Install CUB5RT- A
Drawing No. LP1134
Effective 07/2022

Model CUB®5RT - Miniature Electronic 5-Digit RTD Meter

Installation Guide

c UL US LISTED
IND. CONT. EQ.
E137808

UK CA CE

See the Red Lion website at www.redlion.net for full user manual.

SAFETY SUMMARY

All safety related regulations, local codes as well as instructions that appear in this document or on equipment must be observed to ensure personal safety and to prevent damage to either the device or equipment connected to it.

Do not use these products to replace proper safety interlocking. No software-based device (or any other solid-state device) should ever be designed to be responsible for the maintenance of personnel safety or consequential equipment not equipped with safeguards. Red Lion disclaims any responsibility for damages, either direct or consequential, that result from the use of this equipment in a manner not consistent with these specifications.

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

CAUTION: Risk of electric shock.

ORDERING INFORMATION

DESCRIPTION	PART NUMBER
RTD Meter with Reflective Display	CUB5RTR0
RTD Meter with Backlight Display	CUB5RTB0

SPECIFICATIONS

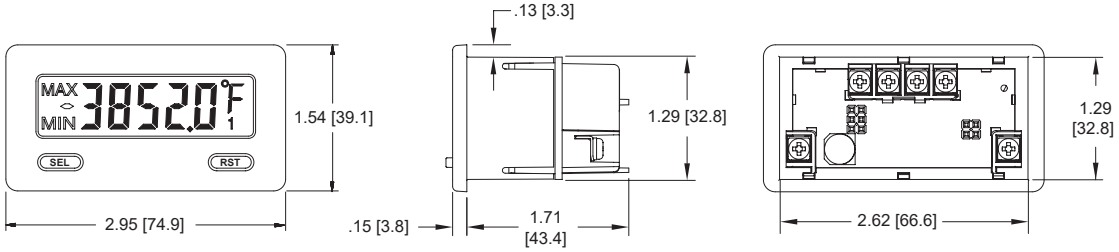
1. **POWER**: Input voltage range is +9 to +28 VDC with short circuit and input polarity protection. Must use an RLC model MLPS or an NEC Class 2 or Limited Power Source (LPS) rated power supply.

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

2. **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.
3. **RTD INPUTS:**
   Isolation: Input and EXC terminals are not electrically isolated from the power supply or optional comms cards.
   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.

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.



Input Type:
100 ohm Pt alpha = .00385 100 ohm Pt alpha = .00392
120 ohm Nickel alpha = .00672 10 ohm Copper alpha = .00427

4. ENVIRONMENTAL CONDITIONS:
Operating Temperature Range for CUB5RTR0: -35 to 75°C
Operating Temperature Range for CUB5RTB0 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 to IEC 68-2-6: Operational 5-500 Hz, 5 g
Shock to IEC 68-2-27: Operational 30 g
Altitude: Up to 2000 meters

5. CERTIFICATIONS AND COMPLIANCES:
CE Approved
EN 61326-1 Immunity to Industrial Locations
Emission CISPR 11 Class A
EN 61010-1: General Requirements
EN 61010-2-030: Particular Requirements for Testing and Measuring Circuits
RoHS Compliant
UL Recognized: File #E179259
UL Listed: File #E137808
Type 4X Indoor/Outdoor Enclosure rating (Face only)
IP65 Enclosure rating (Face only)
IP20 Enclosure rating (Rear of unit)

6. CONNECTIONS: Wire clamping screw terminals
Wire Strip Length: 0.3" (7.5 mm)
Wire Gage: 30-14 AWG copper wire
Torque: 3.5 inch-lbs (0.395 N-m) max.

7. CONSTRUCTION: This unit is rated for Type 4X/IP65 requirements for indoor/outdoor use. Installation Category I, Pollution Degree 2. High impact plastic case with clear viewing window. Panel gasket and mounting clip included.

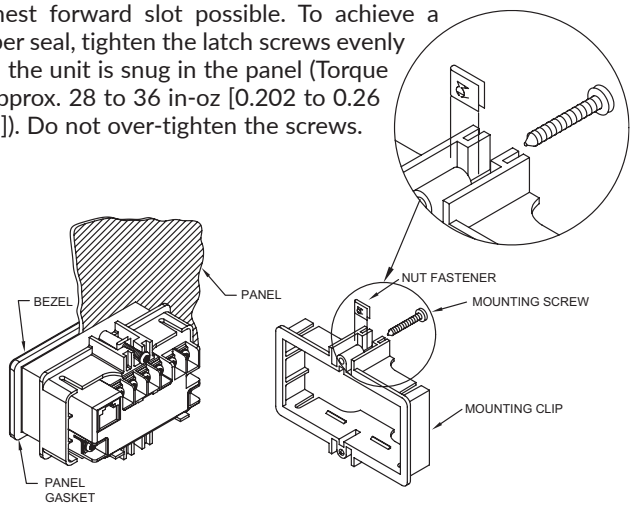
8. WEIGHT: 3.2 oz (100 g)

INSTALLING THE METER

Installation

The meter meets NEMA 4X/IP65 requirements when properly installed. The unit is intended to be mounted into an enclosed panel. Prepare the panel cutout to the dimensions shown. Remove the panel latch from the unit. Slide the panel gasket over the rear of the unit to the back of the bezel. The unit should be installed fully assembled. Insert the unit into the panel cutout.

While holding the unit in place, push the panel latch over the rear of the unit so that the tabs of the panel latch engage in the slots on the case. The panel latch should be engaged in the farthest forward slot possible. To achieve a proper seal, tighten the latch screws evenly until the unit is snug in the panel (Torque to approx. 28 to 36 in-oz [0.202 to 0.26 N-m]). Do not over-tighten the screws.



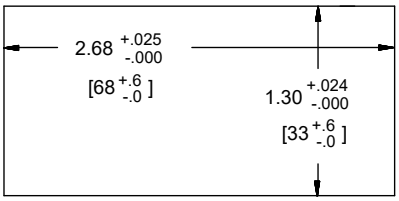
Installation Environment

The unit should be installed in a location that does not exceed the operating temperature and provides good air circulation. Placing the unit near devices that generate excessive heat should be avoided.

The bezel should only be cleaned with a soft cloth and neutral soap product. Do NOT use solvents. Continuous exposure to direct sunlight may accelerate the aging process of the bezel.

Do not use tools of any kind (screwdrivers, pens, pencils, etc.) to operate the keypad of the unit.

PANEL CUT-OUT



SETTING THE JUMPERS

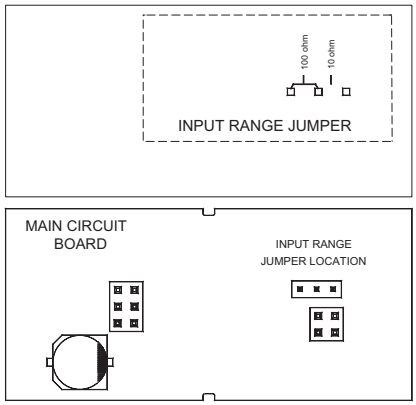
Input Range Jumper

This jumper is used to select the proper input range. The input range selected in programming must match the jumper setting. Select a range that is high enough to accommodate the maximum signal input to avoid overloads. To access the jumper, remove the rear cover of the meter.

WARNING: Exposed line voltage exists on the circuit boards. Remove all power to the meter and load circuits before accessing inside of the meter.

Remove/Replace The Rear Cover

To remove the rear cover, locate the cover locking tab below the 2nd and 3rd input terminals. To release the tab, insert a small, flat blade screwdriver between the tab and the plastic wall below the terminals. Inserting the screwdriver will provide enough pressure to release the tab locks. To replace the cover, align the cover with the input terminals and press down until the cover snaps into place.



WIRING THE METER

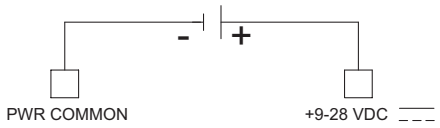
Wiring Overview

Electrical connections are made via screw-clamp terminals located on the back of the meter. All conductors should conform to the meter's voltage and current ratings. All cabling should conform to appropriate standards of good installation, local codes and regulations. It is recommended that the power supplied to the meter (DC or AC) be protected by a fuse or circuit breaker.

Power Wiring

DC Power

+9 to +28 VDC: +VDC
Power Common: -VDC

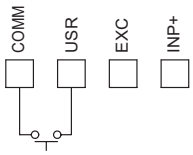


User Input Wiring

Sinking Logic

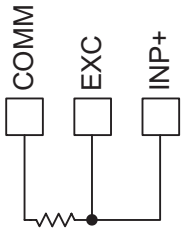
USR COMM
USR
} Connect external switching device between the User Input terminal and User Input Common.

The user input of the meter is internally pulled up to +9 to +28 V with 10 K resistance. The input is active when it is pulled low (<0 .7 V).

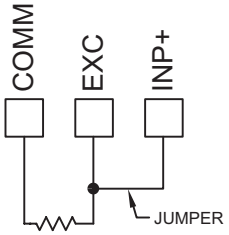


Input Wiring

3-WIRE RTD



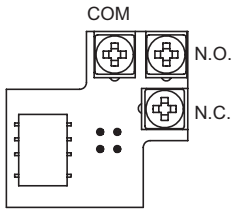
2-WIRE RTD



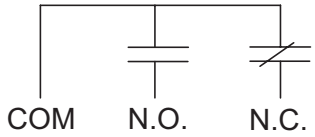
CAUTION: Power input common and sensor input common are NOT isolated from user input common. In order to preserve the safety of the meter application, the power input common and the sensor input common must be suitably isolated from hazardous live earth referenced voltages; or input common must be at protective earth ground potential. If not, hazardous live voltage may be present at the User Inputs and User Input Common terminals. Appropriate considerations must then be given to the potential of the user input common with respect to earth common; and the common of the isolated plug-in cards with respect to input common.

Setpoint (Output) Wiring

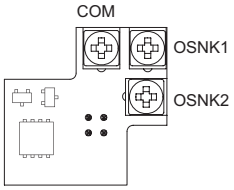
SINGLE SETPOINT RELAY PLUG-IN CARD



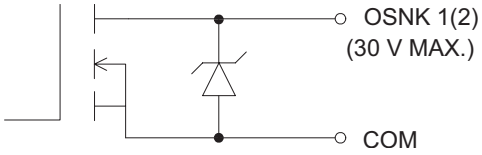
ELECTRICAL CONNECTIONS



DUAL SETPOINT N-FET OPEN DRAIN PLUG-IN CARD



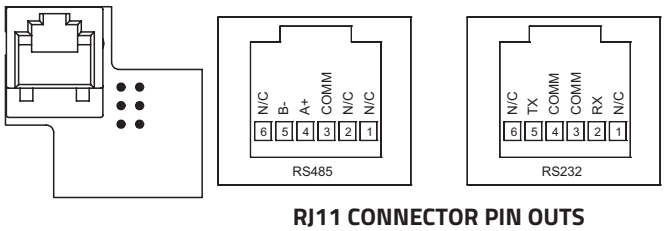
ELECTRICAL CONNECTIONS



Output Common is not isolated from DC Power Common. Load must be wired between OSNK terminal and V+ of the load supply.

Serial Communication Wiring

SERIAL COMMUNICATIONS PLUG-IN CARD



RJ11 CONNECTOR PIN OUTS

RED LION CONTROLS TECHNICAL SUPPORT

If for any reason you have trouble operating, connecting, or simply have questions concerning your new product, contact Red Lion's technical support.

Support: support.redlion.net
Website: www.redlion.net
Inside US: +1 (877) 432-9908
Outside US: +1 (717) 767-6511

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