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

**Part 1:
Overview and fundamental principles**

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 Partie 1: Aperçu et principes fondamentaux*

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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 3.

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.

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.

International Standard ISO 13584-1 was prepared by Technical Committee ISO TC184, *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 10: Conceptual description: Conceptual model of parts library*
- *Part 20: Logical resource: Logical model of expressions*
- *Part 24: Logical resource: Logical model of supplier library*
- *Part 26: Logical resource: Information supplier identification*
- *Part 31: Implementation resource: 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: View exchange protocol by ISO 10303 conforming specification*

The structure of ISO 13584 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.

Should further parts of ISO 13584 be published, they will follow the same numbering pattern.

Annex A forms a normative part of this part of ISO 13584. Annex B is for information only.

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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: conceptual descriptions, logical resources, implementation resources, description methodology, and view exchange protocol. The series are described in this part of ISO 13584, which also provides an overview of ISO 13584 and its structure.

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Industrial automation systems and integration – Parts library – Part 1: Overview and fundamental principles

1 Scope

ISO 13584 provides a representation of parts library information together with the necessary mechanisms and definitions to enable parts library data to be exchanged, used and updated. The exchange may be between different computer systems and environments associated with the complete life cycle of the products where the library parts may be used, including product design, manufacture, use, maintenance, and disposal. The standard provides a generalized structure for a parts library system and does not define a fully detailed implementable parts library system.

This part of ISO 13584 provides an overview of the ISO 13584 standard and its structure.

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

- a summary of the content of the other parts of the ISO 13584 standard series;
- fundamental principles upon which the ISO 13584 standard is based.

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

- the information models defined for capturing parts library data;
- the definition of the implementation resources needed to process parts library data.

2 Normative reference

The following normative document contains provisions which, through reference in this text, constitute provisions of this part of ISO 13584. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 13584 are encouraged to investigate the possibility of applying the most recent edition of the normative document indicated below. For undated references the latest edition of the publication referred to applies. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 10303-1:1994, *Industrial automation systems and integration — Product data representation and exchange — Part 1: Overview and fundamental principles*.

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purpose of this part of ISO 13584, the following terms and definitions apply. Some of these terms and definitions are repeated for convenience from ISO 10303-1:1994.

3.1.1

abstract part

a part that is only defined by a partial specification and that cannot be materially provided by the organization that defines the specification

3.1.2

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

3.1.3

functional model

the library data that represent one representation category of a part in an integrated library

EXAMPLE A functional model of a precisely defined screw may consist of parametric programs which may be used to generate different geometric functional views of the screw in a CAD system database.

3.1.4

functional view

a data that represent one representation category of a part in product data

EXAMPLE The structure of a functional view corresponding to geometry is not dependent on the part to be represented. This structure is specified as a functional view class.

3.1.5

general model

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

3.1.6

implementation method

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

NOTE Adapted from ISO 10303-1:1994.

3.1.7

information model

a formal model of a set of facts, concepts or instructions to meet a specific requirement [ISO 10303-1:1994, definition 3.2.21]

3.1.8

integrated library

operational system consisting of a library management system and a user library

3.1.9

library data

a set of data that represents information about a set of parts

3.1.10

library data supplier supplier

an organization that delivers a library in the standard format defined in ISO 13584 and is responsible for its content

3.1.11**library end-user
user**

the user of an integrated library

NOTE The library end-user:

- consults the data contained in the library;
- selects a given part;
- requests the transmission of a selected view of this part from the library system.

3.1.12**library management system
LMS**

a software system enabling the library end-user to use the content of an integrated library

NOTE This software system is not standardized.

3.1.13**library part**

a part associated with a set of data that represents it in a library

3.1.14**library part data**

data that represent a part in a library

3.1.15**library system**

a structure designed to facilitate the storage and retrieval of parts or views of parts

3.1.16**part**

a material or functional element that is intended to constitute a component of different products

3.1.17**parts library
library**

an identified set of data and possibly programs which may generate information about a set of parts

3.1.18**physical part**

a part that can exist in several equivalent copies and which is capable of being supplied by the library data supplier who describes the library data for this part

NOTE compare to: abstract part.

3.1.19**product**

a thing or substance produced by a natural or artificial process

[ISO 10303-1:1994, definition 3.2.26]

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3.1.20

representation category

an abstraction used to distinguish between various possible user requirements regarding a part representation

NOTE In the model defined in this International Standard, this distinction is formally expressed in terms of a view logical name and in terms of the view control variables.

3.1.21

resource construct

a collection of EXPRESS language entities, types, functions, rules and references that together define a valid description of data

NOTE Adapted from ISO 10303-1:1994.

3.1.22

supplier library

a set of data, and possibly of programs, for which the supplier is identified and that describes in the standard format defined in ISO 13584 a set of parts and/or a set of representations of parts

3.1.23

user library

information that results from the integration of one or more supplier libraries by the library management system and possibly from a later adaptation performed by the user

3.1.24

view control variable

a variable of enumerated type that may be associated with a view logical name and intended to further specify the perspective adopted by the user regarding a part

EXAMPLE The possible values for a view control variables for geometry are: 2D, wire frame, and solid.

3.1.25

view logical name

an identifier of a representation category corresponding to a perspective that can be adopted by a user regarding a part

EXAMPLE View logical names are for example: geometry, inertia, kinematics, etc.

3.2 Abbreviated terms

— CAD: Computer Aided Design;

— CAx: Computer Aided Tools.

NOTE The abbreviation CAx is used for all computer systems that may be used as an aid in engineering and need not include a graphic capability.

4 Overview of ISO 13584

4.1 Purpose

ISO 13584 specifies the structure of a library system which provides an unambiguous representation and exchange of computer interpretable parts library information. The data held in the library are a description that enables the library system to generate various representations of the parts held in the library.

The structure is independent of any particular computer system and permits any kind of digital representation of part representation. The structure will enable consistent implementations to be made across multiple applications and systems. Different implementation technologies may be used for the storage, accessing, transference and archiving of parts library data. Implementations of ISO 13584 can be tested for conformance to ISO 13584.

ISO 13584 does not specify the content of a supplier library. The content of a supplier library is the responsibility of the library data supplier. The library management system used in the implementation of the structure defined in ISO 13584, and any interface between this system and a user of the system is the responsibility of the library management system vendor and is not specified in ISO 13584.

4.2 Components of a library system

The components that form a library system may be split into a number of functional areas, which are illustrated in Figure 1.

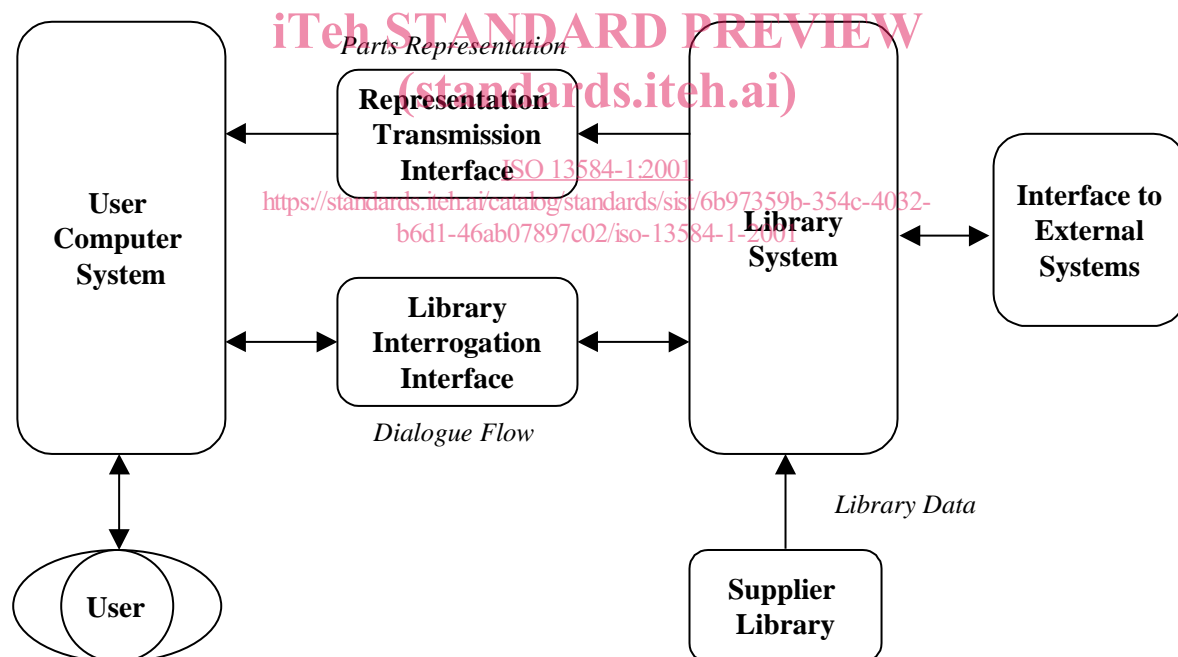


Figure 1 — Functional areas of library usage

4.2.1 User to computer system communication

The interface between the user and his computer system is not defined in this International Standard.

NOTE This would be application dependent and form part of the user interface supplied by a vendor as part of a computer system.