



# MODEL CUB5I - MINIATURE ELECTRONIC 5-DIGIT DC CURRENT METER



- FOUR SELECTABLE D.C. RANGES  
200  $\mu$ A, 2 mA, 20 mA, 200 mA
- MINIMUM AND MAXIMUM DISPLAY CAPTURE
- LCD, REFLECTIVE OR RED/GREEN LED BACKLIGHTING
- 0.48" (12.2 mm) HIGH DIGITS
- OPTIONAL SETPOINT OUTPUT MODULES
- OPTIONAL SERIAL COMMUNICATIONS MODULES (RS232 or RS485)
- OPERATES FROM 9 TO 28 VDC POWER SOURCE
- FRONT PANEL OR CRIMSON PROGRAMMABLE
- DISPLAY COLOR CHANGE CAPABILITY AT SETPOINT OUTPUT
- NEMA 4X/IP65 SEALED FRONT BEZEL

## GENERAL DESCRIPTION

The CUB5 provides the user the ultimate in flexibility, from its complete user programming to the optional setpoint control and communication capability. The CUB5I accepts a DC Current input signal and provides a display in the desired unit of measure. The meter also features minimum and maximum display capture, display offset, units indicator, and programmable user input. The display can be toggled either manually or automatically between the selected displays.

The CUB5 display has 0.48" (12.2 mm) high digits. The LCD is available in two versions, reflective and red/green backlight. The backlight version is user selectable for the desired color and also has variable display intensity.

The capability of the CUB5 can be easily expanded with the addition of option modules. Setpoint capability is field installable with the addition of the setpoint output modules. Serial communications capability for RS232 or RS485 is added with a serial option module.

The CUB5 can be powered from an optional Red Lion Micro-Line/Sensor Power Supply (MLPS1000), which attaches directly to the back of a CUB5. The MLPS1 is powered from 85 to 250 VAC and provides up to 400 mA to drive the unit and sensors.

## CURRENT

The CUB5I is the DC Current meter. It features 4 current input ranges, that are selected by the user via a programming jumper and software input range selection. The ranges consist of following: 200  $\mu$ A, 2 mA, 20 mA, or 200 mA. Users should select the appropriate current range that covers their maximum signal input.

## SAFETY SUMMARY

All safety related regulations, local codes and instructions that appear in this literature or on equipment must be observed to ensure personal safety and to prevent damage to either the instrument or equipment connected to it. If equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

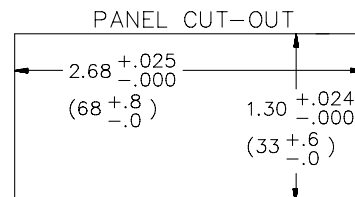
Do not use this meter to directly command motors, valves, or other actuators not equipped with safeguards. To do so can be potentially harmful to persons or equipment in the event of a fault to the meter.



**CAUTION: Risk of Danger.**  
Read complete instructions prior to installation and operation of the unit.

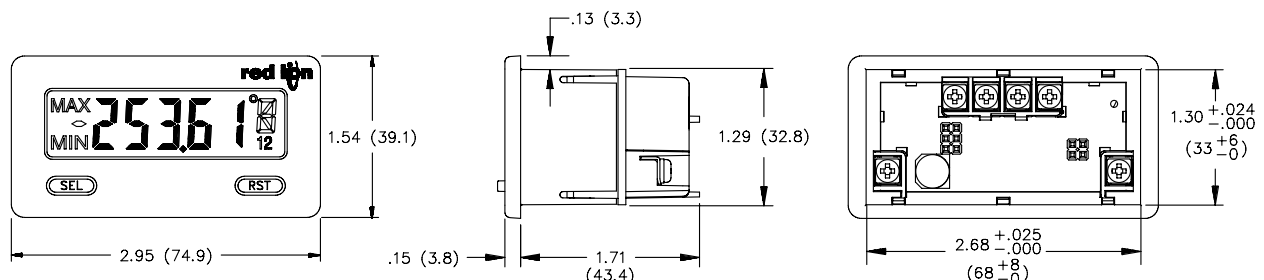


**CAUTION: Risk of electric shock.**



## DIMENSIONS In inches (mm)

Note: Recommended minimum clearance (behind the panel) for mounting clip installation is 2.15" (54.6) H x 3.00" (76.2) W.



# ORDERING INFORMATION

TYPE	MODEL NO.	DESCRIPTION	PART NUMBER
CUB5	CUB5I	DC Current Meter with reflective display	CUB5IR00
		DC Current with backlight display	CUB5IB00
Optional Plug-in Cards	CUB5RLY	Single Relay Output Card	CUB5RLY0
	CUB5SNK	Dual Sinking Open Collector Output Card	CUB5SNK0
	CUB5COM	RS485 Serial Communications Card	CUB5COM1
		RS232 Serial Communications Card	CUB5COM2
CUB5USB	USB Programming Card for CUB5 Products	CUB5USB0	
Accessories	MLPS1	Micro-Line Power Supply, 85 to 250 VAC	MLPS1000
	CBLPROG	RS232 Programming Cable (DB9-RJ11)	CBLPROG0
	CBPRO	RS485 Programming Cable (DB9-RJ11)	CBPRO007
	SFCRD	Crimson 2 PC Configuration Software for Windows ME, 2000, XP *	SFCRD200
	CBLUSB	USB Programming Cable	CBLUSB00

# GENERAL METER SPECIFICATIONS

- DISPLAY:** 5 digit LCD 0.48" (12.2 mm) high digits  
**CUB5IR00:** Reflective LCD with full viewing angle  
**CUB5IB00:** Transmissive LCD with selectable red or green LED backlight, viewing angle optimized. Display color change capability with output state when using an output module.
- POWER:** Input voltage range is +9 to +28 VDC with short circuit and input polarity protection. Must use an RLC model MLPS1 or a Class 2 or SELV rated power supply.

MODEL NO.	DISPLAY COLOR	INPUT CURRENT @ 9 VDC WITHOUT CUB5RLY0	INPUT CURRENT @ 9 VDC WITH CUB5RLY0
CUB5IR00	---	10 mA	40 mA
CUB5IB00	Red (max intensity)	85 mA	115 mA
CUB5IB00	Green (max intensity)	95 mA	125 mA

- INPUT RANGES:** Jumper Selectable  
**D.C. Currents:** 200  $\mu$ A, 2 mA, 20 mA, or 200 mA
- SIGNAL INPUTS:**

INPUT RANGE	ACCURACY @23 °C, less than 85% RH	INPUT IMPEDANCE	MAX INPUT SIGNAL	RESOLUTION	TEMP. COEFFICIENT
200 $\mu$ A	0.1% of span	1.111 K $\Omega$	15 mA	10 nA	70 ppm / °C
2 mA	0.1% of span	111 $\Omega$	50 mA	.1 $\mu$ A	70 ppm / °C
20 mA	0.1% of span	11 $\Omega$	150 mA	1 $\mu$ A	70 ppm / °C
200 mA	0.1% of span	1 $\Omega$	500 mA	10 $\mu$ A	70 ppm / °C

- OVERRANGE RATINGS, PROTECTION & INDICATION:**  
 9 to 28 VDC power circuit is not isolated from the signal circuit.  
**Input Overrange Indication:** "OLOL"  
**Input Underrange Indication:** "ULUL"  
**Display Overrange/Underrange Indication:** "....."/"-----"
- DISPLAY RESPONSE TIME:** 500 msec min.
- NORMAL MODE REJECTION:** 60 dB 50/60 Hz
- USER INPUT (USR):** Programmable input. Connect terminal to common (USR COMM) to activate function. Internal 10K $\Omega$  pull-up resistor to +9 to 28 VDC.  
**Threshold Levels:**  $V_{IL} = 1.0$  V max;  $V_{IH} = 2.4$  V min;  $V_{MAX} = 28$  VDC  
**Response Time:** 5 msec typ.; 50 msec debounce (activation and release)
- MEMORY:** Nonvolatile E<sup>2</sup>PROM memory retains all programming parameters and max/min values when power is removed.
- ENVIRONMENTAL CONDITIONS:**  
**Operating Temperature Range for CUB5IR00:** -35 to 75°C  
**Operating Temperature Range for CUB5IB00 depends on display color and intensity level as per below:**

	INTENSITY LEVEL	TEMPERATURE
Red Display	1 & 2	-35 to 75°C
	3	-35 to 70°C
	4	-35 to 60°C
	5	-35 to 50°C
	5	-35 to 50°C
Green Display	1 & 2	-35 to 75°C
	3	-35 to 65°C
	4	-35 to 50°C
	5	-35 to 50°C
	5	-35 to 35°C

- Storage Temperature:** -35 to 85°C  
**Operating and Storage Humidity:** 0 to 85% max. relative humidity (non-condensing)  
**Vibration According to IEC 68-2-6:** Operational 5 to 500 Hz, in X, Y, Z direction for 1.5 hours, 5 g's.  
**Shock According to IEC 68-2-27:** Operational 30 g, 11 msec in 3 directions.  
**Altitude:** Up to 2000 meters
- CONNECTIONS:** Wire clamping screw terminals  
**Wire Strip Length:** 0.3" (7.5 mm)  
**Wire Gauge:** 30-14 AWG copper wire  
**Torque:** 5 inch-lbs (0.565 N-m) max.
  - CONSTRUCTION:** This unit is rated for NEMA 4X/IP65 requirements for indoor use. Installation Category I, Pollution Degree 2. High impact plastic case with clear viewing window. Panel gasket and mounting clip included.
  - CERTIFICATIONS AND COMPLIANCES:**

**SAFETY**  
 UL Recognized Component, File #E179259, UL61010A-1, CSA 22.2 No. 61010-1  
 Recognized to U.S. and Canadian requirements under the Component Recognition Program of Underwriters Laboratories, Inc.  
 UL Listed, File # E137808, UL508, CSA C22.2 No. 14-M95  
 LISTED by Und. Lab. Inc. to U.S. and Canadian safety standards  
 Type 4X Indoor Enclosure rating (Face only), UL50  
 IECCE CB Scheme Test Certificate #US/9257C/UL  
 CB Scheme Test Report #E179259-V01-S02  
 Issued by Underwriters Laboratories, Inc.  
 IEC 61010-1, EN 61010-1: Safety requirements for electrical equipment for measurement, control, and laboratory use, Part 1.  
 IP65 Enclosure rating (Face only), IEC 529

**ELECTROMAGNETIC COMPATIBILITY**  
 Emissions and Immunity to EN 61326: Electrical Equipment for Measurement, Control and Laboratory use.

### Immunity to Industrial Locations:

Electrostatic discharge	EN 61000-4-2	Criterion A	4 kV contact discharge 8 kV air discharge
Electromagnetic RF fields	EN 61000-4-3	Criterion A	10 V/m
Fast transients (burst)	EN 61000-4-4	Criterion A	2 kV power 1 kV signal
Surge	EN 61000-4-5	Criterion A	1 kV L-L, 2 kV L&N-E power
RF conducted interference	EN 61000-4-6	Criterion A	3 V/rms
Power frequency magnetic fields	EN 61000-4-8	Criterion A	30 A/m

### Emissions:

EN 55011 Class A

### Notes:

1. Criterion A: Normal operation within specified limits.

- WEIGHT:** 3.2 oz (100 g)