

RS485 Liquid level Transmitter Manual

SL01

V1.2



1. Product Overview	3
1.1 Introduction	3
1.2 Features	3
1.3 Working Principle	3
1.4 Application	4
1.5 Technical parameters.....	4
2.Wiring.....	5
2.1 4~20mA wiring instructions (two-wire system)	5
2.2 RS-485 wiring instructions:	5
3. Communication Protocol	5
3.1 Read level value command.....	5
3.2 Read current value command	6
3.3 Read meter range command	7
3.4: Modify ID command.	7

1. Product Overview

1.1 Introduction

The SL01 liquid level transmitter is developed with advanced diffusion silicon transmitter from NOVO Company of United States and IC TRANSMITTERS circuit technology.

It applies two world cutting-edge technologies of silicon fine etching process and silicon wafer lamination, and is a high-quality static pressure liquid level measuring instrument.

It meets the needs of industrial automation and metering automation in some industries for high-precision liquid level detection instruments.

1.2 Features

High precision;

It is directly put into the measured medium, which is quite convenient to install and use;

Solid structure, no moving parts, high reliability, long service life;

It can perform high-precision measurement from water, oil to paste with high viscosity, and is not affected by the foaming, deposition, and electrical characteristics of the measured medium, has no material fatigue and wear;

Not sensitive to vibration and impact.

1.3 Working Principle

Static pressure measurement principle:

When the liquid level transmitter is put into a certain depth in the measured liquid, the pressure on the liquid surface of transmitter is

$$P=\rho\cdot g\cdot h+P_0$$

P: pressure on the liquid surface of the transmitter; Unit: Pa;

ρ : density of liquid to be tested; Unit: kg/m³;

g: local gravity acceleration; Unit: m/s²;

P₀: atmospheric pressure on the liquid surface; Unit: Pa;

H: depth of the transmitter into the liquid level; Unit: m;

At the same time, the atmospheric pressure P₀ on the liquid surface is introduced into

the back pressure chamber of the transmitter through the air guide cable to offset the P0 on the liquid surface of the transmitter, so that the pressure measured by the transmitter is $P=\rho \cdot g \cdot h$. Obviously, by measuring the pressure P , the liquid level depth h can be obtained. The pressure signal sensed by the transmitter is converted and amplified by the circuit, and output as a standard signal after compensation.

1.4 Application

It is widely used in liquid level measurement in petroleum, chemical industry, metallurgy, environmental protection, food, water conservancy, urban water supply, oil field and other industries.

1.5 Technical parameters

Name	Parameter
Range	0~100m
Accuracy	0.2%F.S 0.5%F.S
Working Voltage	DC: 12V~36V
Overload Capacity	Less than 2 times the rated range
Working temperature	0℃~50℃
Signal output mode	RS-485 (Modbus RTU) Or 4~20mA
Zero temperature drift	0.03%FS/℃ (≤100KPa); 0.02%FS/℃ (>100KPa);
Full scale temperature drift:	0.03%FS/℃(≤100KPa); 0.02%FS/℃ (>100KPa);

2. Wiring

2.1 4~20mA wiring instructions (two-wire system)

Red wire	Black wire
positive +	negative -

2.2 RS-485 wiring instructions:

Red wire	Black wire		White wire	Blue wire
positive +	GND		485A	485B

Note: The actual product wire, subject to the label on the back of the product.

3. Communication Protocol

3.1 Read level value command

There are 2 commands to read the level value:

A)

Send: ID 04 00 02 00 02 CRC_L CRC_H

Receive: ID 04 04 XX1 XX2 XX3 XX4 CRC_L CRC_H

All in hexadecimal format (same below)

XX1 XX2 XX3 XX4 is the liquid level value represented by 4 bytes.

CRC_L CRC_H is Low byte and high byte of CRC check respectively.

Note: The factory default ID is 01, and the corresponding CRC_L and CRC_H are D0 0B

Example:

send command as below

Address	FunctionCode	Start Register	Register Length	CRC Check
0x01	0x04	0x00 0x02	0x00 0x02	0xD0 0x0B

receive command as below

Address	Function Code	Data Length	Level value		CRC Check
0x01	0x04	0x04	0x42 0x48	0x00 0x00	0x6F 0xEA

Among them: 42 48 00 00 represents the liquid level value, which is a 4-byte hexadecimal floating-point number format, which is converted into a decimal floating-point number: 50dm (decimeter). The liquid level unit is dm (decimeter).

Note: The conversion of liquid level value, current value, range, etc. mentioned in this document is the conversion between hexadecimal and decimal floating point numbers! ! !

B)

Send: ID 03 00 0B 00 02 CRC_L CRC_H

Receive: ID 03 04 XX1 XX2 XX3 XX4 CRC_L CRC_H

XX1 XX2 XX3 XX4 is the liquid level value represented by 4 bytes.

CRC_L CRC_H is Low byte and high byte of CRC check respectively.

Note: The factory default ID is 01, and the corresponding CRC_L and CRC_H is B5 C9

Example:

send command as below

Address	FunctionCode	Start Register	Register Length	CRC Check
0x01	0x03	0x00 0x0B	0x00 0x02	0xB5 0xC9

receive command as below

Address	Function Code	Data Length	Level value		CRC Check
0x01	0x03	0x04	0x42 0x48	0x00 0x00	0x6F 0xEA

3.2 Read current value command

Send: ID 04 00 03 00 02 CRC_L CRC_H

Receive: ID 04 04 XX1 XX2 XX3 XX4 CRC_L CRC_H

XX1 XX2 XX3 XX4 is the liquid level value represented by 4 bytes.

CRC_L CRC_H is Low byte and high byte of CRC check respectively.

Note: The factory default ID is 01, and the corresponding CRC_L and CRC_H is 81 CB

3.3 Read meter range command

Send: ID 03 00 01 00 04 CRC_L CRC_H

Receive: ID 03 08 XX1 XX2 XX3 XX4 YY1 YY2 YY3 YY4 CRC_L CRC_H

XX1 XX2 XX3 XX4 is the upper limit of the range

YY1 YY2 YY3 YY4 is the lower limit of the range

CRC_L CRC_H Low byte and high byte of CRC check respectively.

Note: The factory default ID is 01, and the corresponding CRC_L and CRC_H is 15 C9

3.4: Modify ID command

Send: ID 06 00 01 00 XX CRC_L CRC_H

XX is the new ID number