

BS EN 62264-5:2016



BSI Standards Publication

Enterprise-control system integration

Part 5: Business to manufacturing
transactions

National foreword

This British Standard is the UK implementation of EN 62264-5:2016. It is identical to IEC 62264-5:2016. It supersedes BS EN 62264-5:2012 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee AMT/7, Industrial communications: process measurement and control, including fieldbus.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2016.

Published by BSI Standards Limited 2016

ISBN 978 0 580 88475 7

ICS 25.040.99; 35.100.01; 35.240.50

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 December 2016.

Amendments/corrigenda issued since publication

Date	Text affected
------	---------------

EUROPEAN STANDARD

EN 62264-5

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 2016

ICS 25.040.99; 35.100; 35.200

Supersedes EN 62264-5:2012

English Version

Enterprise-control system integration -
Part 5: Business to manufacturing transactions
(IEC 62264-5:2016)

Intégration du système de commande d'entreprise -
Partie 5 : Transactions entre systèmes de gestion de
commande d'entreprise et systèmes de fabrication
(IEC 62264-5:2016)

Integration von Unternehmensführungs- und Leitsystemen -
Teil 5: Transaktionen zwischen Unternehmensführungs-
und Produktionsleitsystemen
(IEC 62264-5:2016)

This European Standard was approved by CENELEC on 2016-08-23. 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.



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

European foreword

The text of document 65E/459/CDV, future edition 2 of IEC 62264-5, prepared by SC 65E "Devices and integration in enterprise systems", of IEC/TC 65 "Industrial-process measurement, control and automation" and ISO/SC 5/JWG 5, of ISO/TC 184 "Automation systems and integration" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62264-5:2016.

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) 2017-05-25
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2019-11-25

This document supersedes EN 62264-5:2012

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 62264-5:2016 was approved by CENELEC as a European Standard without any modification.

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 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 62264-2	2013	Enterprise-control system integration - Part 2: Objects and attributes for enterprise-control system integration	EN 62264-2	2013
IEC 62264-3	-	Enterprise-control system integration - Part 3: Activity models of manufacturing operations management	EN 62264-3	-
IEC 62264-4	-	Enterprise-control system integration - Part 4: Object model attributes for manufacturing operations management integration	EN 62264-4	-
ISO/IEC 19501	-	Information technology - Open Distributed Processing - Unified Modeling Language (UML) Version 1.4.2	-	-
ISO 8601	-	Data elements and interchange formats - Information interchange - Representation of dates and times	-	-

CONTENTS

FOREWORD.....	11
INTRODUCTION.....	13
1 Scope.....	14
2 Normative references.....	14
3 Terms, definitions, abbreviations, and conventions.....	15
3.1 Terms and definitions.....	15
3.2 Abbreviations.....	15
3.3 Conventions.....	16
4 Transaction messages and verbs.....	16
4.1 General.....	16
4.2 Transaction models.....	17
4.3 Message structure.....	18
4.3.1 General structure.....	18
4.3.2 Application identification area.....	19
4.3.3 Data area.....	19
4.3.4 Message nouns.....	20
4.3.5 Wildcard.....	20
5 Message verbs.....	21
5.1 Verbs and transaction models.....	21
5.2 GET verb.....	23
5.3 SHOW verb.....	24
5.4 PROCESS verb.....	24
5.5 ACKNOWLEDGE verb.....	25
5.6 CHANGE verb.....	26
5.7 CANCEL verb.....	26
5.8 CONFIRM verb.....	27
5.9 RESPOND verb.....	29
5.10 SYNC verb.....	29
5.11 SYNC ADD verb.....	30
5.12 SYNC CHANGE verb.....	30
5.13 SYNC DELETE verb.....	30
5.14 Verb actions and the use of IDs.....	31
6 Message nouns.....	31
6.1 General.....	31
6.2 Defined message contents.....	31
6.2.1 Equipment.....	31
6.2.2 Equipment Capability Test Specification.....	31
6.2.3 Equipment Class.....	31
6.2.4 Job List.....	31
6.2.5 Job Response.....	32
6.2.6 Job Response List.....	32
6.2.7 Material Class.....	32
6.2.8 Material Definition.....	32
6.2.9 Material Lot.....	33
6.2.10 Material Sublot.....	33
6.2.11 Material Test Specification.....	33

6.2.12	Operations Capability	33
6.2.13	Operations Definition	33
6.2.14	Operations Schedule	34
6.2.15	Operations Performance	34
6.2.16	Person	34
6.2.17	Personnel Class	35
6.2.18	Physical Asset	35
6.2.19	Physical Asset Class	35
6.2.20	Physical Asset Capability Test Specification	35
6.2.21	Process Segment	35
6.2.22	Resource Relationship Network	35
6.2.23	Resource Relationship Network Connection Type	36
6.2.24	Qualification Test Specification	36
6.2.25	Transaction Profile	36
6.2.26	Work Alert Definition	36
6.2.27	Work Alert	36
6.2.28	Work Calendar Definition	36
6.2.29	Work Calendar	36
6.2.30	Work Capability	37
6.2.31	Work Directive	37
6.2.32	Work Master	37
6.2.33	Work Performance	38
6.2.34	Work Record	38
6.2.35	Work Schedule	38
6.2.36	Workflow Specification	38
6.2.37	Workflow Specification Type	39
6.2.38	Production specific models	39
6.3	Personnel model	41
6.3.1	Personnel model elements	41
6.3.2	Personnel Class verbs	41
6.3.3	Personnel Class verb actions	41
6.3.4	Person verbs	44
6.3.5	Person verb actions	44
6.3.6	Qualification Test Specification verbs	47
6.3.7	Qualification Test Specification verb actions	47
6.4	Role based equipment model	49
6.4.1	Role based equipment model elements	49
6.4.2	Equipment Class verbs	49
6.4.3	Equipment Class verb actions	49
6.4.4	Equipment verbs	52
6.4.5	Equipment verb actions	52
6.4.6	Equipment Capability Test Specification verbs	55
6.4.7	Equipment Capability Test Specification verb actions	55
6.5	Physical Asset model	56
6.5.1	Physical Asset model elements	56
6.5.2	Physical Asset Class verbs	57
6.5.3	Physical Asset Class verb actions	57
6.5.4	Physical Asset verbs	60
6.5.5	Physical Asset verb actions	60

6.5.6	Physical Asset Capability Test Specification verbs	63
6.5.7	Physical Asset Capability Test Specification verb actions	63
6.6	Material model	64
6.6.1	Material model elements	64
6.6.2	Material Class verbs	65
6.6.3	Material Class verb actions	65
6.6.4	Material Definition verbs	68
6.6.5	Material Definition verb actions	68
6.6.6	Material Lot verbs	71
6.6.7	Material Lot verb actions	71
6.6.8	Material Sublot verbs	74
6.6.9	Material Sublot verb actions	74
6.6.10	Material Test Specification verbs	77
6.6.11	Material Test Specification verb actions	77
6.7	Process Segment model	79
6.7.1	Process Segment model elements	79
6.7.2	Process Segment verbs	79
6.7.3	Process Segment verb actions	79
6.8	Operations Capability model	80
6.8.1	Operations Capability model elements	80
6.8.2	Operations Capability verbs	81
6.8.3	Operations Capability verb actions	81
6.9	Operations Definition model	84
6.9.1	Operations Definition model elements	84
6.9.2	Operations Definition verbs	85
6.9.3	Operations Definition verb actions	85
6.10	Operations Schedule model	86
6.10.1	Operations Schedule model elements	86
6.10.2	Operations Schedule verbs	87
6.10.3	Operations Schedule verb actions	87
6.11	Operations Performance model	89
6.11.1	Operations Performance model elements	89
6.11.2	Operations Performance verbs	90
6.11.3	Operations Performance verb actions	90
6.12	Resource Relationship Network model	93
6.12.1	Resource Relationship Network model elements	93
6.12.2	Resource Relationship Network verbs	93
6.12.3	Resource Relationship Network verb actions	93
6.12.4	Resource Relationship Connection Type verbs	94
6.12.5	Resource Relationship Connection Type verb actions	94
6.13	Work Alerts	95
6.13.1	Work Alert model elements	95
6.13.2	Work Alert Definition verbs	96
6.13.3	Work Alert Definition actions	96
6.13.4	Work Alert verbs	98
6.13.5	Work Alert verb actions	98
6.14	Work Calendar	99
6.14.1	Work Calendar elements	99
6.14.2	Work Calendar Definition verbs	100

6.14.3	Work Calendar Definition actions.....	100
6.14.4	Work Calendar verbs.....	101
6.14.5	Work Calendar actions.....	101
6.15	Work Capability model.....	102
6.15.1	Work Capability model elements.....	102
6.15.2	Work Capability verbs.....	103
6.15.3	Work Capability verb actions.....	103
6.16	Work Definition model.....	106
6.16.1	Work Definition model elements.....	106
6.16.2	Work Master verbs.....	107
6.16.3	Work Master verb actions.....	107
6.16.4	Work Directive verbs.....	108
6.16.5	Work Directive verb actions.....	108
6.17	Work Record.....	109
6.17.1	Work Record elements.....	109
6.17.2	Work Record verbs.....	110
6.17.3	Work Record verb actions.....	110
6.18	Work Schedule model.....	111
6.18.1	Work Schedule elements.....	111
6.18.2	Work Schedule verbs.....	112
6.18.3	Work Schedule verb actions.....	112
6.18.4	Job List verbs.....	113
6.18.5	Job List verb actions.....	113
6.19	Work Performance model.....	115
6.19.1	Work Performance elements.....	115
6.19.2	Work Performance verbs.....	115
6.19.3	Work Performance verb actions.....	115
6.19.4	Job Response verbs.....	117
6.19.5	Job Response verb actions.....	117
6.19.6	Job Response List verbs.....	118
6.19.7	Job Response List verb actions.....	118
6.20	Workflow Specification model.....	120
6.20.1	Workflow Specification elements.....	120
6.20.2	Workflow Specification verbs.....	120
6.20.3	Workflow Specification verb actions.....	121
6.20.4	Workflow Specification Type.....	121
6.20.5	Workflow Specification Type verbs.....	122
6.20.6	Workflow Specification Type verb actions.....	122
6.21	Transaction Profile.....	123
7	Completeness, compliance and conformance.....	124
7.1	Completeness.....	124
7.2	Compliance.....	124
7.3	Conformance.....	125
Annex A (informative)	Production operations transactions.....	128
A.1	Product Definition model.....	128
A.1.1	Product Definition model elements.....	128
A.1.2	Product Definition verbs.....	128
A.1.3	Product Definition verb actions.....	128
A.2	Production Schedule model.....	129

A.2.1	Production Schedule model elements	129
A.2.2	Production Schedule verbs	130
A.2.3	Production Schedule verb actions	130
A.3	Production Performance model	132
A.3.1	Production Performance model elements	132
A.3.2	Production Performance verbs	133
A.3.3	Production Performance verb actions	133
A.4	Production Capability model	136
A.4.1	Production Capability model elements	136
A.4.2	Production Capability verbs	136
A.4.3	Production Capability verb actions	136
Annex B (informative)	Transaction models and business scenario examples	140
B.1	Coordinating activities	140
B.2	Usage scenarios	141
B.3	Operations Schedule and Operations Performance	141
B.3.1	Push model	141
B.3.2	Pull model	141
B.3.3	Publish model	142
B.4	Operations Schedule changes	142
B.4.1	Push model	142
B.4.2	Publish model	143
B.5	Operations Schedule cancelled	144
B.5.1	Push model	144
B.5.2	Push and pull model	144
B.6	Daily Operations Performance	145
B.6.1	Push model	145
B.6.2	Pull model	145
B.6.3	Publish model	146
B.7	Operations Schedule based on Operations Capability	146
B.7.1	Pull and push model	146
B.7.2	Publish and push model	147
B.8	Operations Schedule changes	148
B.8.1	Push and pull model	148
B.8.2	Publish model	149
B.9	Material quantity changed	150
B.9.1	Push model	150
B.9.2	Publish and push model	150
B.9.3	Push and pull model	150
Annex C (informative)	Questions on the use of transactions	152
C.1	IDs	152
C.2	Transactions	152
C.3	Rollbacks	152
C.4	CONFIRM verb	152
C.5	Two phase commit	152
C.6	Confirm on GET	153
C.7	General query	153
C.8	Nouns	153
C.9	CONFIRM on any verb	153
Annex D (informative)	Patterns for verbs	154

D.1	Patterns	154
D.2	Actions for GET verb	154
D.3	Actions for PROCESS verb	155
D.4	Actions for CHANGE message	156
D.5	Actions for CANCEL message	157
D.6	Actions for SYNC message	157
Annex E (informative)	General rules for identifying nouns from object models	159
E.1	Patterns	159
E.2	Hierarchical object model	159
E.3	Non-hierarchical object model	160
Bibliography	162
Figure 1	– Typical exchanged messages in a transaction	18
Figure 2	– Typical exchanged data set	18
Figure 3	– Typical layout of an application identification area	19
Figure 4	– GET with wildcard and SHOW response	21
Figure 5	– GET and SHOW transaction	24
Figure 6	– PROCESS/ACKNOWLEDGE transaction with an "acknowledge always" option	25
Figure 7	– Example of ACKNOWLEDGE to a PROCESS message	26
Figure 8	– CHANGE/RESPOND transaction with a "respond always" option	26
Figure 9	– CANCEL message	27
Figure 10	– GET and SHOW transaction with a "confirm always"	27
Figure 11	– Example of a GET message with "confirm OnError"	28
Figure 12	– CONFIRM message	29
Figure 13	– SYNC ADD transaction with confirmation	30
Figure 14	– SYNC DELETE transaction with no confirmation	30
Figure 15	– Object grouping for the personnel model	41
Figure 16	– Object grouping for the role based equipment model	49
Figure 17	– Object grouping for the Physical Asset model	57
Figure 18	– Object grouping for the material model	65
Figure 19	– Object grouping for the Process Segment model	79
Figure 20	– Object grouping for the Operations Capability model	81
Figure 21	– Object grouping for the Operations Definition model	85
Figure 22	– Object grouping for the Operations Schedule model	87
Figure 23	– Object grouping for the Operations Performance model	90
Figure 24	– Object grouping for the Resource Relationship Network model	93
Figure 25	– Object grouping for the Work Alert model	96
Figure 26	– Object grouping for the Work Calendar model	100
Figure 27	– Object grouping for the Work Capability model	103
Figure 28	– Object grouping for the Work Definition model	107
Figure 29	– Object grouping for the Work Record model	110
Figure 30	– Object grouping for the Work Schedule model	112
Figure 31	– Object grouping for the Work Performance model	115

Figure 32 – Object grouping for the Workflow Specification model	120
Figure 33 – Transaction Profile model	123
Figure A.1 – Object grouping for the Product Definition model	128
Figure A.2 – Object grouping for the Production Schedule model	130
Figure A.3 – Object grouping for the Production Performance model	133
Figure A.4 – Object grouping for the Production Capability model	136
Figure B.1 – Coordinating planning and operations processes	140
Figure B.2 – Push model: Operations Schedule and Operations Performance	141
Figure B.3 – Pull model: Operations Schedule and Operations Performance	142
Figure B.4 – Publish model: Operations Schedule and Operations Performance	142
Figure B.5 – Push model: Operations Schedule changes	143
Figure B.6 – Publish model: With schedule changes	144
Figure B.7 – Push model: Operations Schedule cancelled	144
Figure B.8 – Push and pull model: Schedule cancelled	145
Figure B.9 – Push model: Daily Operations Performance	145
Figure B.10 – Pull model: Daily Operations Performance	146
Figure B.11 – Publish model: Daily Operations Schedule	146
Figure B.12 – Pull and push model: Operations Capability and Operations Schedule	147
Figure B.13 – Publish and push model: Operations Capability and Operations Schedule	148
Figure B.14 – Push and pull model: Schedule changes	149
Figure B.15 – Publish model: Schedule changes after capability changes	149
Figure B.16 – Push model: Material Lot added, Material Lot quantity changed	150
Figure B.17 – Publish and push model: Material quantity changes	150
Figure B.18 – Push and pull model: Material quantity changes	151
Figure E.1 – Object model with composite relationships	160
Figure E.2 – Example of multiple composite objects	161
Table 1 – Defined verbs	22
Table 2 – Acknowledge request options	25
Table 3 – Acknowledge element	25
Table 4 – Respond options	26
Table 5 – Confirmation request options	28
Table 6 – Respond element	29
Table 7 – Personnel Class verb actions	42
Table 8 – Person verb actions	45
Table 9 – Qualification Test Specification verb actions	48
Table 10 – Equipment Class verb actions	50
Table 11 – Equipment verb actions	53
Table 12 – Equipment Capability Test Specification verb actions	56
Table 13 – Physical Asset Class verb actions	58
Table 14 – Physical Asset verb actions	61
Table 15 – Physical Asset capability Test Specification verb actions	64
Table 16 – Material Class verb actions	66

Table 17 – Material Definition verb actions	69
Table 18 – Material Lot verb actions.....	72
Table 19 – Material Sublot verb actions.....	75
Table 20 – Material Test Specification verb actions	78
Table 21 – Process Segment verb actions.....	80
Table 22 – Operations Capability verb actions.....	82
Table 23 – Operations Capability element definitions for GET verb	83
Table 24 – Operations Definition verb actions.....	86
Table 25 – Operations Schedule verb actions.....	88
Table 26 – Operations Schedule element definitions for GET verb	89
Table 27 – Operations Performance verb actions.....	91
Table 28 – Operations Performance definitions for GET verb	92
Table 29 – Resource Relationship Network verb actions.....	94
Table 30 – Resource Relationship Connection Type verb actions.....	95
Table 31 – Work Alert Definition additional attributes	96
Table 32 – Work Alert Definition verb actions	97
Table 33 – Work Alert Definition element definitions for GET verb.....	98
Table 34 – Work Alert Definition additional attributes	98
Table 35 – Work Alert verb actions.....	98
Table 36 – Work Alert element definitions for GET verb	99
Table 37 – Work Calendar Definition verb actions.....	101
Table 38 – Work Calendar verb actions	102
Table 39 – Work Capability verb actions.....	104
Table 40 – Work Capability element definitions for GET verb	105
Table 41 – Work Master verb actions	108
Table 42 – Work Directive verb actions	109
Table 43 – Work Record verb actions.....	111
Table 44 – Work Schedule verb actions.....	113
Table 45 – Job List verb actions.....	114
Table 46 – Work Schedule and Job List element definitions for GET verb.....	114
Table 47 – Work Performance verb actions	116
Table 48 – Work Performance element definitions for GET verb.....	117
Table 49 – Job Response verb actions	117
Table 50 – Job response element definitions for GET verb.....	118
Table 51 – Job Response List verb actions.....	119
Table 52 – Job Response List element definitions for GET verb.....	120
Table 53 – Workflow Specification verb actions	121
Table 54 – Workflow Specification Type verb actions.....	122
Table 55 – Attributes of Transaction Profile	123
Table 56 – Attributes of Supported Action.....	124
Table 57 – Transaction Profile verb actions	124
Table 58 – Supported verb-noun actions	126
Table 59 – Vendor conformance example	127

Table A.1 – Product Definition verb actions	129
Table A.2 – Production Schedule verb actions	131
Table A.3 – Production Schedule element definitions for GET verb	132
Table A.4 – Production Performance verb actions.....	134
Table A.5 – Production Performance definitions for GET verb	135
Table A.6 – Production Capability verb actions	137
Table A.7 – Production Capability element definitions for GET verb	138
Table D.1 – GET message with Object ID specified	154
Table D.2 – GET message with wildcard in Object ID.....	155
Table D.3 – GET message with no Object ID specified	155
Table D.4 – PROCESS message with Object ID specified.....	155
Table D.5 – PROCESS message with no Object ID.....	156
Table D.6 – CHANGE message with Object ID	156
Table D.7 – CHANGE message with wildcard Object ID	156
Table D.8 – CANCEL message with Object ID	157
Table D.9 – CANCEL message with wildcard in Object ID.....	157
Table D.10 – SYNC message with Object ID	157
Table D.11 – SYNC message with wildcard in Object ID	158

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ENTERPRISE-CONTROL SYSTEM INTEGRATION –**Part 5: Business to manufacturing transactions**

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 62264-5 has been prepared by subcommittee 65E: Devices and integration in enterprise systems, of IEC technical committee 65: Industrial-process measurement, control and automation and ISO SC5, JWG 5, of ISO technical committee 184: Automation systems and integration.

It is published as a double logo standard.

This second edition cancels and replaces the first edition published in 2011. This edition constitutes a technical revision.

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

The addition of transaction rules for objects defined in IEC 62264-4: Job, Job List, Job Response, Job Response List, Work Alert Definition, Work Alert, Work Calendar Definition, Work Calendar, Work Capability Work Directive, Work Master, Work Performance, Work Record, Work Schedule, Workflow Specification Node Type, Workflow Specification.

The text is based on the following documents:

CDV	Report on voting
65E/459/CDV	65E/493/RVC

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 [...] P members out of [...] having cast a vote.

This publication has been drafted in accordance with the ISO/IEC Directives, IEC 62264-2.

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

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

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website 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.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

This part of IEC 62264 is based on the use of IEC 62264 abstract models previously defined in IEC 62264-2 and IEC 62264-4 combined with verbs to define a transaction model for information exchange. It is recognized that other non-IEC 62264-5 transaction protocols are possible and are not deemed invalid as a result. Transactions occur at all levels within the enterprise and between enterprise partners, and are related to both required and actual activities, but the focus of this part of IEC 62264 is the interface between enterprise/business systems and manufacturing systems.

This standard defines transactions that are exchanged between Level 4 and Level 3, and within Level 3 as defined in the object models of IEC 62264-2 and IEC 62264-4. Models are introduced which provide descriptions of the transactions and explanations of the required transaction processing behaviour.

Technology specific implementations to provide this behaviour are not defined in this standard. This part of IEC 62264 has the intent of providing insight into the level of work required to construct transactional exchanges.

ENTERPRISE-CONTROL SYSTEM INTEGRATION –

Part 5: Business to manufacturing transactions

1 Scope

This part of IEC 62264 defines transactions in terms of information exchanges between applications performing business and manufacturing activities associated with Levels 3 and 4. The exchanges are intended to enable information collection, retrieval, transfer and storage in support of enterprise-control system integration. This part of IEC 62264 is consistent with the IEC 62264-2 and IEC 62264-4 object models attributes. This standard also defines transactions that specify how to exchange the objects defined in IEC 62264-2, IEC 62264-4 and this standard. Other uses of the transaction model are not defined in this part.

The models covered in this standard are:

- Personnel model
- Equipment model
- Physical asset model
- Material model
- Process segment model
- Operations capability model
- Operations definition mode
- Operations schedule model
- Operations performance model
- Resource relationship network model
- Work capability model
- Work definition model
- Work schedule model
- Job list model
- Work performance model
- Workflow specification model
- Work calendar
- Work record
- Work alert model

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 62264-2:2013, *Enterprise-control system integration – Part 2: Object and attributes for enterprise-control system integration*

IEC 62264-3, *Enterprise-control system integration – Part 3: Activity models of manufacturing operations management*