FAIL-SAFE®

DESCRIPTION

The CFS 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. An emergency battery pack is available as an option. UL/cUL listed for wet locations, and manufactured in accordance with U.S.D.A. and F.D.A. All fixtures have been tested and reported in compliance with Federal Standard 209E, Class 100 (M3.5). 200 PSI Rating is standard.

Catalog #		Type
Project		
Comments		Date
Prepared by		

SPECIFICATION FEATURES

Application
The CFS 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.

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

Housing
Die-formed, 20 ga. CRS with tightly butted and seam welded, sealed end caps. Contains no holes that would allow air passage. Standard white high reflectance polyester powder coat finish. Gloss: 85%; Reflectance: 93%; Hardness: 2H; Salt Spray: 500 Hours.

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

Door
One-piece, 18 ga., fully gasketed, outside door. with die-formed and beveled edges, eliminates seams that could entrap microscopic contaminants.

Gasket
White, closed cell, Flexiseal(TM) triple gasketing system surrounds perimeter of lens to seal lens to door frame and around perimeter of door to seal door to housing. Sealing from fixture to ceiling by others.

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

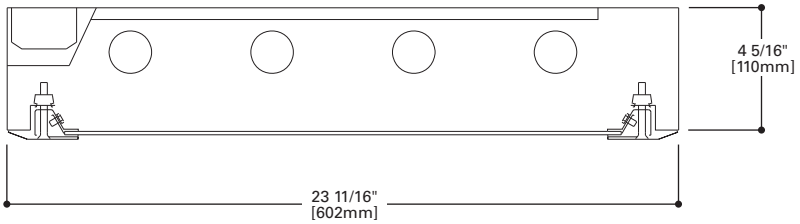
Lens
One-piece, clear Pattern 12 acrylic lens with internal prism pattern. Choice of prismatic acrylic, prismatic polycarbonate, Radialens or prismatic tempered glass on environmental side. See Lens Options.

Lamps
By others.

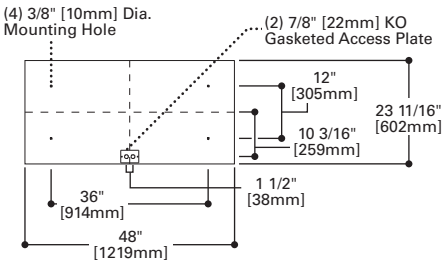
Lens Retention
Unique, Particulock(TM) lens retention system utilizes continuous, 18 ga. media clampdowns to sandwich gasketing and integrate lens and door frame for even environmental seal.

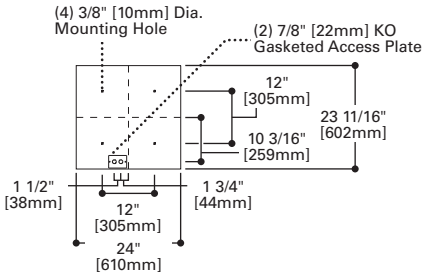
Ballast
Standard Class P, CBM/ETL ballast.

Labels
UL/cUL listed, standard wet label.

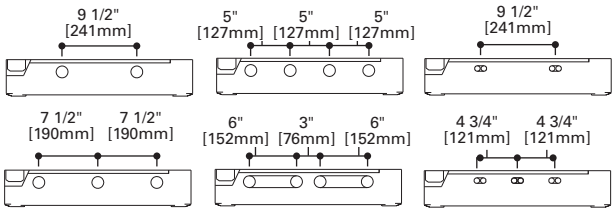


MOUNTING DIMENSIONS



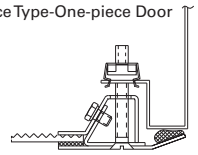


LAMP CONFIGURATIONS



DOOR FRAME

Surface Type-One-piece Door



CFS24

2x2
2x4
Cleanroom

SURFACE
Overlapping Door

ENERGY DATA

Input Watts:

STD Ballasts & STD Lamps
(2) 40W Biaxial Fluorescents: 82W
(3) 40W Biaxial Fluorescents: 127W

ES Ballasts & STD Lamps
(2) 17W T8 Fluorescents: 45W
(3) 17W T8 Fluorescents: 68W
(4) 17W T8 Fluorescents: 90W
(2) 32W T8 Fluorescents: 71W
(3) 32W T8 Fluorescents: 108W
(4) 32W T8 Fluorescents: 142W

Electronic Ballast Data
Consult Cooper Lighting Representative

ORDERING INFORMATION

SAMPLE NUMBER: CFS-24-432-120-IP12-EB82-SSP-EBP

Product Family	Width	Lamp Type	Voltage [1]	Lens Type	Ballast	Door/Finish Options	Options
CFS	**24**						

CFS=Fluorescent Surface Type

24=24″

2′ Fixture Length

T5 Fluorescent

214=(2) 14W Lamps
314=(3) 14W Lamps
414=(4) 14W Lamps
224=(2) 24W Lamps
324=(3) 24W Lamps
424=(4) 24W Lamps

T8 Fluorescent

217=(2) 17W Lamps
317=(3) 17W Lamps
417=(4) 17W Lamps
617=(6) 17W Lamps

Biaxial Fluorescent

240BX=(2) 40W Lamps
340BX=(3) 40W Lamps
440BX=(4) 40W Lamps

4′ Fixture Length

T5 Fluorescent

228=(2) 28W Lamps
328=(3) 28W Lamps
428=(4) 28W Lamps
254=(2) 54W Lamps
354=(3) 54W Lamps
454=(4) 54W Lamps

T8 Fluorescent

232=(2) 32W Lamps
332=(3) 32W Lamps
432=(4) 32W Lamps
632=(6) 32W Lamps

120= 120V
277=277V
347=347V
UNV=120V-277V

IK12=K-12 Prismatic Acrylic
IP12=K-12 Prismatic Polycarbonate
KSH25= Bat Wing Distribution [2]
93=Prismatic Tempered Glass

Electronic Ballast [3]

EB51= (1) Ballast for use with T5 Lamp
EB52=(2) Ballasts for use with T5 Lamp
EB81= (1) Ballast for use with T8 Lamp
EB82=(2) Ballasts for use with T8 Lamp
EBX1=EB1 Ballast for use with Biaxial Lamp
EBX2=(2) Ballast for use with Biaxial Lamp

ALP=Aluminum Door & Trim/Polyester powder finish
ALX=Extruded Alumium Door/Clear anodized finish [4]
ALXP=Extruded Aluminum Door & Trim, Polyester powder finish (Standard) [4]
CRP=CRS/Polyester powder finish (Standard)
SSN=Stainless Steel Door/Brushed finish
SSP=Stainless Steel Door, Polyester powder coat finish

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

Housing Options

SHN=Stainless Steel, Brushed finish
SHP=Stainless Steel, Polyester powder finish
ALH=Aluminum, Polyester powder finish

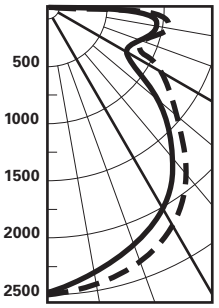
NOTES:

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 Products also available in non-US voltages and 50Hz for international markets. Consult your Cooper Lighting Representative for availability and ordering information.
2 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.
3 For specific electronic ballast, specify brand and catalog number.
4 Not rated for 200 PSI hose down.

PHOTOMETRICS

Candlepower Distribution



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

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.