

JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

JIS C 5401-4-001 : 2005

(IEC 61076-4-001 : 1996)

(JEITA)

**Connectors for electronic equipment —
Part 4-001 : Printed Board Connectors
with assessed quality — Blank Detail
Specification**

ICS 31.220.20

Reference number : JIS C 5401-4-001 : 2005 (E)

PROTECTED BY COPYRIGHT

Foreword

This translation has been made based on the original Japanese Industrial Standard established by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee according to the proposal of establishing a Japanese Industrial Standard from Japan Electronics and Information Technology Industries Association (JEITA), with a draft of Industrial Standard based on the provision of Article 12 Clause 1 of the Industrial Standardization Law.

This Standard has been made based on IEC 61076-4-001:1996 *Connectors with assessed quality, for use in d.c., low-frequency analogue and in digital high-speed data applications—Part 4 : Printed board connectors—Section 001 : Blank detail specification* for the purpose of making it easier to compare this Standard with International Standard; to prepare Japanese Industrial Standard conforming with International Standard; and to propose a draft of an International Standard which is based on Japanese Industrial Standard.

Attention is drawn to the possibility that some parts of this Standard may conflict with a patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have technical properties. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying the patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have the said technical properties.

JIS C 5401 series consists of the following 7 parts under the general title “*Connectors for electronic equipment*”.

Part 1 : Generic specification

Part 2 : Circular connectors with assessed quality—Sectional specification

Part 2-001 : Circular connectors—Blank detail specification

Part 3 : Rectangular connectors with assessed quality—Sectional specification

Part 3-001 : Rectangular connectors with assessed quality—Blank detail specification

Part 4 : Printed board connectors with assessed quality—Sectional specification

Part 4-001 : Printed Board Connectors with assessed quality—Blank Detail Specification

Date of Establishment: 2005-03-20

Date of Public Notice in Official Gazette: 2005-03-22

Investigated by: Japanese Industrial Standards Committee

Standards Board

Technical Committee on Electronics Technology

JIS C 5401-4-001 : 2005, First English edition published in 2005-07

Translated and published by: Japanese Standards Association

4-1-24, Akasaka, Minato-ku, Tokyo, 107-8440 JAPAN

In the event of any doubts arising as to the contents,
the original JIS is to be the final authority.

© JSA 2005

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

Printed in Japan

PROTECTED BY COPYRIGHT

Contents

	Page
Introduction	1
1 General data	3
1.0 Scope	3
1.1 Recommended method of mounting	3
1.2 Ratings and characteristics	3
1.3 Normative references	4
1.4 Marking	6
1.5 JIS type designation	8
1.6 Ordering information	8
2 Technical information	10
2.1 Definitions	10
2.2 Survey of styles and variants	10
2.3 Information on application	10
2.4 Contact arrangements	12
3 Dimensional information	14
3.1 General	14
3.2 Isometric view and common features	14
3.3 Engagement (mating) information	18
3.4 Fixed board connectors	18
3.5 Free board connectors	20
3.6 Accessories	20
3.7 Mounting information for fixed board connectors	20
3.8 Mounting information for free board connectors	22
3.9 Gauges	22
4 Characteristics	26
4.1 Climatic category	26
4.2 Electrical	26
4.3 Mechanical	28
5 Test schedule	32
5.1 General	32
5.2 Test schedules	34
6 Quality assessment procedures	52
6.1 Qualification approval testing	52
6.2 Quality conformance inspection	54
6.3 Delayed delivery, re-inspection	58
Annex A (normative) Requirements for application to mechanical structures according to JIS C 6010-1	60
Annex B (normative) New tests, and additional test phases	62

Connectors for electronic equipment— Part 4-001 : Printed Board Connectors with assessed quality—Blank Detail Specification

Introduction This Japanese Industrial Standard has been prepared based on the first edition of IEC 61076-4-001 *Connectors with assessed quality, for use in d.c., low-frequency analogue and in digital high-speed data applications—Part 4 : Printed board connectors—Section 001 : Blank detail specification* published in 1996 without modifying the technical contents.

The portions underlined with dots are the matters not stated in the original International Standard.

Blank detail specification

This blank detail specification is a supplementary document to the sectional specification JIS C 5401-4 and contains requirements for styles and guidelines of blank detail specification for printed board connectors. It is used for unifying expressions of detail specifications.

Detail specifications shall be prepared using blank detail specifications according to the generic specification JIS C 5401-1 and the sectional specification JIS C 5401-4.

Guidance notes

The following pages give a recommended layout of a detail specification. The contents of this page give guidance on the information which should, wherever possible, be given on the first page of a detail specification (see IEC Guide 102).

The numbers between brackets on the first page of the detail specification correspond to the following information:

Identification of the detail specification

- (1) The International Electrotechnical Commission or the national standards organisation under whose authority the detail specification is drafted.
- (2) The IEC or Japanese Industrial Standard number of the detail specification, date of issue, and any further information required by the national system.
- (3) The number and issue of IEC or national generic specification.
- (4) The number and issue of the IEC blank detail specification.

Identification of the connector

- (5) A short description of the type of connector.
- (6) Information on typical construction of the connector; for example it should be stated whether the connector is suitable for mounting on printed boards.
- (7) Outline drawing, preferably of isometric or similar projection, from which the connector may be clearly identified.
- (8) Information on performance level(s) and assessment level(s) specified in the document.
- (9) Reference data on the most important properties, to allow comparison between the various connector types.

(1)	Detail specification number (2)
Generic specification number Electronic components of assessed quality in accordance with : (3)	Blank detail specification number (4)
Outline drawing (7)	Product description (5)
	(6)
	(8) Performance level(s): Assessment level(s): Combination of performance levels and assessment levels:
(9) Information on the availability of components qualified to this detail specification is given in the qualified products list.	

1 General data

1.0 Scope This section of JIS C 5401-4 is the blank detail specification according to the sectional specification JIS C 5401-4 and specifies connectors for electronic equipment.

Remarks : The International Standard corresponding to this section of JIS C 5401-4 is as follows.

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standard and JIS are IDT (identical), MOD (modified), and NEQ (not equivalent) according to ISO/IEC Guide 21.

IEC 61076-4-001 : 1996 *Connectors with assessed quality, for use in d.c., low-frequency analogue and in digital high-speed data applications—Part 4 : Printed board connectors—Section 001 : Blank detail specification* (IDT)

1.1 Recommended method of mounting See annex A for guide on the application of these connectors in mechanical structures according to JIS C 6010.

1.1.1 Number of contacts or contact cavities

1.2 Ratings and characteristics

Rated voltage : Current rating at 70 °C

Insulation resistance : Climatic category

Printed board thickness : Contact spacing

Guidance notes

1.3 Normative references

1.3 Normative references The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. If the indication of the year of publication is given to these referred standards, only the edition of the indicated year constitutes the provision of this Standard but the revision and amendment made thereafter do not apply. The normative references without the indication of the year of coming into effect apply only to the most recent edition (including amendments).

JIS B 0031 *Geometrical Product Specification (GPS)—Indication of surface texture in technical product documentation*

Remarks : ISO 1302 : 2002 *Geometrical product Specifications (GPS) — Indication of surface texture in technical product documentation* is equivalent to the said standard.

JIS C 60068-1 *Environmental testing Part 1: General and guidance*

Remarks : IEC 60068-1 : 1998 *Environmental testing—Part 1 : General and guidance* is identical with the said standard.

JIS C 60068-2-60 *Environmental testing—Part 2: Tests—Test Ke: Flowing mixed gas corrosion test*

Remarks : IEC 60068-2-60 : 1995 *Environmental testing—Part 2 : Tests—Test Ke: Corrosion tests in artificial atmosphere at very low concentration of polluting gas(es)* is identical with the said standard.

JIS C 5401-1 *Connectors for electronic equipment—Part 1: Generic specification*

Remarks : IEC 61076-1: 1995 *Connectors for electronic equipment with assessed quality—Part 1 : Generic specification* and Amendment 1 (1996) are identical with the said standard.

JIS C 5401-4 *Connectors for electronic equipment—Part 4: Printed board connectors with assessed quality—Sectional specification*

Remarks : IEC 61076-4 : 1995 *Connectors for electronic equipment with assessed quality—Part 4 : Sectional specification—Printed board connectors* is identical with the said standard.

JIS C 5402-1-100 *Connectors for electronic equipment—Tests and measurements—Part 1-100: General—Applicable publications*

Remarks : IEC 60512-1-100 *Connectors for electronic equipment—Tests and measurements—Part 1-100 : General—Applicable publications* is identical with the said standard.

JIS C 6010-1 *Modular order for the development of mechanical structures for electronic equipment practices—Part 1 : Generic standard for modular order for the development of mechanical structures for electronic equipment practice*

Remarks : IEC 60917-1 : 1998 *Modular order for the development of mechanical structures for electronic equipment practices—Part 1 : Generic standard* is identical with the said standard.

Guidance notes

1.4 Marking The marking of the connector and the package shall be in accordance with 2.6 of JIS C 5401-4.

JIS C 6010-2 *Modular order for the development of mechanical structures for electronic equipment practices—Part 2 : Sectional specification—Interface co-ordination dimensions for the 25 mm equipment practice*

Remarks : IEC 60917-2-2 : 1994 *Modular order for the development of mechanical structures for electronic equipment practices Part 2 : Sectional specification—Interface co-ordination dimensions for the 25 mm equipment practice—Section 2 : Detail specification—Dimensions for subracks, chassis, backplanes, front panels and plug-in units is identical with the said standard.*

JIS Z 9015-1 *Sampling procedures for inspection by attributes—Part 1: Sampling plans indexed by acceptable quality level (AQL) for lot-by-lot inspection*

Remarks : IEC 60410 : 1973 *Sampling plans and procedures for inspection by attributes is equivalent to the said standard.*

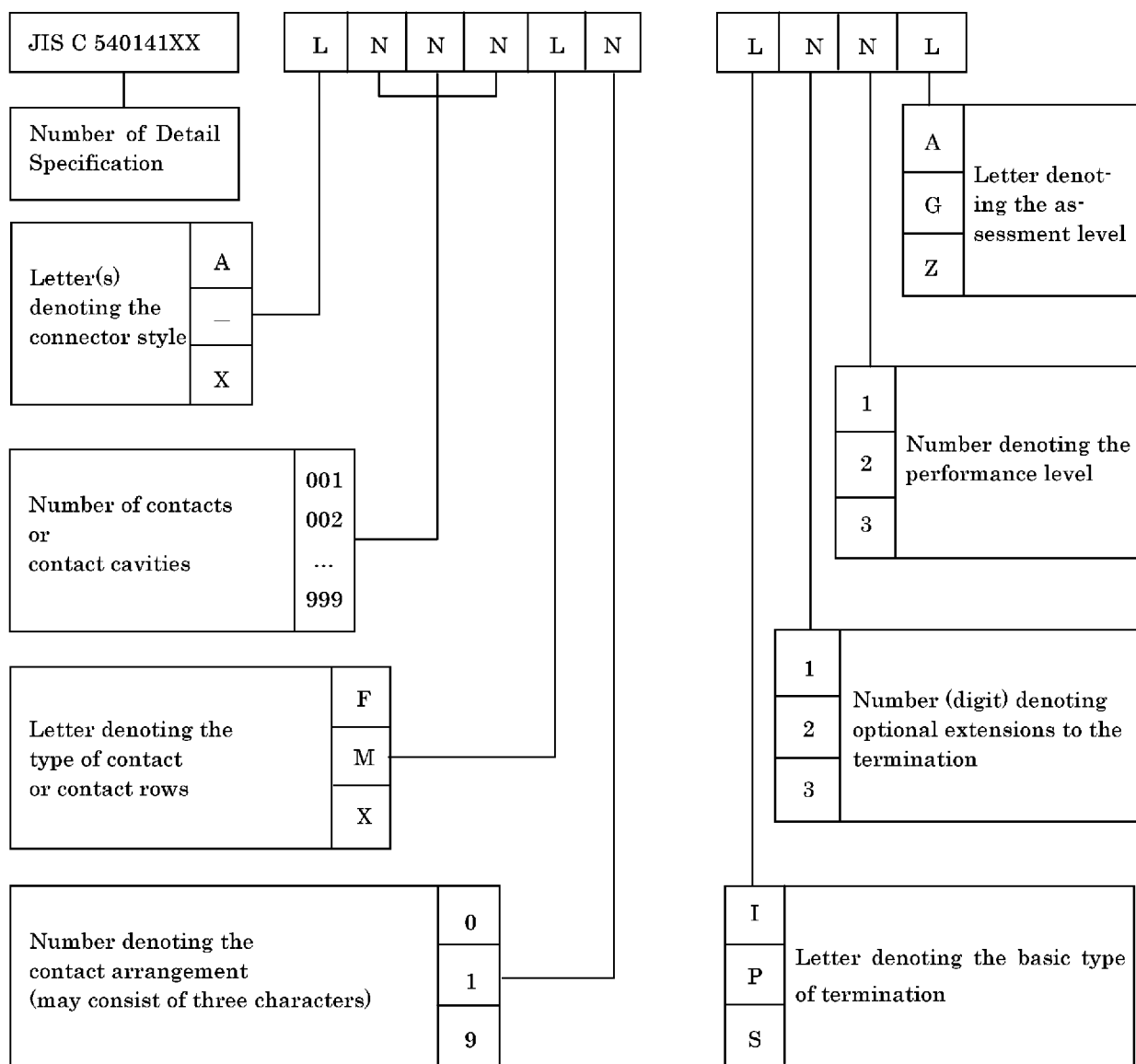
IEC 60352-5 : 1995 *Solderless connections—Part 5 : Solderless press-in connections—General requirements, test method and practical guidance*

1.4 Marking

Guidance notes

1.5 JIS type designation The designation shall be derived in accordance with 2.5 of JIS C 5401-4:

Example:



1.6 Ordering information For ordering connectors according to this detail specification, the type designation described in 1.5 shall be used.

1.5 JIS type designation

1.6 Ordering information

Guidance notes

2 Technical information The detail specification shall contain information which contributes to a proper application of the connectors.

It will also provide further details for a better understanding of the detail specification.

2.1 Definitions In addition to the terminology used in and applicable to the specification, as stated in 2.1 of JIS C 5401-4, it is recommended that those definitions which are unique to the connectors specified in the detail specification be listed.

2.2 Survey of styles and variants Should the detail specification be applicable to a range of styles and/or variants, a survey of the range covered shall be included in the form of a table in the detail specification. The table shown, table 1, may be amended to include additional and/or alternative details if this is applicable to describe the styles and variants.

NOTE : Tables used in detail specifications should be numbered in sequence, the numbering in this Standard has been used as an example.

2.3 Information on application If required, rules and recommendations for the use of the connectors specified in the detail specification shall, unless sufficiently covered by dimensional information in clause 3, be listed for:

2.3.1 Complete connectors (pairs)

2.3.2 Fixed board connectors

2.3.3 Free board connectors

2 Technical information

2.1 Definitions

2.2 Survey of styles and variants

Table 1 Styles and variants

Connector style and number of contacts	Style reference letter				

2.3 Information on application

2.3.1 Complete connectors (pairs)

2.3.2 Fixed board connectors

2.3.3 Free board connectors

Guidance notes

2.3.4 Accessories When accessories provide an essential support to the application of the connectors, the features and use shall be outlined in the detail specification, where applicable.

2.3.4.1 Special contacts In case special contacts are used in conjunction with the contacts specified in the detail specification, information on these contacts shall be presented “for information only”, given the fact that no detail specification of such contacts has been published.

Special contacts are defined as usually removable contacts for high-current, high-voltage, R.F., filter or F.O. applications.

2.3.4.2 Coding devices When coding devices are used, which are not an integral part of the connector, separate information shall be given in the detail specification.

2.3.4.3 Mounting devices When mounting devices are recommended which do not form an integral part of the connector, information on these devices shall be presented in the detail specification for reference only.

2.3.5 Shielding/grounding When shielding and/or grounding features are offered, which cannot be considered as an integral part of the connector or an accessory, information shall be given in the detail specification.

2.3.6 Basic type of terminations When different types of terminations are possible, information on the use of them shall be presented in the detail specification in a tabular form.

More detailed dimensional information may be provided by those parts of the detail specification which describe the dimensions of fixed and free board connectors.

If no significant differences exist between terminations of fixed and free connectors, the information may be included in this clause instead.

2.4 Contact arrangements When different contact arrangements for connector inserts are possible and influence the intended application of the connector, information shall be given in the detail specification, preferably in the form of drawings or tables.

These arrangements shall be specified by the appropriate combination of the JIS type designation specified in 1.5 of the detail specification.

2.3.4 Accessories

2.3.4.1 Special contacts

2.3.4.2 Coding devices

2.3.4.3 Mounting devices

2.3.5 Shielding/grounding

2.3.6 Basic type of terminations

2.4 Contact arrangements

Guidance notes

3 Dimensional information In order to facilitate the comparison of various specifications, a uniform presentation of drawing information is recommended in accordance with 2.7.1 of JIS C 5401-1:

Drawings and dimensions shall cover:

- a) isometric view showing the basic design, including common characteristics of related connectors;
- b) fixed board connectors;
- c) free board connectors and/or board edge of printed boards;
- d) mating information;
- e) accessories;
- f) mounting information for fixed board connectors;
- g) mounting information for free board connectors, if applicable;
- h) mounting information for connectors with accessories;
- i) testing gauges, probes and test panels.

3.1 General It shall be stated in the detail specification if original dimensions are millimetres or inches.

It shall be stated in the detail specification if drawings are shown in first angle or in third angle projection.

The system of lettering shall be as described in 2.7.1.1 of JIS C 5401-1.

The following statement shall be included in the detail specification:

“The shape of the connectors may deviate from those given in the following drawings as long as the specified dimensions are not influenced.”

Wherever practical, the same dimension letters shall be used for corresponding dimensions of fixed and free connectors.

3.2 Isometric view and common features An isometric view should be included and should show the main characteristics of the design including common features, if applicable.

It is convenient to show the dimension reference, the dimension and the feature description in the form of a table, see table 2.

3 Dimensional information

3.1 General The shape of the connectors may deviate from those given in the following drawings as long as the specified dimensions are not influenced.

3.2 Isometric view and common features

Table 2 Isometric view and common features

Dimension reference	Dimension	Feature description

Guidance notes

3.2.1 Common features A description of all the common features relating to the style of connectors covered by the detail specification shall be included.

Data which could be specified includes:

- a) datum point or datum line with reference to the datum;
- b) position of the mounting hole(s) of the fixed board connector;
- c) position of the terminations of the fixed board connector;
- d) position of the free board or edge-socket connector;
- e) position of the mounting holes of the free board connector or the terminations of an edge-socket connector;
- f) position of the printed board;
- g) position of the grid of the printed board.

3.2.2 Reference system The detail specification shall state the co-ordination dimensions to allow for (modular) arrangement of the connector parts. When such reference system is based on guidelines for mechanical structures, it is recommended to refer to this information.

3.2.3 Height dimensions When multiple connectors or connector modules are mounted on a printed board, the height dimension to the backplane and the datum line of the printed board shall be stated in the detail specification.

3.2.4 Width dimensions To show the width positioning of individual printed boards in relation to the datum line of the back plane, which is part of a mechanical structure stated in JIS C 6010-1, such dimensions shall be stated in the detail specification.

3.2.5 Depth dimensions To provide essential information about the position of the edge of a printed board, or the fixed board connector versus the free board connector, depth dimensions shall be stated in the detail specification.

3.2.1 Common features

3.2.2 Reference system Co-ordination dimensions are dimensions without tolerances which indicate the boundary or centre line references in order to allow for (modular) arrangement.

3.2.3 Height dimensions

3.2.4 Width dimensions

3.2.5 Depth dimensions