IEC 62264-2

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Enterprise-control system integration –
Part 2: Objects and attributes for enterprise-control system integration

Intégration des systèmes entreprise-contrôle –
Partie 2: Objets et attributs pour l'intégration des systèmes de commande d'entreprise

IEC 62264-2:2013

IEC Central Office
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 62264-2 has been developed by subcommittee 65E: Devices and integration in enterprise systems, of IEC technical committee 65: Industrial-process measurement, control and automation, and by ISO technical committee 184/SC5: Interoperability, integration and architectures for enterprise systems and automation applications. It is published as a double logo standard.

This standard is based upon ANSI/ISA-95.00.02-2010, Enterprise-Control System Integration, Part 2: Objects and attributes for Enterprise-Control System Integration. It is used with permission of the copyright holder, the Instrumentation, Systems and Automation Society (ISA). ISA encourages the use and application of its industry standards on a global basis.

This second edition cancels and replaces the first edition published in 2004. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) update of the first edition;

b) addition of object models for exchange information used in manufacturing operations management activities, instead of just production operations management actives. The added object models were physical asset, operations definition, operations schedule, operations performance, and operations capability.

c) displacement of the production specific object models in Annex A;

d) displacement of the UML object models that were in IEC 62264-1:2003 into this standard so that the object models and the associated attribute tables were available in the same document;

e) addition of the Hierarchy scope object definition to replace the Location attribute used in the previous edition;

f) addition of a value type section to define the exchange of non-simple value types;

g) definition of simple value types were defined using the ISO 15000-5.

The text of this standard is based on the following documents of IEC:

FDIS	Report on voting
65E/290/FDIS	65E/317/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table. In ISO, the standard has been approved by 10 members out of 10 having cast a vote.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 62264 series, published under the general title *Enterprise control system integration* can be found on the IEC website.

In this publication, the following print types are used:

– *attributes: in italic type.*

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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INTRODUCTION

This part of IEC 62264 further defines formal object models for exchange information described in IEC 62264-1 using UML object models, tables of attributes, and examples. The models and terminology defined in this part of IEC 62264:

a) emphasize good integration practices of control systems with enterprise systems during the entire life cycle of the systems;

b) can be used to improve existing integration capability of manufacturing control systems with enterprise systems; and

c) can be applied regardless of the degree of automation.

Specifically, this part of IEC 62264 provides a standard terminology and a consistent set of concepts and models for integrating control systems with enterprise systems that will improve communications between all parties involved. Benefits produced will:

a) reduce the user's time to reach full production levels for new products;

b) enable vendors to supply appropriate tools for implementing integration of control systems to enterprise systems;

c) enable users to better identify their needs;

d) reduce the cost of automating manufacturing processes;

e) optimize supply chains; and

f) reduce life-cycle engineering efforts.

This standard may be used to reduce the effort associated with implementing new product offerings. The goal is to have enterprise systems and control systems that interoperate and easily integrate.

It is not the intent of the standards to:

a) suggest that there is only one way of implementing integration of control systems to enterprise systems;

b) force users to abandon their current way of handling integration; or

c) restrict development in the area of integration of control systems to enterprise systems.

ENTERPRISE-CONTROL SYSTEM INTEGRATION –

Part 2: Objects and attributes for enterprise-control system integration

1 Scope

This part of IEC 62264 specifies generic interface content exchanged between manufacturing control functions and other enterprise functions. The interface considered is between Level 3 manufacturing systems and Level 4 business systems in the hierarchical model defined in IEC 62264-1. The goal is to reduce the risk, cost, and errors associated with implementing the interface.

Since this standard covers many domains, and there are many different standards in those domains, the semantics of this standard are described at a level intended to enable the other standards to be mapped to these semantics. To this end this standard defines a set of elements contained in the generic interface, together with a mechanism for extending those elements for implementations.

The scope of IEC 62264-2 is limited to the definition of object models and attributes of the exchanged information defined in IEC 62264-1.

This part of IEC 62264 standard does not define attributes to represent the object relationships.

2 Normative references

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

IEC 62264-1, *Enterprise-control system integration – Part 1: Models and terminology*

ISO/IEC 19501, *Information technology – Open Distributed Processing – Unified Modeling Language (UML) Version 1.4.2*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 62264-1, as well as the following apply.

3.1.1
equipment class
grouping of role based equipment with similar characteristics

3.1.2
event
representation of a solicited or unsolicited fact indicating a state change in the enterprise

3.1.3
location
scope of exchanged information as identified by an element of the equipment hierarchy

EXAMPLE There can be an agreement to only supply an “Area” name for exchanged information, because the site and enterprise are implicitly defined through the messaging system

3.1.4
material class
grouping of materials with similar characteristics

3.1.5
material lot
uniquely identifiable amount of a material

Note 1 to entry: It describes the actual or planned total quantity or amount of material available, its current state, and its specific property values.

3.1.6
material definition
definition of the properties for a substance

Note 1 to entry: This includes material that can be identified as raw, intermediate, final material, or consumable.

3.1.7
material sublot
uniquely identifiable subset of a material lot

Note 1 to entry: This can be a single item.

3.1.8
personnel class
grouping of persons with similar characteristics

3.1.9
product
desired output or by-product of the processes of an enterprise

Note 1 to entry: A product can be an intermediate product or end product from a business perspective.

Note 2 to entry: Also defined in ISO 10303-1 as: a substance produced by a natural or artificial process.

3.1.10
property
implementation specific characteristic of an entity

3.2 Abbreviations

For purposes of this standard the following abbreviations apply.

MOM Manufacturing Operations Management

UML Unified Modeling Language

4 Production operations models and generic operations models

4.1 Information models

Common objects used in information exchange that relate to personnel, equipment, physical assets, and material are defined in Clause 5.