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CHB Series Temperature Controller Operation Manual

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.

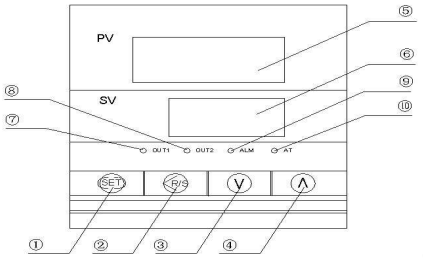
CHB Serial PID Intelligent Temperature Controller adopts computer chip as the main control unit as well as many advanced techniques such as multiple digital filter circuit, PID auto-tuning etc. It has advantages of high measurement accuracy, correct and stable temperature control, strong anti-interference and simple operation, and is widely used in chemical, ceramic, light, metallurgical, petrochemical and plastic industries. It is also an upgraded product of ordinary analogue meters.

□ General Electrical Data

Rated voltage	180-240V AC 50/60HZ 85-265V AC 50/60HZ	Power Consumption	≤5W
Accuracy class	1 class	Working environment	Temperature0°C ~50°C, RH: 35%~85%
Display accuracy	1°C	Connection methods	Terminal

In accordance with standard of "Q/320401HBD001-2000XMT series PID intelligent temperature controller"

□ Panel explanation



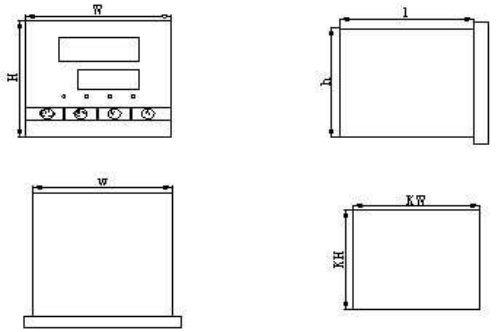
①set key （SET）
②shift key （R/S）
③minus key（V）
④plus key（Λ）
⑤measuring value（PV）
⑥setting value（SV）
⑦output1 indicator (OUT1 green)
⑧output2 indicator (OUT2 green)
⑨alarm indicator （ALM ,red）
⑩auto-tuning indicator（AT，red）

□ Product Model:

CHB □ - □ □ □ - □ □ □ □ □ □ □ □ □
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12)

S/N	Name	Description
(1)	External dimension	401: 48mm×48mm×85mm 402: 48mm×96mm×82mm 901: 96mm×48mm×82mm 702: 72mm×72mm×82mm 902: 96mm×96mm×82mm 168: 160mm×80mm×70mm
(2)	Control Methods	0: PID control 1: stepping control
(3)	Input Methods	1: thermocouple input 2: RTD input
(4)	Output Methods	1: break output
(5)	Refrigeration Methods	0: no refrigeration 1: stepping refrigeration 2:proportional refrigeration
(6)	Alarm Methods	0:no alarm 1:upper limit alarm 2:lower limit downward alarm 3:lower limit upward alarm
(7)	Input Type	1: K 2: E 3: Pt100 4: Cu50 6: J
(8)	Output Type	1: relay contact switch output; 2: logic level output (used to control SSR); 3: single-phase SCR zero-crossing trigger output (used to control thyristor);
(9)	Refrigeration Type	0: no refrigeration output; 1: relay contact switch output; 2: logic level output (used to control SSR); 3: single-phase SCR zero-crossing trigger output (used to control thyristor)
(10)	Alarm Type	0: no alarm output; 1: relay contact switch output; 2: logic level output (used to control SSR); 3:single-phase SCR zero-crossing trigger output (used to control thyristor)
(11)	Temperature Range	1: 0-100°C 2: 0-150°C 3: 0-400°C 4: 0-600°C 5: 0-800°C 6: 0-999°C
(12)	Power supply	Null: 180-240V -EP: 85 -260V

□ External dimension and hole size



Unit: mm

Model	Frame size		Shell size			Hole size	
	W	H	w	h	l	KW	KH
CHB401	48	48	44	44	85.5	45	45
CHB402	48	96	44	90	83	45	91
CHB901	96	48	90	44	83	91	45
CHB702	72	72	66	66	83	67	67
CHB902	96	96	90	90	83	91	91
CHB168	160	80	148	74	70	149	75

□ Wiring connection

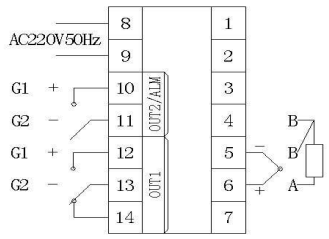


Figure1

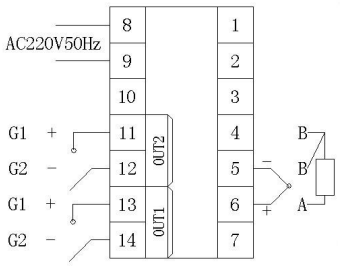


Figure2

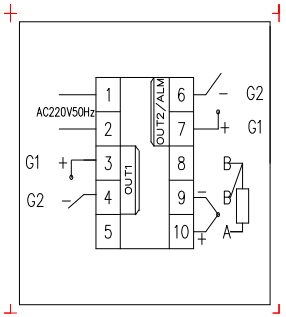
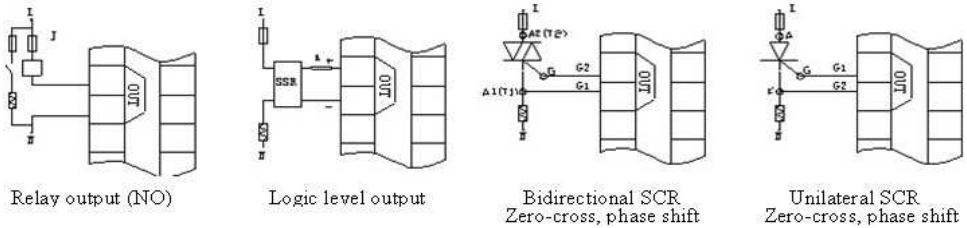


Figure3 (CHB401 ONLY)

Notes:

1. The voltage range for switch power supply is 85 -260V
2. In figure 1 and 3, OUT1 is main output. If it is AC 30A/220V, there is only one pair of normally open contacts; OUT2 is usually for alarm or refrigeration
3. Figure 2 is for phase-shift controller, OUT1 and OUT2 are both for output.
4. Other special connection instructions please refer to the figures on the controllers.
5. Relay contacts output, AC 3A/220V (resistive load)
6. Logic level output (to control SSR) DC0-12V, maximum output current 60mA
6. Two-way SCR zero-crossing trigger to control thyristor

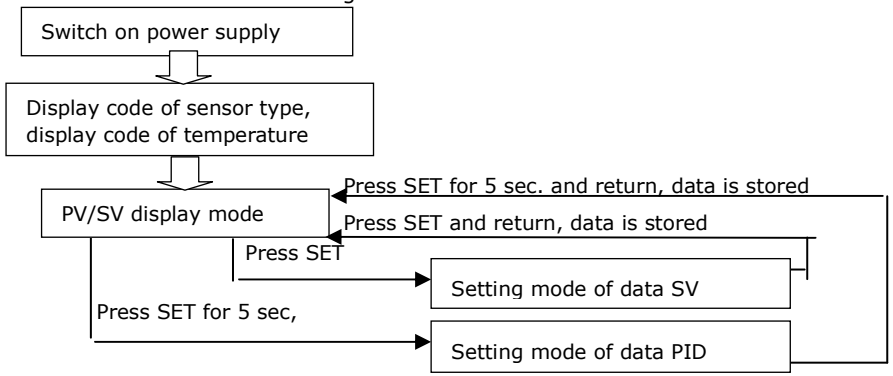
□ Output connection



Note: 1. Twisted-pair wire should be used to connect meter and SCR to reduce interference to SCR.
2. In SCR output, the power supply of heater and meter should be the same. For example, when use 3 phase power supply, if the meter uses U Phase~zero line(AC220V), the heater should use the same

□ Operation instruction

Operation Procedures When Entering into Each State



□ Parameter explanation

Sign	Name	Setting	Description	Initial Value
Pu	(Heating end) Proportional Band	1-100%* 0.1%	Set the heating proportional band, when Pv=0 the controller is under stepping heating control	050
Iu	Integral Time	1-200*10 sec	Remove static error, Iv=0 means PD heating control	042
du	Differential Time	0-200 sec.	Block overshoot through output of forecast thus to rise up stability of controller. Dv=0 means PI heating control	080
IFu	Overshoot Block	0-200°C	Block overshooting or undershooting caused by integral function	010
SPu	Proportional Band Separation	0-200°C	Block overshooting or undershooting caused by proportional function. When SP=0, this function is not available. And SP would be set to O automatically after auto tuning.	025
PIu	Refrigerating Proportion	0-100	Set refrigeration proportion, PIV=0 means stepping refrigerating or alarm control. It is ineffective for current or voltage output	000
AHu	Upper limit Alarm Data	0-100°C	1. Set upper limit deviation alarm data. 2.When PIv≠0, AHv means start value of refrigerating 3. When the controller is in lower limit downward alarm function, AHv value is lower limit alarm value	010
Cu	(Heating End) Output Cycle	1-100	Set circulation time of controller output (heating end). It is smoothing factor for current or voltage output. The larger the factor, the smoother the output	Relay:20 Voltage:3 SCR: 3
btu	Temperature Modifying parameter	0-200℃	To modify temperature difference. The default value is 100(correspond to environment temperature). For 1 unit it is 1 degree.	100
ru	Temperature Range	(20-99)*1 0°C	temperature measuring range （ Special instrument has no such function）	40
Atu	Auto-tuning	1, 2, 3	To make PID data to suit customer's system by auto-calculation	000
LKu	Data Lock	0, 1	When LKv= 000, all internal data are locked; when LKv = 001, internal data can be modified.	000

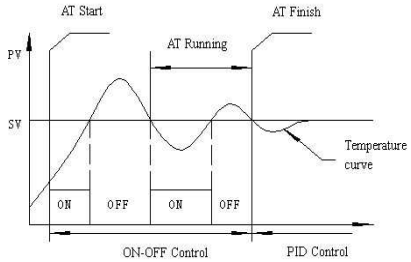
1. In PID data setting mode, press SET key each time; data in following table shall be displayed in sequence. However, based on the ordered specifications, some data may not appear and the initial value could be different.

2. if need stepping control, please set the following parameters: Pv=0 dv= down return difference SPv=0（if don't need return difference, set dv=0）

□ Auto-tuning function

🗁 How to start and stop auto-tuning

1. When start auto-tuning, the heating system should be in working status and the measured temperature should be lower than setting value.
2. Press SET key for 5 seconds to enter parameter setting mode. Click SET key until "LCK" appears, set LCK=1. Click SET key until "AT" appears and input auto-tuning type (1, 2, 3 optional, usually choose 1). Press SET key for about 5 seconds, AT indicator light flashes. Auto-tuning is running.
3. press shift key"<" or minus key"∨"for 5 about seconds to enter auto-tuning status directly When auto-tuning is accomplished, AT indicator light turns off. The controller has calculated out a group of parameters fit to the system and would run under the new PID parameters.(New PID parameters could be found in the controller system.)



Remark: auto-tuning functions (AT) are sorted into 1, 2, 3 types
1). AT=1 means No.1: general type, fast temperature rise and excellent stability.
2). AT=2 means No.2: overshoot suppression type, suitable for the quick system which can't achieve short heating cycle.
3). AT=3 means No.3: lag/delay system type, especially suitable for those systems which are hard to bring down the temperature after overshooting