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Tehnična dokumentacija izdelkov - Splošna načela predstavitve - 1. del: Uvod in temeljne zahteve (ISO/DIS 128-1:2019)

Technical product documentation (TPD) - General principles of representation - Part 1: Introduction and fundamental requirements (ISO/DIS 128-1:2019)

Technische Produktdokumentation (TPD) - Allgemeine Grundlagen der Darstellung - Teil 1: Einleitung und grundlegende Anforderungen (ISO/DIS 128-1:2019)

Documentation technique de produits (TPD) - Principes généraux de représentation - Partie 1: Introduction et exigences fondamentales (ISO/DIS 128-1:2019)

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Technical product documentation (TPD) — General principles of representation —

Part 1:
Introduction and fundamental requirements

Documentation technique de produits (TPD) — Principes généraux de représentation —

Partie 1: Introduction et exigences fondamentales

ICS: 01.100.01

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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 World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 10, *Technical product documentation*.

This second edition cancels and replaces the first edition (ISO 128-1:2003), which has been technically revised.

The main changes compared to the previous edition are as follows:

— The index in the first edition of ISO 128-1 was moved to ISO 128-100

— References were updated to point to the revised parts of ISO 128.

Many of the ISO 128 standards in this series were merged together to form new parts.

ISO 128, Part 2 is a consolidation of previous ISO 128 parts 20, 21, 22, 23, 24 & 25.

ISO 128, Part 3 is a consolidation of previous ISO 128 parts 30, 34, 40, 43, 44, 50 and ISO 8048

A list of all parts in the ISO 128 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Technical product documentation (TPD) — General principles of representation —

Part 1: Introduction and fundamental requirements

1 Scope

This part of ISO 128 gives general rules for the execution of technical drawings (2D and 3D), as well as presenting the structure of the other parts of ISO 128. In all, ISO 128 specifies the graphical representation of objects on technical drawings with the aim of facilitating the international exchange of information on drawings and ensuring their uniformity in a comprehensive system . This part of ISO 128 is applicable to mechanical engineering, construction, architectural and ship building technical drawings. It is applicable to both manual and computer-based technical drawings.

For the purpose of this International Standard the term “technical drawing” shall be interpreted in the broadest possible sense encompassing the total package of documentation specifying the product (workpiece, subassembly, assembly).

2 Normative references

The following 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.

ISO 129, *(all parts), Technical product documentation (TPD)*

ISO 286-1, *Geometrical product specifications (GPS) — ISO code system for tolerances on linear sizes — Part 1: Basis of tolerances, deviations and fits*

ISO 1101, *Geometrical product specifications (GPS) — Geometrical tolerancing — Tolerances of form, orientation, location and run-out*

ISO 1302, *Geometrical Product Specifications (GPS) — Indication of surface texture in technical product documentation*

ISO 2538-2, *Geometrical product specifications (GPS) — Wedges — Part 2: Dimensioning and tolerancing*

ISO 2553, *Welding and allied processes — Symbolic representation on drawings — Welded joints*

ISO 2692, *Geometrical Product Specifications (GPS) — Geometrical tolerancing — Maximum material requirement (MMR), least material requirement (LMR) and reciprocity requirement (RPR)*

ISO 5458, *Geometrical product specifications (GPS) — Geometrical tolerancing — Pattern and combined geometrical specification*

ISO 2768-1, *General tolerances — Part 1: Tolerances for linear and angular dimensions without individual tolerance indications*

ISO 2768-2, *General tolerances — Part 2: Geometrical tolerances for features without individual tolerance indications*

ISO 3040, *Geometrical product specifications (GPS) — Dimensioning and tolerancing — Cones*

ISO 3098-1, *Technical product documentation — Lettering — Part 1: General requirements*

ISO 5455, *Technical drawings — Scales*

ISO 5457, *Technical product documentation — Sizes and layout of drawing sheets*

ISO 5459, *Geometrical product specifications (GPS) — Geometrical tolerancing — Datums and datum systems*

ISO 6284, *Construction drawings — Indication of limit deviations*

ISO 6428, *Technical drawings — Requirements for microcopying*

ISO 6433, *Technical product documentation — Part references*

ISO 7083, *Technical drawings — Symbols for geometrical tolerancing — Proportions and dimensions*

ISO 7200, *Technical product documentation — Data fields in title blocks and document headers*

ISO 7573, *Technical product documentation — Parts lists*

ISO 8015, *Geometrical product specifications (GPS) — Fundamentals — Concepts, principles and rules*

ISO 8560, *Technical drawings — Construction drawings — Representation of modular sizes, lines and grids*

ISO 9431, *Construction drawings — Spaces for drawing and for text, and title blocks on drawing sheets*

ISO 10135, *Geometrical product specifications (GPS) — Drawing indications for moulded parts in technical product documentation (TPD)*

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

ISO 11091, *Construction drawings — Landscape drawing practice*

ISO 25178-1, *Geometrical product specifications (GPS) — Surface texture: Areal — Part 1: Indication of surface texture*

ISO 13715, *Technical product documentation — Edges of undefined shape — Indication and dimensioning*

ISO 14405-1, *Geometrical product specifications (GPS) — Dimensional tolerancing — Part 1: Linear sizes*

ISO 14405-3, *Geometrical product specifications (GPS) — Dimensional tolerancing — Part 3: Angular sizes*

ISO 14638, *Geometrical product specifications (GPS) — Matrix model*

ISO 15785, *Technical drawings — Symbolic presentation and indication of adhesive, fold and pressed joints*

ISO 15787, *Technical product documentation — Heat-treated ferrous parts — Presentation and indications*

ISO 16016, *Technical product documentation — Protection notices for restricting the use of documents and products*

ISO 80000-Series, *Quantities and units*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 10209 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at http://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
technical drawing
drawing showing a technical installation, process, or product with a view to clarifying their structure and to enable for their construction

[SOURCE: ISO 5127:2017]

4 Arrangement of the ISO 128 series

— ISO 128-1 for fundamental requirements

— ISO 128-2 for line types

— ISO 128-3 for views, cuts and sections

— ISO 128-15 for representation of shipbuilding technical drawings

— ISO 128-71 for simplified representation of mechanical engineering technical drawings

— ISO 128-100 for index of subject topics

Within these subject groupings, parts consist of requirements and applications for the different industrial branches — a concept allowing the integration of future developments. A matrix of the structure of ISO 128 (excluding this part of ISO 128) is given in Table 1. Only those parts in existent at the time of publication of this part of ISO 128 are indicated by their numbers.

Table 1 — Matrix of structure of ISO 128 (numbers refer to part numbers)

Subject	Application				
	Basic conventions	Special applications	Construction and architecture	Mechanical engineering	Shipbuilding
Lines	2		2 (Annex B & C)	2 (Annex D & E)	2 (Annex F & G)
CAD Lines	2 (Annex A)	—	—	—	—
Views	3	3 (Annex A & B)	3 (Annex F)	3 (Annex C)	15
Cuts and sections	3	3 (Annex A & B)	3 (Annex F)	3 (Annex D)	15
Areas on section	3	—	—	—	—
Projection	3	—	3 (Annex E)	—	15
Simplified representation	—	—	—	71	15
Coding & Symbols	—	—	—	—	15
Index of subjects	100	100	100	100	100

The ISO 128-series standards are the top of the hierarchy of ISO standards dealing with the graphical execution of technical drawings.

5 Fundamental requirements

Technical drawings (2D and 3D) are a specific type of communication. Technical drawings follow the rules of ISO/TC 10 and shall comply with the following principles.

a) **Unambiguous and clear.** For any feature of a technical drawing, there shall be only one interpretation. It should be easy to understand for each involved person.

b) **Complete.** A technical drawing shows the end condition of the represented object for a specific function. The content shall be complete to serve this function, for example, for the manufacture

of a part and the verification of its specifications. Only indicated requirements on the technical drawing or in the related documentation are manufactured or verified.

c) **To scale.** The outlines and details of a representation should be proportional to the represented part. (For scales, see ISO 5455.) Nevertheless, values for the dimensions of an object shall not be determined or scaled directly from the technical drawing.

d) **Appropriate for duplication and copying.** To provide a high-quality product when plotting, copying or microcopying and reproducing, these shall be done in accordance with ISO 6428.

e) **Language independent.** It is preferable that technical drawings be language independent. Words should be used only within the title block or where it is impracticable to present information graphically.

f) **In accordance with standards.** The ISO 128 series of standards and their normative references shall be respected.

Assembly technical drawings shall have an associated item list in accordance with ISO 7573, which may be included on the technical drawing itself or presented as a separate document. The release procedures for a technical drawing and any changes on released technical drawings shall be clearly documented.

6 Basic entities of technical drawings

6.1 General

A technical drawing shall consist of, when applicable, the following elements:

— Technical drawing sheet layout in accordance with ISO 5457;

— title block in accordance with ISO 7200 for mechanical engineering technical drawings or ISO 9431 for construction technical drawings;

— representation of the object(s) in accordance with the ISO 128 series;

— dimensioning in accordance with the ISO 129-1 ;

— lettering in accordance with ISO 3098-1-2015;

— item references in accordance with ISO 6433;

— quantities, units and symbols in accordance with ISO 31-1 and ISO 1000;

— protection notice in accordance with ISO 16016.

— other standards for applicable elements.

6.2 Mechanical engineering

The geometrical specifications shall be in accordance with the rules of inherent ISO standards as per the GPS matrix model (see ISO 14638), including

— ISO 8015 for general concepts, principles and rules

— ISO 286-1 and ISO 14405-1 for the indication and tolerancing of linear sizes,

— ISO 129-5 for dimensioning of structural metal work,

— ISO 1101, ISO 2692, ISO 5458 and ISO 7083 for the indication of geometrical specifications,

— ISO 1302 and ISO 25178-1 for the indication of surface texture and surface imperfections,

— ISO 2538-2 for the indication and tolerancing of wedges