

1. Brief introduction

Comply with Modbus-RTU international standard communication specification, supports 03H, 06H, 10H three function codes, 03H function code maximum read length is 127 words, 10H maximum write length is 8 words. When the instrument is a multi-channel model, the parameter register is determined according to the set Cn parameter (see register table for details).

2. Function code

2.1 Function code 0x03 (read holding register)

● Command format

| | Address | Function code | Read register starting address | Read data length | CRC |
|-----------------|---------|---------------|--------------------------------|------------------|-----|
| Number of bytes | 1 | 1 | 2 | 2 | 2 |

Note: The range of the register start address is 0~199, and the range of the read length is 1~127

● Format of data return from slave

| | Address | Function code | Data area byte length | Data Area | CRC |
|-----------------|---------|---------------|-----------------------|-----------------------------|-----|
| Number of bytes | 1 | 1 | 1 | Data area byte length bytes | 2 |

2.2 Function code 0x06 (write single holding register)

● Command format

| | Address | Function code | Write data register address | Data input | CRC |
|-----------------|---------|---------------|-----------------------------|------------|-----|
| Number of bytes | 1 | 1 | 2 | 2 | 2 |

Note: The starting address of the register to be written ranges from 0 to 199. Data written range

-32768-32767;

● Format of data return from slave

| | Address | Function code | Write data register address | Data input | CRC |
|-----------------|---------|---------------|-----------------------------|------------|-----|
| Number of bytes | 1 | 1 | 2 | 2 | 2 |

2.3 Function code 0x10 (batch write holding registers)

● Command format

| | Address | Function code | Start address for writing | Number of data written | Number of bytes written | data input | CRC |
|-----------------|---------|---------------|---------------------------|------------------------|-------------------------|------------|-----|
| Number of bytes | 1 | 1 | 2 | 2 | 1 | 2 | 2 |

Note: The range of the starting address of the write register is 0~199, the range of the write length is 1-8, and the range of the write data is -32768-32767;

● Format of data return from slave

| | Address | Function code | Start address for writing | Number of data written | Number of bytes written | CRC |
|-----------------|---------|---------------|---------------------------|------------------------|-------------------------|-----|
| Number of bytes | 1 | 1 | 2 | 2 | 1 | 2 |

3. Registry map

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| Register Address | Parameter name | Read /Write | Description |
|------------------|----------------|-------------|------------------|
| 0 | MV | R | Range -100%-100% |
| 1 | ALM | R | Remark 1 |
| 2 | PV | R | |
| 3 | SV | R/W | Unit same as PV |
| 4 | uPAL | R/W | Unit same as PV |
| 5 | LOAL | R/W | Unit same as PV |
| 6 | ESAL | R/W | Unit same as PV |
| 7 | EIAL | R/V | Unit same as PV |
| 8 | AHYS | R/V | Unit same as PV |

| Register Address | Parameter name | Read /Write | Description |
|------------------|----------------|-------------|--|
| 9 | Ctrl | R/W | 0: ONOFF, 1: APID, 2: nPID 3: PoP, 4: SoP |
| 10 | P | R/W | Unit same as PV |
| 11 | I | R/W | Second |
| 12 | d | R/W | 0.1 second |
| 13 | Ctl | R/W | 0.1 second |
| 14 | Inp | R/W | Refer to manual |
| 15 | dPt | R/W | 0: 0, 1: 0.0, 2: 0.00, 3: 0.000 |
| 16 | SCL | R/W | Unit same as PV |
| 17 | SCH | R/W | Unit same as PV |
| 18 | AOP | R/W | Refer to manual |
| 19 | Scb | R/W | Unit same as PV |
| 20 | Opt | R/W | Refer to manual |
| 21 | OPL | R/W | % |
| 22 | OPH | R/W | % |
| 23 | AF | R/W | Refer to manual |
| 24 | Product series | R | |
| 25 | Addr | R/W | Refer to manual |
| 26 | Filt | R/W | |
| 27 | Not available | | |
| 28 | LOC | R/W | |
| 29 | Not available | R/W | % |
| 30 | SRUN | R/W | 0, run; 1, StoP; 2, HoLd |
| 31 | CHyS | R/W | Refer to manual |
| 32 | At | R/W | 0, OFF; 1, on; 2; FoFF |
| 33 | SPL | R/W | Unit same as PV |
| 34 | SPH | R/W | Unit same as PV |
| 35 | Fru | R/W | Refer to manual |
| 36 | OHEF OPH | R/W | Refer to manual |
| 37 | ACT | R/W | 0: rE, 1: dr, 2: rEbA, 3: drbA |
| 38 | AdIS | R/W | 0: OFF, 1: on |
| 39 | Aut | R/W | 0: SSR, 1: rELy, 2: 0-20 3: 4-20 |
| 40 | P2 | R/W | Refer to manual |
| 41 | I2 | R/W | Second |
| 42 | d2 | R/W | 0.1 second |
| 43 | Ctl2 | R/W | 0.1 second |
| 44 | Et | R/W | 0: nonE, 1: ruSt, 2: SP1.2 3: Pid2 |
| 45 | | R/W | |
| 46 | | R/W | |
| 47 | | R/W | |
| 48 | | R/W | |
| 49 | | R/W | |
| 50 | | R/W | |
| 51 | | R/W | |
| 52 | | R/W | |
| 53 | | R/W | |
| 54 | | R/W | |

| Register Address | Parameter name | Read /Write | Description |
|------------------|----------------|-------------|-----------------|
| 55 | | R/W | |
| 56 | | R/W | |
| 57 | | R/W | |
| 58~66 | | R | |
| 67~74 | EP1-EP8 | R/W | |
| 75 | | R | |
| 76~82 | | R | |
| 83 | SP1 | R/W | Unit same as PV |
| 84 | | R/W | |
| 85 | SP2 | R/W | Unit same as PV |
| 86 | | R/W | |
| 87~182 | | R/W | |
| 183~199 | | R | |

Remark 1

Alarm status

| | |
|-------|------------------------|
| Bit 0 | UPAL |
| Bit 1 | LoAL |
| Bit 2 | ESAL |
| Bit 3 | EIAL |
| Bit 4 | Over range alarm(orAL) |
| Bit 5 | AL1 status, 0 is ON |
| Bit 6 | AL2 status, 0 is ON |
| Bit 7 | Not available |