FAIL-SAFE®

DESCRIPTION

The Fail-Safe CFS Series is designed for use in non-laminar air flow clean rooms. This surface mounted clean room luminaire has a hole-free design and is enclosed and gasketed to protect against infiltration of particles and airborne bacteria. The sealed housing and door frame allow relamping without contamination of the clean areas. These luminaires are U.L. listed and C.S.A. certified for wet locations and are manufactured in accordance with U.S.D.A., F.D.A., N.S.F. and Federal Standard 209E. 200 PSI hosedown rating is standard.

		Type	
Catalog #			
Project			
Comments		Date	
Prepared by			

SPECIFICATION FEATURES

Application
The CFS Series is suitable for use in I.E.S. Class 100, 1,000, 10,000 and 100,000 clean room environments. Applications include clean rooms, technical and biomedical labs, food processing/testing centers and pharmaceutical labs. Manufactured to IP65 Rating.

A ... Lens
Lens is clear extruded with prisms positioned inside fixture and smooth surface on the outside for easy cleaning.

B ... Fasteners
Flush mounted, stainless steel machine screws secure through captive cage nuts in housing and are evenly spaced to compress gasketing on all sides.

C ... Housing
Die-formed, 20 ga. CRS with tightly butted and seam welded, sealed end caps. Contains no holes that would allow air passage.

Housing - (Cont.)
Standard white high reflectance polyester powder coat finish. Gloss: 85%; Reflectance: 93%; Hardness: 2H; Salt Spray: 500 Hours.

D ... Lamps
(By Others)

E ... Lens Retention
Unique, Particulock(TM) lens retention system utilizes continuous, 18 ga. media clampdowns to sandwich gasketing and integrate lens and door frame for even environmental seal.

F ... Hinge
Two braided, stainless steel cables on one side of door provide hinging.

G ... Door
One piece, 18 ga. door with baked white polyester powder coat, fully gasketed, outside door with die-

Door - (Cont.)
formed and beveled edges eliminates seams which could entrap microscopic contaminants. Optional doors available.

H ... Ballast
Standard, Class P, CBM/ETL ballast.

I ... Gasket
White, closed cell, Flexiseal(TM) gasketing surrounds perimeter of lens to seal lens to door frame and around perimeter of door to seal door to housing.

J ... Access
A gasketed access plate inside the housing with two flattened, 7/8" diameter knockouts allows connection of vapor tight conduit fitting.

Labels
U.L. listed, C.S.A. certified, standard wet label. 200 PSI hosedown rating is standard.
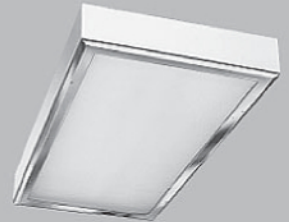
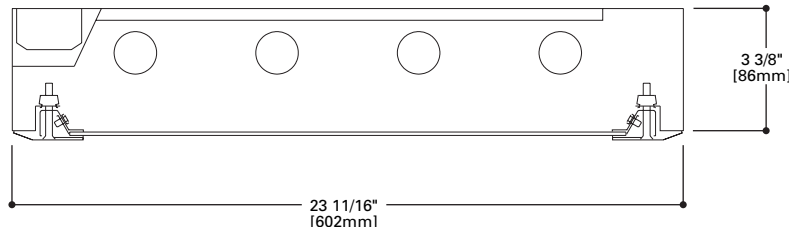## CFS24LP

28W - 216W

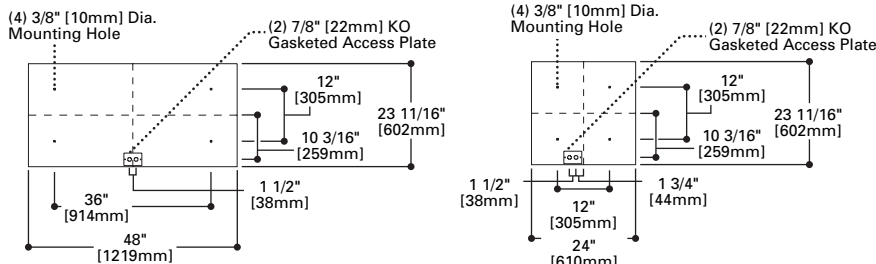**Fluorescent**

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2' X 2'
2' X 4'
FLUORESCENT SURFACE
ONE-PIECE DOOR
T5 LAMP TECHNOLOGY
T8 LAMP TECHNOLOGY

3 3/8" [86mm]

23 11/16" [602mm]

MOUNTING DIMENSIONS

(4) 3/8" [10mm] Dia. Mounting Hole
(2) 7/8" [22mm] KO Gasketed Access Plate
12" [305mm]
10 3/16" [259mm]
23 11/16" [602mm]
36" [914mm]
1 1/2" [38mm]
48" [1219mm]

(4) 3/8" [10mm] Dia. Mounting Hole
(2) 7/8" [22mm] KO Gasketed Access Plate
12" [305mm]
10 3/16" [259mm]
23 11/16" [602mm]
1 1/2" [38mm]
1 3/4" [44mm]
12" [305mm]
24" [610mm]

LAMP CONFIGURATIONS

9 1/2" [241mm]
5" [127mm] 5" [127mm] 5" [127mm]
9 1/2" [241mm]
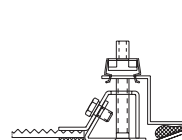7 1/2" [190mm] 7 1/2" [190mm]
4 3/4" [121mm] 4 3/4" [121mm]
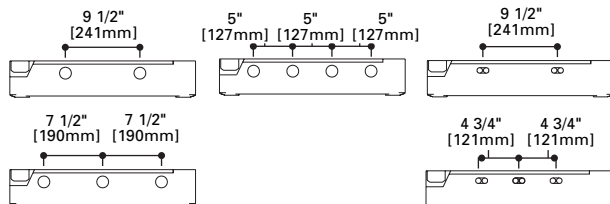
DOOR FRAME

Surface Type-One-piece Door
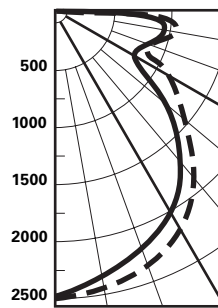

ENERGY DATA

Input Watts:

Electronic Ballasts & STD Lamps
(2) 40W Biaxial Fluorescents: 68W
(3) 40W Biaxial Fluorescents: 101W

Electronic Ballasts & STD Lamps
(2) 17W T8 Fluorescents: 34W
(3) 17W T8 Fluorescents: 47W
(4) 17W T8 Fluorescents: 61W
(2) 32W T8 Fluorescents: 58W
(3) 32W T8 Fluorescents: 85W
(4) 32W T8 Fluorescents: 112W

Electronic Ballasts & STD Lamps
(2) 14W T5 Fluorescents: 35W
(3) 14W T5 Fluorescents: 55W
(4) 14W T5 Fluorescents: 70W
(2) 28W T5 Fluorescents: 63W
(3) 28W T5 Fluorescents: 97W
(4) 28W T5 Fluorescents: 126W

For High Output Electronic Ballast Data Consult Cooper Lighting Representative.

Specifications and Dimensions subject to change without notice.
Consult your representative for additional options and finishes.

Candlepower Distribution

Test No. ITL36036
CFS-24-440-IK12
Lamp=(4) 40WT12
Lumens=8526
Spacing Criteria
⊥=1.4 II=1.2
Efficiency=67.7%

500
1000
1500
2000
2500

- - - ⊥
—— II

Average Luminance

Deg.	⊥	II
45	1595	1323
55	1154	980
65	822	779
75	871	857
85	1018	933

Zonal Lumen Summary

Zone	Lumens	%Lamp	%Luminaire
0-30	2728	21.7	32.0
0-40	4499	35.7	52.8
0-60	7316	58.1	85.8
0-90	8526	67.7	100.0
90-180	0	0.0	0.0
0-180	8526	67.7	100.0

Coefficient of Utilization

rc	80%				70%			50%		30%		10%		0%
rw	70	50	30	10	50	30	10	50	10	50	10	50	10	0
RCR														
0	81	81	81	81	79	79	79	75	75	72	72	69	69	68
1	75	72	69	67	70	68	66	67	64	65	62	62	60	59
2	69	64	60	57	63	59	56	61	55	58	54	56	52	51
3	64	58	53	49	57	52	48	55	48	53	47	51	46	45
4	59	52	46	42	51	46	42	49	42	48	41	46	40	39
5	54	46	41	37	46	40	36	44	36	43	36	42	35	34
6	50	42	36	32	41	36	32	40	32	39	31	38	31	30
7	46	38	32	28	37	32	28	36	28	35	28	34	28	26
8	43	34	28	25	33	28	24	33	24	32	24	31	24	23
9	39	30	25	21	30	25	21	29	21	29	21	28	21	20
10	37	28	22	19	27	22	19	27	19	26	19	25	19	17

rc=Ceiling reflectance, rw=Wall reflectance, RCR=Room cavity ratio
CU Data Based on 20% Effective Floor Cavity Reflectance.

ORDERING INFORMATION

SAMPLE NUMBER: CFS24LP-432-120-IP12-EB82

Product Family	Lamp Type	Voltage	Lens Type	Ballast	Door/Finish Options	Options

CFS24LP

CFS24LP=Fluorescent Surface Type

2′ Nominal Length
T5 Fluorescents
214 =(2) 14W Lamps
314 =(3) 14W Lamps
414 =(4) 14W Lamps
224 =(2) 24W HO Lamps
324 =(3) 24W HO Lamps
424 =(4) 24W HO Lamps

T8 Fluorescents
217 =(2) 14W Lamps
317 =(3) 14W Lamps
417 =(4) 14W Lamps
2U6T8 =(2) 32W Lamps
2U15/8 =(2) 31W Lamps
3U15/8 =(3) 31W Lamps

Biaxial Fluorescents
140BX =(1) 40W Lamp
240BX =(2) 40W Lamps
340BX =(3) 40W Lamps

4′ Nominal Length
T5 Fluorescents
128 =(1) 28W Lamps
228 =(2) 28W Lamps
328 =(3) 28W Lamps
428 =(4) 28W Lamps
154 =(1) 54W Lamps
254 =(2) 54W HO Lamps
354 =(3) 54W HO Lamps
454 =(4) 54W HO Lamps

T8 Fluorescents
132 =(1) 32W Lamps
232 =(2) 32W Lamps
332 =(3) 32W Lamps
432 =(4) 32W Lamps

120=120V
277=277V
347=347V

IK12=K-12 Prismatic Acrylic
IP12=K-12 Prismatic Polycarbonate
KSH25[1]=Bat Wing Distribution
93=Prismatic Tempered Glass

LEOC8=Energy Saving Ballast for use with T8 Lamp

Electronic Ballast[1]
EB81=(1) Ballast for use with T8 lamp
EB82=(2) Ballasts for use with T8 lamps
EBX1=(1) Ballast for use with Biaxial Lamp
EBX2=(2) Ballasts for use with Biaxial Lamps
EB51=(1) Ballast for use with T5 lamp
EB52=(2) Ballasts for use with T5 lamps

Blank=Standard, CRS with baked white finish
SSN=Stainless Steel Door/ Brushed 304 Finish
SSP=Stainless Steel Door/ Polyester Powder Coat Finish
ALP=Aluminum Door & Trim Polyester Powder Finish
ALX=Extruded Aluminum Door & Trim, Clear Anodized Finish[3]
ALXP=Extruded Aluminum Door & Trim Polyester Powder Finish[3]

EBP=Emergency Battery Pack
GLR=Fuse and Holder
RIF=Radio Frequency Interference Filter

Housing Options
SHN=Stainless Steel, Brushed 304 Finish
SHP=Stainless Steel, Polyester Powder Finish

ALH=Aluminum, Polyester Powder Finish

Notes:
For additional options please consult Cooper Llghting Representative. Specifications and Dimensions subject to change without notice. Electronic ballast may cause interference with other electronic devices. If interference occurs, move the device away from the product or plug/connect into a different circuit/outlet.

[1] The KSH25 provides improved visual performance and wide angle distribution. This lens has an integral prism pattern designed so that prisms face the lamp cavity and still supply superior photometrics. Highly recommended for all high tech manufacturing environments. [2] For specific electronic ballast, specify brand and catalog number. [3] Not rated for 200 PSI hose down.

COOPER Lighting
www.cooperlighting.com

Specifications and Dimensions subject to change without notice.
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