



**FEATURES**

- Attractive recessed fluorescent with architecturally enhanced triple lens design
- T8 or T5 Fluorescent
- Full distribution provides controlled high angle light for visual comfort
- Advanced optical design produces high efficiencies
- Hinged optical system allows easy access to lamps and electrical from below the ceiling
- Lenses interlock for structural integrity
- Two optional lens aesthetics
- Exclusive optional T8 EnergyMax® tuned 1.04 ballast factor ballast
- Step and full dimming options for both T5 and T8 expand energy saving and control opportunities
- Recessed, surface or cable mount
- Most configurations produce low W/ft<sup>2</sup> to meet the most restrictive lighting power density codes

**HUBBELL SUSTAINABLE DESIGN SOLUTION FEATURES**

- Made with 90% recycled steel
- Made of 80% recyclable materials by weight
- Job pack available for minimizing amount of packaging material at job site
- Individual cartons made of 100% recycled corrugated

**PROJECT INFORMATION**

Project Name \_\_\_\_\_

Type \_\_\_\_\_

Catalog No. \_\_\_\_\_

Date \_\_\_\_\_

**CONSTRUCTION**

Housing is constructed of heavy gauge steel, die formed for extra rigidity. Four T-bar clips integral to housing. Optical system hinges and latches from either side for easy access to electrical components. Mechanical light trap prevents light leaks. Latches are spring loaded.

**FINISH**

All visible parts are custom formulated soft, non-glare high reflectance white powder coat finish, painted after fabrication.

**SHIELDING**

Lenses are high transmission extruded acrylic with an interlocking design for structural integrity and ease of maintenance.

**INSTALLATION**

An access plate or mounting collar is furnished with luminaire for fast wiring connections without the necessity to open the fixture or wireway.

**BALLASTS**

Energy-efficient, thermally protected, automatic resetting, Class "P", high power factor, sound rated A, unless otherwise specified. For a specific vendor and/or ballast, specify as option. CEE NEMA Premium compliant.

**ELECTRICAL**

Standard class "P," thermally protected, auto-resetting HPF ballast, sound rated A. CEE NEMA Premium compliant. All ballast leads extend a minimum of 6" through access location. NEC/CEC compliant ballast disconnect is standard.

**EMERGENCY**

Field installation of battery packs requires use of remote test switch.

**CEILING COMPATIBILITY**

Designed for recessed installation in standard inverted tee grid ceilings (G), recessed installation in hard ceilings (G with FK accessory), Surface mount at ceiling plane (SM) or cable mount suspension below ceiling plane (CM). For compatibility with specific ceilings contact your Hubbell Lighting representative.

**CERTIFICATION**

All luminaires are built to UL1598 standards and bear appropriate UL and cUL or CSA labels. Damp location labeling is standard. Emergency equipped fixtures labeled UL924. Adheres to LM79, LM80 and TM21 standards. IC rating optional (see availability table). UL Sanitation Approved.

**ORDERING INFORMATION**

**EXAMPLE SER24-232G-RF-E104U-F0835**

SER 24 -									
MODEL	NO. OF LAMPS	CEILING TYPE	SHIELDING	REFLECTOR	VOLTAGE	OPTIONS			
SER Serrano® Recessed Architectural Luminaire	1 One 2 Two 3 Three	G Grid <sup>1</sup> SM Surface Mount CM Cable Mount <sup>2</sup>	C Contour R Rail	P Performance-Specular Aluminum F Full-White Gloss Paint	U 120V-277V 347 347V <sup>4</sup>	C388 3-Wire Flex C488 4-Wire Flex C588 5-Wire Flex EL T8 Emergency Battery Pack, 350-450 Lumens EL5 T5 or T5HO Emergency Battery Pack, 390-700 Lumens GLR Fast Blow Fuse GMF Slow Blow Fuse IC IC Rating CP Chicago Plenum			
SIZE	LAMP TYPE	BALLAST			LAMPS				
24 2' x 4'	28 4', T5: 28 Watt 32 4', T8: 32, 30, 28, or 25 Watt 54 4', T5HO: 54 or 51 Watt	E Electronic T8, 0.88 Ballast Factor, Instant Start ESD Electronic T8, 0.88 Ballast Factor, Step Dimming, Programmed Start <sup>3</sup> ED Electronic T8, T5, T5HO Dimming, Programmed Start <sup>3,4</sup> EP Electronic T5, T5HO, 1.0 Ballast Factor or T8, 0.88 Ballast Factor, Programmed Start EP95 Electronic T5, 0.95 Ballast Factor, Programmed Start (N/A T5HO, 1-Lamp) ESD95 Electronic T5, 0.95 Ballast Factor, Step Dimming, Programmed Start (N/A T5HO, 1-Lamp) EP115 Electronic T5, 1.15 Ballast Factor, Programmed Start (N/A T5HO, 1-Lamp)	F830 30K 78+CRI T8 Lamps Installed F835 35K 78+CRI T8 Lamps Installed F841 41K 78+CRI T8 Lamps Installed F5830 30K 85CRI T5 or T5HO Lamps Installed F5835 35K 85CRI T5 or T5HO Lamps Installed F5841 41K 85CRI T5 or T5HO Lamps Installed						

**ACCESSORIES (ORDER SEPARATELY)**

**FK24** 2' x 4' Flange Kit, Single Mounting (for rows add FKCR)

**FKCR** Flange Kit Row Adaptor

**CM 48Y2SC3F** 48" Cable Mount Kit for 2' wide Cable Mount fixtures, 3 Wire

<sup>1</sup> For drywall, order Flange Kit accessories separately

<sup>2</sup> Order hanger accessories separately

<sup>3</sup> Not compatible with T8 25, 28 or 30 watt energy saving lamps.

<sup>4</sup> Where available.

## PHOTOMETRIC DATA

Test 4460 Test Date 9/19/2011

### LUMINAIRE DATA

Luminaire	SER24-232G-CP-EU
	SER Serrano, Recessed Architectural 2 x 4 2-lamp with Contour center lens, linear prisms side lenses, and performance reflector
Ballast	ICN-2P32-SC
Ballast Factor	0.88
Lamp	F28T8
Lumens per Lamp	2725
Watts	50
Mounting	Recessed
Shielding Angle	0° = 90 90° = 90
Spacing Criterion	0° = 1.23 90° = 1.55
Luminous Opening in Feet	Length: 1.83 Width: 3.83 Height: 0.00

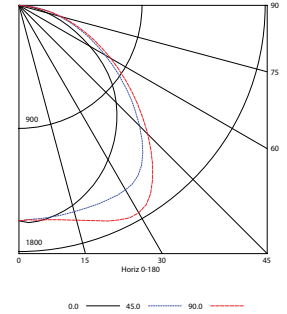
### AVG. LUMINANCE (Candela/Sq. M.)

	0.0	22.5	45.0	67.5	90.0
Average Luminance Angle	0	2417	2417	2417	2417
	30	2309	2451	2761	3022
	40	2229	2476	2821	3007
	45	2183	2415	2711	2867
	50	2119	2289	2559	2700
	55	2005	2126	2396	2533
	60	1843	1963	2239	2374
	65	1653	1802	2093	2228
	70	1464	1639	1949	2079
	75	1276	1478	1816	1940
	80	1061	1318	1707	1689
	85	811	1145	1198	811

### COEFFICIENTS OF UTILIZATION (%)

RCR	RC					80					70					50					0				
	RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10				
1	98	93	90	86	95	91	88	85	88	85	82	75													
2	89	82	76	71	87	80	74	70	77	72	68	63													
3	81	72	64	59	79	70	64	58	68	62	57	53													
4	74	64	56	50	72	62	55	49	60	54	49	45													
5	68	57	49	43	66	56	48	43	54	47	42	39													
6	63	51	43	37	61	50	43	37	49	42	37	34													
7	58	46	38	33	57	45	38	33	44	37	32	30													
8	54	42	34	29	53	41	34	29	40	34	29	27													
9	51	39	31	26	49	38	31	26	37	31	26	24													
10	47	36	28	24	46	35	28	24	34	28	24	22													

### INDOOR CANDELA PLOT



### ZONAL LUMEN SUMMARY

Zone	Lumens	% Lamp	% Fixt.
0-30	1314	24.1	26.9
0-40	2237	41.0	45.8
0-60	3951	72.5	81.0
0-90	4879	89.5	100.0
0-180	4879	89.5	100.0

### ENERGY DATA

Total Luminaire Efficiency	89.5%
Luminaire Efficacy Rating (LER)	86
ANSI/IESNA RP-1-2004 Compliance	Noncompliant
Comparative Yearly Lighting Energy Cost per 1000 Lumens	\$2.79 based on 3000 hrs. and \$0.08 per KWH

### LUMINAIRE DATA

Luminaire	SER24-228G-CP-EPU
	SER Serrano, Recessed Architectural 2 x 4 2-lamp with Contour center lens, linear prisms side lenses, and performance reflector
Ballast	ICN-2S28-N
Ballast Factor	1.00
Lamp	F28T5
Lumens per Lamp	2625
Watts	62
Mounting	Recessed
Shielding Angle	0° = 90 90° = 90
Spacing Criterion	0° = 1.22 90° = 1.51
Luminous Opening in Feet	Length: 3.83 Width: 1.83 Height: 0.00

### AVG. LUMINANCE (Candela/Sq. M.)

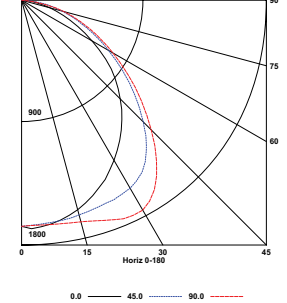
	0.0	22.5	45.0	67.5	90.0
Average Luminance Angle	0	2459	2459	2459	2459
	30	2321	2451	2727	2961
	40	2215	2442	2757	2949
	45	2146	2370	2648	2808
	50	2069	2236	2506	2645
	55	1944	2072	2348	2471
	60	1769	1898	2184	2297
	65	1599	1737	2039	2148
	70	1423	1581	1899	2003
	75	1234	1424	1774	1869
	80	1017	1247	1636	1592
	85	775	1093	1093	740

### COEFFICIENTS OF UTILIZATION (%)

RCR	RC					80					70					50					0				
	RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10				
1	100	95	92	88	97	93	90	87	90	87	84	77													
2	91	83	77	72	88	82	76	71	78	74	70	65													
3	83	73	66	60	81	72	65	60	69	63	59	55													
4	76	65	57	51	74	64	56	51	62	55	50	47													
5	70	58	50	44	68	57	49	44	55	48	43	40													
6	64	52	44	38	63	51	44	38	50	43	38	35													
7	60	47	39	34	58	47	39	34	45	38	33	31													
8	56	43	35	30	54	43	35	30	41	35	30	28													
9	52	40	32	27	51	39	32	27	38	31	27	25													
10	49	37	29	24	47	36	29	24	35	29	24	22													

Test 4540 Test Date 10/25/2011

### INDOOR CANDELA PLOT



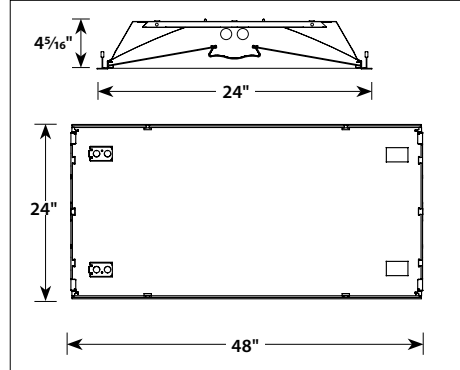
### ZONAL LUMEN SUMMARY

Zone	Lumens	% Lamp	% Fixt.
0-30	1316	25.1	27.4
0-40	2224	42.4	46.4
0-60	3899	74.3	81.3
0-90	4796	91.4	100.0
0-180	4796	91.4	100.0

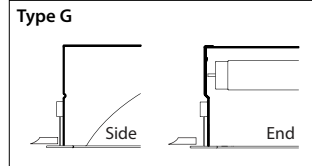
### ENERGY DATA

Total Luminaire Efficiency	91.4%
Luminaire Efficacy Rating (LER)	77
ANSI/IESNA RP-1-2004 Compliance	Noncompliant
Comparative Yearly Lighting Energy Cost per 1000 Lumens	\$3.12 based on 3000 hrs. and \$0.08 per KWH

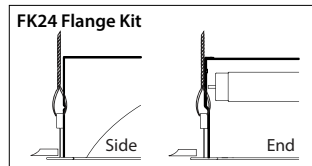
### DIMENSIONAL DATA



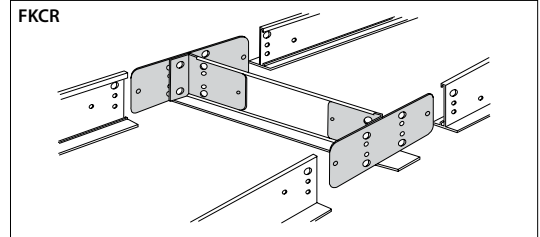
### CEILING COMPATIBILITY



For lay-in installation in exposed grid ceilings. Maximum tee widths of 1" and maximum tee heights of 2" allowed.



For hard ceiling applications, order FK24 flange kit. Flange kit wires directly into concealed ceiling opening for a clean, finished appearance.

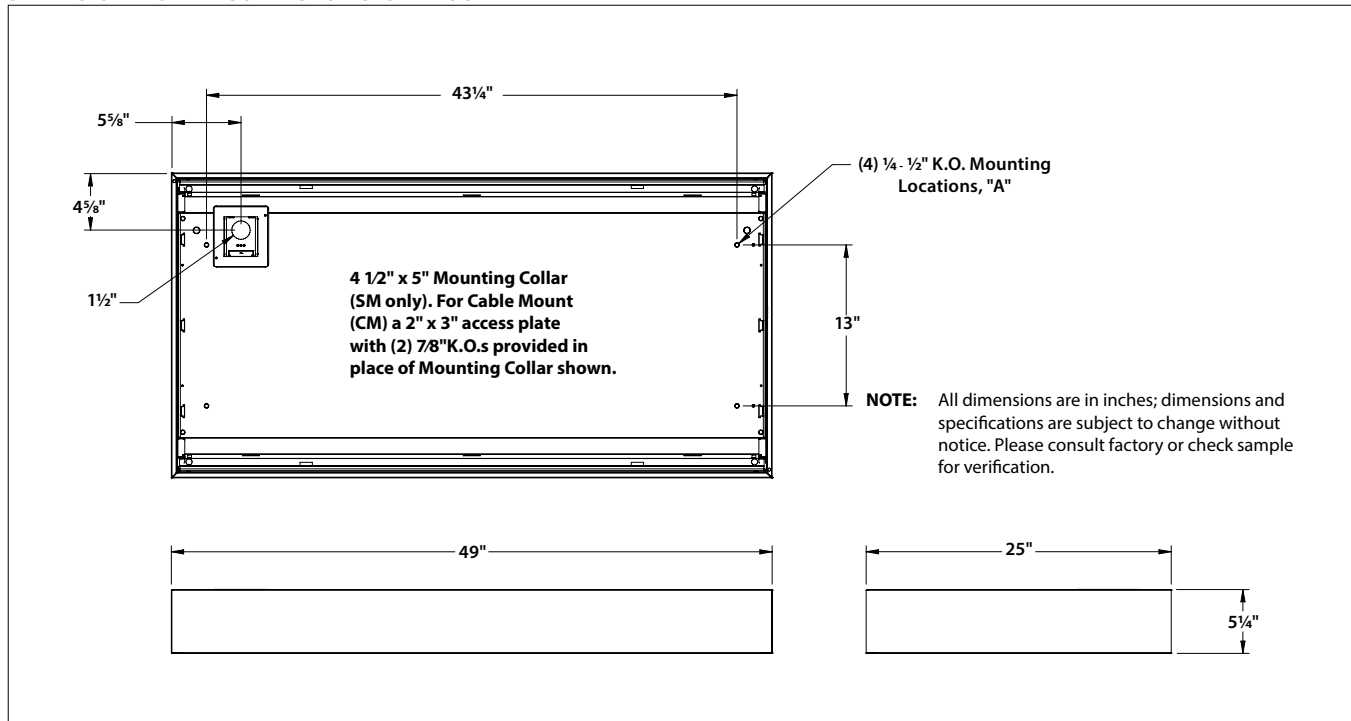


For flanged fixtures in row configurations, the FKCR adapter bracket kit is required in addition to the FK24 kit. Order one less FKCR than the total number of fixtures in row. (Example: Row of two, order (2) FK24 & (1) FKCR)

Row cut out dimensions using FK24s & FKCR adapters:  
Width 24", Length [48" x (# in row)] + 3/8".  
Example: (48" x 2) + 3/8" = 96 3/8"

**Flange kit cut out dimension for single unit only: 24 3/8" x 48 3/8"**

**DIMENSIONAL DATA - SURFACE OR CABLE MOUNT**



**SURFACE MOUNT**

Order SM ceiling type. Mounting collar required for surface mounting. (4) Mounting knock outs, 1/4" to 1/2" provided as shown, marked "A".

**CABLE MOUNT**

Order CM ceiling type. Access plate supplied for cable mounting or suspension. Use CM48Y2C3F-KIT 48" cable mount kit. Includes 3 wire feed cord. For other wiring needs, contact Hubbell representative. Mounting knock-outs, 1/4" to 1/2", provided as shown, marked "A".