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/

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

www.lumenfocus.com
880 Facet Rd. | Henderson, NC 27537
252-430-6970

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 **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	**930** 90 CRI/3000K **935** 90 CRI/3500K **940** 90 CRI/4000K **950** 90 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
ZBT-S1AWH Illumra Single Rocker Self-Powered Zigbee Wall Switch
ZBT-S2AWH Illumra Double Rocker Self-Powered Zigbee Wall Switch

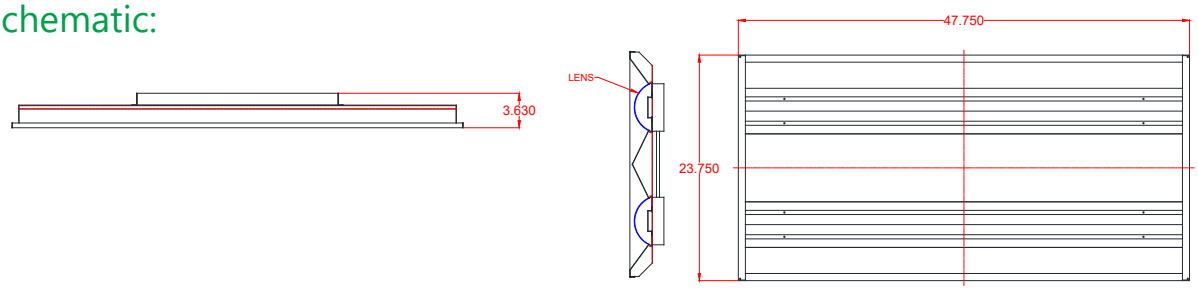
For Douglas Controls
BT-DMSW-U-A Bluetooth 1 Zone Dimmer
BT-4BTSW-U-A Bluetooth 4-Button Wall Station
BT-8BTSW-U-A Bluetooth 8-Button Wall Station

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)

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.

Schematic:



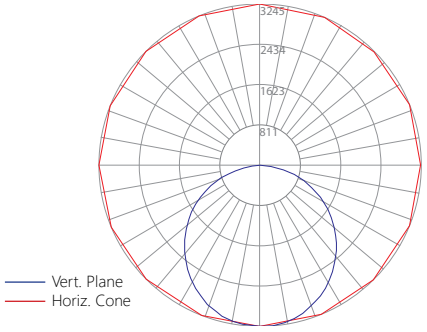
Performance Chart:

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
ZES2	Motion (PIR), Daylight Harvesting	High/Low/Off, High-End Trim, Grouping	Wireless Zigbee, Programmable via Android App
ZES3	Motion (PIR), Daylight Harvesting	High/Low/Off*, High-End Trim*, Grouping*, Scheduling*, Energy Monitoring*, LLLC*, BMS Integration*	Wireless Zigbee, Programmable via qualified 3rd party control systems. Note: ZES3 does not provide stand-alone operation based on occupancy or daylight. Status is provided to the network system for centralized control and command.
ZIFS	Motion (PIR), Daylight Harvesting	High/Low/Off, High-End Trim, Grouping, LLLC (Douglas Lighting Controls-Dialog)*	Wireless Bluetooth Mesh, Programmable via iOS App or Douglas Dialog Software
ZIFC	Controller, No Sensors	High/Low/Off, High-End Trim, Grouping, LLLC (Douglas Lighting Controls-Dialog)*	Wireless Bluetooth Mesh, Programmable via iOS App or Douglas Dialog Software
ZENLO	Motion (PIR), Daylight Harvesting	High/Low/Off, High-End Trim, Grouping, Upgradable to Connected (ZENLC) or IoT (ZENLI)	Wireless Bluetooth Low Energy Mesh, Programmable via Enlighted Room Controller WS-200-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 2R G2 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.

FormFocus 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

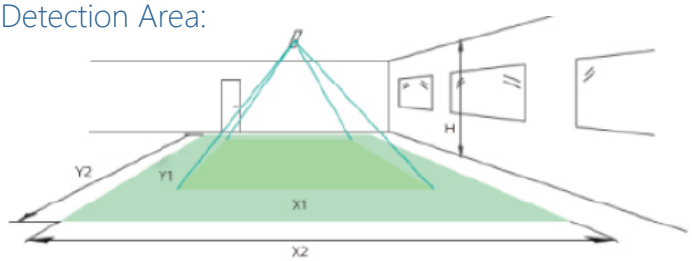
ZES2 (EasySense Fixture-Mount Sensor SNS200 with Philips SR Xitanium driver)

- 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)

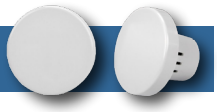
Douglas Lighting Controls, Inc.: Cloud-based controls

The FFL 2R G2 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.

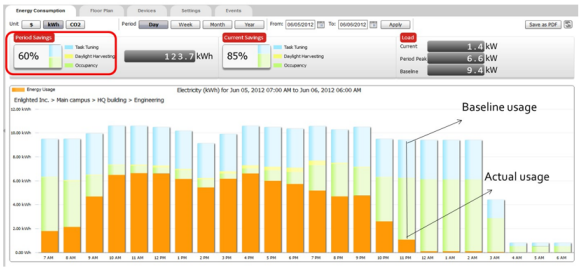
Enlighted Capabilities*	Enlighted One (ZENLO)	Enlighted Connected (ZENLC)	Enlighted IoT (ZENLI)
Motion and Switch Groups	✓	✓	✓
Daylight Harvesting	✓	✓	✓
Schedule Lighting		✓	✓
Energy Reporting & Optimization		✓	✓
Environment Data & Lighting Controls API		✓	✓
Building Management System Integration		✓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



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