



SLOVENSKI STANDARD

SIST EN 62264-2:2014

01-april-2014

Nadomešča:
SIST EN 62264-2:2008

Integracija sistemov za upravljanje podjetij - 2. del: Objektni modeli in lastnosti

Enterprise system integration - Part 2: Object models and attributes

Integration von Unternehmensführungs- und Leitsystemen - Teil 2: Attribute des Objektmodells

Intégration du système de commande d'Entreprise - Partie 2: Modèles d'objets et attributs

iTeh STANDARD PREVIEW

(standards.iteh.ai)

[SIST EN 62264-2:2014](https://standards.iteh.ai/catalog/standards/sist/be3f86f8-0d17-4a38-a820-2014-01-01/sist-en-62264-2-2014)

<https://standards.iteh.ai/catalog/standards/sist/be3f86f8-0d17-4a38-a820-2014-01-01/sist-en-62264-2-2014>

Ta slovenski standard je istoveten z ~~EN 62264-2:2013~~

ICS:

25.040.01	Sistemi za avtomatizacijo v industriji na splošno	Industrial automation systems in general
35.240.50	Uporabniške rešitve IT v industriji	IT applications in industry

SIST EN 62264-2:2014

en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 62264-2:2014

<https://standards.iteh.ai/catalog/standards/sist/be3f86f8-0d17-4a38-a820-8a744ef36e6e/sist-en-62264-2-2014>

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 62264-2

October 2013

ICS 25.040.40; 35.240.50

Supersedes EN 62264-2:2008

English version

**Enterprise-control system integration -
Part 2: Objects and attributes for enterprise-control system integration
(IEC 62264-2:2013)**

Intégration des systèmes entreprise-
contrôle -
Partie 2: Objets et attributs pour
l'intégration des systèmes de commande
d'entreprise
(CEI 62264-2:2013)

Integration von Unternehmensführungs-
und Leitsystemen -
Teil 2: Objekte und Attribute für die
Integration von Unternehmensführungs-
und Leitsystemen
(IEC 62264-2:2013)

iTeh STANDARD PREVIEW
(standards.iteh.ai)

This European Standard was approved by CENELEC on 2013-08-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Avenue Marnix 17, B - 1000 Brussels

Foreword

The text of document 65E/290/FDIS, future edition 2 of IEC 62264-2, prepared by SC 65E "Devices and integration in enterprise systems" of IEC/TC 65 "Industrial-process measurement, control and automation" and by ISO/TC 184/SC5 "Interoperability, integration and architectures for enterprise systems and automation applications" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62264-2:2013.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2014-05-01
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2016-08-01

This document supersedes EN 62264-2:2008.

EN 62264-2:2013 includes the following significant technical changes with respect to EN 62264-2:2008:

- 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 EN 62264-1:2008 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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 62264-2:2013 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 61512-1	NOTE	Harmonised as EN 61512-1.
ISO 19439	NOTE	Harmonised as EN ISO 19439.
ISO 19440	NOTE	Harmonised as EN ISO 19440.

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

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.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 62264-1	-	Enterprise-control system integration - Part 1: Models and terminology	EN 62264-1	-
ISO/IEC 19501	-	Information technology - Open Distributed Processing - Unified Modeling Language (UML)	-	-

iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN 62264-2:2014

<https://standards.iteh.ai/catalog/standards/sist/be3f86f8-0d17-4a38-a820-8a744ef36e6e/sist-en-62264-2-2014>

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 62264-2:2014

<https://standards.iteh.ai/catalog/standards/sist/be3f86f8-0d17-4a38-a820-8a744ef36e6e/sist-en-62264-2-2014>



IEC 62264-2

Edition 2.0 2013-06

INTERNATIONAL STANDARD

NORME INTERNATIONALE



**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**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

PRICE CODE
CODE PRIX

XH

ICS 25.040.40; 35.240.50

ISBN 978-2-83220-833-5

**Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**

CONTENTS

FOREWORD.....	9
INTRODUCTION.....	11
1 Scope.....	12
2 Normative references	12
3 Terms, definitions and abbreviations	12
3.1 Terms and definitions	12
3.2 Abbreviations	13
4 Production operations models and generic operations models.....	13
4.1 Information models.....	13
4.2 General modeling information.....	15
4.3 Extensibility of attributes through properties	15
4.4 Object model structure	16
4.5 Explanation of tables.....	16
4.5.1 Tables of attributes.....	16
4.5.2 Object identification.....	16
4.5.3 Data types.....	17
4.5.4 Presentation of examples	17
4.5.5 References to resources.....	18
4.5.6 Object relationships.....	19
4.6 Relationship of models.....	19
4.7 Hierarchy scope	20
4.8 Value types.....	20
4.8.1 Value use	20
4.8.2 Value syntax.....	21
4.8.3 Simple value types	21
4.8.4 Unit of measure	22
4.8.5 Array value types.....	22
4.8.6 Range value types.....	22
4.8.7 Series value types	22
4.8.8 Structured value types.....	22
5 Common object models	23
5.1 Personnel information	23
5.1.1 Personnel model.....	23
5.1.2 Personnel class	24
5.1.3 Personnel class property	24
5.1.4 Person.....	25
5.1.5 Person property.....	26
5.1.6 Qualification test specification	27
5.1.7 Qualification test result.....	28
5.2 Role based equipment information	29
5.2.1 Role based equipment model.....	29
5.2.2 Equipment class	30
5.2.3 Equipment class property	31
5.2.4 Equipment.....	32
5.2.5 Equipment property	32
5.2.6 Equipment capability test specification	33

5.2.7	Equipment capability test result	34
5.3	Physical asset information	35
5.3.1	Physical asset model	35
5.3.2	Physical asset	36
5.3.3	Physical asset property	37
5.3.4	Physical asset class	37
5.3.5	Physical asset class property.....	38
5.3.6	Physical asset capability test specification.....	38
5.3.7	Physical asset capability test result	39
5.3.8	Equipment asset mapping.....	40
5.4	Material information.....	40
5.4.1	Material model.....	40
5.4.2	Material class	41
5.4.3	Material class property	42
5.4.4	Material definition	43
5.4.5	Material definition property	44
5.4.6	Material lot	45
5.4.7	Material lot property.....	47
5.4.8	Material subplot.....	47
5.4.9	Material test specification	49
5.4.10	Material test result.....	50
5.4.11	Assemblies.....	51
5.5	Process segment information	52
5.5.1	Process segment model	52
5.5.2	Process segment	53
5.5.3	Personnel segment specification	54
5.5.4	Personnel segment specification property.....	55
5.5.5	Equipment segment specification.....	56
5.5.6	Equipment segment specification property.....	56
5.5.7	Material segment specification.....	57
5.5.8	Material segment specification property.....	59
5.5.9	Physical asset segment specification.....	59
5.5.10	Physical asset segment specification property	60
5.5.11	Process segment parameter	61
5.5.12	Process segment dependency	61
5.6	Containers, tools and software	63
5.6.1	Containers.....	63
5.6.2	Tools	63
5.6.3	Software.....	63
6	Operations management information	63
6.1	Operations definition information	63
6.1.1	Operations definition model	63
6.1.2	Operations definition	64
6.1.3	Operations material bill.....	65
6.1.4	Operations material bill item	66
6.1.5	Operations segment	67
6.1.6	Parameter specification	68
6.1.7	Personnel specification.....	69

6.1.8	Personnel specification property	70
6.1.9	Equipment specification	71
6.1.10	Equipment specification property	72
6.1.11	Physical asset specification	73
6.1.12	Physical asset specification property	74
6.1.13	Material specification	75
6.1.14	Material specification property	76
6.1.15	Operations segment dependency	77
6.2	Operations schedule information	77
6.2.1	Operations schedule model	77
6.2.2	Operations schedule	78
6.2.3	Operations request	80
6.2.4	Segment requirement	81
6.2.5	Segment parameter	82
6.2.6	Personnel requirement	83
6.2.7	Personnel requirement property	84
6.2.8	Equipment requirement	85
6.2.9	Equipment requirement property	86
6.2.10	Physical asset requirement	87
6.2.11	Physical asset requirement property	89
6.2.12	Material requirement	89
6.2.13	Material requirement property	91
6.2.14	Requested segment response	92
6.3	Operations performance information	92
6.3.1	Operations performance model	92
6.3.2	Operations performance	93
6.3.3	Operations response	94
6.3.4	Segment response	95
6.3.5	Segment data	96
6.3.6	Personnel actual	97
6.3.7	Personnel actual property	98
6.3.8	Equipment actual	99
6.3.9	Equipment actual property	100
6.3.10	Physical asset actual	101
6.3.11	Physical asset actual property	102
6.3.12	Material actual	103
6.3.13	Material actual property	105
6.4	Operations capability information	105
6.4.1	Operations capability model	105
6.4.2	Operations capability	106
6.4.3	Personnel capability	107
6.4.4	Personnel capability property	109
6.4.5	Equipment capability	109
6.4.6	Equipment capability property	110
6.4.7	Physical asset capability	111
6.4.8	Physical asset capability property	112
6.4.9	Material capability	113
6.4.10	Material capability property	115
6.5	Process segment capability information	116

6.5.1	Process segment capability model	116
6.5.2	Process segment capability	117
7	Object model inter-relationships	118
8	List of objects	120
9	Compliance	123
Annex A (normative)	Production specific information.....	124
Annex B (informative)	Use and examples.....	132
Annex C (informative)	Example data sets.....	140
Annex D (informative)	Questions and answers about object use	148
Annex E (informative)	Logical information flows	162
Bibliography	165
Figure 1 –	Production operations management information models	14
Figure 2 –	Operations information models for operations management	15
Figure 3 –	Detailed resource relationship in models	18
Figure 4 –	Hierarchy scope model.....	20
Figure 5 –	Personnel model	24
Figure 6 –	Role based equipment model	30
Figure 7 –	Physical asset model	35
Figure 8 –	Physical asset and equipment relationship	36
Figure 9 –	Material model	41
Figure 10 –	Example of a material with an assembly	52
Figure 11 –	Process segment model	53
Figure 12 –	Segment dependency examples	62
Figure 13 –	Operations definition model.....	64
Figure 14 –	Operations schedule model	78
Figure 15 –	Operations performance model	92
Figure 16 –	Operations capability Model	106
Figure 17 –	Process segment capability object model	116
Figure 18 –	Object model inter-relationships	118
Figure A.1 –	Product definition model	124
Figure A.2 –	Production schedule model	127
Figure A.3 –	Production performance model	129
Figure A.4 –	Production capability model	131
Figure B.1 –	Personnel model.....	133
Figure B.2 –	Instances of a person class	134
Figure B.3 –	UML model for class and class properties	134
Figure B.4 –	Class property	135
Figure B.5 –	Instances of a person properties	135
Figure B.6 –	Instances of person and person properties	135
Figure B.7 –	XML schema for a person object.....	138
Figure B.8 –	XML schema for person properties.....	138
Figure B.9 –	Example of person and person property.....	139

Figure B.10 – Example of person class information	139
Figure B.11 – Adaptor to map different property IDs and values	139
Figure D.1 – Class and property IDs used to identify elements	151
Figure D.2 – A property defining overlapping subsets of the capability	152
Figure D.3 – Routing for a product	153
Figure D.4 – Routing with co-products and material dependencies	154
Figure D.5 – Product and process capability relationships	155
Figure D.6 – Time-based dependencies	156
Figure D.7 – Mixed operation example	160
Figure E.1 – Enterprise to manufacturing system logical information flows	163
Figure E.2 – Logical information flows among multiple systems	164
Table 1 – UML notation used	16
Table 2 – Example table	17
Table 3 – Attributes of hierarchy scope	20
Table 4 – Commonly used CCTS types for exchange	21
Table 5 – Attributes of personnel class	24
Table 6 – Attributes of personnel class property	25
Table 7 – Attributes of person	26
Table 8 – Attributes of person property	27
Table 9 – Attributes of qualification test specification	28
Table 10 – Attributes of qualification test result	29
Table 11 – Attributes of equipment class	31
Table 12 – Attributes of equipment class property	31
Table 13 – Attributes of equipment	32
Table 14 – Attributes of equipment property	33
Table 15 – Attributes of equipment capability test specification	34
Table 16 – Attributes of equipment capability test result	34
Table 17 – Attributes of physical asset	36
Table 18 – Attributes of physical asset property	37
Table 19 – Attributes of physical asset class	38
Table 20 – Attributes of physical asset class property	38
Table 21 – Attributes of physical asset capability test specification	39
Table 22 – Attributes of physical asset capability test result	40
Table 23 – Attributes of equipment asset mapping	40
Table 24 – Attributes of material class	42
Table 25 – Attributes of material class property	43
Table 26 – Attributes of material definition	44
Table 27 – Attributes of material definition property	45
Table 28 – Attributes of material lot	46
Table 29 – Attributes of material lot property	47
Table 30 – Attributes of material subplot	49
Table 31 – Attributes of material test specification	50

Table 32 – Attributes of material test result	51
Table 33 – Attributes of process segment	54
Table 34 – Attributes of personnel segment specification	55
Table 35 – Attributes of personnel segment specification property	56
Table 36 – Attributes of equipment segment specification	56
Table 37 – Attributes of equipment segment specification property	57
Table 38 – Attributes of material segment specification	58
Table 39 – Attributes of material segment specification property	59
Table 40 – Attributes of physical asset segment specification	60
Table 41 – Attributes of physical asset segment specification property	60
Table 42 – Attributes of process segment parameter	61
Table 43 – Attributes of process segment dependency	62
Table 44 – Attributes of operations definition	65
Table 45 – Attributes of operations material bill	66
Table 46 – Attributes of operations material bill item	67
Table 47 – Attributes of operations segment	68
Table 48 – Attributes of parameter specification	69
Table 49 – Attributes of personnel specification	70
Table 50 – Attributes of personnel specification property	71
Table 51 – Attributes of equipment specification	72
Table 52 – Attributes of equipment specification property	73
Table 53 – Attributes of physical asset specification	74
Table 54 – Attributes of physical asset specification property	74
Table 55 – Attributes of material specification	75
Table 56 – Attributes of material specification property	76
Table 57 – Attributes of operations segment dependency	77
Table 58 – Attributes of operations schedule	79
Table 59 – Attributes of operations request	80
Table 60 – Attributes of segment requirement	82
Table 61 – Attributes of segment parameter	83
Table 62 – Attributes of personnel requirement	84
Table 63 – Attributes of personnel requirement property	85
Table 64 – Attributes of equipment requirement	86
Table 65 – Attributes of equipment requirement property	87
Table 66 – Attributes of physical asset requirement	88
Table 67 – Attributes of physical asset requirement property	89
Table 68 – Attributes of material requirement	90
Table 69 – Attributes of material requirement property	91
Table 70 – Attributes of operations performance	93
Table 71 – Attributes of operations response	94
Table 72 – Attributes of segment response	96
Table 73 – Attributes of segment data	97
Table 74 – Attributes of personnel actual	98

Table 75 – Attributes of personnel actual property	99
Table 76 – Attributes of equipment actual	100
Table 77 – Attributes of equipment actual property	101
Table 78 – Attributes of physical asset actual	102
Table 79 – Attributes of physical asset actual property.....	103
Table 80 – Attributes of material actual	104
Table 81 – Attributes of material actual property	105
Table 82 – Attributes of operations capability.....	107
Table 83 – Attributes of personnel capability.....	108
Table 84 – Attributes of personnel capability property	109
Table 85 – Attributes of equipment capability.....	110
Table 86 – Attributes of equipment capability property	111
Table 87 – Attributes of physical asset capability	112
Table 88 – Attributes of physical asset capability property	113
Table 89 – Attributes of material capability.....	114
Table 90 – Attributes of material capability property.....	115
Table 91 – Attributes of process segment capability.....	117
Table 92 – Model cross-reference (1 of 2)	119
Table 93 – Common resource objects (1 of 4).....	120
Table B.1 – Attributes of person.....	133
Table B.2 – Database structure for person.....	136
Table B.3 – Database structure for person property.....	136
Table B.4 – Database for person with data.....	137
Table B.5 – Database for person property with data.....	137
Table D.1 – Definition of segment types.....	150
Table D.2 – Examples of materials and equipment.....	158
Table D.3 – Equipment and physical assets.....	158

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ENTERPRISE-CONTROL SYSTEM INTEGRATION –

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

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.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

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: