

2、Features

- 2. 1、Process value display (PV): 4 digit green LED input display signal.
Set value display (SV): 4 digit yellow LED display. Can also display control output, valve feedback position or reverse input value.
- 2. 2、Preset mode: Panel settings (if ramp & soak feature is required, please advise if required when ordering).
- 2. 3、Input signal list:

Optional signal	Signal type	Measuring range	Resolution	Measuring accuracy	Input impedance
b	T/C B	600~1800℃	1℃	0.5%	>100K
S	T/C S	0~1600℃	1℃	0.5%	>100K
r	T/C R	500~1600℃	1℃	0.5%	>100K
t	T/C T	0.0~400.0℃	0.1℃	0.5%	>100K
E	T/C E	0~850℃	1℃	0.5%	>100K
J	T/C J	0~1200℃	1℃	0.5%	>100K
K	T/C K	0~1300℃	1℃	0.5%	>100K
Pt	RTD Pt100	-200~850℃	1℃	0.5%	(0.2mA)

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Optional signal	Signal type	Measuring range	Resolution	Measuring accuracy	Input impedance
CU or Ln	RTD Cu50/Cu100	-50.0~150℃	0.1℃	0.5%	(0.2mA)
	Impedance or 0-400 transmitter	Display -1999~9999	12 A/D	0.5%	(0.2mA)
	-20~100mV			0.5%	>100K
	0-1V			0.5%	>20K
0-5V	0.5%			>100K	
SU	0-10V			0.5%	>200K
	0-10mA 0-20mA 4-20mA			0.5%	≤102 Ω

The resolution of T/c R,S,B is 1℃, others 0.1℃ when within the range of 400℃. If 400℃ is exceeded the resolution 1℃. Please advise if deviation rescaling is required.

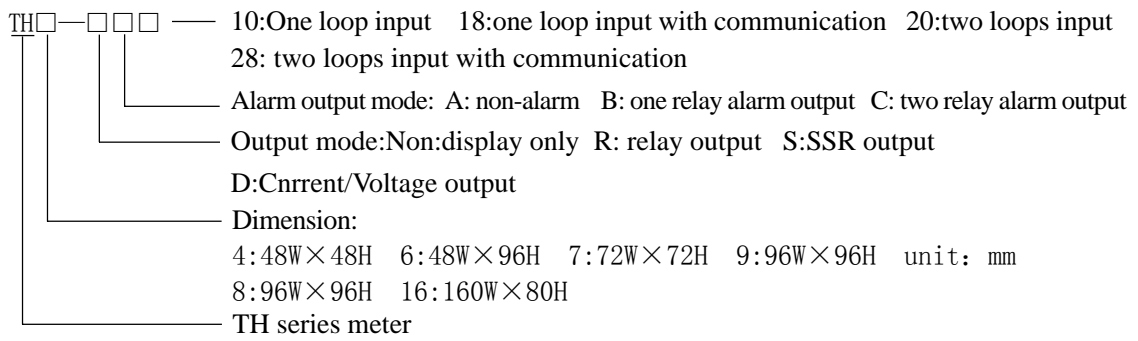
Frequency(pulse): Square wave, triangle and sine waves control available, (please advise if required when ordering).

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- 2. 4、separate output (alter the output module should you want to change the control output)
 - (1) One loop analogue or control output. The analogue (current) range is set freely, it can be 0-20mA.or 4-20mA, Output Impedance ≤600 Ω .Voltage output available upon request.
 - (2) Relay output for on/off applications: 250VAC/3A or 30VDC/3A. The controller can be configured for main output low alarm/high alarm, hysteresis band alarm.
 - (3) SSR output 24VDC/30mA
 - (4) SCR pulse output, can trigger a 5-500A SCR
- 2. 5、Auto/manual option configuration.
- 2. 6、(1) Sampling time 500ms
 - (2) Control mode: PID, ramp soak control, frequency pulse control, Auto-tune control, etc.
- 2. 7、2 Auxiliary 24VDC/30mA power supply available
- 2. 8、RS485 serial communication.
- 2. 9、Reliable and accurate, zero and full scale deviation rescaling settings
- 2. 10、Power supply:85-265V AC/DC, consumption≤5W
- 2. 11、Operating environment 0-50 °C

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3. Ordering code

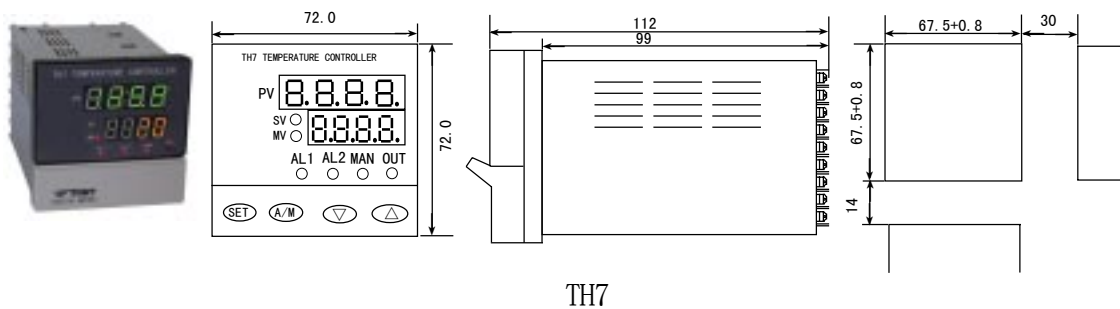


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4. Configuration and connection

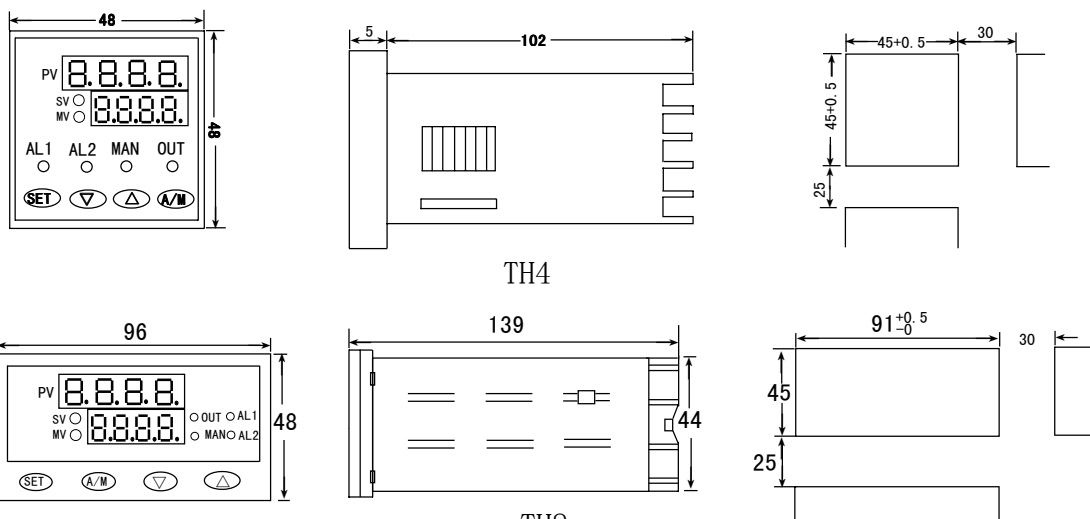
4.1 Install mode:

4.2 Dimension panel



TH7

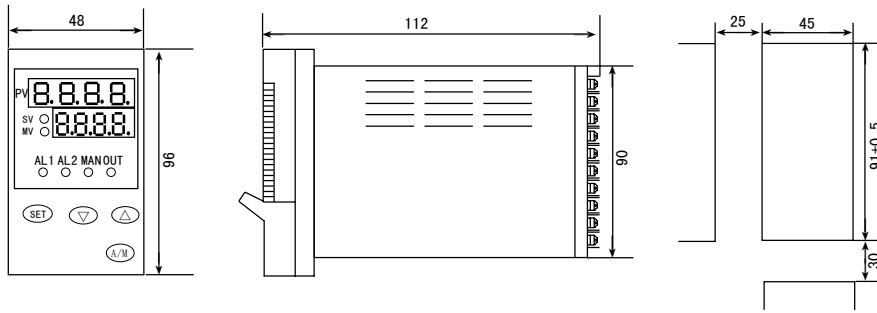
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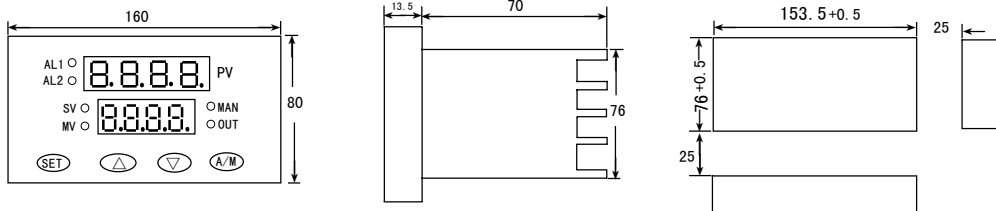
TH8

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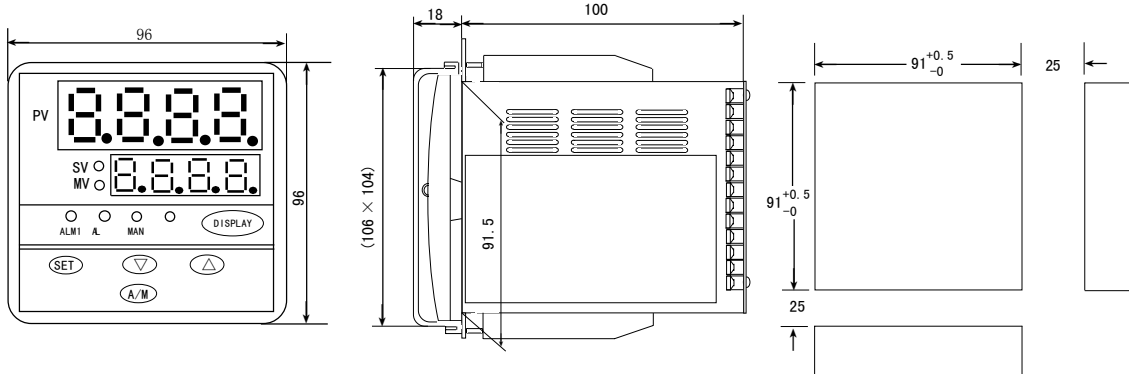
TH6



TH16



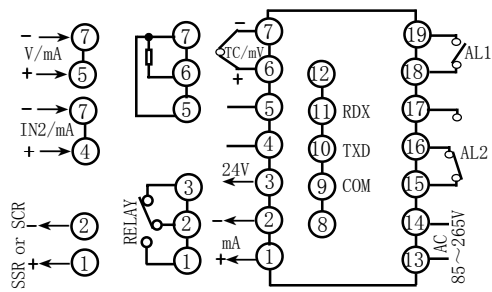
-08-



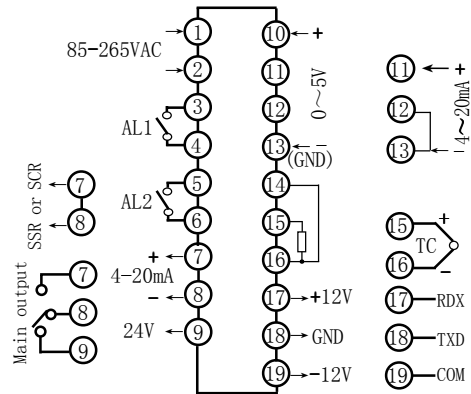
TH9

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4.3 TH7、TH9 Terminal Connection



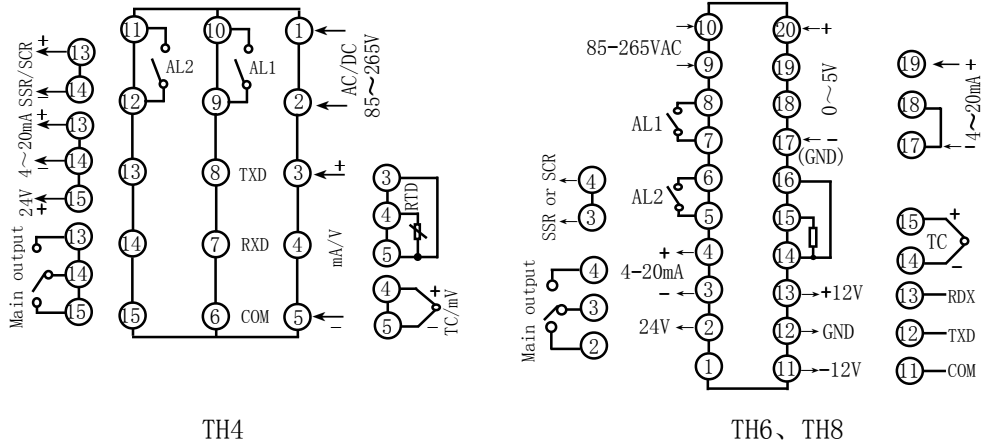
TH7



TH9

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4.4 TH4、TH6 Terminal Connection

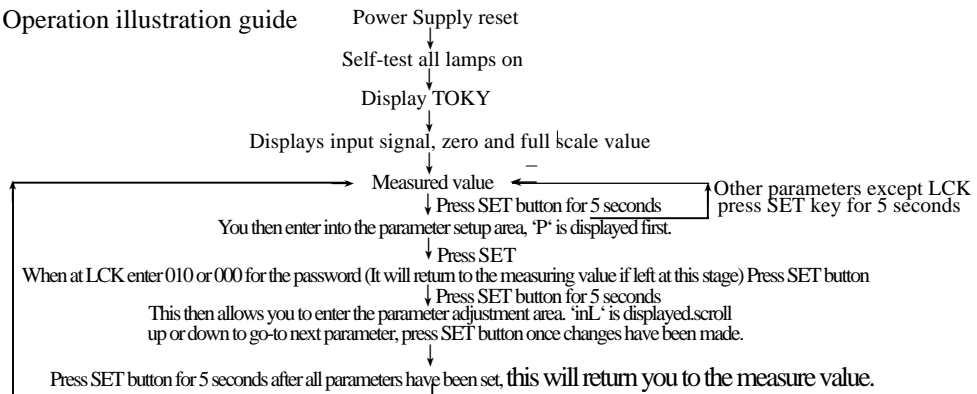


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5、Operation

- 5.1 All connections must be checked for correct installation before power is switched on.
 5.2 There are four keys for 3 modes of operation. The A/M button is the Manual/Automatic button. The controller will not operate while its being adjusted. The SET button changes parameters and is the conformation button. The UP/DOWN buttons increases/decreases parameters. The SET + UP buttons shifts within parameter.

5.2.1 Operation illustration guide



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5.22 Instructions for changing the control settings

PV Display reading or SV on the TH4:

UUU1 for high alarm or nnn1 for low alarm.

Press the SET button on the controller (Display button on the TH9), SV lamp will be on, the MV lamp off. This is the current setting.

Control feedback output

Press the SET button on the controller (Display button on the TH9), MV lamp will be on, the SV lamp off. This is the Control feedback output.

Controller setting instructions

Press the SET button on the controller (Display button on the TH9), SV lamp will be on, the display will continue to flash, this indicate that you are in the modification mode. Press the SET and UP keys simultaneously, then press the UP and DOWN buttons to change the value. Press the SET button to confirm settings.

Auto/Manual mode

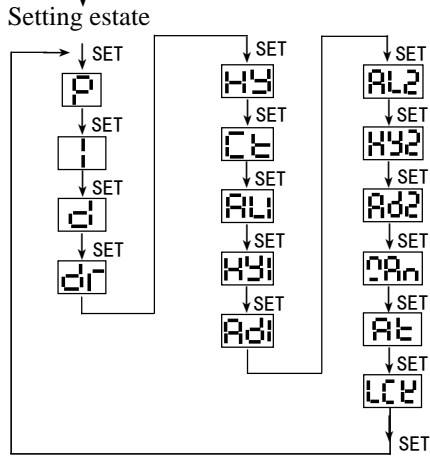
The controller can be set as manual or automatic. This can be done while the controller is in operation or when setting up. Press the A/M button to change. The lamp will indicate the mode, off means automatic, on means manual mode.

5.2.3 Control parameter mode

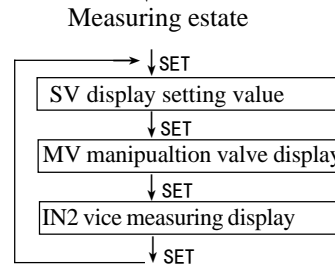
Display function: The PV display is the parameter code, the SV displays the parameter value. The SET button is to select parameters for change, SET and UP buttons is to move to the next digit for change. The up and down buttons is to change the value. Press SET button to confirm settings. The parameter lists are below.

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Parameter setting process

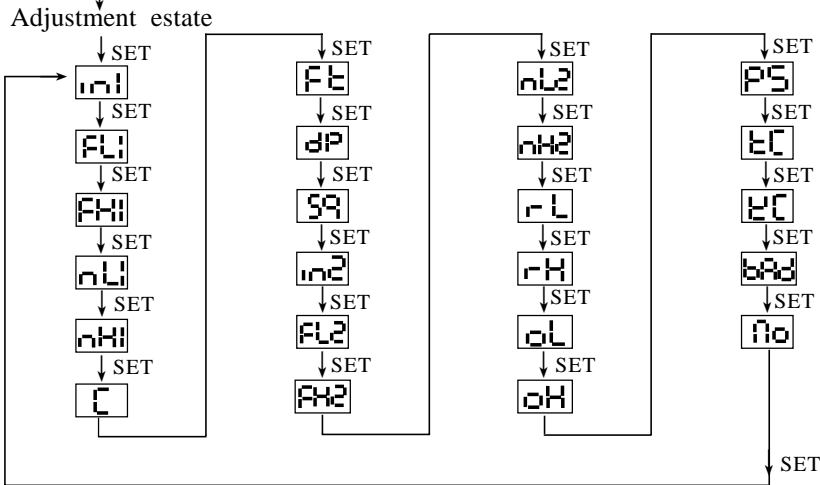


Measuring estate SV/MV window display functions:



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Parameter adjust process:



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5.2.4 Control Parameter settings

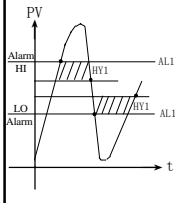
The PV display is the parameter code, the SV displays the parameter value. The SET button is to select parameters for change, SET and UP buttons is to move to the next digit for change. The up and down buttons is to change the value. Press SET button to confirm settings. Different models will have different parameters. We will supply with the correct settings before sale. This only leaves the user having to choose their desired input signal and offset adjustment.

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Form 4: Parameter setting method

Number	code	meaning	Specifications	range
1	P	Proportional band	P=0 on/off(use with Hy setting) If P>0 then=PID	0.0%-3600%
2	I	Integral time	I=0 the integral function is cancelled	0.0-3600S
3	D	Derivative time	D=0 the differential function is cancelled	0.0-3600S
4	dr	Output direction	0= heating, 1=cooling	0 / 1
5	HY	hysteresis	if P=0 (on/off action) use to set the on/off band	0.000-FH1
6	Ct	Cycle time	0=current output, 1=SSR output, 2-250=time proportion, this is for speed of adjustment. Setting instructions as follows: (1) Cycle time for SSR/SCR output should be set short about 12sec normally, this will improves accuracy. For relays this should be no less than 4 sec. This will prolong the relay life. At the same time if it is set too long it will slow down the reaction time. This is normally set to 15seconds. (2) Set the Ct to '0' when the current or time proportional output is selected, the adjustor will be faster and more accurate	0-250

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Number	code	meaning	Specifications	range
7	AL1	Alarm 1 setting	This is used as high/low alarms or band threshold alarm.	FL1-FH1
8	HY1	Alarm 1 differential 	This is used to prevent the alarms from fluttering on/off. e.g. AL1=800°C, HY1=2°C, the alarm will not trigger until the temperature reaches 800°C and will clear until 798°C. This function is also used with the on/off action to increase the accuracy, adversely if set too sensitive, this will shorten the use of the device.	0.000-FH1

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Number	code	meaning	Specifications	range
9	Ad1	Alarm deviation	0=High band deviation set, 1=Low band deviation set, 2=High alarm set, 3=Low alarm set.	0-3
10	AL2	Alarm 2 setting value	Refer AL1	FL1-FH1
11	HY2	Alarm 2 differential	Refer HY1	0.000-FH1
12	Ad2	Alarm 2 mode	0=High band deviation set, 1=Low band deviation set, 2=High alarm set, 3=Low alarm set.	0-3
13	ORn	Power supply Auto/ Manual	0=Manual power supply 1=Auto power supply	0 / 1

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Number	code	meaning	Specifications	range
14	PE	Auto tune PID	0=Normal PID1=Auto tune PID	0-2
15	LCY	Password setting	Enter 000 or 010 to enter setting area, 010 does not allow parameter changing. Press SET button for 3 sec, this allows you to enter the parameter adjustment area. (0=Manual power supply1=Auto power supply)	0-250
Parameter Adjustment				
16	inI	Input signal selection	<p>b S r t J E K P t L n O R S V O U L n</p> <p>“PE” means Pt100, “OR” means mA, “SV” means SV, “OU” means mV, “Ln” means other linear input such as: -20-100mV, 0-10mA....(must mention when order)</p>	0-11
17	FLI	Low input display	<p>Used for linear input (millivolt, voltage, or milliamp). E.g. 4-20mA signal, 4mA= lowest value to be measured.</p> <p>inI = Ln dP = 0.000 FLI = 0.000 FHI = 1.000</p> <p>In case temperature signal input, the parameter is the LO setting value within control range.</p>	-1999-9999

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Number	code	meaning	Specifications	range
18	FHI	High input display	Used for linear input (millivolt, voltage, or milliamp). E.g. 4-20mA signal 20mA= highest value to be measured.	-1999-9999
19	nLI	Lowest limiter/ Highest limiter	After selecting T/C input type, the user to set the zero and full scale parameters between 0-50mV. For linear input (millivolt, voltage, or milliamp). E.g. 4-20mA signal, 4mA= lowest figure, 20mA=highest figure. For RTD after connection set the zero and full scale as 0 – 313.59. Press the SET and UP button, the LED flashes, the controller will adjust itself. Then press the SET button, this then displays the renewed percent value	-100%-100%
20	nHI	Lowest limiter/ Highest limiter	Refer nL1	
21	C	Units of measurement	0= °C 1=°F	-100%-100% 0 / 1
22	FE	Filter	You can configure the controller to average the input over a period of 4 to 20 seconds before it uses the input value in the control algorithm calculations.	0-250

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Number	code	meaning	Specifications	range
23	dP	Decimal point	This can be set up to 3 places from the right with a linear input mode. The controller will self select when T/C or RTD inputs are used. Under 400°C, 1 decimal point, above non. The controller can still calculate at 0.1°C resolution.	0-3
24	SQ	Linear square root input	Functions only when linear input signals are received, not temperature input signals. If Sq=0 function not used, otherwise will be Example if SQ=10.0 and FH1=1000, then (1000x10%=100). The display value of FL1 will remain at 0 until the value is greater than 100. This function is usually used with flow applications.	0.0%-50.0%

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Number	code	meaning	Specifications	range
25	in2	The second loop input signal selection	<p>6 S r t J E 2 Pt Ln 0A 5V 0V Ln</p> <p>“Pt” means Pt100, “0A” means mA, “5V” means SV, “0V” means mV, “Ln” means other linear input such as: -20-100mV, 0-10mA... (must mention when order)</p>	0-11
26	FL2	Low input display	<p>Used for linear input (millivolt, voltage, or milliamp). E.g. 4-20mA signal, 4mA= lowest value to be measured.</p> <p>in2 = Ln dP = 0.000 FL2 = 0.000 FH2 = 1.000</p> <p>In case temperature signal input, the parameter is the LO setting value within control range.</p>	-1999-9999
27	FH2	High input display	Used for linear input (millivolt, voltage, or milliamp). E.g. 4-20mA signal 20mA= highest value to be measured.	-1999-9999

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Number	code	meaning	Specifications	range
28	nl2	Lowest limiter/ Highest limiter	After selecting T/C input type, the user to set the zero and full scale parameters between 0-50mV. For linear input (millivolt, voltage, or milliamp). E.g. 4-20mA signal, 4mA= lowest figure, 20mA=highest figure. For RTD after connection set the zero and full scale as 0 – 313.59. Press the SET and UP button, the LED flashes, the controller will adjust itself. Then press the SET button, this then displays the renewed percent value	-100%-100%
29	nh2	The second loop Scale adjustmen	As the above mentioned	-100%-100%
30	rl	Analogue out low value	PV Displays the analogue output when not in PID mode.	FL1-FH1
31	rh	see rL details	Refer rL value	FL1-FH1
32	ol oh	Analogue output zero adjustment	Press SET, UP and DOWN buttons together to adjust the zero and full scale figures. The LED lights flash then the unit will adjust automatically.	-100%-100%

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Number	code	meaning	Specifications	range
33	PS	Offset adjustment	You can specify the offset (if any) to be applied to the input. Applying a offset allows you to compensate for any difference between sensor reading and the point to be measured. The displayed process variable and setpoint will be offset by the value entered. E.g. P=0 no offset, if P=10, offset is 10°C/F.	-1999-FH1
34	tc	Temperature compensation setting	This should be set to the environment temperature.	0.0-50.0
35	kc	Temperature compensation constant	This parameter will have been set before sale within the range of 380-460 used for calculating the temperature compensation.	0.0-3600
36	bad	Communication speed setting	If the serial communication is used then the BAD defines the parameters 1=19200 2=3000 3=res	0-3
37	no	Communication address	If the serial communication is used then the NO defines the address between 0-100. A different value should be used to differentiate other address on the same line.	0-250

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