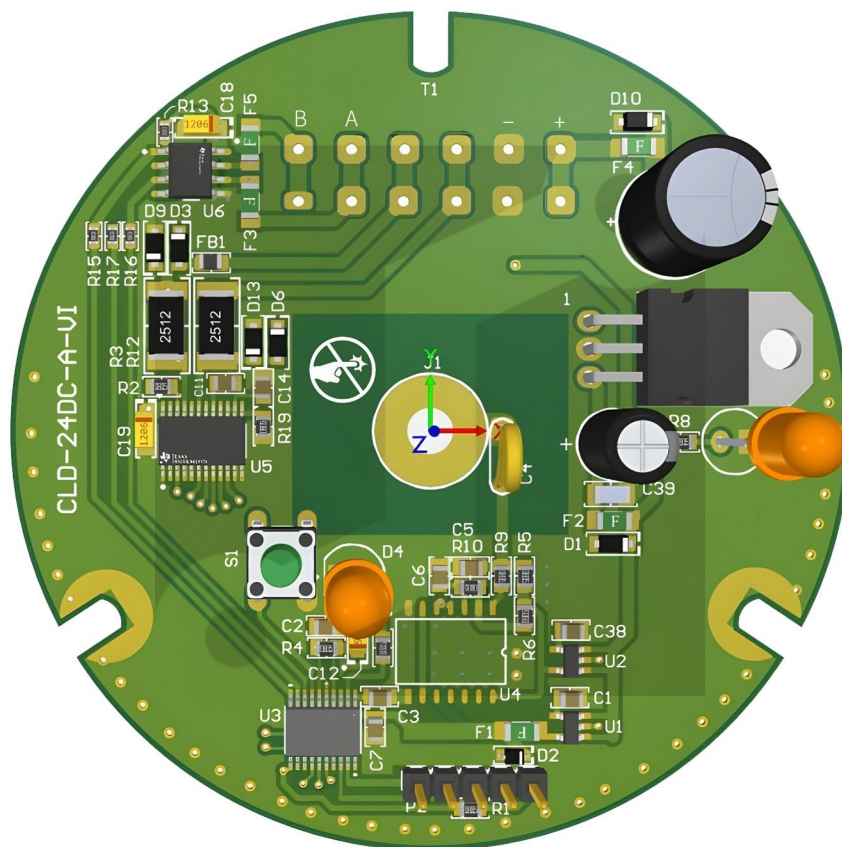


DATASHEET

Modbus RTU Capacitive Level Sensor Module



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1. General Description

This device is an industrial sensor module with Modbus RTU communication. It provides a 32-bit sensor value and configurable communication parameters via Modbus holding registers.

2. Electrical & Communication Specifications

Supply Voltage	24V DC
Protocol	Modbus RTU
Function Codes	03 (Read Holding Registers) , 06 (Write Single Register)
Physical Layer	RS 485
Sensor Refresh Rate	500 ms

3. default communication setting

Parameter	Default Value
Station Address	5
Baud Rate	9600
Parity	0
Stop Bit	1

4. Modbus Register Map

Setting communication parameters (station address, baud rate, etc.) via function Code 03 (Read Holding Registers) and function Code 06 (Write Single Register)

Register 0	Slave Address
Address	0
Description	Modbus slave address
Range	1 – 250
Access	R/W
Default	5

Register 1	Baud Rate
Address	1
Description	Communication baud rate
Values	0:115200, 1:57600, 2:38400, 3:19200, 4:9600, 5:4800
Access	R/W
<u>Default</u>	4 (9600)

Register 2	Parity
Address	2
Description	UART parity configuration
Values	0:None, 1:Even, 2:Odd
Access	R/W
<u>Default</u>	0

Register 3	Stop Bit
Address	3
Description	UART stop bit configuration
Values	0:1 Stop, 1:1.5 Stop, 2:2 Stop
Access	R/W
<u>Default</u>	0

Register 4	Sensor Value High Word
Address	4
Description	High 16 bits of 32-bit sensor value
Data Type	UInt16
Access	Read Only

Register 5	Sensor Value Low Word
Address	5
Description	Low 16 bits of 32-bit sensor value
Data Type	UInt16
Access	Read Only

5. Sensor Data Format

The sensor output is a 32-bit unsigned integer composed of two consecutive holding registers:

Sensor Value = (Register 4 << 16) | Register 5

6. Modbus RTU Frame Examples

Example1: Read Sensor Value (Registers 4 and 5)

Request:

Slave Address : 0x05

Function Code : 0x03

Start Address : 0x0004

Quantity : 0x0002

Frame (Hex) : 05 03 00 04 00 02 CRC_L CRC_H

Response (Example) :

05 03 04 00 12 34 56 CRC_L CRC_H

Example 2 : Write Baud Rate = 9600 (Register 1)

Request:

Slave Address : 0x05

Function Code : 0x06

Register Addr : 0x0001

Value : 0x0004

Frame (Hex) : 05 06 00 01 00 04 CRC_L CRC_H

7. Button & LED Behavior

After powering up, the LED stays OFF for 3 seconds and then starts blinking (1s ON / 1s OFF), indicating that the device is ready for Modbus communication.

Pressing and holding the button for more than 3 seconds turns the LED ON continuously. After releasing the button, the LED turns OFF and, after a 2-second delay, starts blinking.

At this stage, a power reset is required to reset the setting parameters to their default values.

8. Important Notes

- After changing communication parameters via Modbus, power reset is required.
- After resetting communication parameters via button, power reset is required.
- All registers are accessed as Holding Registers