

**Smart Card Connectors, Top Mount**

"The product may not perform according to the product specification if precautions have not been taken in the application to provide mechanical stability of the connector in relation to its mating parts".

**1 SCOPE****1.1 Content**

This document covers the performances, tests, and quality requirements of a twin stacked smart card connector.

**1.2 Qualification**

When tests are performed on subject product, procedures specified in this Product Specification shall be used. All inspections shall be performed using applicable inspection plan and product drawing.

**2 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 the requirements in this specification and the product drawing, the 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 Tyco Documents**

Drawings:

6379018	Twin Smart Card Reader, IDC, Assembly
6379019	Twin Smart Card Reader, IDC, Raised Version, Top Mount
6379386	Twin Smart Card Reader, Top Housing IDC Assembly
6379388	Twin Smart Card Reader, IDC, Assembly

Product Specifications

108-15174	Smart Card Reader with Ribbon Cable
108-20161	AMP Micro-Match miniature connector system

**2.2 Other documents**

IEC 60512 series	Basic testing procedures and measuring methods for electromechanical components
ISO 7810	Identification cards
ISO 7816	Identification cards with microcircuits

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### 3 **REQUIREMENTS**

#### 3.1 **Design and construction**

##### 3.1.1 **General description**

Two versions are available:

###### 3.1.1.1 **Version 1**

A stacked version, board mount, permitting to connect simultaneously two different cards according to ISO 7810 and ISO 7816 to a 1,57 mm thick PCB.

It is a factory assembly of two components snapped together:

- the top connector has 8 or 16 data contacts, accepts 0,76 mm thick smart cards, connectable to the main PCB by IDC contacts and a 'Ribbon Cable with Micro-Match' lead.
- the bottom connector has 8 or 16 data contacts, accepts 0,76 mm thick smart cards, to be snapped to a PCB and connectable to it by IDC contacts and a 'Ribbon Cable with Micro-Match' lead.

In both connectors, the detection of card end position is made by a blade switch, normally closed. A metal strain relief is used to secure the ribbon cable.

###### 3.1.1.2 **Version 2**

The bottom connector, accepting only one card is also available as stand alone component.

##### 3.1.2 **Materials and construction**

Contacts:	Phosphor bronze, gold plated over nickel in contact area, tin over nickel in solder area or IDC area.
Switches:	Phosphor bronze, gold plated over nickel in contact area, tin over nickel in solder area or IDC area.
Housings:	Flame retardant glassfilled PBT, UL 94 V0
Ribbon cables:	Tin-plated copper, PVC insulated 28 A WG -LTL2651
Strain reliefs:	Plated steel

##### 3.1.3 **Climate category**

-40°C +70°C

Warning

*At temperatures of 50°C and above, most commercial smart cards exhibit severe warpage and deformation.*

### 3.2 Performance and Test description

Unless specified otherwise, all tests shall be performed at ambient temperature  
Unless stated otherwise, all tests are carried out according to IEC specification 60512.

The top and bottom connector shall meet all requirements of 108-15174 Smart Card Connector with ribbon cable.

Unless otherwise specified, all tests of the stacked connector shall be made after soldering to a PCB.

The twin connector assembly shall meet additional requirements as stated hereafter:

**TABLE 1:** Tests are carried according to IEC 60512 series

Test	Ref.	Test conditions	Requirements
Visual examination	1a	Visual (10x magnification max.)	No defect that would impair normal operation
Rapid change of temperature	11d	Subject mated samples to 5 cycles between -40 and +85°C. Subjects mounted to board (figure 1)	No physical damage
Temperature life	9b	Subject samples mounted to test board for temperature life at +85°C for 240h	No physical damage.
Static load, axial	8b	Test performed on the stacked connector mounted to the main test PCB (figure 1). Apply a force of 50N for one minute min as shown in figure 2.	No defect that would impair normal operation

### 3.3 Product qualification and requalification test sequence

**TABLE 2:** Test groups

Test or examination	TEST - GROUP (a)		
	1	2	3
TEST - SEQUENCE (b)			
Visual examination of product	1, 3	1, 3	1, 4
Rapid change of temperature	2		
Temperature life		2	2
Static load, axial			3

- (a) See paragraph 4.1.1  
(b) Numbers indicate sequence in which tests are performed

## **4 QUALITY ASSURANCE PROVISIONS**

### **4.1 Qualification Testing**

#### **4.1.1 Sample selection**

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

#### **4.1.2 Test sequence**

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

### **4.2 Regualification 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.

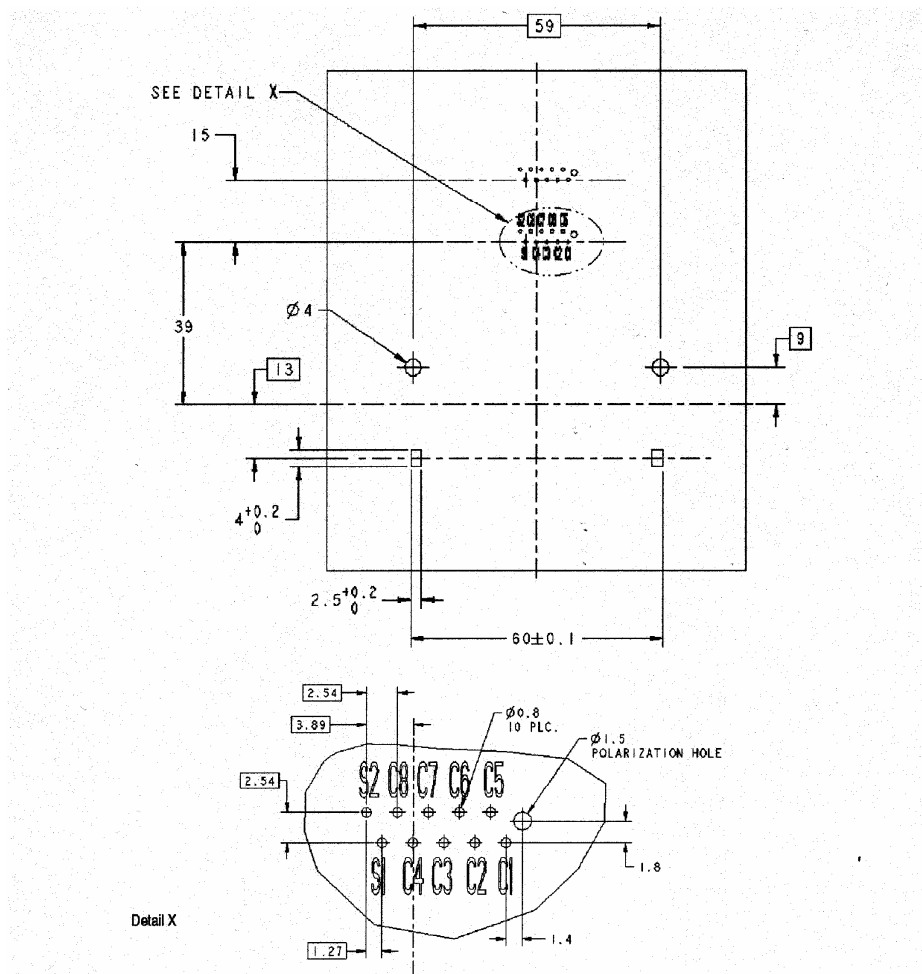
### **4.3 Acceptance**

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

### **4.4 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 drawing and this specification.

**FIGURE 1: Test Printed Circuit Board**



**FIGURE 2: Load appliance for axial static load test (8b)**

