Johnson Controls

Object Library

Occupancy Object

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OCCUPANCY OBJECT

INTRODUCTION

The Occupancy object monitors the number of entities in an occupancy space.

The Occupancy object can work in an anonymous mode, in which occupancy is determined by balancing anonymous in versus out transitions, or it can determine the number of occupants by keeping track of all occupants by their entity ID.

The Occupancy object interacts with the Access Control object in the following way:
An Access Control object consults its local Occupancy object, which immediately returns an occupancy decision. The Access Control objects also keep their local Occupancy objects informed about any transitions into or out of the occupancy space.

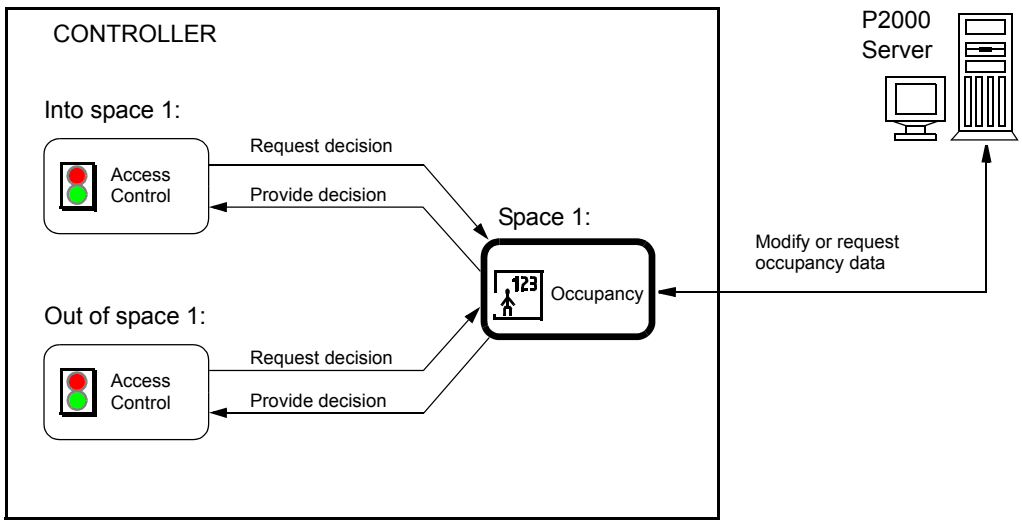

Figure 1: Occupancy Object

An occupancy space may be accessible through several portals, that must all be handled by Access Control objects residing on the same controller. A single controller may hold several occupancy spaces.

If there is a discrepancy between the calculated number of entities and the specified minimum or maximum number of entities in the occupancy space, an occupancy violation occurs. Occupancy violations can be reported to the security management system, and may cause access to be denied for the entity who would be violating the occupancy rule.

ATTRIBUTES

This section describes visible attributes specific to the Occupancy 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: Occupancy Object Attributes

Attribute Name	Attribute Number	Data Type	Notes	Initial Value	Values/Options /Range
Fault Cause	2896	Enumeration	F	-	0 = None 1 = Invalid Configuration 2 = Out Of Memory
Maximum Occupancy	3702	Unsigned32	WCA	1000	In entities
Minimum Occupancy	3703	Unsigned32	WCA	-	In entities
Mode	961	Enumeration	F	-	0 = Normal 1 = Fault 2 = Off-Normal
Notification Class	17	Unsigned32	WCA	1	-
Notify Priority	3644	Unsigned8	WCA	-	-
Occupancy By Entity ID	3701	Boolean	WCA	-	-
Present Value	85	Unsigned32	FW	-	In entities
Set Entity ID In	3685	Unsigned32	W	-	-
Set Entity ID Out	3686	Unsigned32	W	-	-
Transition Notification	4297	Boolean	WCA	-	-

A - Archive, C - Configurable, F - PMI (Person/Machine Interface) refreshing, W - Writable

Fault Cause – Indicates the highest priority reason why the *Mode* attribute is set to "Fault." In case multiple reasons apply, the value with the higher enumeration value is given.

- None - The *Mode* attribute is not set to "Fault."
- Invalid Configuration - The *Occupancy By Entity ID* attribute is set to "True" while the *Maximum Occupancy* attribute is greater than 1000.
- Out Of Memory - The controller does not have enough memory to store the list of occupants.

Maximum Occupancy – Specifies the maximum number of entities that are allowed in the occupancy space. This attribute must be 1000 or less when the *Occupancy By Entity ID* attribute is set to "True." Otherwise, the *Mode* attribute is set to "Fault," and the *Fault Cause* attribute is set to "Invalid Configuration." When no upper occupancy limit applies, this attribute shall be set to 0.

Minimum Occupancy – Specifies the minimum number of entities that must remain in the occupancy space. When no lower occupancy limit applies, this attribute shall be set to 0.

Mode – Indicates the principal state of the Occupancy Object. The options are:

- Normal - The number of occupants, as indicated by the *Present Value* attribute, is greater or equal than the value specified by the *Minimum Occupancy* attribute, and less or equal than the value specified by the *Maximum Occupancy* attribute.
- Off-Normal - The number of occupants, as indicated by the *Present Value* attribute, is less than the value specified by the *Minimum Occupancy* attribute, or greater than the value specified by the *Maximum Occupancy* attribute.
- Fault - The Occupancy Object cannot perform its function properly. The *Fault Cause* attribute holds the reason for this condition.

Notification Class – Specifies which Security Notification Class Object should be used by the Occupancy Object to send its notifications.

Notify Priority – Specifies the Priority parameter of all notifications generated by the Occupancy Object.

Occupancy By Entity ID – Specifies whether the number of entities in the occupancy space is obtained from the number of different entity IDs in the entity ID list, or by balancing in versus out transitions, without respect to any entity IDs. When this attribute is set to "True," the maximum number of entities that can be monitored is limited to 1000. This attribute must only be set to "True" when the *Maximum Occupancy* attribute is 1000 or less. Otherwise, the *Mode* attribute is set to "Fault," and the *Fault Cause* attribute is set to "Invalid Configuration." Every time this attribute is changed, the list of entities is purged, and *Present Value* is set to 0.

Present Value – Indicates the current number of entities that are monitored by the Occupancy Object. When the *Occupancy By Entity ID* attribute is set to "False," this value can be written to correct the number of occupants, in case the controller rebooted, or some other error condition caused the number of occupants to be off.

Set Entity ID In – Specifies the ID of the entity that transitions into the occupancy space. When the *Occupancy By Entity ID* attribute is set to "False," any value that is written to this attribute counts as an occupant entering the occupancy space.

Set Entity ID Out – Specifies the ID of the entity that transitions out of the occupancy space. When the *Occupancy By Entity ID* attribute is set to "False," any value that is written to this attribute counts as an occupant leaving the occupancy space.

Transition Notification – Specifies whether the Occupancy object shall generate a notification of category "Transition" every time an entity transitions into or out of the occupancy space, or when the Occupancy object starts up. The Transition Notification attribute should only be set to "True" when an application in the P2000 system is set up to make use of this notification.

COMMANDS

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

Table 2: Occupancy Object Commands

Command Name	Description
`Change Attribute`	See the description below.

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 Occupancy object. These screens also allow you to set the values of configurable attributes. For more information refer to the *System Configuration Tool (SCT)* manual.

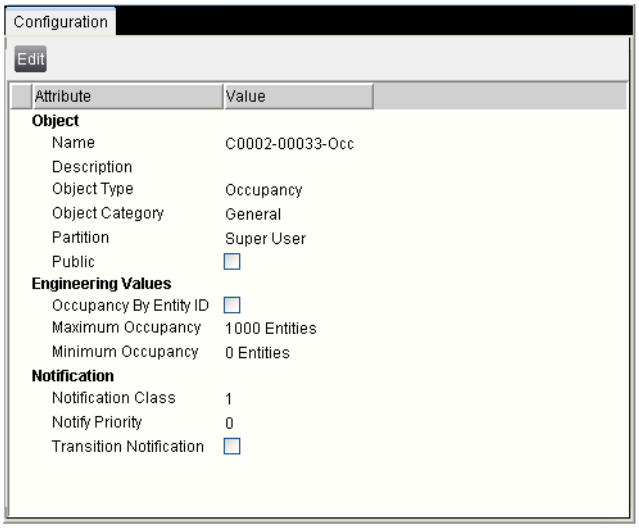

Figure 2: Configuration View