



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

LED

FFL 2R 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)
 - For BAA compliant configurations - up to 189,000 hrs (calculated)
- (L70 information for specific configurations available upon request)

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)



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.)



FORMFOCUS



Ordering Guide:

example: FFL 2R 24 MD UV FA 835 EM1

Series	# of Rows	Size	Output	Voltage	Shielding	CRI/CCT	Mounting	Controls	Options
FFL	2R	24			FA				
FFL	2R 2 Rows	24 2' x 4'	SL Super Low	UV 120-277 34 347V	FA Frosted Acrylic	830 80 CRI/3000K	Blank None	Blank No Controls	Blank No Options
			VL Very Low			835 80 CRI/3500K	SMK Surface Mount Kit	ZSOL Leviton Programmable PIR Occupancy/Daylight Harvesting Sensor ⁽¹⁾	EXT10 10-Year Extended Warranty ⁽⁴⁾
			LW Low			840 80 CRI/4000K	FIK Frame-in Kit	ZES2 Philips EasySense Occupancy/Daylight sensor with advanced grouping ⁽²⁾	SD Step Dimming
			ML Medium Low			850 80 CRI/5000K		ZES3 Philips EasySense Occupancy/Daylight sensor for Zigbee networks ⁽²⁾	W6 6' Whip
			MD Medium					ZIFS Douglas IFS Sensor with Dimming/ Occupancy/Daylight Harvesting with Newtork Capabilities ⁽³⁾	W10 10' Whip
			HI High					ZIFC Douglas IFC Controller with Newtork Capabilities ⁽³⁾	EM1 Emergency Kit - 12W, 1200 nominal lumens ⁽⁵⁾
			VH Very High					ZENLO Enlighted One Micro Sensor with Dimming/Occupancy/Daylight Harvesting ⁽³⁾	F Fuse
			SH Super High					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

Controls Accessories (order separately)



For Leviton Programmable Sensor (OS)
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



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

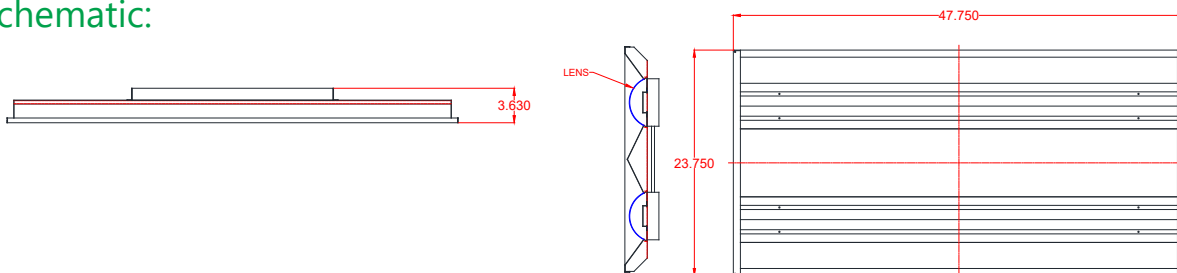


For Enlighted Controls
WS-2-00 Enlighted Remote Control Wall Switch (for Enlighted Connected & IoT)
WS-2-00-IL Enlighted Remote Control Wall Switch (for Enlighted One)

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 (830)	LPW (830)	Lumens (835)	LPW (835)	Lumens (840)	LPW (840)	Lumens (850)	LPW (850)
FFL 2R 24 SL UV FA 8xx	23	3145	136.8	3198	139.1	3304	143.7	3403	148.0
FFL 2R 24 VL UV FA 8xx	28	3784	135.1	3848	137.4	3975	142.0	4094	146.2
FFL 2R 24 LW UV FA 8xx	32	4237	132.4	4308	134.6	4451	139.1	4584	143.3
FFL 2R 24 ML UV FA 8xx	36	4672	129.8	4751	132.0	4908	136.3	5055	140.4
FFL 2R 24 MD UV FA 8xx	43	6163	143.3	6266	145.7	6473	150.5	6667	155.1
FFL 2R 24 HI UV FA 8xx	50	6946	138.9	7062	141.2	7296	145.9	7515	150.3
FFL 2R 24 VH UV FA 8xx	60	8025	133.8	8160	136.0	8430	140.5	8683	144.7
FFL 2R 24 SH UV FA 8xx	68	8866	130.4	9015	132.6	9313	137.0	9593	141.1

Photometric Data:

FFL 2R 24 SH UV FA 840

Test No.: LLIA000860-002A(s)

Luminaire Lumens: 9,314 lm

Luminaire Watts: 68W

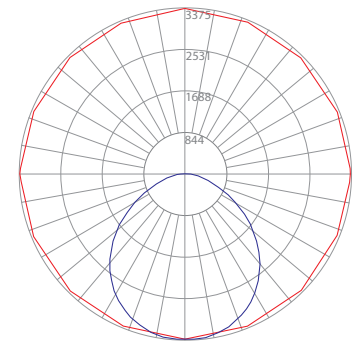
Efficacy: 137.0 LPW

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	4461	4715	4860
55	3936	4503	4748
65	3264	4204	4560
75	2493	3845	3120
85	1647	2044	1155



— Vert. Plane
— Horiz. Cone

Zonal Lumen Summary

Zone	Lumens	%Fixt
0-20	1221.41	13.10
0-30	2594.69	27.90
0-40	4247.03	45.60
0-60	7450.95	80.00
0-80	9182.05	98.60
0-90	9313.56	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	9313.56	100.00

Coefficients Of Utilization - Zonal Cavity Method

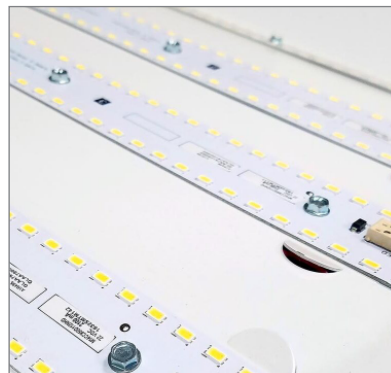
Effective Floor Cavity Reflectance 0.20

RC	70	80	90	100	70	80	90	100	70	80	90	100	70	80	90	100
RW	70	50	30	10	70	50	30	10	70	50	30	10	70	50	30	10
0	119	119	119	119	116	116	116	116	111	111	111	111	106	106	106	106
1	109	104	100	96	106	102	98	95	98	95	92	94	94	91	89	89
2	99	91	84	79	97	89	83	78	86	80	76	82	82	78	74	74
3	90	80	72	65	88	78	71	65	75	69	64	73	73	67	63	63
4	83	71	62	55	81	70	61	55	67	60	54	65	65	59	54	54
5	76	63	54	48	74	62	54	47	60	53	47	58	58	52	46	46
6	70	57	48	42	68	56	48	41	54	47	41	53	53	46	41	41
7	65	52	43	37	63	51	43	37	49	42	36	48	48	41	36	36
8	61	47	39	33	59	46	38	33	45	38	33	44	44	37	32	32
9	57	43	35	30	55	43	35	29	42	34	29	40	40	34	29	29
10	53	40	32	27	52	39	32	27	38	31	27	37	37	31	26	26

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

LUMENFOCUS Re-boardABILITY

The FFL 2R 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 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-compliance strategies
- Occupancy sensing, daylight harvesting, and task tuning in one device
- 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)

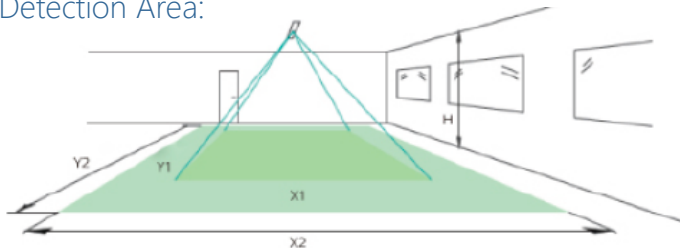
- Independent per-fixture control: Occupancy, Daylight Harvesting, Task Tuning
- Occupancy Sharing
 - Fixtures within a group can be programmed to remain at prescribed light levels so long as occupancy is detected anywhere in the group
- Scene Setting
- Advanced grouping to Illumra ZBT-S1AWH or ZBT-S2AWH 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 $\leq 3.0'$ per second)
- Major movement (person moving $\geq 3.0'$ per second)

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Douglas Lighting Controls, Inc.: Cloud-based controls

The FFL 2R 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 conservation 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.



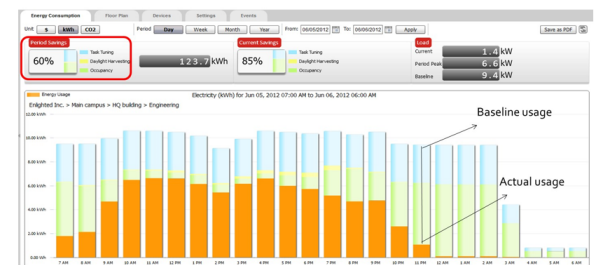
Enlighted Capabilities*	Enlighted One (ZENLO)	Enlighted Connected (ZENLC)	Enlighted IoT (ZENLI)
Motion and Switch Groups	✓	✓	✓
Daylight Harvesting	✓	✓	✓
Schedule Lighting		✓	✓
Energy Reporting & Optimization		✓	✓
Environment Data & Lighting Controls API		✓	✓
Building Management System Integration		✓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