

CR Series

CR14™, CR22™, and CR24™ Architectural LED Troffer - Version B

Rev. Date: V8 10/22/2024

Product Description

The CR Series architectural LED troffers deliver up to 137 lumens per watt of exceptional indirect low glare, 90 CRI light from 2,030 to 5,070 lumens. This breakthrough performance is achieved by combining the high efficacy and high-quality light of Cree TrueWhite® Technology with a unique thermal management design. Its design makes the CR Series perfect for use in commercial new construction or renovated spaces. The CR Series product family is available with 0-10V dimming to 1%, step dimming to 50%, SmartCast® Technology or Lutron Athena Enabled dimming options. The CR Series product family is available in warm, neutral, cool, or daylight color temperatures with tunable white offered in luminaires with SmartCast wireless or Lutron Athena.

Performance Summary

Utilizes Cree TrueWhite® Technology

Room-Side Heat Sink

Efficacy: Up to 137 LPW

Initial Delivered Lumens: 2,030 - 5,070 lumens

Input Power: 16 - 38 watts

CRI: 90+

R9: > 60

CCT: 3000K, 3500K, 4000K, 5000K, Tunable White (SmartCast® Technology and Lutron Athena)

Input Voltage: 120-277 VAC or 347 VAC

Limited Warranty*: 10 years for luminaire and SmartCast controls; 5 years for Lutron Athena controls; up to 5 years for SmartCast® accessories; 1 year for luminaire accessories

Limited Warranty Emergency Back Up (EB) Battery: 1 Year on Battery Back Up. Test regularly in accordance with local codes

Controls: 0-10V Dimming, Step Dimming, SmartCast Wireless/ SmartCast Wireless with Adjustable CCT option and Lutron Athena/Lutron Athena Tunable White

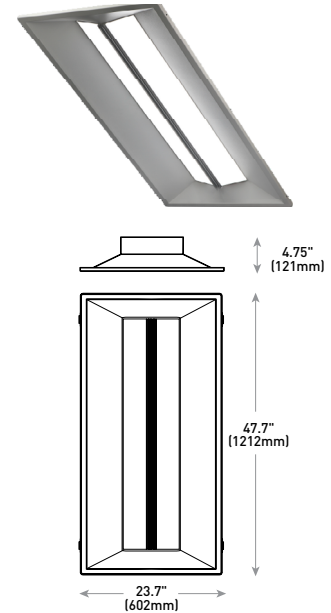
Mounting: Recessed*; surface or suspended w/surface mount kit accessory

Assembled in the USA by Cree Lighting from US and imported parts

* See <https://www.creelighting.com/resources/warranties/> for warranty terms

* Acceptable for use with standard 9/16 T-Bar or larger when installed per installation instructions. Consult factory for non-standard grid applications

CR24 w/10V1, AWRN, and S Controls



NOTE: Use of Expanded Junction Box will expand the depth to 6.7" (170mm) and Emergency Backup will expand the depth to 5.2" (131mm).

Refer to page 5 for additional sizes, controls, EB option and weights.

Luminaire	Weight
2x4	18.2 lbs. (8.3kg)

Ordering Information

Example: CR24-B-40L-940-UNV-10V1

CR		B						
Family	Size	Series	Lumen Package	CRI/CCT	Voltage	Controls	Options	
CR	14 1x4 24 2x4	B	22L 2,200 Lumens 31L 3,100 Lumens 40L 4,000 Lumens 50L 5,000 Lumens	930 90 CRI, 3000K 935 90 CRI, 3500K 940 90 CRI, 4000K 950 90 CRI, 5000K 9ACK 90 CRI, Adjustable Color 3000K-6500K in 100K increments - Available only with 32L [2x2] and 40L [1x4 & 2x4] lumen packages - Available only with SC1, AWN ^R , and AwnS controls	UNV Universal 120-277V 34 347V	10V1 0-10V Dimming to 1% S Step Dimming to 50% - Available only with 32L [2x2] or 40L [1x4 & 2x4] - Available only with 935 or 940 CRI/ CCTs - Available only with UNV voltage SC1 SmartCast Wireless Technology with 1% Dimming, Integral Motion and Ambient Sensors - Utilizes a multifunction sensor luminaire must be ordered with 9ACK CRI/CCT option with 32L or 40L lumen packages - Available only with UNV voltage	AWN ^R Lutron Athena Integral Fixture Control (RF only) with 1% Dimming - Tunable white requires 9ACK CRI/CCT (32L-40L lumen packages only) - Utilizes a DALI2 driver AWN ^S Lutron Athena Wireless Integral Fixture Control with 1% Dimming, Occupancy and Daylight Sensing - Tunable white requires 9ACK CRI/CCT (32L-40L lumen packages only) - Utilizes a DALI2 driver - Utilizes a multifunction sensor	6W5 Power Whip - 6', 5-Wire - Available only with UNV voltage - Not available with step dimming or EB option 6W6 Power Whip - 6', 6-Wire for use with luminaires w/EB option - Available only with UNV voltage - Not available with step dimming CP Chicago Plenum EB Emergency Backup - Available only with UNV voltage - Provides 10W and 90 minutes of emergency operation - GT and EB cannot be used together GT Generator Transfer Device - Available only with UNV voltage - Not available with step dimming - GT and EB cannot be used together - Not available with power whip options
	22 2x2		20L 2,000 Lumens 32L 3,200 Lumens					

* More information on Lutron controls can be found at lutron.com.

Product Specifications

SMARTCAST® TECHNOLOGY

SmartCast® Technology is the most intuitive and easiest to install intelligent light solution on the market. SmartCast® Technology delivers up to 70% energy savings at up to half the cost of other solutions. Luminaires combine best-in-class light with onboard sensors and intelligence to deliver a better light experience. Extreme energy productivity, code compliance and a better light experience without any extra design, installation or setup work.

CREE TRUEWHITE® TECHNOLOGY

A revolutionary way to generate high-quality white light, Cree TrueWhite® Technology is a patented approach that delivers an exclusive combination of 90+ CRI, beautiful light characteristics, and lifelong color consistency, all while maintaining high luminous efficacy – a true no compromise solution

CREE LIGHTING LED TECHNOLOGY

Cree Lighting's total systems approach to product development is a comprehensive engineering philosophy that combines the most advanced LED sources, driver technologies, optics and forms. The result is highly-reliable luminaire solutions for both indoor and outdoor applications that reduce energy use, extend lifetimes, and maximize illumination performance and quality.

ROOM-SIDE HEAT SINK

An innovative thermal management system designed to maximize cooling effectiveness by integrating a unique room-side heat sink into the diffusing lens. This breakthrough design creates a pleasing architectural aesthetic while conducting heat away from LEDs in a temperature-controlled environment. This enables the LEDs to consistently run cooler, providing significant boosts to lifetime, efficacy, and color consistency.

CONSTRUCTION & MATERIALS

- Durable 22-gauge steel housing with standard troffer access plate for electrical installation
- One-piece lower reflector finished with a textured high reflectance white polyester powder coating creates a comfortable visual transition from the lens to the ceiling plane
- Not for installation within 3" (76mm) of insulation
- Includes t-bar clips and holes for mounting support wires (by others)
- May be surface mounted or suspended w/surface mount kit accessory
- Individual luminaires may be mounted end to end for a continuous row of illumination
- Includes QR code on the back of the troffer housing which provides access to: Online installation instructions, Luminaire information (Part number, Serial number, Build date, and Warranty end date), and Warranty claim submission form
- Duplicate 1" and 2" QR code labels are included. 1" labels can be affixed next to fixtures, on site plans, or in maintenance records. 2" labels can be scanned from the ground when placed at an appropriate height

OPTICAL SYSTEM

- Unique combination of reflective and refractive optical components achieves a uniform, comfortable appearance while eliminating pixelation and color fringing
- Components work together to optimize distribution, balancing the delivery of high illuminance levels on horizontal surfaces with an ideal amount of light on walls and vertical surfaces. This increases the perception of spaciousness
- Diffusing lens integrated with upward-facing LED strip eliminates direct view of LEDs while lower reflector balances brightness of lens with the ceiling to create a low-glare high angle appearance


ELECTRICAL SYSTEM

- **Power Factor:** > 90% at full load (and 120-240V for 20L, 22L, 31L and 32L)
- **Input Power:** Stays constant over life
- **Input Voltage:** 120-277V or 347V, 60Hz
- **Operating Temperature Range:** 0°C - + 35°C (32°F - + 95°F)
- **Total Harmonic Distortion:** < 20% at full load
- **10V Source Current:** 0.2mA

CONTROLS

- Step dimming to 50%
- Continuous dimming to 1% with 0-10V DC control protocol. For use with Class 1 or Class 2 dimming systems
- Reference <https://cree.widen.net/s/nfqgmfchnk/0-10v-step-and-les-controls-options-spec-sheet-cr-flex-zr-troffers-ls-ur-stylus-ws-cdr-kbl> for recommended dimming controls and wiring diagrams

REGULATORY & VOLUNTARY QUALIFICATIONS

- cULus Listed (UL1598)
- Suitable for damp locations and plenum use
- Designed for indoor use only
- Type NON-IC in accordance with Article 410 of the NEC and UL 1598
- Requires minimum 90°C supply conductors
- Drivers and LEDs are UL Recognized in accordance with UL8750
- Meets NEMA C82.77 standards
- UL924 (EB Option); Maximum mounting height: 10.0'[3.0m]
- EB option meets CA Title 20 Appliance Regulations
- CCEA approved when ordered with CP option
- RoHS compliant. Consult factory for additional details
- Meets FCC Part 15, Subpart B, Class A limits for conducted and radiated emissions
- Assembled in the USA by Cree Lighting from US and imported parts
- Some configurations meet requirements of BAA and/or BABA. Consult factory when needed for a project: www.creelighting.com/BAA-BABA
- DLC Premium qualified versions available. Exceptions apply for step dimming and CR24 w/22L lumen package. CR22 w/20L and CR14 w/22L lumen packages are qualified from 120-240V only. Please refer to <https://gpl.designlights.org/solid-state-lighting> for most current information
-  **CA RESIDENTS WARNING:** Cancer and Reproductive Harm – www.p65warnings.ca.gov

SmartCast® Technology

INTEGRAL MOTION SENSOR

- Passive infrared (PIR)
- **Coverage area:** Please refer to the PIR motion sensor coverage table
- Not intended to be mounted higher than 20 ft.
- **Operation:**
 - Grouped with a wall control: Luminaire will operate in vacancy mode (manual-on/auto-off)
 - Not grouped with a wall control: Luminaire will operate in occupancy mode (auto-on/auto-off)
- Luminaires operate at full intensity until OneButton™ Setup is initiated by the Cree Lighting Configuration Tool

AMBIENT LIGHT SENSOR

- Sensor response matches response of human eye
- Not intended to be mounted higher than 20 ft. (6.1m)
- Luminaires operate at full intensity until OneButton™ Setup is initiated by the Cree Lighting Configuration Tool
- Daylight harvesting calibration performed automatically during OneButton™ Setup

INTEGRAL WIRELESS COMMUNICATION

- 2.4GHz wireless mesh technology with AES 128-bit encryption
- Self assigns to quietest channel during OneButton™ Setup
- **Range:**
 - 30 ft. (9.1m) in typical commercial applications
 - 300 ft. (91.4m) open air without obstructions
- **Network:** 250 devices max.
- **Space:** 100 devices max. per group
- FCC and IC certifications

LUMINAIRE

- Energy metering with 4% accuracy
- Luminaires operate at full intensity until OneButton™ Setup is initiated by the Cree Lighting Configuration Tool
- 10 year power fail memory of settings
- **NOTE:** SmartCast luminaires must be installed on unswitched AC power. Constant power is required to maintain all luminaires on the SmartCast network. If wall control or manual dimming is required, a SmartCast wall control dimmer must be used for manual on, off, and dimming.

DEPLOYMENT

- Please refer to the SmartCast® Deployment Guide at <https://cree.widen.net/s/mvxtfd2pcz/smartcast-r-wireless-deployment-guide>

CR Version B Troffer Series Ambient Adjusted Lumen Maintenance¹					
Ambient	Initial LMF	25K hr Reported² LMF	50K hr Reported² LMF	75K hr Estimated³ LMF	100K hr Estimated³ LMF
0°C (41°F)	1.04	1.00	0.99	0.97	0.95
5°C (41°F)	1.03	1.00	0.98	0.96	0.94
10°C (50°F)	1.02	0.99	0.97	0.95	0.93
15°C (59°F)	1.02	0.98	0.96	0.95	0.93
20°C (68°F)	1.01	0.98	0.96	0.94	0.92
25°C (77°F)	1.00	0.97	0.95	0.93	0.91
30°C (86°F)	0.99	0.96	0.94	0.93	0.91
35°C (95°F)	0.99	0.95	0.93	0.91	0.90

¹ Lumen maintenance values at 25°C (77°F) are calculated per IES TM-21 based on IES LM-80 report data for the LED package and in-situ luminaire testing. Luminaire ambient temperature factors (LATF) have been applied to all lumen maintenance factors.

² In accordance with IES TM-21, Reported values represent interpolated values based on time durations that are up to 6x the tested duration in the IES LM-80 report for the LED.

³ Estimated values are calculated and represent time durations that exceed the 6x test duration of the LED.

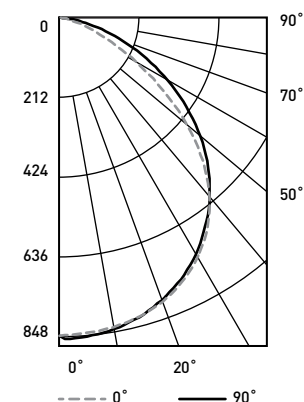
Delivered Lumens & Electrical Data*														
Family/ Size	Lumen Package	Initial Delivered Lumens	Efficacy	System Watts 120-347V	Total Current (A)					EB/GT Wattage	EB/GT Current (A)			
					120V	208V	240V	277V	347V		120V	208V	240V	277V
CR14/CR24	22L	2,250	132	17	0.16	0.09	0.08	0.07	0.06	20	0.18	0.10	0.09	0.08
	31L	3,140	137	23	0.22	0.12	0.11	0.09	0.08	26	0.24	0.14	0.12	0.10
	40L	4,040	135	30	0.28	0.16	0.14	0.12	0.10	33	0.31	0.18	0.15	0.13
	50L	5,070	133	38	0.33	0.20	0.17	0.15	0.12	41	0.35	0.21	0.18	0.16
CR22	20L	2,030	127	16	0.16	0.09	0.08	0.07	0.06	19	0.18	0.11	0.09	0.08
	32L	3,190	128	25	0.23	0.13	0.11	0.10	0.08	28	0.25	0.15	0.13	0.11

* Lumen and electrical data at 25 °C (77 °F). Actual wattage may differ by +/- 10% when operating between 120-277V or 347V +/- 10%.

Photometry

CR14-B-22L-930-UNV-10V1 BASED ON RESTL TEST REPORT #: PL17011-001A

Luminaire photometry has been conducted in accordance with IES LM-79. IES LM-79 specifies the entire luminaire as the source resulting in a luminaire efficiency of 100%.



Coefficients Of Utilization – Zonal Cavity Method				
RC %:	80			
RW %:	70	50	30	10
RCR: 0	119	119	119	119
1	110	106	102	98
2	101	93	87	82
3	92	82	75	69
4	85	73	65	59
5	78	66	57	51
6	72	59	51	45
7	67	54	45	40
8	62	49	41	35
9	58	45	37	32
10	55	42	34	29

Effective Floor Cavity Reflectance: 20%

Reference <http://creelighting.com/products/indoor/troffers/cr-series> for detailed photometric data

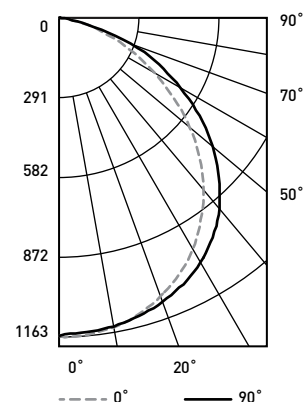
Average Luminance Table (cd/m²)			
Vertical Angle	Horizontal Angle		
	0°	45°	90°
45°	2,170	2,176	2,099
55°	1,978	1,887	1,620
65°	1,663	1,343	1,005
75°	1,240	715	552
85°	651	369	428

Zonal Lumen Summary			
Zone	Lumens	% Lamp	Luminaire
0-30	661	N/A	30.4%
0-40	1,086	N/A	49.9%
0-60	1,858	N/A	85.5%
0-90	2,174	N/A	100%
0-180	2,174	N/A	100%

Photometry

CR22-B-32L-930-UNV-10V1 BASED ON RESTL TEST REPORT #: PL16975-001B

Luminaire photometry has been conducted in accordance with IES LM-79. IES LM-79 specifies the entire luminaire as the source resulting in a luminaire efficiency of 100%.



Coefficients Of Utilization – Zonal Cavity Method				
RC %:	80			
RW %:	70	50	30	10
RCR: 0	119	119	119	119
1	110	105	101	98
2	100	92	86	81
3	92	81	74	67
4	84	72	64	57
5	77	65	56	49
6	71	58	50	43
7	66	53	44	38
8	62	48	40	34
9	58	44	36	31
10	54	41	33	28

Effective Floor Cavity Reflectance: 20%

Reference <http://creelighting.com/products/indoor/troffers/cr-series> for detailed photometric data

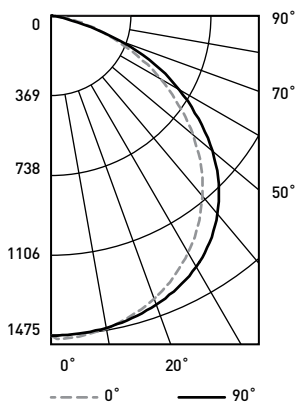
Average Luminance Table (cd/m²)			
Vertical Angle	Horizontal Angle		
	0°	45°	90°
45°	2,810	3,053	3,195
55°	2,441	2,829	2,986
65°	1,929	2,360	2,604
75°	1,253	1,663	1,420
85°	286	164	136

Zonal Lumen Summary			
Zone	Lumens	% Lamp	Luminaire
0-30	910	N/A	29.0%
0-40	1,497	N/A	47.7%
0-60	2,616	N/A	83.4%
0-90	3,138	N/A	100%
0-180	3,138	N/A	100%

Photometry

CR24-B-40L-930-UNV-10V1 BASED ON RESTL TEST REPORT #: PL16995-001B

Luminaire photometry has been conducted in accordance with IES LM-79. IES LM-79 specifies the entire luminaire as the source resulting in a luminaire efficiency of 100%.



Coefficients Of Utilization – Zonal Cavity Method				
RC %:	80			
RW %:	70	50	30	10
RCR: 0	119	119	119	119
1	110	105	101	97
2	100	92	85	80
3	91	81	73	67
4	83	72	63	56
5	77	64	55	49
6	71	58	49	42
7	66	52	43	37
8	61	47	39	33
9	57	44	35	30
10	53	40	32	27

Effective Floor Cavity Reflectance: 20%

Reference <http://creelighting.com/products/indoor/troffers/cr-series> for detailed photometric data

Average Luminance Table (cd/m ²)				
Vertical Angle	Horizontal Angle			
	0°	45°	90°	
	45°	1,869	1,999	2,090
	55°	1,696	1,879	1,957
	65°	1,405	1,639	1,687
	75°	973	1,165	824
	85°	300	73	79

Zonal Lumen Summary			
Zone	Lumens	% Lamp	Luminaire
0-30	1,158	N/A	27.8%
0-40	1,920	N/A	46.1%
0-60	3,422	N/A	82.2%
0-90	4,162	N/A	100%
0-180	4,162	N/A	100%

Application Reference

1x4 & 2x4 Application Reference

Open Space						
Spacing	Lumen Package	Initial Delivered Lumens	Wattage	LPW	w/ft²	Average fc
8 x 8	22L	2,250	17	132	0.26	32
	31L	3,140	23	137	0.35	45
	40L	4,040	30	135	0.45	58
	50L	5,070	38	133	0.57	73
8 x 10	22L	2,250	17	132	0.21	27
	31L	3,140	23	137	0.29	37
	40L	4,040	30	135	0.38	48
	50L	5,070	38	133	0.48	60
10 x 10	22L	2,250	17	132	0.17	21
	31L	3,140	23	137	0.23	30
	40L	4,040	30	135	0.30	39
	50L	5,070	38	133	0.38	48
10 x 12	22L	2,250	17	132	0.14	17
	31L	3,140	23	137	0.18	24
	40L	4,040	30	135	0.24	31
	50L	5,070	38	133	0.30	39

10' ceiling: 80/50/20 reflectances; 2.5' workplane, open room. LLF: 1.0 Initial

Open Space: 50' x 40' x 10

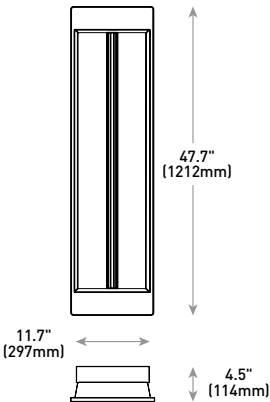
2x2 Application Reference

Open Space						
Spacing	Lumen Package	Initial Delivered Lumens	Wattage	LPW	w/ft²	Average fc
8 x 8	20L	2,030	16	127	0.24	29
	32L	3,190	25	128	0.38	46
8 x 10	20L	2,030	16	127	0.20	24
	32L	3,190	25	128	0.31	38
10 x 10	20L	2,030	16	127	0.16	19
	32L	3,190	25	128	0.25	31
10 x 12	20L	2,030	16	127	0.13	16
	32L	3,190	25	128	0.20	25

10' ceiling: 80/50/20 reflectances; 2.5' workplane, open room. LLF: 1.0 Initial

Open Space: 50' x 40' x 10

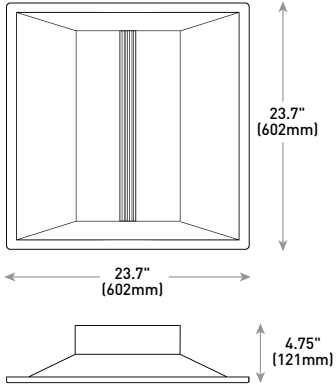
CR14 w/10V1, AWRN,
and S Controls



NOTE: Use of Expanded Junction Box will expand the depth to 6.5" (164mm) and Emergency Backup will expand the depth to 4.9" (126mm).

Luminaire	Weight
1x4	12.4 lbs. (5.6kg)

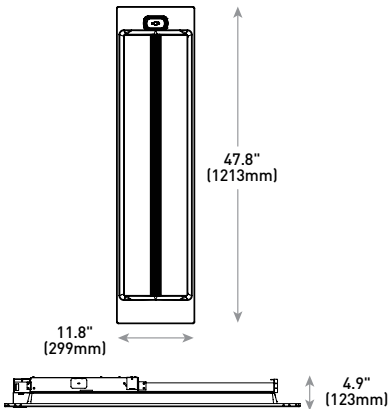
CR22 w/10V1, AWRN,
and S Controls



NOTE: Use of Expanded Junction Box will expand the depth to 6.7" (170mm) and Emergency Backup will expand the depth to 5.2" (131mm).

Luminaire	Weight
2x2	8.2 lbs. (3.7kg)

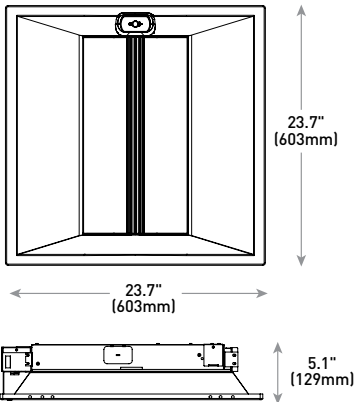
CR14 w/SC1 and AWRN Controls



NOTE: Use of Expanded Junction Box will expand the depth to 6.5" (164mm) and Emergency Backup will expand the depth to 4.9" (126mm) and the above ceiling width to 12.3" (311mm).

Luminaire	Weight
1x4	15.4 lbs. (7.0kg)

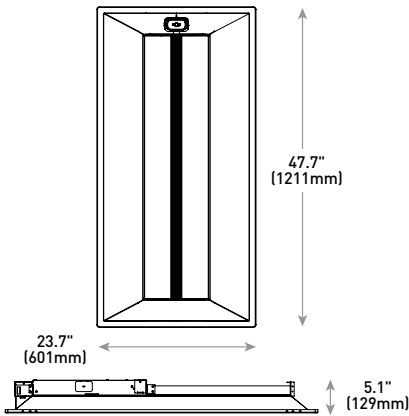
CR22 w/SC1 and
AWRN Controls



NOTE: Use of Expanded Junction Box will expand the depth to 6.7" (170mm) and Emergency Backup will expand the depth to 5.2" (131mm).

Luminaire	Weight
2x2	11.2 lbs. (5.1kg)

CR24 w/SC1 and
AWRN Control



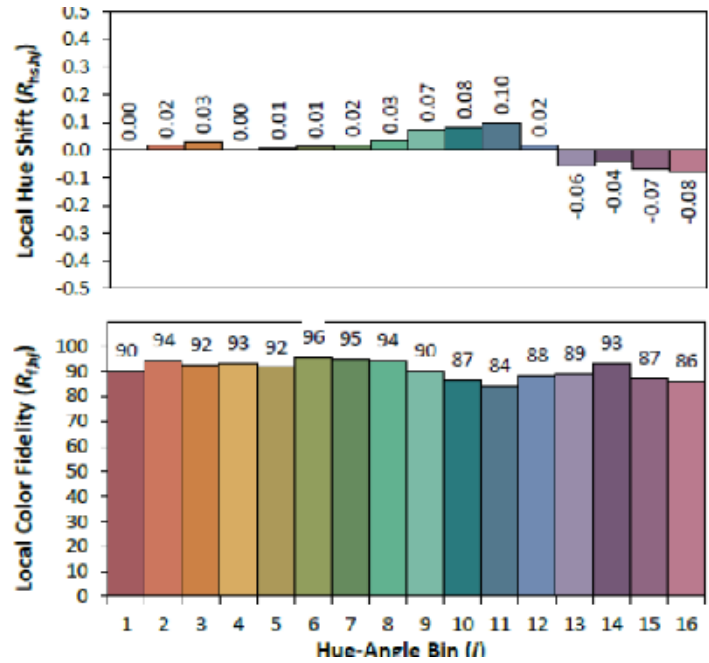
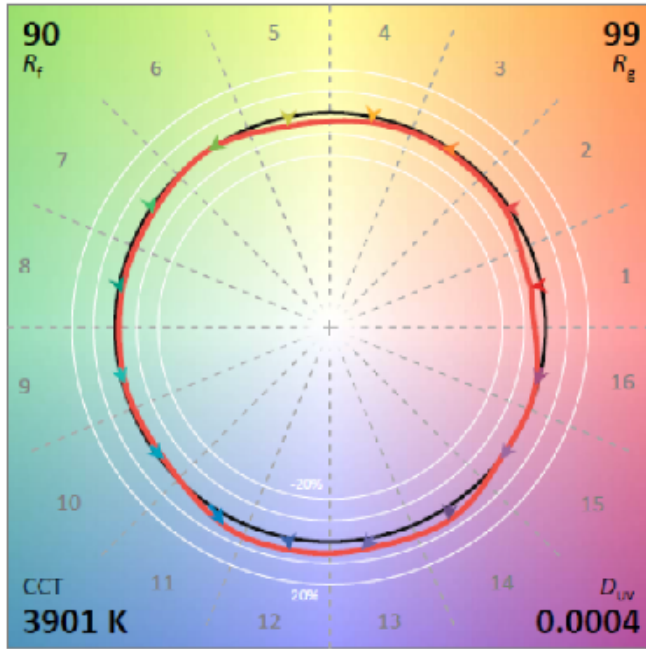
NOTE: Use of Expanded Junction Box will expand the depth to 6.7" (170mm) and Emergency Backup will expand the depth to 5.2" (131mm).

Luminaire	Weight
2x4	21.2 lbs. (9.6kg)

ANSI/IES TM-30-18

4000K, 90 CRI

Based on RESTL TEST #: PL16997-001



Accessories

Field-Installed			
Adjustable Power Feeds with Cable Support Canopy Kits AC5-18/4-72-PD8-JB - Requires use of surface mount kit Adjustable Cable Support Kits AC5-72-PD8-JB - Requires use of surface mount kit T-Bar Clips for Hunter Douglas® Ceilings CR-HDC - Makes the CR troffers compatible with - Armstrong XL, USG DX 1-1/2" or USG 1-5/8" T-grids - Allows fixture to hang 1-1/2" below T-grid to be flush with ceiling tiles - One required per luminaire - Includes 4 clips and 8 screws Drywall Grid Adaptor DGA14-WHT (1x4) DGA22-WHT (2x2) DGA24-WHT (2x4)	Junction Box (5-Pack) EJBCR-5PK - Expanded size junction box for through wiring - Not compatible with surface mount kits 6' Flexible Power Whip PW-18/4-06-9T/SS - For use in step dimming or non-dimming applications only Surface Mount Kit SMK-CR14 (1x4) SMK-CR22 (2x2) SMK-CR24 (2x4) - Not compatible with EJBCR-5PK - Not for use with AWRN control - SMK-CR14 is not compatible with EB option	SmartCast® Technology Configuration Tool CCT-CWC-1 - One required per project when SC1 control is selected SmartCast® Technology Face Plates CFP-1-WH - Matching face plate, 1-gang, white CFP-2-WH - Matching face plate, 2-gang, white SmartCast® Technology Wireless Dimmer CSC-CWD-UNVN-WH (neutral wire required) CSC-CWD-UNV-WH (no neutral required) SmartCast® Technology Adjustable CCT Wireless Dimmer CSC-CCD-UNVN-WH (neutral wire required) CSC-CCD-UNV-WH (no neutral required) - For use only with luminaires with SmartCast controls and 9ACK - 3000K-6500K adjustable CCT SmartCast® Technology Wireless Switch CSC-CWS-UNVN-WH (neutral wire required) CSC-CWS-UNV-WH (no neutral required) SmartCast® 5-Button Wireless Scene Controller CSC-SC-A-5B-UNVN-WH (w/o text) CSC-SC-A-5S-UNVN-WH (w/scene text) CSC-SC-A-5C-UNVN-WH (w/CCT text) - Available only with 9ACK CSC-SC-A-5X-UNVN-WH (w/custom text)	SmartCast® Technology Wireless Plug Load Controller CPLC-JB-CWC SmartCast® 10V Zone Controller CSC-ZC-10V-CWC - Intelligent sensing and control of 0-10V luminaires

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