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MODEL CUB5RT - MINIATURE ELECTRONIC 5-DIGIT RTD METER



- MINIMUM AND MAXIMUM DISPLAY CAPTURE
- LCD, REFLECTIVE OR GREEN/RED LED BACKLIGHTING
- 0.48" (12.2 mm) HIGH DIGITS
- OPTIONAL SETPOINT OUTPUT MODULES
- OPTIONAL SERIAL COMMUNICATION 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

- RTD INPUTS
  RTD types Pt385, Pt392, Ni672, Cu427
- PROGRAMMABLE TEMPERATURE OFFSET
- SELECTABLE °F or °C WITH 1 or 0.1 DEGREE RESOLUTION
- °F OR °C DISPLAY ANNUNCIATORS

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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 CUB5RT accepts an RTD input and provides a temperature display in Celcius or Farenheit. The meter also features minimum and maximum display capture, display offset, °F or °C 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.

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.

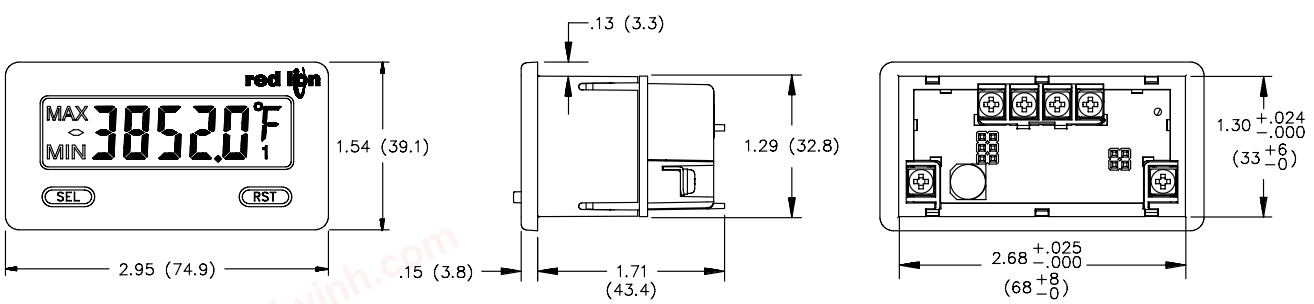
Do not use this meter to directly command motors, valves, or other actuators not equipped with safeguards. To do so can be potentially harmful to persons or equipment in the event of a fault to the meter.

CAUTION: Risk of Danger.
Read complete instructions prior to installationand 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.



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Ordering Information

TYPE	MODEL NO.	DESCRIPTION	PART NUMBER
CUB5	CUB5RT	RTD Meter with Reflective Display	CUB5RTR0
		RTD Meter with Backlight Display	CUB5RTB0
Optional Plug-in Cards	CUB5RLY	Single Relay Output Card	CUB5RLY0
	CUB5SNK	Dual Sinking Output Card	CUB5SNK0
	CUB5COM	RS485 Serial Communications Card	CUB5COM1
		RS232 Serial Communications Card	CUB5COM2
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 98, ME, 2000, XP *	SFCRD200

General Meter Specifications

1. **DISPLAY**: 5 digit LCD 0.48" (12.2 mm) high digits
   CUB5RTR0: Reflective LCD with full viewing angle
   CUB5RTB0: Transmissive LCD with selectable red or green LED backlight, viewing angle optimized. Display color change capability with output state when using an output module.
2. **POWER**: Input voltage range is +9 to +28 VDC with short circuit and input polarity protection. Must use an RLC model MLPS1 or a NEC Class 2 or SELV rated power supply.

MODEL NO.	DISPLAY COLOR	INPUT CURRENT @ 9 VDC WITHOUT CUB5RLY0	INPUT CURRENT @ 9 VDC WITH CUB5RLY0
CUB5RTR0	---	10 mA	40 mA
CUB5RTB0	Red (max intensity)	85 mA	115 mA
CUB5RTB0	Green (max intensity)	95 mA	125 mA

3. **READOUT**:
   Resolution: 1 or 0.1 degrees
   Scale: °F or °C
   Offset Range: -19999 to 19999 display units
4. **RTD INPUTS**:
   Isolation: Input and EXC terminals are not electrically isolated from the power supply or optional comms cards.
   Response Time: 500 msec.
   Failed Sensor Display: OPEN or Short
   Overrange/Underrange Input: OLOL/ULUL
   Overrange/Underrange Display : "....."/"-....."
   Maximum Input Voltage: 30 VDC
   Type: 2, 3 or 4 wire
   Excitation current: 100 ohm range: 165 µA
   10 ohm range: 2.5 mA
   Lead resistance: 100 ohm range: 10 ohm/lead max.
   10 ohm range: 3 ohms/lead max.
   Balanced Lead Resistance: Automatically compensated up to max per lead.
   Unbalanced Lead Resistance: Uncompensated.

INPUT TYPE	RANGE	ACCURACY* (18 to 28°C)	ACCURACY* (0 to 50°C)	STANDARD
100 ohm Pt alpha = .00385	-200 to 850°C	0.4°C	1.6°C	IEC 751
100 ohm Pt alpha = .00392	-200 to 850°C	0.4°C	1.6°C	no official standard
120 ohm Nickel alpha = .00672	-80 to 260°C	0.2°C	0.5°C	no official standard
10 ohm Copper alpha = .00427	-100 to 260°C	0.4°C	0.9°C	no official standard

*After 20 min. warm-up. Accuracy is specified in two ways: Accuracy at 23°C and 15 to 75% RH environment; and Accuracy over a -35 to 75°C and 0 to 85% RH (non condensing) environment. Accuracy specified over the -35 to 75°C operating range includes meter tempco effects. The specification includes the A/D conversion errors and linearization conformity. Total system accuracy is the sum of meter and probe errors. Accuracy may be improved by field calibrating the meter readout at the temperature of interest.

5. **USER INPUT (USR):** Programmable input. Connect terminal to common (USR COMM) to activate function. Internal 10KΩ 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)
6. **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
   IECEE 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:

Emissions	EN 55011	Class A

   Note:
   1. Criterion A: Normal operation within specified limits.
   Refer to EMC Installation Guidelines for additional information.
7. **MEMORY**: Nonvolatile E^2PROM memory retains all programming parameters and max/min values when power is removed.
8. **CONNECTIONS**: Wire clamping screw terminals
   Wire Strip Length: 0.3" (7.5 mm)
   Wire Gage: 30-14 AWG copper wire
   Torque: 5 inch-lbs (0.565 N-m) max.

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9. **ENVIRONMENTAL CONDITIONS**:
   Operating Temperature Range for CUB5TCR0: -35 to 75°C
   Operating Temperature Range for CUB5TCB0 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
Green Display	1 & 2	-35 to 75°C
	3	-35 to 65°C
	4	-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, 5g's.
   Shock According to IEC 68-2-27: Operational 30 g, 11 msec in 3 directions.
   Altitude: Up to 2000 meters

10. **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.
11. **WEIGHT**: 3.2 oz (100 g)

