

## MODBUS RTU PROTOCOL

This communication protocol adopts the standard ModBus protocol and the RTU (hexadecimal number) transmission mode. The ModBus protocol is a master-slave protocol.

Here, the host computer is the master station and the rectifier is the slave station.

address: 1-32

Function code: including reading and writing multiple registers.

Data: transmitted in binary code.

CRC16: Cyclic redundancy check, check from the slave station address to the last byte of the data area, and calculate the polynomial code as A001 (hex).

### 1. Communication port settings:

Communication method Asynchronous serial communication interface, RS-485.

Rate 19200bps

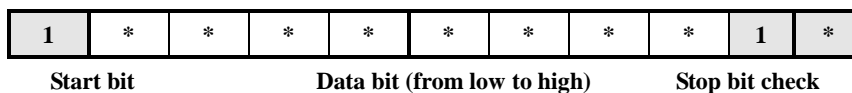
### 2. Byte data format HEX:

.1 start bit

.8 data bits

.1 stop bit

.Even parity



### 3. Example of message frame format (read and write functions are defined from the perspective of the master station):

#### Read register frame

Slave address	Function code	First register address	Number of registers N	CRC16
1byte	1byte	2byte	2byte	2byte
01H	03H	0000H	0002H	CrcL, CrcH

#### Read register return frame

Slave address	Function code	Number of bytes	Register data	CRC16

1byte	1byte	1byte	N*2byte	2byte
01H	03H	04H	0000H 0000H	CrcL, CrcH

### Write register frame

Slave address	Function code	First register address	Number of registersN	Number of bytes	Register data	CRC16
1byte	1byte	2byte	2byte	1byte	N*2byte	2byte
01H	10H	0005H	0002 H	04H	0000H 0000H	CrcL, CrcH

### Write register return frame

Slave address	Function code	First register address	Number of registersN	CRC16
1byte	1byte	2byte	2byte	2byte
01H	10H	0005H	0002H	CrcL, CrcH

### Function code table

Function code	ModBus name	Function name	broadcast	Quantity
03H	Read Holding Registers	Read N register values	No	3
10H	Write Multiple Registers	Write N register values	No	2

## 4. Register address table (read and write registers):

Numbering	Parameter symbol	parameter name	address	Types of	Value range	Remarks
1	V	Voltage display value	0	Read and write	0-9999 (10Base)	
2	I	Current display value	1		0-9999 (10Base)	
3	ZT	State value	2		0-3 (10Base)	0—normal 1—overheat 2—Overcurrent 3—Other failures
4	TX	Communication counter	3		0	The host computer accumulates the value regularly, and the communication interruption is displayed after the value is greater than

						the set value
5	F	Desired point	4		0-9999 (10Base)	
6	SW	Number of switches	5		0000H-0103H (16Base)	Specific reference to control bit variables

**Control bit variable**

Digits	8	7	6	5	4	3	2	1	0
1	start up					alarm		Reverse	Stabilization
0	stop					No alert		Positive	Steady flow

**Register address table description: 1. All data types are unsigned integer (two bytes).**

**2. All data with decimal points in communication transmission are replaced by integers. For example, 1.000 is replaced by 1000.(That is, the decimal point is ignored) 27.9 is replaced by 279.**

**3. All register data is represented by hexadecimal numbers during the transmission process. The high byte is transmitted first, and then the low byte. For example, when transmitting 279, first transmit 01H and then 23H.**