

Graphical symbols for diagrams —

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

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ICS 01.080.30; 29.020

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National foreword

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 41 and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

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Descriptors: General, electric diagram, electrical symbol

English version

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

(IEC 617-2:1996)

Symboles graphiques pour schémas
Partie 2: Eléments de symboles, symboles
distinctifs et autres symboles d'application
générale
(CEI 617-2:1996)

Graphische Symbole für Schaltpläne
Teil 2: Symbolelemente, Kennzeichen und
andere Schaltzeichen für allgemeine
Anwendungen
(IEC 617-2:1996)

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Foreword

The text of document 3A/380/FDIS, future edition 2 of IEC 617-2, prepared by SC 3A, Graphical symbols for diagrams, of IEC TC 3, Documentation and graphical symbols, was submitted to the IEC/CENELEC parallel vote and was approved by CENELEC as EN 60617-2 on 1996-03-05.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 1997-02-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 1997-02-01

Endorsement notice

The text of the International Standard IEC 617-2:1996 was approved by CENELEC as a European Standard without any modification.

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Introduction

This part of IEC 617 forms an element of a series which deals with graphical symbols for diagrams.

The series consists of the following parts:

- *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: Basic 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.*

The scope and the normative references for this series are given in IEC 617-1.

Symbols have been designed in accordance with requirements given in the future ISO 11714-1¹⁾. 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 a 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 617-2 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.

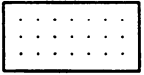
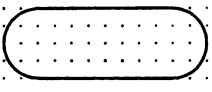
¹⁾ At present, at the stage of Draft International Standard (document 3/563/DIS).

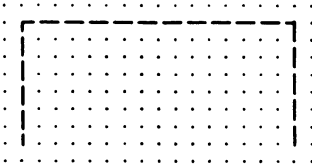
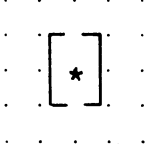
Chapitre I: Éléments de symboles

Section 1 — Cadres et enveloppes

Chapter I: Symbol elements

Section 1 — Outlines and enclosures

No.	Symbole	Symbol	Légende	Description
02-01-01	Forme 1 Form 1		Objet, par exemple: — Equipement — Dispositif — Unité fonctionnelle — Composant — Fonction	Object, for example: — Equipment — Device — Functional unit — Component — Function
02-01-02	Forme 2 Form 2		Des symboles ou légendes appropriés doivent être portés dans le symbole ou inscrits près de son cadre pour préciser le type de l'objet.	Suitable symbols or legends shall be inserted in or added to the symbol outline to indicate the type of object.
02-01-03	Forme 3 Form 3		Un contour d'une autre forme peut être utilisé si la présentation l'exige.	An outline of another shape may be used if layout demands it.
02-01-04	Forme 1 Form 1		Enveloppe (ampoule ou cuve) Enceinte Un contour d'une autre forme peut être utilisé si la présentation l'exige. Si l'enveloppe est construite pour assurer une protection spéciale, on peut l'indiquer par une note.	Envelope (bulb or tank) Enclosure An outline of another shape may be used if layout demands it. If the enclosure has special protective features attention may be drawn to these by a note.
02-01-05	Forme 2 Form 2		Le symbole de l'enveloppe peut être omis s'il n'en résulte aucune confusion. Il doit être dessiné si une connexion aboutit à l'enveloppe. Si nécessaire le symbole de l'enveloppe peut être décomposé.	The envelope symbol may be omitted if no confusion is likely. The envelope must be shown if there is a connection to it. If necessary the envelope symbol may be split.

No.	Symbole Symbol	Légende	Description
02-01-06		Séparation Le symbole est utilisé pour indiquer la séparation d'un groupe de constituants associés physiquement, mécaniquement ou fonctionnellement. N'importe quelle combinaison de traits courts et longs peut aussi être utilisée.	Boundary The symbol is used to indicate a boundary of a group of objects associated physically, mechanically or functionally. Any combination of short and long strokes may also be used.
02-01-07		Ecran Blindage Par exemple pour réduire la pénétration de champs électriques ou électromagnétiques. Toute forme convenable peut être utilisée pour le symbole.	Screen Shield For example for reducing penetration of electric or electromagnetic fields. The symbol may be drawn in any convenient shape.
02-01-08	 200%	Protection contre le contact direct non intentionnel, symbole général. L'astérisque doit être remplacé par le(s) symbole(s) de l'équipement ou du dispositif protégé contre le contact direct non intentionnel.	Protection against unintentional direct contact, general symbol. The asterisk shall be replaced by the symbol(s) for an equipment or device protected against unintentional direct contact.

Chapitre II: Symboles distinctifs

Section 2 — Nature du courant et de la tension

Chapter II: Qualifying symbols

Section 2 — Kind of current and voltage

No.	Symbole Symbol	Légende	Description
02-02-01	supprimé deleted	Transféré à Annexe A: 02-A1-01	Transferred to Annex A: 02-A1-01
02-02-02	supprimé deleted	Transféré à Annexe A: 02-A1-02	Transferred to Annex A: 02-A1-02
02-02-03		Courant continue La valeur de la tension peut être inscrite à droite et le type de réseau à gauche du symbole. EXEMPLE: 2/M= 220/110 V	Direct current The voltage may be indicated at the right of the symbol and the type of system at the left. EXAMPLE: 2/M= 220/110 V
02-02-04		Courant alternatif La valeur numérique de la fréquence ou de la bande de fréquences peut être inscrite à droite du symbole. EXEMPLES: Courant alternatif, 50 Hz	Alternating current The numerical value of the frequency or the frequency range may be added at the right-hand side of the symbol. EXAMPLES: Alternating current of 50 Hz
02-02-05			
02-02-06		Courant alternatif dans une bande de fréquences de 100 kHz à 600 kHz La valeur de la tension peut également être inscrite à droite du symbole. Le nombre de phases et la présence d'un neutre, peuvent être inscrits à gauche du symbole.	Alternating current frequency range 100 kHz to 600 kHz The voltage value may also be indicated to the right of the symbol. The number of phases and the presence of a neutral may be indicated at the left-hand side of the symbol.

No.	Symbole Symbol	Légende	Description
02-02-07	3/N ~ 400/230 V 50 Hz	EXEMPLE: Courant alternatif triphasé avec neutre, 400 V (230 V entre chaque phase et le neutre), 50 Hz. (voir aussi CEI 1293) S'il est nécessaire d'indiquer un système conformément aux désignations établies dans la CEI 364-3 la désignation appropriée doit être ajoutée.	EXAMPLE: Alternating current: three-phase with neutral, 400 V (230 V between phase and neutral), 50 Hz. (see also IEC 1293) If it is necessary to indicate a system in accordance with the designations established in IEC 364-3 the corresponding designation shall be added to the symbol.
02-02-08	3/N ~ 50 Hz / TN – S	EXEMPLE: Courant alternatif, triphasé, 50 Hz; système ayant un point relié à la terre et conducteur neutre et conducteur de protection séparés dans l'ensemble	EXAMPLE: Alternating current, three-phase, 50 Hz; system having one point directly earthed and separate neutral and protective conductors throughout
02-02-09		Courant alternatif, différentes bandes de fréquences Les symboles suivants peuvent être utilisés lorsqu'il faut, dans un même schéma, distinguer les différentes bandes de fréquences, par exemple. Fréquences relativement basses (fréquences industrielles, fréquences infra-acoustiques)	Alternating current, different frequency ranges The following symbols may be used when it is necessary on a given drawing to distinguish between the different frequency ranges, for example. Relatively low frequencies (power frequencies or sub-audio frequencies)
02-02-10		Fréquences moyennes (fréquences acoustiques)	Medium frequencies (audio)
02-02-11		Fréquences relativement hautes (fréquences supraacoustiques, fréquences porteuses, fréquences radioélectriques)	Relatively high frequencies (super audio, carrier and radio frequencies)
02-02-12		Courant redressé avec composante alternative (s'il est nécessaire de le distinguer d'un courant redressé et filtré)	Rectified current with alternating component (if it is necessary to distinguish from a rectified and filtered current)

No.	Symbole Symbol	Légende	Description
02-02-13	+	Polarité positive	Positive polarity
02-02-14	—	Polarité négative	Negative polarity
02-02-15	N	Neutre Ce symbole pour conducteur neutre est donné par la CEI 445.	Neutral This symbol for neutral is given in IEC 445.
02-02-16	M	Médian Ce symbole pour conducteur médian est donné par la CEI 445.	Mid-wire This symbol for mid-wire is given in IEC 445.

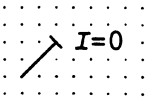
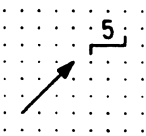
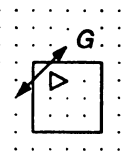
Section 3 — Ajustabilité, variabilité et régulation automatique

- 3.1 L'ajustabilité est une sorte de variabilité extrinsèque qui permet d'accomplir un ajustement, c'est à dire de fixer la grandeur variable à la valeur convenable.
- 3.2 La variabilité est extrinsèque quand la valeur de la grandeur variable est réglée par un dispositif extérieur, par exemple quand la valeur d'une résistance est contrôlée par un régulateur.
- 3.3 La variabilité est intrinsèque quand la valeur de la grandeur variable dépend des propriétés du dispositif lui-même, par exemple quand la valeur d'une résistance varie en fonction de la tension ou de la température.
- 3.4 Il convient que le symbole d'ajustabilité de variabilité soit dessiné sur le symbole de l'élément et sous un angle de 45° environ par rapport à l'axe principal de ce dernier.

Section 3 — Adjustability, variability and automatic control

- 3.1 Adjustability is a kind of non-inherent variability which enables to perform an adjustment, i.e. to set the variable quantity on a suitable value.
- 3.2 Variability is non-inherent when the variable quantity is controlled by an external device, for example, when the resistance is controlled by a regulator.
- 3.3 Variability is inherent when the variable quantity depends on qualities of the device itself, for example, when the resistance changes as a function of voltage or of temperature.
- 3.4 The sign for adjustability and variability should be drawn across the main symbol at about 45° to the centre line of the latter symbol.

No.	Symbole Symbol	Légende	Description
02-03-01		Ajustabilité, symbole général	Adjustability, general symbol
02-03-02		Ajustabilité, non linéaire	Adjustability, non-linear
02-03-03		Variabilité intrinsèque, symbole général Des infomations sur les grandeurs influençantes, par exemple tension ou température, peuvent être inscrites à côté du symbole.	Variability, inherent, general symbol Information on the controlling quantity, for example voltage or temperature, may be shown adjacent to the symbol.
02-03-04		Variabilité intrinsèque, non linéaire La règle du symbole 02-03-03 est applicable.	Variability, inherent, non-linear The rule with symbol 02-03-03 applies.

No.	Symbole Symbol	Légende	Description
02-03-05		Ajustement prédéterminé Des indications concernant les conditions dans lesquelles l'ajustement est autorisé peuvent être figurées à côté du symbole.	Pre-set adjustability Information on the conditions under which adjustability is permitted may be shown adjacent to the symbol.
02-03-06		EXEMPLE: L'ajustement prédéterminé est autorisé seulement à courant nul	EXEMPLE: Pre-set adjustment permitted only at zero current
02-03-07		Action par échelons Le nombre d'échelons peut être précisé.	Action in steps A figure indicating the number of steps may be added.
02-03-08		Ajustabilité pas à pas, 5 pas indiqués	Adjustability step by step, 5 steps shown
02-03-09		Variabilité continue	Continuous variability
02-03-10		EXEMPLE: Ajustement prédéterminé à action continue	EXEMPLE: Pre-set adjustment, continuously variable
02-03-11		Régulation automatique La grandeur réglée peut être indiquée à côté du symbole.	Automatic control The controlled quantity may be indicated adjacent to the symbol.
02-03-12		EXEMPLE: Amplificateur avec contrôle automatique de gain	EXEMPLE: Amplifier with automatic gain control