

ModbusRTU communication protocol between Meter and PC

1. Interface specification

In order to make online with PC or PLC to concentrate on monitoring or controlling meter, the meter provide RS232, RS485 two digital communication interfaces, photoelectric isolation. When adopt RS232 communication interface, the PC can only connect a meter, three-wires connection, transmission distance is about 15 meters. When adopt RS485 communication interface, the PC needs a RS232-485 converter, can connect up to 64 meters, two-wires connection, transmission distance is about 1000 meters.

2. Communication protocol (Suitable for our company all 1 ~ 16 channel meter)

(1) Communication baud rate is 1200,2400,4800,9600 four adjustable, data format for a start bit, 8 data bits, 1 stop bit, no parity bit.

(2) PC Reading a parameter (2 bytes)

NO	Function Code (03)	Parameters's first address	Read words (0001)	CRC16
1 byte	1 byte	2 byte	2 byte	2 byte

(3) The meter return (2 bytes)

NO	Function Code (03)	Read bytes (02)	Parameter value	CRC16
1Byte	1 byte	1 byte	2 byte	2 byte

(4) PC writing a parameter (2 bytes), and meter return (2 bytes) (the same frame format):

NO	Function Code (6)	Parameters's first address	Parameter value	CRC16
1 byte	1 byte	2 byte	2 byte	2 byte

(5) The parameter code and address refer to the meter manual

The channel show value address:

Channel 1: 1001H Channel 2: 1002H Channel 3: 1003H Channel 4: 1004H
 Channel 5: 1005H Channel 6: 1006H Channel 7: 1007H Channel 8: 1008H Channel
 9: 1009H Channel 10: 100AH Channel 11: 100BH Channel 12: 100CH
 Channel 13: 100DH Channel 14: 100EH Channel 15: 100FH Channel 16: 1010H

(6) Meter control output state address:

Channel 1: 1101H Channel 2: 1102H Channel 3: 1103H Channel 4: 1104H
 Channel 5: 1105H Channel 6: 1106H Channel 7: 1107H Channel 8: 1108H
 Channel 9: 1109H Channel 10: 110AH Channel 11: 110BH Channel 12: 110CH
 Channel 13: 110DH Channel 14: 110EH Channel 15: 110FH Channel 16: 1110H

(7) Meter alarm output state address: 1200H

D15	D14	D13	D12	D11	D10	D9	D8	D7	D6	D5	D4	D3	D2	D1	D0
AL16	AL15	AL14	AL13	AL12	AL11	AL10	AL9	AL8	AL7	AL6	AL5	AL4	AL3	AL2	AL1

- The PC writing data procedures for the meter should add parameters limiter function according to the meter's specification, to prevent the ultra-wide data writing meter, it don't work properly, all the parameters code and range refer to "Instrument Manual".
- The interval of PC sending, reading or writing command should be greater than or equal to 0.2 seconds; the interval is too short, the meter may be too late to respond.
- The meter don't send decimal point information, compile PC procedures should be in accordance with the need.
- The measured value for 32767 (7FFFH) means HH (over upper range), and 32512 (7F00H) means LL (over lower range).
- In addition to CRC check byte low bit is previous, while the other all double-byte high bit is previous.

Primer

9600 8n1

01 03 10 01 00 01 D1 0A

adresa 01

read reg 03

mer vred 10 01

read 00 01

CRC D1 0A

odgovor

01 03 02 01 68 B8 3A

01 68 hekza = 360 odnosno 36,0 stepeni

zadavanje merene vrednosti

01 06 00 00 00 10 88 06

00 10 hekza 16 odnosno 1,6 stepeni