N}$ for each	Apply to the locking pin an incremental load to fit it in the board lock, registering the values.

8.2.10 Pull-out force between header PN 284976-1 and PCB without locking pins fitted in the board lock	F>30N	Apply to the header an incremental load to move it away from the PCB, registering the values.
8.2.11 Pull-out force between header PN 284976-1 and PCB with locking pins fully fitted in the board lock	F>40N	Apply to the header an incremental load to move it away from the PCB, registering the values.
8.3. ELECTRICAL	REQUIREMENTS	PROCEDURES
8.3.1 Voltage drop	PCB Receptacle Contacts: Voltage drop ≤ 3.5 mV/A (at 16A) On new contacts and after ten mating/un-mating cycles of the connector/CPL Pin Contacts: see Qualification Test Report Number (*) for MQS Connector System	PCB Receptacle Contacts voltage drop shall be measured using tabs of size 2.0X0.8 mm, made of brass or material with higher electrical properties. Test points shall be on the Receptacle Contact solder part and on the tab, 5mm from the connector external profile as described in Fig 1. Pin Contacts: see Qualification Test Report Number (*) for MQS Connector System
8.3.2 Dielectric strength	Neither creeping discharge nor flash-over shall occur	≥ 500 V AC for 1 minute. Test between adjacent Contact without mating connector/CPL or PCB
8.3.3 Insulation resistance	1 M Ω min.	Applied voltage: 500 V DC between one contact and the others short circuited, without mating the connector with CPL or PCB
8.3.4 Current overload	No damaging Voltage drop: $\Delta R_{bulk} \leq 1.0$ m Ω	Test Current: 27.0 A Test Time: 1800 s tabs of size 2.8x0.8 mm

8.4. ENVIRONMENTAL	REQUIREMENTS	PROCEDURES
8.4.1 Accelerated Ageing	No deformation or cracking of the plastic parts (change of colour is allowed) Voltage drop shall be within limits for new contacts, increased of 50% Insulation resistance and dielectric strength within indicated limits Perform additional cumulative tests as specified in Table 1 Mechanical performances within limits specified for new parts with 50% max. acceptable variation	On mated connectors, which shall be submitted to the following cumulative tests: A- 50 cycles with thermal shock: 3 h at +65°C ± 2°C 3 h at -30°C ± 2°C Transition time 180s B- 10 cycles without shock: 2 h at +65°C ± 2°C 2 h at -30°C ± 2°C Transition time: 2h
8.4.2 Resistance to low temperature	No breakage of plastic parts.	Connector mated samples shall be kept at -40°C for 2h, then the samples shall be brought at 0° C in 3' max and left for thermal stabilization. Un-mate and re-mate the samples.
8.4.3 Salt spray corrosion test	Voltage drop shall be ≤ specified limits for new contacts increased of 100%	150 hours of salt mist at 35°C ± 2°C, 5% of NaCl, pH 6.5-7.2, class 2 The test shall be performed on mated connector/CPL

(* See qualification test report 501-18015 and the report with the additional test for FIAT, "Report on Additional Test for FIAT"

TABLE 1

PRODUCT QUALIFICATION TEST SEQUENCE

ITEM	DESCRIPTION	TEST GROUP									
		A	B	C	D	E	F	G	H	I	L
1	Confirmation of product	1	1	1	1	1	1	1	1	1	1
2	Visual Examination	2;4	2;4	2;4	2;7	2;8	2;9	2;4	2;5	2;6	2;4
3	Eng. Force B.C. to CPL	3									
4	Sep. Force B.C. to CPL		3								
5	Mech. Ret. Of the Conn.			3							
6	Mech. Ret. Of the CPL			3							
7	Durability				3	3	3				
8	Sinusoidal Vibration Test				4	4	4				
9	Random Vibration Test				5	5	5				
10	Voltage Drop				6				4		
11	Dielectric Strength					6					
12	Insulation Resistance					7					
13	Current Overload						6;8				
14	Accelerated Ageing						7				
15	Resistance to low temp.							3			
16	Salt Spray corrosion								3		
17	Force to mate the header with PCB									3	
18	Force to fit the locking pin the b. l.									4	
19	Pull-out F. header/PCB without l. pin										3
20	Pull-out F. header/PCB with l. pin									5	

**Fig. 1 - Voltage drop measuring points
PCB Receptacle Contact**

