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BACnet Protocol Implementation Conformance Statement (PICS)

Date: September 23, 2014
Vendor Name: Lutron Electronics Co., Inc.
Product Name: Quantum® BACnet Integration
Applications Software Version: 2.0
Firmware Revision: 2.7
BACnet Protocol Revision: 4
Vendor ID: 176

Product Description

BACnet IP is embedded in the Quantum® processor. There are two types of BACnet devices available in Quantum®: subsystem devices and area devices. The subsystem devices are main BACnet devices; typically, one main device per floor of the building. The area devices are virtual BACnet devices of the subsystem device, typically one per room of the building. It is normal to have multiple subsystem main devices and area virtual devices in a project.

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.

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:

BACnet IP

Device Address Binding:

Is static device binding supported? No.

Networking Options:

BACnet/IP Annex J — non-BBMD functionality; the Quantum® processor is able to register as a foreign device. The Quantum® processor 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.

- ANSI X3.4

BACnet Routing:

Routes between the connected physical BACnet network and a virtual BACnet network.

Object Name	Type	Instance	Read	Write	COV	Units	Min PV	Max PV	Inactive Text (0)	Active Text (1)	State Text (Multi-State)
{SystemName} {Instance}	DEVICE	{Base} + {System} + 1	X	—	—	—	—	—	—	—	—
	Notes: The System Name is the logical name of one of the Quantum® system's subsystems 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 subsystem.										
Master Loadshed Enabled	BV	2	X	X	X	—	0	1	Disabled	Enabled	—
	Notes: This value determines whether all of the areas in the Quantum® subsystem are being controlled via load shedding. When this value is set to Enabled, for all areas in the subsystem that have loadshed allowed, any dimmable lights in each area that are turned On will have their light level reduced by the percentage specified in the loadshed goal value. When Disabled, the lights will dim to their commanded level.										
Master Hyperion™ Enabled	BV	3	X	X	—	—	0	1	Disabled	Enabled	—
	Notes: When the Master Hyperion™ Enabled feature is set to Enabled, for all areas in the Quantum® subsystem that have Hyperion™ configured, the Hyperion™ feature will control the Lutron® Sivoia® QS roller shades and set their level automatically depending on the position of the sun. When the Master Hyperion™ feature is set to Disabled, in all areas of the subsystem, the shades will not be controlled automatically by the Hyperion™ feature and will not respond to radio window sensors.										
Roof-Mount Cloudy Day Sensor: Subsystem Status	BV	4	X	X	—	—	0	1	Dark	Sunny	—
	Notes: A Lutron® roof-mounted, wired Cloudy Day sensor or a BMS system sensor is used to override all Hyperion™ controlled shades in the subsystem. Sunny indicates that the Hyperion™ feature is in control of the shades; Dark indicates that the shades are overridden to open. This feature is independent of the radio window sensor feature.										

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BV = Binary-Value
{SystemName} is a text string defined in the Lutron® Quantum® system configuration software
{Instance} is a number defined in the Lutron® Quantum® system configuration software that is equal to the {Base} number + {System} number +1
{Base} is a 22-bit value set in the Lutron® Quantum® system configuration software (default 1760000)
{System} is an 8-bit value set in the Lutron® Quantum® system configuration software (0 to 127)
PV = Present-Value

Object Name	Type	Instance	Read	Write	COV	Units	Min PV	Max PV	Inactive Text (0)	Active Text (1)	State Text (Multi-State)
{TimeclockName} Enabled	BV	1000 to 1999	X	X	X	—	0	1	Disabled	Enabled	—
	Notes: For each timeclock in the Quantum® system, there will be one instance number in the range from 1000 to 1999, that can either Enable or Disable that timeclock in the subsystem, or query its current enable state. Please note that for each such instance, there will be a corresponding instance at the same offset but within the range from 2000 to 2999, a {TimeclockName} Enable Command object, similar but with more functionality. Please note that if there are multiple subsystems, the instance number representing an individual timeclock appears in each subsystem's BACnet system device. To enable or disable the timeclock for all subsystems, write to the same instance number in each subsystem's BACnet system device. Write with 0 to Disable Permanently. The timeclock will no longer affect objects in the subsystem. Write with 1 to Enable Without Catch Up. The timeclock will affect objects in the subsystem as programmed, but only starting with future events. Read {TimeclockName} Enabled will return 0 (Disabled) if the last {TimeclockName} Enable Command was any of the following: • Disable Permanently • Disable Until End of Day Without Catch Up • Disable Until End of Day With Catch Up Read {TimeclockName} Enabled will return 1 (Enabled) if the last {TimeclockName} Enable Command was any of • Enable Without Catch Up • Enable With Catch Up • Enable and Run Previous Event Only										

BV = Binary-Value, MSV = Multi-State-Value
{TimeclockName} is a text string defined in the Lutron® Quantum® system configuration software
{VariableName} is a text string defined in the Lutron® Quantum® system configuration software
{VariableStateCount} is the number of states defined for this variable in the Lutron® Quantum® system configuration software
{StateName} is a text string defined in the Lutron® Quantum® system configuration software
PV = Present-Value

Object Name	Type	Instance	Read	Write	COV	Units	Min PV	Max PV	Inactive Text (0)	Active Text (1)	State Text (Multi-State)
{TimeclockName} Enable Command	MSV	2000 to 2999	X	X	—	—	1	6	—	—	1 = Disable Permanently 2 = Disable Until End of Day Without Catch Up 3 = Disable Until End of Day With Catch Up 4 = Enable Without Catch Up 5 = Enable With Catch Up 6 = Enable and Run Previous Event Only
Notes: For each timeclock in the Quantum® system, there will be one instance number in the range from 2000 to 2999, that can either Enable or Disable that timeclock in the subsystem, or query its current enable state. Please note that for each such instance, there will be a corresponding instance at the same offset but within the range from 1000 to 1999, a {TimeclockName} Enabled object, similar but with less functionality. Please note that if there are multiple subsystems, the instance number representing an individual timeclock appears in each subsystem's BACnet system device. To enable or disable the timeclock for all subsystems, write to the same instance number in each subsystem's BACnet system device. WRITING: Write with 1 to Disable Permanently. The timeclock will no longer affect objects in the subsystem. Write with 2 to Disable Until End of Day Without Catch Up. The timeclock will not affect objects in the subsystem until midnight, at which time it will affect objects in the subsystem as programmed, but only starting with future events. Write with 3 to Disable Until End of Day With Catch Up. The timeclock will not affect objects in the subsystem until midnight, at which time it will "catch up", or set objects in the subsystem to the net state that would have obtained had the timeclock been enabled the whole time. Thereafter, it will affect objects in the subsystem as programmed. Write with 4 to Enable Without Catch Up. The timeclock will affect objects in the subsystem as programmed, but only starting with future events. Write with 5 to Enable With Catch Up. The timeclock will "catch up", or set objects in the subsystem to the net state that would have obtained had the timeclock never been disabled (accounting for missed events for up to the last seven days). Thereafter, it will affect objects in the subsystem as programmed. Write with 6 to Enable and Run Previous Event Only. The timeclock will run only the single last scheduled event. Thereafter, it will affect objects in the subsystem as programmed. READING: If timeclock state was last changed by writing to {TimeclockName} Enable Command any of: • Disable Permanently • Disable Until End of Day Without Catch Up • Disable Until End of Day With Catch Up Read thereof will return the same (1, 2, or 3). If timeclock state was last changed by writing to {TimeclockName} Enable Command was any of: • Enable Without Catch Up • Enable With Catch Up • Enable and Run Previous Event Only Read thereof will return 4 (Enable Without Catch Up). If timeclock state was last changed by writing 0 to the {TimeclockName} Enabled instance, then read of {TimeclockName} Enable Command will return 1 (Disable Permanently). If timeclock state was last changed by writing 1 to the {TimeclockName} Enabled instance, then read of {TimeclockName} Enable Command will return 4 (Enable Without Catch Up).										
{VariableName} Current Variable State	MSV	4000 to 4999	X	X	—	—	1	{Variable State Count}	—	—	{StateName}
Notes: The current value of a "State Variable". The State Variable can be used during the evaluation of conditional logic on button programming as configured in the Quantum® software suite. The number of states, as well as the state names, must be configured inside the Quantum® software suite.											

BV = Binary-Value, MSV = Multi-State-Value
{TimeclockName} is a text string defined in the Lutron® Quantum® system configuration software
{VariableName} is a text string defined in the Lutron® Quantum® system configuration software
{VariableStateCount} is the number of states defined for this variable in the Lutron® Quantum® system configuration software
{StateName} is a text string defined in the Lutron® Quantum® system configuration software
PV = Present-Value

Job Name:

Job Number:

Model Numbers: