

Integrated burner controller SCU 3.1



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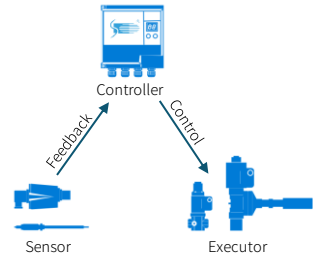
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CHARACTERISTICS

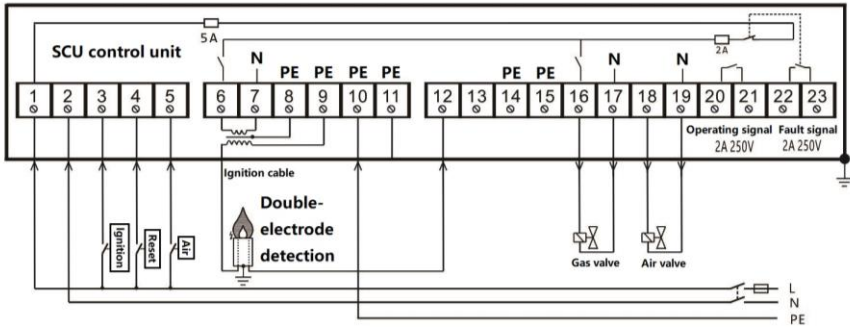
- Integrated burner controller SCU 3.1 can be used for safety ignition and flame state monitoring of industrial burners.
- With integrated digital circuit and built-in high-performance control chip, SCU 3.1 has stable operation and reliable performance.
- Visualizing interactive interface, the operating state, current and fault code are displayed by digital tubes, controller parameters can be viewed and modified through the panel buttons.
- With ignition transformer integrated, remote or local ignition and reset is available; and with the protection class of IP 54, the SCU can be installed next to the burners 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 control system. The application of burner controller can effectively reduce the complexity of industrial furnace control system.



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, the two terminals are also the power supply for the loads controlled by controller, so the power consumption of these loads shall be applied to the total power consumption.

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

Terminal 3# Remote ignition

Terminal 3# is a remote ignition signal input. The input signal must be continuous, ignition starts when signal is input, stops when the signal cut off. Prohibit to ignite over 8 times within 1 minute.

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

Terminal 4# Remote reset

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

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

Terminal 5# Air valve control

Terminal 5# is an external air valve control signal input. The air valves can be set to be controlled by internal or external mode. In the internal control mode, air valves open when the opening signal is input and the controller receives no ignition signal. And in the external control mode, air valves only open when the controller receives the opening signal.

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

Terminal 6# Ignition transformer power supply

Terminal 6# is the live wire output of ignition transformer, the power output is the same as the input of terminal 3#.

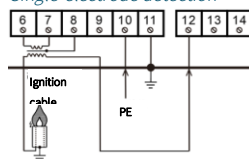
Terminal 7# Ignition transformer power supply

Terminal 7# is the neutral wire output of ignition transformer, the power output is the same as the input of terminal 2#.

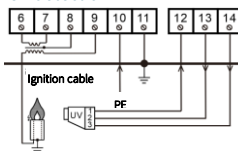
Terminal 8#,9# Ground

Terminal 8# and 9# are the ground terminals of ignition transformer. Terminal 8# is the ground of transformer shell, and terminal 9# works as the ground for the transformer secondary when it is using double-electrode detection or UV detection. Terminal 9# can be suspended when using single-electrode detection.

Single-electrode detection



UV detection



Terminal 10#, 11# Ground

Terminal 10# is the ground of controller circuitry, and terminal 11# is the ground of controller shell.

Terminal 12# Flame detection signal

Terminal 12# is the input of burner flame detection signal (0 ~ 25 μ A). Single-electrode ion detection, double-electrode ion detection and UV detection are available.

Terminal 13#, 14# UV sensor

Terminal 13# and 14# are the power outputs for UV sensor, connected when using UV sensor for detection and can be suspended while using ion detection.

Terminal 15# Ground

Terminal 15# can be used for the ground of gas valves and air valves.

Terminal 16#, 17# Power output for gas valve

Terminal 16# and 17# are the power outputs for automatic gas shut-off valves, the power output is the same as the input power of terminal 3#.

Terminal 18#, 19# Power output for air valve

Terminal 18# and 19# are the power outputs for air valves, the power output is the same as the input power of terminal 3#.

Terminal 20#, 21# Operating signal

Terminal 20# and 21# are the feedback of burner igniting success signal.

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

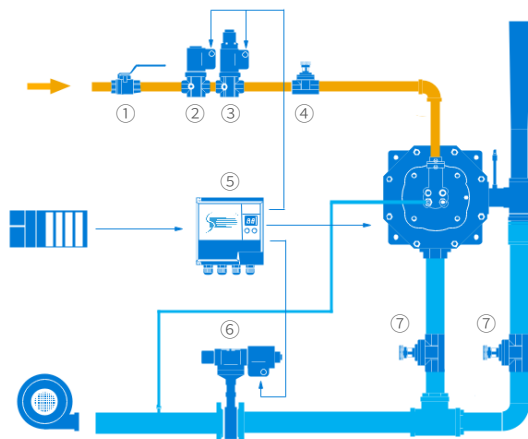
Terminal 22#, 23# Fault signal

Terminal 22# and 23# are the feedback of burner fault signal.

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

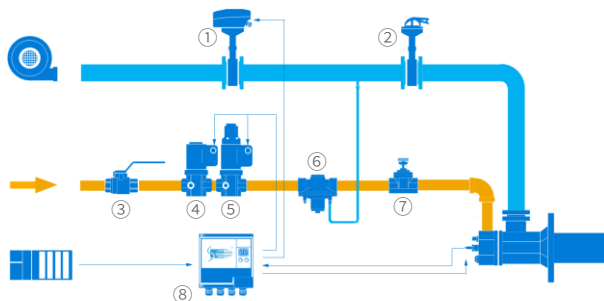
SOLUTIONS

Single-electrode ignition/detection



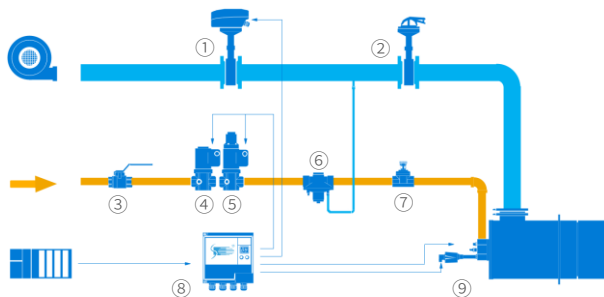
- ① Manual gas shut-off valve
- ② Gas solenoid valve SG..Q
- ③ Gas solenoid valve SG..S
- ④ Gas manual linear flow control KV
- ⑤ Burner controller SCU 4.1
- ⑥ Air solenoid butterfly valve MC+HTB
(Use SA series as air shut-off valve
while DN < 40)
- ⑦ Air manual linear flow control

Double-electrode ignition/detection



- ① Electrical actuator SAM
- ② Air manual butterfly valve with
lever HK
- ③ Gas manual 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 KV
- ⑧ Burner controller SCU 3.1
- ⑨ UV sensor SUV

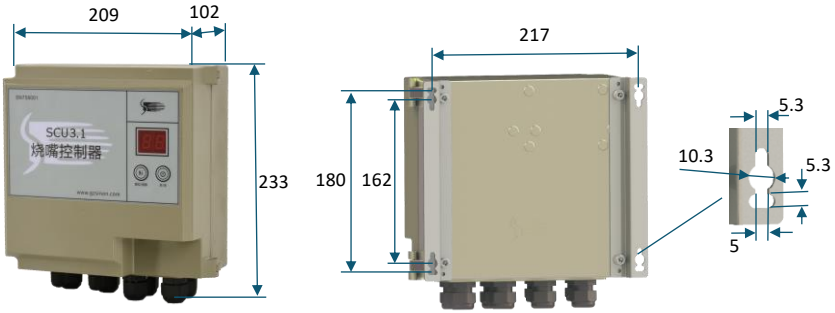
UV sensor detection



- ① Electrical actuator SAM
- ② Air manual butterfly valve with
lever HK
- ③ Gas manual 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 KV
- ⑧ Burner controller SCU 3.1
- ⑨ UV sensor SUV

INSTALLATION

Dimensions



Unit: mm

Installing attention


The SCU shall be installed next to burners with lugs and as far away from heat source as possible.

There shall be no obstruction in front.

Ambient temperature: -15~60 °C (5~140 °F).

Enclosure: IP 54.

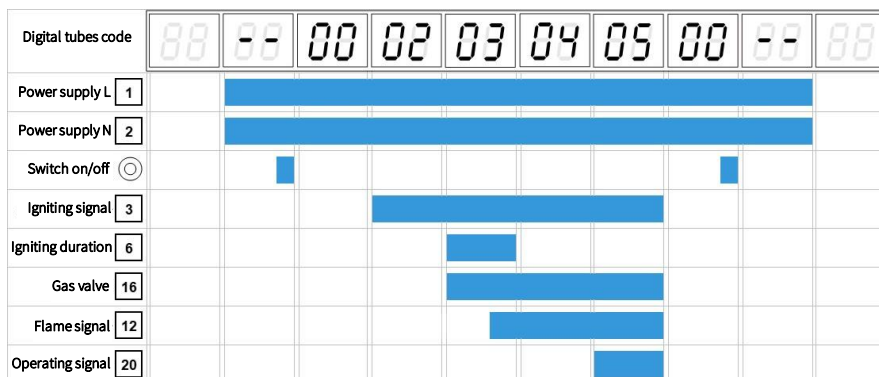
Cable installation

- Signal and control line: max. 2.5 mm² (AWG 14).
- Cable for burner ground (PE) wire: 4 mm² (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 mm² with withstand voltage above 500 V, the live wire and the neutral wire shall be connected through a dual switch.

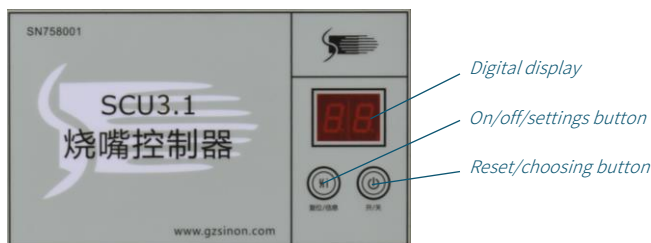
- Terminal 3# is the input of remote ignition signal, it shall be connected to the live wire with BVR line of 1.0~2.5 mm² with withstand voltage above 500 V, and controlled by a separate switch. This wire is the power supply wire for all the outputs of SCU.
- Terminal 4# is the input of remote reset signal, it shall be connected to the live wire with BVR line of 1.0~2.5 mm² with withstand voltage above 500 V, and controlled by a separate switch. This terminal must not be electrified for over 2 s.

OPERATION

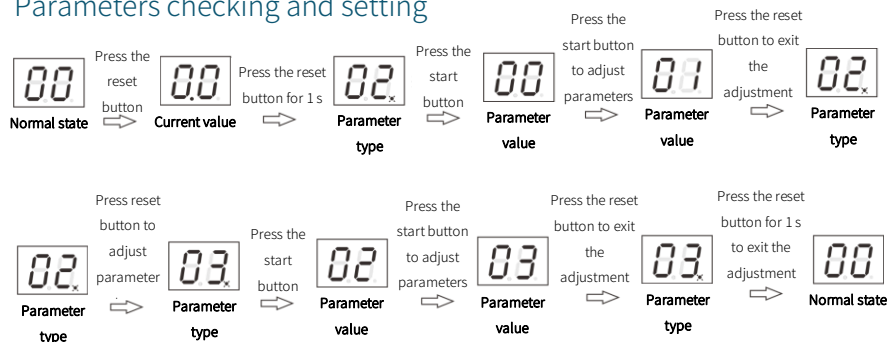
Sequence diagram



Operation interface



Parameters checking and setting



Fault code

Display	Fault message
82	False flame signal. Check the circuit of electrode and UV sensor.
83	Abnormal flame signal: flame signal undetected. Check the circuit of transformer, electrode and UV sensor.
84	Abnormal flame state calibration: flame signal unstable. Check the circuit of electrode and UV sensor.
85	Abnormal flame operating state: flame signal unstable. Check the circuit of electrode and UV sensor.
88	Abnormal parameters. Sent it back to the distributor if the fault cannot be fixed after rewriting the parameters.
89	Power supply voltage <200 V or internal fault of the controller.
99	Fault locking: multiple faults detected.
88	Too many resets. Do not reset over 8 times in 1 min.
83	Overlength reset duration: reset signal duration must not longer than 2 s. Check the terminal 4#.
84	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.