

MODBUS Pressure Level Transmitter Communication Protocol

Overview

This protocol complies with the MODBUS communication protocol, and uses the subset RTU mode in the MODBUS protocol. RS485 half-duplex working mode.

Serial Data Format:

Serial port setting: no parity, 8-bit data, 1 stop bit.

Example: 9600,N,8,1 Meaning: 9600bps, no parity, 8 data bits, 1 stop position.

The serial port baud rate supported by this transmitter is:

1200,2400,4800,9600,19200,38400,57600,115200

CRC check polynomial: 0xA001.

The data in the data communication process is all processed according to double-byte signed integer data. If the data identifies a floating point number, the decimal point needs to be read to determine the size of the data.

Communication Format:

1.1. Read Command Format (03 function code)

1.2. A.Example of read command format:

Transmitter address	Function Code	Data start address(H)	Data start address(L)	Number of data High byte(H)	Number of data Low byte(L)	CRC16 Low byte(L)	CRC16 High byte(H)
0x01	0x03	0x00	0x00	0x00	0x01	0x84	0x0A

B.Example of data format returned by read command:

Transmitter address	Function Code	Data length	Return data High byte(H)	Return data Low byte(L)	CRC16 Low byte(L)	CRC16 High byte(H)
0x01	0x03	0x02	0x00	0x01	0x79	0x84

2. Write Command Format (06 Function Code)

A. Write command format example:

Transmitter address	Function Code	Data start address(H)	Data start address(L)	Write data High byte(H)	Write data Low byte(L)	CRC16 Low byte(L)	CRC16 High byte(H)
0x01	0x06	0x00	0x00	0x00	0x02	0x08	0x0B

B. Example of the format of the read data returned by the write command:

Transmitter address	Function Code	Data start address(H)	Data start address(L)	Data input High byte(H)	Write data Low byte(L)	CRC16 Low byte(L)	CRC16 High byte(H)
0x01	0x06	0x00	0x00	0x00	0x02	0x08	0x0B

3. Error and abnormal command response return data format:

Transmitter address	Function Code	Exception code	CRC16 Low byte(L)	CRC16 High byte (H)
0x01	0x80 + Function Code	0x01: (Illegal function) 0x02: (Illegal data address) 0x03: (Illegal data)		

Function code and data address list:

Read data function code: 0x03 (Corresponding data address list)					
Function code	Data start address	Number of data	Number of data bytes	Data range	Instruction meaning
0x03	0x0000	1	2	1-255	Read slave address
0x03	0x0001	1	2	0-1200 1-2400 2-4800 3-9600 4-19200 5-38400 6-57600 7-115200	Baud rate reading
0x03	0x0002	1	2	1- Without 2- CM 3- MM 4- MPa 5- Pa 6- KPa 7- MA	Pressure unit
0x03	0x0003	1	2	0-#### 1-###.# 2-##.## 3-#.###	The decimal point represents 0-3 decimal points respectively
0x03	0x0004	1	2	-32768-32767	Output Value

0x03	0x0005	1	2	-32768-32767	Transmitter range zero point
0x03	0x0006	1	2	-32768-32767	Transmitter range full point
Write data function code: 0x06 (Corresponding data address list)					
Function code	Data start address	Number of data	Data byte	Data range	Instruction meaning
0x06	0x0000	N/A	2	1-255	Rewrite slave address
0x06	0x0001	N/A	2	0-1200 1-2400 2-4800 3-9600 4-19200 5-38400 6-57600 7-115200	Modify the baud rate

Precautions:

1. When you modify the baud rate, the slave will reply as the old baud rate. After reply, the baud rate has been changed to new one you set.
2. When you modify the address, the slave will reply as the old address. After reply, the address has been changed to new one you set.
3. What you can modified is ONLY two: Baud rate and address.

Read command:

Read baud rate:

Send: 01 03 00 01 00 01 D5 CA

Reply: 01 03 02 00 03 F8 45

Read address:

Send: 01 03 00 00 00 01 84 0A

Reply: 01 03 02 00 01 79 84

Read pressure unit:

Send: 01 03 00 02 00 01 25 CA

Reply: 01 03 02 00 02 39 85

Read decimal point:

Send: 01 03 00 03 00 01 74 0A

Reply: 01 03 02 00 00 B8 44

Read output value:

Send: 01 03 00 04 00 01 C5 CB

Reply: 01 03 02 FF EF B8 38 (FF FF means no pressure)

Normal reply: 01 03 02 02 52 38 D9

Read range zero point:

Send: 01 03 00 05 00 01 94 0B

Reply: 01 03 02 00 00 B8 44

Read range full point:

Send: 01 03 00 06 00 01 64 0B

Reply: 01 03 02 03 E8 B8 FA

Modify command:

Modify address:

Send: 01 06 00 00 00 02 08 0B

Reply: 01 06 00 00 00 02 08 0B

Modify baud rate:

Send: 02 06 00 01 00 02 59 F8

Reply: 02 06 00 01 00 02 59 F8