

Lutron In-Fixture Solutions

Deliver a Beautiful Lighting Experience



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Create the Right Environment

The right environment allows people to be more productive, more comfortable, and happier in the places where they live, work, and learn.

Innovative lighting solutions, like Lutron in-fixture technologies, redefine the way we think about building design and the way we use light to enhance and improve the human experience.

Lutron in-fixture technologies help create the right environment with —

- **Guaranteed dimming performance**
- **Ultra-reliable control**
- **Simple tunable white control**



Why Lutron?

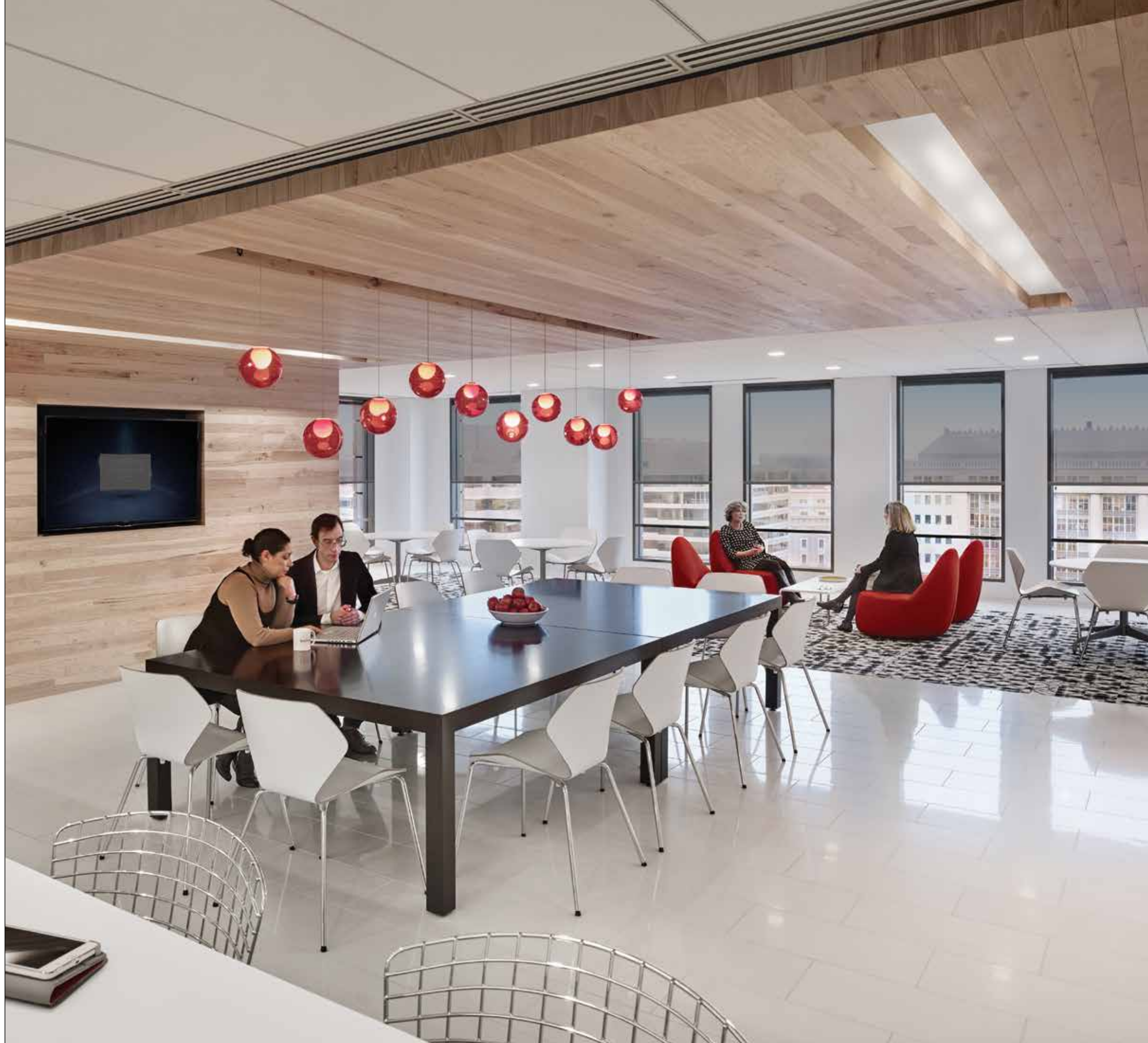
Lutron in-fixture technologies support beautiful fixture aesthetics, superior dimming performance, reliability and intuitive control functionality that strengthens your designs.

- **A single provider** for wired and wireless in-fixture technology and building control systems
- **Choose your fixture.** Lutron is integrated into more than 85,000 fixtures from over 350 manufacturers to ensure design freedom and guarantee compatibility
- **Future proof any space** with the flexibility of digitally addressable wired and wireless fixtures.
- **Meet evolving energy codes** and sustainable building certification requirements (LEED and WELL)
- **Smooth, flicker-free dimming** down to 0.1% with Soft-On Fade-to-Black
- **Outstanding reliability and service** backed by over 57 years of lighting control expertise

Ask about how our OEM Advantage Program can help you specify the best fixtures for your applications.

lutron.com/OEM





EcoSystem and T-Series Inside. Why Digital?

Digital technology is the key to consistent, precise, reliable LED control.

- **Leverage** tunable white and advanced daylight integration to support human centric and circadian lighting designs
- **Use digital** to help deliver a superior overall experience for the people in the space
- **Record and communicate lighting data** using advanced reporting and diagnostics — improve space utilization, simplify operations, maximize energy efficiency, and improve occupant comfort
- **Enable** individual fixture control, status monitoring, flexible zoning and high-performance, flicker-free dimming

The Lutron Digital Advantage

EcoSystem and T-Series are end-to-end digital lighting control solutions comprised of high-performance drivers, simple controls and intuitive user interfaces.

Ensures control flexibility as the space changes over time

Guarantees compatibility and performance

Provides consistent experience on every job

Reduces risk from poorly performing lighting

Benefits of EcoSystem and T-Series — from Design, to Specification, to Operation

Lighting Designers

EcoSystem and T-Series easily accommodate changing system needs

- Zoning decisions can be made and implemented later in the design process
- Digital dimming performance to 5%, 1%, or 0.1%
- Superior dimming performance and guaranteed compatibility with all Lutron EcoSystem and T-Series controls



Electrical Contractors

It is easier to design and install with EcoSystem and T-Series

- Fewer home runs for power and control wiring
- Wiring is polarity independent and topology-free allowing control wiring to be run in same conduit as power
- Minimize cost of wiring errors and troubleshooting with miswire-protected drivers
- Easier to install with less material resulting in lower costs and more profit

Electrical Engineers

EcoSystem and T-Series eliminates risk from your designs

- All EcoSystem and T-Series drivers are NEMA 410 compliant, reducing inrush concerns
- Simple emergency solutions
- Code-compliant daylighting made easy
- Eliminate extra gear (relays and conduit) to reduce cost



Facilities/Owners

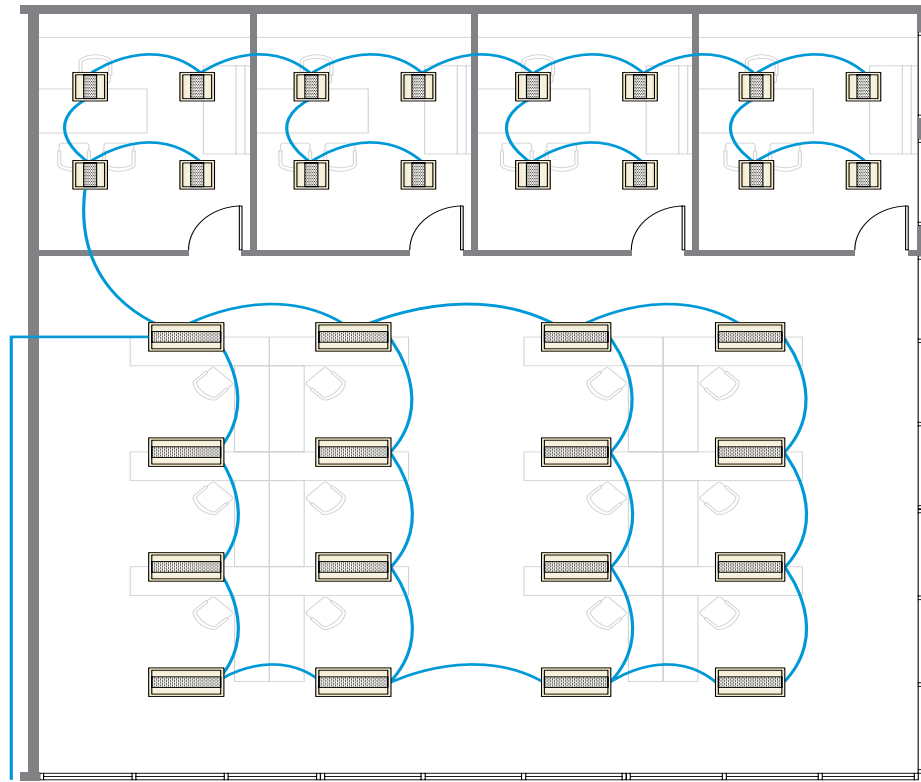
EcoSystem and T-Series help future proof your building

- Rezone your control layout without rewiring
- Fixture-level control and monitoring to optimize space utilization
- 24/7 support provides peace of mind — Lutron is available when you need us
- Easily adapt to evolving energy codes and standards

Digital (EcoSystem and T-Series)

Your choice of control protocol has a dramatic impact on the design, installation and life-cycle costs of your projects.

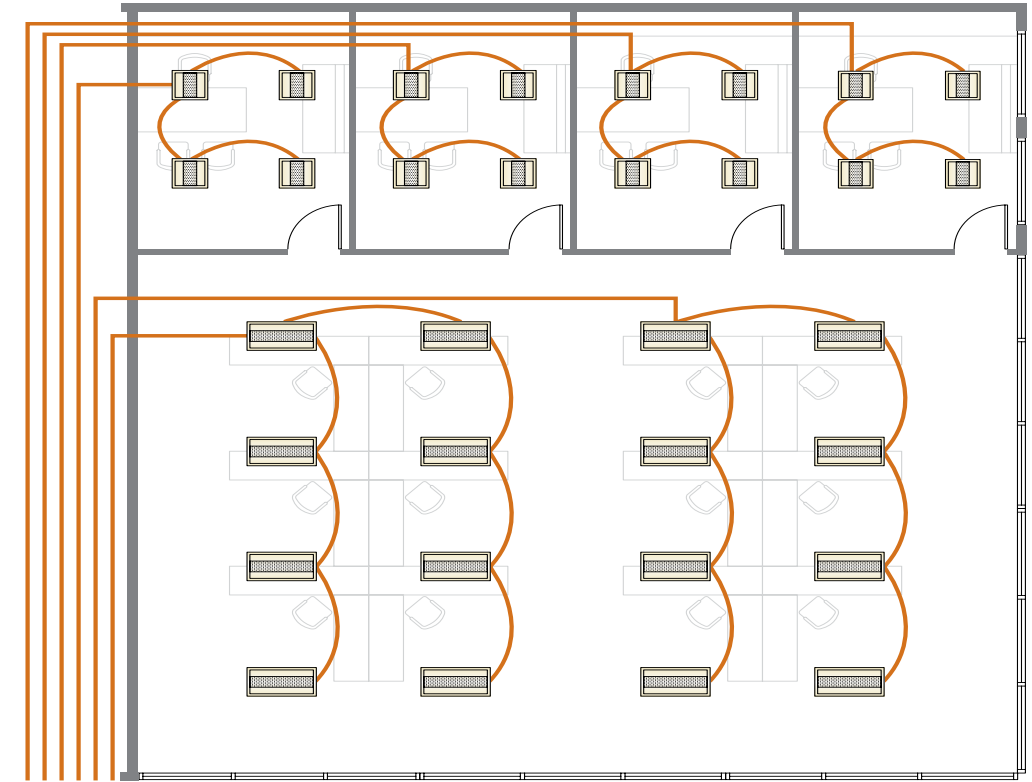
EcoSystem and T-Series
one link independent of power wiring



EcoSystem and T-Series

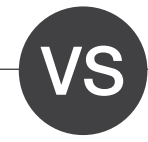
VS Analog (0-10V)

0-10V
many links plus power wiring for each zone of fixtures



0-10V

Digital is easier to wire	Fewer home runs for power and control wiring	Requires home run for power and control wiring for each zone and circuit
	Polarity independent and flexible control wiring	Polarity needs to be maintained for control wiring across all fixtures in the zone
	Run control and power wiring in the same conduit with no interference from line noise	Existing power conduit wiring will likely need rewiring to match new zoning.
	Control terminals are miswire protected to 277 VAC	Control miswire to mains/power is likely to damage the drivers in every fixture in the zone
	Less material and troubleshooting = lower installed cost	More material and troubleshooting = more cost
	One control wire independently controls intensity and CCT	Double the control wiring for independent control of intensity and CCT
Digital is easier to rezone	Rezone without rewiring	Must open ceiling, run new low-voltage wiring, and add more zones and control loops
	Less time = lower cost	More time = higher cost
	Minimal workspace disruption	Significant workspace disruption





In-Fixture Solutions for Your Application

High-Performance 2-Channel Tunable White

Easy to specify tunable white solutions in almost any fixture type empower specifiers to design dynamic, human centric spaces with no compromises.

High-Performance Static White

A full family of Lutron high-performance drivers offer superior, incandescent-like dimming from 100%-0.1% with Soft-on, Fade-to-Black dimming technology.

Wireless Fixture Technology

For new or retrofit, interior or exterior solutions, with or without sensing technology, wireless solutions reduce design, installation and labor time to meet budget and time constraints.



High-Performance, 2-Channel Tunable White

Lutron T-Series 2-Channel Tunable White is an end-to-end solution that packages the LED driver with a dedicated digital controller, minimizing the complexities of specifying tunable white.

- **Guaranteed performance** and compatibility
- **Available in almost any linear fixture type**, offering more design flexibility
- **Independent control** of intensity and CCT
- **Works in the Lutron Quantum system** to deliver dynamic, human centric spaces



T-Series 2-Channel Tunable White
LED Driver and T-Series ESN



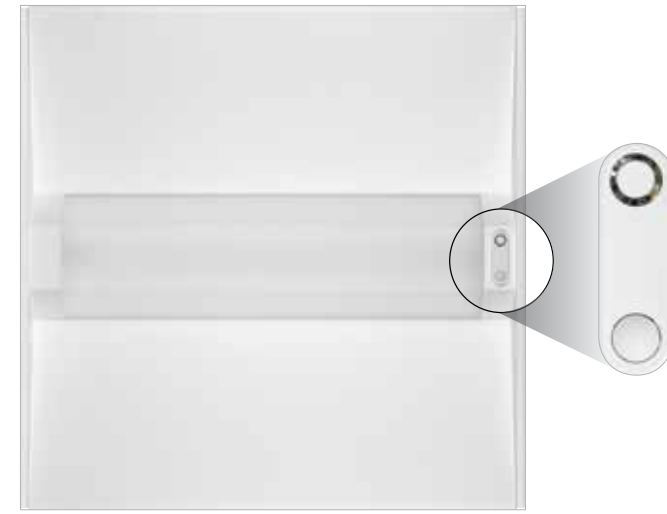
High-Performance Static White

Lutron high-performance, static white LED driver options deliver the high-quality light needed to create beautiful human centric spaces.

- **Built on the Lutron EcoSystem platform**, these options guarantee dimming performance and control compatibility
- **Available options** with continuous, flicker-free dimming down to 1% and 0.1%
- **Offered by more than 350 OEM fixture manufacturers**
- **Supported by Lutron's expertise** in dimming and commitment to quality



Hi-lume Premier 0.1% and Hi-lume1% drivers



High-Performance Wireless Fixtures

Fixture-mounted sensing and controls – any interior fixture can now become “Vive-enabled” with Vive integral fixture control.

- **Simple to design and estimate** – just count the fixtures
- **Options with and without occupancy/daylight sensing** further increase design flexibility
- **Works with all EcoSystem drivers** and third-party DALI sensor-ready drivers.



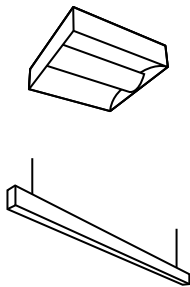

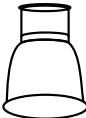

Parking Garages and Exterior Lighting

Limelight by Lutron provides remote control and monitoring of lighting controls in parking garages and other exterior lighting areas, connecting them to Enterprise Vue and tying them into a Quantum or Vive controlled interior space.

- **In-fixture and on-fixture options** offered by many Lutron OEM partners
- **Sensors and control modules** specifically designed for parking garage and parking lot environments
- **HDM (High Density Mesh)** wireless technology ensures extremely reliable, long-range performance in outdoor environments

LED Driver Specification Guide

Consult fixture manufacturer cut sheets or Lutron High Performance Fixture List for desired fixture option and then specify this

	Fixture type	Dimming level	Control method	In the written specification	In the Fixture Schedule
	Troffer, linear pendant, and linear recessed	1% tunable white	T-Series digital	T-Series Digital 2-Channel Tunable White LED Driver with independent control of intensity and Correlated Color Temperature	-PSQ0
		1% with Soft-on, Fade-to-Black	EcoSystem digital	Hi-lume 1% EcoSystem LED driver with Soft-on, Fade-to-Black	-LDE1
		1%	2-wire (120V forward phase)	Hi-lume 1% 2-wire LED driver (120V forward phase only)	-LTEA
		5%	EcoSystem digital	5-Series EcoSystem LED driver	-LDE5
	Architectural downlights (2"-3" aperture)	0.1% with Soft-on, Fade-to-Black	EcoSystem digital	Hi-lume Premier 0.1% EcoSystem LED driver with Soft-on, Fade-to-Black	-PEQ0
		1% with Soft-on, Fade-to-Black	EcoSystem digital	Hi-lume 1% EcoSystem LED driver with Soft-On, Fade-to-Black	-PEQ1
	Downlights (4" and larger apertures)	1% with Soft-on, Fade-to-Black	EcoSystem digital	Hi-lume 1% EcoSystem LED driver with Soft-On, Fade-to-Black	-LDE1
		1%	2-wire (120V forward phase)	Hi-lume 1% 2-wire LED driver (120V forward phase only)	-LTEA
		5%	EcoSystem digital	5-Series EcoSystem LED driver	-LDE5
	Cove, under cabinet	0.1% with Soft-on, Fade-to-Black	EcoSystem digital	Hi-lume Premier 0.1% EcoSystem 24V constant voltage LED driver with Soft-on, Fade-to-Black	-L3D0E
		0.1%	3-wire (120-277V phase)	Hi-lume Premier 0.1% 3-wire 24V constant voltage	-L3D03W
		1%	EcoSystem digital	Hi-lume 1% 12V or 24V constant voltage EcoSystem LED driver	-L3DAE
		1%	3-wire (120 - 277V phase)	Hi-lume 1% 12V or 24V constant voltage 3-wire LED driver	-L3DA3W
		1%	2-wire (120V forward phase)	Hi-lume 1% 12V or 24V constant voltage 2-wire LED driver (120V forward phase only)	-LTEA

Lutron High Performance Fixture List: www.lutron.com/findafixture

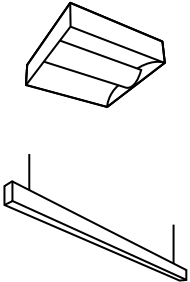

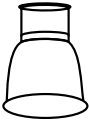
Questions? Contact leds@lutron.com or call the LED Technical Support Team: **1.877.DIM.LED8** (1.877.346.5338)

Consult Lutron's LED driver spec submittals for standards & DLC compliance, along with lists of compatible Lutron controls.

Vive-Enabled Wireless Fixtures

Specification Guide

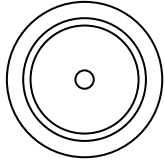
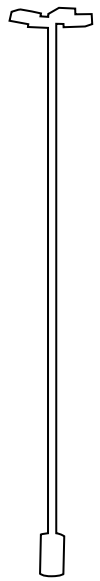
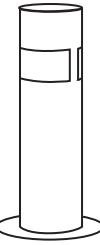
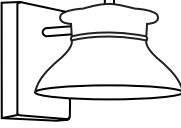
Consult fixture manufacturer cut sheets or Lutron High Performance Fixture List for desired fixture option and then specify this

Fixture Type	Fixture Capability	Control and Dimming Level	In the Written Specification	In the Fixture Schedule
 <p>Troffer, linear pendant, and linear recessed</p>	Individual Fixture Control with Occupancy and Daylight Sensing	Vive with EcoSystem 1%	Vive Wireless Integral Fixture Control with Occupancy and Daylight Sensing and Lutron Hi-lume 1% EcoSystem LED Driver with Soft On, Fade-to-Black	-VDO -LDE1
		Vive with EcoSystem 5%	Vive Wireless Integral Fixture Control with Occupancy and Daylight Sensing and Lutron 5-Series 5% EcoSystem LED Driver	-VDO -LDE5
		Third Party DALI Driver (Philips SR, Osram Dexal, etc.)	Vive Wireless Individual Fixture Control with Occupancy and Daylight Sensing	-VDO
	Individual Fixture Control (RF Only)	Vive with EcoSystem 1%	Vive Wireless Integral Fixture Control with Lutron Hi-lume 1% EcoSystem LED Driver with Soft On, Fade-to-Black	-VRF -LDE1
		Vive with EcoSystem 5%	Vive Wireless Integral Fixture Control with Lutron 5-Series 5% EcoSystem LED Driver	-VRF -LDE5
		Vive PowPak 0-10V	Vive Wireless Individual Fixture Control	-FCJS-010
		Third Party DALI Driver (Philips SR, Osram Dexal, etc.)	Vive Wireless Integral Fixture Control	-VRF
 <p>Architectural downlights (2" - 3" aperture)</p>	Individual Fixture Control (RF Only)	Vive with EcoSystem 0.1%	Vive Wireless Integral Fixture Control with Lutron Hi-lume Premier 0.1% EcoSystem LED Driver with Soft On, Fade-to-Black	-VRF -PEQ0
		Vive with EcoSystem 1%	Vive Wireless Integral Fixture Control with Lutron Hi-lume 1% EcoSystem LED Driver with Soft On, Fade-to-Black	-VRF -LDE1
		Vive PowPak 0-10V	Vive Wireless Individual Fixture Control	-FCJS-010
		Third Party DALI Driver (Philips SR, Osram Dexal, etc.)	Vive Wireless Integral Fixture Control	-VRF
 <p>Downlights (4" + apertures)</p>	Individual Fixture Control (RF Only)	Vive with EcoSystem 1%	Vive Wireless Integral Fixture Control with Lutron Hi-lume 1% EcoSystem LED Driver with Soft On, Fade-to-Black	-VRF -LDE1
		Vive with EcoSystem 5%	Vive Wireless Integral Fixture Control with Lutron 5-Series 5% EcoSystem LED Driver	-VRF -LDE5
		Vive PowPak 0-10V	Vive Wireless Individual Fixture Control	-FCJS-010
		Third Party DALI Driver (Philips SR, Osram Dexal, etc.)	Vive Wireless Integral Fixture Control	-VRF

Limelight by Lutron Exterior Lighting

Specification Guide

Consult fixture manufacturer cut sheets or Lutron High Performance Fixture List for desired fixture option and then specify this

	Fixture Type	Fixture Capability	Fixture Height	In the Written Specification	In the Fixture Schedule
	Parking Garage	RF and Sensing Integrated into the Fixture	Low (8' - 15')	Limelight by Lutron Individual Fixture Control with Occupancy and Daylight Sensing, Internal Mount	-LPL-INT
		RF and Sensing Externally Mounted on Fixture	Low (8' - 15')	Limelight by Lutron Individual Fixture Control with Occupancy and Daylight Sensing, External Mount	-LPL-EXT
	Parking Lot/Area	RF and Sensing Integrated into the Fixture	Medium (16' - 30')	Limelight by Lutron Individual Fixture Control with Occupancy and Daylight Sensing, Internal Mount	-LPM-INT
			High (31' - 40')	Limelight by Lutron Individual Fixture Control with Occupancy and Daylight Sensing, Internal Mount	-LPH-INT
		RF and Sensing Externally Mounted on Fixture	Medium (16' - 30')	Limelight by Lutron Individual Fixture Control with Occupancy and Daylight Sensing, External Mount	-LPM-EXT
			High (31' - 40')	Limelight by Lutron Individual Fixture Control with Occupancy and Daylight Sensing, External Mount	-LPH-EXT
	Bollards	RF Only	N/A	Limelight by Lutron Individual Fixture Control, Internal Mount	-LRF-INT
	Exterior Wall Sconces	RF Only	N/A	Limelight by Lutron Individual Fixture Control, Internal Mount	-LRF-INT

Lutron systems with in-fixture technology maximize the capabilities of your smart, connected buildings and campuses.

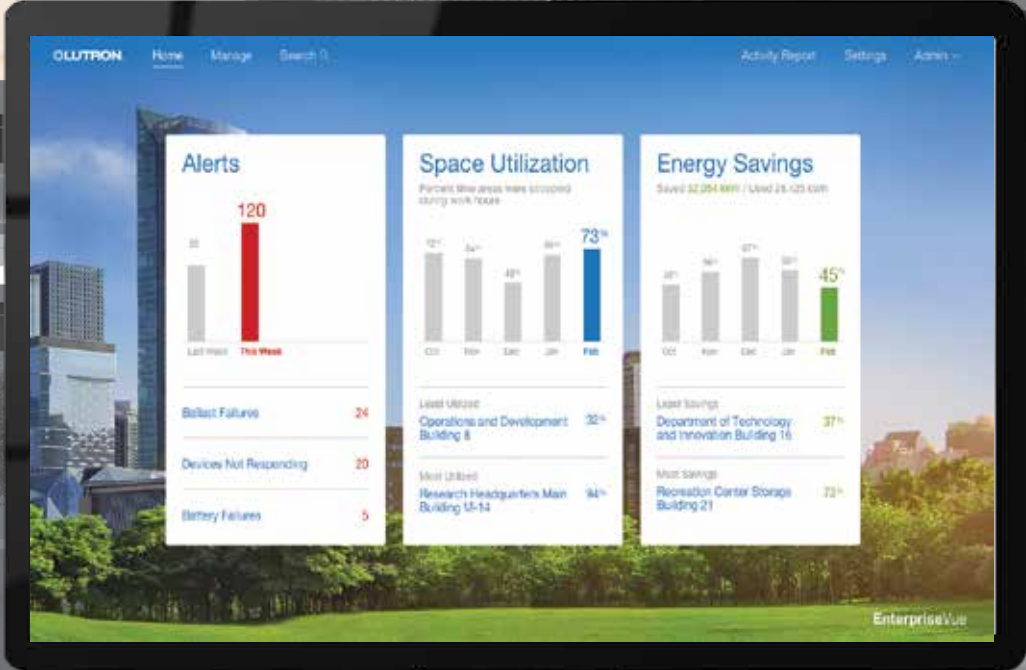
Enterprise Vue

limelight

limelight

vive

QUANTUM



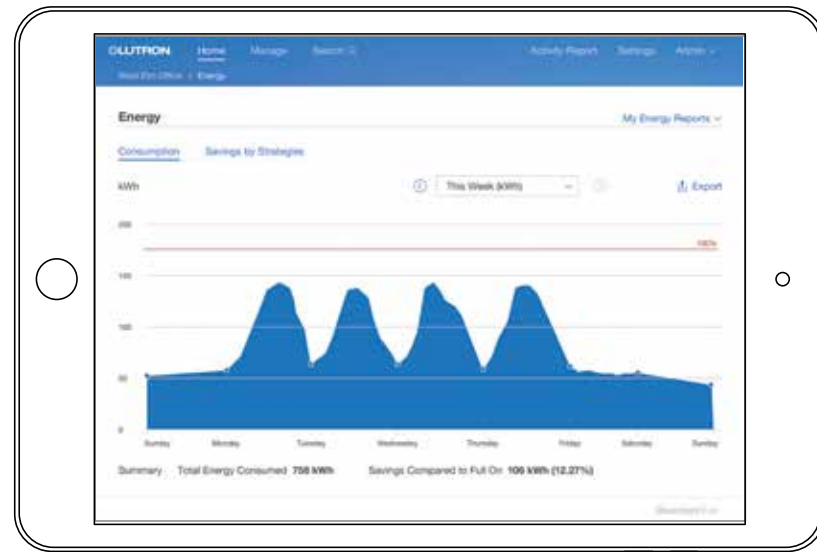
Enterprise Vue home screen

Smarter Fixtures, Smarter Buildings

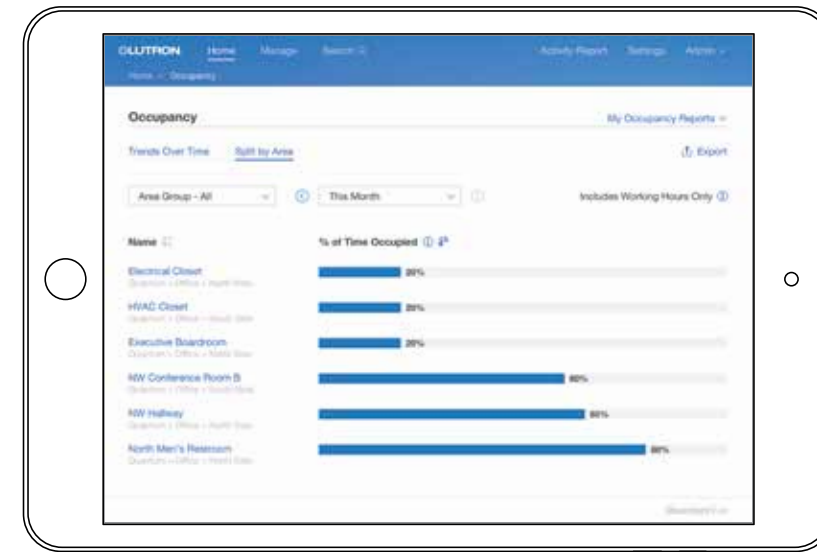
Lutron In-Fixture Technology

Lutron digital lighting control solutions facilitate a wide variety of data-driven reports and alerts to improve building layout, defer capital expenditures and deliver a more efficient, comfortable, productive space. It all depends on the right information, and that starts with the right in-fixture technology.

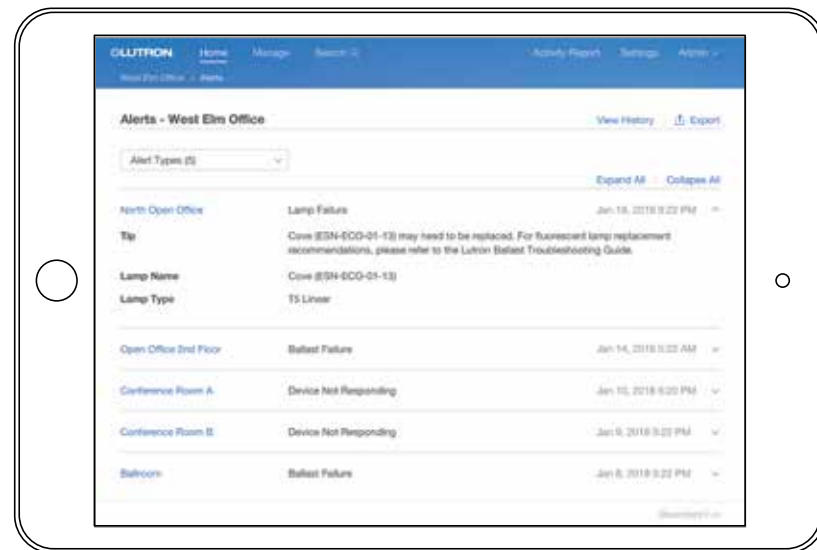
Smart technology embedded in each fixture facilitates high-performance building systems.



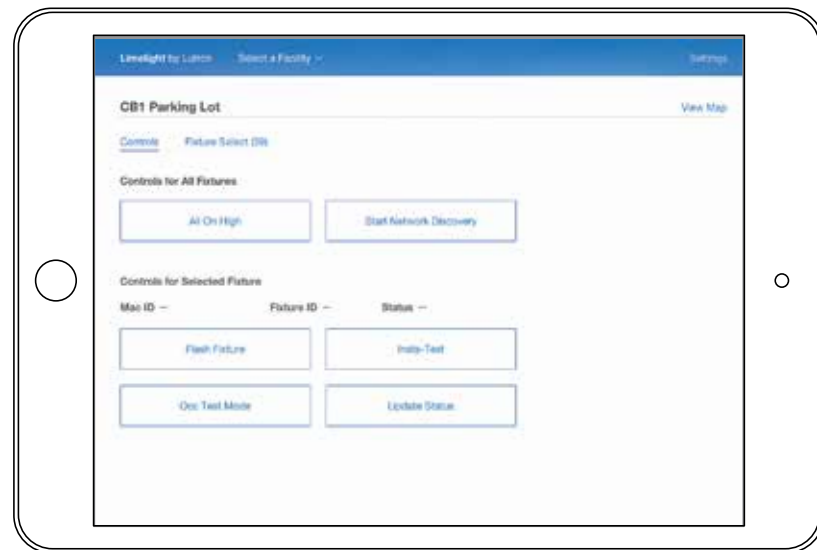
Energy reports
 Monitor energy use to highlight trends and facilitate more effective energy analysis.
 Available with
QUANTUM



Space utilization reports
 Fixture technology can help identify underutilized space and improve facility layout.
 Available with
QUANTUM | VIVE



Alerts
 Fixture data can identify potential issues, triggering system alerts before a problem occurs.
 Available with
QUANTUM



Outdoor Lighting Dashboard
 Use energy usage metrics and system alerts to make more informed decisions and better manage outdoor lighting.
 Available with
limelight by LUTRON



Resources and Support

In addition to a comprehensive service and support team, Lutron offers several online tools to simplify design and specification of Lutron LED Solutions.



High-Performance Fixture List

This simple specifier interface and search engine allows you to search for Lutron LED Drivers and wireless RF modules for more than 350 OEMs with 85,000 fixture options.

- Innovative digital filters are available, including options for warm dimming and tunable white options
- Simple links within the tool to fixture manufacturer specification sheets

lutron.com/hpfl

LED Control Center of Excellence

Lutron's 24/7 online guide helps you correctly specify, install, and use LEDs, ensuring design compatibility between Lutron controls, dimmable LED bulbs, and high-performance LED fixtures.

lutron.com/LED | 1.877.DIM.LED8

Codes and Standards

Lutron application and design guides take the mystery out of changing energy codes with simple, code-based solutions for any space, and up-to-date information on code compliance in each state.

lutron.com/energycodes

Designer +

Lutron's design software helps you create Lutron lighting control solutions and generate comprehensive system-design documentation.

Service programs

Lutron offers end-to-end service programs including design, construction management, startup, and post-occupancy support for lifetime performance.

Global reach

With offices on four continents, Lutron combines global reach with knowledge from sales, field-application engineering, and local service teams.

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(Available 24/7)
support@lutron.com

LED Control Center of Excellence

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(1.877.346.5338)
LEDs@lutron.com

Online Tools

LED Control Center of Excellence | lutron.com/LED

High-Performance LED Fixture List | lutron.com/findafixture

LED Driver Selection Tool | lutron.com/LEDbuildamodel

LED Modules/Lutron Driver Compatibility List | lutron.com/LED

OEM Advantage Program Details and Participants | lutron.com/OEM

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