SLOVENSKI STANDARD
oSIST prEN IEC 62541-9:2018

01-november-2018

Enotna arhitektura OPC - 9. del: Alarmi in pogoji

OPC Unified Architecture - Part 9: Alarms and conditions

Architecture unifiée OPC - Partie 9: Alarmes et conditions

Ta slovenski standard je istoveten z: **prEN IEC 62541-9:2018**

ICS:

25.040.40	Merjenje in krmiljenje industrijskih postopkov	Industrial process measurement and control
35.240.50	Uporabniške rešitve IT v industriji	IT applications in industry

oSIST prEN IEC 62541-9:2018 **en,fr,de**

65E/610/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER: **IEC 62541-9 ED3**	
DATE OF CIRCULATION: **2018-08-17**	CLOSING DATE FOR VOTING: **2018-11-09**
SUPERSEDES DOCUMENTS: **65E/558/RR**	

IEC SC 65E : DEVICES AND INTEGRATION IN ENTERPRISE SYSTEMS

SECRETARIAT: United States of America	SECRETARY: Mr Donald (Bob) Lattimer
OF INTEREST TO THE FOLLOWING COMMITTEES:	PROPOSED HORIZONTAL STANDARD: ☐ Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.

FUNCTIONS CONCERNED:

☐ EMC ☐ ENVIRONMENT ☐ QUALITY ASSURANCE ☐ SAFETY

☒ SUBMITTED FOR CENELEC PARALLEL VOTING	☐ NOT SUBMITTED FOR CENELEC PARALLEL VOTING

Attention IEC-CENELEC parallel voting

The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting.

The CENELEC members are invited to vote through the CENELEC online voting system.

This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

TITLE:

OPC Unified Architecture - Part 9: Alarms and conditions

PROPOSED STABILITY DATE: 2021

NOTE FROM TC/SC OFFICERS:

CONTENTS

FIGURES

TABLES

OPC UNIFIED ARCHITECTURE –

Part 9: Alarms & Conditions

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.
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IEC 62541-9, has been prepared by subcommittee 65E: Devices and integration in enterprise systems, of IEC technical committee 65: Industrial-process measurement, control and automation.

The text of this technical report is based on the following documents:

Enquiry draft	Report on voting
65E/XX/DTR	65E/XX/RVC

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

This third edition cancels and replaces the second edition of IEC 62541, published in 2015.

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

a) Added optional engineering units to the definition of RateOfChange alarms.
b) To fulfill the IEC62682 model, the following elements have been added:
   - AlarmConditionType States: Suppression, Silence, OutOfService, Latched
   - AlarmConditionType Properties: OnDelay, OffDelay, FirstInGroup, ReAlarmTime

- New alarm types: DiscrepancyAlarm, DeviationAlarm, InstrumentDiagnosticAlarm, SystemDiagnosticAlarm

c) Added Annex that specifies how the concepts of this OPC UA part maps to IEC 6282 and ISA 18.2.

d) Added new ConditionClasses: Safety, HighlyManaged, Statistical, Testing, Training.

e) Added CertificateExpiration AlarmType

f) Added Alarm Metrics model

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

Throughout this document and the referenced other Parts of the series, certain document conventions are used:

Italics are used to denote a defined term or definition that appears in the “Terms and definition” clause in one of the parts of the 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 also often 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 of 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 publication will remain unchanged until the stability date indicated on the IEC web site 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.

The National Committees are requested to note that for this publication the stability date is 2021.

THIS TEXT IS INCLUDED FOR THE INFORMATION OF THE NATIONAL COMMITTEES AND WILL BE DELETED AT THE PUBLICATION STAGE.

A bilingual version of this publication may be issued at a later date.

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.

OPC Unified Architecture Specification

Part 9: Alarms & Conditions

1 Scope

This document specifies the representation of *Alarms* and *Conditions* in the OPC Unified Architecture. Included is the *Information Model* representation of *Alarms* and *Conditions* in the OPC UA address space. Other aspects of alarm systems like alarm philosophy, life cycle, alarm response times, alarm types and many other details are captured in standards such as IEC 62682 and ISA 18.2. The *Alarms* and *Conditions Information Model* in this specification is designed in accordance with IEC 62682 and ISA 18.2.

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

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 62541-11, *OPC unified architecture – Part 11: Historical Access*

EEMUA: 2nd Edition EEMUA 191 – Alarm System – A guide to design, management and procurement (Appendixes 6, 7, 8, 9)

https://www.eemua.org/Products/Publications/Print/EEMUA-Publication-191.aspx

IEC 62682: Management of alarms systems for the process industries (Edition 1.0 2014-10)

https://webstore.iec.ch/publication/7363

ISA 18.2: Management of Alarm Systems for the Process Industries

https://www.isa.org/store/ansi/isa-182-2016,-management-of-alarm-systems-for-the-process-industries/46962105

IETF RFC2045: Multipurpose Internet Mail Extensions (MIME) Part One

https://www.ietf.org/rfc/rfc2045.txt

IETF RFC2046: Multipurpose Internet Mail Extensions (MIME) Part Two

https://www.ietf.org/rfc/rfc2046.txt

IETF RFC2047: Multipurpose Internet Mail Extensions (MIME) Part Three

https://www.ietf.org/rfc/rfc2047.txt

3 Terms, definitions, and abbreviations

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC TR 62541-1, IEC 62541-3, IEC 62541-4, and IEC 62541-5 as well as the following apply.

3.1.1
Acknowledge
Operator action that indicates recognition of an *Alarm*

Note 1 to entry: This definition is copied from EEMUA. The term “Accept” is another common term used to describe *Acknowledge*. They can be used interchangeably. This document will use *Acknowledge*.

3.1.2
Active
state for an Alarm that indicates that the situation the *Alarm* is representing currently exists

Note 1 to entry: Other common terms defined by EEMUA are “Standing” for an *Active Alarm* and “Cleared” when the *Condition* has returned to normal and is no longer *Active*.

3.1.3
AdaptiveAlarm
Alarm for which the set point or limits are changed by an algorithm.

Note 1 to entry: *AdaptiveAlarms* are alarms that are adjusted automatically by algorithms. These algorithms might detect conditions in a plant and change setpoints or limits to keep alarms from occurring. These changes occur, in many cases, without *Operator* interactions.

3.1.4
AlarmFlood
condition during which the alarm rate is greater than the *Operator* can effectively manage

Note 1 to entry: OPC UA does not define the conditions that would be considered alarm flooding, these conditions are defined in other specification such as IEC 62682 or ISA 18.2

3.1.5
AlarmSuppressionGroup
group of *Alarms* that is used to suppress other *Alarms*.

Note 1 to entry: An *AlarmSuppressionGroup* is an instance of an *AlarmGroupType* that is used to suppress other *Alarms*. If any *Alarm* in the group is active, then the *AlarmSuppressionGroup* is active. If all *Alarms* in the *AlarmSuppressionGroup* are inactive then the *AlarmSuppressionGroup* is inactive

Note 2 to entry: The *Alarm* to be affected references *AlarmSuppressionGroups* with a *HasAlarmSuppressionGroup ReferenceType*.

3.1.6
ConditionClass
Condition grouping that indicates in which domain or for what purpose a certain *Condition* is used

Note 1 to entry: Some top-level *ConditionClasses* are defined in this specification. Vendors or organisations may derive more concrete classes or define different top-level classes.

3.1.7
ConditionBranch
specific state of a *Condition*

Note 1 to entry: The *Server* can maintain *ConditionBranches* for the current state as well as for previous states.

3.1.8
ConditionSource
element which a specific *Condition* is based upon or related to

Note 1 to entry: Typically, it will be a *Variable* representing a process tag (e.g. FIC101) or an *Object* representing a device or subsystem.