UNAMI

MENTORED BY LUMENFOCUS

Project: _____

Location: _____

Cat. #: _____

Type: _____

Quantity: _____

LED

PLL 22 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

Unami, LLC
880 Facet Rd.
Henderson, NC 27537

Ordering Guide:

example: PLL 22 MD UV FA 835

Series	Size	Output	Voltage	Shielding	CRI/CCT	Mounting	Controls	Options
PLL	22			FA				
PLL	**22** 2' x 2'	**SL** Super Low **VL** Very Low **LW** Low **MD** Medium **HI** High	**UV** 120-277 **34** 347V	**FA** Frosted Acrylic	**830** 80 CRI/3000K **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

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.

Controls Accessories *(order separately)*

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

For Philips EasySense Controls
ZBT-S1AWH Illumra Single Rocker Self-Powered Zigbee Wall Switch
ZBT-S2AWH Illumra Double Rocker Self-Powered 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)

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PLL 22 LED Lay-In

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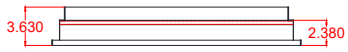
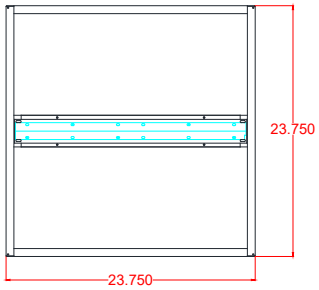
Schematic:





PLL 2x2 with
Surface Mount Kit option

Performance Chart:

Catalog #	QPL/UL Reference #	Watts	Lumens (830)	LPW (830)	Lumens (835)	LPW (835)	Lumens (840)	LPW (840)	Lumens (850)	LPW (850)
PLL 22 SL UV FA xxx	FFL 22 SL UV FA xxx	18	2219	122.6	2254	124.5	2331	128.8	2424	133.9
PLL 22 VL UV FA xxx	FFL 22 VL UV FA xxx	25	2894	116.2	2940	118.1	3040	122.1	3162	127.0
PLL 22 LW UV FA xxx	FFL 22 LW UV FA xxx	32	3769	117.8	3828	119.6	3959	123.7	4117	128.7
PLL 22 MD UV FA xxx	FFL 22 MD UV FA xxx	37	4578	124.7	4655	126.8	4809	131.0	4953	135.0
PLL 22 HI UV FA xxx	FFL 22 HI UV FA xxx	50	5751	114.8	5842	116.6	6041	120.6	6283	125.4

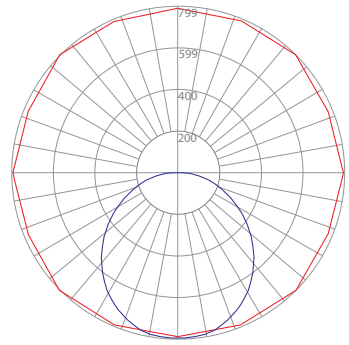
Photometric Data:

PLL 22 SL UV FA 830

Test No.: LLIA000686-001A-R01
Luminaire Lumens: 2,219 lm
Luminaire Watts: 18.1W
Efficacy: 122.6 LPW
Spacing Criterion (0-180): 1.22
Spacing Criterion (90-270): 1.30

Luminance Data (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	2110	2302	2473
55	1843	2189	2433
65	1527	2060	2375
75	1198	1993	2404
85	857	1972	1413



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		109	104	99	95		106	101	97	94		97	94	91		93	91	88
2		99	90	83	78		96	88	82	77		85	79	75		82	77	73
3		90	79	71	64		87	78	70	64		75	68	63		72	66	62
4		82	70	61	55		80	69	61	54		66	59	53		64	58	53
5		76	63	54	47		74	62	53	47		59	52	46		57	51	46
6		70	57	48	41		68	56	47	41		54	46	40		52	45	40
7		65	51	42	36		63	50	42	36		49	41	36		47	41	36
8		60	47	38	32		59	46	38	32		45	37	32		43	37	32
9		56	43	35	29		55	42	34	29		41	34	29		40	33	29
10		53	40	32	26		52	39	31	26		38	31	26		37	31	26

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

Zonal Lumen Summary

Zone	Lumens	%Fixt
0-20	288.34	13.00
0-30	610.73	27.50
0-40	996.34	44.90
0-60	1740.86	78.40
0-80	2170.05	97.80
0-90	2219.40	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	2219.40	100.00

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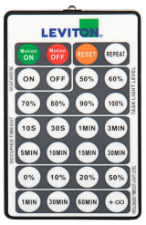
ZSOL option: **Leviton Intellect Solo Sensor**



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

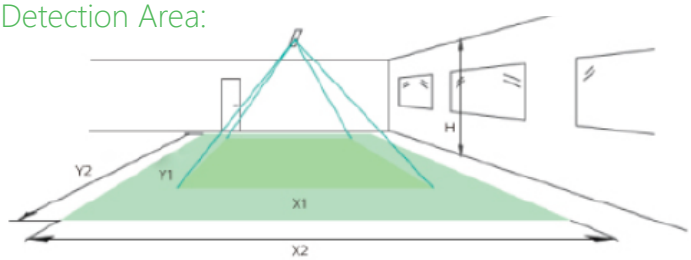
ZES2 (EasySense Fixture-Mount Sensor SNS200 with Philips SR Xitanium driver)

- 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 Illumra ZBT-S1AWH or ZBT-S2AWH wireless wall switch
  - Single (S1AWH) or Dual (S2AWH) 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)

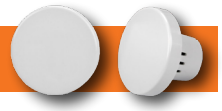
Douglas Lighting Controls, Inc.: Cloud-based controls

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.

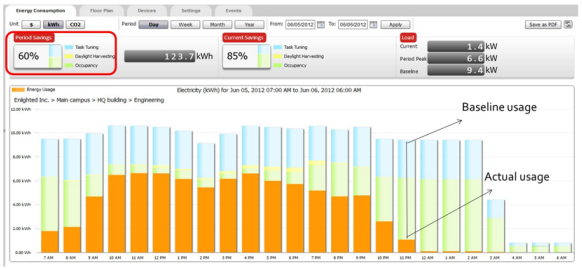
Enlighted Capabilities*	Enlighted One (ZENLO)	Enlighted Connected (ZENLC)	Enlighted IoT (ZENLI)
Motion and Switch Groups	✓	✓	✓
Daylight Harvesting	✓	✓	✓
Schedule Lighting		✓	✓
Energy Reporting & Optimization		✓	✓
Environment Data & Lighting Controls API		✓	✓
Building Management System Integration		✓	✓
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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