AI518 Series Temperature Controller Manual

Features:

- ⊙ TC / RTD universal input, selected by software menu.
- ⊙ With display, alarm and adjusting function
- ⊙ Advanced Two Degrees of Freedom PID Arithmetic.
- ⊙ Optional control output, modularization design.
- ⊙ Good anti-interference.
- ⊙ Switching power supply 100-240VAC.
- ⊙ Applied to system temperature control application.

For your safe, please read the below content carefully before you use the temperature controller!

▣ Safe Caution

※ Please read the manual carefully before you use the temperature controller.

※ Please comply with the below important points.

⚠ Warning An accident may happen if the operation does not comply with the instruction.

⚠ Notice An operation that does not comply with the instruction may lead to product damage.

※ The instruction of the symbol in the manual is as below.
⚠ An accident danger may happen in a special condition.

⚠ Warning

1. A safty protection equipment must be installed or please contact with us for the relative information if the product is used under the circumstance such as nuclear control, medical treatment equipment, automobile, train, airplane, aviation and equipment etc.. Otherwise, it may cause serious loss, fire or person injury.
2. A panel must be installed, otherwise it may cause creepage (leakage).
3. Do not touch wire connectors when the power is on, otherwise you may get an electric shock.
4. Do not dismantle or modify the product. If you have to do so, please contact with us first. Otherwise it may cause electric shock and fire.
5. Please check the connection number while you connect the power supply wire or input signal, otherwise it may cause fire.

⚠ Caution

1. This product cannot be used outdoors. Otherwise the working life of the product will become shorter, or an electric shock accident may happen.
2. When you connect wire to the power input connectors or signal input connectors, the moment of the No.20 AWG (0.50 mm2) screw tweaked to the connector is 0.74n.m - 0.9n.m. Otherwise the connectors may be damaged or get fire.
3. Please comply with the rated specification. Otherwise it may cause electric shock or fire, and damage the product.
4. Do not use water or oil base cleaner to clean the product. Otherwise it may cause electric shock or fire and damage the product.
5. This product should be avoid working under the circumstance that is flammable, explosive, moist, under sunshine, heat radiation and vibration. Otherwise it may cause explosion.
6. In this unit it must not have dust or deposit, otherwise it may cause fire or mechanical malfunction.
7. Do not use gasoline, chemical solvent to clean the cover of the product because such solvent can damage it. Please use some soft cloth with water or alcohol to clean the plastic cover.

1. Model

AI518 □—□ □ □

- Signal input: 10: One signal input without communication function
  18: One signal input with communication function (to be ordered)
- Alarm function: B: one alarm output C: two alarm output
- Output function: R: Relay Q: Logic (SSR) D: Current (4-20mA)
- Dimension (mm): 4: 48Wx48H 6: 48Wx96H 7: 72Wx72H 8: 96Wx48H 9: 96Wx96H
- AI518 series temperature controller

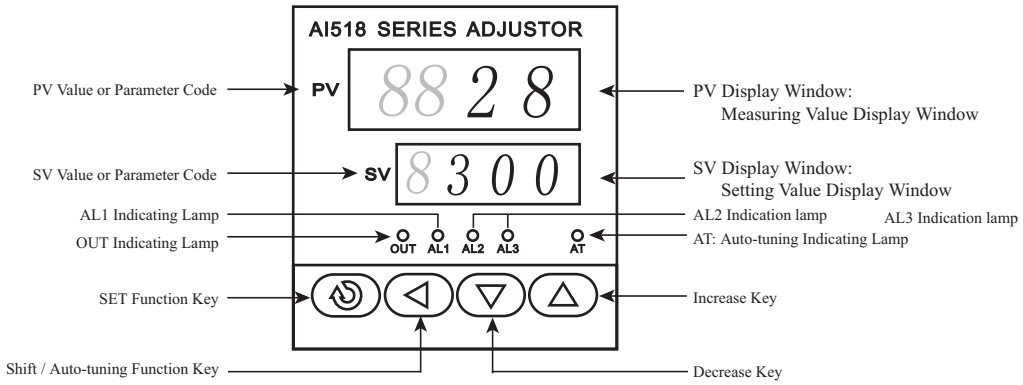
Model	Alarm output	OUT1	Communication
AI518-□RC10	2	Relay control output	No
AI518-□SC10	2	SSR control output	No
AI518-□DC10	2	4-20mA current control output	No
AI518-□RC18	2	Relay control output	RS485(MODBUS)
AI518-□SC18	2	SSR control output	RS485(MODBUS)
AI518-□DC18	2	4-20mA current control output	RS485(MODBUS)

Note：Control output：4-20mA current output, load resistance 600Ωmax. relay output load capacity 3A/250VAC. SSR output load capacity 30mA/24VDC
Alarm output：Relay output load capacity 1A/230VAC

2. Technical Parameters

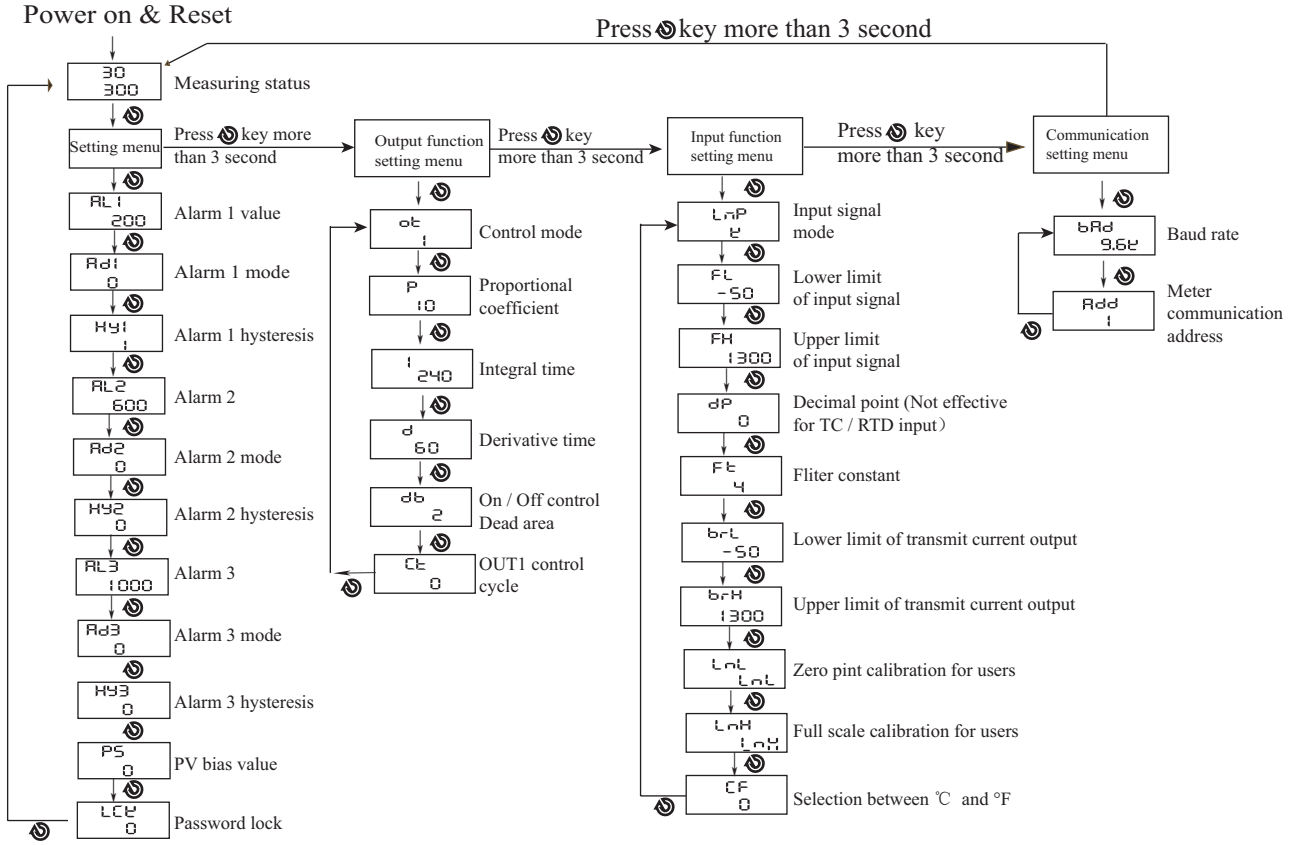
Power supply	100-240VAC/DC
Total current	＜30mA（220VAC）
Ambient environment	0-50℃ 45-85%RH
Measurement accuracy	0.3%FS
Control mode	ON/OFF control，PID heating control，PID cooling control
Communication function	RS485 communication interface, MODBUS protocol (To be ordered)
Panel protection level	IP65
Temperature excursion	≤0.01%FS/℃
Dielectric strength	Between the connectors of power supply to relay output, power supply to signal input, relay output to signal input ≥2000VDC; Between the low voltage signal isolated with each other ≥ 600VDC.

3. Panel indication & Press key operation



（1）Ⓢ key：In normal display status press Ⓢ key to show setting menu, press Ⓢ key more than 3S to show advanced setting menu.
（2）◀ key：Press ◀ key to make the digit to flicker and to be changable.
（3）▲,▼ key: To change value when it is changable.
（4）Press Ⓢ key in the advanced menu then the display returns back to normal display status.
（5）In normal display status, press ◀ key more than 3S, controller will start the auto-tuning function automatically，
at this moment the AT indicating lamp turns ON.

4. Operation Sequence

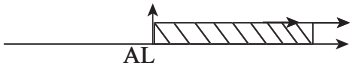
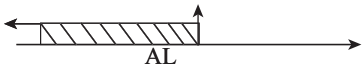
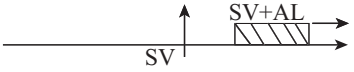
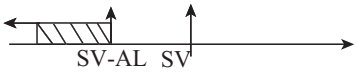


Parameter name	Indication	Setting range	Ex-factory setting
Setting menu			
AL1	Alarm 1 setting value	FL～FH	200
AD1	Alarm 1 mode	0～3	0
HY1	Alarm 1 hysteresis	0～1000 units	1
AL2	Alarm 2 setting value	FL～FH	600
AD2	Alarm 2 mode	0～3	1
HY2	Alarm 2 hysteresis	0～1000 units	1
AL3	Alarm 3 setting value	FL～FH	1000
AD3	Alarm 3 mode	0～3	0
HY3	Alarm 3 hysteresis	0～1000 units	1
PS	Measurement bias value	-1000～1000 units	0
LCK	If the units digit (4th digit from left to right) is 1, SV is prohibited to change. If the tens digit (3rd digit) is 1, menu parameters are prohibited to change.	0～9999	0
Input function menu			
OT	Control mode 0：ON/OFF；1：Heating control；2：Cooling control	0～2	1
P	Proportional coefficient	0～9999	10
I	Integral time	0～3600	240
D	Derivative time	0～3600	60
DB	Dead area for On / Off control	0～1000 units	5
CT	OUT control cycle	0～250	20
Input function setting menu			
INP	Input signal type	See Input Signal Table	K
FL	Input signal display lower limit	See Input Signal Table	-50
FH	Input signal display upper limit	See Input Signal Table	1300
DP	Decimal point setting, only effective for analog signal input	0～3	0
FT	Filter constant	1～250	4
BRL	Display lower limit for retransmit current	FL～FH	-50
BRH	Display upper limit for retransmit current	FL～FH	1300
LNL	Zero point calibration for users		LN
LNH	Full scale calibration for users		LN
CF	Selection between ℃ and °F	℃ / °F	C
Communication setting menu (Only for the controller with this function）			
BAD	Communication baud rate	4.8K, 9.6K	9.6K
ADD	Communication address	0～255	1

Input Signal Table

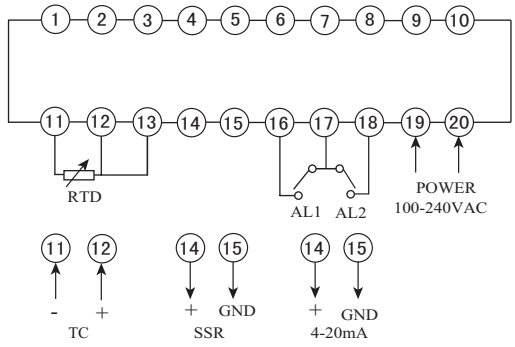
Code	Sign	Input type	Measuring range	Resolution	Input Impedance
0		K type TC	-50-1300℃	1℃	＞100KΩ
1		J type TC	-50-1000℃	1℃	＞100KΩ
2		E type TC	-50-800℃	1℃	＞100KΩ
3		T type TC	-50-400℃	1℃	＞100KΩ
4		PT100	-199.9-850.0℃	0.1 ℃	（0.2mA）
5		CU50	-50.0-150.0℃	0.1 ℃	（0.2mA）
6		CU100	-50.0-150.0℃	0.1 ℃	（0.2mA）
7		Linear signal indicated by customers	To be ordered		

Alarm parameters table

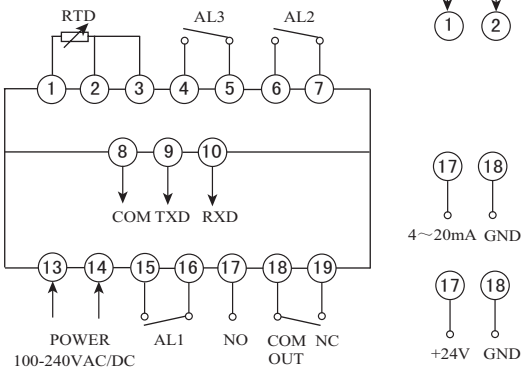
Alarm code	Alarm mode	Alarm output (AL1, AL2 has no relation with each other）
0	Absolute value upper limit	
1	Absolute value lower limit	
2	Deviation upper limit	
3	Deviation lower limit	

5. Connection Drawing

Model：AI518-6/8/9
Accuracy：0.3%FS
Temperature excursion:≤0.01%FS/℃



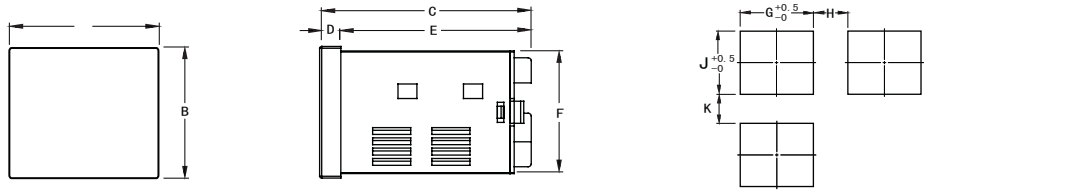
Model：AI518-7
Accuracy：0.3%FS
Temperature excursion:≤0.01%FS/℃



Please subject to the drawing on the product if any changes.

6. Dimension & Mounting Size

Front face size　　Side face size　　Panel mounting size



Model	A	B	C	D	E	F	G	H (Min)	J	K(Min)
4:(48*48)	48	48	101	10	91	45	45.5	25	45.5	25
6:(96*48)	48	96	100	6	94	91	45.5	25	91.5	25
7:(72*72)	72	72	100	10	90	67.5	68	25	68	25
8:(48*96)	96	48	100	6	94	45	91.5	25	45.5	25
9:(96*96)	96	96	101	10	91	90.5	91	25	91	25
Remark	Unit：(mm)　tolerance+0.5%(except for special notice)									

7. Simple Problem Shooting

Display Message	Shooting Method
Display HHHH	Input disconnect or over upper limit, please check input signal, FH value and ambient temperature.
Display LLLL	Input disconnect or under lower limit, please check input signal, FL value and ambient temperature.