

Symbolic representation for process measurement control functions and instrumentation —

Part 2: Specification for additional basic requirements

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Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Industrial-process Measurement and Control Standards Committee (PCL/-) to Technical Committee PCL/4 upon which the following bodies were represented:

- Association of Consulting Engineers
- Beama Transmission and Distribution Association
- British Industrial Measuring and Control Apparatus Manufacturers' Association (BEAMA)
- Energy Industries Council
- Institute of Measurement and Control
- Institution of Gas Engineers
- Ministry of Defence

This British Standard, having been prepared under the direction of the Industrial-process Measurement and Control Standards Committee, was published under the authority of the Board of BSI and comes into effect on 30 November 1983

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Foreword

This British Standard has been prepared under the direction of the Industrial-process Measurement Control Standards Committee and is technically equivalent to the International Organization for Standardization (ISO) draft international standard ISO/DIS 3511/2 “*Process measurement control functions and instrumentation — Symbolic representation, — Part 2: Extension of basic requirements*”.

The decision to publish now rather than await the publication of the corresponding ISO standard, recognises the urgent need of the industry for a standard with worldwide application based on an international text. It is anticipated that any differences with the finally published ISO version will be of a minor nature. This standard incorporates minor editorial corrections to the ISO draft which have been submitted by the British Member Body to the ISO Technical Committee.

For ease of production the text of the draft international standard has been used for this British Standard; some terminology and certain conventions are not identical with those used in British Standards.

Cross-reference

International standard	Corresponding British Standard
IEC 117	BS 3939 Graphical symbols for electrical power, telecommunications and electronic diagrams (Technically equivalent)

The rectangular symbols in accordance with IEC 117-15, referred to in clause 9, are identical with those given in BS 3939-21.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 8, an inside back cover 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.

0 Introduction

This British Standard has been devised to provide a universal means of communication among the various interests involved in the design, manufacture, installation and operation of measurement and control equipment used in the process industries.

Requirements within the industries vary considerably; in recognition of this, this British Standard is presented in several parts, as follows:

- *Part 1: Basic requirements (directed towards the needs of those employing comparatively simple measurements and control means);*
- *Part 2: Extension of basic requirements;*
- *Part 3: Detailed symbols for instrument interconnection diagrams;*
- *Part 4: Basic symbols for process computer, interface, and shared display/control functions¹⁾.*

The four parts together are intended to:

- a) meet the requirements of those, possibly employing more sophisticated measurement and control means, who may wish to depict such aspects as the measurement techniques embodied in a particular instrument, or the means — hydraulic, pneumatic, electrical, mechanical — used for its actuation;
- b) provide standard symbolic representation for process measurement control functions and instrumentation. These symbols are not intended to replace graphic symbols for electrical equipment as contained in IEC Publication 117.

1 Scope and field of application

This Part of BS 1646 is an extension of Part 1, which is limited to identification of instrument functions.

It includes additional symbols and is intended for the communication of measurement and control functions among instrument specialists and other engineers involved with vessels, piping, layout design and operation.

The symbols are used on piping and instrumentation diagrams and engineering line diagrams.

2 Reference

IEC 117-15, *Recommended graphical symbols; graphical symbols — Part 15: Binary logic elements.*

3 Definitions

The definitions given in BS 1646-1 equally apply to this Part of BS 1646.

The following definition also applies:

3.1 sensing element

that part of an instrument loop that first senses the value of a process variable and that assumes a predetermined and intelligible state or output

NOTE The sensing element may be separate from or integral with another functional element of a loop, but should be given an individual tag number only if it is separate.

Examples:

Where a direct-connected pressure transmitter has an integral pressure-sensitive element, the combined element and transmitter assembly shall be tagged PT.

Where an external pressure cell is connected to a transmitter, the pressure cell shall be tagged PE and the transmitter shall be tagged PT.

4 Letter code

4.1 Identifying letters

The function of the instrument shall be defined by a letter code included within the instrument symbol circle.

4.2 Basis for the letter code

The letter code is built up similarly to the letter code for basic symbols given in BS 1646-1 but the table extends the letters available for use.

¹⁾ At present at the stage of draft.