Wattstopper®

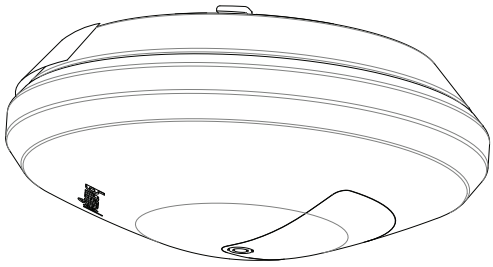
DLM Wireless Photosensor with IPv6/Bluetooth® Low Energy Technology

No: 27365 – 5/22 rev.8

Installation Instructions • Instructions d'Installation • Instrucciones de Instalación

Catalog Number • Numéro de Catalogue • Número de Catálogo: LMDL-600

Country of Origin: Made in China • Pays d'origine: Fabriqué en Chine • País de origen: Hecho en China
Models ending in -U are BAA and TAA compliant (Product produced in the U.S.)



UNIT DESCRIPTION

The DLM Wireless photo sensor is a wireless battery powered light sensor intended for operation with Wireless room controllers. It is an open loop photo sensor that measures daylight in foot candles to automatically switch or dim zones of lighting. The sensor sends light level signals to LMRC-611 room controllers to adjust connected lighting loads.

Sensor Installation and Configuration Overview

1. Mount the photosensor so that the Daylight Viewing Port directly views the daylight entering the space through a window or a skylight. See Placement Guidelines and Mounting the Photosensor.
2. Turn ON power to the room controller.
3. Use LMCS-100 or the DLM Configuration App software to complete the configuration process. The LMDL-600 will not operate properly until the configuration and calibration is successful.
4. Ensure there is a minimum 5fc of ambient light in the space.
5. From LMCS or the App, select the room network you'd like to calibrate and select the LMDL to start the calibration process. You will need a light level meter in order to record the fc data of the space for each prompt in the software. Place the light meter at the task level.
6. After following the software prompts, once calibrated, you can adjust switch overrides and other features by selecting the LMRC that the LMDL is paired to.

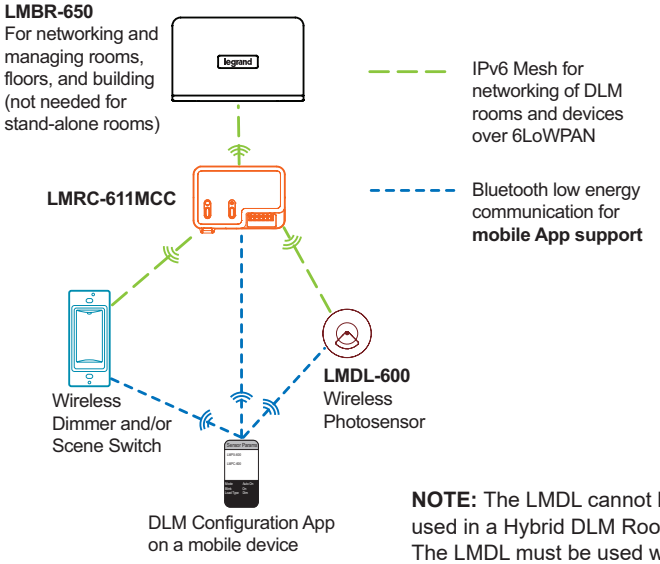
Application Note: Depending on external factors (such as environment, fixture location and dimming curve of the load) an adjustment factor may be needed to achieve the target light level after calibration. If the calibrated LMDL and fixture combination outputs less light than the target light level (set in the LMRC parameter), adjust the 'target light level' parameter by increasing to an appropriate amount.

IMPORTANT: You must wake the device (press the Config button) before commissioning. If the LMDL is paired to a room with LMCS, LMCS is required to calibrate the sensor. If the LMDL is paired to a room with the DLM Configuration App, please calibrate with the DLM Configuration App.

SPECIFICATIONS

Light sensor range..... 1 to 1,500 fc
Power Supply ..... Battery powered, CR123A Lithium Ion, 3 VDC
Connection to DLM Network.... Wireless via LMRC-611 series room controllers
Wireless Radio .....Single, Concurrent 802.15.4 and
..... Bluetooth Low Energy, 2.4GHz
Wireless Communication
IPv6 Mesh (6LoWPAN) Range.....up to 60 ft.
Bluetooth low energy Range .....up to 30 ft.
60 ft. max. between LMDL-600 and room controller
Wireless Encryption..... AES-128 bit symmetric key
Environment:
Operating Temperature .....32° to 104°F (0° to 40°C)
Storage Temperature ..... 23° to 140°F (-5° to 60°C)
Relative Humidity .....5 to 95% (non condensing)
Other:
Plenum Rating.....UL2043
Compliance/Regulatory
FCC, RoHS, Bluetooth, IC certified
UL and cUL listed (E101196)
Patent Pending

WIRELESS DLM CONNECTION



NOTE: The LMDL cannot be used in a Hybrid DLM Room. The LMDL must be used with wireless room controllers.

Distance Recommendations:

30' max between LMDL-600 and mobile device

60' max. between LMDL-600 and room controller or bridge

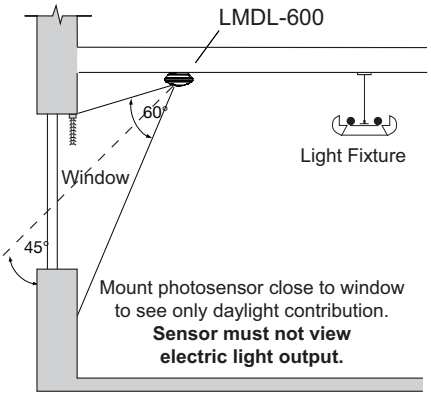
10' minimum and 100' maximum between LMBR-650 and room controller

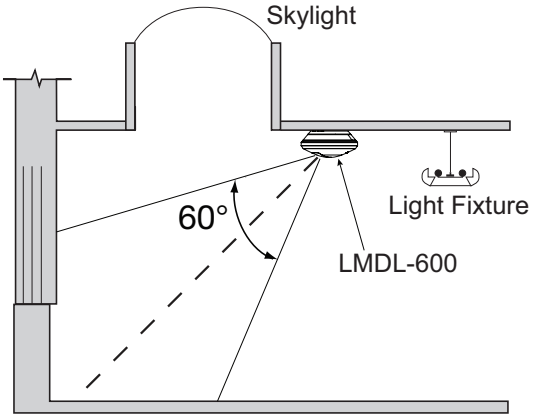
PLACEMENT GUIDELINES

WARNING: DO NOT USE THE DLM LOCAL NETWORK TO CONTROL LOADS OTHER THAN LIGHTING IF THE LOAD IS NOT IN VIEW OF A PERSON AT ALL CONTROL LOCATIONS. DO NOT USE DLM TO CONTROL ANY LOAD THAT MIGHT BE DANGEROUS OR CAUSE A HAZARDOUS SITUATION IF ACCIDENTALLY ACTIVATED.

The LMDL-600 switches or dims electric light in response to daylight. It is important to select a location where the photosensor measures daylight contribution only. For proper operation the photosensor should not see any electric light contribution.

When the primary source of daylight is a window (sidelighting), the LMDL-600 is typically ceiling mounted between one to three feet away from the window. The figure below shows a typical placement location for a sidelit application.





IMPORTANT INSTALLATION INFORMATION

To ensure a successful installation and startup of a wireless system, the following steps must be taken by the installing contractor. **Failure to document all device address and locations may delay completion of startup and result in additional startup charges.**

Key Requirement: Document **every** Device's MAC Address (at least the last 4 alphanumeric characters). An additional MAC address label is included for the installer to use on a floor plan map. The last four characters are repeated in a larger font, in bold. Keep this document so that the commissioning tech has access at a later date.

Examples of labels

MOUNTING THE PHOTOSENSOR

The LMDL-600 in a ceiling or open ceiling environment so that the daylight view port directly views daylight entering the space through a window or skylight.

NOTE: The LMDL-600 operates on an included CR123A battery. Before mounting, pull the battery tab on the back of the unit to activate the battery and power the unit.

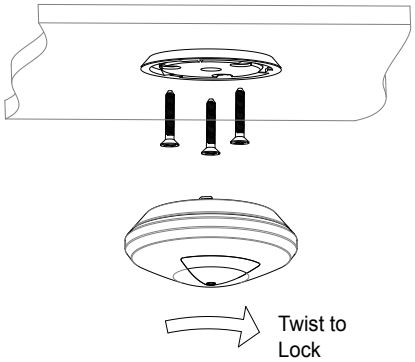
The photosensor can be mounted using one of thee possible methods:

- Mounted to the ceiling using the included plastic mounting plate
- Mounted to a hanging threaded rod, for open ceiling environments, using the included threaded rod adapter
- Recessed mounting, using the optional LMDL-600-RPM Recessed Plenum Mounting Kit

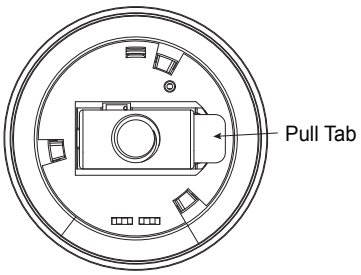
NOTE: The LMDL-600 has a rotating cover which allows the daylight port to be adjusted to point directly at the window or skylight. The cover can be rotated approximately 170°, so mount the photosensor so it points in the general direction of the window/skylight and then adjust the cover.

Ceiling Mount

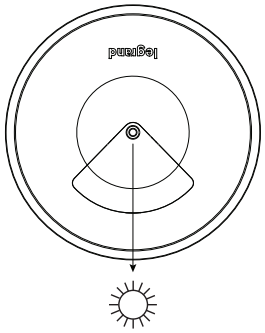
1. Attach the mounting plate to the ceiling with the three included 1" mounting screws.
2. Twist the LMDL-600 clockwise to lock it onto the mounting plate.



NOTE: Pull protective battery tab before installation to power the sensor.



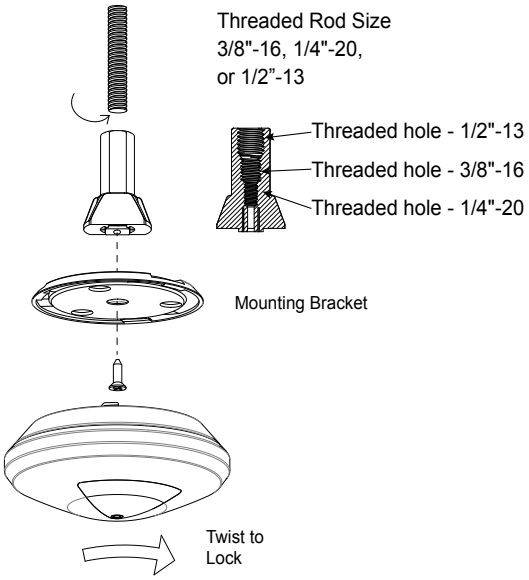
Rotate sensor window so that it points towards window or skylight



Threaded Rod Mount

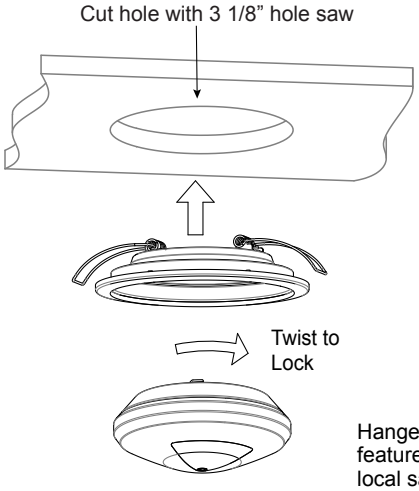
The threaded rod adapter can mount to a 3/8” - 16 or 1/4” - 20 hanging threaded rod.

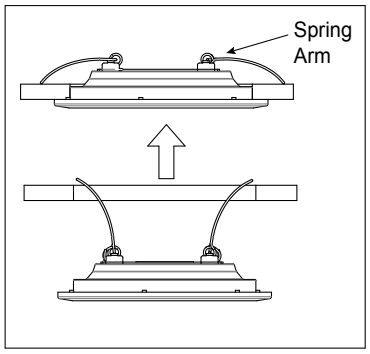
1. Screw the adapter onto the rod.
2. Attach the mounting plate to the adapter using the included 10mm screw.
3. Twist the LMDL-600 clockwise to lock it onto the mounting plate.



Recessed Mount, using the LMDL-600-RPM

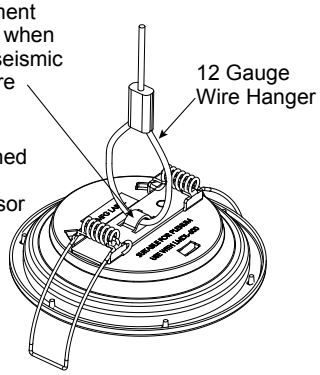
1. Using a 3 1/8” hole saw, cut a hole in the ceiling.
2. Raise the spring loaded arms so they fit through the hole.
3. Release the arms. The LMDL-600 will loosely clamp to the ceiling.
4. Hold the edges of the recessed mounting plate to prevent it from moving, then twist the LMDL-600 clockwise to lock it onto the mounting plate.





Hanger attachment feature, for use when local safety or seismic requirements are applicable.

Note: Once the sensor is attached to the recessed mount, the sensor will be firmly in place.



SETTING UP A ROOM NETWORK BY PAIRING DEVICES

Pair wireless devices to a room controller to create an individual room network and enable Plug N’ Go operation.

Device pairing can be done by using by using the DLM Config App or Push-to-Pair (PtP) mode on the room controller and all other wireless devices. Because the app is needed for commissioning the LMDL-600, you may find it easier to use the DLM Config app.

To pair devices in a network, they must all have the same wireless channel and Network ID. By default the channel is 15 and the Network ID is 1. Using Push-to-Pair mode, the Network ID for all devices being paired is migrated to a new number, so that only those device communicate with each other. The channel number will remain at 15.

NOTE: LMCS-100 software, version 4.7 or later can also be used to pair devices. However, LMCS-100 requires use of an LMBR-650. Using LMCS, it is possible to change the channel as well as Network ID.

DEVICE PAIRING, COMMISSIONING, AND UNIT ADJUSTMENT USING THE DLM CONFIG APP

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

The app provides the ability to pair various devices in a room. The app is also required in order to configure and calibrate the LMDL-600, which must be done before it will function correctly in the room. Additionally, you can modify load binding and edit various DLM parameters within the app.

For details on the features and operation, download the DLM Config App User Guide from the wattstopper web site at :

GET IT ON Google Play

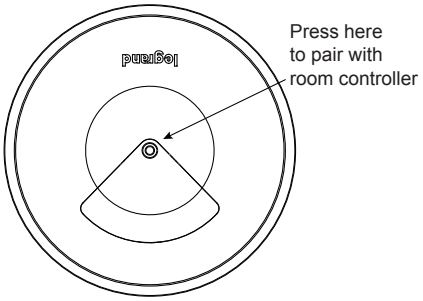
Download on the App Store

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

NOTE: LMCS-100 software, version 4.7 or later can also be used to pair devices, commission the LMDL-600, and edit DLM parameters. However, LMCS-100 requires use of an LMBR-650.

DEVICE PAIRING USING PUSH-TO-PAIR MODE

Push-to-Pair in a room with a single LMRC-611 Room Controller



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 room controller.** Press the Config button three times (within three seconds) until the LED on the room controller flashes green.
2. **Enter PtP mode on the LMDL-600.** Using a pointed tool, press the Config button three times. As with the room controller, the LED on the switch will flash green.
3. **Pair the LMDL-600.** Press the Config button on the LMDL-600 one more time to pair it to the room controller. The load connected to the room controller will toggle once (if the load is OFF, it will turn ON; if ON, it will turn OFF) to indicate that pairing was successful. Also, the LMDM-601's blinking LED will turn to solid green as another indicator of a successful pairing.

   NOTE: If there are any wireless sensors, dimmers, or additional switches in the room, repeat steps 2 and 3 for each of those devices so that all devices are paired together in the same network. For each device, the load will toggle during step 3.
4. **Exit PtP mode.** From any device, press the Config button 3 times. After a few seconds, the LED on each Room controller, switch or sensor currently in PtP mode will flash white and reboot, leaving the default network and migrating to the new network. Then, the LED on the room controller will flash blue and the pairing process finishes.The default Network ID on all devices will change to a new number, based on the last four digits of the Mac address on the room controller, and now those devices will communicate only with each other and not any devices which have not been paired.

   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.

Push-to-Pair in a room with multiple LMRC-611s

In a room with multiple loads, there may be more than one LMRC-611. They can all be paired to the same room network, allowing the scene switch to set each load to different levels per scene. One of the room controllers will become the primary, determining the Network ID and channel settings for all the devices in the network.

1. **Enter wireless Push-to-Pair (PtP) mode on all room controllers.** Press the Config button three times on each LMRC-611 to put them all in PtP mode. The green LEDs will flash on all room controllers. The **first** room controller placed into PtP will become the **primary**.
2. **Pair the room controllers together.** Press the Config button one more time on each room controller **except** for the primary. This indicates to the rooms controllers that they will be paired with each other.

   The primary room controller's LED blink rate will double once the first device is paired to it. This faster blink rate is convenient when multiple room controllers are present on the same network.The LED will turn solid on the other controllers being paired.

   NOTE: If there are more than two room controllers, you have the choice of either placing them all in PtP mode and then pairing them, or pairing the first two controllers and then repeating steps 1 and 2 for each additional controller, leaving the primary controller in PtP mode the entire time.
3. **Enter PtP mode on the LMDL-600.** Press the Config button three times. As with the room controller, the LED on the switch will flash green. Also, the LMDM-601's blinking LED will turn to solid green as another indicator of a successful pairing.
4. **Pair the LMDL-600.** Press the Config button on the LMDL-600 one more time to pair it to the room controller. The load connected to the room controller will toggle once (if the load is OFF, it will turn ON; if ON, it will turn OFF) to indicate that pairing was successful.

   NOTE: If there are any wireless sensors, dimmers, or additional switches in the room, repeat steps 2 and 3 for each of those devices so that all devices are paired together in the same network. For each device, the load will toggle during step 3.
5. **Exit PtP mode.** From any device, press the Config button 3 times. After a few seconds, the LED on each Room controller, switch or sensor currently in PtP mode will flash white and reboot, leaving the default network and migrating to the new network. Then, the LED on the room controller will flash blue and the pairing process finishes.The default Network ID on all devices will change to a new number, based on the last four digits of the Mac address on the primary room controller, and now those devices will communicate only with each other and not any devices which have not been paired.

   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.

Pairing a device to an existing network

If you need to add the LMDL-600 to an existing in room network, follow the procedure below:

1. **Enter wireless Push-to-Pair (PtP) mode on the room controller or any currently paired battery device.** Press the Config button three times (within three seconds).The LED on the room controller and any paired battery devices that are currently awake will flash green.
2. **Enter PtP mode on the LMDL-600.** Using a pointed tool, press the Config button three times. As with the room controller, the LED on the switch will flash green.
3. **Pair the devices.** Press the Config button on the LMDL-600 one more time to pair the LMDL-600 to the room controller. The load connected to the room controller will toggle once (if the load is OFF, it will turn ON; if ON, it will turn OFF) to indicate that pairing was successful.

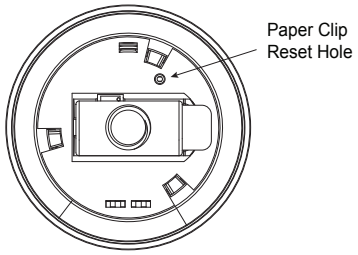
4. From any device, press the Config button 3 times. After a few seconds, the LED on the LMDM-601 will flash white and reboot, leaving the default network and migrating to the new network. Then the LED on the room controller will flash blue while it completes the pairing process. The Network ID of the LMDL-600 will change to the value used by the previously paired devices and the room controller also returns to that value.

RESETTING THE LMDL-600

When you reset the LMDL-600, the Channel and Network ID will return to their default values, and if the switch was previously paired, it will no longer be connected to that room network. All DLM parameters are also returned to their default values.

There are two ways to reset the LMDL-600:

- Press the Config button 10 times. The LED will blink green each time the Config button is pressed. After the 10th press, the LED will turn red then briefly turn white indicating it is rebooting.
- On the back of the sensor, is a small hole that will fit a paper clip. Use a paper clip to depress the button inside that hole and hold for 10 seconds. When you first press the reset button, the LED will blink red once, then after the 10 second will reboot and the LED will briefly turn white, indicating it is rebooting.



NOTE: You can also reset the LMDL-600 from the DLM Config App or LMCS (the LMDL-600 must be woken up before resetting).

LED INDICATORS

LED Color	Function
White	Unit Boot Up
Green, 1 Blink	Config Button Pressed
Blinking Green	Push to Pair Mode
Red, 1 Blink	Indicates low battery. It will only blink if the Config button is pressed. Also blinks if Reset button on back is pressed
Blinking Red	Push n' Learn Mode (not applicable to LMDL-600 but will blink if other devices are in PnL)

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: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

RF exposure warning

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. 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.

IC Caution:

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:

(1) This device may not cause interference, and

(2) This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

(1) l'appareil ne doit pas produire de brouillage, et

(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

RF exposure warning

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Cet équipement est conforme aux limites d'exposition aux radiations de la IC définies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé à une distance minimale de 20 cm entre le radiateur et votre corps.

NOTE: No rights or licenses under patents owned or controlled by third parties, express or implied, are granted to use third-party devices in combination with these products in a wireless mesh network, or to use third-party services to access, monitor or control these products in a wireless mesh network via the internet or another external wide area network. Separate license rights may need to be obtained from such third parties for such devices, combinations and services.

WARRANTY INFORMATION	INFORMATIONS RELATIVES À LA GARANTIE	INFORMACIÓN DE LA GARANTÍA
Wattstopper warranties 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.	Wattstopper garantit que ses produits sont exempts de défauts de matériaux et de fabrication pour une période de cinq (5) ans. Wattstopper ne peut être tenu responsable de tout dommage consécutif causé par ou lié à l'utilisation ou à la performance de ce produit ou tout autre dommage indirect lié à la perte de propriété, de revenus, ou de profits, ou aux coûts d'enlèvement, d'installation ou de réinstallation.	Wattstopper garantiza que sus productos están libres de defectos en materiales y mano de obra por un período de cinco (5) años. No existen obligaciones ni responsabilidades por parte de Wattstopper por daños consecuentes que se deriven o estén relacionados con el uso o el rendimiento de este producto u otros daños indirectos con respecto a la pérdida de propiedad, renta o ganancias, o al costo de extracción, instalación o reinstalación.

No. 27365 – 5/22 rev. 8

800.879.8585
www.legrand.us/wattstopper