# LCA130T Andon Control Box with IO-Link Instruction Manual

Original Instructions
p/n: 241973 Rev. A
June 04, 2024

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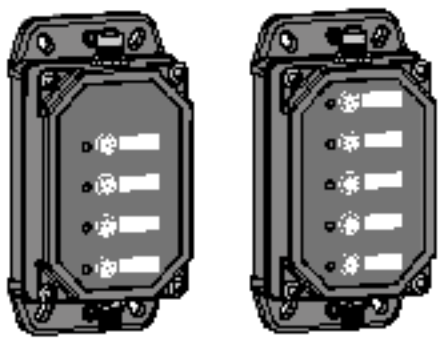
# Chapter 1 Features



- 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
- IO-Link gives full access to color, flashing, and dimming settings, as well as advanced animations which provide dynamic response to changing machine conditions
- Two M12 connectors for added Andon application flexibility and easy installation
- Three to five discrete outputs available to pass up to a total of 4 amps

## Models

| Model Name | Activation Method | Number of Touch Buttons | Control | Connectors |
|---|---|---|---|---|
| LCA130T3KQ | Touch | 3 Buttons | IO-Link | Input: Integral 4-pin M12 male quick-disconnect connector<br>Output: Integral 5-pin M12 female quick-disconnect connector |
| LCA130T4KQ | | 4 Buttons | | Input: Integral 4-pin M12 male quick-disconnect connector<br>Output: Integral 5-pin M12 female quick-disconnect connector |
| LCA130T5KQ | | 5 Buttons | | Input: Integral 4-pin M12 male quick-disconnect connector<br>Output: Integral 8-pin M12 female quick-disconnect connector |

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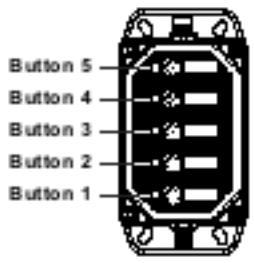
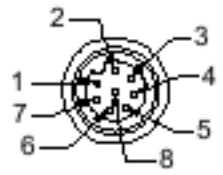
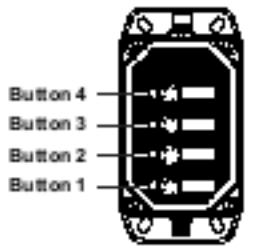
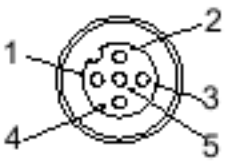
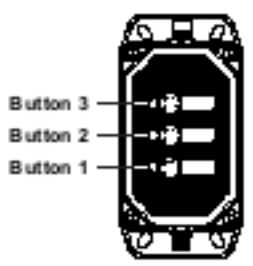
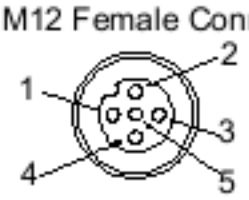
# Chapter 2 LCA130T Switch Diagram

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

Input Pinout - All Models

| 4-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) | IO-Link Communication |

Output Pinout Switch Control

| Button Diagrams | Connectors | Pinout Keys |
|---|---|---|
| 5-Button LCA130T<br>  | 8-pin M12 Female Connector<br>  | Pin 1 = Button 3<br>Pin 2 = Button 4<br>Pin 3 = Not used<br>Pin 4 = Button 1<br>Pin 5 = Button 2<br>Pin 6 = Button 5<br>Pin 7 = DC common (GND)<br>Pin 8 = Not used |
| 4-Button LCA130T<br>  | 5-pin M12 Female Connector<br>  | Pin 1 = Button 2<br>Pin 2 = Button 3<br>Pin 3 = DC common (GND)<br>Pin 4 = Button 1<br>Pin 5 = Button 4 |
| 3-Button LCA130T<br>  | 5-pin M12 Female Connector<br>  | Pin 1 = Button 2<br>Pin 2 = Button 3<br>Pin 3 = DC common (GND)<br>Pin 4 = Button 1<br>Pin 5 = Not used |

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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.

For the latest IODD files, please refer to the Banner Engineering Corp website at: www.bannerengineering.com.

State Mode

Use Process Data In to read button output states of Off, On, or Hold.

Use Process Data Out to set button output states to No Override, Off, On, or Hold.

Use Parameter data to change touch button sensitivity, logic, color, intensity, flash speed, and select animation type on Off, On, and Hold output states.

| Name | Description |
|---|---|
| Animation Type | |
| Off | Button LED is off |
| Steady | Color 1 is solid on at defined intensity |
| Flash | Color 1 flashes at defined speed, color intensity, and pattern |
| Two Color Flash | Color 1 and Color 2 flash alternately at defined speed, color intensities, and pattern |
| Intensity Sweep | Color 1 repeatedly increases and decreases intensity between 0% to 100% at defined speed and color intensity |
| Color Sweep | Color 1 and Color 2 transition alternately at defined speed and color intensities |
| Animation Pattern | Defines the flash pattern for flash and two color flash animations (normal, strobe, three pulse, SOS, or random) |
| Animation Speed | Defines the animation speed (slow, medium, fast, or custom) |
| Off Delay Type | Defines if the Off Delay should be measured from when the conditions for the State began (Leading Edge) or from when the conditions ended (Trailing Edge) |
| Off Delay (ms) | The duration of the animation Off Delay. Leading Edge Off Delays can be used to ensure the animation is active for at least a minimum amount of time. |
| Color 1 | Defines Color 1 of defined animation |
| Color 1 Intensity | Defines the intensity of Color 1 in the animation (high, medium, low, off, or custom) |
| Color 2 | Defines Color 2 of defined animation |
| Color 2 Intensity | Defines the intensity of Color 2 in the animation (high, medium, low, off, or custom) |
| Touch Sensitivity | Defines the sensitivity of the touch button as either Standard, High or Low. Low sensitivity resists false activation. High sensitivity can be used for improved touch response |
| Function | Latching or Momentary options. Momentary function toggles output on only during a touch button input. Latching function toggles output on or off for each touch button input |
| Hold | Defines if Hold state is Enabled or Disabled |

### Advanced Mode

Use Process Data In to read button output states of True or False.
Use Process Data Out to set touch button logic, color, intensity, flash speed, and select animation type.

| Name | Description |
|---|---|
| Animation Type | |
| Off | Button LED is off |
| Steady | Color 1 is solid on at defined intensity |
| Flash | Color 1 flashes at defined speed, color intensity, and pattern |
| Two Color Flash | Color 1 and Color 2 flash alternately at defined speed, color intensities, and pattern |
| Intensity Sweep | Color 1 repeatedly increases and decreases intensity between 0% to 100% at defined speed and color intensity |
| Color Sweep | Color 1 and Color 2 transition alternately at defined speed and color intensities |
| Output | Sets button output to On, Off, or Pattern |
| Animation Pattern | Defines the flash pattern for flash and two color flash animations (normal, strobe, three pulse, SOS, or random) |
| Animation Speed | Defines the animation speed (slow, medium, fast, or custom) |
| Color 1 | Defines Color 1 of defined animation |
| Color 1 Intensity | Defines the intensity of Color 1 in the animation (high, medium, low, off, or custom) |
| Color 2 | Defines Color 2 of defined animation |
| Color 2 Intensity | Defines the intensity of Color 2 in the animation (high, medium, low, off, or custom) |

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# Chapter 4 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

IO-Link Interface

Supports Smart Sensor Profile: No

Baud Rate: 38400 bps (COM2)

Process Data In: 16 bits (2 bytes)

Process Data Out: 160 bits (20 bytes)

IODD Files: Provides all programming options, plus additional functionality

Output Rating

4A maximum load (combined or on a single output)

Connections

Inputs: Integral 4-pin M12 male quick-disconnect connector

Outputs: Integral 5-pin or 8-pin M12 female quick-disconnect connector, depending on model

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)

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 |
| 22 | 3.0 | 28 | 0.8 |
| 24 | 1.0 | 30 | 0.5 |

Certifications

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Park Lane, Culliganlaan 2F bus 3
1831 Diegem, BELGIUM

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

# 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.
- 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.

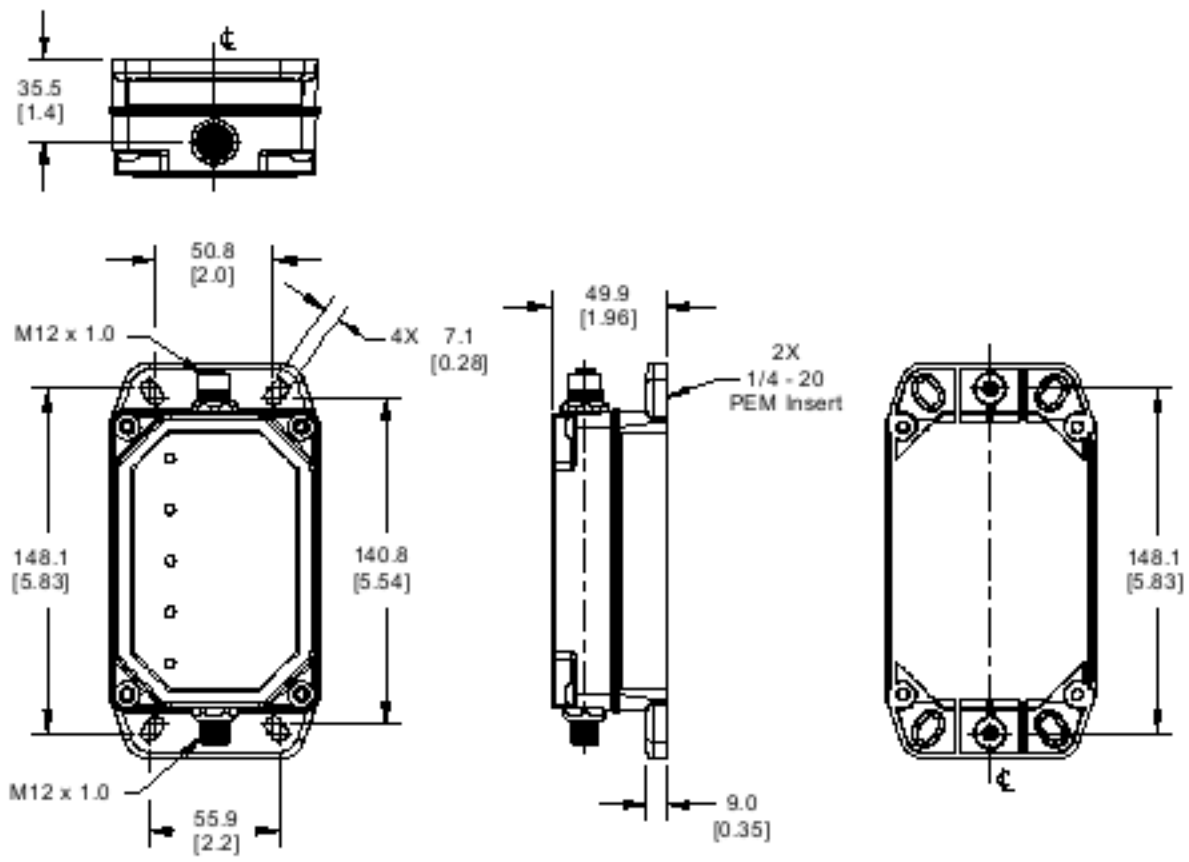
# Industry Canada ICES-003(B)

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.



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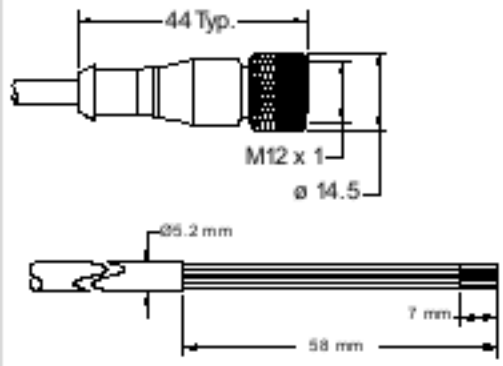
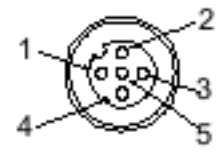
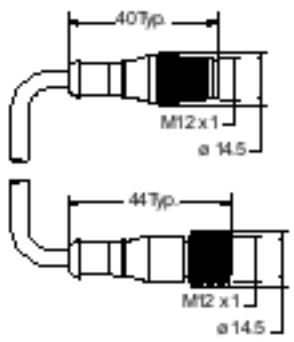
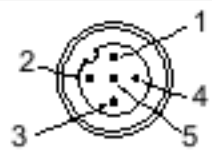
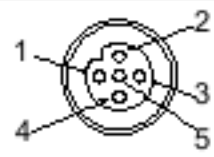
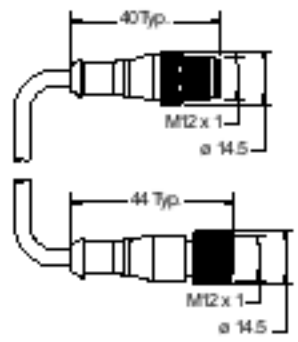
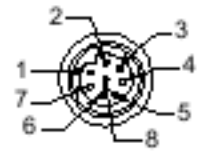
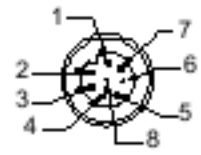
# Chapter 5 Accessories

## Cordsets

| 4-Pin Threaded M12 Cordsets—Single Ended | | | | | |
|---|---|---|---|---|---|
| Model | Length | Style | Dimensions | Pinout (Female) | |
| MQDC-403 | 1 m (3.28 ft) | Straight |  |  | 1 = Brown<br>2 = White<br>3 = Blue<br>4 = Black<br>5 = Not used |
| MQDC-406 | 2 m (6.56 ft) | | | | |
| MQDC-410 | 3 m (9.8 ft) | | | | |
| MQDC-415 | 5 m (16.4 ft) | | | | |
| MQDC-430 | 9 m (29.5 ft) | | | | |
| MQDC-450 | 15 m (49.2 ft) | | | | |
| MQDC-460 | 18.3 m (60 ft) | | | | |
| MQDC-470 | 21 m (68.9 ft) | | | | |
| MQDC-4100 | 30 m (98.43 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 |  |  |  |
| MQDEC-503SS | 0.91 m (2.99 ft) | | | 1 = Brown<br>2 = White<br>3 = Blue | 4 = Black<br>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<br>2 = Brown<br>3 = Green<br>4 = Yellow<br>5 = Gray<br>6 = Pink<br>7 = Blue<br>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<br>  | Male<br>  | |
| MQDEC1-850SS | 15 m (49.2 ft) | | | | |
| MQDEC1-8100SS | 30.5 m (100 ft) | | | | |
| MQDEC1-8200SS | 61 m (200 ft) | | | | |

CSB-M1251FM1251M

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

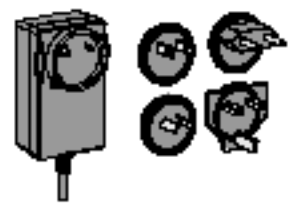
# Power Supplies

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

PSW-24-2

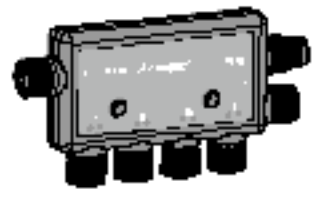
- 24 V DC, 2 A Class 2 UL Listed power supply
- 100 V AC to 240 V AC 50/60 Hz input
- 3.5 m (11.5 ft) PVC cable with M12 quick disconnect
- Includes Type A (US, Canada, Japan, Puerto Rico, Taiwan), Type C (Germany, France, South Korea, Netherlands, Poland, Spain, Turkey), Type G (United Kingdom, Ireland, Singapore, Vietnam), and Type I (China, Australia, New Zealand) AC detachable input plugs

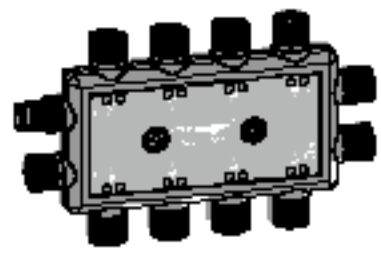


# IO-Link Masters

DXMR90-4K Series Controller IO-Link Master

- One female M12 D-Code Ethernet connector
- Four female M12 connections for IO-Link master connections
- One male M12 (Port 0) connection for incoming power and Modbus RS-485, one female M12 connection for daisy chaining Port 0 signals



| | |
|---|---|
| DXMR110-8K Series Controller IO-Link Master<br>• Two female M12 D-Code Ethernet connectors for daisy chaining and communication to a higher-level control system<br>• Eight female M12 connections for IO-Link master connections<br>• One male M12 connection for incoming power, one female M12 connection for daisy chaining power |  |

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# Chapter 6 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.

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