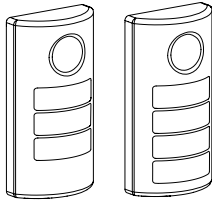


TLF100 Pro Daylight Visible Flush Mount Tower Light



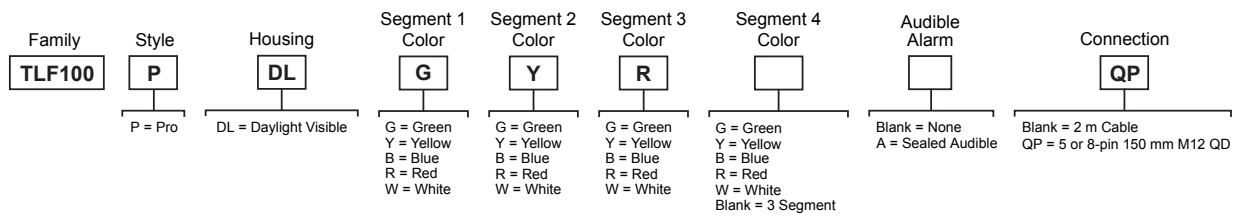
Datasheet

100 mm Programmable Daylight Visible Flush Mount Tower Light



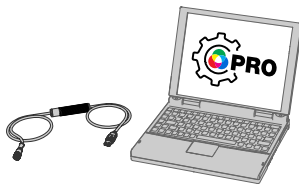
- Rugged, versatile, and easy-to-install 3- and 4-segment tower lights
- Flush mounting allows for easy integration to machines and equipment
- Programmable using Banner's Pro Editor software and Pro Converter Cable
- Intense levels of light output for areas with high ambient light - even outdoors
- Audible models available with sealed audible element
- 14 selectable audible tones and audible intensity control
- 24 V DC operation
- No assembly required
- Bright, single color LEDs provide highly visible indication for indoor or outdoor applications

Models



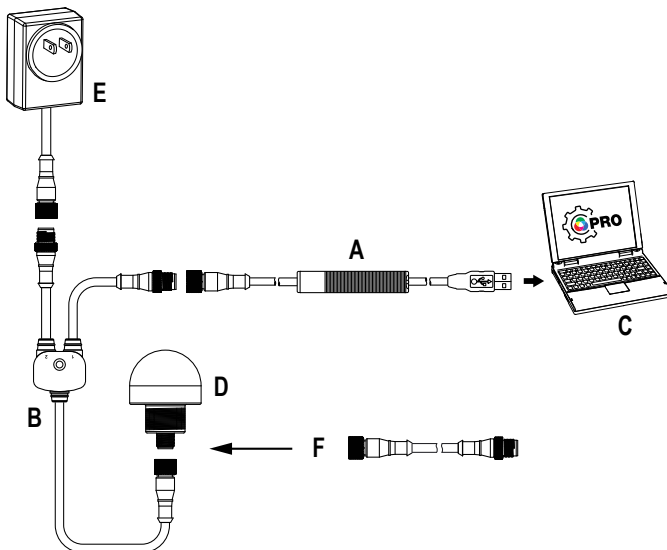
Configuration Instructions

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)



- 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

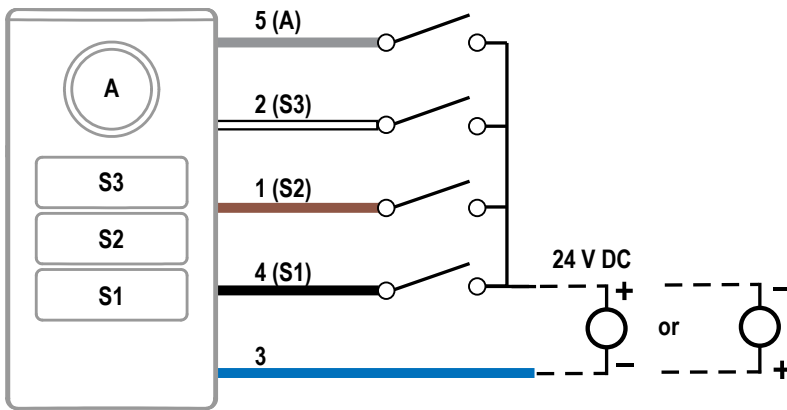


Wiring Diagrams

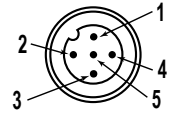


Note: All models are bimodal and can be wired as PNP or NPN devices.

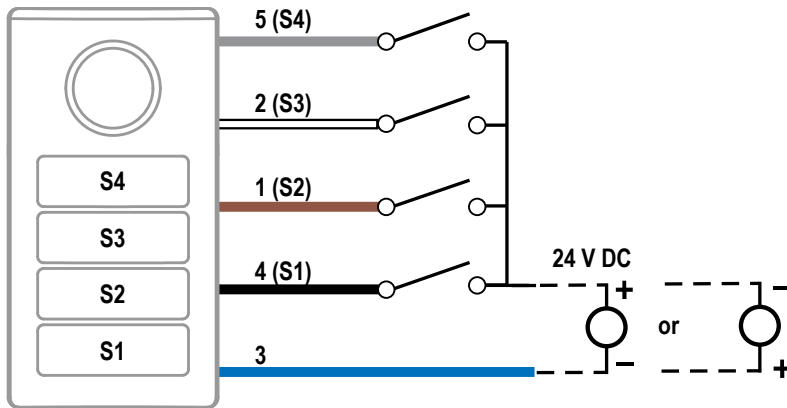
5-pin/Wire Models



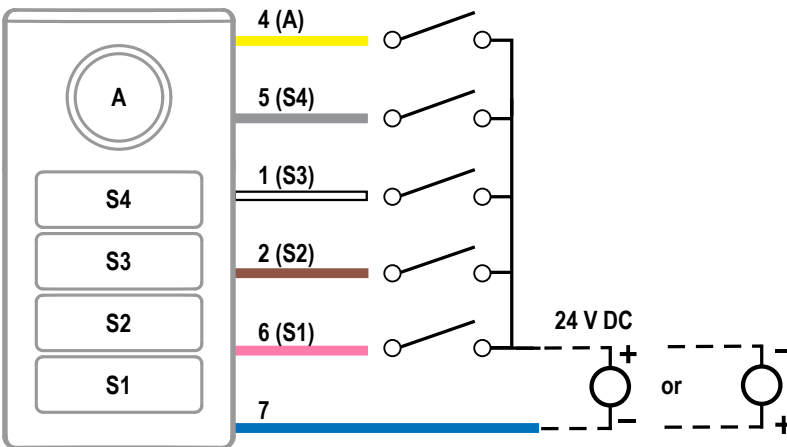
S1 = Color 1
S2 = Color 2
S3 = Color 3
S4 = Color 4
A = Audible



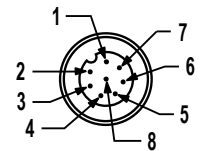
Pin	Color	Segment Mode	Advanced Mode
3	blue	Common	Common (PNP) or 24 V DC (NPN)
4	black	Color 1	Reset Input
1	brown	Color 2	24 V DC (PNP) or Common (NPN)
2	white	Color 3	PWM, PFM, Counter, or Timer input
5	gray	Color 4/ Audible	N/A



8-pin/Wire Models



S1 = Color 1
S2 = Color 2
S3 = Color 3
S4 = Color 4
A = Audible



Pin	Color	Segment Mode	Advanced Mode
7	blue	Common	Common (PNP) or 24 V DC (NPN)
6	pink	Color 1	Reset Input
2	brown	Color 2	24 V DC (PNP) or Common (NPN)
1	white	Color 3	PWM, PFM, Counter, or Timer input
5	gray	Color 4	N/A
4	yellow	Audible	N/A
8	red	N/A	N/A
3	green	N/A	N/A

Pro Editor Configuration for the TLF100 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. Pro Editor includes a preview mode that allows users to verify device performance before writing a configuration to a device. Configure any Pro Series-enabled device using the free Pro Editor software, available for download at www.bannerengineering.com/proeditor.

Segment Mode—Use Segment Mode to activate each segment and to control the input wire, animation, intensity, and speed.



Note: Segment colors for daylight visible models are static and cannot be changed.

Segment Mode Animation	Description
Off	Segment is off
Steady	Segment is on at defined intensity
Flash	Segment flashes at defined speed, intensity, and pattern (normal, strobe, three pulse, SOS, or random)
Intensity Sweep	Segment repeatedly increases and decreases intensity between 0% to 100% at defined speed and intensity

Level—The light adjusts position continuously based on the PFM or PWM input value and defined animation in up to four thresholds. The PFM signal frequency range can be from 100 to 5,000 Hz. The PWM duty cycle range can be from 0 to 100%.

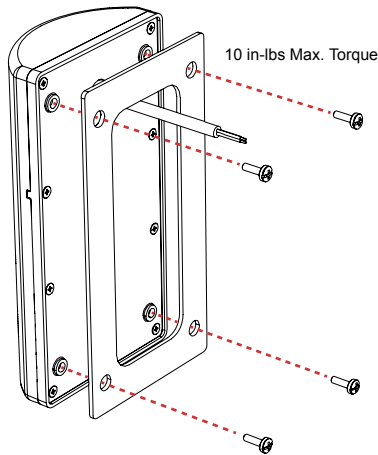
Timer—The timer option uses the TLF100 Pro as a timer, counting up or counting down. Set the total time and choose up to four thresholds to change the visual appearance of the device as time advances. The timer starts when 24 V DC is applied to the timer run input wire, and paused when left floating or tied to ground. The timer resets when 24 V DC is applied to the reset wire. The timer automatically resets when it reaches the final count.

Counter—The counter option counts up or down by converting input pulses into movement of segments along the length of the device based on up to four thresholds that define animations. When the rising edge of a 24 V DC pulse is applied to the counter input wire, the count increases by one. The user can choose whether the counter resets or the count decreases by one when 24 V DC is applied to the control input wire. The counter automatically resets when it reaches the final count.

Audible Control—Use Audible Control to select the settings for the tower light's audible type, feedback, and volume.

Setting	Description
Audible Feedback	Defines the type of audible feedback
Audible Volume	Defines the volume of the audible tone
Audible Type	Defines the type of audible tone played

Installation Instructions



Mounting Surface Thickness	Length of Mounting Screws
≤ 8 mm	12 mm (supplied)
8 mm to 16 mm	20 mm
16 mm to 26 mm	30 mm
26 mm to 36 mm	40 mm
36 mm to 46 mm	50 mm



Note: Do not remove housing screws.

Bracket Mounting Instructions

The TLF100 can be mounted with the SMBTLF100F bracket in the following alternative orientations.

Figure 1. Bracket Orientation - Horizontal

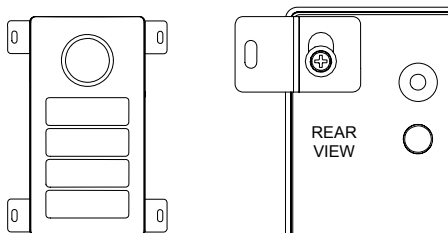
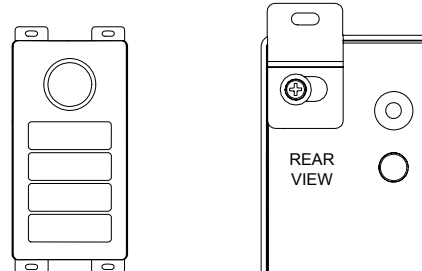


Figure 2. Bracket Orientation - Vertical



Specifications

Supply Voltage and Current

24 V DC nominal
 Typical current per LED segment: 25 mA at 24 V DC
 Typical audible current: 24 mA
 Maximum device current: 160 mA

Supply Protection Circuitry

Protected against reverse polarity and transient voltages

Input Rating

Leakage Current Immunity: 500 uA
 Indicator On/Off Response Time: 250 ms (maximum)
 PWM Duty Cycle Range: 0 to 100%
 PFM Frequency Range: 100 to 5000 Hz

Connections

5-pin or 8-pin integral M12 quick disconnect; 2 m (6.5 ft) integral PVC cable, depending on model
 Models with a quick disconnect require a mating cordset

Construction

Bases, Covers, Light Segment: Polycarbonate

Indicator Characteristics

Color	Dominant Wavelength (nm) or Color Temperature (CCT)	Lumen Output Per Segment (Typical at 25 °C)
Green	526	27
Red	618	15
Yellow	587	11
Blue	467	6
White	5200K	26

Certifications



Advanced Capabilities



Operating Conditions

-40 °C to +50 °C (-40 °F to +122 °F)
 95% at +50 °C maximum relative humidity (non-condensing)

Environmental Rating

IP65, UL Type 4X, and IP69K per DIN 40050-9



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

Vibration and Mechanical Shock

Vibration: 10 Hz to 55 Hz, 0.5 mm peak-to-peak amplitude per IEC 60068-2-6
 Shock: 15G 11 ms duration, half sine wave per IEC 60068-2-27

Audible Alarm

Values shown apply to continuous tone. Frequency and intensity response vary depending on the Audible Tone selected.
 Oscillation Frequency: 3.0 kHz ± 250 Hz
 Intensity:

Low volume (typical): 84 dB at 1 m
 Medium volume (typical): 89 dB at 1 m
 High volume (typical): 94 dB at 1 m

Required Overcurrent Protection



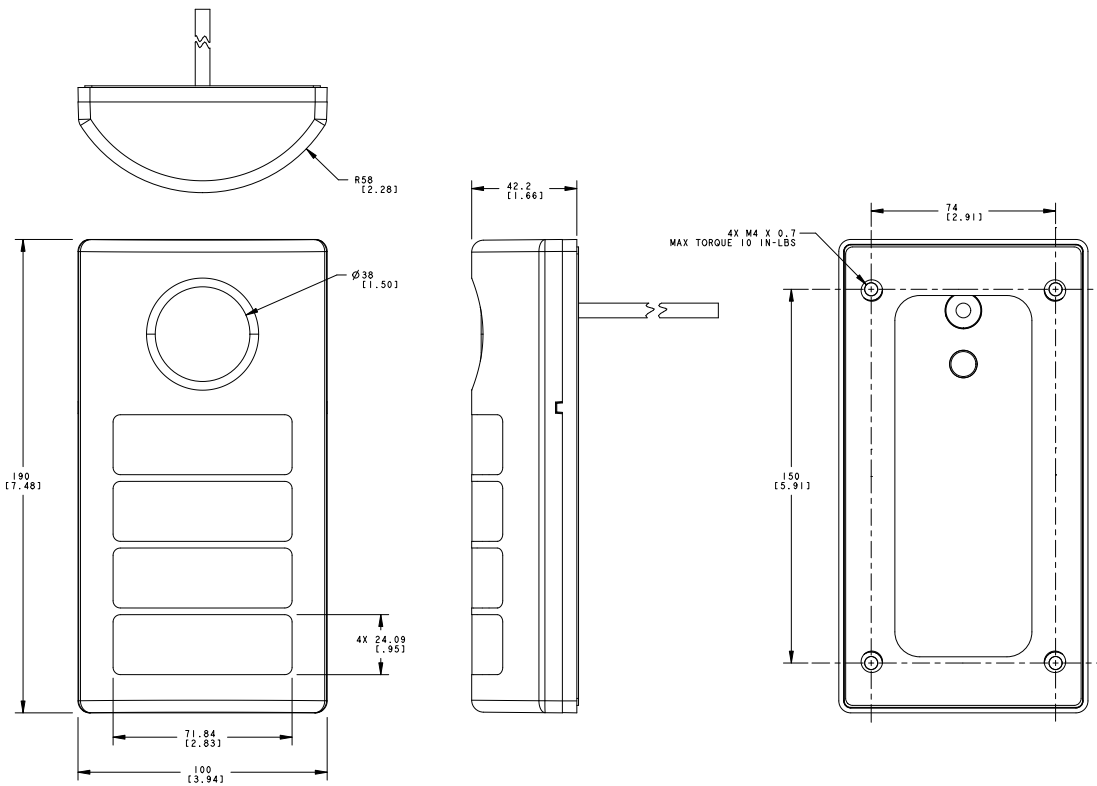
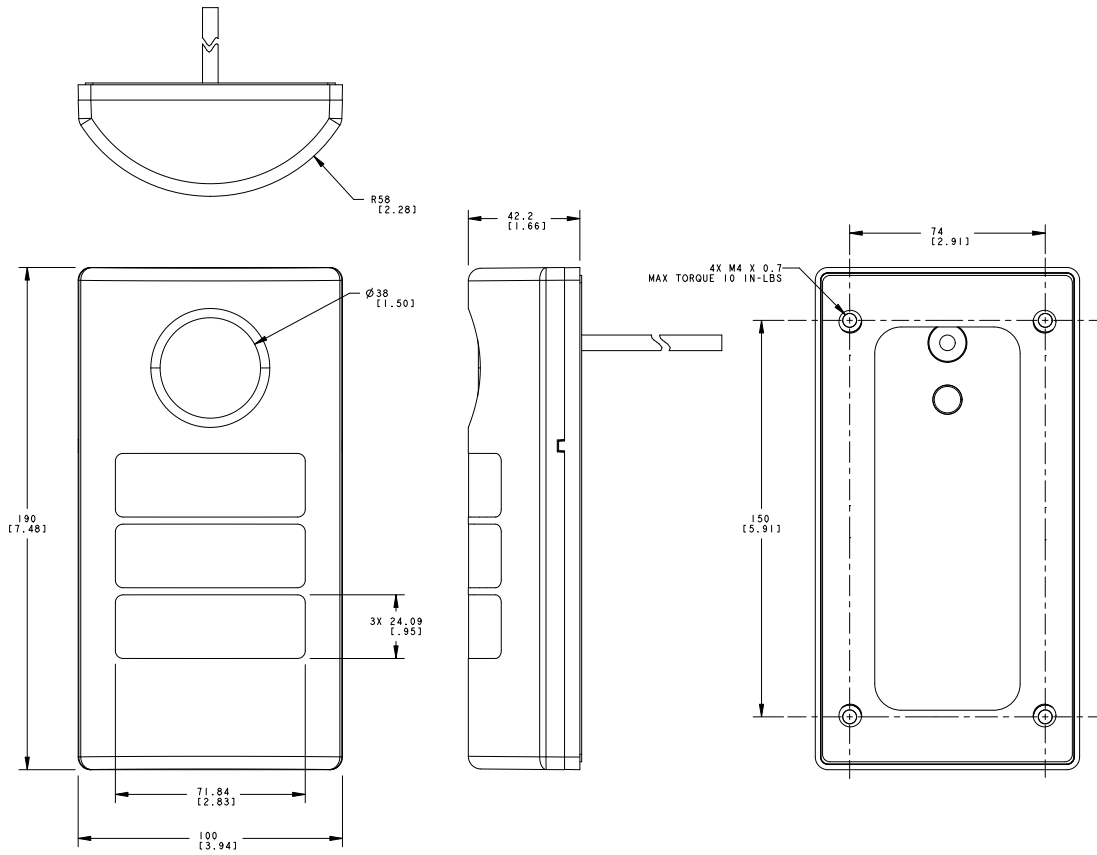
WARNING: Electrical connections must be made by qualified personnel in accordance with local and national electrical codes and regulations.

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 (Amps)
20	5.0
22	3.0
24	2.0
26	1.0
28	0.8
30	0.5

Dimensions

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

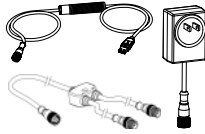


Accessories

Pro Editor Hardware

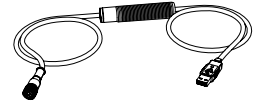
PRO-KIT

- Includes:
- Pro Converter Cable (MQDC-506-USB)
 - Splitter (CSB-M1251FM1251M)
 - Power Supply (PSW-24-1)



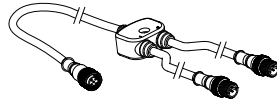
MQDC-506-USB

- 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



CSB-M1251FM1251M

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



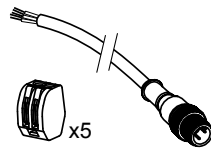
PSW-24-1

- 24 V DC, 1 A power supply
- 2 m (6.5 ft) PVC cable with M12 quick disconnect
- Provides external power with splitter cable, sold separately



ACC-PRO-CABLES

- Mating accessory for cabled and terminal models
- 150 mm (6 inch) PVC cable with M12 quick disconnect
- Lever wire nuts included (qty 5)
- Required to connect cabled models and screw terminal models to Pro Converter Cable, sold separately



MQDC-801-5M-PRO

- 8-pin to 5-pin double-ended cordset
- 0.31 m (1 ft) PVC cable with M12 quick disconnects
- Required to connect 8-pin Pro Series-enabled devices to Pro Converter Cable (MQDC-506-USB), sold separately



Cordsets

5-Pin Threaded M12 Cordsets—Single Ended				
Model	Length	Style	Dimensions	Pinout (Female)
MQDC1-501.5	0.5 m (1.5 ft)	Straight		
MQDC1-506	2 m (6.5 ft)			
MQDC1-515	5 m (16.4 ft)			
MQDC1-530	9 m (29.5 ft)	Right-Angle		
MQDC1-506RA	2 m (6.5 ft)			
MQDC1-515RA	5 m (16.4 ft)			
MQDC1-530RA	9 m (29.5 ft)			

8-Pin Threaded M12 Cordsets with Open-Shield—Single Ended				
Model	Length	Style	Dimensions	Pinout (Female)
MQDC2S-806	2.04 m (6.7 ft)	Straight		
MQDC2S-815	5.04 m (16.54 ft)			
MQDC2S-830	10.04 m (32.95 ft)			
MQDC2S-850	16 m (52.49 ft)			

8-Pin Threaded M12 Cordsets with Open-Shield—Single Ended				
Model	Length	Style	Dimensions	Pinout (Female)
MQDC2S-806RA	2 m (6.56 ft)	Right-Angle		
MQDC2S-815RA	5 m (16.4 ft)			
MQDC2S-830RA	10 m (32.81 ft)			
MQDC2S-850RA	16 m (52.49 ft)			

Splitter Cables for Use with IO-Blocks

5-Pin Threaded M12 to 4-Pin Threaded M12 Combiner Cordset with Flat Junction																					
Model	Branches (Male)	Trunk (Female)	Pinout																		
CSF-M12F51M12M41	4-pin Quick Disconnect, 2 x 0.31 m (1.02 ft)	5-pin Quick Disconnect, 0.31 m (1.02 ft)	<p>Female</p> <p>Male</p> <table border="1"> <thead> <tr> <th>Trunk</th> <th>Branch 1</th> <th>Branch 2</th> </tr> </thead> <tbody> <tr> <td>1 = Brown</td> <td>1 = NC</td> <td>1 = NC</td> </tr> <tr> <td>2 = White</td> <td>2 = Brown</td> <td>2 = Gray</td> </tr> <tr> <td>3 = Blue</td> <td>3 = Blue</td> <td>3 = Blue</td> </tr> <tr> <td>4 = Black</td> <td>4 = Black</td> <td>4 = White</td> </tr> <tr> <td>5 = Gray</td> <td></td> <td></td> </tr> </tbody> </table>	Trunk	Branch 1	Branch 2	1 = Brown	1 = NC	1 = NC	2 = White	2 = Brown	2 = Gray	3 = Blue	3 = Blue	3 = Blue	4 = Black	4 = Black	4 = White	5 = Gray		
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4 = Black	4 = Black	4 = White																			
5 = Gray																					

8-Pin Threaded M12 to 4-Pin Threaded M12 Combiner Cordset with Flat Junction																																							
Model	Branches (Male)	Trunk (Female)	Pinout																																				
CSF3A-M12F81M12M41	4-pin M12 Quick Disconnect, 3 x 0.3 m (0.98 ft)	8-pin M12 Quick Disconnect, 0.3 m (0.98 ft)	<p>Female</p> <p>Male</p> <table border="1"> <thead> <tr> <th>Trunk</th> <th>Branch 1</th> <th>Branch 2</th> <th>Branch 3</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>White</td> <td>NC</td> <td>NC</td> </tr> <tr> <td>2</td> <td>Brown</td> <td>Brown</td> <td>Gray</td> </tr> <tr> <td>3</td> <td>Green</td> <td>Blue</td> <td>Blue</td> </tr> <tr> <td>4</td> <td>Yellow</td> <td>Pink</td> <td>White</td> </tr> <tr> <td>5</td> <td>Gray</td> <td></td> <td></td> </tr> <tr> <td>6</td> <td>Pink</td> <td></td> <td></td> </tr> <tr> <td>7</td> <td>Blue</td> <td></td> <td></td> </tr> <tr> <td>8</td> <td>Red</td> <td></td> <td></td> </tr> </tbody> </table>	Trunk	Branch 1	Branch 2	Branch 3	1	White	NC	NC	2	Brown	Brown	Gray	3	Green	Blue	Blue	4	Yellow	Pink	White	5	Gray			6	Pink			7	Blue			8	Red		
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6	Pink																																						
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Mounting Bracket

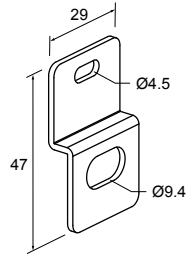
All measurements are listed in millimeters [inches], unless noted otherwise.

SMBTLF100F

- Right-angle
- S bracket
- Mounting hardware included

Hole center spacing: 26.5

Hole Size: A = 16.6 × 9.4, B = 10.5 × 4.5



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.

This Warranty is exclusive and limited to repair or, at the discretion of Banner Engineering Corp., replacement. **IN NO EVENT SHALL BANNER ENGINEERING CORP. BE LIABLE TO BUYER OR ANY OTHER PERSON OR ENTITY FOR ANY EXTRA COSTS, EXPENSES, LOSSES, LOSS OF PROFITS, OR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES RESULTING FROM ANY PRODUCT DEFECT OR FROM THE USE OR INABILITY TO USE THE PRODUCT, WHETHER ARISING IN CONTRACT OR WARRANTY, STATUTE, TORT, STRICT LIABILITY, NEGLIGENCE, OR OTHERWISE.**

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

FCC Part 15

This device complies with Part 15 of the FCC Rules. 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.

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.