

Limelight by Lutron Twist-Lock Radio Daylight Module

The Limelight by Lutron Twist-lock Radio Daylight Module is a radio-frequency (RF) device that controls 0-10 V electronic LED drivers. This Radio Daylight Module (RDM) mounts to an ANSI C136.41 compliant dimming receptacle on exterior parking lot fixtures. The RDM has an onboard daylight sensor enabling it to save energy and turn the light off during the daytime, this feature is enabled out-of-the-box without the need for a Limelight Gateway.

This product is compatible with a Limelight by Lutron Gateway which enables additional system control and monitoring. The Limelight by Lutron system uses a high-density mesh wireless technology to communicate between the Limelight gateway and the Limelight nodes at every luminaire. For a complete list of features supported with the Limelight by Lutron Gateway see specification submittal 3691100 at www.lutron.com.



Features

- Out-of-the-box on/off individual fixture daylighting control when not part of a Limelight by Lutron system.
- System compatibility with all other Limelight Radio Modules. See other model numbers that can add features and system versatility here: <http://www.lutron.com/en-US/Products/Pages/WholeBuildingSystems/Limelight/Overview.aspx>
- A Limelight by Lutron system does not require wireless repeaters and typical jobs are completed with a single gateway. A cellular gateway option eliminates the need to get an Ethernet connection.
- Single sign-on for Lutron interior and exterior controls when connected to Enterprise Vue.
- Fixtures can be grouped together to turn an entire area on at once to make sure there is plenty of light available in safety-critical areas. In areas with cameras, the unoccupied level can be set to a reduced light level instead of OFF.
- Limelight by Lutron uses daylight sensors to intelligently reduce power consumption and can email monthly reports of energy usage data.

Models Available:

Model Number	Installation to Fixture	Description
LL-5TL010	Field/OEM	Limelight by Lutron 5-Pin Twist-lock Radio Daylight Module

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System Components

Limelight by Lutron Radio Daylight Module (RDM)

The Limelight by Lutron wireless Radio Daylight Module (RDM) can be installed onto a variety of luminaires with compatible photocontrol twist-lock connections. Fixtures with an installed RDM can turn on/off and provide full dimming drive capability using 0–10 V. When AC (120 – 277 V~) power is applied, the fixture powers up with a factory default daylight setting and will turn the fixture OFF when there is sufficient light available. When added to a system with a Limelight by Lutron Gateway, additional daylighting capabilities and error reporting become available.

Limelight by Lutron System Compatibility

Lutron's RDM is compatible with Limelight by Lutron's entire product line and can be designed into Limelight systems with various modules. The same High Density Mesh (HDM) technology is shared across Limelight by Lutron products allowing a mesh to be created between all Limelight modules. See other model numbers that can be designed in with RDM here: <http://www.lutron.com/en-US/Products/Pages/WholeBuildingSystems/Limelight/Overview.aspx>

Limelight by Lutron High Density Mesh (HDM)

Every RDM has a fully integrated wireless radio. The radios use HDM wireless technology to ensure extremely reliable, long-range performance in outdoor environments. These radios provide:

- A robust, redundant communications scheme.
- Communication among multiple floors in parking facilities.
- Each radio communicates to the “neighbor” radios around it, creating a high-density mesh.
- This redundant communications system enables Limelight by Lutron to be self-healing. If a radio ever stops functioning or is vandalized, the other radios will immediately search out and establish communication with other neighbors in the mesh. This HDM system enables the Limelight by Lutron control system to operate smoothly even in the most difficult conditions.

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Specifications

Limelight by Lutron UL Twist-Lock Radio Daylight Module (RDM)

Model

- LL-5TL010

Standards

- cULus Listed
 - UL773
- IP66 and UL Wet Location rated when correctly installed on a fixture with corresponding water ingress ratings
- FCC 15.247 / IC RSS-247

Power Requirements

- Input power: 120 – 277 V~ (± 10%) 50 / 60 Hz (phase-to-phase possible)
- Device consumption: 1.0 W (load enabled)
0.5 W (load disabled)
- Maximum Load: 5 A at 120 V~ (600 W)
3.65 A at 277 V~ (1000 W)

Operating Temperature

- -40 °F – 158 °F (-40 °C – 70 °C)

External Housing

- Typical product dimensions:
 - Diameter: 3.46 in (88 mm)
 - Height: 2.44 in (62 mm)
- Dark transparent color only

Water Ingress

- The UL Listed RDM has been tested to the UL Wet Location and IP66 dust and water ingress protection standards

Installation

- The Limelight by Lutron UL Listed RDM must be installed by a licensed electrician
- Mounted to an OEM installed ANSI C136.41 compliant 5/7-pin twist-lock connector (provided by others)
 - Can be mounted to a 7 Pin connector, but will not utilize/control pins 6 and 7 (see wiring diagram for more details)
 - Can be mounted to a 3 Pin connector that is ANSI C136.10 compliant, but will only offer ON/OFF control. This will disable the RDM's 0-10 V dimming capability
- The twist-lock connector must be located on the top surface of the fixture
- Installed on pole mounted fixtures located in open lots and the open top level of parking garages
- Must be installed with one RDM per fixture

Features

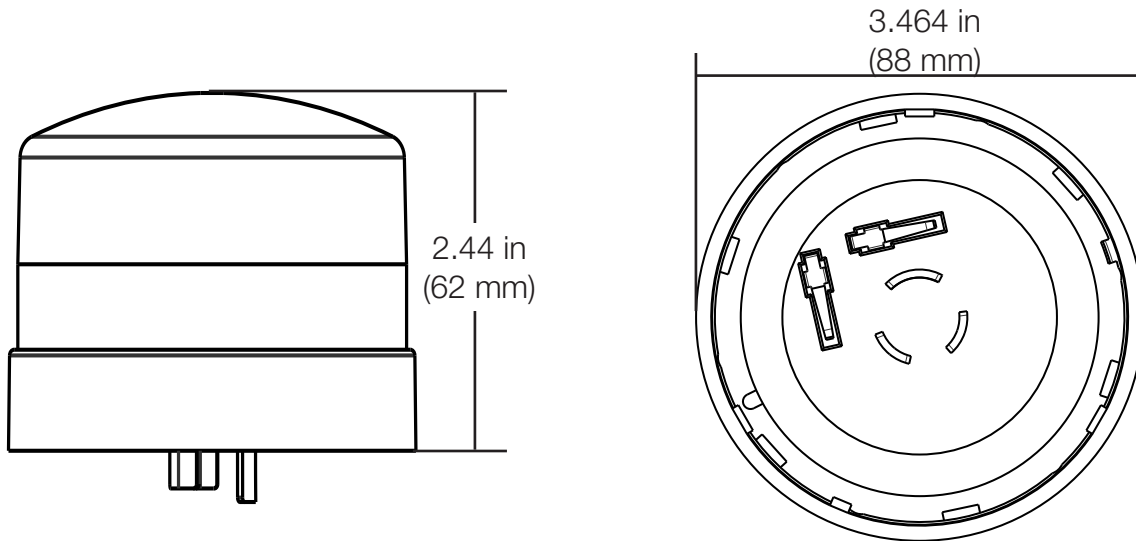
- Power Measurement: Accurate to + / – 5% with loads above 10 W
- Zero-Cross switching to extend relay lifetime
- Non-Class 2 isolated 0 – 10 V_{DC} dimming output, capable of sinking up to 2.0 mA of 0 – 10 V_{DC} signal
- On board temperature sensor, accurate to + / – 2 °C
- Works with all ballasts and drivers that provide a current source compliant to IEC 60629 Annex E.2, and whose inrush current does not exceed NEMA410 standards for electronic ballast/driver
- Integrated HDM radio transceiver
 - IC and FCC approved Title 47 Part 15 Subpart B and Subpart C section 15.247 for Digital Transmission Systems Operating within the band 2400–2483.5 MHz
 - RF transmissions security: 128 AES plus application layer
- Can be configured to control non-dim loads
- Integrated daylight sensor measures light up to 1500 fc

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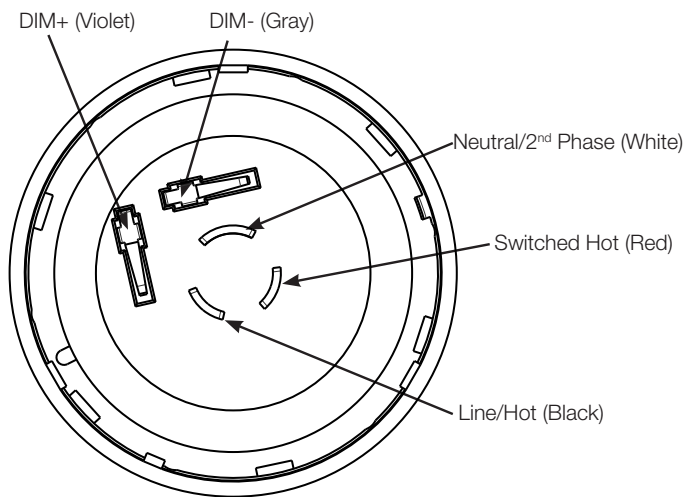
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Dimensions



Wiring Diagram: LL-5TL010

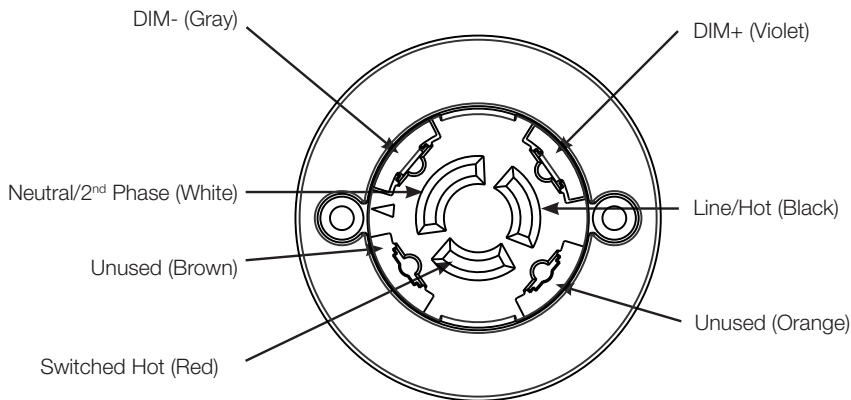
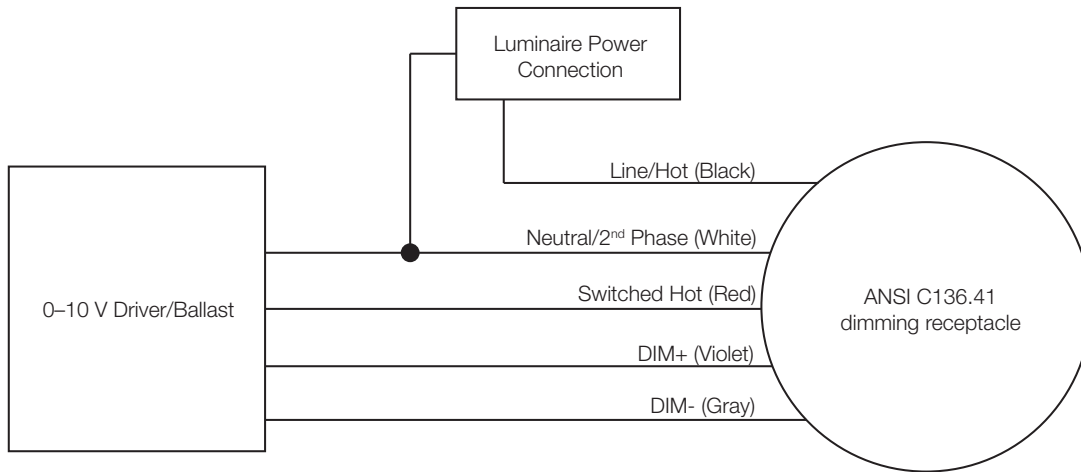


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Wiring Diagram: Fixture (Reference only - provided by fixture manufacturer)



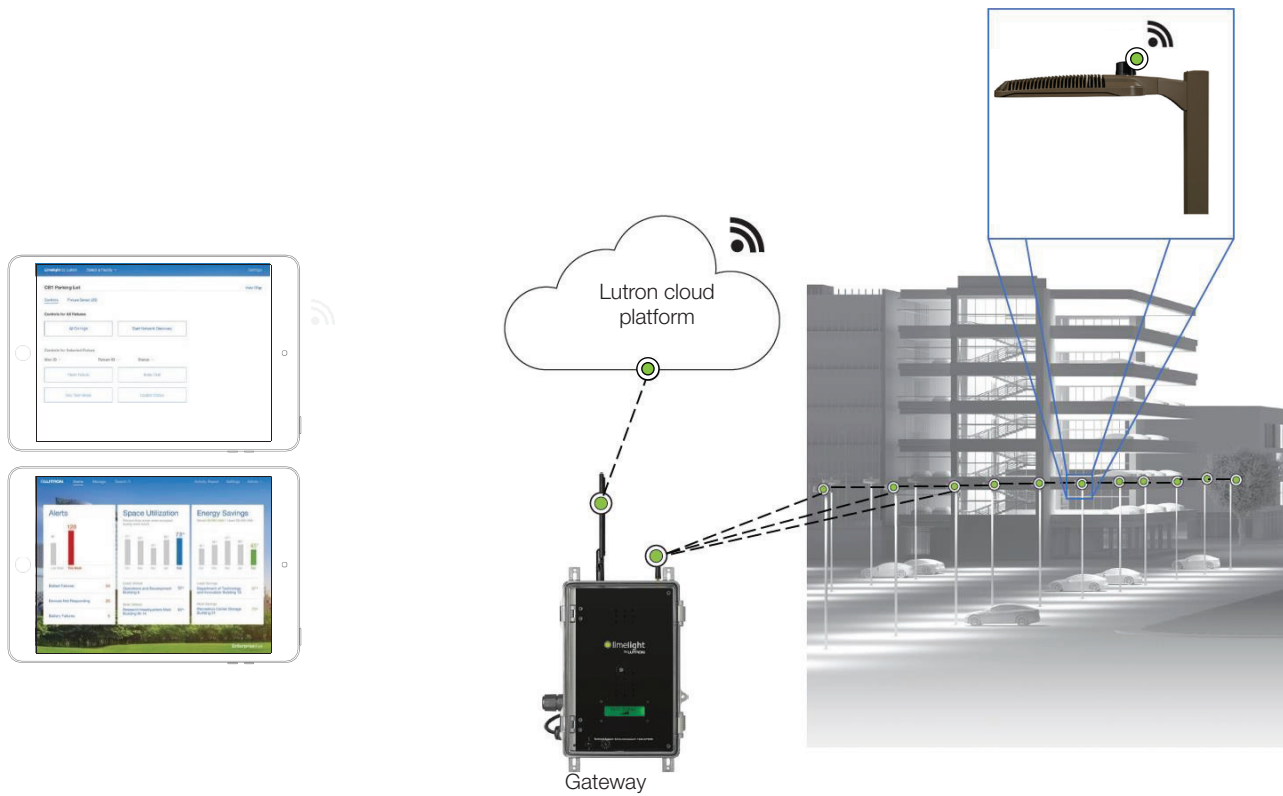
Wiring Note

- The unused connections shown above on the receptacle can exist on fixtures being retrofitted, but cannot be controlled with LL-5TL010.
 - These connections are used for:
 - DALI driver dimming
 - Motion sensor controls
 - Additional 0-10 V dimming
 - If the fixture is using these connections internal to the fixture they will no longer be controlled when LL-5TL010 is installed.

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Technical System Overview

Log in using Enterprise Vue (sold separately) or access directly via www.limelightbylutron.com website (included with system).



Web-Based Interface Capabilities

- Turn all fixtures on (via override) with a single button
- Run diagnostics on a fixture
- Check fixture status and identify errors
- Flash any fixture
- See the total number of connected luminaires
- Group fixtures
- Change system settings (timeclocks, daylight groups, light levels, and more)
- View a live map showing the status of all fixtures
- Perform manual overrides

Gateway

- Wireless HDM to luminaires
- Cellular or Ethernet to the cloud
- Wall-mounted inside a facility utility closet

Limelight by Lutron Enabled Luminaire

- Easy twist-lock installation
- Each RDM is equipped with the Limelight by Lutron radio and out-of-the-box enabled daylight sensor
- Up to 800 luminaires controlled by a single gateway as long as no other range restrictions are violated *

* For parking garages, RDM nodes should be no further than 4 floors above the gateway when installed on the top floor.

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Technical System Overview (continued)

Web-based Interface

- Standalone system (www.limelightbylutron.com)
OR
- Connect to Enterprise Vue for single login and navigation. See the Enterprise Vue Software spec submittal (3691076) at www.lutron.com for more information

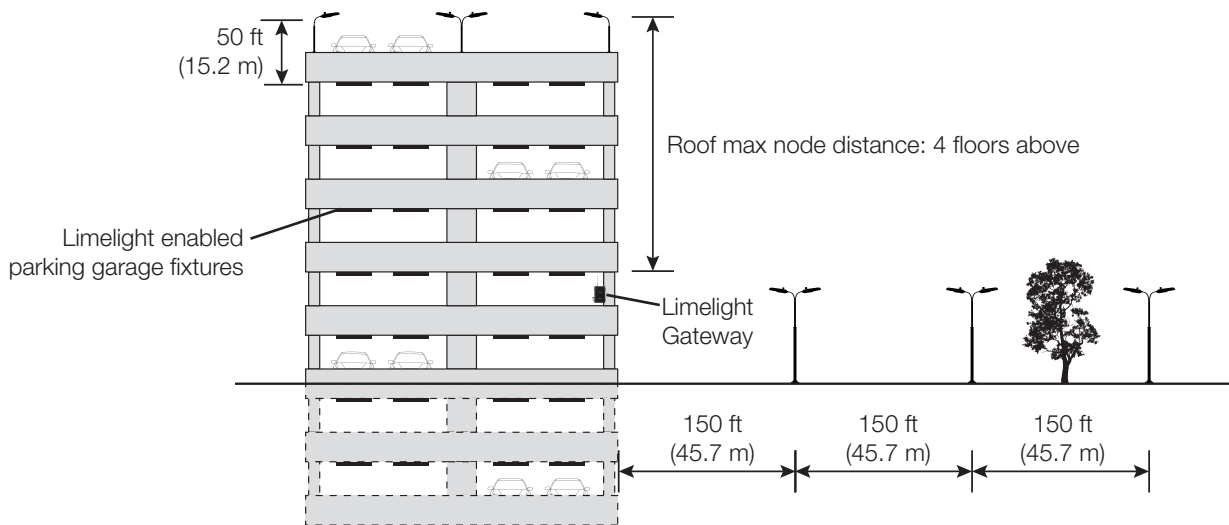
Wireless Range Best Practices

RF range recommendations	Flat lot & Top Level of Parking Garage
3 nodes within this distance of the gateway*	150 ft (45.7 m)**
Max distance from the gateway to any one node	3000 ft (914.4 m)
Max distance from node to node	150 ft (45.7 m)***
Gateway proximity to dense metal obstructions (including electrical panels)	Minimum 2 ft (0.6 m) away
Max number of luminaires controlled by a single gateway	800, as long as no other range restrictions are violated. Nodes should be no further than 4 floors above the gateway when installed on the top floor of a parking garage.

* For systems with other Limelight node models that fulfill this criteria it is not required for LL-5TL010 as long as the node-to-node spacing is followed.

** If the gateway is not at or above ground level or there is more than one wall/floor/ceiling between the gateway and nodes, the 50 ft (15.2 m) spacing guideline should be used.

*** Spacing guidelines between top level parking garage RDM nodes and Limelight enabled parking garage fixtures internal to the garage floors should be 50 ft (15.2 m).



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