Johnson Controls

# Object Library

## Security Notification Class Object

Version 1.0, December 2008
24-10239-243 Revision B

These instructions are supplemental. Some times they are supplemental to other manufacturer's documentation. Never discard other manufacturer's documentation. Publications from Johnson Controls, Inc. are not intended to duplicate nor replace other manufacturer's documentation.

If this document is translated from the original English version by Johnson Controls, Inc., all reasonable endeavors will be used to ensure the accuracy of translation. Johnson Controls, Inc. shall not be liable for any translation errors contained herein or for incidental or consequential damages in connection with the furnishing or use of this translated material.

# SECURITY NOTIFICATION CLASS OBJECT

## INTRODUCTION

The Security Notification Class object defines event-handling options and sends the Event Notification messages initiated by the objects to other devices on the network.

The following diagram shows the major blocks the Security Notification Class object interacts with.

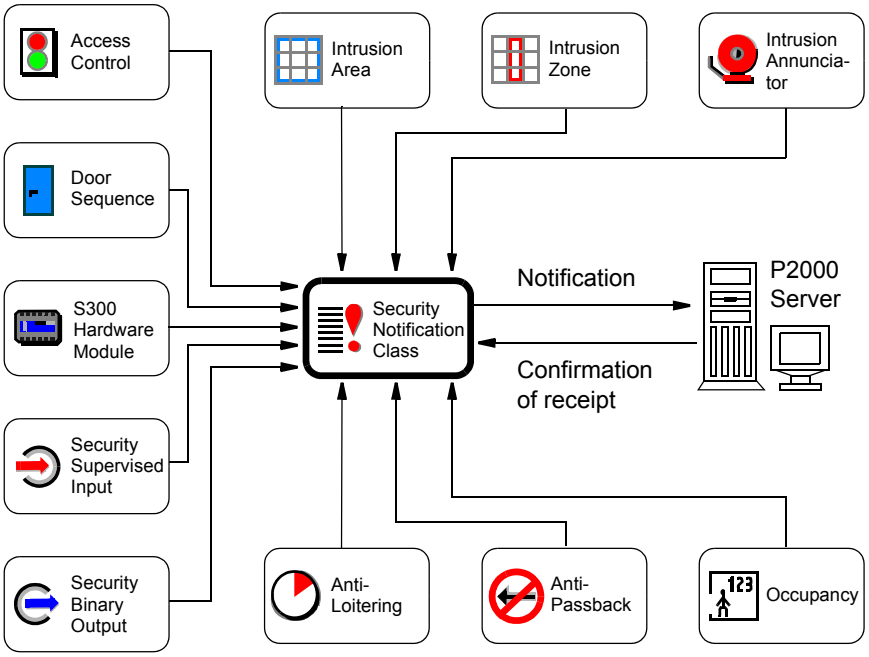


*Figure 1: Security Notification Class Object*

The Security Notification Class object is automatically created and resides on the event-initiating device and behaves as the notification-server for supporting the intrinsic reporting defined in *BACnet Standard Clause 13.2*. The Security Notification Class object provides the destinations qualified by time of day and day of week, and the priority to be used in the event notification. It also specifies whether confirmed or unconfirmed notification is used for event delivery.

Typically, it is used to route alarm and event messages to the P2000 server.

Each event-initiating object is configured to associate with the default instance of the Security Notification Class object. The P2000 server is automatically entered as the notification recipient. The interaction between the Security Notification Class object and other objects is shown in Figure 1.

The First-In-First-Out (FIFO) mechanism is employed for event management. Events are buffered in the FIFO block in received order. When the FIFO buffer is full, an event of type "Event Dropped" is generated and the FIFO always drops the oldest event. Alarm messages will not be dropped. The Time Stamp of the dropped event is copied to the StartTime and EndTime of the "Event Dropped" notification. Then, the Security Notification Class object sends the newly generated "Event Dropped" notification. If the FIFO overflows again when sending the "Event Dropped" notification, the oldest event is thrown away and its Time Stamp is copied to the EndTime of the "Event Dropped" notification. This "Event Dropped" notification also records the number of dropped events due to the extent of the FIFO buffer being full. Upon receiving this "Event Dropped" notification, the Host may evaluate this situation and take action.

The Security Notification Class object always uses the ConfirmedEventNotification service for delivering event notification. This means that the Security Notification Class object needs a confirmation that each event notification has been received. If multiple recipients are specified, a separate invocation of this service shall be used to notify each intended recipient. The ConfirmedEventNotification service provides a means to notify the Security Notification Class object the success or failure of its service.

A separate *Host Recipient List* defines the hosts as the destinations for the event and alarm notification. If the ConfirmedEventNotification service has succeeded for any one of the Host recipients, the sending of the event will be marked as successful.

If the ConfirmedEventNotification service has failed for all Host recipients, the Security Notification Class object will loop through the *Host Recipient List* for sending the event until it succeeds or FIFO overflows. After sending an event, this event will be removed and the Security Notification Class object will send the next event. The CK722 controller does not archive the events sent to the remote devices. The Host as a recipient may archive these events into the events history database.

## ATTRIBUTES

This section describes visible attributes specific to the Security Notification Class object. This object also contains:

- Attributes common to all objects in the P2000 Security Management System. For details, see the *General Object Information* document.
- Internal attributes, which are invisible to the user and cannot be modified directly, but may be referred to throughout this document.

*Table 1: Security Notification Class Object Attributes*

| Attribute Name | Attribute Number | Data Type | Notes | Initial Value | Values/Options/Range |
|---|---|---|---|---|---|
| *Ack Required* | 1 | BACnetEvent TransitionBits | WCAQ | 0x00 | Bit 0; To-Offnormal<br>Bit 1: To-Fault<br>Bit 2: To-Normal |
| *FIFO Size* | 3083 | Unsigned16 | WCA | 20 | In Megabytes<br>Min: 1<br>Max: 20 |
| *Host Recipient List* | 3082 | List Of HostDestination | WCA | - | - |
| *Notification Class* | 17 | Unsigned32 | Q | - | - |
| *Notify Priority* | 3644 | Unsigned8 | WCA | - | - |
| *Present Value* | 85 | Enumeration | F | - | 0 = None<br>1 = Green<br>2 = Yellow<br>3 = Red |
| *Priority* | 86 | BACnetArray[3] of Unsigned8 | WCAQ | 120<br>70<br>200 | To-Offnormal (0 - 255 inclusive)<br>To-Fault (0 - 255 inclusive)<br>To-Normal (0 - 255 inclusive) |
| *Recipient List* | 102 | List Of BACnetDestination | WCAQ | - | - |
| *Release Suppress* | 3709 | Boolean | W | - | - |
| *Suppress* | 2933 | Boolean | WZV | *Suppress Default* | - |
| *Suppress Default* | 4032 | Boolean | WCA | - | - |
| *Suppress Priority Array* | 4698 | BACnetARRAY[16] of Boolean | - | - | - |

A - Archive, C - Configurable, F - PMI (Person/Machine Interface) refreshing, Q - BACnet required attribute, W - Writable, V - Initial value redirected

**Ack Required** – This attribute conveys three separate flags that represent whether acknowledgement shall be required in notifications generated for To-Offnormal, To-Fault, and To-Normal event transitions respectively.

**FIFO Size** – This attribute specifies the size of the FIFO block. For example, a value of 2 Megabytes corresponds to 4096 average sized entries (events).

**Host Recipient List** – This attribute specifies the Host destinations to which the Event Notification messages will be sent. Each HostDestination contains a structure of parameters as the following:

- ValidDays - Of BACnetDaysofWeek data type, specifies days of the week on which this Host destination may be used.
- FromTime - Of Time data type, specifies the starting time (inclusive) of the time window during which the Host destination may be used.
- ToTime - Of Time data type, specifies the ending time (inclusive) of the time window during which the Host destination may be used. To specify all times, use 00:00:00 for FromTime and 23:59:59 for ToTime.
- Recipient - Of Unsigned32 data type, specifies the BACnet object identifier of the device object to which the Event Notification messages will be sent.
- ProcessIdentifier - Of Unsigned32 data type, specifies the Process Identifier within the recipient device which is to receive the Event Notification messages.
- IssueConfirmedNotifications - Of Boolean data type, specifies whether the ConfirmedEventNotification service or UnconfirmedEventNotification service is used for delivery of Event Notification messages. This attribute shall be always "True" for the Security Notification Class object to send Confirmed Event Notifications.
- Transitions - Of BACnetEventTransitionBits data type, specifies three flags which indicate types of transitions (To-Offnormal, To-Fault, or To-Normal) to be sent to this destination. All the three flags are set to "True" (1).
- IsSuspended - Of Boolean data type (default is "False"), specifies whether notification of events to Host is suspended or not.

**Notification Class** – Indicates the numeric value of this notification class, and is equal to the instance number of the Security Notification Class object. Event initiating objects use this number to reference a specific Security Notification Class object.

**Notify Priority** – Specifies the Priority parameter of all notifications generated by the Security Notification Class object.

**Present Value** – Indicates the principal status of the Security Notification Class object. This status is exclusively derived from the number of messages inside the First-In-First-Out mechanism (FIFO). To avoid frequent toggling between two states, a hysteresis function is applied. The possible values are:

- None - The Security Notification Class Status has not yet been determined.
- Green - The FIFO is empty or almost empty.
- Yellow - The FIFO has accumulated some messages, but still has enough space to accept more.
- Red - The FIFO is almost full or completely full.

**Priority** – Indicates the priority to be used for To-Offnormal, To-Fault, and To-Normal events, respectively. A lower number indicates a higher priority.

**Recipient List** – This attribute specifies the destinations other than the Hosts to which the Event Notification messages will be sent. The BACnetDestination is as per Clause 12.20.8 of the *BACnet ASHRAE Standard* and contains a structure of parameters as the following:

- ValidDays - Of BACnetDaysofWeek data type, specifies days of the week on which this Destination may be used.
- FromTime - Of Time data type, specifies the starting time (inclusive) of the time window during which the Destination may be used.
- ToTime - Of Time data type, specifies the ending time (inclusive) of the time window during which the Destination may be used. To specify all times, use 00:00:00 for FromTime and 23:59:59 for ToTime.
- RecipientChoice - Of Enumeration data type, specifies whether to use an Object Identifier (value of 0) or 160 the Network Address (value of 1) of the Destination to route the notifications.
- Recipient - Of Unsigned32 data type, specifies the BACnet object identifier of the device object to which the Event Notification messages will be sent.
- NetNumber - Of Unsigned16 data type, specifies the Network Number for the Destination if routing via address.
- IPAddress - Of Array [4] of Unsigned8 data type, specifies the IP Address of the Destination if routing via address.
- UDPPortNumber - Of Unsigned16 data type, specifies the UDP Port Number for the Destination if routing via address.
- ProcessIdentifier - Of Unsigned32 data type, specifies the Process Identifier within the recipient device which is to receive the Event Notification messages.
- IssueConfirmedNotifications - Of Boolean data type, if "True," Confirmed Event Notifications will be sent; if "False," Unconfirmed Event Notifications will be sent.
- Transitions - Of BACnetEventTransitionBits data type, specifies three flags which indicate types of transitions (To-Offnormal, To-Fault, or To-Normal) to be sent to the Destination.

**Release Suppress** - When written to "True," priorities 16 through 3 of the *Suppress* attribute are released. The value of the *Release Suppress* attribute always remains "False."

**Suppress** – Specifies whether any notifications are being sent to any recipients or host recipients. This attribute allows to dynamically control the flow of notifications to the outside world. The only notifications not subject to this flow control are the notifications generated by the Security Notification Class object itself.

**Suppress Default** - Specifies the initial value of the *Suppress* attribute, and the value of the Suppress attribute when all of its priorities are released.

**Suppress Priority Array** - Indicates the current values in all 16 priority slots of the *Suppress* attribute.

# COMMANDS

This section describes commands that can be issued to this object from SCT.

*Table 2: Security Notification Class Object Commands*

| Command Name | Description |
|---|---|
| `Suppress` | Writes the *Suppress* attribute depending on the parameter. See the description below for details. This command accepts priority. |
| `Release All Suppress` | Writes the *Release Suppress* attribute to "True." |
| `Change Attribute` | See the description below. |

The `Suppress` command writes the *Suppress* attribute based on the command parameter:

- Release - Releases the *Suppress* attribute at the specified priority.
- Suppress - Writes the *Suppress* attribute to "True" at the specified priority.
- Unsuppress - Writes the *Suppress* attribute to "False" at the specified priority.

*Table 3: Suppress Command Parameters*

| Parameter Name | Data Type | Parameter Type Dependent Properties |
|---|---|---|
| Action | Enumeration | 0 = Release<br>1 = Suppress<br>2 = Unsuppress |

The `Change Attribute` is a generic command available for writing the attributes of an object. It is mainly used to change an attribute value from those features which work only with commands. For the sole purpose of giving a generic example, there is no command defined to change the *Notify Priority* attribute of an object. `Change Attribute` could, therefore, be used to change the *Notify Priority* attribute through an interlock or multiple command, both features which require commands to be entered. The `Change Attribute` command requires two parameters:

- Attribute - This parameter specifies which attribute of the object is to be written. Only writable attributes may be changed by this command.
- New value - This parameter specifies new value to be written and must be the same data type as the attribute. The only data types allowed in this command are those allowed as command parameters. A command priority can be specified if the attribute to be changed is a prioritized attribute.

# VIEWS

This section illustrates how the System Configuration Tool displays properties of the Security Notification Class object. This screen also allows you to set the values of configurable attributes. For more information refer to the *System Configuration Tool (SCT)* manual.

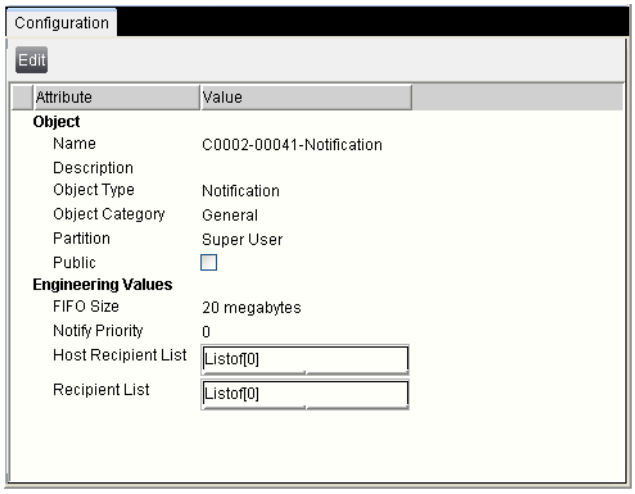


*Figure 2: Configuration View (Basic)*

# DESCRIPTION OF OPERATION

When the FIFO of the Security Notification Class object overflows, an event notification of type “Events Dropped” is generated and sent to the Host. This notification contains the number of dropped events and the time range in which events were dropped.