

# FE300 DIN Rail Temperature Controller

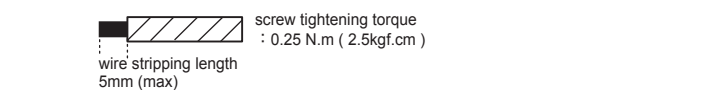
## User's Manual

VER 2.7 2016-12

### 1. Notice

- 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!

- Warning**
1. Please confirm the AC power wiring to controller is correct, otherwise it will be caused an aggravated damage on controller.
  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 ~ 50°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

Output 1	Output 2	Alarm	TRS	DI	COMM	Input type	Power
FE300-1	0	1	0	0	0	01	A
0	None	0	None	0	None	See input Range type code	A AC85-265V
1	Relay	1	1 Set	1	A	4-20mA	D DC 24V
2	Voltage Pulse (SSR Drive)	2	2 Sets	2	B	0-20mA	
3	4-20mA				C	0-5V	
4	0-20mA				D	0-10V	
A	0-5V					1-5V	
B	0-10V					2-10V	
C	1-5V						
D	2-10V						

※ : Block means optional functions with additional charge.

### 3. Specifications

Power supply voltage	85 ~ 265 VAC , DC 24V (Optional)
Frequency	50/60 Hz
Power consumption	Approx 6VA
Memory	Non-volatile memory EEPROM Accuracy : 0.2% FS Sample time 50ms
Sensor input	TC : K · J · R · S · B · E · N · T · W · PL11 · L RTD : PT100 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 output	Relay SPST-NO, 250 VAC, 8A (resistive load), electrical life: 100,000 operations SSR driver ON: 24 V OFF: 0V max. load current: 20 mA, with short-circuit protection circuit Linear 4-20mA, 0-20mA, 0-5V, 0-10V, 1-5V, 2-10V
Control method	ON-OFF or P/PLPID control
Alarm output	SPST-NO, 250VAC, 5A (resistive load), electrical life: 100,000 operations
Transmission	Signal : 4-20mA · 0-20mA · 0-5V · 0-10V · 1-5V · 2-10V Channel : SV,PV,SV2,PV2,OP1
Communication	Interface RS-485 Maximum unit : 32 pcs Maximum distance : 1200m Protocol Modbus RTU , TAIE Parity None , Odd , Even 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 ~ 50°C (with no icing or condensation) 20% ~ 90% RH
Storage temperature	-25 ~ 65°C (with no icing or condensation)
Dimension	W 26 x H 75 x D 90 mm
Weight (approx)	Approx 90g

Thanks for purchase FE series Digital Temperature Controller.  
Before using controller, please make sure the spec and type is correspond your demand.  
Please check the Voltage Frequency and input/output range.  
Please follow the operation manual and pass the user to keep it.

### 4. Input range table

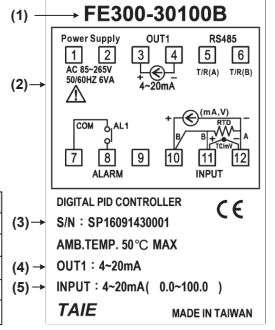
Model	Input type	Code	Range		
			°C	°F	
TC	K	K1	01	-50.0~400.0	-50.0~750.0
		K2	02	0~1200	0~2190
	J	J1	03	-50.0~400.0	-50.0~750.0
		J2	04	0~1200	0~2190
	R	R	05	0~1760	0~3200
		S	06	0~1760	0~3200
	B	07	0~1820	0~3300	
	E	08	0~900	0~1650	
	N	09	0~1300	0~2370	
	T	T1	10	-199.9~400.0	-199.9~750.0
	T2	11	-199~400	-199~750	
	W	12	0~2320	0~4200	
	PL11	PL 11	13	0~1200	0~2190
	L	L	14	0~800	0~1470
RTD	PT100	DP1	15	-199.9~600.0	-199.9~999.9
		DP2	16	-199~600	-199~1110
		DP3	17	0~600	0~1110
		AN1	18	0~25mV	
Linear	AN2	19	0~50mV		
		20	0~20mA		
		21	4~20mA		
		22	0~1V	-1.999~9.999	
		23	0~5V	-19.99~99.99	
		24	0~10V	-199.9~999.9	
		25	0~2V	-1999~9999	
		26	1~5V		
		27	2~10V		
		28	other		
29	AN3	0~70mV			

### 5. Packing list & Label information

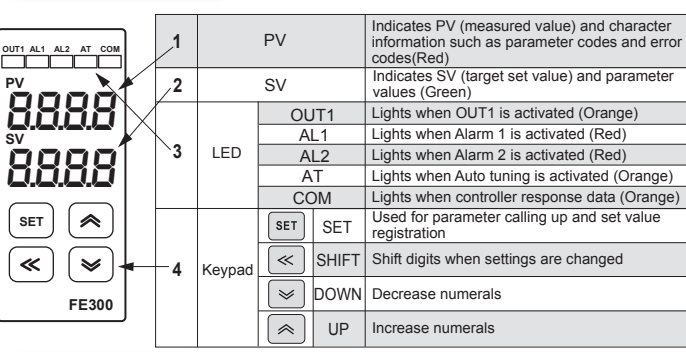
- #### 5.1 Packing list
1. Temperature Controller ...1pcs
  2. Manual .....1pcs
  3. Terminal protect cover.....2pcs

#### 5.2 Label Explanation

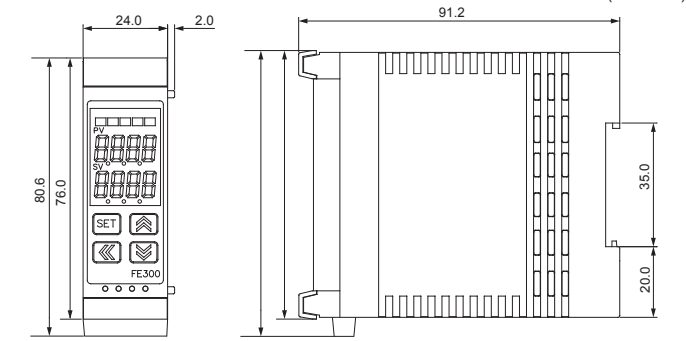
NO.	Explanation	Indication Example
(1)	Model Number	FE300-30100B
(2)	Terminal arrangement	Terminal arrangement for the FE300
(3)	Series Number	16091430001
(4)	Control output	OUT1 4-20mA
(5)	Input type	Multi-range (Multi-range input)



### 6. Parts description

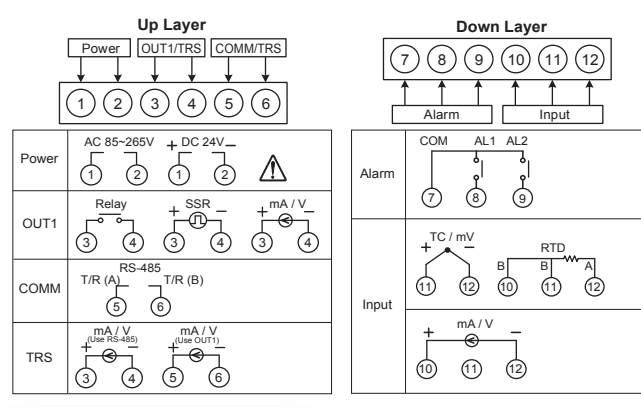


### 7. Installation



### 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.



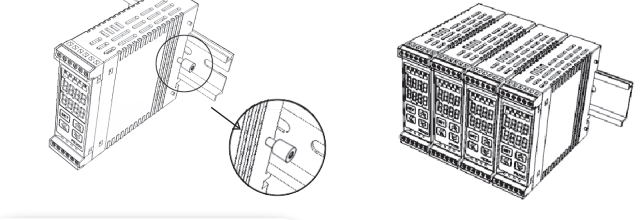
### 9. Mounting procedures

- 1. Installation**
  1. Plug the controller on DIN rail.
  2. Lodge the bottom in easily.
  3. When heard the sound of "ca" mean its plug in.
  4. Shake the controller to make sure of it.
- 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. Hold the controller and take it out.



### 3. Multi-installation

1. By the right site has one round inter stick · about 6mm high.
2. To keep a distance between controllers and efficiency of heat release.
3. If the environment temperature under 40 degree, than can take it off.



### 10. Basic function setting

#### 10.1 Input type setting

1. PV 8825 SV 8810 Operation panel display.
2. PV 1111 SV 8812 Hold [SET] key + [←] key 3 seconds, then the controller will enter LEVEL\_3 upper display show "INP1" lower display show current input type.
3. PV 1111 SV 8812 When [←] key is pressed, the lower display flashes.
4. PV 1111 SV 8812 Press [→] key and [↓] key to set the desire input type.
5. PV 1111 SV 8812 Press [SET] key to store new value of INP1.

※ : INP1 setting value refer the "Input range table"

#### 10.2 SV value setting

1. PV 8825 SV 8810 Operation panel display
2. PV 8825 SV 0000 When [←] key is pressed, the lower display flashes.
3. PV 8825 SV 0150 Press [←] key to choose digit and pressing [→] key and [↓] key to set the desire value.
4. PV 8825 SV 8150 Press [SET] key to store new value of SV.

#### 10.3 RUN/STOP mode selection

1. PV 8825 SV 8150 Operation panel display.
2. PV 8825 SV 560P Press [SET] key to get parameter setup display, "r-s" shown on the upper display.
3. PV 8825 SV 560P When [←] key is pressed, the lower display flashes.
4. PV 8825 SV 8P0N Press [→] key or [↓] key to select run/stop mode.
5. PV 8825 SV 8P0N Press [SET] key to store new value of R-S

### 10.4 Auto tuning execution

1. PV 8825 SV 8150 Operation panel display.
2. PV 8825 SV 8810 Press [SET] key to get parameter setup display, "AT" shown on the upper display.
3. PV 8825 SV 8810 When [←] key is pressed, the lower display flashes.
4. PV 8825 SV 89E5 Press [→] key or [↓] key to select auto tuning.
5. PV 8825 SV 89E5 Press [SET] key to store new value of AT.

When auto tuning AT LED lamp lit and start to output, through a few of circles to get new PID value with the precise control, if finished the AT LED will be lamp off.

### 10.5 PID value setting

1. PV 8825 SV 8810 Operation panel display.
2. PV 8825 SV 8810 Hold [SET] key 3 seconds, then the controller will enter LEVEL\_2 upper display show "P1" lower display show current P1 value.
3. PV 8825 SV 0030 When [←] key is pressed, the lower display flashes.
4. PV 8825 SV 0500 Press [→] key and [↓] key to set the desire P1 value.
5. PV 8825 SV 8500 Press [SET] key to store new value of P1.

※ : Press SHIFT key the upper display will show PV value, this function can let user easy to monitor PV and this parameter relationship.

### 10.6 ON/OFF control setting

1. PV 8825 SV 8810 Operation panel display.
2. PV 8825 SV 8810 Hold [SET] key 3 seconds, then the controller will enter LEVEL\_2 upper display show current P1 value.
3. PV 8825 SV 0030 When [←] key is pressed, the lower display flashes, upper display will show current PV value.
4. PV 8825 SV 000F Press [→] key until P1 = on/of (0.0)
5. PV 8825 SV 000F Press [SET] key to store new value.
6. PV 8825 SV 8810 Press [SET] key to get parameter setup display, "HYO1" shown on the upper display.
7. PV 8825 SV 8810 When [←] key is pressed, the lower display flashes.
8. PV 8825 SV 8810 Press [→] key and [↓] key to set the desire HYO1 value.
9. PV 8825 SV 8810 Press [SET] key to store new value.

Heat mode formula:  
PV ≥ (SV + HYO1) → OUT1 OFF  
PV ≤ (SV - HYO1) → OUT1 ON  
Cool mode formula:  
PV ≥ (SV + HYO1) → OUT1 ON  
PV ≤ (SV - HYO1) → OUT1 OFF

### 10.7 Alarm mode setting

1. PV 8825 SV 8810 Operation panel display.
2. PV 8825 SV 1111 Hold [SET] key + [←] key 3 seconds, then the controller will enter LEVEL\_3 upper display show "AL1" lower display show current input type.
3. PV 8825 SV 8811 Press [SET] key to get parameter setup display, "AL1" shown on the upper display.
4. PV 8825 SV 8811 When [←] key is pressed, the lower display flashes.
5. PV 8825 SV 8812 Press [→] key and [↓] key to set the desire ALD1 value.
6. PV 8825 SV 8812 Press [SET] key to store new value of ALD1. ※ Please refer to 15.1 Alarm mode.

### 10.8 Alarm value setting

1. PV 8825 SV 8810 Operation panel display.
2. PV 8825 SV 8810 Press [SET] key to get parameter setup display, "ALH" shown on the upper display.
3. PV 8825 SV 0000 When [←] key is pressed, the lower display flashes.
4. PV 8825 SV 0020 Press [→] key and [↓] key to set the desire AL1H value.
5. PV 8825 SV 8820 Press [SET] key to store new value of AL1H.

### 10.9 Manual mode selection

1. PV 8825 SV 8150 Operation panel display.
2. PV 8825 SV 8P0N Press [SET] key to get parameter setup display, "A-M" shown on the upper display.
3. PV 8825 SV 8P0N When [←] key is pressed, the lower display flashes.
4. PV 8825 SV 8P0N Press [→] key or [↓] key to select Auto/Man mode.
5. PV 8825 SV 8P0N Press [SET] key to store new value of A-M.
6. PV 8825 SV 8P0N Press [SET] key to get parameter setup display, "MOP" shown on the upper display.
7. PV 8825 SV 0000 When [←] key is pressed, the lower display flashes.
8. PV 8825 SV 3000 Press [→] key to choose digit and pressing [→] key and [↓] key to set the desire value.
9. PV 8825 SV 1000 Press [SET] key to store new value of MOP.

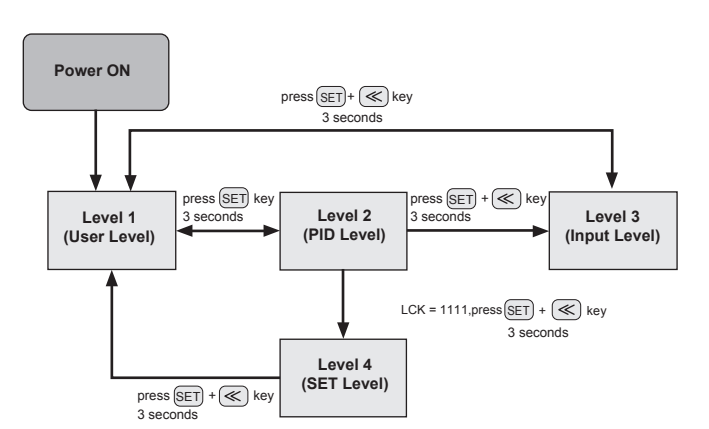
※ : SET8.2=1 (Show A-M & MOP parameter)

### 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



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

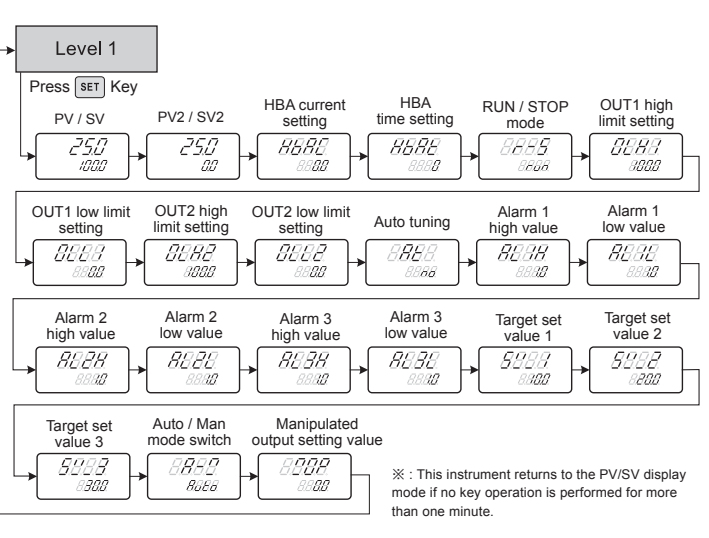
#### 11.3 Data lock (LCK) function

Lock and protect set data of parameters. this function avoid the important parameters to being changed by operator during operation. If parameter cannot be changed check the LCK setting value first.

LCK	LEVEL				Remark
	Level_1	Level_2	Level_3	Level_4	
0000	⊙	⊙	⊙	X	modify LEVEL_1_2_3 parameter available (initial)
1111	⊙	⊙	X	⊙	modify LEVEL_1_2_4 parameter available
0110	⊙	⊙	X	X	modify LEVEL_1 parameter available
0001	⊙	⊙	X	X	only approval modify parameter SV · LCK
0011	⊙	⊙	X	X	only approval modify parameter SV · LCK · R-S
0101	⊙	⊙	X	X	only approval modify parameter LCK

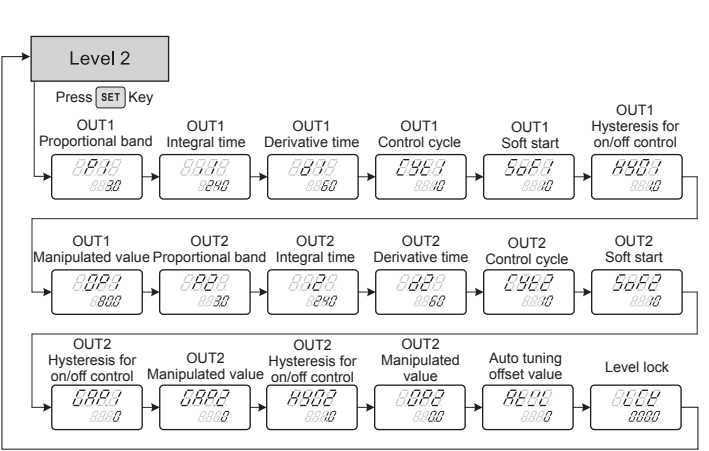
⊙ : approval X : inhibit

#### 11.4 Level 1 (User Level) all parameters display



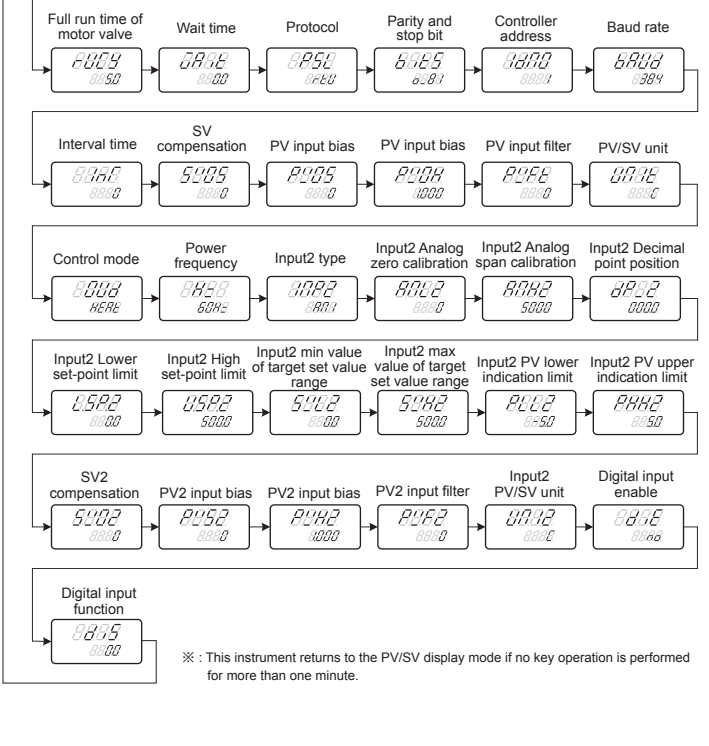
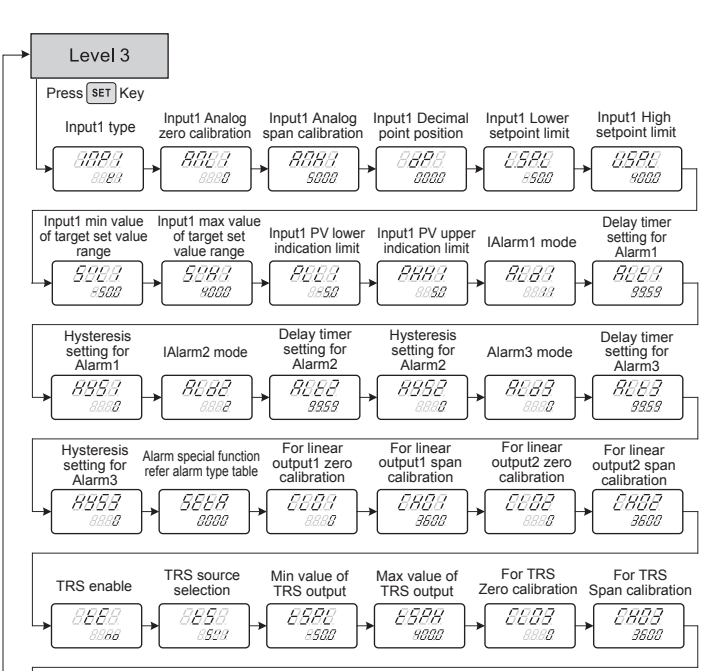
※ : This instrument returns to the PV/SV display mode if no key operation is performed for more than one minute.

#### 11.5 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.

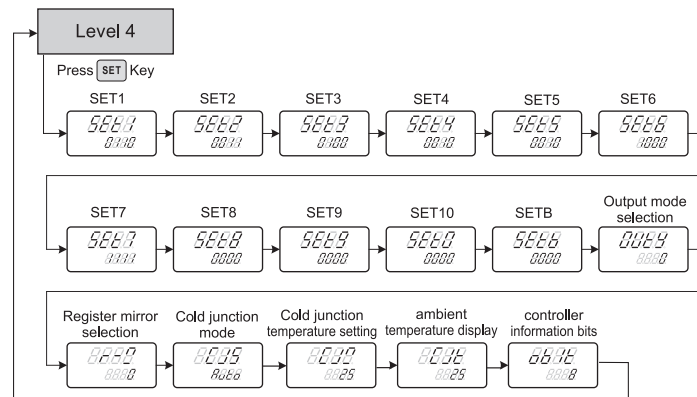
#### 11.6 Level 3 (Input Level) all parameters display



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



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



※ : 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 error.

LED	Error	Solution
ERR1	INIE: Input1 Error	Check whether input loop is opened or wiring incorrect.
ERR2	UUU1:PV is above USPL	Check whether the input value is correct or not.
ERR3	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.

LED	Error	Solution
ERR4	ADCF: A/D convert failed	Send back repair.
ERR5	CJCE: Cold junction compensation failed	Send back repair.
ERR6	RAMF: EEPROM failed	Send back repair.

### 13. Parameters hide / display table on Level 4

SET1	4	3	2	1
SET1_1	0	hide	HBAC	HBAT
SET1_2	0	hide	R-S	
SET1_3	0	hide	OLH1	OLL1
SET1_4	0	hide	OLH2	OLL2
SET2_1	0	hide	AT	
SET2_2	0	hide	AL1H	AL1L
SET2_3	0	hide	AL2H	AL2L
SET2_4	0	hide	AL3H	AL3L
SET3_1	0	hide	SV_1	SV_2
SET3_2	0	hide	ANL_1	ANH1
SET3_3	0	hide	LSPL	USPL
SET3_4	0	hide	SVL1	SVH1
SET4_1	0	hide	PLL1	PHH1
SET4_2	0	hide	ALD1	ALH1
SET4_3	0	hide	ALD2	ALH2
SET4_4	0	hide	ALD3	ALH3
SET5_1	0	hide	SETA	
SET5_2	0	hide	CLO1	CHO1
SET5_3	0	hide	CLO2	CHO2
SET5_4	0	hide	TE	TS
SET6_1	0	hide	RECY	WAIT
SET6_2	0	hide	PSL	IDNO
SET6_3	0	hide	SVOS	
SET6_4	0	hide	PVOS	PVOH

Parameter	LED	Content	Range	Initial	Level
SET7_1	0	hide	PVFT		
SET7_2	0	hide	UNIT		
SET7_3	0	hide	OU2		
SET7_4	0	hide	HZ		
SET8_1	0	hide	DIE DIS		
SET8_2	0	hide	A-M MOP		
SET8_3	0	hide	reserve ,do not care		
SET8_4	0	hide	reserve ,do not care		
SET9_1	0	hide	Channel 2 input disable		
SET9_2	0	hide	Channel 1 analog input reverse display disable		
SET9_3	0	hide	Channel 2 analog input reverse display disable		
SET9_4	0	hide	reserve ,do not care		
SETB_1	0	hide	In TP-15 power-on in idle mode disable		
SETB_2	0	hide	In TP-15 HBA detect disable		
SETB_3	0	hide	Modbus RTU RAM only mode disable		
SETB_4	0	hide	reserve ,do not care		

### 14. List of parameters

Parameter	LED	Content	Range	Initial	Level
PSL	ERR1	Protocol selection 0: TIAE 1: Modbus RTU	1 0	Modbus RTU	Level 3
BITS	ERR2	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	ERR3	Controller address	255 0	1	Level 3
BAUD	ERR4	Baudrate 0: 2400 1: 4800 2: 9600 3: 19200 4: 38400 5: 57600 6: 115200 bps	6 0	38400	Level 3
INT	ERR5	Interval time (ms) Use for data response delay	250 0	0	Level 3
R-M	ERR6	Register mirror selection	20 0	0	Level 4
AL1H	ERR7	Alarm value upper limit 1	9999 -1999	10	Level 1
AL1L	ERR8	Alarm value lower limit 1	9999 -1999	10	Level 1
AL2H	ERR9	Alarm value upper limit 2	9999 -1999	10	Level 1
AL2L	ERR10	Alarm value lower limit 2	9999 -1999	10	Level 1
AL3H	ERR11	Alarm value upper limit 3	9999 -1999	10	Level 1
AL3L	ERR12	Alarm value lower limit 3	9999 -1999	10	Level 1
ALD1	ERR13	Alarm1 mode selection	30 0	11	Level 3
ALD2	ERR14	Alarm2 mode selection	30 0	2	Level 3
ALD3	ERR15	Alarm3 mode selection	30 0	0	Level 3
ALT1	ERR16	00.00: Flicker 99.59: Continued ON	99.59 00.00	99.59	Level 3
ALT2	ERR17	00.01~99.58: delay time	99.59 00.00	99.59	Level 3
ALT3	ERR18		99.59 00.00	99.59	Level 3
HYS1	ERR19	Hysteresis setting for alarm1	1000 0	0	Level 3
HYS2	ERR20	Hysteresis setting for alarm2	1000 0	0	Level 3
HYS3	ERR21	Hysteresis setting for alarm3	1000 0	0	Level 3
SETA	ERR22	Alarm special function Please refer to 15.2.	1111 0000	0000	Level 3

### 14.3 PID GROUP

Parameter	LED	Content	Range	Initial	Level
* P1	ERR23	OUT1 Proportional band 0: 0.00% ON/OFF control 0.1~200.0 : PID control	200.0 0.0	3.0	Level 2
* I1	ERR24	OUT1 Integral time	3600 0	240	Level 2
* D1	ERR25	OUT1 Derivative time	2400 0	60	Level 2
CYT1	ERR26	OUT1 Control cycle 0: 0.00% Linear signal 1: 0.55% SSR drive 2~150 : Relay	150 0	10	Level 2
GAP.1	ERR27	Control gap 1 (for output 1)	1000 0	0	Level 2
* P2	ERR28	OUT2 Proportional band 0: 0.00% ON/OFF control 0.1~200.0 : PID control	200.0 0.0	3.0	Level 2
* I2	ERR29	OUT2 Integral time	3600 0	240	Level 2
* D2	ERR30	OUT2 Derivative time	2400 0	60	Level 2
CYT2	ERR31	OUT2 Control cycle 0: 0.00% Linear signal 1: 0.55% SSR drive 2~150 : Relay	150 0	10	Level 2
GAP.2	ERR32	Control gap 2 (for output 2)	1000 0	0	Level 2
HYO1	ERR33	Hysteresis for OUT1 on/off control	1000 0	1	Level 2
HYO2	ERR34	Hysteresis for OUT2 on/off control	1000 0	1	Level 2

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

### 14.4 SV GROUP

Parameter	LED	Content	Range	Initial	Level
SV	ERR35	Local set value for input1	SVH1 SVL1	0	Level 1
SV2	ERR36	Local set value for input2	SVH2 SVL2	0	Level 1
SV-1	ERR37	Target set value 1	SVH1 SVL1	0	Level 1
SV-2	ERR38	Target set value 2	SVH1 SVL1	0	Level 1
SV-3	ERR39	Target set value 3	SVH1 SVL1	0	Level 1
SVH1	ERR40	Minimum value of target set value range for input1	9999 -1999	LSPL	Level 3
SVL1	ERR41	Maximum value of target set value range for input1	9999 -1999	USPL	Level 3
SVH2	ERR42	Minimum value of target set value range for input2	9999 -1999	LSP2	Level 3
SVL2	ERR43	Maximum value of target set value range for input2	9999 -1999	USP2	Level 3
SVOS	ERR44	SV compensation	5000 -1000	0	Level 3
SVO2	ERR45	SV2 compensation	5000 -1000	0	Level 3

### 14.5 AT GROUP

Parameter	LED	Content	Range	Initial	Level
AT	ERR46	Auto-tuning 0: 0.000 1: 0.000 2: 0.000 3: 0.000	1 0	NO	Level 1
ATVL	ERR47	Auto tuning offset value	9999 0	0	Level 2

### 14.6 SYSTEM GROUP

Parameter	LED	Content	Range	Initial	Level
LCK	ERR48	Function lock Please refer to 11.3 Data lock function	1111 0000	0000	Level 2
UNIT	ERR49	Temperature unit 0: 0.00% °C 1: 0.00% °F 2: 0.00% Linear signal	2 0	C	Level 3
HZ	ERR50	Power frequency 0: 50Hz 50HZ 1: 60Hz 60HZ	1 0	60HZ	Level 3
UNI2	ERR51	Temperature unit 0: 0.00% °C 1: 0.00% °F 2: 0.00% Linear signal 3: 0.00% HBA current	3 0	C	Level 3
OBIT	ERR52	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_9 : ADCF Bit_10 : CJCE Bit_11 : INZE Bit_12 : UUU1 Bit_13 : NNN1 Bit_14 : UUU2 Bit_15 : NNN2	-- --	--	Level 4
CJS	ERR53	Cold junction mode selection 0: 0.00% Automatic compensation 1: 0.00% Manual compensation	1 0	Auto	Level 4
CJM	ERR54	Cold junction temperature setting	50 0	25	Level 4
CJT	ERR55	Ambience temperature display	-- --	--	Level 4

### 14.7 CONTROL GROUP

Parameter	LED	Content	Range	Initial	Level
R-S	ERR56	Run/stop mode 0: 0.00% Output stop 1: 0.00% Output enable	1 0	RUN	Level 1
OLH1	ERR57	High limit setting of manipulated value for output 1	100.0 0.0	100.0	Level 1
OLL1	ERR58	Low limit setting of manipulated value for output 1	100.0 0.0	0.0	Level 1
OLH2	ERR59	High limit setting of manipulated value for output 2	100.0 0.0	100.0	Level 1
OLL2	ERR60	Low limit setting of manipulated value for output 2	100.0 0.0	0.0	Level 1
A-M	ERR61	Auto/Man mode switch 0: 0.00% Automatic 1: 0.00% Manual	1 0	Auto	Level 1
MOP	ERR62	Manipulated output setting value	100.0 0.0	0.0	Level 1
SOF1	ERR63	Power-ON soft start function for output 1	5000 5	10	Level 2
OP1	ERR64	Manipulated value for output 1	100.0 0.0	--	Level 2
SOF2	ERR65	Power-ON soft start function for output 2	5000 5	10	Level 2
OP2	ERR66	Manipulated value for output 2	100.0 0.0	--	Level 2
* CLO1	ERR67	output1 zero calibration only for linear signal	9999 0	0	Level 3
* CHO1	ERR68	output1 span calibration only for linear signal	9999 0	3600	Level 3
* CLO2	ERR69	output2 zero calibration only for linear signal	9999 0	0	Level 3
* CHO2	ERR70	output2 span calibration only for linear signal	9999 0	3600	Level 3
OUD	ERR71	Control mode 0: 0.00% Heating mode 1: 0.00% 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

Parameter	LED	Content	Range	Initial	Level
PV	--	Process value for input1	USPL LSP1	--	Level 1
PV2	--	Process value for input2	USP2 LSP2	--	Level 1
INP1	ERR72	Input1 type selection Please refer to 4 Input range table	19 1	1	Level 3
* ANL1	ERR73	Analog input zero calibration for input 1	9999 -1999	0	Level 3
* ANH1	ERR74	Analog input span calibration for input 1	9999 -1999	5000	Level 3
DP	ERR75	Decimal point position for input1 0: 0.000 1: 0.00 2: 0.000 3: 0.000	3 0	1	Level 3
LSPL	ERR76	Minimum value of measured input1 scale	9999 -1999	--	Level 3
USPL	ERR77	Maximum value of measured input1 scale	9999 -1999	--	Level 3
PLL1	ERR78	PV lower indication limit for input1 PV<(LSP1+PLL1)=>show under range error message	1000 -1000	-5.0	Level 3
PHH1	ERR79	PV upper indication limit for input1 PV>(USP1+PHH1)=>show over range error message	1000 -1000	5.0	Level 3
* PVOS	ERR80	PV input1 bias(for zero) PV=(PV+PVOS)+PVOS	5000 -1000	0	Level 3
* PVOH	ERR81	PV input1 bias(for span) PV=(PV+PVOH)+PVOH	2.000 0.000	1.000	Level 3
PVFT	ERR82	Is used to eliminate noise against the measure input1 0: 0.00% no filter 0.1~10.0 : digital filter	10.0 0.0	0.0	Level 3
INP2	ERR83	Input2 type selection Please refer to ch4 Input range table	19 1	1	Level 3
* ANL2	ERR84	remote input zero calibration for input 2	9999 -1999	0	Level 3
* ANH2	ERR85	remote input span calibration for input 2	9999 -1999	5000	Level 3
DP_2	ERR86	Decimal point position for input2 0: 0.000 1: 0.00 2: 0.000 3: 0.000	3 0	1	Level 3
LSP2	ERR87	Minimum value of measured input2 scale	9999 -1999	--	Level 3
USP2	ERR88	Maximum value of measured input2 scale	9999 -1999	--	Level 3
PLL2	ERR89	PV2 lower indication limit for input2 PV2<(LSP2+PLL2)=>show under range error message	1000 -1000	-5.0	Level 3
PHH2	ERR90	PV2 upper indication limit for input2 PV2>(USP2+PHH2)=>show over range error message	1000 -1000	5.0	Level 3
* PVS2	ERR91	PV input2 bias(for zero) PV2=(PV2+PVS2)+PVS2	5000 -1000	0	Level 3
* PVH2	ERR92	PV input2 bias(for span) PV2=(PV2+PVH2)+PVH2	2.000 0.000	1.000	Level 3
PV2F	ERR93	Is used to eliminate noise against the measure input2 0: 0.00% no filter 0.1~10.0 : digital filter	10.0 0.0	0.0	Level 3

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

### 14.9 TRANSMISSION GROUP

Parameter	LED	Content	Range	Initial	Level
TE	ERR94	Transmission function enable 0: 0.00% (disable) 1: 0.00% (enable)	1 0	0	Level 3
TS	ERR95	Transmission output signal choose 0: SV 3: PV2 1: PV 4: OP1 2: SV2	10 0	0	Level 3
TSPL	ERR96	Minimum value of retransmission output	USPL LSPL	LSPL	Level 3
TSPH	ERR97	Maximum value of retransmission output	USPL LSPL	USPL	Level 3
* CLO3	ERR98	For transmission zero calibration	9999 0	0	Level 3
* CHO3	ERR99	For transmission span calibration	9999 0	3600	Level 3

※: Refer to the transmission example.

### 15. Alarm action explanation

#### 15.1 Alarm mode

ALDX	Alarm type	Description
00	No alarm	Not drive any alarm relays and the corresponding LED lamp.
01	Deviation high With hold action	$PV > (SV + ALXH) \rightarrow$ Alarm ON $PV \leq (SV + ALXH - HYSX) \rightarrow$ Alarm OFF
11	Deviation high With hold action	$PV > (SV + ALXH) \rightarrow$ Alarm ON $PV \leq (SV + ALXH - HYSX) \rightarrow$ Alarm OFF
02	Deviation low With hold action	$PV < (SV - ALXL) \rightarrow$ Alarm ON $PV \geq ($