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**OPC unified architecture -
Part 14: PubSub**



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OPC unified architecture - Part 14: PubSub

FOREWORD

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IEC 62541-14 has been prepared by subcommittee 65E: Devices and integration in enterprise systems, of IEC technical committee 65: Industrial-process measurement, control and automation. It is an International Standard.

This second edition cancels and replaces the first edition published in 2020. This edition constitutes a technical revision.

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

- a) Addition of a "Quantity Model" which can be referenced from EngineeringUnit Properties. The model defines quantities and assigned units. In addition it provides alternative units and the conversion to them.

b) Addition of rules for ValuePrecision Property:

- can also be used for other subtypes like Duration and Decimal.
- rules have been added when ValuePrecision has negative values.

The text of this International Standard is based on the following documents:

Draft	Report on voting
65E/1052/CDV	65E/1099/RVC

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

Throughout this document and the other parts of the IEC 62541 series, certain document conventions are used:

Italics are used to denote a defined term or definition that appears in the "Terms and definitions" clause in one of the parts of the IEC 62541 series.

Italics are also used to denote the name of a service input or output parameter or the name of a structure or element of a structure that are usually defined in tables.

The *italicized terms and names* are, with a few exceptions, written in camel-case (the practice of writing compound words or phrases in which the elements are joined without spaces, with each element's initial letter capitalized within the compound). For example, the defined term is *AddressSpace* instead of Address Space. This makes it easier to understand that there is a single definition for *AddressSpace*, not separate definitions for Address and Space.

A list of all parts in the IEC 62541 series, published under the general title *OPC Unified Architecture*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

1 Scope

This part of IEC 62541 defines the *PubSub* communication model. It defines an OPC UA publish subscribe pattern which complements the client server pattern defined by the *Services* in IEC 62541-4. See IEC 62541-1 for an overview of the two models and their distinct uses.

PubSub allows the distribution of data and events from an OPC UA information source to interested observers inside a device network as well as in IT and analytics cloud systems.

This document consists of

- a general introduction of the *PubSub* concepts,
- a definition of the *PubSub* configuration parameters,
- mapping of *PubSub* concepts and configuration parameters to messages and transport protocols,
- and a PubSub configuration model.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

IEC 62541-1, *OPC Unified Architecture - Part 1: Overview and Concepts*

IEC 62541-2, *OPC Unified Architecture - Part 2: Security Model*

IEC 62541-3, *OPC Unified Architecture - Part 3: Address Space Model*

IEC 62541-4, *OPC Unified Architecture - Part 4: Services*

IEC 62541-5, *OPC Unified Architecture - Part 5: Information Model*

IEC 62541-6, *OPC Unified Architecture - Part 6: Mappings*

IEC 62541-7, *OPC Unified Architecture - Part 7: Profiles*

IEC 62541-8, *OPC Unified Architecture - Part 8: Data Access*

IEC 62541-12, *OPC Unified Architecture - Part 12: Discovery and Global Services*

IEC 62541-20, *OPC Unified Architecture - Part 20: File Transfer*

IEC 62541-22, *OPC Unified Architecture - Part 22: Base Network Model*

ISO/IEC 19464:2014, *Information technology - Advanced Message Queuing Protocol (AMQP) v1.0 specification*

ISO/IEC 20922:2016, *Information technology - Message Queuing Telemetry Transport (MQTT) v3.1.1*

Message Queuing Telemetry Transport (MQTT) Version 5
<http://docs.oasis-open.org/mqtt/mqtt/v5.0>

IETF RFC 8254, Klensin J. and Hakala J., "The JavaScript Object Notation (JSON) Data Interchange Format", October 2017, available at <http://www.ietf.org/rfc/rfc8254.txt>