Project		**Catalog #**		**Type**	
Prepared by		**Notes**		**Date**	



Metalux

Cruze ST 22CZ2

2' x 2' LED Specification Grade Troffer

Typical Applications

Office • Education • Healthcare • Hospitality • Retail

Interactive Menu

- Order Information page 2
- Photometric Data page 3
- Connected Systems page 5
- VividTune™ Color Tuning Solutions page 6
- Product Warranty

Product Certification

Product Features

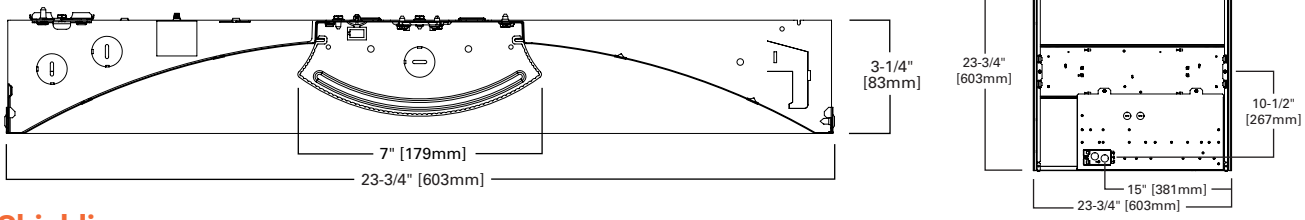
Connected Systems · Bluetooth · damp location · VividTune

LINEAR DISCONNECT — Safe and convenient means of disconnecting power · MWS MODULAR WIRING SYSTEM CLICK HERE · Rapid Response CLICK HERE

Top Product Features

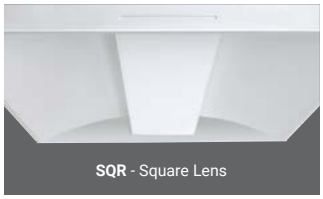
- Latch-less design provides clean architectural look
- VividTune CCT tuning options from 3000K-5000K or 2700K-6500K
- Designers delight - ribbed, smooth and round perforated lens options
- High performance efficacy up to 151 lm/W
- Integrated sensor systems - occupancy, daylight and IoT connectivity
- Options to meet Buy American and other domestic preference requirements

Dimensional and Mounting Details



Shielding

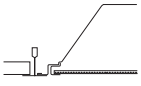




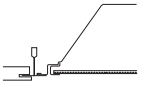
See ordering information for more shielding options.

Ceiling Compatibility

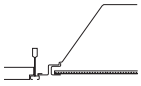
G Grid/Lay-in Standard



G Concealed T



G Slot Grid



Ceiling Type	Trim Type
Exposed Grid	Standard
Concealed T	Standard
Slot Grid	Standard
Flange	*

*See Drywall Frame Kit Accessory in Ordering Information Section

Order Information

SAMPLE ORDER NUMBER: **22CZ2-34HE-UNV-L835-CD1-U**

Domestic Preferences

Domestic Preferences (1)
[Blank]=Standard **BAA**=Buy American Act **TAA**=Trade Agreements Act

Notes

(1) Only product configurations with these designated prefixes are built to be compliant with the Buy American Act of 1933 (BAA) or Trade Agreements Act of 1979 (TAA), respectively. Please refer to DOMESTIC PREFERENCES website for more information. Components shipped separately may be separately analyzed under domestic preference requirements.

Rating

Rating
[Blank]=Standard **ATW-SW4**=Chicago Rated

Series

Series
22CZ2=2x2 Cruze ST

Air

Air
[Blank]=Standard **A**=Air (Vented) (2)

Notes

(2) Air version is intended for air return through plenum. See air return data table for air flow volumes. Air option not available with ATW-SW4.

Lumen Output

Lumen Level		Efficacy
20=2000 Lumens (3) **24**=2400 Lumens (3) **29**=2900 Lumens (8) **32**=3200 Lumens (7) **34**=3400 Lumens (8) **39**=3900 Lumens **44**=4400 Lumens **50**=5000 Lumens (6) **55**=5500 Lumens (6) **60**=6000 Lumens (6) **65**=6500 Lumens (6)	**70**=7000 Lumens (6) **75**=7500 Lumens (6) **80**=8000 Lumens (6) **85**=8500 Lumens (6) **90**=9000 Lumens (6) **95**=9500 Lumens (6) **100**=10000 Lumens (6) **110**=11000 Lumens (6)	**[Blank]**=Standard Efficacy (4), (5) **HE**=High Efficacy (5) **VHE**=Very High Efficacy (6)

Notes

(3) Not available with WN driver. (4) White tuning not available with this model. (5) Available up to 4400 lumens. (6) Currently only available with CD driver option. (7) Only available in Standard Efficacy. (8) Not available in Standard Efficacy.

Shielding

Shielding
[Blank]=Ribbed Frosted Acrylic Lens (standard) **S**=Smooth Frosted Acrylic Lens **RDP**=Smooth Lens with Round Pattern Insert **HRP**=High-Efficiency Round Perf Inlay **SQR**=Square Lens

Voltage

Voltage (9)
UNV=Universal Voltage 120-277 **347V**=347 Volt **48V**=48 Volt Low-voltage (Class 2) (C)

Notes

(9) Products also available in non-US voltages and frequencies for international markets. (C) Consult WaveLinx Low-Voltage or DLVP system pages for additional details and compatibility.

Options

Options
GL=Single Element Fuse **GM**=Double Element Fuse

Emergency Options

Emergency Options
[Blank]=No emergency **EL7W**=7-watt 120V-277V emergency battery pack (10) **EL14W**=14-watt 120V-277V emergency battery pack (10) **EL10WSD**=Bodine 10W emergency battery pack with self diagnostic installed (10), (12) **ELV7W**=Low-voltage system, 7-watt emergency battery pack (C) **ELV14W**=Low-voltage system, 14-watt emergency battery pack (C) **ETRD**=Iota Emergency Transfer Relay with dimming control (11) **RRU**=LVS Controls Emergency Transfer Relay with dimming control (11) **UEL7W**=UL924 Listed luminaire, 7-watt, 120V-277V emergency battery pack (10) **UEL14W**=UL924 Listed luminaire, 14-watt 120V-277V emergency battery pack (10) **UEL10WSD**=Bodine 10W emergency battery pack with self diagnostic installed (10), (13) **UETRD**=UL924 Listed luminaire, Iota Emergency Transfer Relay with dimming control (11) **URRU**=UL924 Listed luminaire, LVS Controls Emergency Transfer Relay with dimming control (11)

Notes

(10) Factory installed with integral test switch/indicator/laser test. For approximate delivered lumens multiply the lumens per watt of the desired fixture by the wattage of the emergency battery pack (100 lm/W x 7=700 lumens). IES-format photometry for luminaire under emergency operation available. Battery option increases total height by 1 inch. (11) Used to bypass local control during outage. Must be used in conjunction with UL 1008 device (provided by others). Devices are universal voltage (UNV). 347 not available. (12) EL10WSD not available with 347V. (13) UEL10WSD not available with 347V. (C) Consult WaveLinx Low-Voltage or DLVP system pages for additional details and compatibility.

CRI/CCT

CRI/CCT
L830=80CRI, 3000K **L835**=80CRI, 3500K **L840**=80CRI, 4000K **L850**=80CRI, 5000K **L930**=90CRI, 3000K **L935**=90CRI, 3500K **L940**=90CRI, 4000K **L950**=90CRI, 5000K **L83050**=80CRI 3000K-5000K White Tuning (14) **L93050**=90CRI 3000K-5000K White Tuning (14) **L82765**=80CRI 2700K-6500K White Tuning (14) **L92765**=90CRI 2700K-6500K White Tuning (14)

Notes

(14) White tuning provides correlated color temperatures (CCT) between 3000K (warm) to 5000K (cool) or 2700K (warm) to 6500K (cool). Must be used in conjunction with W2A driver only. Must be used with two (2) 10V dimming control channels, 1 color, 1 intensity. May be combined with Wavelinx sensor control systems only.

Flex

Flex
[Blank]=No Flex **A3/8-4/18GDIM**=3/8" Flex with 0-10V Dimming Leads **A3/8-2/18G**=3/8" Flex with line and common **A3/8-5/18GDIM**=Flex with 0-10V Dimming leads and Blue for alternate wiring. See below for details.

Flexible Metal Conduit Options

Flex options available for 0-10V dimming control, DALI dimming control, emergency and night light functions. 72-inch factory-installed and pre-wired to driver, fitted to luminaire housing access plate with 90° enclosed FMC connector. Not all options may be combined and installation ratings vary by type. See online configurator for all flex options.

A3/8-4/18GDIM series notes: Factory installed dimming option 3/8" flexible metal conduit with 2-#18 power and ground wires and 2-#18 UL-listed jacketed 0-10V +/- control wires. Meets UL 66, 83, 1479, 1569, 1581, 2556. NEC® 250.118, 300.22(C), 392, 396, 330, 501, 502, 503, 530, 504, 505, 518, 520, 530, 645, 72; Federal Specification A-A-59544 (formerly J-C-30B); all applicable OSHA and HUD Requirements. UL Classified 1-, 2-, and 3-hour through penetration with applicable fire stop product (not included). May be surface mounted, fished and/or embedded in plaster. Cable tray and approved raceway rated, install per NEC®; Environmental Air-Handling Space Installation per NEC® 300.22(C).

Driver Type

Driver Type
CD=0-10V Driver (10%-100% Dimming) **HCD**=0-10V Driver (1%-100% Dimming) **5LTD**=DALI Driver (5%-100% Dimming) **5LTHD**=DALI Driver (1%-100% Dimming) **LV**=Low-voltage System Driver (0%-100% Dimming) (C) **SD**=Step Dimming Driver (50%-100% Dimming) **LH**=Lutron HiLume (LDE1 series) 1%-100% EcoSystem Driver with Soft-on Fade to Black dimming (F) **W2A**=White Tuning, 2 ch, Analog 0-10V Intensity and CCT Control (15) **SR**=Sensor-ready Driver (1%-100% Dimming)

Notes

(15) White tuning provides correlated color temperatures (CCT) between 3000K (warm) to 5000K (cool) or 2700K (warm) to 6500K (cool). Must be used in conjunction with W2A driver only. Must be used with two (2) 10V dimming control channels, 1 color, 1 intensity. May be combined with Wavelinx sensor control systems only.

Integrated options must be used in conjunction with the associated system and may not be compatible with other options or accessories. Please refer to the following: (C) Consult WaveLinx Low-Voltage or DLVP system pages for additional details and compatibility. (F) Consult Marketplace Options - Lutron system pages for additional details and compatibility. Compatible only with driver series shown, and may require two or more drivers. Requires field commissioning to operate or dim. Contact Lutron at www.lutron.com.

Number of Drivers

Number of Drivers
1=1 Driver

Integrated Sensing Systems

Integrated Sensing Systems (16)
[Blank]=No Sensor **WAA**=WaveLinx Wireless Integrated Sensor (17), (A) **WAB**=WaveLinx Lite Wireless Integrated Sensor (18), (B) **WLA**=Low-voltage Integrated Sensor (19), (C) **SVPD1**=0-10V Stand-alone Integrated Sensor (18), (20), (D)

Notes

(16) Matching width lens band on other side of sensor band may be supplied for symmetrical appearance. Required for use with sensor and emergency combination. Add "D" to sensor ordering as shown - WAAD, WABD, SDVPD1. (17) WAA sensor to be used with CD or W2A driver. (18) WAB and SVPD1 sensor to be used with CD driver. (19) WLA sensor to be used with LV driver. (20) If the space remains unoccupied for half of the timeout period, the lighting will automatically reduce to the Energy Saver light level. This adjustable light level is typically half of the occupied daylight level.

Integrated options must be used in conjunction with the associated system and may not be compatible with other options or accessories. Please refer to the following: (A) Consult WaveLinx system pages for additional details and compatibility. (B) WaveLinx Lite devices are not currently compatible with the WaveLinx Wireless Area Controller. Consult WaveLinx Lite system pages for additional details and compatibility. (C) Consult WaveLinx Low-Voltage or DLVP system pages for additional details and compatibility. (D) Consult SVPD series system pages for additional details and compatibility.

Packaging

Packaging
U=Unit Pack **PAL**=Job Pack, out of carton **PALC**=Job Pack, in carton

Accessories

Accessories (order separately) (22)
CZ2-EQCLIP-U-PK="CZ2" Earthquake Clip Kit (4 clips per bag kit) (21) **DF-22W-U**=2' x 2' Drywall Frame Kit **SK-22-WS**=2' x 2' Shallow Surface Mount Kit **SK-22-WT**=2' x 2' Tall Surface Mount Kit **ISHH-01**=Programming Remote for Integrated Sensor (D) **ISHH-02**=Personal Control Remote for Integrated Sensor (D)

Notes

(21) An EQ Grid Clip is recommended for all 9/16" ceiling systems. Four required per fixture. (22) Accessories sold separately will be separately analyzed under domestic preference requirements. Consult factory for further information.

Integrated options must be used in conjunction with the associated system and may not be compatible with other options or accessories. Please refer to the following: (D) For use with SVPD sensor only. Consult SVPD series system pages for additional details and compatibility.

Product Specifications

Construction
- Die formed of code gauge prime cold rolled steel with full length die-formed stiffeners
- Unibody endplates attached with interlocking tabs and screws
- Hemmed side flanges
- Four auxiliary fixture end suspension points
- Integral Grid-lock feature for endplates for added safety
- Optional earthquake clips available

Integrated Controls
- Standard with 0-10V dimming driver (10% standard, 1% optional)
- WaveLinx wireless sensor compatible for standalone, controlled, connected, and IoT capability
- SVPD sensor compatible for standalone functionality
- Low-voltage sensor and driver compatible for WaveLinx Low-Voltage and DLVP applications
- DALI 2.0, Lutron, and step-dimming available

LED and Light Engine
- LED's available in 3000K, 3500K, 4000K, or 5000K at 80 CRI minimum and 90 CRI minimum
- Color accuracy ≤3-Step MacAdam ellipse (SDCM)
- TM21 life at 60,000 hours up to L90 and calculated L70 exceeds 203,000 hrs.
- Drivers available in 120-277V and 347V
- Tunable white options available with Cooper Lighting Solutions' Vividtune

Emergency Battery Options
- Optional emergency battery available in 7W and 14W
- 90-minute backup period for code compliance
- Laser point test from floor for ease of use on 7W and 14W versions
- EZ Key feature prevents accidental discharge during construction on 7W and 14W versions
- Integral emergency transfer relay options available

Finish
- Multistage, iron phosphate pretreatment
- 90% reflective, matte white enamel finish
- Full fixture housing painted after fabrication

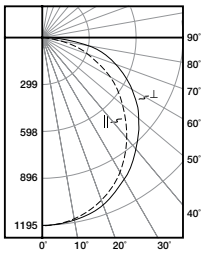
Shielding
- Ribbed acrylic frosted lens standard
- Optional smooth acrylic frosted lens (S)
- Optional metal perforated acrylic lens (RDP)
- Optional High-Efficiency Round Perf Inlay (HRP)

Compliance
- IC rated for insulation contact
- cULus listed for damp locations
- RoHS compliant
- Tested to IESNA LM-79 and LM-80
- Stated life tested to TM21 standards
- Can be used for State of California Title 24 high efficacy luminaire

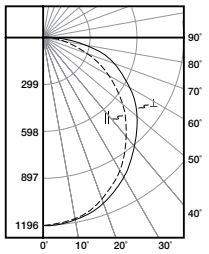
Warranty
- Five-year warranty standard. Optional ten year warranty available.

Photometric Data

View IES files



22CZ2-24-UNV-L830-CD1-U
Dimming Driver
Linear LED 3000K
Spacing criterion: (II) 1.2 x mounting height, (⊥) 1.28 x mounting height
Lumens: 2437
Input Watts: 21.9W
Efficacy: 111.3 LPW
Test Report: 22CZ2-24-UNVL830-CD1-U.IES



22CZ2-24HE-UNV-L830-CD1-U
Dimming Driver
Linear LED 3000K
Spacing criterion: (II) 1.19 x mounting height, (⊥) 1.27 x mounting height
Lumens: 2402
Input Watts: 19.2W
Efficacy: 125.1 LPW
Test Report: 14CZ2-29-UNV-L830-CD1-U.IES

Energy and Performance Data

Standard Efficacy Versions – Single Row of LEDs

Catalog Number	Lumens	Watts	lm/W
22CZ2-20-UNV-L835-CD1-U	2142	16.2	132
22CZ2-24-UNV-L835-CD1-U	2454	18.5	133
22CZ2-32-UNV-L835-CD1-U	3272	24.2	135
22CZ2-39-UNV-L835-CD1-U	3953	31	128
22CZ2-44-UNV-L835-CD1-U	4462	33	134

High Efficacy Versions – Two Rows of LEDs

Catalog Number	Lumens	Watts	lm/W
22CZ2-20HE-UNV-L835-CD1-U	2030	15.0	135
22CZ2-24HE-UNV-L835-CD1-U	2474	18.1	137
22CZ2-29HE-UNV-L835-CD1-U	2982	20.9	143
22CZ2-34HE-UNV-L835-CD1-U	3426	24.3	141
22CZ2-39HE-UNV-L835-CD1-U	3997	28.5	140
22CZ2-44HE-UNV-L835-CD1-U	4567	32.8	139

Very High Efficacy Versions – Three Rows of LEDs

Catalog Number	Lumens	Watts	lm/W
22CZ2-20VHE-UNV-L835-CD1-U	2008	14.2	141
22CZ2-24VHE-UNV-L835-CD1-U	2501	17.5	143
22CZ2-29VHE-UNV-L835-CD1-U	3114	21.7	144
22CZ2-34VHE-UNV-L835-CD1-U	3598	25.1	143
22CZ2-39VHE-UNV-L835-CD1-U	4078	28.6	143
22CZ2-44VHE-UNV-L835-CD1-U	4620	32.6	142
22CZ2-50VHE-UNV-L835-CD1-U	5095	36.2	141
22CZ2-55VHE-UNV-L835-CD1-U	5530	39.4	140
22CZ2-60VHE-UNV-L835-CD1-U	6110	44.1	139
22CZ2-65VHE-UNV-L835-CD1-U	6559	47.9	137
22CZ2-70VHE-UNV-L835-CD1-U	7017	50.3	140
22CZ2-75VHE-UNV-L835-CD1-U	7557	54.7	138
22CZ2-80VHE-UNV-L835-CD1-U	8092	59.1	137
22CZ2-85VHE-UNV-L835-CD1-U	8615	63.6	136
22CZ2-90VHE-UNV-L835-CD1-U	9125	68.2	134
22CZ2-95VHE-UNV-L835-CD1-U	9610	72.7	132
22CZ2-100VHE-UNV-L835-CD1-U	10108	77.7	130
22CZ2-110VHE-UNV-L835-CD1-U	11065	87.7	126

Shielding

Lumen Adjustment Factors			
S	RDP	HRP	SQR
1.05	0.67	0.80	0.96

Lumen Calculator

CCT Multiplier	80 CRI	90 CRI (1)
3000K	0.965	0.827
3500K	1.000	0.847
4000K	1.019	0.856
5000K	1.019	0.909

Notes: (1) Input wattages for 90 CRI versions may vary. Refer to published IES-format photometry or LM-79 reports for more details.

Example of Lumen Adjustment Calculation

22CZ2-32-UNV-L935-CD1-U at 90CRI at 3500K

Lumen Adjustment Factor = 0.845

Total Light Output =

3,280 lm x 0.845 = 2,772 lm

$$\textit{Efficacy} = \frac{2{,}772\ lm}{26.7W} = 103.8\ lm/W$$

Lumen Maintenance

Version	TM-21 Lumen Maintenance (60,000 hours) (2)	Theoretical L70 (Hours) (3)
Standard	> 85%	> 151,000
High Efficiency	> 90%	> 203,000
Very High Efficiency	> 90%	> 203,000

Notes: (2) Supported by IES TM-21 standards. (3) Theoretical values represent estimations commonly used; however, refer to the IES position on LED Product Lifetime Prediction, IES PS-10-18, that explains proper use of IES TM-21 and LM-80.

Load Data (Stock Product)

Thd	6%
Power Factor	0.99
Weight (lbs.)	10.6
Low Temp. Start	-20°C

Shipping Data

Catalog No.	Wt.	Pallet 49"L x 52"W x 55"H
2' x 2'	12.5 lbs.	48

Air Return Volume

Negative Static Pressure (Inches H_2O)	Return Air Volume (CFM)
0.05	79
0.1	112
0.2	161
0.25	177
0.3	198
0.45	239

Control Systems

- WaveLinx Wireless
- WaveLinx Wired
- WaveLinx Lite
- DLVP
- VividTune

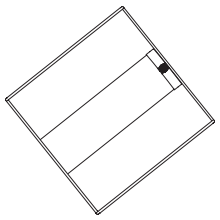
Connected Systems
CLICK HERE

The Cruze ST with Integrated Sensor technology provides automatic energy savings without sacrificing performance. The Cruze ST delivers superior lighting with integrated occupancy and daylighting controls.

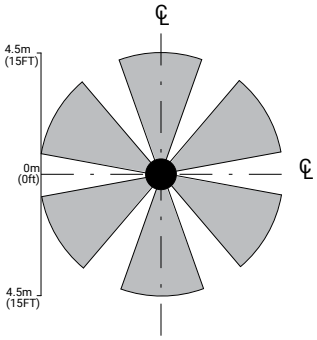
For standalone and controlled applications, the WaveLinx Lite integral sensor provides out-of-the-box functionality with no gateways required and factory startup is not needed.

When more connectivity is required, the WaveLinx Wireless sensor meets modern code and utility requirements, delivers energy and cost savings, while enabling buildings to become smart buildings.

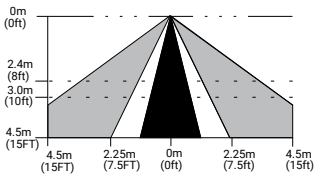
The WaveLinx Wireless Connected Lighting System combined with Trellix provides an open IoT platform and infrastructure that connects intelligent sensors leveraging the real-estate of the physical light fixture to solve higher complexity problems to deliver actionable insights through the aggregation of valuable data.



TOP VIEW:



SIDE VIEW:



***Note**: Installation of integrated sensors within 3-ft (1m) of HVAC air vents is not recommended. The pattern shown is intended solely as a general guide and is not to scale.*

Systems comparison chart

Cooper Lighting Solutions provides many lighting system solutions designed to satisfy code requirements and meet the unique needs of any project.



Standalone



Controlled
WaveLinx Lite



Connected
WaveLinx Pro



Enterprise
Trellix

	Standalone	Controlled (WaveLinx Lite)	Connected (WaveLinx Pro)	Enterprise (Trellix)
Occupancy	Yes	Yes	Yes	Yes
Daylighting	Yes	Yes	Yes	Yes
Wallstations	–	Yes	Yes	Yes
Gateways	–	–	1 WAC	300 WACs
Devices (MAX)	–	50 per Area (1400 per site)	200 per WAC2	32,500 per Core Enterprise
Software	–	WaveLinx Lite Mobile App	WaveLinx Pro Mobile App	Trellix Core
Areas	–	28 per Site	50 per WAC2	up to 3,000
Zones	–	16 per Area	16 per Area	up to 9,000
Scheduling	–	–	Local	Global
VividTune™	–	–	Yes	Yes
Plug-Load Control	–	–	Yes	Yes
Low-Voltage Power	–	–	Yes	Yes
Integration	–	–	–	BACnet, API
Dashboards	–	–	–	Energy, Occupancy
Configuration	–	Installer	Technician	Technician / IT

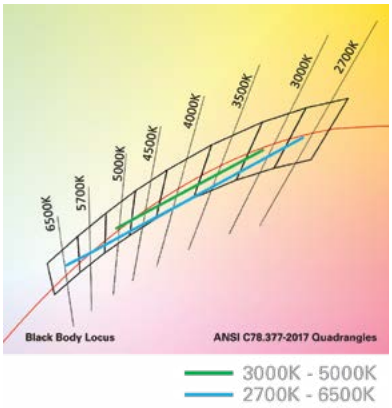
SCALABILITY

devices → areas → floors → buildings

VividTune™
color tuning solutions

22 Cruze ST LED with VividTune Tunable White

VividTune tunable white luminaires from Cooper Lighting Solutions deliver high-quality light in a broad range of continuously variable color temperatures and intensities. Create a dynamic environment by adjusting the ambient light warmer or cooler to influence mood, support the task at hand, or create a dramatic ambience. The ability to control correlated color temperature and intensity separately using simple controls is the next evolution of LED lighting for the commercial, educational, healthcare and hospitality space. The unparalleled flexibility and number of available lighting environments enable users to find the right light with tunable white.



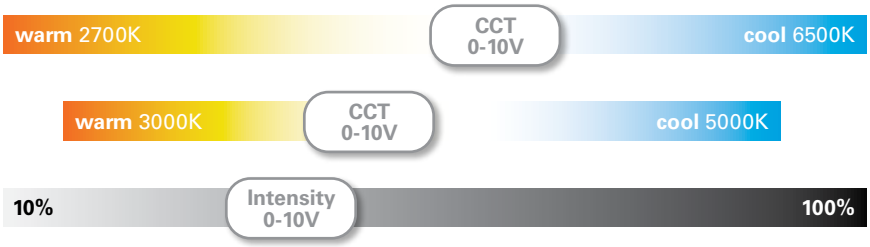
Performance Data*

Tunable White - Lumen Adjustment Factors				
CCT	3000K-5000K		2700K-6500K	
	80 CRI	90 CRI	80 CRI	90 CRI
2700K	-	-	0.868	0.741
3000K	0.894	0.736	0.893	0.771
3500K	0.946	0.804	0.924	0.809
4000K	0.993	0.868	0.944	0.835
4500K	1.002	0.883	0.961	0.857
5000K	1.002	0.883	0.974	0.874
6500K	-	-	0.988	0.897

2' x 2' Cruze ST LED - Example of Approximate Lumen Calculation			
	Standard Catalog #	VividTune 80 CRI Catalog #	VividTune 90 CRI Catalog #
CCT Setting	22CZ2-34HE-UNV-L835-CD1-U	22CZ2-34HE-UNV-L83050-W2A1-U	22CZ2-34HE-UNV-L93050-W2A1-U
3000K	-	3026	2491
3500K	3386	3202	2722
4000K	-	3362	2940
4500K	-	3394	2991
5000K	-	3394	2991

Controlling VividTune Tunable White

VividTune luminaires make tunable white more accessible by using simple and familiar controls. From wall dimmers to wireless controls, VividTune tunable white luminaires are compatible with industry standard 0-10V dimming controls. A single 0-10V dimming input is used to control intensity (brightness) while a second 0-10V dimming input is used to adjust CCT. For suggested control configurations, go to www.cooperlighting.com for tunable white application guides.



Example of Lumen Adjustment Calculation

22CZ2-34HE-UNV-L83050-W2A1-U
at 80 CRI tuned to 3500K

Adjusted Lumen =
published lm x adjusted lm factor

Adjusted Lumen = 3386 x 0.946

Adjusted Lumen = 3202 lm

** Lumen adjustment factors are for reference and may be different for each product selected. Refer to IES files for actual performance data on each.*

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Specifications and dimensions subject to change without notice.