
**Process diagrams for power plants —
Part 1:
Specification for diagrams**

*Schémas de procédés pour centrales électriques —
Partie 1: Spécifications pour diagrammes*

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Contents

	Page
Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Basic aspects for process diagrams for power plants	2
4.1 General.....	2
4.2 Diagram types and interrelations.....	2
4.3 Life cycle aspects.....	3
4.4 Contents of information in diagrams.....	3
5 Diagram types and content	4
5.1 General.....	4
5.2 Block diagram (BLD).....	4
5.2.1 Description.....	4
5.2.2 Application.....	4
5.2.3 Contents.....	4
5.2.4 Representation.....	5
5.3 Process flow diagram (PFD).....	5
5.3.1 Description.....	5
5.3.2 Application.....	5
5.3.3 Contents.....	5
5.3.4 Representation.....	6
5.3.5 Other types of process flow diagrams.....	6
5.4 Process and instrumentation diagram (PID).....	7
5.4.1 Description.....	7
5.4.2 Application.....	7
5.4.3 Contents.....	7
5.4.4 Representation.....	8
5.5 Process control diagram.....	8
5.5.1 Description.....	8
5.5.2 Application.....	8
5.5.3 Contents.....	8
5.5.4 Representation.....	9
5.6 Typical diagram.....	9
5.6.1 Description.....	9
5.6.2 Application.....	9
5.6.3 Contents.....	9
5.6.4 Representation.....	10
6 Representation subjects	10
6.1 General.....	10
6.2 Document sheet issues.....	10
6.3 Technical information.....	10
6.4 Graphical symbols.....	11
6.4.1 General.....	11
6.4.2 Graphical symbols for power plant diagrams.....	11
6.4.3 Extension of information.....	11
6.4.4 Combination of graphical symbols.....	12
6.4.5 Representation of complex/large objects in diagrams.....	12
6.5 Connections.....	12
6.5.1 General.....	12
6.5.2 Indication of flow directions.....	13
6.5.3 Indication of pipe dimension.....	13

6.5.4	Change of dimension on pipelines.....	13
6.5.5	Representation of connection lines.....	13
6.6	Measurement and control.....	14
6.7	Non-object symbols.....	14
6.8	Reference designation.....	14
6.8.1	General.....	14
6.8.2	Representation and location.....	14
6.8.3	Reference designations for pipelines.....	15
Annex A (informative) Non-object symbols, etc.		16
Annex B (informative) Diagram examples		18
Annex C (informative) Reference designation for power plants		25
Annex D (informative) Reference designation symbols		27
Bibliography		28

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT), see the following URL: [Foreword — Supplementary information](#).

The committee responsible for this document is ISO/TC 10, *Technical product documentation*, SC 10, *Process plant documentation*.

ISO 14084 consists of the following parts, under the general title *Process diagrams for power plants*:

- Part 1: *Specification for diagrams*
- Part 2: *Graphical symbols*

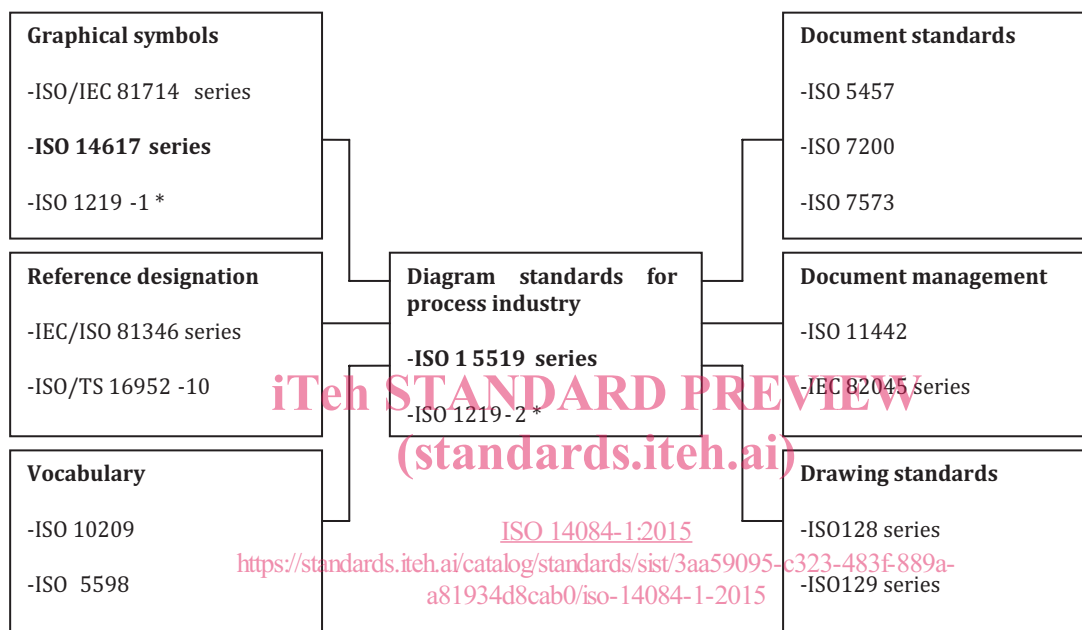
Introduction

0.1 General

This part of ISO 14084 deals with preparation of process diagrams for power plants.

ISO/TC10/SC10 prepares standards for diagrams including graphical symbols which together with standards prepared by other ISO committees and IEC constitute the basis for preparation of diagrams for process industry.

The interrelations between these standards are illustrated in [Figure 1](#). Standards in bold are ISO/TC10/SC10 standards.



NOTE Standards marked * are collective application standards.

Figure 1 — Interrelations between ISO and IEC standards for diagrams for power plants

0.2 Collective application standard

ISO/TC10/SC10 standards:

- ISO 15519 series: Specifications for diagrams for process industry;
- ISO 14617 series: Graphical symbols for diagrams;

These are basic standards, which are general and apply to all fields of applications. Technical committees working in a specific application field are allowed to make extracts and publish them as collective application standards of ISO 15519 series, ISO 14617 series, or both.

0.3 Application fields

This part of ISO 14084 applies to the power plant field, which includes conventional fossil and biomass-fired power plants, hydropower plants, sea wave power plants, wind power plants, nuclear power plants, geothermal power plants, solar power plants, osmosis power plants, incineration plants, and industrial power plants.

0.4 Figures

Figures in this part of ISO 14084 are only examples for illustration of a given rule.

0.5 Reference designation

In this part of ISO 14084, ISO/TS 16952-10 is used for illustration of rules and guidelines for the use of reference designation in process diagrams for power plants.

A summary of ISO/TS 16952-10 is given in [Annex C](#).

NOTE In case of application of another reference designation system, its application in diagrams has to be interpreted analogously.

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Process diagrams for power plants —

Part 1: Specification for diagrams

1 Scope

This part of ISO 14084 specifies types of process diagrams for power plants and rules and guidelines for the preparation and representation of information in such diagrams.

This part of ISO 14084 series is a collective application standard of the ISO 15519 series.

This part of ISO 14084 does not apply to electrotechnical diagrams, which are covered by IEC 61082, and to fluid power diagrams, which are covered by ISO 1219-2.

2 Normative references

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

ISO 10209, *Technical product documentation — Vocabulary — Terms relating to technical drawings, product definition and related documentation*

ISO 14617 (all parts), *Graphical symbols for diagrams*

ISO 15519 (all parts), *Specification for diagrams for process industry*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in the ISO 15519 (all parts) and ISO 10209, and the following apply.

3.1

block diagram

BLD

overview diagram predominantly using block symbols

[SOURCE: ISO 10209:2012, modified]

3.2

process flow diagram

PFD

diagram illustrating the configuration of a process system or process plant by means of graphical symbols

[SOURCE: ISO 10209:2012, modified]

**3.3 process and instrumentation diagram
PID**

diagram representing the technical realization of a process system by means of graphical symbols for equipment, process flow path and process measurement, and control functions

Note 1 to entry: The diagram type process and instrumentation diagram, used in this part of ISO 14084, is technically identical with the piping and instrumentation diagram. The argument for change of the designation in this part of ISO 14084 is that the power plant field uses this document type for both fluid and solid material processes. The abbreviation — used in this part of ISO 14084 — for the process and instrumentation diagram is PID which deviates from the traditional used abbreviation P&ID for the piping and instrumentation diagram.

**3.4 process control diagram
PCD**

diagram representing the configuration of the measuring, control, and actuating functions of a system or sub-system

**3.5 typical diagram
TYD**

diagram representing the detailed configuration of a complex object by means of graphical symbols

EXAMPLE Pneumatic control valve with positioner, instrument air supply, etc.

4 Basic aspects for process diagrams for power plants

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4.1 General

This clause introduces the standard and gives an overview of the topics dealt within the standard. The clause also gives information about topics dealt with in other standards dealing with technical documentation of process plants.

As a collective application standard of ISO 15519-1, the rules and guidelines given in ISO 15519-1 also apply for this part of ISO 14084.

The collective application standard concept allows adding of additional rules and guidelines which apply to the actual application field — in this part of ISO 14084 the power plant field.

4.2 Diagram types and interrelations

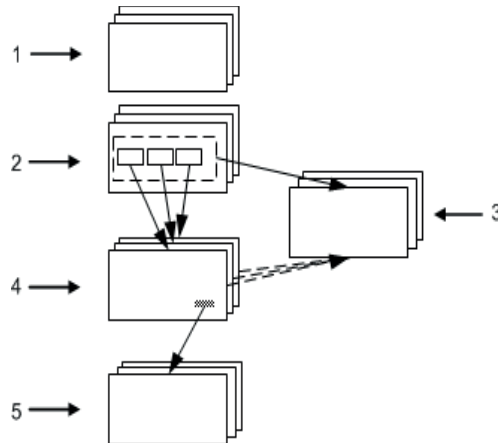
This part of ISO 14084 deals with five types of diagrams for use in the power plant field as listed in Table 1. The table also includes abbreviations used in this part of ISO 14084 and document classification code according to IEC 613551.

ISO 11005 and IEC 61027 provide rules for applying a method of structuring technical information and documentation.

Table 1 — Diagram designation, abbreviation, and coding

Diagram designation	Diagram abbreviation used in this part of ISO 14084	DCC code ref. IEC 61355-1
Block diagram	BLD	FB
Process flow diagram	PFD	FB
Process and instrumentation diagram	PID	FB
Process control diagram	PCD	FA
Typical diagram	TYD	FB

The hierarchical relations between above diagram types are illustrated in [Figure 2](#).



Key

- 1 block diagram
- 2 process flow diagram
- 3 process control diagram
- 4 process and instrumentation diagram
- 5 typical diagram

Figure 2 — Hierarchical relations between diagram types for power plants
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Description, application, representation of diagrams and their contents are described in [Clause 5](#).

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4.3 Life cycle aspects

The diagram types illustrated in [4.2](#) are all intended to contain differentiated types and amount of information to suit the needs of the actual life cycle stage(s) of a power plant. [Figure 3](#) illustrates the application of four diagram types during major life cycle stages and the graduated application value of the diagrams in the different life cycle stages represented by the width of the bar.

Diagram type	Study	Engineering design phases			Manufacture Installation	Operation Maintenance
		Conceptual	Basic	Detailed		
Block diagram	██████████	██████████	██████████	██████████		
Process flow diagram		██████████	██████████	██████████		
Process control diagram			██████████	██████████	██████████	██████████
Process and instrumentation diagram			██████████	██████████	██████████	██████████
			██████████	██████████	██████████	██████████

Figure 3 — Illustration of life cycle application value of diagrams for power plants

4.4 Contents of information in diagrams

Diagrams shall, depending of type and main application, contain information in the form of

- graphical symbols representing functions, objects, and connections,
- technical information, and

- reference designation

sufficient for “reading” and interpretation functionality of represented system/sub-system without consulting further technical descriptions.

The amount of the complete technical information of an object of which some is represented directly in diagrams and some in item lists or data bases – is a balance of:

- the user of the diagram and the user’s access to technical information in other media, e.g. item lists, data bases;
- the technology used for development of diagrams – traditional 2D CAD or advanced data based development tools with screen access to all information stored in data bases;
- the needs from different user groups access to information to perform their job, e.g. control room personnel, maintenance personnel;
- the differentiating needs in life cycle phases.

5 Diagram types and content

5.1 General

This clause deals for each type of diagram with the following:

- description and application of the diagram;
- specification of basic and additional information;
- representation in diagrams.

Application examples of process diagrams for power plants are given in [Annex B](#).

Explanation of terms used for specification of and requirements to reference designation, are given in [Annex C](#).

5.2 Block diagram (BLD)

5.2.1 Description

Block diagrams are overview diagrams predominately using block symbols.

5.2.2 Application

Block diagrams are used on a superior level for simplified representation of the main processes and main flow of media and energy.

5.2.3 Contents

The block diagram shall contain following basic information. Additional information can be added if required (see [Table 2](#)).