

RLS27 Pro Rugged LED Strip Light Instruction Manual



Original Instructions
p/n: 225443 Rev. A
November 30, 2023

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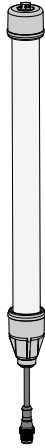
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Chapter 1 Features

Banner's RLS27 Pro Rugged LED Strip Light has a sturdy aluminum housing and is encased in a clear shatterproof, UV-stabilized, polycarbonate shell, and protected with robust end caps making it ideal for harsh outdoor applications.



- Designed for the car wash industry with superior chemical resistance and protection for the most demanding environments
- Focused lens models are ideal for high brightness applications and outdoor settings
- Rugged, waterproof IP67 and IP69K per DIN 40050-9 rated housing for use in challenging applications
- High quality illumination and indication from RGBW LEDs
- 6 white color temperatures and 13 color options for varied indication and illumination 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 four lengths from 285 mm to 1130 mm

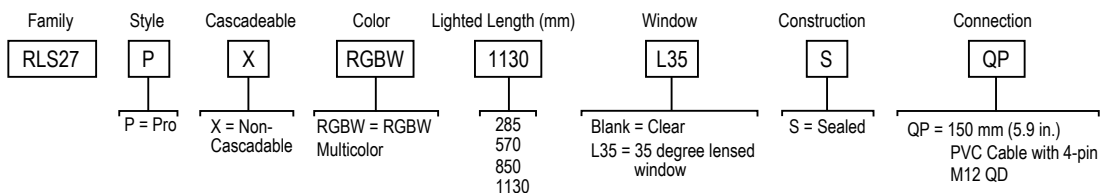
IMPORTANT: Read the following instructions before operating the light. Please download the complete RLS27 Pro Rugged LED Strip Light technical documentation, available in multiple languages, from www.bannerengineering.com for details on the proper use, applications, Warnings, and installation instructions 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 RLS27 Pro Rugged 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 RLS27 Pro Rugged 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

All models require a mating cordset. See "Cordsets" on page 15.



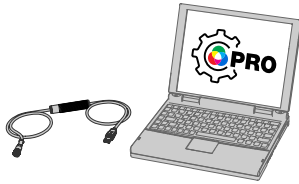
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Chapter 2 Configuration Instructions

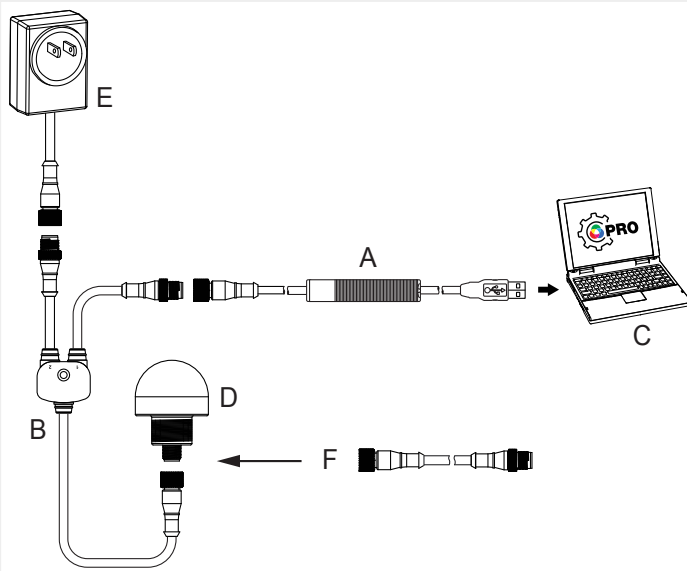
Pro Editor



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.

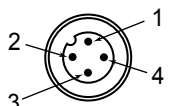
Full Preview Connection (Required)

The full preview connection must be used for the RLS27 Pro Rugged 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

Diagram	Wire	Description ⁽¹⁾	Pinout (Male)
	1 - Brown	Input 1	 1 = Brown 2 = White 3 = Blue 4 = Black
	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 RLS27 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 RLS27 Pro 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 RLS27 Pro 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 RLS27 Pro 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

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

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 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.
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
	18 V DC	24 V DC	30 V DC	A
285 mm	0.48	0.36	0.3	0.55
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

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 kit LMBHLS27S included
 Optional bracket kits available (see "Brackets " on page 16)

Construction

Clear anodized aluminum housing
 UV-stabilized polycarbonate outer housing with vent

Connections

150 mm (6 in) PVC-jacketed cable with a 4-pin M12 male quick-disconnect connector


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

See "Cordsets" on page 15

Advanced Capabilities



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

Environmental Rating

Rated IP67, IP69K per DIN 40050-9

Vibration and Mechanical Shock


Impact: IK10 (IEC EN 60068-2-75)
 Vibration: 10 Hz to 55 Hz, 1.0 mm peak-to-peak amplitude per IEC 60068-2-6 (5 minute sweep, 30 minute dwell)
 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

 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

 **UL** US LISTED
 UL/cULus E338626

Light Characteristics

RGBW LED PWM Frequency: 2kHz

Color	Dominant Wavelength (nm) or Color Temperature	CRI	Color Coordinates ⁽¹⁾		Lumens at Specified Length (Typical at 25 °C)			
			X	Y	285 mm	570 mm	850 mm	1130 mm
Daylight White	5000K	93	0.345	0.352	520	1040	1560	2080
Incandescent White	2700K	42	0.46	0.411	230	460	690	920
Warm White	3000K	50	0.44	0.404	230	460	690	920
Fluorescent Light	4100K	80	0.376	0.374	440	880	1320	1760
Neutral White	5700K	86	0.328	0.337	560	1120	1680	2240
Cool White	6500K	85	0.314	0.324	560	1120	1680	2240
Green	522	-	0.153	0.704	310	620	930	1240
Red	620	-	0.688	0.31	120	240	360	480
Yellow	574	-	0.447	0.488	200	400	600	800
Blue	467	-	0.14	0.061	90	180	270	360
Magenta	-	-	0.348	0.155	110	220	330	440
Cyan	490	-	0.146	0.308	230	460	690	920
Amber	589	-	0.542	0.417	170	340	510	680
Rose	-	-	0.486	0.217	110	220	330	440
Lime Green	562	-	0.376	0.538	230	460	690	920
Orange	599	-	0.605	0.371	150	300	450	600
Sky Blue	483	-	0.143	0.213	190	380	570	760
Violet	-	-	0.223	0.097	100	200	300	400
Spring Green	505	-	0.15	0.518	280	560	840	1120

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.

Industry Canada ICES-003(B)

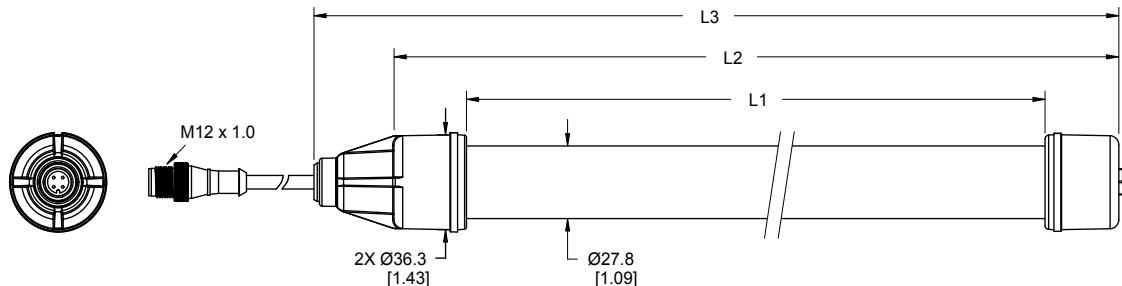
This device complies with CAN ICES-3 (B)/NMB-3(B). Operation is subject to the following two conditions: 1) This device may not cause harmful interference; and 2) This device must accept any interference received, including interference that may cause undesired operation.

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

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

All measurements are listed in millimeters [inches], unless noted otherwise.

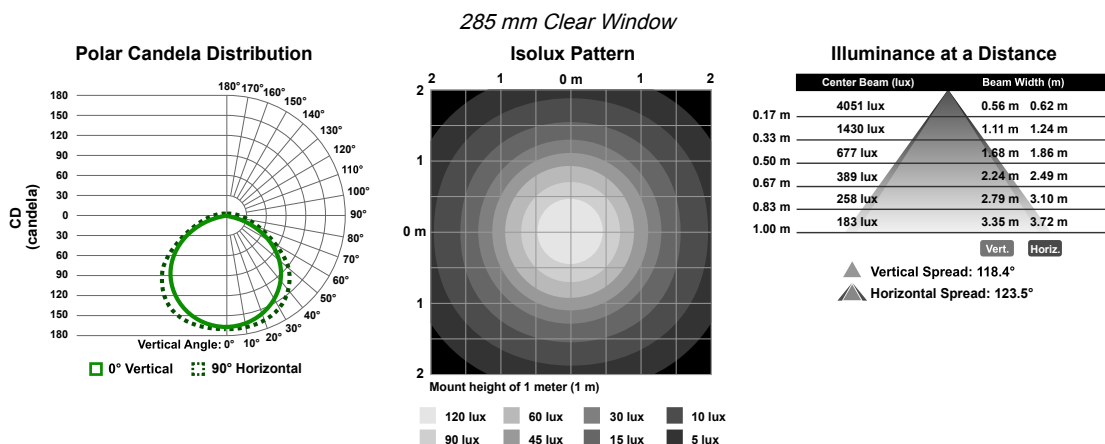


Model	L1	L2	L3
RLS27..0285..	282 mm (11.1 in)	339 mm (13.4 in)	370 mm (14.6 in)
RLS27..0570..	564 mm (22.2 in)	621 mm (24.5 in)	652 mm (25.7 in)
RLS27..0850..	846 mm (33.3 in)	903 mm (35.6 in)	934 mm (36.8 in)
RLS27..1130..	1128 mm (44.4 in)	1185 mm (46.7 in)	1216 mm (47.9 in)

Photometric Data

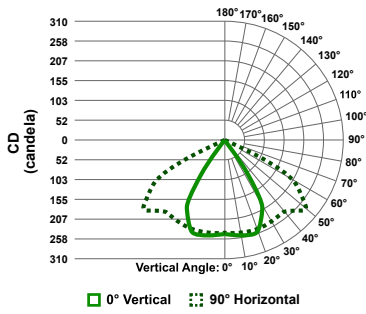
Photometric data shown below is for standard clear, and 35° clear window daylight white models only. To get lux and candela values for other colors, multiply the values shown on the charts by the following factors:

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



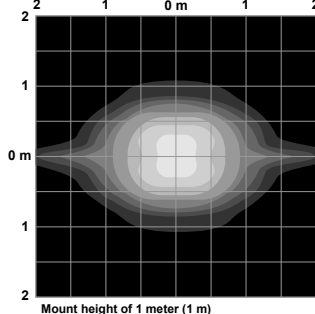
285 mm L35 Window

Polar Candela Distribution



0° Vertical 90° Horizontal

Isolux Pattern



240 lux 195 lux 150 lux 105 lux 60 lux 30 lux 15 lux 5 lux

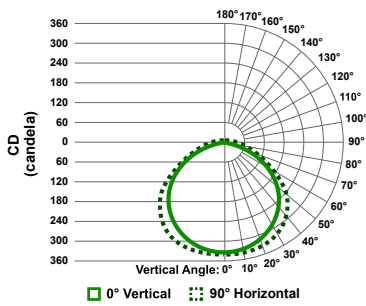
Illuminance at a Distance

Center Beam (lux)	Beam Width (m)
6334 lux	0.18 m 0.34 m
2161 lux	0.35 m 0.67 m
1007 lux	0.53 m 1.01 m
570 lux	0.70 m 1.35 m
378 lux	0.88 m 1.69 m
265 lux	1.06 m 2.03 m

Vertical Spread: 55.7° Horizontal Spread: 90.7°

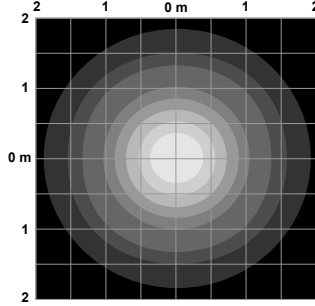
570 mm Clear Window

Polar Candela Distribution



0° Vertical 90° Horizontal

Isolux Pattern



270 lux 225 lux 180 lux 135 lux 90 lux 45 lux 30 lux 15 lux

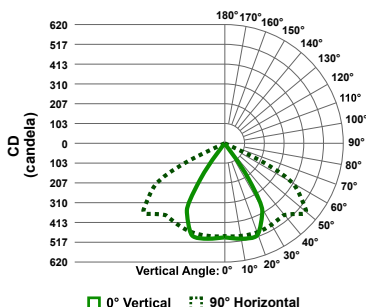
Illuminance at a Distance

Center Beam (lux)	Beam Width (m)
4677 lux	0.56 m 0.62 m
2069 lux	1.11 m 1.24 m
1108 lux	1.68 m 1.86 m
747 lux	2.24 m 2.49 m
509 lux	2.79 m 3.10 m
362 lux	3.35 m 3.72 m

Vertical Spread: 118.4° Horizontal Spread: 123.5°

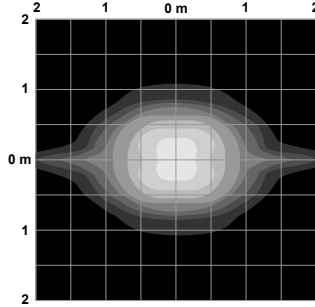
570 mm L35 Window

Polar Candela Distribution



0° Vertical 90° Horizontal

Isolux Pattern



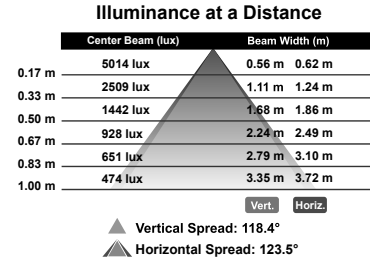
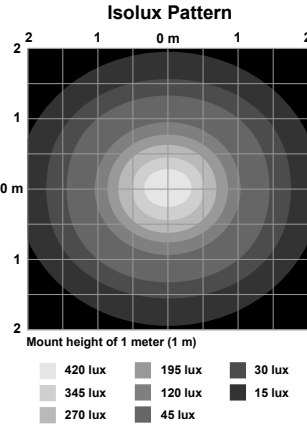
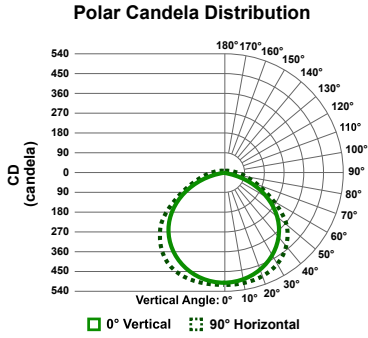
480 lux 390 lux 300 lux 210 lux 120 lux 60 lux 30 lux 15 lux

Illuminance at a Distance

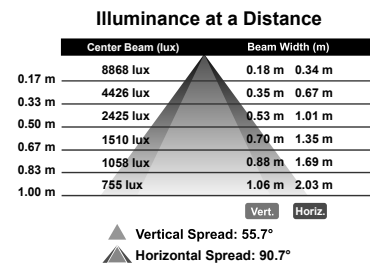
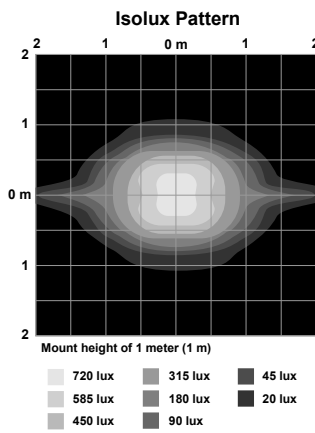
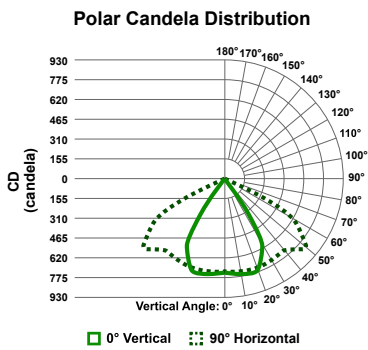
Center Beam (lux)	Beam Width (m)
8862 lux	0.18 m 0.34 m
3641 lux	0.35 m 0.67 m
1867 lux	0.53 m 1.01 m
1126 lux	0.70 m 1.35 m
766 lux	0.88 m 1.69 m
540 lux	1.06 m 2.03 m

Vertical Spread: 55.7° Horizontal Spread: 90.7°

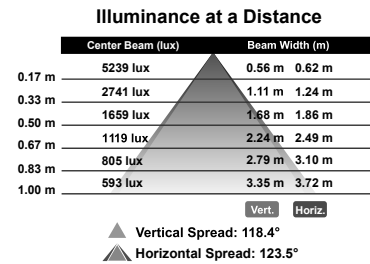
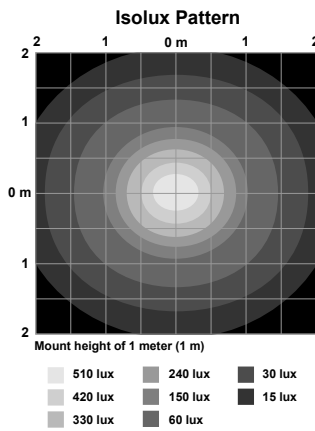
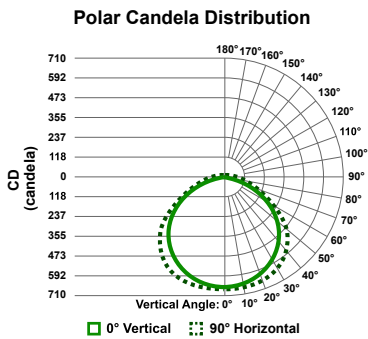
850 mm Clear Window



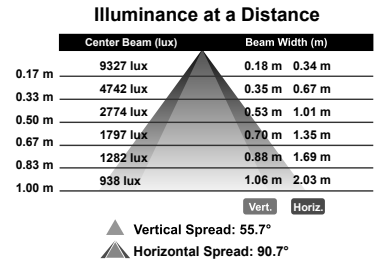
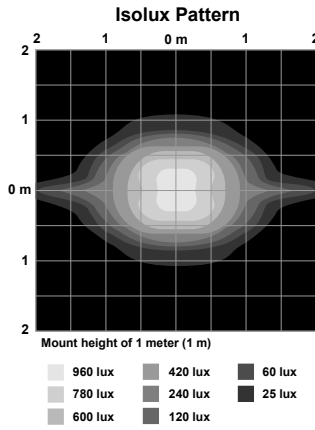
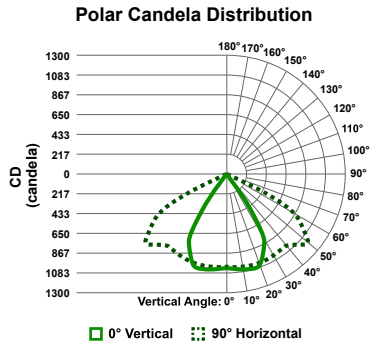
850 mm L35 Window



1130 mm Clear Window



1130 mm L35 Window



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Cordsets

Standard Cordsets

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)	Right-Angle		
MQDC-406RA	2 m (6.56 ft)			
MQDC-415RA	5 m (16.4 ft)			
MQDC-430RA	9 m (29.5 ft)			
MQDC-450RA	15 m (49.2 ft)			1 = Brown 2 = White 3 = Blue 4 = Black 5 = Unused

Washdown Rated Cordsets

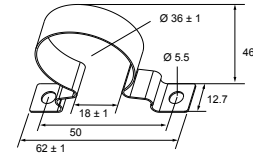
Polypropylene jacket and connector body, stainless steel coupling nut

5-Pin Threaded M12 Washdown Cordsets with Shield—Single Ended				
Model	Length	Style	Dimensions	Pinout (Female)
MQDCWD-506	2 m (6.56 ft)	Straight		
MQDCWD-530	9 m (29.5 ft)			
				1 = Brown 2 = White 3 = Blue 4 = Black 5 = Gray

Brackets

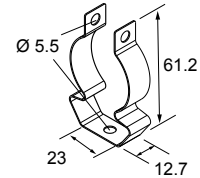
LMBHLS27S

- Set of 2 brackets
- Impact absorbing
- 300 series stainless steel
- Clearance for M5 or #10 hardware



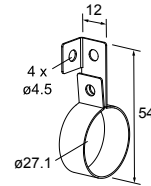
LMBRLS27O

- Set of 3 brackets
- Impact absorbing clamp
- 300 series stainless steel
- M5 stainless steel hardware included
- Extra padding for attachment around 27 mm housing
- Designed for lights over 4 feet in length



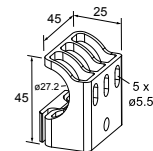
LMBWLS27H

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



LMBWLS27U

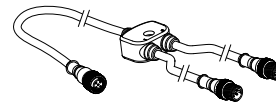
- Clear copolyester
- Clearance for M5 or #10 hardware
- Clamps securely around the light body



Pro Editor Hardware

CSB-M1251FM1251M

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



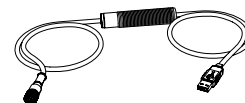
PSD-24-4

- 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



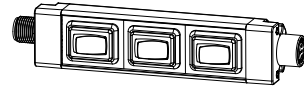
MQDC-506-USB

- 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



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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

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