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

Part 32:

**Conformance testing methodology and
framework: Requirements on testing
laboratories and clients**

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

*Partie 32: Méthodologie et cadre général pour l'évaluation de la conformité:
Prescriptions relatives aux laboratoires d'essai et aux clients*



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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 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 10303-32 was prepared by Technical Committee ISO/TC 184, *Industrial automation systems and integration*, Subcommittee 4, *Industrial data*.

ISO 10303 consists of the following parts under the general title *Industrial automation systems and integration - Product data representation and exchange*:

- Part 1, Overview and fundamental principles;
- Part 11, Description methods: The EXPRESS language reference manual;
- Part 12, Description methods: The EXPRESS-I language reference manual;
- Part 21, Implementation methods: Clear text encoding of the exchange structure;
- Part 22, Implementation methods: Standard data access interface specification;
- Part 23, Implementation methods: C++ language binding to the standard data access interface;
- Part 24, Implementation methods: C language binding to the standard data access interface;
- Part 26, Implementation methods: Interface definition language binding to the standard data access interface;
- Part 31, Conformance testing methodology and framework: General concepts;
- Part 32, Conformance testing methodology and framework: Requirements on testing laboratories and clients;
- Part 34, Conformance testing methodology and framework: Abstract test methods;

- Part 35, Conformance testing methodology and framework: Abstract test methods for SDAI implementations;
- Part 41, Integrated generic resources: Fundamentals of product description and support;
- Part 42, Integrated generic resources: Geometric and topological representation;
- Part 43, Integrated generic resources: Representation structures;
- Part 44, Integrated generic resources: Product structure configuration;
- Part 45, Integrated generic resource: Materials;
- Part 46, Integrated generic resources: Visual presentation;
- Part 47, Integrated generic resource: Shape variation tolerances;
- Part 49, Integrated generic resource: Process structure and properties;
- Part 101, Integrated application resource: Draughting;
- Part 104, Integrated application resource: Finite element analysis;
- Part 105, Integrated application resource: Kinematics;
- Part 106, Integrated application resource: Building construction core model;
- Part 201, Application protocol: Explicit draughting;
- Part 202, Application protocol: Associative draughting;
- Part 203, Application protocol: Configuration controlled design;
- Part 204, Application protocol: Mechanical design using boundary representation;
- Part 205, Application protocol: Mechanical design using surface representation;
- Part 207, Application protocol: Sheet metal die planning and design;
- Part 208, Application protocol: Life cycle management — Change process;
- Part 209, Application protocol: Composite and metallic structural analysis and related design;
- Part 210, Application protocol: Electronic assembly, interconnect, and packaging design;

- Part 212, Application protocol: Electrotechnical design and installation;
- Part 213, Application protocol: Numerical Control process plans for machined parts;
- Part 214, Application protocol: Core data for automotive mechanical design;
- Part 215, Application protocol: Ship arrangement;
- Part 216, Application protocol: Ship moulded forms;
- Part 217, Application protocol: Ship piping;
- Part 218, Application protocol: Ship structures;
- Part 221, Application protocol: Functional data and their schematic representation for process plant;
- Part 222, Application protocol: Exchange of product data for composite structures;
- Part 223, Application protocol: Exchange of design and manufacturing product information for casting parts;
- Part 224, Application protocol: Mechanical products definition for process plans using machining features;
- Part 225, Application protocol: Building elements using explicit shape representation;
- Part 226, Application protocol: Ship mechanical systems;
- Part 227, Application protocol: Plant spatial configuration;
- Part 229, Application protocol: Exchange of design and manufacturing product information for forged parts;
- Part 230, Application protocol: Building structural frame: Steelwork;
- Part 231, Application protocol: Process engineering data: Process design and process specification of major equipment;
- Part 232, Application protocol: Technical data packaging core information and exchange;
- Part 301, Abstract test suite: Explicit draughting;
- Part 302, Abstract test suite: Associative draughting;

- Part 303, Abstract test suite: Configuration controlled design;
- Part 304, Abstract test suite: Mechanical design using boundary representation;
- Part 305, Abstract test suite: Mechanical design using surface representation;
- Part 307, Abstract test suite: Sheet metal die planning and design;
- Part 308, Abstract test suite: Life cycle management — Change process;
- Part 309, Abstract test suite: Composite and metallic structural analysis and related design;
- Part 310, Abstract test suite: Electronic assembly, interconnect, and packaging design;
- Part 312, Abstract test suite: Electrotechnical design and installation;
- Part 313, Abstract test suite: Numerical control process plans for machined parts;
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- Part 322, Abstract test suite: Exchange of product data for composite structures;
- Part 323, Abstract test suite: Exchange of design and manufacturing product information for casting parts;
- Part 324, Abstract test suite: Mechanical product definition for process plans using machining features;
- Part 325, Abstract test suite: Building elements using explicit shape representation;
- Part 326, Abstract test suite: Ship mechanical systems;
- Part 327, Abstract test suite: Plant spatial configuration;

- Part 329, Abstract test suite: Exchange of design and manufacturing product information for forged parts;
- Part 330, Abstract test suite: Building structural frame: Steelwork;
- Part 331, Abstract test suite: Process engineering data: Process design and process specification of major equipment;
- Part 332, Abstract test suite: Technical data packaging core information and exchange;
- Part 501, Application interpreted construct: Edge-based wireframe;
- Part 502, Application interpreted construct: Shell-based wireframe;
- Part 503, Application interpreted construct: Geometrically bounded 2D wireframe;
- Part 504, Application interpreted construct: Draughting annotation;
- Part 505, Application interpreted construct: Drawing structure and administration;
- Part 506, Application interpreted construct: Draughting elements;
- Part 507, Application interpreted construct: Geometrically bounded surface;
- Part 508, Application interpreted construct: Non-manifold surface;
- Part 509, Application interpreted construct: Manifold surface;
- Part 510, Application interpreted construct: Geometrically bounded wireframe;
- Part 511, Application interpreted construct: Topologically bounded surface;
- Part 512, Application interpreted construct: Faceted boundary representation;
- Part 513, Application interpreted construct: Elementary boundary representation;
- Part 514, Application interpreted construct: Advanced boundary representation;
- Part 515, Application interpreted construct: Constructive solid geometry;
- Part 517, Application interpreted construct: Mechanical design geometric presentation;
- Part 518, Application interpreted construct: Mechanical design shaded presentation.

The structure of this International Standard is described in ISO 10303-1. The numbering of the parts of this International Standard reflects its structure:

- Parts 11 and 12 specify the description methods,
- Parts 21 to 26 specify the implementation methods,
- Parts 31 to 35 specify the conformance testing methodology and framework,
- Parts 41 to 49 specify the integrated generic resources,
- Parts 101 to 106 specify the integrated application resources,
- Parts 201 to 232 specify the application protocols,
- Parts 301 to 332 specify the abstract test suites, and
- Parts 501 to 518 specify the application interpreted constructs.

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

Annexes A and B form an integral part of this part of ISO 10303. Annexes C, D and E are for information only.

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Introduction

ISO 10303 is an International Standard for the computer-interpretable representation and exchange of product data. The objective is to provide a neutral mechanism capable of describing product data throughout the life cycle of a product, independent from any particular system. The nature of this description makes it suitable not only for neutral file exchange, but also as a basis for implementing and sharing product databases and archiving.

This International Standard is organized as a series of parts, each published separately. The parts of ISO 10303 fall into one of the following series: description methods, integrated resources, application interpreted constructs, application protocols, abstract test suites, implementation methods, and conformance testing. The series are described in ISO 10303-1. This part of ISO 10303 is a member of the conformance testing series.

This part of ISO 10303 specifies the techniques and means to facilitate the use of those techniques by the testing laboratory and the client for conformance testing. This part of ISO 10303 addresses the roles of both the testing laboratory and the client during the conformance assessment process, the need to reach mutual agreements between them, and the requirements on each of them.

A major objective of standardising the conformance assessment process is to achieve an acceptable and useful degree of comparability of results of conformance testing of similar products. For this to be achieved, standardised tests should be used and the methods of selecting and assigning values to parameters of these tests should be the same. The presentation of their results should also be the same.

This part of ISO 10303 should be read in conjunction with ISO 10303-31.

This part of ISO 10303 prescribes the requirements on both the testing laboratory and the client to achieve the necessary consistency of conformance testing. The target audiences for this part of ISO 10303 are the testing laboratories and their clients.

This part of ISO 10303 may also be of interest to:

- test realisers who are responsible for producing the executable test suites, procedures and executable software from standardised abstract test suites and abstract test methods;
- organisations responsible for the accreditation of testing laboratories¹⁾;
- organisations responsible for the issue of certificates of conformity that are based upon the conformance test reports issued by testing laboratories;
- readers of conformance test reports.

¹⁾ Further information on the roles of accreditation and certification organisations is given in annex D of ISO 10303-31.

Within this part of ISO 10303, the conformance assessment process relating to both the testing laboratory and the client is divided into four phases as given in 6.4 of ISO 10303-31. Clauses 5 to 8 of this part of ISO 10303 give requirements for conducting these four phases.

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Industrial automation systems and integration — Product data representation and exchange — Part 32: Conformance testing methodology and framework: Requirements on testing laboratories and clients

1 Scope

This part of ISO 10303 specifies the techniques for conformance testing and the means to facilitate the use of those techniques by the testing laboratory and the client. This part of ISO 10303 specifies the roles of both the testing laboratory and the client during the conformance assessment process, the need to reach mutual agreements between them, and the requirements on each of them.

1.1 Coverage

The following are within the scope of this part of ISO 10303:

- general requirements on the testing laboratory and on the client that are applicable to the conformance assessment process;
- the exchange of technical and administrative information, including a protocol implementation conformance statement (PICS) and a protocol implementation extra information for testing (PIXIT);
- the process of negotiation between the testing laboratory and the client to reach an agreement on:
 - a) the definition of the implementation under test (IUT);
 - b) the abstract test method and abstract test suite to be used;
 - c) the conditions under which conformance testing will be performed;
- requirements for the structure and content of the test report that document the results of the conformance testing.

The following are outside the scope of this part of ISO 10303:

- the resolution of technical issues between the client and the testing laboratory that arise during the conformance assessment process;