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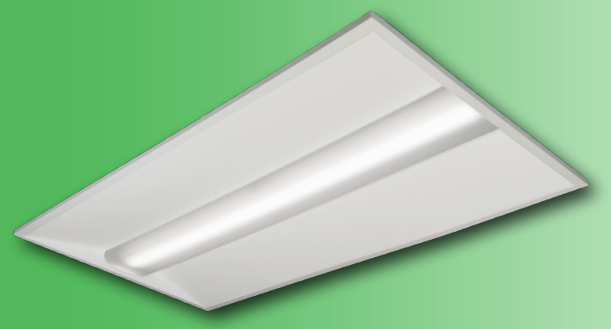

Project: _____

Location: _____

Cat. #: _____

Type: _____

Quantity: _____

LED

PLL 24 LED Lay-In

Features:

- High performance LED technology
- 0-10V dimming drivers standard
- Field replaceable LED boards and drivers
- Frosted diffuser optimized to balance efficiency and aesthetics
- Available in a wide variety of lumen outputs for maximum flexibility
- Low profile and lightweight housing allows for easy installation
- Advanced controls available

Applications:

Suitable for most commercial and institutional applications

- Office
- Retail
- Classrooms
- Healthcare Facilities

Predicted L70 Lifetime:

- Up to 189,000 hrs (calculated)

(L70 information for specific configurations available upon request)

- For BAA compliant configurations - up to 189,000 hrs (calculated)

Construction:

- Die-formed heavy-gauge cold rolled steel ballast housing with precision brake formed aluminum LED tray
- Frosted Acrylic Diffuser
- White enamel finish

Certifications:

- UL 1598 listed for US and Canada, suitable for damp locations
- DesignLights Consortium qualified on specific configurations (refer to DLC qualified products list for exact model numbers) http://designlights.org/

Warranty:

- 5 year limited system warranty
- see www.UnamiLighting.com for complete warranty terms and conditions
- 10 year warranty option available on specific models

(Not available on all models. Certain conditions apply. Consult factory or sales representative for details.)

10 YEAR EXTENDED WARRANTY AVAILABLE ON CERTAIN MODELS

MADE IN USA

USING DOMESTIC AND FOREIGN COMPONENTS

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Unami, LLC
880 Facet Rd.
Henderson, NC 27537

Ordering Guide:

example: PLL 24 MD UV FA 835

Series	Size	Output	Voltage	Shielding	CRI/CCT	Mounting	Controls	Options
PLL	24			FA				
PLL	**24** 2' x 4'	**SL** Super Low **VL** Very Low **LW** Low **ML** Medium Low **MD** Medium **HI** High **VH** Very High **SH** Super High	**UV** 120-277 **34** 347V	**FA** Frosted Acrylic	**835** 80 CRI/3500K **840** 80 CRI/4000K **850** 80 CRI/5000K	**Blank** None **SMK** Surface Mount Kit **FIK** Frame-in Kit	**Blank** No Controls **ZSOL** Leviton Programmable PIR Occupancy/Daylight Harvesting Sensor[1] **ZES2** Philips EasySense Occupancy/ Daylight sensor with advanced grouping[2] **ZES3** Philips EasySense Occupancy/ Daylight sensor for Zigbee networks[2] **ZIFS** Douglas IFS Sensor with Dimming/ Occupancy/Daylight Harvesting with Newtork Capabilities[3] **ZIFC** Douglas IFC Controller with Newtork Capabilities[3] **ZENLO** Enlighted One Micro Sensor with Dimming/Occupancy/Daylight Harvesting[3] **ZENLC** Enlighted Connected Micro Sensor with Dimming/Occupancy/Daylight Harvesting[3] **ZENLI** Enlighted IoT Micro Sensor with Dimming/Occupancy/Daylight Harvesting[3]	**Blank** No Options **EXT10** 10-Year Extended Warranty[4] **SD** Step Dimming **W6** 6' Whip **W10** 10' Whip **EM1** Emergency Kit - 12W 1200 nominal lumens[5] **F** Fuse **GC** Grid Clip **SDT(347V)** 347V to 277V Step Down Transformer **AR** Plenum Ceiling Air Return **LVL** 0-10V Dimming Leads for Easy Field Access **BAA** Buy American Act Compliant

Controls Accessories *(order separately)*

For Leviton Programmable Sensor (OS)
ZLS0R-RA1 IR Programming Remote

For Philips EasySense Controls
MZ-ESRP Magnum Single Zigbee Wall Switch
MZ-EDRP Magnum Double Zigbee Wall Switch

For Douglas Controls
BT-DMSW-U-A Bluetooth 1 Zone Dimmer
BT-4BTSW-U-A Bluetooth 4-Button Wall Station
BT-8BTSW-U-A Bluetooth 8-Button Wall Station

For Enlighted Controls
WS-2-00 Enlighted Remote Control Wall Switch (for Enlighted Connected & IoT)
WS-2-00-IL Enlighted Remote Control Wall Switch (for Enlighted One)

Notes

[1] See page 4 for more details.
[2] 120-277V only. See page 4 for more details.
[3] See page 5 for more details.
[4] Not available on all models. Certain conditions apply. Consult factory or sales representative for details.
[5] 120-277V only / 0°C-50°C ambient.

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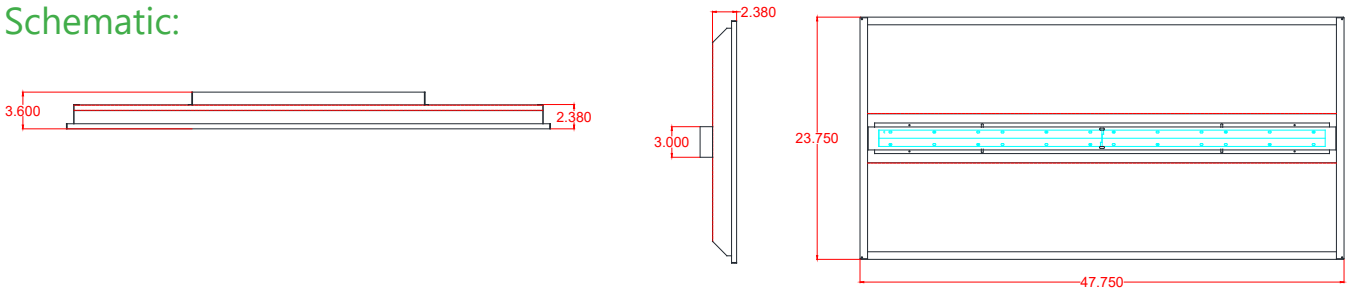
Schematic:



Performance Chart:

Catalog #	QPL/UL Reference #	Watts	Lumens (830)	LPW (830)	Lumens (835)	LPW (835)	Lumens (840)	LPW (840)	Lumens (850)	LPW (850)
PLL 24 SL UV FA xxx	FFL 24 SL UV FA xxx	25	3069	121.3	3117	123.2	3223	127.4	3352	132.5
PLL 24 VL UV FA xxx	FFL 24 VL UV FA xxx	28	3720	132.9	3779	134.9	3907	139.6	4064	145.1
PLL 24 LW UV FA xxx	FFL 24 LW UV FA xxx	33	4256	129.0	4323	131.0	4470	135.5	4649	140.9
PLL 24 ML UV FA xxx	FFL 24 ML UV FA xxx	36	4559	126.6	4630	128.6	4788	133.0	4980	138.3
PLL 24 MD UV FA xxx	FFL 24 MD UV FA xxx	46	5753	125.1	5844	127.0	6043	131.4	6285	136.6
PLL 24 HI UV FA xxx	FFL 24 HI UV FA xxx	52	6778	130.3	6884	132.4	7119	136.9	7404	142.4
PLL 24 VH UV FA xxx	FFL 24 VH UV FA xxx	60	7547	125.8	7666	127.8	7928	132.1	8245	137.4
PLL 24 SH UV FA xxx	FFL 24 SH UV FA xxx	69	8681	125.1	8818	127.1	9119	131.4	9484	136.7

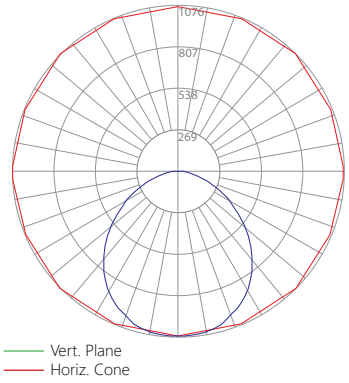
Photometric Data:

PLL 24 SL UV FA 830

Test No.: LLIA000690-002
Luminaire Lumens: 3,069 lm
Luminaire Watts: 25.3W
Efficacy: 121.3 LPW
Spacing Criterion (0-180): 1.26
Spacing Criterion (90-270): 1.28

Luminance Data (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	1426	1543	1604
55	1256	1475	1573
65	1043	1385	1526
75	805	1347	1532
85	561	1592	1088



Coefficients Of Utilization - Zonal Cavity Method
Effective Floor Cavity Reflectance 0.20

RC		80				70				50				30		
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10		
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106		
1	108	103	99	95	106	101	97	94	97	94	91	93	90	88		
2	98	90	83	77	96	88	82	76	85	79	75	81	77	73		
3	90	79	71	64	87	77	70	64	74	68	62	72	66	61		
4	82	70	61	54	80	69	60	54	66	59	53	64	57	52		
5	75	62	53	47	73	61	53	46	59	52	46	57	51	45		
6	70	56	47	41	68	55	47	41	53	46	40	52	45	40		
7	65	51	42	36	63	50	42	36	49	41	36	47	40	35		
8	60	47	38	32	59	46	38	32	45	37	32	43	37	32		
9	56	43	34	29	55	42	34	29	41	34	29	40	33	28		
10	53	39	31	26	51	39	31	26	38	31	26	37	30	26		

Zonal Lumen Summary

Zone	Lumens	%Fixt
0-20	392.22	12.80
0-30	833.42	27.20
0-40	1364.28	44.50
0-60	2396.40	78.10
0-80	2992.48	97.50
0-90	3069.12	100.00
90-120	0.00	0.00
90-130	0.00	0.00
90-150	0.00	0.00
90-180	0.00	0.00
0-180	3069.12	100.00

Tested in accordance with IES standards utilizing absolute photometry per LM-79-08

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ZSOL option: **Leviton Intellect Solo Sensor**

The PLL can be equipped with an integrated Leviton Intellect Solo Sensor ("ZSOL" option). This is a 0-10V dimming Passive Infrared (PIR) occupancy and daylight harvesting sensor.

Other features:

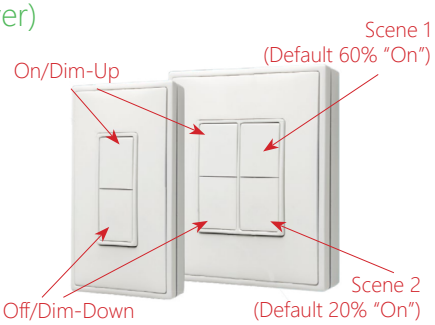
- Partial-on
- Partial-off
- 8' to 10' mounting height
- IP20 rated
- Detection angle: 120 degrees
- IR remote available for programming sensor from the floor (sold separately)
- Can be used to comply with IECC, ASHRAE 90.1 and 2019 Title 24, Part 6 dimming, occupancy/vacancy sensing and daylight harvesting requirements.

PLL available with **Philips EasySense Sensors**

- Simple, cost effective way to add controls to every luminaire in order to maximize energy savings and address code-compliancy strategies
- Occupancy sensing, daylight harvesting, and task tuning in one devise
- Reduces installation time and eliminates the need to wire sensors outside the fixture in the ceiling
- Title 20 compliant
- Enables auto-off/manual-on and auto-off/partial-on application
- Easy field configuration from floor via smartphone with Easysense App
- Factory can pre-set max light levels

ZES2 (EasySense Fixture-Mount Sensor SNS200 with Philips SR Xitanium driver)

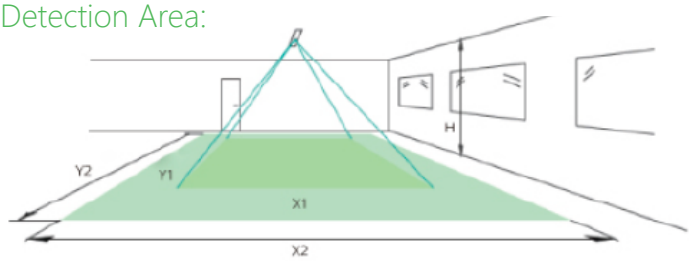
- Independent per-fixture control: Occupancy, Daylight Harvesting, Task Tuning
- Occupancy Sharing
  - Fixtures within a group can be programmed to remain at prescribed light levels so long as occupancy is detected anywhere in the group
- Scene Setting
- Advanced grouping to Magnum MZ-ESRP or MZ-EDRP wireless wall switch
  - Single (ESRP) or Dual (ESDP) Rocker Self-Powered Light Switch
  - Up to 40 sensors can be grouped to a single switch
  - Functions: On/Off, Dim-Up/Dim-Down, Scene 1, Scene 2
- DLC listed



ZES3 (EasySense Fixture-Mount Sensor for Networks SNS300 with Philips SR Xitanium driver)

- Occupancy & daylight sensing in one device
- Designed for applications with centralized lighting control through Zigbee wireless technology
  - Compatible with qualified third-party lighting control systems or building management systems (BMS)
  - Provides a simple solution to actively manage and control energy usage, while remotely adjusting light settings and determining service needs
  - Provides fixture-specific information into networks for centralized control and enables functionality such as energy monitoring, scheduling, and load shedding.
  - **Note:** SNS300 does not provide stand-alone operation based on occupancy or daylight. Status is provided to the network system for centralized control and command.

Detection Area:



Height	Minor Movement		Major Movement	
H	X1	Y1	X2	Y2
10'	12'	9'	18'	12'

Longer dimension of detection area (X1, X2) is parallel to longer dimension of EasySense

- Minor movement (person moving ≤ 3.0' per second)
- Major movement (person moving ≥ 3.0' per second)

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Douglas Lighting Controls, Inc.: Cloud-based controls

The PLL can be equipped with the Douglas Bluetooth Intelligent Fixture Sensor (IFS) as well as the Intelligent Fixture Controller.

IFS

- Occupancy, vacancy, partial-on and partial-off
- Occupancy timeout adjustable from 5 to 90 minutes
- Primary and secondary daylight harvesting
- Up to 16.4' (5m) mounting height

IFC

- Listed for emergency control when used on dedicated emergency power bus
- Same occupancy and daylight controls as the IFS when networked with one or more IFS sensors

Available with both IFS and IFC:

- 0-10V dimming with dim-to-off
- Bluetooth beacon for digital ceiling, IoT and location service strategies
- 150-foot clear line of sight, 50 feet through standard walls
- May be used with dual-channel, tunable white LED drivers providing auxiliary power and dim-to-off capability
- Commissioning through Douglas Lighting Controls, Inc. app from Apple app store
- **Note:** Additional equipment required for IoT capabilities

CheckLight® Energy Management System

Douglas controls can be integrated with the CheckLight® Energy Management system. This system can help you uncover energy conversion opportunities, create conservation strategies, analyze lighting load inefficiencies, and make configuration changes from anywhere with Douglas' user-friendly interface. You can get measurements, reports, and control your system from a web-based application.

CheckLight® has the capability to look at different facilities within a portfolio and use data benchmarks to compare building performances.

- Find energy conservation opportunities
- Create energy saving strategies
- Analyze load inefficiencies
- Optimize energy management

Enlighted: All-in-one sensors, upgradeable systems

Enlighted's SMART Micro Sensor is an all-in-one unit: task tuning, high-end trimming, daylight harvesting, and occupancy/vacancy detection. Max installation height is 15 feet.

Enlighted sensors come standard with the Enlighted One system (the "ZENLO" option). Enlighted Connected ("ZENLC") offers even more options. The Enlighted IoT ("ZENLI") option allows the full implementation of Enlighted's services. Each system can be fully upgraded to the next tier in the future. So if you start with Enlighted One but want to add energy reporting or building management systems integration in the future, you can.

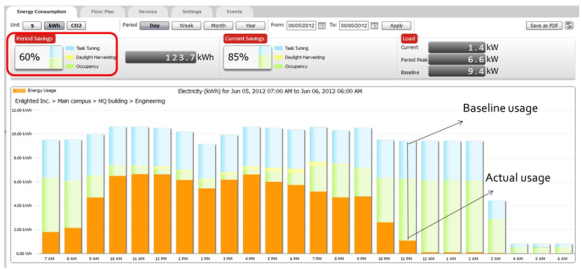
Enlighted Capabilities*	Enlighted One (ZENLO)	Enlighted Connected (ZENLC)	Enlighted IoT (ZENLI)
Motion and Switch Groups	✓	✓	✓
Daylight Harvesting	✓	✓	✓
Schedule Lighting		✓	✓
Energy Reporting & Optimization		✓	✓
Environment Data & Lighting Controls API		✓	✓
Building Management System Integration		✓	✓
Where & Space Applications			✓
Location & Occupancy APIs & Beaconing			✓
Future App & API Ready			✓

Note: Additional equipment required ZENLC and ZENLI

Real-time data analytics

Enlighted's control units compile data in real-time, which can be viewed via the Energy Manager. The Energy Manager is part of the Enlighted Connected and Enlighted IoT configurations.

- Real-time measurements and verification of energy savings
- Space analytics - data can be compiled into motion trails and heat maps
- Analyze traffic density and congestion in a space



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