

RS485 communication meter reading application (communication protocol) and register address

This energy meter can realize long-distance reading of energy and other data in the meter through its RS485 interface. And through its infrared communication interface, it can use a handheld computer to realize short-range transcription of electric energy data in the meter. The encoding format, checksum (even checksum) and data transfer method (eight data bits, one stop bit) comply with the requirements of the MODBUS-RTU standard. The default baud rate is 1200bps, 2400bps, 4800bps, 9600bps (default) optional. If there are no special requirements, the meter is set according to the default baud rate of 9600bps, and the table address and communication rate can be modified through the software we provide. MODBUS-RTU communication protocol description:

1. Data format:

Address + function code + data +

CRC check code 2, read the meter

parameters example:

For example, if you need to read the meter with an address of 01 and a data start address of 00 for the current phase A voltage, you need to enter the following data:

(1) Issued data: 01 04 00 00 00 02 71 CB

Data Description:

data	Detailed description
01	Meter address
04	Function code, read the internal register data of the meter
00 00	The data is read from the 00 00 register address inside the meter
00 02	Read data length, which is 2 words and 4 bytes of data
71 CB	is a CRC check for the previous data, where the high position is in front and the low position is in the back

(2) Returns data: 01 04 04 43 6B 58 0E 25 D8

Data Description:

data	Detailed description
01	Meter address
04	Return the function code
04	The returned data length is 4 bytes of data length
43 6B 58 0E	The returned data is 4 bytes of data
25 D8	The returned CRC check

(3) Data format description:

The data inside the meter is read in accordance with the IEEE-754 standard floating-point number in a 32-bit, 4-byte single-precision floating-point data format.

3. Modify the address of the table:

Command to change the address of a table: For example, if you change the address of a table to 02, issue the following command: 01 10 00 08 00 02 04 40 00 00 00 E7 C9

Data Description:

data	Detailed description
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01	Meter address
10	Function code, write the internal register data of the meter
00 08	Write data starting from the 00 08 register address inside the meter
00 02	Write data length, which is 2 words, 4 bytes of data
04	The length of the write data, which is 4 bytes of data
40 00	The address of the table to be written, 4 bytes of data, floating-point data

00 00	
E7 C9	CRC check

Return data: 01 10 00 08 00 02 C0 0A

4. Modify the communication rate of the table:

For example, if you change the meter communication rate to 1200bps, send the following command: 01 10 00 00 00 02 04 44 96 00 00 07 73

Data Description:

data	Detailed description
01	Meter address
10	Function code, write the internal register data

	of the meter
00 00	Write data from the 00 00 register address inside the meter
00 02	Write data length, which is 2 words, 4 bytes of data
04	The length of the write data, which is 4 bytes of data
44 96 00 00	The communication rate of the table written, 4 bytes of data, floating-point data
07 73	CRC check

Return data: 01 10 00 00 00 02 41 C8

In the MODBUS protocol, meter data can be read using function code 0x04 with the following register

addresses:(Hex)		Description of register parameters			
HI	LO	description	unit	format	mode
00	00	voltage	volt	Floating point	read only

00	08	current	ampere	floating point	read only
00	12	Active power	kw	Floating point	read only
00	2A	Factor	COS	Floating point	read only
00	36	frequency	hertz	floating point	read only
01	00	There is always active power	kWh	floating point	read only

Meter parameters can be read using function code 0x03 or modified using function code 0x10 with the following

register address: address (Hex)		Save the register parameters				
HI	LO	length (bytes)	format	description	unit	mode
00	00	4	Float	baud rate (1200 2400 4800 9600)	bps	Read/ Write

