#### **DIN Rail Temperature Controller FE300** User's Manual

# 1. Notice

#### A Warning

- 1. Danger! Electric Shock!
- 2. DON'T touch AC power wiring terminals when controller has been activated! 3. Make sure the power off until all of the wirings are completed!

- A Warning
- 1. Please confirm the AC power wiring to controller is correct, otherwise it will be
- caused an aggravated damage on controlle 2. Make sure to use the rated power supply (AC85~265V or DC 24V), otherwise it will be caused severely damage on controller
- 3. Please confirm wirings are connected with correct terminals (Input, Output, Alarm).
- 4. Please choose suitable M2 screws wire AWG26~16( 0.13mm2 ~1.3mm2 ) , like below



5. Avoid installing controller in following spaces:

- I. A place where the ambient temperature may reach beyond the range from  $0 \sim 50^{\circ}$ C II. A place where the ambient humidity may reach beyond the range from 20 ~ 90% RH. III. A place where the controller likely to come into contact with water, oil, chemicals, steam and vapor
- IV. A place where the controller is subject to interface with static electricity, magnetism and noise. 6. For thermocouple (TC) input, use shield compensating lead wire.
- 7. For RTD input, use shield wires which have low resistance and no resistance difference between 3 wires.

# 2. Order information



# 3. Specifications

Power su	pply voltage	85 ~ 265 VAC , DC 24V (Optional)					
Frequency		50/60 Hz					
Power co	nsumption	Approx 6VA					
Memory		Non-volatile memory EEPROM					
		Accuracy : 0.2% FS					
		Sample time 50ms					
Sensor in	put	TC : K \ J \ R \ S \ B \ E \ N \ T \ W \ PL    \ L					
※ Please	refer to input	RTD : PT100					
range	table	Linear : 0~20mA \ 4~20mA 0~1V \ 0~5V \ 0~10V \ 0~2V \ 1~5V \ 2~10V 0~25mV \ 0~50mV \ 10~50mV \ 0~70mV					
Control	Relay	SPST-NO, 250 VAC, 8A (resistive load), electrical life: 100,000 operations					
Control SSR driver		ON: 24 V OFF: 0V max. load current: 20 mA, with short-circuit protection circuit					
ουιραι	Linear	4~20mA,0~20mA, 0~5V,0~10V, 1~5V,2~10V					
Control m	nethod	ON-OFF or P,PI,PID control					
Alarm out	tput	SPST-NO, 250VAC, 5A (resistive load), electrical life: 100,000 operations					
Tranomio	sion	Signal : 4~20mA \ 0~20mA \ 0~5V \ 0~10V \ 1~5V \ 2~10V					
TIALISTIIS	51011	Channel : SV,PV,SV2,PV2,OP1					
	Interface	RS-485 Maximum unit : 32 pcs Maximum distance : 1200m					
	Protocol	Modbus RTU , TAIE					
Commun	Parity	None , Odd , Even					
-ication	Data bit	8bit					
	Stop bit	1 or 2 bit					
	Baud rate	2400,4800,9600,19200,38400,57600,115200 bps					
Delay time		0~250 ms					
Special features		3 SV choose(SV1,SV2,SV3), Power-on soft start, Timer function (1 minute to 99 hours,59 minutes)					
Operating	temperature humidity	$0 \sim 50^\circ C$ (with no icing or condensation) $20\% \sim 90\%~RH$					
Storage t	emperature	$-25 \sim 65^{\circ}$ C (with no icing or condensation)					
Dimensio	n	W 26 x H 75 x D 90 mm					
Weight (a	ipprox)	Approx 90g					

4. Input range table	

hanks for purchase FE series Digital Temperature Controlle

Please check the Voltage' Frequency and input/output range. Please follow the operation manual and pass the user to keep it.

Before using controller, please make sure the spec and type is correspond your demand.

Model	Input type		Code	Range			
woder	input	type	Coue	C	°F		
	K	K1	01	-50.0~400.0	-50.0~750.0		
	ĸ	K2	02	0~1200	0~2190		
	1	J1	03	-50.0~400.0	-50.0~750.0		
	5	J2	04	0~1200	0~2190		
	R	R	05	0~1760	0~3200		
тс	S	S	06	0~1760	0~3200		
	В	В	07	0~1820	0~3300		
	E	E	08	0~900	0~1650		
	N	N	09	0~1300	0~2370		
	т	T1	10	-199.9~400.0	-199.9~750.0		
	1	T2	11	-199~400	-199~750		
	W	W	12	0~2320	0~4200		
	PLII	PL II	13	0~1200	0~2190		
	L	L	14	0~800	0~1470		
		DP1	15	-199.9~600.0	-199.9~999.9		
RTD	PT100	DP2	16	-199~600	-199~1110		
		DP3	17	0~600	0~1110		
	AN1	0~25mV	18				
		0~50mV	19				
		0~20mA	20	-1.999~9.999			
		4~20mA	21				
		0~1V	22				
Linear	AN2	0~5V	23	-19.99	~99.99		
		0~10V	24	-199.9	~999.9		
		0~2V	25	-1999-	~9999		
		1~5V	26				
		2~10V	27				
		other	28				
	AN3	0~70mV	29				

# 5. Packing list & Label information

5 1 Packing list	)		(1) —	→ FE300-	3010	0B
1.Temperature Cont 2.Manual	roller1pcs		(2)→	Power Supply 0 1 2 3 AC 85~265V 4 50/60HZ 6VA 4~2	UT1 4 [ € _ т/ 20mA	RS485 5 6 R(A) T/R(B)
3.Terminal protect c	ation			COM AL1 P 7 8 9 ALARM	+ - C	mA,V) RTD 3 + TCinv 11 12 IPUT
NO. Explanation	Indication Exa		DIGITAL PID CONTRO	OLLER	CE	
(1) Model Number	FE300-30100B	(3)→	S/N : SP16091430	001	~~	
(2) Terminal arrangement	Terminal arrangement		AMB.TEMP. 50 °C	MAX		
(3) Series Number	16091430001		(4) →	OUT1 : 4~20mA		
(4) Control output	OUT1 4~20mA		(5) →	INPUT: 4~20mA(	0.0~100.	0)
(5) Input type	Multi-range (Multi-ra	nge input)		TAIE	MADE	IN TAIWAN

# 6.Parts description



# 7. Installation

-1-



# 8. Terminal arrangement

# Notice

Make sure the power off until all of the wirings are completed! Turn the power supply to the instrument off before wiring or checking. Working on or touching the terminal with the power switched on may result in severe injury or death due to electric shock.



# 9. Mounting procedures

#### 1. Installation 1. Plug the controller on DIN rail. 2. Lodge the bottom in easily.

2. Pull out 1. Insert into the square hole on the bottom with driver. 2. Put front the clamp will out of DIN rail. 3. When heard the sound of "ca" mean its plug in. 3. Hold the controller and take it out.

4. Shake the controller to make sure of it.







close all OUTPUT and ALARM function.



# 10. Basic function setting

SV Room new value of R-S

# (10.1 Input type setting

1.	PV SV	18 <b>85</b> 8888	Operation panel display.	2.	PV Hold SET key + Key 3 seconds, then the controller will enter LEVEL_3 upper display show "NPP" lower display show "NPP" lower display show upper lower	
3.	pv 🍐 sv	1087 8 82	When key is pressed, the lower display flashes.	4.	PV Press key and key SV BC to set the desire input type.	
5.	PV /	10P 1 8P2	Press SET key to store new value of INP1.	Moo and Plea	dify input type needs to interchange of jumper location, it needs to recalibration for linear input type change. ase refer to ch16 Input type modification.	
*:	INP1 set	tting value re	efer the "Input range table"			
10	.2 SV	value se	tting			
1.	PV SV	7 <i>825</i> 8880	Operation panel display	2.	PV 8825 When key is pressed, SV 00002 the lower display flashes.	
3.	PV SV	9825 0350	Press key to choose digit and pressing key and key to set the desire value.	4.	PV 8825 Press SET key to store SV 8850 new value of SV.	
10.3 RUN/STOP mode selection						
1.	PV SV	7 <i>825</i> 8350	Operation panel display.	2.	PV BEBS SET key to get parameter setup display, SV SEBS "r-s" shown on the upper display.	
3.	PV SV	7 - 5 560P(	When Key is pressed, the lower display flashes.	4.	PV 8755 Press key or key SV 8705 to select run/stop mode.	
5	PV	7885	Press SET key to store		When controller selection STOP mode,	

ΡV PV SV

ΡV

SV

ΡV PV SV

ΡV

# 10.9 Ma

-2- X: SET8.2=1 (Show A-M & MOP parameter)

#### 10.4 Auto tuning execution

8.825 8.858	Operation panel display.	2.	PV     Press     SET     key to get parameter setup display, "AT" shown on the upper display.		
8888 8888	When key is pressed, the lower display flashes.	4.	PV REA Press key or key		
8 <b>8</b> 88 8985	Press SET key to store new value of AT.	When auto tuning AT LED lamp lit and start to ou through a few of circles to get new PID value with precise control, if finished the AT LED will be lam			

# 10.5 PID value setting

pv <i>8.82</i> sv <i>8.88</i>	S Operation panel display.	2.	PV SV	8838 8830	Hold SET key 3 seconds, then the controller will enter LEVEL_2 upper display show "P1" lower display show current P1 value.
pv <i>882</i> sv <i>883</i>	G When ≪ key is pressed, the lower display flashes.	4.	PV SV	8825 0500	Press key and key to set the desire P1 value.
pv <i>888</i> sv <i>850</i>	Press SET key to store new value of P1.		Similarly, use the same ways to set integr value(I1) and derivate value(D1).		ame ways to set integral ate value(D1).

#### \* : Press SHIFT key the upper display will show PV value, this function can let user easy to monitor PV and this parameter relationshi

# (10.6 ON/OFF control setting )

8.885 8.950	Operation panel display.	2.	pv <i>8838</i> sv <i>8830</i>	Hold SET key 3 seconds, then the controller will enter LEVEL_2 upper display show "P1" lower display show current P1 value.
8889 0030	When Key is pressed, the lower display flashes, upper display will show current PV value.	4.	PV 8825 SV anaf	Press 💌 key until P1 = on.oF (0.0)
P 1 onoE	Press SET key to store new value.	6.	PV <b>8977</b> SV 8888	Press SET key to get parameter setup display, "HYO1" shown on the upper display.
8983 8883	When Key is pressed, the lower display flashes.	8.	pv <i>8901</i> sv <i>8901</i>	Press key and key to set the desire HYO1value
8583 8890	Press SET key to store new value.		Heat mode formu $PV \ge (SV + HYO)$ $PV \le (SV - HYO)$ Cool mode formu $PV \ge (SV + HYO)$ $PV \le (SV - HYO)$	IIa: 1) → OUT1 OFF 1) → OUT1 ON IIa: 1) → OUT1 ON 1) → OUT1 OFF

# (10.7 Alarm mode setting )

8885 8888	Operation panel display.	2.	PV SV	8888 8888	Hold [SET] key + Key 3 seconds, then the controlle will enter LEVEL_3 upper display show "INP1"lower display show current input type
8888 8888	Press SET key to get parameter setup display, "ALD1" shown on the upper display.	4.	PV SV	8888 8884	When SHIFT key is pressed, the lower display flashes.
8283 8882	Press 💌 key and 🙈 key to set the desire ALD1 value.	6.	PV SV	8283 8882	Press SET key to store new value of ALD1. ※ Please refer to 15.1 Alarm mode.

#### 10.8 Alarm value setting

8.8 <b>25</b> 8.880	Operation panel display.	2.	⁰ <i>88.88</i> <sup>sv</sup> 8880	Press SET key to get parameter setup display, "AL1H"shown on the upper display.	
8838 0000(	When key is pressed, the lower display flashes.	4.	™ <i>8238</i> <sup>sv</sup> <i>8029</i>	Press very and key and key to set the desire AL1H value.	
Press SET key to store new value of AL1H.					
anual mode selection					

	nual	mode	sel	ection)	
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8885 8850	Operation panel display.	2.	PV     Press     SET     key to get       sv     ROEB     Press     Press       sv     ROEB     "A-M" shown on the upper display.
8-2 8055	When key is pressed, the lower display flashes.	4.	PV Press key or key sv PRA
888 <u>9</u> 8988	Press <b>SET</b> key to store new value of A-M.	6.	PV Press SET key to get parameter setup display, SV 88000 "MOP" shown on the upper display.
8008 0000	When key is pressed, the lower display flashes.	8.	PV Press key to choose digit and pressing key SV 2000 and key to set the desire value.
8208 8888	Press SET key to store new value of MOP.	li c	in manual mode MOP=100.0 output=100.0% continuous

#### 11. Flow chart of parameters setting

#### (11.1 Levels operation mode

- 1. LEVEL 1 enter to the LEVEL 2
- Press and hold SET key for 3 seconds then enter to LEVEL 2
- 2. LEVEL 1 enter to the LEVEL 3
- Press and hold SET key + press SHIFT key for 3 seconds then enter to LEVEL 3 3. LEVEL 1 enter to the LEVEL 4
- Press and hold SET key for 3 seconds then enter to LEVEL 2 in LEVEL 2 press SET key to find parameter "LCK" , modify LCK value from current value to 1111 then Press and hold SET key + press SHIFT key for 3 seconds enter to LEVEL 4
- 4. LEVEL 2 return to the LEVEL 1
- Press and hold SET key for 3 seconds then return to LEVEL 1
- 5. LEVEL 3 return to the LEVEL 1 Press and hold SET key + press SHIFT key for 3 seconds then return to LEVEL 1
- 6. LEVEL 4 return to the LEVEL 1 Press and hold SET key + press SHIFT key for 3 seconds then return to LEVEL 1

#### 11.2 Levels operation diagram



for more than one minute.

#### (11.3 Data lock (LCK) function



		LE	VEL					
LCK	Level_1	Level_2	Level_3	Level_4	Remark			
0000	0	0	O	Х	modify LEVEL_1_2_3 parameter available (initial)			
1111	0	0	Х	Ø	modify LEVEL_1_2_4 parameter available			
0110	0	O	Х	Х	modify LEVEL_1 parameter available			
0001	0	0	Х	Х	only approval modify parameter SV , LCK			
0011	0	O	Х	Х	only approval modify parameter SV , LCK , R-S			
0101	0	0	Х	Х	only approval modify parameter LCK			
	©:apr	oroval X	: inhibit					

11.4 Level 1 (User Level) all parameters display	

7	Level I					
	Press SET Key PV / SV → 2 <sup>2</sup> 5.0 1000	PV2 / SV2	HBA current setting HBBE 8888	HBA time setting 8888 8888	RUN / STOP mode 8888 8888	OUT1 high limit setting
	OUT1 low limit setting I → BBB BBB	OUT2 high C imit setting BBBB 8888	DUT2 low limit setting DEBE 8800	Auto tuning	Alarm 1 high value BBBB 8888	Alarm 1 low value
	Alarm 2 high value → 8888 8888	Alarm 2 low value	Alarm 3 high value 8838 8830	Alarm 3 low value	Target set value 1 	Target set value 2
	Target set value 3 m → 5888 8308	Auto / Man node switch o 8888	Manipulated utput setting valu	e ※ : This instru mode if no key than one minu	ument returns to the y operation is perfo ite.	e PV/SV display rmed for more

# (11.5 Level 2 (PID Level) all parameters display)



\* This instrument returns to the PV/SV display mode if no key operation is performed for more than one minute.

#### (11.6 Level 3 (Input Level) all parameters display)

→	Level 3					
	Press SET Key	Input1 Analog	Input1 Analog	Input1 Decimal	Input1 Lower	Input1 High
	Input1 type z	ero calibration	span calibration	point position	setpoint limit	setpoint limit
		8888	18888 5808	→ 0080 0000	► 8588 8588	8000
	Input1 min value In of target set value range	nput1 max value of target set value range	Input1 PV lowe indication limit	r Input1 PV upper indication limit	IAlarm1 mode	Delay timer setting for Alarm1
	→ <i>5888.</i> 8580 →	5888 8000	► <i>888.8</i> 8858	→ <i>8888</i> 8850	► <i>8883</i>	8888
	Hysteresis setting for Alarm1	IAlarm2 mode	Delay timer setting for Alarm2	Hysteresis setting for Alarm2	Alarm3 mode	Delay timer setting for Alarm3
	→ <i>8858</i> 8888	8888. 8888	8888.	→ <i>8888.</i> 8888	▶ <i>8888</i>	8888
	Hysteresis setting for Alarm3	m special function r alarm type table	For linear output1 zero calibration	For linear output1 span calibration	For linear output2 zero calibration	For linear output2 span calibration
	→ <i>8353</i> 8888	5888 8888 -	8888 8888	→ <i>8888</i> 3608	► 8888 8888	8888. 3688
	TRS enable	TRS source selection	Min value of TRS output	Max value of TRS output	For TRS Zero calibration	For TRS Span calibration
	→ <i>8888.</i> 8888	8888. 8998 -	8588 8588	► <i>8588</i> 8080	► 8888 8888	8883
	Full run time of motor valve	Wait time	Protocol	Parity and stop bit	Controller address	Baud rate
	→ <i>RBBB</i> 8850	8888. 8888 -	8858 8888	► <i>8888</i> 8988		8888
	Interval time c	SV compensation	PV input bias	PV input bias	PV input filter	PV/SV unit
	→ <i>8.88E</i> →	8888 <b>-</b>	8985 8880	► <i>8988</i> 8000	8288. 8888 -	. 8888. 8888.
	Control mode	Power frequency	Input2 type	Input2 Analog zero calibration	Input2 Analog span calibration	Input2 Decimal point position
	→ 8888 BEBE	8888. 6088.	8888 8803	→ <i>8888</i>	8888. 5000	, 8888. 0000
	Input2 Lower set-point limit	Input2 High Input2 High Input2 High	nput2 min value f target set value range	e Input2 max e value of target set value range	Input2 PV lower indication limit	Input2 PV upper indication limit
	→ <i>8.588</i> 8800 →	8.58,8 5000	► <i>8888.</i> 8888	→ <i>5888.</i> 5000	► <i>8888.</i> 8858	8888
	SV2 compensation	PV2 input bias	PV2 input bias	PV2 input filter	Input2 PV/SV unit	Digital input enable
	→ <i>8888.</i> 8888	8888 8888	► <i>8888.</i> 8888	→ <i>8888</i>	► <i>8888.</i> 8888.	8888. 8888
	Digital input function → 8888	※ : This instru	ument returns to	the PV/SV display n	node if no key opera	ation is performed
		for more	than one minute.			

#### (11.7 Level 4 (Setting Level) all parameters display



X : This instrument returns to the PV/SV display mode if no key operation is performed for more than one minute.

# 12.Troubleshooting

If the controller displays one of the following, carry out the appropriate remedy for the particular er						
LED	Error	Solution				
8888	INIE: Input1 Error	Check whether input loop is opened or wiring incorrect.				
8888	UUU1:PV is above USPL	Check whether the input value is correct or not.				
8888	NNN1:PV is below LSPL	Check whether the input value is correct or not.				
If any of the indication in the table below appear, the controller need to be repaired do not try to repair the Controller by yourself, order a new one or contact us to repair.						
repair the Co	indication in the table below appear, the cor introller by yourself, order a new one or con	troller need to be repaired do not try to tact us to repair.				
repair the Co	indication in the table below appear, the cor introller by yourself, order a new one or con Error	troller need to be repaired do not try to tact us to repair. Solution				
LED	ndication in the table below appear, the con ntroller by yourself, order a new one or con Error ADCF: A/D convert failed	troller need to be repaired do not try to tact us to repair. Solution Send back repair.				
LED	Indication in the table below appear, the con Introller by yourself, order a new one or con Error ADCF: A/D convert failed CJCE:Cold junction compensation failed	Send back repair.				
LED BBCE BBCE BBCE	Indication in the table below appear, the corn Introller by yourself, order a new one or con Error ADCF: A/D convert failed CJCE:Cold junction compensation failed RAMF: EEPROM failed	Send back repair.				

# 13. Parameters hide / display table on Level 4



	0574.4	0	hide	HBAC HBAT
	SEI1_1	1	display	HBAC HBAT
	8ET1 0	0	hide	R-S
0000	SEII_2	1	display	R-S
0.0.0.0	SET1 2	0	hide	OLH1 OLL1
	<u>SEI1_</u> 3	1	display	OLH1 OLL1
	SET1 4	0	hide	OLH2 OLL2
		1	display	OLH2 OLL2
	0570 4	0	hide	AT
<i>5688</i>	SE12_1	1	display	AT
	о <b>ст</b> о о	0	hide	AL1H AL1L
	JLIZ_Z	1	display	AL1H AL1L
0.0.0.0.	SET2 3	0	hide	AL2H AL2L
	0212_0	1	display	AL2H AL2L
	SET2 4	0	hide	AL3H AL3L
	· · · · <u>·</u> ·	1	display	AL3H AL3L
	0572.4	0	hide	SV_1 SV_2 SV_3
0000	SE13_1	1	display	SV_1 SV_2 SV_3
	SET3 2	0	hide	ANL1 ANH1 DP
	0210_2	1	display	ANL1 ANH1 DP
0.0.0.0	SET3 3	0	hide	LSPL USPL
		1	display	LSPL USPL
	SET3_4	0	hide	SVL1 SVH1
		1	display	SVL1 SVH1
	SET4_1	0	hide	PLL1 PHH1
		1	display	PLL1 PHH1
		0	hide	ALD1 ALT1 HYS1
<u>gggg</u>		1	display	ALD1 ALT1 HYS1
0000	SET4 3	0	hide	ALD2 ALT2 HYS2
	<u>-</u> -	1	display	ALD2 ALT2 HYS2
	SET4_4	0	hide	ALD3 ALT3 HYS3
	_	1	display	ALD3 ALT3 HYS3
	SET5 1	0	hide	SETA
	3613_1	1	display	SETA
	SET5 2	0	hide	CLO1 CHO1
8888		1	display	CLO1 CHO1
0.0.0.0.	SET5 3	0	hide	CLO2 CHO2
		1	display	CLO2 CHO2
	SET5_4	0	hide	TE TS TSPL TSPH CLO3 CHO3
	_	1	display	TE TS TSPL TSPH CLO3 CHO3
	SETE 1	0	hide	RUCY WAIT
	3610_1	1	display	RUCY WAIT
	SET6 2	0	hide	PSL IDNO BITS BAUD INT
8888	<u></u> _	1	display	PSL IDNO BITS BAUD INT
0.0.0.0	SET6 3	0	hide	SVOS
		1	display	SVOS
	SET6_4	0	hide	PVOS PVOH
	1	1	display	PVUS PVUH

	0577.4	0	hide	PVFT
	SEI7_1	1	display	PVFT
	SETT 2	0	hide	UNIT
0000	3617_2	1	display	UNIT
0000	0577.0	0	hide	OUD
	SEI7_3	1	display	OUD
	SETT A	0	hide	HZ
		1	display	HZ
		0	hide	
	SET8_1	1	dieplay	
		0	hido	
	SET8_2	1	display	
5888		0	hido	
0000	SET8_3	1	display	
		0	hide	
	SET8_4	1	dienlay	
			uispiay	Teserve, do not care
	SET9_1	0	Channe	2 input disable
		1	Channe	2 input enable
9999	SET9_2	0	Channe	1 analog input reverse display disable
		1	Channe	1 analog input reverse display enable
00.00	SETQ 2	0	Channe	2 analog input reverse display disable
	0213_0	1	Channe	2 analog input reverse display enable
	SET9 4	0	register	mirror disable
	0210_1	1	register	mirror enable
		0	power-c	on soft start disable
	SET0_1	1	power-c	on soft start enable
		0	hot runn	er disable
0000	SET0_2	1	hot runn	er enable
5889 5880		0	Remote	SV disable
	SE10_3	1	Remote	SV enable
		0	reserve	do not care
	SEI0_4	1	reserve	do not care
				100 101 0010
	SETR 1	0	In TP-15	5 power-on in idle mode disable
		1	In TP-15	power-on in idle mode enable
	SETB 2	0	In TP-18	HBA detect disable
<i>SEE8</i>		1	In TP-15	PTU RAM only mode disable
	SETB_3	1	Modbus	RTU RAM only mode enable
		0	reserve	do not care
	SETB_4	1	reserve	.do not care
	1		1000170	,00

# 14. List of parameters

#### (14.1 COMM GROUP

aramotor		Contont	Rai	nge	Initial	Loval
arameter	LED	Content	MAX	MIN	Initial	Level
PSL	<i>88.98</i>	Protocol selection 0: TAIE 1: Modbus RTU	1	0	Modbus RTU	Level 3
BITS	8888	Parity and stop bit 0: O_81 1: O_82 2: E_81 3: E_82 4: N_81 5: N_82	5	0	O_81	Level 3
IDNO	<i>88.88</i>	Controller address	255	0	1	Level 3
BAUD	8888	Baudrate 0: 2400 1: 4800 2: 9600 3: 19200 4: 38400 5: 57600 6: 115200 bps	6	0	38400	Level 3
INT	8.888.	Interval time (ms) Use for data response de <b>l</b> ay	250	0	0	Level 3
R-M	<i>8888</i>	Register mirror selection	20	0	0	Level 4

#### 14.2 ALARM GROUP

-4-

aramatar		Contont	Ra	nge	la tita l		
		Content	MAX	MIN	Initial	Level	
AL1H	8888	Alarm value upper limit 1	9999	-1999	10	Level 1	
AL1L	88.88	Alarm value lower limit 1	9999	-1999	10	Level 1	
AL2H	8888	Alarm value upper limit 2	9999	-1999	10	Level 1	
AL2L	8888	Alarm value lower limit 2	9999	-1999	10	Level 1	
AL3H	8888	Alarm value upper limit 3	9999	-1999	10	Level 1	
AL3L	8888	Alarm value lower limit 3	9999	-1999	10	Level 1	
ALD1	8888	Alarm1 mode selection	30	0	11	Level 3	
ALD2	8888	Alarm2 mode selection	30	0	2	Level 3	
ALD3	8888	Alarm3 mode selection	30	0	0	Level 3	
ALT1	8888	00.00: Flicker	99.59	00.00	99.59	Level 3	
ALT2	8888	99.59: Continued ON	99.59	00.00	99.59	Level 3	
ALT3	8888	00.01~99.58: delay time	99.59	00.00	99.59	Level 3	
HYS1	8998	Hysteresis setting for alarm1	1000	0	0	Level 3	
HYS2	8888	Hysteresis setting for alarm2	1000	0	0	Level 3	
HYS3	8888	Hysteresis setting for alarm3	1000	0	0	Level 3	
SETA	<i>5888</i>	Alarm special function Please refer to 15.2 .	1111	0000	0000	Level 3	

			Ra	nae		
Parameter	LED	Content	MAX	MIN	Initial	Level
Ж <b>Р</b> 1	8 <b>8</b> .8.8.	OUT1 Proportional band 0 : BBBB ON/OFF control 0.1~200 : PID control	200.0	0.0	3.0	Level 2
ж <b>I</b> 1	8.8.8.8.	OUT1 Integral time	3600	0	240	Level 2
※ D1	8 <b>8</b> 88	OUT1 Derivative time	2400	0	60	Level 2
CYT1	8988	OUT1 Control cycle 0 : 2008 Linear signal 1 : 2558 SSR drive 2~150 : Relay	150	0	10	Level 2
GAP.1	<i>888.8</i>	Control gap 1 (for output 1)	1000	0	0	Level 2
<b>※ P2</b>	8 <b>88</b> 8	OUT2 Proportional band 0 : BBB ON/OFF control 0.1~200.0 : PID control	200.0	0.0	3.0	Level 2
<b>※ I2</b>	88 <b>8</b> 8	OUT2 Integral time	3600	0	240	Level 2
Ж D2	8 <b>88</b> 8.	OUT2 Derivative time	2400	0	60	Level 2
СҮТ2	8988	OUT2 Control cycle 0 : 2002 Linear signal 1 : 2552 SSR drive 2~150 : Relay	150	0	10	Level 2
GAP.2	<i>8888</i>	Control gap 2 (for output 2)	1000	0	0	Level 2
HYO1	8888	Hysteresis for OUT1 on/off control	1000	0	1	Level 2
HYO2	8888	Hysteresis for OUT2 on/off control	1000	0	1	Level 2
14.4 SV (	GROUP	X : Press SHIFT I this function c	key the uppe an let user e	er display w easy to mor	rill show PV value hitor PV with this p	, parameter effec
Parameter	LED	Content	Rai MAX	nge MIN	Initial	Level
sv	8.8.8 <b>.8</b> .	Local set value for input1	SVH1	SVL1	0	Level 1
SV2	8.8.8 <b>8</b>	Local set value for input2	SVH2	SVL2	0	Level 1
SV-1	<i>8888</i>	Target set value 1	SVH1	SVL1	0	Level 1
SV-2	8888	Target set value 2	SVH1	SVL1	0	Level 1
SV-3	88.88.	Target set value 3	SVH1	SVL1	0	Level 1
SVL1	<i>8888</i>	Minimum value of target set value range for input1	9999	-1999	LSPL	Level 3
SVH1	8888	value range for input1	9999	-1999	USPL	Level 3
SVL2	8888	Minimum value of target set value range for input2	9999	-1999	LSP2	Level 3
SVH2	<i>8888</i>	Maximum value of target set value range for input2	9999	-1999	USP2	Level 3
SVOS	<i>5885</i>	SV compensation	5000	-1000	0	Level 3
SVO2	<i>5888</i>	SV2 compensation	5000	-1000	0	Level 3
14.5 AT (	GROUP					
Parameter	LED	Content	Rar	nge	Initial	Level
arameter	LED	Content	MAX	MIN	mua	Level
AT	8 <b>8</b> 88.	Auto-tuning 0: <i>8888</i> 1: <i>8889</i>	1	0	NO	Level 1
ATVL	8888	Auto tuning offset value	9999	0	0	Level 2
14.6 SYS	TEM GR	OUP	_			
Parameter	LED	Content	Rai MAX	nge MIN	Initial	Level
LCK	8888	Function lock Please refer to 11.3 Data lock function	1111	0000	0000	Level 2
UNIT	8888	Temperature unit 0 : <i>8888</i> °C 1 : <i>8888</i> °⊏	2	0	С	Level 3

		to TT.5 Data lock function				
UNIT	888E	Temperature unit 0 : <i>888£</i> ℃ 1 : <i>888£</i> °F 2 : <i>8888</i> Linear signal	2	0	С	Level 3
HZ	8 <b>8</b> 8.8.	Power frequency 0 : <i>5888</i> , 50HZ 1 : <i>5888</i> , 60HZ	1	0	60HZ	Level 3
UNI2	88.88	Temperature unit 0 : <i>888 E</i> °C 1 : <i>888 E</i> °F 2 : <i>888 B</i> Linear signal 3 : <i>282 B</i> HBA current	3	0	с	Level 3
OBIT	8888	Communication bits configuration Bit_0: OUT1 Bit_1: OUT2 Bit_2: AT Bit_3: AL1 Bit_4: AL2 Bit_5: AL3 Bit_6: COM Bit_7: MAN Bit 8: INIE Bit_10: CJCE Bit_11: IN2E Bit_11: IN2E Bit_13: NNN1 Bit_13: NNN1 Bit_15: NNN2	_	_		Level 4
CJS	8888	Cold junction mode selection 0 : 888 Automatic compensation 1 : 888 Manual compensation	1	0	Auto	Level 4
CJM	8888	Cold junction temperature setting	50	0	25	Level 4
CJT	88.88.	Ambience temperature display	—	—		Level 4

Parame

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#### (14.7 CONTROL GROUP)

Dovomotor		Contont	Rar	nge	Initial	Loval	
Parameter	LED	Content	MAX	MIN	mua	Level	
R-S	888 <b>8</b>	Run/stop mode 0: <i>52.67</i> Output stop 1: <i>82.66</i> Output enable	1	0	RUN	Level 1	
OLH1	8888	High limit setting of manipulated value for output 1	100.0	0.0	100.0	Level 1	
OLL1	8888	low limit setting of manipulated value for output 1	100.0	0.0	0.0	Level 1	
OLH2	8888	High limit setting of manipulated value for output 2	100.0	0.0	100.0	Level 1	
OLL2	8888	low limit setting of manipulated value for output 2	100.0	0.0	0.0	Level 1	
A-M	8 <b>8</b> 88	Auto/Man mode switch 0: 8088 Automatic 1: 8888 Manual	1	0	Auto	Level 1	
MOP	<i>8.888</i>	Manipulated output setting value	100.0	0.0	0.0	Level 1	
SOF1	8888	Power-ON soft start function for output 1	5000	5	10	Level 2	
OP1	8888	Manipulated value for output 1	100.0	0.0	—	Level 2	
SOF2	8888	Power-ON soft start function for output 2	5000	5	10	Level 2	
OP2	8888	Manipulated value foroutput 2	100.0	0.0	—	Level 2	
X CLO1	8888	output1 zero calibration only for linear signal	9999	0	0	Level 3	
Ж СНО1	8888	output1 span calibration only for linear signal	9999	0	3600	Level 3	
X CLO2	8888	Output2 zero calibration only for linear signal	9999	0	0	Level 3	
※ СНО2	8888	Output2 span calibration only for linear signal	9999	0	3600	Level 3	
OUD	8888	Control mode 0 : <i>BEBE</i> Heating mode 1 : <i>FBBR</i> Cooling mode	1	0	HEAT	Level 3	

※ : Each controller calibration values are different, before the modify please record the current value.

#### (14.8 INPUT GROUP

<b>.</b>			Range				
Parameter	LED	Content	MAX	MIN	Initial	Level	
PV	_	Process value for input1	USPI	LSPI	_	Level 1	
BV2	_	Process value for input?		LOFE		Level 1	
FV2			0012	LOIZ		Level 1	
INP1	8888	Please refer to 4 Input range table	19	1	1	Level 3	
X ANL1	<i>8888</i>	Analog input zero calibration for input 1	9999	-1999	0	Level 3	
X ANH1	8888	Analog input span calibration for input 1	9999	-1999	5000	Level 3	
DP	8. <b>88</b> .8.	Decimal point position for input1 0: 0000 1: 000.0 2: 00.00 3: 0.000	3	0	1	Level 3	
LSPL	8.888	Minimum value of measured input1 scale	9999	-1999	—	Level 3	
USPL	8.988.	Maximum value of measured input1 scale	9999	-1999	—	Level 3	
PLL1	8888	PV lower indication limit for input1 PV<(LSPL+PLL1)=>show under range error message	1000	-1000	-5.0	Level 3	
PHH1	8883	PV upper indication limit for input1 PV>(USPL+PHH1)=>show over range error message	1000	-1000	5.0	Level 3	
※ PVOS	<i>8885</i>	PV input1 bias(for zero) PV=(PVxPVOH)+PVOS	5000	-1000	0	Level 3	
Ж Р∨ОН	8888	PV input1 bias(for span) PV=(PVxPVOH)+PVOS	2.000	0.000	1.000	Level 3	
PVFT	8888	Is used to eliminate noise against the measure input1 0 : BBBB : no filter 0.1~10.0 : digital filter	10.0	0.0	0.0	Level 3	
INP2	8888.	Input2 type selection Please refer to ch4 Input range table	19	1	1	Level 3	
※ ANL2	<i>8888</i>	remote input zero calibration for input 2	9999	-1999	0	Level 3	
X ANH2	8882	remote input span calibration for input 2	9999	-1999	5000	Level 3	
DP_2	88.88.	Decimal point position for input2 0: 0000 1: 000.0 2: 00.00 3: 0.000	3	0	1	Level 3	
LSP2	<i>8.888</i>	Minimum value of measured input2 scale	9999	-1999	—	Level 3	
USP2	8.88.8.	Maximum value of measured input2 scale	9999	-1999	_	Level 3	
PLL2	8888	PV2 lower indication limit for input2 PV2<(LSP2-PLL2)=>show under range error message	1000	-1000	-5.0	Level 3	
PHH2	8888	PV2 upper indication limit for input2 PV2>(USP2+PHH2)=>show over range error message	1000	-1000	5.0	Level 3	
× PVS2	8888	PV input2 bias(for zero) PV2=(PV2xPVH2)+PVS2	5000	-1000	0	Level 3	
× PVH2	8888.	PV input2 bias(for span) PV2=(PV2xPVH2)+PVS2	2.000	0.000	1.000	Level 3	
PVF2	8888	Is used to eliminate noise against the measure input2 0 : <u>88</u> : no filter 0.1~10.0 : digital filter	10.0	0.0	0.0	Level 3	

#### 14.9 TRANSMISSION GROUP

		_	Range				
arameter	LED	Content	MAX	MIN	Initial	Level	
TE	88 <b>8</b> 8.	Transmission function enable 0: 8999 (disable) 1: 9955 (enable)	1	0	0	Level 3	
TS	8 <b>8.9</b> .8.	Transmission output signal choose 0: SV 3: PV2 1: PV 4: OP1 2: SV2	10	0	0	Level 3	
TSPL	8.888.	Minimum value of retransmission output	USPL	LSPL	LSPL	Level 3	
TSPH	8888	Maximum value of retransmission output	USPL	LSPL	USPL	Level 3	
« CLO3	8888	For transmission zero calibration	9999	0	0	Level 3	
« СНОЗ	8888	For transmission span calibration	9999	0	3600	Level 3	
: Refer to the transmission example.							

#### 15. Alarm action explanation

#### 15.1 Alarm mode

## $(\blacktriangle: SV \quad \Delta: Alarm set value \quad X: 1 \text{ or } 2)$

ALDX	Alarm type	Description
00	No alarm	Not drive any alarm relays and the corresponding LED lamp.
01	Deviation high With hold action	HYSX ON SV OFF ALXL
11	Deviation high	$\label{eq:Formula} \begin{array}{l} PV \ > \ (SV + ALXH) \rightarrow Alarm \ ON \\ PV \leqq \ (SV + ALXH - HYSX) \rightarrow Alarm \ OFF \end{array}$
02	Deviation low With hold action	ON HYSX ALXL OFF SV
12	Deviation low	$\begin{tabular}{lllllllllllllllllllllllllllllllllll$
03	Deviation high/low With hold action	ON HYSX OFF HYSX ON ALXL SV ALXL
13	Deviation high/low	$\label{eq:Formula} \begin{array}{l} PV < (SV - ALXL) \rightarrow Alarm \; ON \\ PV \geq (SV - ALXL + HYSX) \rightarrow Alarm \; OFF \\ PV > (SV + ALXH) \rightarrow Alarm \; ON \\ PV \geq (SV + ALXH - HYSX) \rightarrow Alarm \; OFF \end{array}$
04	Band With hold action	OFF
14	Band	$\label{eq:Formula} \begin{array}{l} PV \geqq (SV - ALXL) \to Alarm \; ON \\ PV & (SV - ALXL) \to Alarm \; OFF \\ PV \leqq (SV + ALXH) \to Alarm \; ON \\ PV > (SV + ALXH) \to Alarm \; OFF \end{array}$
05	PV high With hold action	
15	PV high	$\begin{tabular}{lllllllllllllllllllllllllllllllllll$
06	PV low With hold action	
16	PV low	Formula $PV < ALXH \rightarrow Alarm ON$ $PV \ge (ALXH + HYSX) \rightarrow Alarm OFF$
07	Timer	<ul> <li>(1) set ALXH = 1000 timer start counting, when timer count to ALTX setting value alarm action ON</li> <li>(2) set ALXH = 0 stop and reset timer ALTX="hour"."minute"</li> </ul>
08	Error	when PV show error message alarm action ON when PV show normal temperature alarm action OFF
09	SV high	$\begin{tabular}{ c c c c c } \hline & & & & & & & & & & & & & & & & & & $
10	SV low	Formula $SV < ALXL \rightarrow Alarm ON$ $SV \geq (ALXL) + HYSN \to Alarm OFF$

※ : With hold action When hold action is ON, the alarm action is suppressed at start-up until measured value has entered the non-alarm range.

#### Ex: Process low alarm



### (15.2 Alarm special function)

1. Alarm Reverse Function After power-on if no alarm events generate the alarm relay will contact in close condition if alarm events generate the alarm relay will contact in open condition.



#### (16.1 Modify to Thermocouple)





## 17. Communication register address table

<b>D</b>	Register Address		D (144			Register
Parameter	Hoy	Dec	R/W		Parameter	Hey
SV/	0x00	0	D / M/	4 1	CL 02	0769
	0x00	0	R/W	4 -	CLOS	0x00
PV	0x01	1	R	4 4	CHO3	0x69
SV2	0x02	2	R/W	1 1	RUCY	0x6A
PV2	0x03	3	R		WAIT	0x6B
HBAC	0x04	4	R/W	1 1	PSL	0x6C
HBAT	0x05	5	R/W	1 1	BITS	0x6D
P-S	0x06	6	P/W/	1 1	IDNO	0x6E
	0,00	7	D ( M	4 - 1	DAUD	0x0L
OLHI	0x07	/	R/W	4 1	BAUD	UX6F
OLL1	0x08	8	R/W	4 1	NI	0x70
OLH2	0x09	9	R/W		SVOS	0x71
OLL2	0x0A	10	R/W	1 [	PVOS	0x72
AT	0x0B	11	R/W	1 1	PVOH	0x73
	0x0C	12	R/W	1 1	P\/FT	0x74
	0x00	12	R/W	1 1	LINIT	0x75
ALIL	0,00	13	R/W	4 1		0x75
ALZH	UXUE	14	R/W	4 1	OUD	0x76
AL2L	0x0F	15	R/W	4 4	HZ	0x77
AL3H	0x10	16	R/W		NP2	0x78
AL3L	0x11	17	R/W	[	ANL2	0x79
SV 1	0x12	18	R/W	1 1	ANH2	0x7A
SV 2	0x13	19	R/W	1 1	DP 2	0x7B
EV 2	0x10	20	D / W	4 1	1000	0.70
30_3	0,14	20	R/W	4 1	LSPZ	0x7C
A-M	0x15	21	R/W	4	USP2	0x7D
MOP	0x16	22	R/W	1 L	SVL2	0x7E
P1	0x35	53	R/W	j ľ	SVH2	0x7F
11	0x36	54	R/W	ן ן	PLL2	0x80
D1	0x37	55	R/W	1 1	PHH2	0x81
CYT1	0x38	56	R/W	1 1	SV/02	0x82
0111	0,00	57	D (M)	4 1	3702	0,02
SUFT	0x39	57	R/W	4 1	PVSZ	0x83
HY01	0x3A	58	R/W	4 4	PVH2	0x84
OP1	0x3B	59	R	1 [	PVF2	0x85
P2	0x3C	60	R/W	1 [	UNI2	0x86
12	0x3D	61	R/W	1 1	DIE	0x8C
D2	0x3E	62	R/W	1 1	DIS	0x8D
CVT2	0,42E	62	D / W	1 1	CET4	0x0D
0050	0x3F	03	R/W	4 1	3ETT	0.0E
SOF2	0x40	64	R/W	4 1	SET2	0x8F
GAP.1	0x41	65	R/W	4 1	SET3	0x90
GAP.2	0x42	66	R/W		SET4	0x91
HYO2	0x43	67	R/W	[	SET5	0x92
OP2	0x44	68	R	1 1	SET6	0x93
ATVI	0x45	69	R/W	1 1	SET7	0x94
ICK	0x4B	75	P/W/	1 1	CETO	0x04
LOR INDA	0,40	70	D ( M	4 - 1	3610	0,95
INPT	0x4C	/6	R/W	4 1	SEI9	0x96
ANL1	0x4D	11	R/W	4 1	SET0	0x97
ANH1	0x4E	78	R/W	1 [	OUTY	0x9D
DP	0x4F	79	R/W		R-M	0x9E
LSPL	0x50	80	R/W	1 1	CJS	0x9F
USPL	0x51	81	R/W	ן ר	CJM	0xA0
SVI 1	0x52	82	R/W	1 1	CUT	0xA1
SVH1	0x53	83	R/W	1 1	OBIT	0×42
	0,55	0.0		4 1	D 01	0.44
	UX54	84	R/W	4 4	<u>D_01</u>	UXA5
PHH1	0x55	85	R/W	4 1	D_02	UxA6
ALD1	0x56	86	R/W	J	D_03	0xA7
ALT1	0x57	87	R/W	1	D_04	0xA8
HYS1	0x58	88	R/W	1 1	D 05	0xA9
	0x59	89	R/W	1 1	D_06	0xAA
	0x55	00	D / M	4 1	D 07	
	0.50	90		4 1	<u> </u>	0,40
HYS2	UX5B	91	R/W	4 4	D_08	UXAC
ALD3	UX5C	92	R/W	4 1	D_08	UXAD
ALT3	0x5D	93	R/W	l l	D_10	0xAE
HYS3	0x5E	94	R/W	] [	D_11	0xAF
SETA	0x5F	95	R/W	1 f	D 12	0xB0
CL 01	0x60	96	R/W	1 1	D 13	0xB1
CHO1	0x61	97	R/W	1 1	D 14	0vB2
	0x67	3/	D/W	4 1	D 15	0x02
CLO2	UX62	98	R/W	4	D_15	UXB3
CHO2	0x63	99	R/W	ļl	D_16	0xB4
TE	0x64	100	R/W	ļĺ		
TS	0x65	101	R/W	1 1		
TSPL	0x66	102	R/W	1 h		
TSDU	0x67	102	R/W	1 1		
13511	0,07	105	1 1 1 / 1 4 4	JL		

Parameter	rtegietei	Huurcoo	- R/I
- aramotor	Hex	Dec	10,7
CLO3	0x68	104	R/'
CHO3	0x69	105	R/'
RUCY	0x6A	106	R/
WALL	0x6B	107	<u> R/'</u>
PSL	UX6C	108	R/1
BIIS	0x6D	1109	R/
BALID	0x6E	111	R/
INT	0x70	112	R/
SVOS	0x71	113	R/
PVOS	0x72	114	R/
PVOH	0x73	115	R/
PVFT	0x74	116	R/
UNIT	0x75	117	R/'
OUD	0x76	118	R/'
HZ	0x77	119	R/'
NP2	0x78	120	R/
ANL2	0x79	121	R/
ANH2	0x7A	122	R / 1
DP_2	0x7B	123	R/
LSP2	0x7C	124	R/
USP2	0x7D	125	R/
SVL2	0x7E	126	R/
SVH2	0x7F	127	R/
PLL2	0x80	128	<u> R/</u>
PHH2 SVO2	0481	129	R/
SVU2	0x82	130	
PV32	0x84	132	
	0x85	132	
11112	0x86	134	R/
DIE	0x8C	140	R/
DIS	0x8D	141	R/
SET1	0x8E	142	R/
SET2	0x8F	143	R/
SET3	0x90	144	R /
SET4	0x91	145	R/
SET5	0x92	146	R/
SET6	0x93	147	R/
SET7	0x94	148	R / 1
SET8	0x95	149	R/
SET9	0x96	150	R/
SET0	0x97	151	R/
OUTY	0x9D	157	R/
R-M	0x9E	158	$+ \frac{R}{2}$
CIM	UX9F	159	K/
CIT	0xA0	161	
OBIT	0xA1	162	
D 01	0x45	165	R/
D 02	0xA6	166	
D 03	0xA7	167	
D_04	0xA8	168	
D 05	0xA9	169	
D 06	0xAA	170	
D 07	0xAB	171	R/
D 08	0xAC	172	R/
D 09	0xAD	173	R/
D 10	0xAE	174	R/
D 11	0xAF	175	R/
D 12	0xB0	176	R/
D_13	0xB1	177	R/
D 14	0xB2	178	R/
D 15	0xB3	179	R/
D_13		180	R/
D_15 D_16	0,04		
D_10 D_16	0704		
D_13 D_16	0704		

% : Press SHIFT key the upper display will show PV/PV2 value, this function can let user easy to monitor PV with this parameter effect.