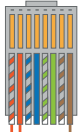


## OVERVIEW

This guide will explain how to properly design a project with Legrand Shading Systems and Vantage lighting controls. Legrand Shading offers two solutions that integrate with Vantage based on the project specifications:



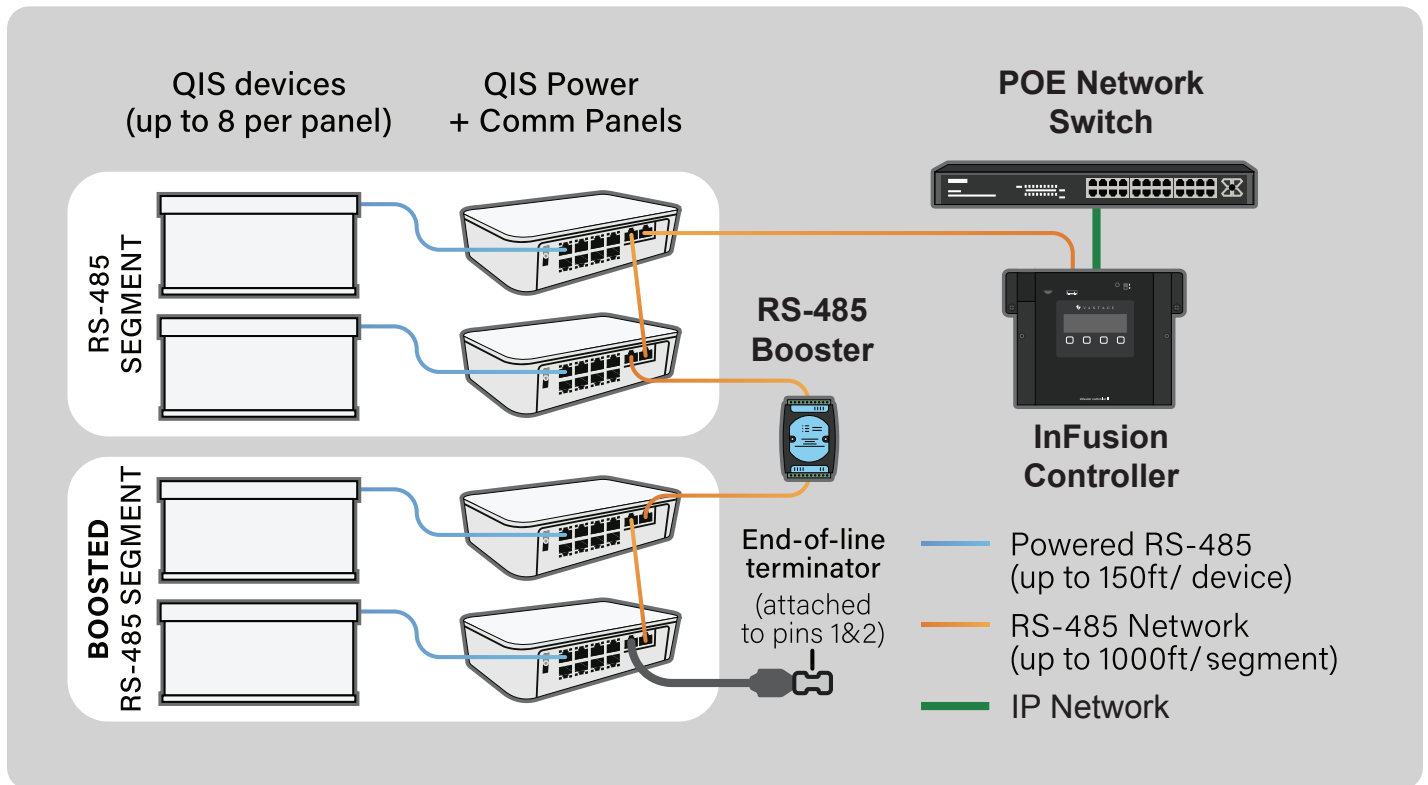
Legrand Shading's QIS hardwired system utilizes a Cat5e/ Cat6 wire for power and communication. It also has the capability to communicate via Zigbee if necessary, however it's best practice to plan for serial communication whenever possible. The QIS power panel is used for providing power and relaying communication received from a Vantage or 3rd party system.



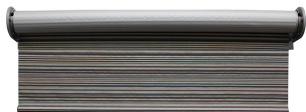




For retrofit applications, Legrand Shading's Zigbee battery system offers two-way communication and uses the QzHub3 as a gateway for ZigBee communication and integration. The QzHub3 coordinates communication within the Zigbee network to the local network and Cloud. The Legrand Shades app is required to setup and commission the shades.

## WIRED COMMUNICATION - QIS

### Wired System Components



## WIRED COMMUNICATION - QIS COMPONENTS DESCRIPTIONS

Component	Description	Image
<b>QIS Shade</b>	<p>Wired power and Serial communication Shade</p> <ul style="list-style-type: none"> <li>• Cat 5e / Cat 6 Connection</li> <li>• 6" or 35" motor pigtail options with adapter for male or female connections</li> <li>• Refer to "Design Parameters" section below for complete wiring specifications</li> </ul>	
<b>QIS Power and Communication Panel</b>	<p>Power supply and serial hub for QIS shades</p> <ul style="list-style-type: none"> <li>• Cat 5e / Cat 6 connection</li> <li>• 2 RS-485 pass-through network ports</li> <li>• 8 Powered device ports</li> </ul>	
<b>InFusion Controller</b>	<p>Vantage system controller</p> <ul style="list-style-type: none"> <li>• RS-485 ports for QIS connection</li> <li>• Panelized or DIN form factor</li> </ul>	
<b>RS485 Booster</b>	<p>Signal amplifier and extender to strengthen RS-485 communication</p> <ul style="list-style-type: none"> <li>• Enables up to 32 QIS shades per RS-485 port</li> <li>• Purchase at <a href="#">RS485 / RS422 Isolator / Repeater / Converter (Industrial) – CommFront</a></li> </ul>	
<b>QIS Wiring Adapter</b>	<p>Optional adapter for pre-wired cabling to easily connect to QIS devices</p> <ul style="list-style-type: none"> <li>• Allows for translation communication and power for cables with 18-24 AWG, a characteristic impedance of 120 Ohms, and at least 4 conductors</li> <li>• 6" length, 2 per shade cable recommended</li> </ul>	

## DESIGN PARAMETERS - WIRED COMMUNICATION

Please consider the following specifications for optimal results on a project:

Detail Consideration	Specification
<b>RS-485 Port Cabling</b>	Cat 5e/Cat6, Twisted pair, shielded recommended but not required
<b>Total Power Panel Device Outputs</b>	8 Ports
<b>Max Wire Length Between Power Panel and Shade</b>	150 feet
<b>Max Segment RS-485 Network Cable Length</b> <i>(Refer to the illustration above)</i> <b>Segment 1) Cabling between IC, up to 2 panels, and booster</b> <b>Segment 2) Cabling after booster, including up to 2 panels</b>	1,000 feet
<b>Max # Power Panels to Vantage IC Port Without RS-485 Booster</b>	2 (16 Devices)
<b>Max # Power Panels to Vantage IC Port With RS-485 Booster between the 2nd and 3rd panel</b>	4 (32 Devices)
<b>Max # combined Devices between both IC ports Using RS-485 Boosters</b>	64 Devices
<b>Recommended RS-485 Booster</b>	Commfront RPT-485_422-4
<b>Terminal Resistor Specifications</b>	120 ohms (1/4 W), placed in last open PCP RS85 port

## IMPORTANT NOTES AND RECOMMENDATIONS

### 1. RS-485 Booster

- Use of a RS485 Booster does not extend the max wire length between devices, but instead strengthens the communication
- To regulate power, we recommend adding a 120 ohms (1/4 W) terminator resistor to the network cable in the last open RS485 Power Panel port. This can be done by attaching the terminator to pins 1 and 2 of a QIS Wiring Adapter, as shown in the “Wired System Components” image on page 1.

### 2. Wire length limitations are to ensure reliable data communication, not voltage drop.

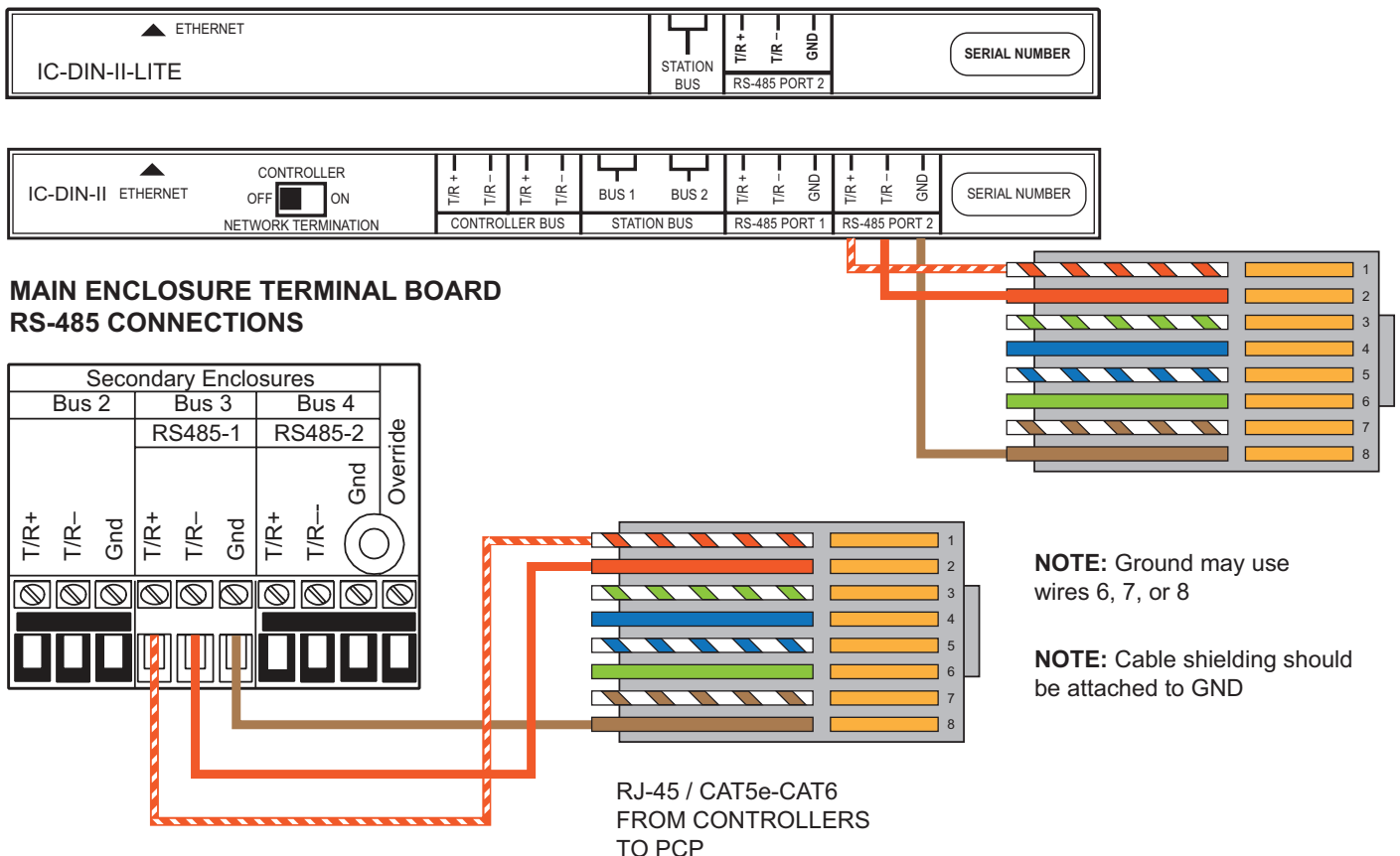
### 3. Existing wiring can be retrofit if it is 18-24 AWG, a characteristic impedance of 120 Ohms, and at least 4 conductors

- The available QIS Wiring Adapter translates communication and power without through a simple connection (2 per cable recommended).

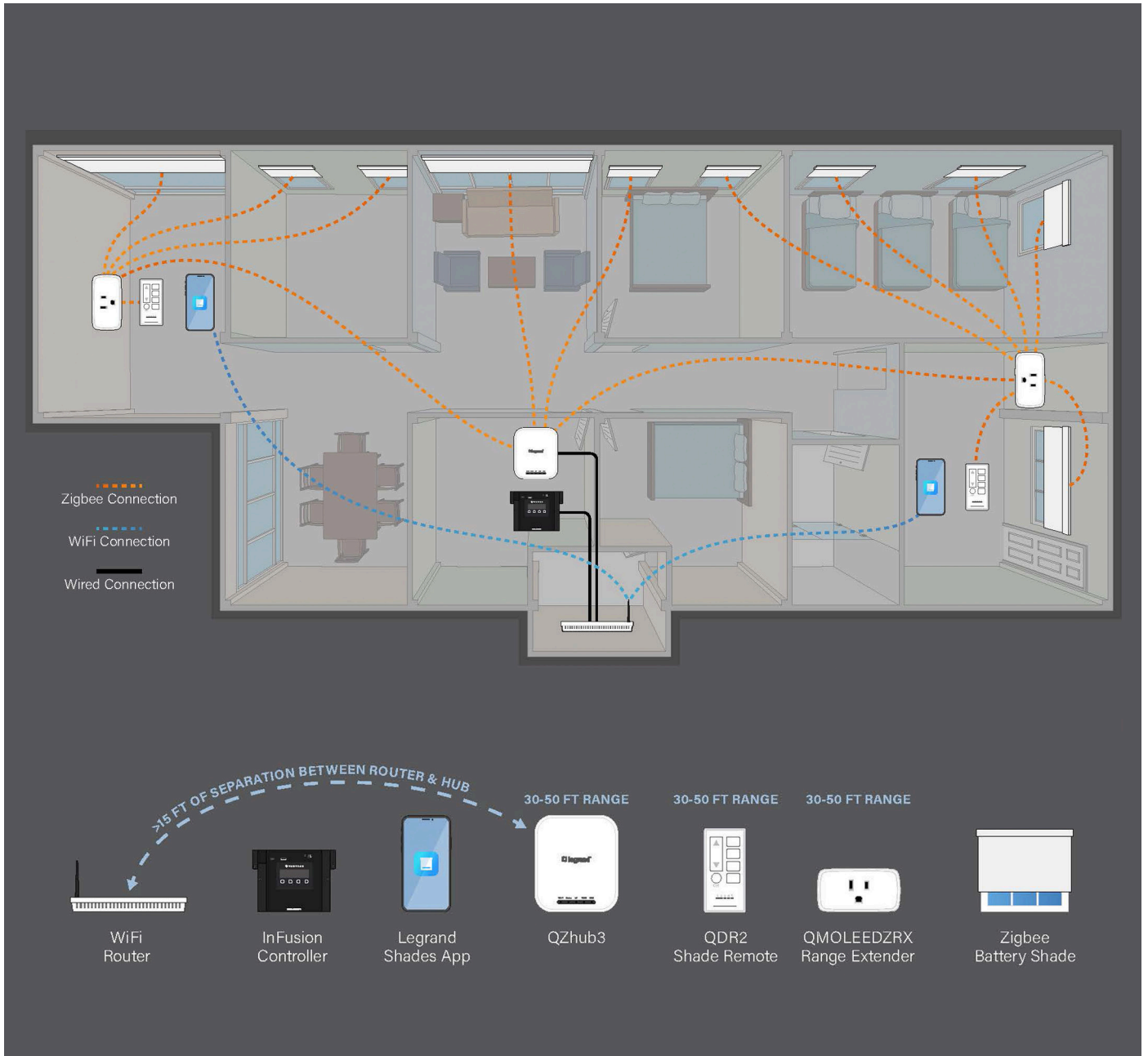
### 4. The following wired system “Do’s and Don’t’s” should be considered to ensure system reliability:

1. **Do** check and prevent cabling issues, such as cable / connector damage, improper wiring, and improper termination. If you do not possess a QIS Wire Tester, request one from Customer Service to help catch and prevent wiring issues on the project.
2. **Do** consider an RS-485 booster, if necessary, per the guidelines above.
3. **Do** consider adding a suitable battery backup and / or surge protection as a preventative to power surge, lightning strike, or power outage.
4. **Don’t** exceed the recommended wire lengths.
5. **Don’t** splice/split cables to connect additional devices. There should be one device per connection.
6. **Don’t** use external power panel and communication panels.





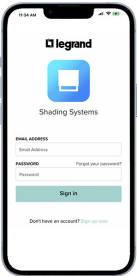


## WIRED COMMUNICATION DIAGRAM - QIS TO INFUSION CONTROLLER CONNECTION



### Wireless System Components



## WIRELESS COMMUNICATION - ZIGBEE COMPONENTS DESCRIPTIONS

Component	Description	Image
<b>Zigbee Shade</b>	Shade communicating via Zigbee (battery version shown to right) <ul style="list-style-type: none"> <li>Battery models are powered by D-cell alkaline batteries (AA for narrow shades)</li> <li>Up to 3 year battery life for D-cell shades and up to 1 year battery life for AA shades (results vary based on size, usage, environment, and batteries)</li> </ul>	
<b>QzHub3</b>	Gateway for wireless communication with Vantage and Legrand Shading <ul style="list-style-type: none"> <li>100 Device max, 30 - 50ft range</li> <li>Setup requires connection to Wi-Fi router and Legrand Shades App</li> </ul>	
<b>QMOLEEDZRX</b>	Zigbee Range Extender <ul style="list-style-type: none"> <li>15A Pass-through plug</li> <li>30 - 50ft range to reach shades that are outside of range</li> </ul>	
<b>QDR2 Remote</b>	Wireless Legrand Shading 5-Channel Remote <ul style="list-style-type: none"> <li>Each channel can operate together or individually and contain an unlimited number of shades (30 - 50ft range)</li> <li>5 Color options with matching wall plate</li> </ul>	
<b>Legrand Shade App</b>	App for setup and commissioning of shades <ul style="list-style-type: none"> <li>Available on iOS and Android, including tablets</li> <li>Learn devices to network, set limits, create groups, change Zigbee channel, and initiate integration</li> </ul>	
<b>QIS Power Panel (Power Only)</b>	Provides power for QIS shades <ul style="list-style-type: none"> <li>Wireless communication through Zigbee</li> <li>QIS Wiring Adapter is ideal for non-category cable to suitable power and communication</li> </ul>	
<b>InFusion Controller</b>	Vantage's lighting controller <ul style="list-style-type: none"> <li>Supports QzHub3 natively through Design Center</li> <li>Panelized or DIN form factor</li> </ul>	

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## DESIGN PARAMETERS - WIRELESS COMMUNICATION

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Please consider the following specifications for optimal results on a project:

Detail Consideration	Specification
QzHub3 Max Paired Devices	100 (shades + remotes = range extender = 100)
QzHub3 Range	30 - 50 ft, application dependent
QMOLEEDZRX Range	30 -50 ft, application dependent
Distance Between Range Extenders	+/- 75 ft
Max Devices Per Range Extender	15, Add another Range Extender if there are more devices within range

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## IMPORTANT NOTES AND RECOMMENDATIONS

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1. The QzHub3 is best located at the central location of the project.
  - It should be located at least 15 feet from the router and connected to the network with an Ethernet cable.
2. A QIS Shade can function as a range extender.
  - A project with a mix of wired and battery shades communicating via Zigbee can utilize wired shades as a range extender (up to 7 devices from a QIS shade)
3. The following Zigbee **“Do’s and Don’ts”** should be considered to ensure system reliability:
  - **Do** consider that the project’s material and layout can affect the Zigbee signal
    - Masonry walls or metal structures (beams and plumbing) between devices can decrease range, versus drywall or an open environment
  - **Do** consider that shades installed up high, such as 30ft up, may need an extender directly below to keep it within the 30-50ft range
  - **Do** consider that shades encased in metal (fascia, top/back fascia, or a pocket), can decrease range
  - **Don’t** place devices behind furniture or appliances if possible. This can decrease range.
  - **Don’t** place devices in a rack around other devices if possible. This can decrease range.
  - **Don’t** move or unplug range extenders once they are setup.
4. If the considerations above still result in decreased range, the Legrand Shading app has an option to change to a clearer Zigbee channel.
  - The QzHub3 defaults to an open channel at setup, however changes to the environment may need the channel to be updated.
  - Found in *Settings> Select hub> Advanced Options> Select Zigbee Channel> Scan for Open Channel*

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## ADDITIONAL SUPPORT

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- For additional support information, please visit: <https://legrand-communities.force.com/knowledgebase/s/ac-knowledge>
- Pour plus d’informations sur l’assistance, veuillez visiter : <https://legrand-communities.force.com/knowledgebase/s/ac-knowledge>
- Para obtener información de soporte adicional, visite: <https://legrand-communities.force.com/knowledgebase/s/ac-knowledge>

