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Synergy

Network Controller

Expanded Protocol Implementation Conformance Statement

Capabilities and features **highlighted in yellow** are not available in production releases 2.71 or earlier.

Product Description:

Synergy is an event-driven lighting control system integrating all aspects of lighting control into a single system platform. Synergy combines architectural dimming, low voltage switching, lighting automation and lighting energy management functions into a scalable package capable of meeting the requirements of virtually any lighting control application.

BACnet Standardized Device Profile (Annex L):

B-ASC: A B-ASC (BACnet Application Specific Controller) is a controller with limited resources relative to a B-AAC. It is intended for use in a specific application and supports limited programmability. It enables specification of the following:

1. Data Sharing:
 - a. Ability to provide the values of any of its BACnet objects.
 - b. Ability to allow modification of some or all of its BACnet objects by another device.
2. Alarm and Event Management:
 - a. No requirement.
3. Scheduling:
 - a. No requirement.
4. Trending:
 - a. No requirement.
5. Device and Network Management:
 - a. Ability to respond to queries about its status.
 - b. Ability to respond to requests for information about any of its objects.
 - c. Ability to respond to communication control messages.

Additionally, The Synergy Network Controller provides three of the capabilities associated with B-AAC (BACnet Advanced Application Controller) devices, four of the capabilities associated with B-BC (BACnet Building Controller) devices, and three capabilities associated with B-OWS (BACnet Operator Workstation) devices:

1. Device and Network Management:
 - a. Ability to synchronize its internal clock upon request (B-AAC.)
 - b. Ability to perform re-initialization upon request (B-AAC.)
 - c. Ability to respond to Read Property Multiple requests (B-AAC.)
 - d. Ability to retrieve the values of BACnet objects from other devices (B-BC.)
 - e. Ability to modify some BACnet objects in other devices (B-BC.)
 - f. Ability to dynamically bind with other devices (B-BC.)
 - g. Ability to dynamically bind with objects in other devices (B-BC.)
 - h. Ability to synchronize the time in devices across the BACnet inter-network (B-OWS.)
 - i. Ability to cause a remote device to reinitialize itself (B-OWS.)
 - j. Ability to silence a device on the network that is transmitting erroneous data (B-OWS.)

List all BACnet Interoperability Building Blocks Supported (Annex K):

BIBB Name	Description
DS-RP-A	Data Sharing – Read Property – able to transmit it
DS-RP-B	Data Sharing – Read Property – able to reply to it
DS-RPM-B	Data Sharing – Read Property Multiple – able to reply to it
DS-WP-A	Data Sharing – Write Property – able to transmit it
DS-WP-B	Data Sharing – Write Property – able to reply to it
DM-DDB-A	Device Management – Dynamic Device Binding – able to transmit it
DM-DDB-B	Device Management – Dynamic Device Binding – able to reply to it
DM-DOB-A	Device Management – Dynamic Object Binding – able to transmit it
DM-DOB-B	Device Management – Dynamic Object Binding – able to reply to it
DM-TS-A	Device Management – Time Synchronization – able to transmit it
DM-TS-B	Device Management – Time Synchronization – able to reply to it
DM-RD-A	Device Management – Reinitialize Device – able to transmit it
DM-RD-B	Device Management – Reinitialize Device – able to reply to it
DM-DCC-A	Device Management – Device Communication Control – able to transmit
DM-DCC-B	Device Management – Device Communication Control – able to reply to it

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Segmentation Capability:

Segmented requests and responses are both supported with a window size of 16.

Object Types:

Object Type Number	BACnet Object	Synergy Object
0	Analog Input (AI)	Analog Input or Button
1	Analog Output (AO)	Dimmer or Relay
2	Analog Value (AV)	Synergy Group
3	Binary Input (BI)	Switch or Button
4	Binary Output (BO)	Relay or Dimmer
5	Binary Value (BV)	Partition (room divider)
8	Device (D)	Cabinet (one Synergy Network Controller)
10	File (F)	Synergy File

Instance Numbers:

BACnet instance numbers map directly to the Synergy “Hotel” numbering system used to identify inputs and outputs. The Synergy Network Controller is directly connected to 1-16 modules, each of which contains inputs to receive information from the building and outputs to control lighting loads. The module types are relay, dimmer, and SIMPLY5. Each module has an address wheel which is set to a unique (to its Controller) number, 0-15. This number or module ID is the upper two digits of the “Hotel” number. The module’s inputs are numbered sequentially beginning with 1, as are the module’s outputs. These numbers are the lower two digits of the “Hotel” number. For example, if a system has a 8-output relay card at module ID 2, then the “Hotel” numbers corresponding to these outputs are 201, 202, 203, 204, 205, 206, 207 and 208. They may be accessed over BACnet as either AO or BO objects.

DALI-Group instance numbers (3MLGG) are in the inclusive range 30000-39215. The least-significant 4-digits (MLGG) identify the module (M), DALI loop (L), and group number (GG.) The least-significant two digits (GG) are the group number which is always in the inclusive range 0-15 (16 groups per loop.) The next most significant digit (L) identifies which of the three loops the group is on. The inclusive range for the loop number is 0-2. The next most significant digit (M) is the module address. Because there is only one digit for the DALI Module's address, it must be set to a value in the inclusive range 0-9.

DALI instance numbers (2MLPP) are in the inclusive range 20000-29263. The least-significant 4-digits (MLPP) identify the module (M), DALI loop (L), and point number (PP.) The least-significant two digits (PP) are the point number which is always in the inclusive range 0-63 (64 points per loop.) The next most significant digit (L) identifies which of the three loops the point is on. The inclusive range for the loop number is 0-2. The next most significant digit (M) is the module address. Because there is only one digit for the DALI Module's address, it must be set to a value in the inclusive range 0-9.

Legacy dimmer (maxstar) instance numbers (1MPPP) are in the inclusive range 10000-13999. The least-significant 4-digits (MPPP) identify the module (M) and the point number (PPP.) The least-significant 3-digits (PPP) are the point number which is always in the inclusive range 0-999. The next most significant digit (M) is the module address. Legacy dimmer (maxstar) module addresses are restricted to the inclusive range 0-3.

Remote Station instance numbers (2000 + SSBB) are in the inclusive range 2000-7999. First subtract 2000 to get a number in the range 0-5999. This is the Remote Station Hotel Number (SSBB). The least-significant two digits (BB) are the button/input number, and the two next most significant digits (SS) are the station number (0-59.)

Relay and Dimmer instance numbers (MMPP) are in the inclusive range 0-1507. The least-significant two digits (PP) are the point number. For relay modules, this is always in the inclusive range 0-7. For dimmer modules, this is always in the inclusive range 0-5. The next two most significant digits (MM) are the module address, which is always limited to the inclusive range 0-15.

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Proprietary Properties:

Property Number	Description	Containing Object(s)
512	Strike_Count	AO, BO
513	Hour_Count	AO, BO
514	Dawn	D
515	Dusk	D
42001	Group_Object_ID	BI
42002	Member_List	AV
42003	Script_Update	F

Priority Values:

Priority	Description
3	On
4	Off
10	Normal (use for nearly all write property actions)
13	Low

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1.1 Analog Input Object Type

The Analog Input object type may be used to control both analog inputs and buttons. Analog inputs may be various types of sensors that are directly connected to inputs on a module. The instance number for the analog input will be the “Hotel” number for the module’s input. Buttons always refer to Remote Station buttons. The instance number for the button is 2000 plus the “Hotel” number. In this particular case, remote stations have unique (to the Controller) addresses in the range 0-15. This is the upper two digits of the “Hotel” number. On the individual remote station the buttons are usually numbered left-to-right, top-to-bottom, starting with one. For example, button 1 of Remote Station 3 has 301 as its “Hotel” number, and 2301 as its instance number.

Table 1-1. Properties of the Analog Input Object Type

Property Identifier	Property Data Type	Access
Object_Identifier (75)	BACnetObjectIdentifier	Read
Object_Name (77)	CharacterString	Read
Object_Type (79)	BACnetObjectType	Read
Present_Value (85)	REAL	Read/Write
Description (28)	CharacterString	Read/Write
Device_Type (31)	CharacterString	Not Supported
Status_Flags (111)	BACnetStatusFlags	Read
Event_State (36)	BACnetEventState	Read
Reliability (103)	BACnetReliability	Read
Out_Of_Service (81)	BOOLEAN	Read
Update_Interval (118)	Unsigned	Not Supported
Units (117)	BACnetEngineeringUnits	Read
Min_Pres_Value (69)	REAL	Not Supported
Max_Pres_Value (65)	REAL	Not Supported
Resolution (106)	REAL	Not Supported
COV_Increment (22)	REAL	Not Supported
Time_Delay (113)	Unsigned	Not Supported
Notification_Class (17)	Unsigned	Not Supported
High_Limit (45)	REAL	Not Supported
Low_Limit (59)	REAL	Not Supported
Deadband (25)	REAL	Not Supported
Limit_Enable (52)	BACnetLimitEnable	Not Supported
Event_Enable (35)	BACnetEventTransitionBits	Not Supported
Acked_Transitions (0)	BACnetEventTransitionBits	Not Supported
Notify_Type (72)	BACnetNotifyType	Not Supported
Event_Time_Stamps (130)	BACnetARRAY[3] of BACnetTimeStamp	Not Supported
Profile_Name (168)	CharacterString	Not Supported

1.1.1 Object_Identifier (75)

It is composed from the object type (Analog-Input [0]), and the instance number. Analog inputs may be various types of sensors that are directly connected to inputs on a module. The instance number for the analog input will be the “Hotel” number for the module’s input. Buttons always refer to Remote Station buttons. The instance number for the button is 2000 plus the “Hotel” number. In this particular case, remote stations have unique (to the Controller) addresses in the range 0-15. This is the upper two digits of the “Hotel” number. On the individual remote station the buttons are usually numbered left-to-right, top-to-bottom, starting with one. For example, button 1 of Remote Station 3 has 301 as its “Hotel” number, and 2301 as its instance number.

1.1.2 Object_Name (77)

All Analog Input objects have “ANALOG” as the first part of its name, even if they are actually buttons. The second part of the name is the “Hotel” number, as described above.

1.1.3 Object_Type (79)

Always ANALOG_INPUT.

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1.1.4 Present_Value (85)

The range of Present_Value is restricted to 0.0 thru 100.0 in steps of 1.0. For this use case the implied units are percent.

1.1.5 Description (28)

The value is constrained to 1-40 characters, the first character must be printable, and the NULL/empty string is not allowed.
The default description of analog inputs is the same as the object name, but buttons have no default description.

1.1.6 Device_Type (31)

Not Supported.

1.1.7 Status_Flags (111)

The four flags are

{IN_ALARM, FAULT, OVERRIDDEN, OUT_OF_SERVICE}

Where:

IN_ALARM	Always FALSE (normal.)
FAULT	TRUE if the card (module) or remote station is offline. It is FALSE otherwise.
OVERRIDDEN	Always FALSE (normal.)
OUT_OF_SERVICE	Always FALSE (normal.)

1.1.8 Event_State (36)

The Event_State is always NORMAL.

1.1.9 Reliability (103)

The Reliability property is 1) NO_SENSOR if the input is offline, or 2) NO_FAULT_DETECTED otherwise.

1.1.10 Out_Of_Service (81)

Always FALSE.

1.1.11 Update_Interval (118)

Not Supported.

1.1.12 Units (117)

Always percent.

1.1.13 Min_Pres_Value (69)

Not Supported.

1.1.14 Max_Pres_Value (65)

Not Supported.

1.1.15 Resolution (106)

Not Supported.

1.1.16 COV_Increment (22)

Not Supported.

1.1.17 Time_Delay (113)

Not Supported.

1.1.18 Notification_Class (17)

Not Supported.

1.1.19 High_Limit (45)

Not Supported.

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1.1.20 Low_Limit (59)

Not Supported.

1.1.21 Deadband (25)

Not Supported.

1.1.22 Limit_Enable (52)

Not Supported.

1.1.23 Event_Enable (35)

Not Supported.

1.1.24 Acked_Transitions (0)

Not Supported.

1.1.25 Notify_Type (72)

Not Supported.

1.1.26 Event_Time_Stamps (130)

Not Supported.

1.1.27 Profile_Name (168)

Not Supported.

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1.2 Analog Output Object Type

The Analog Output object type may be used to control both dimmers and relays. The instance number for both dimmers and relays will be the “Hotel” number for the module’s output. The instance number for Maxstar dimmers is 10000 plus the “Hotel” number. The instance number for SIMPLY5 dimmers is 20000 plus the “Hotel” number. The instance number for SIMPLY5-Group dimmers is 30000 plus the “Hotel” number.

Table 1-2. Properties of the Analog Output Object Type

Property Identifier	Property Data Type	Access
Object_Identifier (75)	BACnetObjectIdentifier	Read/Write
Object_Name (77)	CharacterString	Read
Object_Type (79)	BACnetObjectType	Read
Present_Value (85)	REAL	Read/Write
Description (28)	CharacterString	Read/Write
Device_Type (31)	CharacterString	Not Supported
Status_Flags (111)	BACnetStatusFlags	Read
Event_State (36)	BACnetEventState	Read
Reliability (103)	BACnetReliability	Read
Out_Of_Service (81)	BOOLEAN	Read
Units (117)	BACnetEngineeringUnits	Read
Min_Pres_Value (69)	REAL	Read/Write
Max_Pres_Value (65)	REAL	Read/Write
Resolution (106)	REAL	Not Supported
Priority_Array (87)	BACnetPriorityArray	Read
Relinquish_Default (104)	REAL	Read
COV_Increment (22)	REAL	Not Supported
Time_Delay (113)	Unsigned	Not Supported
Notification_Class (17)	Unsigned	Not Supported
High_Limit (45)	REAL	Not Supported
Low_Limit (59)	REAL	Not Supported
Deadband (25)	REAL	Not Supported
Limit_Enable (52)	BACnetLimitEnable	Not Supported
Event_Enable (35)	BACnetEventTransitionBits	Not Supported
Acked_Transitions (0)	BACnetEventTransitionBits	Not Supported
Notify_Type (72)	BACnetNotifyType	Not Supported
Event_Time_Stamps (130)	BACnetARRAY[3] of BACnetTimeStamp	Not Supported
Profile_Name (168)	CharacterString	Not Supported
Strike_Count (512)	REAL	Read/Write
Hour_Count (513)	REAL	Read/Write

1.2.1 Object_Identifier (75)

It is composed from the object type (Analog-Output [1]), and the instance number. The instance number for both dimmers and relays will be the “Hotel” number for the module’s output. The instance number for Maxstar dimmers is 10000 plus the “Hotel” number. The instance number for SIMPLY5 dimmers is 20000 plus the “Hotel” number. The instance number for SIMPLY5-Group dimmers is 30000 plus the “Hotel” number. When this property is written, and the object instance is a SIMPLY5 dimmer, the write action will renumber the SIMPLY5 dimmer (reposition it within the SIMPLY5 loop it belongs to.)

1.2.2 Object_Name (77)

All Analog Output objects have “DIMMER” as the first part of its name, even if they are actually relays. The second part of the name is the “Hotel” number, as described above.

1.2.3 Object_Type (79)

Always ANALOG_OUTPUT.

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1.2.4 Present_Value (85, Commandable)

*The range of Present_Value is restricted to 0.0 thru 100.0 in steps of 1.0. For this use case the implied units are percent. 0.0 is “OFF” and relinquish. 1.0 is “OFF” without relinquish. 100.0 is “ON.” Special values for present value that are greater than 100.0, have no implied units, and are commands or level/fade combined into one value. 128.0 = STOP, 129.0 = LOWER, 130.0 = RAISE, 131.0 = BLINK, FLASH=132.0 (SIMPLY5 dimmer only), 255 = RELINQUISH, FADE = (1000.0 * fade + level), with fade represented in tenths of seconds (e.g. 3 seconds is represented as 30.)*

1.2.5 Description (28)

The value is constrained to 1-40 characters, the first character must be printable, and the NULL/empty string is not allowed.
The default description of dimmers is the same as the object name, but relays begin with “Relay” instead.

1.2.6 Device_Type (31)

Not Supported.

1.2.7 Status_Flags (111)

The four flags are

{IN_ALARM, FAULT, OVERRIDDEN, OUT_OF_SERVICE}

Where:

<i>IN_ALARM</i>	<i>Always FALSE (normal.)</i>
<i>FAULT</i>	<i>TRUE if 1) the breaker card output is missing or offline, 2) a SIMPLY5 dimmer has a lamp failure, or 3) the breaker card output has tripped. It is FALSE otherwise.</i>
<i>OVERRIDDEN</i>	<i>TRUE if the Module override switch is in either the “OFF” or “ON” positions. FALSE when the Module override switch is in the “NORMAL” (middle) position.</i>

OUT_OF_SERVICE Always FALSE (normal.)

1.2.8 Event_State (36)

The Event_State is FAULT if 1) the breaker card output is missing or offline, 2) a SIMPLY5 dimmer has a lamp failure, or 3) the breaker card output has tripped. It is NORMAL otherwise.

1.2.9 Reliability (103)

The Reliability property is 1) NO_OUTPUT if the breaker card output is missing or offline, 2) UNRELIABLE_OTHER if a SIMPLY5 dimmer has a lamp failure, or if the breaker card output has tripped, or 3) NO_FAULT_DETECTED otherwise.

1.2.10 Out_Of_Service (81)

Always FALSE.

1.2.11 Units (117)

Always percent.

1.2.12 Min_Pres_Value (69, Low_Set –or- Threshold)

For Analog Output objects representing dimmers, this value indicates the lowest number that can be used for the Present_Value property of this object. For Analog Output objects representing relays, this is the value (Threshold) above which the relay is “ON”, and at or below which it is “OFF.”

1.2.13 Max_Pres_Value (65, Hi_Set)

For Analog Output objects representing dimmers, this value indicates the highest number that can be used for the Present_Value property of this object. This property is not valid for Analog Output objects that represent relays. For example, Dimmer 105 has a Max_Pres_Value of 50, meaning its maximum brightness is 50%.

1.2.14 Resolution (106)

Not Supported.

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1.2.15 Priority_Array (87)

This property is a read-only array of prioritized values. Synergy recognizes specific local priorities:

PRIORITY_ON = 3; Will relinquish when 0.0 ("OFF") is sent to Present_Value.

PRIORITY_OFF = 4; Will relinquish when 100.0 ("ON") is sent to Present_Value.

PRIORITY_MANUAL_OPERATION = 8; only used with Flash-To-Find; Will relinquish on deactivate.

PRIORITY_NORMAL_OPERATION = 10; Will relinquish when 0.0 ("OFF") is sent to Present_Value.

PRIORITY_LOW = 13; Will relinquish when 0.0 ("OFF") is sent to Present_Value.

1.2.16 Relinquish_Default (104)

Always 0.0.

1.2.17 COV_Increment (22)

Not Supported.

1.2.18 Time_Delay (113)

Not Supported.

1.2.19 Notification_Class (17)

Not Supported.

1.2.20 High_Limit (45)

Not Supported.

1.2.21 Low_Limit (59)

Not Supported.

1.2.22 Deadband (25)

Not Supported.

1.2.23 Limit_Enable (52)

Not Supported.

1.2.24 Event_Enable (35)

Not Supported.

1.2.25 Acked_Transitions (0)

Not Supported.

1.2.26 Notify_Type (72)

Not Supported.

1.2.27 Event_Time_Stamps (130)

Not Supported.

1.2.28 Profile_Name (168)

Not Supported.

1.2.29 Strike_Count

Reading this property returns the number of "OFF" to "ON" transitions. Writing this property with any valid value resets both Strike_Count and Hour_Count to zero.

1.2.30 Hour_Count

Reading this property returns the number of hours the Present_Value is "ON". Writing this property with any valid value resets both Strike_Count and Hour_Count to zero.

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1.3 Analog Value Object Type

The Analog Value object represents a Synergy Group. Synergy Groups are used to organize lighting loads into logical zones for more convenient operation and programming. Relays and/or dimmers put into a Synergy Group may be acted upon collectively with a single action. As an example, the corridor lighting in a building might be connected to several relays. If these relays are combined into a Group in the Synergy controller configuration, it will require reading/writing only a single point to control and monitor the corridor lighting. When writing to a Group, the Present_Value and Priority are passed on to all members of the group. The instance number for the Synergy Group will be directly related to the “Hotel” number for the output or set of outputs that belong to the group. For example, by default dimmers 101 thru 103 are in group 101.

Table 1-3. Properties of the Analog Value Object Type

Property Identifier	Property Data Type	Access
Object_Identifier (75)	BACnetObjectIdentifier	Read
Object_Name (77)	CharacterString	Read
Object_Type (79)	BACnetObjectType	Read
Present_Value (85)	REAL	Read/Write
Description (28)	CharacterString	Read/Write
Status_Flags (111)	BACnetStatusFlags	Read
Event_State (36)	BACnetEventState	Read
Reliability (103)	BACnetReliability	Read
Out_Of_Service (81)	BOOLEAN	Read
Units (117)	BACnetEngineeringUnits	Read
Priority_Array (87)	BACnetPriorityArray	Read
Relinquish_Default (104)	REAL	Read
COV_Increment (22)	REAL	Not Supported
Time_Delay (113)	Unsigned	Not Supported
Notification_Class (17)	Unsigned	Not Supported
High_Limit (45)	REAL	Not Supported
Low_Limit (59)	REAL	Not Supported
Deadband (25)	REAL	Not Supported
Limit_Enable (22)	BACnetLimitEnable	Not Supported
Event_Enable (35)	BACnetEventTransitionBits	Not Supported
Acked_Transitions (0)	BACnetEventTransitionBits	Not Supported
Notify_Type (72)	BACnetNotifyType	Not Supported
Event_Time_Stamps (130)	BACnetARRAY[3] of BACnetTimeStamp	Not Supported
Profile_Name (168)	CharacterString	Not Supported
Member_List (42002)	BACnetARRAY[n] of Unsigned	Read/Write

1.3.1 Object_Identifier (75)

It is composed from the object type (Analog-Value [2]), and the instance number. The instance number for the Synergy Group will be directly related to the “Hotel” number for the output or set of outputs that belong to the group. For example, by default dimmers 101 thru 103 are in group 101.

1.3.2 Object_Name (77)

All Analog Value objects have “GROUP” as the first part of their name. The second part of the name is the “Hotel” number, as described above.

1.3.3 Object_Type (79)

Always ANALOG_VALUE.

1.3.4 Present_Value (85, Commandable)

The range of Present_Value is restricted to 0.0 thru 100.0 in steps of 1.0. For this use case the implied units are percent. 0.0 is “OFF” and relinquish. 1.0 is “OFF” without relinquish. 100.0 is “ON.” Special values for present value that are greater than 100.0, have no implied units, and are commands or level/fade combined into one value. 128.0 = STOP, 129.0 =

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*LOWER, 130.0 = RAISE, 131.0 = BLINK, 255 = RELINQUISH, FADE = (1000.0 * fade + level), with fade represented in tenths of seconds (e.g. 3 seconds is represented as 30.)*

1.3.5 Description (28)

The value is constrained to 1-40 characters, the first character must be printable, and the NULL/empty string is not allowed.
The default description of groups and sub-groups controlled by Remote Station preset buttons is empty. The default description of Group 0 is "All Outputs", and the descriptions of all other groups is the same as the object name.

1.3.6 Status_Flags (111)

The four flags are

{IN_ALARM, FAULT, OVERRIDDEN, OUT_OF_SERVICE}

Where:

<i>IN_ALARM</i>	<i>Always FALSE (normal.)</i>
<i>FAULT</i>	<i>Always FALSE (normal.)</i>
<i>OVERRIDDEN</i>	<i>Always FALSE (normal.)</i>
<i>OUT_OF_SERVICE</i>	<i>Always FALSE (normal.)</i>

1.3.7 Event_State (36)

Always NORMAL.

1.3.8 Reliability (103)

Always NO_FAULT_DETECTED.

1.3.9 Out_Of_Service (81)

Always FALSE.

1.3.10 Units (117)

Always percent.

1.3.11 Priority_Array (87)

This property is a read-only array of prioritized values. Synergy recognizes specific local priorities:

PRIORITY_ON = 3; Will relinquish when 0.0 ("OFF") is sent to Present_Value.

PRIORITY_OFF = 4; Will relinquish when 100.0 ("ON") is sent to Present_Value.

PRIORITY_MANUAL_OPERATION = 8; only used with Flash-To-Find; Will relinquish on deactivate.

PRIORITY_NORMAL_OPERATION = 10; Will relinquish when 0.0 ("OFF") is sent to Present_Value.

PRIORITY_LOW = 13; Will relinquish when 0.0 ("OFF") is sent to Present_Value.

1.3.12 Relinquish_Default (104)

Always 0.0.

1.3.13 COV_Increment (22)

Not Supported.

1.3.14 Time_Delay (113)

Not Supported.

1.3.15 Notification_Class (17)

Not Supported.

1.3.16 High_Limit (45)

Not Supported.

1.3.17 Low_Limit (59)

Not Supported.

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1.3.18 Deadband (25)

Not Supported.

1.3.19 Limit_Enable (52)

Not Supported.

1.3.20 Event_Enable (35)

Not Supported.

1.3.21 Acked_Transitions (0)

Not Supported.

1.3.22 Notify_Type (72)

Not Supported.

1.3.23 Event_Time_Stamps (130)

Not Supported.

1.3.24 Profile_Name (168)

Not Supported.

1.3.25 Member_List (42002)

This property can be used to update an existing group member, delete an existing group member, append a new group member, delete all group members, and replace all group members. Each member has five unsigned values:

- 1. device_id – range 0-419403, with zero representing a local device. All other values represent remote devices.*
- 2. object_type – legal values are:*
 - 1=AO – SIMPLY5, SIMPLY5_GROUP, DIMMER, MAXSTAR, or RELAY*
 - 2=AV – GROUP*
 - 4=BO – SIMPLY5, SIMPLY5_GROUP, DIMMER, MAXSTAR, or RELAY*
 - 5=BV – PARTITION*
- 3. instance_number – range depends on object type:*
 - When object_type is 1 (AO) or 4 (BO):*
 - 0-9999 for DIMMER or RELAY*
 - 10000-19999 for MAXSTAR*
 - 20000-29999 for SIMPLY5*
 - 30000-39999 for SIMPLY5_GROUP*
- 4. level – range is 0-100 percent*
- 5. fade_time – range is 0-6039 (00:00-99:99)*

Taken together, these five values represent all the properties of one member (as specified by Array-Index) of the group specified by the AV objects instance number.

For example, if property 42002 of instance 2101 of an AV object contains these values:

{0,2,2117,74,0,0,2,2118,43,0,0,2,2119,20,0}

Then group 2101 has three members: groups 2117-2119. All the members are local, and all the members have a fade_time of zero. Each member has a unique level.

Capabilities and features highlighted in yellow are not available in production releases 2.71 or earlier.

1.4 Binary Input Object Type

The Binary Input object type may be used to control Synergy switches and buttons. Switches may be various types of momentary or latching contactors that are connected directly to inputs on a module. The instance number for the switch will be the “Hotel” number for the module’s input. Buttons always refer to Remote Station buttons. The instance number for the button is 2000 plus the “Hotel” number. In this particular case, remote stations have unique (to the Controller) addresses in the range 0-15. This is the upper two digits of the “Hotel” number. On the individual remote station the buttons are usually numbered left-to-right, top-to-bottom, starting with one. For example, button 1 of Remote Station 3 has 301 as its “Hotel” number, and 2301 as its instance number.

Table 1-4. Properties of the Binary Input Object Type

Property Identifier	Property Data Type	Access
Object_Identifier (75)	BACnetObjectIdentifier	Read
Object_Name (77)	CharacterString	Read
Object_Type (79)	BACnetObjectType	Read
Present_Value (85)	BACnetBinaryPV	Read/Write
Description (28)	CharacterString	Read/Write
Device_Type (31)	CharacterString	Read/Write
Status_Flags (111)	BACnetStatusFlags	Read
Event_State (36)	BACnetEventState	Read
Reliability (103)	BACnetReliability	Read
Out_Of_Service (81)	BOOLEAN	Read
Polarity (84)	BACnetPolarity	Read
Inactive_Text (46)	CharacterString	Not Supported
Active_Text (4)	CharacterString	Not Supported
Change_Of_State_Time (16)	BACnetDateTime	Not Supported
Change_Of_State_Count (15)	Unsigned	Not Supported
Time_Of_State_Count_Reset (115)	BACnetDateTime	Not Supported
Elapsed_Active_Time (33)	Unsigned32	Not Supported
Time_Of_Active_Time_Reset (114)	BACnetDateTime	Not Supported
Time_Delay (113)	Unsigned	Not Supported
Notification_Class (17)	Unsigned	Not Supported
Alarm_Value (6)	BACnetBinaryPV	Not Supported
Event_Enable (35)	BACnetEventTransitionBits	Not Supported
Acked_Transitions (0)	BACnetEventTransitionBits	Not Supported
Notify_Type (72)	BACnetNotifyType	Not Supported
Event_Time_Stamps (130)	BACnetARRAY[3] of BACnetTimeStamp	Not Supported
Group_Object_ID (42001)	BACnetObjectType	Read/Write

1.4.1 Object_Identifier (75)

It is composed from the object type (Binary-Input [3]), and the instance number. Switches may be various types of momentary or latching contactors that are connected directly to inputs on a module. The instance number for the switch will be the “Hotel” number for the module’s input. Buttons always refer to Remote Station buttons. The instance number for the button is 2000 plus the “Hotel” number. In this particular case, remote stations have unique (to the Controller) addresses in the range 0-15. This is the upper two digits of the “Hotel” number. On the individual remote station the buttons are usually numbered left-to-right, top-to-bottom, starting with one. For example, button 1 of Remote Station 3 has 301 as its “Hotel” number, and 2301 as its instance number.

1.4.2 Object_Name (77)

Any switch or button that is addressed as a Binary Input has “SWITCH” as the first part of its name. The second part of the name is the “Hotel” number, as described above.

1.4.3 Object_Type (79)

Always *BINARY_INPUT*.

Capabilities and features **highlighted in yellow** are not available in production releases 2.71 or earlier.

1.4.4 Present_Value (85)

Present_Value is "INACTIVE" (0, "OFF") or "ACTIVE" (1, "ON").

1.4.5 Description (28)

The value is constrained to 1-40 characters, the first character must be printable, and the NULL/empty string is not allowed.
The default description of Remote Station buttons is empty. The description of switches is the same as the object name.

1.4.6 Device_Type (31)

For buttons, the legal values are: "ALTERNATE", "DISABLED", "LATCH", "MAINTAIN", "MASTER_LOWER", "MASTER_OFF", "MASTER_ON", "MASTER_RAISE", "OFF", "ON", "RAMPDOWN", "RAMPING", and "RAMPUP".
For switches, the legal values are: "DISABLED", "LATCH", "MAINTAIN", "RAMPING", "TOGGLE".

1.4.7 Status_Flags (111)

The four flags are

{IN_ALARM, FAULT, OVERRIDDEN, OUT_OF_SERVICE}

Where:

<i>IN_ALARM</i>	Always FALSE (normal.)
<i>FAULT</i>	TRUE if 1) the input (or Remote Station) is offline or 2) the pilot is shorted.
<i>OVERRIDDEN</i>	Always FALSE (normal.)
<i>OUT_OF_SERVICE</i>	Always FALSE (normal.)

1.4.8 Event_State (36)

Always NORMAL.

1.4.9 Reliability (103)

If the pilot is shorted, the value is "UNRELIABLE-OTHER." If the input (or Remote Station) is offline, the value is "NO-SENSOR." Otherwise, the value is "NO-FAULT-DETECTED."

1.4.10 Out_Of_Service (81)

Always FALSE.

1.4.11 Polarity (84)

Always NORMAL.

1.4.12 Inactive_Text (46)

Not Supported.

1.4.13 Active_Text (4)

Not Supported.

1.4.14 Change_Of_State_Time (16)

Not Supported.

1.4.15 Change_Of_State_Count (15)

Not Supported.

1.4.16 Time_Of_State_Count_Reset (115)

Not Supported.

1.4.17 Elapsed_Active_Time (33)

Not Supported.

1.4.18 Time_Of_Active_Time_Reset (114)

Not Supported.

Capabilities and features **highlighted in yellow** are not available in production releases 2.71 or earlier.

1.4.19 Time_Delay (113)

Not Supported.

1.4.20 Notification_Class (17)

Not Supported.

1.4.21 Alarm_Value (6)

Not Supported.

1.4.22 Event_Enable (35)

Not Supported.

1.4.23 Acked_Transitions (0)

Not Supported.

1.4.24 Notify_Type (72)

Not Supported.

1.4.25 Event_Time_Stamps (130)

Not Supported.

1.4.26 Profile_Name (168)

Not Supported.

1.4.27 Group_Object_ID (42001)

An Object Identifier for an Analog Value object with an instance number in the range 0-9999 that represents the Synergy group number this switch or button controls. The only supported object type is Analog-Value [5].

When this property is read, the returned data type is NULL if the property has no value. Otherwise, the data type is Object-Identifier, the object type is Analog-Value [5], and the instance number (group number) is in the range of 0-9999. When this property is written, the object type must be Analog-Value, and the instance number must be in the range 0-9999. If the group doesn't exist, it is created.

Capabilities and features highlighted in yellow are not available in production releases 2.71 or earlier.

1.5 Binary Output Object Type

The Binary Output object type may be used to control both dimmers and relays. The instance number for both dimmers and relays will be the “Hotel” number for the module’s output. The instance number for Maxstar dimmers is 10000 plus the “Hotel” number. The instance number for SIMPLY5 dimmers is 20000 plus the “Hotel” number. The instance number for SIMPLY5-Group dimmers is 30000 plus the “Hotel” number.

Table 1-5. Properties of the Binary Output Object Type

Property Identifier	Property Data Type	Access
Object_Identifier (75)	BACnetObjectIdentifier	Read/Write
Object_Name (77)	CharacterString	Read
Object_Type (79)	BACnetObjectType	Read
Present_Value (85)	BACnetBinaryPV	Read/Write
Description (28)	CharacterString	Read/Write
Device_Type (31)	CharacterString	Not Supported
Status_Flags (111)	BACnetStatusFlags	Read
Event_State (36)	BACnetEventState	Read
Reliability (103)	BACnetReliability	Read
Out_Of_Service (81)	BOOLEAN	Read
Polarity (84)	BACnetPolarity	Read
Inactive_Text (46)	CharacterString	Not Supported
Active_Text (4)	CharacterString	Not Supported
Change_Of_State_Time (16)	BACnetDateTime	Not Supported
Change_Of_State_Count (15)	Unsigned	Not Supported
Time_Of_State_Count_Reset (115)	BACnetDateTime	Not Supported
Elapsed_Active_Time (33)	Unsigned32	Not Supported
Time_Of_Active_Time_Reset (114)	BACnetDateTime	Not Supported
Minimum_Off_Time (66)	Unsigned32	Not Supported
Minimum_On_Time (67)	Unsigned32	Not Supported
Priority_Array (87)	BACnetPriorityArray	Read
Relinquish_Default (104)	BACnetBinaryPV	Read
Time_Delay (113)	Unsigned	Not Supported
Notification_Class (17)	Unsigned	Not Supported
Feedback_Value (40)	BACnetBinaryPV	Not Supported
Event_Enable (35)	BACnetEventTransitionBits	Not Supported
Acked_Transitions (0)	BACnetEventTransitionBits	Not Supported
Notify_Type (72)	BACnetNotifyType	Not Supported
Event_Time_Stamps (130)	BACnetARRAY[3] of BACnetTimeStamp	Not Supported
Profile_Name (168)	CharacterString	Not Supported
Strike_Count (512)	REAL	Read/Write
Hour_Count (513)	REAL	Read/Write

Capabilities and features highlighted in yellow are not available in production releases 2.71 or earlier.

1.5.1 Object_Identifier (75)

It is composed from the object type (Binary-Output [4]), and the instance number. The instance number for both dimmers and relays will be the "Hotel" number for the module's output. The instance number for Maxstar dimmers is 10000 plus the "Hotel" number. The instance number for SIMPLY5 dimmers is 20000 plus the "Hotel" number. The instance number for SIMPLY5-Group dimmers is 30000 plus the "Hotel" number. When this property is written, and the object instance owning this property is a SIMPLY5 dimmer, the write action will renumber the SIMPLY5 dimmer (reposition it within the SIMPLY5 loop it belongs to.)

1.5.2 Object_Name (77)

All Analog Output objects have "RELAY" as the first part of its name, even if they are actually dimmers. The second part of the name is the "Hotel" number, as described above.

1.5.3 Object_Type (79)

Always BINARY_OUTPUT.

1.5.4 Present_Value (85, Commandable)

Present_Value is "INACTIVE" (0, "OFF") or "ACTIVE" (1, "ON").

1.5.5 Description (28)

The value is constrained to 1-40 characters, the first character must be printable, and the NULL/empty string is not allowed. The default description of relays is the same as the object name. For dimmers, the description begins with "Dimmer" instead of "Relay."

1.5.6 Device_Type (31)

Not Supported.

1.5.7 Status_Flags (111)

The four flags are

{IN_ALARM, FAULT, OVERRIDDEN, OUT_OF_SERVICE}

Where:

<i>IN_ALARM</i>	<i>Always FALSE (normal.)</i>
<i>FAULT</i>	<i>TRUE if 1) the breaker card output is missing or offline, 2) a SIMPLY5 dimmer has a lamp failure, or 3) the breaker card output has tripped. It is FALSE otherwise.</i>
<i>OVERRIDDEN</i>	<i>TRUE if the Module override switch is in either the "OFF" or "ON" positions. FALSE when the Module override switch is in the "NORMAL" (middle) position.</i>
<i>OUT_OF_SERVICE</i>	<i>Always FALSE (normal.)</i>

1.5.8 Event_State (36)

The Event_State is FAULT if 1) the breaker card output is missing or offline, 2) a SIMPLY5 dimmer has a lamp failure, or 3) the breaker card output has tripped. It is NORMAL otherwise.

1.5.9 Reliability (103)

The Reliability property is 1) NO_OUTPUT if the breaker card output is missing or offline, 2) UNRELIABLE_OTHER if a SIMPLY5 dimmer has a lamp failure, or if the breaker card output has tripped, or 3) NO_FAULT_DETECTED otherwise.

1.5.10 Out_Of_Service (81)

Always FALSE.

1.5.11 Polarity (84)

Always NORMAL.

Capabilities and features **highlighted in yellow** are not available in production releases 2.71 or earlier.

1.5.12 Inactive_Text (46)

Not Supported.

1.5.13 Active_Text (4)

Not Supported.

1.5.14 Change_Of_State_Time (16)

Not Supported.

1.5.15 Change_Of_State_Count (15)

Not Supported.

1.5.16 Time_Of_State_Count_Reset (115)

Not Supported.

1.5.17 Elapsed_Active_Time (33)

Not Supported.

1.5.18 Time_Of_Active_Time_Reset (114)

Not Supported.

1.5.19 Minimum_Off_Time (66)

Not Supported.

1.5.20 Minimum_On_Time (67)

Not Supported.

1.5.21 Priority_Array (87)

This property is a read-only array of prioritized values. Synergy recognizes specific local priorities:

PRIORITY_ON = 3; Will relinquish when 0.0 ("OFF") is sent to Present_Value.

PRIORITY_OFF = 4; Will relinquish when 100.0 ("ON") is sent to Present_Value.

PRIORITY_MANUAL_OPERATION = 8; only used with Flash-To-Find; Will relinquish on deactivate.

PRIORITY_NORMAL_OPERATION = 10; Will relinquish when 0.0 ("OFF") is sent to Present_Value.

PRIORITY_LOW = 13; Will relinquish when 0.0 ("OFF") is sent to Present_Value.

1.5.22 Relinquish_Default (104)

Always inactive (0, "OFF".)

1.5.23 Time_Delay (113)

Not Supported.

1.5.24 Notification_Class (17)

Not Supported.

1.5.25 Feedback_Value (40)

Not Supported.

1.5.26 Event_Enable (35)

Not Supported.

1.5.27 Acked_Transitions (0)

Not Supported.

1.5.28 Notify_Type (72)

Not Supported.

Capabilities and features **highlighted in yellow** are not available in production releases 2.71 or earlier.

1.5.29 Event_Time_Stamps (130)

Not Supported.

1.5.30 Profile_Name (168)

Not Supported.

1.5.31 Strike_Count (512)

Reading this property returns the number of “OFF” to “ON” transitions. Writing this property with any valid value resets both Strike_Count and Hour_Count to zero.

1.5.32 Hour_Count (513)

Reading this property returns the number of hours the Present_Value is “ON”. Writing this property with any valid value resets both Strike_Count and Hour_Count to zero.

Capabilities and features highlighted in yellow are not available in production releases 2.71 or earlier.

1.6 Binary Value Object Type

The Binary Value object type may be used to control partitions (room dividers.) By default, instance numbers for partitions begin with 1 and go up to 11. Partitions are control points (they don't exist in the physical world.) Typically one or more partitions are in a group, and that group is controlled by a maintained input (a sensor or switch.)

Table 1-6. Properties of the Binary Value Object Type

Property Identifier	Property Data Type	Access
Object_Identifier (75)	BACnetObjectIdentifier	Read/Write
Object_Name (77)	CharacterString	Read
Object_Type (79)	BACnetObjectType	Read
Present_Value (85)	BACnetBinaryPV	Read/Write
Description (28)	CharacterString	Read/Write
Status_Flags (111)	BACnetStatusFlags	Read
Event_State (36)	BACnetEventState	Read
Reliability (103)	BACnetReliability	Read
Out_Of_Service (81)	BOOLEAN	Read
Inactive_Text (46)	CharacterString	Not Supported
Active_Text (4)	CharacterString	Not Supported
Change_Of_State_Time (16)	BACnetDateTime	Not Supported
Change_Of_State_Count (15)	Unsigned	Not Supported
Time_Of_State_Count_Reset (115)	BACnetDateTime	Not Supported
Elapsed_Active_Time (33)	Unsigned32	Not Supported
Time_Of_Active_Time_Reset (114)	BACnetDateTime	Not Supported
Minimum_Off_Time (66)	Unsigned32	Not Supported
Minimum_On_Time (67)	Unsigned32	Not Supported
Priority_Array (87)	BACnetPriorityArray	Read
Relinquish_Default (104)	BACnetBinaryPV	Read
Time_Delay (113)	Unsigned	Not Supported
Notification_Class (17)	Unsigned	Not Supported
Alarm_Value (6)	BACnetBinaryPV	Not Supported
Event_Enable (35)	BACnetEventTransitionBits	Not Supported
Acked_Transitions (0)	BACnetEventTransitionBits	Not Supported
Notify_Type (72)	BACnetNotifyType	Not Supported
Event_Time_Stamps (130)	BACnetARRAY[3] of BACnetTimeStamp	Not Supported
Profile_Name (168)	CharacterString	Not Supported

Capabilities and features **highlighted in yellow** are not available in production releases 2.71 or earlier.

1.6.1 Object_Identifier (75)

It is composed from the object type (Binary-Value [5]), and the instance number. Partition instance numbers start with one and go up.

1.6.2 Object_Name (77)

All Binary Value objects have "PARTITION" as the first part of its name. The second part of the name is the partition number, as described above.

1.6.3 Object_Type (79)

Always BINARY_VALUE.

1.6.4 Present_Value (85, Commandable)

Present_Value is "INACTIVE" (0, "OFF") or "ACTIVE" (1, "ON").

1.6.5 Description (28)

The value is constrained to 1-40 characters, the first character must be printable, and the NULL/empty string is not allowed. By default, the description of partitions is empty.

1.6.6 Status_Flags (111)

The four flags are

{IN_ALARM, FAULT, OVERRIDDEN, OUT_OF_SERVICE}

Where:

IN_ALARM	Always FALSE (normal.)
FAULT	Always FALSE (normal.)
OVERRIDDEN	Always FALSE (normal.)
OUT_OF_SERVICE	Always FALSE (normal.)

1.6.7 Event_State (36)

The Event_State is always NORMAL.

1.6.8 Reliability (103)

The Reliability property is always NO_FAULT_DETECTED.

1.6.9 Out_Of_Service (81)

Always FALSE.

1.6.10 Inactive_Text (46)

Not Supported.

1.6.11 Active_Text (4)

Not Supported.

1.6.12 Change_Of_State_Time (16)

Not Supported.

1.6.13 Change_Of_State_Count (15)

Not Supported.

1.6.14 Time_Of_State_Count_Reset (115)

Not Supported.

1.6.15 Elapsed_Active_Time (33)

Not Supported.

Capabilities and features **highlighted in yellow** are not available in production releases 2.71 or earlier.

1.6.16 Time_Of_Active_Time_Reset (114)

Not Supported.

1.6.17 Minimum_Off_Time (66)

Not Supported.

1.6.18 Minimum_On_Time (67)

Not Supported.

1.6.19 Priority_Array (87)

This property is a read-only array of prioritized values. Synergy recognizes specific local priorities:

PRIORITY_ON = 3; Will relinquish when 0.0 ("OFF") is sent to Present_Value.

PRIORITY_OFF = 4; Will relinquish when 100.0 ("ON") is sent to Present_Value.

PRIORITY_MANUAL_OPERATION = 8; only used with Flash-To-Find; Will relinquish on deactivate.

PRIORITY_NORMAL_OPERATION = 10; Will relinquish when 0.0 ("OFF") is sent to Present_Value.

PRIORITY_LOW = 13; Will relinquish when 0.0 ("OFF") is sent to Present_Value.

1.6.20 Relinquish_Default (104)

Always inactive (0, "OFF".)

1.6.21 Time_Delay (113)

Not Supported.

1.6.22 Notification_Class (17)

Not Supported.

1.6.23 Alarm_Value (6)

Not Supported.

1.6.24 Event_Enable (35)

Not Supported.

1.6.25 Acked_Transitions (0)

Not Supported.

1.6.26 Notify_Type (72)

Not Supported.

1.6.27 Event_Time_Stamps (130)

Not Supported.

1.6.28 Profile_Name (168)

Not Supported.

Capabilities and features **highlighted in yellow** are not available in production releases 2.71 or earlier.

1.7 Device Object Type

The Device object type represents the externally visible characteristics of the Synergy Network Controller. The instance number of the device object (one Synergy Network Controller) is always the same as the Controller’s BACnet ID.

Table 1-7. Properties of the Device Object Type

Property Identifier	Property Data Type	Access
Object_Identifier (75)	BACnetObjectIdentifier	Read
Object_Name (77)	CharacterString	Read/Write
Object_Type (79)	BACnetObjectType	Read
System_Status (112)	BACnetDeviceStatus	Read
Vendor_Name (121)	CharacterString	Read
Vendor_Identifier (120)	Unsigned16	Read
Model_Name (70)	CharacterString	Read
Firmware_Revision (44)	CharacterString	Read
Application_Software_Version (12)	CharacterString	Read
Location (58)	CharacterString	Not Supported
Description (28)	CharacterString	Read
Protocol_Version (98)	Unsigned	Read
Protocol_Conformance_Class (95)	Unsigned	Read
Protocol_Revision (139)	Unsigned	Not Supported
Protocol_Services_Supported (97)	BACnetServicesSupported	Read
Protocol_Object_Types_Supported (96)	BACnetObjectTypesSupported	Read
Object_List (76)	BACnetARRAY[N]of BACnetObjectIdentifier	Read
Max_APDU_Length_Accepted (62)	Unsigned	Read
Segmentation_Supported (107)	BACnetSegmentation	Read
Max_Segments_Accepted (167)	Unsigned	Not Supported
VT_Classes_Supported (122)	List of BACnetVTClass	Not Supported
Active_VT_Sessions (5)	List of BACnetVTSession	Not Supported
Local_Time (57)	Time	Read
Local_Date (56)	Date	Read
UTC_Offset (119)	INTEGER	Read
Daylight_Savings_Status (24)	BOOLEAN	Read
APDU_Segment_Timeout (10)	Unsigned	Read
APDU_Timeout (11)	Unsigned	Read
Number_Of_APDU_Retries (73)	Unsigned	Read
List_Of_Session_Keys (55)	List of BACnetSessionKey	Not Supported
Time_Synchronization_Recipients (116)	List of BACnetRecipient	Not Supported
Max_Master (64)	Unsigned(1..127)	Read/Write
Max_Info_Frames (63)	Unsigned	Read/Write
Device_Address_Binding (30)	List of BACnetAddressBinding	Read
Database_Revision (155)	Unsigned	Not Supported
Configuration_Files (154)	BACnetARRAY[N] of BACnetObjectIdentifier	Not Supported
Last_Restore_Time (157)	BACnetTimeStamp	Not Supported
Backup_Failure_Timeout (153)	Unsigned16	Not Supported
Active_COV_Subscriptions (152)	List of BACnetCOVSubscription	Not Supported
Slave_Proxy_Enable (172)	BACnetArray[N] of BOOLEAN	Not Supported
Manual_Slave_Address_Binding (170)	List of BACnetAddressBinding	Not Supported
Auto_Slave_Discovery (169)	BACnetArray[N] of BOOLEAN	Not Supported
Slave_Address_Binding (171)	List of BACnetAddressBinding	Not Supported
Profile_Name (168)	CharacterString	Not Supported
Dawn (514)	Time	Read
Dusk (515)	Time	Read

Capabilities and features **highlighted in yellow** are not available in production releases 2.71 or earlier.

1.7.1 Object_Identifier (75)

It is composed from the object type (Device [8]), and the device's BACnet ID.

1.7.2 Object_Name (77)

The value is constrained to 1-20 characters, the first character must be printable, and the NULL/empty string is not allowed.
Depending on the number of digits in the device's BACnet ID, as many as 17 characters of this value may display on the top line of the Main Screen on the LCD of the Synergy Controller. The default Device object name is "Synergy Controller."

1.7.3 Object_Type (79)

Always DEVICE.

1.7.4 System_Status (112)

Always "OPERATIONAL."

1.7.5 Vendor_Name (121)

Always "Lithonia Lighting, Inc."

1.7.6 Vendor_Identifier (120)

Always 42.

1.7.7 Model_Name (70)

Either "SYSC MLX" (BACnet/IP or BACnet/ARCnet) or "SYSC MSTP" (BACnet/MSTP.)

1.7.8 Firmware_Revision (44)

Always returns the Synergy Network Controller software version number.

1.7.9 Application_Software_Version (12)

Always returns the build date for the Synergy Network Controller software followed by the version number and quantity or bus ID of every active device on the ACCESS.BUS. Because they are listed in bus ID order, the keyboard is always first (ID=0.) The separator between the date and the first device/quantity (and between every following device/quantity) is "..".

1.7.10 Location (58)

Not Supported.

1.7.11 Description (28)

Always "Lighting Controller."

1.7.12 Protocol_Version (98)

Always 1.

1.7.13 Protocol_Conformance_Class (95)

Always 2. From SSPC 135-1995, see clause 22, Table 22-2.

1.7.14 Protocol_Revision (139)

Not Supported.

1.7.15 Protocol_Services_Supported (97)

Always indicates support for these services: atomicReadFile (6), atomicWriteFile (7), readProperty (12), readPropertyMultiple (14), writeProperty (15), deviceCommunicationControl (17), reinitializeDevice (20), i-Am (26), i-Have (27), timeSynchronization (32), who-Has (33), and who-is (34.)

1.7.16 Protocol_Object_Types_Supported (96)

Always indicates support for these objects: analog-input (0), analog-output (1), analog-value (2), binary-input (3), binary-output (4), binary-value (5), device (8), and file (10.)

Capabilities and features **highlighted in yellow** are not available in production releases 2.71 or earlier.

1.7.17 Object_List (76)

Always returns all object identifiers. The list can also be read individually (by array_index.) This size of the object list is directly determined by the content of script.txt when the Controller initialized itself, and by any modules or remote stations added while the Controller is operating.

1.7.18 Max_APDU_Length_Accepted (62)

Always 480.

1.7.19 Segmentation_Supported (107)

Always "SEGMENTED_BOTH."

1.7.20 Max_Segments_Accepted (167)

Not Supported.

1.7.21 VT_Classes_Supported (122)

Not Supported.

1.7.22 Active_VT_Sessions (5)

Not Supported.

1.7.23 Local_Time (57)

Always returns the current time as "hh:mm:ss.000" in 24-hour format.

1.7.24 Local_Date (56)

Returns today's date as "any day of week, Month dd, yyyy" (i.e. "any day of week, September 26, 2008.")

1.7.25 UTC_Offset (119)

Always the returns the UTC offset as minutes.

1.7.26 Daylight_Savings_Status (24)

Returns TRUE when daylight savings time is in effect and FALSE otherwise.

1.7.27 APDU_Segment_Timeout (10)

Always returns the value set in CONFIG.INI, or the default value of 8000 milliseconds.

1.7.28 APDU_Timeout (11)

Always returns the value set in CONFIG.INI, or the default value of 8000 milliseconds.

1.7.29 Number_Of_APDU_Retries (73)

Always returns 3.

1.7.30 List_Of_Session_Keys (55)

Not Supported.

1.7.31 Time_Synchronization_Recipients (116)

Not Supported.

1.7.32 Max_Master (64)

The value is constrained to the range 0-127. The default is 127.

1.7.33 Max_Info_Frames (63)

The value is constrained to the range 1-255. The default is 1.

Capabilities and features **highlighted in yellow** are not available in production releases 2.71 or earlier.

1.7.34 Device_Address_Binding (30)

Always returns NULL (zero entries.)

1.7.35 Database_Revision (155)

Not Supported.

1.7.36 Configuration_Files (154)

Not Supported.

1.7.37 Last_Restore_Time (157)

Not Supported.

1.7.38 Backup_Failure_Timeout (153)

Not Supported.

1.7.39 Active_COV_Subscriptions (152)

Not Supported.

1.7.40 Slave_Proxy_Enable (172)

Not Supported.

1.7.41 Manual_Slave_Address_Binding (170)

Not Supported.

1.7.42 Auto_Slave_Discovery (169)

Not Supported.

1.7.43 Slave_Address_Binding (171)

Not Supported.

1.7.44 Profile_Name (168)

Not Supported.

1.7.45 Dawn (514)

When read, this property always returns the calculated time of sunrise based on the date and location (i.e. "07:28:52.00.")

1.7.46 Dusk (515)

When read, this property always returns the calculated time of sunset based on the date and location (i.e. "19:28:32.00.")

Capabilities and features **highlighted in yellow** are not available in production releases 2.71 or earlier.

1.8 File Object Type

The File object type describes properties of data files that may be accessed using File Services. File instance numbers begin at zero and go up to 109. Each instance number corresponds to a unique file in the Synergy Network Controller.

Table 1-8. Properties of the File Object Type

Property Identifier	Property Data Type	Access
Object_Identifier (75)	BACnetObjectIdentifier	Read
Object_Name (77)	CharacterString	Read
Object_Type (79)	BACnetObjectType	Read
Description (28)	CharacterString	Read
File_Type (43)	CharacterString	Read
File_Size (42)	Unsigned	Read/Write
Modification_Date (71)	BACnetDateTime	Read
Archive (13)	BOOLEAN	Read/Write
Read_Only (99)	BOOLEAN	Read
File_Access_Method (41)	BACnetFileAccessMethod	Read
Record_Count (141)	Unsigned	Not Supported
Profile_Name (168)	CharacterString	Not Supported
Script_Update (42003)	Unsigned	Write-only

1.8.1 Object_Identifier (75)

It is composed of the object type (File [10]), and the file instance number, as listed here:

Instance Number	Filename
0	TEMP.TXT
1	SCRIPT.TXT
2	LOGIC.TXT
3	PASS.BIN
4	LOG.BIN
5	STRIKE.BIN
6	CONFIG.INI
7	SYNERGY.RTB
8	GREET.RIF
9	THANKS.RIF
10	PRIORITY.BIN
11	TASKINFO.DAT
12	LOGIC.TMP
13	LOG.INI
14	LOGIC.BAD
15	SCRIPT.BAD
16	NOTES.TXT
17	GREET.WAV
18	THANKS.WAV
19	REQUEST.WAV
32	GATEWAY.INI
33	GATEWAY.RTB
34	LUTRON.INI
35	PASSWORD.BIN
64	LITE.RTB
100	FILE100
101	FILE101
102	FILE102
103	FILE103
104	FILE104
105	FILE105

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Instance Number	Filename
106	FILE106
107	FILE107
108	FILE108
109	FILE109

1.8.2 Object_Name (77)

All File objects return the name of the file (i.e. "script.txt.")

1.8.3 Object_Type (79)

Always FILE.

1.8.4 Description (28)

By default, the description of files is the same as the object name.

1.8.5 File_Type (43)

Always "DOS FAT16."

1.8.6 File_Size (42)

Always the size of the file in bytes. When written, the file is truncated if the new size is smaller. If the file didn't exist, it is created and will have a size of 0 bytes.

1.8.7 Modification_Date (71)

Always the day, date, and time the file was written to (i.e. "any day of week, September 22, 2008,15:56:32.000.")

1.8.8 Archive (13)

A value of TRUE means this file is marked for (awaiting) backup. Files that have been updated by Synergy return FALSE. If the file has not been rewritten or updated, this property returns TRUE.

1.8.9 Read_Only (99)

Always return FALSE.

1.8.10 File_Access_Method (41)

Always returns "STREAM_ACCESS."

1.8.11 Record_Count (141)

Not Supported.

1.8.12 Profile_Name (168)

Not Supported.

1.8.13 Script_Update (42003)

Writing 1 to instance 1 forces an immediate update of script.txt.

Capabilities and features **highlighted in yellow** are not available in production releases 2.71 or earlier.

Error Messages:

ERROR_CLASS	ERROR_CODE	DESCRIPTION
PROPERTY	INVALID_ARRAY_INDEX	Read a single TUPLE from property 42002 of AV object but the value of array-index is beyond the current size of the group specified by instance_id, or it is beyond the maximum group size specified by the current setting of BACnetMaxGroupSize in CONFIG.INI.
		Wrote an entire array (list of TUPLES) to property 42002 of AV object but the number of TUPLES (members) is larger than the current setting of BACnetMaxGroupSize in CONFIG.INI.
		Wrote a single TUPLE to property 42002 of AV object to add a member to the group, but the group is either at or beyond the maximum group size specified by the current setting of BACnetMaxGroupSize in CONFIG.INI.
		Wrote a single TUPLE to property 42002 of AV object to change a member of the group, but the array-index is greater than the maximum group size specified by the current setting of BACnetMaxGroupSize in CONFIG.INI.
PROPERTY	INVALID_DATA_TYPE	Wrote a value to the Device-Type property of the BI object with a Data-Type of something other than CHARACTER-STRING.
		Wrote a value to the Device-Type property of the BI object with more than one element associated with the property (element_count != 1.)
		Wrote a value to property 42001 of BI object with more than one element associated with the property (element_count != 1.)
		Wrote a value to property 42001 of BI object with a Data-Type that is something other than OBJECT-IDENTIFIER.
		Wrote a value to the Object_Identifier property of an AO or BO object with a Data-Type that is something other than BACnetObjectIdentifier.
		Wrote a value to the Max_Pres_Value property of an AO object with a Data-Type that is something other than REAL.
		Wrote a value to the Min_Pres_Value property of an AO object with a Data-Type that is something other than REAL.
		Wrote a value to array-index 0 of property 42002 of AV object with a Data-Type that is something other than UNSIGNED.
		Wrote a TUPLE to property 42002 of AV object with a Data-Type that is something other than UNSIGNED.
		Wrote a value to property 42003 of F object with a Data-Type that is something other than UNSIGNED.

Capabilities and features **highlighted in yellow** are not available in production releases 2.71 or earlier.

ERROR_CLASS	ERROR_CODE	DESCRIPTION
PROPERTY	INVALID_PARAMETER_TYPE	Wrote a value of BACnetObjectIdentifier to the Object_Identifier property of either an AO or BO object, and the value's object type is different from that of the object being written to.
PROPERTY	INCONSISTENT_PARAMETERS	Wrote one or more TUPLES to property 42002 of AV object but there is either not enough elements, or there are too many elements (must be a multiple of 5.)
		Wrote an UNSIGNED value to array-index 0 of property 42002 of AV object with more than one element associated with the property (element_count != 1.)
		Wrote a NULL Data-Type to array-index 0 of property 42002 of AV object with more than one element associated with the property (element_count != 1.)
PROPERTY	INCONSISTENT_SELECTION_CRITERIA	Wrote a TUPLE to property 42002 of AV object to change an existing group member and device_id, object_id and instance_id (taken together) do not represent the same group member that is specified by array-index.
		Wrote a value of BACnetObjectIdentifier to the Object_Identifier property of either an AO or BO object, and the instance number of both the object being written to and of the value itself, refer to the same SIMPLY5 fixture.
		Wrote a value of BACnetObjectIdentifier to the Object_Identifier property of either an AO or BO object, and the SIMPLY5 fixture represented by this object is not on the same card and/or loop as the SIMPLY5 fixture represented by the value itself.
PROPERTY	NO_OBJS_OF_SPEC_TYPE	Read a TUPLE from property 42002 of AV object but the group specified by instance_id has mysteriously disappeared (deleted by a separate yet concurrent BACnet/keypad/serial command or action.)
		Read the entire array of TUPLES from property 42002 of AV object but one or more members of the group specified by instance_id has mysteriously disappeared (deleted by a separate yet concurrent BACnet/keypad/serial command or action.)
		Wrote a TUPLE to property 42002 of AV object but the group specified by instance_id has mysteriously disappeared (deleted by a separate yet concurrent BACnet/keypad/serial command or action.)
		Wrote a value of BACnetObjectIdentifier to the Object_Identifier property of either an AO or BO object, and the SIMPLY5 fixture represented by this object does not exist.
		Wrote a value of BACnetObjectIdentifier to the Object_Identifier property of either an AO or BO object, and the SIMPLY5 fixture represented by the value itself does not exist.

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ERROR_CLASS	ERROR_CODE	DESCRIPTION
PROPERTY	READ_ACCESS_DENIED	Wrote a TUPLE to property 42002 of AV object to add a group member and device_id, and object_id and instance_id (taken together) do not represent a pre-existing device in this Synergy controller.
		Attempted to read property 42003 of F object.
PROPERTY	UNKNOWN_PROPERTY	Wrote a REAL value to the Max_Pres_Value property of an AO object that does not represent a dimmer fixture.
		Wrote a REAL value to the Min_Pres_Value property of an AO object that does not represent a dimmer fixture, or a relay.
		Wrote a REAL value to the Hour_Count property (513) of an AO or BO object that does not represent a dimmer fixture, or a relay.
		Wrote a REAL value to the Strike_Count property (512) of an AO or BO object that does not represent a dimmer fixture, or a relay.
		Attempted to read the Max_Pres_Value property of an AO or BO object that does not represent a dimmer fixture.
		Attempted to read the Min_Pres_Value property of an AO or BO object that does not represent a dimmer fixture, or a relay.
PROPERTY	UNSUPPORTED_OBJ_TYPE	Wrote an OBJECT-IDENTIFIER value to property 42001 whose object_id is something other than 2 (AV.)
		Wrote a value whose type is BACnetObjectIdentifier to the Object-Identifier property of an AO or BO object, but the value's instance number does not represent a SIMPLY5 fixture.
		Wrote a value whose type is BACnetObjectIdentifier to the Object-Identifier property of an AO or BO object that itself does not represent a SIMPLY5 fixture.

Capabilities and features **highlighted in yellow** are not available in production releases 2.71 or earlier.

ERROR_CLASS	ERROR_CODE	DESCRIPTION
PROPERTY	VALUE_OUT_OF_RANGE	<p>Wrote a TUPLE to property 42002 of AV object with one or more values that are out-of-range:</p> <p>device_id range is 0-4194303, with 0 representing a LOCAL device</p> <p>object_id values: 1=AO – SIMPLY5, SIMPLY5_GROUP, NODE_DIMMER, NODE_MAXSTAR, NODE_RELAY 2=AV - NODE_GROUP 4=BO – SIMPLY5, SIMPLY5_GROUP, NODE_DIMMER, NODE_MAXSTAR, NODE_RELAY 5=BV - NODE_PARTITION</p> <p>instance_id range is 0-4194303, except when object_id is 2 (AV/NODE_GROUP), it is limited to 0-9999</p> <p>level range is 0-100 (percent)</p> <p>fade_time range is 0-6039 (seconds), which is equivalent to 99:99.</p> <p>Wrote a value to the Device-Type property of the BI object that is not one of the following character strings:</p> <p>instance_id >= 2000 (CSI Button): "ALTERNATE", "DISABLED", "LATCH", "MAINTAIN", "MASTER_LOWER", "MASTER_OFF", "MASTER_ON", "MASTER_RAISE", "OFF", "ON", "RAMPDOWN", "RAMPING" or "RAMPUP".</p> <p>instance_id < 2000 (Switch): "DISABLED", "LATCH", "MAINTAIN", "RAMPING" or "TOGGLE".</p> <p>Wrote an UNSIGNED value other than zero (0) to array-index 0 (COUNT) of property 42002 of AV object.</p> <p>Wrote a REAL value other than 0-100 (after conversion to an integer) to the Max_Pres_Value property of an AO object, or a value less than Min_Pres_Value.</p> <p>Wrote a REAL value other than 0-100 (after conversion to an integer) to the Min_Pres_Value property of an AO object, or a value greater than Max_Pres_Value.</p> <p>Wrote a UNSIGNED value other than one (1) to instance 1 (SCRIPT.TXT) of property 42003 of F object.</p>
		<p>Wrote a NULL/empty string or a string whose first character is non-printable to the Description property of an AI, AO, AV, BI, BO, or BV object.</p>
		<p>Wrote a NULL/empty string or a string whose first character is non-printable to the Object_Name property of the Device object.</p>

Capabilities and features **highlighted in yellow** are not available in production releases 2.71 or earlier.

ERROR_CLASS	ERROR_CODE	DESCRIPTION
PROPERTY	WRITE_ACCESS_DENIED	<p>Wrote a TUPLE to property 42002 of AV object to add a group member and device_id, object_id, and instance_id (all together) represent a member that is already in this group (a duplicate.) If an entire array was being written, the TUPLES (members) processed before this error occurred were successfully added to the group.</p>
		<p>Tried to write a value to an instance other than 1 (SCRIPT.TXT) of property 42003 of F object.</p>
SERVICES	INCONSISTENT_PARAMETERS	<p>Wrote a value to the Device-Type property of the BI object with an array-index value other than ALL (-1.)</p>
		<p>Read a value from the Device-Type property of the BI object with an array-index value other than ALL (-1.)</p>
		<p>Wrote a value to property 42001 of BI object with an array-index value other than ALL (-1.)</p>
		<p>Read a value from property 42001 of BI object with an array-index value other than ALL (-1.)</p>
SERVICES	NO_SPACE_FOR_OBJECT	<p>The first time a single TUPLE or the entire array of members is read from property 42002 of AV object, memory must be allocated to hold the TUPLES as they are retrieved from the group specified by instance_id. This message indicates the failure of that memory allocation, especially if reading individual members also fails with the same error code. The amount of memory that was requested can be calculated from the current value of BACnetMaxGroupSize: multiply this parameter value by 20 to get the size of the failed memory request in bytes.</p> <p>If the memory allocation was successful, then it is possible for a read request for all the members of a group to return this error because the group size is larger than the current value of BACnetMaxGroupSize in CONFIG.INI. For this case, reading individual members will succeed.</p>