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Australian Standard™

Industrial automation systems and integration—Open systems application integration framework

Part 4: Reference description for Ethernet-based control systems

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PREFACE

This Standard was prepared by the Standards Australia Committee IT-006, Information Technology for Industrial Automation and Integration.

This Standard is identical with, and has been reproduced from, ISO 15745-4:2003, *Industrial automation systems and integration—Open systems application integration framework,* Part 4*: Reference description for Ethernet-based control systems*.

The objective of this Standard is to provide the technology specific elements and rules for describing both communication network profiles and the communication related aspects of device profiles specific to Ethernet-based control systems.

This Standard is Part 4 of AS ISO 15745—2004, *Industrial automation systems and integration—Open systems application integration framework*, which is published in parts as follows:

Part 1: Generic reference description
Part 2: Reference description for ISO 11898-based control systems
Part 3: Reference description for IEC 61158-based control systems
Part 4: Reference description for Ethernet-based control systems (this Standard)

The terms 'normative' and 'informative' are used to define the application of the annex to which they apply. A normative annex is an integral part of a standard, whereas an informative annex is only for information and guidance.

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Reference to International Standard		*Australian Standard*	
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ISO		AS	
15745-1	Industrial automation systems and integration—Open systems application integration framework—Part 1: Generic reference description	15745.1	Industrial automation systems and integration—Open systems application integration framework, Part 1: Generic reference description

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INTRODUCTION

The application integration framework (AIF) described in ISO 15745 defines elements and rules that facilitate:

— the systematic organization and representation of the application integration requirements using integration models;

— the development of interface specifications in the form of application interoperability profiles (AIPs) that enable both the selection of suitable resources and the documentation of the "as built" application.

ISO 15745-1 defines the generic elements and rules for describing integration models and AIPs, together with their component profiles - process profiles, information exchange profiles, and resource profiles. The context of ISO 15745 and a structural overview of the constituents of an AIP are given in Figure 1 of ISO 15745-1:2003.

This part of ISO 15745 extends the generic AIF described in ISO 15745-1 by defining the technology specific elements and rules for describing both communication network profiles and the communication related aspects of device profiles specific to Ethernet[1]-based control systems (ADS-net[2], FL-net[3] and EtherNet/IP™[4]). EtherNet/IP™ technology uses a profile of IEC 61158 which is specified in IEC 61784-1.

In particular, this part of ISO 15745 describes technology specific profile templates for the device profile and the communication network profile. Within an AIP, a device profile instance and a communication network profile instance is part of the resource profile defined in ISO 15745-1. The device profile and the communication network profile XML instance files are included in a resource profile XML instance using the ProfileHandle_DataType as specified in ISO 15745-1:2003, 7.2.5.

AIFs specified using the elements and rules of ISO 15745-1 can be easily integrated with the component profiles defined using the elements and rules specified in this part.

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[1] Ethernet is used in this document as a synonym for ISO/IEC 8802-3.

[2] ADS-net is a trade name used to describe JIS-TR B0012 (Autonomous Decentralized System network). This information is given for the convenience of users of ISO 15745 and does not constitute an endorsement by ISO of the trademark, or any related products. Compliance to this standard does not require use of the trade name ADS-net.

[3] FL-net is a trade name used to describe JEM 1479. This information is given for the convenience of users of ISO 15745 and does not constitute an endorsement by ISO of the trademark, or any related products. Compliance to this standard does not require use of the trade name FL-net.

[4] EtherNet/IP™ is a trade name of ControlNet International, Ltd. and Open DeviceNet Vendor Association, Inc. This information is given for the convenience of users of ISO 15745 and does not constitute an endorsement by ISO of the trademark holder or any of its products. Compliance to this standard does not require use of the trade name EtherNet/IP™. Use of the trade name EtherNet/IP™ requires permission of either ControlNet International, Ltd. or Open DeviceNet Vendor Association, Inc.

NOTES

AUSTRALIAN STANDARD

Industrial automation systems and integration — Open systems application integration framework —

Part 4:
Reference description for Ethernet-based control systems

1 Scope

This part of ISO 15745 defines the technology specific elements and rules for describing control communication network profiles and the communication related aspects of device profiles specific to Ethernet-based control systems.

NOTE Generic elements and rules for describing integration models and application interoperability profiles, together with their component profiles (process profiles, information exchange profiles, and resource profiles) are specified in ISO 15745-1.

This part of ISO 15745 is to be used in conjunction with ISO 15745-1 to describe an application integration framework.

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.

ISO 639-2:1998, *Codes for the representation of names of languages – Part 2: Alpha-3 code*

ISO 15745-1:2003, *Industrial automation systems and integration – Open systems application integration framework – Part 1: Generic reference description*

ISO/IEC 7498-4:1989, *Information processing systems – Open Systems Interconnection – Basic Reference Model – Part 4: Management framework*

ISO/IEC 8802-3:2000, *Information technology – Telecommunications and information exchange between systems – Local and metropolitan area networks – Specific requirements – Part 3: Carrier sense multiple access with collision detection (CSMA/CD) access method and physical layer specifications*

ISO/IEC 10646-1:2000, *Information technology – Universal Multiple-Octet Coded Character Set (UCS) – Part 1: Architecture and Basic Multilingual Plane*

IEC 61158 (all parts), *Digital data communications for measurement and control – Fieldbus for use in industrial control systems*

IEC 61784-1:2003, *Digital data communications for measurement and control – Part 1: Profile sets for continuous and discrete manufacturing relative to fieldbus use in industrial control systems*

IEEE Std 754-1985 (R1990), *IEEE Standard for Binary Floating Point Arithmetic*

JEM 1479:2002, *Protocol specification – Factory automation control Link Network (FL-net)*

JIS-TR B0012: 2000, *Autonomous Decentralized System Network (ADS-net)*

