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Industrial automation systems and integration — Parts library —

Part 31: Implementation resources: Geometric programming interface

Systèmes d'automatisation industrielle et intégration — Bibliothèque de composants —

Partie 31: Ressources de mise en application: Interface de programmation géométrique

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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.

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.

International Standard ISO 13584-31 was prepared by Technical Committee ISO/TC 184, *Industrial automation system and integration,* Subcommittee SC4, *Industrial data and global manufacturing programming languages.*

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

— Parts 10 to 19 specify the conceptual descriptions,

— Parts 20 to 29 specify the logical resources,

— Parts 30 to 39 specfy the implementation resources,

— Parts 40 to 49 specify the description methodology,

— Parts 50 to 59 specify the conformance testing,

— Parts 100 to 199 specify the view exchange protocol,

— Parts 500 to 599 specify the standardised content.

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

Annexes A and B form an integral part of this part of ISO 13584.

Annex B is for information only.

Introduction

ISO 13584 is an International Standard for the computer-interpretable representation and exchange of part 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.

This International Standard is organized as a series of parts, each published separately. The parts of ISO 13854 fall into one of the following series: conceptual descriptions, logical resources, implementation resources, description methodology, conformance testing, view exchange protocol, and standardised content. The series are described in ISO 13584-1. This part of ISO 13584 is a member of the (implementation resources) series .

This part of ISO 13584 specifies an interface to enable the creation of product model data inside an user system from an application program that is independent of the target user system.

This interface may be used, outside the context of standardized parts library data, to permit the development of application programs that are independent of the target CAD system. In the context of ISO 10303, this interface may be implemented on the top of the SDAI interface to provide constrained geometry construction facilities.

In the context of parts library data, conforming to the ISO 13584 Standard series, the product model data creation process is an application program provided by parts library suppliers, that creates geometric model inside the user system. The interface ensures its independancy from the target user system.

Industrial automation systems and integration - Parts Library - Part 31: Implementation resources: Geometric programming interface

1 Scope and field of application

This part of ISO 13584 specifies an application programming interface that enables an application program to generate geometric models that are independent of the target user system. The interface allows portability of programs that describe parametric shape representations of parts families held in an ISO 13584 parts library.

The following are within the scope of this International Standard:

— programs to generate geometric representations within a modelling system that are independent of the target system,

— programs that specify geometric representations that are created through constraint-based geometric definitions,

— programs that structure geometric representations created independently of the target system,

— programs that specify presentation style attributes for symbolic visualisation of representations created,

— programs that support technical drawing standard conventions for shape representation, including a 2D hidden line mechanism.

The following are outside the scope of this International Standard:

— The precise control of the image to be displayed on the receiving system devices,

— The precise definition of the data that shall be created on the receiving system,

— The storage of a parametric model on the receiving system.

2 Normative references

The following normative documents contain 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 editions of the normative documents indicated below. For undated references the latest edition of the publication referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 128: 1982	*Technical drawings - General principles of presentation.*
ISO 1539: 1991	*Information technology - Programming languages - FORTRAN.*
ISO/IEC 8824-1 [1)]	*Information technology - Abstract Syntax Notation One (ASN.1): Specification of basic notation.*

1) To be published