

# LS-FD High Efficiency Series

LS4™ High Efficiency Series LED Surface Ambient Luminaire – 4'

## Product Description

The LS-FD High Efficiency surface ambient luminaire delivers 105 lumens per watt with 80+ CRI illumination. The 4' (1219mm) luminaire is available with up to 4,000 lumens in 3500K, 4000K and 5000K color temperatures. The LS-FD Series features sleek and compact architectural design with flexible lumen packages, color temperatures and standard 0-10V dimming. Flexible mounting of the LS-FD Series allows for individual mount or continuous row applications for surface mount, suspended mount, pendant mount and cove installations.

**Applications:** Surface and suspended ambient applications for new construction and upgrade.

## Performance Summary

**Initial Delivered Lumens:** 1,900-4,000 lumens

**Input Power:** 18-38 watts

**Efficacy:** 105 LPW

**CRI:** 80+ CRI

**CCT:** 3500K, 4000K, 5000K

**Input Voltage:** 120-277 VAC

**L<sub>70</sub> Lifetime:** > 100,000 hours at 35°C

**Limited Warranty\*:** 10 years on luminaire

**Limited Warranty Emergency Back Up (EB) Battery:** 1 Year on Back Up. Test regularly in accordance with local codes

**Dimensions:** L 48.0" (1219mm) x W 2.5" (64mm) x H 3.0" (77mm)

**Weight:** 5 lbs. (2.3kg)

**Dimming:** 0-10V dimming to 5%

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

## Reflectors & Accessories

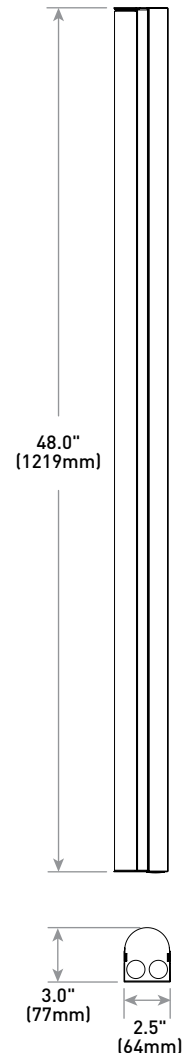
Field-Installed		
<b>Reflectors</b> - Refer to reflector spec sheet <b>Solid</b> LS4-SR - Pair of reflectors <b>Apertured</b> LS4-AR - Pair of reflectors <b>Joint Aligner</b> LS-RJ - Top housing aligner for continuous rows LS-RFLJ - Reflector aligner for continuous row	<b>Adjustable Cable Support Kits for T-Bar Applications<sup>†</sup></b> AC5-48-Q14B-TB AC5-48-Q14B-TB-50BULK (Pack of 50) - Includes 5.0" (127mm) Canopy, 48.0" (1219mm) Adjustable Cable, Q14B Gripper and T-Bar Clip AC2-48-Q14B-TB AC2-48-Q14B-TB-50BULK (Pack of 50) - Same as above except with 2" (51mm) Canopy <b>Adjustable Loop Cable Kit for Unfinished Ceiling Applications<sup>†</sup></b> AC-144-Q14B-LP AC-144-Q14B-LP-50BULK (Pack of 50) - Includes 144.0" (366cm) L x 1/16" (2mm) Diameter Adjustable Galvanized Loop Cable w/Q14B Gripper <b>Continuous Row Through Wiring Kit<sup>†</sup></b> LS4TWK - Includes (3) #12AWG 54.0" (1372mm) Wires for Line (black), Neutral (white), Ground (green), (2) #18AWG 54.0" (1372mm) Wires for 0-10V dimming (purple, gray) and (10) Wire Nuts - Optional accessory for use when luminaire is not ordered with factory installed TW option - Does not power luminaires w/EB14 option. Additional unswitched (i.e. continuous power) dedicated feeds (by others) must be supplied to EB14	<b>Adjustable Cable Support Kits w/ Power Feeds<sup>†</sup></b> AC5-12/3-48-Q14B-JB - Non-dimming applications - Includes 5.0" (127mm) Cable Canopy, 48" (1219mm) #12/3 SJT Cord, Q14B Gripper and J-Box Strap AC5-18/5-48-Q14B-JB - Dimming applications - Includes 5.0" (127mm) Cable Canopy, 48.0" (1219mm) #18/5 SVT Cord, Q14B Gripper and J-Box Strap AC5-18/2-48-Q14B-JB - For use with AC5-12/3-48-Q14B-JB for selective luminaire dimming control in row mounted luminaires - Includes 5.0" (127mm) Cable Canopy, 48.0" (1219mm) #18/2 SVT Cord, Q14B Gripper and J-Box Strap <b>Dimming Occupancy Sensor w/ Photocell</b> S-WRAC-OC-1 - Enables daylight harvesting - Not for continuous row applications - Refer to installation instructions for details

<sup>†</sup> Refer to the [CS & LS Accessory spec sheet](#) for more details

## Ordering Information

Example: LS4-40L-35K-10V-FD

LS4			10V		FD	
Product	Initial Delivered Lumens	CCT	Control	Voltage	CRI	Options
LS4	<b>25L</b> 18W, 1,900 lumens <b>40L</b> 30W, 3,150 lumens <b>50L</b> 38W, 4,000 lumens	<b>35K</b> 3500K <b>40K</b> 4000K <b>50K</b> 5000K	<b>10V</b> 0-10V dimming to 5%	<b>Blank</b> 120-277 Volt	<b>FD</b> 80+ CRI	<b>EB14 Emergency Backup</b> - Minimum 90 minutes - 1,400 lumens - Minimum operating temperature: 0°C (32°F)  <b>TW Through Wire Option</b> - Factory installed - Includes quick connects for use in continuous row applications - Not for use with 25L or EB14 option



**Product Specifications**

**CONSTRUCTION & MATERIALS**

- Constructed of durable 22 gauge steel
- Acrylic lens delivers a low-glare, diffused light distribution
- Prepainted white for enhanced smooth finish

**OPTICAL SYSTEM**

- Unique combination of reflective and refractive optical components achieves a uniform, comfortable appearance while eliminating pixelation and color fringing
- Components work together to optimize distribution, balancing the delivery of high illuminance levels on horizontal surfaces with an ideal amount of light on walls and vertical surfaces. This increases the perception of spaciousness

**ELECTRICAL SYSTEM**

- **Power Factor:** > 0.9
- **Input Power:** Stays constant over life
- **Input Voltage:** 120-277V, 60Hz
- **Operating Temperature Range:** -28°C - +35°C (-18.4°F - +95°F); minimum operating temperature with EB14 option is 0°C (32°F)
- **Total Harmonic Distortion:** < 25%

**CONTROLS**

- Continuous dimming to 5% with 0-10V DC control protocol
- **10V Source Current:** 0.25mA
- Use only lighting controls with neutral connection or controls intended for use with LED fixtures
- 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
- Suitable for continuous row mounting
- Designed for indoor use
- Not intended for use in environments containing airborne corrosive agents such as chemical solvents, cleaners, or cutting fluids
- **Ingress Protection:** IP20
- UL924 (EB option). Maximum mounting height: 10.0' (3.0m)
- RoHS compliant. Consult factory for additional details
- Meets FCC Part 15, Subpart B, Class A standards for conducted and radiated emissions

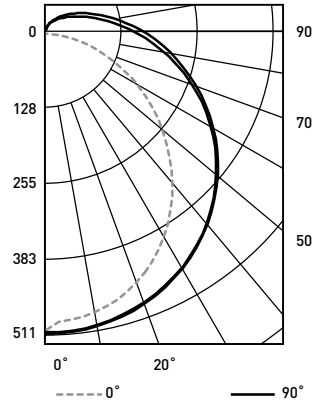
Electrical Data*					
Initial Delivered Lumens	System Watts 120-277V	Total Current (A)			
		120V	208V	240V	277V
25L	18	0.16	0.10	0.08	0.07
25L w/EB14	22	0.19	0.12	0.11	0.09
40L	30	0.26	0.17	0.15	0.13
40L w/EB14	35	0.31	0.20	0.17	0.15
50L	38	0.33	0.21	0.19	0.16
50L w/EB14	44	0.38	0.24	0.20	0.18

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

**Photometry**

**CONFIGURED LS4-25L-40K-10V-FD BASED ON CESTL REPORT TEST #: PL09630-001A**

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%.



Average Luminance Table (cd/m²)				
Vertical Angle	Horizontal Angle			
	0°	45°	90°	
45°	5,307	4,795	4,823	
55°	4,824	4,423	4,527	
65°	4,221	4,088	4,237	
75°	3,413	3,771	3,926	
85°	2,275	3,584	3,678	

Coefficients Of Utilization – Zonal Cavity Method				
RC %:	80			
RW %:	70	50	30	10
RCR: 0	117	117	117	117
1	104	98	93	88
2	94	84	77	70
3	85	73	65	57
4	78	65	55	48
5	71	58	48	41
6	66	52	42	36
7	61	47	38	31
8	56	42	34	28
9	53	39	30	25
10	49	36	28	22

Effective Floor Cavity Reflectance: 20%

Zonal Lumen Summary			
Zone	Lumens	% Lamp	Luminaire
0-30	395	N/A	20.8%
0-40	651	N/A	34.3%
0-60	1,187	N/A	62.5%
0-90	1,712	N/A	90.1%
0-180	1,900	N/A	100%

Reference <http://lighting.cree.com/products/indoor/surface-ambient/ls-series> for detailed photometric data

LS-FD Series Ambient Adjusted Lumen Maintenance <sup>1</sup>					
Ambient	Initial LMF	25K hr Projected <sup>2</sup> LMF	50K hr Calculated <sup>3</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. Luminaire ambient temperature factors (LATF) have been applied to all lumen maintenance factors

<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

