

## DESCRIPTION

The CRF is designed to meet the toughest requirements in clean room and BSL applications. The enclosed and gasketed housing and one-piece, door protect against infiltration of airborne bacteria. Die-formed edges on door frame and the hole-free design of housing prevent air exchange between fixture and plenum, to allow re-lamping without contaminating the area. One-piece gaskets are included on lens, for easy replacement and on door edge. UL/cUL listed for wet locations. IP 65 rated and manufactured in accordance with ISO 14644, NSF and Federal Standard 209E in a certified ISO 9001:2000 facility.

<b>Catalog #</b>		<b>Type</b>
<b>Project</b>		
<b>Comments</b>		<b>Date</b>
<b>Prepared by</b>		

## SPECIFICATION FEATURES

### Application

The CRF is suitable for use in I.E.S. Class 100, 1,000, 10,000, and 100,000 clean room environments. Applications include clean rooms, Biomedical Safety Labs, food processing/testing centers and pharmaceutical labs.

### Fasteners

Flush mounted, stainless steel machine screws and molded washers ensure a proper seal; secured through captive cage nuts in the housing, and evenly spaced to compress gasketing on all sides.

### Housing

Die-Formed, 20 ga. CRS with tightly butted, 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 side of door provide hinging.

### Door

One-piece, 20 ga. door with baked white polyester powder coat. Fully gasketed, outside door with die-formed edges eliminates seams which could entrap microscopic contaminants. Other doors also available.

### Gasket

White, closed cell one piece silicone gasketing is standard around perimeter of lens, and around perimeter of door. Additional fixture-to-ceiling gasketing is available.

### Access

Gasketed access plate on top of housing with two flattened, 7/8" diameter knockouts allows connection of vapor tight conduit fitting. Optional, above-ceiling, top access door for luminaire

Maintenance is available and ideal for food processing and cleanroom applications.

### Lens

Lens is clear, 0.125" thick Pattern 12 acrylic with prisms positioned inside the fixture providing a smooth surface on the outside for easy cleaning.

### Lamps

T5, T8, Biaxial.

### Lens Retention

Unique, one-piece Particlock™ lens retention system utilizes continuous, media clampdowns to sandwich gasketing and integrate lens and door frame for equalized pressure on the lens.

### Ballast

Standard Class P, CBM/RTL ballast.

### Labels

UL/cUL listed, standard wet label, NSF.



**CRF**

1x2  
1x4  
Cleanroom

RECESSED FLANGE  
Overlapping Door

IP65 Rated

**TRI-SEAL™**



## ENERGY DATA

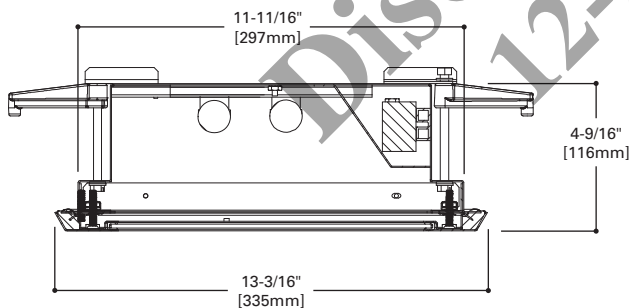
Input Watts:  
**STD Ballasts & STD Lamps**  
(2) 40W Biaxial Fluorescents: 82W

**T5 ES Ballast & STD Lamps**  
(2) 14WT5 Fluorescents: 38W  
(3) 14WT5 Fluorescents: 57W  
(2) 24WT5 Fluorescents: 52W  
(3) 24WT5 Fluorescents: 78W  
(2) 28WT5 Fluorescents: 68W  
(3) 28WT5 Fluorescents: 102W  
(2) 54WT5 Fluorescents: 106W  
(3) 54WT5 Fluorescents: 160W

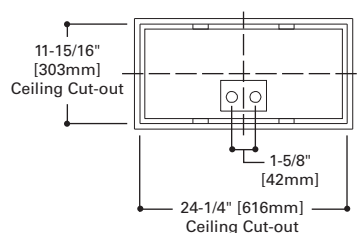
**T8 ES Ballast & STD Lamps**  
(2) 17WT8 Fluorescents: 36W  
(3) 17WT8 Fluorescents: 56W  
(2) 32WT8 Fluorescents: 71W  
(3) 32WT8 Fluorescents: 108W

## Electronic Ballast Data

Consult Cooper Lighting Solutions Representative



## DOOR FRAME



Overall Sizes			
Housing Type	A (in)	B (in)	C (in)
1' x 4'	48"	11-11/16"	30"
1' x 2'	24"	11-11/16"	15"

Ceiling Cutout Dimensions		
Ceiling Type	X (in)	Y (in)
1' x 4'	48-5/16"	12"
1' x 2'	24-5/16"	12"

**ORDERING INFORMATION**

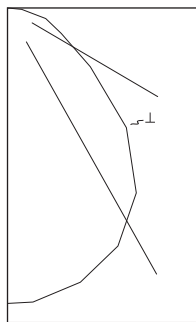
SAMPLE NUMBER: CRF-12-217-277-IK12-EB81-GLR

Product Family	Width	Lamp Type	Voltage	Lens Type	Ballast	Door /Finish Options	Options
<b>CRF</b>	<b>12</b>						
CRF=Clean Room Fluorescent Flange Type	12=12"		120=120V 277=277V UNV=120-277V	IK12=K-12 Prismatic Acrylic, 0.125" thick ID12=K-12 Prismatic Impact Resistant Acrylic IP12=K-12 Prismatic Polycarbonate KSH25=Bat Wing Distribution <sup>(1)</sup> 93=Prismatic Tempered Glass	<b>Electronic Ballast<sup>(2)</sup></b> EB51=(1) Ballast for use with T5 Lamp EB52=(2) Ballast for use with T5 Lamp EB81=(1) Ballast for use with T8 Lamp EB82=(2) Ballast for use with T8 Lamp EBX1=(1) Ballast for use with Biax Lamp EBX2=(2) Ballast for use with Biax Lamp	Blank=Standard, CRS with baked white finish SSN=Stainless Steel Door/Brushed finish SSP=Stainless Steel Door/Polyester Powder Coat Finish ALP=Aluminum Door/Polyester Powder Finish	EBP=Emergency Battery Pack GLR=Fuse and Holder RIF=Radio Frequency Interference Filter TAD=Top Access Door AM=Antimicrobial Finish <b>Housing Options</b> SHN=Stainless Steel, Brushed Finish SHP=Stainless Steel, Polyester Powder Finish ALH=Aluminum, Polyester Powder Finish GSK=Gasket Applied to Housing Flange to Seal Against Ceiling
<b>2' Fixture Length</b> T5HO Fluorescent 124T5=(1) 24W Lamp 224T5=(2) 24W Lamps 324T5=(3) 24W Lamps  T5 Fluorescent 114T5=(1) 14W Lamp 214T5=(2) 14W Lamps 314T5=(3) 14W Lamps  T8 Fluorescent 117=(1) 17W Lamp 217=(2) 17W Lamps 317=(3) 17W Lamps  U Lamps 1U 1 5/8=(1) 31W T8 Lamp  Biaxial Fluorescent 240BX=(2) 40W Lamps		<b>4' Fixture Length</b> T5HO Fluorescent 154T5=(1) 54W Lamp 254T5=(2) 54W Lamps 354T5=(3) 54W Lamps  T5 Fluorescent 128T5=(1) 28W Lamp 228T5=(2) 28W Lamps 328T5=(3) 28W Lamps  T8 Fluorescent 132=(1) 32W Lamp 232=(2) 32W Lamps 332=(3) 32W Lamps					

**NOTES:**  
For additional options please consult Cooper Lighting Solutions Representative. Specifications and Dimensions are 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.

<sup>(1)</sup> 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. <sup>(2)</sup> For specific electronic ballast, specify brand and catalog number.

**PHOTOMETRICS**



**CRF-12-232**  
Electronic Ballast  
F32T8 Lamps  
2850 Lumens

Spacing criterion:  
(||) 1.2 x mounting height,  
(⊥) 1.3 x mounting height  
Efficiency 65.9%  
Test Report:  
5602

**Coefficients of Utilization**

rc	Effective floor cavity reflectance																						
	20%																						
	80%				70%				50%				30%				10%				0%		
rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0		
RCR																							
0	78	78	78	78	77	77	77	77	73	73	73	70	70	70	67	67	67	66	66	66	66		
1	71	68	65	62	69	66	63	61	63	61	59	61	59	57	58	57	55	54	54	54	54		
2	65	59	54	50	63	58	53	50	55	52	48	53	50	47	51	49	46	45	45	45	45		
3	59	51	46	41	57	50	45	41	48	44	40	47	43	40	45	42	39	37	37	37	37		
4	54	45	39	35	52	45	39	35	43	38	34	41	37	34	40	36	33	32	32	32	32		
5	49	40	34	30	48	40	34	30	38	33	29	37	32	29	36	32	29	27	27	27	27		
6	45	36	30	26	44	35	30	25	34	29	25	33	28	25	32	28	25	23	23	23	23		
7	42	32	26	22	40	32	26	22	31	26	22	30	25	22	29	25	22	20	20	20	20		
8	39	29	24	20	38	29	23	20	28	23	19	27	23	19	26	22	19	18	18	18	18		
9	36	27	21	17	35	26	21	17	26	21	17	25	20	17	24	20	17	16	16	16	16		
10	33	24	19	16	33	24	19	15	23	19	15	23	18	15	22	18	15	14	14	14	14		

**Zonal Lumen Summary**

Zone	Lumens	%Lamp	%Fixture
0-30	867	15.2	23.1
0-40	1590	27.9	42.4
0-60	2970	52.1	79.1
0-90	3754	65.9	100.0
0-180	3754	65.9	100.0

**Luminance Data**

Angle in Deg	Average 0-Deg cd/sm	Average 45-Deg cd/sm	Average 90-Deg cd/sm
45	3061	2547	2658
55	2182	1750	1812
65	1631	1014	864
75	1590	713	584
85	1106	451	435

**Candela**

Angle	Along	45°	Across ⊥
0	1545	1545	1545
5	1547	1545	1544
15	1488	1491	1509
25	1376	1398	1422
35	1180	1220	1304
45	885	907	979
55	532	562	607
65	311	280	252
75	210	159	140
85	77	74	79
90	0	0	0