

AS/NZS 1102.103:1997

Australian/New Zealand Standard[®]

**Graphical symbols for
electrotechnical documentation**

**Part 103: Conductors and
connecting devices**

[Based on and including the full text of IEC 617-3:1996, Graphical symbols for diagrams, Part 3: Conductors and connecting devices]



**LEADING AUSTRALIA
INTO THE FUTURE**



Documents

Document Sharing Hub

AS/NZS 1102.103:1997

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee TE/13, Symbols, Units and Quantities for Electrotechnology. It was approved on behalf of the Council of Standards Australia on 19 September 1997 and on behalf of the Council of Standards New Zealand on 19 September 1997. It was published on 5 December 1997.

The following interests are represented on Committee TE/13:

AirServices Australia
The Association of Consulting Engineers, Australia
Australian Chamber of Commerce & Industry
Department of Employment & Technical & Further Education, S.A.
Department of Defence, Australia
Institution of Engineers, Australia
Institution of Radio & Electronics Engineers, Australia
Ministry of Commerce, New Zealand
Queensland Mining Council
Royal Melbourne Institute of Technology

Review of Standards. To keep abreast of progress in industry, Joint Australian/New Zealand 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 Joint Standards and related publications will be found in the Standards Australia and Standards New Zealand Catalogue of Publications; this information is supplemented each month by the magazines 'The Australian Standard' and 'Standards New Zealand', which subscribing members receive, and which give details of new publications, new editions and amendments, and of withdrawn Standards.

Suggestions for improvements to Joint Standards, addressed to the head office of either Standards Australia or Standards New Zealand, are welcomed. Notification of any inaccuracy or ambiguity found in a Joint Australian/New Zealand 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 97172.

**Documents**

Document Sharing Hub

AS/NZS 1102.103:1997

Australian/New Zealand Standard[®]

**Graphical symbols for
electrotechnical documentation**

**Part 103: Conductors and
connecting devices**

Originated in Australia in part as part of AS 1102.5—1972.
Final Australian edition AS 1102.103—1989.
Jointly revised and designated AS/NZS 1102.103:1997.

PUBLISHED JOINTLY BY:

STANDARDS AUSTRALIA
1 The Crescent,
Homebush NSW 2140 Australia

STANDARDS NEW ZEALAND
Level 10, Radio New Zealand House,
155 The Terrace,
Wellington 6001 New Zealand

PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee TE/13, Symbols, Units and Quantities for Electrotechnology. It is issued as a Joint Standard to supersede AS 1102.103—1989. It is based on but not equivalent to, and reproduced from, IEC 617-3, *Graphical symbols for diagrams, Part 3: Conductors and connecting devices*.

The objective of this Standard is to provide users of electrotechnical documents with graphical symbols for conductors and connecting devices for the purposes of uniformity and clarity in presenting electrotechnical diagrams.

The Part numbers in this series of Standards correspond to equivalent Parts in the IEC 617 series but with '100' added to the IEC 617 Part number. For example, for the Standard IEC 617-2 refer to AS/NZS 1102.102. The symbol numbers within this Standard are the same as the IEC 617 numbers. In AS/NZS 1102.101, *Graphical symbols for electrotechnical documentation, Part 101: General information and general index*, the first part of the symbol number refers to the Part number, e.g. in the index, for symbol 102-01-01, refer to Part 102, symbol 02-01-01.

In this Standard, Australian and New Zealand variations have been listed in Appendix ZA and accordingly, the source text should be amended, supplemented or replaced as required. The changes to the source text are indicated with a marginal bar against each clause, table, figure or part thereof affected. Appendix ZA provides symbols for use in Australia and New Zealand which are additional to, or alternative to, the IEC 617 symbols. The symbols are identified with an 'A' in the third part of the symbol number.

The term 'normative' has been used in this Standard to define the application of the appendix to which it applies. A 'normative' appendix is an integral part of a Standard.

As this Standard is reproduced from an international Standard, the following applies:

- (a) Its number appears on the cover and title page while the international Standard number appears only on the cover.
- (b) In the source text, 'this International Standard' should read 'this Australian/New Zealand Standard'.
- (c) A full point substitutes for a comma when referring to a decimal marker.

References to international Standards should be replaced by equivalent Australian or Australian/New Zealand Standards as follows:

<i>Reference to International Standard</i>		<i>Australian or Australian/New Zealand Standard</i>	
IEC		AS	
617	Graphical symbols for diagrams	1102	Graphical symbols for electrotechnical documentation
617-1	Part 1: General information, general index. Cross-reference tables	1102.101	Part 101: General information and general index

CONTENTS

	<i>Page</i>
INTRODUCTION	iv
Section 1 Connections	2
Section 2 Junctions, terminals and branchings	5
Section 3 Connection devices	9
Section 4 Cable fittings	12
Annex A – Older symbols	14
Annex C – English alphabetic index	16
APPENDIX ZA CHANGES TO THE IEC STANDARD FOR AUSTRALIA AND NEW ZEALAND	18

© Copyright – STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

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

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

Inclusion of copyright material in computer software programs is also permitted without 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 or Standards New Zealand at any time.

INTRODUCTION

Symbols have been designed in accordance with requirements given in the future ISO 11714-1. The module size $M = 2,5$ 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. To save space larger symbols have been reduced to half size and are marked "50 %" in the symbol column. In accordance with the future ISO 11714-1, clause 7, symbol dimensions (for instance height) may be modified in order to make space for greater number of terminals or for other layout requirements. 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 draughting system. The grid which was used has been reproduced in the background of the symbols.

The older symbols which were included in appendix A of the first edition of IEC 617-3 for a transitional period, are no longer part of this second edition, as they will definitely be withdrawn from use.

The indexes in Annex B and C include an alphabetic list of symbol names and their corresponding number. The symbol names are based on the description of the symbols of this part. A general index including an alphabetic list of symbols of all parts is given in IEC 617-1.

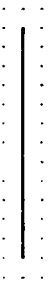
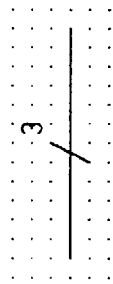
AUSTRALIAN/NEW ZEALAND STANDARD

Graphical symbols for electrotechnical documentation

Part 103:
Conductors and connecting devices

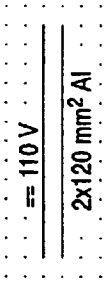
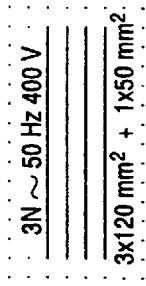
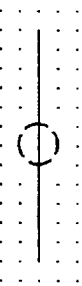
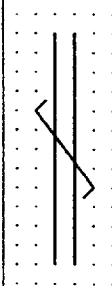
SECTION 1 – CONNECTIONS

SECTION 1 – LIAISONS

No.	Symbole	Symbol	Légende	Description
03-01-01			Liaison Groupe de liaisons EXAMPLES: – conducteur – câble – ligne – ligne de propagation Lorsqu'un trait unique représente un groupe de conducteurs, leur nombre de liaisons peut être indiqué soit par autant de tirets obliques, soit par un seul tiret oblique complété d'un chiffre correspondant au nombre de liaisons. La longueur du symbole de liaison peut être ajustée en fonction de la disposition du schéma.	Connection Group of connections EXAMPLES: – conductor – cable – line – transmission path If a single line represents a group of conductors, the number of connections may be indicated either by adding as many oblique strokes or one stroke followed by the figure for the number of connections. The length of the connection symbol may be adjusted to the layout of the diagram.
03-01-02	Forme 1 Form 1		EXAMPLES: Trois liaisons Des renseignements complémentaires peuvent être indiqués comme suit: – nature du courant – système de distribution – fréquence – tension – nombre de conducteurs – section de chaque conducteur – symbole chimique du métal du conducteur	EXAMPLES: Three connections Additional information may be indicated such as: – kind of current – system of distribution – frequency – voltage – number of conductors – cross-sectional area of each conductor – the chemical symbol for the conductor material
03-01-03	Forme 2 Form 2		Le nombre de conducteurs est suivi de la valeur de la section, séparée par un x. Si certains conducteurs ont des sections différentes, il convient d'en séparer les caractéristiques par le signe +.	The number of conductors is followed by the sectional area, separated by x. If different sizes are used, their particulars should be separated by +.

(Continued overleaf)

(Suite au verso)

No.	Symbole Symbol	Légende	Description
03-01-04		EXEMPLES: Circuit à courant continu, 110 V, deux conducteurs de 120 mm² en aluminium	EXEMPLES: Direct current circuit, 110 V, two aluminium conductors of 120 mm²
03-01-05		Circuit à courant triphasé, 50 Hz, 400 V, trois conducteurs de 120 mm², avec fil neutre de 50 mm² Il est permis de remplacer 3N par 3+N	Three-phase circuit, 50 Hz, 400 V, three conductors of 120 mm², with neutral of 50 mm² 3N may be replaced by 3+N
03-01-06		Liaison flexible	Flexible connection
03-01-07		Conducteur sous écran La méthode de représentation du 03-01-10 peut être utilisée pour plusieurs conducteurs sous un écran commun ou dans le même câble ou torsadés, mais les symboles de ces conducteurs sont mêlés avec ceux des autres connexions. Le symbole d'un câble, d'un écran, d'une torsade, doit être figuré au-dessus, au-dessous ou près du groupe où sont mêlés les symboles de conducteur. Il doit être relié par une ligne conduisant aux lignes individuelles qui représentent les conducteurs dans le même écran, câble ou groupe torsadé.	Screened conductor The drawing method shown in 03-01-10 may be used if several conductors are contained within the same screen or cable or are twisted together, but the symbols for these conductors are intermingled with symbols for other connections. The symbol for cable, screen, or twist shall be shown, either above, below, or beside the intermingled group of conductor symbols. It shall be connected by a leader line pointing to the individual lines representing the conductors within the same screen, cable or twisted group.
03-01-08		Liaison torsadée Deux liaisons figurées La règle de 03-01-07 est applicable	Twisted connection Two connections shown The rule with 03-01-07 applies