SwitchPak MSTP

Expanded Protocol Implementation Conformance Statement

Product Description:

The SwitchPak™ lighting control panel combines simplicity with flexibility. SwitchPak includes time-based control for ON/OFF scheduling and low-voltage control for lighting loads in a compact and economical package. It features a custom designed user interface with soft keys, LED status indicators for schedules, inputs and outputs, and an easy-to-read illuminated LCD display.

The BACnet standard MS/TP interface provides an expanded, economical lighting control solution that allows the panel to be shared building-wide.

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 SwitchPak MSTP provides two of the capabilities associated with B-AAC (BACnet Advanced Application Controller) 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.)

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

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

Segmentation Capability:

Not supported.

Object Types:

Object Type Number	BACnet Object	SPAK MSTP Object
0	Analog Input (AI)	The Photocell (1)
1	Analog Output (AO)	Relay (8)
3	Binary Input (BI)	Switch (8)
4	Binary Output (BO)	Relay (8)
8	Device (D)	Cabinet (one SwitchPak MSTP Controller)

Instance Numbers:

BACnet instance numbers map directly to the sequential numbering system used to identify switch or photocell inputs and relay outputs. BACnet switch inputs are numbered sequentially beginning with 1, as are the relay outputs. BACnet Binary Input 1 corresponds to INPUT 1. BACnet Binary Output 1 corresponds to RELAY 1. BACnet Analog Input 1 corresponds to PHOTOCELL 1. BACnet Analog Output 1 corresponds to RELAY 1.

Proprietary Properties:

Property Number	Description	Containing Object(s)
9600	MSTP_Baud_Rate	D
9700	Number_Of_Schedules	D
9800	Location_Code	D
9900	Blink_Warn_Time	AO and BO
9901	Input_Time_Out	BI
9999	MSTP_My_Address	D

Priority Values:

Priority	Description
1-5	Supported, see SSPC 135.
6	Not allowed (priority 6 is reserved for use by Minimum_On_Time and Minimum_Off_Time and may not be used for other purposes in any object.)
7-9	Supported, see SSPC 135.
10	Normal (typical value for all writes that require a priority, e.g. Present_Value of Binary Outputs.)
11-16	Supported, see SSPC 135.

1.1 Analog Input Object Type

The Analog Input object type is only used for the photocell. The instance number for the photocell is one (1.)

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
Description (28)	CharacterString	Read
Device_Type (31)	CharacterString	Not Supported
Status_Flags (111)	BACnetStatusFlags	Read
Event_State (36)	BACnetEventState	Read
Reliability (103)	BACnetReliability	Not Supported
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 (1.)

1.1.2 Object_Name (77)

All Analog Input objects have "AI-" as the first part of their name. The second part of the name is the input number, as described above.

1.1.3 Object_Type (79)

Always ANALOG_INPUT.

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 description of analog inputs is the same as the object name.

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	*Always FALSE (normal.)*
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)

Not Supported.

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.

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.

1.2 Analog Output Object Type

The Analog Output object type is intended to be a compatibility interface for controlling the relays from both Synergy Config (on a PC) and a Synergy Network Controller, although any BACnet-capable device may also use this object type. The instance numbers for the relays are in the range 1-8.

Table 1-3. Properties of the Analog Output 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
Device_Type (31)	CharacterString	Not Supported
Status_Flags (111)	BACnetStatusFlags	Read
Event_State (36)	BACnetEventState	Read
Reliability (103)	BACnetReliability	Not Supported
Out_Of_Service (81)	BOOLEAN	Read
Units (117)	BACnetEngineeringUnits	Read
Min_Pres_Value (69)	REAL	Read/Write
Max_Pres_Value (65)	REAL	Not Supported
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
Blink_Warn_Time (9900)	Unsigned	Read/Write

1.2.1 Object_Identifier (75)

It is composed from the object type (Analog-Output [1]), and the instance number (1-8.)

1.2.2 Object_Name (77)

All Analog Output objects have "AO-" as the first part of their name. The second part of the name is the instance number, as described above.

1.2.3 Object_Type (79)

Always ANALOG_OUTPUT.

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. Because the physical device being controlled is a relay, when Present_Value is read, the value returned is 0.0 if the relay is INACTIVE, or 100.0 if the relay is ACTIVE. The behavior of writing values 0.0 thru 100.0 is determined by the value of the Min_Pres_Value property (see 1.2.12 below.) Writing a 131.0 or a 256.0 will "blink" the relay. Writing a NULL will relinquish the priority, as will writing a 255.0.

"Blinking" a relay causes its off-time to be automatically scheduled. The off-time is the time-of-blink plus the WARN time (see 1.2.29) or plus five minutes if the WARN time for the relay is zero.

The relay types that can blink are: NORMAL_OPEN, NORMAL_CLOSED, and SWEEP. The relay types that cannot blink are: MOMENTARY_ON, MOMENTARY_OFF, INTELISWITCH, and DISABLED. See 1.4.6 below. Relays will not blink when the override switch is either in the "ON" or "OFF" positions. INACTIVE relays will not blink.

1.2.5 Description (28)

The description is always the same as the Object_Name.

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:

IN_ALARM	*Always FALSE (normal.)*
FAULT	*Always FALSE (normal.)*
OVERRIDDEN	*TRUE if the module override switch is in the "OFF" or "ON" positions and the relay is not disabled. FALSE (normal) when the override switch is set to "AUTO."*
OUT_OF_SERVICE	*TRUE if the relay is disabled, and FALSE (normal) otherwise. See 1.4.6 below.*

1.2.8 Event_State (36)

The Event_State is always NORMAL.

1.2.9 Reliability (103)

Not Supported.

1.2.10 Out_Of_Service (81)

TRUE if the relay is disabled and FALSE otherwise. See 1.4.6 below.

1.2.11 Units (117)

Always percent.

1.2.12 Min_Pres_Value (69)

This property is used to implement the threshold behavior and make it accessible to BACnet users. When the Present_Value property of an Analog Output object is written (see 1.2.4 above), the new present value is compared to the threshold (the value of this property.) If the new present value is greater than the threshold, the relay becomes ACTIVE (and its

Present_Value property will return 100.0 when read.) If the new present value is less than or equal to the threshold, the relay becomes INACTIVE (and its Present_Value property will return 0.0 when read.) The default threshold value is 0. The threshold range is 0 thru 99.

1.2.13 Max_Pres_Value (65)

Not Supported.

1.2.14 Resolution (106)

Not Supported.

1.2.15 Priority_Array (87)

Returns the actual relay value (0.0 for INACTIVE, or 100.0 for ACTIVE) for the most recently written present value of the relay for each of the sixteen priorities. During the Blink/Warn period a value of 131.0 is returned. If the priority has been relinquished, NULL is returned. See 1.2.4 above.

1.2.16 Relinquish_Default (104)

Always 0.0 ("OFF".)

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 Blink_Warn_Time (9900)

When read Blink_Warn_Time returns the time in minutes before the scheduled off-time to blink the ACTIVE relay. When written, the range is restricted to 0-99 minutes, with 0 indicating DISABLED (no blink-warn.) Altering the value of this property will not influence any in-progress off-time.

1.3 Binary Input Object Type

The Binary Input object type may be used to control SwitchPAK inputs (switches.) Switches may be various types of momentary or latching contactors. The instance numbers for the switches are in the range 1-8.

Table 1-2. 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
Device_Type (31)	CharacterString	Read
Status_Flags (111)	BACnetStatusFlags	Read
Event_State (36)	BACnetEventState	Read
Reliability (103)	BACnetReliability	Not Supported
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
Profile_Name (168)	CharacterString	Not Supported
Input_Time_Out (9901)	Unsigned	Read/Write

1.3.1 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. The instance numbers for the switches are in the range 1-8.

1.3.2 Object_Name (77)

Any switch has "BI-" as the first part of its name. The second part of the name is the switch number, as described above.

1.3.3 Object_Type (79)

Always BINARY_INPUT.

1.3.4 Present_Value (85)

Present_Value is "INACTIVE" (0, "OFF") or "ACTIVE" (1, "ON"). Writing Present_Value at priority 6 is not allowed, otherwise priority is ignored because it is not required for this object type.

1.3.5 Description (28)

The description of switches is the same as the object name.

1.3.6 Device_Type (31)

The string returned for Device_Type represents the selected INPUT type: 3-WIRE, MAINTAINED, ALTERNATE, or DISABLED. When the Device_Type is DISABLED, the OUT_OF_SERVICE flag (Status_Flags property) and the Out_Of_Service property both return TRUE. See 1.3.7 and 1.3.10.

1.3.7 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	*TRUE if the input is disabled and FALSE otherwise. See 1.3.6 above.*

1.3.8 Event_State (36)

Always NORMAL.

1.3.9 Reliability (103)

Not Supported.

1.3.10 Out_Of_Service (81)

TRUE if the input is disabled and FALSE otherwise. See 1.3.6 above.

1.3.11 Polarity (84)

Always NORMAL (0.)

1.3.12 Inactive_Text (46)

Not Supported.

1.3.13 Active_Text (4)

Not Supported.

1.3.14 Change_Of_State_Time (16)

Not Supported.

1.3.15 Change_Of_State_Count (15)

Not Supported.

1.3.16 Time_Of_State_Count_Reset (115)

Not Supported.

1.3.17 Elapsed_Active_Time (33)

Not Supported.

1.3.18 Time_Of_Active_Time_Reset (114)

Not Supported.

1.3.19 Time_Delay (113)

Not Supported.

1.3.20 Notification_Class (17)

Not Supported.

1.3.21 Alarm_Value (6)

Not Supported.

1.3.22 Event_Enable (35)

Not Supported.

1.3.23 Acked_Transitions (0)

Not Supported.

1.3.24 Notify_Type (72)

Not Supported.

1.3.25 Event_Time_Stamps (130)

Not Supported.

1.3.26 Profile_Name (168)

Not Supported.

1.3.27 Input_Time_Out (9901)

When this property is read, it returns the time in minutes that must elapse before the switch is automatically made INACTIVE (0, "OFF".) This time out period begins when the switch changes to the ACTIVE (1, "ON") state. When written, the range is restricted to 0-999 minutes, with 0 indicating DISABLED (no input time out.) Altering the value of this property will not influence any in-progress input time out.

1.4 Binary Output Object Type

The Binary Output object type is used to control the relays. The instance numbers for the relays are in the range 1-8.

Table 1-3. Properties of the Binary Output 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
Device_Type (31)	CharacterString	Read
Status_Flags (111)	BACnetStatusFlags	Read
Event_State (36)	BACnetEventState	Read
Reliability (103)	BACnetReliability	Not Supported
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
Blink_Warn_Time (9900)	Unsigned	Read/Write

1.4.1 Object_Identifier (75)

It is composed from the object type (Binary-Output [4]), and the instance number (1-8.)

1.4.2 Object_Name (77)

All Binary Output objects have "BO-" as the first part of their name. The second part of the name is the instance number, as described above.

1.4.3 Object_Type (79)

Always BINARY_OUTPUT.

1.4.4 Present_Value (85, Commandable)

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

1.4.5 Description (28)

The description is always the same as the Object_Name.

1.4.6 Device_Type (31)

Device_Type represents the selected RELAY type: NORMAL_OPEN, NORMAL_CLOSED, MOMENTARY_ON, MOMENTARY_OFF, SWEEP, INTELISWITCH, or DISABLED. When the Device_Type is DISABLED, the OUT_OF_SERVICE flag (Status_Flags property) and the Out_Of_Service property both return TRUE. See 1.4.7 and 1.4.10.

1.4.7 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	*TRUE if the module override switch is in the "OFF" or "ON" positions and the relay is not disabled. FALSE (normal) when the override switch is set to "AUTO."*
OUT_OF_SERVICE	*TRUE if the relay is disabled, and FALSE (normal) otherwise. See 1.4.6 above.*

1.4.8 Event_State (36)

The Event_State is always NORMAL.

1.4.9 Reliability (103)

Not Supported.

1.4.10 Out_Of_Service (81)

TRUE if the relay is disabled and FALSE otherwise. See 1.4.6 above.

1.4.11 Polarity (84)

The Polarity is determined by the Device_Type (see 1.4.6 above.)

DEVICE TYPE	POLARITY
NORMAL_OPEN	0 (Normal)
NORMAL_CLOSED	1 (Reverse)
MOMENTARY_ON	0
MOMENTARY_OFF	0
SWEEP	0
INTELISWITCH	0
DISABLED	0

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.

1.4.19 Minimum_Off_Time (66)

Not Supported.

1.4.20 Minimum_On_Time (67)

Not Supported.

1.4.21 Priority_Array (87)

Returns the actual relay value (0.0 for INACTIVE, or 100.0 for ACTIVE) for the most recently written present value of the relay for each of the sixteen priorities. During the Blink/Warn period a value of 131.0 is returned. If the priority has been relinquished, NULL is returned. See 1.4.4 and 1.2.4 above.

1.4.22 Relinquish_Default (104)

Always INACTIVE (0, "OFF".)

1.4.23 Time_Delay (113)

Not Supported.

1.4.24 Notification_Class (17)

Not Supported.

1.4.25 Feedback_Value (40)

Not Supported.

1.4.26 Event_Enable (35)

Not Supported.

1.4.27 Acked_Transitions (0)

Not Supported.

1.4.28 Notify_Type (72)

Not Supported.

1.4.29 Event_Time_Stamps (130)

Not Supported.

1.4.30 Profile_Name (168)

Not Supported.

1.4.31 Blink_Warn_Time (9900)

When read, Blink_Warn_Time returns the time in minutes before the scheduled off-time to blink the ACTIVE relay. When written, the range is restricted to 0-99 minutes, with 0 indicating DISABLED (no blink-warn.) Altering the value of this property will not influence any in-progress (scheduled) off-time.

1.5 Device Object Type

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

Table 1-4. Properties of the Device Object Type

Property Identifier	Property Data Type	Access
Object_Identifier (75)	BACnetObjectIdentifier	Read/Write
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	Read
Description (28)	CharacterString	Read
Protocol_Conformance_Class (95)	Unsigned (1..6)	Read
Protocol_Version (98)	Unsigned	Read
Protocol_Revision (139)	Unsigned	Read
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	Not Supported
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	Read
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
MSTP_Baud_Rate (9600)	Unsigned (9600, 19200, 38400)	Read/Write
Number_Of_Schedules (9700)	Unsigned(0-100; write a NULL data type)	Read/Write
Location_Code (9800)	Unsigned (0-448)	Read/Write
MSTP_My_Address (9999)	Unsigned (0-127)	Read/Write

1.5.1 Object_Identifier (75)

It is composed from the object type (Device [8]), and the device's BACnet ID. Writing this property with the same object type but a different instance number will change the device's BACnet ID. The default BACnet ID is 4194302.

1.5.2 Object_Name (77)

The Device object name, by default is set to "SwitchPAK MSTP". The maximum name length is 20 characters.

1.5.3 Object Type (79)

Always DEVICE.

1.5.4 System_Status (112)

Always "OPERATIONAL."

1.5.5 Vendor_Name (121)

Always "Lithonia Lighting"

1.5.6 Vendor_Identifier (120)

Always 42.

1.5.7 Model_Name (70)

Always "SPAK MSTP".

1.5.8 Firmware_Revision (44)

Always returns the factory SwitchPAK MSTP Controller firmware part number (e.g. SY29V202.)

1.5.9 Application_Software_Version (12)

Always returns the same value returned for the Firmware_Revision (44) property. The application software version is everything from the "V" to the end of the string. There is an implied decimal-point that provides two digits of precision. For example "V202" means version 2.02.

1.5.10 Location (58)

Returns the current geographic location (city name.) Used for dawn/dusk calculations and daylight savings time. See 1.5.47.

1.5.11 Description (28)

Always "Lighting Panel".

1.5.12 Protocol_Conformance_Class (95)

Always 1. From SSPC 135-1995, see clause 22, Table 22-2.

1.5.13 Protocol_Version (98)

Always 1.

1.5.14 Protocol_Revision (139)

Always 5.

1.5.15 Protocol_Services_Supported (97)

Always indicates support for these services: readProperty (12), writeProperty (15), deviceCommunicationControl (17), reinitializeDevice (20), timeSynchronization (32), who-is (34), and utcTimeSynchronization (36.)

1.5.16 Protocol_Object_Types_Supported (96)

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

1.5.17 Object_List (76)

The response won't fit in a single (unsegmented) message. The list must be read individually (by array_index.) The size of the object list is always 26 objects.

1.5.18 Max_APDU_Length_Accepted (62)

Always 50.

1.5.19 Segmentation_Supported (107)

Always "NO-SEGMENTATION".

1.5.20 Max_Segments_Accepted (167)

Not Supported.

1.5.21 VT_Classes_Supported (122)

Not Supported.

1.5.22 Active_VT_Sessions (5)

Not Supported.

1.5.23 Local_Time (57)

Always returns the current time as "hh:mm:ss.*00" in 24-hour format.*

1.5.24 Local_Date (56)

Returns today's date as "day-of-week, Month dd, yyyy*" (e.g. "Thursday, June 4, 2009".)*

1.5.25 UTC_Offset (119)

Always the returns the UTC offset as minutes.

1.5.26 Daylight_Savings_Status (24)

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

1.5.27 APDU_Segment_Timeout (10)

Not Supported.

1.5.28 APDU_Timeout (11)

Always returns 60,000 milliseconds.

1.5.29 Number_Of_APDU_Retries (73)

Always returns 0.

1.5.30 List_Of_Session_Keys (55)

Not Supported.

1.5.31 Time_Synchronization_Recipients (116)

Not Supported.

1.5.32 Max_Master (64)

The value is constrained to the range 1-127.

1.5.33 Max_Info_Frames (63)

The value is constrained to the range 1-255.

1.5.34 Device_Address_Binding (30)

Always returns NULL (zero entries.)

1.5.35 Database_Revision (155)

Always returns zero (0.)

1.5.36 Configuration_Files (154)

Not Supported.

1.5.37 Last_Restore_Time (157)

Not Supported.

1.5.38 Backup_Failure_Timeout (153)

Not Supported.

1.5.39 Active_COV_Subscriptions (152)

Not Supported.

1.5.40 Slave_Proxy_Enable (172)

Not Supported.

1.5.41 Manual_Slave_Address_Binding (170)

Not Supported.

1.5.42 Auto_Slave_Discovery (169)

Not Supported.

1.5.43 Slave_Address_Binding (171)

Not Supported.

1.5.44 Profile_Name (168)

Not Supported.

1.5.45 MSTP_Baud_Rate (9600)

When read, this property always returns the MSTP baud rate setting. The default value is 9600. The units are always bits/sec (baud.) When written, the value is constrained to 9600, 19200, or 38400. The baud rate change will take affect immediately, which will cause the command acknowledgement to be transmitted at the new baud rate.

1.5.46 Number_Of_Schedules (9700)

When read, this property returns the number of schedules in the Controller, with 0 signifying no schedules are present. The default value is 0. The maximum number of schedules is 100. When written with a NULL data type all schedules are cleared. Alternatively, writing this property with an UNSIGNED zero will have the same affect (of clearing all schedules.)

1.5.47 Location_Code (9800)

When read, this property returns an UNSIGNED value in the range 0-448 that represents the same geographic location identified by the text string received from reading Location (see paragraph 1.5.10 above.). This property may be written with an UNSIGNED value in the range of 0-448 to change the geographic location.

Location_Code	Geographic Place Name
0	AB, Calgary
1	AB, Cold Lake
2	AB, Edmonton
3	AB, Fort McMurray
4	AB, Jasper
5	AB, Lethbridge
6	AB, Medicine Hat
7	AK, Adak
8	AK, Anchorage
9	AK, Barrow
10	AK, Deadhorse
11	AK, Denali N.Park
12	AK, Eielson AFB
13	AK, Fort Yukon
14	AK, Juneau
15	AK, Kenai
16	AK, Ketchikan
17	AK, Kodiak
18	AK, Nome
19	AK, Prudhoe Bay
20	AK, Seward
21	AK, Shemya
22	AK, Sitka
23	AL, Birmingham
24	AL, Dothan
25	AL, Huntsville
26	AL, Mobile
27	AL, Montgomery
28	AL, Phenix City
29	AR, El Dorado
30	AR, Fort Smith
31	AR, Little Rock
32	AR, Texarkana
33	AR, West Memphis
34	AZ, Flagstaff
35	AZ, Phoenix
36	AZ, Prescott
37	AZ, Sanders
38	AZ, Tucson
39	AZ, Yuma
40	BC, Fort Nelson
41	BC, Kamloops
42	BC, Prince George
43	BC, Vancouver
44	BC, Victoria
45	CA, Anaheim
46	CA, Bakersfield
47	CA, Barstow
48	CA, Berkeley
49	CA, Compton
50	CA, Dmd.Springs
51	CA, E.Los Angeles
52	CA, Edwards AFB
53	CA, Escondido
54	CA, Eureka
55	CA, Fairfield
56	CA, Fresno
57	CA, Glendale
58	CA, Hawthorne
59	CA, Hayward
60	CA, Huntington B.
61	CA, Long Beach
62	CA, Los Angeles
63	CA, Modesto
64	CA, Needles
65	CA, Oakland
66	CA, Oxnard
67	CA, Redding

1.5.48 MSTP_My_Address (9999)

When read, this property always returns the Controller's MS/TP address. The default value is 127. When written, the value is constrained to 0-127. After writing, the address change takes effect immediately, which will cause the unit to ignore all commands sent to the old address.