

WLS27 Pro LED Strip Light Instruction Manual



Original Instructions
p/n: 214239 Rev. E
October 11, 2023

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Chapter 1 Features

Banner's WLS27 Pro LED Strip Light has a sturdy aluminum housing and is encased in a shatterproof, UV stabilized, copolyester shell, making it ideal for harsh indoor and outdoor applications.



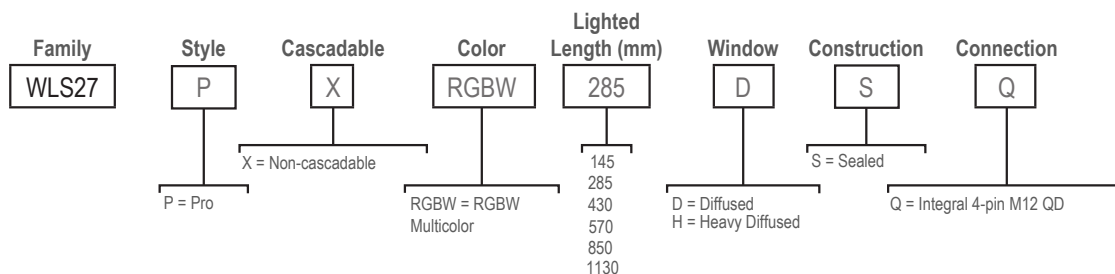
- High quality illumination and indication from RGBW LEDs
- Six white color temperatures for comfort and compatibility
- 13 color options for varied indication and inspection uses
- Programmable using Banner's Pro Editor software and Pro Converter Cable
- Pro Editor software configuration and three discrete inputs gives access to color, flashing, intensity, and animation settings, as well as advanced operating modes for displaying distance, count, time and position
- Available in six lengths from 145 mm to 1130 mm
- Rugged, water-resistant IP69K per DIN 40050-9 rating

IMPORTANT: Read the following instructions before operating the light. Please download the complete WLS27 Pro LED Strip Light technical documentation, available in multiple languages, from www.bannerengineering.com for details on the proper use, applications, Warnings, and installation instructions of this device.

IMPORTANT: Lea el siguiente instructivo antes de operar el luminario. Por favor descargue desde www.bannerengineering.com toda la documentación técnica de los WLS27 Pro LED Strip Light, disponibles en múltiples idiomas, para detalles del uso adecuado, aplicaciones, advertencias, y las instrucciones de instalación de estos dispositivos.

IMPORTANT: Lisez les instructions suivantes avant d'utiliser le luminaire. Veuillez télécharger la documentation technique complète des WLS27 Pro LED Strip Light sur notre site www.bannerengineering.com pour les détails sur leur utilisation correcte, les applications, les notes de sécurité et les instructions de montage.

Models



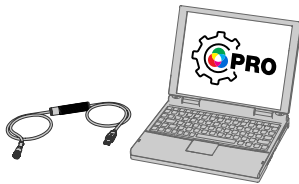
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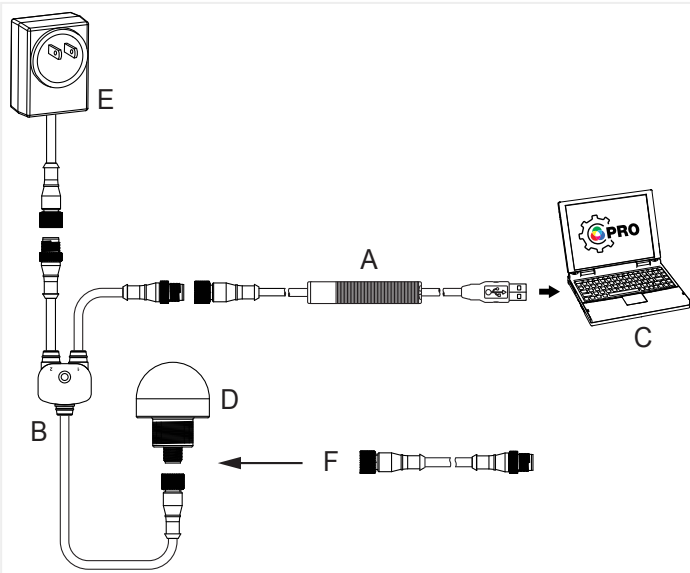
Pro Editor



Use Banner's Pro Editor software and Pro Converter Cable to create custom configurations by selecting different colors, flash patterns, and animations. For more information visit www.bannerengineering.com/proeditor.

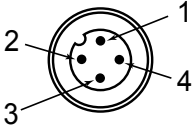
Full Preview Connection (Required)

The full preview connection must be used for the WLS27 Pro LED Strip Light.



- A = Pro Converter Cable (MQDC-506-USB)
- B = Splitter (CSB-M1251FM1251M)
- C = PC running Pro Editor software
- D = Any Banner Pro Series-enabled device (K50 shown)
- E = Power Supply (PSW-24-1 or PSD-24-4)
- F = 8-Pin to 5-Pin Double-Ended Cordset (MQDC-801-5M-PRO), required for 8-Pin models

Wiring Diagrams

Male	Pin	Wire Color	Description ⁽¹⁾
	1	Brown	Input 1
	2	White	Input 3
	3	Blue	DC common
	4	Black	Input 2

7 Color Binary Control (<i>Binary input state controls color, default configuration</i>)			
Input 1: Pin 1 Brown Wire	Input 2: Pin 4 Black Wire	Input 3: Pin 2 White Wire	LED Color
—	—	—	Light OFF
18 V DC to 30 V DC	—	—	Daylight White
—	18 V DC to 30 V DC	—	Green
—	—	18 V DC to 30 V DC	Red
18 V DC to 30 V DC	18 V DC to 30 V DC	—	Yellow
18 V DC to 30 V DC	—	18 V DC to 30 V DC	Blue Bounce with Daylight White Background
—	18 V DC to 30 V DC	18 V DC to 30 V DC	Daylight White with Red Ends Flash
18 V DC to 30 V DC	18 V DC to 30 V DC	18 V DC to 30 V DC	Warm White

Pro Editor Configuration for the WLS27

Banner's Pro Editor software offers an easy way to configure Pro Series-enabled touch and indicator devices, allowing users full control of device states. The easy-to-use configuration software provides a variety of tools and capabilities to solve a wide range of applications. Configure any Pro Series-enabled device using the free Pro Editor software, available for download at www.bannerengineering.com/proeditor.

Machine and Work Cell—Choose colors and animations to create up to seven discretely controlled illumination and status states. Spans functionality from single segment to two-colored animations.

Single Segment—The single segment option shows the WLS27 in one solid color. The input wires are used to change colors. Flashing and intensity options are available. Presets are available for common configurations, which can be adjusted as desired.

End Status—The end status option shows the inside section of the WLS27 in one color and the ends of the light in another. The size of the two sections are customizable. The input wires are used to change color states. Flashing and intensity options are available.

Process Visualization—The process visualization option enables a choice of colors, animations, speeds, and intensities to provide visual information that corresponds to equipment or process status. Single color illumination states are also available.

Tower Light—Choose colors, intensities, and animations to create a discretely controlled two or three segment indicator. The segments are controlled independently with input wires.

Timer—The timer option uses the WLS27 as a timer, counting up or counting down. Set the total time and choose up to four thresholds to change the visual appearance of the light as time advances. The timer starts when 18 V DC to 30 V DC is applied to the timer run input wire, and paused when left floating or tied to ground. The timer resets when 18 V DC to 30 V DC is applied to the reset wire. The timer automatically resets when it reaches the final count. A steady global background can be applied, from which color and intensity can be defined.

Counter—The counter option counts up or down by converting input pulses into movement of LEDs along the length of the light based on up to four thresholds that define colors, intensity, and flashing. When the rising edge of an 18 V DC to 30 V DC pulse is applied to the counter input wire, the count changes by one. The counter resets when 18 V DC to 30 V DC is applied

⁽¹⁾ Input functionality can change depending on configuration created with Pro Editor.

to the reset wire. The counter automatically resets when it reaches the final count. A steady global background can be applied, from which color and intensity can also be defined.

Distance—The distance mode uses the light to display colored LEDs proportional to a PFM (pulse frequency modulation) or PWM (pulse width modulation) input and set range. The light adjusts position and color continuously based on the input value and defined color, flash, and intensity in up to four thresholds while maintaining an optional steady background for LEDs outside the active threshold range. The PFM signal frequency range can be from 100 to 10,000 Hz. The PWM duty cycle range can be from 0 to 100%.

Gauge—The gauge option controls the color and position of a band of LEDs based on a defined PFM or PWM input value and range. The width of the band is defined as a percentage of total lighted length. The light adjusts the position and color of the band and background continuously based on the input signal and defined color, flash, intensities, and animations in upper, lower, and center thresholds. The PFM signal frequency range can be from 100 to 10,000 Hz. The PWM duty cycle range can be from 0 to 100%.

Animation Settings

Animation	Description
Off	Device OFF, no animation displays
Steady	Color 1 is solid ON at the defined intensity
Flash	Color 1 flashes at the defined speed, color intensity, and pattern (normal, strobe, three pulse, SOS, or random)
Two Color Flash	Color 1 and Color 2 flash alternately at the defined speed, color intensities, and pattern (normal, strobe, three pulse, SOS, or random)
Two Color Shift	Color 1 and Color 2 flash alternately on adjacent LEDs at defined speed and color intensities
Ends Steady	Color 1 defines the center 75% of the light. Color 2 defines the 12.5% of the light on each end. Center and ends are on steady. Center proportion can be defined in End Status mode
Ends Flash	Color 1 defines the center 75% of the light. Color 2 defines the 12.5% of the light on each end. The ends will flash at defined speed and pattern. Center proportion can be defined in End Status mode
Scroll	Color 1 defines a band 20% of the length of the light that moves in one direction up or down against the background of Color 2 at the defined speed and color intensities
Center Scroll	Color 1 defines a band 10% the length of the light that moves from the center of the light to the ends against the background of Color 2 at the defined speed and color intensity
Bounce	Color 1 defines a band 20% of the length of the light that moves up and down between the top and bottom of the light against the background of Color 2 at the defined speed and color intensities
Center Bounce	Color 1 defines a band 10% the length of the light that moves from the center of the light to the ends and back against the background of Color 2 at the defined speed and color intensity
Intensity Sweep	Color 1 continuously increases and decreases intensity between 0% to 100% at defined speed and color intensity
Two Color Sweep	Color 1 and Color 2 define the end values of a line across the color gamut. The light continuously displays a color by moving along the line at the defined speed and color intensity
Color Spectrum	The light scrolls through the 13 predefined colors with a different color on each LED at the defined speed, Color 1 intensity, and direction
Single End Steady (WLS15 Pro only)	Color 1 is solid ON at the defined intensity on one end of the device
Single End Flash (WLS15 Pro only)	Color 1 flashes at the defined speed, color intensity, and pattern (normal, strobe, three pulse, SOS, or random) on one end of the device

By default, when the sub-applications for Machine and Work Cell are selected, Pro Editor opens **I/O State** configuration in **Advanced**. Three **I/O states** are available:

I/O State Configuration Settings	Description
Basic	Configurations made in this state assign one wire to one state, with the following override control: <ul style="list-style-type: none"> Pin 4 (Black) overrides Pin 1 (Brown) Pin 2 (White) overrides Pins 1 and 4 (Brown and Black)
Advanced	I/O state with full seven state options for maximum configuration. Configurations made in Advanced assign binary wiring combinations of all valid inputs to each state.

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I/O State Configuration Settings	Description
I/O Block	Three state control for use with I/O block. Configurations made in I/O Block assign states to the black, white, and combination of black and white wires for use with I/O blocks for which power (brown) and common (blue) are always on for five pin connections.

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Chapter 3 Specifications

Supply Voltage

18 V DC to 30 V DC

Use only with suitable Class 2 power supply (UL) or a SELV power supply (CE)

Light Length	Typical Current			Maximum Current A
	18 V DC	24 V DC	30 V DC	
145 mm	0.24	0.18	0.15	0.275
285 mm	0.48	0.36	0.3	0.55
430 mm	0.72	0.54	0.45	0.825
570 mm	0.96	0.72	0.6	1.1
850 mm	1.44	1.08	0.9	1.65
1130 mm	1.92	1.44	1.2	2.2

Supply Protection Circuitry

Protected against reverse polarity and transient voltages

NOTE: Do not spray cable with high-pressure sprayer, or cable damage will result.

Input Rating

Leakage Current Immunity: 400 µA
 Indicator On/Off Response Time: 300 ms (maximum)
 PWM Duty Cycle Range: 0 to 100%
 PFM Frequency Range: 100 to 10000 Hz

Mounting

Bracket LMBWLS27EC included (2 for lights up to 570 mm or 3 for lights 850 mm and longer)

Vibration and Mechanical Shock

Vibration: 10 Hz to 55 Hz, 1.0 mm peak-to-peak amplitude per IEC 60068-2-6
 Shock: 15G 11 ms duration, half sine wave per IEC 60068-2-27

Construction

Clear anodized aluminum inner housing and FDA-grade copolyester outer housing

Connections

Integral 4-pin M12 male quick-disconnect connector

Environmental Rating


Rated IP66, IP67, and IP69K per DIN 40050-9

Operating Temperature

-40 °C to +50 °C (-40 °F to +122 °F)

Storage Temperature: -40 °C to +70 °C (-40 °F to +158 °F)

Required Overcurrent Protection

 **WARNING:** Electrical connections must be made by qualified personnel in accordance with local and national electrical codes and regulations.

Overcurrent protection is required to be provided by end product application per the supplied table.


Overcurrent protection may be provided with external fusing or via Current Limiting, Class 2 Power Supply.

Supply wiring leads < 24 AWG shall not be spliced.

For additional product support, go to www.bannerengineering.com.

Supply Wiring (AWG)	Required Overcurrent Protection (A)	Supply Wiring (AWG)	Required Overcurrent Protection (A)
20	5.0	26	1.0
22	3.0	28	0.8
24	1.0	30	0.5

Certifications

 Banner Engineering BV
 Park Lane, Culliganlaan 2F bus 3
 1831 Diegem, BELGIUM

 Turck Banner LTD Blenheim House
 Blenheim Court
 Wickford, Essex SS11 8YT
 GREAT BRITAIN

Advanced Capabilities



Light Characteristics

RGBW LED PWM Frequency: 2kHz

Color	Dominant Wavelength (nm) or Color Temperature (CCT)	CRI	Color Coordinates ⁽¹⁾		Lumens at Specified Length (Typical at 25 °C) ⁽²⁾					
			X	Y	145 mm	285 mm	430 mm	570 mm	850 mm	1130 mm
Daylight White	5000K	93	0.345	0.352	245	490	735	980	1470	1960
Incandescent White	2700K	42	0.46	0.411	110	220	330	440	660	880
Warm White	3000K	50	0.44	0.404	110	220	330	440	660	880
Fluorescent White	4100K	80	0.376	0.374	205	410	615	820	1230	1640
Neutral White	5700K	86	0.328	0.337	265	530	795	1060	1590	2120
Cool White	6500K	85	0.314	0.324	265	530	795	1060	1590	2120
Green	522	-	0.153	0.704	145	290	435	580	870	1160
Red	620	-	0.688	0.31	55	110	165	220	330	440
Yellow	574	-	0.447	0.488	95	190	285	380	570	760
Blue	467	-	0.14	0.061	40	80	120	160	240	320
Magenta	-	-	0.348	0.155	50	100	150	200	300	400
Cyan	490	-	0.146	0.308	110	220	330	440	660	880
Amber	589	-	0.542	0.417	80	160	240	320	480	640
Rose	-	-	0.486	0.217	50	100	150	200	300	400
Lime Green	562	-	0.376	0.538	110	220	330	440	660	880
Orange	599	-	0.605	0.371	70	140	210	280	420	560
Sky Blue	483	-	0.143	0.213	90	180	270	360	540	720
Violet	-	-	0.223	0.097	45	90	135	180	270	360
Spring Green	505	-	0.15	0.518	130	260	390	520	780	1040

FCC Part 15 Class B

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

⁽¹⁾ Refer to the CIE 1931 (x,y) Chromaticity Diagram to show equivalent color with indicated color coordinates. Actual coordinates may differ $\pm 5\%$.

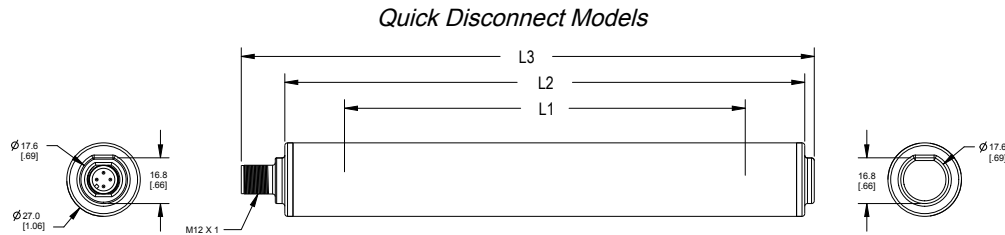
⁽²⁾ Lumen values shown apply to diffused models only. Heavy diffused models are 30% lower.

Industry Canada ICES-003(B)

This device complies with CAN ICES-3 (B)/NMB-3(B). Operation is subject to the following two conditions: 1) This device may not cause harmful interference; and 2) This device must accept any interference received, including interference that may cause undesired operation.

Cet appareil est conforme à la norme NMB-3(B). Le fonctionnement est soumis aux deux conditions suivantes : (1) ce dispositif ne peut pas occasionner d'interférences, et (2) il doit tolérer toute interférence, y compris celles susceptibles de provoquer un fonctionnement non souhaité du dispositif.

Dimensions



Models	L1	L2	L3
WLS27..145..	145 mm (5.7 in)	191 mm (7.5 in)	210.5 mm (8.3 in)
WLS27..285..	286 mm (11.3 in)	332 mm (13.1 in)	351.5 mm (13.8 in)
WLS27..430..	427 mm (16.8 in)	473 mm (18.6 in)	492.5 mm (19.4 in)
WLS27..570..	568 mm (22.4 in)	614 mm (24.2 in)	633.5 mm (24.9 in)
WLS27..850..	850 mm (33.5 in)	896 mm (35.3 in)	915.5 mm (36 in)
WLS27..1130..	1132 mm (44.6 in)	1178 mm (46.4 in)	1197.5 mm (47.1 in)

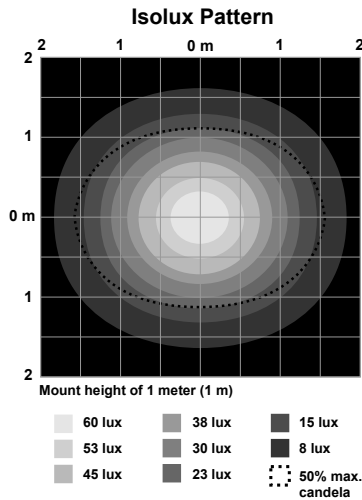
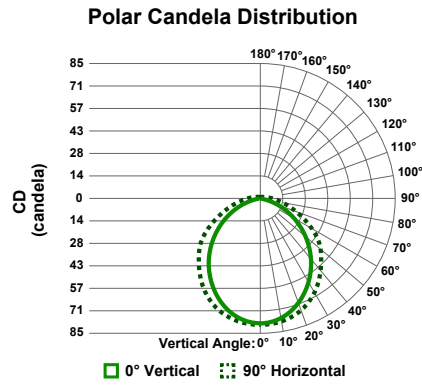
Photometric Data

Optical data shown below is for diffused daylight white models only. To get lux and candela values for other colors, multiply the values shown on the charts by the following factors:

Incandescent White: 0.449	Red: 0.224	Rose: 0.204
Warm White: 0.449	Yellow: 0.388	Lime Green: 0.449
Fluorescent White: 0.837	Blue: 0.163	Orange: 0.286
Neutral White: 1.082	Magenta: 0.204	Sky Blue: 0.367
Cool White: 1.082	Cyan: 0.449	Violet: 0.184
Green: 0.592	Amber: 0.327	Spring Green: 0.531

For models with heavy diffused housing, multiply lux and candela values by an additional 0.550.

145 mm Models

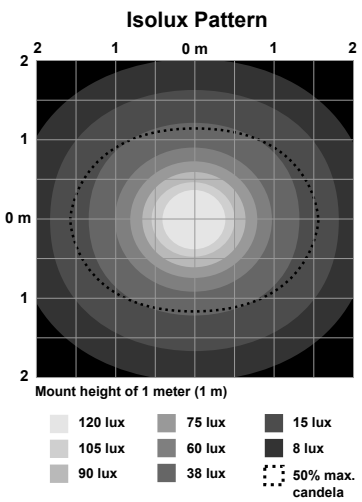
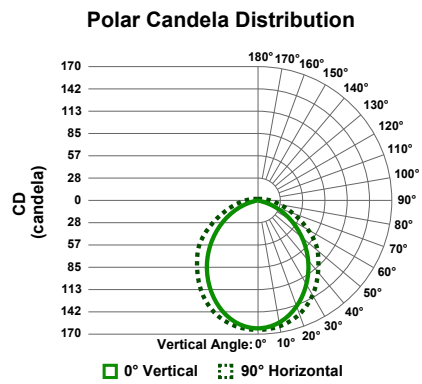


Illuminance at a Distance

	Center Beam (lux)	Beam Width (m)	
	2187 lux	0.37 m	0.53 m
0.17 m	660 lux	0.74 m	1.05 m
0.33 m	297 lux	1.11 m	1.59 m
0.50 m	168 lux	1.48 m	2.12 m
0.67 m	111 lux	1.85 m	2.64 m
0.83 m	78 lux	2.22 m	3.17 m
1.00 m			

Vertical Spread: 95.1°
Horizontal Spread: 115.0°

285 mm Models

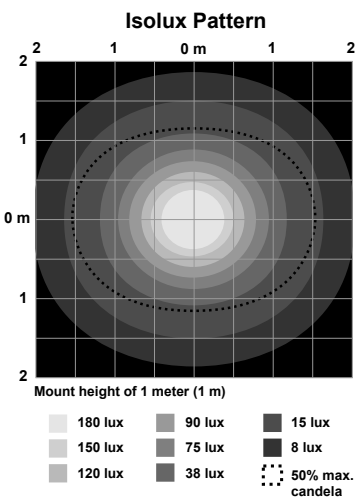
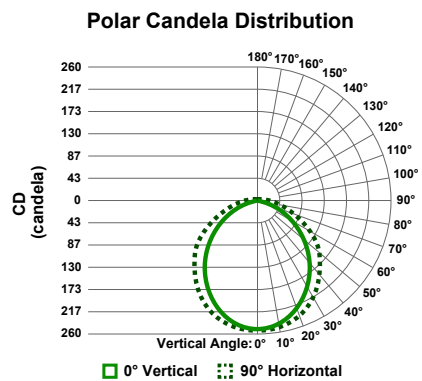


Illuminance at a Distance

	Center Beam (lux)	Beam Width (m)	
	3768 lux	0.38 m	0.52 m
0.17 m	1353 lux	0.76 m	1.04 m
0.33 m	639 lux	1.14 m	1.56 m
0.50 m	369 lux	1.53 m	2.09 m
0.67 m	246 lux	1.91 m	2.60 m
0.83 m	174 lux	2.29 m	3.12 m
1.00 m			

Vertical Spread: 97.8°
Horizontal Spread: 115.0°

430 mm Models

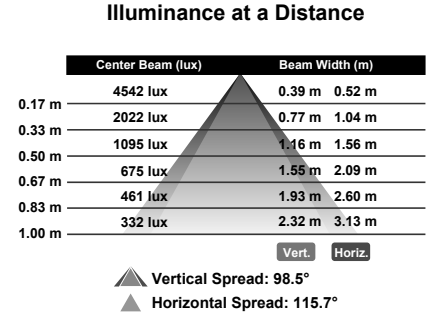
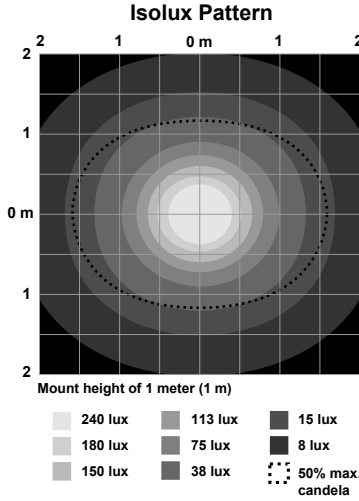
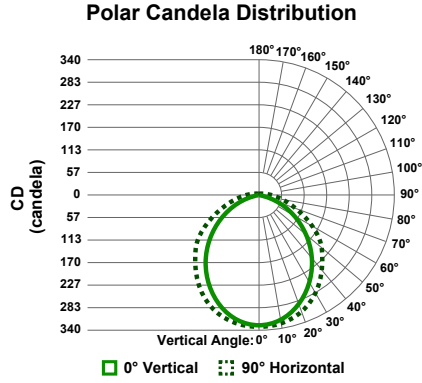


Illuminance at a Distance

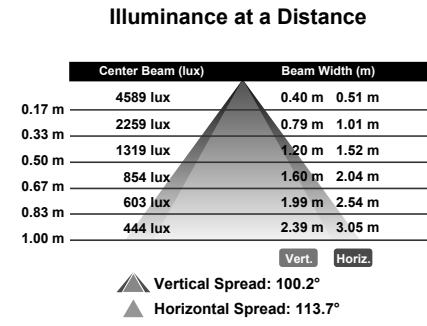
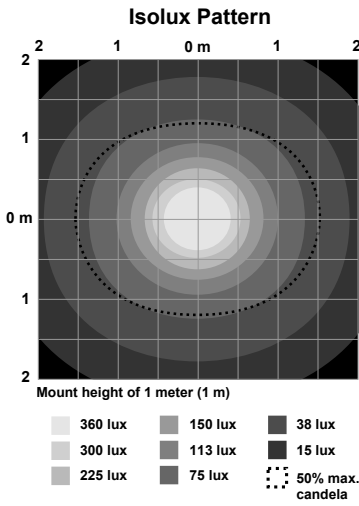
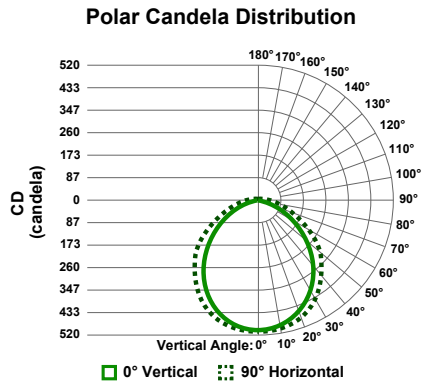
	Center Beam (lux)	Beam Width (m)	
	4368 lux	0.39 m	0.51 m
0.17 m	1797 lux	0.77 m	1.02 m
0.33 m	909 lux	1.16 m	1.53 m
0.50 m	546 lux	1.54 m	2.05 m
0.67 m	366 lux	1.92 m	2.55 m
0.83 m	261 lux	2.31 m	3.07 m
1.00 m			

Vertical Spread: 98.2°
Horizontal Spread: 113.8°

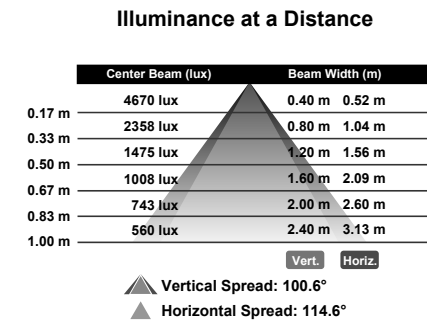
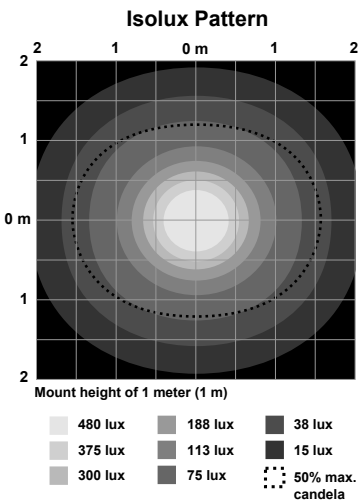
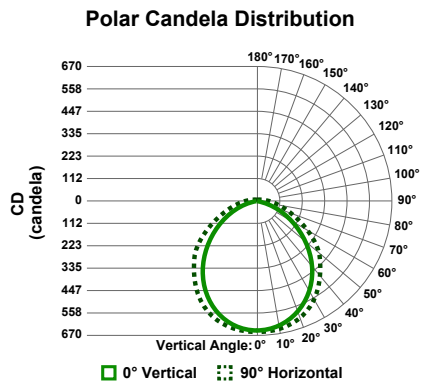
570 mm Models



850 mm Models



1130 mm Models



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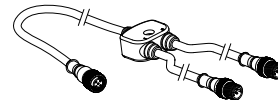
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Chapter 4 Accessories

Cordsets

CSB-M1251FM1251M

- 5-pin parallel Y splitter (Male-Male-Female)
- For full Pro Editor preview capability
- Requires external power supply, sold separately



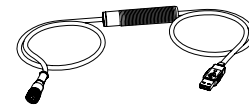
PSD-24-4

- 90 to 264 V AC 50/60 Hz input
- Includes a 1.8 m (6 ft) US style 5-15P input plug
- 24 V DC UL Listed Class 2 M12 connector output
- 4 A total current



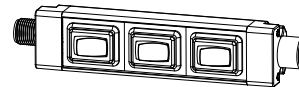
MQDC-506-USB

- Pro Converter Cable
- 1.83 m (6 ft) length 5-pin M12 quick disconnect to Device and USB to PC
- Required for connection to Pro Editor



LC28PB2-3Q

- In-line switch with M12 connectors
- Rugged metal housing
- Perfect for DC-powered task lights, indicators, and tower lights
- Rated for up to 30 V DC



4-Pin Threaded M12 Cordsets—Single Ended

Model	Length	Style	Dimensions	Pinout (Female)
MQDC-406	2 m (6.56 ft)	Straight		
MQDC-415	5 m (16.4 ft)			
MQDC-430	9 m (29.5 ft)			
MQDC-450	15 m (49.2 ft)			

1 = Brown
 2 = White
 3 = Blue
 4 = Black
 5 = Unused

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4-Pin Threaded M12 Cordsets—Single Ended				
Model	Length	Style	Dimensions	Pinout (Female)
MQDC-406RA	2 m (6.56 ft)	Right-Angle		
MQDC-415RA	5 m (16.4 ft)			
MQDC-430RA	9 m (29.5 ft)			
MQDC-450RA	15 m (49.2 ft)			

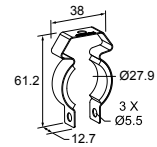
4-Pin Threaded M12 Cordsets—Washdown, Stainless Steel, Single Ended				
Model	Length	Style	Dimensions	Pinout (Female)
MQDC-WDSS-0406	2 m (6.56 ft)	Straight		<p>1 = Brown 2 = White 3 = Blue 4 = Black</p>
MQDC-WDSS-0415	5 m (16.4 ft)			
MQDC-WDSS-0430	9 m (29.5 ft)			

Brackets

<p>LMBWLS27EC</p> <ul style="list-style-type: none"> • Clear copolyester • Clearance for M5 or #10 hardware 	
<p>LMBWLS27H</p> <ul style="list-style-type: none"> • 300 series stainless steel mounting brackets • M4 stainless steel hardware included 	
<p>LMBWLS27SP</p> <ul style="list-style-type: none"> • Clear copolyester • Clearance for M5 or #10 hardware • Snap bracket for light duty applications 	

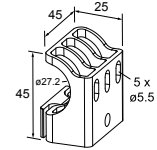
LMBWLS27T

- Stainless steel mounting brackets with rubber grips
- M5 stainless steel hardware included
- Clearance for M5 or #10 hardware



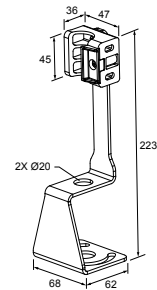
LMBWLS27U

- Clear copolyester
- Clearance for M5 or #10 hardware
- Clamps securely around the light body



LMBWLS27V

- Clamp with base mount for vertical installations
- Mounting hole and clamp for WLS27
- Clearance for M6 (¼ in) hardware
- 304 stainless steel with copolyester clamp



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Chapter 5 Banner Engineering Corp Limited Warranty

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For patent information, see www.bannerengineering.com/patents.

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Banner Engineering de México, S. de R.L. de C.V. | David Alfaro Siqueiros 103 Piso 2 Valle oriente | San Pedro Garza Garcia Nuevo León, C. P. 66269

81 8363.2714

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