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Connectors for electronic equipment –

Part 3-109:
Detail specification for two-part cable to board connector for high speed data application in a harsh industrial environment – Protection rate IP67 according to IEC 60529

PUBLICLY AVAILABLE SPECIFICATION

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FOREWORD

A PAS is a technical specification not fulfilling the requirements for a standard, but made available to the public.

IEC-PAS 61076-3-109 has been processed by subcommittee 48B: Connectors, of IEC technical committee 48: Electromechanical components and mechanical structures for electronic equipment.

The text of this PAS is based on the following document:

This PAS was approved for publication by the P-members of the committee concerned as indicated in the following document:

Draft PAS	Report on voting
48B/1106/PAS	48B/1121/RVD

Following publication of this PAS, the technical committee or subcommittee concerned will investigate the possibility of transforming the PAS into an International Standard.

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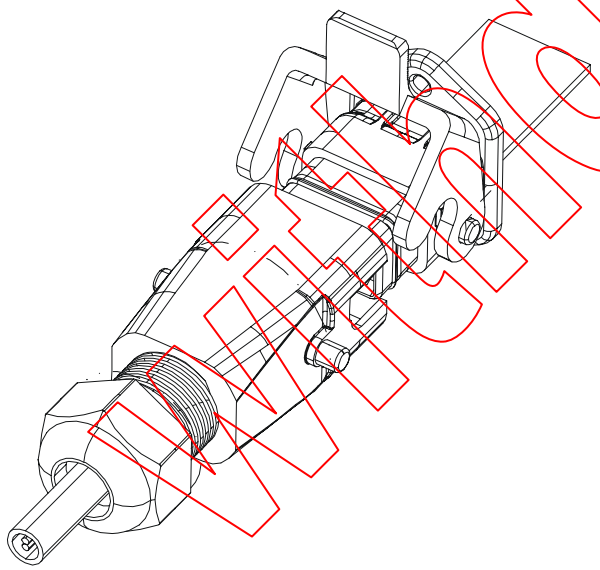
IEC SC 48B: LF Connectors Specification available from: IEC Central Office or from the addresses shown on the inside cover. Electronic components of assessed quality in accordance with: GENERIC SPECIFICATION IEC 61076-1 First edition 1995	**IEC-PAS 61076-3-109** Page 7 of 62 pages
See for dimensions 	Detail specification for two-part cable to board connector used in: – high speed data application up to 600 MHz. – harsh industrial environment – protective housing with robust locking latch and cable gland. – protection rate IP67 according to IEC 60529 – 2 and 4 balanced shielded contact pairs (4 and 8 contacts) – optional 2 unshielded pre-leading contacts Performance level (PL):1, 2, 3

1 General

1.1 Scope

This PAS establishes an uniform specification and type testing requirements for 4- to 10-pole connectors, containing 2 or 4 balanced shielded pairs for frequencies up to 600 MHz and optional 2 unshielded contacts for lower frequencies or power line interconnections.
The mounting footprint of the fixed connector to a cabinet is compatible to a widely used industrial standard connector for industrial power and signal interconnection (Han 3A).
The purpose of this connector is to provide solutions for increasing data rates and to establish highest reliability interconnection under harsh environmental conditions for high speed data transmission in industrial environments to, for instance Industrial Gigabit Ethernet 1000BaseT applications.

1.2 Recommended method of mounting

The free connector (cable connector) is provided with moulded contact-cavities for each balanced shielded or unshielded contact pair, terminated to the signal line of the cable with insulation piercing terminations and solderless shielding clamp contacts to the cable braid.
The contact inserts are mounted in a rigid housing with locking levers for achieving IP67 protection degree.
Appropriate cable has to be selected and professional harnessing workmanship to be secured.
The fixed connector (board connectors) is provided with moulded contact-cavities for each balanced shielded or unshielded contact pair, terminated to a printed board by surface mount termination.
The contact insert is fixed to the board by press-in pivots. After the soldering process the assembly is mounted in the cabinet and the fixed connector housing with an appropriated seal is adjusted over the contact insets and mounted to the outside surface of the electronic cabinet to achieve IP 67 protection degree.

1.3 Ratings and characteristics

Rated voltage:

Material group	Pollution degree	Rated voltage (V)
I, II, IIIa/b	1	400
II, IIIa/b	2	63
II, IIIa/b	3	25
NOTE Reference is made to "Table 4 – Minimum creepage and clearance distances of this specification, and Table 4 of IEC 60664-1 listing the relation between creepage distances, pollution degree and material groups versus voltages r.m.s.		

Table 1 – Rated voltage

Current rating: All contacts:
2 A at 70 °C applied on each contact of the shielded balanced pair and the unshielded contacts

Insulation resistance: 10^6 MΩ min.

Shielding: to achieve high speed performance as detailed in 4.2.6 to 4.2.14.

Degree of Protection: IP67 in accordance with IEC 60529.

Climatic category: PL1: 55/125/56
PL2: 55/125/21
PL3: 25/100/00

1.4 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this Public Available Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60068-1:1988, *Environmental testing – Part 1: General and guidance*

IEC 60068-1-am1:1992, *Amendment No.1*

IEC 60352-6:1997, *Solderless connections - Part 6: Insulation piercing connections – General requirements, test methods and practical guidance*

IEC 60512-1:1994, *Electromechanical components for electronic equipment – Basic testing procedures and measuring methods – Part 1: General*

IEC 60512-2:1985, *Electromechanical components for electronic equipment; basic testing procedures and measuring methods – Part 2: General examination, electrical continuity and contact resistance tests, insulation tests and voltage stress tests*

IEC 60512-2-am1:1994, *Amendment No.1*

IEC 60512-3:1976, *Electromechanical components for electronic equipment; basic testing procedures and measuring methods – Part 3: Current-carrying capacity tests*

IEC 60512-4:1976, *Electromechanical components for electronic equipment; basic testing procedures and measuring methods – Part 4: Dynamic stress tests*

IEC 60512-5:1992, *Electromechanical components for electronic equipment; basic testing procedures and measuring methods – Part 5: Impact tests (free components), static load tests (fixed components), endurance tests and overload tests*

IEC 60512-6:1984, *Electromechanical components for electronic equipment; basic testing procedures and measuring methods – Part 6: Climatic tests and soldering tests*

IEC 60512-7:1993, *Electromechanical components for electronic equipment; basic testing procedures and measuring methods – Part 7: Mechanical operating tests and sealing tests*

IEC 60512-8:1993, *Electromechanical components for electronic equipment; basic testing procedures and measuring methods – Part 8: Connector tests (mechanical) and mechanical tests on contacts and terminations*

IEC 60512-9:1992, *Electromechanical components for electronic equipment; basic testing procedures and measuring methods – Part 9: Miscellaneous tests*

IEC 60512-11-1: 1995, *Electromechanical components for electronic equipment - Basic testing procedures and measuring methods – Part 11: Climatic tests – Section 1: Test 11a: Climatic sequence.*

IEC 60512-11-14: 1996, *Electromechanical components for electronic equipment - Basic testing procedures and measuring methods – Part 11: Climatic tests – Section 14: Test 11p: Flowing single gas corrosion test*

IEC 60529:1989, *Degree of protection provided by enclosures (IP Code)*

IEC 60664-1:1992: *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*

ISO 1302: 1992, *Technical drawings – Method of indicating surface texture*