



# Wattstopper®

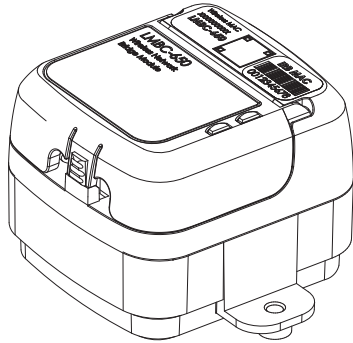
DLM Wireless Network Bridge Module with IPv6/Bluetooth®

No: 27970 – 5/19 rev. 3a

Quick Start Guide • Guide de démarrage rapide • Guía de inicio rápido

## Catalog Number • Numéro de Catalogue • Número de Catálogo: LMBC-650

Country of Origin: Made in China • Pays d'origine: Fabriqué en Chine • País de origen: Hecho en China



**This unit is preset for Plug n' Go™ operation, adjustment is optional.**

For full operational details, adjustment and more features of the product, see the DLM System Installation Guide provided with Wattstopper room controllers, and also available at [www.legrand.us/wattstopper](http://www.legrand.us/wattstopper).

**Installation shall be in accordance with all applicable regulations, local and NEC codes.** Wire connections shall be rated suitable for the wire size (lead and building wiring) employed.

For Class 2 DLM devices and device wiring: To be connected to a Class 2 power source only. Do not reclassify and install as Class 1, or Power and Lighting Wiring.

## DESCRIPTION AND OPERATION

The LMBC-650 Wireless Network Bridge module provides a network connection for a group of Wattstopper Digital Lighting Management (DLM) Local Network room level devices. The LMBC-650 allows the creation of a local network with wired DLM devices.

The DLM local network must include at least one wired room/load controller. When connecting a LMBC-650 to the LMBR-650 DLM network and then either using LMCS-100 or DLM Dashboard software, the system can expose BACnet protocol to reveal the status and parameters of all connected devices to the broader 3rd party network.

## SPECIFICATIONS

Voltage .....	24VDC
Current Consumption .....	20mA
Power Supply .....	Wattstopper Room Controller or Power Booster
Connection to the DLM Local Network.....	2 RJ-45 ports
Segment Network.....	BACnet IPv6 Mesh Network
DLM Local Network characteristics when using LMRC-1xx/2xx room controllers:	
Low voltage power provided over Cat 5e cable (LMRJ); max current	
800mA. Supports up to 64 load addresses, 47 communicating	
devices including up to 4 LMRC-10x, LMPC series, LMPB-100,	
and/or LMPL-101 controllers. Free topology up to 1,000' max.	
Wireless Hardware	
Radio .....	Single 2.4GHz
Antenna.....	IPv6 Mesh and Bluetooth low energy technology
Standard.....	Supports both 802.15.4 and Bluetooth low energy
Wireless Communication	
IPv6 Mesh (6LoWPAN) Range.....	up to 100 ft.
Bluetooth low energy Range .....	up to 30 ft.
Wireless Encryption	
AES-128 bit symmetric key, randomly generated per PAN	
Shared via secured DTLS only	
Environment	
Operating Temperature .....	32° to 158°F (0° to 70°C)
Storage Temperature .....	23° to 176°F (-5° to 80°C)
Relative Humidity .....	5 to 95% (non condensing)
Other	
Compatible Border Router .....	Wattstopper LMBR-650
BACnet IPv6 capable	
Compliance/Regulatory	
UL2043 plenum rated, FCC Part 15, RoHS	
Bluetooth certified	

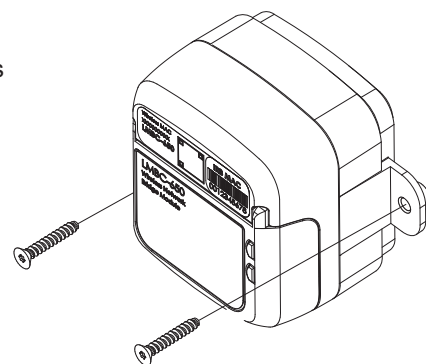
## MOUNTING AND INSTALLATION

Determine a suitable location for the LMBC-650. This will usually be in the ceiling closely located to the DLM local network devices to be networked either directly in the room/space or just outside in a hallway for easier access. Hallway mounting may be beneficial for classrooms and patient rooms.

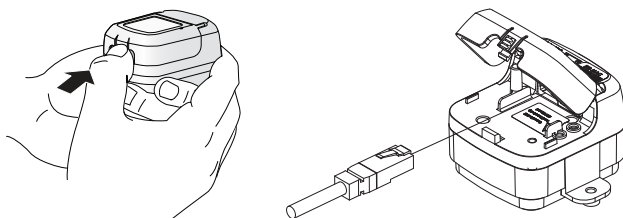
The LMBC-650 is UL2043 Plenum rated and is mounted using two screws.

**Warning:** The LMBC-650 is a wireless device. Avoid mounting next to motors, large metal obstructions, 802.11 WLAN access points, or within 6" of another wireless emitting device or 10' from and LMBR-650.

**NOTE:** The LMBC-650 can be installed in an electrical box to meet Chicago Plenum (CECA) guidelines. This will reduce wireless range by 25%.



### Attach the LMRJ Local Network Cable



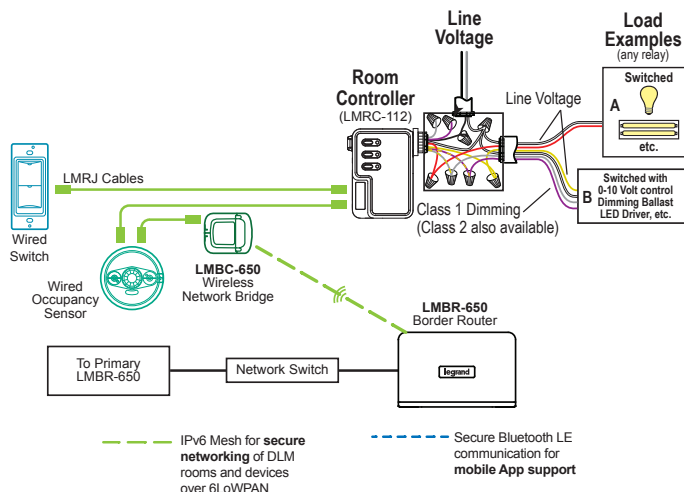
## WIRING TO THE DLM LOCAL NETWORK

The DLM local network uses free topology low voltage wiring. The LMBC-650 can connect anywhere on the DLM local network using LMRJ cables.

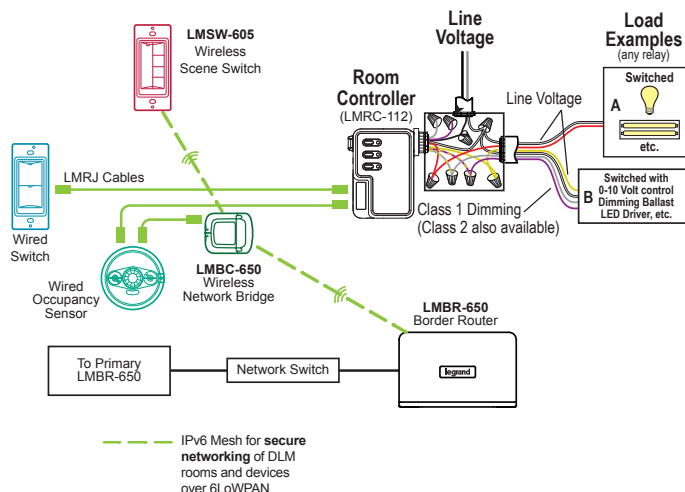
Use a Wattstopper LMRJ series cable or a Cat5e patch cable to connect the LMBC-650 to one of the RJ-45 jacks on any of the DLM local network devices. When connected to a powered DLM local network the red Transmit LED blinks rapidly. The red Config LED blinks at the same rate as the other DLM local network devices.

**WARNING:** Connect the LMBC-650 RJ-45 jack only to DLM lighting control devices. Do not connect Ethernet to the LMBC-650 RJ-45 jack.

**Wired Room**



**Hybrid Room with Wired and Wireless Devices**



**CAUTION: TO CONNECT A COMPUTER TO THE DLM LOCAL NETWORK USE THE LMCI-100. NEVER CONNECT THE DLM LOCAL NETWORK TO AN ETHERNET PORT – IT MAY DAMAGE COMPUTERS AND OTHER CONNECTED EQUIPMENT.**

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## LED INDICATORS

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The bridge has two LED indicators visible when the top cover is closed or open

### RGB LED

- Blinking Blue – network traffic associated with a border router. Can be used to identify device during commissioning.
- Solid – device is active but not connected to a border router

### Red LED

- Blinking – DLM Local network IRB traffic. Can be used to identify device during commissioning.

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## SETTING UP A ROOM NETWORK BY PAIRING DEVICES

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Since the primary use of the LMBC-650 is to integrate wired devices into a wireless network, and since this requires the use of an LMBR-650, **LMCS-100 software is recommended for use in pairing devices with the LMBC-650.**

However, it is still possible to pair wireless devices to the LMBC-650 manually. To pair devices in a network, they must all have the same wireless channel and PAN ID. By default the channel is 15 and the PAN ID is 1. Using Push-to-Pair mode, the PAN ID for all devices being paired is migrated to a new number, so that only those device communicate with each other. Note that while the channel remains at its default value using Push-to-Pair, if you pair devices using the DLM Config app, you can also change the channel.

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## SET UP A ROOM NETWORK USING PUSH-TO-PAIR MODE

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**NOTE:** Once you enter PtP mode on the room controller, a three minute timer begins. If the Config button on any device in the room is pressed, the timer resets and begins the three minute countdown again. If no Config button is pressed within three minutes, the room controller will exit PtP mode.

1. **Enter PtP mode on the LMBC-650.** Press the Config button three times (within three seconds) until the LED on the room controller flashes green.

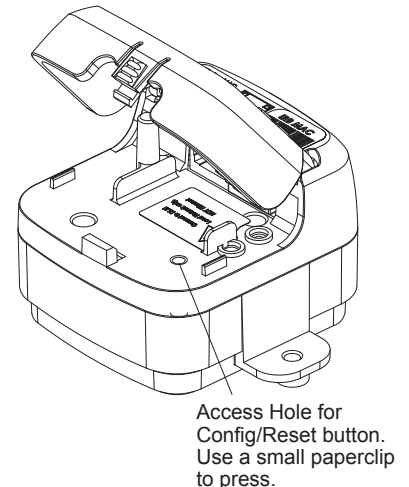
**NOTE:** You will need a small paper clip to access the Config button, as shown in the figure to the right.

2. **Enter PtP mode on a sensor or switch.** On one of the sensors or switches, press the Config button three times. As with the LMBC-650, the LED on the device will flash green.
3. **Pair the devices.** On that same sensor or switch, press the Config button once to pair it to the LMBC-650. The LED on the sensor or switch will turn solid green to indicate it is paired.

**NOTE:** Repeat steps 2 and 3 for each sensor and switch in the room, so that all devices are paired together in the same network.

4. **Exit PtP mode.** Exit PtP on the LMBC-650, by pressing the Config button 3 times. The LED on the LMBC-650 will flash blue while it completes the pairing process. The default PAN ID on all devices will change to a new number, based on the last four digits of the Mac address on the LMBC-650, and now those devices will communicate only with each other and not any devices which have not been paired. Once complete, the switches and sensors will automatically exit PtP mode and will reboot. The LED on each switch or sensor will flash white at least once before resuming normal operation.

**NOTE:** It is important to exit PtP mode within the three minute time limit mentioned above. If you do not, none of the device pairings will be remembered and you have to start the process over from the beginning.



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## USING THE DLM CONFIG APP

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The DLM Config App is available for both iOS® and Android® devices. Search “DLM Config” on your device to download.

Currently, the app can only be used to update the firmware in the LMBC-650.

However, the app **can** be used to pair devices in a room using a wireless room controller. For details on the features and operation, download the DLM Config App User Guide from the wattstopper web site at :

<https://www.legrand.us/wattstopper.aspx>



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## BRIDGE RESET

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The LMBC-650 wireless bridge can be reset manually on the device or remotely through software.

### Reset to Factory Default Network and Security Settings Directly on the LMBC-650

1. Open the hinged bridge cover to by pressing and lifting.
2. Using a paper clip, press the recessed reset button and hold for 20 seconds to reset back to factory default network and security settings.

### Reset Using LMCS (Advanced method)

1. The LMBC-650 must first be discovered as part of a wireless network, using LMCS.
2. Select the bridge device(s) to be reset in the LMCS device tree.
3. Click the Diagnostics tab.
4. There are two button on this tab, labeled **Factory Reset** and **Default Params**.
  - Clicking the reset button will put the LMBC-650 back to its factory defaults, including the Network ID and Channel. This means that once the reset is complete, the LMBC-650 will no longer be part of the current network, and you will therefore have to go through the Discovery process again to add the device back to the network, and then re-pair it with other devices in the room.
  - Clicking the Default Params button will set all programming parameters back to their defaults. However, the Network ID and Channel will not be changed so that the device will still remain communicating within the network. There only a couple of programming parameters within LMCS on the LMBC-650, so this option does not have a lot of practical use.

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## TROUBLESHOOTING

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### LMBC-650 LEDs fail to illuminate

Check LMRJ Cat5e connections

### Network LED fails to enter blinking state

Check to make sure border router is powered on

### FCC REGULATORY STATEMENTS

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

**NOTE:** NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This device complies with FCC and IC safety levels of radio frequency (RF) exposure for Mobile devices.

This device is only authorized for use in a mobile application. At least 20 cm of separation distance between this device and the user's body must be maintained at all times.

Any changes or modifications not expressly approved by The Watt Stopper Inc. could void the user's authority to operate the equipment.

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### WARRANTY INFORMATION

Wattstopper warrants its products to be free of defects in materials and workmanship for a period of five (5) years. There are no obligations or liabilities on the part of Wattstopper for consequential damages arising out of, or in connection with, the use or performance of this product or other indirect damages with respect to loss of property, revenue or profit, or cost of removal, installation or reinstallation.

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