

## Red Lion CUB5

# Red Lion CUB5 Electronic Dual Counter and Rate Indicator with Backlight User Manual

Model: CUB5

## 1. INTRODUCTION AND OVERVIEW

The Red Lion CUB5 is a versatile electronic dual counter and rate indicator designed for industrial applications. It offers extensive user programming capabilities and optional relay output. This device can function as a dual counter with integrated rate indication. The display can be configured to toggle between selected readouts, either manually or automatically.

Key features include a 0.46-inch high digit display and a backlight version with user-selectable green or red illumination and adjustable intensity. The counter supports eight different count modes, including bi-directional and quadrature counting. When configured as a dual counter, each counter has independent scale factors and decimal points. In counter/rate indicator mode, both functions have their own scaling and decimal point readouts for different engineering units.

The CUB5 features two separate inputs, which perform different functions based on the selected operating mode. An anti-coincidence mode monitors both inputs simultaneously to prevent count loss, allowing the display to show the sum or difference of the two inputs. The Rate Indicator includes programmable low (minimum) and high (maximum) update times to optimize display response across various input frequencies. A programmable user input can be assigned to various functions.

The unit's capabilities can be expanded with optional modules, such as the CUB5RLY0 relay output module for setpoint functionality, or serial option modules for RS232 or RS485 communication. The CUB5 can be powered by an optional Red Lion Micro-Line/Sensor Power Supply (MLPS1000), which attaches directly to the unit and provides up to 400 mA for the unit and sensors.



Figure 1: Red Lion CUB5 Electronic Dual Counter and Rate Indicator. This image displays the front panel of the CUB5 unit, featuring an 8-digit LCD screen and two control buttons labeled "SEL" (Select) and "RST" (Reset).

## 2. KEY FEATURES

- LCD display with LED backlighting, offering programmable scaling for both count and rate functions.
- Large 0.46-inch high digits for clear visibility.
- Supports optional relay output module for control applications.
- Compatible with optional serial communications modules (RS232/RS485).
- High count speeds up to 20 KHz.
- Operates from a 9 to 28 VDC power source.
- Bi-directional counting and up/down control capabilities.
- Quadrature sensing for enhanced resolution (up to 4 times).
- Display color change functionality at preset values.
- NEMA 4X/IP65 sealed front bezel for environmental protection.

## 3. SETUP AND INSTALLATION

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### 3.1 Power Requirements

The CUB5 unit requires a 9 to 28 VDC power source. Ensure the power supply meets these specifications to prevent damage to the device. An optional Red Lion Micro-Line/Sensor Power Supply (MLPS1000) can be used, which provides up to 400 mA and attaches directly to the back of the CUB5.

### 3.2 Electrical Connections

Connections are made using wire clamping screw terminals. Prepare wires with a 0.3-inch strip length. The terminals accommodate 30-14 AWG copper wire. Ensure all connections are secure and correctly wired according to the specific application and wiring diagrams provided in the full product documentation.

- **Input Connections:** The CUB5 has two separate inputs. Refer to the detailed wiring diagram for connecting sensors or signal sources.
- **Optional Module Connections:** If using optional relay output (CUB5RLY0) or serial communication modules, connect them according to their respective installation guides.

### 3.3 Mounting

The CUB5 features a NEMA 4X/IP65 sealed front bezel, indicating it is designed for panel mounting and offers protection against dust and water jets. Install the unit into a panel cutout, ensuring the front bezel is properly sealed to maintain its environmental rating.

## 4. OPERATING INSTRUCTIONS

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### 4.1 Basic Operation

Upon power-up, the CUB5 will display the configured counter or rate value. The unit's front panel includes two buttons: "SEL" (Select) and "RST" (Reset).

- **SEL Button:** Used to navigate through programming menus and select options. In operational mode, it may be used to toggle between different display views (e.g., Counter 1, Counter 2, Rate).
- **RST Button:** Used to reset counter values or confirm settings during programming.

### 4.2 Programming Modes

The CUB5 offers extensive programming options accessible via the front panel buttons. Refer to the comprehensive programming guide for detailed instructions on configuring specific parameters. Key programmable aspects include:

- **Count Modes:** Select from eight different count modes, including bi-directional counting and quadrature sensing.
- **Scaling and Decimal Points:** Configure independent scale factors and decimal point positions for each counter and rate indicator.
- **Display Toggling:** Set the display to automatically or manually switch between counter and rate readouts.
- **Anti-Coincidence Mode:** Configure the unit to monitor two inputs simultaneously, displaying their sum or difference.
- **Rate Indicator Update Times:** Adjust low and high update times for optimal response.
- **User Input Function:** Assign various functions to the programmable user input.
- **Backlight Settings:** Choose between green or red backlight and adjust display intensity.
- **Preset Display Color Change:** Program the display to change color when a preset value is reached.

## 5. MAINTENANCE

The Red Lion CUB5 is designed for robust industrial use and requires minimal maintenance. Regular inspection and cleaning are recommended to ensure optimal performance and longevity.

- **Cleaning:** Periodically clean the front bezel and display with a soft, damp cloth. Avoid abrasive cleaners or solvents, as these can damage the display or housing.
- **Environmental Protection:** The NEMA 4X/IP65 rating protects against dust and water. Ensure the unit's panel seal remains intact. If the seal is compromised, the environmental protection may be reduced.
- **Connections:** Periodically check all electrical connections for tightness and signs of corrosion. Loose connections can lead to intermittent operation or signal loss.

## 6. TROUBLESHOOTING

This section provides general troubleshooting tips. For specific issues, consult the full product manual or contact Red Lion technical support.

- **No Display/Power:**
  - Verify the power supply is connected correctly and providing 9-28 VDC.
  - Check all power wiring for continuity and secure connections.
- **Incorrect Counts/Rate:**
  - Ensure input signals are within the specified frequency range (up to 20 KHz).
  - Check input wiring for proper connection and shielding.
  - Review programming settings for count mode, scaling, and decimal points.
  - Verify sensor operation and output.
- **Display Issues:**
  - If the backlight is not functioning, check backlight intensity settings in programming.
  - Ensure the unit is operating within its specified temperature range.

## 7. SPECIFICATIONS

Specification	Value
Model Number	CUB5
Display Type	8-Digit LCD with Backlight
Digit Height	0.46 inches
Max Frequency	20 KHz
Accuracy	+/- 0.01 percent
Power Source	9 to 28 VDC
Connections	Wire clamping screw terminals (30-14 AWG copper wire, 0.3" strip length)



Specification	Value
Environmental Rating	NEMA 4X/IP65 (front bezel)
Product Dimensions (L x W x H)	2.8 x 3.1 x 4.3 inches
Item Weight	4.8 ounces
Approvals	UL, CE, RoHS
Manufacturer	Red Lion Controls Inc

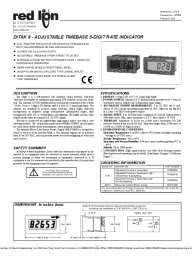


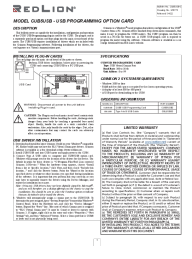
## 8. WARRANTY AND SUPPORT

Warranty information for the Red Lion CUB5 is typically provided with the product at the time of purchase or can be obtained directly from Red Lion Controls Inc. Please refer to the documentation included with your specific unit for details regarding warranty coverage, terms, and conditions.

For technical support, service, or additional product information, please visit the official Red Lion Controls website or contact their customer service department. You can also find more information and products at the [Red Lion Store on Amazon](#).

### Related Documents - CUB5

	<p><a href="#">Red Lion CUB®5 Miniature Electronic 8-Digit Dual Counter and Rate Indicator Manual</a></p> <p>Comprehensive user manual for the Red Lion CUB®5, detailing its features as a miniature electronic 8-digit dual counter and rate indicator, including installation, programming, and communication options for industrial applications.</p>
	<p><a href="#">Red Lion CUB5 Miniature Dual Counter and Rate Indicator User Manual</a></p> <p>Detailed user manual and datasheet for the Red Lion CUB5 miniature electronic 8-digit dual counter and rate indicator. Learn about features, specifications, installation, programming, and serial communications.</p>

	<p><a href="#">Red Lion DITAK 8 Adjustable Timebase 5-Digit Rate Indicator Manual</a></p> <p>This document provides detailed specifications, installation guidelines, and troubleshooting information for the Red Lion DITAK 8 Adjustable Timebase 5-Digit Rate Indicator. It covers features, electrical specifications, EMC compliance, and programming.</p>
	<p><a href="#">Red Lion CUB5P Miniature Electronic 5-Digit Process Meter User Manual</a></p> <p>Detailed user manual for the Red Lion CUB5P Miniature Electronic 5-Digit Process Meter, covering installation, wiring, programming, and specifications. Learn about its features, options, and operation.</p>
	<p><a href="#">Red Lion CUB5 Miniature Electronic 8-Digit Dual Counter and Rate Indicator</a></p> <p>Detailed specifications, installation guide, and programming manual for the Red Lion CUB5 miniature electronic 8-digit dual counter and rate indicator. Features include selectable LCD or LED backlighting, optional relay and serial communication modules, and NEMA 4X/IP65 sealing.</p>
	<p><a href="#">Red Lion CUB5USB USB Programming Option Card: Installation and Configuration Guide</a></p> <p>A technical bulletin detailing the installation, configuration, and specifications of the Red Lion CUB5USB plug-in card for CUB5 meters, enabling programming via Crimson software. Includes driver installation steps, system requirements, and warranty information.</p>