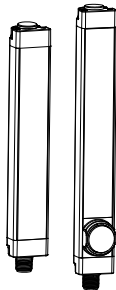


# HLS28 Hazardous Enclosure LED Strip Light



## Datasheet

Banner's HLS28 Hazardous Location LED Strip Light has a sturdy aluminum housing, shatterproof windows, and low-profile, space-saving design for use in enclosures in hazardous locations.



- 9 single color models and 3 multicolor models available in lengths from 145 mm to 570 mm <sup>1</sup>
- Available with integrated motion sensor for auto-on when motion is detected
- Single color models have the capability to dim lights using the wiring pinout (Hi/Lo/Off)
- Automatic temperature protection built into the unit—above 50 °C, the light dims to manage heat and protect product lifetime
- Certification for installations inside appropriately rated enclosures such as cULus and ATEX/UKCA/IECEX, see details in specifications



**Note:** When cascading lights, a model with a Motion switch can be used to control the lights cascaded off the switched model.

## Models

Single Color Models <sup>1</sup>	Multicolor Models <sup>1</sup>
HLS28XW145XMQ	HLS28XWGRXX3-285X24Q
HLS28XW145XM	HLS28XWYRXX3-285X24Q
HLS28XW285XM	HLS28XWGRYB5-285X24Q
HLS28XW285XMQ	
HLS28XW285DXMQ	
HLS28CW285XMQ	
HLS28XW285XQ	
HLS28XW430XMQ	
HLS28XW570XMQ	

Single Color Model Example: HLS28XW285DXMQ  
Each part of the model number defines a feature of the light.

<b>HLS28</b>	Defines the product family of the light	<b>D</b>	Defines the window D = Diffused plastic
<b>X</b>	Defines the cascable feature of the light X = Non-cascable	<b>X</b>	Defines the construction of the light X = Non-sealed
<b>W</b>	Defines the color of the light W = Cool white	<b>M</b>	Defines the control of the light M = Motion switch
<b>285</b>	Defines the length of the light in millimeters (mm)	<b>Q</b>	Defines the connection of the light Q = Integral 4-pin M12 quick disconnect

Multicolor Model Example: HLS28XWGRXX3-285X24Q  
Each part of the model number defines a feature of the light.

<b>HLS28</b>	Defines the product family of the light	<b>[blank]</b>	Defines the window Blank = Clear Plastic
<b>X</b>	Defines the cascable feature of the light X = Non-cascable	<b>X</b>	Defines the construction of the light X = Non-sealed
<b>WGRXX3</b>	Defines the color combination of the light WGRXXX3 = White, Green, and Red with override control	<b>24</b>	Defines the voltage of the light in volts (V)
<b>—285</b>	Defines the length of the light in millimeters (mm)	<b>Q</b>	Defines the connection of the light Q = Integral 4-pin M12 quick disconnect

<sup>1</sup> Contact Banner Engineering for custom configurations or lengths up to 1130 mm.



## Installation Instructions

### Hazardous Location Applications


**WARNING:**

- **Hazardous Locations**
- It is the user's responsibility to ensure that all local, state, and national laws, rules, codes, or regulations relating to the installation and use of this device in any particular application are satisfied. This device must be installed by Qualified Persons, in accordance with this document and applicable regulations.
- A Qualified Person is a person who, by possession of a recognized degree or certificate of professional training, or who, by extensive knowledge, training and experience, has successfully demonstrated the ability to solve problems relating to the subject matter and work.


**CAUTION:**

- **Electrostatic Discharge (ESD) Special Conditions for Safe Use**
- Parts of the enclosure are non-conducting and can generate an ignition-capable level of ESD.
- Clean the equipment with only a damp cloth.

**General Notes and Conditions of Use:**

- See Specifications and Wiring Diagrams for important information concerning entity parameters, permissible locations, electrical connections and certifications.
- In addition to the warning above concerning user responsibility, the installation must comply with the following:
  - All installations must comply with all manufacturer's instructions.
    - Must be installed within an enclosure only accessible with a tool, such as a key, and appropriately rated for the application and the environment.
      - NEC/CEC: For Class I Division 2, Groups A, B, C, D classified locations, these luminaires shall be installed within an enclosure that is appropriately rated for the environment per NEC/CEC requirements.
      - ATEX/UKCA/IECEX: The luminaires shall be installed in an enclosure that provides a degree of protection not less than IP54 in accordance with IEC/EN 60079-0. All enclosure materials must be UV blocking.
    - Do not mount these luminaires near heat generating sources (for example, devices) that will increase the surrounding temperatures within the enclosure greater than the ambient temperature ratings.
    - Division 2 / Zone 2 wiring methods must comply with the following:
      - U.S. Installations: The relevant requirements of the National Electrical Code® (ANSI/NFPA-70 NEC®).
      - Canadian Installations: The relevant requirements of the Canadian Electrical Code (CSA C22.1).
      - ATEX, UKCA, and IECEX Installations: The relevant requirements of EN/IEC 60079-14 and applicable National regulations.
    - The device must be powered by a Class 2 or SELV power supply.
    - Clean with a damp cloth only.



**Note:** For quick disconnect models only: use Banner MQDC-4## and MQDEC-4## cordsets (shown in [Accessories](#) on page 9), or suitable M12 quick disconnect cordsets with threaded retaining nut (see [Specifications](#) on page 3). The cordset must be securely fastened using the M12 x 1 QD retaining nut to prevent disconnection.

- Do not attempt any repairs to this device; it contains no field-replaceable parts or components. Tampering and/or replacement with non-factory components may adversely affect the safe use of the system.
- The nonconducting materials of this device may be susceptible to ignition-capable level of electrostatic charging and precautions must be taken to avoid this. The user/installer shall ensure that the equipment is not installed in a location where it may be subjected to external conditions (such as high-pressure steam) which are conducive to creating a build-up of electrostatic charges.

### Installation

1. Remove power at the DC power supply.
2. Remove the light from the packaging and inspect it for damage before installing it.
3. Attach the included SMBWLS28RA brackets, or other compatible brackets, to the light.  
Refer to [Accessories](#) on page 9 for a complete list of compatible brackets.
4. Select a suitable mounting location inside the appropriately rated enclosure for the application as described above.



**Important:** Do not mount these luminaires near heat generating sources (for example, devices) that will increase the surrounding temperatures within the enclosure greater than the ambient temperature ratings (see Operating Temperature in [Specifications](#) on page 3 for further details).

5. Place the light in the mounting location and mark the positions of the bracket mounting holes.
6. Use appropriate fasteners (screws) to secure the bracket to the mounting location.
7. Wire the leads of the cables per the wiring diagram onto the light. Terminate wire as appropriate per application. On QD models, secure the cordset M12 x 1 QD retaining nut to the HLS28 mating QD; do not over-tighten.
8. Installation is complete. Reapply power at the DC power supply.


**WARNING:**

- **Explosion Hazard**
- Do not disconnect equipment unless the power has been switched off or the area is known to be non-hazardous.

## Wiring

Diagram	Wire	Single Color Models	Multicolor Models	Pinout (Male)	Pinout (Female)
	1 - Brown	12 V DC to 30 V DC	Input 1		
	2 - White	Not used	Input 3		
	3 - Blue	DC common	DC Common		
	4 - Black	Models without motion detection: Connect to 12 V DC to 30 V DC for 50% maximum intensity. For maximum intensity, leave the black wire floating or connected to common. Models with motion detection: Connect to 12 V DC to 30 V DC to bypass the motion detector switch.	Input 2		

Input 1: Pin 1 Brown Wire	Input 2: Pin 4 Black Wire	Input 3: Pin 2 White Wire	LED Color
—	—	—	Light OFF
+24 V DC	—	—	Color 1 ON
—	+24 V DC	—	Color 2 ON
+24 V DC	+24 V DC	—	Color 2 ON
—	—	+24 V DC	Color 3 ON
+24 V DC	—	+24 V DC	Color 3 ON
—	+24 V DC	+24 V DC	Color 3 ON
+24 V DC	+24 V DC	+24 V DC	Color 3 ON

Input 1: Pin 1 Brown Wire	Input 2: Pin 4 Black Wire	Input 3: Pin 2 White Wire	LED Color
—	—	—	Light OFF
+24 V DC	—	—	Color 1 ON
—	+24 V DC	—	Color 2 ON
—	—	+24 V DC	Color 3 ON
+24 V DC	+24 V DC	—	Color 4 ON
+24 V DC	—	+24 V DC	Color 5 ON
—	+24 V DC	+24 V DC	Light OFF
+24 V DC	+24 V DC	+24 V DC	Light OFF

## Specifications

### Single Color

#### Supply Voltage and Current

12 V DC to 30 V DC (See Table 1)  
Use only with suitable Class 2 power supply (UL) or a SELV power supply (CE).  
See electrical characteristics on product label

#### Supply Protection Circuitry

Protected against reverse polarity and transient voltages

#### Light Characteristics

Cool white  
Color Temperature (CCT): 6500K (+500K, -400K)  
Lumen output: 800 (± 5%) per foot, typical at 25 °C (77 °F)  
Luminous efficacy: 110 lumens/Watt typical at 24 V dc at 25 °C (77 °F)  
CRI: 85, typical

#### Leakage Current Immunity

400 µA

#### LED Lifetime

Lumen Maintenance = L<sub>70</sub>  
When operating within specifications, output will decrease less than 30% after 75,000 hours.

#### Models with Motion Detection

Light turns off after approximately 60 seconds without detecting motion  
Range: 12 meters; ± 45° field of view  
Standby current: 170 µA

#### Construction

Clear anodized aluminum housing; painted zinc end caps; polycarbonate window on clear and diffuse plastic housings; zinc plated steel brackets

#### Mounting

(2) swivel brackets SMBWLS28RA included and (4) screws

#### Connections

Integral 4-pin M12 male quick-disconnect connector (4-pin connecting QD cordset required); or 2 m (6.5 ft) integral PVC-jacketed cable  
Connecting 4-pin M12 QD Cordsets (see Cordsets):  
Female single-ended or male/female double-ended;  
Multiconductor cable (at minimum): UL AVLV2 Style 2517, 24 AWG wire, rated ≥ 80 °C;  
M12 QD connector: per IEC 61076-2-101, must have threaded M12 × 1 retaining nut.

#### Environmental Rating

IP50

#### Vibration and Mechanical Shock

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

#### Operating Temperature

Models without motion detection: -40 °C to +70 °C (-40 °F to +158 °F)  
Models with motion detection: -20 °C to +60 °C (-4 °F to +140 °F)  
Light output begins to decrease above 50 °C (122 °F) and will be approximately 65% of max intensity at 60 °C (140 °F) and 30% of max intensity at 70 °C (158 °F)

#### Storage Temperature

-40 °C to +70 °C (-40 °F to +158 °F)

#### Application Note

When connecting cascaded lights in series at 100% intensity, it is important not to exceed maximum current limitations:

Maximum length of light at 12 V DC: 1.4 m (4.6 ft)

Maximum length of light at 24 V DC: 3.0 m (9.8 ft)

Maximum length of light at 30 V DC: 3.1 m (10.2 ft)

At 50% intensity, double the lengths.

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

#### 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](http://www.bannerengineering.com).

Supply Wiring (AWG)	Required Overcurrent Protection (Amps)
20	5.0
22	3.0
24	2.0
26	1.0
28	0.8
30	0.5

**Typical Current**

Light Length	Typical Current			Max. Current	Lumens <sup>2</sup> (Typical @25 °C)
	12 V DC	24 V DC	30 V DC	A	Cool White
145 mm	0.33 A	0.15 A	0.12 A	0.4	400
285 mm	0.66 A	0.30 A	0.24 A	0.8	800
430 mm	1.01 A	0.46 A	0.36 A	1.2	1200
570 mm	1.36 A	0.61 A	0.48 A	1.6	1600
710 mm	1.75 A	0.77 A	0.60 A	2.0	2000
850 mm	2.13 A	0.92 A	0.73 A	2.4	2400
990 mm	2.59 A	1.08 A	0.85 A	2.8	2800
1130 mm	3.04 A	1.24 A	0.97 A	3.2	3200

**Approvals**

NEC and CEC:

Models without motion detection option:  $-40^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$   
 Models with motion detection option:  $-20^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$   
 Gas & Vapors: Class I Zone 2 IIC T4 / Class I Div 2 Groups ABCD T4

ATEX/UKCA/IECEX:

Models without motion detection option:  $-40^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$   
 Models with motion detection option:  $-20^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$   
 Gas & Vapors: II 3 G Ex ec IIC T4 Gc (Group IIC Zone 2)



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



UL/cULus E467619



**Turck Banner LTD** Blenheim House, Blenheim Court, Wickford, Essex SS11 8YT, Great Britain

UL 21 ATEX 2508X  
IECEX UL 21.0007X

IEC 60079-0:2017  
IEC 60079-7:2017

**Multicolor**

**Supply Voltage and Current**

24 V DC (+ 20% / - 10%)  
 Use only with suitable Class 2 power supply (UL) or a SELV power supply (CE)  
 See electrical characteristics on product label

Lighted Length	Typical Current (A) at 25° C <sup>3</sup>	Maximum Current (A)
285 mm	0.315	0.400
570 mm	0.630	0.800
850 mm	0.945	1.200
1130 mm	1.260	1.600

**Supply Protection Circuitry**

Protected against reverse polarity and transient voltages

**Light Characteristics**

Daylight White Efficacy: 85 lumens/watt typical at 24 V DC at 25 °C (77 °F)  
 CRI: 80, minimum

Color	Dominant Wavelength (nm) or Color Temperature	Lighted Length Lumens (Typical at 25 °C) <sup>3</sup>			
		285 mm	570 mm	850 mm	1130 mm
Green	525 nm	400	800	1200	1600
Red	625 nm	185	370	555	740
Yellow	580 nm	570	1140	1710	2280
Blue	470 nm	125	250	375	500
Daylight White	5000 K (±300 K)	650	1300	1950	2600

**Connections**

Integral 4-pin M12 male quick-disconnect connector (4-pin connecting QD cordset required); or 2 m (6.5 ft) integral PVC-jacketed cable  
 Connecting 4-pin M12 QD Cordsets (see Cordsets):

Female single-ended or male/female double-ended;  
 Multiconductor cable (at minimum): UL AVL2 Style 2517, 24 AWG wire, rated ≥ 80 °C;  
 M12 QD connector: per IEC 61076-2-101, must have threaded M12 × 1 retaining nut.

**Construction**

Clear anodized aluminum housing; painted zinc end caps; polycarbonate window on clear and diffuse plastic models; zinc plated steel brackets

**Environmental Rating**

IP50

**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 +50 °C (-40 °F to +122 °F)

**Application Notes**

When connecting cascable lights in series it is important not to exceed maximum current limitations:

Maximum length of light at 24 V DC: 3.0 m (9.8 ft)

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

<sup>2</sup> Lumen values lowered by 25% on diffused window and 25 degree lensed models.

<sup>3</sup> Values shown at 25 °C - current and lumen values decrease 0.4% per 1 °C from ambient. For example, a 1130 mm unit will have a maximum current of 1.600 A at -40 °C and 1.134 A at +50 °C.

**Leakage Current Immunity**

400 µA

**LED Lifetime**

Lumen Maintenance - L<sub>70</sub>

When operating within specifications, output decreases less than 30% after 50,000 hours

**Mounting**

(2) SMBWLS28RA swivel brackets and 4 screws included

**Approvals**

NEC and CEC:

Models without motion detection option: -40°C ≤ T<sub>a</sub> ≤ +50°C

Gas & Vapors: Class I Zone 2 IIC T4 / Class I Div 2 Groups ABCD T4

ATEX/UKCA/IECEX:

Models without motion detection option: -40°C ≤ T<sub>a</sub> ≤ +50°C

Gas & Vapors: II 3 G Ex ec IIC T4 Gc (Group IIC Zone 2)

**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](http://www.bannerengineering.com).

Supply Wiring (AWG)	Required Overcurrent Protection (Amps)
20	5.0
22	3.0
24	2.0
26	1.0
28	0.8
30	0.5



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



UL/cULus  
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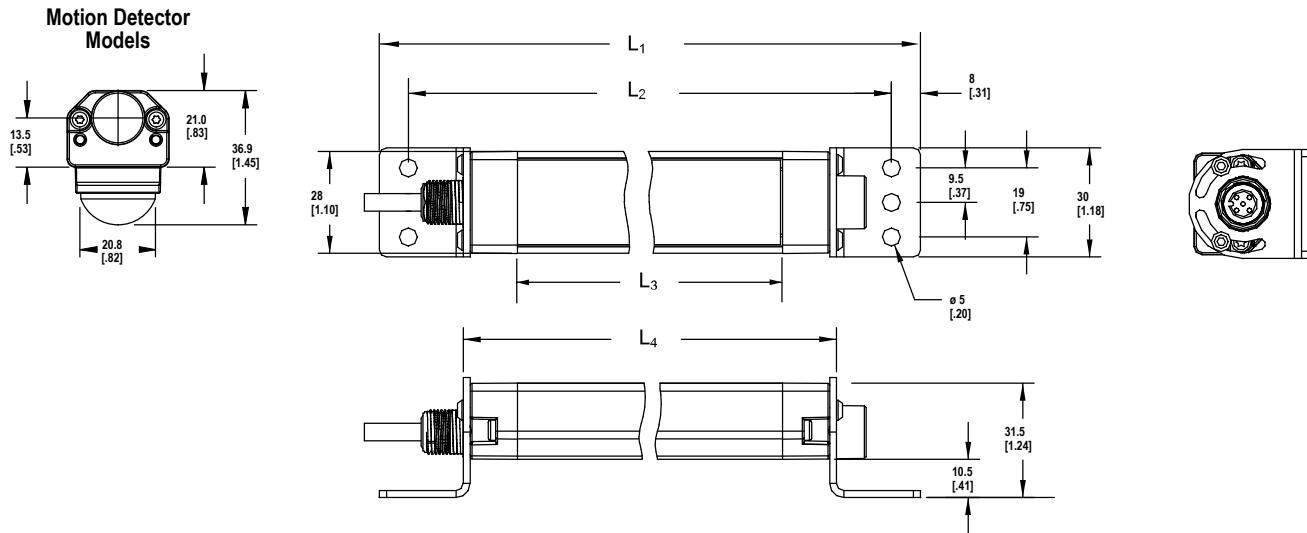
UL 21 ATEX 2508X  
IECEX UL 21.0007X

IEC 60079-0:2017

IEC 60079-7:2017

**Dimensions**

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



Dimensions are shown with included SMBWLS28RA bracket

Models without motion detection				
Model	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>
HLS28..145X	221 mm (8.7 in)	205 mm (8.1 in)	145 mm (5.71 in)	175 mm (6.9 in)
HLS28..285X	362 mm (14.3 in)	346 mm (13.6 in)	286 mm (11.26 in)	316 mm (12.4 in)
HLS28..430X	503 mm (19.8 in)	487 mm (19.2 in)	427 mm (16.81 in)	457 mm (18.0 in)
HLS28..570X	644 mm (25.4 in)	628 mm (24.7 in)	568 mm (22.36 in)	598 mm (23.5 in)
HLS28..710X	785 mm (30.9 in)	769 mm (30.3 in)	709 mm (27.91 in)	739 mm (29.1 in)
HLS28..850X	926 mm (36.5 in)	910 mm (35.8 in)	850 mm (33.46 in)	880 mm (34.6 in)
HLS28..990X	1067 mm (42 in)	1051 mm (41.4 in)	991 mm (39.02 in)	1021 mm (40.2 in)
HLS28..1130X	1208 mm (47.6 in)	1192 mm (46.9 in)	1132 mm (44.57 in)	1162 mm (45.7 in)

Models with motion detection				
Model	L1	L2	L3	L4
HLS28..145XM	251 mm (9.9 in)	235 mm (9.3 in)	145 mm (5.71 in)	205 mm (8.1 in)
HLS28..285XM	392 mm (15.4 in)	376 mm (14.8 in)	286 mm (11.26 in)	346 mm (13.6 in)
HLS28..430XM	533 mm (21.0 in)	517 mm (20.4 in)	427 mm (16.81 in)	487 mm (19.2 in)
HLS28..570XM	674 mm (26.5 in)	658 mm (25.9 in)	568 mm (22.36 in)	628 mm (24.7 in)
HLS28..710XM	815 mm (32.1 in)	799 mm (31.5 in)	709 mm (27.91 in)	769 mm (30.3 in)
HLS28..850XM	956 mm (37.6 in)	940 mm (37 in)	850 mm (33.46 in)	910 mm (35.8 in)
HLS28..990XM	1097 mm (43.2 in)	1081 mm (42.6 in)	991 mm (39.02 in)	1051 mm (41.4 in)
HLS28..1130XM	1238 mm (48.7 in)	1222 mm (48.1 in)	1132 mm (44.57 in)	1192 mm (46.9 in)

Performance

The optical data shown below is for standard single color, cool white only. To calculate lux and candela values for colors in the multicolor models, multiply the values shown on the charts by the following factors.

Color for Multicolor Models	Multiplier
Daylight white	0.813
Green	0.500
Red	0.231
Yellow	0.713
Blue	0.156

Figure 1. 145 mm Models

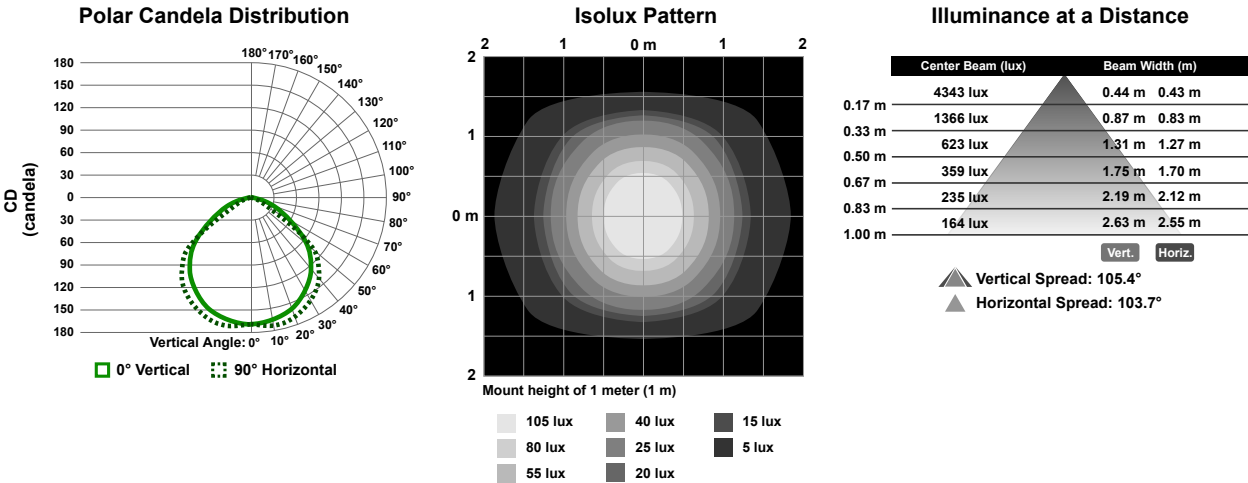


Figure 2. 285 mm Models

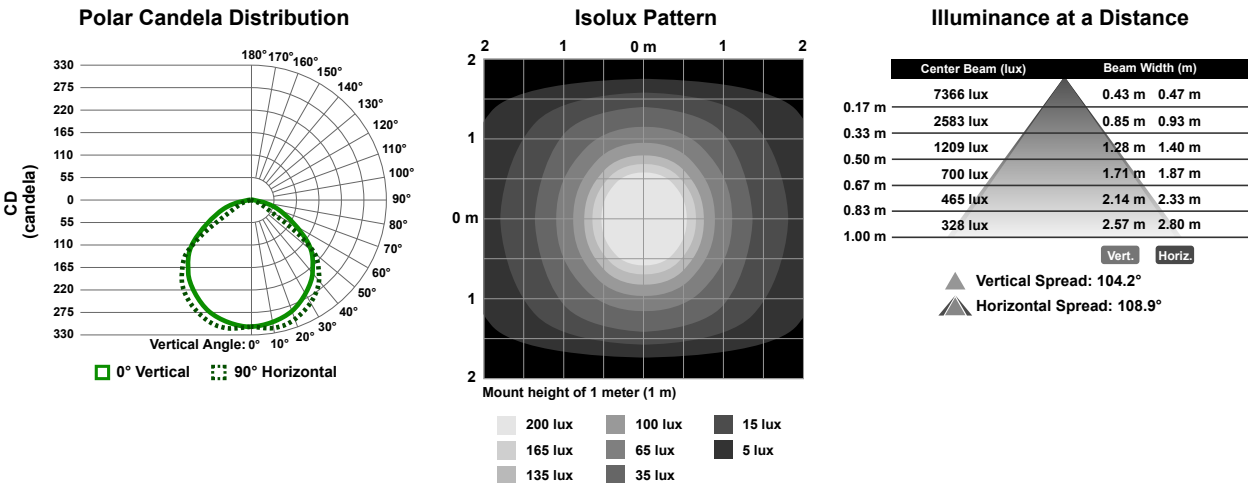


Figure 3. 430 mm Models

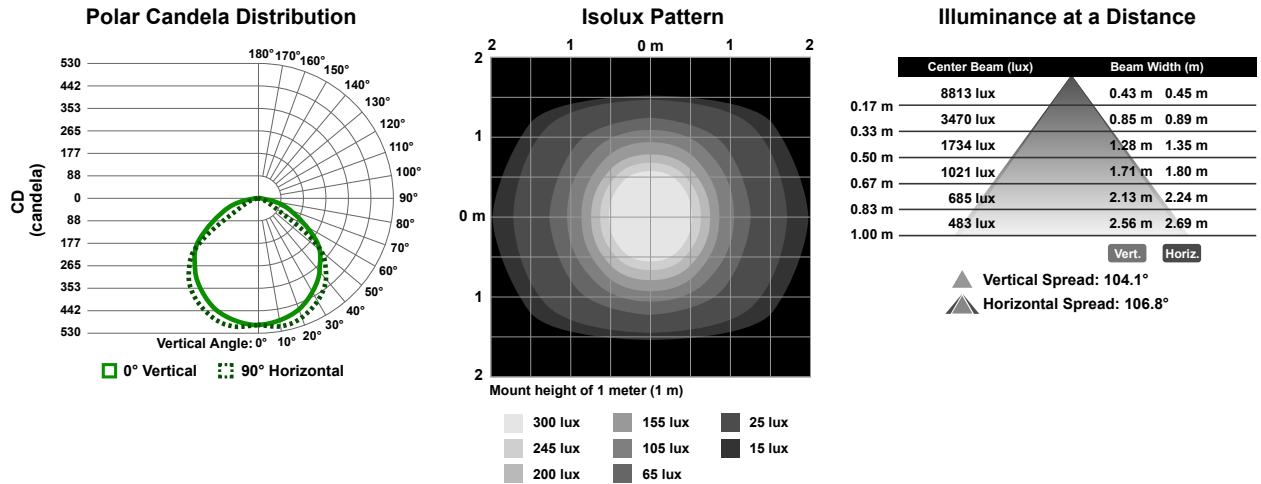


Figure 4. 570 mm Models

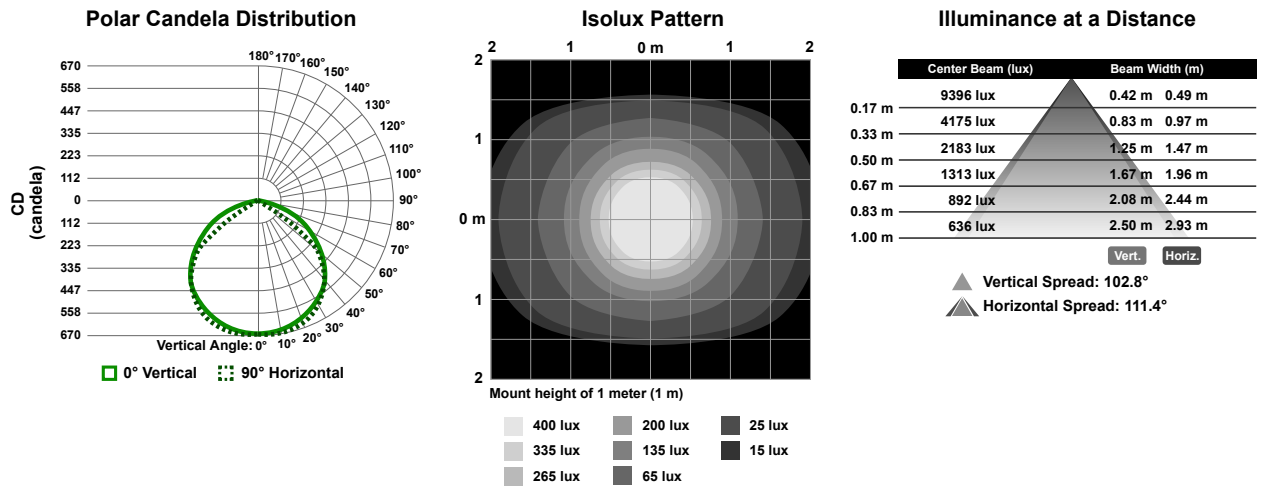


Figure 5. 710 mm Models

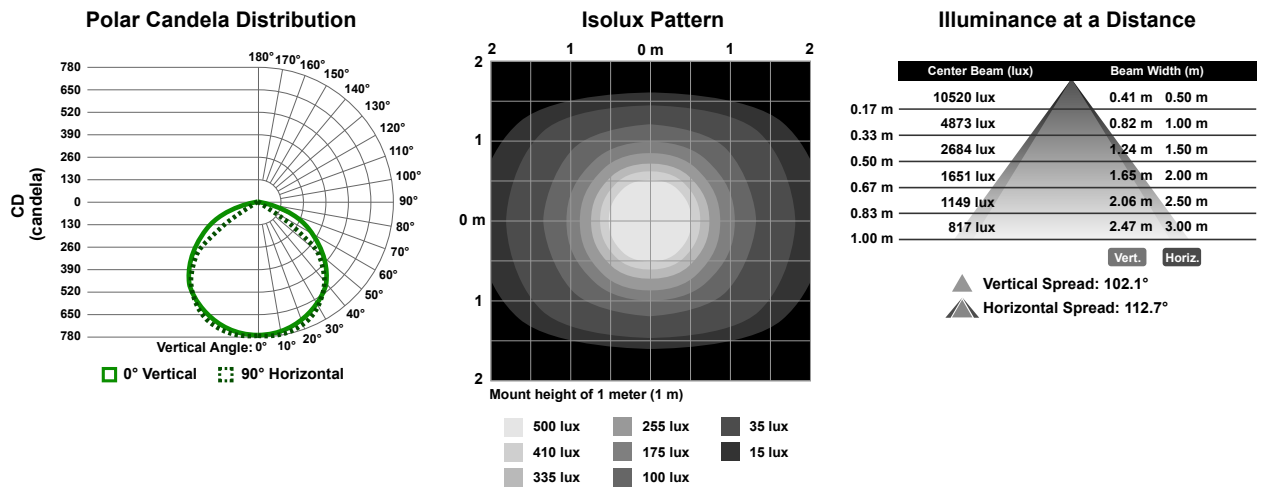


Figure 6. 850 mm Models

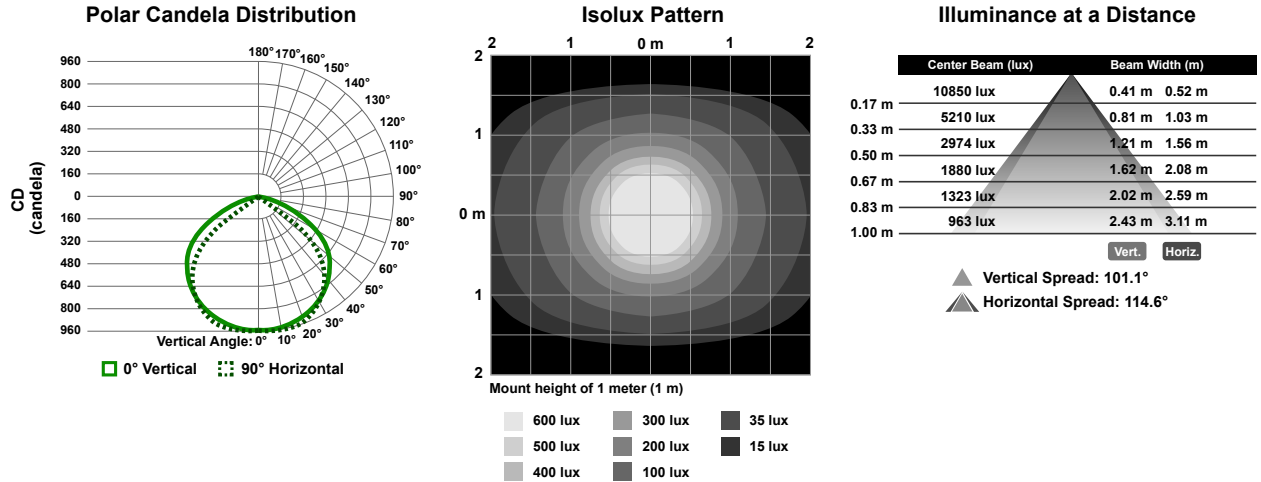


Figure 7. 990 mm Models

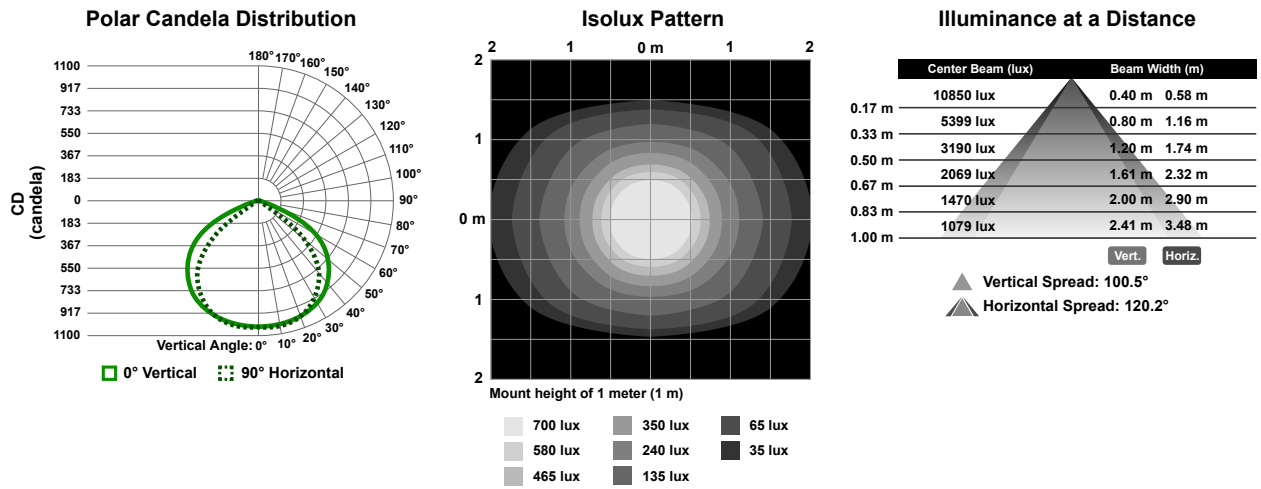
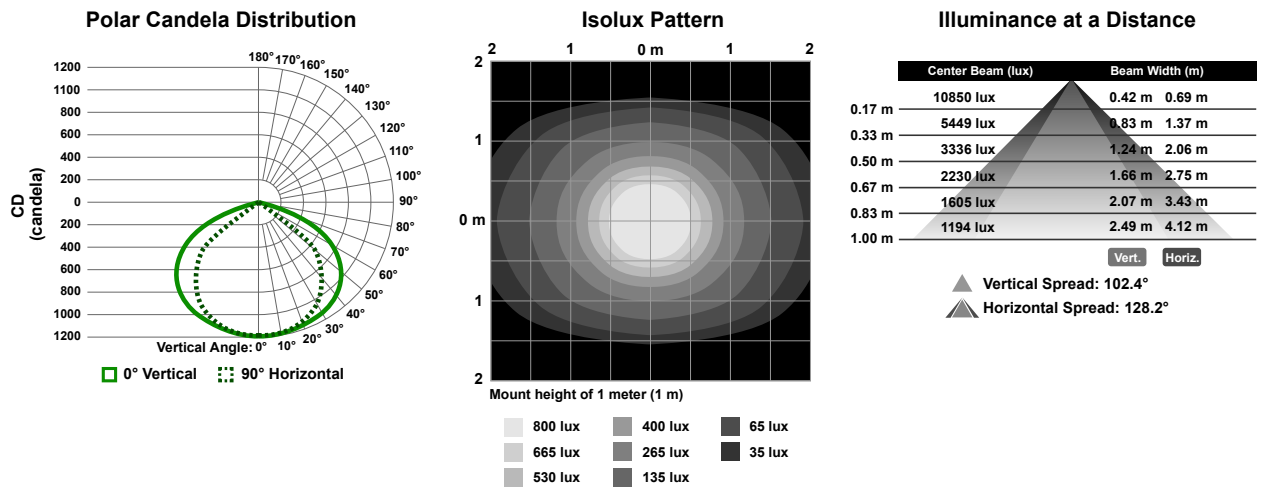


Figure 8. 1130 mm Models



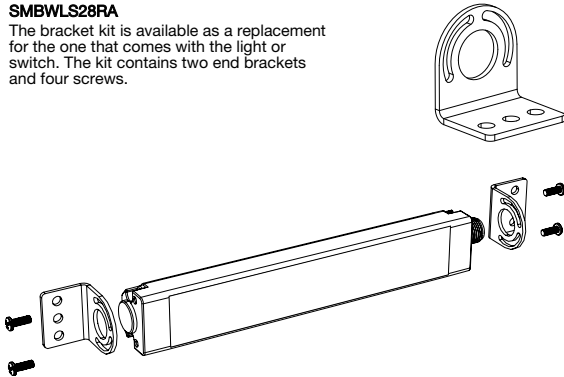


## Accessories

### Brackets

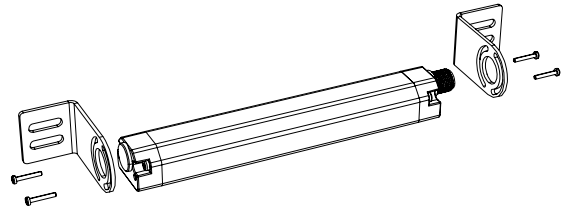
**SMBWLS28RA**

The bracket kit is available as a replacement for the one that comes with the light or switch. The kit contains two end brackets and four screws.



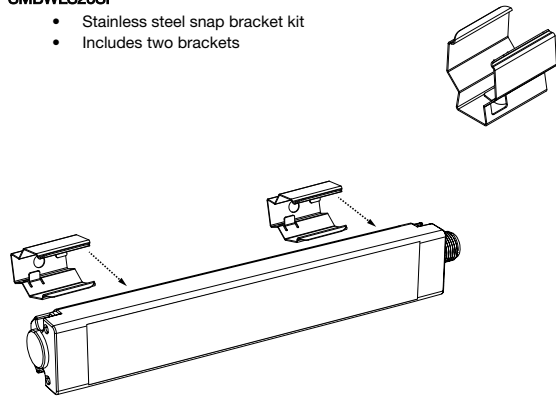
**SMBWLS28SM**

This kit allows the light or switch to be mounted at a right angle to the mounting surface. The kit contains two end brackets and four screws.



**SMBWLS28SP**

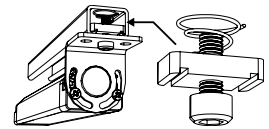
- Stainless steel snap bracket kit
- Includes two brackets



**SMH1316**

This kit allows the light or switch to be mounted to a 13/16-inch Unistrut channel. Light is shown.

- #10-32 spring nuts (qty 2)
- #10-32 socket head cap screws (qty 2)
- #10 lock washers (qty 2)



### 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

4-Pin Threaded M12 Cordsets—Double Ended				
Model	Length	Style	Dimensions	Pinout
MQDEC-401SS	0.31 m (1 ft)	Male Straight/Female Straight		Female
MQDEC-403SS	0.91 m (2.99 ft)			
MQDEC-406SS	1.83 m (6 ft)			Male
MQDEC-412SS	3.66 m (12 ft)			
MQDEC-420SS	6.10 m (20 ft)			
MQDEC-430SS	9.14 m (30.2 ft)			
MQDEC-450SS	15.2 m (49.9 ft)			

## Banner Engineering Corp. Limited Warranty

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.

**THIS LIMITED WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES WHETHER EXPRESS OR IMPLIED (INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND WHETHER ARISING UNDER COURSE OF PERFORMANCE, COURSE OF DEALING OR TRADE USAGE.**

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For patent information, see [www.bannerengineering.com/patents](http://www.bannerengineering.com/patents).

## Repairs

Contact Banner Engineering for troubleshooting of this device. **Do not attempt any repairs to this Banner device; it contains no field-replaceable parts or components.** If the device, device part, or device component is determined to be defective by a Banner Applications Engineer, they will advise you of Banner's RMA (Return Merchandise Authorization) procedure.



**Important:** If instructed to return the device, pack it with care. Damage that occurs in return shipping is not covered by warranty.

## 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

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.