

## DESCRIPTION

The FR series is a premium recessed commercial luminaire which offers a high quality lighting solution dedicated with the latest solid state lighting and electronic driver technology for optimal performance and energy efficiency. The FR series is compatible with all of today's popular ceiling systems and is available with a number of shielding options and accessories for application versatility.

The FR series features efficiency, quality and performance. The series is an excellent choice for commercial office spaces, schools, hospitals or retail merchandising areas.

## SPECIFICATION FEATURES

### Construction

Rigid housing is die formed of code gauge prime cold rolled steel and features full length die-formed stiffeners and unibody endplate for added strength. Side flanges are hemmed. Innovative design provides superior lens brightness uniformity and visual comfort. Unibody endplates are securely attached with interlocking tabs and screws. Four auxiliary fixture end suspension points provided. Endplates have integral Grid-lock feature for safety and convenience.

### Controls

The FR series is equipped standard with a 0-10V continuous dimming driver that works with any standard 0-10V control/dimmer. Combine with energy-saving products like occupancy sensors, daylighting controls, and lighting relay panels from Cooper Controls ([www.coopercontrol.com](http://www.coopercontrol.com)) to maximize energy savings. Or, specify the Digital Addressable Lighting Interface (DALI) drivers, dimmable down to 1% with the HD option, for use with Fifth Light controls. Consult factory for integrated sensor options.

### Electrical

Long-Life LED system coupled with electrical driver to deliver optimal performance. LED's available in 2700K, 3000K, 3500K, 4000K or 5000K with typical CRI 85. Projected life is 60,000 hours at 70% lumen output. cULus listed. Electronic drivers are available for 120-277V applications. A 0-10V dimming driver is standard.

### Emergency Battery Pack Option

Optional 120v-277v integral emergency battery pack is available in 7-watts or 14-watts to meet critical life-safety lighting requirements. The 90-minute batteries provide constant power to the LED system, ensuring code-compliance. A test switch/indicator button can be tested safely from the ground using a laser pointer, while the patented EZ Key prevents accidental discharge of the battery during construction. See ordering information for details.

### Finish

Multistage, iron phosphate pretreatment ensures maximum bonding and rust inhibition. Housing and driver cover finished with new 90% reflective white enamel for superior performance.

### Hinging / Latching

Cam steel latches with baked white enamel finish. Safety-lock T-hinges allow hinging and latching either side.

### Frame/Optical Shielding

Curved, Frost lens within steel hinged door frame. Lens offers a balance of aesthetics and light stability.

### Compliance

Modules are UL recognized components and indoor luminaires are cULus listed for 25°C ambient environments, RoHS compliant, and LED modules comply with IESNA LM-79 and LM-80 standards. DesignLights Consortium™ Qualified and classified for both DLC Standard and DLC Premium, refer to [www.designlights.org](http://www.designlights.org) for details.

Catalog #		Type	
Project		Date	
Comments			
Prepared by			

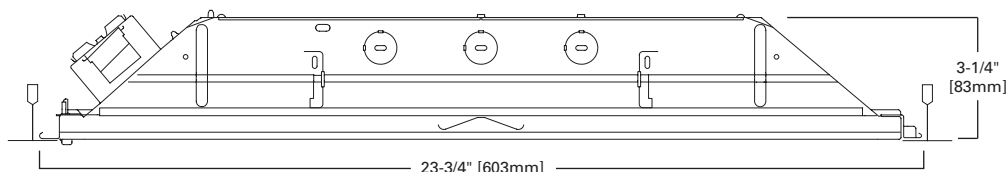


## 24FR LED

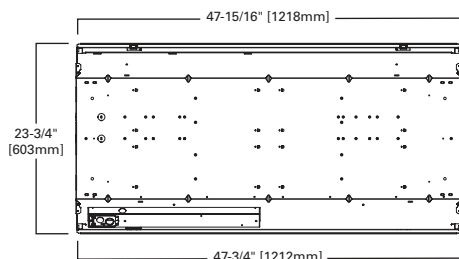
2' X 4' LED LUMINAIRE

Premium Recessed Commercial LED Luminaire

For Use in Insulated Ceilings



## MOUNTING DATA



## CEILING COMPATIBILITY

G	G	G	Ceiling Type	Trim Type
Grid/Lay-in Standard	Concealed T	Slot Grid	Exposed Grid	G
			Concealed T	G
			Slot Grid	G

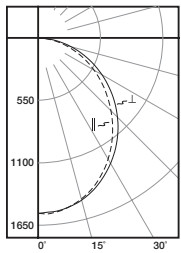
(Verify compatibility/ consult factory.)

## WATTAGE

Catalog Number	Performance Type	Product Description	Nominal Lumens	Wattage	Efficacy (lm/W)
24FR-LD4-30-UNV-L835-CD1-U	Standard	2' x 4', Premium Commercial Troffer, 3000 lm, 3500K, UNV	3023	26.0	116.4
24FR-LD4-30-UNV-L840-CD1-U	Standard	2' x 4', Premium Commercial Troffer, 3000 lm, 4000K, UNV	3071	26.0	118.2
24FR-LD4-30-UNV-L850-CD1-U	Standard	2' x 4', Premium Commercial Troffer, 3000 lm, 5000K, UNV	3352	26.0	129.1
24FR-LD4-30-HP-UNV-L835-CD1-U	High Performance	2' x 4', Premium Commercial Troffer, 3000 lm, 3500K, UNV	3067	22.8	134.5
24FR-LD4-30-HP-UNV-L840-CD1-U	High Performance	2' x 4', Premium Commercial Troffer, 3000 lm, 4000K, UNV	3116	22.8	136.7
24FR-LD4-30-HP-UNV-L850-CD1-U	High Performance	2' x 4', Premium Commercial Troffer, 3000 lm, 5000K, UNV	3401	22.8	149.2
<b>24FR-LD4-40-UNV-L835-CD1-U</b>	<b>Standard</b>	<b>2' x 4', Premium Commercial Troffer, 4000 lm, 3500K, UNV</b>	<b>4096</b>	<b>35.7</b>	<b>114.7</b>
<b>24FR-LD4-40-UNV-L840-CD1-U</b>	<b>Standard</b>	<b>2' x 4', Premium Commercial Troffer, 4000 lm, 4000K, UNV</b>	<b>4162</b>	<b>35.7</b>	<b>116.6</b>
24FR-LD4-40-UNV-L850-CD1-U	Standard	2' x 4', Premium Commercial Troffer, 4000 lm, 5000K, UNV	4542	35.7	127.2
24FR-LD4-40-HP-UNV-L835-CD1-U	High Performance	2' x 4', Premium Commercial Troffer, 4000 lm, 3500K, UNV	4097	31.3	130.9
24FR-LD4-40-HP-UNV-L840-CD1-U	High Performance	2' x 4', Premium Commercial Troffer, 4000 lm, 4000K, UNV	4163	31.3	133.0
24FR-LD4-40-HP-UNV-L850-CD1-U	High Performance	2' x 4', Premium Commercial Troffer, 4000 lm, 5000K, UNV	4543	31.3	145.2
24FR-LD4-50-UNV-L835-CD1-U	Standard	2' x 4', Premium Commercial Troffer, 5000 lm, 3500K, UNV	5034	47.6	105.8
24FR-LD4-50-UNV-L840-CD1-U	Standard	2' x 4', Premium Commercial Troffer, 5000 lm, 4000K, UNV	5115	47.6	107.5
24FR-LD4-50-UNV-L850-CD1-U	Standard	2' x 4', Premium Commercial Troffer, 5000 lm, 5000K, UNV	5583	47.6	117.3
24FR-LD4-50-HP-UNV-L835-CD1-U	High Performance	2' x 4', Premium Commercial Troffer, 5000 lm, 3500K, UNV	5090	40.2	126.6
24FR-LD4-50-HP-UNV-L840-CD1-U	High Performance	2' x 4', Premium Commercial Troffer, 5000 lm, 4000K, UNV	5172	40.2	128.6
24FR-LD4-50-HP-UNV-L850-CD1-U	High Performance	2' x 4', Premium Commercial Troffer, 5000 lm, 5000K, UNV	5645	40.2	140.4
<b>24FR-LD4-65-UNV-L835-CD1-U</b>	<b>Standard</b>	<b>2' x 4', Premium Commercial Troffer, 6500 lm, 3500K, UNV</b>	<b>6703</b>	<b>65.2</b>	<b>102.9</b>
<b>24FR-LD4-65-UNV-L840-CD1-U</b>	<b>Standard</b>	<b>2' x 4', Premium Commercial Troffer, 6500 lm, 4000K, UNV</b>	<b>6810</b>	<b>65.2</b>	<b>104.5</b>
24FR-LD4-65-UNV-L850-CD1-U	Standard	2' x 4', Premium Commercial Troffer, 6500 lm, 5000K, UNV	7433	65.2	114.1
24FR-LD4-65-HP-UNV-L835-CD1-U	High Performance	2' x 4', Premium Commercial Troffer, 6500 lm, 3500K, UNV	6530	53.8	121.5
24FR-LD4-65-HP-UNV-L840-CD1-U	High Performance	2' x 4', Premium Commercial Troffer, 6500 lm, 4000K, UNV	6635	53.8	123.4
24FR-LD4-65-HP-UNV-L850-CD1-U	High Performance	2' x 4', Premium Commercial Troffer, 6500 lm, 5000K, UNV	7242	53.8	134.7
24FR-LD4-69-UNV-L835-CD1-U	Standard	2' x 4', Premium Commercial Troffer, 6900 lm, 3500K, UNV	6900	68.1	101.3
24FR-LD4-69-UNV-L840-CD1-U	Standard	2' x 4', Premium Commercial Troffer, 6900 lm, 4000K, UNV	7011	68.1	102.9
24FR-LD4-69-UNV-L850-CD1-U	Standard	2' x 4', Premium Commercial Troffer, 6900 lm, 5000K, UNV	7652	68.1	112.4
24FR-LD4-72-UNV-L835-CD1-U	Standard	2' x 4', Premium Commercial Troffer, 7200 lm, 3500K, UNV	7237	73.1	99.0
24FR-LD4-72-UNV-L840-CD1-U	Standard	2' x 4', Premium Commercial Troffer, 7200 lm, 4000K, UNV	7353	73.1	100.6
24FR-LD4-72-UNV-L850-CD1-U	Standard	2' x 4', Premium Commercial Troffer, 7200 lm, 5000K, UNV	8026	73.1	109.8
24FR-LD4-72-HP-UNV-L835-CD1-U	High Performance	2' x 4', Premium Commercial Troffer, 7200 lm, 3500K, UNV	7265	63.3	114.8
24FR-LD4-72-HP-UNV-L840-CD1-U	High Performance	2' x 4', Premium Commercial Troffer, 7200 lm, 4000K, UNV	7381	63.3	116.6
24FR-LD4-72-HP-UNV-L850-CD1-U	High Performance	2' x 4', Premium Commercial Troffer, 7200 lm, 5000K, UNV	8057	63.3	127.3
24FR-LD4-80-HP-UNV-L835-CD1-U	High Performance	2' x 4', Premium Commercial Troffer, 8000 lm, 3500K, UNV	8028	71.7	112.0
24FR-LD4-80-HP-UNV-L840-CD1-U	High Performance	2' x 4', Premium Commercial Troffer, 8000 lm, 4000K, UNV	8157	71.7	113.8
24FR-LD4-80-HP-UNV-L850-CD1-U	High Performance	2' x 4', Premium Commercial Troffer, 8000 lm, 5000K, UNV	8903	71.7	124.2

**Notes:** Bold=stocked SKUs (STK), available for immediate shipment. Non-bold=MTO SKUs, available in less than two weeks.  
All models also available in 2700K and 3000K.

PHOTOMETRICS

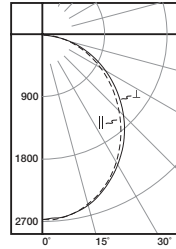


**24FR-40-UNV-L835-CD1-U**

Electronic Driver  
 Linear LED 3500K  
 Spacing criterion: (H) 1.2 x mounting height, (L) 1.2 x mounting height  
 Lumens: 4158  
 Input Watts: 33.6W  
 Efficacy: 123.8 lm/W  
 Test Report: 24FR-40-UNV-L835-CD1-U.IES

**Candlepower**

Angle	Along H	45°	Across L
0	1552	1552	1552
5	1552	1546	1543
10	1521	1521	1521
15	1473	1478	1484
20	1409	1420	1429
25	1327	1345	1358
30	1234	1259	1278
35	1131	1163	1190
40	1021	1060	1093
45	906	950	988
50	791	838	879
55	679	723	764
60	568	609	648
65	458	497	532
70	349	386	415
75	248	279	303
80	154	176	194
85	69	82	89
90	0	0	0



**24FR-65-UNV-L835-CD1-U**

Electronic Driver  
 Linear LED 3500K  
 Spacing criterion: (H) 1.2 x mounting height, (L) 1.2 x mounting height  
 Lumens: 6900  
 Input Watts: 68.1W  
 Efficacy: 101.3 lm/W  
 Test Report: 24FR-65-UNV-L835-CD1-U.IES

**Candlepower**

Angle	Along H	45°	Across L
0	2654	2654	2654
5	2648	2644	2640
10	2598	2598	2598
15	2511	2522	2529
20	2401	2417	2422
25	2266	2283	2292
30	2105	2128	2148
35	1926	1959	1992
40	1737	1778	1819
45	1541	1589	1633
50	1346	1395	1439
55	1151	1197	1241
60	960	1000	1042
65	772	806	844
70	591	624	646
75	419	446	455
80	259	273	246
85	117	74	40
90	0	0	0

**Coefficients of Utilization**

rc rw RCR	Effective floor cavity reflectance																						
	80%				70%				50%				30%				10%				0%		
0	119	119	119	116	116	116	111	111	111	106	106	106	102	102	102	100							
1	109	104	100	96	106	102	98	94	97	94	91	93	91	88	90	88	86	84					
2	99	91	84	78	96	89	82	77	85	80	75	82	77	74	79	75	72	70					
3	90	80	71	65	88	78	70	64	75	69	63	72	67	62	70	65	61	59					
4	83	71	62	55	80	69	61	55	67	60	54	64	58	53	62	57	53	50					
5	76	63	54	48	74	62	54	47	60	52	47	58	51	46	56	50	46	44					
6	70	57	48	42	68	56	48	41	54	47	41	53	46	41	51	45	40	38					
7	65	52	43	37	63	51	43	37	49	42	36	48	41	36	47	41	36	34					
8	61	47	39	33	59	47	38	33	45	38	33	44	37	32	43	37	32	30					
9	57	43	35	30	55	43	35	30	42	34	29	41	34	29	40	34	29	27					
10	53	40	32	27	52	40	32	27	39	32	27	38	31	27	37	31	27	25					

**Zonal Lumen Summary**

Zone	Lumens	% Fixture
0-30	1180	28.4
0-40	1905	45.8
0-60	3283	79.0
0-90	4158	100.0
0-180	4158	100.0

**Coefficients of Utilization**

rc rw RCR	Effective floor cavity reflectance																						
	80%				70%				50%				30%				10%				0%		
0	119	119	119	116	116	116	111	111	111	106	106	106	102	102	102	100							
1	109	104	100	96	106	102	98	95	98	95	92	94	91	89	90	88	86	84					
2	99	91	84	79	97	89	83	78	86	81	76	82	78	74	79	76	73	70					
3	91	80	72	66	88	79	71	65	76	69	64	73	67	63	70	66	62	60					
4	83	71	63	56	81	70	62	56	67	60	55	65	59	54	63	58	53	51					
5	77	64	55	48	74	63	54	48	61	53	48	59	52	47	57	51	46	44					
6	71	58	49	42	69	57	48	42	55	47	42	53	46	41	52	46	41	39					
7	66	52	44	37	64	51	43	37	50	42	37	48	42	37	47	41	37	35					
8	61	48	39	34	60	47	39	33	46	38	33	44	38	33	43	37	33	31					
9	57	44	36	30	56	43	35	30	42	35	30	41	35	30	40	34	30	28					
10	54	41	33	27	52	40	32	27	39	32	27	38	32	27	37	31	27	25					

**Zonal Lumen Summary**

Zone	Lumens	% Fixture
0-30	2008	29.1
0-40	3231	46.8
0-60	5523	80.0
0-90	6900	100.0
0-180	6900	100.0

ORDERING INFORMATION

SAMPLE NUMBER: 24FR-LD4-40-UNV-L835-CD1-U

<p><b>Rating</b>                  [Blank]=Standard                  ATW-SW4=Chicago Rated</p> <p><b>Width / Length</b>                  24=2' x 4'</p> <p><b>Series</b><sup>(8)</sup>                  FR=Premium Commercial Luminaire</p> <p><b>Door Frame</b>                  Standard=Flat White                  Steel Door (Leave Blank)</p>	<p><b>LED Type</b>                  LD4=LED 4.0</p> <p><b>LED Lumens Output</b><sup>(4)</sup>                  Stock                  40=4000                  65=6500</p> <p><b>MTO</b>                  30=3000                  50=5000                  69=6900                  72=7200                  80=8000</p> <p><b>Shielding</b>                  [Blank]=Curved Frosted Acrylic Lens (standard)                  HP=High Performance, Curved Frosted Acrylic Lens</p>	<p><b>Voltage</b><sup>(2)</sup>                  347=347V                  UNV=Universal                  Voltage 120-277</p> <p><b>Options</b>  <b>Emergency</b>                  EL7W=7-watt, 120V-277V emergency battery pack installed<sup>(3)</sup>                  EL14W=14-watt 120V-277V emergency battery pack installed<sup>(3)</sup>                  GTD2=Bodine Generator Transfer Device<sup>(7)</sup>                  ETS2=IOTA Emergency Transfer Switch<sup>(7)</sup></p> <p><b>CCT</b>                  L827=2700K                  L830=3000K                  L835=3500K                  L840=4000K                  L850=5000K  <b>Flex</b>                  Multiple Configurations Available</p>	<p><b>Driver Type</b>                  CD=0-10V Dimming Driver (10% - 100% Dimming)                  HCD=0-10V Dimming Driver (1% - 100% Dimming)                  SD=Step-dim Driver<sup>(6)</sup>                  5LTD=Fifth Light DALI Driver (10% - 100% Dimming)<sup>(5), (6)</sup>                  5LTHD=Fifth Light DALI Driver (1% - 100% Dimming)<sup>(5), (6)</sup></p> <p><b>Number of Drivers</b>                  1=1 Driver                  2=2 Drivers<sup>(7)</sup></p>	<p><b>Options</b>                  PMW=Paint                  Matte White</p> <p><b>Packaging</b>                  U=Unit Pack</p>
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**ACCESSORIES**

- EQ-CLIP-U=T-BAR Safety Earthquake Clips<sup>(1)</sup>
- DF-24-W=2' x 4' Drywall Frame Kit
- SK-24-WS=2' x 4' Shallow Surface Mount Kit
- SK-24-WT=2' x 4' Tall Surface Mount Kit
- DF10P-C\_=Decorator Dimmer, 0-10V
- SF10P\_=Decorator Slide Dimmer, 0-10V
- ISHH-01=Programming Remote for Integrated Sensor
- ISHH-02=Personal Control Remote for Integrated Sensor

**NOTES:** <sup>(1)</sup>An EQ Grid Clip is recommended for all 9/16" ceiling systems. Four required per fixture. <sup>(2)</sup>Products also available in non-US voltages and frequencies for international markets. <sup>(3)</sup>External test switch / indicator / laser test. For approximate delivered lumens multiply the lumens per watt of the desired fixture by the wattage of the emergency battery pack (100 lm/W x 7=700 lumens). IES-format photometry for luminaire under emergency operation available. <sup>(4)</sup>Nominal lumen output. <sup>(5)</sup>Step-Dim (Bi-Level) and Fifth Light (DALI) only available for 4,000, 5,000 and 6,500 lumens. <sup>(6)</sup>Must be used in conjunction with a DALI control system. For complete DALI solutions by Fifth Light, visit [www.eaton.com/lightingsystems](http://www.eaton.com/lightingsystems) <sup>(7)</sup>Used to transfer fixture to secondary power source for life-safety operation. When used with a dimming fixture, two devices are required to ensure control is disabled while operating under emergency power. <sup>(8)</sup>DesignLights Consortium™ Qualified and classified for both DLC Standard and DLC Premium, refer to [www.designlights.org](http://www.designlights.org) for details.

Specifications & dimensions subject to change without notice. Consult your Eaton Representative for availability and ordering information.

**SHIPPING DATA**

Catalog No.	Wt.	Pallet
24FR-LD4	20 lbs.	24