WLS27 Pro LED Strip Light

Instruction Manual

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.

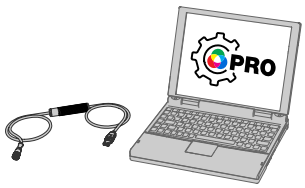
Important: Lisez les instructions suivantes avant d'utiliser le luminaire. Veuillez télécharger la documentation technique complète des WLS27 Pro LED Strip Light sur notre site www.bannerengineering.com pour les détails sur leur utilisation correcte, les applications, les notes de sécurité et les instructions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

Models

Family	Style	Cascadable	Color	Lighted Length (mm)	Window	Construction	Connection
WLS27	P	X	RGBW	285	D	S	Q
	P = Pro	X = Non-cascadable	RGBW = RGBW Multicolor	145 285 430 570 850 1130	D = Diffused H = Heavy Diffused	S = Sealed	Q = Integral 4-pin M12 QD

Configuration Instructions

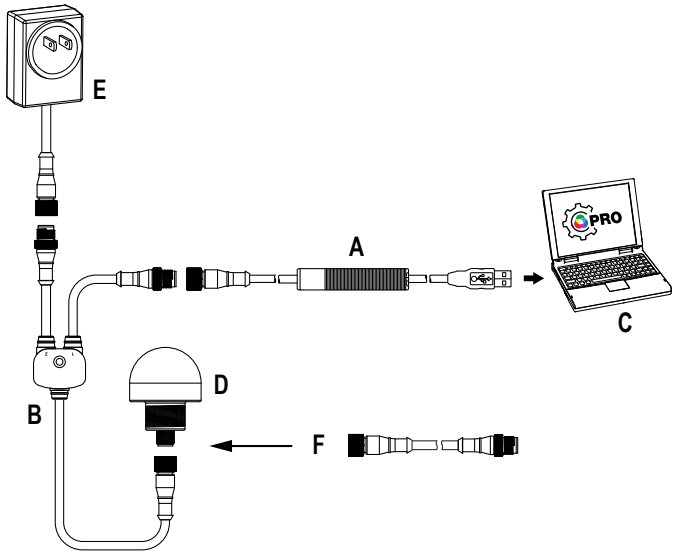
Pro Editor



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.

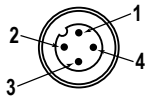
Full Preview Connection (Required)

The full preview connection must be used for the TL50 Pro Tower Light and the WLS27 Pro Strip Light, and is optional but recommended for other Pro-series enabled devices.



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 *(Binary input state controls color, default configuration)*			
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 Pro

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.

[1] Input functionality can change depending on configuration created with Pro Editor.

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 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

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: • 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.
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.

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
	18 V DC	24 V DC	30 V DC	A
145 mm	0.240	0.180	0.150	0.275
285 mm	0.480	0.360	0.300	0.550
430 mm	0.720	0.540	0.450	0.825
570 mm	0.960	0.720	0.600	1.100
850 mm	1.440	1.080	0.900	1.650
1130 mm	1.920	1.440	1.200	2.200

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

Light Characteristics
RGBW LED PWM Frequency: 2kHz

Color	Dominant Wavelength (nm) or Color Temperature (CCT)	CRI	Color Coordinates[2]		Lumens at Specified Length (Typical at 25 °C)[3]					
			X	Y	145 mm	285 mm	430 mm	570 mm	850 mm	1130 mm
Daylight White	5000K	82	0.345	0.352	160	320	480	640	960	1280
Incandescent White	2700K	55	0.460	0.411	110	220	330	440	660	880
Warm White	3000K	65	0.440	0.404	110	220	330	440	660	880
Fluorescent White	4100K	90	0.376	0.374	145	290	435	580	870	1160
Neutral White	5700K	82	0.328	0.337	160	320	480	640	960	1280
Cool White	6500K	82	0.314	0.324	160	320	480	640	960	1280
Green	522	-	0.153	0.704	145	290	435	580	870	1160
Red	620	-	0.688	0.310	55	110	165	220	330	440
Yellow	574	-	0.447	0.488	95	190	285	380	570	760
Blue	467	-	0.140	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	-	0.150	0.518	130	260	390	520	780	1040

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

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

Connections
Integral 4-pin M12/Euro-style male quick disconnect

Environmental Rating
Rated IEC IP66, IEC IP67, and IP69K per DIN 40050-9

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

Operating Temperature
–40 °C to +50 °C (–40 °F to +122 °F)
Storage Temperature: –40 °C to +70 °C (–40 °F to +158 °F)

Certifications

Performance

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:

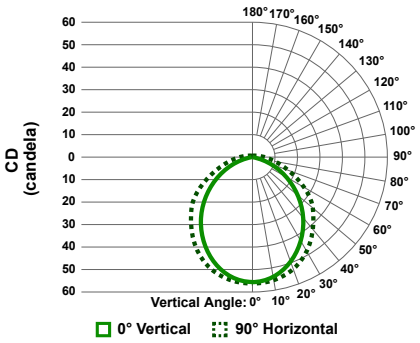
Incandescent White: 0.688
Warm White: 0.688
Fluorescent White: 0.906
Neutral White: 1.000
Cool White: 1.000
Green: 0.906
Red: 0.344
Yellow: 0.594
Blue: 0.250
Magenta: 0.313
Cyan: 0.688
Amber: 0.500
Rose: 0.313
Lime Green: 0.688
Orange: 0.438
Sky Blue: 0.563
Violet: 0.281
Spring Green: 0.813

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

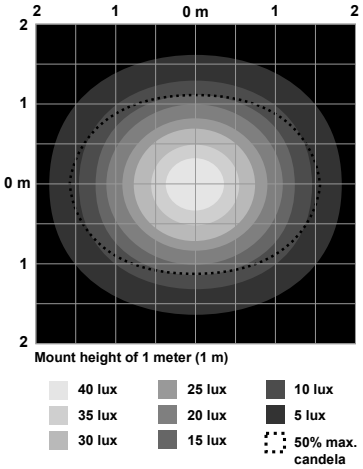
2 Refer to the CIE 1931 (x,y) Chromaticity Diagram to show equivalent color with indicated color coordinates. Actual coordinates may differ ± 5%.
3 Lumen values shown apply to diffused models only. Heavy diffused models are 30% lower.

145 mm Models

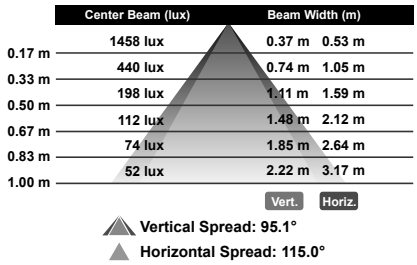
Polar Candela Distribution



Isolux Pattern

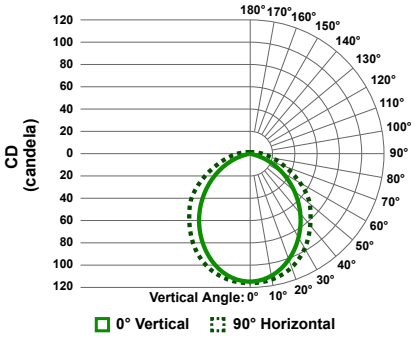


Illuminance at a Distance

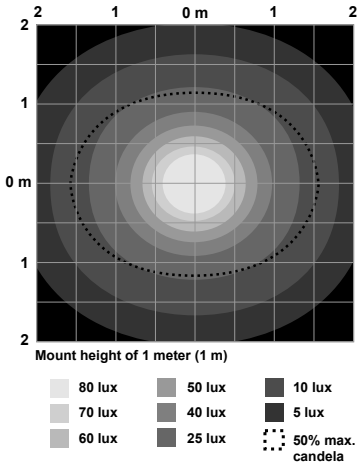


285 mm Models

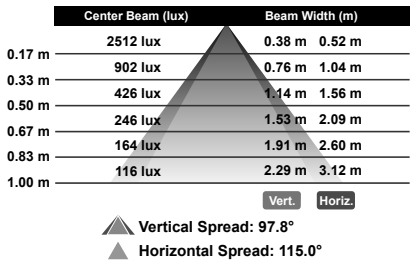
Polar Candela Distribution



Isolux Pattern

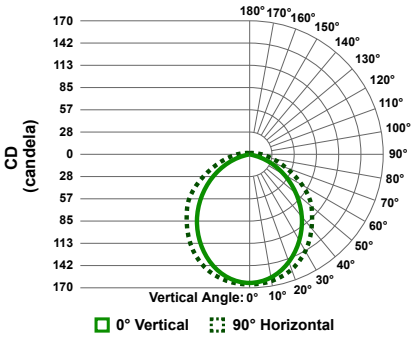


Illuminance at a Distance



430 mm Models

Polar Candela Distribution



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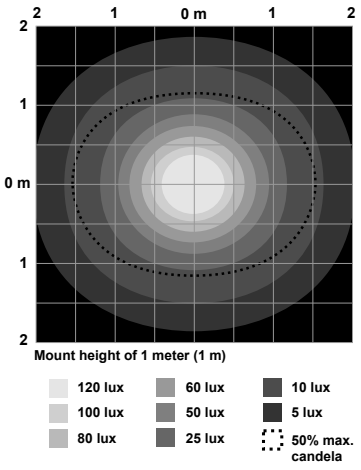
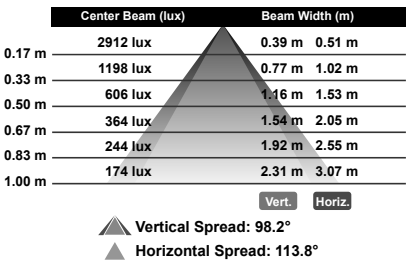
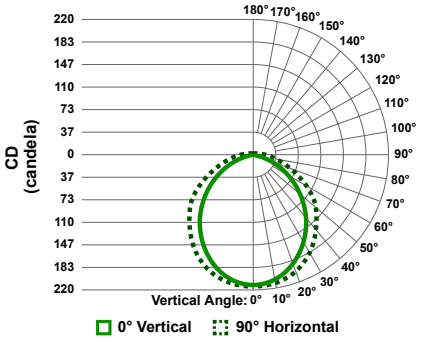


Illuminance at a Distance



570 mm Models

Polar Candela Distribution



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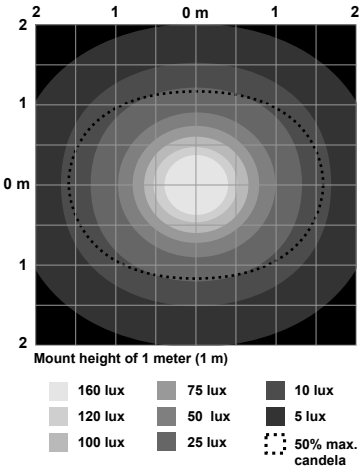
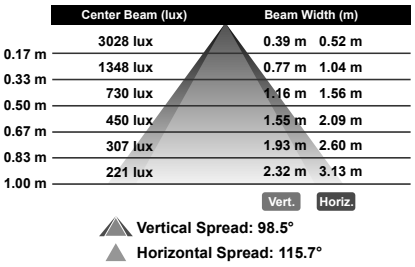
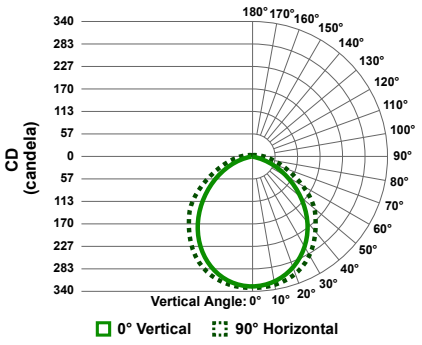


Illuminance at a Distance



850 mm Models

Polar Candela Distribution



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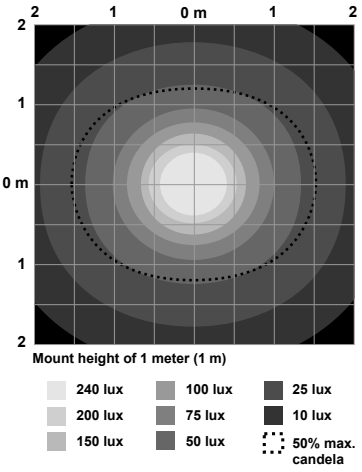
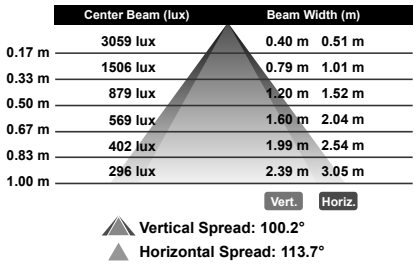
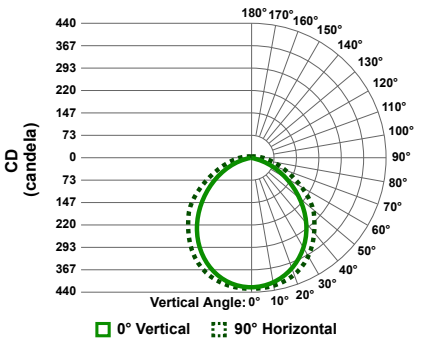


Illuminance at a Distance



1130 mm Models

Polar Candela Distribution



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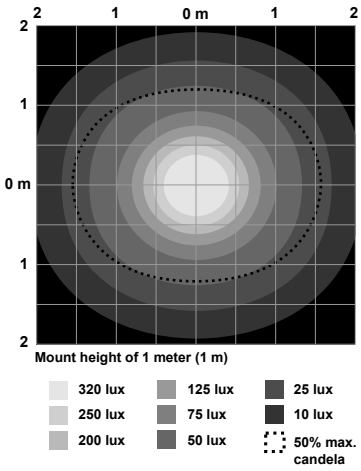
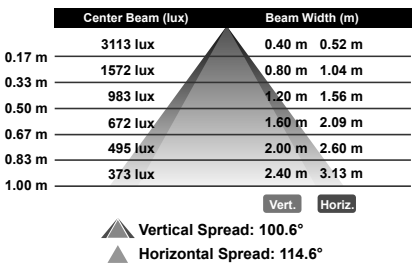
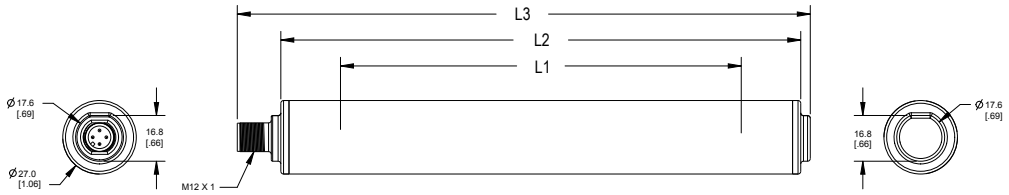


Illuminance at a Distance



Dimensions

Quick Disconnect Models

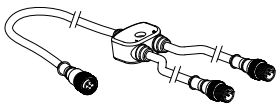


Models	L1	L2	L3
WLS27..145..	145 mm (5.7 in)	189 mm (7.4 in)	208.5 mm (8.2 in)
WLS27..285..	286 mm (11.3 in)	330 mm (13 in)	349.5 mm (13.8 in)
WLS27..430..	427 mm (16.8 in)	471 mm (18.5 in)	490.5 mm (13.3 in)
WLS27..570..	569 mm (22.4 in)	612 mm (24.1 in)	631.5 mm (24.9 in)
WLS27..850..	849 mm (33.4 in)	893 mm (35.2 in)	912.5 mm (35.9 in)
WLS27..1130..	1120 mm (44.1 in)	1164 mm (45.8 in)	1183.5 mm (46.4 in)

Accessories

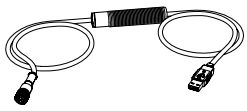
Cordsets

CSB-M1251FM1251M
- 5-pin parallel Y splitter (Male-Male-Female)
- For full Pro Editor preview capability
- Requires external power supply, sold separately

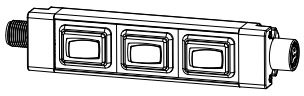


PSD-24-4
- 90 to 264 V AC 50/60 Hz input
- Includes a 1.8 m (6 ft) US style 5-15P input plug
- 24 V DC UL Listed Class 2 M12/ Euro-style connector output
- 4 A total current

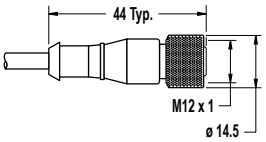
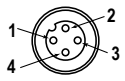
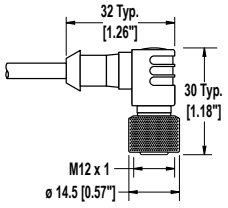
MQDC-506-USB
- Pro Converter Cable
- 1.83 m (6 ft) M12/Euro-style quick disconnect to Device and USB to PC
- Required for connection to Pro Editor

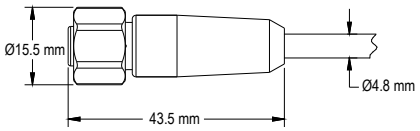
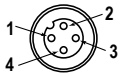


LC28PB2-3Q
- In-line switch with M12 connectors
- Rugged metal housing
- Perfect for dc-powered task lights, indicators, and tower lights
- Rated for up to 30 V dc



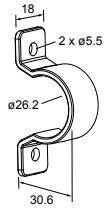
4-Pin Threaded M12/Euro-Style Cordsets—Single Ended

Model	Length	Style	Dimensions	Pinout (Female)
MQDC-406	1.83 m (6 ft)	Straight		 1 = Brown 2 = White 3 = Blue 4 = Black
MQDC-415	4.57 m (15 ft)			
MQDC-430	9.14 m (30 ft)			
MQDC-450	15.2 m (50 ft)			
MQDC-406RA	1.83 m (6 ft)	Right-Angle		
MQDC-415RA	4.57 m (15 ft)			
MQDC-430RA	9.14 m (30 ft)			
MQDC-450RA	15.2 m (50 ft)			

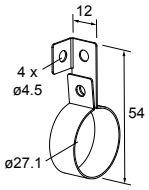
4-Pin Threaded M12/Euro-Style Cordsets—Washdown, Stainless Steel, Single Ended				
Model	**Length**	**Style**	**Dimensions**	**Pinout (Female)**
MQDC-WDSS-0406	1.83 m (6 ft)	Straight		 1 = Brown 2 = White 3 = Blue 4 = Black
MQDC-WDSS-0415	4.57 m (15 ft)			
MQDC-WDSS-0430	9.14 m (30 ft)			

Brackets

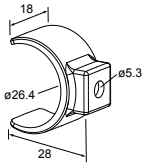
LMBWLS27EC
- Clear copolyester
- Clearance for M5 or #10 hardware



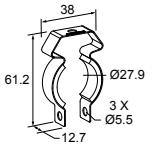
LMBWLS27H
- 300 series stainless steel mounting brackets
- M4 stainless steel hardware included



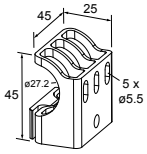
LMBWLS27SP
- Clear copolyester
- Clearance for M5 or #10 hardware
- Snap bracket for light duty applications



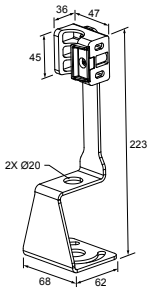
LMBWLS27T
- Stainless steel mounting brackets with rubber grips
- M5 stainless steel hardware included
- Clearance for M5 or #10 hardware



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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Banner Engineering Corp. warrants its products to be free from defects in material and workmanship for one year following the date of shipment. Banner Engineering Corp. will repair or replace, free of charge, any product of its manufacture which, at the time it is returned to the factory, is found to have been defective during the warranty period. This warranty does not cover damage or liability for misuse, abuse, or the improper application or installation of the Banner product.

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FCC Part 15 and CAN ICES-3 (B)/NMB-3(B)

This device complies with part 15 of the FCC Rules and 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.

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 and CAN ICES-3 (B)/NMB-3(B). 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 manufacturer.

Mexican Importer

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