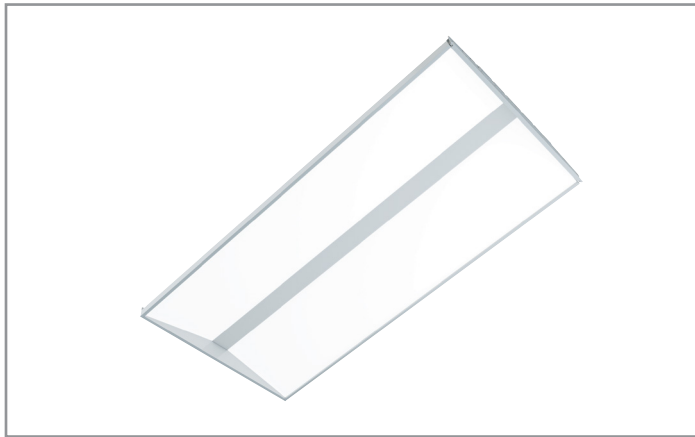| Project		Catalog #		Type	
Prepared by		Notes		Date	

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

UL CERTIFIED SAFETY   DLC LISTED   DLC LISTED PREMIUM   damp location   IC RATED   IP40   TAA   ISO SYSTEMS CERTIFIED

Product Features

Connected Systems   Bluetooth   VividTune color tuning solutions   MWS MODULAR WIRING SYSTEM CLICK HERE

LINEAR DISCONNECT Safe and convenient means of disconnecting power   Rapid Response CLICK HERE

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
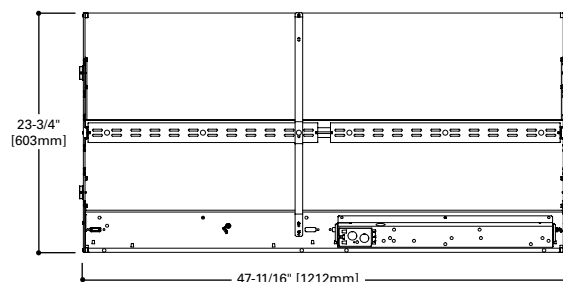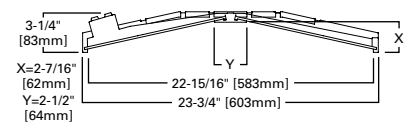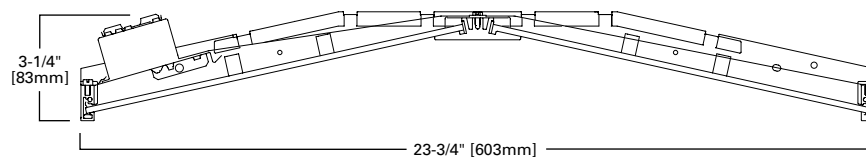• Options to meet Trade Agreements Act requirements

Dimensional and Mounting Details

3-1/4" [83mm]

23-3/4" [603mm]

3-1/4" [83mm]
X=2-7/16" [62mm]
Y=2-1/2" [64mm]
X
Y
22-15/16" [583mm]
23-3/4" [603mm]

23-3/4" [603mm]

47-11/16" [1212mm]

Ceiling Compatibility

G
Grid/Lay-in
Standard

G or T
9/16" or 15/16"
Slot Grid

F
Drywall Frame
Kit

Ceiling Type	Trim Type
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-SVPD1-U**

Domestic Preferences [20]	Rating	Series [2]	Air	Lamp Type	Lumen Outputs	Voltage [6]
[Blank]=Standard **TAA**=Trade Agreements Act	**[Blank]**=Standard **ATW-SW4**=Chicago Rated [1]	**24EN**=2' x 4' Encounter Series	**[Blank]**=Standard **A**=Air (Vented) [3]	**LD2**=LED 2.0	**Stock** **45**=4500 Lumens **54**=5400 Lumens **67**=6700 Lumens **MTO** **30**=3000 Lumens [4], [5] **34**=3400 Lumens [4], [5] **40**=4000 Lumens **49**=4900 Lumens **58**=5800 Lumens **70**=7000 Lumens [4] **74**=7400 Lumens [4]	**UNV**=Universal Voltage 120-277 **347V**=347 Volt [7] **48V**=48 Volt Low-voltage (Class 2) [C] **120V**=120 Volt [8] **277V**=277 Volt [8]
Notes (20) Only product configurations with this designated prefix are built to be compliant with the Trade Agreements Act of 1979 (TAA). Please refer to DOMESTIC PREFERENCES website for more information. Components shipped separately may be separately analyzed under domestic preference requirements.	**Notes** (1) Chicago rated version does not allow for row mounting.	**Notes** (2) DesignLights Consortium® Qualified and classified for both DLC Standard and DLC Premium, refer to www.designlights.org for details.	**Notes** (3) Air version is vented but does not meet air handling requirements.		**Notes** (4) Step-dim driver not available with 3000, 3400, 7000 and 7400 lumen options. (5) 5LTD DALI option not available with 3000 and 3400 lumen packages.	**Notes** (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
EL7W=7-watt, 120V-277V emergency battery pack installed [9] **EL14W**=14-watt 120V-277V emergency battery pack installed [9] **ELV7W**=Low-voltage system, 7-watt emergency battery pack [C] **ELV14W**=Low-voltage system, 14-watt emergency battery pack [C] **GTR2**=Bodine Generator Transfer Relay [10], [11] **ETRD**=Iota Emergency Transfer Relay with dimming control [10]	**L830**=3000K **L835**=3500K **L840**=4000K **L850**=5000K **L930**=3000K **L935**=3500K **L940**=4000K **L950**=5000K **L83050**=80CRI 3000K-5000K White Tuning [12] **L93050**=90CRI 3000K-5000K White Tuning [12] **L82765**=80CRI 2700K-6500K White Tuning [12] **L92765**=90CRI 2700K-6500K White Tuning [12]	**A3/8-4/18GDIM**=3/8" Flex with 0-10V Dimming Leads Multiple other configurations available. See below for details. **A3/8-5/18GDIM**=Flex with 0-10V Dimming leads and Blue for alternate wiring. See below for details.	**CD**=0-10V Dimming Driver (1%-100% Dimming) **WN**=WaveLinx Wireless Fixture, No Sensor. [A], [G], [H] **5LTD**=Fifth Light DALI Driver (10%-100% Dimming) [15], [E] **5LTHD**=Fifth Light Dimming Driver (1%-100% Dimming) [14], [E] **LV**=Low-voltage System Dimming Driver (0%-100% Dimming) [C] **SD**=Step Dimming Driver (50% or 100% Dimming) [13] **LH**=Lutron HiLume (LDE1 series) 1%-100% EcoSystem Driver with Soft-on Fade to Black dimming [F] **L5**=Lutron 5 Series (LDE5-Series) 5%-100% EcoSystem Driver [F] **W2A**=White Tuning, 2ch, Intensity and CCT Control [16] **SR**=Sensor-ready Dimming Driver (1%-100% Dimming)
Notes (9) 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. (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. (C) Consult WaveLinx Low-Voltage or DLVP system pages for additional details and compatibility.	**Notes** (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.	**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. **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).	**Notes** (13) Step-dim driver not available with 3000, 3400, 7000 and 7400 lumen options. (14) Two drivers required for 5LTHD option for 6700 lumens and up. (15) 5LTD DALI 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: (A) Consult WaveLinx system pages for additional details and compatibility. (C) Consult WaveLinx Low-Voltage or DLVP system pages for additional details and compatibility. (E) Consult Fifth Light system pages for additional details and compatibility. (F) Consult Marketplace Options - Lutron system pages for additional details and compatibility. Compatible with driver series shown, and may require two or more drivers. Requires field commissioning to operate or dim. Contact Lutron at www.lutron.com. (G) Not compatible with GTR, ETRD, or integrated sensor options. (H) Available with UNV voltage only.

Number of Drivers	Integrated Sensing Systems	Packaging	Accessories
1=1 Driver **2**=2 Drivers	**[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], [D]	**U**=Unit Pack **PALC**=Job Pack, in carton	**Accessories (order separately) [21]** **T3A END E.Q. BRACKET PARTS BAG** (Standard with fixture) **DF-24W-U**=2' x 4' Drywall Frame Kit **SK-24-WS**=2' x 4' Shallow Surface Mount Kit **SK-24-WT**=2' x 4' Tall Surface Mount Kit **ISHH-01**=Programming Remote for Integrated Sensor [D] **ISHH-02**=Personal Control Remote for Integrated Sensor [D]
	Notes (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. 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.		**Notes** (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. 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
- 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 fixture for sensor-less wireless control
- 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

Electrical
- LED's available in 3000K, 3500K, or 4000K at 80 CRI or 90 CRI minimum
- Color accuracy ≤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
- Optional 120V-277V integral emergency battery pack available in 7W or 14W
- 90-minute backup period for code compliance
- Test switch with laser pointer allows safe testing from floor
- Patented EZ Key prevents accidental discharge during construction

Driver Access
- Drivers can be accessed via plenum

Finish
- High reflectance baked matte white enamel finish

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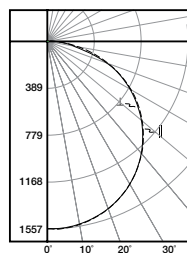- WaveStream technology provides a visually comfortable fully luminous surface

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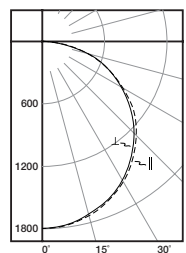
Warranty
- Five year warranty standard. Optional ten year warranty available

Photometric Data

View IES files

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

Electronic Driver

Linear LED 3500K

Spacing criterion: (II) 1.29 x mounting height, (⊥) 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: (II) 1.3 x mounting height, (⊥) 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) [1]	Theoretical L70 (Hours) [2]
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 = $\frac{4,022\ lm}{38W}$ = 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 Wireless
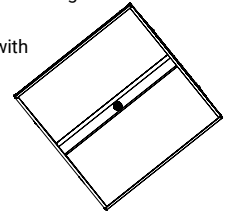- WaveLinx Wired
- WaveLinx Lite
- DLVP
- VividTune

Connected Systems CLICK HERE

The Encounter with Integrated Sensor technology provides automatic energy savings without sacrificing performance. The Encounter delivers superior lighting with integrated occupancy and daylighting controls.
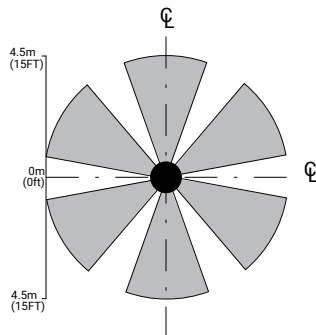
For standalone and controlled applications, the WaveLinx Lite integral sensor provides out-of-the-box functionality with no gateways required and factory startup is not needed.

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.
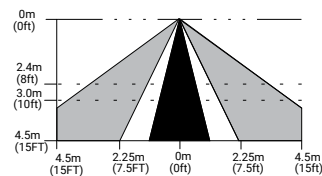
The WaveLinx Wireless Connected Lighting System combined with Trellix provides an open IoT platform and infrastructure that connects intelligent sensors leveraging the real-estate of the physical light fixture to solve higher complexity problems to deliver actionable insights through the aggregation 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
Occupancy	Yes	Yes	Yes	Yes
Daylighting	Yes	Yes	Yes	Yes
Gateways	–	–	1 WAC	300 WACs
Devices	–	50 per Area (1400 per site)	150 per WAC	32,500 per Core Enterprise
Software	–	WaveLinx Lite Mobile App	WaveLinx Pro Mobile App	Trellix Core
Areas	–	28 per Site	50 per WAC	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

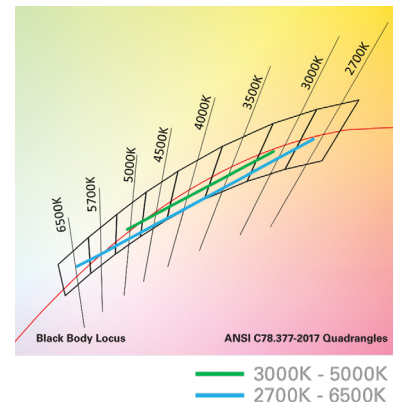devices → areas → floors → buildings

VividTune™
color tuning solutions

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.
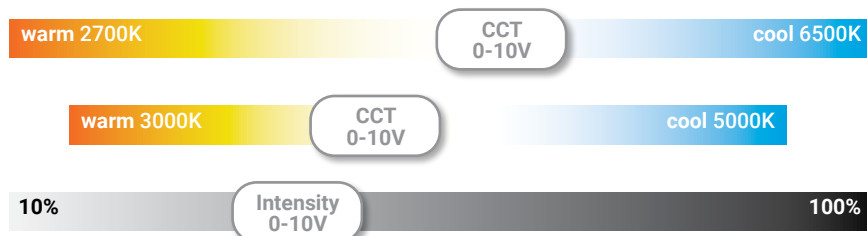

Black Body Locus   ANSI C78.377-2017 Quadrangles

— 3000K - 5000K
— 2700K - 6500K

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.

warm 2700K   CCT 0-10V   **cool 6500K**

warm 3000K   CCT 0-10V   **cool 5000K**

10%   Intensity 0-10V   **100%**

Example of Lumen Adjustment Calculation

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

Adjusted Lumen = published lm x adjusted lm factor

*Adjusted Lumen = 4656 * 0.984*

Adjusted Lumen = 4582 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.

COOPER
Lighting Solutions