The following is the communication protocol between the software and the transmitter. List the items that the user needs to work with.

Modbus Pressure Transmitter Communication Protocol

Ⅰ.Summary：

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

II. Serial data format: Serial port settings: no verification, 8 bits of data, 1 stop bit.

Example: 9600,N,8,1 means: 9600bps, no check, 8 data bits, 1 stop bit.

The port wave rate supported by this transducer is 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200

Polynomial of CRC check: 0xA001.

In the process of data communication, all data are processed according to double-byte shaped data. If the data identifies floating-point numbers, it is necessary to read decimal points to determine the data size.

III. Communication format:

1. Example of reading command format (03 function code)

 A. send read command format:

Address	function code	Originate date (H)	Originate date (L)	Number of data(H)	Number of data(L)	CRC16 (L)	CRC16 (H)
0X01	0X03	0X00	0X00	0X00	0X01	0X84	0X0A

 B. Return to read data format: example

Address	function code	Data length	Date (H)	Date (L)	CRC16 (L)	CRC16 (H)
0X01	0X03	0X02	0X00	0X01	0X79	0X84

2. Example of writing command format (06 function code)

Address	function code	Data length(H)	Originate date (L)	Date (H)	Date (L)	CRC16 (L)	CRC16 (H)
0X01	0X06	0X00	0X00	0X00	0X02	0X08	0X0B

 B. Return to read data format: example

Address	function code	Data length(H)	Originate date (L)	Date (H)	Date (L)	CRC16 (L)	CRC16 (H)
0X01	0X06	0X00	0X00	0X00	0X02	0X08	0X0B

3. The abnormal response returns

Address	function code	Abnormal code	CRC16 (L)	CRC16 (H)
0X01	0X80 + function code	0x01(Illegal function) 0x02(Illegal data address) 0x03(Illegal data)		

Iv. supported commands and meanings of commands and data:

MODBUS-RTU protocol commands are listed as follows:

function code	Data start Address	Number of data	Data byte	scope of data	Instruction meaning
0x03 Function code reads data					
0x03	0x0000	1	2	1-255	Read the 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	0x0003	1	2	0-#### 1-###.# 2-##.## 3-#.###	Decimal points represent 0-3 decimal points respectively
0x03	0x0002	1	2	Mpa Kpa Pa Bar Mbar kg/cm2 psi mh2o mmh2o	pressure unit
0x03	0x0004	1	2	-32768-32767	Measure the output value
0x03	0x0005	1	2	-32768-32767	Transmitter range zero
0x03	0x0006	1	2	-32768-32767	Transmitter full range point
0x03	0x000c	1	2	-32768-32767	The zero offset value is generally 0 at the factory
0x06 Write data with function code					
0x06	0x0000		2	1-255	Override slave address
0x06	0x0001		2	0-1200 1-2400 2-4800 3-9600 4-19200 5-38400 6-57600 7-115200	Modify baud rate
0x06	0x000c		2	-32768-32767	Zero offset value. Pressure output value =

					calibration measurement value+zero offset value
Save and restore the factory					
0x06	0x000F		2	0- Save to user area	
0X06	0x0010		2	1- Return factory parameters	

Example: the slave address is 1, and CRC is the calculated CRC code, not the three characters of CRC. Read slave address:

Send: 010300000001CRC

return: 0103020001CRC

Read the pressure value:

Send: 010300040001CRC

Return: 0103020012CRC,0012 is the measured value. According to the format in front of the document, 00 is the upper 8 bits, and 12 is the lower 8 bits, which together is a 16-bit signed number.

Modify the address: change to 2

Send: 010600000002CRC

Return: 010600000002CRC. After the return, the transmitter address becomes 2 instead of 1.

Save and compile data:

Send: 0206000F0000CRC.

Return: 0206000F0000CRC. It indicates that data has been saved after power failure, such as modified address.

Description:

1. When the baud rate is modified, the transmitter will reply the modified data with the baud rate sent by the host. After the reply, the baud rate of the transmitter will become the modified target value.

2. When modifying the address, the data will be replied with the address before modification, and the transmitter address will be automatically modified after the reply.

3. Saving and replying the factory command will return the original value, indicating that the transmitter has accepted the command of the host.

4. When restoring factory data, it should be noted that the parameters saved by the factory may be inconsistent with those saved by the user, so the address, baud rate and calibration data may be inconsistent, so the transmitter must be searched again after restoring the factory parameters.

5. There are only three data that users can modify, namely address, baud rate and zero offset value.

6. If the data to be read is identified by floating-point numbers, such as 6.000, but this agreement stipulates that the data are all communicated by shaped data, so the read data is 6000, and then

6.000 can be obtained by operation according to the decimal point position. For example, the decimal point is 3, which means 6000/10(3), that is, 6000 divided by. 10 to the third power, we get the data of 6.000.

7. Modify the address or baud rate, reset the value, etc. Finally, a save instruction must be sent to save in case of power failure.

8. Save instruction: 0106000F0000CRC. The slave address and CRC will change. Please use professional CRC calculation software to calculate the CRC value.