K S W type electric furnace temperature controller (including hang type) operating manual

一、 Introduction

KSW series temperature controller for SG2, SX2, SK2 series 1000 ℃, 1200 ℃ furnace equipment, (hang type for SX Series "1200 ℃ furnace equipment). Supporting the use of nickel-chromium ---- nickel-silicon thermocouple to measure, display and control, the temperature inside the furnace.and allows the furnace temperature automatically to maintain constant temperature. KSW type is of intelligent digital instrument control. Novel design, high precision temperature control, stable performance and easy operation. to adapt different heating rate and temperature of the different requirements of the experiments.

Its main features are:

1 temperature setting and measurement with digital display, intuitive and accurate.

(2) has PID control function, can effectively overcome the overshoot temperature of furnace, the temperature control is more accurate.

3. Has over-temperature alarm function.

二、Main technical parameters

Model	KSW-6-12	KSW-12-12
Rated power (KW)	6	12
Voltage(V)	Single phase 220V±10%	Three phase 380V±10%
Teperature control precision (℃)	±5	
Temperature resolution (℃)	1	
Max temperature (℃)	1200	
Note	supporting the use of 1000 ℃, 1200 ℃ resistance furnace temperature controller and thermocouple indexing are "K"	

三、 Use

1 Open the cover, according to the wiring diagram,connect the furnace, thermocouple and controller, and close the cover. (Hang type, screw the two studs into threaded holes on the controller side. and the other end into the furnace rear bracket holes respectively with nuts.)

2, connect the power, according to the phase diagram or the connection wiring signs.It can not be reversed, otherwise it will affect the normal operation of the controller, and a danger of electric shock! Protective earth terminal must be connected to a ground wire securely

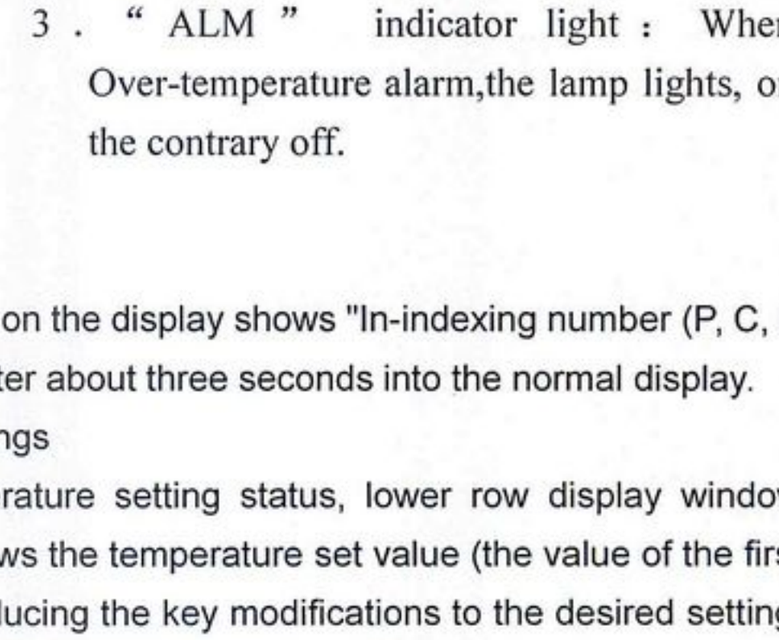
(non-floating).

3, the user should configure the power cord and circuit lines according to the maximum output of the current.

4, turn on the power switch, the switch indicator light, buzzer 2-3 seconds, which means that power is on.

Note: Thermocouple Positive Negative cann't be not reversed, otherwise the controller will not work properly.

四、Meter Indicator Definition



1．“RUN/AT” indicator light： the lamp lights when running;when the end of the running the ligh off; self-tuning lights flashing.

2．“OUT” indicator light： when there is heating output,this lamp lights, on the contrary off.

3．“ALM” indicator light： When Over-temperature alarm,the lamp lights, on the contrary off.

五、operation and use

1. Power on the controller, the display window on the display shows "In-indexing number (P, C, K, S)", the lower display shows "Range Value" After about three seconds into the normal display.

2. Temperature and holding time see and settings

Click the "Settings" button, enter the temperature setting status, lower row display window displays a prompt "SP", the upper display shows the temperature set value (the value of the first digit flashing), through shifting, increasing, reducing the key modifications to the desired setting;

then click the "settings" button to exit this setting mode, modify settings automatically saved.

3. Over-temperature alarm, the buzzer beeps continuously, "ALM" warning lights. If the set value due to changes in temperature resulting from over-temperature alarm, "ALM" warning light is lit, but the buzzer does not beep.

4. Buzzer, press any key to mute.

5. "Shift" button: Click this button in the set state setpoint shift can blink modification.

6. "Lower" button: Click this button to make the setting mode setting down, long press allows continuous decrease the set value.

7. "Add" button: Click this button to make the setting mode setting a sliding scale, long press allows setting a continuous sliding scale.

8. If the set condition within one minute without any key is pressed, the controller will automatically return to the normal display.

9. If the controller display window display shows "----", which means that the temperature sensor or the controller itself fails, please carefully check the temperature sensor and its wiring.

六. Self-tuning system

When the temperature control is not ideal when the system can be self-tuning. Self-tuning process will have greater temperature overshoot, the user during system tuning fully consider this factor before.

In the non-established state, long press "Shift / self-tuning" button after 6 seconds into the system self-tuning process, "RUN / AT" indicator flashes after the end of the self-tuning indicator stops flashing, the controller will get a group better system PID parameters, the parameter value is automatically saved. Self-tuning process in the system long press "Shift / self-tuning" button after 6 seconds to abort self-tuning process.

In the system auto-tuning process if over-temperature alarm, "ALM" warning light does not shine, the buzzer does not beep, but the heating alarm relay will be automatically disconnected. In the process of self-tuning system "Setup" key is invalid. In the process of self-tuning system, whether there is setting of the thermostat, the controller display window below always shows the setting temperature.

七. See the internal parameters and temperature settings

Press Set button for about 3 seconds, the upper of the controller display window shows the password prompt "Lc", the next row shows the password value.By increase, decrease and shift keys, change the password to the desired value. Then click the Settings button, if the password is incorrect, the controller automatically returns to normal display status, if the password is correct, then enter the temperature parameters set status, and then click the Settings button to modify the parameters in turn. Then press set button for 3 seconds, you can exit this state, the parameter value is automatically saved.

Internal Parameters-1

Parameter indicates	Parameter Name	Parameter Function	(Range) the factory value
Lc-	Password	When"Lc = 3" can view and modify parameter values .	0
AL-	Over-temperature deviation alarm	When the "temperature measurement value> temperature set value + AL", the warning lights, the buzzer (see 五.3), disconnect the heating output	(0.0～100.0℃) 5
T-	Control cycle	Heating control cycle.	(1 ~ 60 seconds) 2 Relay 20
P-	Proportional band	The proportion of time regulation.	(1.0～Value range) 30
I-	Integration time	Integral regulating	(1～1000 seconds) 400
d-	Differential time	Differential regulation	(0～1000 seconds) 200
Pb-	Zero adjustment	Correction sensor (low temperature) measurements have errors. Pb=The actual temperature - Instrumentation measurements	(-50～50℃) 0
PK-	Span adjustment	Correction the errors of the sensor (high temperature) PK=1000*(Actual temperature - meter measured value) / meter measured value	(-999～999) 0
Et-	Timer function	ET=0，no timer function； 1 ,timer when power on; 2, timer when setting valve.	(0～2) 0

Internal Parameters-2

Parameter indicates	Parameter Name	Parameter Function	(Range) the factory value
Lc-	Password	When"Lc = 9" can view and modify parameter values .	0

Co-	Off heat output deviation	When the "the temperature measurement value ⩾ set value + Co", the turn-off heat output.	(0.0～50.0℃) 5.0
Hn-	timer mode	0: minute 1: hour	(0～1) 0
En-	message address	En=0 when running over,close the uniform temperature; En=1 when running over,go on the uniform temperature;	(0～1) 0
Lt-	The max power out	the percentage of the maximum heating power output	(0~100) 100
rH-	Value range	The range of temperature setting	1350

Note: If you need to set the time, according to the following method of operation. (See 七 Et-) bring up the time setting mode, click on the "Settings" button, enter the temperature setting state, and then click on the "Settings" button into the thermostat setting state display window Display Prompt the symbol "St", on the row to display the thermostat time settings (the first digit is blinking), through the shift, increase, decrease the key change to the desired setting; and then click on the "Settings" button to exit this setting status, modify the settings automatically saved.

When ET = 0, no timer function, set the time is not displayed. When the thermostat is set to "0", which means that no timing, the controller continuous operation, the lower display shows the temperature settings in the display window; when the set time is not "0", the display shows the running time in the display window, and Finally, a point on a timer is started, such as measuring the temperature reaches the set temperature, the decimal point flashes lit.

If En = 0, the time to the end of the run, the next part of the window to display "End", the buzzer 30 seconds off all output;

If En = 1, the end of the time, did not display "End", the buzzer 30 seconds, the temperature continues to thermostat display window;

After the end of the run, long press "reduced / Run" button for 3 seconds to restart the timer is running.

八、Maintenance and precautions

1, the controller should be well ventilated, no pollution and no vibration horizontal position, the furnace controller distance should be greater than 0.5 meters.

2, No conductive dust around, explosive gases and can seriously damage the metal and

insulation corrosive gases.

3, there is no obvious vibration and bumps.

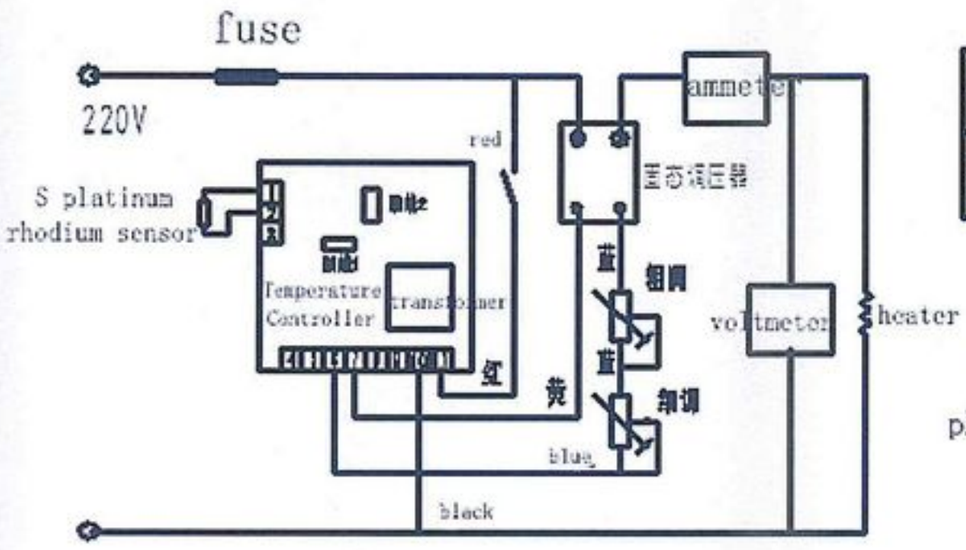
4, ensure that the temperature controller is working properly, you must regularly check the wiring head is reliable, temperature control is normal

九、Failure analysis and processing

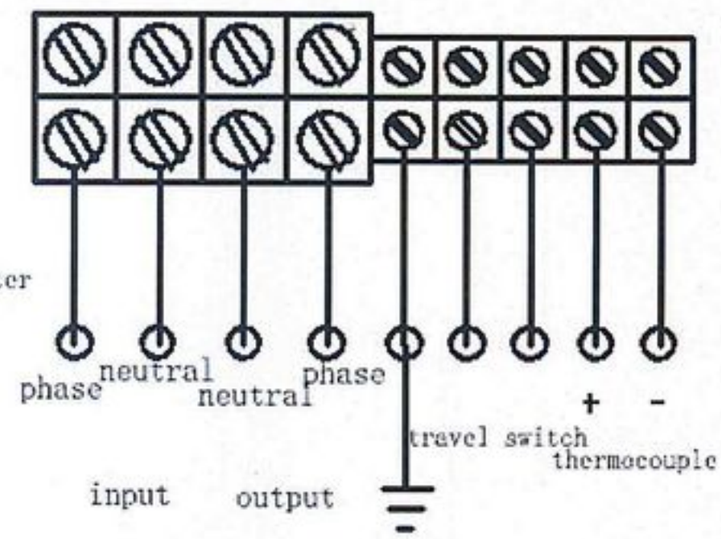
Symptom	Analysis	Treatment
Boot without power	Power outlet without electricity or poor contact with the plug	Check and repair
	fuse break	Replace the fuse
	Power switch is not open or bad	Turn on the switch or replace
Boot display ---- and with a beep	Sensor failure or the actual temperature exceeds the measured value	Replace the sensor or change the set temperature
Does not heat up	time setting is too short	Cancel or adjust the time setting
	The meter no output or damaged	Adjust or replace
	the heating tube is damaged or wiring off	Cancel or adjust the time setting
the temperature has been rising Can not controlled	The meter is damaged	replace
	Solid state voltage regulator breakdown	replace
Temperature control is not accurate	the internal parameters of the meter does not match	Start auto tuning
	The sensor poor contact	Reconnect
	Too early to measure the time	heat 2 hours before test

Note: Don't leave when using first 24 hours.

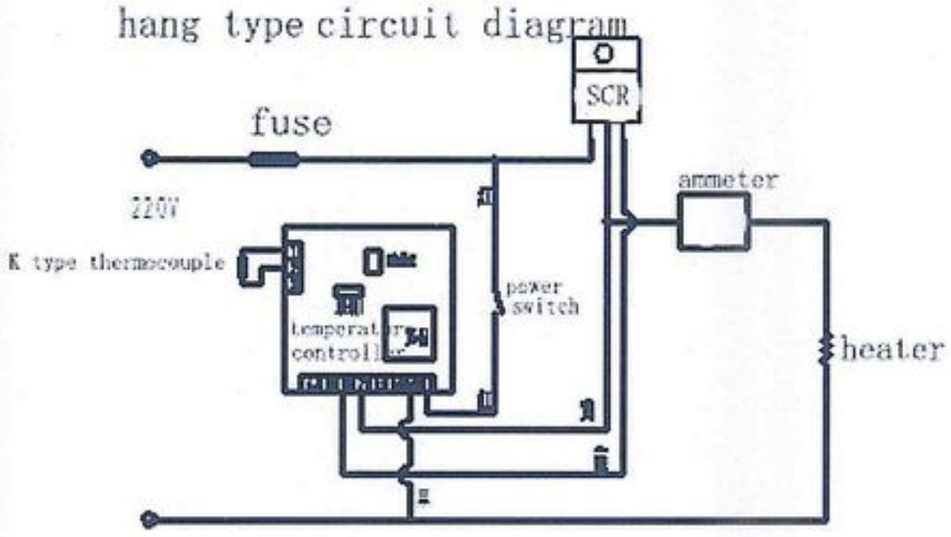
circuit diagram

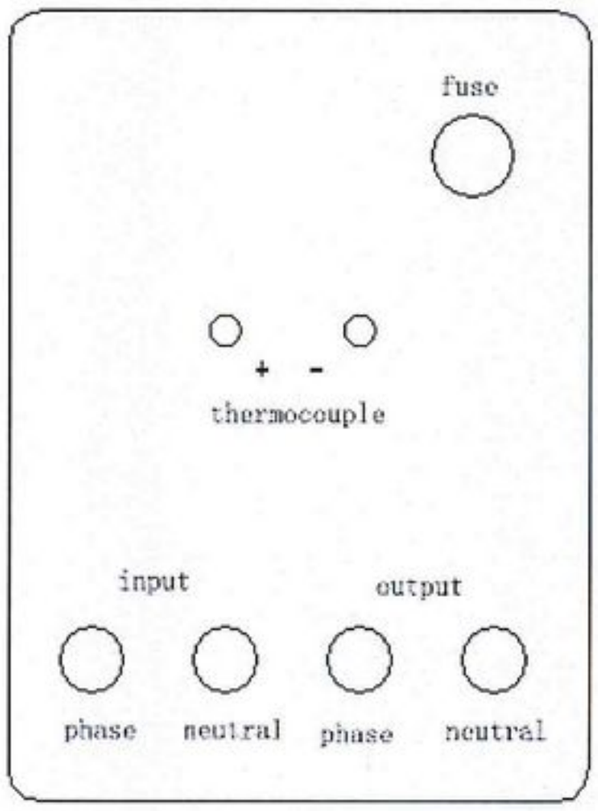


terminal block diagram

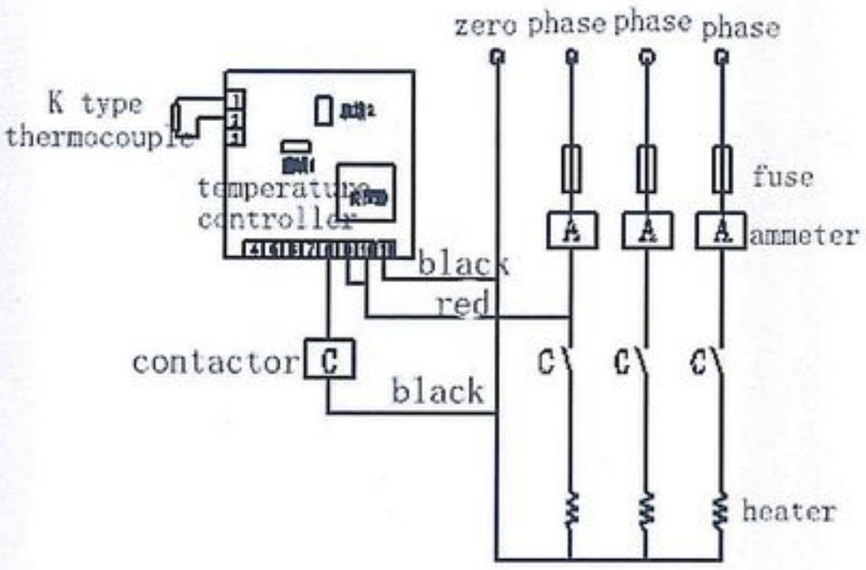


hang type circuit diagram





KSW－12－12 circuit diagram



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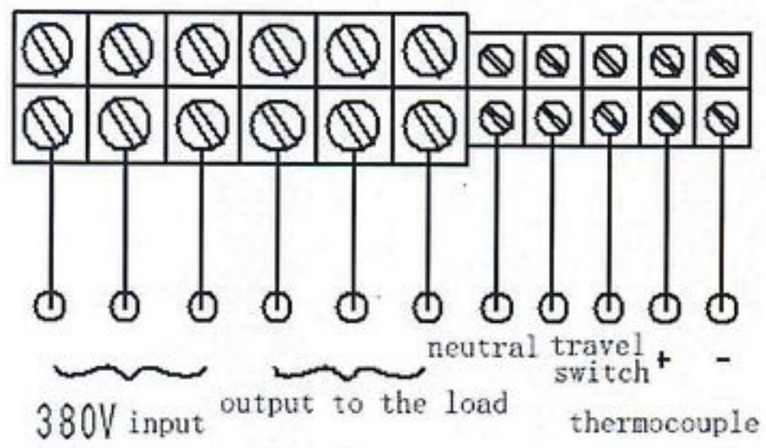

十、Packing list

No.	class	name	unit	number	Note
1	machine	controller	set	1	
2	file	operating manual	piece	1	
3	file	Certification/warranty card	piece	1	

The items listed in the single box installed in-kind match

Packing person：_____