



# WLS15 Pro LED Strip Light with IO-Link Product Manual

Original Instructions

p/n: 219131 Rev. C

03-Nov-25

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# Chapter 1

## Features

Banner's WLS15 Pro LED Strip Lights with IO-Link have sturdy aluminum inner frames, encased in shatter-resistant, UV-stabilized, polycarbonate shells, making them ideal for indoor and outdoor applications.



- Bright, programmable strip light with RGB LEDs
- 19 color options for varied indication and inspection uses
- IO-Link gives full access to individual LED control, color, flashing, intensity, and animation settings, as well as advanced level, gauge, and segment operating modes
- Available in six lengths from 220 mm to 1200 mm
- Low-profile, space-saving design
- Rugged, water-resistant design

**IMPORTANT:** Read the following instructions before operating the light. Please download the complete WLS15 Pro LED Strip Light with IO-Link technical documentation, available in multiple languages, from [www.bannerengineering.com](http://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](http://www.bannerengineering.com) toda la documentación técnica de los WLS15 Pro LED Strip Light with IO-Link, 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 WLS15 Pro LED Strip Light with IO-Link sur notre site [www.bannerengineering.com](http://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	Control	Connection
WLS15	P	X	RGB	0360	D	S	K	QP
				0220				
				0360				
				0500				
				0640	D = Diffused	S = Sealed	K = IO-Link	QP = 150 mm (6 in) PVC-jacketed cable with a 4-pin M12 male quick-disconnect connector
				0920				
				1200				

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## Chapter 2

Wiring

4-pin M12 Male	Pin	Wire Color	Description
	1	Brown	18 V DC to 30 V DC
	2	White	Not used
	3	Blue	DC common
	4	Black	IO-Link Communication

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## Chapter 3

IO-Link Process Data out (Master to Device)

IO-Link® is a point-to-point communication link between a master device and a sensor and/or light. It can be used to automatically parameterize sensors or lights and to transmit process data. For the latest IO-Link protocol and specifications, please visit [www.io-link.com](http://www.io-link.com).

For the latest IODD files, please refer to the Banner Engineering Corp website at: [www.bannerengineering.com](http://www.bannerengineering.com).

**Segment Mode**

Configure the light to have up to 10 segments which scale in size automatically with the length of the light or select Manual Segment Configuration which allows each segment to have a custom LED width and LED offset from the beginning of each segment to the beginning of the light.

Use process data to set each segment to off, solid on, flash, or animation mode. Use parameter data to change segment number and configuration, color, intensity, flash speed, direction, background, threshold markers, and select animation type.

Animation	Description
Off	Segment is off
Steady	Color 1 is solid 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)
Two Color Shift	Color 1 and Color 2 flash alternately on adjacent LEDs at defined speed and color intensities
Ends Steady	Color 1 is solid on in the center of the segment as defined by Percent Width of Color 1 at defined color intensity while Color 2 is solid on for half of the remaining percentage on each end of the segment at defined color intensity
Ends Flash	Color 1 is solid on in the center of the segment as defined by Percent Width of Color 1 at defined color intensity while Color 2 flashes on for half of the remaining percentage on each end of the segment at defined speed, color intensity, and pattern (normal, strobe, three pulse, SOS, or random)
Scroll	Color 1 fills the segment as defined by Percent Width of Color 1 and moves in one direction up or down against the background of Color 2 at the defined speed, color intensities, style, and direction
Center Scroll	Color 1 fills the segment as defined by Percent Width of Color 1 and moves in or out from the center of the segment against the background of Color 2 at the defined speed, color intensities, style, and direction
Bounce	Color 1 fills the segment as defined by Percent Width of Color 1 and moves up and down against the background of Color 2 at the defined speed, color intensities, and style
Center Bounce	Color 1 fills the segment as defined by Percent Width of Color 1 and moves in and out from the center of the segment against the background of Color 2 at the defined speed, color intensities, and style
Intensity Sweep	Color 1 repeatedly 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 segment continuously displays a color by moving along the line at the defined speed and color intensities
Spectrum	The segment scrolls through 13 predefined colors with a different color on each LED at the defined speed, Color 1 intensity, and direction
Single End Steady	Color 1 is solid ON at the defined intensity on one end of the device
Single End Flash	Color 1 flashes at the defined speed, color intensity, and pattern (normal, strobe, three pulse, SOS, or random) on one end of the device

**Run Mode**

Use process data to control entire light and select color, intensity, flash, direction, and animations. Use parameter data to create custom colors, intensities, and flash speeds.

Animation	Description
Off	Light is off

Continued on page 6

Continued from page 5

Animation	Description
Steady	Color 1 is solid 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)
Two Color Shift	Color 1 and Color 2 flash alternately on adjacent LEDs at defined speed and color intensities
Ends Steady	Color 1 is solid on in the center of the light as defined by Percent Width of Color 1 at defined color intensity while Color 2 is solid on for half of the remaining percentage on each end of the light at defined color intensity
Ends Flash	Color 1 is solid on in the center of the light as defined by Percent Width of Color 1 at defined color intensity while Color 2 flashes on for half of the remaining percentage on each end of the light at defined speed, color intensity, and pattern (normal, strobe, three pulse, SOS, or random)
Scroll	Color 1 fills the light as defined by Percent Width of Color 1 and moves in one direction up or down against the background of Color 2 at the defined speed, color intensities, style, and direction
Center Scroll	Color 1 fills the light as defined by Percent Width of Color 1 and moves in or out from the center of the light against the background of Color 2 at the defined speed, color intensities, style, and direction
Bounce	Color 1 fills the light as defined by Percent Width of Color 1 and moves up and down against the background of Color 2 at the defined speed, color intensities, and style
Center Bounce	Color 1 fills the light as defined by Percent Width of Color 1 and moves in and out from the center of the light against the background of Color 2 at the defined speed, color intensities, and style
Intensity Sweep	Color 1 repeatedly 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 intensities
Spectrum	The light scrolls through 13 predefined colors with a different color on each LED at the defined speed, Color 1 intensity, and direction
Single End Steady	Color 1 is solid ON at the defined intensity on one end of the device
Single End Flash	Color 1 flashes at the defined speed, color intensity, and pattern (normal, strobe, three pulse, SOS, or random) on one end of the device

## Level Mode

Use process data to set the level value. Use parameter data to set range, thresholds, colors, intensities, flash speeds, background, threshold markers, and animation types.

General Settings	Description
Level Mode Value	Value of the level of the light (between 0 to 65,535)
Full Scale Value	Set the upper limit of the Level Mode Value (between 0 to 65,535)
Background Color and Intensity	A defined color and intensity is displayed on LEDs that are not active
Dominance	Dominant: The entire light displays the active threshold color Non-Dominant: LEDs displays their defined threshold colors
Sub-Segment Style	If Level Mode Value is a partial percentage of an LED, select if segment will be on steady or analog dimmed to the partial percentage
Filtering	Smooths the input signal by varying the sample size None: There is no filtering Low: The sample size is short and changes to the input signal are more noticeable High: The sample size is long and changes to the input signal are less noticeable
Hysteresis	Determines the signal value change needed to transition between thresholds and to prevent chatter None: The value follows the input signal High: A large value change is needed to transition between thresholds
Level Mode Threshold Markers	Threshold markers display LED(s) at the defined thresholds and can be configured as either dominant or non-dominant. Threshold marker location and width are defined by the offset and width parameter, respectively, in segment mode.

Base and Threshold 1-4 Settings	Description
Threshold Type: Base	A defined animation state is displayed on LEDs that are not defined within a threshold

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Base and Threshold 1-4 Settings		Description
Threshold Type: 1-4		Level Mode Values that conform to Threshold Comparison Type $\leq$ or $\geq$ and the Threshold Value Percent are displayed on LEDs as defined by the threshold color, intensity, flash speeds, and run mode animation types

### Dim and Blend Mode

Dim and blend mode uses the light to finely adjust the intensity of one color, or blend between two or three colors. Use process data to set the dim and blend mode value. Use parameter data to set number of colors, range, colors, and intensities.

General Settings	Description
Dim and Blend Mode Value	Value of the intensity of the light in 1 Color mode or value of the blend between colors in 2 and 3 Color mode (between 0 to 65,535)
Full Scale Value	Set the upper limit of the Dim and Blend Mode Value (between 0 to 65,535)
Number of Colors	1: Color 1 is solid on at intensity defined by the percentage of Dim and Blend Mode Value to the Full Scale Value when Color 1 Intensity is set to high 2: Color 1 and Color 2 define the end values of a line across the color gamut. The light displays a blended color and moves along the line as defined by the Dim and Blend Mode Value and color intensities 3: Color 1 and Color 2 define the beginning and end value of one line across the color gamut. Color 2 and Color 3 define the beginning and end value of a second line across the color gamut. The light displays a blended color and moves along the two lines as defined by the Dim and Blend Mode Value and color intensities
Filtering	Smooths the input signal by varying the sample size None: There is no filtering Low: The sample size is short and changes to the input signal are more noticeable High: The sample size is long and changes to the input signal are less noticeable

### Gauge Mode

Gauge mode uses the light to display a colored band of LEDs in a position proportional to the gauge mode value. Use process data to set the gauge mode value. Use parameter data to set range, thresholds, colors, intensities, flash speeds, background, threshold markers, and animation types.

General Settings	Description
Gauge Mode Value	Value of the band position within the light (between 0 to 65,535)
Full Scale Value	Set the upper limit of the Gauge Mode Value (between 0 to 65,535)
Filtering	Smooths the input signal by varying the sample size None: There is no filtering Low: The sample size is short and changes to the input signal are more noticeable High: The sample size is long and changes to the input signal are less noticeable
Hysteresis	Determines the signal value change needed to transition between thresholds and to prevent chatter None: The value follows the input signal High: A large value change is needed to transition between thresholds
Gauge Mode Threshold Markers	Threshold markers display LED(s) at the defined thresholds and can be configured as either dominant or non-dominant. Threshold marker location and width are defined by the offset and width parameter, respectively, in segment mode.

Center, Threshold 1, and Threshold 2 Settings	Description
Threshold Type: Center	Gauge Mode Values not in Threshold 1 or Threshold 2 are positioned on a band of LEDs as defined by the center threshold color, intensity, flash speeds, backgrounds, band size percent width, and run mode animation types
Threshold Type: 1 & 2	Gauge Mode Values that conform to Threshold Comparison Type $\leq$ or $\geq$ and the Threshold Value Percent are positioned on a band of LEDs as defined by the threshold color, intensity, flash speeds, backgrounds, band size percent width, and run mode animation types

### LED Mode

Use process data to turn on and select a color for each individual LED. Use parameter data to set global intensity.

General Settings	Description
LED 1-64 Color	Set chosen LED to off or to a defined color
LED Mode Intensity	Defines intensity of all LEDs turned on

### Demo Mode

Demo sequence cycles through 12 different configurations to highlight example applications.

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## Chapter 4

# 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	
220 mm	0.08	0.06	0.05	0.085
360 mm	0.16	0.12	0.1	0.17
500 mm	0.24	0.18	0.15	0.255
640 mm	0.32	0.24	0.2	0.34
920 mm	0.48	0.36	0.3	0.51
1200 mm	0.64	0.48	0.4	0.68

**NOTE:** Different IO-Link masters have different maximum current limits. Use CSB-M1251FM1251M splitter cable and external power supply if needed. See Accessories.

**Supply Protection Circuitry**

Protected against reverse polarity and transient voltages

**Construction**

Clear anodized aluminum housing

Polycarbonate outer housing

Polyamide end caps

**Connections**

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

Models with a quick-disconnect connector require a mating cordset

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

**Input Response Time**

45 ms maximum

**Mounting**

Integral mounting slots for M4 (#8) screws, tighten to 0.56 N·m (5 in-lbf) max torque

Multiple bracket options available

Secure cables within 150 mm (5.9 in) of the light

**NOTE:** It is recommended to use the provided mounting bushings when mounting using the endcaps. Center the mounting bushings in each slot to allow for expansion and contraction. Install using a M4 (#8) screw in each bushing torqued to a maximum of 0.45 N·m (4 in-lbf). For 920 mm and 1200 mm models in environments that vary more than 10 °C (18 °F), it is recommended to use one of the mounting bracket options instead of the end cap slots. If using the LMBWLS15 clip bracket and additional attachment is desired, only one end may be fastened using one of the spacers provided in the LMBWLS15 hardware packet to allow the opposite end to expand and contract. See mounting options in the instruction manual for bracket and tape options that allow expansion and contraction over temperature variations.

**Environmental Rating**

Rated IP66 and IP67

Suitable for wet locations per UL 2108

**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**

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



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

## Light Characteristics

RGBW LED PWM Frequency: 1kHz

Color	Dominant Wavelength (nm) or Color Temperature (CCT)	CRI	Color Coordinates <sup>(1)</sup>		Lumens at Specified Length (Typical at 25 °C)					
			X	Y	220 mm	360 mm	500 mm	640 mm	920 mm	1200 mm
Daylight White	5000K	0.345	0.352	30	60	90	120	180	240	1280
Incandescent White	2700K	0.46	0.411	30	60	90	120	180	240	880
Warm White	3000K	0.44	0.404	30	60	90	120	180	240	880
Fluorescent White	4100K	0.376	0.374	30	60	90	120	180	240	1160
Neutral White	5700K	0.328	0.337	30	60	90	120	180	240	1280
Cool White	6500K	0.314	0.324	30	60	90	120	180	240	1280
Green	532	0.181	0.735	45	90	135	180	270	360	1160
Red	621	0.691	0.308	25	50	75	100	150	200	440
Yellow	578	0.473	0.474	35	70	105	140	210	280	760
Blue	467	0.137	0.056	10	20	30	40	60	80	320
Magenta	-	0.379	0.177	20	40	60	80	120	160	400
Cyan	492	0.15	0.334	30	60	90	120	180	240	880
Amber	590	0.552	0.414	30	60	90	120	180	240	640
Rose	-	0.508	0.23	25	50	75	100	150	200	400
Lime Green	565	0.393	0.535	40	80	120	160	240	320	880
Orange	600	0.611	0.37	30	60	90	120	180	240	560
Sky Blue	485	0.146	0.241	25	50	75	100	150	200	720
Violet	-	0.212	0.091	15	30	45	60	90	120	360
Spring Green	509	0.157	0.553	40	80	120	160	240	320	1040

## FCC Part 15 Class B for Unintentional Radiators

(Part 15.105(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.

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

- 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.

(Part 15.21) Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

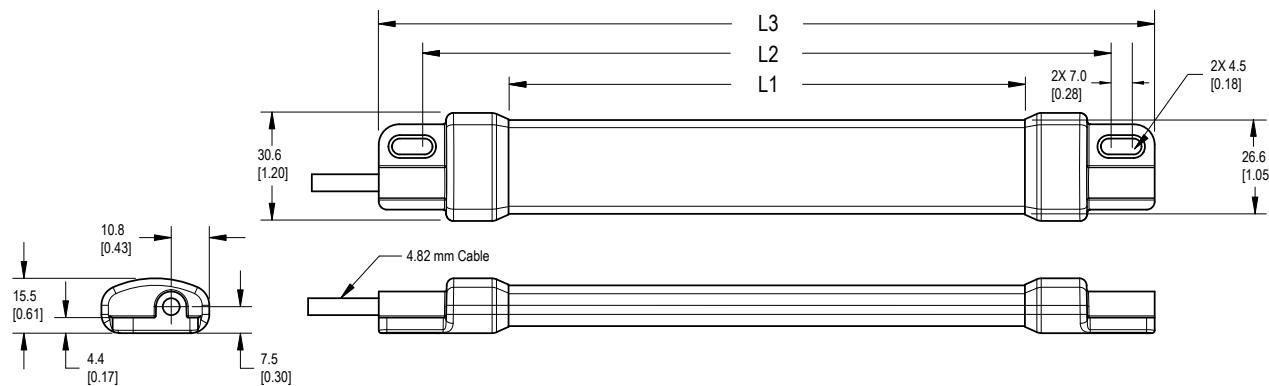
## Industry Canada ICES-003(B)

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.

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. The measurements provided are subject to change.



Models	L1	L2	L3
WLS15..0220..	146.4 mm (5.76 inches)	194 mm (7.64 inches)	220 mm (8.66 inches)
WLS15..0360..	286.4 mm (11.28 inches)	334 mm (13.15 inches)	360 mm (14.17 inches)
WLS15..0500..	426.4 mm (16.79 inches)	474 mm (18.66 inches)	500 mm (19.69 inches)
WLS15..0640..	566.4 mm (22.3 inches)	614 mm (24.17 inches)	640 mm (25.2 inches)
WLS15..0920..	846.4 mm (33.32 inches)	894 mm (35.2 inches)	920 mm (36.22 inches)
WLS15..1200..	1126.4 mm (44.35 inches)	1174 mm (46.22 inches)	1200 mm (47.24 inches)

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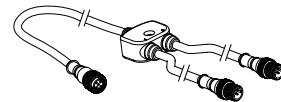
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## Chapter 5 Accessories

### 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**

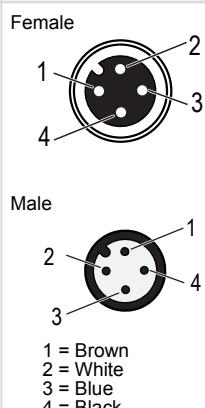
- 90 to 264 V AC 50/60 Hz input
- Includes a 1.8 m (6 ft) US-style 5-15P input plug
- 24 V DC UL Listed Class 2 M12 connector output
- 4 A total current

**PSW-24-1**

- 24 V DC, 1 A Class 2 UL Listed power supply
- 100 V AC to 240 V AC 50/60 Hz input
- 2 m (6.5 ft) PVC cable with M12 quick disconnect
- Includes Type A (US, Canada, Japan, Puerto Rico, Taiwan), Type C (Germany, France, South Korea, Netherlands, Poland, Spain, Turkey), Type G (United Kingdom, Ireland, Singapore, Vietnam), and Type I (China, Australia, New Zealand) AC detachable input plugs

**4-Pin Double-Ended M12 Female to M12 Male Cordsets**

Model	Length	Style	Dimensions	Pinout
MQDEC-401SS	0.31 m (1 ft)	Male Straight/Female Straight		
MQDEC-403SS	0.91 m (2.99 ft)			
MQDEC-406SS	1.83 m (6 ft)			
MQDEC-412SS	3.66 m (12 ft)			
MQDEC-415SS	4.58 m (15 ft)			
MQDEC-420SS	6.10 m (20 ft)			
MQDEC-430SS	9.14 m (30.2 ft)			
MQDEC-450SS	15.2 m (49.9 ft)			

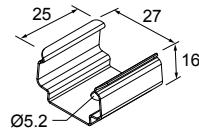


## Mounting Accessories

All measurements are listed in millimeters [inches], unless noted otherwise. The measurements provided are subject to change.

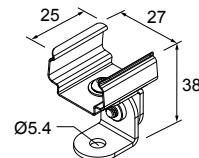
### LMBWLS15

- Stainless steel clip bracket
- Includes 3 clip brackets and 2 plastic spacers
- Clearance hole for M5 hardware



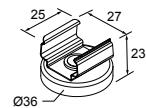
### LMBWLS15-150S

- Set of 2 stainless steel swivel brackets, allows for 150° of movement
- Clearance hole for M5 button head screw



### LMBWLS15MAG

- Set of 2 brackets
- Magnetic mounting bracket for attachment to steel and iron surfaces



### LMBWLS15TD

- Includes 4 100 mm (4 in) strips of 3M™ Dual Lock™ reclosable fasteners
- Recommended for mounting to metal and plastic surfaces
- Strong, pressure-sensitive adhesive bonds on contact



### LMBWLS15TF

- Includes 2 100 mm (4 in) strips of double-sided foam urethane strips
- Acrylic adhesive provides high bond strength to most surfaces
- Bonds to low surface energy plastics such as polypropylene and powder-coated paints



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## Chapter 6 Product Support and Maintenance

### Clean with Mild Detergent and Warm Water

Wipe down the device with a soft cloth dampened with a mild detergent and warm water solution. Do not use any other chemicals for cleaning.

### 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.

### Contact Us

Banner Engineering Corp. | 9714 Tenth Avenue North | Plymouth, MN 55441, USA | Phone: +1 888 373 6767

For worldwide locations and local representatives, visit [www.bannerengineering.com](http://www.bannerengineering.com).

### 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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