LUMENFOCUS

Project: _____

Location: _____

Cat. #: _____

Type: _____

Quantity: _____

LED

FFL 2R 22 HO | LED High Output 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:
- >95,000 hrs (calculated)
- >72,000 hrs (reported)
- 77% lumen maintenance @ 72,000 hrs (based on LM-80, TM-21 and in-situ 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

MADE IN USA

USING DOMESTIC AND FOREIGN COMPONENTS

FORMFOCUS

Ordering Guide:

example: FFL 2R 22 MD HO UV FA 835 EM1

Series	# of Rows	Size	Output	Performance	Voltage	Shielding	CRI/CCT	Mounting	Controls	Options
FFL	2R	22		HO		FA				
FFL	2R 2 Rows	22 2' x 2'	LW Low	HO High Output	UV 120-277	FA Frosted Acrylic	830 80 CRI/3000K	Blank None	Blank No Controls	Blank No Options
			MD Medium		34 347V		835 80 CRI/3500K	SMK Surface Mount Kit	ZSOL Leviton Programmable PIR Occupancy/Daylight Harvesting Sensor[1]	SD Step Dimming
			HI High				840 80 CRI/4000K	FIK Frame-in Kit	ZES2 Philips EasySense Occupancy/Daylight sensor with advanced grouping[2]	W6 6' Whip
			VH Very High				850 80 CRI/5000K		ZES3 Philips EasySense Occupancy/Daylight sensor for Zigbee networks[2]	W10 10' Whip
									ZIFS Douglas IFS Sensor with Dimming/Occupancy/Daylight Harvesting with Newtork Capabilities[3]	WG Wire Guard
									ZIFC Douglas IFC Controller with Newtork Capabilities[3]	EM1 Emergency Kit - 12W, 1200 nominal lumens[4]
									ZENLO Enlighted One Micro Sensor with Dimming/Occupancy/Daylight Harvesting[3]	F Fuse
									ZENLC Enlighted Connected Micro Sensor with Dimming/Occupancy/Daylight Harvesting[3]	GC Grid Clip
									ZENLI Enlighted IoT Micro Sensor with Dimming/Occupancy/Daylight Harvesting[3]	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] 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
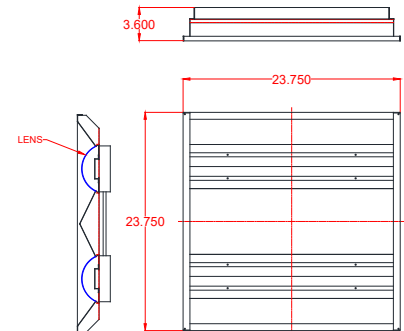
For Douglas Controls
BT-DMSW-U-A   Bluetooth 1 Zone Dimmer
BT-4BTSW-U-A   Bluetooth 4-Button Wall Station
BT-8BTSW-U-A   Bluetooth 8-Button Wall Station

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)

Schematic:

3.600

23.750

23.750

LENS

Performance Chart:

Catalog #	Watts	Lumens (830)	LPW (830)	Lumens (835)	LPW (835)	Lumens (840)	LPW (840)	Lumens (850)	LPW (850)
FFL 2R 22 LW HO UV FA 8xx	50	6146	122.9	6250	125.0	6456	129.1	6650	133.0
FFL 2R 22 MD HO UV FA 8xx	64	7910	123.6	8043	125.7	8309	129.8	8558	133.7
FFL 2R 22 HI HO UV FA 8xx	80	9741	121.8	9904	123.8	10232	127.9	10539	131.7
FFL 2R 22 VH HO UV FA 8xx	102	11755	115.1	11952	117.1	12348	120.9	12718	124.6

Photometric Data:

FFL 2R 22 VH HO UV FA 830

Test No.: LLIA000850-004A
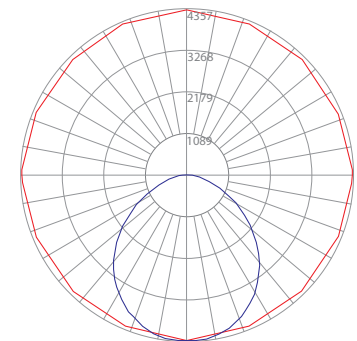**Luminaire Lumens:** 11,755 lm
Luminaire Watts: 102.1W
Efficacy: 115.1 LPW
Spacing Criterion (0-180): 1.24
Spacing Criterion (90-270): 1.28

Luminance Data (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	11275	12000	12777
55	9836	11376	12497
65	8090	10555	11954
75	6239	9513	8104
85	4192	5026	2981

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	100	96	106	102	98	95	98	95	92		94	91	89
2	99	91	84	79	97	89	83	78	86	81	76		82	78	74
3	91	80	72	66	88	79	71	65	76	69	64		73	67	63
4	83	71	62	56	81	70	62	55	67	60	55		65	59	54
5	76	64	55	48	74	62	54	48	60	53	47		58	52	47
6	70	57	48	42	69	56	48	42	54	47	41		53	46	41
7	65	52	43	37	64	51	43	37	50	42	37		48	41	36
8	61	47	39	33	59	47	39	33	45	38	33		44	37	33
9	57	43	35	30	55	43	35	30	42	35	30		41	34	29
10	53	40	32	27	52	40	32	27	39	32	27		38	31	27

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

——— Vert. Plane
——— Horiz. Cone

Zonal Lumen Summary

Zone	Lumens	%Fixt
0-20	1566.01	13.30
0-30	3316.80	28.20
0-40	5411.18	46.00
0-60	9441.59	80.30
0-80	11596.41	98.70
0-90	11754.65	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	11754.65	100.00

LUMENFOCUS Re-boardABILITY

The FFL 2R HO 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.
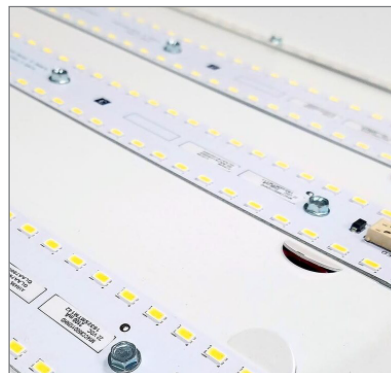
Click here for a video demonstration of the re-boarding process on a FFL.
Note: Exact time varies depending on the model.

ZSOL option: **Leviton Intellect Solo Sensor**

The FFL 2R HO 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:
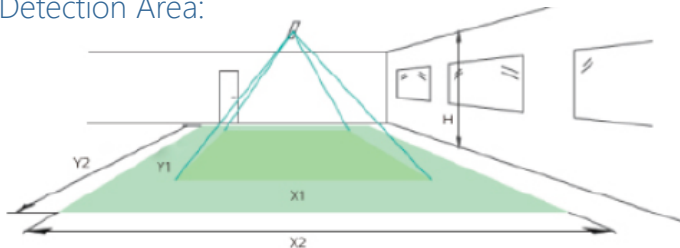
Height	Minor Movement		Major Movement	
H	X1	Y1	X2	Y2
10'	12'	9'	18'	12'

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)

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Douglas Lighting Controls, Inc.: Cloud-based controls

The FFL 2R HO 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
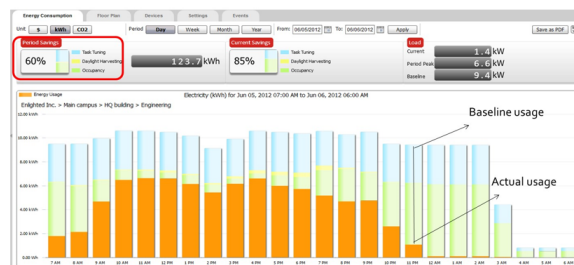
Learn more about our available advanced controls options here:
www.lumenfocus.com/controls-overview

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