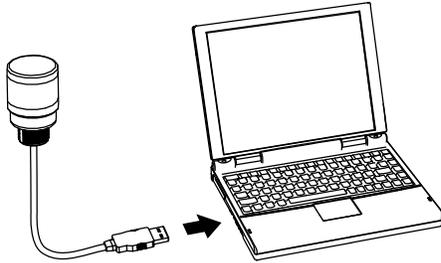# TL50 Pro Tower Light with USB
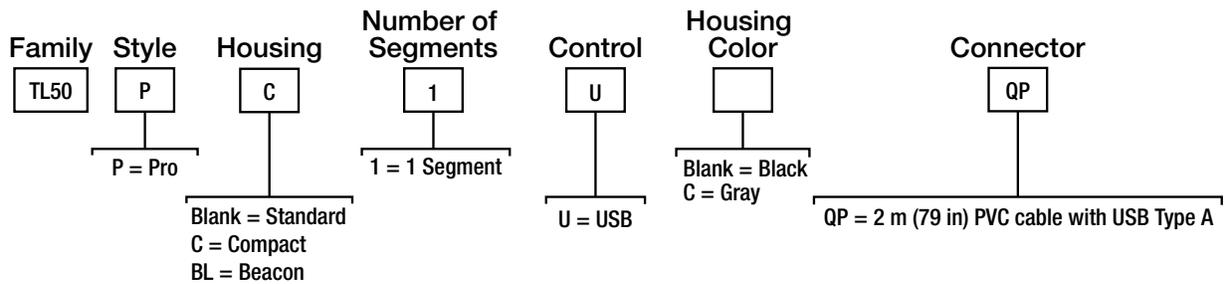
Datasheet

50 mm Programmable Multicolor RGB Tower Light with USB Connection and Control

- Controlled by PC via USB interface
- USB interface gives full access to color, flashing, rotating, and dimming settings which provides dynamic response to changing machine conditions
- Rugged, cost-effective, and easy-to-install tower lights
- Illuminated segments provide easy-to-see operator guidance and indication of equipment status
- Compact and beacon models are more intense in a smaller form factor compared to standard models
- 5 V DC operation

Models

Family	Style	Housing	Number of Segments	Control	Housing Color	Connector
TL50	P	C	1	U		QP

P = Pro

Blank = Standard
C = Compact
BL = Beacon

1 = 1 Segment

U = USB

Blank = Black
C = Gray

QP = 2 m (79 in) PVC cable with USB Type A

USB Configuration Overview

The TL50 Pro Tower Light with USB is a PC-controlled device requiring a software application. The tower light is powered directly from the USB port and utilizes a shared library to control all device functions. The device is compatible with a variety of Windows libraries which enable control using common Windows programming platforms, such as C#, Python, VisualBasic, Visual C++, Labview, and Matlab. Refer to document 218025 TL50 Pro with USB Instruction Manual for more information about device programming functions.

Configuration for the TL50 Pro with USB

Animation	Description
Off	Segment is off
Steady	Color 1 is on at defined intensity
Flash	Color 1 flashes at defined speed, color intensity, and pattern (normal, strobe, three pulse, SOS, or random)
Two Color Flash	Color 1 and Color 2 flash alternately at defined speed, color intensities, and pattern (normal, strobe, three pulse, SOS, or random)
50/50	Color 1 is displayed on 50% of the segment and Color 2 is displayed on the other 50% of the segment at the defined color intensities
50/50 Rotate	Color 1 is displayed on 50% of the segment and Color 2 is displayed on the other 50% of the segment while rotating at the defined speed, color intensities, and rotational direction
Chase	Color 1 is displayed as a single spot against the background of Color 2 while rotating at the defined speed, color intensities, and rotational direction
Intensity Sweep	Color 1 repeatedly increases and decreases intensity between 0% to 100% at defined speed and color intensity

Color 1 or Color 2

The following colors are available for Color 1 and Color 2.[1]

- Red
- Green
- Yellow
- Blue
- Magenta

- Cyan
- White
- Amber
- Rose
- Lime Green

- Orange
- Sky Blue
- Violet
- Spring Green

Intensity 1 or Intensity 2

The Intensity control sets the intensity of a color. Color 1 is controlled by Intensity 1. Color 2, if applicable, is controlled by Intensity 2.

Intensity	Tower Light Devices
Hi	100%
Med	60%
Low	25%
Off	0%

Speed

The Speed control sets the speed of five animation options: flash, chase, rotate, scroll, and bounce.

Flash, Scroll, and Bounce Animation Speed

Speed	Description
Slow	0.5 Hz
Standard	1 Hz
Fast	5 Hz

Rotational and Chase Animation Speed

Speed	Description
Slow	1 Hz
Standard	2 Hz
Fast	4Hz

Pattern

The Pattern control sets the pattern of the flash animation.

Pattern	Description
Normal	Alternating Color 1; Color 2 at 50% duty cycle
Strobe	Continuous Color 1; Color 2 flashes at 20% duty cycle
3-Pulse	Three consecutive Color 1 pulses at 10% duty cycle on Color 2 background
SOS	Short pulse, short pulse, short pulse, long pulse, long pulse, long pulse, short pulse, short pulse, short pulse alternating Color 1 and Color 2
Random	Random sequence of light signals

Direction

The Direction control sets the direction of the animation.

Direction	Description
Clockwise (CW)	Animation rotates in clockwise direction. Applies to 50/50 rotate and chase.
Counterclockwise (CCW)	Animation rotates in counterclockwise direction. Applies to 50/50 rotate and chase.
Up	Animation originates from the connector end
Down	Animation originates from the non-connector end

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[1] The following colors are uncalibrated to achieve higher saturation: Red, Green, and Blue. They may show greater variance between devices than other colors.

Shift Enable

Shift enable controls the 50/50, 50/50 Rotate, and Chase animations in Run and Action Mode. When applied, the shift enable consecutively offsets each segment animation by one LED.

Specifications

Supply Voltage and Current
5 V DC
Maximum current: 500 mA

Supply Protection Circuitry
Protected against reverse polarity and transient voltages

Input Rating
Indicator On/Off Response Time: 250 ms (maximum)

Connections
2 m (6.5 ft) PVC cable with a USB Type A Connector
Models with a quick disconnect require a mating cordset; compatible with USB 2.0 and USB 3.0 Ports

Construction
Bases and Covers: ABS
Light Segment: Polycarbonate

Operating Conditions
–40 °C to +50 °C (–40 °F to +122 °F)

Environmental Rating
IEC IP67

Vibration and Mechanical Shock
Vibration: 10 Hz to 55 Hz, 1.0 mm peak-to-peak amplitude per IEC 60068-2-6
Shock: 30G 11 ms duration, half sine wave per IEC 60068-2-27

Operating System
Microsoft Windows operating system versions 7 or 10

Software Libraries
Windows DLL (Dynamic-Link Library); 32-Bit and 64-Bit
Windows Static Library; 32-Bit and 64-Bit
.NET DLL (Dynamic-Link Library

Certifications

CE

Serial Communication Settings
Baud Rate: 19200
Data Bits: 8
Parity: None
Stop Bits: 1
Flow Control: None

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

Indicator Characteristics

Color	Dominant Wavelength (nm) or Color Temperature (CCT)	Color Coordinates[2]		Lumen Output Per Segment (Typical at 25 °C)		
		X	Y	Standard	Compact	Beacon
Red	620	0.689	0.309	7.2	6.3	9.8
Green	522	0.154	0.700	17.5	14.1	21.8
Yellow	576	0.477	0.493	23.8	18.9	29.2
Blue	466	0.140	0.054	3.4	2.5	4.1
Magenta	–	0.379	0.172	10.4	8.3	12.6
Cyan	493	0.170	0.340	19.2	14.9	22.9
White	5700 K	0.328	0.337	24.8	19.5	29.9
Amber	589	0.556	0.420	15.3	12.3	19.2
Rose	–	0.515	0.220	8.2	6.7	10.1
Lime Green	562	0.388	0.561	21.2	16.8	25.9
Orange	599	0.616	0.370	11.3	9.3	14.5
Sky Blue	486	0.155	0.247	20.1	15.6	24.0
Violet	–	0.217	0.089	6.6	5.1	8.0
Spring Green	508	0.177	0.536	18.2	14.2	21.9

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[2] Refer to CIE 1931 chromaticity diagram or color chart to show equivalent color with indicated color coordinates

Dimensions

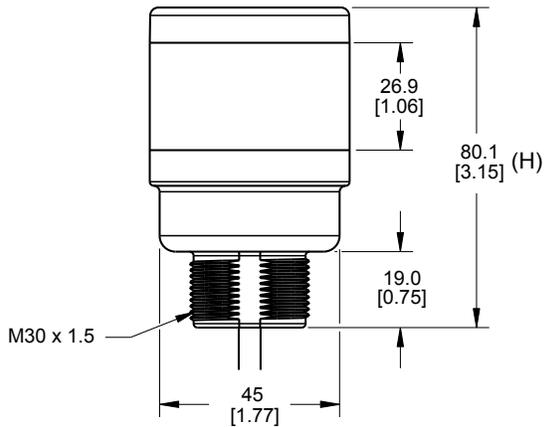All measurements are listed in millimeters [inches], unless noted otherwise.

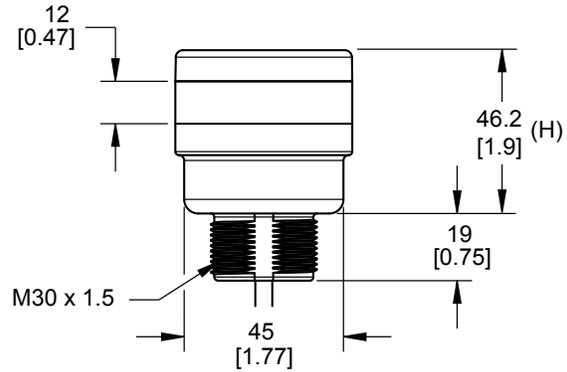*Figure 1. Standard Model Dimensions*

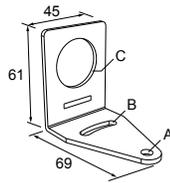*Figure 2. Compact and Beacon Model Dimensions*

Accessories

Mounting Brackets

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

SMB30A
- Right-angle bracket with curved slot for versatile orientation
- Clearance for M6 (¼ in) hardware
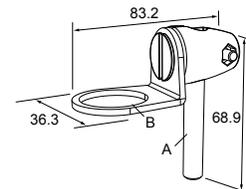- Mounting hole for 30 mm sensor
- 12-ga. stainless steel

Hole center spacing: A to B=40
Hole size: A=ø 6.3, B= 27.1 x 6.3, C=ø 30.5

SMB30FA
- Swivel bracket with tilt and pan movement for precise adjustment
- Mounting hole for 30 mm sensor
- 12-ga. 304 stainless steel
- Easy sensor mounting to extrude rail T-slot
- Metric and inch size bolt available

Bolt thread: SMB30FA, A= 3/8 - 16 x 2 in; SMB30FAM10, A= M10 - 1.5 x 50
Hole size: B= ø 30.1

SMB30MM
- 12-ga. stainless steel bracket with curved mounting slots for versatile orientation
- Clearance for M6 (¼ in) hardware
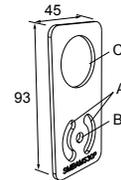- Mounting hole for 30 mm sensor
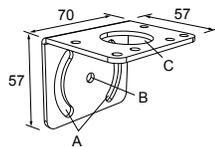
Hole center spacing: A = 51, A to B = 25.4
Hole size: A = 42.6 x 7, B = ø 6.4, C = ø 30.1

SMBAMS30P
- Flat SMBAMS series bracket
- 30 mm hole for mounting sensors
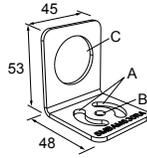- Articulation slots for 90°+ rotation
- 12-ga. 300 series stainless steel

Hole center spacing: A=26.0, A to B=13.0
**Hole size:** A=26.8 x 7.0, B=ø 6.5, C=ø 31.0

SMBAMS30RA

- Right-angle SMBAMS series bracket
- 30 mm hole for mounting sensors
- Articulation slots for 90°+ rotation
- 12-ga. (2.6 mm) cold-rolled steel

Hole center spacing: A=26.0, A to B=13.0
Hole size: A=26.8 x 7.0, B=ø 6.5, C=ø 31.0

SMB30SC

- Swivel bracket with 30 mm mounting hole for sensor
- Black reinforced thermoplastic polyester
- Stainless steel mounting and swivel locking hardware included
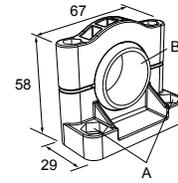
Hole center spacing: A=ø 50.8
**Hole size:** A=ø 7.0, B=ø 30.0

LMBE12RA35

- Direct mounting of stand-off pipe, with common bracket type
- Zinc-plated steel
- 1/2-14 NPSM nut
- Mounting distance from the wall to the center of the 1/2-14 NPSM nut is 35 mm
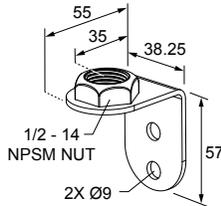
Hole center spacing: 20.0

LMBE12RA45

- Direct mounting of stand-off pipe, with common bracket type
- Zinc-plated steel
- 1/2-14 NPSM nut
- Mounting distance from the wall to the center of the 1/2-14 NPSM nut is 45 mm
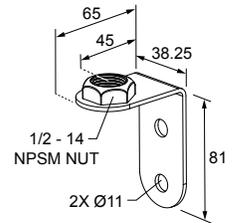
Hole center spacing: 35.0

LMB Sealed Right-Angle Bracket

Model	Description	Construction	
LMB30RA	**Direct-Mount Models:** Bracket kit with base, 30 mm adapter, set screw, fasteners, O-rings, and gaskets.	Black polycarbonate	
LMB30RAC		Gray polycarbonate	
LMBE12RA	**Pipe-Mount Models:** Bracket kit with base, ½-14 pipe adapter, set screw, fasteners, O-rings, and gaskets. For use with stand-off pipe (listed and sold separately).	Black polycarbonate	
LMBE12RAC		Gray polycarbonate	

Elevated Mount System

Model			Features	Components
SA-M30TE12 - Black Acetal			• Streamlined black acetal or white UHMW stand-off pipe adapter/cover • Connects between 30 mm light base and ½ in. NPSM/DN15 pipe • Mounting hardware included	
SA-M30TE12C - White UHMW				
Polished 304 Stainless Steel	Black Anodized Aluminum	Clear Anodized Aluminum		
SOP-E12-150SS 150 mm (6 in) long	SOP-E12-150A 150 mm (6 in) long	SOP-E12-150AC 150 mm (6 in) long	• Elevated-use stand-off pipe (½ in. NPSM/DN15) • Polished 304 stainless steel, black anodized aluminum, or clear anodized aluminum surface • ½ in. NPT thread at both ends • Compatible with most industrial environments	
SOP-E12-300SS 300 mm (12 in) long	SOP-E12-300A 300 mm (12 in) long	SOP-E12-300AC 300 mm (12 in) long		
SOP-E12-900SS 900 mm (36 in) long	SOP-E12-900A 900 mm (36 in) long	SOP-E12-900AC 900 mm (36 in) long		
SA-E12M30 - Black Acetal			• Streamlined black acetal or white UHMW mounting base adapter/cover • Connects between ½ in. NPSM/DN15 pipe and 30 mm (1-3/16 in) drilled hole • Mounting hardware included	
SA-E12M30C - White UHMW				

Pipe Mounting Flange

Pipe Mounting Flange			
Model	Features	Construction	
SA-F12	• Elevated-use stand-off pipes (½ in, NPSM/DN15) • M5 mounting hardware and nitrile gasket included	Die-cast zinc base with black paint	
SA-F12-3	• Elevated-use stand-off pipes (½ in, NPSM/DN15) • M4 mounting hardware and nitrile blend gasket included	Black Polycarbonate	

Foldable Mounting Brackets

Foldable Mounting Brackets			
Model	Features	Construction	
SA-FFB12		Black polycarbonate	
SA-FFB12C	• For use with 1/2 inch stand-off pipes • Stainless steel hardware	Gray polycarbonate	

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

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.