

MOD-CU UP / DOWN COUNTER



- Available in 3 to 8-digit version
- 2.3", 4", 5", 7" bright red LED display
- Bi-directional counting
- Display stored
- Modbus RTU communication

General description

The MOD CU Display is a versatile display that can increase productivity by offering the plant floor or production area a large visual display of their current status. Whether your measurement is rate, count, or time, the MOD CU can satisfy your requirement application. The MOD CU can be ordered with Modbus RTU communication/bus, making the MOD CU a truly Intelligent Panel indicator.

Safety summary

All safety regulations, local codes and instructions that appear in this and corresponding 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.

The protective conductor terminal is bonded to conductive parts of the equipment for safety purposes and must be connected to an external protective earthing system.



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



CAUTION: Risk of electric shock.

Connection Terminals:

Input terminal: Acc IEC 60947-7-1, IEC 60998-1
Screw terminal 24 ~ 12 AWG / 0.14 – 2.5 mm²
Tightening torque: 0.25 Nm.
Isolation: 4 kV input to power line.

Power Supply:

The display operates at 240 VAC or 110 VAC or 24 VAC 50-60Hz. It is equipped with an 18-gauge, three-wire cord, which should be connected to a properly grounded receptacle. Do not try to defeat the grounding.

General Specifications

Display: Red LED seven segments (refer to ordering)
Display: 3 - 8 segments
Power source: work with wide voltage Ranges, noise protected (refer to ordering information).
Fuse: S.B. 1A 6x30
Operating Temp: -25°C to 55°C
Storage Temp: -40°C to 75°C
Relative Humidity: 0 to 90% non-condensing
Case: Aluminum black powder glass with red Acrylic front glass.
Case dimensions: refer to case dimensions table 1.2.
Visible: 40-160m.
Front protection: IP65
Case protection: refer to ordering.

Certification, Compliance, safety & electromagnetic compatibility

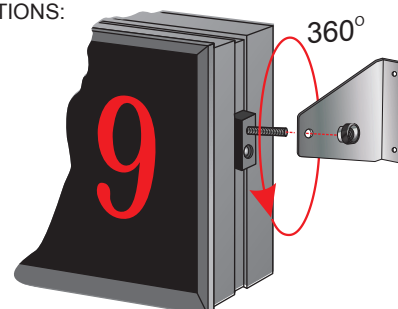
IEC 61010-1, EN 61010-1: Safety requirements for electrical equipment for measurement, control, and laboratory use, Part 1.
IP65 Enclosure rating (Face only), IEC 529
EMC specifications determined by the CU module.

Installation Environment

The unit should be installed in a location that does not exceed the operating temperature. Placing the unit near devices that generate excessive heat should be avoided. The unit should only be cleaned with a soft cloth and neutral soap product. Do NOT use solvents. Continuous exposure to direct sunlight may the front overlay. Do not use tools of any kind (screwdrivers, pens, pencils, etc.) accelerate the aging process of to operate the keypad of the unit.

CU MOUNTING INSTRUCTIONS:

This display is designed to be wall mounted or suspended from a ceiling truss or other suitable structure capable of supporting the MOD-CU. Caution should be exercised when hanging the display to provide for the safety of personnel.



Control input wiring

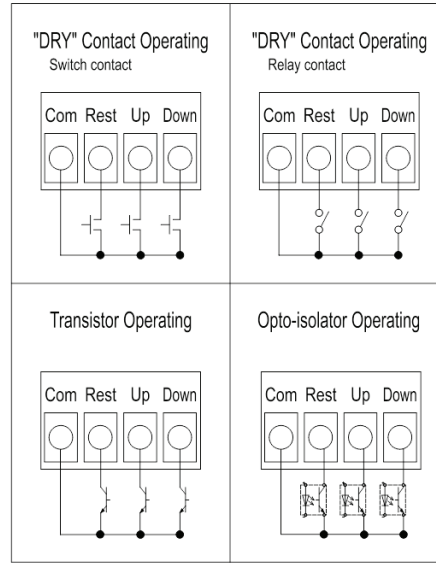
The CU provides a number of control inputs, including Reset, Up and Down control. These inputs are active low (connected to Common), so the external switching device should be connected between the Control input and common terminals.

Up – accept pulses from a variety of sources including Switch contacts, and debouncing internally

Down - accept pulses from a variety of sources including Switch contacts, and debouncing internally

Reset - When this input is pulled low, the meter will reset to zero. If the input remains low or connected to common, the meter will be held in the reset mode, And not able to count.

1.1 INPUT WIRING

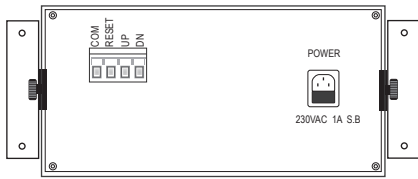


Ordering information

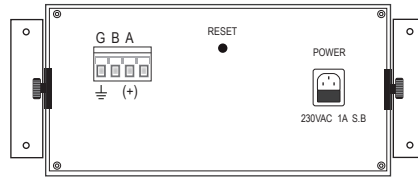
MOD-CU	Volt	Segment height	Number of segments	Color	Sealed	Operation
1	240VAC	A 2.3"	1	1 Black	Se Sealed IP67	1 Refer to Table 1.1
2	110VAC	B 4"	2	2 White	Nil Sealed IP62	2 Serial input RS485 Modbus RTU
3	24VAC	C 5"	3			
		D 7"	4			
			5			
			6			
			7			
			8			

TYPE	MODEL NO.	DESCRIPTION	PART NUMBER
Basic	CU	2.23" high 3-digits red led counter 240 VAC (box color) black Sealed IP62 Digital operation	CU 240V A 3 1 NIL 1
		2.23" high 6-digits red led counter 240 VAC (box color) black Sealed IP62 Digital operation	CU 240V A 6 1 NIL 1
		4" high 4-digits red led counter 240 VAC (box color) black Sealed IP67 Digital operation	CU 240V B 4 1 Se 1
		4" high 3-digits red led counter 110 VAC (box color) white Sealed IP62 Digital operation	CU 110V B 3 2 NIL 1
Modbus Communication	CU	2.23" high 3-digits red led counter 240 VAC (box color) black Sealed IP62 RS485 Modbus Communication	CU 240V A 3 1 NIL 2
		4" high 4-digits red led counter 240 VAC (box color) black Sealed IP67 RS485 Modbus Communication	CU 240V B 4 1 Se 2

Back panel connection UP / DOWN COUNTER

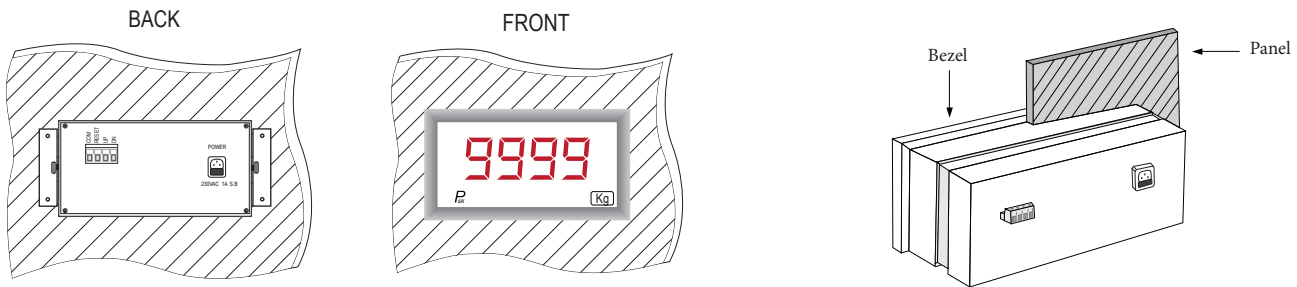


Back panel connection Modbus COUNTER

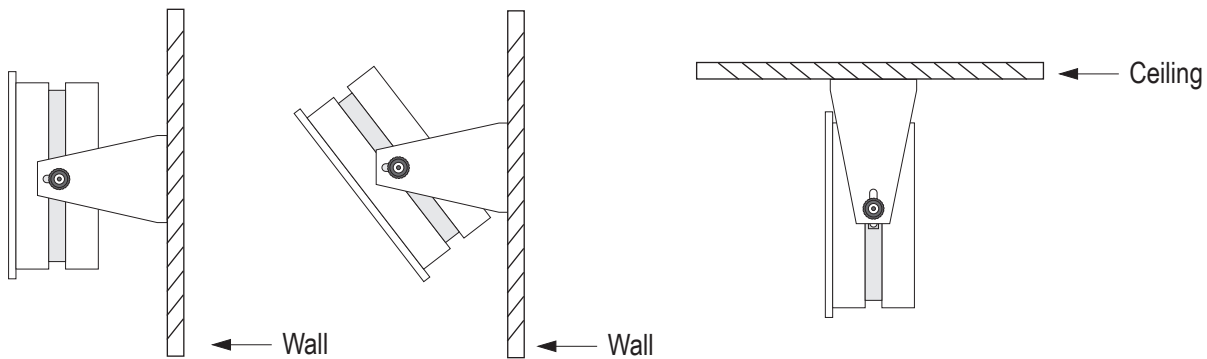


Installation Environment

1. Panel installation:

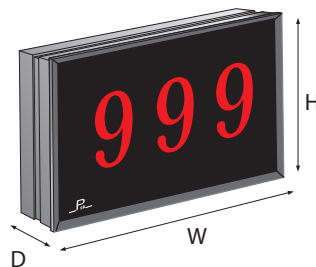


2. Indors/outdoors installation:



1.2 Dimensions (mm):

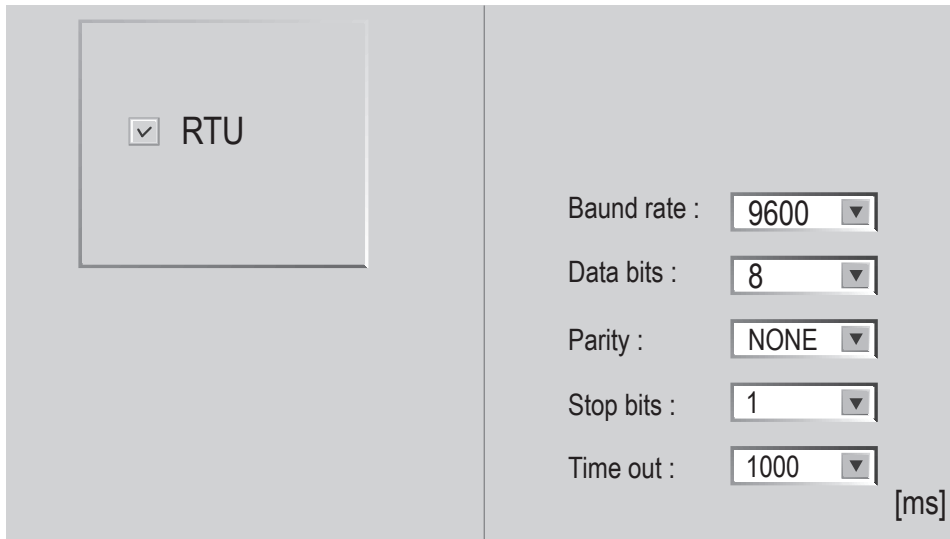
		3	4	5	6	8
2.3"	H	140	140	140	140	140
	W	265	315	360	360	445
	D	106	106	106	106	106
4"	H	200	200	200	200	200
	W	390	480	570	670	730
	D	106	106	106	106	106
5"	H	260	260	260	260	260
	W	445	560	670	730	940
	D	106	106	106	106	106
7"	H	320	320	320	320	320
	W	670	830	1030	1260	1450
	D	106	106	106	106	106



Modbus RTU Display Network

1 Initial state.

- Bound rate: 9600, 8 bit, parity NONE, Stop bit 1.
- Modbus Node ID: 25 .
- Mode: RTU.



The screenshot shows a configuration window for a Modbus RTU device. On the left, there is a checkbox labeled 'RTU' which is checked. On the right, there are five dropdown menus for configuring communication parameters: 'Baund rate' (9600), 'Data bits' (8), 'Parity' (NONE), 'Stop bits' (1), and 'Time out' (1000). The 'Time out' field has a '[ms]' label to its right.

2 Node ID change.

- To change device ID (Modbus node ID) you have to write into Register-1 Address (40001).
- Valid address set: 3-254 (address 255 is reserved for internal needs).

3 Bound rate change.

- To change bound rate you have to write into register 2 (40002).
- Valid address
 - 0 - 1200
 - 1 - 2400
 - 2 - 4800
 - 3 - 9600
 - 4 - 19200
 - 5 - 28800
 - 6 - 57600

4 Data enter.

- Write data to the device (Modbus node ID) you have to write into Registers:

2 Led Display Address: Register (40003)

40003

9 9

bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
name	x	x	x	x	x	x	x	x	MSB							LSB

3 Led Display Address: Register (40003)

40003

9 9 9

bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
name	x	x	MSB													LSB

4 Led Display Address: Register (40003)

40003

9 9 9 9

bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
name	MSB															LSB

5 Led Display

First Address Register (40003)

40004

40003

9 9 9 9 9

bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
name																LSB

Second Address Register (40004)

bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
name	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	MSB

6 Led Display

First Address Register (40003)

40004

40003

9 9 9 9 9 9

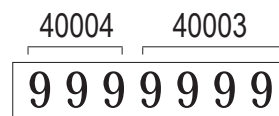
bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
name																LSB

Second Address Register (40004)

bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
name	x	x	x	x	x	x	x	x	x	x	x	x	MSB			

7 Led Display

First Address Register (40003)



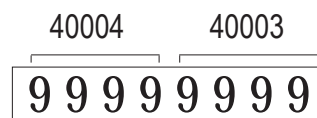
bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
name																LSB

Second Address Register (40004)

bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
name	x	x	x	x	x	x	x	x	MSB							

8 Led Display

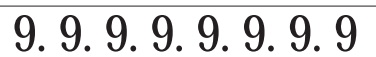
First Address Register (40003)



bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
name																LSB

Second Address Register (40004)

bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
name	x	x	x	x	x	MSB										



DP Address Register (40005)



bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
name	x	x	x	x	x	x	x	x	x	MSB						LSB

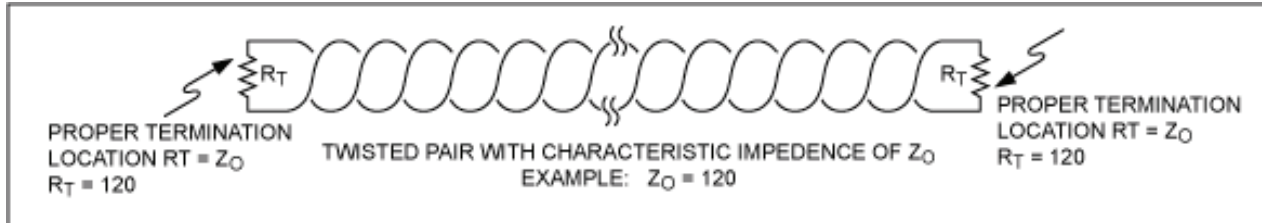
Legend:

- LSB - Last Significant Bit
- MSB - Most Significant Bit
- LDP - Left DP
- RDP - Right DP
- x - not in use



5 Termination Resistors.

Because of the high frequencies and the distances involved, proper attention must be paid to transmission-line effects. The value of the terminating resistor is ideally the same value as the characteristic impedance of the cable.



6 Network connection.

- Wiring: Shielded twisted per.
- Cable maximum length: 1200M.
- Slave PLC connection: serial connection “Daisy Chain”.
- Each PLC has one address.
- PLC appliance sold to customers with Default address (25), can be change by the client.
- Number of PLC slaves can be connected to one chain: up to 32.

Shielding

Always shield a Modbus over Serial Line Cable. At one end of each cable its shield must be connected to protective ground. If a connector is used at this end, the shell of the connector is connected to the shield of the cable.

Cable specification

A RS485-Modbus must use a balanced pair (for D0-D1) and a third wire (for the Common). For the balanced pairs used in an RS485-system, a Characteristic Impedance with a value 120 Ohms must be used.

