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**Industrial automation systems and  
integration — Parts library —**

Part 501:

**Reference dictionary for measuring  
instruments — Registration procedure**

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*Systemes d'automatisation industrielle et integration — Bibliothèque de  
composants —  
Partie 501: Dictionnaire de référence pour les instruments de mesure —  
Procédure d'enregistrement*

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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.

International Standards are drafted in accordance with the rules given in the ISO/ IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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Attention is drawn to the possibility that some of the elements of this part of ISO 13584 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 13584-501 was prepared by Technical Committee ISO/TC 184, *Industrial automation systems and integration*, Subcommittee SC 4 *Industrial data*.

ISO 13584 consists of the following parts under the general title *Industrial automation systems and integration — Parts library*:

- *Part 1: Overview and fundamental principles;*
- *Part 20: Logical resource: Logical model of expressions;*
- *Part 24: Logical resource: Logical model of supplier library;*
- *Part 25: Logical resource: Logical model of supplier library with aggregate values and explicit content;*
- *Part 26: Logical resource: Information supplier identification;*

- *Part 31: Implementation resources: Geometric programming interface;*
- *Part 42: Description methodology: Methodology for structuring part families;*
- *Part 101: View exchange protocol: Geometric view exchange protocol by parametric program;*
- *Part 102: View exchange protocol by ISO 10303 conforming specification;*
- *Part 501: Reference dictionary for measuring instruments — Registration procedure;*
- *Part 511: Mechanical systems and components for general use — Reference dictionary for fasteners.*

The structure of the ISO 13584 series is described in ISO 13584-1. The numbering of the parts of ISO 13584 reflects its structure:

- Parts 10 to 19 specify the conceptual descriptions;
- Parts 20 to 29 specify the logical resources;
- Parts 30 to 39 specify the implementation resources;
- Parts 40 to 49 specify the description methodology;
- Parts 100 to 199 specify the view exchange protocol;
- Parts 500 to 599 specify the reference dictionaries.

A complete list of parts of ISO 13584 is available from the Internet:

[http://www.tc184-sc4.org/titles/PLIB\\_Titles.htm](http://www.tc184-sc4.org/titles/PLIB_Titles.htm)

## Introduction

ISO 13584 is an International Standard for the computer-interpretable representation and exchange of parts library data. The objective is to provide a neutral mechanism capable of transferring parts library data, independent of any application that is using a parts library data system. The nature of this description makes it suitable not only for the exchange of files containing parts, but also as a basis for implementing and sharing databases of parts library data.

ISO 13584 is organized as a series of parts, each published separately. The parts of ISO 13584 fall into one of the following series: logical resources, implementation resources, description methodology, view exchange protocol and reference dictionaries. The series are described in ISO 13584-1. This part of ISO 13584 is a member of the reference dictionaries series.

Parts of the standardized content series of parts specify ontologies for representing the entities of an application domain, together with their descriptive properties and domains of values. Each entity, property or domain of values constitutes an entry of a dictionary and it is associated with a computer sensible and human readable definition, and with a computer sensible identification. The unique identification of a dictionary entry allows it to be referenced unambiguously from any application. Definitions and identifications of dictionary entries are represented as instances of the EXPRESS entity data types defined in the common dictionary schema, or in its extensions defined in the logical series of parts of ISO 13584.

This part of ISO 13584 specifies the requirements for an ISO-registered reference dictionary for representing measuring instruments with their properties and domains of values. This part of ISO 13584 also establishes and specifies the behaviour of a registration authority whose role is to develop, maintain and update this ISO-registered reference dictionary for measuring instruments. These measuring instruments include environment measuring instruments and laboratory measuring instruments.



# Industrial automation systems and integration — Parts library — Part 501: Reference dictionary for measuring instruments — Registration procedure

## 1 Scope

This part of ISO 13584 specifies the requirements for an ISO-registered reference dictionary for measuring instruments with their descriptive properties and domains of values. The measuring instruments to be included in the dictionary comprise environment measuring instruments and laboratory measuring instruments.

This part of ISO 13584 also specifies the procedures of an organization that develops, maintains and updates the reference dictionary for measuring instruments over a specified period of time. Such an organization is nominated by ISO and is referenced in this part of ISO 13584 as the registration authority of the reference dictionary for measuring instruments.

The reference dictionary for measuring instruments contains the following:

- definitions and identifications of classes of measuring instruments, with associated classification scheme;
- definitions and identifications of data element types that represent properties of measuring instruments;
- definitions and identifications of domains of values that prove useful for describing the above data element types.

Each class, property or domain of values of this application domain constitutes an entry of the reference dictionary for measuring instruments defined by the registration authority. It is associated with a computer sensible and human readable definition, and with a computer sensible identification. Each dictionary entry has an identifier that allows it to be referenced unambiguously from any application.

Definitions and identifications of dictionary entries are defined by means of standard data that

## ISO 13584-501:2007(E)

consist of instances of the EXPRESS entity data types defined in the common dictionary schema, and in its extensions defined in ISO 13584-24 and ISO 13584-25.

The following are within the scope of this part of ISO 13584:

- requirements on the standard data that is used to represent the various classes of measuring instruments, together with their descriptive properties and domains of values;

NOTE 1 Descriptive properties can include properties concerning regulations on manufacturing, operation, maintenance, disposal and recycling of the product.

- the process to be followed by the registration authority to propose and validate an initial version of the reference dictionary for measuring instruments;
- the process to be followed by the registration authority to collect, validate and register new entries or update entries for the reference dictionary for measuring instruments;
- the process to be followed by the registration authority to distribute the reference dictionary for measuring instruments.

NOTE 2 The measuring instruments considered in this part of ISO 13584 include those measuring instruments that are classified in the classes ICS 13 (Environment, Health protection, Safety), ICS 71.040 (Analytical chemistry) and ICS 17.220 (Electricity, Magnetism, Electrical and magnetic measurements).

NOTE 3 The file format with which the standard data registered by the registration authority established by this part of ISO 13584 can be exchanged is specified in ISO 10303-21.

The following is outside the scope of this part of ISO 13584:

- the standard data themselves that constitute the content of the reference dictionary for measuring instruments.

NOTE 4 The standard data themselves that constitute the content of the reference dictionary are registered by an ISO registration authority, but are not ISO-standardized.

NOTE 5 The standard data contain the definitions and properties of measuring instruments specified above, but they are not necessarily of measuring equipment. The difference in definitions between measuring equipment and measuring instruments is explained in IEC 60050-351.

## 2 Normative references

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

ISO 10303-21, *Industrial automation systems and integration — Product data representation and exchange — Part 21: Implementation methods: Clear text encoding of the exchange structure.*

ISO 13584-1:2001, *Industrial automation systems and integration — Parts library — Part 1: Overview and fundamental principles.*

ISO 13584-24:2003, *Industrial automation systems and integration — Parts library — Part 24: Logical resource: Logical model of supplier library.*

ISO 13584-25:2004, *Industrial automation systems and integration — Parts library — Part 25: Logical resource: Logical model of supplier library with aggregate values and explicit content.*

ISO 13584-26:2000, *Industrial automation systems and integration — Parts library — Part 26: Logical resource: Information supplier identification.*

ISO 13584-42:1998, *Industrial automation systems and integration — Parts library — Part 42: Description methodology: Methodology for structuring part families.*

ISO/IEC 6523-1:1998, *Information technology — Structure for the identification of organizations and organization parts — Part 1: Identification of organization identification schemes.*

ISO/IEC 6523-2, *Information technology — Structure for the identification of organizations and organization parts — Part 2: Registration of organization identification schemes.*

ISO/IEC 8824-1, *Information technology — Abstract Syntax Notation One (ASN.1) — Part 1: Specification of basic notation.*

### 3 Terms, definitions, and abbreviations

For the purposes of this document, the following terms and definitions apply. Some of these terms and definitions are repeated for convenience from:

- ISO 10303-1:1994;
- ISO 10303-11:1994;
- ISO 13584-1:2001;
- ISO 13584-42:1998;
- ISO 13584-24:2003;
- IEC 60050-300:2001.

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### 3.1

#### applicable property

a property that is defined for some family of parts and that shall apply to any part that belongs to this family of parts

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[ISO 13584-24:2003] <https://standards.iteh.ai/catalog/standards/sist/07384fe5-09ed-46e1-b708-6cae55920018/iso-13584-501-2007>

EXAMPLE For a screw generic family of parts, the threaded diameter is an applicable property: this characteristic applies to any screw.

### 3.2

#### application

a group of one or more processes creating or using product data

[ISO 10303-1:1994, definition 3.2.2]

### 3.3

#### assembled item

an item that is defined as a composition of other items

[ISO 13584-42:1998]

### 3.4

#### atomic item

an item that is not defined as a composition of other items

[ISO 13584-42:1998]

NOTE A part that consists of several subassemblies can be described as an atomic item if its class definition does not define its constituent subassemblies.

### 3.5 basic semantic unit BSU

the entity that provides an absolute and universal identification of certain objects of the application domain (for example, classes, data element types)

[ISO 13584-42:1998]

### 3.6 characteristic of a part part characteristic

a constant property, characteristic of a part, of which the value is fixed once the part is defined

[ISO 13584-24:2003]

NOTE Changing the value of a characteristic of a part would mean changing the part.

EXAMPLE For a ball bearing, the inner and outer diameters are part characteristics.

### 3.7 common dictionary schema

the information model for a dictionary, using the information modelling language EXPRESS, resulting from a joint effort between ISO TC184/SC4/WG2 and IEC SC3D

[ISO 13584-42:1998]

NOTE The common dictionary schema is specified in IEC 61360-2, and its content is provided in the informative ISO 13584-42:1998, Annex D.

### 3.8 composite property

collection of properties that can be referenced from a class or classes as a single entity

### 3.9 data

a representation of facts, concepts, or instructions in a formal manner suitable for communication, interpretation, or processing by human beings or computers

[ISO 10303-1:1994, definition 3.2.14]

### 3.10 data element type DET

a unit of data for which the identification, the description, and value representation have been specified

[ISO 13584-42:1998]

### 3.11 data exchange

the storing, accessing, transferring, and archiving of data

[ISO 10303-1:1994, definition 3.2.15]

### 3.12

#### **data type**

a domain of values

[ISO 10303-11:1994]

### 3.13

#### **dictionary**

a table consisting of a series of entries. One meaning corresponds to each entry in the dictionary and one dictionary entry identifies one single meaning

[ISO 13584-1:2001]

NOTE 1 In ISO 13584, the kinds of meaning intended to constitute dictionary entries are: supplier, class, property, program library, type, table and document.

NOTE 2 In ISO 13584, the information that represents a dictionary entry is split into three entities: a basic semantic unit (BSU) that provides for reference, a dictionary element that describes the dictionary entry by means of attributes, and, possibly, a content item entity that describes the dictionary entry by describing its content.

### 3.14

#### **dictionary data**

the set of data that describes hierarchies of families of parts and properties of these parts

[ISO 13584-42:1998, definition 3.4.6]

### 3.15

#### **dictionary element**

the set of attributes that constitutes the dictionary description of certain objects of the application domain (for example, classes, data element types)

[ISO 13584-42:1998, definition 3.4.7]

### 3.16

#### **entity**

a class of information defined by common properties

[ISO 10303-11:1994, definition 3.2.5]

### 3.17

#### **entity data type**

a representation of an entity. An entity data type establishes a domain of values defined by common attributes and constraints

[ISO 10303-11:1994, definition 3.2.6]

### 3.18

#### **entity (data type) instance**

a named unit of data that represents a unit of information within the class defined by an entity. It is a member of the domain established by an entity data type

[ISO 10303-11:1994, definition 3.2.7]

### 3.19 environment measuring instrument

measuring instrument that is used to measure physicochemical properties of the environment, or of the substance that is released into the environment, such as air pollutants, noises, and water pollutants, soil contaminants, on spot or on line

### 3.20 family of parts

a simple or generic family of parts

[ISO 13584-42:1998]

### 3.21 family of products

simple or generic family of products each of which can have several parts

NOTE In object oriented paradigm, such a family is usually called class.

### 3.22 feature

an aspect of an item that can be captured by a class structure and set of properties and that cannot exist independently of the item

[ISO 13584-24:2003]

EXAMPLE In a piping component, an outlet is an aspect of a part that conforms to some preconceived function stereotype that is associated with properties (for example, its name, its role). It can be represented as a feature.

### 3.23 general model of a part

the library data that carries the definition and identity of a part in an integrated library

[ISO 13584-1:2001]

### 3.24 generic family of parts

a grouping of simple or generic families of parts done for purposes of classification or for factoring common information

[ISO 13584-24:2003]

### 3.25 implementation method

a technique used by computers to exchange data that is described using the EXPRESS data specification language

[ISO 13584-24:2003]

### 3.26 instance

a named value

[ISO 10303-11:1994, definition 3.2.8]