

Vive Integral Fixture Controls

Overview

This document is intended to provide fixture manufacturers with the information needed to properly integrate Lutron Vive integral fixture controls with their fixtures in order to provide a Lutron Clear Connect enabled fixture. For more information, please see product spec [3691039](#) at [www.lutron.com](#)

Models Available

Model Number	Description
DFCSJ-OEM-OCC	Vive Integral Fixture Control with sensor
DFCSJ-OEM-RF	Vive Integral Fixture Control (RF only)
DFC-OEM-DBI	Fixture control digital link interface

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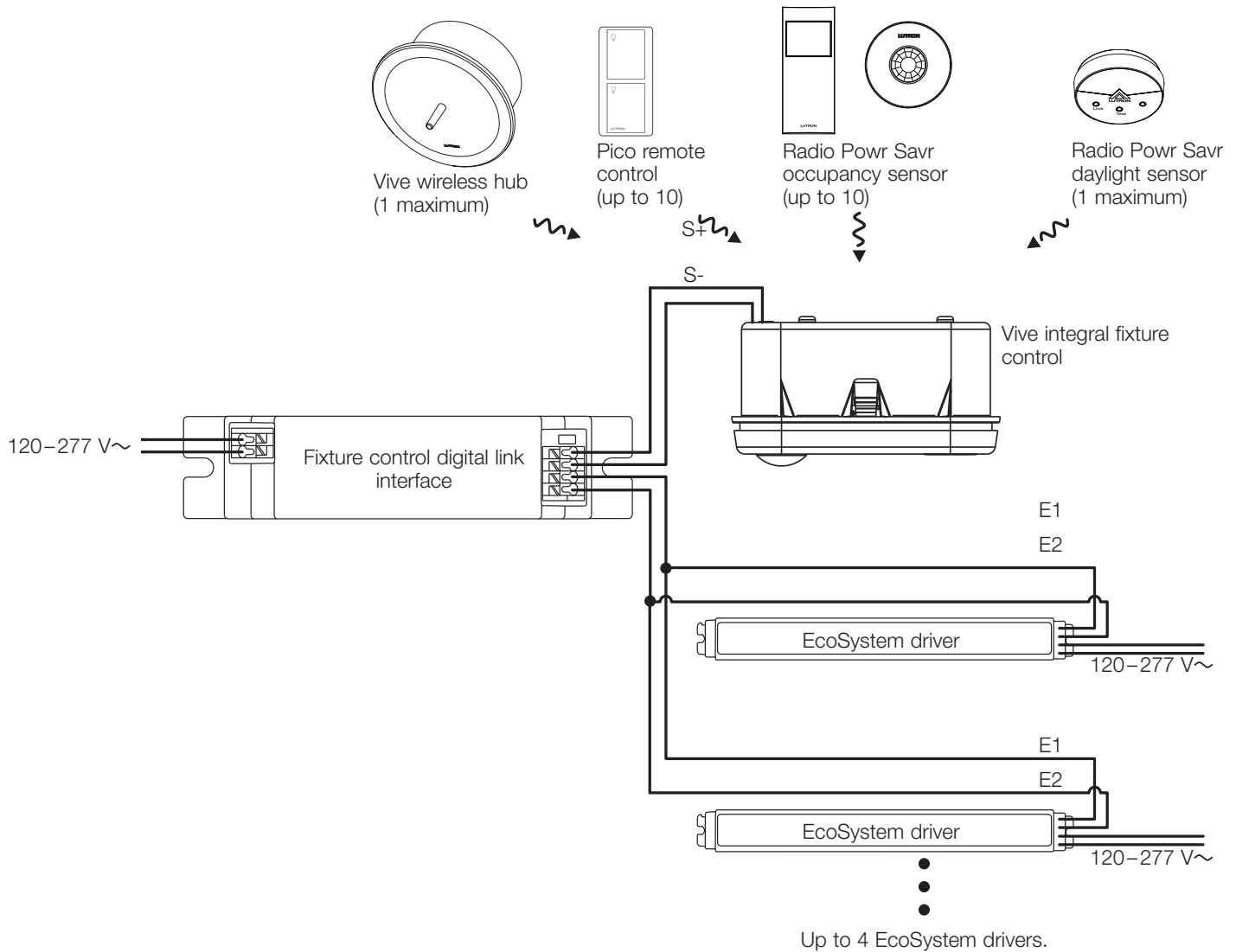
For more information not contained in this document, see spec submittal 3691039 at [www.lutron.com](#)

Compatible Driver Options

For compatible driver options, see product spec [3691039](https://www.lutron.com/Products/3691039) at www.lutron.com

Lutron Vive integral fixture controls can be used with Lutron EcoSystem drivers and drivers with an integrated self-powered DALI link. In cases where the driver does not have a DC output supply to power the integral fixture control, a fixture control digital link interface is required.

Lutron EcoSystem Drivers (require fixture control digital link interface)

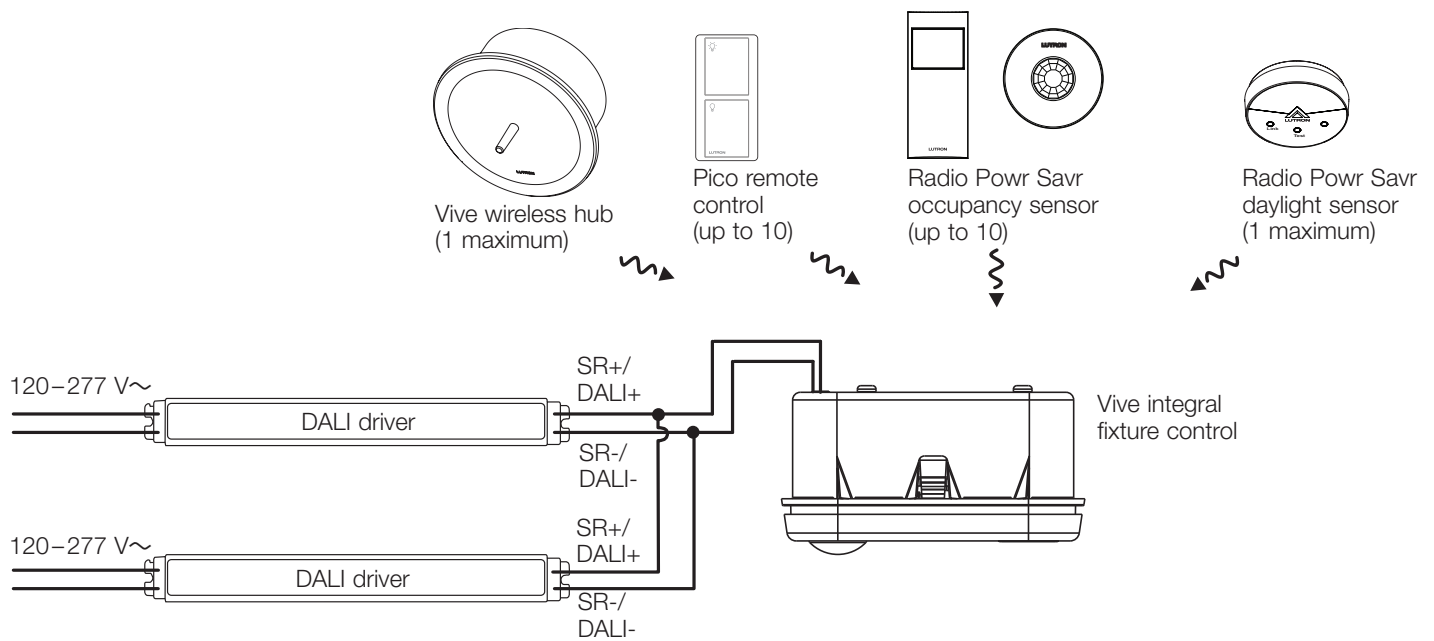


Note: Do not mix drivers from different manufacturers in the same fixture.

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Compatible Driver Options (continued)

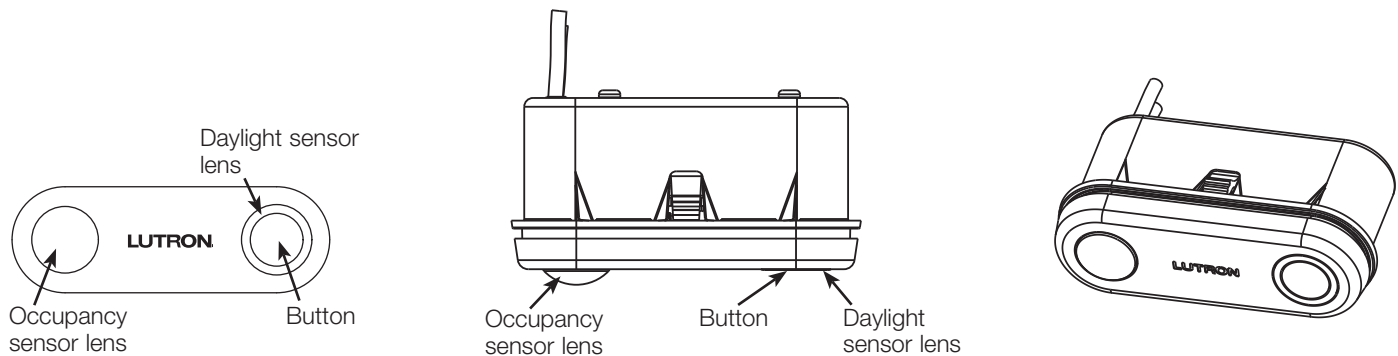
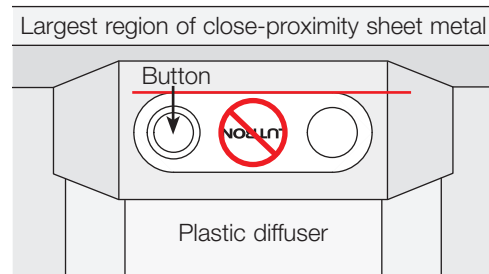
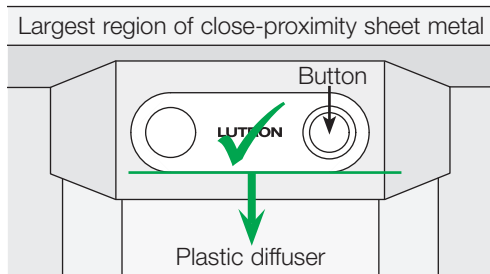
Drivers with Integrated Self-Powered DALI Link



Physical Mounting Considerations

Orientation

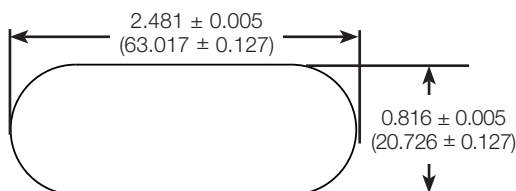
For optimal RF performance, install in the proper orientation shown in the diagrams below.



The button can be used to perform device associations and is required in order to restore the integral fixture control to factory settings. The button and the occupancy sensor lens need to be accessible in the final mounting position.

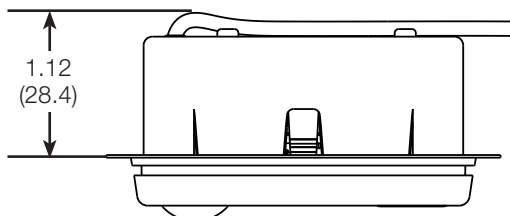
Knockout Dimensions

Dimensions shown as: in (mm)



IMPORTANT: For optimal RF performance, mounting plate containing opening should be metal and connected back to fixture ground. For all mounting plates, the Fixture Control Self-Test must be used to determine suitability. Refer to the **Fixture Control Self-Test** section on page 7.

Minimum Depth Required in Fixture (as measured from front face of fixture)



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Physical Mounting Considerations (continued)

Installation

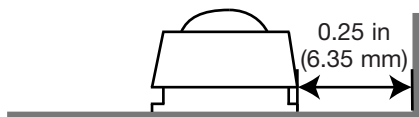
- Ensure knockout and adjacent surfaces are free from burrs, oil, chemicals, debris, etc.
- Do not push on the button or the occupancy sensor lens to install the integral fixture control.
- Push firmly along the entire perimeter of the integral fixture control until it is seated snugly against the fixture surface. A Lutron tool can be provided to facilitate installation.
- Clean only with soft, damp cloth. Do not use chemical cleaners.
- Do not paint.
- Vive integral fixture controls should be mounted to fixture surface that is parallel to the floor in final installation.

Mounting Thickness

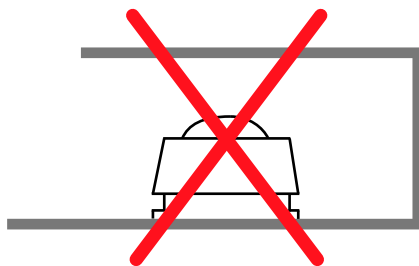
Suitable for use in mounting thicknesses up to 0.12 in (3.0 mm).

Separation from Metal Walls

- Maintain 0.25 in (6.35 mm) space between control and vertical metallic walls.

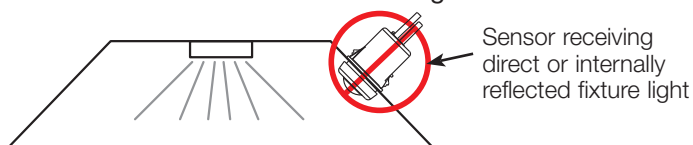


- Do not put metal over the face of the control. The front of the control contains the antenna and must extend outside the metal fixture.

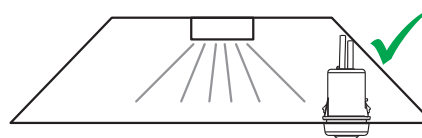


Daylight Sensor (DFCSJ-OEM-OCC only)

Do not install in direct view of the light source or reflecting surface.



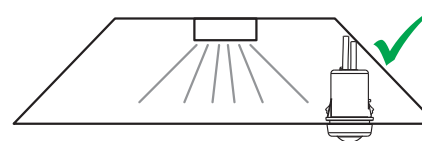
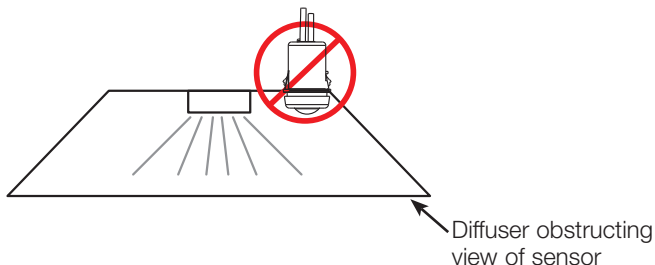
Sensor receiving direct or internally reflected fixture light



Note: If mounting the Vive integral fixture control to a lens/diffuser, do NOT face it towards the light source (LEDs).

Occupancy Sensor (DFCSJ-OEM-OCC only)

- Install in a location that allows the sensor to have an unobstructed view of the area. Do not mount behind glass or clear plastic.
- Install away from radiated heat given off by the light source.
- Sensor not intended for hanging pendants - occupancy coverage area is reduced.



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Physical Mounting Considerations (continued)

Temperature

The integral fixture control is rated for 55 °C (131 °F) maximum. Product must be installed in an area that will not allow it to exceed this rating. Keep away from heat generating devices (e.g., drivers) and verify during the fixture design process.

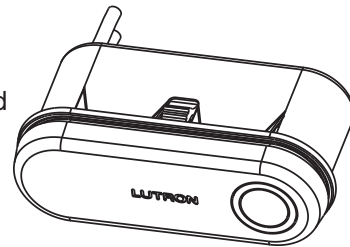
Note: NOT RATED for wet/damp or exterior locations.

DFCSJ-OEM-OCC Specific Notes

Hot objects and moving air currents can affect the performance of the onboard occupancy sensor on the DFCSJ-OEM-OCC. To ensure proper operation, the sensor should be mounted at least 4 ft (1.2 m) away from HVAC vents and light bulbs that are below the ceiling line. Additionally, some fixtures may be used for return/supply air. In these applications it is recommended to use the DFCSJ-OEM-RF with area occupancy sensors (LRF2- model family)

DFCSJ-OEM-RF Specific Notes

- Because the DFCSJ-OEM-RF does not contain a built-in sensor, local control of a fixture that contains this device will require a Pico wireless control, Radio Powr Savr sensor, or Vive hub.
- The Vive integral fixture control is UL2043 plenum rated, so it can be mounted to the backside of a fixture (not recommended for DFCSJ-OEM-OCC).
- Please consider user access of the button when selecting a mounting location for the integral fixture control. The button may need to be accessed, especially if the system does not contain a Vive hub.
- Do not fully enclose in metal.



Mounting to Curved Surfaces

Do NOT mount directly to a curved surface. An adaptor (custom manufactured by the OEM) must be used to ensure the device is engaged on a flat surface.

Remote Mounting

The integral fixture control is intended for installation in troffer and linear fixtures and is not intended to be directly mounted to a ceiling surface. It is not intended to control multiple fixtures. For information on products with remote mount options, refer to the specification submittals for Radio Powr Savr sensors (369432, 369481, and 369262) and PowPak fixture controls (369866) at www.lutron.com

Important Note: Vive Integral Fixture Control is not intended for retrofit kits that do not allow for the full kit assembly to be 100% tested at the fixture manufacturer's facility. Examples of non-compliant fixtures include but are not limited to "internal only kits," where testing the fixture does not leave the components in a position representative of the final installation case.

Retrofit kit manufacturers must perform the Fixture Control Self-Test during the design phase with a full fixture as the customer would install it (including pan), varying those parameters that can change when the kit is installed in the field (i.e. incoming power wire length; power wire bundling, etc.) to verify that a pass (green light) is achieved in all these conditions.

Meeting RF Performance Criteria

Background

LED drivers are electrically very noisy, and this noise gets coupled onto the LEDs, LED load wires, driver power wires, and control wires, which can cause issues for RF controls. All RF controls are sensitive to this type of interference which can be generated by a driver, cell phone, or Wi-Fi router. Lutron has encountered cases where an LED driver can interfere with the RF system and reduce the range to an unacceptable level. The Vive integral fixture control has been designed to be resilient to these issues.

Expectations

In order to guarantee the specified RF performance of the fixture, the following requirements must be met:

1. Lutron expects OEM to maintain the integrity of the Vive integral fixture control. Removal or modification of the shield or other components will void the warranty.
2. The Fixture Control Self-Test is the key to determining if the fixture meets Lutron's criteria for acceptable RF performance.

End-of-Line Testing

Lutron tests the performance of the occupancy and daylight sensors in this product and does NOT expect the OEM to test those features.

Fixture Control Self-Test (REQUIRED)

The Vive integral fixture control supports a self-test mode in order to verify proper RF communication after being installed in a fixture. In case of self-test failure, the fixture must not be released to customers until the wiring and/or fixture construction is adjusted to improve RF performance until the fixture passes the self-test. See **Wiring Best Practices** section on page 8 for details.

Until one or more of the following conditions are met, the fixture control automatically enters self-test on power-up:

- The fixture control has previously been powered continuously for more than 60 minutes.
- The fixture control is associated to any other devices or a Vive system.

Resetting the fixture control to factory defaults will reset the above conditions and re-enable automatic self-test entry.

The Fixture Control Self-Test is conducted as follows:

1. While the test is in progress, the status LED alternates between green and red. During the test, the Vive integral fixture control will not respond to button presses or commands from other Lutron Clear Connect devices.
2. Fixture will turn ON to full intensity for 5 seconds and then turn OFF for 5 seconds.
3. Once the self-test is complete:
 - a. If the fixture passes, the status LED blinks green twice (repeat every 2 seconds) and the fixture will turn ON.
 - b. If the fixture fails, the status LED blinks red twice (repeat every 2 seconds) and the fixture will remain OFF.
4. To exit the self-test mode after completion, press the button or wait 5 minutes to exit automatically.

Note: Do NOT disconnect power to the fixture until the pass/fail determination has been made.

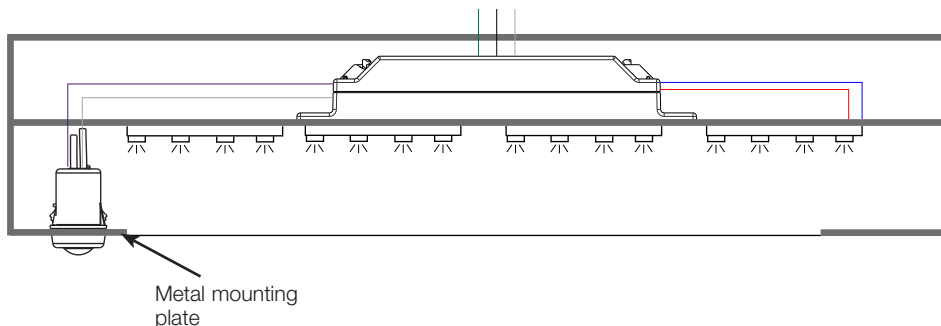
Basic Functionality (works only after completion of the Fixture Control Self-Test above)

Toggle the load by pressing the button on the integral fixture control. If the fixture control is connected properly, the load will fade to OFF after the first button press and fade to ON after the second button press (or vice versa depending on the state of the load prior to the first button press).

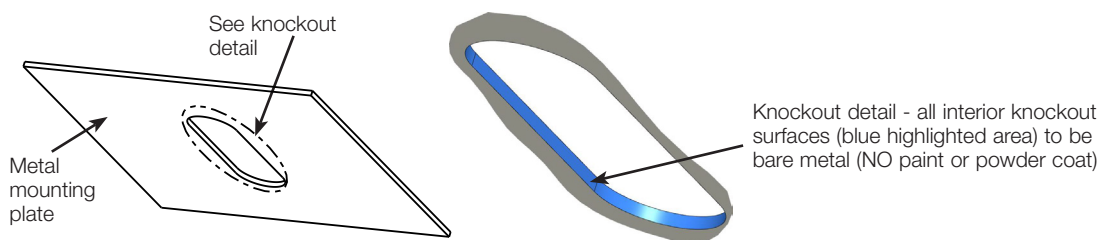
The **Wiring Best Practice** section is intended to provide recommendations to help a fixture design pass the self-test. They are not necessarily absolute requirements, as long as the self-test results in a pass.

Wiring Best Practices (for RF consideration – to help pass the self-test)

1. It is best to have the metal barrier between the driver and the Vive integral fixture control. This provides isolation from radiated noise
 - A. The DFCSJ-OEM-OCC should be front mounted. Lutron recommends that the driver and the Vive integral fixture controls NOT be co-located in the wiring channel/compartment.

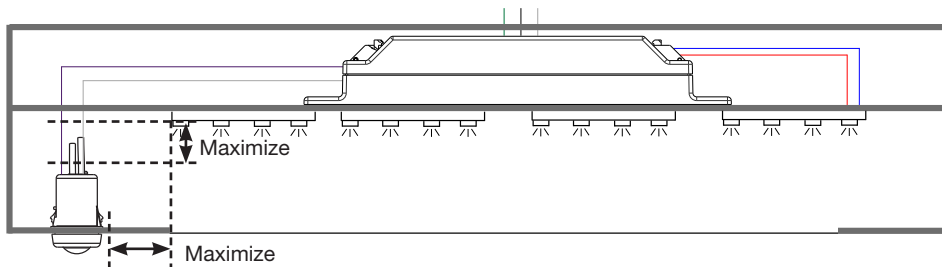


- B. If the driver and Vive integral fixture controls have to be co-located in the wiring channel/compartment (not recommended), the details below should be followed:
 - i. Paint free knockout edges

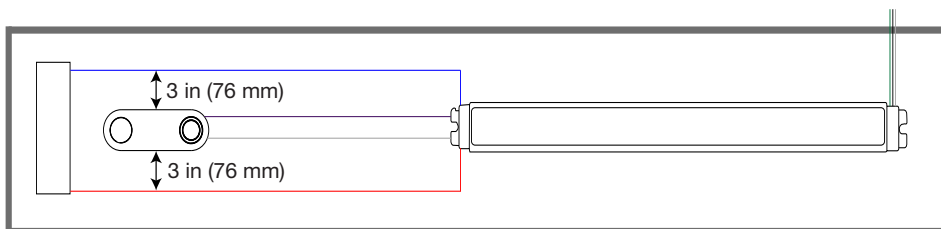


- ii. Metal mounting plate, which should be ohmically tied back to fixture ground.

2. Keep the Vive integral fixture control as far away from the LEDs as possible.



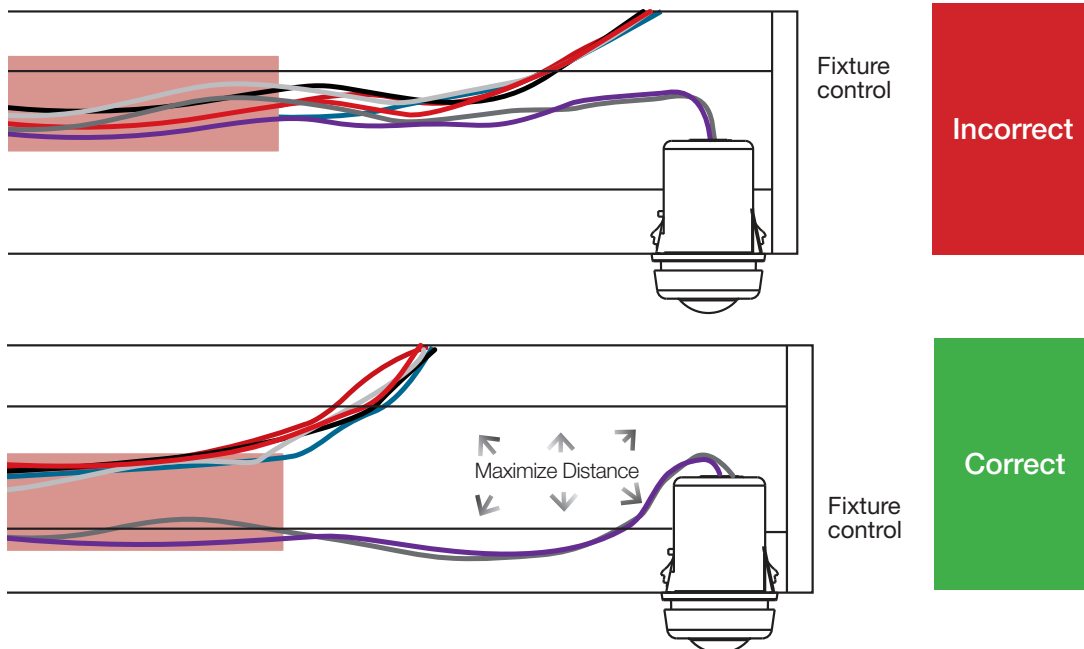
3. All wires should be routed as far away from the Vive integral fixture control as possible (3 in [76 mm] minimum separation suggested)



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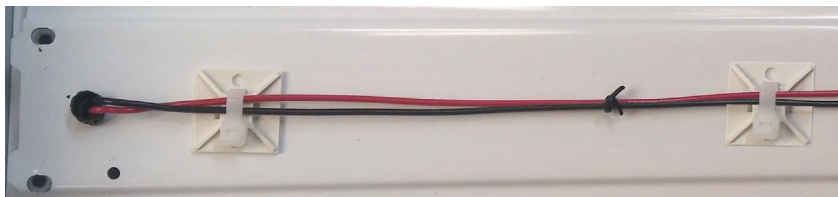
Wiring Best Practices (for RF consideration – to help pass the self-test) (continued)

4. Avoid routing the driver and Vive integral fixture control wires side-by-side. Separate the power and LED wires from the Vive integral fixture control/DALI communication wires as much as possible.



5. Minimize wire lengths

- A. Remove all excess slack in wires and mechanically affix them against the grounded fixture sheet metal.
B. Use wire hold-downs so wires do not shift in the fixture.

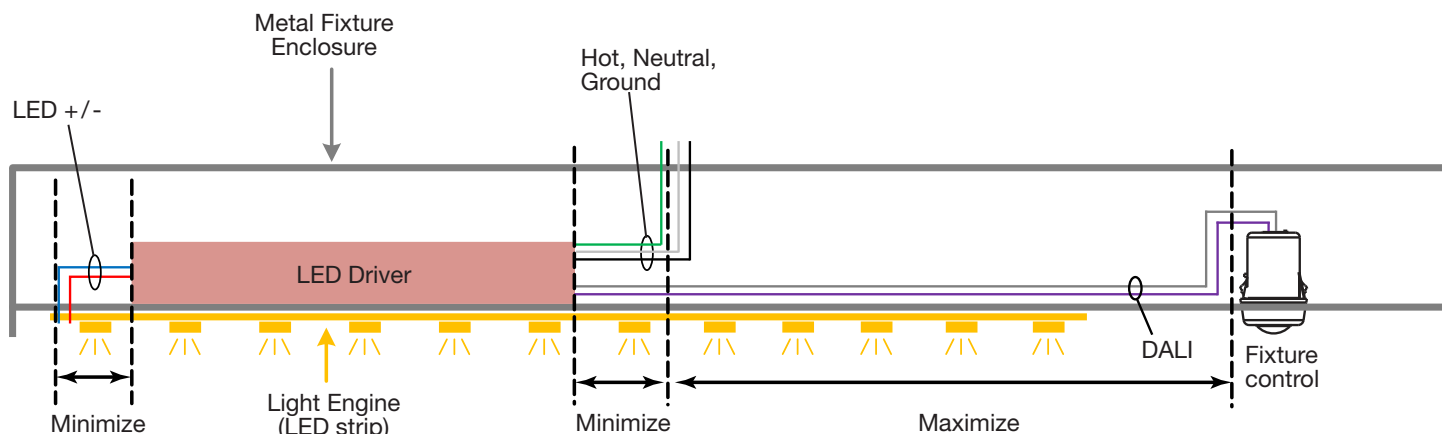


- C. Use a shielded, grounded cable if slack is needed.
D. Don't bunch up DALI wires behind or around the Vive integral fixture control.

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Wiring Best Practices (for RF consideration – to help pass the self-test) (continued)

6. Separate the power and LED wires from the Vive integral fixture control/DALI communication wires as much as possible.
7. Maximize distance between power wire entry and the Vive integral fixture control. Minimize the length of the LED wires from the driver.
8. Driver line voltage wiring should exit the fixture wiring channel as close as possible to the driver to minimize any internal coupling to the fixture control.



Note: If the driver is provided with a ground terminal, this terminal should be electrically connected to the grounded fixture metal as close to the driver as possible.

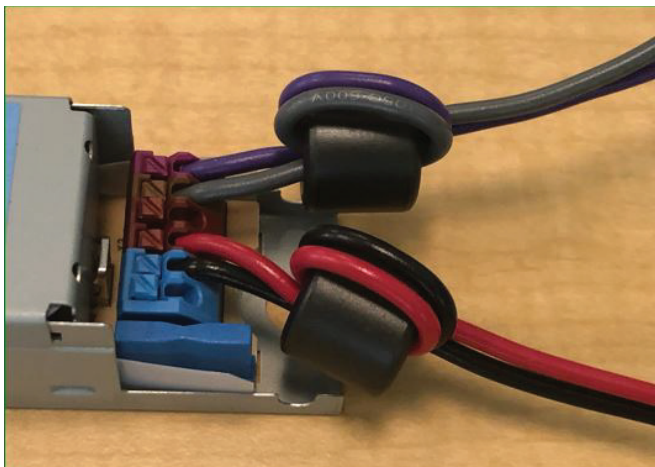
Driver-Specific Requirements

In order to guarantee the specified RF performance of the fixture, certain drivers require the addition of ferrite beads on specific wire sets during installation. This ensures the RF performance of the Vive in-fixture controller and enables the fixture design to consistently pass the RF self-test.

Model: XI040C110V054VPT2

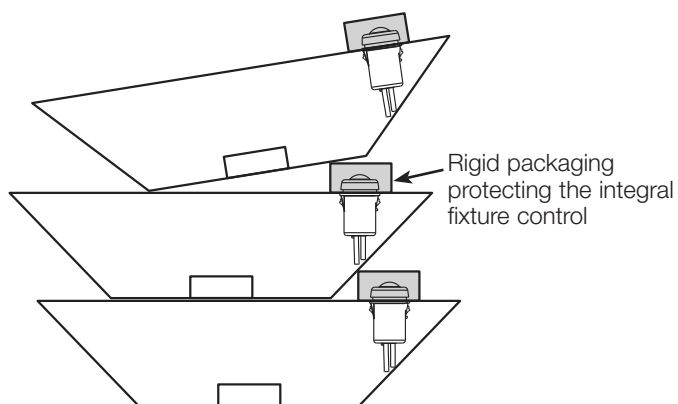
- Lutron recommends using Laird 28B0625-000 ferrite beads which have high impedance at 434 MHz.
- Wrap both the DA+ and DA- wires through one ferrite bead such that the individual wires pass through the bead two times total (one loop).
- Wrap both the LED+ and LED- wires through one ferrite bead such that the individual wires pass through the bead two times total (one loop).

Note: Ensure the wire length between the driver's terminal block and the ferrite bead is a maximum of 1 in (25.4 mm).



Packaging

Fixture packaging must protect the installed integral fixture control so that it does not get damaged in shipping.



Vive System

For more information regarding Vive systems, visit www.lutron.com/en-US/Products/Pages/WholeBuildingSystems/Vive/Overview.aspx

Emergency Fixtures

For information regarding emergency fixtures, visit <https://www.lutron.com/TechnicalDocumentLibrary/048628.pdf>

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