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Graphical symbols for diagrams— Part 2: Symbol elements, qualifying symbols and other symbols having general application

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Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee in accordance with the Industrial Standardization Law.

Consequently JIS 0617-2:1997 is replaced with this Standard.

This **JIS** document is protected by the Copyright Law.

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 or utility model right. 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 or the utility model right.

JIS C 0617 series consists of the following 13 parts under the general title "*Graphical symbols for diagrams*":

- Part 1: General information, general index. Cross-reference tables
- Part 2: Symbol elements, qualifying symbols and other symbols having general application
- Part 3: Conductors and connecting devices
- Part 4: Passive components
- Part 5: Semiconductors and electron tubes
- Part 6: Production and conversion of electrical energy
- Part 7: Switchgear, controlgear and protective devices
- Part 8: Measuring instruments, lamps and signalling devices
- Part 9: Telecommunications: Switching and peripheral equipment
- Part 10: Telecommunications—Transmission
- Part 11: Architectural and topographical installation plans and diagrams
- Part 12: Binary logic elements
- Part 13: Analogue elements

Graphical symbols for diagrams— Part 2: Symbol elements, qualifying symbols and other symbols having general application

Introduction

This Japanese Industrial Standard has been prepared based on IEC 60617 without modifying the technical contents. The said IEC was published in 2001 as a database standard, and has been maintained online ever since. The adopted contents in this Standard are comprised of the contents of IEC 60617 as of 2008.

While all the parts of **IEC 60617** have been incorporated into one database standard, this **JIS** will be continuously published in separate parts in print, partly for the users' convenience, instead of conforming to the new format of the **IEC**.

1 Scope

This Standard specifies the symbol elements, qualifying symbols and other symbols having general application, out of graphical symbols for diagrams.

- NOTE 1 This Standard is constituted of the conventional graphical symbol numbers from 02-01-01 to 02-17-09 of **IEC 60617**. Annex A is provided for information.
- NOTE 2 The International Standard corresponding to this Standard and the symbol of degree of correspondence are as follows.

IEC 60617 Graphical symbols for diagrams (MOD)

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standards and **JIS** are IDT (identical), MOD (modified), and NEQ (not equivalent) according to **ISO/IEC Guide 21-1**.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. For standards with the year indication, only the editions of the indicated year shall be applied and the revisions (including amendments) made thereafter shall not be applied. For those without the indication of the year, the most recent edition (including amendments) shall be applied.

- JIS C 0452-2 Industrial systems, installations and equipment and industrial products—Structuring principles and reference designations—Part 2: Classification of objects and codes for classes
 - NOTE : Corresponding International Standard: IEC 61346-2 Industrial systems, installations and equipment and industrial products—Structuring principles and reference designations—Part 2: Classification of objects and codes for classes (IDT)

- JIS C 0456 Information technology—Coded graphic character set for use in the preparation of documents used in electrotechnology and for information interchange
 - NOTE: Corresponding International Standard: IEC 61286 Information technology—Coded graphic character set for use in the preparation of documents used in electrotechnology and for information interchange (IDT)
- JIS C 0617-1 Graphical symbols for diagrams—Part 1: General information, general index. Cross-reference tables
 - NOTE: Corresponding International Standard: IEC 60617 Graphical symbols for diagrams (MOD)
- JIS C 1082-1:1999 Preparation of documents used in electrotechnology—Part 1: General requirements
 - NOTE: Corresponding International Standard: IEC 61082-1 Preparation of documents used in electrotechnology—Part 1: Rules (MOD)
- JIS C 60364-1 Low-voltage electrical installations—Part 1: Fundamental principles, assessment of general characteristics, definitions
 - NOTE: Corresponding International Standard: IEC 60364-1 Low-voltage electrical installations—Part 1: Fundamental principles, assessment of general characteristics, definitions (IDT)
- JIS X 0201 7-bit and 8-bit coded character sets for information interchange
 - NOTE : Corresponding International Standard: ISO/IEC 646 Information technology—ISO 7-bit coded character set for information interchange (MOD)
- JIS X 0221 Information technology—Universal Multiple-Octet Coded Character Set (UCS)
 - NOTE: Corresponding International Standard: ISO/IEC 10646 Information technology—Universal Multiple-Octet Coded Character Set (UCS) (IDT)
- JIS Z 8222-1 Design of graphical symbols for use in the technical documentation of products—Part 1: Basic rules
 - NOTE : Corresponding International Standard: ISO 81714-1 Design of graphical symbols for use in the technical documentation of products—Part 1: Basic rules (IDT)
- JIS Z 8316 Technical drawings—General principles of presentation
- NOTE : Corresponding International Standard: ISO 128 Technical drawings— General principles of presentation (MOD)
- IEC 60050 (all parts) International Electrotechnical Vocabulary
- IEC 60375 Conventions concerning electric and magnetic circuits
- IEC 60445 Basic and safety principles for man-machine interface, marking and identification—Identification of equipment terminals and conductor terminations
- IEC 61293 Marking of electrical equipment with ratings related to electrical supply—Safety requirements

3 Structure

The standard series of **JIS C 0617** consists of several parts as set out below:

Part 1: General information, general index. Cross-reference tables

Part 2: Symbol elements, qualifying symbols and other symbols having general application

Part 3: Conductors and connecting devices

Part 4: Passive components

Part 5: Semiconductors and electron tubes

Part 6: Production and conversion of electrical energy

Part 7: Switchgear, controlgear and protective devices

Part 8: Measuring instruments, lamps and signalling devices

Part 9: Telecommunications: Switching and peripheral equipment

Part 10: Telecommunications-Transmission

Part 11: Architectural and topographical installation plans and diagrams

Part 12: Binary logic elements

Part 13: Analogue elements

Symbols have been designed in accordance with the requirements given in the **JIS Z 8222-1**. The module size M = 5 mm has been used. For better readability smaller symbols in this Standard have been enlarged to double size and are marked 200 % in the symbol column.

In accordance with clause 7 of **JIS Z 8222-1**, symbol dimensions (e.g. height) may be modified in order to make space for a greater number of terminals or for other layout requirement.

In all cases, whether the size is enlarged or reduced, or dimensions modified, the thickness of the original line should be maintained without scaling.

The symbols in this Standard are laid out in such a way that the distance between connecting lines is a multiple of a certain module. The module 2M has been chosen to provide enough space for a required terminal designation. The symbols have been drawn to a size convenient for comprehension, using the same grid consistently in the representation of all symbols.

All symbols are designed within a grid in a computer-aided drafting system (the grid which was used has been reproduced in the background of the symbols).

Graphical symbols that were specified in **JIS C 0617-2**:1997 but now deleted are given in Annex A as old graphical symbols.

The indices of all the graphical symbols specified in the standard series of **JIS C** 0617 are given in **JIS C 0617-1**.

The descriptions of item names used in this Standard are given in table 1.

In addition, English item names are those corresponding to IEC 60617.

| Item | Description |
|---|--|
| Classification number of graphical symbols | Classification number in the form of xx-yy-zz, where x, y and z are expressed with integers from 0 to 9 and A. |
| | xx: Number of part |
| | yy: Number of section |
| | zz: Graphical symbol number in the number of section |
| | NOTE: The graphical symbols with A attached to the section numbers, which were specified in the previous edition, are now deleted (see Annex A). |
| Symbol identity number | An identifier of a graphical symbol of the form "Snnnnn" where n is an integer from 0 to 9. This number corresponds to the symbol identity number specified in IEC 60617 , and carries no semantic meaning. |
| Name | Short description of the meaning of the symbol. |
| Alternative names | Synonymous, "almost synonymous" and possibly branch specific meanings, etc. under which the symbol might also be known. |
| Form | Designation of a particular form of the symbol. When there are graphical symbols having alternative forms, it is described as form 1, form 2 |
| Alternative forms | Identity numbers of symbols having the same meaning but an alternative form. |
| Application notes | Links to common descriptive notes with additional relevant information. Application notes, which are normally shared among several symbols, are described in another page indicated with the application number. |
| | The application note number is indicated in the form of Annnnn, where n is an integer from 0 to 9. This number corresponds to application notes of IEC 60617 , and carries no semantic meaning. |
| Application class | Document kinds in which the symbol is intended to be applied. It is defined in JIS C 1082-1 . |
| Function class | One or more classes defined in JIS C 0452-2 , to which the present symbol belongs. Those given in parentheses are codes for classes. |
| Shape class | Primary shape that characterizes the symbol. |
| Symbol restrictions | Possible restrictions with regard to the application of the symbol. |
| Remarks | Additional information of the graphical symbol concerned. |
| Applies | Identity numbers of symbols (symbol element, qualifying symbol and general symbol) used in the construction of the present symbol. |
| Applied in | Identity numbers of symbols where the present one is being used as an element. |
| Keywords | Listing of key words to facilitate retrieval. |
| NOTE | Reference information that supplements the matter related to graphical symbols etc. In addition, reference information of IEC 60617 is deleted in this standard. |

Table 1Descriptions of item names used for provisions of graphical
symbols

4 Graphical symbols for diagrams and their descriptions

The construction of chapters and sections of this Standard shall be as follows. Information given is derived from $IEC \ 60617$.

- Chapter I Symbol elements
 - Section 1 Outlines and enclosures

Chapter II Qualifying symbols

- Section 2 Kind of current and voltage
- Section 3 Adjustment, variability and automatic control
- Section 4 Direction of force, or motion
- Section 5 Direction of flow
- Section 6 Operational dependence on a characteristic quantity
- Section 7 Types of material
- Section 8 Effect or dependence
- Section 9 Radiation
- Section 10 Signal waveforms
- Section 11 Printing, perforating and facsimile
- Chapter III Other symbols having general application
 - Section 12 Mechanical and other controls
 - Section 13 Actuators, set 1
 - Section 14 Actuators, set 2
 - Section 15 Earth and frame, connections, equipotentiality
 - Section 16 Ideal circuit elements
 - Section 17 Miscellaneous

Chapter I Symbol elements

Section 1 Outlines and enclosures

| Number of graphical symbols (Symbol identity number) | Symbol |
|--|--|
| 02-01-01 (S00059) | |
| Item | Description |
| Name | Object |
| Alternative names | Equipment; Device; Functional unit; Component; Function |
| Form | Form 1 |
| Alternative forms | 02-01-02 (S00060), 02-01-03 (S00061) |
| Application notes | A00013 |
| Application class | Qualifying symbols |
| Function class | - Functional attribute only |
| Shape class | Squares |
| Symbol restrictions | _ |
| Remarks | _ |
| Applies | _ |
| Applied in | S00385, S00386, S00393, S00391, S00392, S00394, S00396, S00397, S00398, S00395, S00399, S00401, S00402, S00404, S00403, S00400, S00443, S00442, S01421, S01465, S01463, S01464, S01655, S01031, S01176, S00515, S01078, S01136, S00900, S01030, S01035, S00992, S01076, S01181, S01175, S00896, S00781, S00894, S00519, S00608, S01184, S01037, S00533, S00993, S00492, S00893, S00785, S01032, S01167, S00899, S00549, S01036, S01244, S01075, S01125, S01225, S01079, S01029, S00552, S00494, S01174, S01177, S01130, S00897, S01033, S00548, S01034, S00783 |
| Keywords | envelopes, outlines |
| NOTE | |

| Number of graphical symbols (Symbol identity number) | Symbol |
|--|--|
| 02-01-02 (S00060) | |
| Item | Description |
| Name | Object |
| Alternative names | Equipment; Device; Functional unit; Component; Function |
| Form | Form 2 |
| Alternative forms | 02-01-01 (S00059), 02-01-03 (S00061) |
| Application notes | A00013 |
| Application class | Qualifying symbols |
| Function class | - Functional attribute only |
| Shape class | Rectangles |
| Symbol restrictions | _ |
| Remarks | _ |
| Applies | _ |
| Applied in | S00388, S00387, S00455, S00456, S01420, S01419, S00516, S00479, S01328, S00609, S00495, S01327, S00994, S00784, S00478, S01326, S00480 |
| Keywords | envelopes, outlines |
| NOTE | _ |

Section 1 Outlines and enclosures