# Digital burner controller SCU 2.2


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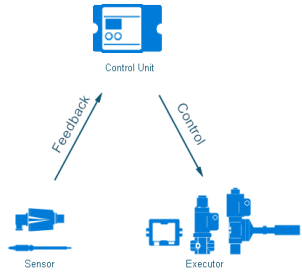
## CHARACTERISTICS

- Digital controller SCU 2.2 can be used for safety ignition and flame state monitoring of industrial burners.
- With integrated digital circuit and built-in high-performance control chip, SCU 2.2 has stable operation and reliable performance.
- Visualizing interactive interface, the operating status, current and fault code can be displayed by digital tubes, controller parameters can be viewed and modified through panel buttons.
- Remote or local ignition and reset are available; and with the protection class of IP 40, the SCU must be installed in the control cabinet in facilities.

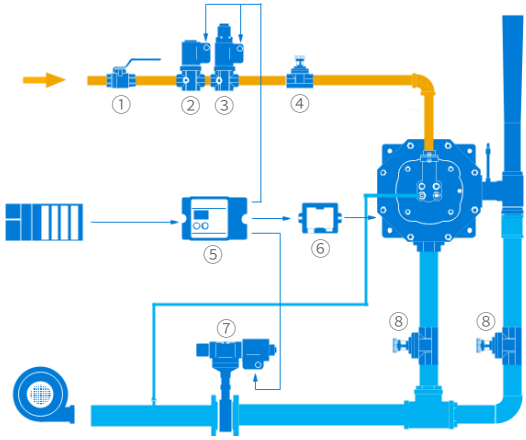
# APPLICATIONS

Burner controller is the core of industrial furnaces combustion system. It receives signal from control system, controls ignition transformer, gas valve, air valve and other executors to ignite burner safely. It also monitors the operating state and sends feedback to the control system. The application of burner controller can effectively reduce the complexity of industrial furnace control system.




# SOLUTIONS

## Single-electrode ignition/detection




*① Manual gas shut-off valve*

*② Gas solenoid valve SG..Q*

*③ Gas solenoid valve SG..S*

*④ Manual gas linear flow control KV*

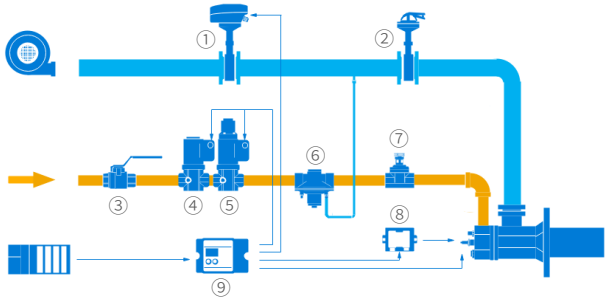
*⑤ Burner controller SCU 2.2*

*⑥ Ignition transformer IT*

*⑦ Air solenoid butterfly valve MC+HTB (Use SA series as air shut-off valve while DN＜40)*

*⑧ Manual air linear flow control*

## Double-electrode ignition/detection




*① Electrical actuator SAM*

*② Manual air butterfly valve with lever HK*

*③ Manual gas shut-off valve*

*④ Gas solenoid valve SG..Q*

*⑤ Gas solenoid valve SG..S*

*⑥ Air-gas proportional valve GRC*

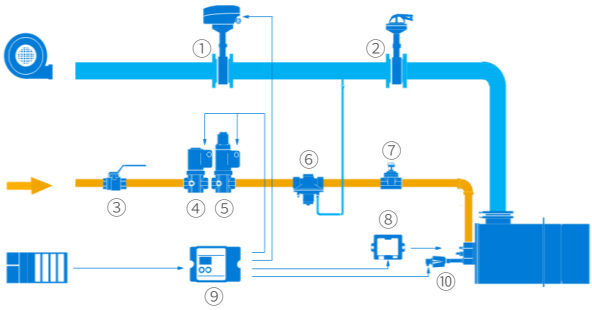
*⑦ Manual linear flow control valve KV*

*⑧ Ignition transformer IT*

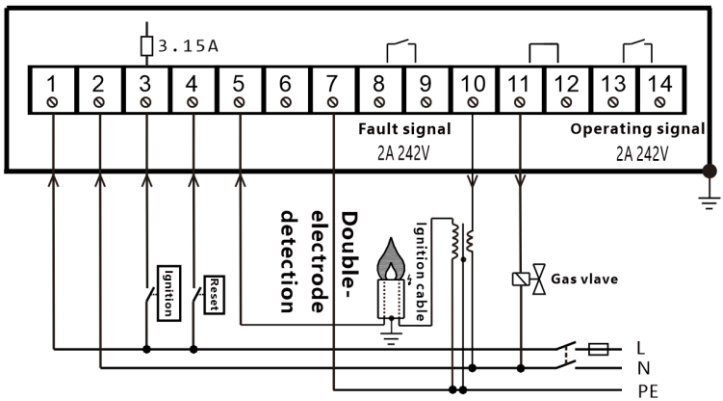
*⑨ Burner controller SCU 2.2*

*⑩ UV sensor SUV*

## UV sensor detection




## WIRING

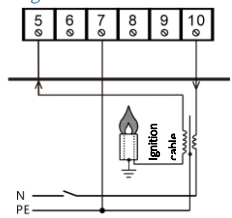


### Terminal 1#, 2# Power supply

Terminal 1# is the live wire input of power supply, and 2# is the neutral wire input. The power consumption of controller <12 W.

Power supply: 220 V AC, ±10%, 50/60 Hz. The power supply doesn't conform to the technical specification is forbidden.

*Single-electrode detection*

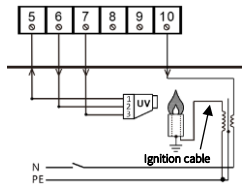



### Terminal 3# Remote ignition

Terminal 3# is a remote ignition signal input. The input signal must be continuous, and the ignition starts when signal is input, stops when the signal cut off. The times of ignition within 1 minute must be less than 8.

Input signal: 220 V AC, ±10%, 5～10 mA, in phase with the power supply.

*UV sensor detection*




### Terminal 4# Remote reset

Terminal 4# is a remote reset signal input. The input signal duration must be less than 2 s.

Input signal: 220 V AC, ±10%, 5～10 mA, in phase with the power supply.

### Terminal 5# Flame detection signal

Terminal 5# is the input of burner flame detection signal (0～25 μA). Single-electrode ion detection, double-electrode ion detection and UV detection are available.

The cable for ion detection signal must be shorter than 75 m; and the UV sensor signal cable must be shorter than 100 m.

### Terminal 6# UV sensor

Terminal 6# is the power output for UV sensor, connected when using UV sensor for detection and can be suspended while using ion detection.

### Terminal 7# Ground

Terminal 7# is grounded while using ion detection; and it connects to the UV sensor while using UV detection. The internal wires have been connected as ion detection mode by default.

### Terminal 8#, 9# Fault signal

Terminal 8# and 9# are the feedback of burner fault signal.

Dry contact signal, contact capacity: max. 250 V, 2 A. Normally open contact.

### Terminal 10# Ignition transformer power supply

Terminal 10# is the live wire output of ignition transformer, the power output is the same as the input of terminal 3#.

### Terminal 11#, 12# Power output for gas valve

Terminal 11# and 12# are the power outputs for automatic gas shut-off valve, the two terminals are connected in parallel internally and output at the same time. The output is the same as the input power of terminal 3#.

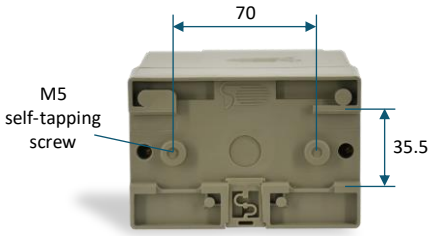
### Terminal 13#, 14# Operating signal

Terminal 13# and 14# are the feedback of burner igniting success signal.

Dry contact signal, contact capacity: max. 250 V, 2 A. Normally open contact.

## Installation

## Dimensions


*Unit: mm*

## Installing attention

- The SCU shall be installed in the control cabinet in facilities. It can be installed to the base plate with M5 self-tapping screws, it can also be installed on DIN rail directly.
- It shall be installed as far away from the heat source as possible. There shall be no obstruction in front to facilitate operation and maintenance.
- Ambient temperature: -15 ~ 60 ℃ (5 ~ 140 °F).
- Enclosure: IP 40.

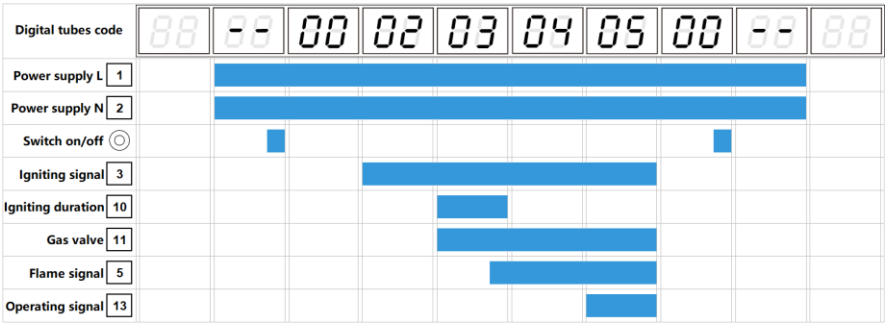
## Cable installation

- Signal and control line: max. 2.5 $mm^2$ (AWG 14).
- Cable for controller ground/PE wire: max. 4 $mm^2$ (AWG 12).
- Mark ⏚ indicates PE terminal, which is connected with the controller shell through ground wire. The PE terminal connects to ground wire together with the burner shell.
- Terminal 1# for live wire, 2# for neutral wire separately, use BVR line of 1.0～2.5 $mm^2$ with withstand voltage above 500 V, the live wire and the neutral wire shall be connected through a dual switch.
- Terminal 3# is the input of remote ignition signal, it shall be connected to the live wire with BVR line of 1.0～2.5 $mm^2$ with withstand voltage above 500 V, and controlled by a separate switch. This wire is the power supply for all the outputs of SCU.
- Terminal 4# is the input of remote reset signal, it shall be connected with BVR line of 1.0～2.5 $mm^2$ with withstand voltage above 500 V, and connect it to the live wire and control with a separate switch. This terminal must not be electrified for over 2 s.
- Terminal 5# is the terminal for detecting signal wire. It shall be connected with the brown cable of ignition transformer while using single-electrode ignition/detection, or connected to the detecting electrode of burner with red silicone skin high-voltage cable in the case of double-electrode operation.

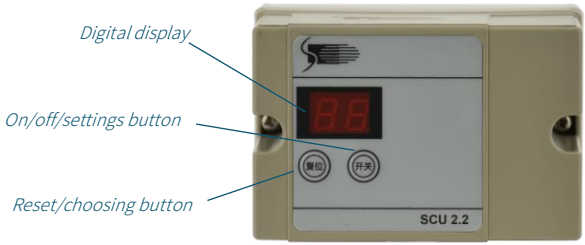
- Terminal 11# and 12# are the live wire outputs for gas valve, use BVR line of 1.0～2.5 mm² with withstand voltage above 500 V.

# OPERATION

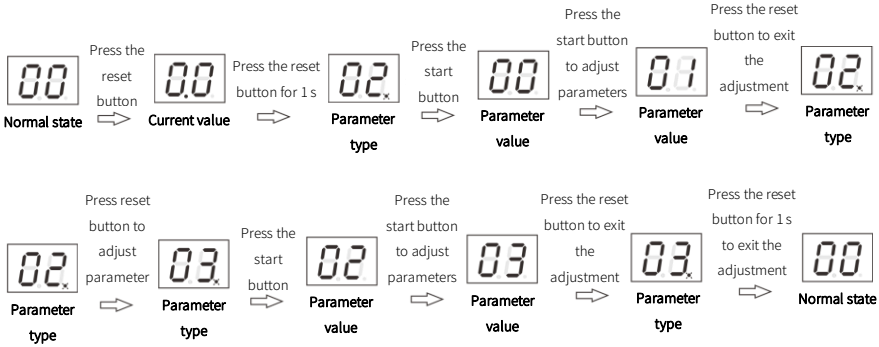
## Sequence diagram




## Operation interface




## Parameters checking and setting



## Fault code

| Display | Fault message |
|---|---|
|  | False flame signal. Check the circuit of electrode and UV sensor. |
|  | Abnormal flame signal: flame signal undetected. Check the circuit of transformer, electrode and UV sensor. |
|  | Abnormal flame state calibration: flame signal unstable. Check the circuit of electrode and UV sensor. |
|  | Abnormal flame operating state: flame signal unstable. Check the circuit of electrode and UV sensor. |
|  | Abnormal parameters. Sent it back to the distributor if the fault cannot be fixed after rewriting the parameters. |
|  | Power supply voltage <200 V or internal fault of the controller. |
|  | Fault locking: multiple faults detected. |
|  | Too many resets. Do not reset over 8 times in 1 min. |
|  | Overlength reset duration: reset signal duration must not longer than 2 s. Check the terminal 4#. |
|  | Too many Ignitions. Do not ignite over 8 times in 1 min. |
| Others | Internal fault of the controller. Please send it back to the distributor. |