

CPL40 Transmitter

MODBUS PROTOCOL

Version: Ver1.1

Date: 2016-06-25

1 Register address information table

1.1 Readable & Writable **Byte** Parameters

Modbus Address /Actual Address	Parameter Description	Number of registers /bytes	Default
40001/0 0x00	MIMA(Reserved)	1/1	
40002/1 0x01	ADDR Device address	1/1	0x01
40003/2 0x02	BAUD: 1200/2400/4800/9600/ 19200 correspond to 0/1/2/3/4	1/1	0x03(9600) Default
40004/3 0x03	UNIT	1/1	0x00(kPa) 0x01(MPa) UNIT Defaults 0x02(mH2O) 0x03(Bar) 0x04(Psi) 0x05(mBar) 0x06 0x07(mmHg) 0x08(atm) 0x09(Pa)
40008/7 0x07	PNUM	1/1	0x00
40009/8 0x08	CALM(Reserved)	1/1	0x00

1.2 Readable & Writable **Short** Parameters

Modbus Address /Actual Address	Parameter Description	Number of registers/bytes	Defaults
40011/10 0x0A	DAL	1/2	0x0000
40012/11 0x0B	DAH	1/2	0x0000

1.3 Readable & Writable **Float** Parameters

Transmitter configuration parameters

Modbus Address /Actual Address	Parameter Description	Number of registers/bytes	Defaults
40013/12 0x0C	SL(Scale low)	2/4	0.0
40015/14 0x0E	SH(Scale high)	2/4	1.0
40017/16 0x10	DPL(Display low)	2/4	0.0
40019/18 0x12	DPH(Display high)	2/4	1.0
40021/20 0x14	IOL(4mA input low)	2/4	0.0
40023/22 0x16	IOH(20mA input high)	2/4	1.0
40025/24 0x18	SZ(pressure zero)	2/4	0.0
40027/26 0x1A	STATUS	1/1	0x00

Note: 4-byte Float, IEEE-754-compliant standard Single

Byte Number	1	2	3	4
Byte Data	0xF5	0xC3	0x40	0x48

Decoding result: hexadecimal 0x4048F5C3 correspond to Float 3.14

For example, Float 10.28 correspond to Single 0x41247AE1 which storage format in register is

Byte Number	1	2	3	4
Byte Data	0x7A	0xE1	0x41	0x24

1.4 Readable & Writable **String** Parameters

ID & TYPE of Sensor

Modbus Address /Actual Address	Parameter Description	Number of registers/bytes	Defaults
40029/28 0x1C	ID	4/8	00000000
40033/32 0x20	TY	4/8	00000000

1.5 Read-only Float parameter

Modbus Address /Actual Address	Parameter Description	Number of registers/bytes	Defaults
40037/36 0x24	RP(Real-time pressure value)	2/4	
40039/38 0x26	TMP(Temperature real-time value)	2/4	

The format of the pressure & temperature value is as same as above Float data.

2 Supported Function code

Function code description

Function code	Function Description	Access specification
0x03	Read Register	byte、short、integer、float
0x06	Set single register	byte、short
0x10	Set multiple registers	byte、short、integer、float

3 MODBUS protocol format

3.1 Read register and its response

0x03 Read register format:

Number of bytes	Description
1	Slave device address
2	Read function code: 0x03
3,4	16-bit register address
5,6	Number of registers accessed, 16-bit
7,8	CRC

0x03 Read register response format:

Number of bytes	Description
1	Slave device address
2	Read function code: 0x03
3	Number of data bytes returned
4..(4+n)-1	Number of registers accessed, 16-bit
(4+n), (4+n)+1	CRC

3.2 Write a single register and its response

0x06 Write a single register format:

Number of bytes	Description
1	Slave device address
2	Read function code: 0x06
3,4	16-bit register address
5,6	Number of registers accessed, 16-bit
7,8	CRC

0x06 Write single register response format:

Number of bytes	Description
1	Slave device address
2	Write function code: 0x06
3,4	Write register address, 16 bits
5,6	Write register value, 16 bits
(4+n), (4+n)+1	CRC

3.3 Write multiple registers and their responses

0x10 Write multiple register formats:

Number of bytes	Description
1	Slave device address
2	Read function code: 0x10
3,4	16-bit register starting address
5,6	Write number of registers, 16 bits
7	Number of bytes written
8..(8+n)-1	Value written into register
(8+n), (8+n)+1	CRC

0x10 Write multiple register response formats:

Number of bytes	Description
1	Slave device address
2	Write function code: 0x10
3,4	Write register starting address, 16 bits
5,6	Write Number of registers, 16 bits
7,8	CRC

3.4 Abnormal response

Abnormal response format

Directive	
Byte	Parameter Description
1	Slave address
2	Function code 0x80
3	Abnormal code
4,5	CRC Verification

Abnormal code (Exception)

Code	Description	Remark
03	Abnormal data value	Invalid data length
04	CRC Verification failed	CRC Parity error

4 Directive for saving user data and restoring factory data

Directive for saving user data

Address	0x10	0x01	0x88	0x00	0x02	0x04	CRC1	CRC2
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Directive for restoring factory data

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