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Mnemonics and designations of symbols for measuring relays, instruments and related device

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MNEMONICS AND DESIGNATIONS OF SYMBOLS FOR MEASURING RELAYS, INSTRUMENTS AND RELATED DEVICE

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IEC 62711, which is a technical report, was prepared by IEC technical committee 3: Information structures, documentation and graphical symbols.

The text of this technical report is based on the following documents:

Enquiry draft	Report on voting
3/1029A/DTR	3/1041/RVC

Full information on the voting for the approval of this technical report can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

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The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
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MNEMONICS AND DESIGNATIONS OF SYMBOLS FOR MEASURING RELAYS, INSTRUMENTS AND RELATED DEVICE

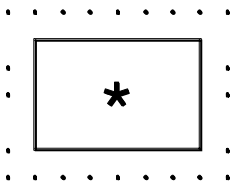
1 Scope

This Technical Report provides recommendations for consistent use of mnemonics and qualifying symbols to be applied to symbols representing devices used in systems for monitoring, protection, switching, and controlling of apparatus in electrical substations, generating stations, power utilization and conversion facilities, and equipment designed for automatic protection of power systems. The recommendations are intended for designers, manufacturers and engineers of such systems.

For symbols of measuring relay and measuring instrument, it is intended to serve two purposes, namely:

– Give a review of standardized designations (as defined in this report);
– Limit the range of possible variants (after final standardization and introduction in IEC 60617).

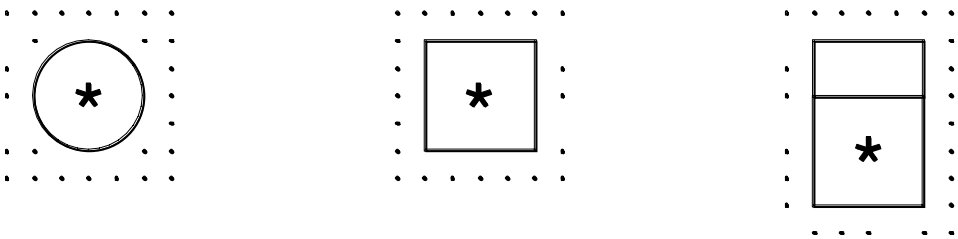
Symbols for measuring relays are symbols in which the functional behaviour of an element, mostly because of its complexity, is described by qualifying symbols e.g. IEC 60617-S00328 (2001-07), IEC 60617-S00337 (2001-07), particularly by referring to supporting documentation; the relevant rules and explanations are to be found in IEC 60617 in the application notes associated with the symbols, e.g. IEC 60617-S00327 (2001-07) (A00091 through A00094).



IEC 60617-S00327 (2001-07):
Measuring relay

Figure 1 – The general symbol for a measuring relay in IEC 60617

Symbols for indicating, recording or integrating instruments are symbols in which the functional behaviour of an element is fully described by standardized means. The relevant rules and explanations are to be found in IEC 60617 in the application notes associated with the symbols IEC 60617-S00910 (2001-07), IEC 60617-S00911 (2001-07) and IEC 60617-S00912 (A00144 through A00147).



IEC 60617-S00910 (2001-07):
Indicating instrument

IEC 60617-S00911 (2001-07):
Recording instrument

IEC 60617-S00912 (2001-07):
Integrating instrument

Figure 2 – The general symbols for a measuring instrument in IEC 60617

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2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60617, *Graphical symbols for diagrams*

ISO/IEC 81714-1, *Design of graphical symbols for use in the technical documentation of products – Part 1: Basic rules*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
protection relay
measuring relay which, either solely or in combination with other relays, is a constituent of a protection equipment

[IEC 60050-448:1995, 448-11-02]

4 Measuring relay symbols

Power systems are extremely complicated electrical networks that are geographically spread over very large areas. The power systems are so complex that a complete conventional diagram showing all the connections is impractical. There is some concise way of communicating the basic arrangement of power system components. This is done by using diagrams with universally accepted symbols in IEC 60617.

When measuring relay symbols are required, pick the general symbol IEC 60617-S00327 (2001-07) (see Figure 1), and then combine it with one or more appropriate supplementary symbols.

Some devices, especially newer devices, may not have universally accepted symbols. These devices could be represented in a number of ways, usually a matter of personal choice. In such instances, the symbol is usually accompanied by a verbal description.

When an appropriate symbol does not exist, either the general symbol IEC 60617-S00327 (2001-07) should be applied, or a symbol may be constructed following the rules of IEC 60617 and ISO/IEC 81714-1.

5 Measuring instruments

When measuring instrument symbols are required, pick the general symbols from among IEC 60617-S00910 (2001-07), IEC 60617-S00911 (2001-07) and IEC 60617-S00912 (2001-07) according to the function, that is, indicating, recording and integrating (see Figure 1). Then the asterisk within the symbol is replaced with the letter symbol or the graphical symbol.

The replacing symbol is related to the information displayed by the instrument regardless of the means used to obtain the information.

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6 Mnemonics and designations for measuring relays and instruments

6.1 Overview

Where in Tables 1 to 19 below the letter “M” is shown in the second column, this means that the designation concerned may be used in measuring relay symbols. A letter “I” in the second column means that the designation concerned may be in indicating instrument symbols. A letter “R” in the second column means that the designation concerned may be in recording instrument symbols. A letter “G” in the second column means that the designation concerned may be in integrating instrument symbols. In these tables, the English descriptions appear in the fourth column, because in many cases designations are derived from terms in English.

6.2 Measuring relays

Tables 1 to 18 present the mnemonics and designations for measuring relays.

Table 1 – Measuring relays – Prefix

MNEMONICS DESIGNATION	M/I/ R/G	NAMES	DESCRIPTIONS	GRAPHICAL SYMBOLS
O	-	over	Actuating when the characteristic quantity is higher than the setting value.	> IEC 60617-S0 0108(2001-07)
U	-	under	Actuating when the characteristic quantity is lower than the setting value.	< IEC 60617-S0 0109(2001-07)
B	-	band	Actuating when the characteristic quantity is either higher than a given high setting or lower than a given low setting.	> < IEC 60617-S0 0110(2001-07)
R	-	reverse	Actuating when the characteristic quantity is contrary or opposite to what has been mentioned.	N/A
H	-	high or high speed	Actuating at high speed or other high level of a measured value or indicating signal.	N/A

Table 2 – Measuring relays – Suffix

MNEMONICS DESIGNATION	M/I/ R/G	NAMES	DESCRIPTIONS	GRAPHICAL SYMBOLS
B	-	balance	Relay which operates by comparing the magnitudes of two similar input quantities. NOTE The balance may be affected by counteracting electromagnetic forces on a common armature, or by counteracting magnetomotive forces in a common magnetic circuit, or by similar means, such as springs, levers, etc.	N/A
V	-	with voltage restraint	Method of restraining the operation of a relay by means of a voltage input which opposes the typical response of the relay to other inputs.	N/A
NOTE With regard to suffixes, designation variables as described in IEC 60909-0 and IEC 60909-3 may be used as a suffix.				

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