

## ANNEX A - PROTOCOL IMPLEMENTATION CONFORMANCE STATEMENT (NORMATIVE)

**BACnet Protocol Implementation Conformance Statement**

**Date:** 5/24/2017  
**Vendor Name:** Leviton Manufacturing, Inc.  
**Product Name:** GreenMax  
**Product Model Number:** RPM00-100, RPM08-108, RPM16-116  
**Application Software Version:** N/A  
**Firmware Revision:** >=4.09  
**BACnet Protocol Revision:** 12

**Product Description:**

The GreenMAX Lighting Control System is designed to connect to a Building Automation System (BAS). The GreenMAX system communicates with the BAS using standard BACnet/IP protocol. One dedicated communication port is provided at each Command Module for Ethernet connection. The Command Modules listed above mount in relay cabinets and provide control of line voltage lighting control circuits. Each relay cabinet contains one Command Module that requires a unique IP address and can control up to 48 relays or Dimming Modules. The Command Modules provide Low Voltage input connections for Occupancy Sensors, Photocells, Low Voltage Switch Buttons, and Contact Closures. An Emergency Mode Low Voltage input is provided on each Command Module to trigger an Emergency cabinet override in compliance of UL924. In addition, all Digital Switches, Command Modules, and Low Voltage Input boards communicate on a secondary independent communication network called LumaCan (LC). There are dedicated data ports for LumaCan interconnectivity.

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

- BACnet Operator Workstation (B-OWS)
- BACnet Advanced Operator Workstation (B-AWS)
- BACnet Operator Display (B-OD)
- BACnet Building Controller (B-BC)
- BACnet Advanced Application Controller (B-AAC)
- BACnet Application Specific Controller (B-ASC)
- BACnet Smart Sensor (B-SS)
- BACnet Smart Actuator (B-SA)

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

DS-RP-B, DS-RPM-B, DS-WP-B, DS-COV-B, DM-DDB-B, DM-DOB-B, SCHED-I-B, DM-TS-B

**Segmentation Capability: -none-**

- Able to transmit segmented messages Window Size \_\_\_\_\_
- Able to receive segmented messages Window Size \_\_\_\_\_

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**Standard Object Types Supported:**

Object Type	What is it?	Creatable/ Deleteable	Property	Readable	Writable	Values	Notes
Device	Relay Panel (MPU)	No	Name	Yes	No	GreenMAX Cabinet[x.x].DEV	Each Cabinet connected to the IP network is represented as a device , where [x.x] represents the Cabinet LC node ID
			Description	Yes	No	GreenMAX yy Relay Cabinet[x.x].DEV"	
			Location	Yes	No	GreenMAX Cabinet[x:x] ??? location	Description and Location are modified in NV memory only with programmer.
			Time synchronization	Yes	Yes	-	
			Local Time	Yes	Yes	-	UTC not supported
			Daylight savings status	Yes	Yes	-	
			Date	Yes	Yes	-	
Binary Output	Relay	No	Name	Yes	No	Relay[x].BO	One for each relay where [x] and instance represents the relay number in the panel.
			Present Value	Yes	Yes	0(open),1(close) for each priority	Priority 3-16 of present value property is writable, value 0,1. Changes to priority 1,2 are rejected and used internally for emergency and panel override.
Analog Output	Dimming Relay	No	Name	Yes	No	Relay[x].AO	One for each relay where [x] and instance represents the relay number in the panel.
			Present Value	Yes	Yes	0-100 for each priority	Priority 3-16 of present value property is writable. Dimmer value in percentage 0-100. 0 = Relay Open 1-100= Relay closed. Changes to priority 1,2 are rejected and used internally for emergency and panel override.
Binary Input	Input on "AI" Card or Digital Switch buttons	No	Name	Yes	No	GreenMAX Switch Button [x:x.z].BI Or GreenMAX Occupancy Sensor [x:x.z].BI	One for each binary , where [x:x.z] represents the LC node ID and input number.
			Present Value	Yes	No	0,1	Represents state of connected device to analog input, commonly would be low voltage switch, contact closure, or occupancy sensor. 255=occupied/active, 0=unoccupied/inactive
Analog Input	Input on AI Card	No	Name	Yes	No	GreenMAX Photocell[x:x.z].AI	One for each photocell AI where [x:x.z] represents the LC node id and input number.
			Present Value	Yes	No	0-100	Represents relative light level of photocell, 0-100, where 0=dark and 100= max light level reported by photocell in percentage.
Multi-State Value	Behavior	No	Description	Yes	Yes	Schedule[x].MSV	Direct control of Behavior Mode for each area. x = Schedule number. Writeable only on Primary Time Master (PTM)
Schedule	System Schedule	No	Description	Yes	Yes	Schedule[x].SCH	Weekly schedules can be read, and, scheduled times/days can be written on PTM. x = Schedule number.
Calendar	System Calendar	No	Description	Yes	Yes	Calendar[x].CAL	Exception Calendars can be read and written to on PTM. x = Calendar number.

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**Additional Object Types Supported when Metering Relays are used:**

Object Type	What is it?	Creatable Deletable	Property	Readable	Writeable	Values	Notes
Analog Value	Total Watt hours (Wh)	No	Name	Yes	No	Relay[xx].WH.AV	One for each relay where [xx] represents relay number. Instance = 1xx.
			Present Value	Yes	No	0- 2,147,483,647	Accumulator representing total value. Rolls over when max is achieved.
Analog Value	Total Apparent Energy (VAh)	No	Name	Yes	No	Relay[xx].VAH.AV	One for each relay where [xx] represents relay number. Instance = 2xx.
			Present Value	Yes	No	0- 2,147,483,647	Accumulator representing total value. Rolls over when max is achieved.
Analog Value	Total Reactive Energy (VARh)	No	Name	Yes	No	Relay[xx]:VARH.AV	One for each relay where [xx] represents relay number. Instance = 3xx.
			Present Value	Yes	No	0- 2,147,483,647	Accumulator representing total value. Rolls over when max is achieved.
Analog Value	Line Voltage ( $V_{rms}$ )	No	Name	Yes	No	Relay[xx]:VRMS.AV	One for each relay where [xx] represents relay number. Instance = 4xx.
			Present Value	Yes	No	0 – max	Voltage expressed in Volts with precision.
Analog Value	Line Current ( $A_{rms}$ )	No	Name	Yes	No	Relay[xx]:ARMS.AV	One for each relay where [xx] represents relay number. Instance = 5xx.
			Present Value	Yes	No	0 – max	Current expressed in Amps with precision.
Analog Value	Line Frequency (Hz)	No	Name	Yes	No	Relay[xx]:Hz.AV	One for each relay where [xx] represents relay number. Instance = 6xx.
			Present Value	Yes	No	0 – max	Frequency express in Hertz with precision.
Analog Value	Instantaneous Power (W)	No	Name	Yes	No	Relay[xx]:Watts.AV	One for each relay where [xx] represents relay number. Instance = 7xx.
			Present Value	Yes	No	0 – max	Power in Watts with precision.
Analog Value	Instantaneous Reactive Power (VAR)	No	Name	Yes	No	Relay[xx]:VAR.AV	One for each relay where [xx] represents relay number. Instance = 8xx.
			Present Value	Yes	No	0 – max	Reactive power in VA with precision.
Analog Value	Instantaneous Affective Power (VA)	No	Name	Yes	No	Relay[xx]:VA.AV	One for each relay where [xx] represents relay number. Instance = 9xx.
			Present Value	Yes	No	0 – max	Power in VA with precision.
Analog Value	Instantaneous Power Factor	No	Name	Yes	No	Relay[xx]:PF.AV	One for each relay where [xx] represents relay number. Instance = 10xx.
			Present Value	Yes	No	- 1.000-1.000	Power factor with precision.
Analog Value	Instantaneous Line Voltage THD	No	Name	Yes	No	Relay[xx]:THD-V.AV	One for each relay where [xx] represents relay number. Instance = 11xx.
			Present Value	Yes	No	0-100	Harmonic Distortion in percentage
Analog Value	Instantaneous Line Current THD	No	Name	Yes	No	Relay[xx]:THD-I.AV	One for each relay where [xx] represents relay number. Instance = 12xx.
			Present Value	Yes	No	0-100	Harmonic Distortion in percentage

**Data Link Layer Options:**

- BACnet IP, (Annex J)
- BACnet IP, (Annex J), Foreign Device
- ISO 8802-3, Ethernet (Clause 7)
- ATA 878.1, 2.5 Mb. ARCNET (Clause 8)
- ATA 878.1, EIA-485 ARCNET (Clause 8), baud rate(s) \_\_\_\_\_
- MS/TP master (Clause 9), baud rate(s): \_\_\_\_\_
- MS/TP slave (Clause 9), baud rate(s): \_\_\_\_\_
- Point-To-Point, EIA 232 (Clause 10), baud rate(s): \_\_\_\_\_
- Point-To-Point, modem, (Clause 10), baud rate(s): \_\_\_\_\_
- LonTalk, (Clause 11), medium: \_\_\_\_\_
- BACnet/ZigBee (ANNEX O)
- Other: \_\_\_\_\_

**Device Address Binding:**

Is static device binding supported? (This is currently necessary for two-way communication with MS/TP slaves and certain other devices.)  Yes  No

**Networking Options:**

- Router, Clause 6 - List all routing configurations, e.g., ARCNET-Ethernet, Ethernet-MS/TP, etc.
- Annex H, BACnet Tunneling Router over IP
- BACnet/IP Broadcast Management Device (BBMD)
  - Does the BBMD support registrations by Foreign Devices?  Yes  No
  - Does the BBMD support network address translation?  Yes  No

**Network Security Options:**

- Non-secure Device - is capable of operating without BACnet Network Security
- Secure Device - is capable of using BACnet Network Security (NS-SD BIBB)
  - Multiple Application-Specific Keys:
  - Supports encryption (NS-ED BIBB)
  - Key Server (NS-KS BIBB)

**Character Sets Supported:**

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

- ANSI X3.4
- IBM™/Microsoft™ DBCS
- ISO 8859-1
- ISO 10646 (UCS-2)
- ISO 10646 (UCS-4)
- JIS X 0208

**If this product is a communication gateway, describe the types of non-BACnet equipment/networks(s) that the gateway supports:**

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