



INTERNATIONAL STANDARD

OPC unified architecture - Part 9: Alarms and Conditions

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FOREWORD	10
1 Scope	12
2 Normative references	12
3 Terms, definitions, abbreviated terms and used data types	13
3.1 Terms and definitions.....	13
3.2 Abbreviated terms and symbols	15
3.3 Used data types	16
4 Concepts	16
4.1 General.....	16
4.2 Conditions	16
4.3 Acknowledgeable Conditions	18
4.4 Previous states of Conditions.....	19
4.5 Condition state synchronization	20
4.6 Severity, quality, and comment	21
4.7 Dialogs	21
4.8 Alarms	21
4.9 Multiple active states	23
4.10 Condition instances in the AddressSpace	24
4.11 Alarm and Condition auditing	25
4.12 Alarms in a system	25
5 Model	25
5.1 General.....	25
5.2 Two-state state machines	26
5.3 ConditionVariable	28
5.4 ReferenceTypes.....	29
5.4.1 General	29
5.4.2 HasTrueSubState ReferenceType.....	29
5.4.3 HasFalseSubState ReferenceType	30
5.4.4 HasAlarmSuppressionGroup ReferenceType	30
5.4.5 AlarmGroupMember ReferenceType	31
5.4.6 AlarmSuppressionGroupMember ReferenceType.....	31
5.5 Condition Model.....	32
5.5.1 General	32
5.5.2 ConditionType	32
5.5.3 Condition and branch instances.....	37
5.5.4 Disable Method.....	37
5.5.5 Enable Method	38
5.5.6 AddComment Method	39
5.5.7 ConditionRefresh Method	40
5.5.8 ConditionRefresh2 Method	42
5.6 Dialog Model.....	44
5.6.1 General	44
5.6.2 DialogConditionType	44
5.6.3 Respond Method	46
5.6.4 Respond2 Method	47
5.7 Acknowledgeable Condition Model.....	48
5.7.1 General	48

This is a preview of IEC 62541-9 Ed. 4.0 en:2026. [Click here to purchase the full version from the ANSI store.](#)

5.7.3	Acknowledge Method	49
5.7.4	Confirm Method	50
5.8	Alarm model	52
5.8.1	General	52
5.8.2	AlarmConditionType	53
5.8.3	AlarmGroupType	57
5.8.4	AlarmSuppressionGroupType	58
5.8.5	Reset Method	59
5.8.6	Reset2 Method	60
5.8.7	Silence Method.....	61
5.8.8	Suppress Method.....	61
5.8.9	Suppress2 Method.....	62
5.8.10	Unsuppress Method.....	63
5.8.11	Unsuppress2 Method.....	64
5.8.12	RemoveFromService Method.....	65
5.8.13	RemoveFromService2 Method	66
5.8.14	PlaceInService Method	67
5.8.15	PlaceInService2 Method	68
5.8.16	GetGroupMemberships Method	69
5.8.17	ShelvedStateMachineType	70
5.8.18	LimitAlarmType.....	80
5.8.19	Exclusive Limit Types	82
5.8.20	NonExclusiveLimitAlarmType.....	86
5.8.21	Level Alarm	88
5.8.22	Deviation Alarm	89
5.8.23	Rate of change Alarms	91
5.8.24	Discrete Alarms	92
5.8.25	DiscrepancyAlarmType	96
5.9	ConditionClasses	97
5.9.1	Overview	97
5.9.2	BaseConditionClassType	98
5.9.3	ProcessConditionClassType	98
5.9.4	MaintenanceConditionClassType	98
5.9.5	SystemConditionClassType	99
5.9.6	SafetyConditionClassType	99
5.9.7	HighlyManagedAlarmConditionClassType.....	100
5.9.8	TrainingConditionClassType	100
5.9.9	StatisticalConditionClassType	100
5.9.10	TestingConditionClassType	101
5.10	Audit Events	101
5.10.1	Overview	101
5.10.2	AuditConditionEventType	102
5.10.3	AuditConditionEnableEventType.....	103
5.10.4	AuditConditionCommentEventType.....	103
5.10.5	AuditConditionRespondEventType.....	104
5.10.6	AuditConditionAcknowledgeEventType	104
5.10.7	AuditConditionConfirmEventType	104
5.10.8	AuditConditionShelvingEventType	105

This is a preview of IEC 62541-9 Ed. 4.0 en:2026. [Click here to purchase the full version from the ANSI store.](#)

5.10.10	AuditConditionSilenceEventType	106
5.10.11	AuditConditionResetEventType	106
5.10.12	AuditConditionOutOfServiceEventType	107
5.11	Condition Refresh related Events	107
5.11.1	Overview	107
5.11.2	RefreshStartEventType	107
5.11.3	RefreshEndEventType	108
5.11.4	RefreshRequiredEventType	108
5.12	HasCondition Reference type	109
5.13	Alarm & Condition status codes	109
5.14	Expected A & C server behaviours	110
5.14.1	General	110
5.14.2	Communication problems	110
5.14.3	Redundant A & C servers	111
6	AddressSpace organisation	111
6.1	General	111
6.2	EventNotifier and source hierarchy	111
6.3	Adding Conditions to the hierarchy	112
6.4	Conditions in InstanceDeclarations	113
6.5	Conditions in a VariableType	114
7	System State & Alarms	114
7.1	Overview	114
7.2	HasEffectDisable	114
7.3	HasEffectEnable	115
7.4	HasEffectSuppressed	115
7.5	HasEffectUnsuppressed	116
8	Alarm Summary and Objects	117
8.1	Overview	117
8.2	AlarmState Variable	118
8.3	AlarmMask	119
9	Alarm Metrics	120
9.1	Overview	120
9.2	AlarmMetricsType	120
9.3	AlarmRateVariableType	122
9.4	Reset Method	122
Annex A (informative)	Recommended localized names	124
A.1	Recommended state names for TwoState Variables	124
A.1.1	LocaleId "en"	124
A.1.2	LocaleId "de"	124
A.1.3	LocaleId "fr"	125
A.2	Recommended dialog response options	126
Annex B (informative)	Examples	127
B.1	Examples for Event sequences from Condition instances	127
B.1.1	Overview	127
B.1.2	Server maintains current state only	127
B.1.3	Server maintains previous states	128
B.1.4	Server current-State Model with Suppression	129

This is a preview of IEC 62541-9 Ed. 4.0 en:2026. [Click here to purchase the full version from the ANSI store.](#)

B.2	AddressSpace examples	131
Annex C (informative)	Mapping from OPC A&E to OPC UA A & C	134
C.1	Overview	134
C.2	Alarms and Events COM UA wrapper	134
C.2.1	Event areas	134
C.2.2	Event sources	135
C.2.3	Event categories	135
C.2.4	Event attributes	136
C.2.5	Event subscriptions	136
C.2.6	Condition instances	139
C.2.7	Condition Refresh	139
C.3	Alarms and Events COM UA proxy	139
C.3.1	General	139
C.3.2	Server status mapping	139
C.3.3	Event Type mapping	140
C.3.4	Event category mapping	140
C.3.5	Event Category attribute mapping	141
C.3.6	Event Condition mapping	144
C.3.7	Browse mapping	144
C.3.8	Qualified names	145
C.3.9	Subscription filters	146
Annex D (informative)	IEC 62682 Mapping	148
D.1	Overview	148
D.2	Terms	148
D.3	Alarm records & State indications	154
Annex E (Informative)	System state	155
E.1	Overview	155
E.2	SystemStateStateMachineType	156
Bibliography	160
Figure 1	– Base Condition state model	17
Figure 2	– AcknowledgeableConditions state model	18
Figure 3	– Acknowledge State Model	19
Figure 4	– Confirm acknowledge State model	19
Figure 5	– Alarm state machine model	22
Figure 6	– Typical Alarm Timeline example	23
Figure 7	– Multiple active states example	24
Figure 8	– ConditionType hierarchy	26
Figure 9	– TwoStateVariable Illustration	28
Figure 10	– Condition model	32
Figure 11	– SupportsFilteredRetain process	35
Figure 12	– DialogConditionType Overview	44
Figure 13	– AcknowledgeableConditionType overview	48
Figure 14	– AlarmConditionType Hierarchy Model	52
Figure 15	– Alarm Model	53

This is a preview of IEC 62541-9 Ed. 4.0 en:2026. [Click here to purchase the full version from the ANSI store.](#)

Figure 17 – ShelvedStateMachineType model.....	71
Figure 18 – LimitAlarmType	80
Figure 19 – ExclusiveLimitStateMachineType	83
Figure 20 – ExclusiveLimitAlarmType	85
Figure 21 – NonExclusiveLimitAlarmType	87
Figure 22 – DiscreteAlarmType Hierarchy	93
Figure 23 – ConditionClass type hierarchy.....	97
Figure 24 – AuditEvent hierarchy	102
Figure 25 – Refresh Related Event Hierarchy	107
Figure 26 – Typical HasNotifier Hierarchy	112
Figure 27 – Use of HasCondition in a HasNotifier hierarchy	113
Figure 28 – Use of HasCondition in an InstanceDeclaration	113
Figure 29 – Use of HasCondition in a VariableType	114
Figure 30 – AlarmSummary equipment example	117
Figure 31 – AlarmSummary Equipment Object Example.....	118
Figure B.1 – Single state example	127
Figure B.2 – Previous state example.....	128
Figure B.3 – SuppressedState and OutOfServiceState example.....	130
Figure B.4 – Alarm example – On Delay, Off Delay, ReAlarmTime	131
Figure B.5 – HasCondition used with Condition instances	132
Figure B.6 – HasCondition reference to a Condition type	133
Figure B.7 – HasCondition used with an instance declaration	133
Figure C.1 – The type model of a wrapped COM AE server	136
Figure C.2 – Mapping UA Event Types to COM A&E Event Types.....	140
Figure C.3 – Example mapping of UA Event Types to COM A&E categories	141
Figure C.4 – Example mapping of UA Event Types to A&E categories with attributes.....	144
Figure E.1 – SystemState transitions	155
Figure E.2 – SystemStateStateMachineType model	156
Table 1 – Parameter types defined in IEC 62541-3	16
Table 2 – Parameter types defined in IEC 62541-4	16
Table 3 – TwoStateVariableType definition	27
Table 4 – ConditionVariableType definition	28
Table 5 – HasTrueSubState ReferenceType	29
Table 6 – HasFalseSubState ReferenceType.....	30
Table 7 – HasAlarmSuppressionGroup ReferenceType.....	30
Table 8 – AlarmGroupMember ReferenceType.....	31
Table 9 – AlarmSuppressionGroupMember ReferenceType	31
Table 10 – ConditionType definition	33
Table 11 – ConditionType Additional Subcomponents.....	33
Table 12 – ConditionId SimpleAttributeOperand Illustration	36
Table 13 – Disable result codes	37

This is a preview of IEC 62541-9 Ed. 4.0 en:2026. [Click here to purchase the full version from the ANSI store.](#)

Table 15 – Enable result codes.....	38
Table 16 – Enable Method AddressSpace definition.....	38
Table 17 – AddComment arguments	39
Table 18 – AddComment result codes.....	39
Table 19 – AddComment Method AddressSpace definition	40
Table 20 – ConditionRefresh parameters	40
Table 21 – ConditionRefresh result codes.....	40
Table 22 – ConditionRefresh Method AddressSpace definition	41
Table 23 – ConditionRefresh2 parameters	42
Table 24 – ConditionRefresh2 result codes.....	42
Table 25 – ConditionRefresh2 Method AddressSpace definition.....	43
Table 26 – DialogConditionType definition	44
Table 27 – DialogConditionType Additional Subcomponents	45
Table 28 – Respond parameters	46
Table 29 – Respond Result Codes	46
Table 30 – Respond Method AddressSpace definition.....	46
Table 31 – Respond2 parameters	47
Table 32 – Respond2 Result Codes	47
Table 33 – Respond2 Method AddressSpace definition.....	47
Table 34 – AcknowledgeableConditionType definition.....	48
Table 35 – AcknowledgeableConditionType Additional Subcomponents.....	49
Table 36 – Acknowledge parameters	49
Table 37 – Acknowledge result codes	50
Table 38 – Acknowledge Method AddressSpace definition.....	50
Table 39 – Confirm Method parameters	51
Table 40 – Confirm result codes	51
Table 41 – Confirm Method AddressSpace definition	52
Table 42 – AlarmConditionType definition	54
Table 43 – AlarmConditionType Additional Subcomponents.....	55
Table 44 – AlarmGroupType definition	58
Table 45 – AlarmSuppressionGroupType definition.....	58
Table 46 – Reset result codes	59
Table 47 – Reset Method AddressSpace definition	59
Table 48 – Reset2 Method parameters	60
Table 49 – Reset2 result codes.....	60
Table 50 – Reset2 Method AddressSpace definition	60
Table 51 – Silence result codes	61
Table 52 – Silence Method AddressSpace definition.....	61
Table 53 – Suppress result codes	62
Table 54 – Suppress Method AddressSpace definition.....	62
Table 55 – Suppress2 Method parameters	63
Table 56 – Suppress2 Method AddressSpace definition.....	63

This is a preview of IEC 62541-9 Ed. 4.0 en:2026. [Click here to purchase the full version from the ANSI store.](#)

Table 58 – Unsuppress Method AddressSpace definition	64
Table 59 – Unsuppress2 Method parameters	64
Table 60 – Unsuppress2 Method AddressSpace definition	65
Table 61 – RemoveFromService result codes	65
Table 62 – RemoveFromService Method AddressSpace definition	66
Table 63 – RemoveFromService2 Method parameters	66
Table 64 – RemoveFromService2 result codes	66
Table 65 – RemoveFromService2 Method AddressSpace definition	67
Table 66 – PlaceInService result codes	67
Table 67 – PlaceInService Method AddressSpace definition	68
Table 68 – PlaceInService2 Method parameters	68
Table 69 – PlaceInService2 result codes	68
Table 70 – PlaceInService2 Method AddressSpace definition	69
Table 71 – GetGroupMemberships result codes	69
Table 72 – GetGroupMemberships Method AddressSpace definition	70
Table 73 – ShelvedStateMachineType definition	72
Table 74 – ShelvedStateMachineType Additional References	73
Table 75 – ShelvedStateMachineType Attribute values for child Nodes	74
Table 76 – Unshelve result codes	74
Table 77 – Unshelve Method AddressSpace definition	75
Table 78 – Unshelve2 Method parameters	75
Table 79 – Unshelve2 result codes	75
Table 80 – Unshelve2 Method AddressSpace definition	76
Table 81 – TimedShelve parameters	76
Table 82 – TimedShelve result codes	76
Table 83 – TimedShelve Method AddressSpace definition	77
Table 84 – TimedShelve2 parameters	77
Table 85 – TimedShelve2 result codes	78
Table 86 – TimedShelve2 Method AddressSpace definition	78
Table 87 – OneShotShelve result codes	79
Table 88 – OneShotShelve Method AddressSpace definition	79
Table 89 – OneShotShelve2 Method parameters	79
Table 90 – OneShotShelve2 result codes	79
Table 91 – OneShotShelve2 Method AddressSpace definition	80
Table 92 – LimitAlarmType definition	81
Table 93 – ExclusiveLimitStateMachineType definition	83
Table 94 – ExclusiveLimitStateMachineType Additional References	84
Table 95 – ExclusiveLimitStateMachineType Attribute values for child Nodes	84
Table 96 – ExclusiveLimitAlarmType definition	86
Table 97 – NonExclusiveLimitAlarmType definition	88
Table 98 – NonExclusiveLimitAlarmType Additional Subcomponents	88
Table 99 – NonExclusiveLevelAlarmType definition	89

This is a preview of IEC 62541-9 Ed. 4.0 en:2026. [Click here to purchase the full version from the ANSI store.](#)

Table 101 – NonExclusiveDeviationAlarmType definition	90
Table 102 – ExclusiveDeviationAlarmType definition	91
Table 103 – NonExclusiveRateOfChangeAlarmType definition	92
Table 104 – ExclusiveRateOfChangeAlarmType definition	92
Table 105 – DiscreteAlarmType definition	93
Table 106 – OffNormalAlarmType definition	94
Table 107 – SystemOffNormalAlarmType definition	94
Table 108 – TripAlarmType definition	95
Table 109 – InstrumentDiagnosticAlarmType definition	95
Table 110 – SystemDiagnosticAlarmType definition	95
Table 111 – CertificateExpirationAlarmType definition	96
Table 112 – DiscrepancyAlarmType definition	96
Table 113 – BaseConditionClassType definition	98
Table 114 – ProcessConditionClassType definition	98
Table 115 – MaintenanceConditionClassType definition	99
Table 116 – SystemConditionClassType definition	99
Table 117 – SafetyConditionClassType definition	99
Table 118 – HighlyManagedAlarmConditionClassType definition	100
Table 119 – TrainingConditionClassType definition	100
Table 120 – StatisticalConditionClassType definition	101
Table 121 – TestingConditionClassType definition	101
Table 122 – AuditConditionEventType definition	102
Table 123 – AuditConditionEnableEventType definition	103
Table 124 – AuditConditionCommentEventType definition	103
Table 125 – AuditConditionRespondEventType definition	104
Table 126 – AuditConditionAcknowledgeEventType definition	104
Table 127 – AuditConditionConfirmEventType definition	105
Table 128 – AuditConditionShelvingEventType definition	105
Table 129 – AuditConditionSuppressionEventType definition	106
Table 130 – AuditConditionSilenceEventType definition	106
Table 131 – AuditConditionResetEventType definition	106
Table 132 – AuditConditionOutOfServiceEventType definition	107
Table 133 – RefreshStartEventType definition	108
Table 134 – RefreshEndEventType definition	108
Table 135 – RefreshRequiredEventType definition	108
Table 136 – HasCondition <i>ReferenceType</i> Definition	109
Table 137 – Alarm & Condition result codes	110
Table 138 – HasEffectDisable ReferenceType	115
Table 139 – HasEffectEnable ReferenceType	115
Table 140 – HasEffectSuppressed ReferenceType	116
Table 141 – HasEffectUnsuppressed ReferenceType	117
Table 142 – AlarmStateVariableType definition	119

This is a preview of IEC 62541-9 Ed. 4.0 en:2026. [Click here to purchase the full version from the ANSI store.](#)

Table 144 – AlarmMask definition	120
Table 145 – AlarmMetricsType Definition	121
Table 146 – AlarmRateVariableType Definition	122
Table 147 – Suppress result codes	122
Table 148 – Reset Method AddressSpace Definition	123
Table A.1 – Recommended state names for LocaleId "en"	124
Table A.2 – Recommended DisplayNames for LocaleId "en"	124
Table A.3 – Recommended state names for LocaleId "de"	125
Table A.4 – Recommended DisplayNames for LocaleId "de"	125
Table A.5 – Recommended state names for LocaleId "fr"	126
Table A.6 – Recommended DisplayNames for LocaleId "fr"	126
Table A.7 – Recommended dialog response options	126
Table B.1 – Example of a Condition that only keeps the latest state.....	127
Table B.2 – Example of a <i>Condition</i> that maintains previous states via branches	129
Table B.3 – Example of a Condition that is Suppressed / OutOfService	130
Table C.1 – Mapping from standard Event categories to OPC UA Event types	135
Table C.2 – Mapping from ONEVENTSTRUCT fields to UA BaseEventType Variables.....	137
Table C.3 – Mapping from ONEVENTSTRUCT fields to UA AuditEventType Variables.....	137
Table C.4 – Mapping from ONEVENTSTRUCT fields to UA AlarmType Variables	138
Table C.5 – Event category attribute mapping table	141
Table D.1 – IEC 62682 mapping table.....	148
Table E.1 – SystemStateStateMachineType definition.....	157
Table E.2 – SystemStateStateMachineType additional references	158
Table E.3 – SystemStateStateMachineType Attribute values for child Nodes	159

OPC unified architecture - Part 9: Alarms and 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. It is an International Standard.

This fourth edition cancels and replaces the third 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 "Comment" parameter to Alarm shelving methods;
- b) addition of method that allows a client to get the members of a group, since it is possible that the AddressSpace does not expose instances of alarms;
- c) addition of deadband properties for all limits in the limit AlarmType (from which all other types described in this issue are derived);

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that it is maintained in this document for backward compatibility, but that it is recommended that Alarm not be disabled;

- e) addition of optional severities for limit alarms;
- f) addition of new AlarmState variable type that can be used to collect alarm information for displays on graphics;
- g) addition of SupportsFilterRetain property to improve Client filtering;
- h) removal of ConditionSubClassId and ConditionSubClassNames from the conditiontype definition since they are now defined in BaseEventType.

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

Draft	Report on voting
65E/1056/CDV	65E/1109/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.

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This part of IEC 62541 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 document, is designed in accordance with IEC 62682 and ISA 18.2. Annex C specifies a recommended mapping between OPC Classic Alarm & Events (A&E) servers to the model described in this document.

Annex A describes recommended localized names for *Alarm* states.

Annex B describes examples (e.g. *Event* sequences, *Alarm* areas in *AddressSpace*).

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: 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*

IEC 62541-16, *OPC Unified Architecture - Part 16: State Machines*

IEC 62682, *Management of alarm systems for the process industries*

ISA 18.2, *Management of Alarm Systems for the Process Industries*

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EEMUA Publication 191, *Alarm System – A guide to design, management and procurement, second edition*

IETF RFC 2045, N. Freed, N. Borenstein, *Multipurpose Internet Mail Extensions (MIME) - Part One: Format of Internet Message Bodies*, November 1996, available at <https://www.ietf.org/rfc/rfc2045.txt>

IETF RFC 2046, N. Freed, N. Borenstein, *Multipurpose Internet Mail Extensions (MIME) - Part Two: Media Types*, November 1996, available at <https://www.ietf.org/rfc/rfc2046.txt>

IETF RFC 2047, K. Moore, *Multipurpose Internet Mail Extensions (MIME) Part Three: Message Header Extensions for Non-ASCII Text*, November 1996, available at <https://www.ietf.org/rfc/rfc2047.txt>
