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# Classes

## AlarmCapability

Applied stereotypes:

* OpenModelClass
* support: MANDATORY
* OpenInterfaceModelClass
* objectCreationNotification: NO
* objectDeletionNotification: NO

Attributes for AlarmCapability

Table 1: Attributes for AlarmCapability

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Multiplicity** | **Access** | **Stereotypes** | **Description** |
| alarmInventoryList | AlarmKindType  ./. | 0..\* | R | OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA  OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY | This alarm-inventory list contains all types of alarms, which are available at the device. |

## AlarmConfiguration

Applied stereotypes:

* OpenModelClass
* support: MANDATORY
* OpenInterfaceModelClass
* objectCreationNotification: NO
* objectDeletionNotification: NO

Attributes for AlarmConfiguration

Table 1: Attributes for AlarmConfiguration

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Multiplicity** | **Access** | **Stereotypes** | **Description** |
| severityConfigurationList | SeverityConfigurationType  ./. | 0..\* | RW | OpenInterfaceModelAttribute  • AVC: YES  • bitLength: NA  OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY | This severity-configuration list contains all severity levels, which are currently configured at the device. |

## AlarmEventRecords

Applied stereotypes:

* OpenModelClass
* support: MANDATORY
* OpenInterfaceModelClass
* objectCreationNotification: NO
* objectDeletionNotification: NO

Attributes for AlarmEventRecords

Table 1: Attributes for AlarmEventRecords

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Multiplicity** | **Access** | **Stereotypes** | **Description** |
| alarmEventRecordList | AlarmEventRecordType  ./. | 0..\* | R | OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA  OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY | This alarm-event list contains all events recorded by the device. |
| numberOfAlarmEventRecords | Integer  -1 | 1 | R | OpenInterfaceModelAttribute  • AVC: NO  • bitLength: LENGTH\_16\_BIT  OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: records  • support: MANDATORY | Number of alarm-events recorded by the device. |
| timeOfLatestChange | DateTime  2010-11-20T14:00:00+01:00 | 1 | R | OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA  OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY | Date and time when the last alarm-event has been recorded. |

## AlarmSpec

Applied stereotypes:

* OpenModelClass
* support: MANDATORY
* OpenInterfaceModelClass
* objectCreationNotification: NO
* objectDeletionNotification: NO

Attributes for AlarmSpec

Table 1: Attributes for AlarmSpec

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Multiplicity** | **Access** | **Stereotypes** | **Description** |
| \_Alarm\_Pac | Alarm\_Pac  ./. | 1 | RW | OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA  OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY | See referenced class |

## Alarm\_Pac

Applied stereotypes:

* OpenModelClass
* support: MANDATORY
* OpenInterfaceModelClass
* objectCreationNotification: NO
* objectDeletionNotification: NO

Attributes for Alarm\_Pac

Table 1: Attributes for Alarm\_Pac

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Multiplicity** | **Access** | **Stereotypes** | **Description** |
| \_AlarmCapability | AlarmCapability  ./. | 1 | R | OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA  OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY | See referenced class |
| \_AlarmConfiguration | AlarmConfiguration  ./. | 1 | RW | OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA  OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY | See referenced class |
| \_CurrentAlarms | CurrentAlarms  ./. | 1 | R | OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA  OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY | See referenced class |
| \_AlarmEventRecords | AlarmEventRecords  ./. | 1 | R | OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA  OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY | See referenced class |

## CurrentAlarms

Applied stereotypes:

* OpenModelClass
* support: MANDATORY
* OpenInterfaceModelClass
* objectCreationNotification: NO
* objectDeletionNotification: NO

Attributes for CurrentAlarms

Table 1: Attributes for CurrentAlarms

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Multiplicity** | **Access** | **Stereotypes** | **Description** |
| currentAlarmList | CurrentAlarmType  ./. | 0..\* | R | OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA  OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY | Number of currently active alarms in the device. |
| numberOfCurrentAlarms | Integer  -1 | 1 | R | OpenInterfaceModelAttribute  • AVC: NO  • bitLength: LENGTH\_16\_BIT  OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: alarms  • support: MANDATORY | This object shows the total number of currently active alarms in the system. |
| timeOfLatestChange | DateTime  2010-11-20T14:00:00+01:00 | 1 | R | OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA  OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY | Date and time of the last time an alarm has either been raised or cleared. |

# Data Types

## AlarmEventRecordType

Applied Stereotypes:

Attributes for AlarmEventRecordType

Table 1: Attributes for AlarmEventRecordType

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Multiplicity** | **Access** | **Stereotypes** | **Description** |
| alarmEventSequenceNumber | Integer  ./. | 1 | RW | OpenInterfaceModelAttribute   * AVC: NO * bitLength: LENGTH\_32\_BIT   OpenModelAttribute   * partOfObjectKey: 1 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY | Identifier of the records of raised and cleared alarms. |
| alarmTypeId | AlarmTypeIdType  ./. | 1 | R | OpenInterfaceModelAttribute   * AVC: NO * bitLength: NA   OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY | This attribute and the alarm-type-qualifier attribute together provides a unique identification of the alarm type. |
| alarmTypeQualifier | String  ./. | 1 | R | OpenInterfaceModelAttribute   * AVC: NO * bitLength: NA   OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY | This attribute is used when the alarm-type-id attribute does not suffice for uniquely identifying the alarm type. |
| resource | InstanceIdentifier  ./. | 1 | R | OpenInterfaceModelAttribute   * AVC: NO * bitLength: NA   OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY | Concrete resource affected by this alarm event. |
| alarmSeverity | SeverityAndClearedType  NOT\_YET\_DEFINED | 1 | R | OpenInterfaceModelAttribute   * AVC: NO * bitLength: NA   OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY | Severity of the alarm, but also indication about the alarm being cleared. |
| timestamp | DateTime  2010-11-20T14:00:00+01:00 | 1 | R | OpenInterfaceModelAttribute   * AVC: NO * bitLength: NA   OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY | The time-stamp when this alarm event occured. |

## AlarmKindType

Applied Stereotypes:

Attributes for AlarmKindType

Table 1: Attributes for AlarmKindType

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Multiplicity** | **Access** | **Stereotypes** | **Description** |
| alarmTypeId | AlarmTypeIdType  ./. | 1 | RW | OpenInterfaceModelAttribute   * AVC: NO * bitLength: NA   OpenModelAttribute   * partOfObjectKey: 1 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY | The statically defined alarm type identifier for this possible alarm. |
| alarmTypeQualifier | String  ./. | 1 | RW | OpenInterfaceModelAttribute   * AVC: NO * bitLength: NA   OpenModelAttribute   * partOfObjectKey: 2 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY | The optionally defined alarm type identifier for this possible alarm. |
| willClear | Boolean  false | 1 | R | OpenInterfaceModelAttribute   * AVC: NO * bitLength: NA   OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY | This attribute tells the operator, whether the alarm will be automatically cleared when the correct corrective action has been taken. |
| description | String  Not yet defined. | 1 | R | OpenInterfaceModelAttribute   * AVC: NO * bitLength: NA   OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY | A description of the possible alarm. It should include information on possible underlying root causes and corrective actions. |
| alarmCategory | AlarmCategoryType  NOT\_YET\_DEFINED | 1 | R | OpenInterfaceModelAttribute   * AVC: NO * bitLength: NA   OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY | The X.733/X.736 event type for this alarm. |
| probableCause | Integer  -1 | 1 | R | OpenInterfaceModelAttribute   * AVC: NO * bitLength: LENGTH\_16\_BIT   OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY | If the value of the alarm-category attribute is chosen from ITU-T X.733, values 1-57 of this attribute have to be applied according to ITU-T X.721 section 14.2. If the value of the alarm-category attribute is chosen from ITU-T X.736, values 1-18 of this attribute have to be applied according to ITU-T X.721 section 14.2. If probable-cause and alarm-category cannot be mapped to those defined in ITU-T X.733 and ITU-T X.736, then the default value shall be represented in this attribute. In such case, the probable-cause-string attribute might be used. |
| probableCauseString | String  Not yet defined. | 1 | R | OpenInterfaceModelAttribute   * AVC: NO * bitLength: NA   OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY | The user friendly string matching the probable cause integer value. The string should match the X.733 enumeration. |
| specificProblem | String  Not yet defined. | 1 | R | Reference  OpenInterfaceModelAttribute   * AVC: NO * bitLength: NA   OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY | This parameter, when present, identifies further refinements to the probable-cause of the alarm. This parameter qualifies the chosen probable-cause and may be used by the managed object class definer to specify a set of identifiers for use in managed object classes. |

## CurrentAlarmType

Applied Stereotypes:

Attributes for CurrentAlarmType

Table 1: Attributes for CurrentAlarmType

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Multiplicity** | **Access** | **Stereotypes** | **Description** |
| currentAlarmIdentifier | String  ./. | 1 | RW | OpenInterfaceModelAttribute   * AVC: NO * bitLength: NA   OpenModelAttribute   * partOfObjectKey: 1 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY |  |
| alarmTypeId | AlarmTypeIdType  ./. | 1 | R | OpenInterfaceModelAttribute   * AVC: NO * bitLength: NA   OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY | This attribute and the alarm-type-qualifier attribute together provides a unique identification of the alarm type. |
| alarmTypeQualifier | String  ./. | 1 | R | OpenInterfaceModelAttribute   * AVC: NO * bitLength: NA   OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY | This attribute is used whenever the alarm-type-id attribute cannot uniquely identify the type of alarm. Usually, this is not required and this leaf is an empty string. |
| resource | InstanceIdentifier  ./. | 1 | R | OpenInterfaceModelAttribute   * AVC: NO * bitLength: NA   OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY | Concrete resource affected by this alarm. |
| alarmSeverity | SeverityType  NOT\_YET\_DEFINED | 1 | R | OpenInterfaceModelAttribute   * AVC: NO * bitLength: NA   OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY | Severity of the alarm. |
| timestamp | DateTime  2010-11-20T14:00:00+01:00 | 1 | R | OpenInterfaceModelAttribute   * AVC: NO * bitLength: NA   OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY | Time when this alarm occurred. This represents the first time the alarm appeared; it can also represent that the alarm re-appeared after a purge. |

## InstanceIdentifier

To be translated into the YANG built in datatype instance-identifier.

Applied Stereotypes:

## SeverityConfigurationType

This list is used to override the system default alarm severity levels.

Applied Stereotypes:

* Reference

Attributes for SeverityConfigurationType

Table 1: Attributes for SeverityConfigurationType

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Multiplicity** | **Access** | **Stereotypes** | **Description** |
| severityConfigurationIdentifier | String  ./. | 1 | RW | OpenInterfaceModelAttribute   * AVC: NO * bitLength: NA   OpenModelAttribute   * partOfObjectKey: 1 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY | Identifier of the data set of a severity configuration. |
| alarmTypeId | AlarmTypeIdType  ./. | 1 | R | OpenInterfaceModelAttribute   * AVC: NO * bitLength: NA   OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY | The alarm type identifier to match. |
| alarmTypeQualifier | String  ./. | 1 | R | OpenInterfaceModelAttribute   * AVC: NO * bitLength: NA   OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY | The optionally defined alarm type identifier for this possible alarm. |
| resourceList | String  ./. | 1..\* | R | OpenInterfaceModelAttribute   * AVC: NO * bitLength: NA   OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY | One or several xpath expressions describing individual resources or types of resources that a subject to the severity definition. |
| resourceGroupDescription | String  ./. | 1 | R | OpenInterfaceModelAttribute   * AVC: NO * bitLength: NA   OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY | Label that describes the group of ressources or ressource types that are subject to this severity configuration. |
| severityLevelList | SeverityType  NOT\_YET\_DEFINED | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: YES * bitLength: NA   OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: false * valueRange: no range constraint * unit: no unit defined * support: MANDATORY | Specifies the configured severity level(s) for the matching alarm. If the alarm has several severity levels, the list shall be given in rising severity order. Example: Assume a high-utilization alarm type with two thresholds with the system-default severity levels of threshold1 = warning and threshold2 = minor. Setting this list to (minor, major) will assign the severity levels as threshold1 = minor and threshold2 = major. |

# Enumeration Types

## AlarmCategoryType

Contains Enumeration Literals:

* OTHER:
  + None of the below.
* COMMUNICATIONS\_ALARM:
  + An alarm of this type is principally associated with the procedures and/or processes required to convey information from one point to another.
* QUALITY\_OF\_SERVICE\_ALARM:
  + An alarm of this type is principally associated with a degradation in the quality of a service.
* PROCESSING\_ERROR\_ALARM:
  + An alarm of this type is principally associated with a software or processing fault.
* EQUIPMENT\_ALARM:
  + An alarm of this type is principally associated with an equipment fault.
* ENVIRONMENTAL\_ALARM:
  + An alarm of this type is principally associated with a condition relating to an enclosure in which the equipment resides.
* INTEGRITY\_VIOLATION:
  + An indication that information may have been illegally modified, inserted or deleted.
* OPERATIONAL\_VIOLATION:
  + An indication that the provision of the requested service was not possible due to the unavailability, malfunction or incorrect invocation of the service.
* PHYSICAL\_VIOLATION:
  + An indication that a physical resource has been violated in a way that suggests a security attack.
* SECURITY\_SERVICE\_OR\_MECHANISM\_VIOLATION:
  + An indication that a security attack has been detected by a security service or mechanism.
* TIME\_DOMAIN\_VIOLATION:
  + An indication that an event has occurred at an unexpected or prohibited time.
* NOT\_YET\_DEFINED:

## AlarmTypeIdType

This identity shall be referenced as a base identity for identities representing individual alarm types as they are supported by the individual device. The additional identities referencing the ALARM\_TYPE\_ID\_TYPE shall be provided by vendors in a separate YANG module.

Contains Enumeration Literals:

## SeverityAndClearedType

According to ITU-T M.3160

Contains Enumeration Literals:

* INDETERMINATE:
  + Indicates that the severity level could not be determined. This level SHOULD be avoided.
* WARNING:
  + This severity level indicates the detection of a potential or impending service affecting fault, before any significant effects have been felt. Action should be taken to further diagnose (if necessary) and correct the problem in order to prevent it from becoming a more serious service affecting fault.
* MINOR:
  + This severity level indicates the existence of a non-service affecting fault condition and that corrective action should be taken in order to prevent a more serious (for example, service affecting) fault. Such a severity can be reported, for example, when the detected alarm condition is not currently degrading the capacity of the resource.
* MAJOR:
  + This severity level indicates that a service affecting condition has developed and an urgent corrective action is required. Such a severity can be reported, for example, when there is a severe degradation in the capability of the resource and its full capability must be restored.
* CRITICAL:
  + This severity level indicates that a service affecting condition has occurred and an immediate corrective action is required. Such a severity can be reported, for example, when a resource becomes totally out of service and its capability must be restored.
* CLEARED:
  + This value indicates that the alarm is no longer active.
* NOT\_YET\_DEFINED:

## SeverityType

According to ITU-T M.3160

Contains Enumeration Literals:

* INDETERMINATE:
  + Indicates that the severity level could not be determined. This level SHOULD be avoided.
* WARNING:
  + This severity level indicates the detection of a potential or impending service affecting fault, before any significant effects have been felt. Action should be taken to further diagnose (if necessary) and correct the problem in order to prevent it from becoming a more serious service affecting fault.
* MINOR:
  + This severity level indicates the existence of a non-service affecting fault condition and that corrective action should be taken in order to prevent a more serious (for example, service affecting) fault. Such a severity can be reported, for example, when the detected alarm condition is not currently degrading the capacity of the resource.
* MAJOR:
  + This severity level indicates that a service affecting condition has developed and an urgent corrective action is required. Such a severity can be reported, for example, when there is a severe degradation in the capability of the resource and its full capability must be restored.
* CRITICAL:
  + This severity level indicates that a service affecting condition has occurred and an immediate corrective action is required. Such a severity can be reported, for example, when a resource becomes totally out of service and its capability must be restored.
* NOT\_YET\_DEFINED:

# Primitive Types