Legrand®

Wattstopper®
DLM LMJA-8xxx Network Controller

Installation Instructions • Instructions d'Installation • Instrucciones de Instalación

Catalog Numbers • Les Nombre de Catalogue • Números de Catálogo: LMJA-8125, LMJA-8300/LMJA-8125-AX, LMJA-8300-AX

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

OVERVIEW

The Legrand/Wattstopper LMJA-8125/LMJA-8300 is a network controller that provides advanced building management and automation features for customers using Digital Lighting Management (DLM) BACnet-based networks and devices. Powered by the Tridium Niagara platform, the controller can be ordered with either the N4 or AX 3.8 (LMJA-8xxx-AX) Segman 2.4 station. The LMJA-8xxx Network controller hardware running are licensed for use with Wattstopper DLM. When used with a DLM wired or wireless network segments the LMJA-8xxx series network controllers provide global control, monitoring, adjustment, scheduling, and support for graphics. Larger buildings and campus deployments with multiple network controllers can also communicate to a supervisor software for a single point of BACnet management and monitoring. The LMJA-8xxx series can be configured to work with just DLM platform or can be integrated into an existing 3rd party Building Management System (BMS).
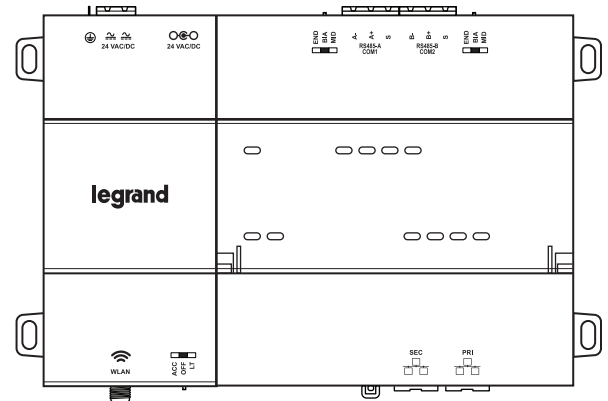
PREPARATION

Unpack the LMJA-8125/8300 controller and power module and inspect the package contents for damaged or missing components. If damaged, notify the appropriate carrier at once and return any damaged components for immediate repair or replacement.

Included in this Package

Included in this package you should find the following items:

- (1) DLM LMJA-8125/8300 controller unit with micro SD card
- (1) Controller power supply
- (1) Wattstopper DLM quick reference guide
- (1) Wattstopper installation sheet (28957)
- (1) Accessory wiring and connector accessory pack

⚠ **CAUTION** ⚠

Safety Precautions

The following items are warnings of a general nature relating to the installation and start-up of the LMJA-8xxx. Be sure to heed these warnings to prevent personal injury or equipment damage.

WARNING

- Disconnect power before installation or servicing to prevent electrical shock or equipment damage.
- Make all connections in accordance with national and local electrical codes. Use copper conductors only.
- To reduce the risk of fire or electrical shock, install in a controlled environment relatively free of contaminants.
- This device is only intended for use as a monitoring and control device. To prevent data loss or equipment damage, do not use it for any other purpose.

Static Discharge Precautions

Static charges produce voltages high enough to damage electronic components. The microprocessors and associated circuitry within a Segment Manager are sensitive to static discharge. Follow these precautions when installing, servicing, or operating the system:

CAUTION

- Work in a static-free area.
- Discharge any static electricity you may have accumulated. Discharge static electricity by touching a securely grounded object.
- Do not handle the printed circuit board (PCB) without proper protection against static discharge. Use a wrist strap when handling PCBs. The wrist strap clamp must be secured to earth ground.

Inserting or Removing the Micro SD Card Installation

Before mounting a new controller, you must insert the included microSD flash memory card. Note the card has the unique Niagara identity (host ID) for the unit, set at the factory. ALL power to the controller must be removed. If the unit is currently running, initiate a controller shutdown.
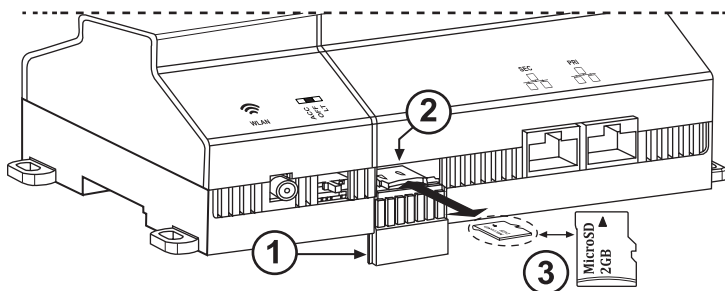
1. Access shutter for microSD card (slide down/up to open/close)
2. Card carrier inside controller
3. MicroSD card to insert or remove from card carrier

1. Carefully slide the plastic microSD card shutter open. The shutter should remain captive in the base, revealing the microSD card socket.
2. To insert the microSD card, slide it into the card carrier, label side up, until the spring catch engages. If properly inserted, the card is behind the shutter track.
3. To remove the microSD card, push it in, until the spring release pushes it partially out of the card carrier. Grasp the card, pull it completely out of the unit and store it in a static-free protective case.
4. Carefully slide the card shutter back over the card carrier opening, until it clicks into place. When properly closed, the shutter should not protrude behind the mounting base.

NOTE: Data on the microSD card is encrypted. If you swap in a card from a previously configured unit, you must change the LMJA-8125/8300 system passphrase on the platform to match the passphrase on the new microSD card. Typically, the microSD card never needs removal. However, in the case where a controller has been electrically damaged or found faulty, you can remove the card and install it in another like unit, so it can become a functional replacement.

MATERIAL AND TOOLS REQUIRED

- One of the following:
  - ‣ UL Listed, Class 2, 24VAC transformer, rated at minimum of 24VA. A dedicated transformer is required (cannot power additional equipment), -OR-
  - ‣ 24VDC power supply, capable of supplying at least 1A (24W), -OR-
  - ‣ NB-PS1 wall-mount AC power adapter with barrel connector plug
- DIN rail, type NS35/7.5 (35mm x 7.5mm_ and DIN rail end-clips (stop clips), recommended for any installation with option modules. Controller is also panel mountable.
- Suitable tools, fasteners, and accessories for mounting

MOUNTING

Mount the LMJA-8125/8300 controller in a location that allows clearance for wiring, servicing, and module removal.

Environmental Requirements

Note the following requirements for the LMJA-8125/8300 controller mounting location:

- This product is intended for indoor use only. Altitude to 6,562 ft (2,000m).
- Ambient conditions must be within the range of: Operating Temperature: -4°F to 140°F (-20°C to 60°C), Storage Temperature: -40°F to 185°F (-40°C to 85°C)
- Relative Humidity: 5% to 95% non-condensing, Pollution Degree 3
- Supply (mains) voltage requirements: Allowable voltage fluctuation +/- 10%
- Do not expose the unit to ambient conditions outside of the range of 0ºC (32º F) to 50ºC (122º F) and relative humidity outside the range 5% to 95% non-condensing.
- If mounting inside an enclosure, that enclosure should be designed to keep the unit within its required operating range considering a 24-watt dissipation by the controller, plus dissipation from any other devices installed in the same enclosure. This is especially important if the controller is mounted inside an enclosure with other heat producing equipment.
- Do not mount the unit:
  - ‣ In an area where excessive moisture, corrosive fumes, or explosive vapors are present
  - ‣ Where vibration or shock is likely to occur
  - ‣ In a location subject to electrical noise, including the proximity of large electrical conductors, electrical machinery, welding equipment, spark igniters, and variable frequency drives, etc.

Physical Mounting

The following information applies to physically mounting the unit.

- You can mount the LMJA-8125/8300 in any orientation. Horizontal mounting (as shown) is strongly recommended to achieve maximum heat dissipation and meet the operating temperature upper limit. Any other mounting orientation reduces this upper limit.
- Mounting on a 35mm wide DIN rail is recommended. The LMJA-8125/8300 unit base has a molded DIN rail slot and locking clip. DIN rail mounting ensure alignment of the connectors between all devices.
- If DIN rail mounting is impractical, you can use screws in mounting tabs on the controller (see next page)
- The LMNC-ENC1 is an optional DIN rail equipped enclosure. The LMNC-ENC1 provides an integral 120VAC receptacle, conduit connection points and protection for the LMJA-8xxx. It is designed for applications where code or the local AHJ requires that low voltage wiring such as control and communication wiring be run inside conduit, or where needed for customer specifications. See the instructions provided with the LMNC-ENC1 for more information.
- The LMJA-8125/8300 controller can also be mounted in an LMNC enclosure, where multiple NB-Routers and an NB-Switch are used
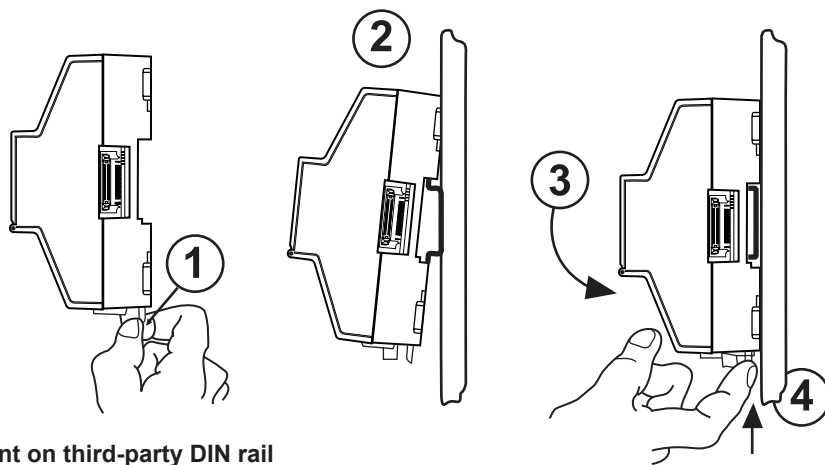

NOTE: To remove a unit from the DIN rail, pull down its locking clip, then swing the bottom out and lift the unity away from the DIN rail.

### To mount on third-party DIN rail

The following procedure provides step-by-step DIN rail mounting instructions for the LMJA-8125/8300. It is recommended to leave 2 inches of clearance above and below the unit.

1. Pull the controller's locking clip down.
2. Tilt the controller to hook over the DIN rail.
3. Push down and in on the unit, fastening to the rail.
4. Push the locking clip up to secure.
5. Mount any option module (RS-485 Module) onto the DIN rail in the same way.
6. Carefully secure both ends of the final assembly with DIN rail end-clips provided by the DIN rail vendor.
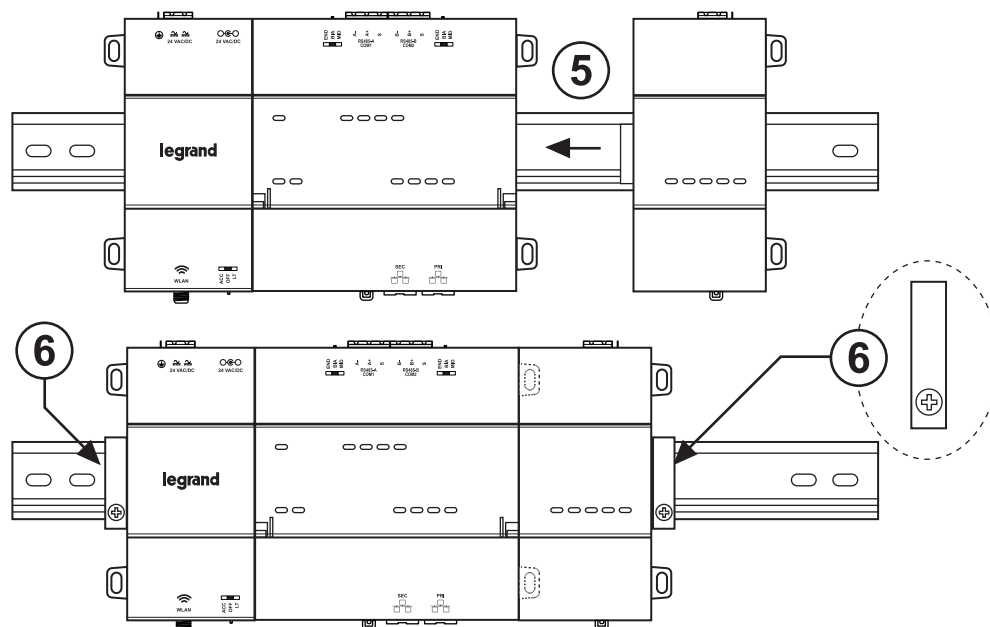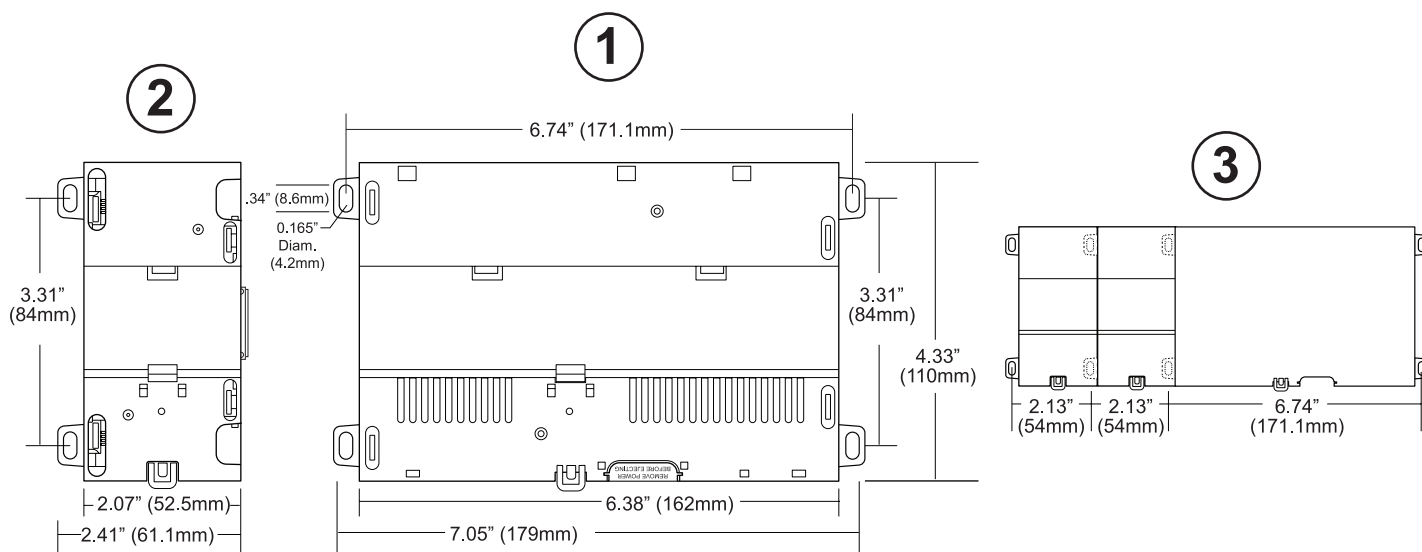
DIN Rail Mounting Dimensions

This diagram shows mounting dimensions of controller and option modules. Electronic and printed versions of this guide may not show the dimensions to scale. Verify all measurements before drilling.
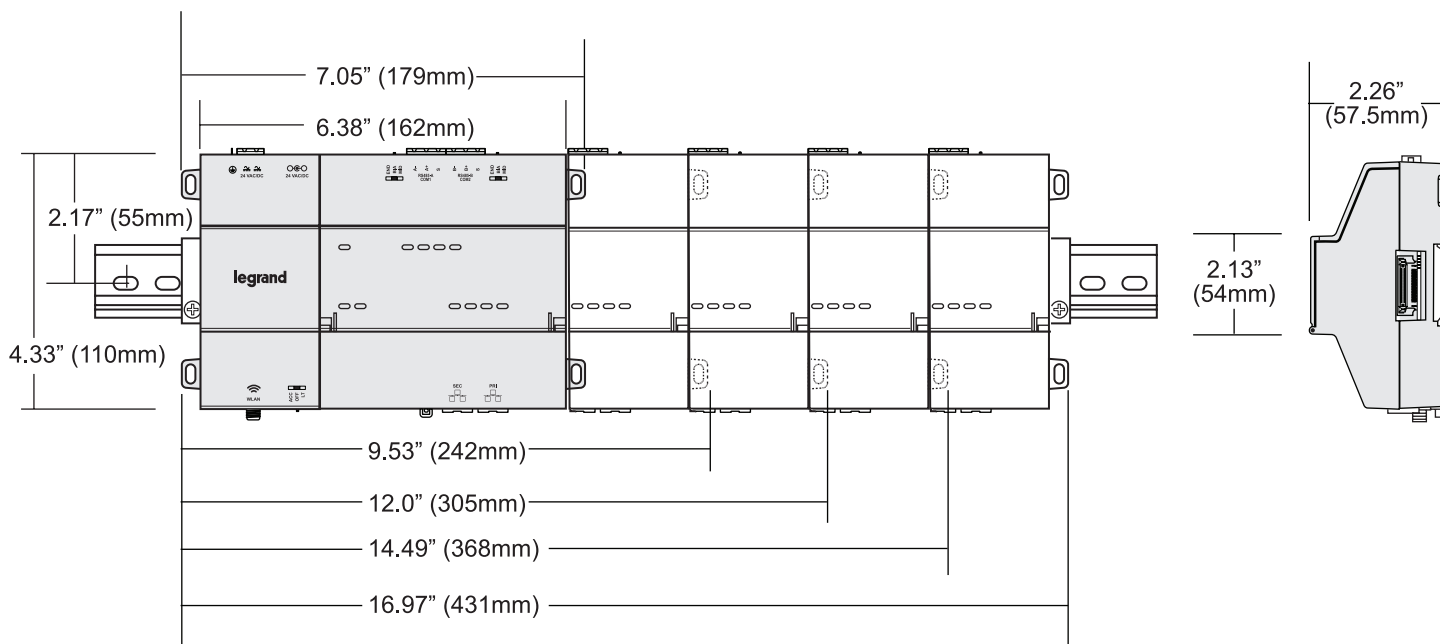
Tab Mounting Dimensions

Measurements shown below are in inches and (mm). **NOTE:** DIN rail mounting is recommended over tab mounting.

1. The LMJA-8125/8300 controller. With no option modules added, allow at least 1.5" (38mm) clearance around all sides.
2. Optional expansion module. Up to four (4) may be used.
3. Distances between center of tabs from one unit to another unit.

INITIAL LOGIN AND SET UP - AX 3.8 (SEGMAN 2.4)

Make sure that you have followed all installation instructions and that the controller is properly powered and connected to the segment network(s).

1. Connect a PC to the LAN 1 connection on the LMJA-8xxx-AX using a standard Ethernet cable (not supplied). Note that some older PCs require the use of a crossover cable for this connection.
2. Confirm that the LED labeled PRI is lit on the top of the LMJA-8xxx-AX housing. This indicates that an Ethernet connection is present. Confirm that the link indicator on the PC's NIC is also lit. If both are not lit, try using another cable or try using a crossover cable.
3. Set the network adapter in your PC to use a static IP address in the same range as the LMJA-8xxx_AX. Set the PC to 192.168.1.xxx (where xxx is any number between 001 and 255 and is not the same as the Segment Manager). Set the subnet mask to 255.255.255.0. If you need assistance with this step, see the Static IP Address Setup on pages 6-7.
4. Open a browser on the PC and enter the following in the address field:
   http://192.168.1.140.
5. Press ENTER. The browser displays a progress indicator while the Segment Manager 2.4 downloads a small application to the PC. This process is only required the first time that you connect to the LMJA-8xxx-AX running Segment Manager 2.4.
6. When the Login window appears, enter the factory default login:

   Username: **SegMan**
   Password: w@ttstopper

   Note that **both** the user name and password are case sensitive.

   Click the "Login" button. Logins with individual permissions can be customized for different users. Refer to the Operation Manual for setting up user logins.
7. The Segment Manager 2.4 Home screen opens in the browser window. Refer to the Operation Manual for further set up and operation of the Segment Manager 2.4.

INITIAL LOGIN AND SET UP - N4

Make sure that you have followed all installation instructions and that the controller is properly powered and connected to the segment network(s).

1. Connect a PC to the LAN 1 connection on the LMJA-8xxx using a standard Ethernet cable (not supplied). Note that some older PCs require the use of a crossover cable for this connection.
2. Confirm that the LED labeled PRI is lit on the top of the LMJA-8xxx housing. This indicates that an Ethernet connection is present. Confirm that the link indicator on the PC's NIC is also lit. If both are not lit, try using another cable or try using a crossover cable.
3. Set the network adapter in your PC to use a static IP address in the same range as the LMJA-8xxx. Set the PC to 192.168.1.xxx (where xxx is any number between 001 and 255 and is not the same as the Segment Manager). Set the subnet mask to 255.255.255.0. If you need assistance with this step, see the Static IP Address Setup on pages 6-7.
4. Open a browser on the PC and enter the following in the address field:
   http://192.168.1.140.
5. When the Login window appears, enter the factory default login:

   Username: **admin**
   Password: W@ttst0pper

   Note that **both** the user name and password are case sensitive.

STATIC IP ADDRESS SETUP

These instructions apply to Windows® 7, 8, or 10. Consult the appropriate documentation for other operating systems.

To set up the computer for direct connection to the Segment Manager, proceed as follows:

1. Click on the Start menu and type: network sharing center. Then Click on "Network and Sharing Center" in results.
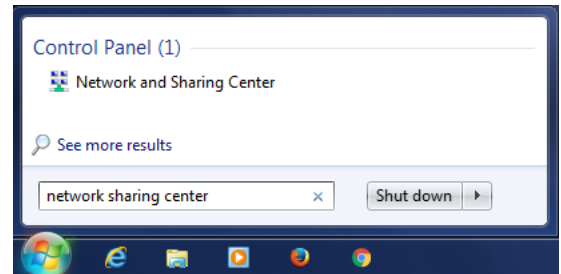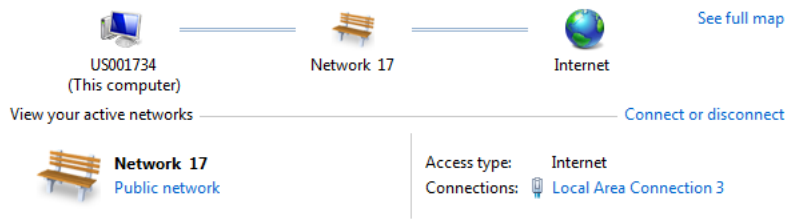
2. Click **Local Area Connection** to open the **Local Area Connection Status** window.
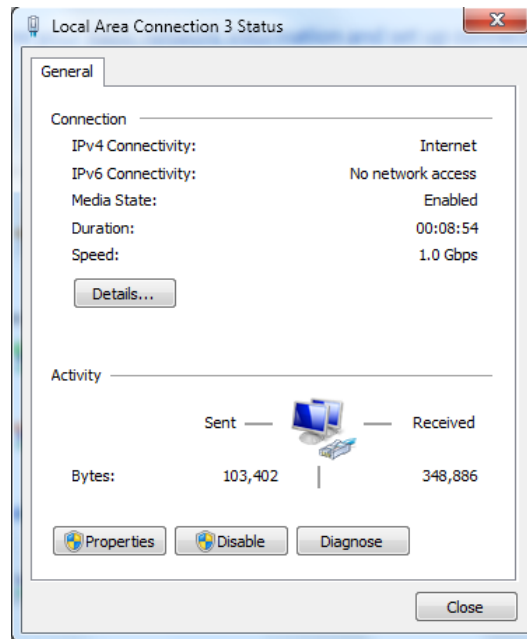
3. Click **Properties**. In the Local Area Connection Properties window, select **Internet Protocol Version 4 (TCP/IPv4)**.
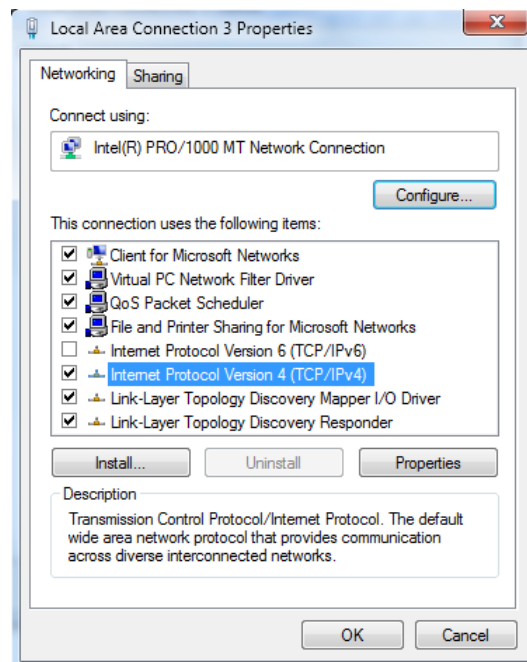
4. Click **Properties**.
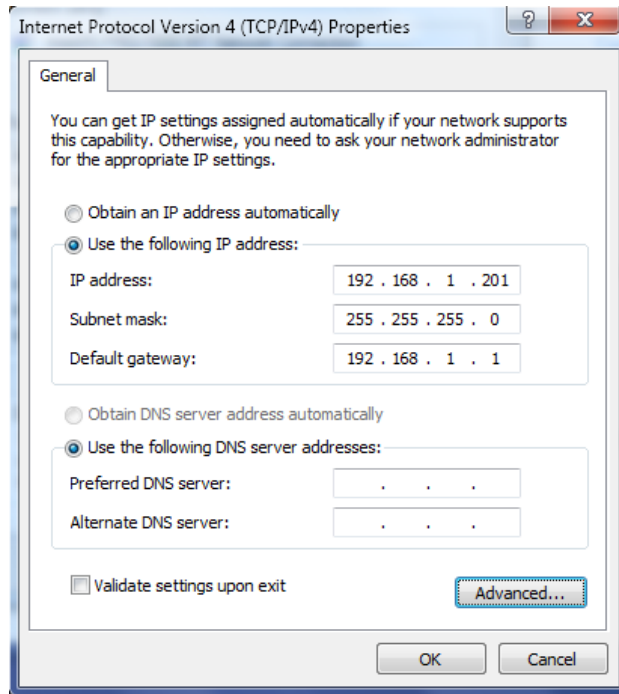
5. Select **Use the following IP address**.
6. Enter the **IP address** and **Subnet mask**. Set the PC to 192.168.1.xxx (where xxx is any number between 001 and 255 and is **not** the same as the Segment Manager). Set the subnet mask to 255.255.255.0.
7. Click **OK** then close all remaining windows.

STATUS LEDS

The controller provides a number of status LEDs, with all but one visible with the front access door closed.
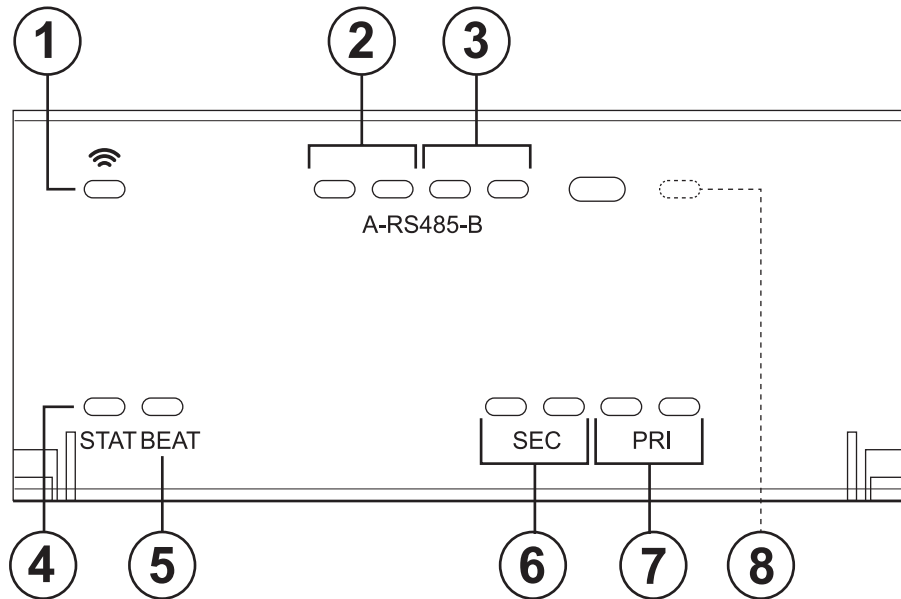
1. **WiFi** (green) - This option is not used
2. **RS485 "A"** (COM1) - Transmit (TX, Yellow) and Receive (RX, Green)
3. **RS485 "B"** (COM2) - Trams,to (TX) and Receive (RX)
4. **STAT** (Green) - Remains lit
5. **BEAT** (Yellow) - "Heartbeat" LED that blinks at 1Hz during normal operation
6. **Secondary Ethernet**, SEC (LAN2) "link" (Green) and "Activity" (Yellow)
7. **Primary Ethernet**, PRI (LAN1) "Link" (Green), "Activity" (Yellow)
8. **BACKUP** (Behind door) - Green, typically Off unless a USB drive is inserted, or a backup, restore, or factory recovery image install is in progress.

USING STATUS LEDS

The LMJA-8125/8300 includes several LEDs that can help you determine the status of the unit. They are located in two places as shown in the Status LEDs diagram above: the top of the LMJA-8xxx (visible through the cover), and for serial ports, on the bottom board (visible only with cover removed). From left to right these LEDs include:

- Status (STATUS)
- Heartbeat (BEAT)
- Serial Ports (see USB Ports section on page 10 for explanation)
- Ethernet Ports (SEC, PRI)

Ethernet Ports

Each Ethernet port ("SEC" for LAN2, "PRI" for LAN1) has one green LED, visible on the top cover. The LED indicates activity on the associated port as follows:

- **Off** – No Ethernet link is made.
- **On** – Ethernet link is present, but no activity on the LAN.
- **Blinking** – Ethernet link is present with data activity on the LAN.

Heartbeat

The "BEAT" LED is located to the right of the Ethernet LEDs, and is yellow. Under normal operation, this LED should blink about once per second. If the heartbeat LED stays on constantly, does not light, or blinks very fast (more than once per second), contact technical support.

Status

When power is applied, the "STATUS" LED is located to the right of the heartbeat ("BEAT") LED, and is green. This LED provides a CPU machine status check, and should be lit when the LMJA-8xxx is powered.

If the STATUS LED is not lit while power is applied, contact Wattstopper Technical Support.

RS485 LEDs

RS485 port A (Com1) and RS495 port B (COM2) each have two LEDs reflecting port activity as follows:

• **Yellow** (TX): Indicates the controller is transmitting data on the RS485 port

• **Green** (RX): Indicates the controller is receiving data from an RS485 device connected to this port

These LEDs use a fixed "on time" when a message is detected on the port. If a receive LED is on constantly, this can indicate a wiring problem, such as a shorted wire or reversed wiring.

STAT (Status) LED

The green "STAT" LED provides a CPU machine status check, and should remain lit whenever the controller is powered. If the status LED does not light while power is applied contact tech support.

BEAT (Heartbeat) LED

In normal operation, the **yellow** heartbeat (BEAT) LED blinks at 1 Hz, at 50% on/off duty cycle. During controller bootup, this LED may blink at 1 Hz with a 90%/10% on/off cycle, or in some other irregular pattern. When bootup completes, the platform daemon is started, and the normal 1 Hz flash at 50%/50% on/off duty cycle returns.

CAUTION ⚡ The 1 Hz, 90%/10% on/off "BEAT" flash at bootup also occurs during other critical operations, such as a firmware upgrade to the controller and/or any attached modules. To be safe, do not remove power from the controller while its "BEAT" LED flashes with a 90%/10% on/off duty cycle. Wait for the normal (50%/50%) flash to return before removing power.

If the "BEAT" LED stays on constantly, does not light, or blinks very fast, contact technical support.

PRI, SEC (Ethernet) LEDs

Two LEDs for each of the two LAN ports indicate as follows:

• **Green** (left side) "Link" LED operates as follows:

    - Off: No Ethernet link is made

    - On: Ethernet link is made

• **Yellow** (right side) "Activity" LED operates as follows:

    - Off: No Ethernet activity

    - On: Blinking indicates activity (typical if Link is On)

⚠ **WARNING**

Do not remove power while a recovery image install or backup restore is in progress, meaning the BACKUP LED is flashing in "working mode" pattern (1s On/1s Off, or slow blink). Otherwise, the controller will be inoperable ("bricked"), and must be returned to a service center for repair.

BACKUP LED

A green "BACKUP" LED is behind the front access door, and is visible only if the door is open (see diagram, next page). Typically, this LED remains off.

Possible "BACKUP" LED states are:

On Solid: USB backup media detected. Occurs when you insert a USB flash drive to signal a backup is possible

Alert Mode: 100ms On/100ms Off repeating (fast blink). Occurs for several seconds in the following scenarios:

• When USB media was detected, after the controller's BACKUP button is pressed (backup mode)

• When the controller is power cycled while holding in the BACKUP button (recovery/restore mode)

Working Mode: 1s On/1s Off repeating (slow blink. Never remove power in this mode (See following warning)

Error Mode: Two quick 200ms flashes On, 3 seconds Off, repeating

Some scenarios where the BACKUP LED is used include:

USB Drive Inserted - A USB flash drive is inserted in the USB 2.0 port, to either backup a commissioned unit to the USB drive, or to restore an existing backup from the drive. The BACKUP LED lights when the USB drive is mounted.

Backup - A backup is initiated by pressing the BACKUP button from 1 to 5 seconds before releasing, where the LED starts blinking in "alert mode" for 5 seconds. Another button press in this period starts the backup, where the LED blinks in the "working mode" pattern. When the backup completes, the LED turns Off, and the USB drive can be removed.

Boot to Recover Or Restore Image - The unit is powered up while holding in the BACKUP button, for either:

• (No USB media detected) A "factory defaults" recovery from an onboard partition with default image

• (If USB media is detected) For the restore of a backup image on the USB flash drive. Note: This also requires a serial shell connection to the controller's Debug port.

In either case, the BACKUP LED starts blinking in "alert mode" pattern. If you release the BACKUP button during this period (within 5 seconds), initiation begins for either:

• If no USB media is detected, the "factory defaults' recovery image installation

• If USB media is detected, the system enters "restore mode." In this mode, after login with serial shell, a menu lists the available backup images on the USB flash drive. You can select one (and enter the unique security key to initiate its installation, or alternatively select to install the "factory defaults" recovery image.

During a recovery or restore image installation, the LED blinks in the "working mode" pattern. When the image installation completes, the BACKUP LED turns Off. A controller reboot is then required.

USB PORTS AND PUSHBUTTON SWITCHES

Behind the controller's front access door are two USB ports, two pushbutton switches, and an associated LED.
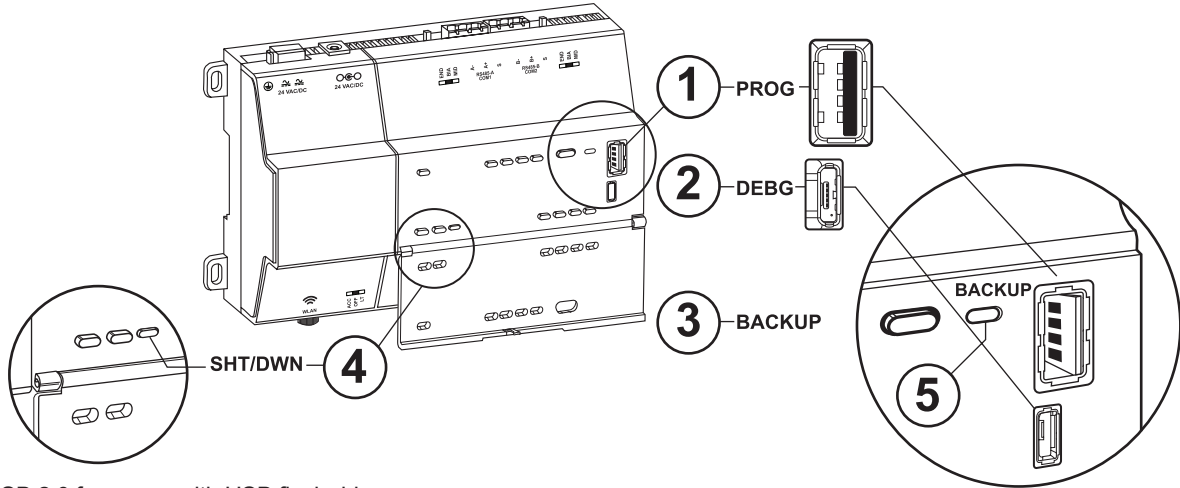
1. **PROG** - USB 2.0 for usage with USB flash drive
2. **DEBUG** - Micro-A USB for serial debug communications
3. **BACKUP** - Pushbutton switch to start a USB backup, or if held in during power up/boot up, a factory recovery image
4. **SHT/DWN** - Recessed switch for controlled shutdown
5. **BACKUP** - LED to indicate USB media present, or a backup, restore, or factory recovery image in progress

- The DEBUG port is a standard Micro-A type USB port for serial debug communications to the controller. You can use a serial terminal program (for example: PuTTY) to access the controller's "system shell" menu. This provides access to a few basic platform settings. Default DEBUG port settings are: 115200, 8, N, 1 (baud rate, data bits, parity, stop bits). **NOTE:** Login requires admin-level platform credentials.
- The SHT/DWN pushbutton initiates a "controlled shutdown" of the controller, ensuring that all station data is preserved. This provides an alternative to the platform "stop station" command, while connected online with controller.

WIRING: EARTH GROUND AND POWER

Earth Ground and Power

Earth grounding provides protection from electrostatic discharge or other forms of EMI.

NOTES: Depending on power sourced used:

- **2.1** (AC): Dedicated 24V transformer required, with neither side of the transformer secondary tied to ground
- **2.2** (DC): Polarity is unimportant (uses on board diode bridge), with neither leg tied to ground
- **2.3** (Wall-mount AC adapter, NB-PS1) instead of wiring 24V to 2-position connector

PREREQUISITE: A nearby earth ground point is needed. Before making power terminations, de-energize the 24V power source. Do not restore power until completing all other mounting and wiring.
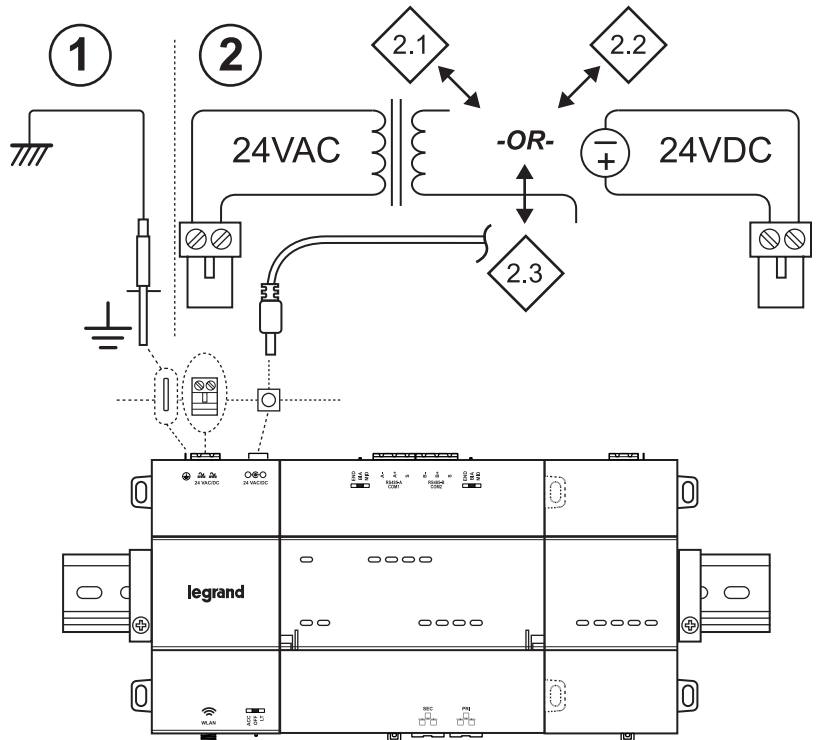
1. Install the included earth ground wire to the controller's earth ground spade lug and terminate the other end to a nearby earth ground.

2. Unplug the controller's 2-position power connector plug and terminate the 24V supply source (AC or DC) to the connector. Leave connector unplugged for now.

Ports for field communications are shown on controller.

1. RS485 ports and bias switches
2. Ethernet ports, 10/100-Mbit, RJ-45
3. Earth ground and 24V power input
4. WLAN **is NOT enabled**
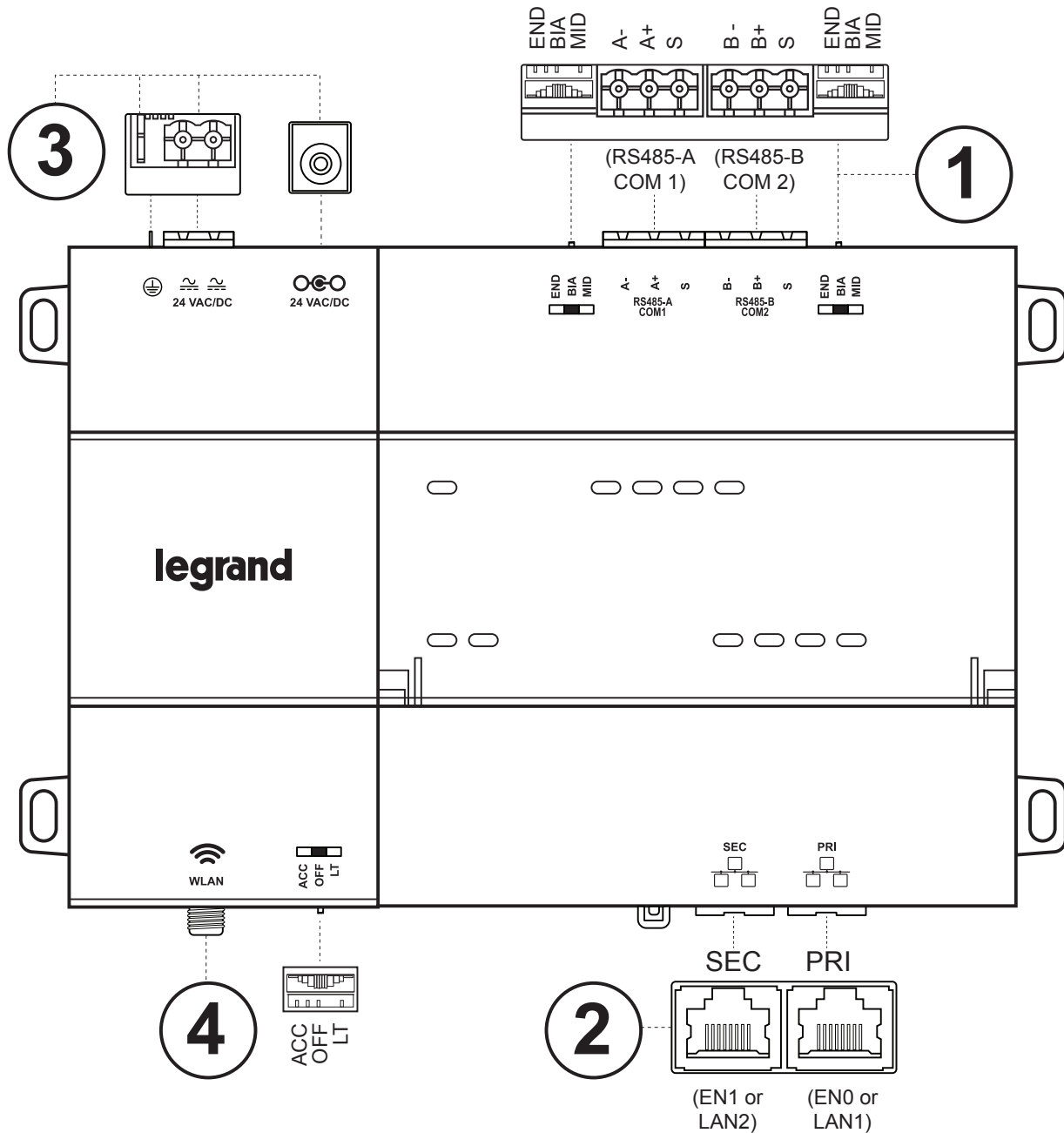
On the controller's top side, two RS485 ports operate as COM1 and COM2. Each port is capable of up to 115,200 baud, and uses a 3-position, screw terminal connector.

1. RS485 port A (COM1) is often used to support a LMJA-IO-R-34 module. NOTE: Do not mix LMJA-IO-R-34 modules with other types of RS485 devices on the same RS485 trunk.
2. RS485 port B (COM2) supporting a network of other field devices using RS485 communications.
3. RS485 devices on the same network should use the same protocol and baud rate. Up to 32 or more devices may be supported, depending on device specifications.

Use shielded, twisted-pair, 18/22 AWG cabling to wire in a continuous multi-drop fashion to other RS485 devices: "minus to minus," "plus to plus," and "shield to shield." Connect the shield wire to earth ground at one end only, for example at the controller.

NOTE: The power for the LMJA-IO-R-34 could be sourced from the LMJA-8xxx if adequate current is available **-OR-** a dedicated Class 2, 24V transformer, or to a 24VDC power source. The LMJA-IO-R-34 can share transformer power with an LMJA-8xxx. If powering from a 24V transformer, do not also power equipment (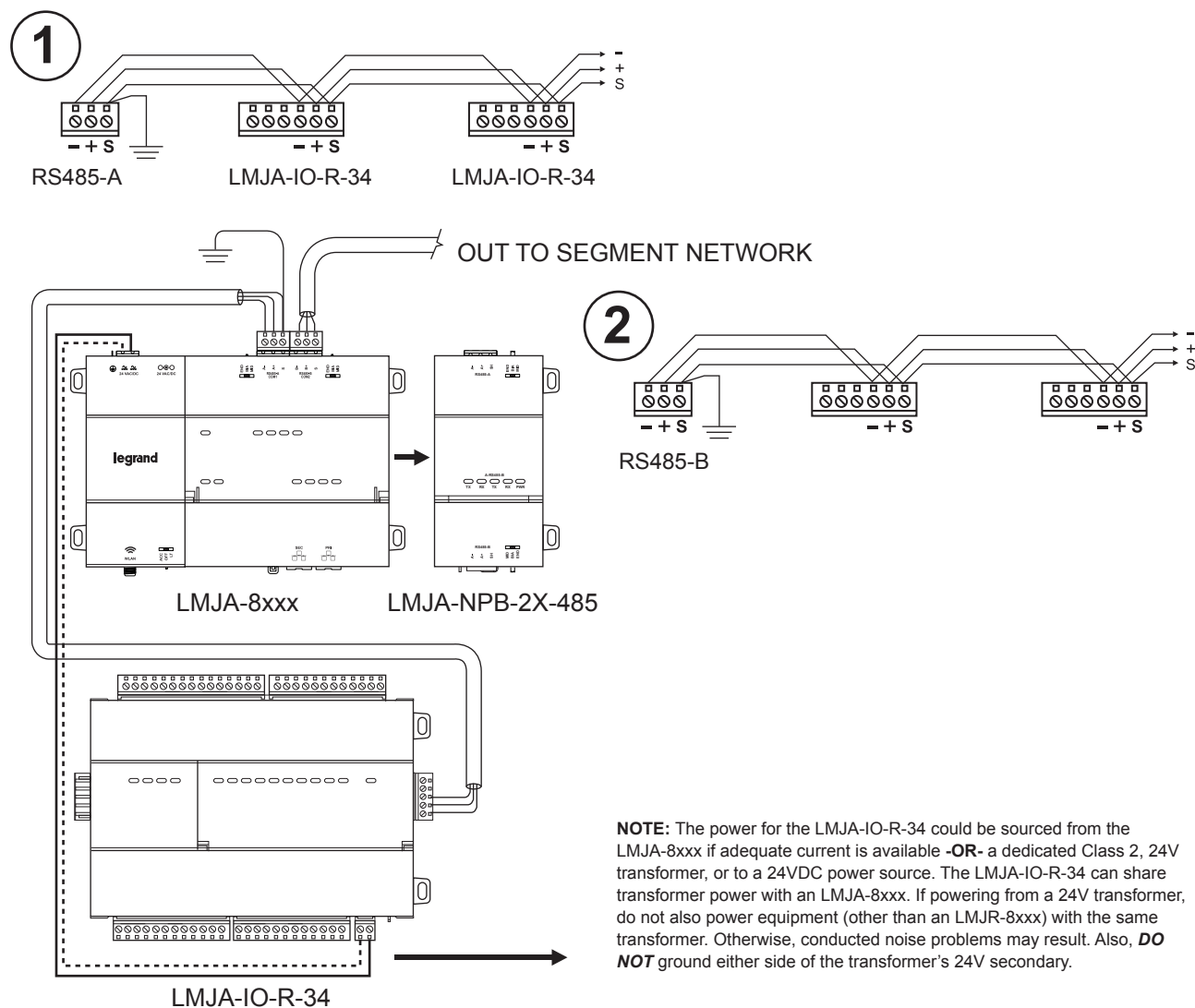other than an LMJR-8xxx) with the same transformer. Otherwise, conducted noise problems may result. Also, *DO NOT* ground either side of the transformer's 24V secondary.

RS485 Bias Switches
Each RS485 port has an adjacent 3-position biasing switch with these settings:
BIA - (Default, middle) RS485 biasing and termination: 2.7K Ohm bias resistors with no termination resistor
END - RS485 biasing and a termination: 562 Ohm bias resistors and 150 Ohm termination resistor
MID - RS485 biasing or termination: 47.5K bias resistors with no termination resistor

Often, adding RS-485 biasing can improve communications by eliminating indeterminate idle states.
BIA - (Default, middle) Often best if the RS485 trunk needs biasing, but when the controller is not installed at the end of the trunk.
END - Often best if the controller is installed at the end of an RS485 trunk of devices that is not already biased
MID -Often best if the controller is put in the middle of an already-biased RS485 trunk

If desired, you can change the position of an RS485 port's bias switch while the controller is running. Each RS485 port has two LEDs.

Make connections to the controller in the following order:

1. Connect supplied earth grounding wires (with spade connector) from the earth ground lug on the controller to a nearby earth grounding point. See "Wiring: Earth Ground and Power" for details.
2. Prepare power wiring, but leave the unit powered off; **do not plug in the power connector from the Power Module until all other mounting and wiring is complete**. See "Wiring: Earth Ground and Power" for details.
3. Connect communications cables. See pages 11 for ports available on the LMJA-8xxx.

Grounding

An earth ground spade lug (0.187") is provided on the base of the LMJA-8xxx for connection to earth ground. For maximum protection from electrostatic discharge or other forms of EMI, connect the supplied earth grounding wire to this lug and a nearby earth ground (see page 8). Keep this wire as short as possible.

Power Wiring

The LMJA-8125/8300 must be powered by an approved 24VDC power source. This can be either an external wall mount AC adapter (NB-PS1), or other source of 24 volts DC.

The LMJA-8125/8300 does not have an on/off switch. To apply power, plug in to either the Barrel power connector (1.) or 2 position plug (2.)
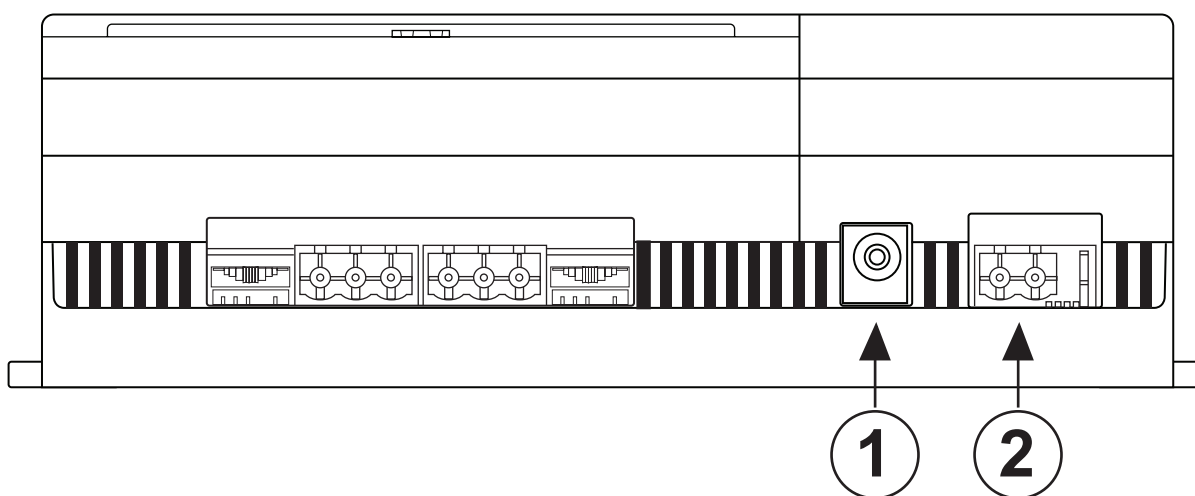
CAUTION ⚡ Do not plug the power supply connector into the LMJA-8125/8300 controller until all other mounting and wiring is completed.

Communications Wiring

Before connecting cables, provide strain relief for them to prevent damage to the LMJA-8xxx. Connect communications wiring to the LMJA-8xxx (see page 11), which include:

• RJ-45 Ethernet for PC or LAN connection
• RS-485 (2-position) for LMJA-8xxx (BACnet MS/TP) connections

Wiring an LMJA-8xxx

Connect an RJ-45 Ethernet cable from a PC (or a network the PC is connected to) to the LMJA-8xxx. See the "Ethernet" section on the next page for details.

For each segment you are connecting to the LMJA-8xxx (up to 2), attach one end of the LM-MSTP cable to a terminal block, as shown on page 9 including RS-485 Bias switches settings for termination.

Connect the shield conductors from all network segments to earth ground at the Segment Manager. The LMNC-ENC1 enclosure provides a ground lug for this purpose and is recommended. Do not connect the shield conductor(s) at any other device.

-OR-

Connect to a switch and to multiple routers, These components are usually housed inside an LMNC DLM Network Component Enclosure. In this case, the LMJA-8xxx connects to the switch using Ethernet cable, and each router connects to a segment using LM-MSTP cable. The rules regarding termination and grounding still apply when connecting the cable to the router. See the wiring examples.

Attaching Ferrules to LM-MSTP Wires

Wattstopper recommends attaching ferrules to the LM-MSTP wires to help maintain signal integrity. Wires should be stripped as shown in the diagram below. Insert the wire into a ferrule and crimp the end, using a crimping tool designed to work with ferrules. Then insert the end of the ferrule into the appropriate slot in the terminal block.
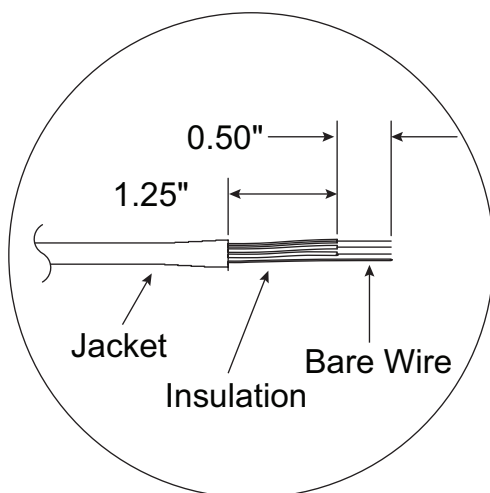
Insulation Strip Guide
*Legrand recommends using Ferrules,
but if not using, wire should be stripped to .25" only
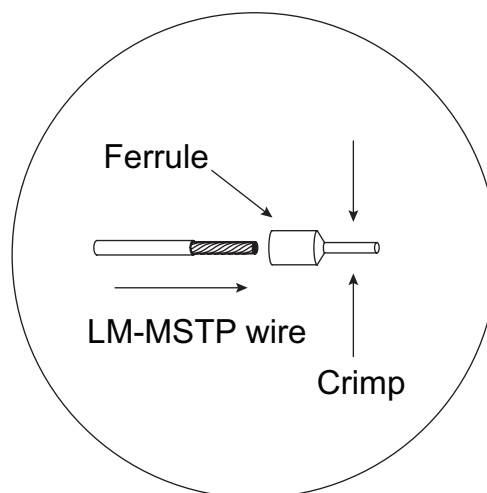
Ethernet

Two female 10/100-Mbit Ethernet connections are provided on the LMJA-8125/8300. These are RJ-45 connectors labeled SEC and PRI. Use a standard Ethernet patch cable for connecting to an Ethernet switch. An activity LED for each Ethernet port is visible and they are labeled "SEC" (for LAN2) and "PRI" (for LAN1) on the cover.

The factory-default **IP address for LAN1** on a LMJA-8xxx is **192.168.1.140**. This address can be changed. See the Segment Manager 2.4 Operation Manual for details.

The **subnet mask** is **255.255.255.0**.

The factory-default **IP address for LAN2** on a LMJA-8xxx is **192.168.5.140**.

Serial Port LEDs

Connecting the LMJA-8xxx to an MS/TP Network

The LMJA-8xxx should always be placed at one end of an MS/TP segment. There is a maximum of 40 LMBC-300s or panels (with a maximum of 340 total DLM devices) per segment network.

NOTE: Because panels are a much larger collection of objects, they count as multiple rooms and devices. See the table in the next section.

NOTE: With large implementations, Wattstopper recommends not fully loading a segment to maximum capacity, to allow for future changes or additions to the segment.

POWER UP AND INITIAL CHECKOUT

Ensure power wiring to the LMJA-8xxx is ready—see the "Wiring: Earth Ground and Power" section. Refer to page 10 for the locations of the power connections.

After mounting and wiring, perform the following:

Step 1: Apply Power

• Apply power to the LMJA-8xxx by plugging the power into one of the power connections on the LMJA-8xxx. Refer to page 8 for location of the power connector.

Step 2: Check the Status LEDs

• When power is applied, the "STATUS" LED is located to the right of the heartbeat ("BEAT") LED, and is green. This LED provides a CPU machine status check, and should be lit when the LMJA-8xxx is powered.

   If the STATUS LED is not lit while power is applied, contact Wattstopper technical support.

• Once the LMJA-8xxx boots, the yellow "BEAT" (heartbeat) LED begins blinking. The "BEAT" LED is located to the right of the Ethernet LEDs, and is yellow. Under normal operation, this LED should blink about once per second. If the heartbeat LED stays on constantly, does not light, or blinks very fast (more than once per second), contact technical support.

• If after applying power, the STATUS LED goes out, or if the BEAT LED comes on (steady) and stays lit longer than two minutes, contact WattStopper Technical Support. See also the "Using Status LEDs" section.

WIRING EXAMPLES
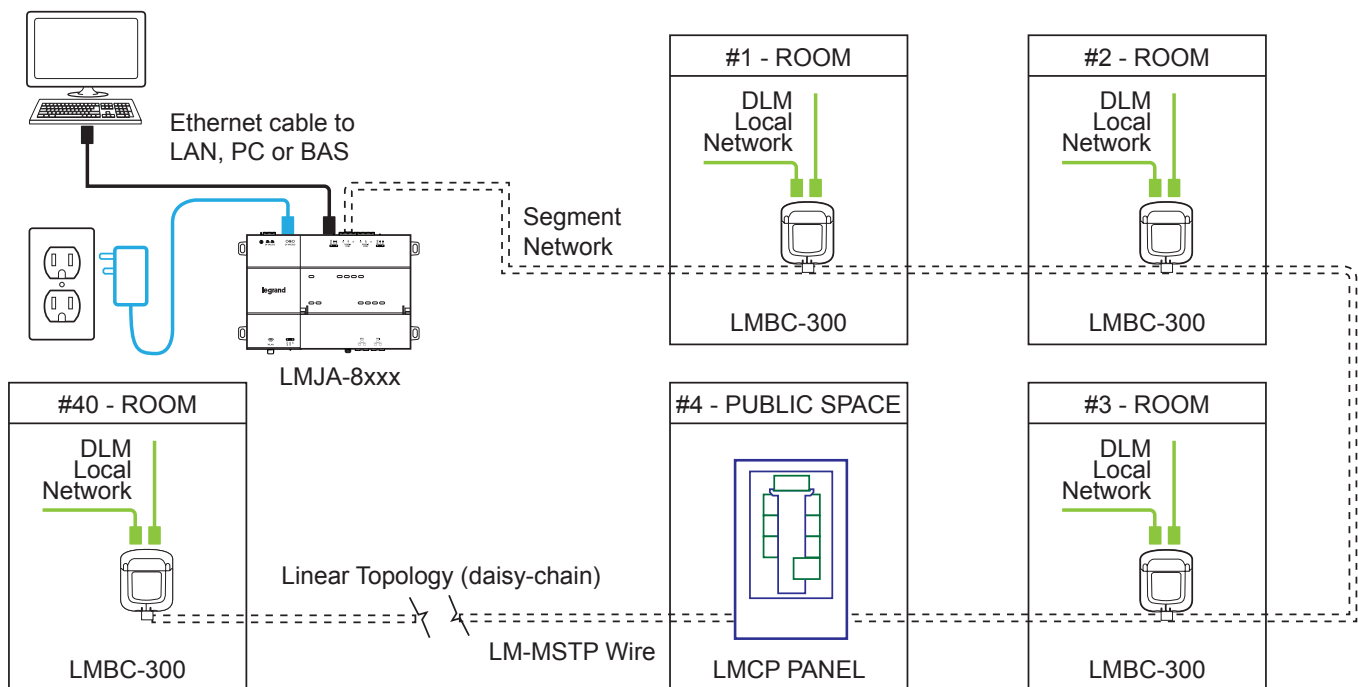
The following pages display some examples of various connection scenarios.
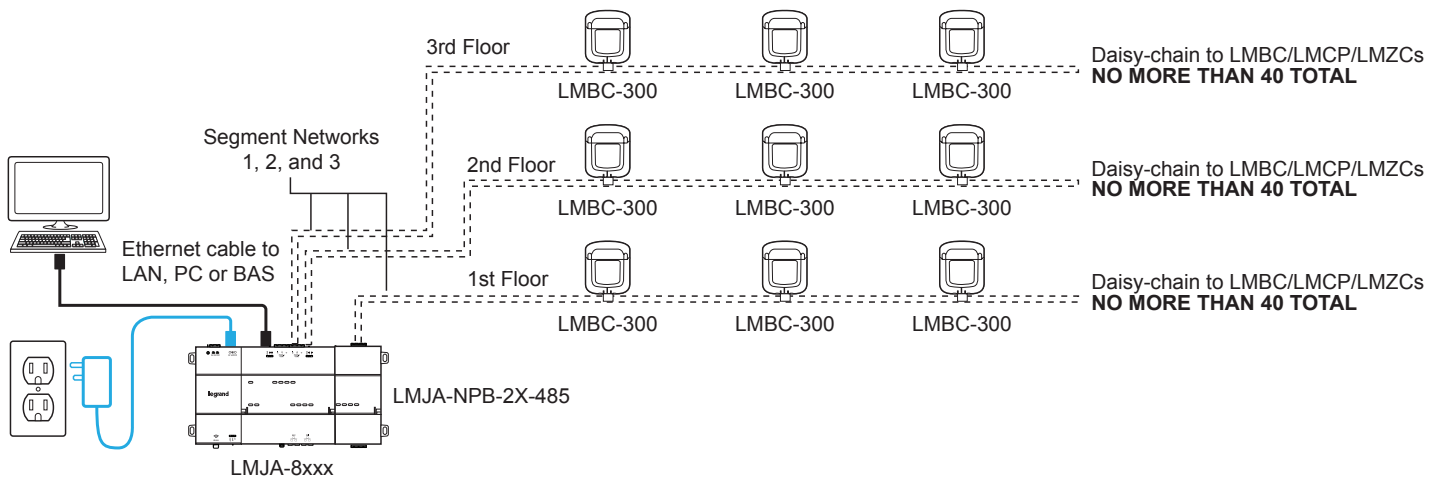
LMJA-8125/8300

The LMJA-8xxx can connect to up to two separate segments, and is used for buildings in which there is no more than 120 rooms (controlled by the LMBC-300 bridge) or common areas (controlled by a panel or zone controller).

EXAMPLE: A Single network segment with 40 or fewer rooms/common spaces

EXAMPLE: Three story building with no more than 40 rooms/common spaces per floor

3rd Floor — LMBC-300, LMBC-300, LMBC-300 — Daisy-chain to LMBC/LMCP/LMZCs **NO MORE THAN 40 TOTAL**

Segment Networks 1, 2, and 3

2nd Floor — LMBC-300, LMBC-300, LMBC-300 — Daisy-chain to LMBC/LMCP/LMZCs **NO MORE THAN 40 TOTAL**

Ethernet cable to LAN, PC or BAS

1st Floor — LMBC-300, LMBC-300, LMBC-300 — Daisy-chain to LMBC/LMCP/LMZCs **NO MORE THAN 40 TOTAL**

LMJA-NPB-2X-485

LMJA-8xxx

The LMJA-8125/8300 can be used in conjunction with multiple NB-Routers and an NB-Switch. These components are usually housed inside an LMNC DLM Network Component Enclosure. Each router communicates with one segment. There is a maximum of 300 rooms or common spaces controlled by a single LMJA-8xxx, and the maximum of 40 per segment still applies. Therefore a typical application with close to 300 rooms/spaces (and up to 2000 DLM devices) might use between seven and nine routers, depending on how many devices are connected in each segment. (As mentioned previously, Wattstopper recommends not fully loading a controller to maximum capacity, to allow for future changes or additions to the segment.)

EXAMPLE: Four story building with some floors having more than 40 rooms/common spaces

Ethernet   LMNC

LMBC-300, LMCP, or LMZC-301

Power Supply

4th Floor – Rooms 401-440 — Daisy Chain **NO MORE THAN 40 TOTAL**

3rd Floor – Rooms 301-340 — Daisy Chain **NO MORE THAN 40 TOTAL**

NB-Switch

2nd Floor – Rooms 241-280 — Daisy Chain **NO MORE THAN 40 TOTAL**

2nd Floor – Rooms 201-240 — Daisy Chain **NO MORE THAN 40 TOTAL**

1st Floor – Rooms 141-180 — Daisy Chain **NO MORE THAN 40 TOTAL**

1st Floor – Rooms 101-140 — Daisy Chain **NO MORE THAN 40 TOTAL**

LMJA-8xxx   NB-Routers

Wattstopper recommends a maximum of **32**

EXAMPLE: Two LMJA-8xxxs - Example of a 10 story building with no more than 40 rooms/common spaces per floor

In larger buildings with more floors and/or more than 300 rooms/spaces, multiple segment managers are used and connected via Ethernet.

LMNC-5 (With 5 routers and a 16 port switch)
Located on 6th floor

Ethernet

Power Supply

NB-Switch

LMJA-8xxx

NB-Routers

LMBC-300
Reference Fig. A for LMCP, or LMZC-301

8th Floor – Rooms 801-840 — Daisy Chain **NO MORE THAN 40 TOTAL**
7thFloor – Rooms 701-740 — Daisy Chain **NO MORE THAN 40 TOTAL**
6th Floor – Rooms 641-680 — Daisy Chain **NO MORE THAN 40 TOTAL**
6th Floor – Rooms 601-640 — Daisy Chain **NO MORE THAN 40 TOTAL**
5th Floor – Rooms 541-580 — Daisy Chain **NO MORE THAN 40 TOTAL**
5th Floor – Rooms 501-540 — Daisy Chain **NO MORE THAN 40 TOTAL**

Wattstopper recommends a maximum of **32**

CABINET B

LMNC-5 (With 5 routers and a 16 port switch)
Located on1st floor

Ethernet

Power Supply

NB-Switch

LMJA-8xxx

NB-Routers

LMBC-300
Reference Fig. A for LMCP, or LMZC-301

4th Floor – Rooms 401-440 — Daisy Chain **NO MORE THAN 40 TOTAL**
3rd Floor – Rooms 301-340 — Daisy Chain **NO MORE THAN 40 TOTAL**
2nd Floor – Rooms 241-280 — Daisy Chain **NO MORE THAN 40 TOTAL**
2nd Floor – Rooms 201-240 — Daisy Chain **NO MORE THAN 40 TOTAL**
1st Floor – Rooms 141-180 — Daisy Chain **NO MORE THAN 40 TOTAL**
1st Floor – Rooms 101-140 — Daisy Chain **NO MORE THAN 40 TOTAL**

Wattstopper recommends a maximum of **32**

WIRING EXAMPLE - WIRELESS

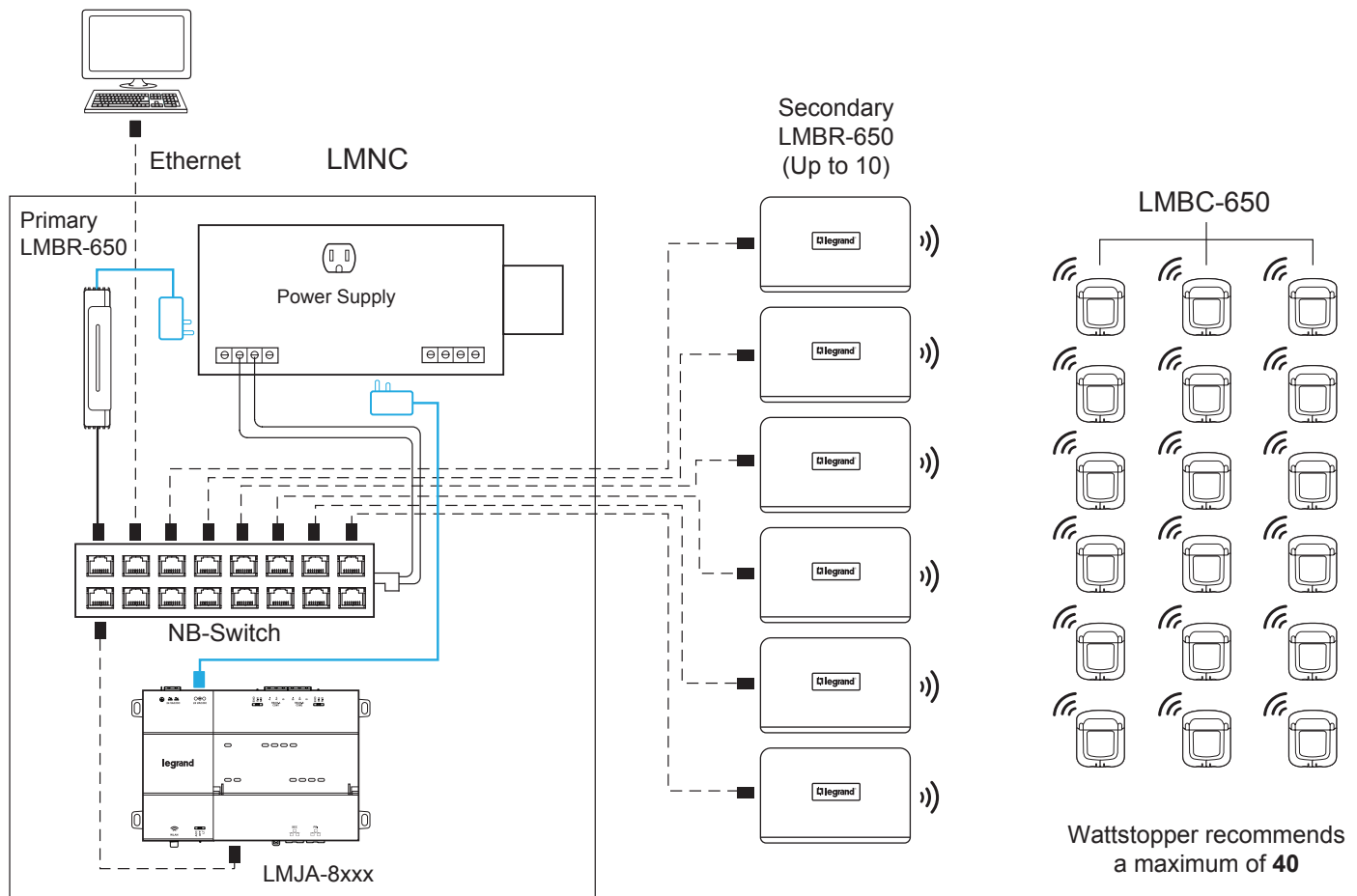**Example of a wireless 4 story building with no more than 40 rooms/common spaces per floor**

In larger buildings with more floors and/or more than 300 rooms/spaces, multiple segment managers are used and connected via Ethernet.

Secondary LMBR-650 (Up to 10)

LMBC-650

Wattstopper recommends a maximum of **40**

NETWORK SECURITIES

For proper security of the LMJA-8xxx you MUST implement one of the following options, including but not limited to changing the default user name and password at start-up.

OPTION 1

Physical network isolation, achieved by running the lighting control network parallel to and never with interconnection with the customer network. This is intended to provide a customer with the ability to physically connect a computer to the lighting control network when needed for service or to purchase our Remote Access cellular-based service (RACCESS).

OPTION 2

Virtual network isolation, achieved by placing a secure network gateway between the lighting control network and the customer network. As part of this Option 2, state firewall rules are configured on a Wattstopper-provided secure device (RACCESS) or a customer-provided and managed device.

PLEASE NOTE: You **MUST** implement one of these two options described above. Option 1 provides the most secure option, whereas the lighting control network never connects with the customer network. Option 2 may not be as secure as Option 1, since it is completely dependent on the customer-provided and managed devices for network security.

LEGRAND ASSUMES NO RESPONSIBILITY OR LIABILITY FOR A SECURITY FAILURE. YOUR FAILURE TO IMPLEMENT THESE MANDATORY SECURITY STEPS MAY EXPOSE YOU TO LIABILITY IN THE EVENT OF A BREACH.

WIRING EXAMPLES - HYBRID

Example of a hybrid 4 story building with no more than 40 rooms/common spaces per floor

In larger buildings with more floors and/or more than 300 rooms/spaces, multiple segment managers are used and connected via Ethernet.
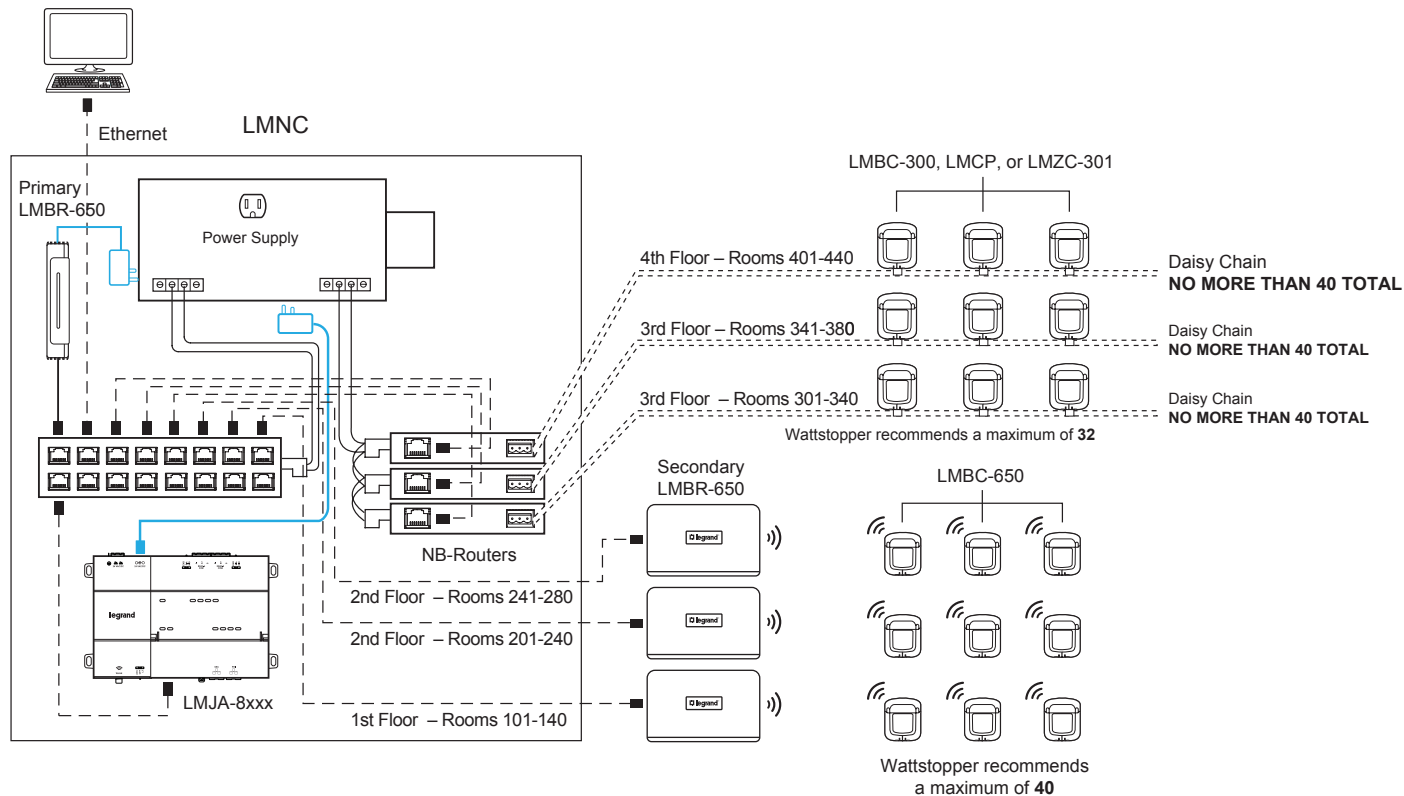

FIGURE A - PANEL/ROOM EQUIVALENCY

Relay panel products/zone controllers supported by the LMJA-8xxx must be treated as large DLM rooms when calculating the segment network device count, as shown in the equivalency chart below. Note that because LMCP relay panels create data objects for connected in-room products, a count of connected products (sensors, switches, etc.) must be added to the device equivalency number to establish the total data footprint for the panel/zone controller.

Panel	Room equivalency	Device equivalency	Connected devices
LMCP8	3	20	Count connected devices
LMCP24	5	30	Count connected devices
LMCP48	7	40	Count connected devices
LILM8*	3	20	Do not count connected devices
LILM24*	5	30	Do not count connected devices
LILM48*	7	40	Do not count connected devices

* not recommended for new DLM projects

LMZC-301 Zone Controller	Room equivalency	Device equivalency	Connected devices
With 0 LMFC-011s or LMRCs (used for scheduling functions)	1	10	Count connected devices
With 1-24 LMFC-011s or LMRCs connected	3	20	Count connected devices
With 25-48 LMFC-011s or LMRCs connected	5	30	Count connected devices
With 49-64 LMFC-011s or LMRCs connected	7	40	Count connected devices

Federal Communications Commission (FCC)

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

Changes or modifications not expressly approved by the part responsible for compliance could void the user's authority to operate the equipment.

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 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

Agency Listings and Certifications

The LMJA-8125/8300 controller has the following agency listings, compliances, and certifications:

- UL-916, Energy Management Equipment, - Edition 4
- FCC Part 15, Class B - Federal Communications Commission, with FCC Part 15, Subpart C - WiFi
- ICES-003, Class B - Industry Canada Interference - Causing Equipment Standard
- RoHS 2 (Restriction of Hazardous Substances), Directive 2011/65/EU
- CE Declaration of Conformity (Council Directive 004-108-EC)

Canadian Department of Communications (DOC)

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.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

The device for operation in the band 5150-5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems.

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numerique de la classe A respecte toutes les exigencies du Reglement sur le material broilleur du Canada.

Approved Antenna Listing

- ANT-DB1-RAF-RPS

Transmitter Module Listing

- Contains Transmitter Module FCC ID: W98-12977
- Contains Transmitter Module IC: 8339A-12977

CERTIFICATIONS *(continued)*

EMC Standards Applied

Standard	Description	Criteria Met
EN 61000-6-4	Electro-Magnetic Compatibility Emissions Generic	Complies
EN 61000-6-2 and EN 61000-6-1	Electro-Magnetic Compatibility Immunity	Complies
EN50081-2	Generic Emission Standard for residential, commercial, and light industrial environment	
CISPR 11	Limits of Radio Disturbance - Radiated Emissions	PASS Class A
	Limits of Radio Disturbance - Conducted Emissions	PASS Class A
IEC 61000-4-2	E.S.D	PASS Criteria A
IEC 61000-4-3	Radiated Field Immunity	PASS Criteria A
IEC 61000-4-4	Electrical Fast Transient Immunity (Signal Ports) Electrical	PASS Criteria A
	Fast Transient Immunity (AC Power)	PASS Criteria A
IEC 61000-4-5	Surge Immunity	PASS Criteria A
IEC 61000-4-6	Conducted Immunity	PASS Criteria A
EN 61000-3-2	Harmonic	Current PASS
EN 61000-3-3	Quasi-Stationary Harmonics Test, Voltage Fluctuation and Flicker	PASS
IEC 61000-4-11	Voltage Dips	PASS Criteria A
	Voltage Interrupts	PASS Criteria A
IEC 61010-10-1: 90 +A1:92 + A2:95	Safety requirement for electrical equipment for measurement, control and laboratory use	PASS

INITIATING A CONTROLLER SHUTDOWN

When locally servicing an installed and configured (commissioned) unit, use this feature before removing power.

NOTE: Do not initiate a shutdown or remove power if:

- BACKUP LED is blinking in "working mode", **- or -**
- Beat LED is flashing at a 90%/10% on/off rate.

Instead, wait for the BACKUP LED to be in another state (typically Off), and the BEAT LED to flashing at the normal 50%/50% on/off duty cycle rate before initiating a shutdown.

Prerequisite: Controller has been commissioned (Niagara 4 installed, platform configured, a station installed) and the unit is running the station.
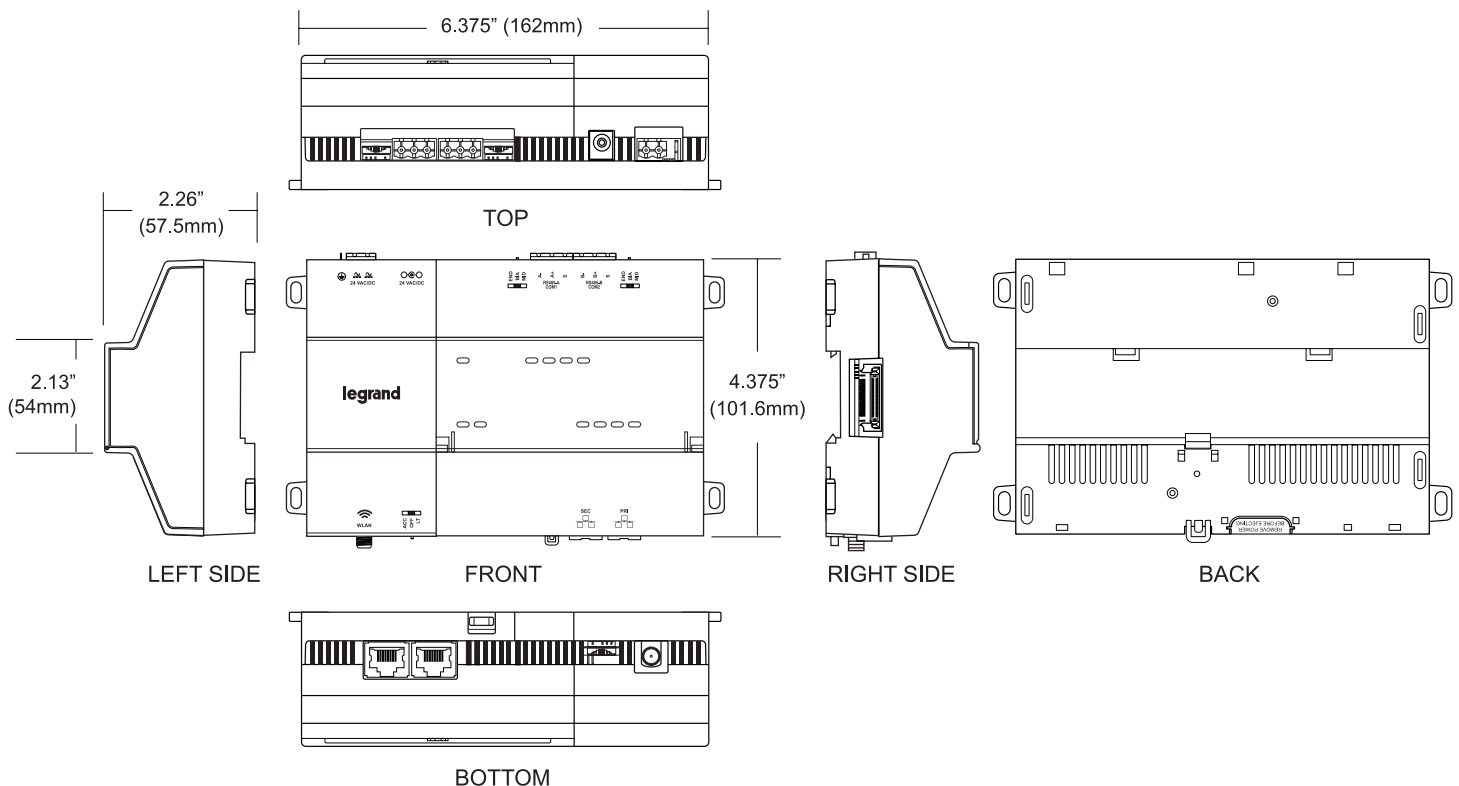
1. Press and hold the recessed SHT/DOWN button just until the "BACKUP" LED begins flashing in "alert mode" pattern: 100ms On/100ms Off repeating (fast blink)
2. Release the SHUT/DOWN button during this alert mode. This starts the shutdown process, where the station and software is put into a safe state. During this shutdown, the "BACKUP" LED blinks in "working mode."
3. When shutdown is done, the "BACKUP" LED turns off. You can safely remove 24V power from the unit

NOTE: In the case where the system cannot be put into a safe state, the "BACKUP" LED blinks in "error mode" - two quick 200ms flashes On, 3 seconds Off, repeating.

DEVICE POINTS AND LIMITS

DEVICE POINTS / LIMITS	LMJA-8125 / LMJA-8125-AX	LMJA-8300 / LMJA-8300-AX
Maximum # of Room/Bridges	125	300
Maximum Total # of Devices per LMJA-8xxx	2000	2000
Maximum # of Wired MS/TP Segments	2	2
With LMJA-NPB-2X-485, the wired MS/TP Segments are expandable to:	4	4
Maximum # of LMBC-300 per Segment	40	40
Recommended # of IP Segments Using NB-ROUTER	6	6
Maximum # of Wireless IP LMBR's Segments	10	10
Maximum # of Devices per Segment	340	340
Maximum # of BACnet Points	6250	15000
Average # of BACnet Points per Room	50	50

MULTI-LINE DRAWINGS AND DIMENSIONS

6.375" (162mm)

TOP

2.26" (57.5mm)

2.13" (54mm)

4.375" (101.6mm)

LEFT SIDE   FRONT   RIGHT SIDE   BACK

BOTTOM

WARRANTY INFORMATION

Wattstopper warranties its products to be free of defects in materials and workmanship for a period of one (3) 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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Wattstopper garantit que ses produits sont exempts de défauts de matériaux et de fabrication pour une période de un (3) 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.

INFORMACIÓN DE LA GARANTÍA

Wattstopper garantiza que sus productos están libres de defectos en materiales y mano de obra por un período de un (3) año. 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.

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