LCA130T Wireless Andon Control Box Instruction Manual

Features

- Rugged, cost-effective, and easy-to-install Andon Control Box
- Integral four or five capacitive touch button controller with programmable LEDs and discrete outputs
- Programmable using Banner's Pro Editor software and Pro Converter Cable
- Two M12 connectors for added Andon application flexibility and easy installation
- Up to five discrete outputs available to pass up to a total of 4 amps

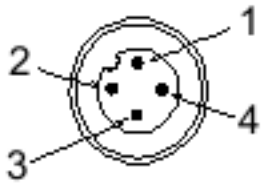
LCA130T Models

Model Name	Activation Method	Number of Touch Inputs	Frequency	Connector
LCA130T4DXN2Q	Touch	4 Inputs	2.4 GHz ISM Band	Integral 4-pin M12 male input quick-disconnect connector and 5-pin M12 female output quick-disconnect connector
LCA130T4DXN9Q			900 MHz ISM Band	
LCA130T5DXN2Q		5 Inputs	2.4 GHz ISM Band	Integral 4-pin M12 male input quick-disconnect connector and 8-pin M12 female output quick-disconnect connector
LCA130T5DXN9Q			900 MHz ISM Band	

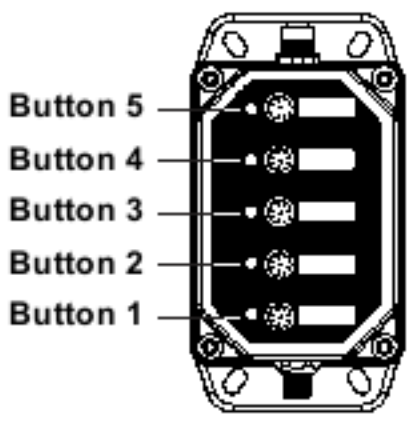
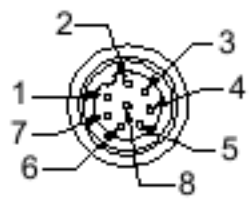
LCA130T Switch Diagram

Tap or press-to-hold one or more of the buttons to activate a programmed color and animation function.

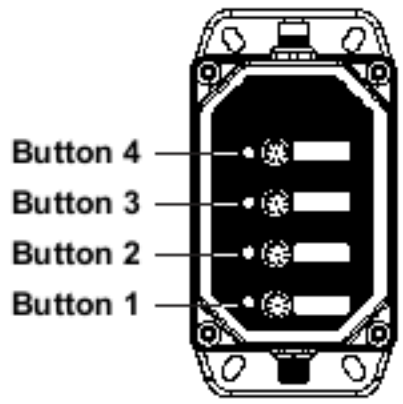
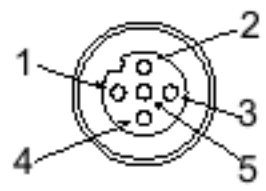
Input Pinout - All Models

4-Pin M12 Male Connector	Pin	Wire Color	Wiring Description
	1	Brown (bn)	18 V DC to 30 V DC
	2	White (wh)	Use to configure with the Pro Editor Configuration software
	3	Blue (bu)	DC common (GND)
	4	Black (bk)	Not Used

Output Pinout - 5-Button Switch Control

5-Button LCA130T	8-pin M12 Female Connector	Pin	Description
		1	Button 3
		2	Button 4
		3	Not used
		4	Button 1
		5	Button 2
		6	Button 5
		7	DC common (GND)
		8	Not used

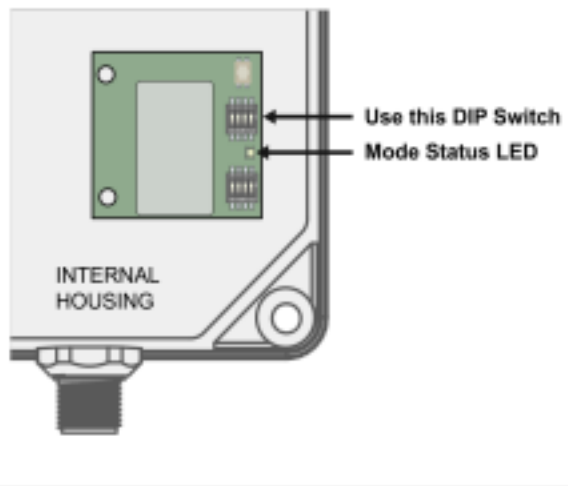
Output Pinout - 4-Button Switch Control

4-Button LCA130T	5-pin M12 Female Connector	Pin	Description
		1	Button 2
		2	Button 3
		3	DC common (GND)
		4	Button 1
		5	Button 4

Configuration Instructions

LCA130T DIP Switches

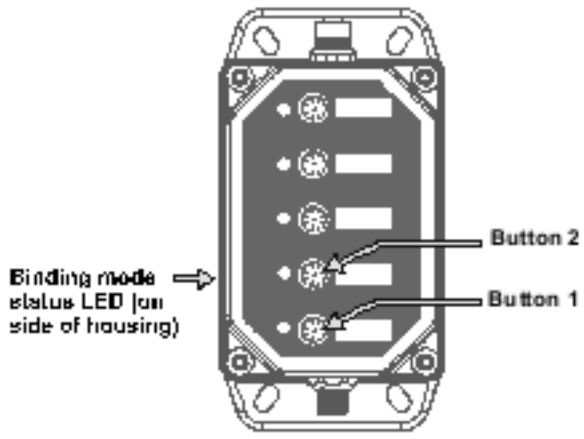
Before applying power to the device, set the radio's DIP switches.



Device Settings	DIP Switches			
	1	2	3	4
Transmit Power Level: 900 mW (default setting)	OFF			
Transmit Power Level: 250 mW	ON			
Bit-Packed Button / Light Status: Input 1: ENABLED Output 1 Overwrite Input Status: ENABLED (default setting)		OFF	OFF	OFF
Conventional Button / Light Status: Inputs 2-6 (OFF = 0, Solid = 1, Flashing = 2): ENABLED Outputs 2-6 (Overwrite Input Status): ENABLED		ON	OFF	OFF
Bit-packed Button / Light Status: Input 1: ENABLED Output 1 Overwrite Input Status: DISABLED		OFF	ON	OFF
Conventional Button / Light Status: Inputs 2-6 (OFF = 0, Solid = 1, Flashing = 2): ENABLED Outputs 2-6 (Overwrite Input Status): DISABLED		ON	ON	OFF

Bind the LCA130T to a DXM and Assign the Device Address

Before beginning the binding procedure, apply power to all the devices. Separate the radios by two meters when running the binding procedure. Put only one DXM into binding mode at a time to prevent the LCA130T from binding to the wrong DXM.



1. On the DXM: Use the arrow keys to select the ISM Radio menu on the LCD and click ENTER.
2. Highlight the Binding menu and click ENTER.
3. Use the arrow keys to select the Node address to bind the LCA130T to.
4. On the LCA130T, enter binding mode:
    a. Press and hold button 1.
    b. Triple-click button 2.
    c. Release button 1.

   The red and green LEDs flash alternately and the sensor searches for a DXM in binding mode. After the LCA130T binds, the LEDs stay solid momentarily, then they flash together four times. The LCA130T exits binding mode.
5. Label the LCA130T with the Node address number for future reference.
6. On the DXM: Click BACK to exit binding for that specific Node address.
7. Repeat steps 3 through 6 and change the Node address for as many LCA130Ts as are needed for your network.
8. On the DXM: After you have finished forming your network, click BACK until you reach the main menu.

LED Behavior for the One LED Nodes

Nodes do not sample inputs until they are communicating with the Gateway. The radios and antennas must be a minimum distance apart to function properly. Recommended minimum distances are:

900 MHz 150 mW and 250 mW radios: 6 feet
900 MHz 1 Watt radios: 15 feet
2.4 GHz 65 mW radios: 1 foot

LED (Bi-color)	Node Status
Flashing green	Radio link okay
Green and red flashing alternately	In Binding mode
Both colors are solid for 4 seconds, then flash 4 times; looks amber	Binding mode is complete
Flashing red, once every 3 seconds	Radio link error
Flashing red, once every second	Device error

LCA130T Modbus Registers

Holding registers

Modbus Registers		EIP Registers		I/O Type	I/O Range		Holding Register Representation (DEC)	
Gateway	Node	Node			Min	Max	Min	Max
1	1 + (Node# x 16)	0 + (Node# x 8)	Instance 100 / N7	Bit Packed Input*	0	682	0	682
2	2 + (Node# x 16)	1 + (Node# x 8)		Button 1 Input 1	0	2	0	2
3	3 + (Node# x 16)	2 + (Node# x 8)		Button 2 Input 2	0	2	0	2
4	4 + (Node# x 16)	3 + (Node# x 8)		Button 3 Input 3	0	2	0	2
5	5 + (Node# x 16)	4 + (Node# x 8)		Button 4 Input 4	0	2	0	2
6	6 + (Node# x 16)	5 + (Node# x 8)		Button 5 Input 5	0	2	0	2
7	7 + (Node# x 16)	6 + (Node# x 8)		Reserved				
8	8 + (Node# x 16)	7 + (Node# x 8)		Device Message				
9	9 + (Node# x 16)	8 + (Node# x 8)	Instance 112 / N14	Bit Packed Output*	0	682	0	682
10	10 + (Node# x 16)	9 + (Node# x 8)		Button 1 Output 1	0	2	0	2

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Modbus Registers		EIP Registers		I/O Type	I/O Range		Holding Register Representation (DEC)	
Gateway	Node	Node			Min	Max	Min	Max
11	11 + (Node# x 16)	10 + (Node# x 8)		Button 2 Output 2	0	2	0	2
12	12 + (Node# x 16)	11 + (Node# x 8)		Button 3 Output 3	0	2	0	2
13	13 + (Node# x 16)	12 + (Node# x 8)		Button 4 Output 4	0	2	0	2
14	14 + (Node# x 16)	13 + (Node# x 8)		Button 5 Output 5	0	2	0	2
15	15 + (Node# x 16)	14 + (Node# x 8)		Control Message	0	2	0	2
16	16 + (Node# x 16)	15 + (Node# x 8)		Reserved	0	2	0	2

* Bit-packed register contents for defining light behavior

	Register contents summed to define the light behavior	
Light (top to bottom)	Solid light	Flashing light
Light 5	1	2
Light 4	4	8
Light 3	16	32
Light 2	64	128
Light 1	256	512

The light is solid when the button is pressed and released. The light flashes when the button is pressed and held. Combinations of button presses and holds are summed.

For example, the value held in register 1 is 6 (2 + 4) when button 5 is flashing (2) and button 4 (4) is solid.

LCA130T Specifications

Supply Voltage and Current
18 V DC to 30 V DC
50 mA maximum current at 18 V DC (exclusive of load)

Supply Protection Circuitry
Protected against transient voltages

Response Time
Power-Up Delay: 500 milliseconds maximum
Input Response: 40 milliseconds maximum
Output Response: 300 milliseconds maximum

Output Rating
4A maximum load (combined or on a single wire)

Input
PNP power only

Connections
Integral 5-pin and 8-pin M12 male quick-disconnect connectors
Models with a quick disconnect require a mating cordset

Construction
Polycarbonate

Vibration and Mechanical Shock
Meets IEC 60068-2-6 requirements (Vibration: 10 Hz to 55 Hz, 0.5 mm amplitude, 5 minutes sweep, 30 minutes dwell)
Meets IEC 60068-2-27 requirements (Shock: 15G 11 ms duration, half sine wave)

Pro Editor Configuration
Connection to Pro Editor software enables control of:
- Animation: Off, Steady, Flash, Two Color Flash
- Color: Green, Red, Yellow, Blue, Cyan, Magenta, Amber, Rose, Lime Green, Orange, Sky Blue, Violet, Spring Green
- Intensity: Off, Low, Medium, High
- Speed: Slow, Standard, Fast
- Pattern: Normal, Strobe, 3-Pulse, SOS, Random

Pro Converter Cable required to interface between PC and indicator, see Accessories

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

Environmental Rating
IP65

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

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Supply Wiring (AWG)	Required Overcurrent Protection (A)	Supply Wiring (AWG)	Required Overcurrent Protection (A)
22	3.0	28	0.8
24	1.0	30	0.5

Certifications

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

Banner Engineering LTD Blatchford Road
Braintree Court
Wickford, Essex SS11 8YT
GREAT BRITAIN

(CE/UKCA approval only applies to 2.4 GHz models)

Radio Range

900 MHz (500 mW): Up to 1.6 km (1 mile) (internal antenna)

2.4 GHz: Up to 1000 m (3280 ft) with line of sight (internal antenna)

Antenna Minimum Separation Distance

900 MHz (500 mW): 4.57 m (15 ft) with the supplied 2 dB antenna

2.4 GHz, 65 mW: 0.3 m (1 ft)

Radio Transmit Power

900 MHz Conducted: 27 dBm (500 mW); EIRP with the supplied 4 dB antenna: 31 dBm (1260 mW)

2.4 GHz Conducted: < 18 dBm (65 mW); EIRP with the supplied 2 dB antenna: < 20 dBm (100 mW)

Spread Spectrum Technology

FHSS (Frequency Hopping Spread Spectrum)

900 MHz Compliance

Radio module is indicated by the product label marking

Contains FCC ID: UE3RM7023: FCC Part 15, Subpart C, 15.247

Contains IC: 7044A-RM7023

2.4 GHz Compliance (SX243 Radio Module)

Radio module is indicated by the product label marking

Contains FCC ID: UE3SX243: FCC Part 15, Subpart C, 15.247

Radio Equipment Directive (RED) 2014/53/EU

ETSI/EN: EN 300 328 V2.2.2 (2019-07) [RED HarmStds]

Contains IC: 7044A-SX243

FCC Part 15 Class A for Intentional Radiators

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Industry Canada Statement for Intentional Radiators

This device contains licence-exempt transmitters(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

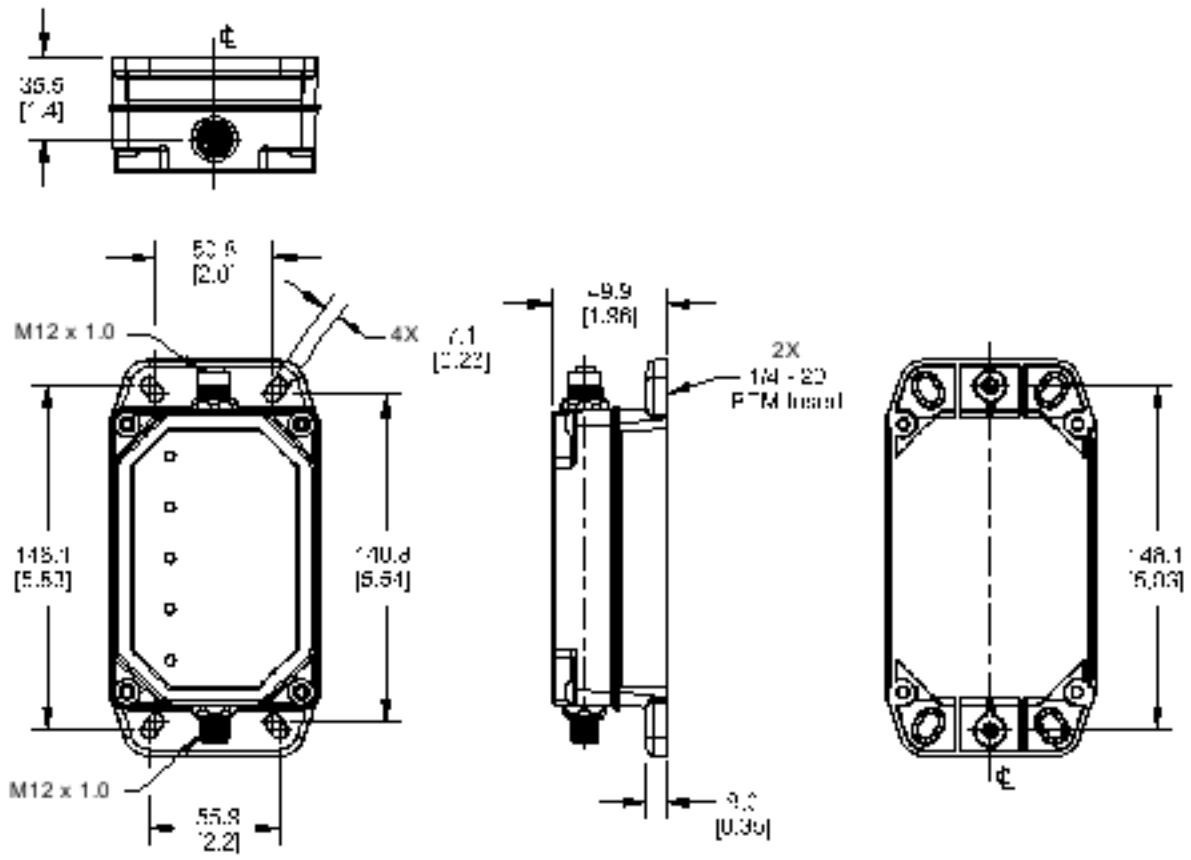
1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

Cet appareil contient des émetteurs/récepteurs exemptés de licence conformes à la norme Innovation, Sciences, et Développement économique Canada. L'exploitation est autorisée aux deux conditions suivantes:

1. L'appareil ne doit pas produire de brouillage.
2. L'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

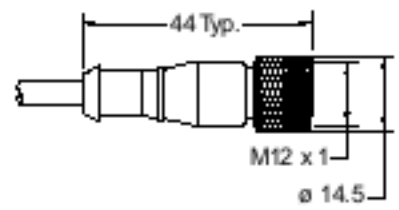
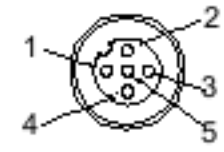
Dimensions

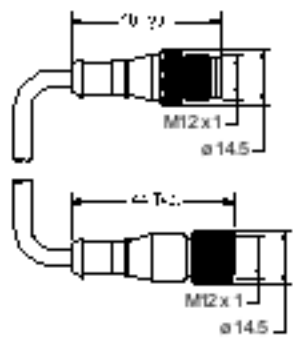
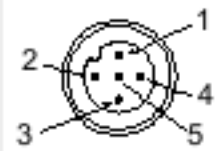
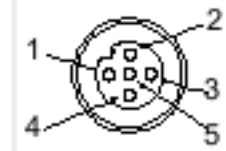
All measurements are listed in millimeters [inches], unless noted otherwise.

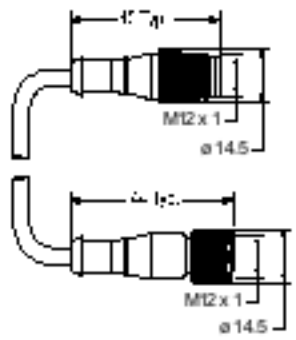
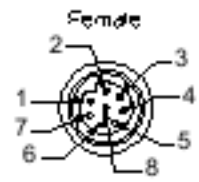
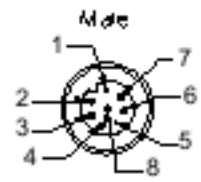


Accessories

Cordsets

5 Pin Threaded M12 Cordsets—Single Ended				
Model	Length	Style	Dimensions	Pinout (Female)
MQDC1-501.5	0.5 m (1.5 ft)	Straight		 1 = Brown 2 = White 3 = Blue 4 = Black 5 = Gray
MQDC1-503	0.9 m (2.9 ft)			
MQDC1-506	2 m (6.5 ft)			
MQDC1-515	5 m (16.4 ft)			
MQDC1-530	9 m (29.5 ft)			
MQDC1-560	18 m (59 ft)			
MQDC1-5100	31 m (101.7 ft)			

5 Pin Threaded M12 Cordsets—Double Ended					
Model	Length	Style	Dimensions	Pinout (Male)	Pinout (Female)
MQDEC-501SS	0.31 m (1.02 ft)	Male Straight/ Female Straight		 1 = Brown 2 = White 3 = Blue	 4 = Black 5 = Gray
MQDEC-503SS	0.91 m (2.99 ft)				
MQDEC-506SS	1.83 m (6 ft)				
MQDEC-512SS	3.66 m (12 ft)				
MQDEC-515SS	5 m (16.4 ft)				
MQDEC-530SS	9 m (29.5 ft)				
MQDEC-550SS	15 m (49.2 ft)				

8 Pin Threaded M12 Cordsets—Double Ended				
Model	Length	Style	Dimensions	Pinout
MQDEC1-803SS	1 m (3.28 ft)	Male Straight / Female Straight		1 = White 2 = Brown 3 = Green 4 = Yellow 5 = Gray 6 = Pink 7 = Blue 8 = Red
MQDEC1-806SS	2 m (6.56 ft)			
MQDEC1-810SS	3 m (9.84 ft)			
MQDEC1-815SS	5 m (16.4 ft)			
MQDEC1-830SS	9 m (29.5 ft)			
MQDEC1-850SS	15 m (49.2 ft)			
MQDEC1-8100SS	30.5 m (100 ft)			
MQDEC1-8200SS	61 m (200 ft)			

Pro Editor Hardware

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

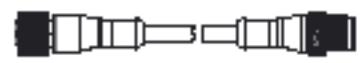
PSW-24-2
- 24 V DC, 2 A power supply
- 3.5 m (11.5 ft) PVC cable with M12 quick disconnect
- Provides external power with splitter cable, sold separately

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

ACC-PRO-CABLE5
- 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



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.