Changzhou Winpark Electronics Co., Ltd
Address: 6th Floor of Tianan Industrial Village A plus, Xinbei, Changzhou 213022, China
Tel: 0086-519-85132277 Email: winpark@cnwinpark.com
Fax: 0086-519-85108252 Web: www.cnwinpark.com

FOXB Series Temperature Controller Operation Manual

MC（苏）制 04000201
Version No.:V1.02

Thank you for using Winpark products. Please read this manual carefully before operating the controller and always keep it around you to make it available easily anytime.

WARNING

Wire connection

If failure or error of this instrument could result in a critical accident of the system, install an external protection circuit to prevent such an accident.
Choose fuse protection power supply wire and output wire to avoid strong current strike which may cause failure or damage to the controller.

Power supply

Please use the controller under rated power supply to avoid causing failure or damage to the controller.
Don't turn on thee power supply until all of the wiring is completed and checked again

Using sites limitation

Don't use this controller in the places subject to flammable or explosive gas to avoid cause fire.
Don't use this controller in dusty, corrosive and steam exhaust environment
Don't use this controller where there are strong shock and strike.

FOXB Series Temperature Controller is a universal model controller. Different sensor inputs such as RTD and TC are free to change with the controller, which brings much convenience to users. The well designed software, high quality components and elegant workmanship also provide customers perfect using experience. It is widely used in plastic, biology engineering, metallurgy, packing, chemical and boiler products and industry.

General Electrical Data

Rated voltage	180 ~240V AC 50/60Hz or 85-260V AC 50/60Hz
Power consumption	≤5VA
Insulation Strength	Power supply- input：1500V AC 1min Input-relay output：1500V AC 1min Power supply-relay output：1500V AC 1min
Insulation Resistance	Input-relay output：>20MΩ Input-power supply：>20MΩ Power supply-relay output：>20MΩ
Working Environment	Ambient temperature：0°C ~50°C Relative humidity：35%~85%（no condensation）

Measuring Data

Input sensor	TC ≤100Ω、RTD：≤5Ω per each conductor			
Measuring range	Display accuracy 1 ℃: K（-100 ~1200℃）； E(-50 ~600℃)； J(-100~800)； PT100（-100-500℃）； Cu50(-50 ~150℃)			
	Display accuracy 0.1 ℃: K(-50.0~150.0 ℃)； E(-50.0~150.0 ℃)； J(-50.0~150.0 ℃)； PT100(-50.0~100.0℃)；Cu50(-50.0 ~150.0℃)			
Input type	K、E、J		PT100、Cu50	
Display Accuracy	0.1℃	1℃	0.1℃	1℃
Tolerance	±0.5%FS	±1%FS	±0.5%FS	±1%FS

Product model

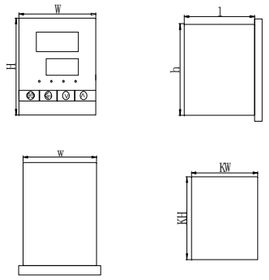
FOXB- □ □ □ □
(1) (2) (3) (4)

SN	Name	Explanation
(1)	Outer Dimension (mm)	A: 48mm×48mm×85mm B：48mm×96mm×82mm C: 96mm×48mm×82mm D：72mm×72mm×82mm E: 96mm×96mm×82mm
(2)	Power supply type	1: Linear power supply 180 ~240V AC 2: Switching power supply 85-260V AC
(3)	OUT1 output type	1: relay contact switch output(customize NO contact) 2: logic level output (used to control SSR) 3: single-phase SCR zero-crossing trigger output(to control thyristor) 4: 4~20mA output 5: 0~5V output 6: 0~10V output 7: phase-shift trigger SCR 8: 0~10mA output
(4)	OUT2/ALM output type	0: No output 1: relay contact switch output 2: logic level output (used to control SSR)

Specification code: − □ □ □ □ □ □
(1) (2) (3) (4) (5)

SN	Name	Explanation
(1)	OUT1 control methods	1: PID auto-tuning and fuzzy control 2: Step control
(2)	OUT2/ALM control methods	0: no alarm 1: upper limit alarm 2:lower limit alarm 3:lower/upper limit alarm 4:lower limit upward alarm 5:lower limit downward alarm (keep)
(3)	Input type	1: K 2:E 3:J 4: Pt100 5: Cu50
(4)	Upper limit of measuring range	1：100℃ 2：150℃ 3：400℃ 4：600℃ 5：800℃ 6：1000℃ 7：1200℃
(5)	Display accuracy	0：1℃ 1：0.1℃

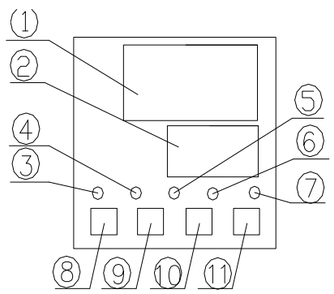
Outer dimension & hole dimension



Unit: mm

Model	Panel dimension		Shell dimension			Hole dimension	
	W	H	w	h	l	KW	KH
FOXB-A	48	48	44	44	85.5	45	45
FOXB-B	48	96	44	90	83	45	91
FOXB-C	96	48	90	44	83	91	45
FOXB-D	72	72	66	66	83	67	67
FOXB-E	96	96	90	90	83	91	91

Panel explanation



1. PV: measuring value
2. SV: setting value
3. OUT1:output indicator（green）
4. ALM1: alarm1 output indicator（red）
5. ALM2: alarm2 output indicator（red）
6. AT: auto-tuning indicator（red）
7. SP: special output indicator (red)
8. SET: set key
9. shift key & auto-tuning key
10. minus key
11. plus key & default parameter keyR1

Wiring connection

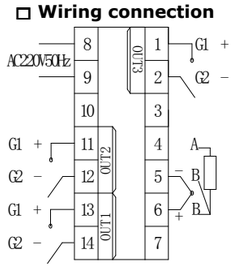


Figure 1

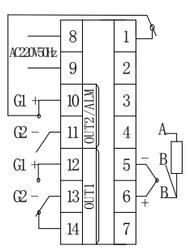


Figure 2

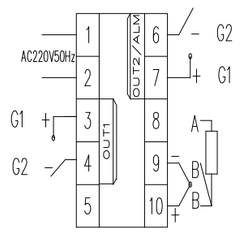
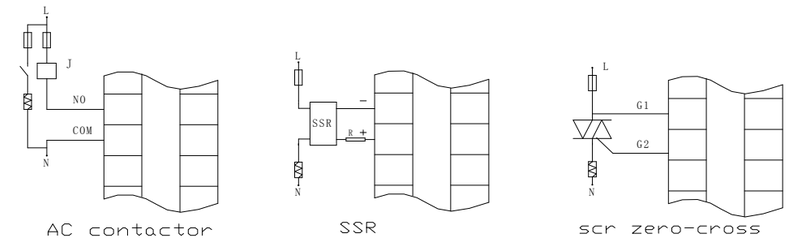


Figure 3 (Only for FOXB-A)

Notes:

1. Figure 1 is for SCR zero-crossing (or phase-shift) controller: OUT1 and OUT2 are both outputs, OUT3 is alarm output.
2. Figure 2 is for relay output (or logic level output) controller: OUT1 is main output. If it is AC 30A/220V, there is only one pair of normally open contacts; OUT2 is usually for alarm/refrigeration
3. Other special connection instructions please refer to the figures on the controllers.
4. Relay contacts output, AC 3A/220V (resistive load)
5. Logic level output (to control SSR) DC0-12V, maximum output current 60mA
6. Two-way SCR zero-crossing trigger to control thyristor

Output connection:



Operation instruction

Power on interface and explanation

Display	Explanation
	The upper line displays controller model; the lower line displays software version
	K： Input sensor type is K 1200：The upper limit of measured temperature range
	Measuring and controlling page upper line: measured temperature lower line: set temperature This page is in the normal working condition

Temperature setting parameter explanation

Display	Explanation
	normal working condition
	Press set key, the upper line displays "SV", the lower line flashes. The controller is in temperature setting mode. Change setting value by pressing shift key, minus key and plus key. The corresponsive number would flash.
	After setting the values, press set key to save parameters. The controller would start to work.

Error display

Display	Explanation
	System error-please contact distributor or Winpaprk
	System error-please contact distributor or Winpaprk
	Measured value exceeds the rated range or the input sensors are abnormal—check the status of the sensor.

The second level parameter setting

Display	Explanation	Measuring range and default value
PV 20 SV 1200	Measuring and controlling mode: Hold SET key for 3 seconds in measuring and controlling mode to ender LCK data lock value setting page.	
PV LCY	LCK： data lock LCK =0: All parameters could be set. LCK =1: Only SV value could be set; LCK =2: No parameters could be set Press SET to enter next page	Range：0，1，2 Default：1
PV P-A	P-A：Alarm methods 0: no alarm 1: upper limit alarm 2:lower limit alarm 3:lower/upper limit alarm 4: lower limit upward alarm 5: lower limit downward alarm (keep), see details in alarm type table. Press SET to enter next page	Range：0~5 Default：1
PV AL	AL：Lower limit deviation of alarm This parameter is alarm control value. Press SET to enter next page. When the display accuracy is set to 0.1, alarm parameter changes to 0.1 degree automatically R1	Range：0~200 Default：0
PV AH	AH：Upper limit deviation of alarm This parameter is alarm control value. Press SET to enter next page. When the display accuracy is set to 0.1, alarm parameter changes to 0.1 degree automatically R2	Range：0~200 Default：5
PV IK	IK： Smooth treatment In phase-shift or analog output controller, modify this parameter in order to output smoothly	Range：0~200 Default：0
PV P	P：Proportional band Proportional band for heat-side. Press SET to enter next page. (when P=0, the controller in stepping control mode)	Range：0~1000 Default：100
PV I	I：Integral time Integral time for heat-side (time for the next adjustment). Press SET to enter next page.	Range：0~360.0 Default：24.0
PV d	D：Derivative time Derivative time for heat-side (time for advance adjustment)。 Press SET to enter next page. (When it is stepping control, this parameter is return difference value and the unit is 0.1°C – "I" area is not sensitive then)	Range：0~1000 Default：60
PV It	IT：Overshooting restrain The smaller is the value, the smaller is the first overshooting, but it will reduce the time to reach the setting temperature. Press SET to enter next page	Range：0~100 Default：10
PV SP	SP：Proportional band separation To prevent overshooting or down shooting caused by proportional function. Press SET to enter next page.	Range：0~255 Default：0
PV t	T：Heat cycle time Heat cycle means the controller would output action one time in the cycle when using break output. Press SET to enter next page.	Range：1~180 Default：30
PV tr	TR：Temperature modification When there is temperature measuring error caused by sensor position or other factors, use this parameter to modify. Press SET to enter next page	Range：-99~100 Default：0
PV AT	AT：Auto-tuning Set AT=1 to enter auto-tuning mode ("AT" indicator flashes after pressing SET key); Set AT=0 to suspend auto-tuning. Press SET to enter LCK lock setting page.	Range：0，1 Default：0

The third level parameter setting

Display	Explanation	Measuring range and default value
PV 20 SV 1200	Measuring and controlling page: In measuring and controlling mode press SET key for 6 seconds to enter P-In input sensor type selecting page.	
PV P-In	P-In ： Input sensor type selecting page. Press minus and plus key to select. Press SET to enter next page. R4	Sensor Type： K:K type; E:E type; J:J type; Pt:Pt100; Cu:Cu50 Default: K

PV rAG	RAG： Upper limit of measuring range setting page. Press SET to enter next page	Default：1000° C
PV MIn	MIN： Lower limit of measuring range setting page. Press SET to enter next page	Default：0° C
PV dP	dP：Display accuracy selecting Press minus and plus key to select. Press SET to enter next page (main control is analog output). R4	0000：1℃ 000.0：0.1℃ Default：0000
PV IH	IH: To modify the biggest analog value output (amplitude). press SET key to enter P-In input sensor type selecting page. (Only works when main control is analog output).	Factory setting, can't be changed
PV IL	IL： To modify the smallest analog value output (zero point). Press SET key to enter next page. (Only works when main control is analog output).	Factory setting, can't be changed
PV 20 SV 1200	**After setting the parameters, press SET key for 3 seconds to save data automatically and return to the measuring and controlling page.**	

Remark:

R1：Press plus key for 3 seconds to recover all parameter to factory default value.

R2：when the display accuracy is 1℃, the default return difference is 1℃; when the display accuracy is 0.1℃, the return difference changes into 0.1℃ automatically.

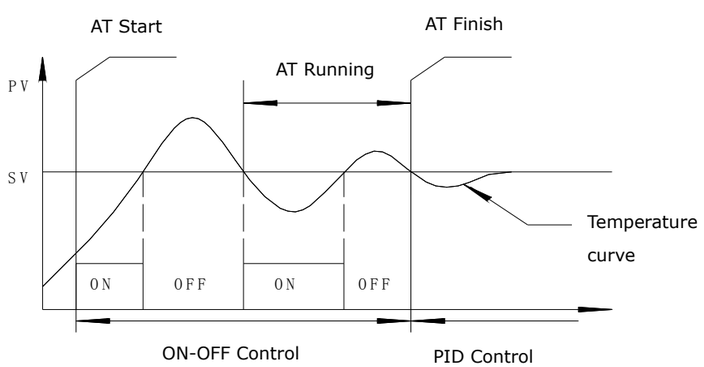
R3：When changing the sensor type, the measuring range would change accordingly and automatically. If the setting value exceeds the measuring range then, SV would be set into 0℃ automatically.

R4：when the controller display accuracy is changed into 0.1℃, the display of the following values: AH, AL, RAG, TR and MIN would change into0.1℃ automatically

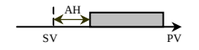
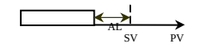
How to start and stop auto-tuning

PV AT SV 1	Method 1：In second level, press SET key to adjust setting value to auto-tuning page. Use plus/minus key to set value of the lower line to 1 Method 2：Press shift key for 3 seconds in measuring and controlling page, and then enter auto-tuning function.
PV 20 SV 1200	In processing of auto-tuning, the controller would figure out a group of new PID parameter by detecting the controlled object automatically. After auto-tuning, the new PID parameter would be saved automatically and auto-tuning would end then. And the controller would turn back to measuring and controlling page In processing of auto-tuning, press SET key would stop auto-tuning and turn the controller back to the measuring and controlling page

Auto-tuning process illustration



Alarm type and code

Setting value	Alarm type	Alarm output explanation
0	No alarm	Close alarm function
1	Upper limit alarm(deviation)	
2	Lower limit alarm(deviation)	
3	Upper/lower limit alarm(deviation)	
4	Lower limit upward alarm(deviation)	
5	Lower limit alarm(keep)	

Remark：

(1) The range marked by hatched line is ON

(2) What is "alarm keep"?

"Alarm keep" means no alarm outputs at the first time when turn on the controller or after setting parameters, even if the measured value is in the range of alarm.

When the measured value goes out of the alarm range and turns back to this range again, the controller would output alarm (ON).

This function is only available when the setting value is jumping program and deviation alarm.