Johnson Controls

Object Library

Security Supervised Input Object

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SECURITY SUPERVISED INPUT OBJECT

INTRODUCTION

The Security Supervised Input object defines Johnson Controls' mechanism to monitor the state of a physical supervised input point.

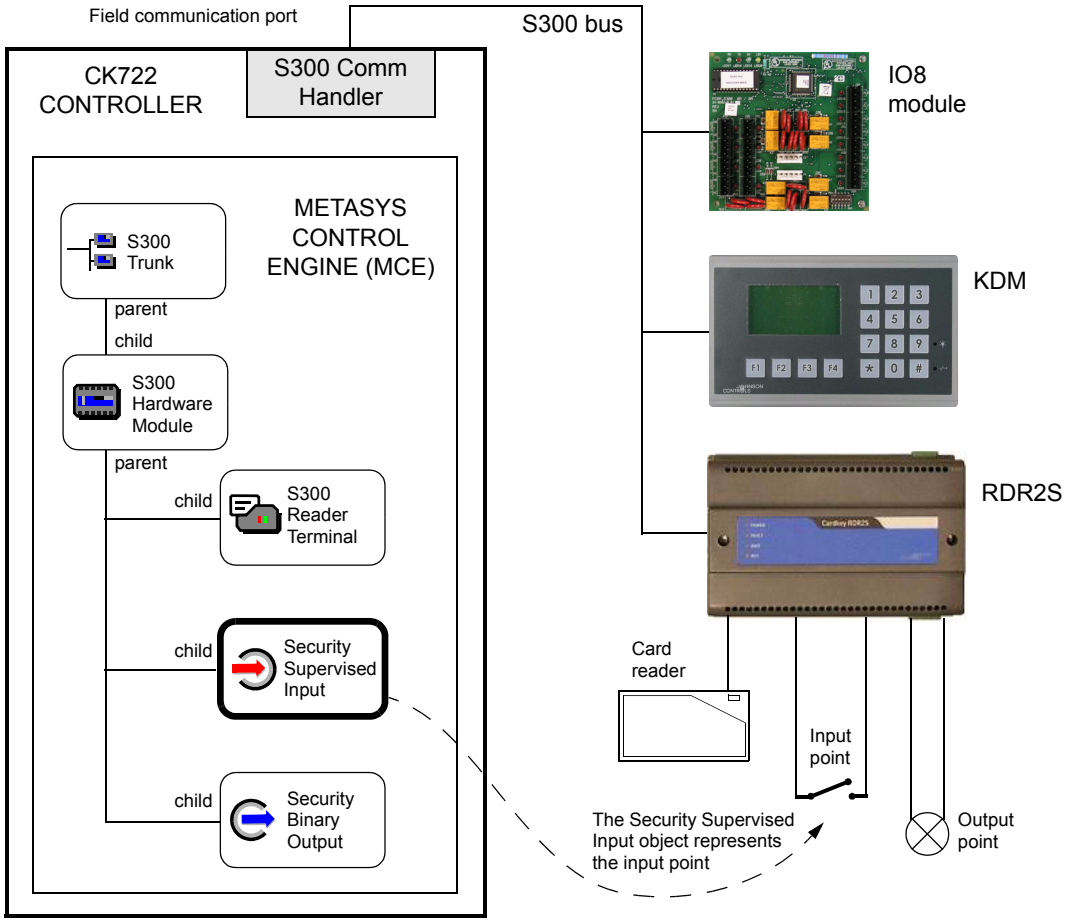

Figure 1: Security Supervised Input Object

ATTRIBUTES

This section describes visible attributes specific to the Security Supervised Input 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.

For detailed information on BACnet properties, refer to *ANSI/ASHRAE Standard 1352001 - A Data Communication Protocol for Building Automation and Control Networks*.

Table 1: Security Supervised Input Object Attributes

Attribute Name	Attribute Number	Data Type	Notes	Initial Value	Values/Options /Range
Acked Transitions	0	BACnetEvent TransitionBits	-	-	Refer to *BACnet Standard 12.19.20*
Calibrate	3718	Boolean	W	-	-
Calibration	3719	Enumeration	W	-	0 = Uncalibrate 1 = Calibrate 2 = Calibrate to Cal Resistor
Connector	3715	Enumeration	WCA	-	See Table 2
Debounce Time	3717	Float	WCA	100	0 - 60,000 milliseconds
Event Enable	35	BACnetEvent TransitionBits	CA	1, 1, 1	Refer to *BACnet Standard 12.19.18*
Event State	36	Enumeration	F	-	0 = Normal 1 = Fault 2 = Off-Normal
Event Time Stamps	130	BACnetARRAY [3] of BACnetTime Stamp	-	-	Refer to *BACnet Standard 12.19.21*
Hardware Module Number	3711	Unsigned32	-	-	Value is inherited from parent object
Hardware Module Type	3710	Enumeration	-	-	Value is inherited from parent object
Notification Class	17	Unsigned32	WCA	-	Refer to *BACnet Standard 12.19.18*
Notify Priority	3644	Unsigned8	WCA	-	-
Notify Type	72	Enumeration	WCA	-	Refer to *BACnet Standard 12.19.20*

Table 1: Security Supervised Input Object Attributes

Attribute Name	Attribute Number	Data Type	Notes	Initial Value	Values/Options /Range
Polarity	84	Enumeration	WCA	-	0 = Normal 1 = Reverse
Present Value	85	Enumeration	F	-	0 = Secure 1 = Alarm 2 = Short 3 = Open 4 = Unknown 5 = Not Initialized
Release Suppress	3709	Boolean	W	-	-
Suppress	2933	Boolean	WZV	*Suppress Default*	-
Suppress Default	4032	Boolean	WCA	-	-
Suppress Notification	3721	Boolean	WCA	-	-
Suppress Priority Array	4698	BACnetARRAY [16] of Boolean	-	-	-
Trunk Number	549	Unsigned8	-	-	Value is inherited from parent object
Unknown Notification	3720	Boolean	WCA	-	-

A - Archive, C - Configurable, F - PMI (Person/Machine Interface) refreshing, W - Writable, V - Default value redirected, Z - Priority allowed on write

Table 2: Connector Attribute Values

***Hardware Module Type* Attribute**	***Connector* Attribute Values**
Generic	0 to 99: 0 = Output 1 1 = Output 2 etc.
RDR2S	0 = IN11 1 = IN12 2 = IN21 3 = IN22 4 = IN01 5 = IN02
RDR2	No selection available
IO8, SIO8, SI8	0 to 7: 0 = AL1 1 = AL2 etc.
I16	0 to 15: 0 = AL1 1 = AL2 etc.

Table 2: Connector Attribute Values

***Hardware Module Type* Attribute**	***Connector* Attribute Values**	
RDR2S-A	0 = Reader 1 Door Contact	12 = Reader 1 Spare B [2]
	1 = Reader 1 REX	13 = Reader 2 Spare A[2]
	2 = Reader 2 Door Contact	14 = Reader 2 Spare B[2]
	3 = Reader 2 REX	15 = Reader 1 Tamper A[2]
	4 = Reader 1 Spare	16 = Reader 1 Tamper B[2]
	5 = Reader 2 Spare	17 = Reader 2 Tamper A[2]
	6 = Reader 1 Tamper	18 = Reader 2 Tamper B[2]
	7 = Reader 2 Tamper	19 = Panel Tamper A[2]
	8 = Panel Tamper	20 = Panel Tamper B[2]
	9 = Power Fail	21 = Power Fail A[2]
	10 = Panel Battery Low[1]	22 = Power Fail B [2]
	11 = Reader 1 Spare A[2]	
RDR8S	0 = Reader 1 Door Contact	18 = Reader 5 Tamper
	1 = Reader 1 REX	19 = Reader 5 Spare
	2 = Reader 1 Tamper	20 = Reader 6 Door Contact
	3 = Reader 1 Spare	21 = Reader 6 REX
	4 = Reader 2 Door Contact	22 = Reader 6 Tamper
	5 = Reader 2 REX	23 = Reader 6 Spare
	6 = Reader 2 Tamper	24 = Reader 7 Door Contact
	7 = Reader 2 Spare	25 = Reader 7 REX
	8 = Reader 3 Door Contact	26 = Reader 7 Tamper
	9 = Reader 3 REX	27 = Reader 7 Spare
	10 = Reader 3 Tamper	28 = Reader 8 Door Contact
	11 = Reader 3 Spare	29 = Reader 8 REX
	12 = Reader 4 Door Contact	30 = Reader 8 Tamper
	13 = Reader 4 REX	31 = Reader 8 Spare
	14 = Reader 4 Tamper	32 = Panel Tamper
	15 = Reader 4 Spare	33 = Power Fail
	16 = Reader 5 Door Contact	34 = Panel Battery Low[2]
	17 = Reader 5 REX	
KDM	No selection available	
CK722	0 = BINARY IN1 1 = BINARY IN2	

[1]Input is 2 state only and cannot be calibrated.

[2]Input is 4 state only and cannot be calibrated.

Acked Transitions – Refer to *BACnet Standard 135-2001 12.19.19*.

Calibrate – Specifies the calibration command for the supervised input point. The result can be obtained from the Calibration attribute. The options are:

- Uncalibrate - Attempts to calibrate the supervised input as a 2-state input.
- Calibrate - Attempts to calibrate the supervised input so that the current resistance at the supervised input is the Secure state of the 4-state input.
- Calibrate to Cal Resistor - Attempts to calibrate the supervised input so that the current resistance at thecalibration resistor input is the “Secure” state of the 4-state input.

Calibration – Indicates the calibration state of the input as reported by the hardware that actually handles the input. This attribute is updated after writing the *Calibrate* attribute, and whenever new calibration information is received from the hardware. The options are:

- Unknown - The calibration state cannot be determined at this time. This typically happens when the object was never informed by the hardware module about the calibration state.
- Failed, Resistance Too Low - The last calibration attempt was unsuccessful, because the connected resistor network had a too low resistance.
- Failed, Resistance Too High - The last calibration attempt was unsuccessful, because the resistor network had a too high resistance.
- 2-State Input - The input point works, as expected, as a 2-state input.
- Failed, Offline - The last calibration attempt was unsuccessful, because the hardware module was offline. When the module comes online, this attribute may be updated with the calibration state reported by the hardware module that handles the input.
- 4-State Input - The input point works, as expected, as a 4-state input.
- Failed, No Calibration Supported - The last calibration attempt was unsuccessful, because the hardware does not support dynamic calibration.
- Failed, Input Is 2-State Only - The last calibration attempt was unsuccessful, because the input point does not support dynamic calibration.This also applies to input points that are 4-State Only.
- Failed, Out-of-Service - The last calibration attempt was unsuccessful, because the object's *Out of Service* attribute was set to “True.” When the *Out of Service* attribute is set to “False,” this attribute may be updated with the calibration state reported by the hardware that handles the input. As the *Out Of Service* attribute is not writeable and always “False,” this state is never entered.

Connector – Specifies the physical input connector on the hardware module that this object is associated with. The enumeration set varies with the current value of the *Hardware Module Type* attribute.

Debounce Time – The time in seconds, rounded to the nearest 0.004s internally, that a supervised input must remain in a transition state to establish the detected state.

The Security Supervised Input objects representing inputs on S300-SIO8, S300-SI8, S300-IO8, and S300-I16 devices only support debounce times ranging from 0.02 to 0.8s.

Event Enable – Refer to *BACnet Standard 135-2001 12.19.18*.

Event State – Indicates the event related status of the Security Supervised Input object, determined as follows:

- Fault - The *Present Value* attribute is either set to "Short" or "Open" (4-state) or the last To-Fault notification has not yet been acknowledged.
  For a 4-state input, it represents a balanced condition of a calibrated input reporting mid scale.
- Off-Normal - The *Present Value* attribute is set to "Alarm" while the *Suppress* attribute is set to "False," or the last To-Offnormal notification has not yet been acknowledged.
- Normal - The *Present Value* attribute is either set to "Secure," or it is set to "Alarm" while the *Suppress* attribute is set to "True." The *Present Value* attribute changing to the "Unknown" state does not change the *Event State* attribute.

Event Time Stamps – Refer to *BACnet Standard 135-2001 12.19.21*.

Hardware Module Number – Indicates the logical hardware module number that this object is associated with. The object computes the value for this attribute from information provided by its parent.

Hardware Module Type – Indicates the type of hardware module that this object is associated with. The object computes the value for this attribute from information provided by its parent.

Notification Class – Specifies which Security Notification Class object should be used by the Security Supervised Input object to send its notifications to.

Notify Priority – Specifies the Priority parameter of all notifications generated by the Security Supervised Input object.

Notify Type – Specifies the Notify Type of the Security Supervised Input object.

Polarity – Specifies the relationship between the physical state of a 2-state supervised input and the logical state represented by the *Present Value* attribute.

A value of 0 means "Normal," a value of 1 means "Reverse." With a *Polarity* of "Normal," Secure denotes zero resistance (Short) and Alarm denotes infinite resistance (Open). With a *Polarity* of "Reverse," Secure denotes infinite resistance (Open) and Alarm denotes zero resistance (Short).

The *Polarity* attribute has no effect on 4-state inputs.

Present Value - Indicates the principal status of the Security Supervised Input object. The options are:

- Secure - For a 2-state input with a *Polarity* of "Normal," it represents a short-circuit condition, with a *Polarity* of "Reverse" it represents an open-circuit condition. For a 4-state input, it represents a balanced condition of a calibrated input reporting mid scale.
- Alarm - For a 2-state input with a *Polarity* of "Normal," it represents an open-circuit condition, with a *Polarity* of "Reverse," it represents a short-circuit condition. For a 4-state input, it represents a condition below open-circuit and above short-circuit.
- Short - The input is in short-circuit condition. This pertains only to 4-state inputs.
- Open - The input is in open-circuit condition. This pertains only to 4-state inputs.
- Unknown - The input's state is unknown. This is the case when the hardware module that handles the input is offline to the object.
- Not Initialized - The input's state is not yet initialized. This state is only used as the initial state.

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 the generation of notifications shall be suppressed.

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

Suppress Notification – Specifies whether a notification should be generated when the *Suppress* attribute changes. When this attribute changes from "False" to "True," and the *Suppress* attribute is "True," a notification of type "Input Suppressed" is generated. When this attribute changes from "True" to "False," and the *Suppress* attribute is "True," and the input is in the alarm state, a notification of type "Input Secure" is generated.

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

Trunk Number – Indicates the trunk that this object belongs to. In case of an on-board input, the object must be a child of the Device object, so this attribute is automatically set to 0. In case the input resides on an S300 module, the object must be a child of an S300 Hardware Module object, so the value of this attribute is inherited from the S300 Hardware Module object's *Trunk Number* attribute.

Unknown Notification – Specifies whether a notification should be generated when the *Present Value* attribute changes to "Unknown." If not, a notification is also not generated when the *Present Value* attribute changes from "Unknown" to the previously reported state.

COMMANDS

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

Table 3: Security Supervised Input Object Commands

Command Name	Description
`Suppress`	Writes the *Suppress* attribute depending on the parameter. 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 4: Suppress Command Parameters

Parameter Name	Data Type	Parameter Type Dependent Properties
Action	Enumeration	0 = Release 1 = Suppress 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 Supervised Input object. This screen also allows you to set the values of configurable attributes. For more information refer to the *System Configuration Tool (SCT)* manual.

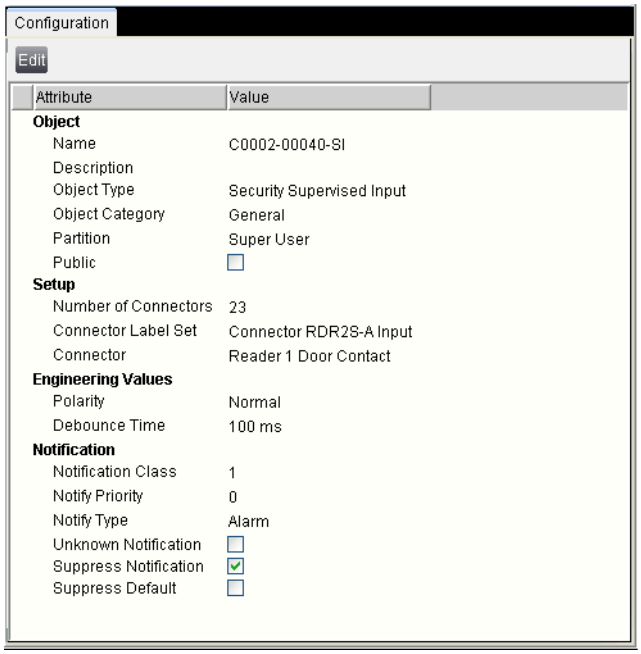

Figure 2: Configuration View

DESCRIPTION OF OPERATION

Alarm Latching

The Security Supervised Input object uses its *Present Value* attribute to indicate its current state, which is in no way dependent on any notification issues, such as suppression or filtering. The Supervised Input object uses its *Event State* attribute to indicate the state of the object with respect to notification issues, such as suppression or filtering.

When the *Suppress* attribute is set to "False," the *Event State* attribute is driven by the *Present Value* attribute, but latches to either "Off-Normal" or "Fault" until the causing condition is removed, and the reported event state is acknowledged, if it was required to be acknowledged. The "Fault" state takes priority over the "Off-Normal" state.

A notification is only required to be acknowledged when it was generated with a

Notify Type parameter of "Alarm." The event state must be acknowledged with the BACnet AcknowledgeAlarm service as described in the *BACnet Standard 135-2001 Section 13.5*. The *Event Time Stamps* attribute only stores the time stamps of events that need to be acknowledged. As long as the *Event State* attribute remains latched at "Off-Normal" or remains latched at "Fault," all generated notifications have a *Notify Type* attribute of "Event."

Suppression

When the *Suppress* attribute is set to "True," the conditions that otherwise would set the *Event State* attribute to the "Off-Normal" state will now set it to the "Normal" state instead, unless there is still an acknowledgement pending for the "Off-Normal" state. The *Suppress* attribute when set to "True," causes the Security Supervised Input object to suppress the generation of all notifications caused by direct transitions between the "Normal" and the "Off-Normal" states.

Transitions to and from the "Fault" state are not affected by the *Suppress* attribute.