LumenFocus

Project: ______________________
Location: ______________________
Cat. #: ______________________
Type: ______________________
Quantity: ______________________

LED

FFL 2R G2 24 | LED Lay-In

Features:
- High performance LED technology
- 90+ CRI standard
- 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 Lifetime:
- L70: 142,000 hrs (calculated)
- L80: 89,000 hrs (calculated)
- L90: 43,000 hrs (reported)
- 86% lumen maintenance @ 60,000 hrs

(based on LM80 and insitu laboratory testing)

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/

DLC LISTED c UL US

Warranty:
- 5 year limited system warranty - see www.LumenFocus.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.)*

MADE IN USA
USING DOMESTIC AND FOREIGN COMPONENTS

10 YEAR EXTENDED WARRANTY
AVAILABLE ON CERTAIN MODELS

90+ CRI

FormFocus

Ordering Guide:

example: FFL 2R G2 24 MD UV FA 935 EM1

Series	Version	Size	Output	Voltage	Shielding	CRI/CCT	Mounting	Controls	Options
FFL 2R	G2	24			FA				
FFL 2R FFL Two-Row	**G2** Gen 2	**24** 2' x 4'	**SL** Super Low	**UV** 120-277	**FA** Frosted Acrylic	**930** 90 CRI/3000K	**Blank** None	**Blank** No Controls	**Blank** No Options
			VL Very Low	**34** 347V		**935** 90 CRI/3500K	**SMK** Surface Mount Kit	**ZSOL** Leviton Programmable PIR Occupancy/Daylight Harvesting Sensor(1)	**EXT10** 10-Year Extended Warranty(4)
			LW Low			**940** 90 CRI/4000K	**FIK** Frame-in Kit	**ZESMC** Philips EasySense Occupancy/ Daylight Harvesting sensor with advanced grouping(2)	**SD** Step Dimming
			ML Medium Low			**950** 90 CRI/5000K		**ZLDS** Leviton Intellect DALI Sensor with Dimming/Occupancy/ Daylight Harvesting with Newtork Capabilities(3)	**W6** 6' Whip
			MD Medium					**ZL7S** Leviton Intellect 0-10V Sensor with Dimming/Occupancy/ Daylight Harvesting with Newtork Capabilities(3)	**W10** 10' Whip
			HI High					**ZLDC** Leviton Intellect DALI Fixture Controller with Newtork Capabilities(3)	**EM1** Emergency Kit - 12W, 1200 nominal lumens(5)
			VH Very High					**ZL7C** Leviton Intellect 0-10V Fixture Controller with Newtork Capabilities(3)	**F** Fuse
			SH Super High					**ZENLO** Enlighted One Micro Sensor with Dimming/Occupancy/Daylight Harvesting(3)	**GC** Grid Clip
								ZENLC Enlighted Connected Micro Sensor with Dimming/Occupancy/Daylight Harvesting(3)	**SDT(347V)** 347V to 277V Step Down Transformer
								ZENLI Enlighted IoT Micro Sensor with Dimming/Occupancy/Daylight Harvesting(3)	**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

ZLSOR-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
SWS200	Philips Zigbee Green Power 4-Button Wall Switch

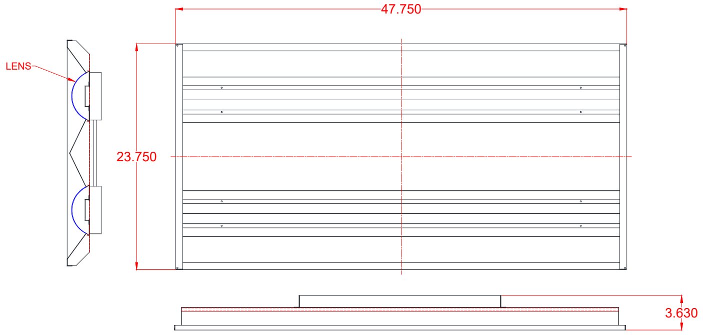
For Leviton Intellect Controls

DRKDN-U1W	1-Button Wireless Wall Controller
DRKDN-U2W	2-Button Wireless Wall Controller
DRKDN-U2W	4-Button Wireless Wall Controller
DRKDN-U8W	8-Button Wireless Wall Controller

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)

Schematic:



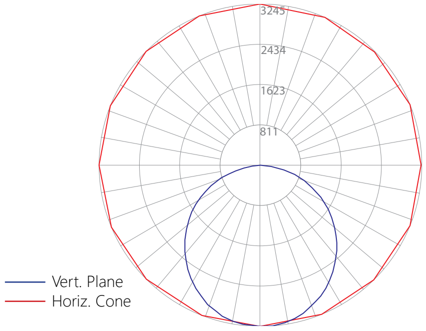
Performance Chart:

Catalog #	Watts	Lumens (930)	LPW (930)	Lumens (935)	LPW (935)	Lumens (940)	LPW (940)	Lumens (950)	LPW (950)
FFL 2R G2 24 SL UV FA 9xx	20.2	2851.4	141.3	2863.4	141.9	2931.4	145.3	2931.4	145.3
FFL 2R G2 24 VL UV FA 9xx	25.2	3667.4	145.3	3682.8	145.9	3770.3	149.4	3770.3	149.4
FFL 2R G2 24 LW UV FA 9xx	28.2	4113.4	145.9	4130.7	146.5	4228.8	150.0	4228.8	150.0
FFL 2R G2 24 ML UV FA 9xx	32.8	4857.1	147.9	4877.6	148.6	4993.4	152.1	4993.4	152.1
FFL 2R G2 24 MD UV FA 9xx	39.1	5748.5	147.1	5772.8	147.7	5909.9	151.2	5909.9	151.2
FFL 2R G2 24 HI UV FA 9xx	46.0	6784.0	147.6	6812.6	148.2	6974.4	151.7	6974.4	151.7
FFL 2R G2 24 VH UV FA 9xx	52.9	7810.8	147.7	7843.7	148.4	8030.0	151.9	8030.0	151.9
FFL 2R G2 24 SH UV FA 9xx	59.8	8753.2	146.4	8790.1	147.0	8998.9	150.5	8998.9	150.5

Photometric Data:

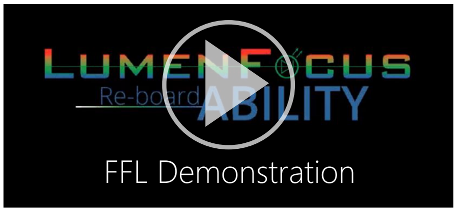
FFL 2R G2 24 SH UV FA 950

Test No.: LLIA001588-030
Luminaire Lumens: 8,999.0 lm
Luminaire Watts: 59.8W
Efficacy: 150.5 LPW
Spacing Criterion (0-180): 1.22
Spacing Criterion (90-270): 1.26



LUMENFOCUS Re-boardABILITY

The FFL features field replaceable boards and drivers. This allows you to upgrade to more efficient technology in the future. Or, in the rare event of a failure, you can rapidly replace defective components. Re-boardABILITY helps to ensure you won't get stuck with an obsolete light fixture. Learn more about Re-boardABILITY here.



Click here for a video demonstration of the re-boarding process on a FFL.
Note: Exact time varies depending on the model.

Controls Summary:

Control Code	Type	Capabilities	Communication
ZSOL	Motion (PIR), Daylight Harvesting	High/Low/Off, High-End Trim	Wired 0-10V, Programmable via IR remote (sold separately) or via dip switches on sensor
ZESMC	Motion (PIR), Daylight Harvesting	High/Low/Off, High-End Trim, Grouping, Room Level Energy Monitoring, LLLC (Philips Master Connect)	Wireless Zigbee 2.4 GHz, Programmable via Philips MasterConnect App for iOS or Android
ZLxS	Motion (PIR), Daylight Harvesting	High/Low/Off, High-End Trim, Grouping, Scheduling, Demand Response*, BMS Integration*, LLLC (GreenMAX DRC)	Wireless Zigbee 2.4 GHz Mesh, Programmable via GreenMAX DRC app. for iOS or Android along with DRKDN-UxW Wall Controller (sold separately)
ZLxC	Controller, No Sensors	High/Low/Off, High-End Trim, Grouping, Scheduling, Demand Response*, BMS Integration*, LLLC (GreenMAX DRC)	Wireless Zigbee 2.4 GHz Mesh, Programmable via GreenMAX DRC app. for iOS or Android along with DRKDN-UxW Wall Controller (sold separately)
ZENLO	Motion (PIR), Daylight Harvesting	High/Low/Off, High-End Trim, Grouping, Upgradable to Connected (ZE-NLC) or IoT (ZENLI)	Wireless Bluetooth Low Energy Mesh, Programmable via Enlighted Room Controller WS-2-00-IL (sold separately)
ZENLC	Motion (PIR), Daylight Harvesting	High/Low/Off, High-End Trim, Grouping, Scheduling*, Energy Monitoring*, BMS Integration*, Upgradable to IoT (ZENLI), LLLC (Enlighted IoT)	Wireless Bluetooth Low Energy Mesh, Programmable via Enlighted IoT Software
ZENLI	Motion (PIR), Daylight Harvesting	High/Low/Off, High-End Trim, Grouping, Scheduling*, Energy Monitoring*, BMS Integration*, LLLC (Enlighted IoT)*, Space - Building Utilization*, Where - Real Time Location Services*	Wireless Bluetooth Low Energy Mesh, Programmable via Enlighted IoT Software

LLLC = Luminaire Level Lighting Control
* Additional equipment required. Contact LumenFocus representative for details

ZSOL option: **Leviton Intellect Solo Sensor**

The FFL 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.

LEVITON
Motion ON
Motion OFF
RESET
REPEAT
ON
OFF
50%
60%
70%
80%
90%
100%
TASK LIGHT LEVEL
OCCUPIED TIME OUT
10S
30S
1MIN
3MIN
5MIN
10MIN
15MIN
30MIN
0%
10%
20%
50%
1MIN
30MIN
60MIN
+∞

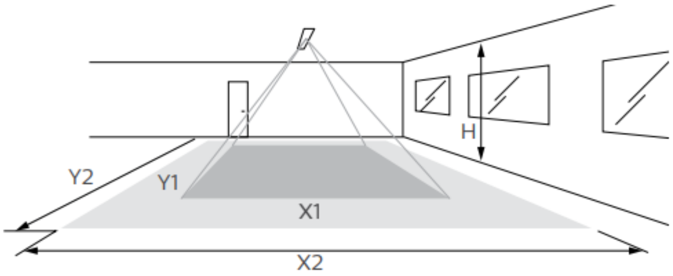
FormFocus available with **Philips EasySense Sensors**

EasySense MC Sensors are the ideal solution for per-luminaire control of new LED luminaires. It combines occupancy and daylight sensing in one package. The result is a cost-effective and easy-to-install solution ideal for energy savings. Commissioning and configuration during and after installation is quick and easy using the Philips MasterConnect app. This app works via Bluetooth Low Energy (BLE) technology and is available for free in the App Store and the Google Play Store.

ZESMC

- Occupancy sensing, daylight harvesting, and task tuning in one device
- **8' to 10' mounting height**
- Groups/networks up to 120 lights
- Enables auto-off/manual-on and auto-off/partial-on application
- Independent per-fixture control: Occupancy, Daylight Harvesting, Task Tuning
- Occupancy Sharing
- Scene Setting
- Advanced grouping to select Zigbee wireless wall switches
- Simple room level energy reporting with CSV file saved on the phone
- ZigBee 2.4 GHz Wireless Mesh Network
- 120-277V only, works with Philips Xitanium SR drivers

Detection Area:



Height	Minor Movement		Major Movement	
H	X1	Y1	X2	Y2
8'	6'	10'	9'	14'
10'	8'	12'	12'	18'

Longer dimension of detection area (Y1, Y2) is parallel to longer dimension of EasySense

- Minor movement (movement of a person sitting at an office desk reaching for a telephone, turning the pages in a book, opening a file folder, picking up a coffee cup, etc.)
- Major movement (movement of a person walking into or through an area.)

Room Controllers

- Illumra ZBT-S1AWH (Single Rocker) or ZBT-S2AWH (Dual Rocker) wireless Zigbee wall switch
    - ◦ Self-Powered
    - ◦ Up to 120 sensors can be grouped to a single switch
    - ◦ Functions: On/Off, Dim-Up/Dim-Down, Scene 1, Scene 2 (Scenes: Dual Rocker Only)
    - ◦ Range: 30-100' (typical)

- Philips SWS200 Zigbee Green Power 4-button Wall Switch
    - ◦ Battery Powered
    - ◦ Up to 120 sensors can be grouped to a single switch
    - ◦ Functions: On/Off, Dim-Up/Dim-Down, Scene 1, Scene 2
    - ◦ Range: 33' (typical)

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GreenMAX DRC Wireless Networked Control System
with Leviton Intellect Sensors & Controllers

The GreenMAX DRC Wireless Keypad Room Controllers are used as the brain of the system, managing the fixture integrated Leviton Intellect sensors & controllers. Wirelessly commission, configure, control, monitor and provision the GreenMAX DRC system using the GreenMAX DRC App and an Android or iOS smart device.

- Occupancy/Vacancy Sensing
- Multi-Level Lighting, Partial-On, Partial-Off
- Daylight Harvesting
- Task Tuning
- Scheduling
- Grouping
- Demand Response
- BMS Integration
- ZigBee 2.4 GHz Wireless Mesh Network
- Up to 75' between devices

** DRKDN-UxW room controller required for full functionality and programming of Intellect sensors & controllers*

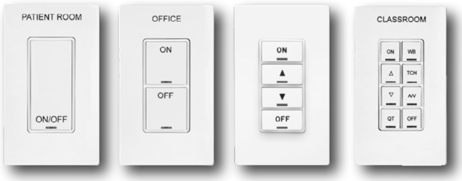
ZLxS

- PIR Occupancy Sensor
- Daylight Sensor
- 0-10V or DALI
- **Up to 20' mounting height**

ZLxC

- Wireless fixture controller, no sensor
- 0-10V or DALI

DRKDN-UxW Room Controllers



- 1-, 2-, 4-, and 8-button configurations
- Line voltage powered: 120-277V
- Max capacity: 60 devices
- Programmable: On/Off/Raise/Lower/Toggle/Scene
- Use any Android or iOS device for configuration using the GreenMAX DRC App

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.

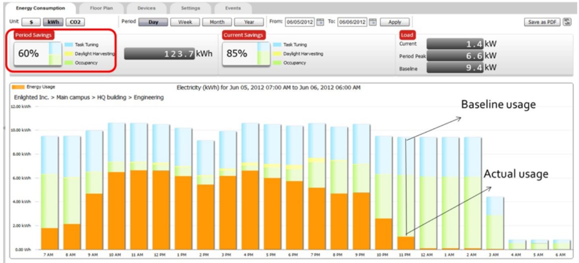
Enlighted Capabilities*	Enlighted One (ZENLO)	Enlighted Connected (ZENLC)	Enlighted IoT (ZENLI)
Motion and Switch Groups	✓	✓	✓
Daylight Harvesting	✓	✓	✓
Schedule Lighting		✓	✓
Energy Reporting & Optimization		✓	✓
Environment Data & Lighting Controls API		✓	✓
Building Management System Integration		✓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



Learn more about our available advanced controls options here:
www.lumenfocus.com/controls-overview

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