KC141 Combustion Safety Controller

PRODUCT DATA

INTRODUCTION：

KC141 series automatic burner control units provide safeguard protection for industrial and commercial gas, oil, or combination burners.

The typical application, of the controller, is industrial heating process, such as ceramics, iron-steel heating treatment, glass, oil and gas field and chemical industrial.

- Safety test start, flame monitor and flame safe guard.
- Flame signal output.
- 4 LEDs on the front of the device, indicated: power (red)，valve(yellow)，flame(yellow) and alarm (red).
- A non-inflammable, plug-in type plastic case.
- The switch, in front of controller, is to start/stop the combustion process. It is also a reset of alarm.
- Different types can be used with UV, ionization or normal light flame sensor.

TECHNICAL DATA：

Power：220/110Vac (± 10%)，50/60 Hz；

Power Consumption：**<**5 W；

Ambient Temperature：0 ~ 60 ℃；

Environment：<90%, no moisture condensation admissible；

Safety Start Testing Time (T1)：10S；

Flame Establish Period (T2)：10S；

Flame Failure Response Time(FFRT)：< 2S；

(T1, T2 and FFRT can also be designed by customer's special requirements.)

Protection ： IP40；

Max. load per output：

- Flame signal(term. 5) ： 220Vac,<2A；
- Igniter(term. 4)：<1A；
- Valves(term. 7)：<2A；
- Alarm(term.9)：<1A；
- Total load： < 5A。

Dimension：See Pig. 2.

Model No. and flame sensors：

KC141R220：(220Vac，50/60Hz)

- Ionization probe.

KC141R110：(110Vac，50/60Hz)

- Ionization probe.

KC141U220：(220Vac，50/60Hz)

- Green Island FUVS series UV flame sensors

KC141U110：(110Vac，50/60Hz)

- Green Island FUVS serial UV flame sensors

KC141L220：(220Vac，50/60Hz)

- Normal light sensors.

KC141L110：(110Vac，50/60Hz)

- Normal light sensors.

Features：

1. Operation:

The schematic connection diagram and process of KC141 is in Pig.2.

Supply the main power (according to model No.) to term. 12 (L) and 11(N). Then the power light (red) will be illuminated.

Switches, such as burner start/stop switch, temperature limits, pressure switch and remote reset, can be connected between term.12 and 10. After term.10 get the main power and controller front switch is on, the controller is started and begin to safety testing.

The time of safety testing (T1) is 10S. No flame should be detected within T1. If the controller finds the flame within T1, it will stop all process, and fault lockout takes place with alarm lighten.

After safety testing, the controller goes into ignition period(T2), to starts the burner, to open fuel valve (V) and igniter(Z). The T2 is 10S. If the flame is detected, the igniter will be stopped, otherwise, the igniter will keep working.

If the controller found the flame, terminal 5 will have the line power output, and flame light is lighten.

After the ignition period (T2), If no flame is detected within T2, the controller will stop all process, and fault lockout takes place with alarm lighten.

After T2, the controller goes into normal working period. If the controller can't found the flame, it will close all fuel valves, and alarm output and lighten.

2. Alarm and Reset：

CAUTION:

Please not restart the equipment, before you find the alarm reason. Other wise it is easy to make the equipment explode.

Reset should only be carried out by hand.

When alarm appears, following ways can help you to restart.

(1) Turn the front switch on the controller to off. Then put it to on side after 1S. To do this will restart the controller.

(2) Remote reset: disconnect any switch between terminal 12 and 10; then connect it again after 1S, can restart the controller.

3. Terminals：

Term.12: power supply L.

Term.11: power supply N.

Term.10，12: start or limited controllers input.

Term.9: alarm output 220/110vac，< 1A。

Term.7: fuel valve output, 220/110Vac，< 2A.

Term.6: Igniter output，220/110Vac，< 2A。

Term.5: Flame signal line power，< 2A。

Term.3, 6 and 8: Same as term. 11, power supply N.

Term. 2: flame signal input.

Term.1: Ground.

CAUTION：

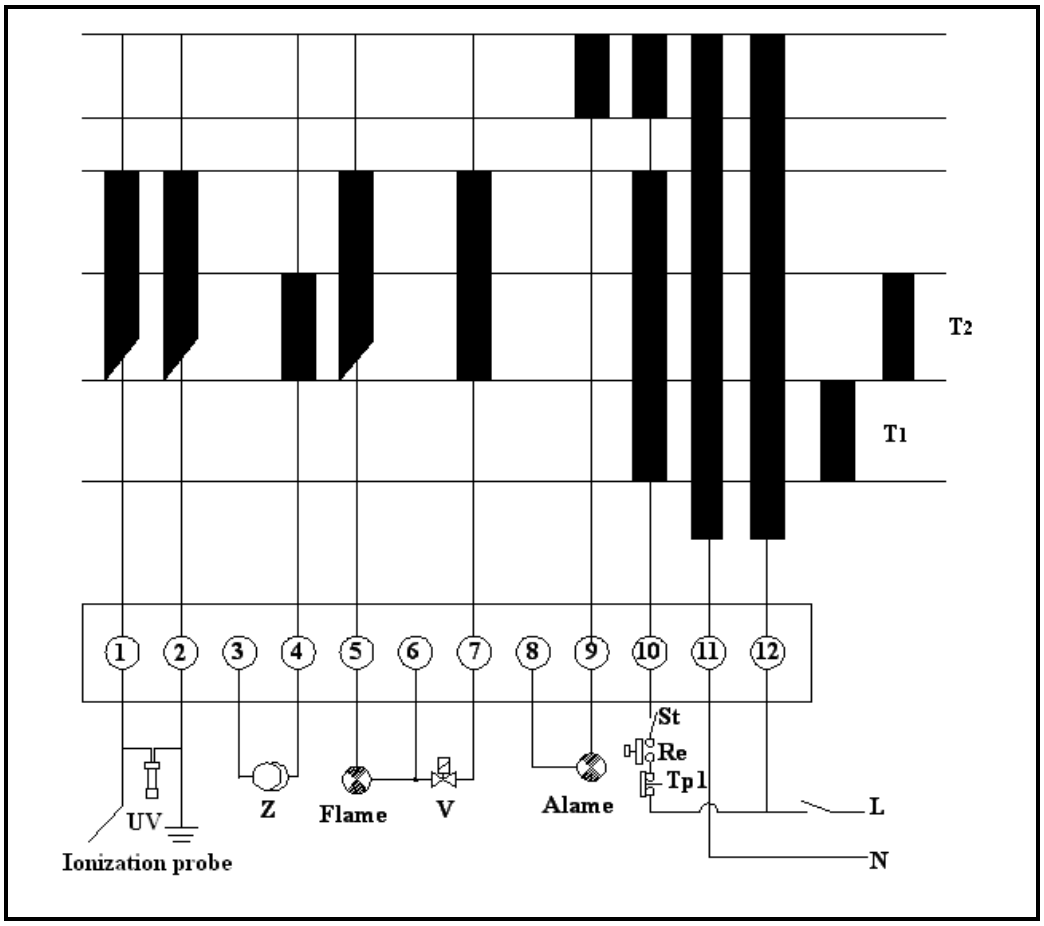
1. ***Terminal 1 must have a connection to earth. Otherwise, it is easy to destroy the device***
2. ***Terminal 12 should be connected to L of line power, and 11 to N. Wrong connection of the two terminals will destroy the controller or other equipments using with it.***

WIRING of KC141:

Attention:

- ***Do not run high voltage ignition transformer wires in the same conduit with the flame detector wiring.***
- ***The cable, used with the controller, should be rated for 105°C or higher, and larger than 1mm^2.***
- ***The length of the sensor cable is dependent on the type of cable and position. The max. is 100m normally.***

Pig.1 KC141 SCHEMATIC CONNECTION DIAGRAM AND PROCESS DIAGRAM



Attentions before installing:

Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.

Disconnect power supply before beginning installation to prevent electrical shock and equipment damage.

All wiring must comply with applicable local electrical codes, ordinances, and regulations.

Check the ratings given in the instructions and on the product to make sure the product is suitable for your application.

Installer must be a trained, experienced flame safety control technician.
After installation is complete, check out product operation as provided in these instructions.

Installation:

Release the two screws on the product. Take the controller away from sub-base.

The sub-base may be installed in any plane through the two installing holes, such as Pig.3. But, the vertical is recommended.

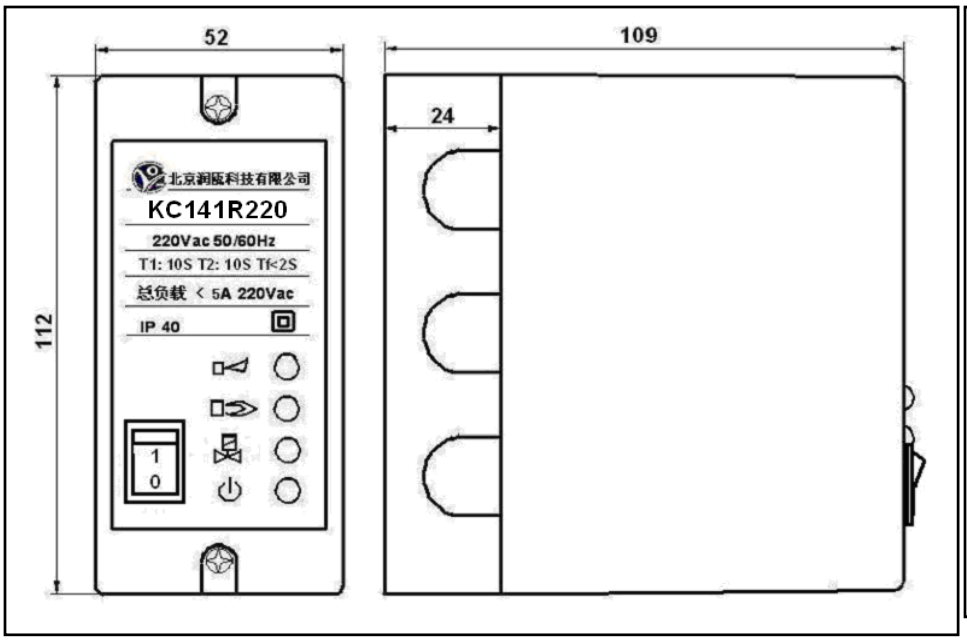
Ensure that sufficient space is available to access the relay for servicing or removal.

Wiring should be according to Pig.1.

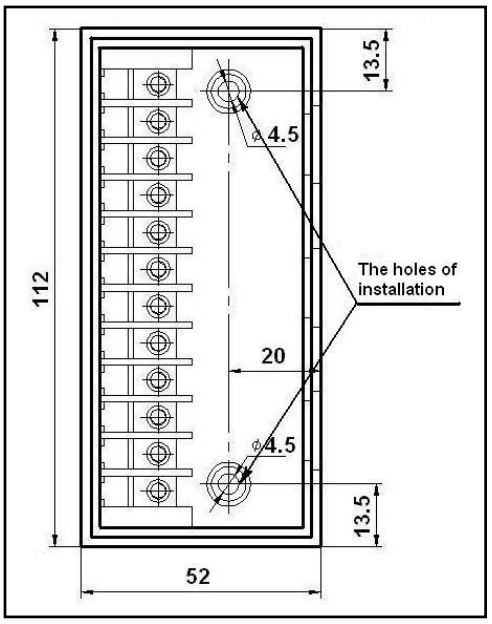
Verify that the wiring is correct before plugging in the relay.

Plug the relay into the sub-base. Secure the relay to the sub-base by tightening the two captive screws on the relay face.

Pig. 2 Dimension:



Pig. 3 Installation Dimension：



TROUBLESHOOTING:

Every KC141 had been tested all features and been powered more than 24 hours before sent out from factory. No special maintenance is required of this product, if you use the product according to this product handbook. You can use following process, when you meet the problems:

CAUTION: Please double check the wiring carefully first, when you find any problems.

（1） Power LED is lighten, but burner can't be start:

(a) Please check the switches between terminal 10 and 12. And confirm the line power is in terminal 10.
(b) Confirm the front main switch on the controller is ON.

（2） Alarmed during safety testing time:

(a) Please check, is there flame in the heating equipment?
(b) Is the UV sensor works with no problem. If not, please change new sensor. (KC141U type only)
(c) Measure the ionization and ground. To confirm they are not shorten. (KC141R only).

***（3） KC141U can not find the flame within ignition period*:**

(a) The hole of flame sensor installed is clean. And point to the flame position.
(b) The surface of UV sensor is clean, and no oil or dusty on it.

（4） KC141R can not find the flame within ignition period:

(a) The flame rod isn't shorten to ground.
(b) The surface of flame rod is clean and isn't oxidated.
(c) The flame rod can contact the flame when combustion.

Other problems isn't listed above, please contact with your supplier.

IMPORTANT:

When the controller is used with UV or day light flame sensors, the system must be shut down once in every 24 hours for safety requirement.

The product features may be difference with this manual. Please confirm the final function before you use it.