THE DIGITAL LIGHTING MANAGEMENT EXPORT TABLE: INTEGRATING DLM WITH A BUILDING AUTOMATION SYSTEM VIA BACNET IP

DLM EXPORT TABLE AND BACNET IP

Wattstopper Digital Lighting Management (DLM) distributed controls are designed to operate as stand alone lighting control systems out of the box, but they are also capable of integration with other building control systems. Adding an LMBC-300 Network Bridge module to a DLM local network provides BACnet MS/TP connectivity and access to a wide range of integration points for control and monitoring.

The DLM systems can then be integrated via BACnet IP using a Wattstopper Segment Manager to provide a single point of connection between the lighting control local networks and the building automation system (BAS), and a process that exposes only selected points for integration. This technique defines a clear separation between the scope of the lighting control system and the BAS.

Alternately, the individual DLM local networks may be treated as BACnet Application Specific Controllers for native integration as described in TB175.

SEGMENT MANAGER FUNCTIONALITY

An LMSM-3E or LMSM-6E Segment Manager is the key component in this simple third party integration using BACnet IP. The Segment Manager is configured as a front end controller complete with a web browser-based graphical user interface (GUI). It manages all the local networks and is capable of providing user access to numerous device settings, status, and configuration parameters as well as settings for each room as a whole.

The Segment Manager GUI includes an Export Table feature that allows selection of available points, outlined in the chart below, for exposure to the BAS, and creates an alias of the selected native BACnet object instances. Once the table has been created, the object list resides within a single BACnet device instance (the Segment Manager). The object list documentation can then be exported as a file in a choice of formats shared with the BAS programmer. This process simplifies integration by exposing only objects that are relevant to the application.

The following guidelines are intended to insure a successful integration between a Wattstopper DLM lighting control system and a third party BAS using a BACnet IP connection.
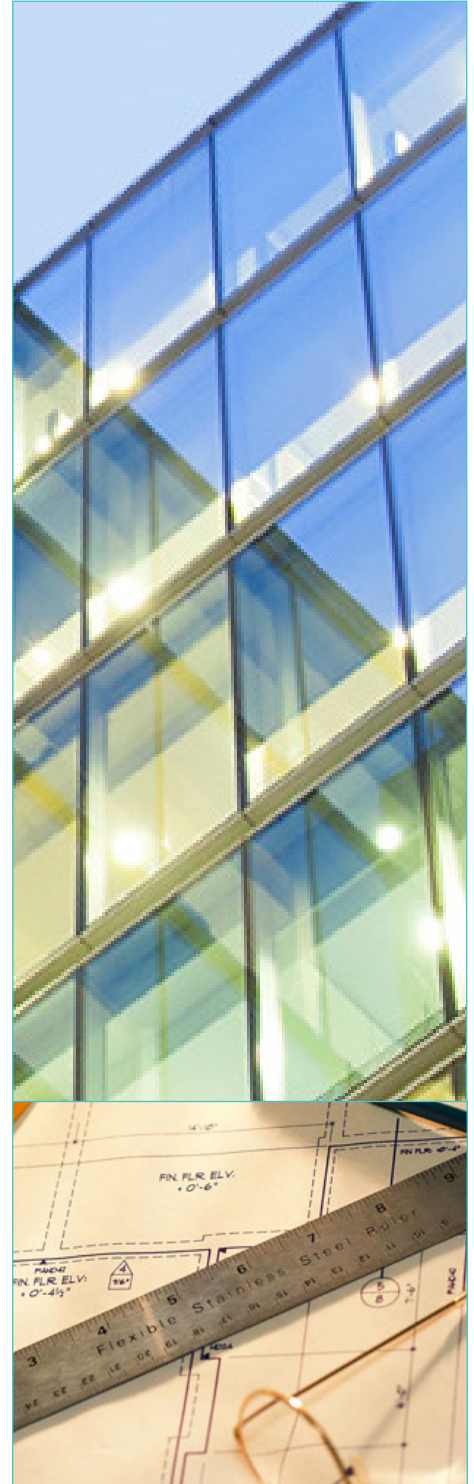
EXPORT TABLE OBJECTS (SEGMENT MANAGER GUI V1.2.4 OR HIGHER)

| Available Object	Object Range	Object Values	Number of Objects
Room Occupancy State	BV1001-2000	Occupied or Unoccupied (read only)	One per DLM local network
Room Schedule Mode	BV1-1000	Normal Hours or After Hours	One per DLM local network
Room Switch Lock State	BV2001-3000	Locked or Not Locked	One per DLM local network
Room Lighting Power (available with LMRC-200 Series room controllers)	AV4001-5000	Total Watts (read only)	One per DLM local network
Room Plug Load Power (available with LMPL-200 Series plug load controllers)	AV5001-6000	Total Watts (read only)	One per DLM local network
Relay State	BO1-1000	On or Off	One per relay
Light Level	AO1-1000	Percent from 0-100	One per dimmed load
Occupancy Sensor Detection State	BI1-1000	On or Off (read only)	One per occupancy sensor
Group State	BV3001-4000	On or Off	One per group
Channel Schedule Mode (available with LMCP panels)	BV4001-5000	Normal Hours or After Hours	One per channel
LMCP Panel Relay State	BV5001-6000	On or Off	One per relay

DOCUMENT OPERATING REQUIREMENTS

The intended result of the integration must be clearly defined and documented. Documentation should include the desired sequences of operation, noting all lighting control points that are to be monitored (read only) by the BAS and those that are to be writable. This information must be available to Wattstopper prior to final configuration of the lighting control system.

DOCUMENT ADDRESSING REQUIREMENTS

Network configuration requirements including static IP address, gateway, DNS server, etc. for the Segment Manager must be documented and made available to Wattstopper prior to final configuration of the lighting control system.

Note that the Segment Manager provides two independent network interface (NIC) connections. Only the primary port, #1, can be used for a BACnet IP connection to the BAS. If the Wattstopper GUI is to be accessed from outside the BAS network, port #2 must be configured and used for the alternate network connection.
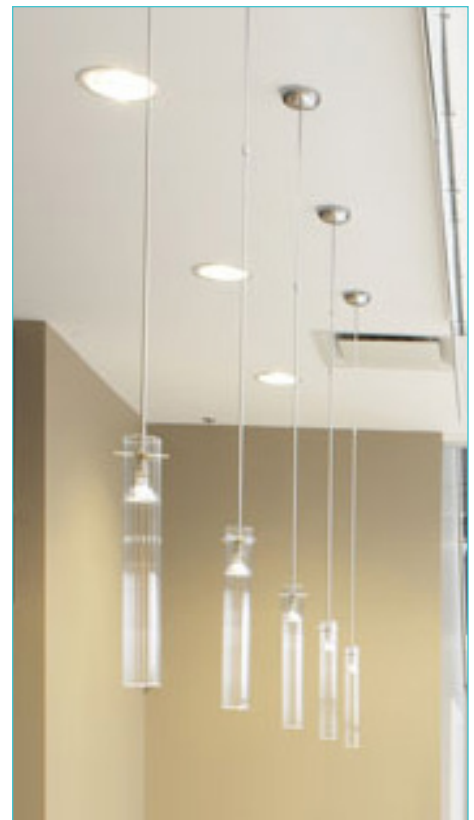
CONFIRM OPERATION AND CREATE EXPORT TABLE

Before any integration can occur, the DLM lighting control system must be completely configured, verified, and fully functional. This includes the creation of the Export Table to match the documented operating requirements.

FOLLOW LIGHTING CONTROL BEST PRACTICES

We strongly discourage direct third party control of load relays and dimmers in rooms equipped with occupancy sensors since the practice can create problematic control sequences for users in the space. If the sequence of operation must include BAS control of load relays or dimmers be sure to give careful consideration to proper use of the BO and AO priority arrays. Loads controlled by DLM occupancy sensors and wall switches operate within the room using priority level 8. DLM daylighting loads operate at priority level 7. Note: the intention to control loads at other than priority level 8 must be established prior to creation of the Export Table.
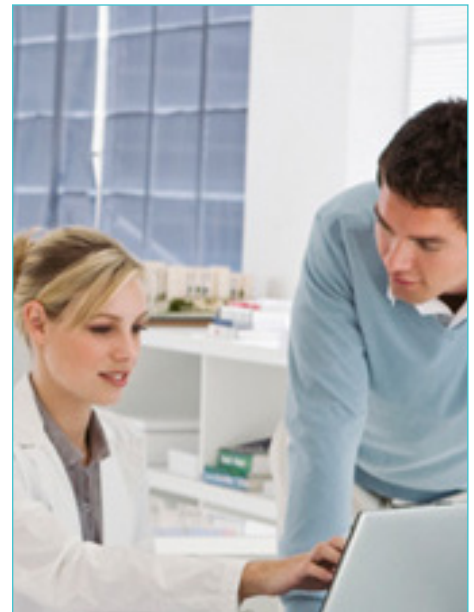
1. Click the tab with the blue arrow and toggle Export Table Configuration on.

2. Right click on products you wish to export in the device tree.
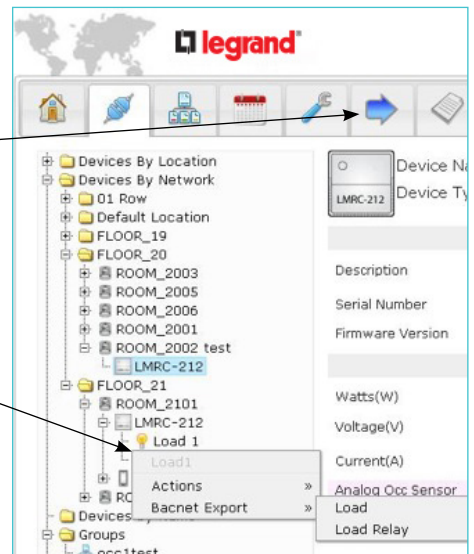
BACnet Object	Control	Name	Status	Value	Ord
binaryOutput:5002	Writable	Panel_86294.Relay.1	(ok)	Off (ok) @ def	station:|h:1bf77
binaryOutput:5003	Writable	Panel_86294.Relay.2	(ok)	Off (ok) @ def	station:|h:1f161
binaryOutput:5004	Writable	Panel_86294.Relay.4	(ok)	Off (ok) @ def	station:|h:1f166
binaryOutput:5005	Writable	Panel_86294.Relay.5	(ok)	Off (ok) @ def	station:|h:1f16b
binaryOutput:5006	Writable	Panel_86294.Relay.6	(ok)	Off (ok) @ def	station:|h:1f170
binaryValue:3001	ReadOnly	Group.Fun2	(ok)	Off (ok) @ 10	station:|h:1bc06