

**Pressure Transmitter  
IQPT  
MPM47  
MODBUS  
Communication Protocol**

# Table of Content

<b>1</b>	<b>Communication parameters.....</b>	<b>3</b>
<b>2</b>	<b>Table of Register Address.....</b>	<b>3</b>
2.1	How to read pressure/level value.....	4
2.2	How to read temperature value .....	4
2.3	How to read pressure/level & temperature value .....	4
<b>3</b>	<b>Function Codes Supported .....</b>	<b>5</b>
3.1	Description.....	5
<b>4</b>	<b>MODBUS Protocol Format .....</b>	<b>5</b>
4.1	Reading register and responses.....	5
4.2	Writing single register and responses .....	5
4.3	Writing multiple register and responses .....	6
4.4	Exception response.....	6
<b>5</b>	<b>Save user data and Restore factory settings .....</b>	<b>6</b>
5.1	Save.....	6
5.2	Restore.....	

## 1 Communication parameters

8 data bits, 1 stop bit, without verification. It adopts 16-bit CRC verification, the least-significant byte is assigned in the front and the most significant byte is assigned at the back.

## 2 Table of Register Address

Modbus address /Actual address (16-bit)	Parameter description	Register amount	Data type	Specifications
0x00	Reserved	1	Short	
0x01	Device address	1	Short	Random device address. 0x00 is the general address. Address 0x01- 0x99 as a hexadecimal number without letters can be configurable.
0x02	BAUD	1	Short	0x00 - 1200 0x01 - 2400 0x02 - 4800 0x03 - 9600 default value
0x03	UNIT (physical unit)	1	Short	0x00 - kPa 0x01 - Mpa 0x02 - mH <sub>2</sub> O 0x03 - Bar 0x04 - Psi 0x05 - mBar 0x06 - kgf/cm <sup>2</sup> 0x07 - cmHg 0x08 - atm 0x09 - Pa 0x0A - inH <sub>2</sub> O 0x0B - inHg
0x0A	Analog zero trim	1	Short	
0x0B	Analog full scale trim	1	Short	
0x10	Digital output zero point	2	Float	
0x12	Digital output full scale	2	Float	
0x14	Analog output zero point	2	Float	
0x16	Analog output full scale	2	Float	
0x18	Linear offset	2	Float	
0x1A	Analog output status	1	Short	0x00 - Current output value 0x40 - Analog zero output 0x80 - Analog full scale output
0x1C	Serial Number	4	Short	

0x20	Type code of devices	4	Short	
0x24	Pressure/level	2	Float	
0x26	Real time temperature	2	Float	

### 2.1 How to read pressure/level value

Send: 01 03 00 24 00 02 84 00

Reply: 01 03 04 **F5 C3 40 48** 08 35

4-byte Float, single-precision floating-point number reach IEEE-754 standard

Byte No.	1	2	3	4
Byte data	0xF5	0XC3	0x40	0x48

Decoding result: hexadecimal 0x4048F5C3, i.e., a float point number 3.14

### 2.2 How to read temperature value

Send: 01 03 00 26 00 04 A5 C2

Reply: 01 03 04 **00 00 42 4E** 4A A7

4-byte Float, single-precision floating-point number reach IEEE-754 standard

Byte No.	1	2	3	4
Byte data	0x00	0X00	0x42	0x4E

Decoding result: hexadecimal 0x424E0000, i.e., a float point number 51.5

### 2.3 How to read pressure/level & temperature value

Send: 01 03 00 24 00 04 04 02

Reply: 01 03 08 **F5 C3 40 48 00 00 42 4E** F7 FA

4-byte Float, single-precision floating-point number reach IEEE-754 standard

Byte No.	1	2	3	4	5	6	7	8
Byte data	0xF5	0XC3	0x40	0x48	0x00	0X00	0x42	0x4E

Decoding result: hexadecimal 0x4048F5C3, 0x424E0000, i.e., float point number are 3.14 and 51.5

## 3 Function Codes Supported

### 3.1 Description

Function code	Function description
0x03	Reading register
0x06	Setting single register
0x10	Setting multiple register

## 4 MODBUS Protocol Format

### 4.1 Reading register and responses

0x03 Reading register format:

Slave device address	Function code	Starting register address	No. of registers accessed	16-bit CRC
1 Byte	1 Byte	2 Byte	2 Byte	2 Byte
XX	03	XX XX	XX XX	XX XX

0x03 Reading register response format:

Slave device address	Function code	No. of bytes	No. of data bytes returned	16-bit CRC
1 Byte	1 Byte	1 Byte	N*2 Byte	2 Byte
XX	03	XX XX	XX... .. XX	XX XX

### 4.2 Writing single register and responses

0x06 Writing single register format:

Slave device address	Function code	Starting register address	Writing Contents	16-bit CRC
1 Byte	1 Byte	2 Byte	2 Byte	2 Byte
XX	06	XX XX	XX XX	XX XX

0x06 Writing single register response format:

Slave device address	Function code	Register address	Writing Contents	16-bit CRC
1 Byte	1 Byte	2 Byte	2 Byte	2 Byte
XX	06	XX XX	XX XX	XX XX

### 4.3 Writing multiple register and responses

0x10 Writing multiple registers format:

Slave device address	Function code	Starting register address	Number of writings	Bit-number of writings	Writing Contents	16-bit CRC
1 Byte	1 Byte	2 Byte	2 Byte	1 Byte	N*2 Byte	2 Byte
XX	10	XX XX	XX XX	XX	XX... .. XX	XX XX

0x10 Writing multiple registers response format:

Slave device address	Function code	Starting register address	Number of writings	16-bit CRC
1 Byte	1 Byte	2 Byte	2 Byte	2 Byte
XX	10	XX XX	XX XX	XX XX

### 4.4 Exception response

Exception response format

Slave device address	Error function code	Exception code	16-bit CRC
1 Byte	1 Byte	2 Byte	2 Byte
XX	Function code   0x80	XX	XX XX

Exception code

Code	Name	Description
03	Value exception	Data length invalid
04	CRC verification failed	CRC verification failed

## 5 Save user data and Restore factory settings

### 5.1 Save

Address	0x10	0x01	0x88	0x00	0x02	0x04	CRC1	CRC2
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### 5.2 Restore

Address	0x10	0x04	0x88	0x00	0x02	0x04	CRC1	CRC2
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