

# Temperature Controller

## User Manual

### BI Series

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### Ordering Code

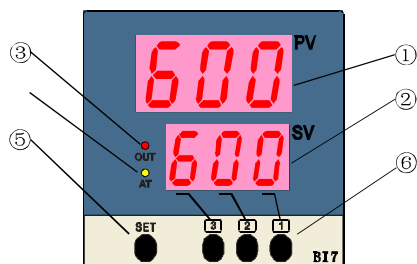
**BI** ☐ ☐ ☐ — **Input Signal:** K: K type J: J type E: E type P: Pt100 Cu: Cu50  
**Control Output:** R: Relay output S: SSR output  
**Sizes:** 4: 48X48 6: 48X96 7: 72X72 9: 96X96  
**BI Series of Economic Temperature Controller**

Eg: BI4-R-J means the size is 48X48, relay control output and input by thermocouple J.

### Technical Data

Input type Display range	K:K Type input(range:0-600℃) P:PT100 Type input(range:0-600℃) E:E Type input(range:0-400℃) J:J Type input(range:0-600℃) Cu:Cu50 Type input(range:0-150℃)
Deviation	0.8%F.S ±3Digit
Resolution	1℃
Control mode	PID control or ON/OFF control set by key
Control output	Relay : AC250V3A SSR: DC8-15V
Power	AC220V±20% 100—240VAC/DC (Customized)
Ambient temperature	0-50℃ 45-85%(No freezing)

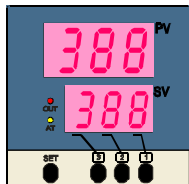
### Panel Illustration



- ①: Measure value
- ②: Set value
- ③: OUT indicate lamp
- ④: AT indicate lamp
- ⑤: Set/Confirm key (SET)
- ⑥: ①②③ Increase key

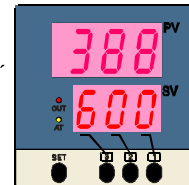
### Operation Process

#### A: SV value setting process



#### Temperature setting

Press one of ①②③ keys, one of SV digit flashing, each press the value keep increasing  
Stop pressing when you set the value as you want, after 4 flashings, the new SV set down.



Remarks: If the control temperature is not good, please start AT autotuning function. (Press SET and No.3 key at the same time, AT lamp will be on)  
PV value should not more than 80% of SV value, otherwise autotuning run error.  
For example, when the SV is 100, the PV should less than 80.

#### B: Autotuning function

Autotuning starts by press SET and No.3 key, AT lamp on. And finished AT lamp off. (All parameters can be modified only after autotuning finished.)

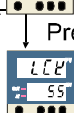
#### C: Parameters setting

In the measuring estate, Press and hold SET key for 5 seconds, enter parameter setting area.



#### Previous measured value

Press SET



(LCK key lock) Press 1,2,3 key to modify the number, then press SET key to confirm. The factory setting is 55  
When LCK=51, all the parameters are locked except SV and LCK value  
When LCK=55, all the parameters can be modified  
When LCK not 51/55, all the parameters are locked except LCK value

Press SET



(Proportional Band) Press 1,2,3 key to modify the number, then press SET key to confirm. Factory set is 0, Range is 0-600  
P=0 means it is the position control (ON/OFF). The larger the proportional band is, the slower the system heats. Under this condition the time to reach SV is longer. If the proportion temperature is too low, it will cause oscillation.

Press SET



(Integral Time) Press 1,2,3 key to modify the number, then press SET key to confirm. Factory set is 240, Range is 0-600  
I=0 means that it is PD heating system. The smaller the integral time is, the stronger the integral action is. And better for eliminating the bias between it and the setting value. If the integral time is too short, it may cause oscillation.

Press SET



(Derivation Time) Press 1,2,3 key to modify the number, then press SET key to confirm. Factory set is 60, Range is 0-600  
D=0 means that it is PI heating system. To decrease the derivative time to a proper value can prevent the system from oscillation. The bigger the D is, the derivative action is.

Press SET



(Hysteresis value) Press 1,2,3 key to modify the number, then press SET key to confirm. Factory set is 3, Range is 1-50. If P not 3, it is invalid. When P=0, HYS=3, and SV IS 100  
While the PV=100, it will stop heating, lower than 96, it will begin heating

Press SET



(Control cycle) Press 1,2,3 key to modify the number, then press SET key to confirm. Factory set is 20, Range is 1-255.  
Relay output: T=20 SSR output or SCR output: T=1

Press SET



(PV bias amend) Press 1,2,3 key to modify the number, then press SET key to confirm. Factory set is 0, Range is -50~50.  
PV bias applied to amend the bias caused by TC and compensation lead during the measuring process

Press SET



(FT filter constant) Press 1,2,3 key to modify the number, then press SET key to confirm. Factory set is 100, Range is 0-200.  
The smaller the filter is, the quicker response but it caused fluctuations

Press SET

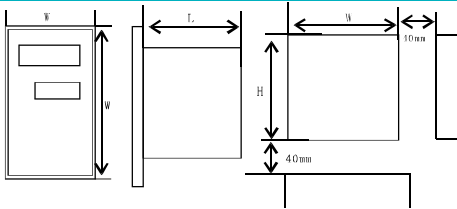
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### Dimension Size



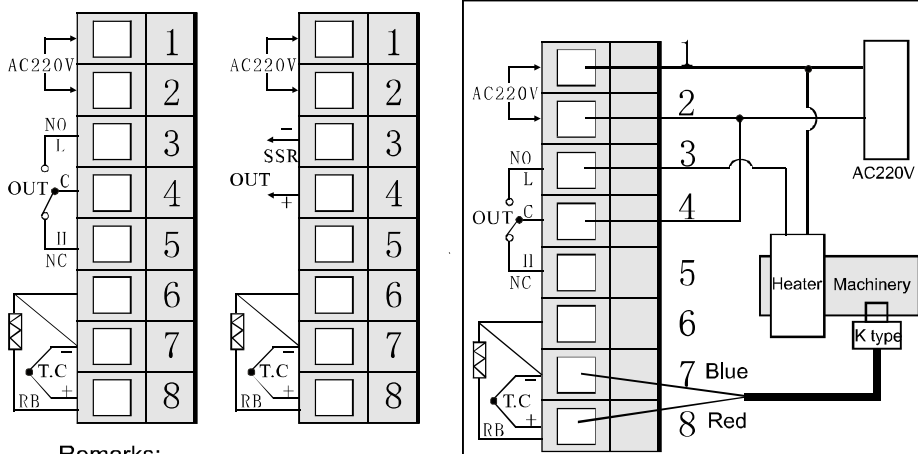
型号	面板尺寸 H X W	壳体尺寸 h X w X L	开孔尺寸 a X b
BI4	48X48	45X45X64	45.6X45.6
BI6	96X49	90X45X63	91X45.6
BI7	72X72	65X65X63	66X66
BI9	96X96	89X89X63	90X90

### Terminal Connection

#### Connection Caution

1. When input TC, should use the corresponding compensation lead.
2. Input signal wire should be far away from other noise source to avoid interference.
3. Attention to Min/Max of the input T/C, Wrong connect probably cause burning out.

Terminal connection (Note: Please refer to the product connection drawing)



#### Remarks:

1. Relay capacity: AC 3A/250V
2. SSR DC8-15V, Max 30mA

### Caution

#### 1. Installed in the following environments:

- A: Atmospheric pressure: 86-106Kpa, Ambient temperature: 0-50 degree, Humidity: 35%-85% (no freeze)
- B: Dramatic changes in the ambient temperature may cause condensation, corrosive, flammable gases, the main structure of direct vibration or shock water, oil, chemicals, smoke or steam excessive dust pollution, salt or metal powders, air conditioning blowing straight direct sun, thermal radiation accumulation place
- C: Instrument should be stored in dry and ventilated, non-corrosive gas application with the case of complete package

#### 2. Warranty

- A: Meter sold within one year from the date of billing, failure due to manufacturing quality full warranty by the factory responsible for, damager caused by improper use of the repair costs from the factory charge a fee

#### 3. About Error

- A: If the PV display "Err" or "HHH", it means it is out of range or TC/RTD does not work
- B: If the parameters can not be changed, please check if the LCK value is 55.
- C: The PV value display abnormal fluctuations, please increase the parameter FT value.

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