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Enterprise-Control System Integration

– Part 2: Object Model Attributes

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Enterprise-Control System Integration – Part 2: Object Model Attributes

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ISA
67 Alexander Drive
P.O. Box 12277
Research Triangle Park, North Carolina 27709

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ENTERPRISE-CONTROL SYSTEM INTEGRATION –

Part 2: Objects model attributes

FOREWORD

This standard is Part 2 of a multi-part set of standards that defines the interfaces between enterprise activities and control activities. It follows ANSI/ISA-95.00.01-2010 (IEC 62264-1 Mod), Enterprise-Control System Integration - Part 1: Models and Terminology.

The scope of this Part 2 standard is limited to defining the details of the interface content between manufacturing control functions and other enterprise functions. The scope of this Part 2 standard is limited to the definition of object models and attributes for the information defined in Part 1. The goal is to reduce the effort, cost, and errors associated with implementing these interfaces.

The 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.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2. Therefore, the first three clauses present the scope of the standard, normative references, and definitions, in that order.

Clause 4 is informative. It describes the general information about the object models and examples defined in later clauses.

Clause 5 is normative. It defines the object models and attributes of common information defined in Part 1.

Clause 6 is normative. It defines the object models and attributes of operations management information defined in Part 1.

Clause 7 is informative. It defines the inter-relationships between the object models.

Clause 8 is informative. It lists the objects defined in the standard as an aid to documenting conformance and compliance.

Clause 9 is normative. It defines completeness, conformance and compliance criteria associated with the objects and attributes.

Annex A is normative. It defines the object models and attributes of production specific information defined in Part 1.

Annex B is informative. It provides examples to illustrate how the models and attributes may be used.

Annex C is informative. It illustrates some example data sets.

Annex D is informative. It contains questions and answers on the use and reason for elements in the standard.

Annex E is informative. It discusses how the standard relates to logical information flows.

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INTRODUCTION

This Part 2 standard further defines formal object models for exchange information described in ANSI/ISA-95.00.01-2010 (IEC 62264-1 Mod), Enterprise- Control System Integration - Part 1: Models and Terminology (hereafter referred to as Part 1) using UML object models, tables of attributes, and examples. The models and terminology defined in this part:

- 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 provide 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.

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ENTERPRISE-CONTROL SYSTEM INTEGRATION –

Part 2: Object model attributes

1 Scope

This part of ISA95, in conjunction with ANSI/ISA-95.00.01-2010 (IEC 62264-1 Mod), Enterprise-Control System Integration – Part 1: Models and Terminology, specifies generic interface content 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 Part 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 Part 2 is limited to the definition of object models and attributes of the exchanged information defined in Part 1.

This Part 2 standard does not define attributes to represent the object relationships.

2 Normative references

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

ANSI/ISA-95.00.01-2010 (IEC 62264-1 Mod), Enterprise-Control System Integration – Part 1: Models and Terminology

ISA-88.00.01-1995, Batch Control – Part 1: Models and Terminology

IEC 62264-1, Enterprise-Control System Integration – Part 1: Models and terminology

IEC 61512-1, Batch control – Part 1: Models and terminology

ISO 19439, Enterprise integration - Framework for enterprise modeling

ISO 19440, Enterprise integration - Constructs for enterprise modeling

ISO 15704, Industrial automation systems--Requirements for enterprise-reference architectures and methodologies

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

ISO 10303-1, Industrial automation systems and integration – Product data representation and exchange – Part 1: Overview and fundamental principles