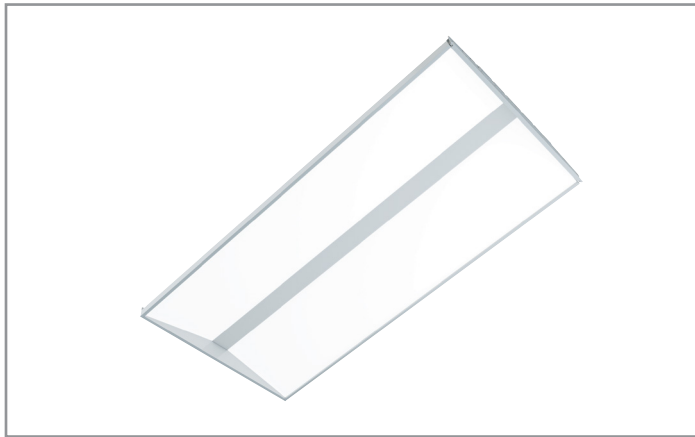


Project		Catalog #		Type	
Prepared by		Notes		Date	



## Metalux

### Encounter 24EN LED

2' x 4' Troffer LED Module  
Specification Grade Troffer

#### Typical Applications

- Commercial Office Spaces • Schools • Hospitals • Retail
- Other Indoor Ambient Applications

#### Interactive Menu

- Order Information page 2
- Photometric Data page 3
- Control Solutions page 4
- Connected Systems page 4
- Product Warranty

#### Product Certification



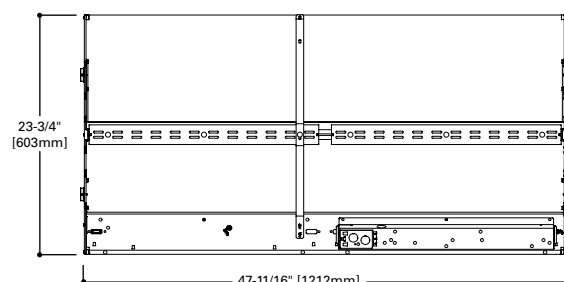
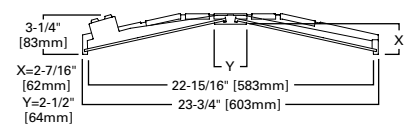
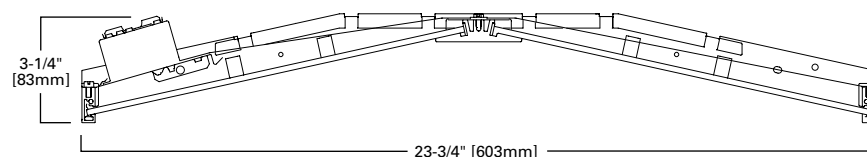
#### Product Features



#### Top Product Features

- Available in 1' x 2', 1' x 4', 2' x 2' and 2' x 4' recessed versions
- Leverages our patented WaveStream Technology with AccuAim™ optics
- Four CCT options: 3000K, 3500K, 4000K, and 5000K at 80CRI or 90 CRI
- White tuning solutions available, either 3000K - 5000K or 2700K - 6500K
- Efficacy up to 143 lumens per watt
- Options to meet Buy American and other domestic preference requirements

#### Dimensional and Mounting Details



#### Ceiling Compatibility

G	G or T	F	Ceiling Type	Trim Type
Grid/Lay-in Standard	9/16" or 15/16" Slot Grid	Drywall Frame Kit	Exposed Grid	G
			Concealed T	G or T
			Slot Grid	G or T
			Flange	*

#### Notes:

\*See Drywall Frame Kit Accessory in Ordering Information section.

\*\*Fixture construction is suitable for use in Air-handling and plenum rated spaces in accordance with Section 300.22 (C) of the National Electrical Code, Section 4.3.11.2.6.5 of NFPA 90A and Section 602.2.1.4 of ICC.

## Order Information

SAMPLE ORDER NUMBER: **24EN-LD2-67-UNV-L835-CD1-WPN-U**

Domestic Preferences	Rating	Series	Air	Lamp Type	Lumen Outputs	Voltage
Domestic Preferences <sup>(20)</sup>	Rating	Series <sup>(2)</sup>	Air	Lamp Type	Lumen Outputs	Voltage <sup>(6)</sup>
<b>[Blank]</b> =Standard <b>BAA</b> =Buy American Act <b>TAA</b> =Trade Agreements Act	<b>[Blank]</b> =Standard <b>ATW-SW4</b> = Chicago Rated <sup>(1)</sup>	<b>24EN</b> =2' x 4' Encounter Series	<b>[Blank]</b> =Standard <b>A</b> =Air (Vented) <sup>(3)</sup>	<b>LD2</b> =LED 2.0	<b>Stock</b> 45=4500 Lumens 54=5400 Lumens 67=6700 Lumens  <b>MT0</b> 30=3000 Lumens <sup>(4), (5)</sup> 34=3400 Lumens <sup>(4), (5)</sup> 40=4000 Lumens 49=4900 Lumens 58=5800 Lumens 70=7000 Lumens <sup>(4)</sup> 74=7400 Lumens <sup>(4)</sup>	<b>UNV</b> =Universal Voltage 120-277 <b>347V</b> =347 Volt <sup>(7)</sup> <b>48V</b> =48 Volt Low-voltage (Class 2) <sup>(8)</sup> <b>120V</b> =120 Volt <sup>(9)</sup> <b>277V</b> =277 Volt <sup>(9)</sup>
<b>Notes</b>  (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 <a href="#">DOMESTIC PREFERENCES</a> website for more information. Components shipped separately may be separately analyzed under domestic preference requirements.	<b>Notes</b>  (1) Chicago rated version does not allow for row mounting.	<b>Notes</b>  (2) DesignLights Consortium® Qualified and classified for both DLC Standard and DLC Premium, refer to <a href="#">www.designlights.org</a> for details.	<b>Notes</b>  (3) Air version is vented but does not meet air handling requirements.		<b>Notes</b>  (4) Step-dim driver not available with 3000, 3400, 7000 and 7400 lumen options. (5) SLTD DALI option not available with 3000 and 3400 lumen packages.	<b>Notes</b>  (6) Products also available in non-US voltages and frequencies for international markets. (7) 347V emergency option not available. (8) Must specify voltage as 120V or 277V when ordering GTR2 option. (C) Consult WaveLinX Low-Voltage or DLVP system pages for additional details and compatibility.

Emergency Options	CCT	Flex	Driver Type
Emergency Optionsx	CCT	Flex	Driver Type
<b>EL7W</b> =7-watt 120V-277V emergency battery pack <sup>(9)</sup> <b>EL10W</b> =10-watt 120V-277V emergency battery pack <sup>(9)</sup> <b>EL14W</b> =14-watt 120V-277V emergency battery pack <sup>(9)</sup> <b>EL10WSD</b> =10W emergency battery pack with self-diagnostic installed <sup>(9), (22)</sup> <b>EL14WSD</b> =14W emergency battery pack with self-diagnostic installed <sup>(9), (22)</sup> <b>ELV7W</b> =Low-voltage system, 7-watt emergency battery pack <sup>(5)</sup> <b>ELV14W</b> =Low-voltage system, 14-watt emergency battery pack <sup>(5)</sup> <b>GTR2</b> =Bodine Generator Transfer Relay <sup>(10), (11)</sup> <b>ETRD</b> =Emergency Transfer Relay with dimming control <sup>(10)</sup>	<b>L830</b> =3000K <b>L835</b> =3500K <b>L840</b> =4000K <b>L850</b> =5000K <b>L930</b> =3000K <b>L935</b> =3500K <b>L940</b> =4000K <b>L950</b> =5000K <b>L83050</b> =80CRI 3000K-5000K White Tuning <sup>(12)</sup> <b>L93050</b> =90CRI 3000K-5000K White Tuning <sup>(12)</sup> <b>L82765</b> =80CRI 2700K-6500K White Tuning <sup>(12)</sup> <b>L92765</b> =90CRI 2700K-6500K White Tuning <sup>(12)</sup>	<b>A3/8-4/18GDIM</b> =3/8" Flex with 0-10V Dimming Leads Multiple other configurations available. See below for details. <b>A3/8-5/18GDIM</b> =Flex with 0-10V Dimming leads and Blue for alternate wiring. See below for details.	<b>CD</b> =0-10V Driver (1%-100% Dimming) <b>SLTD</b> =DALI Driver (5%-100% Dimming) <sup>(15)</sup> <b>SLTHD</b> =DALI Driver (1%-100% Dimming) <sup>(14)</sup> <b>LV</b> =Low-voltage System Driver (0%-100% Dimming) <sup>(6)</sup> <b>SD</b> =Step Dimming Driver (50% or 100% Dimming) <sup>(13)</sup> <b>LH</b> =Lutron HiLume (LDE1 series) 1%-100% EcoSystem Driver with Soft-on Fade to Black dimming <sup>(5)</sup> <b>W2A</b> =White Tuning, 2ch, Intensity and CCT Control <sup>(16)</sup> <b>SR</b> =Sensor-ready Driver (1%-100% Dimming)
<b>Notes</b>  (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). GTR2 option includes 2 relays on fixtures with dimming drivers. ETRD option only requires one relay when used on a dimming fixture. (11) Must specify voltage as 120V or 277V when ordering GTR2 option. (22) EL10WSD and EL14WSD not available with 347V. (C) Consult WaveLinX Low-Voltage or DLVP system pages for additional details and compatibility.	<b>Notes</b>  (12) 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.	<b>Flexible Metal Conduit Options</b>  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.  <b>A3/8-4/18GDIM series notes:</b> 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).	<b>Notes</b>  (13) Step-dim (SD) driver not available with 3000, 3400, 7000 and 7400 lumen options. (14) Two drivers required for DALI (SLTHD) option for 6700 lumens and up. (15) DALI (SLTD) option not available with 3000 and 3400 lumen packages. (16) 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.  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 <a href="#">www.lutron.com</a> .

Number of Drivers	Integrated Sensing Systems	Packaging	Accessories
Number of Drivers	Integrated Sensing Systems	Packaging	Accessories (order separately) <sup>(21)</sup>
1=1 Driver 2=2 Drivers	<b>[Blank]</b> =No Sensor <b>WAA</b> =WaveLinX PRO Wireless Integrated Sensor <sup>(17), (A)</sup> <b>WPN</b> =WaveLinX PRO Wireless Node without Sensor <sup>(17), (A)</sup> <b>WAB</b> =WaveLinX LITE Wireless Integrated Sensor <sup>(18), (B)</sup> <b>WLA</b> =Low-voltage Integrated Sensor <sup>(19), (C)</sup>	<b>U</b> =Unit Pack <b>PALC</b> =Job Pack, in carton	<b>T3A END E.Q. BRACKET PARTS BAG</b> (Standard with fixture) <b>DF-24W-U</b> =2' x 4' Drywall Frame Kit <b>SK-24-WS</b> =2' x 4' Shallow Surface Mount Kit <b>SK-24-WT</b> =2' x 4' Tall Surface Mount Kit
	<b>Notes</b>  (17) WAA sensor and WPN node to be used with CD or W2A driver. Consult factory for WPN with tunable white W2A driver. (18) WAB sensor to be used with CD driver. (19) WLA sensor to be used with LV driver.  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) 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.		<b>Notes</b>  (21) 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.

## Product Specifications

### Construction

- Shallow 3-1/16" deep housing extruded aluminum frame
- Injected molded composite end plates
- End plates screws for strength, rigidity and gap eliminations
- End plates accessory grid-lock feature adds safety
- Four auxiliary fixture end suspension points
- Large access plate for supply connection

### Controls

- 0-10V dimming to 1% standard
- WaveLinX wireless sensor compatible for standalone, controlled, connected, and IoT capability
- Low-voltage sensor and driver compatible for WaveLinX Low-Voltage and DLVP applications
- DALI 2.0, Lutron, and step-dimming available

### Electrical

- LED's available in 3000K, 3500K, or 4000K at 80 CRI or 90 CRI minimum
- Color accuracy  $\leq 3$ -Step MacAdam ellipse (SDCM)
- TM21 life at 60,000 hours up to L92 and calculated L70 exceeds 288,000 hrs
- Drivers available in 120-277V and 347V
- Tunable white options available with Cooper Lighting's VividTune

### Emergency Battery Pack Options

- 120V-277V integral emergency battery pack comes in 7-watts, 10-watt, or 14-watts
- Self-diagnostic emergency battery available in 10 or 14-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

### Finish

- High reflectance baked matte white enamel finish

### Optics

- Precision formed optical assembly
- Positively retained high optical grade acrylic lenses
- WaveStream technology provides a visually comfortable fully luminous surface

### Compliance

- Components are UL recognized
- cULus Damp Location listed for 25C ambient indoor environments
- Complies with IESNA LM-79 and LM-80 standards
- DesignLights Consortium® Qualified and classified for DLC Standard and DLC Premium (refer to www.designlights.org)

### Warranty

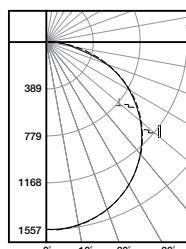
- Five year warranty standard. Optional ten year warranty available

### Driver Access

- Drivers can be accessed via plenum

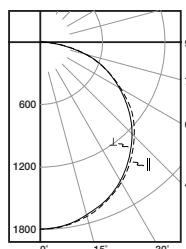
## Photometric Data

 View IES files



### 24EN-LD2-45-UNV-L835-CD1-U

Electronic Driver  
Linear LED 3500K  
Spacing criterion: (H) 1.29 x mounting height,  
(L) 1.29 x mounting height  
Lumens: 4656  
Input Watts: 38W  
Efficacy: 122.5 lm/W  
Test Report: 24EN-LD2-45-UNV-L835-CD1-U.IES



### 24EN-LD2-54-UNV-L835-CD1-U

Electronic Driver  
Linear LED 3500K  
Spacing criterion: (H) 1.3 x mounting height,  
(L) 1.3 x mounting height  
Lumens: 5410  
Input Watts: 43.0W  
Efficacy: 125.8 lm/W  
Test Report: 24EN-LD2-54-UNV-L835-CD1-U.IES

## Energy and Performance Data

Stock or MTO	Catalog Logic	Delivered Lumens	Watts	Efficacy (LPW)
MTO	24EN-LD2-30-UNV-L835-CD1-U	3117	24.6	127
MTO	24EN-LD2-34-UNV-L835-CD1-U	3610	28.7	126
MTO	24EN-LD2-40-UNV-L835-CD1-U	4204	33.9	124
STOCK	24EN-LD2-45-UNV-L835-CD1-U	4656	38.0	123
STOCK	24EN-LD2-45-UNV-L840-CD1-U	4748	38.0	125
MTO	24EN-LD2-49-UNV-L835-CD1-U	5099	42.2	121
STOCK	24EN-LD2-54-UNV-L835-CD1-U	5410	43.0	126
STOCK	24EN-LD2-54-UNV-L840-CD1-U	5518	43.0	128
MTO	24EN-LD2-58-UNV-L835-CD1-U	5838	47.0	124
STOCK	24EN-LD2-67-UNV-L835-CD1-U	6731	56.1	120
STOCK	24EN-LD2-67-UNV-L840-CD1-U	6866	56.1	122
MTO	24EN-LD2-70-UNV-L835-CD1-U	7023	60.2	117
MTO	24EN-LD2-74-UNV-L835-CD1-U	7484	63.6	118

### Lumen Maintenance

Ambient Temperature	TM-21 Lumen Maintenance (60,000 hours) <sup>(1)</sup>	Theoretical L70 (Hours) <sup>(2)</sup>
25°C	> 92%	> 288,000

Notes: (1) Supported by IES TM-21 standards. (2) 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.

### Lumen Calculator

CCT Multiplier	80 CRI	90 CRI
3000K	0.970	0.835
3500K	1.000	0.864
4000K	1.020	0.901
5000K	1.110	0.955

### Example of Lumen Adjustment Calculation

24EN-LD2-45-UNV-L835-CD1-U  
at 90CRI at 3500K

Lumen Adjustment Factor = 0.864

Total Light Output = 4,651 lm x 0.864 = 4,022 lm

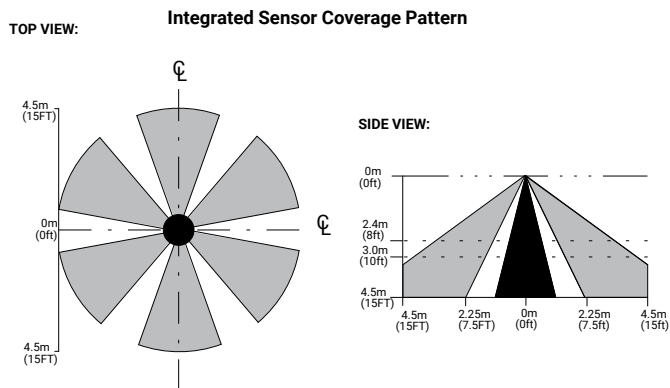
Efficacy =  $\frac{4,022 \text{ lm}}{38 \text{ W}}$  = 105.8 lm/W

### Shipping Data

Catalog No.	Weight (lbs)	Units per Pallet 49" L x 52" W x 55" H
24EN-LD2	28	18

## Control Systems

- WaveLinx PRO Wireless
- WaveLinx LITE Wireless
- WaveLinx Wired



**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.

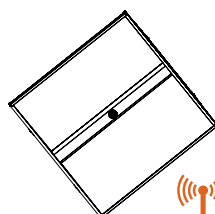
The Encounter with WaveLinx offers no-hassle lighting control with multiple luminaire level control solutions.

**WaveLinx PRO** is used for applications where spaces need to be connected to a lighting or building management system and to help building owners improve their operations, building environment, and tenants' experience by leveraging the data generated by the sensors. The WaveLinx PRO devices communicate with each other via the WaveLinx Area Controller which coordinates the data traffic between the devices, lighting apps and CORE platform. The WaveLinx Area Controller also hosts the time clock required if spaces need to be turned on/off at a specific time.

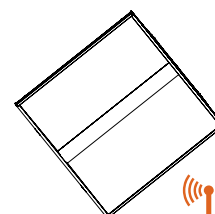
The WaveLinx PRO Sensor offers built-in occupancy and daylighting controls as well as luminaire level control including white tuning while the WaveLinx PRO Node offers luminaire level control and white tuning. If opting for the WaveLinx PRO Node option, a PRO Ceiling Sensor will most likely be needed within the space to control the lights based on occupancy and daylight levels.

**WaveLinx LITE** is used for single spaces where there is no need to manage the spaces remotely or exchange the sensor data with other sub-systems within the building or smart applications.

The WaveLinx LITE Sensor offers built-in occupancy and daylighting controls as well as luminaire level control.



With Integrated WaveLinx Sensor



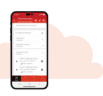
With Integrated WaveLinx Node

## 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



Networked Spaces  
WaveLinx PRO



Enterprise  
WaveLinx CORE

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

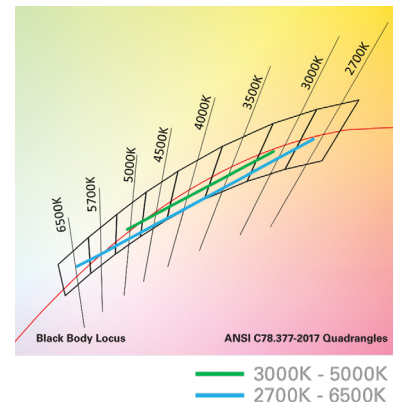
## SCALABILITY





## 24EN 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.



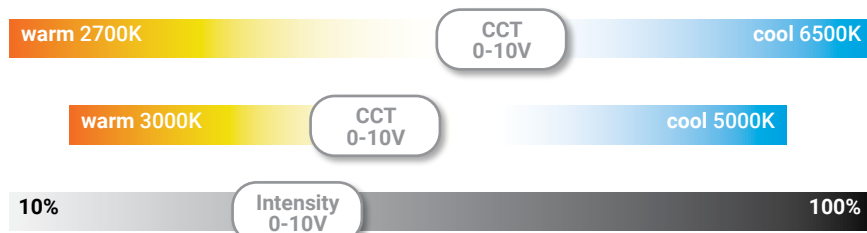
## Performance Data\*

Tunable White - Lumen Adjustment Factors (example only)				
CCT	3000K-5000K		2700K-6500K	
	80 CRI	90 CRI	80 CRI	90 CRI
2700K	-	-	0.894	0.738
3000K	0.968	0.809	0.903	0.762
3500K	0.984	0.827	0.932	0.779
4000K	0.988	0.860	0.919	0.814
4500K	1.002	0.864	0.946	0.808
5000K	1.003	0.868	0.945	0.829
6500K	-	-	0.949	0.850

2' x 4' Encounter LED - Example of Approximate Lumen Calculation			
	Standard Catalog #	VividTune 80 CRI Catalog #	VividTune 90 CRI Catalog #
CCT Setting	24EN-LD2-45-UNV-L835-CD1-U	24EN-LD2-45-UNV-L83050-W2A1-U	24EN-LD2-45-UNV-L93050-W2A1-U
3000K	-	4508	3765
3500K	4656	4582	3853
4000K	-	4601	4002
4500K	-	4663	4023
5000K	-	4668	4042

## 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, [click here](#) for tunable white application guides.



## Example of Lumen Adjustment Calculation

24EN-LD2-45-UNV-L83050-W2A1-U  
at 80 CRI tuned to 3500K

$\text{Adjusted Lumen} = \text{published lm} \times \text{adjusted lm factor}$

$\text{Adjusted Lumen} = 4656 \times 0.984$

$\text{Adjusted Lumen} = 4582 \text{ lm}$

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