| Project | | Catalog # | | Type | |
|---|---|---|---|---|---|
| Prepared by | | Notes | | Date | |



**ArcMED**

# Fail-Safe
**ArcMED**

## FCZ2 Sealed Cruze ST 1x4

1x4 Sealed Center Basket
Sterile Environments / Behavioral Health
Curved or Square Lens
2,000 to 6,000 lumens

### Typical Applications
Medical • Cleanroom • Behavior Health • Education • Laboratory • Pharmacy • Fitness Center • R&D Center

## Interactive Menu

## Product Certification

RoHS COMPLIANT · NSF · NSF SPLASH ZONE · IP65 · ISO3 CLASS 1 · USP 797 800 · BSL 1-4 · wet location · ISO SYSTEMS CERTIFIED · IK10

## Product Features

WaveLinx LITE · WaveLinx PRO · VividTune color tuning solutions

LINEAR DISCONNECT Designed to provide safe and convenient means of disconnecting power · BioUp Melanopic Lighting · IALD LIRC · LIGATURE RESISTANT · BAA BUY AMERICAN ACT AVAILABLE · BABA BUILD AMERICA BUY AMERICA AVAILABLE

## Top Product Features

- Sealed center basket luminaire for use in high abuse, medical, wet location, and sterile applications
- BioUp melanopic lighting options enable circadian design for patient or staff care
- Wet location standard, IP65 standard for dust and water ingress protection
- VividTune tunable white (3000K-5000K and 2700K-6500K) available in 80CRI or 90CRI
- NSF listed for use in food services/food preparation environments
- Clear polycarbonate bottom lens for use in **behavioral health applications;** IK10 impact rated with polycarbonate lens
- ISO3-9 certified, USP 797/800, and BSL 1-4 rated for use in cleanroom applications
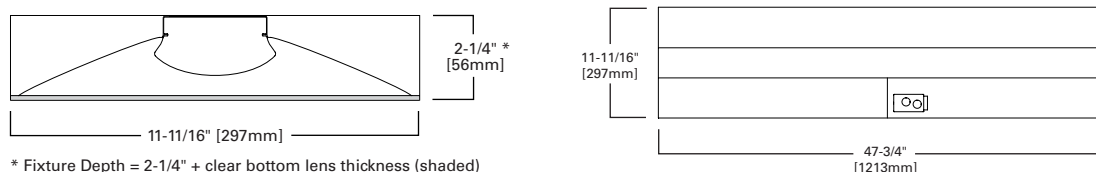- Options to meet Build America, Buy America, Buy American and other domestic preference requirements

## Dimensional and Mounting Details
**(standard curved lens shown)**



2-1/4" * [56mm]

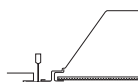11-11/16" [297mm]

11-11/16" [297mm]

47-3/4" [1213mm]

* Fixture Depth = 2-1/4" + clear bottom lens thickness (shaded)
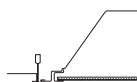When combined with emergency total height is increased by 1 inch.

## 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

## Optional Square Lens



**SQR** - Square Lens

## Order Information

SAMPLE ORDER NUMBER: **14FCZ2-48HE-UNV-L840-CP125-CD1**

| Domestic Preferences (1) | Series | Lumen Output | Shielding | Voltage (3) | CRI/CCT |
|---|---|---|---|---|---|
| **[Blank]**=Standard<br>**BAA**=Buy American Act<br>**TAA**=Trade Agreements Act<br>**BABA**=Build America Buy America Act | **14FCZ2**=12 inch width, 4 ft. length | **High Efficacy**<br>**39HE**=3800 Lumens (2)<br>**48HE**=4800 Lumens (2)<br>**60HE**=6000 Lumens (2)<br>**Standard Efficacy**<br>**20**=2000 Lumens<br>**25**=2500 Lumens<br>**29**=2900 Lumens<br>**35**=3500 Lumens<br>**39**=3900 Lumens<br>**44**=4400 Lumens | **[Blank]**=Ribbed Frosted Acrylic Curved Lens (standard)<br>**S**=Smooth Frosted Acrylic Curved Lens<br>**RDP**=Smooth Curved Lens with Round Pattern Insert<br>**HRP**=Curved Lens with High-Efficiency Round Perf Inlay<br>**SQR**=Square Lens | **UNV**=Universal Voltage 120-277<br>**347V**=347 Volt (4) | **L830**=80CRI, 3000K<br>**L835**=80CRI, 3500K<br>**L840**=80CRI, 4000K<br>**L850**=80CRI, 5000K<br>**L865**=80CRI, 6500K<br>**L930**=90CRI, 3000K<br>**L935**=90CRI, 3500K<br>**L940**=90CRI, 4000K<br>**L950**=90CRI, 5000K<br>**L965**=90CRI, 6500K<br>**L83050**=80CRI 3000K-5000K White Tuning (5)<br>**L93050**=90CRI 3000K-5000K White Tuning (5)<br>**L82765**=80CRI 2700K-6500K White Tuning (5)<br>**L92765**=90CRI 2700K-6500K White Tuning (5)<br>**B35**=BioUp Static 3500K (6)<br>**B40**=BioUp Static 4000K (6)<br>**B50**=BioUp Static 5000K (6)<br>**B2750**=BioUp Tunable 2700K-5000K (7) |
| **Notes**<br>(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**<br>(2) VividTune white tuning, BioUp Static and BioUP dynamic are not available with these lumen selections. | | **Notes**<br>(3) Products also available in non-US voltages and frequencies for international markets. (4) 347 versions 6000 lumens and below are available with emergency options, 5LTHD and step-dim options or sensors are not available. | **Notes**<br>(5) 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 cct, 1 intensity. Not compatible with other control or sensor options. (6) BioUp Static to be used with HCD driver. (7) 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. |

| Flex | Bottom Lens | Driver Type | Number of Drivers |
|---|---|---|---|
| **[Blank]**=No Options<br>**A3/8-4/18GDIM**=3/8" Flex with 0-10V Dimming Leads<br>**A3/8-2/18G**=3/8" Flex with line and common<br>**A3/8-5/18GDIM**=Flex with 0-10V Dimming leads and Blue for alternate wiring. See below for details. | **CA08**=0.080" Clear Acrylic<br>**CA125**=0.125" Clear Acrylic<br>**CP125**=Clear Polycarbonate 0.125"<br>**CP187**=Clear Polycarbonate 0.187"<br>**CP250**=Clear Polycarbonate 0.250" | **CD**=0-10V Driver (10%-100% Dimming)<br>**HCD**=0-10V Driver (1%-100% Dimming)<br>**5LTD**=DALI Driver (5%-100% Dimming)<br>**5LTHD**=DALI Driver (1%-100% Dimming)<br>**SD**=Step Dimming Driver (50% or 100% Dimming)<br>**LH**=Lutron HiLume 1% EcoSystems (LDE1) (F)<br>**W2A**=White Tuning, 2 ch, Analog 0-10V Intensity and CCT Control (8)<br>**W2D**=White Tuning, DALI Type 8 (1%-100% Dimming) (9) | **1**=1 Driver |
| **Flexible Metal Conduit Options**<br>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.<br>**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, 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). | | **Notes**<br>(8) W2A used with two (2) 10V dimming control channels - CCT and intensity. (9) 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.<br><br>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 | |

| Options | Emergency | Integrated Control | Accessories (order separately) (17) |
|---|---|---|---|
| **[Blank]**=No Element Fuse<br>**GL**=Single Element Fuse<br>**GM**=Double Element Fuse<br>**AMW**=Anti-microbial, Powder Coat, Matte White Paint<br>**HS**=High Security **(DFVR accessory not required with HS option)** (10), (19), (21) | **[Blank]**=No Emergency Pack<br>**EL7W**=7-watt, 120V-277V emergency battery pack installed (11)<br>**EL14W**=14-watt 120V-277V emergency battery pack installed (11)<br>**GTR2**=Generator Transfer Relay (12)<br>**ETRD**=Emergency Transfer Relay with dimming control (12)<br>**EL10WSD**=10W emergency battery pack with self-diagnostic installed (11), (13)<br>**EL14WSD**=14W emergency battery pack with self-diagnostic installed (11), (13) | **[Blank]**=No Integrated Control<br>**WLN**=WaveLinx LITE Wireless Control Node, without sensor (14), (B)<br>**WPN**=WaveLinx PRO Wireless Control Node, without sensor (15), (A)<br>**LWTPD1**=Enlighted Wireless Tile-mount Sensor | **[Blank]**=No Accessory<br>**FCZ2-EQCLIP-U-PK**=Pack of four Fail-Safe Cruze grid security clips (16)<br>**DFCL-1248W-U**=1' x 4' gasketed drywall framing kit. Ships with gasket to be applied in field. Cutout Dimensions 12.25" x 48.25".<br>**DFVR/FCZ-1248W-U**=1' x 4' secured tamper resistant drywall kit. Cutout dimensions 12.25" x 48.25". (18), (20) |
| **Notes**<br>(10) For use in behavioral areas. Clear polycarbonate lens, robust steel housing, and tamper resistant hardware provide a ligature resistant luminaire. Ceiling cut-out 13.87" x 49.87". (19) DFVR accessory is not required for (HS) High Security option. (21) HS option is only available for hard ceiling or wall mount; recessed only. | **Notes**<br>(11) 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. (12) Used to bypass local control during outage. Must be used in conjunction with UL 1008 device (provided by others). GTR2 option includes 2 relays on fixtures with dimming drivers. ETRD option only requires one relay when used on a dimming fixture. 347 not available. (13) EL10WSD and EL14WSD not available for 347V<br><br>Integrated options must be used in conjunction with the associated system and may not be compatible with other options or accessories. | **Notes**<br>(14) WPN node to be used with CD, HCD or W2A driver. (15) WLN node to be used with CD or HCD driver.<br><br>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. | **Notes**<br>(16) An EQ Grid Clip is recommended for all 9/16" ceiling systems. Four required per fixture. (17) Accessories sold separately and will be separately analyzed under domestic preference requirements. Consult factory for further information. (18) For Anti-microbial matte white finish, replace W with AMW. ex DFCL-1248AMW-U. (20) **DFVR not necessary with HS option.** |

## Product Specifications

### Construction
- Formed steel housing with integral Grid-lock feature and optional grid security clips

### Integrated Controls
- Standard with 0-10V dimming. Optionally available with Lutron and Dali
- Integrated WaveLinx options provide wireless individual fixture control and enable code compliance, increased energy savings, grouping of fixtures, and connection to WaveLinx control systems

### LED and Light Engine
- Available in 3000, 3500, 4000, 5000K and 6500K fixed color temperatures, or with Vividtune white tuning technology
- Drivers available in 120-277V and 347V
- TM21 life at 60,000 hours up to L85 and L70 exceeds 132,000 hours
- Tunable white options available with Cooper Lighting Solutions' VividTune
- BioUp options available in static or tunable white

### Emergency Battery Options
- Optional 120-277V emergency battery available in 7W or 14W
- 90-minute backup period for code compliance
- Test switch with laser pointer and testing from floor feature for ease of use
- Generator transfer options available

### Finish
- High Gloss white finish standard

### Shielding
- Standard ribbed frosted acrylic curved diffuser
- Optional clear curved diffuser with perf or decorative pattern inserts
- Optional smooth acrylic frosted curved lens (S)
- Optional metal perforated acrylic curved lens (RDP)
- Optional High-Efficiency Curved Round Perf Inlay (HRP)
- Optional square frosted acrylic lens (SQR)

### Compliance
- Tested for ISO 5 compliance. IS03 and ISO4 environments typically employ uni-directional vertical air-flow and a ventilated raised floor to remove airborne particles. Not uncommon for the entire ceiling to be either HEPA or ULPA filters. Filtered air is continually directed downward, passing through the ventilated raised floor, and recirculated – to remove more of the airborne particles than are created. Often, laminar-flow surface mount luminaires are used to illuminate the space. With proper air flow and air exchanges, proper installation, this non-shedding luminaire is acceptable for use in ISO3-9 environments.
- IC rated, cULus Wet Location
- RoHS compliant
- IP65 rated from below the luminaire/ceiling
- IK10 - Polycarbonate Lens

- NSF rated; Splash, Non-Food Zone- Typical rating for lighting equipment not subjected to direct food contact. (e.g. ceiling mount luminaires). Examples of equipment subjected to direct food contact would be cutting boards, work-tables, mixers, can-openers, other)
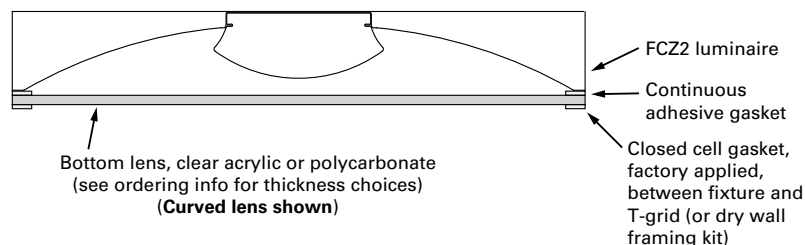
### BABA Domestic Preference Compliance
- This Cooper product is manufactured in the US and meets the BABA cost of components rule. To verify a configured product with specific accessories and options meets BABA Domestic Preference Requirements; submit this catalog number to Cooper Lighting Quotation 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

## Cross Section



- FCZ2 luminaire
- Continuous adhesive gasket
- Closed cell gasket, factory applied, between fixture and T-grid (or dry wall framing kit)

Bottom lens, clear acrylic or polycarbonate (see ordering info for thickness choices) (**Curved lens shown**)

## Energy and Performance Data Catalog Number

| Catalog Number | Watts | CA08 | LPW | CA125 | LPW | CP125 | LPW | CP187 | LPW | CP250 | LPW |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 14FCZ2-20-XXXX-UNV-35-CD1 | 16.3 | 1940 | 119 | 1933 | 119 | 1896 | 116 | 1816 | 111 | 1801 | 110 |
| 14FCZ2-25-XXXX-UNV-35-CD1 | 20.5 | 2390 | 117 | 2382 | 116 | 2336 | 114 | 2237 | 109 | 2219 | 108 |
| 14FCZ2-29-XXXX-UNV-35-CD1 | 24.3 | 2782 | 114 | 2772 | 114 | 2718 | 112 | 2603 | 107 | 2582 | 106 |
| 14FCZ2-35-XXXX-UNV-35-CD1 | 31.2 | 3426 | 110 | 3414 | 109 | 3347 | 107 | 3206 | 103 | 3179 | 102 |
| 14FCZ2-39-XXXX-UNV-35-CD1 | 32.3 | 3799 | 118 | 3786 | 117 | 3712 | 115 | 3555 | 110 | 3526 | 109 |
| 14FCZ2-44-XXXX-UNV-35-CD1 | 38.3 | 4360 | 114 | 4344 | 113 | 4260 | 111 | 4080 | 107 | 4046 | 106 |
| 14FCZ2-39HE-XXXX-UNV-35-CD1 | 29.3 | 3832 | 131 | 3818 | 130 | 3744 | 128 | 3586 | 122 | 3556 | 121 |
| 14FCZ2-48HE-XXXX-UNV-35-CD1 | 36.9 | 4661 | 126 | 4645 | 126 | 4554 | 123 | 4362 | 118 | 4326 | 117 |
| 14FCZ2-60HE-XXXX-UNV-35-CD1 | 48.3 | 5819 | 120 | 5798 | 120 | 5686 | 118 | 5445 | 113 | 5401 | 112 |

**Lumen Calculator**

| CCT Multiplier | 80 CRI | 90 CRI [1] | BioUp Static |
|---|---|---|---|
| 3000K | 0.994 | 0.830 | - |
| 3500K | 1.00 | 0.845 | 0.912 |
| 4000K | 1.00 | 0.854 | 0.899 |
| 5000K | 1.065 | 0.852 | 0.879 |

## Control Solutions

- WaveLinx LITE wireless
- WaveLinx PRO wireless
- WaveLinx CAT wired
- WaveLinx Wired

**WaveLinx** Digital Lighting Control Solutions

The FCZ with Wavelinx Pro Node offers no-hassle lighting control with multiple luminaire level control solutions.

**WaveLinx PRO** Node is a wireless lighting control solution, for connected spaces, that can be used to significantly reduce a building's energy consumption. From a single floor to an entire campus, WaveLinx PRO connects more than lighting assets; it shares aggregated data with the WaveLinx CORE platform and other building systems, so building owners can improve operations, spaces environment, and tenants' experience. WaveLinx PRO offers a rich portfolio of wireless devices, Wavelinx Pro node-enabled luminaires, and an intuitive WaveLinx mobile app for complex environments.

**Wavelinx Lite** Node is a cost effective, wireless digital lighting control solution, with out-of-the-box functionality, that saves energy and meets code. Customize installations for complex environments.

**With Integrated WaveLinx Node**
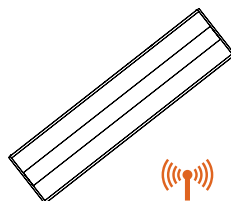
Sealed luminaires do not work well with PIR sensors. The WaveLinx sensor node (WPN, WLN) are "hidden" controls enabling wireless wavelinx control without the issues associated with PIR sensing.

**Allows to:**
- Connect sealed fixtures without a standard sensor option such as products for clinical space.
- Keeps luminaire aesthetics

### Integrated Controls Options

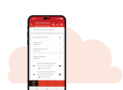| Option | Out of the Box Functionality | Luminaire Level Lighting Control (LLLC) | Automatic Dimming Photocell | Occupancy Sensing | CCT Control |
|--------|------------------------------|------------------------------------------|------------------------------|-------------------|-------------|
| WLN | | X | | | |
| WPN | | 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 WPN device in addition to VividTune or BioUp technologies for integrated fixture control.

## Systems comparison chart

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

| | Luminaire with standalone sensor | Standalone Spaces WaveLinx LITE | Standalone Spaces WaveLinx CAT | Networked Spaces WaveLinx PRO | Enterprise WaveLinx CORE |
|--------|------|------|------|------|------|
| Occupancy | Yes | Yes | Yes | Yes | Yes |
| Daylighting | Yes | Yes | Yes | Yes | Yes |
| Wallstations | – | Yes | Yes | Yes | Yes |
| Gateways | – | – | – | 1 WAC | 300 WACs |
| Devices (MAX) | – | 40 per Area (1120 per space) | 40 per Area | 200 per WAC2 | 32,500 per CORE Enterprise |
| Software | – | WaveLinx LITE Mobile App | WaveLinx CAT Mobile App | WaveLinx Mobile App | CORE |
| Areas | – | 28 per Space | Unlimited | 50 per WAC2 | up to 3,000 |
| Zones | – | 16 per Area | 16 per Area | 16 per Area | up to 9,000 |
| Scheduling | – | – | – | Local | Global |
| VividTune™ | – | – | – | Yes | Yes |
| Plug-Load Control | – | Yes | Yes | Yes | Yes |
| Low-Voltage Power | – | – | Yes | Yes | Yes |
| Integration | – | – | – | – | BACnet, API |
| Dashboards | – | – | – | – | Energy, Occupancy |
| Configuration | – | Installer | Installer | Technician | Technician / IT |

**COOPER** Lighting Solutions
a Signify business

# VividTune™
### color tuning solutions

## 14 FCZ2 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.
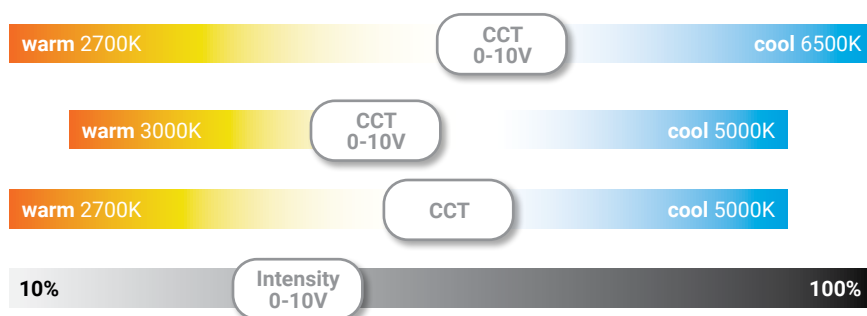


Black Body Locus          ANSI C78.377-2017 Quadrangles

—— 3000K - 5000K
—— 2700K - 6500K
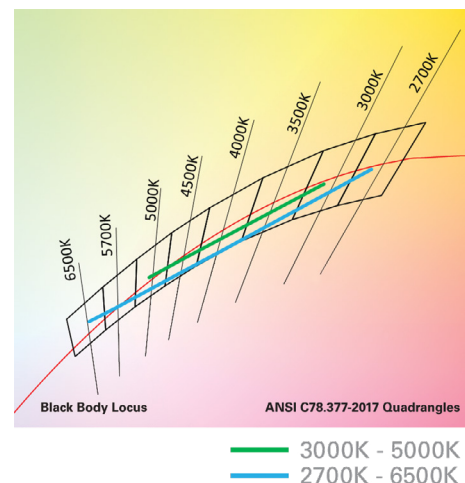
## Energy and Performance Data

### 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 | - | - |

### 1' x 4' FCZ LED - Example of Approximate Lumen Calculation

| CCT Setting | Standard Catalog # 14FCZ2-35-UNV-L835-CD1-U | VividTune 80 CRI Catalog # 14FCZ2-35-UNV-L83050-W2A1-U | VividTune 90 CRI Catalog # 14FCZ2-35-UNV-L93050-W2A1-U | BioUp Tunable White 14FCZ2-35-UNV-B2750-W2A1-U |
|---|---|---|---|---|
| 2700K | - | 3201 | 2733 | 3325 |
| 3000K | - | 3294 | 2712 | 3293 |
| 3500K | 3545 | 3486 | 2963 | 3233 |
| 4000K | - | 3660 | 3200 | 3187 |
| 4500K | - | 3695 | 3255 | 3155 |
| 5000K | - | 3695 | 3255 | 3116 |
| 6500K | - | 3644 | 3307 | - |

## 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.

warm 2700K          CCT 0-10V          cool 6500K

warm 3000K          CCT 0-10V          cool 5000K

warm 2700K          CCT          cool 5000K

10%          Intensity 0-10V          100%

### Example of Lumen Adjustment Calculation

14FCZ2-35-UNV-L83050-W2A1-U
at 80 CRI tuned to 3500K

Adjusted Lumen = published lm x adjusted lm factor

Adjusted Lumen = 3545 x 0.983

Adjusted Lumen = 3486 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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Lighting Solutions
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# Proven Research. Industry Recognized.

## BioUp
### Melanopic Lighting

**See better**

**Feel better**

**Function better**

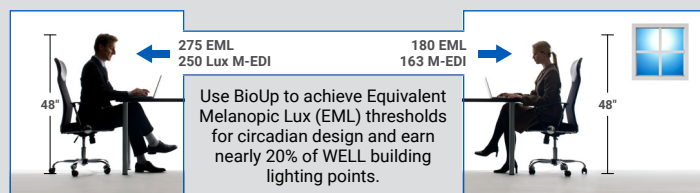See BioUp brochure for more details

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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

**INTERNATIONAL WELL BUILDING INSTITUTE™**

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

275 EML
250 Lux M-EDI

180 EML
163 M-EDI

48"

48"

Use BioUp to achieve Equivalent Melanopic Lux (EML) thresholds for circadian design and earn nearly 20% of WELL building lighting points.

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

@signify

The power of healthy daytime lighting in indoor settings
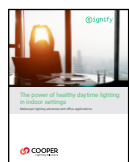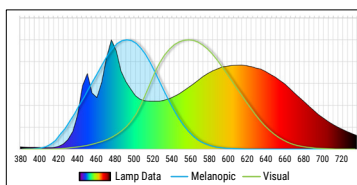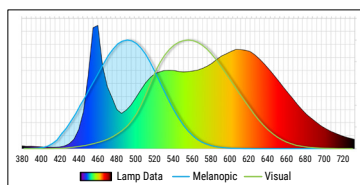
See BioUp white paper for more details

COOPER

**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


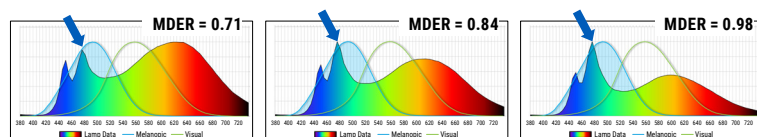
## 30% boost Biological impact
### compared to traditional LED sources

| 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.*

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## Static (non-tunable)
Static BioUp is used when simple Melanopic Lighting is desired at all times.

**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.

MDER = 0.71



MDER = 0.84



MDER = 0.98



**3500K** or **4000K** or **5000K**

Cyan light component always present

**Dimming Control**

0%    Intensity    100%

❯ no CCT control needed

**Evening**

MDER = 0.43



**Daytime**

MDER = 0.98
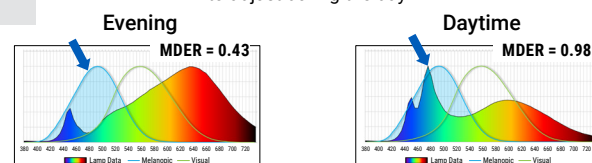


Warmer CCT **Without** Cyan content

Cooler Light **With** Cyan content

**2700K – 5000K**

**CCT Control**

warm 2700K    CCT    cool 5000K

**Dimming Control**

0%    Intensity    100%

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

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