

# ZR-FD High Efficiency Series

ZR24™ 2' x 4' High Efficiency Series LED Troffer with Matte Finish

## Product Description

The ZR-FD High Efficiency Series is a commercial spec-grade LED troffer delivering superior energy efficiency of up to 130 lumens per watt for maximum energy savings. But stellar lumen-per-watt performance is just the beginning: the ZR-FD High Efficiency Series also provides a matte finished housing for less glare and better light distribution, standard 0 to 10V dimming to 5% and 80+ CRI — all in a package with a price as attractive as it looks.

## Performance Summary

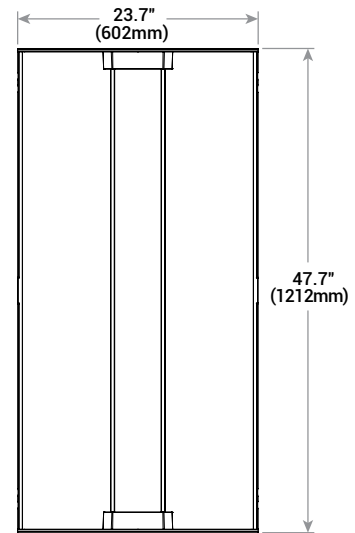
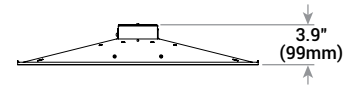
<b>Efficacy:</b> 130 LPW
<b>Initial Delivered Lumens:</b> 4,000 or 5,000 lumens
<b>Input Power:</b> 30-38 watts
<b>CRI:</b> 80+ CRI
<b>CCT:</b> 3500K, 4000K, 5000K
<b>Input Voltage:</b> 120-277 VAC
<b>Limited Warranty*:</b> 10 years on luminaire
<b>Limited Warranty Emergency Back Up (EB) Battery:</b> 1 Year on Battery Back Up. Test regularly in accordance with local codes
<b>Controls:</b> 0-10V dimming to 5%
<b>Mounting:</b> Recessed*

\* See <http://lighting.cree.com/warranty> for warranty terms

\* Not intended for use with 9/16" T-Bar grids unless used with a 9/16" accessory clip like "Armstrong® LFC- Fixture Clip" which can be purchased through distribution. Consult factory for non-standard grid applications.

## Accessories

Field-Installed	
<b>Drywall Grid Adapter</b> <a href="#">DGA24-WHT</a>	<b>Wireless 0-10V Dimming/Switching Interface with Cree SmartCast® Technology</b> <a href="#">CIF-10V-CWC-SNSR</a>
<b>Surface Mount Kit</b> <a href="#">SMK-ZR24</a>	- For use with luminaires with 10V controls when integral SmartCast isn't available
- Not for use with EB14 or SmartCast® Technology	<b>Cree SmartCast® Technology Configuration Tool</b> <a href="#">CCT-CWC-1</a>
<b>6' Flexible Power Whip</b> <a href="#">PW-18/4-06-9T/SS</a>	- One required per project when CIF-10V is selected
	<b>Chicago Plenum Field Kit</b> CPLZR
	- Fits all ZR types to be installed in the field



## Ordering Information

Example: ZR24M-40L-35K-10V-FD

ZR24M				10V	FD	
Product	Initial Delivered Lumens	CCT	Voltage	Control	CRI	Options
ZR24M	<b>40L</b> 30W, 4,000 lumens <b>50L</b> 38W, 5,000 lumens	<b>35K</b> 3500K - Available with 40L only <b>40K</b> 4000K <b>50K</b> 5000K - Available with 50L only	<b>Blank</b> 120-277 Volt	<b>10V</b> <a href="#">0-10V</a> dimming to 5%	<b>FD</b> 80+ CRI	<b>EB14 Emergency Backup</b> - 1,400 lumens - Provides 90 minutes of emergency operation



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# ZR24™ 2' x 4' High Efficiency Series LED Troffer with Matte Finish

## Product Specifications

### CONSTRUCTION & MATERIALS

- Durable 22 ga. cold rolled steel housing provides strength and uniformity
- Ultra-thin 3.9" (99mm) luminaire height and lightweight design effectively target a broad range of plenum spaces and allow for easy installations
- Luminaire is pre-painted for enhanced smooth matte finish
- Includes t-bar clips and holes for mounting support wires (by others)
- Luminaire sides and ends are hemmed in for safe, easy handling
- Includes lens gasket to prevent ingress of insects
- Not for installation within 3" (76mm) of insulation

### OPTICAL SYSTEM

- Unique luminaire design creates perfect balance of both horizontal and vertical illumination
- Optimized smooth acrylic lens eliminates pixelation and delivers a low-glare, diffused light distribution

### ELECTRICAL SYSTEM

- Cree born components including highly efficacious Cree® LED chips along with an integral high-efficiency Cree® driver
- **Power Factor:** = 0.9 nominal
- **Input Power:** Stays constant over life
- **Input Voltage:** 120-277V, 60Hz
- **Operating Temperature Range:** 0°C - + 35°C (32°F - + 95°F)
- **Total Harmonic Distortion:** <20%

### CONTROLS

- Continuous dimming to 5% with 0-10V DC control protocol
- **10V Source Current:** 0.25mA
- For use with Class 2 dimming systems only. Use only lighting controls with relay or FET-based outputs, or lighting controls with neutral connection
- Reference [www.creelink.com/exLink.asp?70982140Z58R34I26620963](http://www.creelink.com/exLink.asp?70982140Z58R34I26620963) for recommended dimming controls and wiring diagrams

### REGULATORY & VOLUNTARY QUALIFICATIONS

- cULus Listed
- Suitable for damp locations
- Designed for indoor use
- UL924 (EB option). Maximum mounting height: 15.0' (4.6m)
- RoHS compliant. Consult factory for additional details
- Meets FCC Part 15, Subpart B, Class A standards for conducted and radiated emissions
- DLC Premium qualified. Please refer to [www.designlights.org/QPL](http://www.designlights.org/QPL) for most current information
- **CA RESIDENTS WARNING:** Cancer and Reproductive Harm - [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

Electrical Data*					
Initial Delivered Lumens	System Watts 120-277V	Total Current (A)			
		120V	208V	240V	277V
40L	30	0.25	0.16	0.14	0.12
40L w/EB14 Option	33	0.28	0.18	0.15	0.13
50L	38	0.32	0.18	0.16	0.14
50L w/EB14 Option	43	0.36	0.21	0.18	0.16

\* Electrical data at 25°C (77°F). Actual wattage may differ by +/- 10% when operating between 120-277V +/- 10%

Recommended ZR Series Lumen Maintenance Factors (LMF) <sup>1</sup>					
Ambient	Initial LMF	25K hr Projected <sup>2</sup> LMF	50K hr Projected <sup>2</sup> LMF	75K hr Calculated <sup>3</sup> LMF	100K hr Calculated <sup>3</sup> LMF
0°C (32°F)	1.04	1.04	1.04	1.04	1.04
5°C (41°F)	1.03	1.03	1.03	1.03	1.03
10°C (50°F)	1.02	1.02	1.02	1.02	1.02
15°C (59°F)	1.02	1.02	1.02	1.02	1.02
20°C (68°F)	1.01	1.01	1.01	1.01	1.01
25°C (77°F)	1.00	1.00	1.00	1.00	1.00
30°C (86°F)	0.99	0.99	0.99	0.99	0.99
35°C (95°F)	0.98	0.98	0.98	0.98	0.98

<sup>1</sup> Lumen maintenance values at 25°C are calculated per TM-21 based on LM-80 data and in-situ luminaire testing

<sup>2</sup> In accordance with IESNA TM-21-11, Projected Values represent interpolated value based on time durations that are within six times (6X) the IESNA LM-80-08 total test duration (in hours) for the device under testing ([DUT] i.e. the packaged LED chip)

<sup>3</sup> In accordance with IESNA TM-21-11, Calculated Values represent time durations that exceed six times (6X) the IESNA LM-80-08 total test duration (in hours) for the device under testing ([DUT] i.e. the packaged LED chip)

## Application Reference

Open Space					
Spacing	Lumens	Wattage	LPW	w/ft <sup>2</sup>	Average fc
8 x 8	4,000	30	133	0.45	55
8 x 10				0.38	46
10 x 10				0.30	37
10 x 12				0.24	29

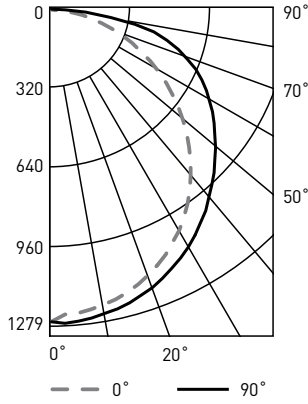
10' ceiling; 80/50/20 reflectances; 2.5' workplane, open room. LLF: 1.0 Initial. Open Space: 50' x 40' x 10'



**Photometry**

**ZR24M-40L-35K-10V-FD BASED ON CREE REPORT TEST #: PL08597-001A**

Luminaire photometry has been conducted by a NVLAP accredited testing laboratory in accordance with IESNA LM-79-08. IESNA LM-79-08 specifies the entire luminaire as the source resulting in a luminaire efficiency of 100%.



Coefficients Of Utilization – Zonal Cavity Method				
<b>RC %:</b>	80			
<b>RW %:</b>	70	50	30	10
<b>RCR: 0</b>	119	119	119	119
1	107	102	97	93
2	97	88	80	74
3	88	77	68	61
4	80	68	58	51
5	74	60	51	44
6	68	54	45	38
7	63	49	40	33
8	58	45	36	30
9	55	41	32	27
10	51	38	30	24

Effective Floor Cavity Reflectance: 20%

Zonal Lumen Summary			
Zone	Lumens	% Lamp	Luminaire
0-30	985	N/A	24.6%
0-40	1,620	N/A	40.4%
0-60	2,928	N/A	73.0%
0-90	4,010	N/A	100%
0-180	4,010	N/A	100%

Average Luminance Table (cd/m <sup>2</sup> )			
Vertical Angle	Horizontal Angle		
	0°	45°	90°
	45°	8,599	9,555
55°	8,049	9,722	10,786
65°	7,337	10,403	12,237
75°	6,282	11,927	14,461
85°	4,863	12,944	12,467

Reference <http://lighting.cree.com/products/indoor/troffers/zr-series> for detailed photometric data

