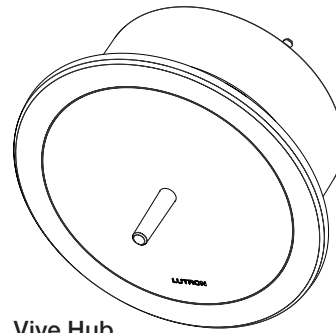


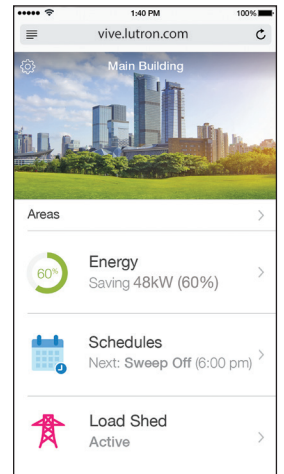
Vive Wireless Hub

The Vive hub provides a connection point for Lutron Vive devices such as PowPak wireless dimming and switching modules, PowPak Wireless Fixture Controllers, PowPak 20 A Relay Modules, Maestro Wireless dimmers and switches, Pico remote controls, Radio Powr Savr occupancy sensors, and daylight sensors. For a complete list of compatible devices, see the last page of this document.

For more information on the Vive hub, including training materials, design information and software updates, please visit www.lutron.com/vive



Vive Hub



Vive Hub Dashboard

Features

- Communicates with controls on a floor using Lutron wireless Clear Connect technology (range radius of 71 ft [22 m]).
- Distributed system architecture.
 - Wireless sensors and controls must be located within 60 ft (18 m) line of sight, or 30 ft (9 m), through walls, of the associated device.
- Supports timeclock events based on both sunrise and sunset or fixed time-of-day.
- Integrated multi-color LED provides feedback on what mode the hub is in.
- Contact Closure Inputs for integration with devices by others including devices for Title 24 Automatic Demand Response.

<p>Job Name:</p> <p>Job Number:</p>	<p>Model Numbers:</p>
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Features *(continued)*

- Web based software used for:
 - Setup and programming.
 - Uses Lutron RF signal strength measurements to find devices nearby for quick association and programming without having to climb ladders.
 - Dashboard of current status for control and monitoring of the system. Also shows current energy usage.
 - Password protected access.
 - Supports HTTPS.
 - Supported on most devices that use an HTML5 compliant browser (iOS, Android®, Windows®, Mac).
 - Recommended configurations:

Device	OS Version	Browser
<i>iPhone 6, iPhone 6 plus or newer</i>	iOS 9.2.1	<i>Safari</i>
Samsung Galaxy S6	Android® 5.1	Chrome®

- Connects directly to any smartphone, tablet or computer using built in Wi-Fi. 2.4 GHz 802.11b/g.
 - Range radius of 71 ft (22 m).
 - WPA2 Security.
- Ethernet 10/100 Mbps connection for:
 - Native BACnet (see Lutron P/N 369978 for PIC Statement) integration into Building Management Systems.
 - Network multiple Vive hubs together as an independent system or as part of an existing building network.
- Firmware upgradable for future features and security patches.
- Flush-mount or surface-mount options available.
- Each hub presents a dashboard of devices and areas controlled by it.
- If all the hubs on a job are networked using Ethernet, you can easily navigate from one hub to another to view it dashboard.

Job Name:	Model Numbers:
Job Number:	

Specifications

Regulatory Approvals

- cULus® Listed
- FCC approved. Complies with the limits for a Class B device, pursuant to Part 15 of the FCC rules.
- IC
- Complies with COFETEL requirements
- Complies with NOM-001

Power / Performance

- Input to power supply:
120 – 277 V \sim
50 / 60 Hz
0.6 A
- Input to Vive hub:
24 V \equiv
350 mA

System Limits

- HJS-1, HJS-2 support up to 700 Lutron Wireless devices. HJS-0 limited to 75 devices. Devices must be located within 71 ft (22 m) of the Vive hub.
- Any given load device can be controlled by 10 occupancy sensors, 10 Pico remote controls and 1 daylight sensor (Pico remote controls and sensors must be located within 30 ft [9 m] of the load device they are controlling).

Mounting

- Vive hub units should be mounted in the middle of non-metal ceiling tile or drywall, visible from inside the space.
- Installation near metal, other than a junction box, may reduce RF range. Hub should be at least 12 in (305 mm) away from metal objects.
- Use surface-mount version for mounting to a hard or cement ceiling.
- Power supply mounts to a standard 4 in x 4 in (101 mm x 101 mm) square junction box.
- Power supply must be mounted within 100 ft (31 m) of the Vive hub. Wiring should be 24 AWG to 12 AWG (0.2 mm² to 2.5 mm²).

Environment

- For indoor use only.
- 32 to 104 °F (0 to 40 °C).
- Relative humidity less than 90% non-condensing.

Contact Closure Input Terminals

- Only the first contact closure is used.
- Accepts only maintained inputs.
- Off-state leakage current must be less than 100 μ A.
- Open circuit voltage: 24 V \equiv maximum.
- Input wiring: 24 AWG to 12 AWG (0.2 mm² to 2.5 mm²).
- **Contact Closure Inputs on multiple hubs can be wired in parallel. DO NOT wire inputs in parallel with other equipment as it can cause the inputs on either of the devices to falsely trigger.**
- **Up to 4 hubs in parallel.**
- **To ensure proper operation of Contact Closure Inputs, a PS-J-20W-UNV power supply may not be used to provide power to more than one hub.**
- Inputs must be dry contact closure, solid state, open collector, or active-low (NPN)/active high (PNP) output.
 - Open collector NPN or active-low on-state voltage must be less than 2 V and sink 3.0 mA.
 - Open collector PNP or active-high on-state voltage must be greater than 12 V and source 3.0 mA.

Additional Software Features

- Measured energy data for PowPak Wireless Fixture Control accurate to \pm 2%, or 0.5 W, whichever is higher.
- Calculated energy data for PowPak modules and Maestro dimmers or switches at 10% accuracy.
- Create and edit areas.
- Tune area light levels by trimming the high-end and low-end output to save energy.
- Adjust occupancy settings. Create occupancy groups.
- Load shed is configurable.

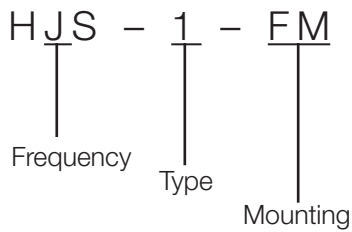
Warranty

- 1 year limited warranty. The customer can register the product to increase the warranty period from 1 year to 5 years. Please visit www.lutron.com/TechnicalDocumentLibrary/369-119_Wallbox_Warranty.pdf for warranty details.

Job Name: Job Number:	Model Numbers:
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How to Build a Model Number

Example



Frequency

J = 431.0 – 437.0 MHz (USA, Canada, Mexico)

Type

0 = Starter Vive hub without BACnet limited to 75 devices. (Available as HJS-0-FM only)

1 = Vive hub without BACnet

2 = Premium Vive hub with BACnet

Mounting

FM = Flush-Mount (non-metal ceiling tiles or drywall)

SM = Surface-Mount (cement)

Available Vive Hub Model Numbers (includes power supply and mounting adapter)

HJS-0-FM - Starter hub, flush-mount adapter and power supply

HJS-1-FM - Vive hub, flush-mount adapter and power supply

HJS-1-SM - Vive hub, surface-mount adapter and power supply

HJS-2-FM - Premium Vive hub, flush-mount adapter and power supply

HJS-2-SM - Premium Vive hub, surface-mount adapter and power supply

HJS-UPDATE - Software upgrade license to add BACnet to HJS-0 and HJS-1 hubs

HJS-DEVICES - Software upgrade license expands device limit to 700 devices for HJS-0 hubs

Replacement Part Model Numbers

PS-J-20W-UNV Vive hub external power supply

H-MOUNT-FM Flush-mount installation adapter

H-MOUNT-SM Surface-mount installation adapter

Ethernet Switch Model Numbers (sold separately)

All switches are unmanaged 10/100/1000 Mbps. This IT gear is a suggested list. IT provided gear that is equivalent or better is sufficient. Enterprise level gear recommended.

ETH-SWITCH-16 16 port

ETH-SWITCH-24 24 port

ETH-SWITCH-24-1M 24 port, 1 multi-mode fiber

ETH-SWITCH-24-2M 24 port, 2 multi-mode fiber

ETH-SWITCH-24-1S 24 port, 1 single-mode fiber

ETH-SWITCH-24-2S 24 port, 2 single-mode fiber

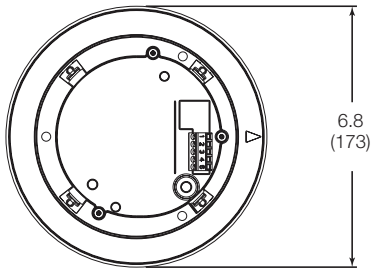
Job Name:	Model Numbers:
Job Number:	

Dimensions

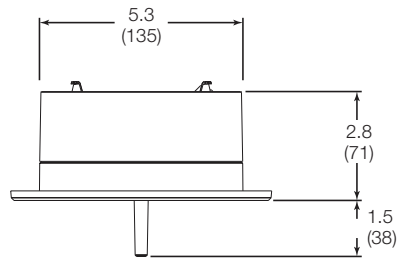
Dimensions are shown as: in (mm)

Vive Hub

Top View

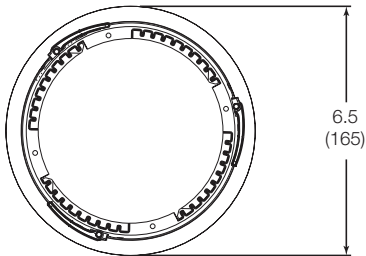


Side View

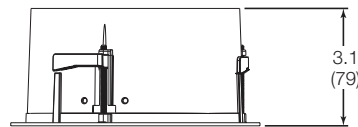


Flush-mount Adapter

Top View



Side View

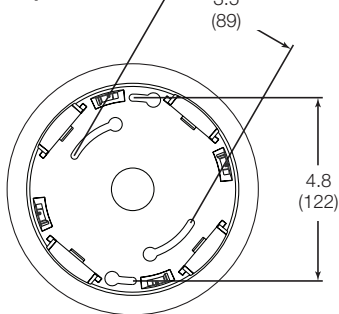


Flush-mount Adapter Details

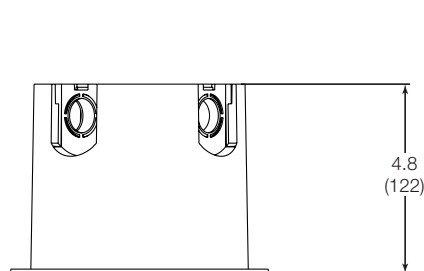
- Requires a 6 in (153 mm) hole to be cut in the ceiling for mounting.

Surface-mount Adapter

Top View



Side View

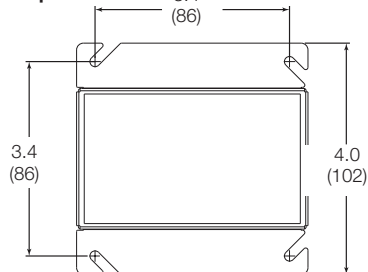


Surface-mount Adapter Details

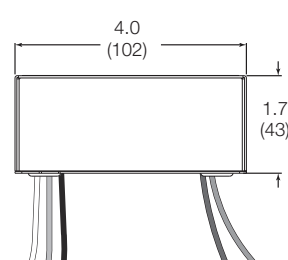
- Knockouts for 1/2 in or 3/4 in (13 mm or 19 mm) conduit.

Power Supply

Top View



Side View



<p>Job Name:</p> <p>Job Number:</p>	<p>Model Numbers:</p>
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Range Diagrams

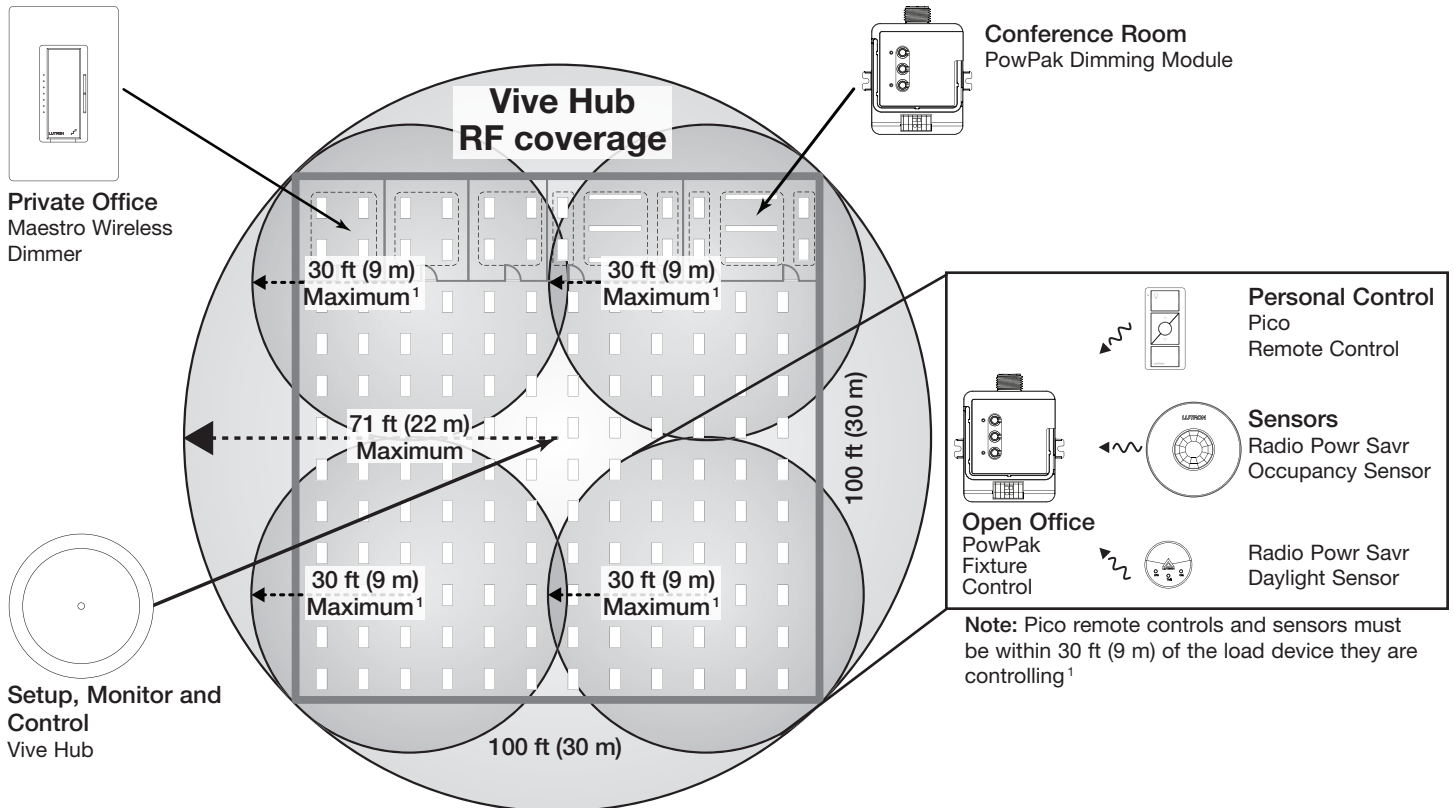
All wireless devices to be associated to the Vive hub must be within 71 ft (22 m) of the Vive hub and must be on the same floor as the Vive hub.

Note: Vive hubs should be mounted greater than 10 ft (3 m) apart on the same floor.

Note: A corporate Wi-Fi network can interfere with the Wi-Fi on the Vive hub. Where a corporate Wi-Fi network exists, it is recommended to do the following:

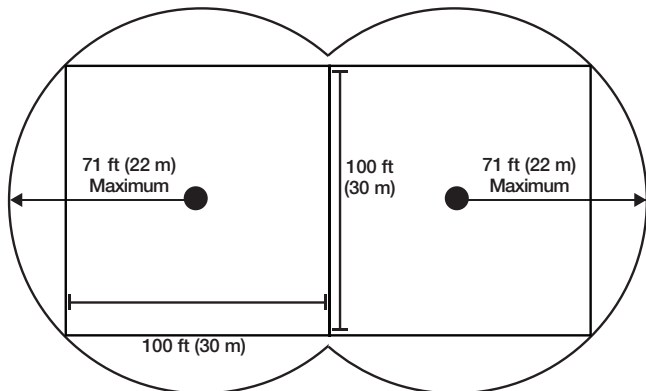
- Connect the Vive hub to the corporate network using the Ethernet connection on the hub and disable the hub's Wi-Fi.

Note: Vive hubs should be mounted greater than 10 ft (3 m) from a Wi-Fi router or access point.



¹ Wireless sensors and controls must be located within 60 ft (18 m) line of sight, or 30 ft (9 m), through walls, of the associated device.

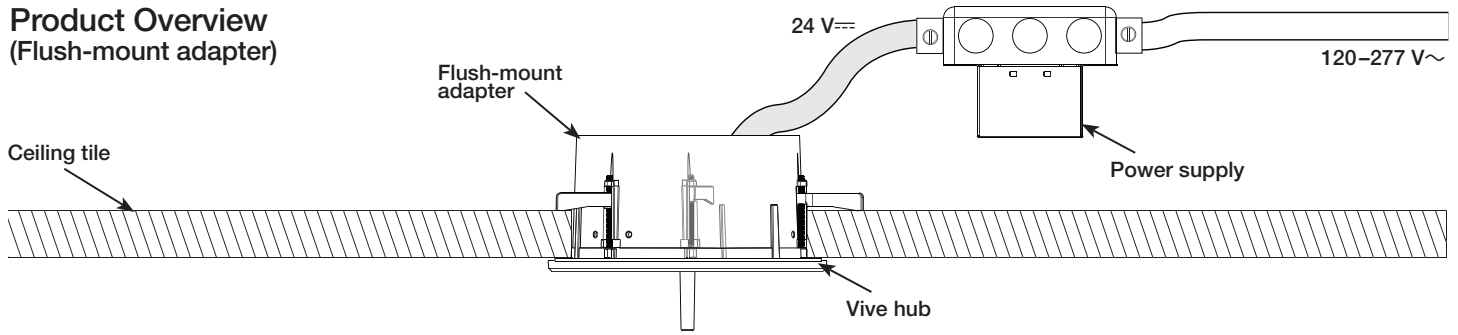
Range with multiple Vive hubs



Job Name:	Model Numbers:
Job Number:	

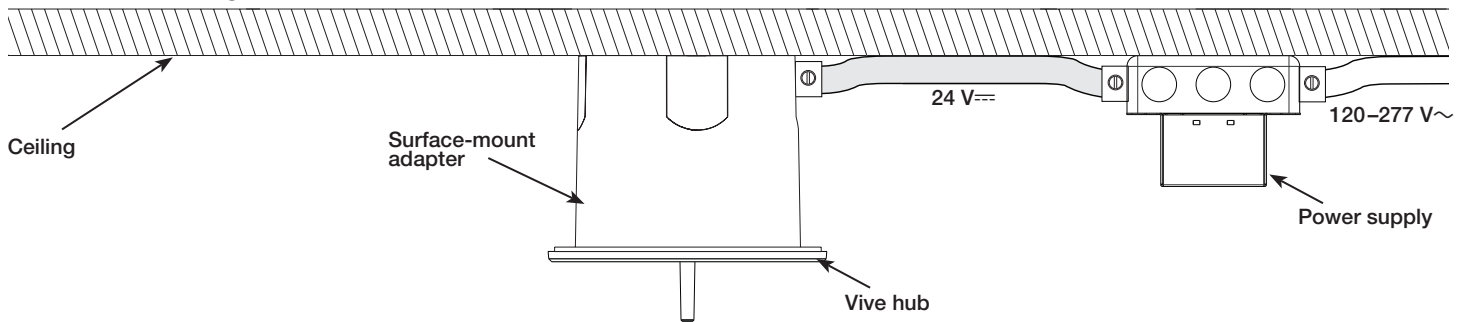
Wiring

Product Overview (Flush-mount adapter)

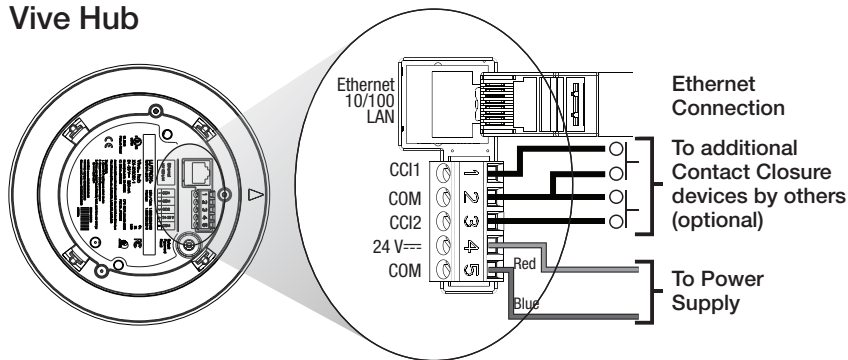


Product Overview (Surface-mount adapter)

Note: For Chicago plenum space applications the power supply has a metal enclosure and can be mounted in the plenum space. The Vive hub cannot be mounted in the plenum space and needs to be mounted outside the plenum space on the surface of the ceiling.



Vive Hub



Job Name:	Model Numbers:
Job Number:	

Vive Security Statement

Lutron takes the security of the Vive Lighting Control System very seriously.

The Vive Lighting Control System has been designed and engineered with attention to security since its inception. Lutron has engaged security experts and independent testing firms throughout the entire development of the Vive Lighting Control System. Lutron is committed to security and continuous improvement throughout the Vive product lifecycle.

The Vive Lighting Control System uses a multi-tiered approach to security and National Institute of Standards and Technology (NIST) recommended techniques for security.

They include:

1. An architecture that isolates the wired Ethernet network from the wireless network, which strictly limits the possibility of the Vive Wi-Fi being used to access the corporate network and gain confidential information
2. A distributed security architecture with each hub having its own unique keys that would limit any potential breach to only a small area of the system
3. Multiple levels of password protection (Wi-Fi network and the hubs themselves), with built-in rules that force the user to enter a strong password
4. NIST-recommended best practices including salting and SCrypt for securely storing usernames and passwords
5. AES 128-bit encryption for network communications
6. HTTPS (TLS 1.2) protocol for securing connections to the hub over the wired network
7. WPA2 technology for securing connections to the hub over the Wi-Fi network

The Vive hub can be deployed in one of two ways:

- Dedicated Lutron Network
- Connected to the corporate IT network via Ethernet. The Vive hub must be connected via Ethernet to access certain features such as BACnet® for BMS integration. Lutron advises following best practices in this instance, including separating the business information network and the building infrastructure network. Use of a VLAN or physically separated networks is recommended for secure deployment.

Dedicated Lutron Network Deployment

The Vive hub is not connected to the building network. Wi-Fi is used to connect to a smart device such as a phone, tablet, or PC for commissioning and configuration only. The Vive hub serves web pages for setup and maintenance via a password-protected connection. The Wi-Fi SSID can be set to not broadcast. The Vive hub Wi-Fi may be disabled if desired.

Corporate IT Network Deployment

The Vive hub may be deployed with a fixed IP address or served over DHCP. Once the IT network is operational, the Vive hub will serve password-protected web pages for access and maintenance. The Vive hub Wi-Fi may be disabled if desired.

The Vive hub acts as a Wi-Fi access point purely for the configuration and commissioning of the Vive system. It is not a substitute for your building's normal Wi-Fi access point. The Vive hub does not act as a bridge between wireless and wired networks.

It is strongly recommended that local IT security professionals be involved with the network configuration and set-up to ensure the installation meets their security needs.

Job Name:	Model Numbers:
Job Number:	

Security 1

Dedicated Network

Wi-Fi Only

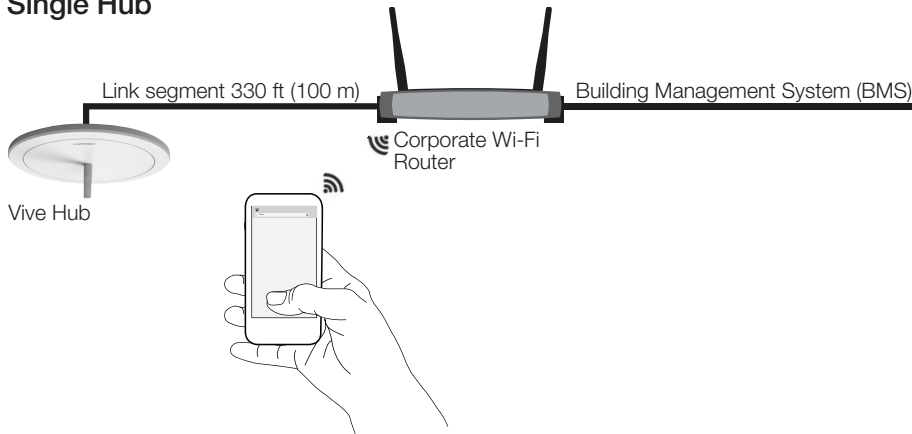
Ports Used

- No IT configuration needed



Corporate Network

Single Hub



Ports Used

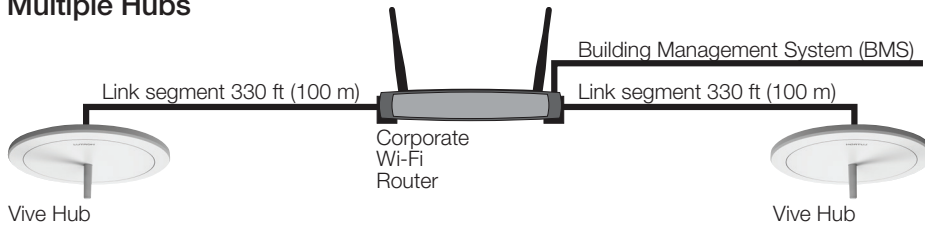
Traffic	Port	Type	Connection	Description
Outbound	443	TCP	Both Ethernet and Wi-Fi	Used to communicate with software update server
	47808 (configurable)	UDP	Ethernet	Used for BACnet integration into Building Management Systems
	8443	TCP	Both Ethernet and Wi-Fi	Used to communicate with webserver from Vive hub
	80	TCP		Used to start web connection
Inbound	443	TCP	Both Ethernet and Wi-Fi	Used to serve user interface to smart device
	47808 (configurable)	UDP	Ethernet	Used for BACnet integration into Building Management Systems
	8443	TCP	Both Ethernet and Wi-Fi	Used to communicate with webserver from Vive hub
	80	TCP		Used by other hubs to proxy

Job Name:	Model Numbers:
Job Number:	

Security 1 (continued)

Corporate Network (continued)

Multiple Hubs



Ports Used

Traffic	Port	Type	Connection	Description
Outbound	443	TCP	Both Ethernet and Wi-Fi	Used to communicate with software update server
	5353	UDP	Ethernet	Used for <i>Bonjour</i> networking protocol
	47808 (configurable)	UDP	Ethernet	Used for BACnet integration into Building Management Systems
	8443	TCP	Both Ethernet and Wi-Fi	Used to communicate with webserver from Vive hub
	8508	TCP	Ethernet	Used for networking hubs
	9200 - 9264	TCP	Wi-Fi	Used to access networked hubs
	80	TCP	Both Ethernet and Wi-Fi	Used to start web connection
Inbound	443	TCP	Both Ethernet and Wi-Fi	Used to serve user interface to smart device
	47808 (configurable)	UDP	Ethernet	Used for BACnet integration into Building Management Systems
	8443	TCP	Both Ethernet and Wi-Fi	Used to communicate with webserver from Vive hub
	8508	TCP	Ethernet	Used for networking hubs
	9200 - 9264	TCP	Wi-Fi	Used to access networked hubs
	80	TCP	Both Ethernet and Wi-Fi	Used by other hubs to proxy

Notes

- The inter-hub wiring is considered IEC PELV/NEC® Class 2; do not run in the same conduit as line (mains) voltage wiring.
- Wiring distance for any single link segment is 330 ft (100 m) max; use Lutron-provided or 3rd party Ethernet switches for longer distances (see page 3).
- Up to 64 hubs can be networked together.
- Hubs communicate over the inter-hub link using multicast UDP or TCP; a dedicated network is recommended but not required.
- The Wi-Fi access port cannot be used to create an ad hoc network for use as the inter-hub communication link.

Bonjour is a trademark of Apple Inc., registered in the U.S. and other countries.

Job Name:	Model Numbers:
Job Number:	

Compatible Devices

• Maestro Wireless Dimmers and Switches

- MRF2S-6CL-XX¹
- MRF2S-6ELV120-XX¹
- MRF2S-8S-DV-XX¹
- UMRF2S-8S-DV-XX¹
- MRF2S-8ANS120-XX¹
- UMRF2S-8ANS120XX¹
- MRF2S-6ANS-XX¹

• Maestro Wireless Companion Dimmers and Switches

- MA-R-XX¹
- MA-R-277-XX¹
- MSC-AD-XX¹
- MSC-AD-277-XX¹
- MA-AS-XX¹
- MA-AS-277-XX¹
- MSC-AS-XX¹
- MSC-AS-277-XX¹

• PowPak Modules

- FCJS-010
- FCJS-ECO
- RMJS-8T-DV-B
- URMJS-8T-DV-B
- RMJS-16RCCO1DV-B
- URMJS-16RCCO1DVB
- RMJS-16R-DV-B
- URMJS-16R-DV-B
- RMJS-5RCCO1-DV-B
- RMJS-5R-DV-B
- RMJS-20R-DV-B
- RMJS-20RCCO1DV-B
- RMJS-CCO1-24-B
- URMJS-CCO1-24B

• Pico Remote Controls

- PJ2-2B-GXX-YYY¹
- PJ2-2BRL-GXX-YYY¹
- PJ2-3B-GXX-YYY¹
- PJ2-3BRL-GXX-YYY¹
- PJ2-4B-GXX-YYY^{1, 2}
- PJN-2B-GXX-L01¹
- PJN-3BRL-GXX-L01¹

• Wireless Occupancy and Daylight Sensors

- LRF2-OCR2B-P-WH
- LRF2-VCR2B-P-WH
- LRF2-OHLB-P-WH
- LRF2-OKLB-P-WH
- LRF2-OWLB-P-WH
- LRF2-VHLB-P-WH
- LRF2-VKLB-P-WH
- LRF2-VWLB-P-WH
- LRF2-DCRB-WH

• Energy Retrofit Kits

- MRF2S-1S8A-1OC
- MRF2S-1S8A-1OH
- MRF2S-1S8A-1OK
- MRF2S-1S8A-1OW
- MRF2S-1S8A-1VC
- MRF2S-2S8A-1OW

¹ "XX" denotes color code and "YYY" denotes button marking code.

² PJ2-4B-GXX-L41 is not supported with the Vive hub.

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Mac, Safari and iPhone are trademarks of Apple Inc., registered in the U.S. and other countries.

iOS is a trademark of Cisco in the U.S. and other countries and is used under license.

Windows is a registered trademark of Microsoft Corporation in the United States and/or other countries.

 **LUTRON SPECIFICATION SUBMITTAL**

Page

Job Name:	Model Numbers:
Job Number:	