

Project		Catalog #		Type	
Prepared by		Notes		Date	



Metalux

Cruze ST 24CZ2

2' x 4' LED Specification Grade Troffer

Typical Applications

Office • Education • Healthcare • Hospitality • Retail

Interactive Menu

- Order Information page 2
- Photometric Data page 4
- Control Solutions page 6
- VividTune™ Color Tuning Solutions page 7
- BioUp - Melanopic Lighting page 8
- Product Warranty

Product Certification



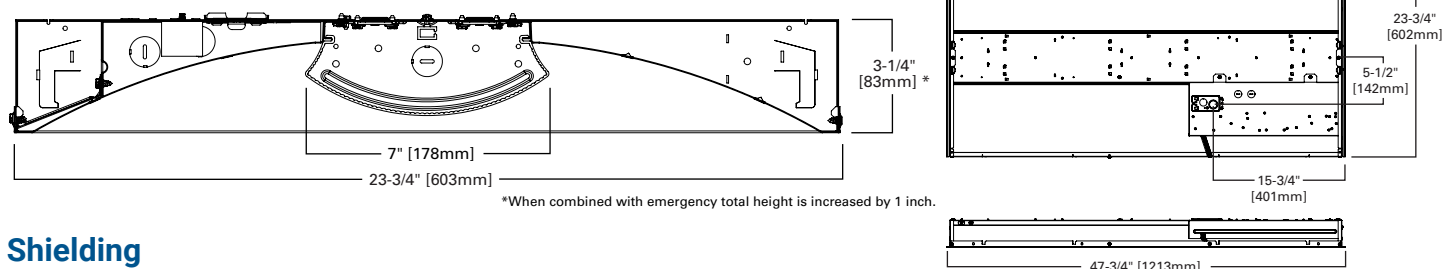
Product Features



Top Product Features

- Latch-less design provides clean architectural look
- BioUp melanopic lighting options for 30% circadian boost and earn WELL Building Standard points
- VividTune CCT tuning options from 3000K-5000K or 2700K-6500K
- Designers delight - ribbed, smooth and round perforated lens options
- High performance efficacy up to 167 lm/W
- Integrated sensor systems - occupancy, daylight and IoT connectivity
- Options to meet Build America, Buy America, Buy American and other domestic preference requirements

Dimensional and Mounting Details



Shielding



See ordering information for more shielding options.



Ceiling Compatibility

G	G	G	Ceiling Type	Trim Type
Grid/Lay-in Standard	Concealed T	Slot Grid	Exposed Grid	Standard
			Concealed T	Standard
			Slot Grid	Standard
			Flange	*

*See Drywall Frame Kit Accessory in Ordering Information Section

Order Information

SAMPLE ORDER NUMBER: **24CZ2-45HE-UNV-L835-CD1-U**

Domestic Preferences ⁽¹⁾	Rating	Series	Air	Lumen Level / Efficacy Option		
[Blank] =Standard BAA =Buy American Act TAA =Trade Agreements Act BABA =Build America Buy America Act	[Blank] =Standard ATW-SW4 =Chicago Rated	24CZ2 =2x4 Cruze ST	[Blank] =Standard A =Air (Vented) ⁽²⁾	Standard [Blank] 30=3000 Lumens 35=3500 Lumens 40=4000 Lumens 45=4500 Lumens 50=5000 Lumens 55=5500 Lumens 60=6000 Lumens ⁽³⁾ 65=6500 Lumens ^{(3), (4)}	High Efficacy [HE] 30HE=3000 Lumens 35HE=3500 Lumens 40HE=4000 Lumens 45HE=4500 Lumens 50HE=5000 Lumens 55HE=5500 Lumens 60HE=6000 Lumens ^{(4), (6)} 65HE=6500 Lumens ^{(4), (6)} 70HE=7000 Lumens ^{(4), (6)} 75HE=7500 Lumens ^{(3), (4)}	Very High Efficacy [VHE] 30VHE=3000 Lumens ⁽³⁾ 35VHE=3500 Lumens ⁽³⁾ 40VHE=4000 Lumens ⁽³⁾ 45VHE=4500 Lumens ⁽³⁾ 50VHE=5000 Lumens ⁽³⁾ 55VHE=5500 Lumens ⁽³⁾ 60VHE=6000 Lumens ⁽³⁾ 65VHE=6500 Lumens ^{(3), (4)} 70VHE=7000 Lumens ^{(3), (4)} 75VHE=7500 Lumens ^{(3), (4)} 80VHE=8000 Lumens ^{(3), (4)} 85VHE=8500 Lumens ^{(3), (4)} 90VHE=9000 Lumens ^{(3), (4)} 95VHE=9500 Lumens ^{(3), (4)} 100VHE=10000 Lumens ^{(3), (4), (5)} 110VHE=11000 Lumens ^{(3), (4), (5)} 120VHE=12000 Lumens ^{(3), (4), (5)} 130VHE=13000 Lumens ^{(3), (4), (5)} 150VHE=15000 Lumens ^{(3), (4), (5)} 170VHE=17000 Lumens ^{(3), (4), (5)}
Notes (1) Only product configurations with these prefixes are built to be compliant with the Buy American Act of 1933 (BAA), Trade Agreements Act of 1979 (TAA), or the Build America Buy America Act (BABA). BABA is the minimum Government compliance requirement for the Build America Buy America standards which is part of the Infrastructure and Investment Jobs Act (IIJA). Individual Government Agencies may have more stringent compliance standards. Please refer to DOMESTIC PREFERENCES website or consult the CLS Domestic Preferences team for more information. Components shipped separately may be separately analyzed under domestic preference requirements.			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. Air requires "PAF" option.	Notes (3) VividTune white tuning and BioUP static and dynamic options are not available with these lumen/efficacy selections. (4) Available with CD or HCD drivers only. (5) Requires 2 CD-1 drivers above 100VHE. (6) W2D Dali dimming BioUP not available with these options.		

Shielding	Voltage ⁽⁷⁾	Options	Emergency Options
[Blank] =Ribbed Frosted Acrylic Lens (standard) S =Smooth Frosted Acrylic Lens HRP =High-Efficiency Round Perf Inlay SQR =Square Ribbed Frosted Acrylic Lens	UNV =Universal Voltage 120-277 347V =347 Volt ⁽⁸⁾	GL =Single Element Fuse GM =Double Element Fuse PAF = Painted After Fabrication	[Blank] =No emergency EL7W =7-watt 120V-277V emergency battery pack ⁽⁹⁾ EL10W =10-watt 120V-277V emergency battery pack ⁽⁹⁾ EL14W =14-watt 120V-277V emergency battery pack ⁽⁹⁾ EL10WSD =10W emergency battery pack with self-diagnostic installed ^{(9), (11)} EL14WSD =14W emergency battery pack with self-diagnostic installed ^{(9), (11)} ETRD =Emergency Transfer Relay with dimming control ⁽¹⁰⁾ RRU =LVS Controls Emergency Transfer Relay with dimming control ⁽¹⁰⁾ UEL7W =UL924 Listed luminaire, 7-watt, 120V-277V emergency battery pack ^{(13), (9)} UEL14W =UL924 Listed luminaire, 14-watt 120V-277V emergency battery pack ^{(13), (9)} UEL10WSD =Bodine 10W emergency battery pack with self diagnostic installed ^{(13), (9), (12)} UETRD =UL924 Listed luminaire, Emergency Transfer Relay with dimming control ^{(13), (10)} URRU =UL924 Listed luminaire, LVS Controls Emergency Transfer Relay with dimming control ^{(13), (10)} WNPS =WaveLinX with Normal Power Sensing Beacon ^{(14), (15), (16), (17)} WEM =WaveLinX Enabled UL924 ^{(14), (16), (17)}
	Notes (7) Products also available in non-US voltages and frequencies for international markets. (8) Some 347V versions require a transformer. Total wattage will increase by 2 watts if used.		Notes (9) 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. (10) 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. (11) EL10WSD and EL14WSD not available with 347V. (12) UEL10WSD not available with 347V. (13) Cannot be used with BioUP options. (14) Only available as part of a WaveLinX control system; must order with WLS or WPS sensor. Compatible with UNV CD/HCD drivers only. (15) WNPS is compatible with ESP-1 or ESP-P emergency control devices. (16) Cannot be combined with other emergency, control or relay options. (17) For UL924 compliance, WEM and WNPS luminaires must be installed in the same application space.

continued next page

Order Information

CONTINUED

CRI/CCT	Flex
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 ⁽¹⁸⁾ L93050 =90CRI 3000K-5000K White Tuning ⁽¹⁸⁾ L82765 =80CRI 2700K-6500K White Tuning ⁽¹⁸⁾ L92765 =90CRI 2700K-6500K White Tuning ⁽¹⁸⁾ B35 =BioUp Static 3500K ⁽¹⁹⁾ B40 =BioUp Static 4000K ⁽¹⁹⁾ B50 =BioUp Static 5000K ⁽¹⁹⁾ B2750 =BioUp Tunable 2700K-5000K ⁽²⁰⁾	[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.
Notes (18) VividTune 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 cct, 1 intensity. May be combined with Wavelinx sensor control systems. (19) BioUp Static to be used with HCD driver. (20) BioUp Tunable provides correlated color temperatures (CCT) between 2700K (warm) to 5000K (cool). Must be used with W2A (for two channel 0-10V Control) or W2D (for 2 channel Dali Control) driver. See BioUp page for more information.	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, 2356, 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	Number of Drivers	Integrated Sensing Systems ⁽²⁷⁾	Packaging
CD =0-10V Driver (10%-100% Dimming) ^{(24), (25), (23)} CDW =NonProgrammable Driver, Limited Lumen Packages, 0-10V Dimming (10%-100%) HCD =0-10V Driver (1%-100% Dimming) ^{(24), (25), (23)} SLTD =DALI Driver (5%-100% Dimming) SLTHD =DALI Driver (1%-100% Dimming) SD =Step Dimming Driver (50%-100% Dimming) LH =Lutron HiLume 1% EcoSystems (LDE1) ^(F) W2A =White Tuning, 2 ch, Analog 0-10V (1%-100% Dimming) ^{(21), (23)} W2D =White Tuning, DALI Type 8 (1%-100% Dimming) ⁽¹⁹⁾	1 =1 Driver 2 =2 Drivers ⁽²⁶⁾	[Blank] =No Sensor WLS =WaveLinX LITE Integrated Sensor, Dim and Daylight, Bluetooth, 8'-15' MH ^{(29), (B)} WPS =WaveLinX PRO Integrated Sensor, Dim and Daylight, ZigBee, 8'-15' MH ^{(28), (A)} WLN =WaveLinX LITE Integrated Node, Dim and Daylight, Bluetooth ^{(29), (B)} WPN =WaveLinX PRO Integrated Node, Dim and Daylight, Zigbee ^{(28), (A)}	U =Unit Pack PAL =Job Pack, out of carton PALC =Job Pack, in carton
Notes (21) W2A used with two (2) 10V dimming control channels - cct and intensity. (22) W2D for use with BioUp options only. White tuning CCT between 2700K and 5000K. Must be used with DALI controls; one address to control two channels - intensity and CCT. May not be used with sensing systems. For Emergency options ONLY EL10WSD can be used. (23) When selecting 0-10V driver with Integrated Sensing System a 0-10V driver might be substituted with another type. (24) WPS and WPN node used with CD, HCD or W2A drivers only. (25) WLS and WLN node used with CD or HCD drivers 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: (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.	Notes (26) See lumen limitation notes for applications requiring 2 drivers or use online configurator. When combined with emergency total height is increased by 1 inch.	Notes (27) Add "D" to sensor ordering logic - WPSD or WLSd, to create a symmetrical dual band appearance on the luminaire/lens. (28) WPS and WPN node used with CD, HCD or W2A drivers only. (29) WLS and WLN node used with CD or HCD drivers 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: (A) Consult WaveLinX PRO system pages for additional details and compatibility. (B) Consult WaveLinX LITE system pages for additional details and compatibility.	

Accessories (order separately) ⁽³¹⁾
CZ2-EQCLIP-U PK =CZ2" Earthquake Clip Kit (4 clips per bag kit) ⁽³⁰⁾ DF-24W-U =2' x 4' Drywall Frame Kit SMK-24-W = 4" Tall Surface Mount Kit, 2' x 4'
Notes (30) An EQ Grid Clip is recommended for all 9/16" ceiling systems. Four required per fixture. (31) Accessories sold separately will be separately analyzed under domestic preference requirements. Consult factory for further information.

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)
- Integrated WaveLinX options provide wireless individual fixture control and enable code compliance, increased energy savings, grouping of fixtures, and connection to WaveLinX control systems
- 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
- BioUp melanopic lighting options available in static or tunable white

Emergency Options

- 120V-277V integral emergency battery pack comes in 7-watts, 10-watt, or 14-watts
- Self-diagnostic emergency battery available in 10 or watts (NFPA 101@ Life Safety Code®)
- Constant power to the LED system for controlled, predictable discharge
- Integrated test switch/indicator light visible from floor
- Min. 90-minute backup period for code compliance
- Integral emergency transfer relay available for generator equipped power systems

WNPS - WaveLinX Normal Power Sensing

- Normal Power Sensing (NPS) wireless beacon enabled luminaire that signals normal power is present
- Must be ordered with WaveLinX LITE or PRO sensor as part of a WaveLinX control system
- For UL924 compliance, WNPS enabled luminaires with standard product and compatible emergency control devices (ESP-P/ESP-L) must be installed in same application space

WEM - WaveLinX UL924 Emergency Sensor

- Emergency control devices (ESP-P/ESP-L) not required when WEM and WNPS luminaires are installed in the same application space
- For UL924 compliance, order WEM and WNPS luminaires in the same application space
- WEM must be ordered with WLS or WPS sensor as part of a WaveLinX control system

Shielding

- Ribbed acrylic frosted lens standard
- Optional smooth acrylic frosted lens (S)
- Optional square ribbed frosted acrylic lens (SQR)
- Optional High-Efficiency Round Perf Inlay (HRP)
- Replacement lenses available, contact factory
- Lens is acrylic with features on the face and sides to optimize the direct and indirect lighting contributions for improved glare and efficacy

Compliance

- IC rated for insulation contact
- cULus listed for damp locations
- UL924 luminaire listing available, see Emergency Options
- 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

BABA Domestic Preference Compliance

- This Cooper product is manufactured in the US and meets the BABA cost of components rule. To verify a configured product with specific accessories and options meets BABA Domestic Preference Requirements; submit this catalog number to Cooper Lighting Quotation team for validation by our Engineering and Manufacturing teams. Our BABA designation is based on the minimum compliance requirement for BABA. Individual Government Agencies may have more stringent compliance standards. Please refer to the [DOMESTIC PREFERENCES](#) website or consult the CLS Domestic Preferences team for more information. Components shipped separately may be separately analyzed under domestic preference requirements.

Warranty

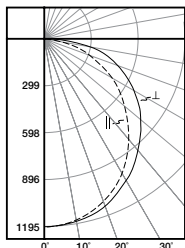
- Five-year limited warranty standard. Optional ten year limited warranty available.

Finish

- Multistage, iron phosphate pretreatment
- 90% reflective, matte white enamel finish
- Full fixture housing pre-painted matte white (choose PAF option for "Paint after Fabrication")

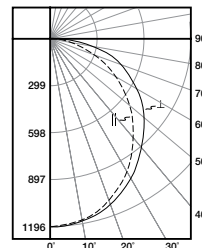
Photometric Data

 View IES files



24CZ2-35-UNV-L830-CD1-U

Dimming Driver
Linear LED 3000K
Spacing criterion: (II) 1.22 x mounting height,
(⊥) 1.28 x mounting height
Lumens: 3618
Input Watts: 30.1W
Efficacy: 120.2 LPW
Test Report: 24CZ2-35-UNV-L830-CD1-U.IES



24CZ2-35HE-UNV-L830-CD1-U

Dimming Driver
Linear LED 3000K
Spacing criterion: (II) 1.21 x mounting height,
(⊥) 1.27 x mounting height
Lumens: 3562
Input Watts: 26.9W
Efficacy: 132.4 LPW
Test Report: 24CZ2-35HE-UNV-L830-CD1-U.IES

Energy and Performance Data

Standard Efficacy Versions – Single Row of LEDs
Default CCT/Lumen Setting: 3500K/Med

Catalog Number	Lumens	Watts	lm/W
24CZ2-30-UNV-L835-CD1-U	3028	22.4	135
24CZ2-35-UNV-L835-CD1-U	3633	27.3	133
24CZ2-40-UNV-L835-CD1-U	4178	30.4	137
24CZ2-45-UNV-L835-CD1-U	4602	35.0	132
24CZ2-50-UNV-L835-CD1-U	5049	39.6	128
24CZ2-55-UNV-L835-CD1-U	5571	41.1	135
24CZ2-60-UNV-L835-CD1-U	6056	46.3	131
24CZ2-65-UNV-L835-CD1-U	6601	50.1	132

High Efficacy Versions – Two Rows of LEDs
Default CCT/Lumen Setting: 3500K/Med

Catalog Number	Lumens	Watts	lm/W
24CZ2-30HE-UNV-L835-CD1-U	3100	22.3	139
24CZ2-35HE-UNV-L835-CD1-U	3685	27.0	137
24CZ2-40HE-UNV-L835-CD1-U	4144	30.7	135
24CZ2-45HE-UNV-L835-CD1-U	4712	35.3	134
24CZ2-50HE-UNV-L835-CD1-U	5164	38.6	134
24CZ2-55HE-UNV-L835-CD1-U	5722	43.5	132
24CZ2-60HE-UNV-L835-CD1-U	6182	44.1	140
24CZ2-65HE-UNV-L835-CD1-U	6777	48.9	139
24CZ2-70HE-UNV-L835-CD1-U	7218	49.3	146
24CZ2-75HE-UNV-L835-CD1-U	7787	55.4	141

Very High Efficacy Versions – Three Rows of LEDs
Default CCT/Lumen Setting: 3500K/Med

Catalog Number	Lumens	Watts	lm/W
24CZ2-30VHE-UNV-L835-CD1-U	3011	20.4	148
24CZ2-35VHE-UNV-L835-CD1-U	3526	22.8	155
24CZ2-40VHE-UNV-L835-CD1-U	4042	26.2	154
24CZ2-45VHE-UNV-L835-CD1-U	4559	29.6	154
24CZ2-50VHE-UNV-L835-CD1-U	5064	32.7	155
24CZ2-55VHE-UNV-L835-CD1-U	5570	36.1	154
24CZ2-60VHE-UNV-L835-CD1-U	6055	38.7	157
24CZ2-65VHE-UNV-L835-CD1-U	6565	42.2	156
24CZ2-70VHE-UNV-L835-CD1-U	7059	45.7	155
24CZ2-75VHE-UNV-L835-CD1-U	7662	49.9	154
24CZ2-80VHE-UNV-L835-CD1-U	8128	53.8	151
24CZ2-85VHE-UNV-L835-CD1-U	8600	57.9	149
24CZ2-90VHE-UNV-L835-CD1-U	9053	61.8	147
24CZ2-95VHE-UNV-L835-CD1-U	9521	65.6	145
24CZ2-100VHE-UNV-L835-CD1-U	10191	69.6	146
24CZ2-110VHE-UNV-L835-CD2-U	11098	77.4	143
24CZ2-120VHE-UNV-L835-CD2-U	12211	83.6	146
24CZ2-130VHE-UNV-L835-CD2-U	13271	90.7	146
24CZ2-150VHE-UNV-L835-CD2-U	15006	104.2	144
24CZ2-170VHE-UNV-L835-CD2-U	17021	123.4	138

Shielding

Lumen Adjustment Factors		
S	HRP	SQR
1.05	0.81	0.96

Lumen Calculator

CCT Multiplier	80 CRI	90 CRI ⁽¹⁾	BioUp Static
3000K	0.965	0.827	-
3500K	1.000	0.847	0.912
4000K	1.019	0.856	0.899
5000K	1.019	0.909	0.879

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

24CZ2-40-UNV-L835-CD1-U at 90CRI at 3500K

Lumen Adjustment Factor = 0.845

Total Light Output =

4,196 lm x 0.845 = 3,546 lm

Efficacy = $\frac{3,546 \text{ lm}}{36.2 \text{ W}}$ = 98 lm/W

Lumen Maintenance

Version	TM-21 Lumen Maintenance (60,000 hours) ⁽²⁾	Theoretical L70 (Hours) ⁽³⁾
Standard	> 87%	> 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.)	16
Low Temp. Start	-20°C

Shipping Data

Catalog No.	Wt.	Pallet 49"L x 52"W x 46"H
2' x 4'	20.4 lbs.	28

Air Return Volume

Negative Static Pressure (Inches H ₂ O)	Return Air Volume (CFM)
0.05	75
0.1	103
0.2	153
0.25	177
0.3	191
0.45	234

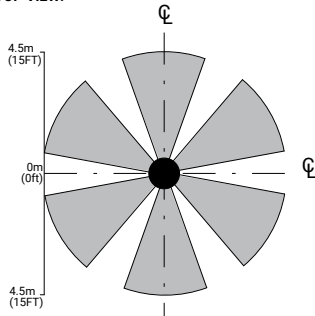
Control Solutions

- WaveLinX LITE wireless
- WaveLinX PRO wireless
- WaveLinX CAT wired
- WaveLinX DALI wired

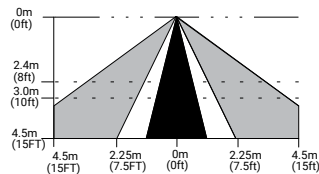


Integrated Sensor Coverage Pattern

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.

With Integrated WaveLinX Sensor

With Integrated WaveLinX Node

Add a hidden WaveLinX Node (WPN, WLN) to your space lighting design!

To:

- Keep luminaire aesthetics
- Connect fixtures without space for a sensor, such as downlights
- Connect sealed fixtures without a standard sensor option such as products for clinical space

The Cruze ST with WaveLinX offers no-hassle lighting control with multiple luminaire level control solutions.

WaveLinX by Cooper Lighting Solutions is a wired and wireless solution for a single room, a parking lot, or an entire campus, helping meet energy codes, reduce energy use, and create healthier environments. As a true hybrid architecture, it enables the seamless integration of DALI, CAT, and PRO technologies and luminaires for unmatched reliability and flexibility, with sensor-enabled luminaires that can also share data with the WaveLinX CORE platform, further improving operations across office, education, healthcare, warehouse, and parking garage applications.



WaveLinX LITE is a Bluetooth wireless digital lighting control solution with out-of-the-box functionality that saves energy and meets energy codes. It's designed for applications that require occupancy-based, daylighting, or manual light control using WaveLinX LITE-enabled luminaires and a mobile app for cost-effective projects.



WaveLinX PRO is a Zigbee wireless solution that offers a rich portfolio of devices, WaveLinX PRO-enabled luminaires, and a mobile app and the WAC (WaveLinX Area Controller). It offers advanced energy savings and deep data integration to improve the occupant experience.



WaveLinX CAT is a scalable CAT5-wired solution for a single room and connected spaces, supporting applications that require occupancy-based, daylighting, or manual light control, with self-commissioning to meet energy codes and maximize energy savings.



WaveLinX DALI is a powerful two-wire DALI-2 solution for connected spaces, combining open-standard devices enabling interoperability with the simplicity of WaveLinX app-based commissioning. It delivers deterministic wired control, granular addressability, and tunable white.

Integrated Controls Options

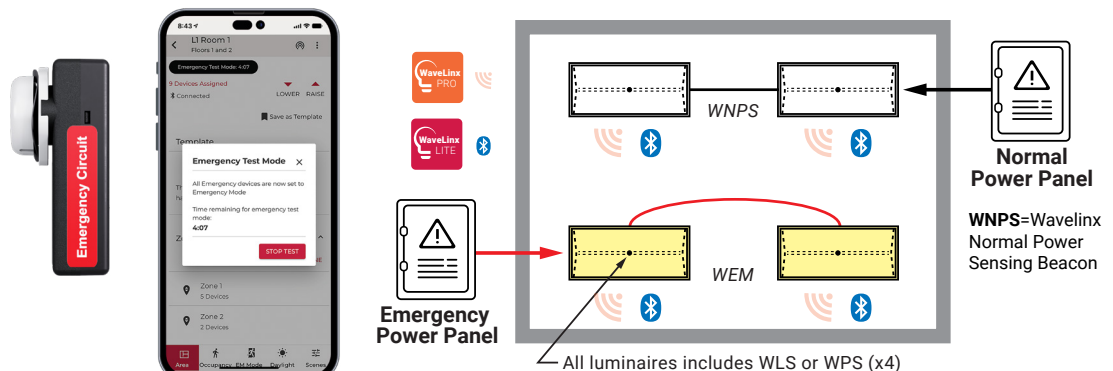
Option	Out of the Box Functionality	Luminaire Level Lighting Control (LLLC)	Automatic Dimming Photocell	Occupancy Sensing	CCT Control*
WLS (WaveLinX LITE Sensor)	X	X	X	X	
WLN (WaveLinX LITE Node)		X			
WPS (WaveLinX PRO Sensor)		X	X	X	X
WPN (WaveLinX PRO Node)		X			X

Note: *WaveLinX utilizes scenes to allow users to change an area's fixtures Correlated Color Temperature (CCT) and intensity using a commissioned wireless wallstation scene controller. To enable CCT adjustments through WaveLinX, include WPS or WPN devices in addition to VividTune or BioUp technologies for integrated fixture control. WPS with CCT controls the intensity of the fixture; an additional, externally mounted control device is needed to control the CCT. See [RSP-P-010-347](#)

The WNPS and WEM (UL924 option) only available with WLS or WPS sensors. Must be specified when ordered. WEM must be associated with a group that includes a normal power sensing device to receive NPS beacon. Learn more about WaveLinX EM [here](#).

WaveLinX EM

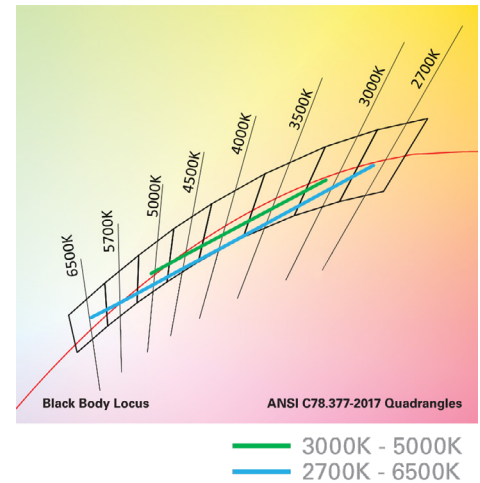
The WaveLinX Emergency (WEM) solution offered by WaveLinX wireless (PRO and LITE) makes it easy to design your UL924 certified emergency lighting solution. Fixture-integrated WaveLinX Emergency Modules (WEM) override lighting controls and increases light output to emergency level (100%) until normal power is restored. Needs programming. WaveLinX emergency systems are designed to meet UL 924 standards. Learn more [here](#).





24 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.



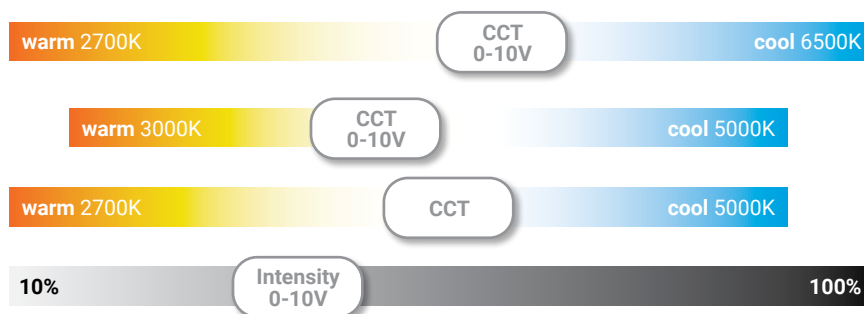
Energy and Performance Data

Tunable White - Lumen Adjustment Factors						
CCT	VividTune 3000K-5000K		VividTune 2700K-6500K		BioUp Tunable White 2700K-5000K	
	80 CRI	90 CRI	80 CRI	90 CRI	CRI	Lumen Adjustment
2700K	-	-	0.903	0.771	95	0.938
3000K	0.929	0.765	0.928	0.801	94	0.929
3500K	0.983	0.836	0.961	0.842	90	0.912
4000K	1.033	0.903	0.981	0.868	87	0.899
4500K	1.042	0.918	0.999	0.891	85	0.890
5000K	1.042	0.918	1.013	0.909	84	0.879
6500K	-	-	1.028	0.933	-	-

2' x 4' Cruze ST LED - Example of Approximate Lumen Calculation				
	Standard Catalog #	VividTune 80 CRI Catalog #	VividTune 90 CRI Catalog #	BioUp Tunable White
CCT Setting	24CZ2-40HE-UNV-L835-CD1-U	24CZ2-40HE-UNV-L83050-W2A1-U	24CZ2-40HE-UNV-L93050-W2A1-U	24CZ2-40HE-UNV-B2750-W2A1-U
2700K	-	3638	3106	3779
3000K	-	3641	2998	3743
3500K	4029	3853	3275	3674
4000K	-	4046	3537	3622
4500K	-	4084	3599	3586
5000K	-	4084	3599	3541
6500K	-	4142	3579	-

Controlling VividTune and BioUp Tunable White

From wall dimmers to wireless controls, tunable white luminaires are compatible with industry standard 0-10V and DALI controls. One channel to control intensity (brightness) and a second channel to adjust CCT.



Example of Lumen Adjustment Calculation

24CZ2-40HE-UNV-L83050-W2A1-U
at 80 CRI tuned to 3500K

Adjusted Lumen =
published lm x adjusted lm factor

Adjusted Lumen = 4029 x 0.956

Adjusted Lumen = 3853 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.*

Proven Research. Industry Recognized.

BioUp

Melanopic Lighting



See better



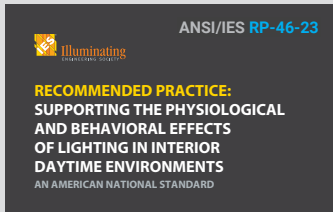
Feel better



Function better



See [BioUp brochure](#) for more details



ANSI/IES RP-46-23

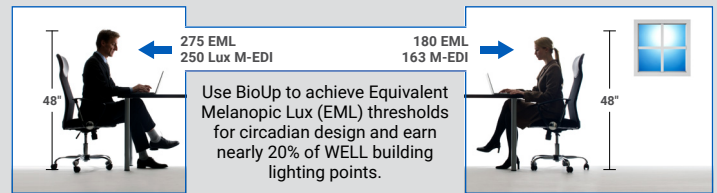
RECOMMENDED PRACTICE:
SUPPORTING THE PHYSIOLOGICAL
AND BEHAVIORAL EFFECTS
OF LIGHTING IN INTERIOR
DAYTIME ENVIRONMENTS
AN AMERICAN NATIONAL STANDARD

ANSI/IES RP-46-23
/ TM18 published
March 2024 based
on over 40 years of
research.

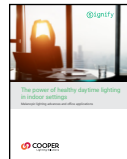
"...circadian clock synchronization is paramount to the body's efficient and appropriate functioning." – TM18



BioUp solutions maximize WELL points for Circadian Lighting Design (L03):



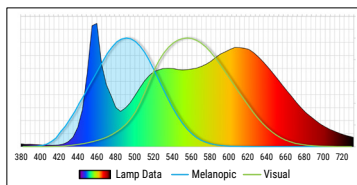
MDER, M-EDI and **EML** are key metrics used to quantify non-visual performance of indoor lighting systems.



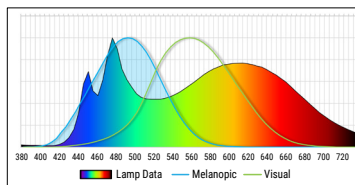
See [BioUp white paper](#) for more details

MDER - Melanopic Daylight Efficacy Ratio (MDER) measures the amount of light stimulating to the melanopsin receptors.

Standard 4000K LED
MDER = .62



BioUp 4000K LED
MDER = .82



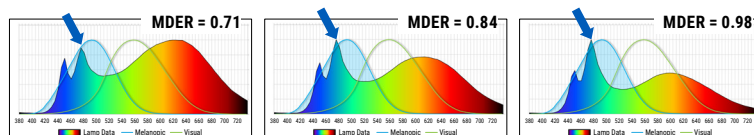
30% boost Biological impact compared to traditional LED sources

CCT	LED MDER ~83 CRI	BioUp Static		BioUp Dynamic	
		MDER	CRI	MDER	CRI
2700K	0.44	—	—	0.43	95
3000K	0.49	—	—	0.54	94
3500K	0.56	0.71	90	0.71	90
4000K	0.64	0.84	87	0.82	87
5000K	0.77	0.98	84	0.98	84

BioUp enhances the LED spectrum with cyan light at 475nm increasing the biological impact of the light to enhance our circadian rhythm which regulates our sleep/wake cycle, daytime engagement, and mood – **all without distorting visual color impression.**

Static (non-tunable)

Static BioUp is used when simple Melanopic Lighting is desired at all times.



3500K

or

4000K

or

5000K

Cyan light component always present

Dimming Control

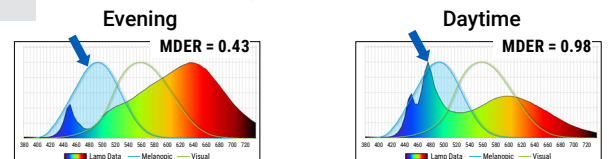


no CCT control needed

Arrow in graph shows BioUp spectrum boost is at 475nm where non-visual biological response is enhanced.

Dynamic - (Tunable)

Dynamic BioUp is used when Melanopic Lighting is desired to adjust during the day.



Warmer CCT Without Cyan content

2700K – 5000K

Cooler Light With Cyan content

CCT Control



Dimming Control



Control with Wavelinx, 2ch 0-10V, or DALI

Emergency Lighting

All buildings have to comply with emergency lighting codes to maintain their certificate of occupancy. To enable this, Cooper Lighting Solutions has created multiple offerings to suit the building type and luminaire type.

Options to Enable Emergency (Stand Alone)

	Standard	Self-Diagnostic	FirstLink Connected ETO for Factory-Installed Only 
Metalux Recessed, HALO, APG, Outdoor Medium forward voltage LED arrays usually 20-60V DC	Batteries: EBPLEDL7W, EBPLEDL14W Inverters: INVM-10W-AD	Batteries: EBPLED10WSD, EBPLED7.5WSD Inverters: INVM-25W-ADSD, INVM-50W-ADSD	Batteries: EBPLEDL10SF, EBPLEDL6SF
Metalux Industrial High forward voltage LED arrays usually 90-200V DC	Batteries: EBPLEDC1HV Inverters: INVM-10W-AD, INVM-100W-AD	Inverters: INVM-25W-ADSD, INVM-50W-ADSD	
How is emergency lighting inspection done?	Turn breakers off Walk around the building and collect compliance data.	No need to turn breakers off. Walk around, look up and collect compliance data.	No need to turn breaker off, No walking around. Open the app, push a button, and collect compliance data.

NOTE: 1. For factory installed First-Link EBP, order xSF option. Example: ETO_22CZ2-34HE-UNV-EBP10SF-L835-CD1-U (see Luminaire Order Info)
2. For factory installed standard EBP. Example: 22CZ2-34HE-UNV-EL7W-L835-CD1--U

Connected Emergency Lighting ETO via Factory-Installed Only



Use our Connected Emergency Lighting products (FirstLink) to reduce the cost of compliance.

FirstLink is a complete and fully code compliant connected emergency egress lighting system comprised of FirstLink enabled exit signs, unit equipment, emergency LED drivers and the FirstLink application. The monthly and annual tests can be scheduled to be performed on a cadence. And the FirstLink app easy, instant access to compliance information and your system status. Reports can be easily exported to prove the system compliance status is 100%.



Compliance

- Avoid costly non-compliance fines
- Helps reduce risks and insurance premiums



Convenience

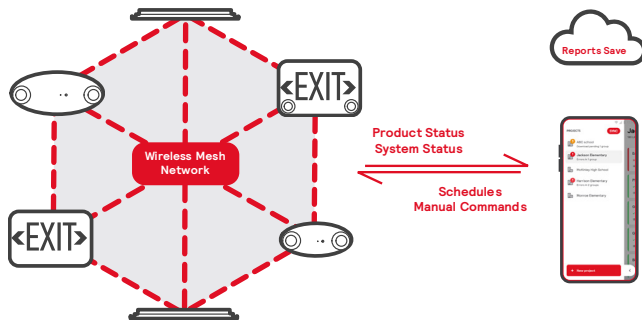
- No ladders
- No documentation
- No searching for reports during an inspection.



Control

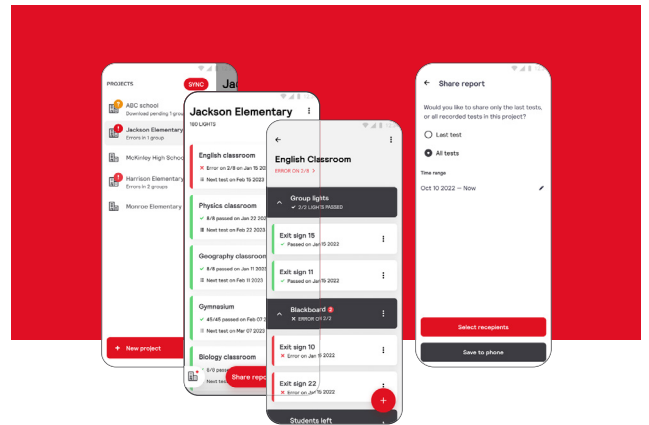
- Scheduling: Adjust the frequency and timing of testing.
- Troubleshooting: Receive complete product status information.
- Customization: Create custom groups and zones.

How does FirstLink work?



FirstLink is a standalone wireless mesh network that connects all devices and ensures a reliable connection through the network, even during the loss of individual devices.

If the app can communicate with just one device, the status of all devices can be read. Once the status is downloaded, the data is uploaded and saved to the cloud.



The FirstLink App

Complete control is in your hands

The FirstLink app is your portal to the FirstLink system. This easy-to-navigate iOS and Android application gives you the ability to configure your system, view and export results, change testing schedules, and more.