

I. SCOPE**1.1. Content**

This document covers the performances, tests, and quality requirements of a smart card connector assembly. This connector is typically equipped with a ribbon cable and a connector, for a connection to a PCB. A special version is equipped with an optional fixing frame permitting snap-on mounting into a front panel.

1.2. Qualification

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

II. APPLICABLE DOCUMENTS

The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, latest edition of the document applies. 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 shall take precedence.

2.1. AMP documents

Drawings :

- 953128
 - 953131
 - 953616
 - 953774
- } Ass'y with ribbon cable.
- 953135
 - 953136
 - 953497
- } Ass'y with ribbon cable and fixing frame.

2.2. Other documents

- | | |
|------------------|---|
| IEC 60512 series | Basic testing procedures and measuring methods for electromechanical components |
| UTE C 93421 | Multicontact edge socket and board mounted connectors. |
| ISO 7810 | Identification cards. |
| ISO 7816 | Identification cards with microcircuits |

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III. REQUIREMENTS

3.1. Design and construction

3.1.1 General description

This product is designed to interconnect a smart card (according to ISO 7810 and ISO 7816) to a PCB.

Two versions are available:

- one version features 16 data contacts and one switch contact made from two blade contacts.
- the other version has only 8 data contacts and one switch made from two blade contacts.

The connection between the smart card and the connector is accomplished by cantilever contacts.

The interface with the PCB is made via a ribbon cable equipped with an IDC connector. This connector is mated to a header soldered to the board. This feature permits an easy installation and maintenance of the connector into the cabinet.

The detection of the card end position is made by a blade switch, normally closed.

The housing has boardlocks to permit easy mounting into a frame.

The product is equipped with a strain relief. A special version without strain relief is available for customers willing to incorporate the strain relief function into their design.

This special version must be handled with care.

3.1.2 Materials and construction

Contacts : Phosphor bronze, gold plated over nickel in contact area, tin lead over nickel in IDC area.

Switch : Phosphor bronze, gold plated over nickel in contact area. Tin plated over nickel in IDC area.

Housing : Flame retardant glassfilled PBT. UL 94 V0

Fixing frame : ABS, colour black. UL 94 V0

Strain relief : Plated steel

3.2. Test requirements and procedure summary

Unless specified otherwise, all tests shall be performed at ambient temperature, on the standard version, not equipped with fixing frame.

IV. TEST DESCRIPTION (TABLE 1)

Tests are carried according to IEC 512 series.

TEST	Ref	TEST CONDITIONS	REQUIREMENTS
VISUAL EXAMINATION	1a		No defect that would impair normal operation
TERMINATION RESISTANCE DATA CONTACTS	2a	Subject mated contacts to 20 mV max open circuit at 100 mA max see fig. 1	100 mΩ max (excluding cable and cable connector)
TERMINATION RESISTANCE CARD DETECTION	2b	Subject mated contacts to 20 mV max open circuit at 100 mA max see fig.1	150 mΩ max (excluding cable and cable connector)
INSULATION RESISTANCE	3a	Voltage : 100 V Method A : test between one contact and the others	500 MΩ min
VOLTAGE PROOF	4a	Method A : test between one contact and the others.	250 Vac for data contacts and switch contacts (card inserted)
STATIC LOAD TRANSVERSE (1)	8a	Apply force F1=15N for one minute min. (see fig.5) Sample to be mounted in panel (fig.4)	No functional damage No removal from panel
STATIC LOAD AXIAL(1)	8b	Apply force F2=50N for one minute min. (see fig.5) Sample to be mounted in panel (fig.4)	No functional damage No removal from panel
CARD MATING AND UNMATING FORCE	13 b	Measure force necessary to mate and unmate card into samples at maximum speed of 100 mm/min Use test cards per figure 3	10 Nmax
VIBRATIONS	6d	Subject samples mated to test boards fig. 3 to 10-500 Hz /0,5mm or 3g/ 20 minutes in each of 3 planes (see figure 2)	No functional damage No discontinuity greater than 0,1 μ s
DURABILITY	9a	Mate and unmate samples for 30 000 cycles. Smart card to be replaced by a new one every 1000 cycles. Maximum rate 1800 cycles/h Insertion speed 80mm/s max Rest time between cycles: 0,5s unmated	After 1 000 cycles : no damage affecting the card functionality After 30 000 cycles : no defect that would impair normal operation -contact resistance 100 mΩ max - Card mating force 10 N max - Card unmating force 1N min
RAPID CHANGE OF TEMPERATURE	11d	Subject mated samples to 5 cycles between -10 and 70°C	No physical damage.
CLIMATIC SEQUENCE	11a	Mated samples dampheat 55° C and 95% HR 2 cycles.	No physical damage. Meets additional requirements per sequence table 2
TEMPERATURE LIFE	9b	Subject mated samples to temperature life at 70°C for 500 h	No physical damage. Meets additional requirements per sequence table 2

(1) test applicable only to panel mount version

**V. PRODUCT QUALIFICATION AND REQUALIFICATION TEST SEQUENCE
(TABLE 2)**

	TEST GROUP (a)		
TEST OR EXAMINATION	1	2	3
		test sequence (b)	
Examination of product	1,9	1,5	1,9
Termination resistance	5,7	2,4	
Insulation resistance			2,7
Voltage proof			3,8
Vibration			5
Durability	6		
Mating force	2 (f)		
Unmating force	8		
Rapid change of temperature			4
Climatic sequence			6
Temperature life		3 (d)	
Static load transverse (e)	3		
Static load axial (e)	4		

(a) see paragraph 411

(b) numbers indicate sequence in which tests are performed

(c) samples mated to ISO 7810 PVC smart cards

(d) precondition samples with 10 cycles durability

(e) applicable only to panel mount version

(f) precondition samples at 40 C for two hours with mated test cards prior to test.

VI. QUALITY ASSURANCE PROVISIONS**6.1. Qualification testing****6.1.1 Sample selection**

Samples shall be randomly taken from production batches. Test groups 1, 2, and 3 shall consist of a minimum of 5 samples.

6.1.2 Test sequence

Qualification inspection shall be verified by testing samples as specified in table 2.

6.2. Requalification testing

If changes affecting significantly form, fit and function are made to the product or manufacturing process, partial or complete requalification testing will be implemented, according to requirements established by product engineering and quality assurance.

6.3. Acceptance

Acceptance is based on verification that product meets requirements of figure 1.

6.4. Quality conformance inspection

Applicable AMP quality inspection plan will specify sampling acceptable quality level to be used. Dimensional and functional requirements shall be in accordance with applicable product drawings and specifications.

TERMINATION RESISTANCE MEASUREMENTS POINTS

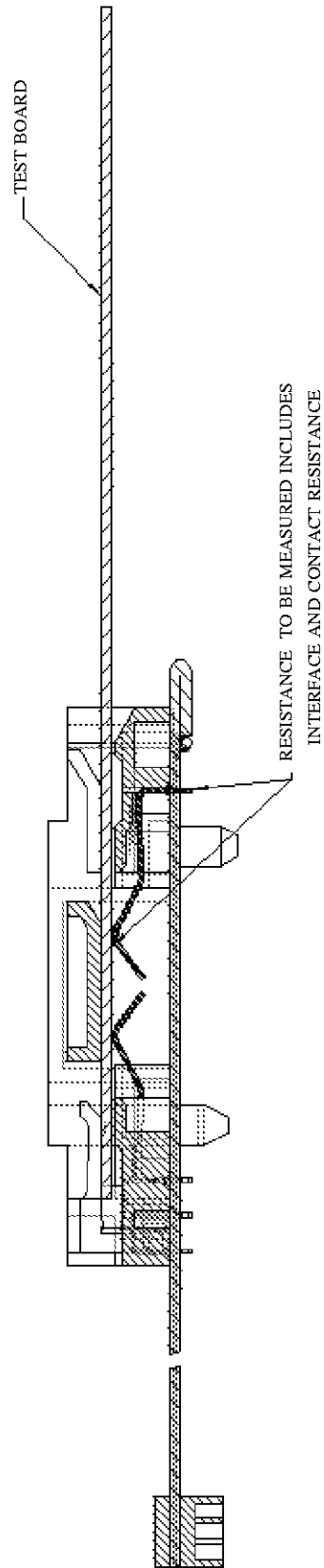


Figure 1

MOUNTING METHOD FOR VIBRATION TESTS

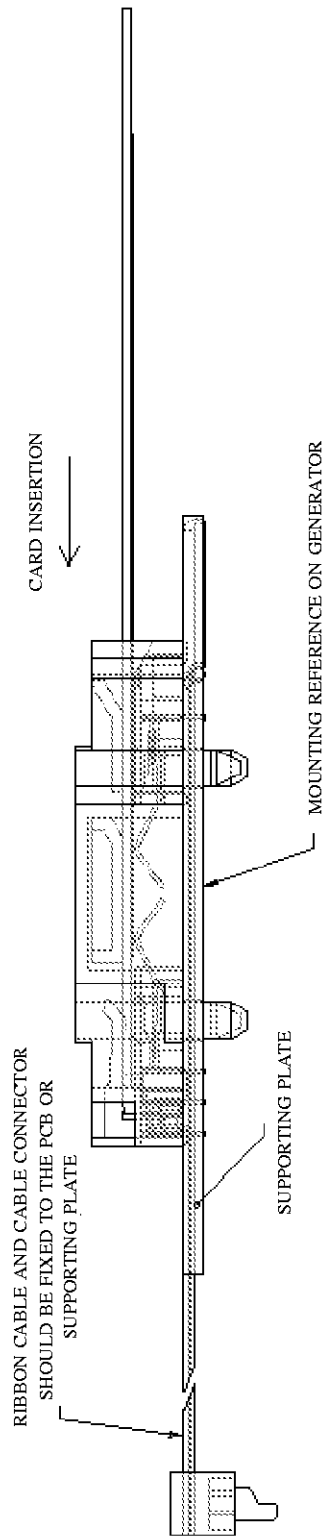
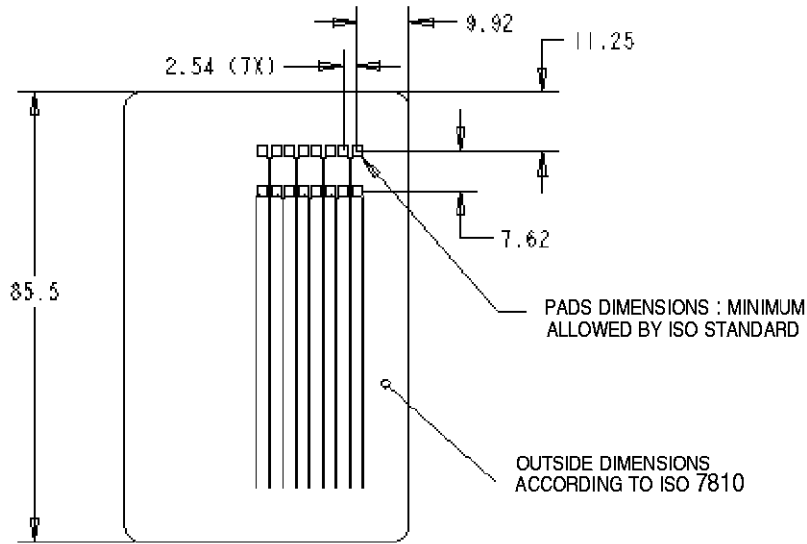


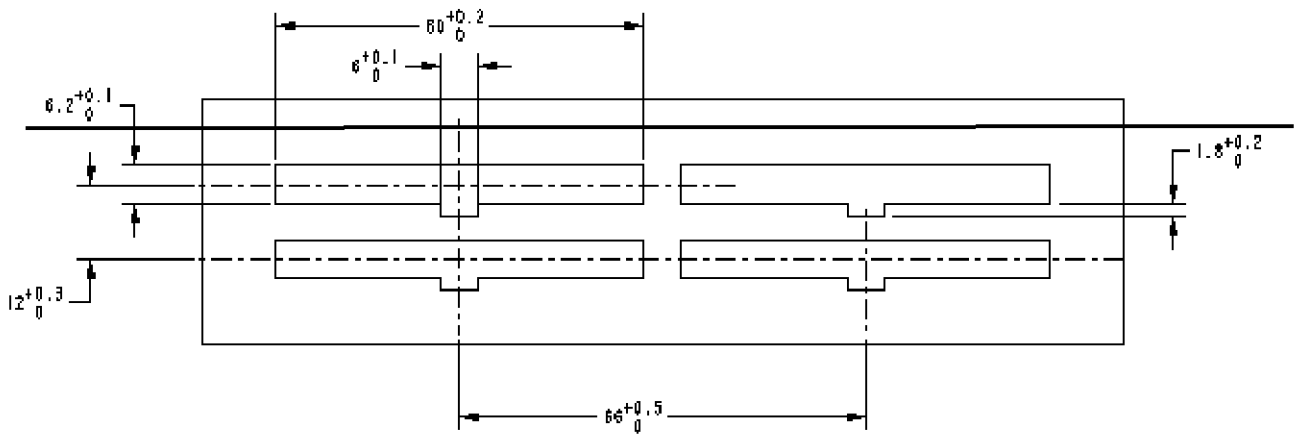
Figure 2

TEST BOARDS
(according to UTEC 93)

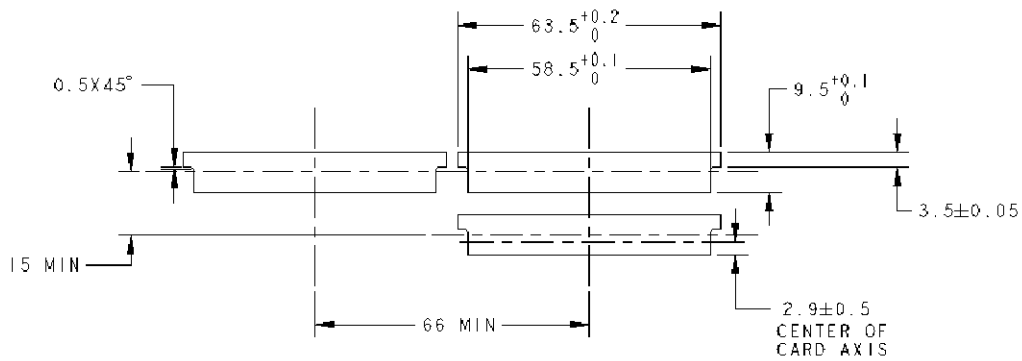


SINGLE SIDED EPOXY PCB, 0.8 mm THICKNESS, 35 microns CU
0.4 microns AU OVER 1.27 microns NI IN CONTACT AREA.

Figure 3



0,8mm THICK STEEL PANEL FOR TESTS 8a / 8b CUTOUTS MADE BY WIRE EDM (use for 953135, 953136 series)



0,8mm THICK STEEL PANEL FOR TESTS 8a / 8b CUTOUTS MADE BY WIRE EDM (use for 953497 series)

Figure 4

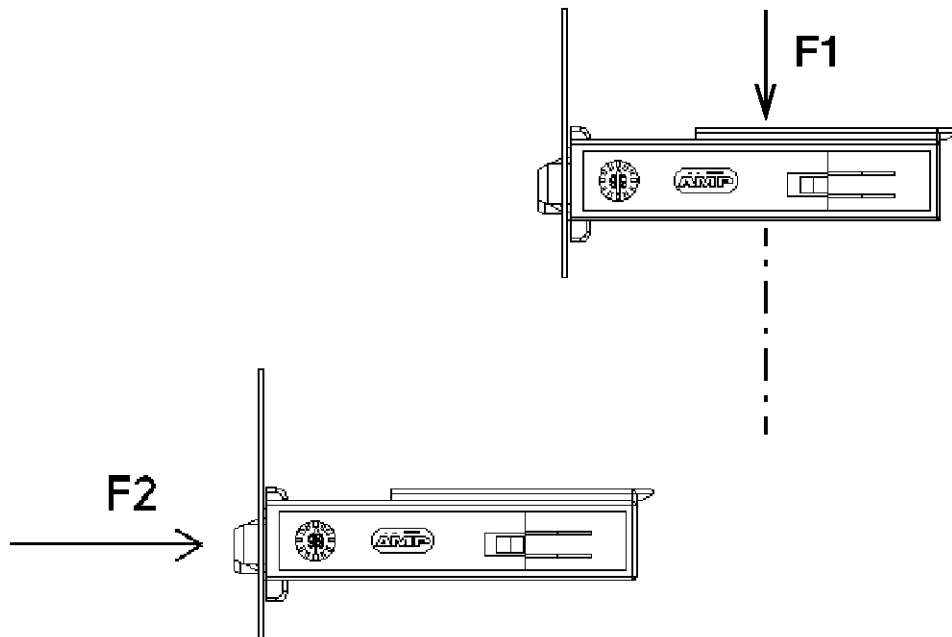


Figure 5