

PRODUCT SPECIFICATION

AMP COMMERCIAL INTERCONNECTION SYSTEM

1. SCOPE

This specification covers the general description and performance requirements of the AMP Commercial Interconnection System (C.I.S.) which includes a complete product line of board-to-board and wire-to-board interconnections.

2. APPLICABLE DOCUMENTS

The latest revision of the following documents form a part of this specification to the extent indicated herein.

2.1. DIN Specifications:

- DIN 17660 Wrought copper alloys; copper-zinc alloys (brass); (special brass); chemical composition.
- DIN 17662 Wrought copper alloys; copper-tin alloys (tin bronze); chemical composition.
- DIN 17670 Plate, sheet and strip of wrought copper and copper alloys; mechanical properties.

2.2. I.E.C. Specifications:

- I.E.C. 130, Connectors used for frequencies below 3MHz (Mc/s)
- I.E.C. 68, Basic environmental testing procedures for electronic components and electronic equipment.

2.3. E.I.A. Specification:

- RS-178-A Solderability test standard.

2.4. Applicable Product Drawings.

				DATE 4/9 74 CHK [Signature]	AMP AMP-HOLLAND N.V. 's-HERTOGENBOSCH HOLLAND		REV N
				DATE [Signature] BASE [Signature]	LOC H NO A	108-190.11	
N	REVISED PAGE 12	R.B.	6/2 75	SHEET		NAME	
M	RELEASED.	[Signature]	6/2 75	1 OF 13		PRODUCT SPECIFICATION AMP-COMMERCIAL INTERCONNECTION SYSTEM	
LTR	REVISION RECORD	OR	CHK	DATE			

FORM 1A

3. PRODUCT DESCRIPTION

3.1. Parts - The system consists of the following parts:

- 3.1.1. FEMALE P.C. BOARD CONNECTOR ASSEMBLY, consisting of a housing and a number of receptacles press-fitted in the housing. Female connector assemblies are intended to be soldered to Printed Circuit Boards to accommodate interconnections to printed wiring circuitry.
- 3.1.2. MALE TABS, Male tabs are intended to be soldered on Printed Circuit Boards.
- 3.1.3. MALE CONNECTOR ASSEMBLY, consisting of a housing and a number of contacts crimped to appropriate wires and locked in the housing.

3.2. Type - When Female Connector Assemblies are used in combination with Male Tabs soldered to Printed Circuit Boards, or with Male Connector Assemblies, this System provides adaptability to any center arrangement of 2,5 mm (= .0984 inch) minimum or one multiple of it.

3.3. Design and Construction

- 3.3.1. General - Connector Assemblies and Tabs shall be of the design, construction and physical dimensions as specified on the applicable product drawings.
- 3.3.2. Material and Finish -
 - A. Housings - The houses are moulded of NORYL Flammability rating 94V1 (SE-1)
 - B. Terminals - Terminals shall be fabricated of brass conforming DIN Specifications. They shall be tinplated with copper underlayer

3.4. Application - By this system, connections between Printed Circuit Boards and between wire and Printed Circuit Boards, can be made in perpendicular and inline position. Perpendicular connections can be made to both sides of the Printed Circuit Board to which the Female Connector Assemblies are mounted.

3.4.1. Typical Application - See fig.1 on page 3 and fig.5 on page 13.


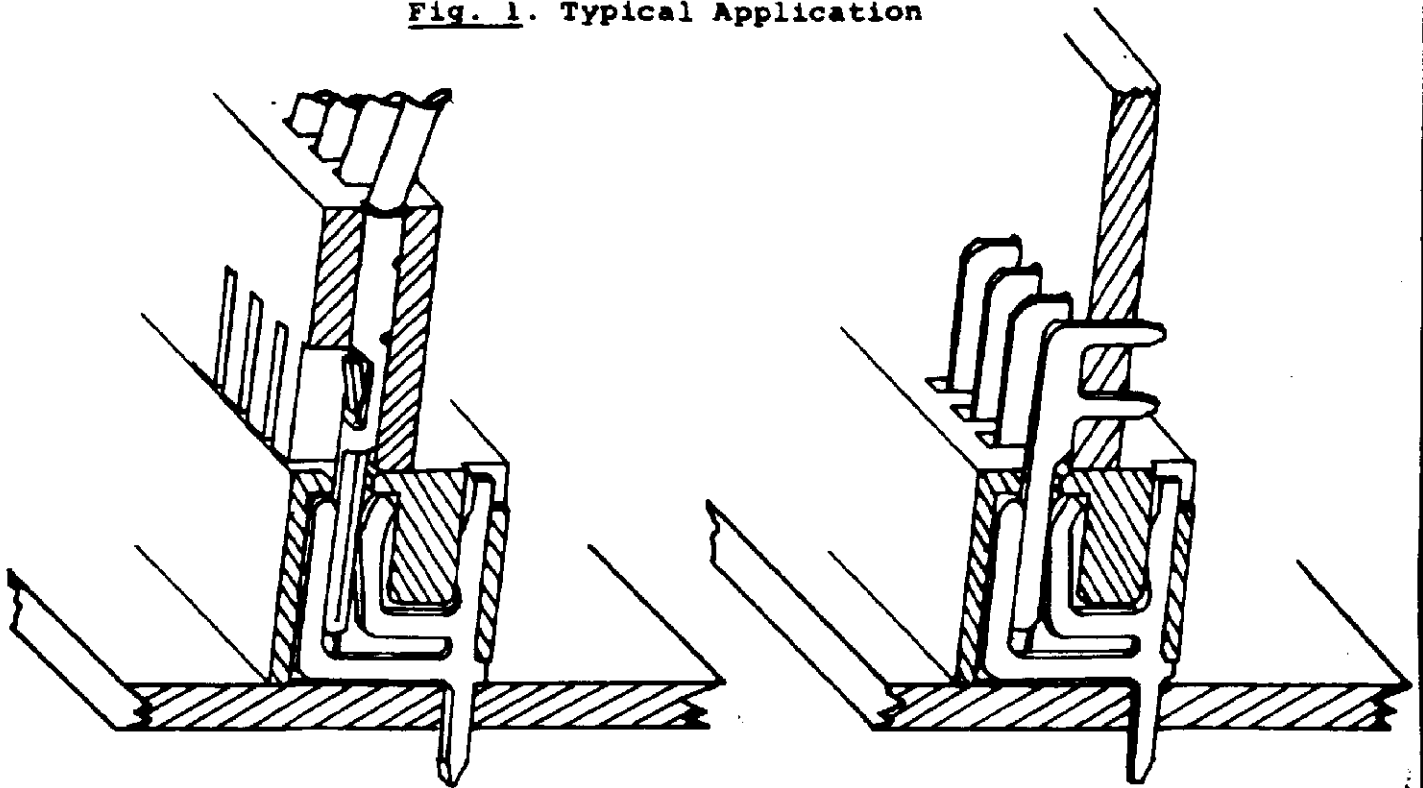
SHEET			AMP-HOLLAND N.V.	
			1-HERTOGENBOSCH HOLLAND	
2 OF 13	LOC H	A	NO 108-190.11	
NAME Product Specification AMP- Commercial Interconnection System				

Fig. 1. Typical Application



Max. perm. current in Amps.
D.C. or R.M.S. value

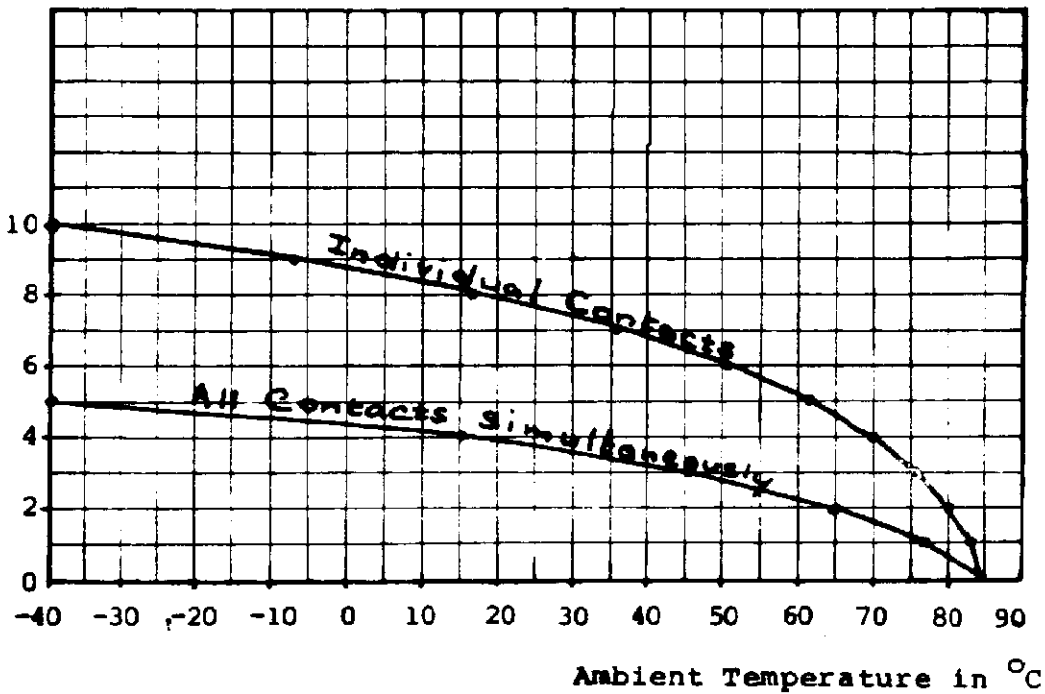


Fig. 2

This information is confidential and is disclosed to you on condition that no further disclosure is made by you to other than AMP personnel without written authorization from AMP-HOLLAND N.V.

AMP SECURITY CLASSIFICATION Unrestricted
NUMBER 108-190-11

SHEET		AMP		AMP-HOLLAND N.V. HERTOGENBOSCH HOLLAND	
3 OF 13	LOC H	A	NO	108-190-11	REV
NAME Product Specification AMP Commercial Interconnection System					

4. PERFORMANCE AND TEST DESCRIPTION

4.1. Temperature rating -

Each assembly shall be capable of continuous operation throughout an ambient temperature range of -40°C to $+85^{\circ}\text{C}$.

4.2. Current rating -

The maximum permissible current shall be as specified in fig. 2, on page 3.

4.3. Voltage rating -

The rated voltage shall be 354 Volts D.C. or A.C. peak as specified in I.E.C. 130-1 clause 5.

4.4. Test Conditions -

Unless specifically stated, tests and examinations required by this specification shall be executed under any combination of conditions as specified in I.E.C. 68-1 clause 5.3.

4.5. Test Samples -

The samples submitted for test shall include Female P.C. Board Connector Assemblies whether or not soldered to Printed Circuit Boards. Tabs soldered to Printed Circuit Boards and Male Connector Assemblies with contacts crimped to appropriate wires in Test Groups as mentioned below. The dimensions, plating and mounting shall be as specified on the applicable Product and Customer drawings.


This information is confidential and is disclosed to you on condition that no further disclosure is made by you to other than AMP personnel without written authorization from AMP-HOLLAND N.V.

AMP SECURITY CLASSIFICATION

Unrestricted


NUMBER

108-190-11

SHEET 4 OF 13			AMP-HOLLAND N.V. HERTOGENBOSCH HOLLAND
	LOC H	NO A	108-190-11
NAME Product Specification AMP- Commercial Interconnection System			

This information is confidential and is disclosed to you on condition that no further disclosure is made by you to other than AMP personnel without written authorization from AMP-HOLLAND N.V.

- 4.5.1. TEST GROUP I - The samples contained in this group shall consist of Female P.C. Board Connector Assemblies with the required number of Tabs, all soldered to Printed Circuit Boards in one of the arrangements mentioned in Paragraph 3.4. This arrangement depends on application (Reference Figures 3 and 4 for board dimensions)
- 4.5.2. TEST GROUP II - The samples contained in this group shall consist of Female and Male Connector Assemblies. The Female P.C. Board Connector Assemblies are soldered to Printed Circuit Boards in one of the arrangements mentioned in Paragraph 3.4. This arrangement depends on application. (Reference Figure 3 for board dimensions). Male Connector Assemblies contain Crimp-on Snap-in Contacts crimped to appropriate wires.
- 4.5.3. TEST GROUP III - The samples contained in this group shall consist of Female P.C. Board Connector Assemblies not soldered to Printed Circuit Boards.
- 4.5.4. TEST GROUP IV - The samples contained in this group shall consist of Male Connector Assemblies with Crimp-on Snap-in Contacts crimped to appropriate wires.
- 4.5.5. TEST GROUP V - The samples contained in this group shall consist of Male Tabs not soldered to Printed Circuit Boards.
- 4.5.6. TEST GROUP VI - The samples contained in this group shall consist of Crimp-on Snap-in Contacts crimped to appropriate wires.

SHEET				AMP-HOLLAND N.V.	
5 OF 13				HERTOGENBOSCH	
LOC	A	NO	108-190.11		REV
H				P.	
NAME Product Specification AMP Commercial Interconnection System					

5. QUALITY ASSURANCE PROVISIONS

5.1. Qualification Inspection

5.1.1. Sample Selection -

Connector assemblies and contacts shall be prepared in accordance with applicable Product- and Customer drawings.

They shall be selected at random from current production.

Number of testsamples in accordance with I.E.C. 130-1 clause 9.

5.1.2. Test sequence -

Qualification inspection shall be verified by testing the samples to the test sequence as specified under 6.2.

5.1.3. Acceptance -

When testing the samples as specified, all results will fall within the specification limits 99% of the time with a confidence level of 95%. Failures attributed to equipment, test set-up or operator deficiencies will not disqualify the product. When product failure occurs, corrective action will be taken and samples shall be re-submitted for qualification.

5.1.4. Test Report -

A report containing test data-analysis and product performance evaluation shall be issued at the completion of the qualification test program.

5.2. Quality Conformance Inspection


Sampling procedures shall be in accordance with MIL-STD-105. The applicable AMP Quality Inspection Plan will specify the Sampling and Acceptance Quality Level to be used. Dimensional and functional requirements will be in accordance with the applicable Product drawings.

This information is confidential and is disclosed to you on condition that no further disclosure is made by you to other than AMP personnel without written authorization from AMP-HOLLAND N.V.

NUMBER

108-190-11

AMP SECURITY CLASSIFICATION
Unrestricted

SHEET			AMP-HOLLAND N.V.	
			HERTOGENBOSCH HOLLAND	
6 OF 13	LOC H	A	NO	108-190-11
NAME Product Specification AMP Commercial Interconnection System				

This information is confidential and is disclosed to you on condition that no further disclosure is made by you to other than AMP personnel without written authorization from AMP-HOLLAND N.V.

AMP SECURITY
CLASSIFICATION

Unrestricted

NUMBER

108-190-11

6. TEST SCHEDULE FOR TYPE TESTS

- 6.1. The testschedule, table 1 and 2 on page 8 and 9, shows all tests, conditions of tests as well as the requirements to be met for each type of connector.
- 6.2. The testsequence, table 3 page 10, shows the order in which the tests shall be carried out.

6.2.1. Test Groups and Test Lots -

The various Test Groups shall be divided into the following number of Test Lots:

Test Groups I - II and III	-	4 Lots each.
Test Group IV	-	3 Lots.
Test Groups V - VI	-	1 Lot each.


SHEET				AMP-HOLLAND N.V. HERTOGENBOSCH HOLLAND
<u>7</u> OF 13	LOC H	A	NO 108-190-11	REV N
NAME Product Specification AMP Commercial Interconnection System				

TABLE 1

108-190-11

NUMBER

Unrestricted

AMP SECURITY CLASSIFICATION

This information is confidential and is disclosed to you on condition that no further disclosure is made by you to other than AMP personnel without written authorization from AMP-HOLLAND N.V.

Test Description	Clause of I.E.C.130-1	Conditions of test	Requirements
Examination of Product	11-12		Meets requirements of product drawings
Termination Resistance *	14.1 14.1.3	25% of all contacts, with a min. of 2- of each sample shall be measured. The E.M.F. of the measuring circuit shall not exceed 20mV. I = 100mA max. Measuring points see fig.5	10 milliohm max.
Insulation Resistance	14.4	100 \pm 15 V	1000 Megohm min.
Voltage Proof	14.5	1 minute 1000 V	No breakdown or flashover
Damp Heat accelerated	18.2.2	I.E.C. 68-2-4, Test D Not under mechanical and electrical load	
Cold	18.2.3	I.E.C. 68-2-1, Test Aa; -40°C Not under mechanical and electrical load	
Damp heat long term.	18.3	I.E.C. 68-2-3, Test C Severity: 21 days half lot mated, half lot unmated. Not under mech. and electrical load	
Dry Heat	18.2.1	I.E.C. 68-2-2 Test Ba; + 85°C Not under mechanical and electrical load	
Rapid Change of Temperature	18.4	I.E.C. 68-2-14; Test Na, -40°C/+85°C; 6 cycles 1/4 hour/1/4 hour Not under mechanical and electrical load	

* In I.E.C. 130-1 called: Contact Resistance


SHEET				AMP-HOLLAND N.V.	
8 OF 13		LOC	A	NO	108-190-11
		H			REV
NAME Product Specification AMP					
Commercial Interconnection System					

TABLE 2

NUMBER 108-190-11
 AMP SECURITY CLASSIFICATION Unrestricted

This information is confidential and is disclosed to you on condition that no further disclosure is made by you to other than AMP personnel without written authorization from AMP-HOLLAND N.V.

TEST DESCRIPTION	Clause of I.E.C.130-	CONDITIONS OF TEST	REQUIREMENTS
Salt Mist	18.7	I.E.C. 68-2-11, Test Ka 1 x 24 hours half lot mated half lot unmated	
Insertion/Extraction Force	16.1	Measuring force to insert and extract male contacts in female connector assemblies	5 N max./contact 1 N min./contact
Mechanical Endurance	19.	Number of operations: 25 Frequency of operations 10/minute. Minimum time between successive operations 1 second	
Vibration	16.4	I.E.C. 68-2-6, Test Fc Procedure B4; 10-55 Hz Displacement 0,75 mm peak. Wires to be used: 0,12 - 0,35 mm ² with insulation outer diameter 1,0 - 1,4 mm	No discontinuity above 1 microsecond
Contact Retention		Apply an axial load of: 10 N to female contacts 30 N to Crimp-on Snap-in contacts	Contacts will not dislodge from housings
Tensile Strength of Crimp termination	15.4	I.E.C. 68-2-21, Test Ua	20 N min. for 0,12 mm ² wires 70 N min. for 0,35 mm ² wires
Solderability		E.I.A. RS-178-A Solderability Test Standard Test condition 1	5% max. dewetting of functional area
Resistance to Soldering Heat	15.3	I.E.C. 68-2-20, Test Tb Method 1A	No functional damage



SHEET				AMP-HOLLAND N.V. HERTOGENBOSCH HOLLAND	
2 OF 13	LOC H	A	NO	108-190-11	REV N
NAME Production Specification AMP Commercial Interconnection System					

TABLE 3

Test or Examination	LOT:	Group I-II				Group III-IV *				V	VI
		1	2	3	4	1	2	3	4	1	1
Examination of Product		X	X	X	X	X	X	X	X	X	X
Termination Resistance		X	X	X	X						
Insulation Resistance						X	X	X			
Voltage Proof						X	X	X			
Insertion/Extraction Force		X	X								
Contact Retention						X					
Tensile Strength (half lot)											X
Damp Heat Long Term				X				X			
Change of Temperature					X						X
Dry Heat		X				X					
Tensile Strength (half lot)											X
Damp Heat Accelerated 2 cycl.									X	X	
Mechanical Endurance			X								
Insertion/Extraction Force			X								
Damp Heat Accelerated 1 cycl.		X				X					
Termination Resistance		X	X	X	X						
Insulation Resistance					X	X					
Voltage Proof					X	X					
Salt Mist			X				X				
Cold		X				X					
Damp Heat Accelerated 5 cycl.		X				X					
Termination Resistance		X	X								
Mechanical Endurance			X								
Insertion/Extraction Force		X	X								
Vibration					X						
Termination Resistance			X		X						
Insulation Resistance						X	X	X			
Voltage Proof						X	X	X			
Contact Retention						X					
Solderability									X	X	
Resistance to Soldering Heat									X		
Examination of Product		X	X	X	X	X	X	X	X	X	X

* Note: For Group IV only Lot 1, 2 and 3.

SHEET				AMP-HOLLAND N.V.	
10 OF 13		LOC	NO	HERTOGENBOSCH HOLLAND	
		H	A	108-190-11	
NAME Product Specification AMP Commercial Interconnection System					

This information is confidential and is disclosed to you on condition that no further disclosure is made by you or other than AMP personnel without written authorization from AMP-HOLLAND N.V.

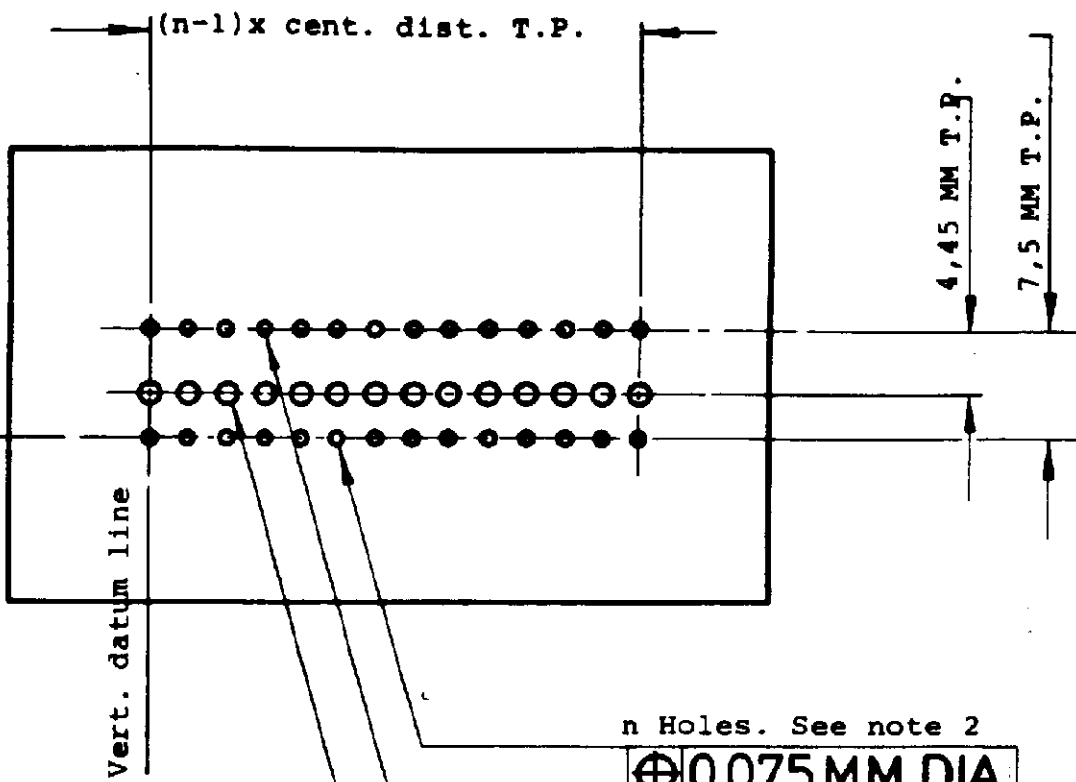
AMP SECURITY CLASSIFICATION Unrestricted

NUMBER 108-190-11

108-19011

UNRESTRICTED

closure is made by you to other than AMP personnel without written authorization from AMP-HOLLAND N.V.



Note 1:
 Material, board dimensions and dimensions of copper pads to be determined by the customer.

Note 2:
 Preferred holes sizes are:
 + 0,1 + 0,1 + 0,1
 0,8 - 0,0; 0,9 - 0,0; 1,0 - 0,0 mm, depending on number of positions of connector.
 For information please contact AMP Engineering Department.

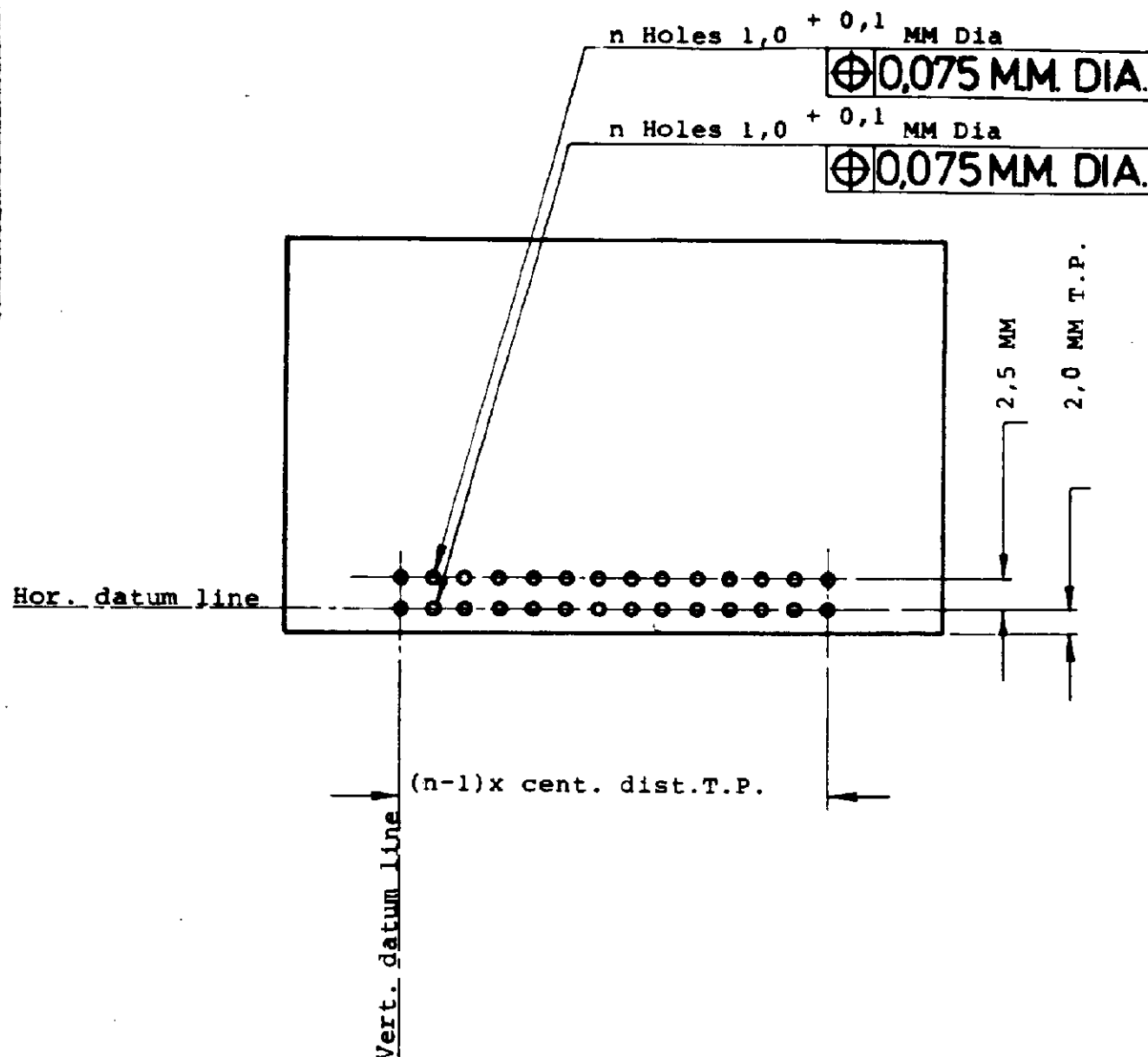
Hole pattern for typical printed circuit test board for female connector assembly

figure 3

SHEET		AMP		AMP-HOLLAND N.V. 1-HERTOGENBOSCH HOLLAND	
L10F 13	LOC H	A	NO 108-19011	REV	
NAME Product Specification AMP Commercial Interconnection System					

CLASSIFICATION 108-19011


Unauthorized reproduction or disclosure of this document is prohibited by law. No part of this document may be reproduced or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or by any information storage and retrieval system, without written authorization from AMP-HOLLAND N.V.



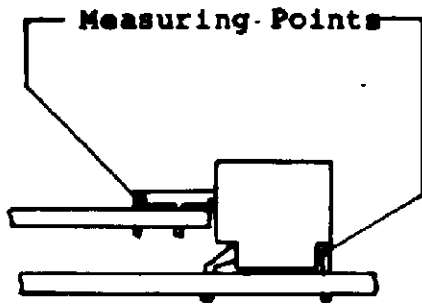
Note :
 Material, board dimensions
 and dimensions of copper pads to be
 determined by the customer.

Hole pattern for typical printed circuit
 test board for tabs. (F-Type only)

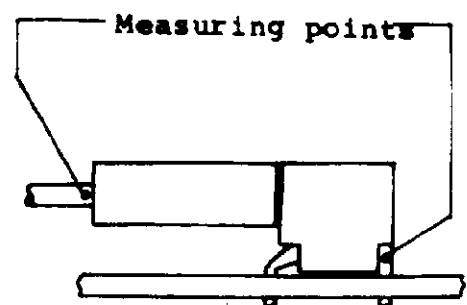
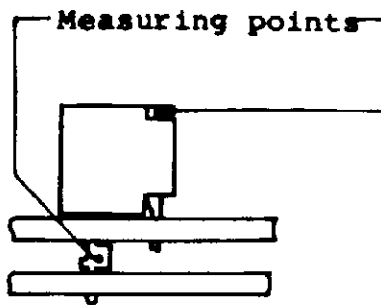
Figure 4.

SHEET			AMP-HOLLAND N.V.		REV
			HERTOGENBOECH HOLLAND		
12 OF 13	LOC H	A	NO 108-19011		
NAME Product Specification					
AMP Commercial Interconnection System					

In-line Application

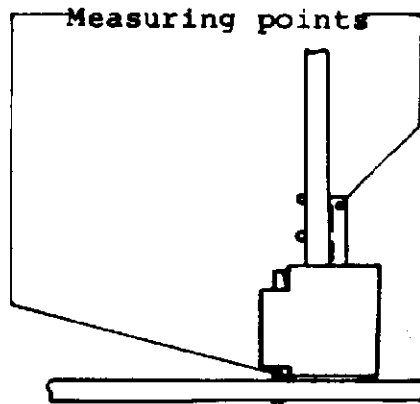


Board-to-Board

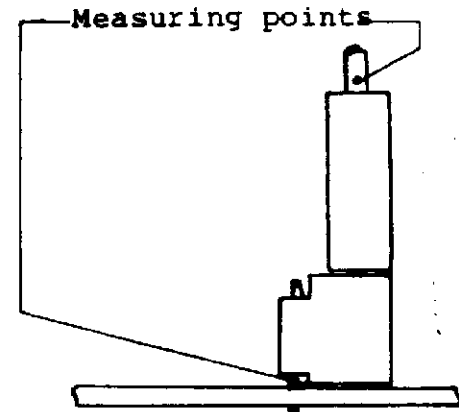


Wire-to-Board

Perpendicular Application I

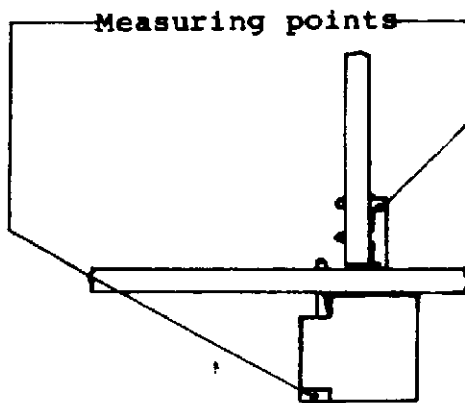


Board-to-Board

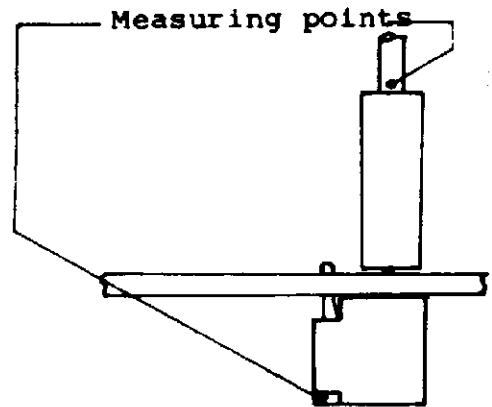


Wire-to-Board

Perpendicular Application II



Board-to-Board



Wire-to-Board

Measuring points for termination resistance test

Figure 5

SHEET		AMP		AMP-HOLLAND N.V. HERTOGENBOSCH HOLLAND	
130F L3	LOC H	A	NO	108-190-11	REV N
NAME Product Specification AMP Commercial Interconnection System					