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Industrial automation systems and integration — Product data representation and exchange —

Part 21: Implementation methods: Clear text encoding of the exchange structure

*Systèmes d'automatisation industrielle et intégration — Représentation et
échange de données de produits —*

*Partie 21: Méthodes de mise en application: Encodage en texte clair des
fichiers d'échange*



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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 standardizations.

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 10303 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 10303-21 was prepared by Technical Committee ISO/TC 184, *Industrial automation systems and integration*, Subcommittee SC 4, *Industrial data*.

This second edition cancels and replaces the first edition (ISO 10303-21:1994), of which it constitutes a technical revision. It incorporates the corrections published in ISO 10303-21:1994/Cor.1:1996.

This International Standard is organized as a series of parts, each published separately. The structure of this International Standard is described in ISO 10303-1.

Each part of this International Standard is a member of one of the following series: description methods, implementation methods, conformance testing methodology and framework, integrated generic resources, integrated application resources, application protocols, abstract test suites, application interpreted constructs, and application modules. This part is a member of the implementation methods series.

A complete list of parts of ISO 10303 is available from the Internet:

`<http://www.nist.gov/sc4/editing/step/titles/>`

Annexes A, B, C, D, E and F form a normative part of this part of ISO 10303. Annexes G and H are for information only.

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Introduction

ISO 10303 is an International Standard for the computer-interpretable representation of product information and for the exchange of product data. The objective is to provide a neutral mechanism capable of describing products throughout their life cycle. This mechanism is suitable not only for neutral file exchange, but also as a basis for implementing and sharing product databases, and as a basis for archiving.

This part of ISO 10303 specifies a mechanism that allows product data described in the EXPRESS language, specified in ISO 10303-11, to be transferred from one computer system to another.

Major subdivisions in this part of ISO 10303 are:

- specification of the exchange structure syntax;
- mapping from an EXPRESS schema onto this syntax.

NOTE The examples of EXPRESS usage in this part of ISO 10303 do not conform to any particular style rules. Indeed, the examples sometimes use poor style to conserve space or to concentrate on the important points. The examples are not intended to reflect the content of the information models defined in other parts of this International Standard. They are crafted to show particular features of EXPRESS or of the exchange structure. Many examples are annotated in a way that is not consistent with the syntax rules of this part of ISO 10303. These annotations are introduced by symbolic arrows, either horizontal '---->', or vertical. These annotations should be ignored when considering the parse rules. Any similarity between the examples and the normative models specified in other parts of this International Standard should be ignored. Several mapping examples have been provided throughout this document. Additional *spaces* and new lines have been inserted into some of these examples to aid readability. These *spaces* and new lines need not appear in an exchange structure.

This edition incorporates the following technical modifications to ISO 10303-21:1994:

- the SCOPE structure (&SCOPE / ENDSCOPE) has been eliminated;
- the exchange structure may now contain multiple data sections;
- the exchange structure header section may now identify the default language for string attributes of entity instances encoded in a data section;
- the exchange structure header section may now identify information describing contexts within which the entity instances encoded in a data section are applicable;
- enumeration values may now be encoded using short names if such names are available.

All exchange structures that are encoded according to the previous edition of ISO 10303-21 and that do not use the SCOPE structure also conform to this edition.