Astechnic
诺 一

ACU460 ACU480
Flame Controller

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ACU460 ACU480 Flame Controller

Overview

ACU460/ACU480 is an intelligent combustion controller, using advanced intelligent control chips, reliable industrial-grade components, strong anti-interference. It has the functions of burner ignition control, flame monitoring, air pressure monitoring, high temperature mode, purging control, gas valve control, air valve control, etc. The ignition transformer is built into the controller to form an integrated combustion controller, which can replace the local control cabinet. There are three flame monitoring methods: single electrode, double electrode and UV probe. The digital tube can display the working status, the current value of the flame signal and the fault code, and can detect the flame current signal as low as 2 μA. It can be used in the burner control system with intermittent or continuous work. Among them, ACU460 is a basic combustion controller, which does not have communication function. ACU480 is a bus type combustion controller, with communication function, Profibus-DP, ProfiNET communication optional.

Technical Parameters

- Power supply: AC220V±10% 50Hz
- Maximum power consumption: 10W
- Output load: 2A maximum for a single output
- Output power: equal to the working power
- Flame detection current sensitivity: factory default 2uA
- Flame monitoring method: UV probe or ion electrode
- Safety time: 5S by factory default
- Operating temperature: -20~+60° C
- Protection class: IP40
- Flame detection cable length: 75m for electrode detection and 100m for UV probe

Exterior Dimension Drawing

Installation method: fix the ACU controller directly on the installation layout with 4 M6 screws.

Precautions for Installation

●ACU460, ACU480 cannot be installed in the following environments.

a. Where there are special chemicals and corrosive gases (ammonia, sulfur, chlorine, ethylene, acid gas, etc.).

b. In water, in humid (humidity not exceeding 90%) or in dewy environment.

c. Places where the temperature is too high and vibrates frequently.

- The supply voltage should not exceed AC240V, otherwise the controller will be burnt out.
- The ground wire of the ignition transformer must be connected to the metal shell of the burner.
- Please make sure that the ignition ground wire is properly grounded and that the grounding resistance is less than 10 Ω.
- Make sure that the detection electrode is in contact with the flame and that the electrode lead is in good contact.
- The ignition cable should be wired separately and should not be the same as other signal lines and power cables, otherwise it will lead to abnormal operation or even damage to the controller.

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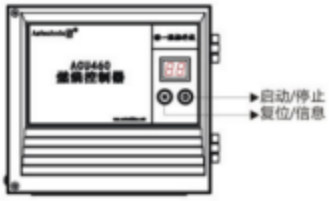
Program status and display

Control panel



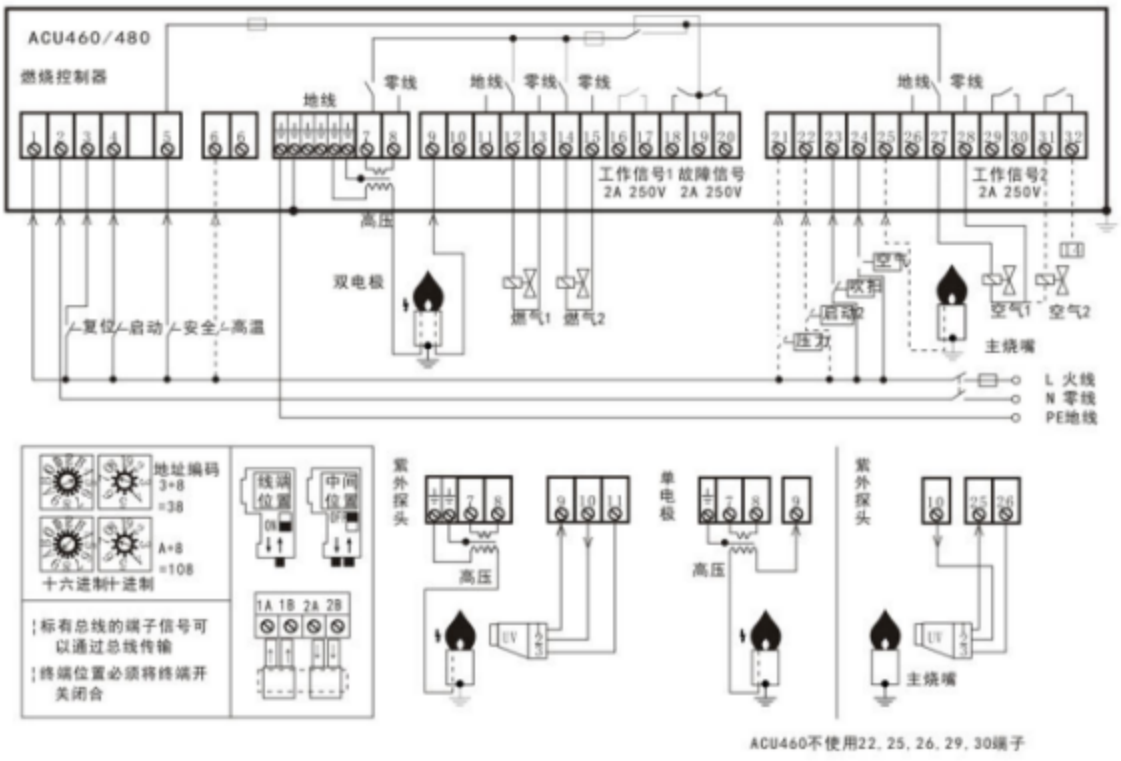
Start/Stop
Reset/Info

Program status	Code	Description
Standby	--	Indicates that the controller is in a waiting state after power-up
Self-test	02	Indicates self-test before initiating ignition
ignition	A3	Indicates starting ignition
Fire inspection	A4	Indicates that flame detection is initiated after ignition
Run	A5	Indicates entering a normal operating state
Purge up	P1	Indicates that purge mode is activated
Manual mode	0.0.	Indicates that it is in manual mode when inside two dots

There are two digital tube monitors on the panel

Below the display are two button switches, and the right one is the start/stop button for power on or off and parameter setting.

The one on the left of the off is the reset/message button to reset and view parameters.



Terminal signals marked with bus can be transmitted via the bus

The terminal position must be closed and closed

The ACU460 does not use 22, 25, 26, 29, 30 terminals

1: Line of Fire (L); 4: Work enablement; 7.8: Ignition output ; 14.15: Gas valve 2; 21: Pressure 31.32: Air valve 2 ; 2: Neutral line (N); 5: Safety interlock; 9.10. 11: Flame detection; 16.17: Operating Signals ; 23: Purge 22.25. 26. 29. 30 do not use; 3: Remote reset; 6: High temperature mode input; 12.13: Gas Valves 1 ; 18.19. 20: Fault Signals; 27.28: Air valve 1

■Workflow diagram

Digital tube display
Power supply L
Power supply N
Switch button
Safety interlock signal
Start signal
Purge the signal
High pressure ignition
Gas valve 1
Air valve 1
Flame Signal 1
Working signal 1
Gas valve 2

ACU460 normal working process. Please perform the corresponding operation according to the timing order shown above.

■Fault code and description	Code	Description	Solutions
	12	There are false flame signals	Check solenoid valves, electrodes, UV circuits
	13	The flame signal could not be detected	Please check the transformer, electrode, UV circuit
	14	Flame inspection is abnormal	Check electrodes, UV loops
	15	The flame works abnormally or the signal is unstable	Check electrodes, UV loops
	16	The main burner has a false flame signal	Check solenoid valves, electrodes, UV circuits
	17	The main burner flame signal is abnormal	Check transformers, electrodes, UV circuits
	18	The main burner flame test is abnormal	Check electrodes, UV loops
	19	The main burner flame is working abnormally or the signal is unstable	Check electrodes, UV loops
	21	The parameter value is unexpected	If it cannot be restored after rewriting the parameter, please return to the dealer
	31	Internal damage	Return to the dealer for processing
	41	Internal damage	Return to the dealer for processing
	18	The pressure switch signal is abnormal	Detection of pressure switches
	19	Fault lockout	Multiple failures occur, check for failures
	F1	Too many resets	Please do not reset frequently
	F2	Lack of safety interlock signal	Check terminal 5 or fuse
	F3	Reset time is too long	Check the Terminal 3 signal
	F4	Too many ignitions	Please do not ignite frequently

■Product Code table	No.	Product Code	Product Model	Description
	1	115094600001	ACU460	Basic integrated combustion controller without communication, black housing, fire detection + purge + high temperature mode
	2	115094800002	ACU480	Bus type integrated combustion controller with communication function, black housing, single fire detection + purge + high temperature mode

■ Fault and reset of Flame signal

During the working process of ACU460 and ACU480, the controller will stop working if the flame signal is detected before ignition or can not be detected after ignition, turn off all output and output fault alarm signal, and the corresponding fault code is displayed on the digital display.

When the controller is in the state of fault alarm, it can be reset by pressing the reset key on the panel or by powering up through Terminal 3. After the reset, the controller will start working again. Note that terminal 3 should not apply voltage for a long time.

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Description of the terminal's function

Terminal 1.2: Working power input

Terminal 1 is connected to the live wire (L), terminal 2 is connected to the neutral wire (N), the power supply requires 220VAC±10% 50Hz, if the connected power supply is not grounded, be sure to add an isolation transformer.

Terminal 3: Remote reset input

The input signal at this terminal is 220VAC±10%, the current is 5-10mA, and the input signal duration is ≤2S, which can be reset

Terminal 4: Remote start input

In this terminal, the signal is 220VAC±10%, the current is 5-10mA, and the signal is continuous, which can start ignition and turn off when the signal is disconnected.

Terminal 5: Safety interlock input

The safety interlock is achieved by entering a control signal to Terminal 5 with an input signal of 220VAC±10%. For example, it is managed by the authority of the central control system of thermal equipment, and when the thermal equipment does not have ignition conditions, or it is urgent to cut off the control signal of the external circuit to terminal 5 to ensure safety.

Terminal 6: High temperature mode signal input

This terminal is used to turn on and off the high temperature mode, the input signal is 220VAC±10%, and the current is 5-10mA.

Terminals 7, 8: ignition transformer control

These two terminals are used to connect the ignition transformer, terminal 7 contacts the live wire of the ignition transformer (L), and terminal 8 contacts the neutral wire of the ignition transformer (N).

Terminals 9, 10, 11: Flame signal monitoring

Terminal 9 is the input of the flame monitoring signal, and the machine supports three detection methods: single-electrode ion detection, two-electrode ion detection and ultraviolet probe detection. Terminal 10 is connected to the live wire (L) of the UV probe, and terminal 1 1 is connected to the neutral wire (N) of the UV probe, which is suspended when using ion detection.

Terminal 12, 13: gas valve 1 output

Gas valve 1 output, output voltage equal to the working supply voltage.

Terminals 14, 15: Gas valve 2 output

Gas valve 2 output, output voltage equal to the working supply voltage.

Terminals 16, 17: working signal 1 output

A set of passive normally open contacts, the rear end subs 16 and 17 are closed after successful ignition, and the maximum load of the terminal is 2A@250V.

Terminals 18, 19, 20: fault alarm output

Terminals 18 and 19 are a set of passive normally open contacts, terminals 19 and 20 are a set of passive normally closed contacts, and the maximum load of the contacts is 2A@250V. Terminal 23: Purge signal input

This terminal is used for purge function opening and closing control, and is often used for safe purging before furnace start-up or emergency stop. The input signal is a continuous signal, the purge is started when the signal is connected, and the purge is closed when the signal is disconnected. The input signal is 220VAC± 10% and the current is 5-10mA.

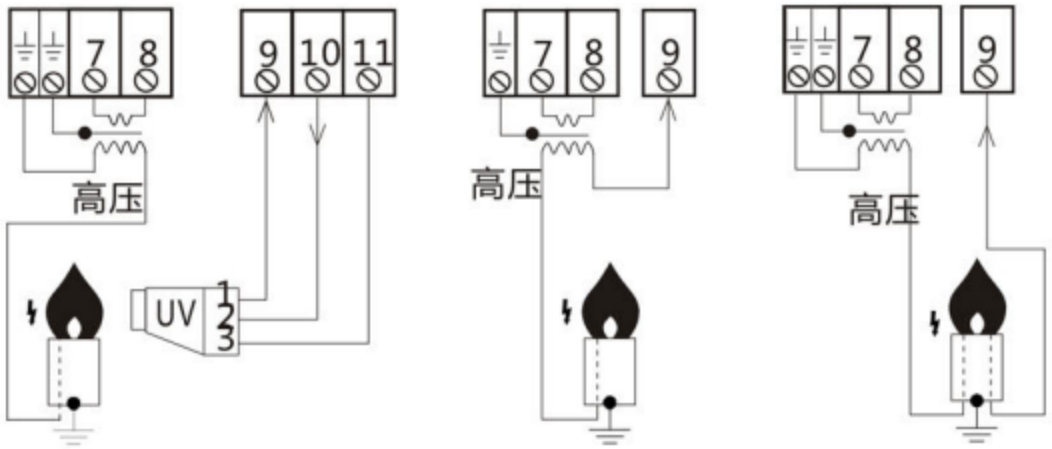
Terminals 27, 28: Air valve 1 output

These two terminals are active outputs. Terminals 27 and 28 output a signal of 220VAC±10% and current 2A.

Terminals 31, 32: Air valve 2 output

These two terminals are a set of normally open passive outputs, and the maximum load of the terminals is 2A@250V.

Terminals 22, 25, 26, 29, 30: This unit is not used



Ultraviolet Probe Connection　　Single Electrode Connection　　Double Electrode Connection

Manual operation

In the absence of an input signal, the operation is controlled by manually operating the keys as follows:

Press and hold the reset key for 2 seconds and then press the open key at the same time; hold down the reset key for 1 second; hold down the reset key for 1 second.

Standby state; manual state (two dots flashing); purge; flame.

Press and hold the reset key for 1 second; hold down the reset key for 1 second; hold down the reset key for 1 second.
Ignition; fire detection; normal operation; standby state