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# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

colour inside

## Enterprise-control system integration – Part 5: Business to manufacturing transactions

## Intégration du système de commande d'entreprise – Partie 5: Transactions entre systèmes de gestion de commande d'entreprise et systèmes de fabrication



IEC 62264-5:2016-07(en-fr)



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# ENTERPRISE-CONTROL SYSTEM INTEGRATION –

# Part 5: Business to manufacturing transactions

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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.

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# 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*

IEC 62264-4, *Enterprise-control system integration – Part 4: Object model attributes for manufacturing operations management integration*

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*

## 3 Terms, definitions, abbreviations, and conventions

### 3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

**3.1.1**
**application**
ordered set of physical and logical system processes, performed by a set of resources that conduct a set of transactions intended to accomplish a definite objective performing the activity of an information provider or information user involved in a transaction

EXAMPLE HMIs, data historians, MES and LIMs software are examples of applications.

**3.1.2**
**ID**
information to identify an object or a property of an object

**3.1.3**
**message**
structured information unit conveyed in a one-way transfer of data between one sending application to one or more receiving applications

**3.1.4**
**noun**
one of two parts in the content of a message, which represents one or more objects, as defined in the IEC 62264-2 and IEC 62264-4 object models

**3.1.5**
**transaction**
sequence of related messages that are exchanged among applications performing Level 3 or Level 4 activities

**3.1.6**
**verb**
one of two parts in the content of a message, which defines the action to be performed, or the response to a request

**3.1.7**
**wildcard**
information to identify a collection of objects or properties of objects

### 3.2 Abbreviations

ERP Enterprise Resource Planning

HMI Human-machine interface

LIM Laboratory information management

MES Manufacturing Execution System