

AS 1102.101—1989

Australian Standard®

**Graphical symbols for
electrotechnical documentation**

**Part 101: General information and
general index**

This Australian Standard was prepared by Committee TE/13, Symbols, Units and Quantities for electrotechnology. It was approved on behalf of the Council of Standards Australia on 22 March 1989 and published on 19 June 1989.

The following interests are represented on Committee TE/13:

Association of Consulting Engineers, Australia
Australian Electrical and Electronic Manufacturers Association
Civil Aviation Authority
Confederation of Australian Industry
Department of Administrative Services—Construction Group
Department of Defence
Department of Technical and Further Education, N.S.W., Vic. and S.A.
Electricity Supply Association of Australia
Institute of Draftsmen, Australia
Institution of Radio and Electronics Engineers, Australia
Melbourne & Metropolitan Board of Works
Queensland Chamber of Mines
Railways of Australia Committee
Royal Melbourne Institute of Technology
Telecom Australia
The technical press

Review of Australian Standards. To keep abreast of progress in industry, Australian Standards are subject to periodic review and are kept up to date by the issue of amendments or new editions as necessary. It is important therefore that Standards users ensure that they are in possession of the latest edition, and any amendments thereto.

Full details of all Australian Standards and related publications will be found in the Standards Australia Catalogue of Publications; this information is supplemented each month by the magazine 'The Australian Standard', which subscribing members receive, and which gives details of new publications, new editions and amendments, and of withdrawn Standards.

Suggestions for improvements to Australian Standards, addressed to the head office of Standards Australia, are welcomed. Notification of any inaccuracy or ambiguity found in an Australian Standard should be made without delay in order that the matter may be investigated and appropriate action taken.

This Standard was issued in draft form for comment as DR 87200.

Australian Standard[®]

**Graphical symbols for
electrotechnical documentation**

**Part 101: General information and
general index**

For history before 1989 see Preface.
AS 1002.101 first published 1989.

PUBLISHED BY STANDARDS AUSTRALIA
(STANDARDS ASSOCIATION OF AUSTRALIA)
1 THE CRESCENT, HOMEBUSH, NSW 2140



Documents

Document Sharing Hub

PREFACE

This Standard was prepared by the Standards Australia Committee on Symbols, Units and Quantities for Electrotechnology, under the authority of both the Telecommunications and Electronics Standards Board and the Electrical Standards Board.

THE 'NEW' AS 1102 SERIES

This Standard is one part of a major revision of the AS 1102 series, all 15 parts of which have or are currently being revised and consolidated so that the series is aligned with the 13-part IEC 617 series, *Graphical symbols for diagrams*.

The Committee decided upon this alignment rather than continue with the development of an Australian series based on but not aligned with IEC 617. Such a course would eventually have proved counter-productive since the IEC 617 series has already gained wide national and international acceptance.

Since the generic AS number for the series (AS 1102) is so well established throughout industry and technical colleges as *the* Australian Standard for electrotechnical graphical symbols, it was felt appropriate that it be retained. However, to clearly identify the revised Standards, three-digit part numbers have been employed (e.g. AS 1102.106) and in this Preface these revised Standards are referred to as the 'new' AS 1102 series.

The Standards of the 'new' AS 1102 series are derived as follows:

- (a) Eleven parts of the 'old' AS 1102 series (i.e. Parts 1 to 7, 10, 11, 13 and 14) are now consolidated and aligned with the first 10 parts of IEC 617 and thus become AS 1102.101 to AS 1102.110. These are published simultaneously.
- (b) Of the outstanding balance of parts of the 'old' AS 1102 series (i.e. Parts 8, 9, 12 and 15), these will all be revised and aligned in due course as follows:
 - (i) Part 8–1986, *Symbols for location diagrams*. This part will become AS 1102.111.
 - (ii) Part 9–1986, *Binary logic elements*. This part is already substantially in alignment with IEC 617–12 (1983) and will become AS 1102.112.
 - (iii) Part 12–1984, *Electric traction*. This part is wholly of Australian origin and it does not correspond with any IEC Standard. However, when it is revised it will be redesignated with a 3-digit part number. For the meantime it retains its 2-digit part number, i.e. Part 12.
 - (iv) Part 15–1982, *Analogue elements*. This part is already substantially in alignment with IEC 617–13 (1978) and will become AS 1102.113.

The following are the parts of the 'new' AS 1102 series that are published simultaneously:

AS 1102	<i>Graphical symbols for electrotechnical documentation</i>
AS 1102.101	<i>General information and general index</i>
AS 1102.102	<i>Symbol elements, qualifying symbols and other symbols having general application</i>
AS 1102.103	<i>Conductors and connecting devices</i>
AS 1102.104	<i>Passive components</i>
AS 1102.105	<i>Semiconductors and electron tubes</i>
AS 1102.106	<i>Production and conversion of electrical energy</i>
AS 1102.107	<i>Switchgear, controlgear and protective devices</i>
AS 1102.108	<i>Measuring instruments, lamps and signalling devices</i>
AS 1102.109	<i>Telecommunications–Switching and peripheral equipment</i>
AS 1102.110	<i>Telecommunications–Transmission</i>

The above parts collectively supersede the following Standards of the 'old' AS 1102 series:

AS 1102	<i>Graphical symbols for electrotechnology</i>
AS 1102.1–1985	<i>General, qualifying and supplementary symbols</i> (first published in 1973, second edition 1981)
AS 1102.2–1981	<i>Conductors and connecting devices</i> (first published in 1973)
AS 1102.3–1983	<i>Resistors, capacitors and inductors</i> (first published in 1973)

- AS 1102.4–1983 *Electron tubes and rectifiers* (first published in 1974)
 AS 1102.5–1983 *Semiconductor devices* (first published in 1972)
 AS 1102.6–1982 *Rotating electrical machines* (first published in 1975)
 AS 1102.7–1982 *Measuring instruments* (first published in 1975)
 AS 1102.10–1985 *Signal transmission symbols* (first published in 1973, second edition 1981)
 AS 1102.11–1985 *Switching and protective devices* (first published in 1976, second edition 1981)
 AS 1102.13–1979 *Microwave technology*
 AS 1102.14–1979 *Telephony, telegraphy and transducers*

PARTICULAR POINTS ON PART 101

The purpose of this Part (101) is to provide general information on the structure of the ‘new’ AS 1102 series, the terminology used, the numbering, presentation and use of the symbols, their adaption to computer-aided drafting (CAD) systems and a general index.

In its terminology, format and general treatment of the subject, this Standard aligns with IEC 617–1 (1985) except as modified to suit Australian conditions and includes a number of non-IEC symbols which represent Australian practice. These Australian symbols are separately identified (see Clauses 1.4 to 1.8).

© Copyright — STANDARDS AUSTRALIA

Users of Standards are reminded that copyright subsists in all Standards Australia publications and software. Except where the Copyright Act allows and except where provided for below no publications or software produced by Standards Australia may be reproduced, stored in a retrieval system in any form or transmitted by any means without prior permission in writing from Standards Australia. Permission may be conditional on an appropriate royalty payment. Requests for permission and information on commercial software royalties should be directed to the head office of Standards Australia.

Standards Australia will permit up to 10 percent of the technical content pages of a Standard to be copied for use exclusively in-house by purchasers of the Standard without payment of a royalty or advice to Standards Australia.

Standards Australia will also permit the inclusion of its copyright material in computer software programs for no royalty payment provided such programs are used exclusively in-house by the creators of the programs.

Care should be taken to ensure that material used is from the current edition of the Standard and that it is updated whenever the Standard is amended or revised. The number and date of the Standard should therefore be clearly identified.

The use of material in print form or in computer software programs to be used commercially, with or without payment, or in commercial contracts is subject to the payment of a royalty. This policy may be varied by Standards Australia at any time.

CONTENTS

	<i>Page</i>
SECTION 1 GENERAL	
1.1 SCOPE	5
1.2 REFERENCED DOCUMENTS	5
1.3 STRUCTURE	5
1.4 RELATIONSHIP WITH IEC SYMBOLS	7
1.5 RELATED AUSTRALIAN STANDARDS	7
1.6 TERMINOLOGY	7
1.7 PRESENTATION OF SYMBOLS	7
1.8 NUMBERING OF SYMBOLS	7
1.9 USE OF SYMBOLS	8
1.10 ADAPTATION OF SYMBOLS TO COMPUTER-AIDED DRAFTING SYSTEMS	8
SECTION 2 GENERAL INDEX	9
APPENDICES	
A GRID FOR COMPUTER-AIDED DRAFTING (CAD) SYSTEMS	33
B (VOID)	34

STANDARDS AUSTRALIA

Australian Standard

Graphical symbols for electrotechnical documentation

Part 101: General information and general index

SECTION 1. GENERAL

1.1 SCOPE. This Standard contains symbols for use in electrotechnical documentation and provides general information on the structure of the AS 1102 series of Standards, the terminology used, the numbering, presentation and use of the symbols and gives guidance on the adaptation of the symbols to computer-aided drafting (CAD) systems. Also, a general index of all symbols contained in the series is given (see Section 2).

No distinction is made between light and heavy current applications. Although many symbols relating to specific electrotechnical fields have been grouped in parts of this Standard, it should be noted that many of the symbols grouped and labelled for a specific field may have application elsewhere.

1.2 REFERENCED DOCUMENTS. The following documents are referred to in this Standard:

AS

1100	Technical drawing
1100.101	Part 101: General principles
1102	Graphical symbols for electrotechnology ('Old' series)
1102.8	Part 18: Symbols for location diagrams
1102.9	Part 9: Binary logic elements
1102.12	Part 12: Electric traction
1102.15	Part 15: Analogue elements
1102	Graphical symbols for electrotechnical documentation ('New' series)
1102.102	Part 102: Symbol elements, qualifying symbols and other symbols having general application
1102.103	Part 103: Conductors and connecting devices
1102.104	Part 104: Passive components
1102.105	Part 105: Semiconductors and electron tubes
1102.106	Part 106: Production and conversion of electrical energy
1102.107	Part 107: Switchgear, controlgear and protective devices
1102.108	Part 108: Measuring instruments, lamps and signalling devices
1102.109	Part 109: Telecommunications—Switching and peripheral equipment
1102.110	Part 110: Telecommunications—Transmission
1103	Diagrams, charts and tables for electrotechnology
1103.1	Part 1: Definitions and classifications
1103.3	Part 3: General rules for the preparation of diagrams and associated documents

1103.4	Part 4: Guiding principles for the preparation of circuit diagrams
1103.5	Part 5: Preparation of interconnection diagrams and tables
1103.6	Part 6: Preparation of unit wiring diagrams and tables
1103.7	Part 7: Representation of values of units of physical quantities
1103.8	Part 8: Guiding principles for the preparation of logic diagrams
1852	International electrotechnical vocabulary
3702	Item designation in electrotechnology
IEC	
117	Recommended graphical symbols
117.5	Part 5: Generating stations and substations, lines for transmission and distribution
117.8	Part 8: Symbols for architectural diagrams
617	Graphical symbols for diagrams
617.1	Part 1: General information, general index. Cross-reference tables
617.2	Part 2: Symbol elements, qualifying symbols and other symbols having general application
617.3	Part 3: Conductors and connecting devices
617.4	Part 4: Passive components
617.5	Part 5: Semiconductors and electron tubes
617.6	Part 6: Production and conversion of electrical energy
617.7	Part 7: Switchgear, controlgear and protective devices
617.8	Part 8: Measuring instruments, lamps and signalling devices
617.9	Part 9: Telecommunications: Switching and peripheral equipment
617.10	Part 10: Telecommunications: Transmission
617.11	Part 11: Architectural and topographical installation plans and diagrams.
617.12	Part 12: Binary logic elements
617.13	Part 13: Analogue elements

1.3 STRUCTURE.

1.3.1 General. The 'new' AS 1102 series of Standards comprises 14 Standards, ten of which have three-digit part numbers (AS 1102.101 to AS 1102.110) and four one-digit or two-digit part numbers (AS 1102.8, AS 1102.9, AS 1102.12 and AS 1102.15). The reasons for this are explained in the Preface.

Given below is a synopsis of each Standard in the series together with examples of associated matters (e.g. equipments) and the corresponding IEC Standard, where appropriate.

1.3.2 Three-digit part numbers. The following are details of the Standards in the AS 1102 series designated with three-digit part numbers:

- (a) *AS 1102.101 General information and general index.*

Synopsis: Provides general information on the structure of the 'new' AS 1102 series and a general index.

Associated matters: The terminology used, the numbering, presentation and use of the symbols and their adaptation to computer-aided drafting (CAD) systems.

Equivalent IEC Standard: IEC 617-1.

- (b) *AS 1102.102 Symbol elements, qualifying symbols and other symbols having general application.*

Synopsis: Provides information on symbol elements, qualifying symbols and other symbols having general application to the 'new' AS 1102 series.

Associated matters: Outlines and enclosures, qualifying symbols for kind of current and voltage, variability, direction of force, motion and flow, etc, mechanical controls, earth and frame connections and ideal circuit elements.

Equivalent IEC Standard: IEC 617-2.

- (c) *AS 1102.103 Conductors and connecting devices.*

Synopsis: Provides symbols for conductors and connecting devices, including terminals and cable fittings.

Associated matters: Flexible, screened, coaxial or twisted conductors; terminals, junctions, plugs and sockets and cable sealing ends.

Equivalent IEC Standard: IEC 617-3.

- (d) *AS 1102.104 Passive components.*

Synopsis: Provides symbols for passive components.

Associated matters: Resistors, capacitors, inductors, ferrite cores, magnetic storage matrices, piezoelectric crystals, electret and delay lines.

Equivalent IEC Standard: IEC 617-4.

- (e) *AS 1102.105 Semiconductors and electron tubes.*

Synopsis: Provides symbols for semiconductor devices and electron tubes.

Associated matters: Diodes, transistors, thyristors, electron tubes and radiation detectors.

Equivalent IEC Standard: IEC 617-5.

- (f) *AS 1102.106 Production and conversion of electrical energy.*

Synopsis: Provides symbols for the production and conversion of electrical energy.

Associated matters: Windings, generators, motors, transformers and power converters.

Equivalent IEC Standard: IEC 617-6.

- (g) *AS 1102.107 Switchgear, controlgear and protective devices.*

Synopsis: Provides symbols for switchgear, controlgear and protective devices, including starters, relays and flag indicators.

Associated matters: Contacts, switches, temperature-, proximity-, and touch-sensitive switches, switchgear and controlgear, motor starters, all-or-nothing relays, measuring relays, fuses, gaps and arresters.

Equivalent IEC Standard: IEC 617-7.

- (h) *AS 1102.108 Measuring instruments, lamps and signalling devices.*

Synopsis: Provides symbols for measuring instruments, lamps and signalling devices.

Associated matters: Indicating, integrating and recording instruments, thermocouples, telemetering devices, clocks, position and pressure transducers, lamps, horns and bells.

Equivalent IEC Standard: IEC 617-8.

- (i) *AS 1102.109 Telecommunications—Switching and peripheral equipment.*

Synopsis: Provides symbols for telecommunications switching and peripheral equipment.

Associated matters: Switching systems, selectors, telephone sets, telegraph and data apparatus, transducers, recorders and reproducers.

Equivalent IEC Standard: IEC 617-9.

- (j) *AS 1102.110 Telecommunications—Transmission.*

Synopsis: Provides symbols for telecommunications transmission.

Associated matters: Telecommunication circuits, antennas, radio stations, waveguides, one-port, two-port devices, or multiport devices, masers, lasers, signal generators, changers, threshold devices, modulators, demodulators, discriminators, concentrators, multiplexers, frequency spectrum diagrams, fibre-optics transmission lines and devices.

Equivalent IEC Standard: IEC 617-10.

1.3.3 One-digit or two-digit part numbers. The following are details of Standards in the AS 1102 series designated with one-digit or two-digit part numbers:

- (a) *AS 1102.8 Symbols for location diagrams.*

Synopsis: Provides symbols for location diagrams including guidance on architectural location diagrams for electrical services and location of analytical or process variable instruments on electrical location diagrams.

Associated matters: General electrical application symbols, power and communication application symbols, intruder alarm equipment, airport lighting and electric traction.

Equivalent IEC Standard: Consistent with IEC 117-5, 117-8 and 617-11.

- (b) *AS 1102.9 Binary logic elements.*

Synopsis: Defines the principles used in the development of graphical symbols for logic functions.

Associated matters: Qualifying symbols, dependency notation, combinative and sequential elements such as buffers, drivers, coders, arithmetic elements, delay elements, bistable, monostable and astable elements, memories, shift registers and counters.

Equivalent IEC Standard: Substantially aligns with IEC 617-12.

(c) *AS 1102.12 Electric traction.*

Synopsis: Defines graphical symbols for overhead power equipment and conductor rails for use in electric traction diagrams.

Associated matters: Symbols for track plans and sectionalizing diagrams, rolling stock for use in circuit and wiring diagrams.

Equivalent IEC Standard: No equivalent.

(d) *AS 1102.15 Analogue elements.*

Synopsis: Defines graphical symbols for use in diagrams for analogue elements for fields such as computation and control.

Associated matters: General rules, qualifying symbols, amplifiers, function generators, coordinate and signal converters, electronic switches and coefficient scaler.

Equivalent IEC Standard: Substantially aligns with IEC 617-13.

1.4 RELATIONSHIP WITH IEC SYMBOLS.

Symbols are identical with those internationally agreed within the International Electrotechnical Commission (IEC) except where—

- (i) established usage in Australia makes unqualified acceptance of the IEC symbol difficult;
- (ii) additional examples are required; or
- (iii) alternative symbols are given.

In such cases, the 'Australian' symbol is identified by the suffix '-A' followed by a number, at the end of the symbol number (see Clause 1.8), or the unacceptable IEC symbol is marked 'VOID'. For an example of each case, see AS 1102.102, Symbol numbers 102-02-A1 and 102-02-08.

1.5 RELATED AUSTRALIAN STANDARDS. More detailed guidance on the use of graphical symbols and the various types of diagram is given in AS 1100.101 and AS 1103.3 to AS 1103.8.

1.6 TERMINOLOGY.

1.6.1 General. Whenever possible, the names of the devices and concepts symbolized in this 'new' AS 1102 series correspond with those used in the AS 1852 series, and in general, the terms and definitions employed are given in AS 1103.1.

Terms for the various types of graphical symbols are defined in Clauses 1.6.2 to 1.6.6.

1.6.2 Graphical symbols. Graphical symbols are figures, marks or characters conventionally used on a diagram or other document to represent an item or a concept.

1.6.3 Symbol elements. Symbol elements are simple figures with defined meanings which must be combined with other figures to form complete symbols for a device or a concept.

For example, the symbol for an electron tube (valve) is assembled from symbol elements representing the heater, grid, anode, envelope, etc. When symbol elements are combined in this way, their arrangement is not necessarily related to the physical structure of the device symbolized.

1.6.4 General symbols. General symbols are usually simple and characteristically common to a whole family of items.

1.6.5 Qualifying symbols. Qualifying symbols are symbols that are added to other symbols to provide additional information.

NOTES:

1. Although qualifying symbols cannot normally be used on their own, a general symbol may sometimes be used for qualifying purposes. Thus the general symbol for a capacitor may be added to that for a microphone to produce the symbol for a capacitor microphone.
2. The term 'supplementary symbol' (now non-preferred) was once used with the same meaning as qualifying symbol.

1.6.6 Block symbols. Block symbols are simple graphical symbols representing an assembly of items and intended to indicate the function of the assembly, but they give no details about the items nor do they take account of all connections.

NOTE: Block symbols are generally used in diagrams where single line representation is applied. They may also be used in diagrams with all input and output connections shown.

1.7 PRESENTATION OF SYMBOLS. The symbols in the 'new' AS 1102 series are drawn to a size convenient for comprehension, and to give them suitable sizes relative to each other. They are laid out in such a way that the distance between connecting lines is a multiple of a certain modulus chosen to provide enough space for the usual terminal designations.

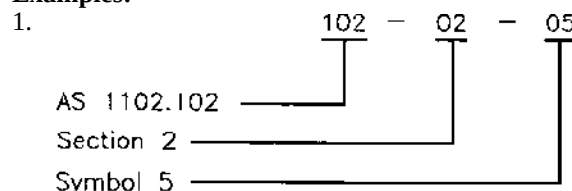
In most cases symbols are directly applicable on a diagram and can be put on a grid in a computer-aided drafting (CAD) system (see Clause 1.10). In the 'new' AS 1102 series some symbols are reproduced at reduced size for reasons of publication convenience.

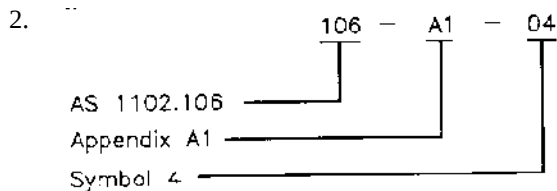
Although the symbols in the 'new' AS 1102 series are presented without a background grid, a grid was used in their preparation. A transparent overlay with a grid is included as Appendix A.

1.8 NUMBERING OF SYMBOLS. Each symbol has a serial number comprising three elements, each separated by a dash as follows:

- (a) *First element.* The first element consists of three digits which corresponds to the part number of the Standard, e.g. 106 for AS 1102.106.
- (b) *Second element.* The second element consists of either—
 - (i) two digits which represents the section of the Standard, e.g. 13 for Section 13; or
 - (ii) one capital letter and one digit which represents the section of an appendix of the Standard, e.g. A2 for Section A2 of Appendix A.
- (c) *Third element.* The third element consists of two digits which represent the number of the symbol in the section of the Standard, e.g. 04 for the fourth symbol listed.

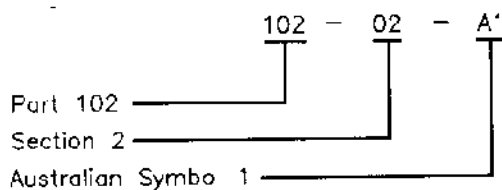
In AS 1102.102 to AS 1102.110, sections are numbered consecutively from 1 to 99, appendices from A1 to A9 and symbols from 01 to 99.

Examples:



With respect to Clause 1.4, the only variation to the (IEC style) numbering given above, is for Australian alternative or additional symbols. These 'Australian' symbols are numbered exactly as given in Items (a) and (b) above, the exception being for the symbol number (Item (c)) which is identified as A1 to A99.

Example:



1.9 USE OF SYMBOLS. Although the list of symbol elements, qualifying symbols and general symbols has been made as complete as possible, only a limited number of examples of combined symbols are given. If the symbol for a particular device or concept cannot be found, it should be possible to produce it by an appropriate combination of the published symbols.

The sizes of symbols relative to one another may be changed to suit the circumstances of a given diagram or application, e.g. different symbol sizes are often used for power transformers and measuring transformers. Also, if a symbol is used to qualify another, its size is often reduced. However, the relative proportions of the individual symbols should be retained when they are reduced or enlarged.

Symbols may be turned or mirror-imaged if their meaning will not be changed thereby. The orientation shown is not mandatory.

A different line thickness may be used for conductor symbols.

For clarity, symbols are usually shown with connecting lines. Unless otherwise stated, the arrangements shown are only one example of the ways in which connecting lines may be drawn.

Supplementary information can be added to most symbols but examples of the practice are only given in those cases where there is a recommended method for the presentation of such information, e.g. Symbol 103-01-05.

1.10 ADAPTATION OF SYMBOLS TO COMPUTER-AIDED DRAFTING (CAD) SYSTEMS. The use of the symbols with a CAD system may be facilitated as follows:

- The symbols have been designed so that they can be used on a grid system with a modulus, M , between lines. The modulus used is 2.5 mm but it is not mandatory.
- Connecting lines to a symbol coincide with the grid lines and end at grid line intersections.
- The sides of rectangles and the diameter of circles are multiples of $2M$. For smaller symbols, dimensions equal to $1.5M$, $1M$ and $0.5M$ are used.
- A distance of at least $2M$ is provided between connecting lines to meet the requirements of AS 1100.101 for a minimum character height of 2.5 mm.

It is an additional requirement of CAD systems that each symbol has a reference point located at a grid intersection. Although there is no general rule stating the exact location of such a reference point, a transparent overlay (such as that shown in Appendix A) facilitates the selection of a suitable entry point and exit point.

SECTION 2. GENERAL INDEX

NOTES:

1. The first element shown below (see Clause 1.8) corresponds to the part number of the Standard in the AS 1102 series. This number is the same as the IEC 617 part number except that the IEC numbers commence at 01, whereas the Australian Standard numbers commence at 101. (See also Clause 1.3.)
2. The symbol numbers for AS 1102.111, AS 1102.112 and AS 1102.113 correspond to IEC 617, Parts 11, 12 and 13 which have not yet been incorporated in the 'new' AS 1102 series. (See also Clause 1.3.)
3. Symbol numbers for AS 1102.8, AS 1102.9, AS 1102.12 and AS 1102.15 are not incorporated in this general index but will

be included when those Standards are revised, consolidated and introduced into the 'new' AS 1102 series with a 3-digit part number (see Preface).

4. The letter codes for kind of item in the third column of the general index conform with AS 3702. However, AS 3702 permits the use of alternative codes depending on the item's use. The codes shown in the index are those most commonly used. Not all items listed in the index have been assigned a letter code.
5. Attention is drawn to the general information on the structure of the 'new' AS 1102 series provided by Clause 1.3.

Description	Symbol No.	Letter code	Description	Symbol No.	Letter code
A			Analogue elements, qualifying symbols for		
AND element(s)			amplifiers		
–OR-Invert	112-28-03	D	analogue value of		
expandable	112-28-06	D	integration	113-03-06	
general symbol	112-27-02	D	control	113-03-07	
with negated output (NAND)	112-28-01	D	differentiating	113-03-03	
Accumulator	106-15-01	G	frequency compensation	113-03-05	
Accumulator			hold	113-03-08	
coulomb	105-16-01	V	initial condition	113-03-06	
Accumulators–Battery of			integrating	113-03-02	
form 1	106-15-02	G	logarithmic	113-03-04	
form 2	106-15-03	G	reset	113-03-09	
Active space station	110-06-10		set	113-03-10	
Adder(s) (binary logic)			splitter/combiner	109-07-A5	
full adder, 4-bit	112-39-02	D	summation	113-03-01	
general symbol	112-38-01	D	supply voltage	113-03-11	
half	112-38-07	D	identification of		
single-bit full	112-38-08	D	analogue signals	113-02-01	
single-bit full, example	112-39-01	D	digital signals	113-02-02	
Additional measuring frequency	110-21-07		Annunciator element	108-10-03	H
transmitted or measured on request	110-21-08		Anode	105-07-11	
Adjustable			composite, serving as an anode and/or	105-07-10	
discontinuity	110-08-02	Z	as a cold cathode		
Adjustable capacitor	104-02-07	C	fluorescent target	105-07-12	
Adjustable resistor	104-01-03	R	with secondary emission	105-08-12	
Adjustment, pre-set	102-03-05		Anode(s)		
Alternating current	102-02-04		X-ray tube	105-10-01	
Alternating current of 'm'	102-02-A1		protective	111-04-08	F,X
phases and frequency 'p'			Antenna(s)		
Ampere-hour meter	108-04-02	P	Qualifying symbols		
Amplifier(s)			circular polarization	110-03-02	
both way, negative impedance	110-15-04	A	direction finder	110-03-08	
form 1, general symbol	110-15-01	A	direction of radiation	110-03-07	
form 2, general symbol	110-15-02	A	fixed in azimuth and elevation		
with by-pass	110-15-05	A	direction of radiation	110-03-03	
with external control	110-15-03	A	fixed in azimuth		
Amplifier(s) (Map symbols)			direction of radiation	110-03-05	
bridging	111-06-01	A	fixed in elevation		
end of line (branch or spur feeder)	111-06-03	A	direction of radiation	110-03-04	
trunk bridging amplifier assembly	111-06-02	A	variable in azimuth		
with return channel	111-06-04	A	direction of radiation	110-03-06	
Amplifier(s) (analogue)			variable in elevation		
differentiating	113-04-08	N,A	plane polarization	110-03-01	
for analogue computation,	113-04-01	N,A	radio beacon	110-03-08	
general symbol			balun	110-05-08	W
high gain differential	113-04-02	N,A	cheese box reflector	110-05-12	W
high gain with an amplification of	113-04-03	N,A	cheese reflector	110-05-12	W
10 000			counterpoise	110-05-03	W
integrating	113-04-07	N,A	dipole	110-05-05	W
inverting with			dipole folded	110-05-06	W
an amplification of 1	113-04-04	N,A	with balun and coaxial feeder	110-05-09	W
logarithmic	113-04-09	N,A	with three directors and one reflector	110-05-07	W
operational	113-04-02	N,A	direction finding	110-04-06	W
summing	113-04-06	N,A	directional, fixed in azimuth,		
with two outputs of different quality	113-04-05	N,A	horizontal polarization	110-04-04	W
Amplifier, magnetic	106-A1-04	A	directional, fixed in azimuth	110-04-07	W
Amplitude controller, non-distorting	110-16-18	Z	vertically polarized		
Amplitude/frequency distortion corrector	110-16-15	Z	frame	110-05-01	W
			general symbol	110-04-01	W
			horn	110-05-11	W
			horn feed	110-05-11	W
			horn-reflector	110-05-14	W