

XMT63X series meter communication protocol

Protocol Settings Options

Communications speed: 1200,2400,4800,9600 bps

Stop Bits: 1

Data bits: 8

Parity: None

Modbus Functions Supported

Function Code 03: Read parameter value

Function Code 10: Write parameters

Function Code 01: Read controller status bit (SV, A / M, R / D, set up, unusual, AL2, AL1, AT) (This function code is read bit-specific functional status instrument code)

Function Code 05: change the instrument control mode (the A / M set to 0 or 1, the AT is set to 0) (this function to change the instrument control code-specific function code)

RTU frame structure

Message at least 3.5 character times of pause interval start; entire message frame must be lost as a continuous flow, before the completion of the frame if there are more than 3.5 character times Pause time, the receiving device flushes the incomplete message and assumes that the next byte is a new message address fields. Similarly, if a new message in less than 3.5 character times before then A message is beginning to receive the device that it is a continuation of the previous message.

The standard structure of a quote information is as follows:

Start address field functional domain data field CRC check end

T1-T2-T3-T4 8Bit 8Bit n a 8Bit 16Bit T1-T2-T3-T4

Address field: the host will be contacted by the slave address into the address field of the message to strobe from the device, a single machine has an address range from 1 ... 64 (decimal).

Address 0 is used as a broadcast address, so that all can understand from the machine.

Functional domains: an effective encoding range is 1 ... 64 (decimal); when the message sent from the machine from the host, the function code field will be advertised from the machine needs to do. For example: read / write a register number

According to the content, reading from the machine's diagnostic status, allowing transferred, record, verify the program from the machine and so on.

Data: Host issued from the machine's data field contains the complete functionality from the machine when the domain of action necessary additional information; such as: register address, the actual number of bytes and so on.

CRC check: CRC generation, the low byte first, high byte in the post.

2, XMT63X series instrument parameter set

1) set of dynamic parameters

Code Number	Parameter Symbol	Parameter Name	Address		Type	Range of Values	Remarks
			High	Low			
1	PV+SV+OUT	Measured value (4 bytes) + dynamic setting (4 Bytes) + output value (4 bytes)	01H	64H	Read		
2	A/M	Hand / Auto status flag	00H	01H	Write Function Code 05	FF, 00 00, 00	Position
3	Pr+t	Curve segments (single-byte) + current remaining segment Time (double-byte)	01H	90H	Read	0- (63+9999)	
4	NAT	NAT: Cancel AT status flag	00H	00H	Write Function Code 05	00,00	Position

Example. To read current controller status, read 12 bytes starting from address 356 (0x164) the first 4 bytes are the current temperature, the next 4 bytes are the set point and the last 4 bytes the output value.

2) static set of parameters

Code Number	Parameter Symbol	Parameter Name	Address	Decimal Point	Type	Range of Values	Bytes
1	Su	Sv: Set Point	0000H	Dot	Read/Write	-1999-9999	4
2	AL1	The First Alarm	0001H	Dot	Read/Write	-1999-9999	4
3	AL2	The Second Alarm	0002H	Dot	Read/Write	-1999-9999	4
4	At	Auto Tuning	0003H	0	Read/Write	0-1	4
5	AL1y	First Alarm Type	1000H	0	Read/Write	0-6:10-16	4
6	AL1C	First Alarm Difference	1001H	DOT	Read/Write	0-9999	4
7	AL2y	Second Alarm Type	1002H	0	Read/Write	0-6:10-16	4
8	AL2C	Second Alarm Difference	1003H	DOT	Read/Write	0-9999	4
9	P	Proportional Band	1004H	1	Read/Write	0.1-300.0	4
10	I	Integral	1005H	0	Read/Write	0-2000	4
11	d	Derivative	1006H	0	Read/Write	0-1000	4

Code Number	Parameter Symbol	Parameter Name	Address	Decimal Point	Type	Range of Values	Bytes
12	Ct	Control Cycle	1007H	0	Read/Write	0-100	4
13	SF	Overshoot Supression	1008H	1	Read/Write	0-9999	4
14	Pd	Differential Limiting	1009H	1	Read/Write	0.1-0.9	4
15	bb	Scope	100AH	0	Read/Write	0-9999	4
16	outL	Amplitue Control output Limit	100BH	1	Read/Write	0.0 -100.0	4
17	outH	Amplitue Control Maximum	100CH	1	Read/Write	0.0 -100.0	4
18	nout	Output Value, when input is abnormal	100DH	0	Read/Write	0-100	4
19	PSb	On-line transmitter / sensor zero error Differential correction	100EH	DOT	Read/Write	-1999-9999	4
20	FILt	Digital Filter Co-efficient	100FH	0	Read/Write	0-3	4

Code Number	Parameter Symbol	Parameter Name	Address	Decimal Point	Type	Range of Values	Bytes
...	P(1)	First Group	3000H	1	Read/Write	0.1-300.0	4
...	I(1)	...	3001H	0	Read/Write	0-2000	4
...	D(1)	...	3002H	0	Read/Write	0-1000	4
PID parameter groups P(1) through to P(9)							
...	P(9)	Ninth Group	3018H	1	Read/Write	0.1-300.0	4
...	I(9)	...	3019H	0	Read/Write	0-2000	4
...	D(9)	...	301AH	0	Read/Write	0-1000	4
Ramp Parameters							
...	C(01)	Ramp 1 PID group	4000H	0	Read/Write	0-9	4
...	t(01)	Ramp 1 Time	4001H	0	Read/Write	-64-9999	4
...	Sv(01)	Ramp 1 Set Value	4002H	DOT	Read/Write	-1999-9999	4
Ramp parameters from 01 to 64							
...	C(64)	Ramp 64 PID group	40BDH	0	Read/Write	0-9	4
...	t(64)	Ramp 64 Time	40BEH	0	Read/Write	-64-9999	4
...	Sv(64)	Ramp 64 Set Value	40BFH	DOT	Read/Write	-1999-9999	4
...							

Code Number	Parameter Symbol	Parameter Name	Address	Decimal Point	Type	Range of Values	Bytes
21	Inty	Input Type	2000H	0	Read/Write	0=T 1=R 2=J 3=Wre2-Wre25 4=B 5=S 6=K 7=E 8=Pt100 9=Cu50 10=0~375 11=0~75mV 12=0~30mV 13=0~5V 14=1~5V 15=0~10V 16=0~10mA 17=0~20mA 18=4~20mA	4
22	PvL	Display Lower Limit	2001H	DOT	Read/Write	-1999-9999	4
23	PvH	Display Upper Limit	2002H	DOT	Read/Write	-1999-9999	4
24	dot	Decimal Point	2003H	0	Read/Write	0-3	4
25	rd	1=Positive:0=Negative	2004H	0	Read/Write	0-1	4
26	obty	Transmission Output	2005H	0	Read/Write	0=0~10mA 1=4~20mA 2=0~20mA	4
27	obl	Transmission Limit Low	2006H	DOT	Read/Write	-1999-9999	4
28	obh	Transmission Limit High	2007H	DOT	Read/Write	-1999-9999	4
29	oAty	PID Output	2008H	0	Read/Write	0-100 0=0~10mA 1=4~20mA 2=0~20mA 3-100 proportional cycle	4
30	EL	Extraction on/off	2009H	0	Read/Write	0-1	4
31	SS	Small Signal Recovery	200AH	0	Read/Write	0-100	4
32	rES	Delay Startup	200BH	0	Read/Write	0-120	4
33	uP	Power Fail Process	200CH	0	Read/Write	0,1	4
34	nodL	Work Mode	200DH	0	Read/Write	0:SV 1:S-SV 2:M-SV 3:S-PV 4:M-PV	4
35	prL	First Step	200EH	0	Read/Write	1-63	4
36	prH	Last Step	200FH	0	Read/Write	2-64	4
37	Id	Modbus Address	2010H	0	Read	1-64	4
38	Baud	Baud Rate	2011H	0	Read	1=1200 2=2400 3=4800 4=9600	4

Function Code Application Examples

Function Code 03

Reading the current temperature (PV present value)

Host Sends 05 03 01 64 00 02 85 AC

Device responds with 05 03 04 13 88 00 01 FA 9D

Packet sent from Host

05 = address of node we wish to talk to.

03 = function code for read holding register

01 64 = address that we wish to read (high low)

00 02 = number of 16bit registers to read (high low)

85 AC= 16bit CRC (low high)

Packet sent from Device

05 = address echoed back, so we know who sent the packet to the host

03 = function code being responded to

04 = number of data bytes following

13 88 00 01

FA 9D = 16 bit CRC (low high)

Interpretation of the data

1388 hex is 5000 when converted to decimal

0001 is decimal point location

so the present value is 500.0

Function Code 01

Read controller status bit (SV, A / M, R / D, set up, unusual, AL2, AL1, AT):

Host sends 05 01 00 00 00 08 3C 48

Device response 05 01 01 03 FE 43

Packet sent from Host

05 = address of node we wish to talk to.

01 = function code for read bits

00 00 = address that we wish to read (high low)

00 08 = number of bits to read (high low)

3C 48= 16bit CRC (low high)

Packet sent from Device

05 = address echoed back, so we know who sent the packet to the host

01 = function code being responded to

01 = number of data bytes following

03 = 8 bit Data

FE43 = 16 bit CRC (low high)

D0= SV I'm Still trying to understand the detail of how this works....

当D0=1 时, 从机正在修改SV 动态值 禁止写A/M, AT 两项操作。

The translation I've got so far is...

SV: When D0 = 1, the slave is to modify the dynamic value SV is prohibited to write A / M, AT two operations.

D1=A/M 0=auto mode 1=manual mode

D2=Hot/Cold 0=heating 1=cooling

D3=Setup 1=write protect

D4=Abnormal 0=normal

D5=AL1 1=alarm 1

D6=Al2 1=alarm 2

D7=AT 1=auto tuning