

**BACnet® Protocol Implementation Conformance  
Statement (PICS)**

Date: May 09, 2018

Vendor Name: Lutron Electronics Co., Inc.

Product Name: Vive BACnet Integration

BACnet Applications Software Version: 1.07

Vive Firmware Revision: 1.07

BACnet Protocol Revision: 13

Vendor ID: 176

**Product Description**

BACnet IP is embedded in the Vive hub. There are two types of BACnet devices available in Vive:

Vive hubs and area devices. The Vive hubs are main BACnet devices; typically, one to two Vive hubs per floor of the building. The area devices are virtual BACnet devices of the Vive hub, typically one per room of the building. It is normal to have multiple Vive hubs and area virtual devices in a project.

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**BACnet Interoperability Building Blocks Supported (Annex K):**

K.1.2 BIBB	Data Sharing	ReadProperty-B (DS-RP-B)
K.1.4 BIBB	Data Sharing	ReadPropertyMultiple-B (DS-RPM-B)
K.1.8 BIBB	Data Sharing	WriteProperty-B (DS-WP-B)
K.1.10 BIBB	Data Sharing	WritePropertyMultiple-B (DS-WPM-B)
K.1.12 BIBB	Data Sharing	COV-B (DS-COV-B)
K.5.2 BIBB	Device Management	DynamicDeviceBinding-B (DM-DDB-B)
K.5.4 BIBB	Device Management	DynamicObjectBinding-B (DM-DOB-B)
K.5.6 BIBB	Device Management	DeviceCommunicationControl-B (DM-DCC-B)

**BACnet Standardized Device Profile (Annex L):**

BACnet Application Specific Controller (B-ASC)

**Segmentation Capability:**

Segmented requests supported? No. Window Size: n/a

Segmented responses supported? No. Window Size: n/a

**Non-Standard Application Services:**

Non-standard application services are not supported.

Job Name:	Model Numbers:
Job Number:	

**Standard Object Types Supported:***Device*

1. Dynamically creatable using BACnet CreateObject service? **No**.
2. Dynamically deletable using BACnet DeleteObject service? **No**.
3. List of optional properties supported: **Active\_COV\_Subscriptions**, Description, Location, Profile\_Name.
4. List of all properties that are writable where not otherwise required by this standard: **None**.
5. List of proprietary properties: **None**.
6. List of any property value range restrictions: **None**.

*Analog Value*

1. Dynamically creatable using the BACnet CreateObject service? **No**.
2. Dynamically deletable using BACnet DeleteObject service? **No**.
3. List of optional properties supported: **COV\_Increment** (See Table for objects that support this property).
4. List of all properties that are writable where not otherwise required by this standard: **None**.
5. List of proprietary properties: **None**.
6. List of any property value range restrictions: **See Table**.

*Binary Value*

1. Dynamically creatable using BACnet CreateObject service? **No**.
2. Dynamically deletable using BACnet DeleteObject service? **No**.
3. List of optional properties supported: **Active\_Text**, **Inactive\_Text**.
4. List of all properties that are writable where not otherwise required by this standard: **None**.
5. List of proprietary properties: **None**.
6. List of any property value range restrictions: **See Table**.

*Multi-State Value*

1. Dynamically creatable using BACnet CreateObject service? **No**.
2. Dynamically deletable using BACnet DeleteObject service? **No**.
3. List of optional properties supported: **State\_Text**.
4. List of all properties that are writable where not otherwise required by this standard: **None**.
5. List of proprietary properties: **None**.
6. List of any property value range restrictions: **See Table**.

**Data Link Layer Options:**

Other: These devices are virtual devices and are represented by a six octet address equal to the 48-bit device instance of the virtual device.

**Device Address Binding:**

Is static device binding supported? **No**.

**Networking Options:**

BACnet/IP Annex J – non-BBMD functionality; the Vive is able to register as a foreign device. The Vive hub is able to initiate original-broadcast-NPDU.

**Character Sets Supported:**

Indicating support for multiple character sets does not imply that they can all be supported simultaneously.

- UTF-8

**BACnet Routing:**

The Vive hub is a BACnet virtual router. All of the virtual area devices are routed through the main Vive hub.

<b>Job Name:</b>  <b>Job Number:</b>	<b>Model Numbers:</b>
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Object Name	Type	Instance	Read	Write	COV	Units	Min PV	Max PV	Inactive Text (0)	Active Text (1)	State Text (Multi-State)	Notes
{SystemName} {Instance}	DEVICE	22 bit GUID	X	—	—	—	—	—	—	—	—	The System Name is the logical name of one of the Vive hubs that typically corresponds to a physical portion of the building such as a floor. The Instance is the same as the unique Device ID assigned to each Vive hub.
Master Load shed Enabled	BV	2	X	X	X	—	0	1	Disabled	Enabled	—	This value determines whether all of the areas in the Vive subsystem are being controlled via load shedding. When this value is set to Enabled, for all areas in the hub that have load shed allowed, any dimmable lights in each area that are turned on will have their light level reduced by the percentage specified in the Load shed Goal value. The specified switched loads will turn off. When Disabled, the lights will return to their previous level and the specified switched loads will return to their previous state.

Object Name	Type	Instance	Read	Write	COV	Units	Min PV	Max PV	Inactive Text (0)	Active Text (1)	State Text (Multi-State)	Notes
{AreaName} {Instance}	DEVICE	22 bit GUID	X	—	—	—	—	—	—	—	—	The Area Name is the logical name that typically corresponds to a physical location in a building. The Instance is the same as the unique Device ID assigned to each area.
Lighting Level	AV	2	X	X	X	%	0	100	—	—	—	The intensity level of all lighting fixtures in the area. The light level will be an analog value between 0% and 100%. If the lighting fixtures in the area are at different light levels, this value will be set to the level of the highest intensity in that area. This will apply to both switched and dimmed lighting fixtures. If a non-zero level is written switched lighting fixtures will turn on and dimmed lighting fixtures will go to that level.
Lighting State	BV	3	X	X	X	—	0	1	Off	On	—	The Lighting State will be On if any of the lighting fixtures in the area are in the on state; if all lighting fixtures are off, the Lighting State will be set to Off. When written with On, it will turn all dimmable lighting loads to 100% and turn all switched lighting loads on. When written with Off, it will turn all lighting loads off.

AV = Analog-Value, BV = Binary-Value, MSV = Multi-State-Value

{Area Name}/{SystemName} is a text string defined in the Lutron Vive system configuration software

{Instance} is a number defined in the Lutron Vive system configuration software that is equal to the {Base} number + unique Device ID assigned to each area.

PV = Present-Value

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<b>Job Name:</b>	<b>Model Numbers:</b>
<b>Job Number:</b>	

Object Name	Type	Instance	Read	Write	COV	Units	Min PV	Max PV	Inactive Text (0)	Active Text (1)	State Text (Multi-State)	Notes
Disable Occupancy	BV	7	X	X	X	—	0	1	False	True	—	When set to True, occupancy sensors will not affect the lights in the area. When set to False, occupancy sensors will affect the lights in the area as programmed.
Occupancy State	MSV	8	X	—	X	—	1	4	—	—	1 = Unoccupied 2 = Occupied 4 = Unknown	A read-only property indicates the occupancy of the entire area. Occupied means that at least one sensor in the area is indicating occupancy. Unoccupied means that all of the sensors in the area are indicating unoccupied. Unknown indicates that not all of the sensors in the area have reported their status.
Unoccupied Level	AV	9	X	X	X	%	0	100	—	—	—	The light level to which the dimmed lights in the area will be set when an area transitions to unoccupied.
Occupied Level	AV	10	X	X	X	%	0	100	—	—	—	The light level to which the dimmed lights in the area will be set when an area transitions to occupied.
Load shed Allowed	BV	12	X	X	X	—	0	1	No	Yes	—	When Load shed Allowed is set to YES, this area will be affected when Load shed is Enabled. When set to NO, this area will not be affected when Load shed is Enabled.
Load shed Goal	AV	13	X	X	X	%	0	90	—	—	—	When Load shed is enabled and Load shed Allowed is set to YES, the light level will be reduced by the percentage specified. Range: 0% to 90%

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Job Name:	Model Numbers:
Job Number:	

Object Name	Type	Instance	Read	Write	COV	Units	Min PV	Max PV	Inactive Text (0)	Active Text (1)	State Text (Multi-State)	Notes
Occupancy Mode	MSV	14	X	X	X	N/A	2	5	—	—	2 = Automatic ON, Automatic OFF (Read-Write) 3 = Manual ON, Automatic OFF (Read-Write) 4 = Not Applicable (Read-Only) 5 = Mixed (Read-Only)	Determines the way that the occupancy sensors control the lights. When set to Automatic ON and Automatic OFF, the sensors will set lights to their occupied level when occupied and to their unoccupied level when unoccupied. When set to Manual ON and Automatic OFF, the sensors will set lights to the unoccupied level only when an area changes to unoccupied. Not Applicable means that the area is not controlled by occupancy. Mixed means that the zones in the area have been configured as a combination of "Automatic ON and Automatic OFF" and "Manual ON and Automatic OFF" modes. <b>NOTES:</b> 1. States Not Applicable and Mixed are read-only states. Writes with those states will return a value out of range error. 2. State value 1 is not used and reserved. Writing 1 results in a value out of range error.
Total Power	AV	18	X	—	X	watts	0	none	—	—	—	A calculated/ measured value that indicates the total instantaneous power consumption for all of the lighting loads in the area.
Maximum Power	AV	19	X	—	X	watts	0	none	—	—	—	The maximum connected lighting load of the area. This value is the maximum value that Total Power can achieve. Maximum Power minus Total Power equals the power being saved. This value typically does not change.

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PV = Present-Value

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