

## FT200 communication protocol

Applicable for software version 800

(1) Support 03 read command, 06/10 write command, Master device with broadcast function when the read/write address is "0"

(2)Interface: Base on standard RS-485

Connection method: 2 wire system, half-duplex multi-drop connection

Communication speed: 2400bps, 4800bps, 9600bps, 19200bps

Data type: Start bit: 1

Data bit: 8

Parity bit: None/Uneven/Even selectable

Stop bit: 1

Protocol: Modbus-RTU RS-485

### 2: Parameter and address list

Name	al g or is m	Hex	Range	Read	Decimal point
PV Process value	0	0000H	-19999~99999 (9999.9 degree)	R	Temp display=1
MV1 Output1 PID indication %	1	0001H	0-1000 (0-100.0%)	R	1
MV2 Output2 PID indication %%	2	0002H	0-1000 (0-100.0%)	R	1
MVFB position feedback indication%	3	0003H	0-1000 (0-100.0%)	R	1
Output LED indication	4	0004H	Refer to remark 1 for details	R	0
SV Setting value	5	0005H	-19999~99999 (9999.9 degree)	R/W	Temp display=1
S.F00 , shortcut definition for SV	6	0006H	0: shortcut key on the panel 1: located in menu 1 2: located in menu 2 3: located in menu 3	R/W	0
SV1, event input SV1	7	0007H	-19999~9999 (9999.9 degree)	R/W	Temp display=1
SV2, event input SV2	8	0008H	-19999~9999 (9999.9 degree)	R/W	Temp display=1
SV3, event input SV3	9	0009H	-19999~99999 (9999.9 degree)	R/W	Temp display=1
SV4, event input SV4	10	000AH	-19999~99999 (9999.9 degree)	R/W	Temp display=1
S.F01, F01 parameter group shortcut	11	000BH	0: Without shortcut 1: located in menu 1 2: located in menu 2 3: located in menu 3	R/W	0

AT Auto-tuning	1 2	000CH	0: Auto-tuning off 1: Auto-tuning on	R/W	0
AM.RS Control mode selection	1 3	000DH	0: PID control 1: Manual control 2: STOP 5: End status	R/W	0
AL1 alarm 1 value	1 4	000EH	-19999~99999 (9999.9 degree)	R/W	Temp display=1
AL2 alarm two value	1 5	000FH	-19999~99999 (9999.9 degree)	R/W	Temp display=1
Spare , reserved for future use	1 6	0010H			
UAd device address	1 7	0011H	0-255	R	0
S.F02, F02 parameter group shortcut	1 8	0012H	0: Without shortcut 1: located in menu 1 2: located in menu 2 3: located in menu 3	R/W	0
Spare , reserved for future use	1 9	0013H			
RAMP ramp up rate	2 0	0014H	0-9999(0.0~999.9 degree/minute)	R/W	1
T1 soak time	2 1	0015H	0-9999 second or minutes	R/W	0
S.F03, F03 parameter group shortcut	2 2	0016H	0: Without shortcut 1: located in menu 1 2: located in menu 2 3: located in menu 3	R/W	0
SC input offset	2 3	0017H	-1999~9999 (999.9 degree)	R/W	Temp display=1
P1 for group 1 PID,P VALUE	2 4	0018H	0-8000 (0.0-800.0 degree)	R/W	Temp display=1
I1 for group 1 PID, I VALUE	2 5	0019H	0-3600 (seconds)	R/W	0
D1 for group 1 PID D VALU	2 6	001AH	0-3600 (seconds)	R/W	0
Built-in timer display	2 7	001BH	0-9999	R	0
ATVL auto-tuning reset windup	2 8	001CH	-19999~99999 (9999.9 degree)	R/W	Temp display=1
CYT1 Cycle time for #1 PID group	2 9	001DH	0-100 (second)	R/W	0
HYS1 for #1 PID group	3 0	001EH	1~9000 (0.1~900.0 degree)	R/W	Temp display=1

rSt1 for #1 PID group	3 1	001FH	-1999~1999 (199.9 degree)	R/W	Temp display=1
OPL1 Output lower limit for #1 PID group	3 2	0020H	0-1000 (0-100.0%)	R/W	1
OPH1 Output higher limit for #1 PID group	3 3	0021H	0-1000 (0-100.0%)	R/W	1
bUF1 soft-start for #1 group PID group	3 4	0022H	0-1000 (0-100.0%)	R/W	1
PKo1 output rate for manual output after power on	3 5	0023H	0-1000 (0-100.0%)	R/W	1
reserved	3 6	0024H			
OLAP overlap area for heating+cooling mode	3 7	0025H	0~1000 (0.0~100.0 degree)	R/W	Temp display=1
GAP2 offset for SV of cooling side	3 8	0026H	0-2000 (0.0~200.0 degree)	R/W	Temp display=1
P2 for group 2 PID,P VALUE	3 9	0027H	0-8000 (0.0-800.0 degree)	R/W	Temp display=1
I2 for group 2 PID, I VALUE	4 0	0028H	0-3600 (second)	R/W	0
D2 for group 2 PID D VALU	4 1	0029H	0-3600 (second)	R/W	0
Manual output rate	4 2	002AH	0-1000 (0-100.0%)	R/W	1
CYT2 Cycle time for #2 PID group	4 3	002BH	0-100 (second)	R/W	0
HYS2 for #1 PID group	4 4	002CH	1~9000 (0.1~900.0 degree)	R/W	Temp display=1
rSt2 for #1 PID group	4 5	002DH	-1999~1999 (199.9 degree)	R/W	Temp display=1
OPL2 Output lower limit for #2 PID group	4 6	002EH	0-1000 (0-100.0%)	R/W	1
OPH2 Output higher limit for #2 PID group	4 7	002FH	0-1000 (0-100.0%)	R/W	1
reserved	4 8	0030H			
S.F04, F04 parameter shortcut group	4 9	0031H	0: Without shortcut 1: located in menu 1 2: located in menu 2 3: located in menu 3	R/W	0
SFSV SV for soft-start procedure	5 0	0032H	-1999~32750 (3275.0 degree)	R/W	Temp display=1
STME soft-start effective time	5 1	0033H	0-100 minute	R/W	0

SOUT Soft-start output ratio	5 2	0034H	0-1000 (0-100.0%)	R/W	1
S.F05 , F05 parameter group shortcut	5 3	0035H	0: Without shortcut 1: located in menu 1 2: located in menu 2 3: located in menu 3	R/W	0
LBAAt loop break alarm checking time	5 4	0036H	0-9999 seconds	R/W	0
LBAB look break alarm temperature value	5 5	0037H	0-99999 (9999.9 degree)	R/W	Temp display=1
HBAAt loop short circuit alarm checking time	5 6	0038H	0-9999 second	R/W	0
HBAB look short circuit alarm temperature value	5 7	0039H	0-99999 (9999.9 degree)	R/W	Temp display=1
S.F06, F06 parameter group shortcut	5 8	003AH	0: Without shortcut 1: located in menu 1 2: located in menu 2 3: located in menu 3	R/W	0
1LR alarm lock-in for alarm 1	5 9	003BH	=0 lock-in defused	R/W	0
2LR alarm lock-in for alarm 2	6 0	003CH	=0 lock-in defused	R/W	0
reserved	6 1	003DH			
S.F07, F07 parameter group shortcut	6 2	003EH	0: Without shortcut 1: located in menu 1 2: located in menu 2 3: located in menu 3	R/W	0
LCK Access protection	6 3	003FH	0~8	R/W	0
S.F08, F08 parameter group shortcut	6 4	0040H	0: Without shortcut 1: located in menu 1 2: located in menu 2 3: located in menu 3	R/W	0
INP1 Input signal selection	6 5	0041H	See remark 2	R/W	0
dP Decimal point display	6 6	0042H	Decimal point: 0, 1 Analog: 0~3	R/W	0
Unit display unit selection	6 7	0043H	0: Celcius 1: Fahrenheit 2: without unit	R/W	0
LSPL SV lower limit	6 8	0044H	-19999~99999 (9999.9 degree)	R/W	Temp display=1
USPL SV higher limit	6 9	0045H	-19999~99999(9999.9 degree)	R/W	Temp display=1

PVoS input offset, same as SC	7 0	0046H	-1999~9999 (999.9 degree)	R/W	Temp display=1
PVFt input filter strength	7 1	0047H	0-60	R/W	0
ANL1 lower limit display for analog input	7 2	0048H	-1999~9999	R/W	Refer to dP
ANH1 higher limit display for analog input	7 3	0049H	-1999~9999	R/W	Refer to dP
tRSL display for re-transmission lower limit value	7 4	004AH	-19999~99999 (9999.9 degree)	R/W	Temp display=1
tRSH display for re-transmission higher limit value	7 5	004BH	-19999~99999 (9999.9 degree)	R/W	Temp display=1
ALd1 alarm 1 mode	7 6	004CH	0-23	R/W	0
AH1 alarm 1 hysteresis	7 7	004DH	0-99999 (9999.9 degree)	R/W	Temp display=1
ALt1 alarm 1 output delay time	7 8	004EH	0-9999 second	R/W	0
ALd2 alarm 2 mode	7 9	004FH	0-23	R/W	0
AH2 alarm 2 hysteresis	8 0	0050H	0-99999 (9999.9 degree)	R/W	Temp display=1
Alt2 alarm 2 output delay time	8 1	0051H	0-9999 second	R/W	0
reserved	8 2	0052H			
reserved	8 3	0053H			
reserved	8 4	0054H			
Oud1 output mode (heating/cooling) selection	8 5	0055H	0: reverse action(heating) 1: direct action (cooling)	R/W	0
bER1 analog output soft-start mode	8 6	0056H	0:no buffer 1: buffer on all the time 2:buffer on when analog increase	R/W	0
reserved	8 7	0057H			
RUCY motor travel time	8 8	0058H	0-200 second	R/W	0
reserved	8 9	0059H			
reserved	9 0	005AH			

PMd program running mode	9 1	005BH	0: standard mode 1: temperature constant mode 2: Ramp up mode	R/W	0
tSP timer kick-in temperature	9 2	005CH	0-99999 (9999.9 degree)	R/W	Temp display=1
PEND running mode after timer finish timing	9 3	005DH	0: program END after timer finish 1: PID continue work after timer finish	R/W	0
Idno address	9 4	005EH	0-255	R/W	0
bAUd baud rate	9 5	005FH	0: 2400bps 1: 4800bps 2: 9600bps 3: 19200bps	R/W	0
Ucr Parity bit	9 6	0060H	0: No parity(8N1) 1: Odd parity(8O1) 2: Even number parity (8E1)	R/W	0
EXC1 select relay status when alarm is on	9 7	0061H	0: Alarm ON, relay on 1: Alarm off, Relay NC	R/W	0
A1L1 alarm 1 lock-in selection	9 8	0062H	0: no alarm lock-in 1: alarm lock-in	R/W	0
EXC2 select relay status when alarm is on	9 9	0063H	0: Alarm ON, relay on 1: Alarm off, Relay NC	R/W	0
A1L2 alarm 2 lock-in selection	1 0 0	0064H	0: no alarm lock-in 1: alarm lock-in	R/W	0
reserved	1 0 1	0065H			
reserved	1 0 2	0066H			
KA/M Auto/manual switch	1 0 3	0067H	0: No shortcut key 1: Use A/M key	R/W	0
KR/S Run/stop switch	1 0 4	0068H	0: no shortcut key 1: use F1 to quick switch between RUN/STOP	R/W	0
KATU Auto-tuning shortcut	1 0 5	0069H	0: No shortcut key 1: Use F3 as shortcut key	R/W	0

PWON controller running mode after power on	1 0 6	006AH	0: PID mode 1: Manual mode 2: Stop mode 3: inherit from the mode before power off	R/W	0
SFST soft-start function	1 0 7	006BH	0: soft-start off 1: Soft-start on	R/W	0
tRS PV/SV re-transmission function	1 0 8	006CH	0: PV re-transmission 1: SV re-transmission	R/W	0
PFbK Position feedback configuration	1 0 9	006DH	0: no position feedback 1: with position feedback	R/W	0
RESV Remote-SV configuration	11 0	006EH	0: SV panel set 1: remote SV, panel set disabled 2 : Remote SV, panel set switchable	R/W	0
MONI SV window display contents configuration	11 1	006FH	0: no display MV1,MV2,MVFb 1: only display MV1, MV2 2: only display MVFb 3: display MV1,MV2,MVFb	R/W	0
bEAM bar graphic display configuration	11 2	0070H	0: indication for MV1% 1: indication for MV2% 2: indication for re-transmission% 3: indication for MVFb%	R/W	0
T1UN Timer unit, minutes or seconds	11 3	0071H	0: second 1: minute	R/W	0
REMS manual output ration	11 4	0072H	0: manual output defined via panel 1: manual output ration remote setting	R/W	0

\*Remark 1 : Panel indicators Address 0004H

bit0: COM   bit1:MAN   bit2:AL3   bit3: AL2  
bit4:AL1   bit5:AT   bit6:OUT2   bit7:OUT1  
bit8: PRG   bit9: SV4   bit10:SV3   bit11:SV2  
bit12: SV1   bit13: C bit14: F bit15: %  
=0 ON, =1 OFF

\*Remark 2: Input signal selection INP1

Details as below:

INP1=	Input signal
0	K
1	E
2	J
3	N
4	Wu3/Re25
5	S
6	T
7	R
8	B
9	AN1 analog signal
10	AN2 analog signal
11	F3 reserved for future use
12	F4 reserved for future use
13	Pt100

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