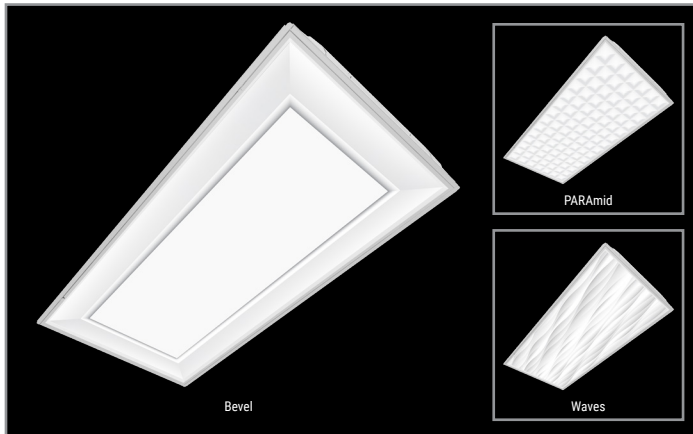


| | | | | | |
|-------------|--|-----------|--|------|--|
| Project | | Catalog # | | Type | |
| Prepared by | | Notes | | Date | |



Metalux

Perceive™ 24PD

2' x 4' Recessed LED Specification Series

Typical Applications

Office • Education • Healthcare • Hospitality • Retail

Interactive Menu

- Order Information [page 2](#)
- Photometric Data [page 3](#)
- Connected Systems [page 6](#)
- Product Warranty

Top Product Features

- Proprietary optical system based on human perception of depth
- Multiple dynamic 3D optical patterns
- Glare-reducing performance provides comfortable high-quality illumination
- Available in 2x2, 2x4, and 1x4 sizes
- Thoughtfully designed wireless control options
- Options to meet Trade Agreements Act requirements

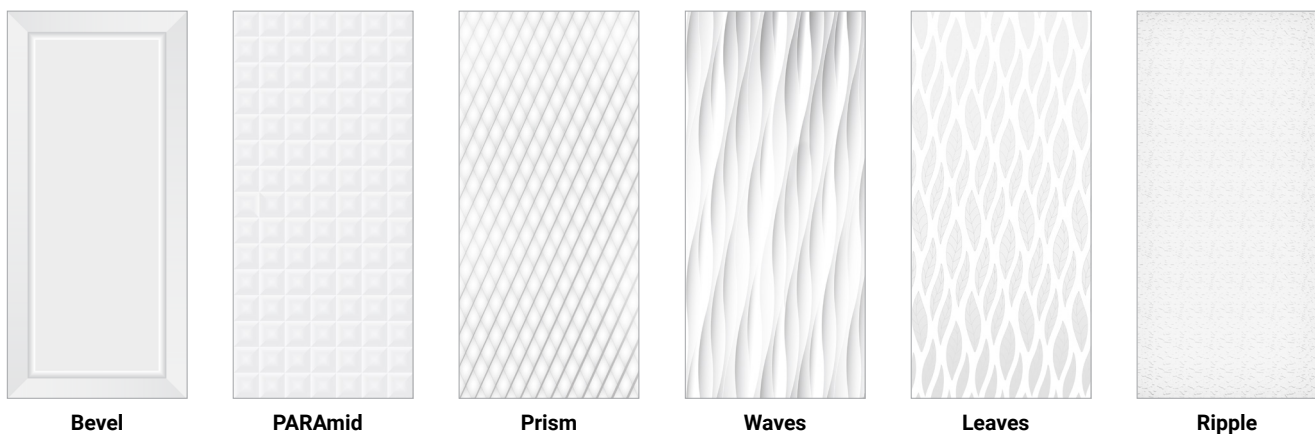
Product Certification



Product Features



Options



[additional product diagrams](#)

Order Information

SAMPLE ORDER NUMBER: **24PD-40-PB1-L835-U**

| Domestic Preferences | Rating | Series | Lumen Output | Shielding | Voltage | Options | Emergency Options |
|---|---|---|--|--|--|--|---|
| Domestic Preferences ⁽¹⁴⁾ | Rating | Series | Lumen Output ⁽¹⁾ | Shielding | Voltage | Options | Emergency Options |
| [Blank] =Standard TAA =Trade Agreements Act | [Blank] =Standard ATW-SW4 =Chicago Rated | 24PD =2x4 Perceive, Service From Below | 30 =3000 Lumens 35 =3500 Lumens 40 =4000 Lumens 45 =4500 Lumens 50 =5000 Lumens 55 =5500 Lumens 60 =6000 Lumens 70 =7000 Lumens 80 =8000 Lumens ^{(2), (3)} 90 =9000 Lumens ^{(2), (3)} | PB1 =Bevel PC3 =PARAmid PP3 =Prism PW1 =Waves PL1 =Leaves PR1 =Ripple | [Blank] =Universal Voltage 120-277 347V =347 Volt ⁽⁴⁾ 48V =48 Volt Low-voltage (Class 2) ⁽⁵⁾ | GL =Single Element Fuse GM =Double Element Fuse | [Blank] =No emergency EL7W =7-watt 120V-277V emergency battery pack ⁽⁵⁾ EL10W =10-watt 120V-277V emergency battery pack ⁽⁵⁾ EL14W =14-watt 120V-277V emergency battery pack ⁽⁵⁾ EL10WSD =10W emergency battery pack with self-diagnostic installed ^{(5), (7)} EL14WSD =14W emergency battery pack with self-diagnostic installed ^{(5), (7)} ELV7W =Low-voltage system, 7-watt emergency battery pack ^{(5), (3)} ELV14W =Low-voltage system, 14-watt emergency battery pack ^{(5), (3)} ETRD =Emergency Transfer Relay with dimming control ⁽⁶⁾ RRU =LVS Controls Emergency Transfer Relay with dimming control ⁽⁴⁾ |
| Notes (14) 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) Custom lumen output available: 3000 to 10000 lumens. (2) SLTHD driver not available on 80 and 90 lumen outputs. (3) WN WaveLinX not available on 80 and 90 lumen outputs. | | Notes (4) 347 with emergency not available with SD driver. (C) Consult WaveLinX Low-Voltage or DLVP system pages for additional details and compatibility. | | Notes (5) 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. (6) Used to bypass local control during outage. Must be used in conjunction with UL 1008 device (provided by others). Devices are universal voltage (120-277V). 347 not available. (C) Consult WaveLinX Low-Voltage or DLVP system pages for additional details and compatibility. (7) EL10WSD and EL14WSD not available with 347V. |

| CRI/CCT | Flex | Driver Type | Number of Drivers |
|--|--|--|--------------------------|
| CRI/CCT ⁽⁸⁾ | Flex ⁽⁹⁾ | Driver Type | Number of Drivers |
| L830 =80CRI, 3000K L835 =80CRI, 3500K L840 =80CRI, 4000K L850 =80CRI, 5000K L930 =90CRI, 3000K L935 =90CRI, 3500K L940 =90CRI, 4000K L950 =90CRI, 5000K | [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. | [Blank] =0-10V Dimming Driver (1%-100% Dimming) SLTD =DALI Driver (5%-100% Dimming) SLTHD =DALI Driver (1%-100% Dimming) LV =Low-voltage System Driver (0%-100% Dimming) ⁽¹⁰⁾ SD =Step Dimming Driver (50%, 100% Dimming) LH =Lutron HiLume (LDE1 series) 1%-100% EcoSystem Driver with Soft-on Fade to Black dimming ⁽⁷⁾ SR =Sensor-ready Driver (1%-100% Dimming) | [Blank] =1 Driver |
| Notes (8) 90CRI - 2700K available - consult factory. | Flexible Metal Conduit Options (9) Multiple options available in online configurator. See additional notes on Flex below. 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-***** 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, 945.72; 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 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. Requires field commissioning to operate or dim. Contact Lutron at www.lutron.com | |

| Integrated Sensing Systems | Packaging | Accessories |
|---|--|--|
| Integrated Sensing Systems | Packaging | Accessories (order separately) ⁽¹⁵⁾ |
| [Blank] =No Sensor WAA =WaveLinX Wireless Integrated Sensor ^{(10), (A)} WAB =WaveLinX Lite Wireless Integrated Sensor ^{(11), (B)} WLA =Low-voltage Integrated Sensor ^{(12), (C)} SVPD1 =0-10V Stand-alone Integrated Sensor ^{(11), (D)} | U =Unit Pack PAL =Job Pack, out of carton PALC =Job Pack, in carton | EQ-CLIP-U =T-BAR Safety Earthquake Clips ⁽¹³⁾ DF-24W-U =2' x 4' Drywall Frame Kit SK-24-WS =2' x 4' Shallow Surface Mount Kit ^(D) ISHH-01 =Programming Remote for Integrated Sensor ^(D) ISHH-02 =Personal Control Remote for Integrated Sensor ^(D) |
| Notes (10) WAA sensor to be used with CD or W2A driver. (11) WAB and SVPD1 sensor to be used with CD driver. (12) 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 Wireless system pages for additional details and compatibility. (B) WaveLinX Lite devices are not currently compatible with the WaveLinX Wireless Area Controller. Consult WaveLinX Lite Commercial 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 (13) An EQ Grid Clip is recommended for all 9/16" ceiling systems. (15) Accessories sold separately will be separately analyzed under domestic preference requirements. Consult factory for further information. (D) For use with SVPD sensor only. Consult SVPD series system pages for additional details and compatibility. |

Product Specifications

Construction

- 3-1/4" Rigid housing is die formed of code gauge prime cold rolled steel
- Full length die-formed stiffeners and unibody endplate for added strength
- Four auxiliary fixture end tie-back points provided
- Endplates have integral Grid-lock feature for safety and convenience
- 1/2" Regressed extruded aluminum door

Hinging/Latching

- Door assembly hinges down for easy access from below
- Positive cam action steel latches with powder coat matte white finish
- Safety-lock T-hinges allow hinging and latching either side

Frame/Shielding

- Proprietary Perceive™ optical system enables dynamic visual depth on a flat surface
- Bottom surface can be wiped down for easy cleaning and maintenance
- Durable lens system is >.125" thick and includes diffuser, 3D elements and anti-glare

Controls

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

Light Engine / Electrical

- LED's available in 3000K, 3500K, 4000K, or 5000K at 80 CRI or 90 CRI minimum
- Color accuracy ≤ 3 -Step MacAdam ellipse (SDCM)
- TM21 life at 72,000 hours up to L86 and calculated L70 exceeds 170,000 hrs
- Drivers available in 120-277V and 347V

Emergency Battery Pack Option

- 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

- Multistage, iron phosphate pretreatment
- Housing is high reflectance pre-paint white finish
- Frame assembly is powder coat matte white finish

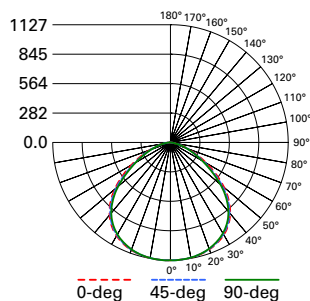
Compliance

- IC rated for insulation contact
- cULus listed for damp locations for 25°C ambient environments
- RoHS compliant
- Tested according to IESNA LM-79 and LM-80 procedures
- Stated life per TM21 standards
- Can be used to comply with California Title 24 Non-Residential
- Meets IEEE 1789-2015 Standard Recommended Practice for LED flicker light modulation
- Contributes to meeting several WELL™ v1 and v2 Features

Warranty

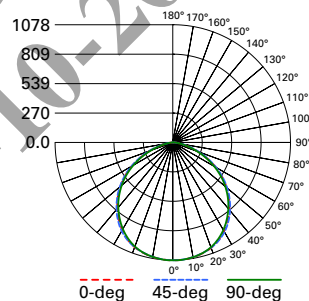
- Five year warranty standard. Optional ten year warranty available

Photometric Data

[View IES files](#)


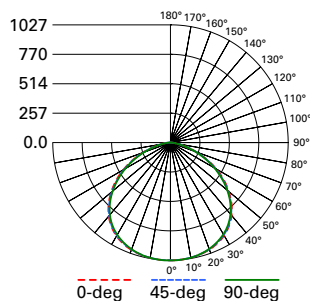
24PD-30-PB1-L835

Electronic Driver
Linear LED 3500K
Spacing criterion: (II) 1.34 x mounting height, (⊥) 1.32 x mounting height
Lumens: 2996
Input Watts: 21.3W
Efficacy: 141 LPW
Test Report: 24PD-30-PB1-L835.IES



24PD-30-PC3-L835

Electronic Driver
Linear LED 3500K
Spacing criterion: (II) 1.28 x mounting height, (⊥) 1.26 x mounting height
Lumens: 2945
Input Watts: 21.3W
Efficacy: 138 LPW
Test Report: 24PD-30-PC3-L835.IES



24PD-30-PP3-L835

Electronic Driver
Linear LED 3500K
Spacing criterion: (II) 1.35 x mounting height, (⊥) 1.33 x mounting height
Lumens: 2986
Input Watts: 21.3W
Efficacy: 140 LPW
Test Report: 24PD-30-PP3-L835.IES

Energy and Performance Data

Electrical Performance - Perceive 2x4

| Lumen Package | CCT | Delivered Lumens | | | | | | Power | Efficacy (LPW) | | | | | | Current (A) | |
|---------------|------|------------------|---------------|-------------|-------------|--------------|--------------|-------|----------------|---------------|-------------|-------------|--------------|--------------|-------------|------|
| | | Bevel (PB1) | PARAmid (PC3) | Prism (PP3) | Waves (PW1) | Leaves (PL1) | Ripple (PR1) | Watts | Bevel (PB1) | PARAmid (PC3) | Prism (PP3) | Waves (PW1) | Leaves (PL1) | Ripple (PR1) | 120V | 277V |
| 3000 | 3500 | 2996 | 2945 | 2986 | 3011 | 3003 | 2894 | 21.3 | 141 | 138 | 140 | 141 | 141 | 136 | 0.18 | 0.08 |
| 3500 | 3500 | 3523 | 3463 | 3512 | 3541 | 3531 | 3403 | 25.3 | 139 | 137 | 139 | 140 | 140 | 134 | 0.21 | 0.09 |
| 4000 | 3500 | 4041 | 3972 | 4028 | 4061 | 4050 | 3903 | 29.4 | 138 | 135 | 137 | 138 | 138 | 133 | 0.24 | 0.11 |
| 4500 | 3500 | 4507 | 4430 | 4493 | 4529 | 4517 | 4353 | 33.0 | 137 | 134 | 136 | 137 | 137 | 132 | 0.27 | 0.12 |
| 5000 | 3500 | 5018 | 4933 | 5002 | 5043 | 5029 | 4847 | 37.1 | 135 | 133 | 135 | 136 | 136 | 131 | 0.31 | 0.13 |
| 5500 | 3500 | 5545 | 5451 | 5527 | 5573 | 5558 | 5356 | 41.2 | 135 | 132 | 134 | 135 | 135 | 130 | 0.34 | 0.15 |
| 6000 | 3500 | 5996 | 5894 | 5977 | 6026 | 6010 | 5792 | 44.9 | 134 | 131 | 133 | 134 | 134 | 129 | 0.37 | 0.16 |
| 7000 | 3500 | 7025 | 6905 | 7003 | 7060 | 7041 | 6786 | 51.5 | 136 | 134 | 136 | 137 | 137 | 132 | 0.43 | 0.19 |
| 8000 | 3500 | 8050 | 7913 | 8024 | 8090 | 8068 | 7776 | 61.2 | 132 | 129 | 131 | 132 | 132 | 127 | 0.51 | 0.22 |
| 9000 | 3500 | 9056 | 8902 | 9027 | 9101 | 9077 | 8747 | 69.7 | 130 | 128 | 130 | 131 | 130 | 126 | 0.58 | 0.25 |

Optical Performance - Perceive 2x4

| Lumen Package | CCT | UGR [CIE 190:2010] (1) (4H, 8H; Reflectance: 70% Ceiling, 50% Wall, 20% Ref. Plane) | | | | | | Max Luminance [45-90 Deg from NADIR] (2) (CD/M ²) | | | | | |
|---------------|------|--|---------------|-------------|-------------|--------------|--------------|---|---------------|-------------|-------------|--------------|--------------|
| | | Bevel (PB1) | PARAmid (PC3) | Prism (PP3) | Waves (PW1) | Leaves (PL1) | Ripple (PR1) | Bevel (PB1) | PARAmid (PC3) | Prism (PP3) | Waves (PW1) | Leaves (PL1) | Ripple (PR1) |
| 3000 | 3500 | 15.1 | 16 | 16.2 | 16.0 | 15.9 | 15.9 | 2303 | 2091 | 2176 | 1451 | 1442 | 1395 |
| 3500 | 3500 | 15.6 | 16.6 | 16.8 | 16.5 | 16.4 | 16.4 | 2709 | 2458 | 2559 | 1706 | 1695 | 1640 |
| 4000 | 3500 | 16.1 | 17.1 | 17.3 | 17.0 | 16.9 | 16.9 | 3107 | 2820 | 2935 | 1957 | 1945 | 1882 |
| 4500 | 3500 | 16.5 | 17.4 | 17.6 | 17.4 | 17.3 | 17.3 | 3465 | 3145 | 3274 | 2183 | 2169 | 2099 |
| 5000 | 3500 | 16.9 | 17.8 | 18 | 17.8 | 17.7 | 17.7 | 3858 | 3501 | 3645 | 2430 | 2415 | 2337 |
| 5500 | 3500 | 17.2 | 18.2 | 18.4 | 18.1 | 18.0 | 18.0 | 4263 | 3869 | 4028 | 2685 | 2669 | 2582 |
| 6000 | 3500 | 17.5 | 18.4 | 18.6 | 18.4 | 18.3 | 18.3 | 4610 | 4184 | 4356 | 2904 | 2886 | 2792 |
| 7000 | 3500 | 18 | 19 | 19.2 | 18.9 | 18.8 | 18.8 | 5401 | 4902 | 5103 | 3402 | 3381 | 3271 |
| 8000 | 3500 | 18.5 | 19.5 | 19.7 | 19.4 | 19.3 | 19.3 | 6189 | 5617 | 5848 | 3899 | 3874 | 3748 |
| 9000 | 3500 | 18.9 | 19.9 | 20.1 | 19.8 | 19.7 | 19.7 | 6962 | 6319 | 6578 | 4386 | 4358 | 4217 |

Nominal Lumen Maintenance

| TM-21 Lumen Maintenance (72,000 hours) | Theoretical L70 (hours) ⁽¹⁾ |
|--|--|
| > 86% | > 170,000 |

Notes: (1) Theoretical values represent estimations. Refer to LED Product Lifetime Prediction, IES PS-10-18, that explains proper use of IES TM-21 and LM-80.

Lumen Adjustment Factors

| CCT Multiplier | 80 CRI | 90 CRI |
|----------------|--------|--------|
| 3000K | 0.953 | 0.826 |
| 3500K | 1.000 | 0.837 |
| 4000K | 1.005 | 0.849 |
| 5000K | 1.027 | 0.894 |

Shipping Data

| Series Catalog No. | Weight (lbs) | Units per Pallet 49"L x 52"W x 55"H |
|--------------------|--------------|--|
| 24PD | 23 | 9 |

Example of Lumen Adjustment Calculation

24PD-40-PB1-L835 at 80CRI at 5000K

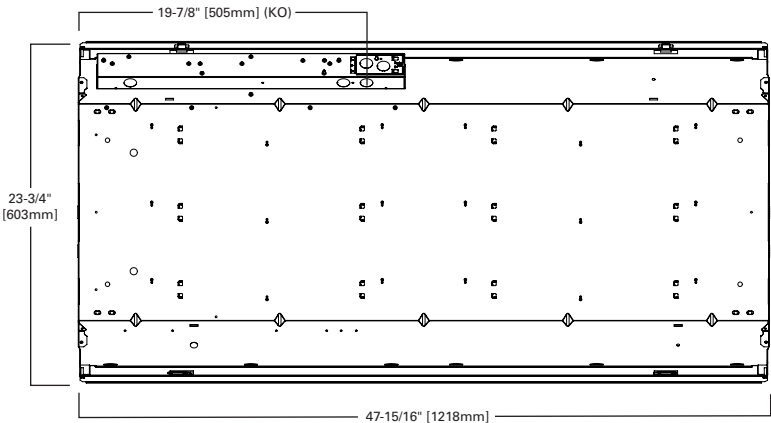
Lumen Adjustment Factor = 1.027

Total Light Output =

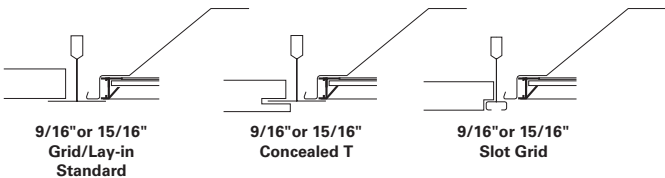
4,041 lm x 1.027 = 4,150 lm

Efficacy = $\frac{4,150 \text{ lm}}{29.4 \text{ W}}$ = 141 lm/W

Dimensional and Mounting Details



Ceiling Compatibility



Ceiling Mounting Choices

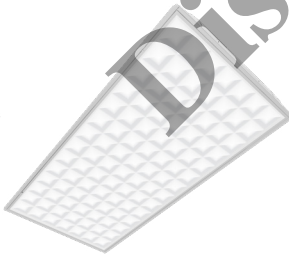
| Application | Catalog | UPC | Description |
|-----------------------|----------|--------------|-------------------------------|
| Hard Ceiling Recessed | DF-24W-U | 662401232970 | 2x4 Dry Wall Frame Kit |
| Surface Mount | SK-24-WS | 080083719389 | 2x4 Shallow Surface Mount Kit |

Perceive Optic Patterns

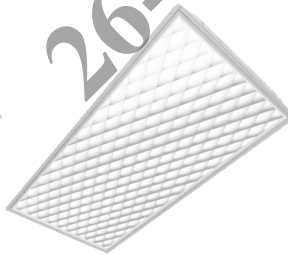
Cooper Lighting Solutions' Perceive™ technology enables a wide-variety of 3D visual forms; all on an easy-to-clean flat surface.



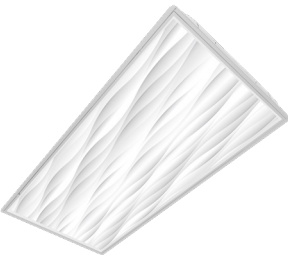
Bevel (PB1):
Distinct regressed coffer appearance



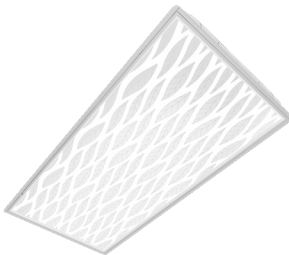
PARAMid (PC3):
Dynamic pyramid stud 3" cells



Prism (PP3):
Diamond prismatic geometry



Waves (PW1):
Energetic flowing waves, sculpted appearance



Leaves (PL1):
Subtle organic leaves



Ripple (PR1):
Soft undulating form

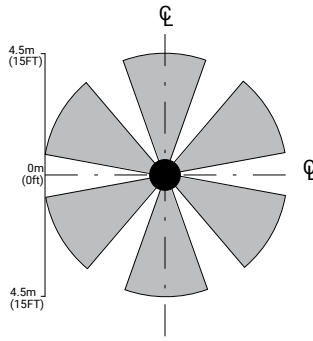
Control Systems

- WaveLinX Wireless
- WaveLinX Wired
- WaveLinX Lite
- DLVP

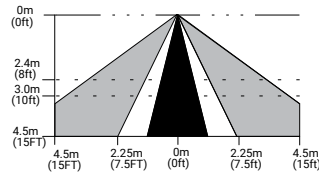


Connected Systems
[CLICK HERE](#)

TOP VIEW:



SIDE VIEW:



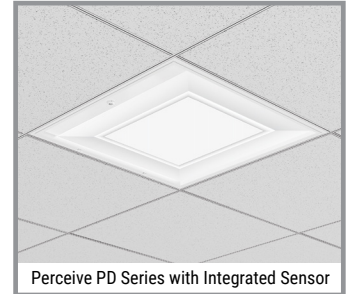
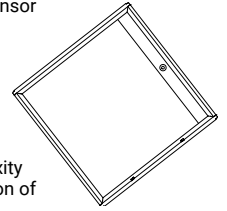
Note: Installation of integrated sensors within 3-ft (1m) of HVAC air vents is not recommended. The pattern shown is intended solely as a general guide and is not to scale.

The Perceive with Integrated Sensor technology provides automatic energy savings without sacrificing performance. The Perceive 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.



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
Trellix

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

SCALABILITY

