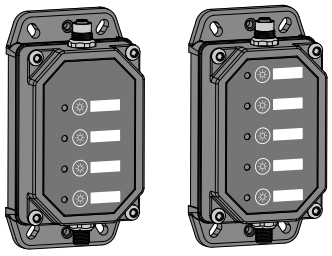
LCA130T Wireless Andon Control Box Instruction Manual

Features



- Rugged, cost-effective, and easy-to-install Andon Control Box
- Integral three, 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

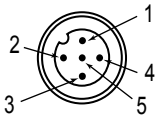
LCA130T Models

Model Name	Activation Method	Number of Touch Buttons	Frequency	Connector
LCA130T3DXN2Q	Touch	3 Buttons	2.4 GHz ISM Band	Input: Integral 5-pin M12 male quick-disconnect connector Output: Integral 5-pin M12 female quick-disconnect connector
LCA130T3DXN9Q			900 MHz ISM Band	
LCA130T4DXN2Q		4 Buttons	2.4 GHz ISM Band	Input: Integral 5-pin M12 male quick-disconnect connector Output: Integral 5-pin M12 female quick-disconnect connector
LCA130T4DXN9Q			900 MHz ISM Band	
LCA130T5DXN2Q		5 Buttons	2.4 GHz ISM Band	Input: Integral 5-pin M12 male quick-disconnect connector Output: Integral 8-pin M12 female quick-disconnect connector
LCA130T5DXN9Q			900 MHz ISM Band	

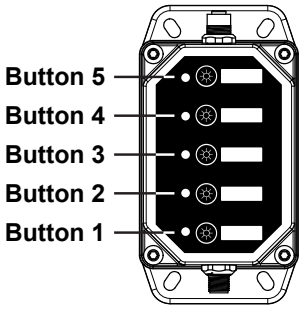
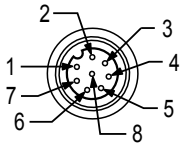
LCA130T Switch Diagram

Touch, or touch and hold, one or more of the buttons to activate a programmed color and animation function.

Input Pinout - All Models

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

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

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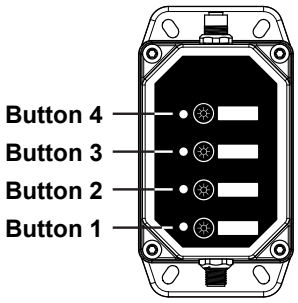
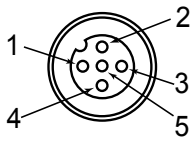
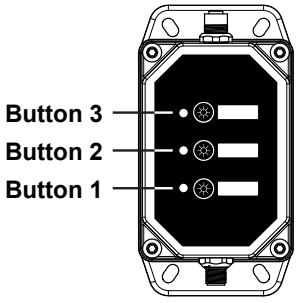
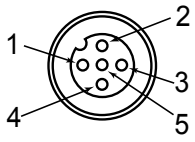
Output Pinout - 4-Button Switch Control

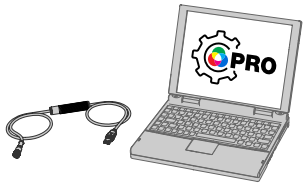
4-Button LCA130T	5-pin M12 Female Connector	Pin	Description
		1	Button 2
		2	Button 3
		3	DC common (GND)
		4	Button 1
		5	Button 4

Output Pinout - 3-Button Switch Control

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

Configuration Instructions

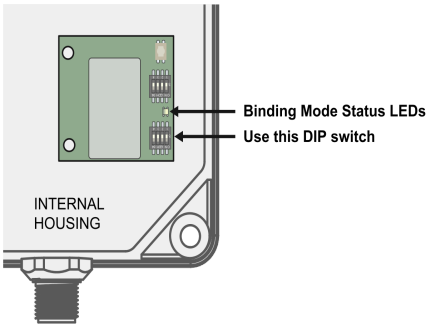
Pro Editor



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.

LCA130T DIP Switches

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



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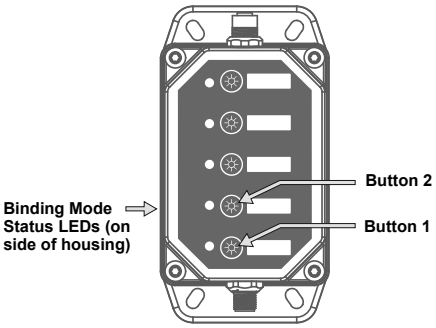
Device Settings[1]	DIP Switches			
	1[2]	2	3	4
Transmit Power Level: 500 mW (default setting)	OFF			
Transmit Power Level: 250 mW	ON			
Bit-Packed Button / LED and Output Status: Input 1: ENABLED Output 1 Overwrite Input Status: ENABLED (default setting)		OFF	OFF	OFF
Conventional Button / LED and Output Status: Inputs 2-6 (OFF = 0, Steady = 1, Flashing = 2): ENABLED Outputs 2-6 (Overwrite Input Status): ENABLED		ON	OFF	OFF
Bit-Packed Button / LED and Output Status: Input 1: ENABLED Output 1 Overwrite Input Status: DISABLED		OFF	ON	OFF
Conventional Button / LED and Output Status: Inputs 2-6 (OFF = 0, Steady = 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. Touch and hold button 1.
    b. Triple-touch button 2.
    c. Release button 1.

    The red and green Binding Mode Status 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 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 (500 mW): 4.57 m (15 ft)
2.4 GHz (65 mW): 0.3 m (1 ft)

Binding Mode Status LEDs	Node Status
Flashing green	Radio link okay

Continued on page 4

[1] Default device settings are shown. LED and output functionality can change depending on the configuration created with Pro Editor.
[2] DIP Switch 1 is only used on 900 MHz models.

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Continued from page 3

Binding Mode Status LEDs	Node Status
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
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

To ensure that the LCA130T holds the correct state in case of signal interference, read the button input registers on the LCA130T, and then use the gateway to write the matching value to the button output registers on the LCA130T.

Bit-Packed Holding Register Representation

	Summed Bit-Packed Register Contents of the LCA130T	
Buttons	Touch Value	Touch and Hold Value
Button 1	1	2
Button 2	4	8
Button 3	16	32
Button 4	64	128
Button 5	256	512

By default, an LED and an output are on steady when the corresponding button is touched and released immediately. An LED and an output continuously flash on and off when the button is touched and held for one second. Combinations of button touches and holds are summed.

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

Conventional Button holding Register Representation

Value	Description
0	LED and output off
1	Touch: LED and output are on steady
2	Touch and Hold: LED and output are flashing on and off

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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 output)

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)

Radio Range

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

2.4 GHz (65 mw): 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)

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)

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
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

Turck Banner LTD Blenheim House
Blenheim Court
Wickford, Essex SS11 8YT
GREAT BRITAIN

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

900 MHz Compliance (RM7023 Radio Module)

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.

(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 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.

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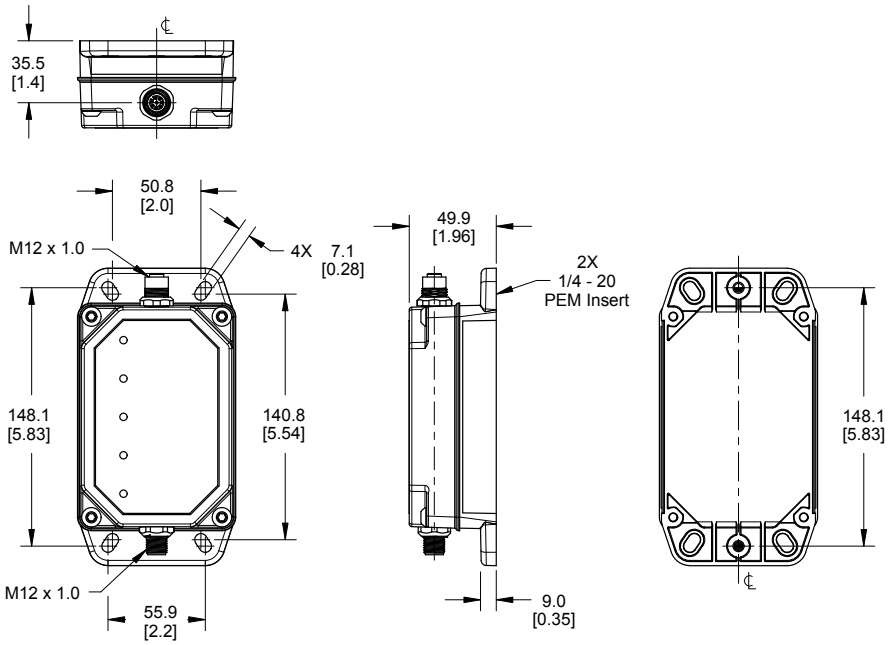
2. This device must accept any interference, including interference that may cause undesired operation of the device.

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.

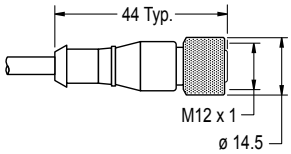
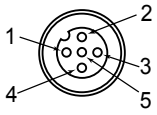
Dimensions

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)			

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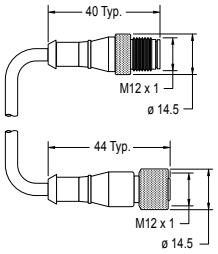
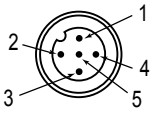
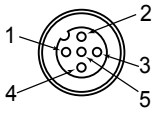
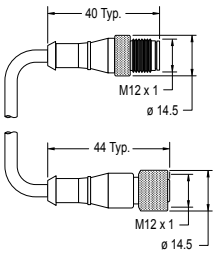
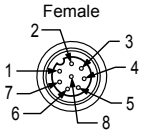
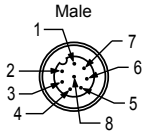
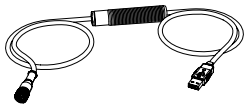
5-Pin Threaded M12 Cordsets—Double Ended					
Model	**Length**	**Style**	**Dimensions**	**Pinout (Male)**	**Pinout (Female)**
MQDEC-501SS	0.31 m (1.02 ft)	Male Straight/ Female Straight			
MQDEC-503SS	0.91 m (2.99 ft)			1 = Brown 2 = White 3 = Blue	4 = Black 5 = Gray
MQDEC-506SS	1.83 m (6 ft)				
MQDEC-512SS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

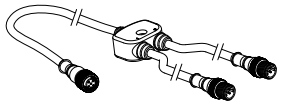
8-Pin Threaded M12 Cordsets—Double Ended					
Model	**Length**	**Style**	**Dimensions**		**Pinout**
MQDEC1-803SS	1 m (3.28 ft)	Male Straight / Female Straight			1 = White 2 = Brown 3 = Green 4 = Yellow 5 = Gray 6 = Pink 7 = Blue 8 = Red
MQDEC1-806SS	2 m (6.56 ft)				
MQDEC1-810SS	3 m (9.84 ft)				
MQDEC1-815SS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

Pro Editor Hardware

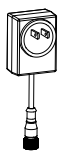
MQDC-506-USB
- Pro Converter Cable
- 1.83 m (6 ft) length 5-pin M12 quick disconnect to Device and USB to PC
- Required for connection to the configuration software



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



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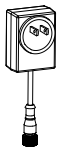
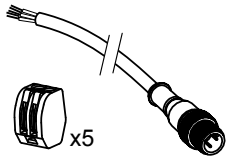
PSW-24-2
- 24 V DC, 2 A power supply
- 3.5 m (11.5 ft) PVC cable with M12 quick disconnect
- Provides external power with splitter cable, sold separately



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



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