

FX-438 MODBUS ADDRESS

PARAMETERS		REGISTER ADDRESS	MODBUS FUNCTION CODE	SETTING
				RANGE
SP1	SETPOINT 1	000	03/06H	LSPL ~ HSPL
OUT.L	OUTPUT POWER	001	03/06H	0.0 ~ 100.0
AT	AUTO TUNE	002	03/06H	0001H = NO
				0001H = YES
SP2	SETPOINT 2	003	03/06H	Ref Table 2
SP3	SETPOINT 3	004	03/06H	Ref Table 2
PB	PROPORTIONAL BAND	057	03/06H	5 ~ 999 °C
INT	INTEGRAL TIME	058	03/06H	0 ~ 3600 Sec
DT	DERIVATIVE TIME	059	03/06H	0 ~ 300 Sec
T.OFS	TUNE OFFSET	061	03/06H	50 ~ 100
CYCT	CYCLE TIME	062	03/06H	1.0 ~ 100.0 Sec
HY1	HYSTERESIS 1	063	03/06H	1 ~ 99
HY2	HYSTERESIS 2	068	03/06H	1 ~ 99
GAP1	GAP 1	069	03/06H	-9.9 ~ 9.9
GAP2	GAP 2	070	03/06H	-9.9 ~ 9.9
U.LCK	USER SETTABLE LOCK	071	03/06H	1 ~ 9999
TYPE	INPUT TYPE SELECTION	072	03/06H	0000H = TC-J
				0001H = TC-K
				0002H = TC-R
				0003H = TC-S
				0004H = TC-N
				0005H = TC-B
				0006H = RTD
RESL	DECIMAL POINT POSITION	075	03/06H	0000H = 0000
				0001H = 000.0
				0002H = 00.00
				0003H = 0.000
LSPL	LOWER SP LIMIT	076	03/06H	Ref Table 1
HSPL	HIGHER SP LIMIT	077	03/06H	Ref Table 1
AI.LO	Analog Input Value Low	078	03/06H	Ref Table 1
AI.HI	Analog Input Value High	079	03/06H	Ref Table 1
A1.TY	ALARM 1 TYPE	080	03/06H	0000H = LOW
				0001H = HIGH
				0002H = LOW DEVIATION
				0003H = HIGH DEVIATION
A2.TY	ALARM 2 TYPE	082	03/06H	0004H = BAND
				0000H = LOW
				0001H = HIGH
				0002H = LOW DEVIATION
PAR	PARITY	097	03H	0003H = HIGH DEVIATION
				0004H = BAND
				0000H = NONE_8_1
				0001H = NONE_8_2
				0002H = ODD_8_1
				0003H = ODD_8_2
				0004H = EVEN_8_1
				0005H = EVEN_8_2

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			FUNCTION CODE	RANGE
DV.ID	DEVICE ID	098	03H	1 ~ 255
BAUD	BAUDRATE	099	03H	0000H = 9600
				0001H = 19200
				0002H = 31250
				0003H = 38400
				0004H = 76800
OFST	OFFSET	101	03/06H	Ref Table 1
FLTR	FILTER	103	03/06H	1 ~ 10
OP1.L	OUTPUT 1 LOGIC	105	03/06H	0000H = HEAT
				0001H = COOL
				0002H = HEAT-COOL
MODE	OUTPUT 1 MODE	106	03/06H	0000H = PID
				0001H = ON/OFF
AT	AUTO TUNE D/E	108	03/06H	0000H = DISABLE
				0001H = ENABLE
SP1	SETPOINT 1 D/E	109	03/06H	0000H = DISABLE
				0001H = ENABLE
SP2	SETPOINT 2 D/E	110	03/06H	0000H = DISABLE
				0001H = ENABLE
SP3	SETPOINT 3 D/E	111	03/06H	0000H = DISABLE
				0001H = ENABLE
RATE	RAMP RATE D/E	112	03/06H	0000H = DISABLE
				0001H = ENABLE
OP2M	OUTPUT 2 MODE D/E	113	03/06H	0000H = DISABLE
				0001H = ENABLE
P.MN	MANUAL POWER D/E	114	03/06H	0000H = DISABLE
				0001H = ENABLE
POWER	OUTPUT POWER	135	03H	0.0 ~ 100.0 %
OBIT	CONTROLLER BIT INFORMATION	136	03H	0001H = OP1 Status
				0002H = OP2 Status
				0004H = OP3 Status
				0008H = TIMER STATUS (TIMER START/NOT START)
				0100H = OPEN
				0200H = LWL
				0400H = DOOR
				1000H = HHHH
				2000H = LLLL
PV	PROCESS VALUE	138	03H	As per Selected Input
A1.LG	ALARM 1 LOGIC	141	03/06H	0000H = DIRECT
				0001H = REVERSE
A1.IH	ALARM 1 INHIBIT	142	03/06H	0000H = NO
				0001H = YES
A1.AK	ALARM 1 ACKNOWLEDGE	143	03/06H	0000H = AUTO
				0001H = MANUAL
				0002H = BOTH
A2.LG	ALARM 2 LOGIC	146	03/06H	0000H = DIRECT
				0001H = REVERSE

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				RANGE
A2.IH	ALARM 2 INHIBIT	147	03/06H	0000H = NO
				0001H = YES
A2.AK	ALARM 2 ACKNOWLEDGE	148	03/06H	0000H = AUTO
				0001H = MANUAL
				0002H = BOTH
RE.LO	Retransmission Low	149	03/06H	Ref Table 1
RE.HI	Retransmission High	150	03/06H	Ref Table 1
T.MA	mA Type	157	03/06H	0000H = 0-20
				0001H = 4-20
SS.TM	Soft start	161	03/06H	5 ~ 1000 Sec
DLY1	DELAY 1	162	03/06H	0 ~ 500 Sec
OP2M	OUTPUT 2 MODE	163	03/06H	0000H = DISABLE
				0001H = ENABLE
OP2.C	OUTPUT 2 CONTROL	164	03/06H	0.0 ~ 80.0
LDSP	LOWER DISPLAY	171	03/06H	0000H = TOGGLE
				0001H = SETPOINT 1
				0002H = TIMER
ST.DL	SOAK TIME DELAY	173	03/06H	0 ~ 99
ST.TM	SOAK TIMER	174	03/06H	Ref Table 3
DIP	DIGITAL INPUT	175	03/06H	0000H = NONE
				0001H = LOW WATER LEVEL
				0002H = DOOR
D.TMR	DIGITAL INPUT TIME	176	03/06H	0 ~ 99
A.TMR	ALARM ACTIVATE TIME	177	03/06H	0 ~ 99
MA.FN	mA Function	178	03/06H	0000H = Control
				0001H = Re-Transmission
RT.DI	mA Direction	179	03/06H	0000H = DIRECT
				0001H = REVERSE
RT.ER	mA Error	180	03/06H	0000H = USER LOW
				0001H = USER HIGH
				0002H = SIGNAL LOW
				0003H = SIGNAL HIGH
OCP	OVERSHOOT CONTROL POINT	181	03/06H	0 ~ 100
OP2M	OUTPUT 2 FUNCTION	182	03/06H	0000H = NONE
				0001H = AUXILLARY
				0002H = ALARM
OP2M	OUTPUT 2 MODE	183	03/06H	0000H = ABSOLUTE
				0001H = DEVIATION
OP2.L	OUTPUT 2 LOGIC	184	03/06H	0000H = HEAT
				0001H = COOL
OP3	OUTPUT 3 FUNCTION	185	03/06H	0000H = NONE
				0001H = AUXILLARY
				0002H = ALARM
				0003H = SOAK TIMER
				0004H = ALARM SOAK
OP3M	OUTPUT 3 MODE	186	03/06H	0000H = ABSOLUTE
				0001H = DEVIATION
OP3.L	OUTPUT 3 LOGIC	187	03/06H	0000H = HEAT
				0001H = COOL

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			FUNCTION CODE	RANGE
SK.ES	END OF SOAK STRATEGY	188	03/06H	0000H = NONE
				0001H = HEATER OFF
				0002H = ALARM ON
				0003H = BOTH
SK.TB	TIME BASE FOR SOAK TIMER	189	03/06H	0000H = MM.SS
				0001H = MMMM
				0002H = HH.MM
				0003H = HHHH
SK.DR	SOAK TIMER DIRECTION	190	03/06H	0000H = UP
				0001H = DOWN
SK.RS	SOAK TIMER RESET	191	03/06H	0001H = NO
				0001H = YES
SK.MD	TIMER START MODE	192	03/06H	0000H = MODE 1
				0001H = MODE 2
				0002H = MODE 3
				0003H = MODE 4
OP.OF	OUTPUT OFF	193	03/06H	0 ~ 10
DLY2	DELAY 2	194	03/06H	0 ~ 500 Sec
HY3	HYSTERISIS 3	195	03/06H	1 ~ 99
DLY3	DELAY 3	196	03/06H	0 ~ 500 Sec
ST.BD	SOAK TIME BAND	197	03/06H	0.0 ~ 99.9
RATE	RAMP RATE	198	03/06H	0.0 ~ 25.0
P.MN	MANUAL POWER	199	03/06H	0 ~ 100.0 %
	Alarm Output Acknowledge	200	03/06H	0000H = N.A
				0001H = Alam Output Ack
	CYCLE START/STOP	201	03/06H	0000H = STOP
				0001H = START
	ELAPSED SOAK TIME	202	03H	Ref Table 3

Table 1 : Parameter Range as per Resolution						
Sensor Type	Resolution	AI.Lo	AI.Hi	LSPL	HSPL	Offset
Fe-K (J) T/C	0000	N.A.	N.A.	0 ~ HSPL	LSPL ~ 760	-25 ~ 25 °C
Cr-AL (K) T/C				-99 ~ HSPL	LSPL ~ 1300	
(R) T/ C				0 ~ HSPL	LSPL ~ 1700	
(S) T/ C				0 ~ HSPL	LSPL ~ 1700	
(N) T/ C				-99 ~ HSPL	LSPL ~ 1300	
(T) T/ C				-99 ~ HSPL	LSPL ~ 400	
(B) T/ C				0 ~ HSPL	LSPL ~ 1800	
Pt-100 (RTD)				-100 ~ HSPL	LSPL ~ 450	
Pt-100 (RTD.1)	000.0			-100.0 ~ HSPL	LSPL ~ 450.0	-25.0 ~ 25.0 °C
0 ~ 1 Volt ;	0000	-1999 ~ AI.HI	AI.Lo ~ 9999	AI.Lo ~ HSPL	LSPL ~ AI.Hi	-25 ~ 25 °C
0 ~ 3.3 Volts;	000.0	-199.9 ~ AI.HI	AI.Lo ~ 999.9			-25.0 ~ 25.0 °C
0 ~ 5 Volts;	00.00	-19.99 ~ AI.HI	AI.Lo ~ 99.99			-15.00 ~ 25.00 °C
0 ~ 10 Volts;	0.000	-1.999 ~ AI.HI	AI.Lo ~ 9.999			-1.500 ~ 2.500 °C

Table 1 : Parameter Range as per Resolution						
Sensor Type	Resolution	Hys 1	Hys 2	Hys 3	RE.Lo	RE.Hi
Fe-K (J) T/C	0000	1 ~ 25 °C	2 ~ 25 °C	3 ~ 25 °C	0 ~ RE.Hi	RE.Lo ~ 760
Cr-AL (K) T/C					-99 ~ RE.Hi	RE.Lo ~ 1300
(R) T/ C					0 ~ RE.Hi	RE.Lo ~ 1700
(S) T/ C					0 ~ RE.Hi	RE.Lo ~ 1700
(N) T/ C					-99 ~ RE.Hi	RE.Lo ~ 1300
(T) T/ C					-99 ~ RE.Hi	RE.Lo ~ 400
(B) T/ C					0 ~ RE.Hi	RE.Lo ~ 1800
Pt-100 (RTD)					-100 ~ RE.Hi	RE.Lo ~ 450
Pt-100 (RTD.1)	000.0	0.1 ~ 25.0 °C	0.1 ~ 25.0 °C	0.1 ~ 25.0 °C	-100.0 ~ RE.Hi	RE.Lo ~ 450.0
0 ~ 1 Volt ;	0000	1 ~ 25 °C	1 ~ 25 °C	1 ~ 25 °C	AI.Lo ~ RE.Hi	RE.Lo ~ AI.Hi
0 ~ 3.3 Volts;	000.0	0.1 ~ 25.0 °C	0.1 ~ 25.0 °C	0.1 ~ 25.0 °C		
0 ~ 5 Volts;	00.00	0.01 ~ 25.00 °C	0.01 ~ 25.00 °C	0.01 ~ 25.00 °C		
0 ~ 10 Volts;	0.000	0.001 ~ 2.500 °C	0.001 ~ 2.500 °C	0.001 ~ 2.500 °C		

Table 2 : Setpoint Range			
Output Fuction	Sub Function	Resolution	Range
Auxiliary	Absolute	0000	LSPL ~ HSPL
		000.0	
		00.00	
		0.000	
	Deviation	0000	-99 ~ 99
		000.0	-99.0 ~ 99.0
		00.00	-9.99 ~ 99.99
		0.000	-0.999 ~ 9.999
Alarm	Low ; High	0000	LSPL ~ HSPL
		000.0	
		00.00	
		0.000	
	Low Deviation ; High Deviation	0000	-99 ~ 99
		000.0	-99.0 ~ 99.0
		00.00	-9.99 ~ 99.99
		0.000	-0.999 ~ 9.999
	Band	0000	2 ~ 99
		000.0	2 ~ 99.9
		00.00	2 ~ 99.99
		0.000	2 ~ 9.999

Table 3 : Soak Timer			
Parameter	Range	Read	Write
Soak Timer Set Value	MM.SS	MM = Read value "Div" 60 SS = Read value "MOD" 60	Write Value = (MM * 60) + SS
	MMMM	MMMM = Read value	Write Value = MMMM
	HH.MM	HH = Read value "Div" 60 MM = Read value "MOD" 60	Write Value = (HH * 60) + MM
	HHHH	HHHH = Read value	Write Value = HHHH
	Remaining Soak Timer	MM.SS	MM = Read value
MMMM		MMMM = Read value	
HH.MM		HH = Read value "Div" 60 MM = Read value "MOD" 60	
HHHH		HHHH = Read value "Div" 60	
HHHH		HHHH = Read value "Div" 60	