



Application:

The TBC2800 series is a high-performance burner controller designed for industrial and commercial systems, offering precise control for various gas fuels. It excels in both traditional continuous and pulse combustion control, ensuring efficient and uniform temperature regulation. Suitable for multi-burner setups, it is widely used in industries such as steel, machinery, non-ferrous metals, glass, ceramics, and petrochemicals.

Installation:

The base can be directly mounted on a DIN rail or fixed to a mounting plate using two M4 screws. Note that to meet the IP54 sealing rating, sealing washers must be used when installing with screws. The base has 7 pre-drilled M16 knockout holes that match the plastic sealing connectors, which are used for the connection of incoming and outgoing cables.



Warning:

Before installation, the power supply must be disconnected! Proper grounding is essential! Failure to do so may result in personal injury or equipment damage!

Adequate protection against accidental electric shocks must be considered to ensure that personnel do not come into contact with inadequately insulated components!

Features:

- The system will switch between ion rod and UV flame detection via settings.
- Six operating parameters are integrated and selectable.
- 24-hour continuous operation (excluding UV), with a lifespan of over 250,000 cycles (Note 1).
- IP54 protection rating, suitable for on-site or cabinet installation.
- Multifunctional button combination and LED status indicators. Real-time display of operating status, fault information, and flame intensity.
- Remote or on-site reset
- Adjustable flame threshold
- Compliant with European EN298 standard

Main Technical Parameters:

L*W*H: 122.5 X 82 X 131.2 mm

Input Voltage: 220/230 VAC – 15/+10%, 50/60Hz

Maximum Power: 9 VA

Maximum length of the ion rod cable: 75m

Maximum length of the UV cable: 75m

Initial flame threshold setting value: 1A (Minimum)

Enclosure construction material:

PC/ABS: Black (base) / Blue (enclosure).

Protection rating: IP54

Ambient temperature: - 20°C ~ +60°C

Ambient humidity: < 95% non-condensing.

Service life: 250,000 cycles (compliant with EN298 standard).

Maximum current for driving the gas valve 1A; Power factor: 1

Maximum current for driving the ignition transformer: 2A;

Power factor: 0.2

Maximum current for output terminals.: 2A;

AC voltage: 242V

UV flame detection sensor model: C7027A/ C7035A/ C7044A



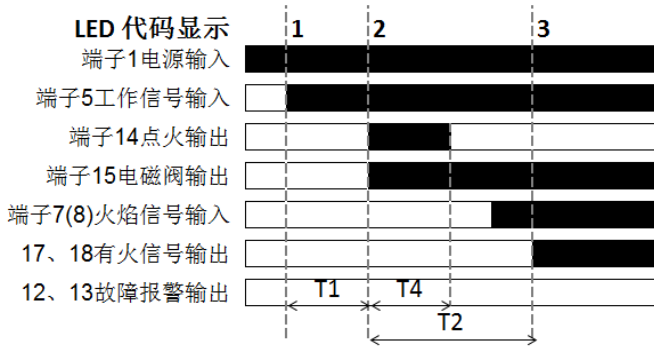
NOTES:

- Please carefully read the installation instructions before installation. Improper operation may result in product damage or accidents.
 - Verify the installation level of the product to ensure it is suitable for installation.
 - Installers should be professionally trained and experienced.
 - After installation, the controller parameters must be configured by a professional based on on-site application requirements, and the product should be inspected according to the installation instructions.
 - Do not bundle the flame detection cable with the ignition cable; keep them as far apart as possible.
 - When using UV flame detection, the system should be restarted after 24 hours of operation.
- Note 1: The controller has a service life of 100,000 cycles when used with a single-pin igniter.

Operating sequence:

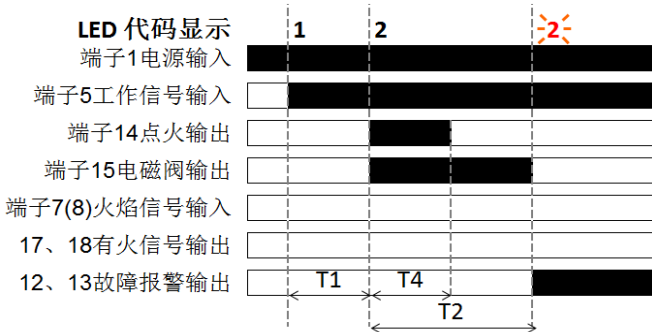
Define the operating conditions sequence, time definitions, and fault conditions of the controller.

1、Normal Startup



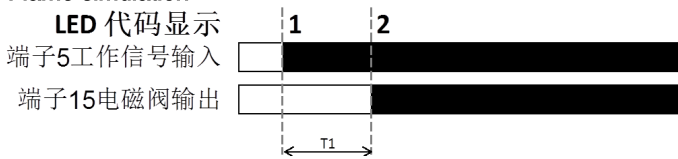
Upon receiving the startup signal, the controller operates and performs a flame simulation check within the waiting time T1. If no flame signal is detected, the system enters the startup safety time T2, during which the gas valve and ignition transformer are activated. Within T2, if a flame signal is detected, the signal output terminals 17 and 18 will close. The burner then enters normal operation, and the LED displays the current operating status code "3."

2、No flame signal during startup

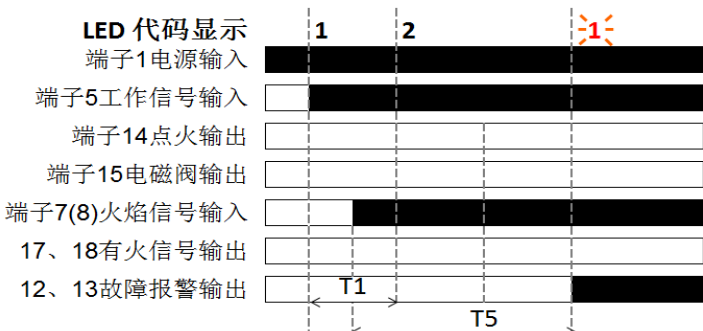


If the burner fails to detect a flame signal within the startup safety time T2 after normal startup, a fault lockout will occur, and the fault signal output terminals 12 and 13 will close. During the entire startup safety time T2, the gas valve remains open. The LED will flash to display the fault code "2."

3、Flame simulation



After receiving the startup signal, flame simulation detection is performed during the waiting time T1.



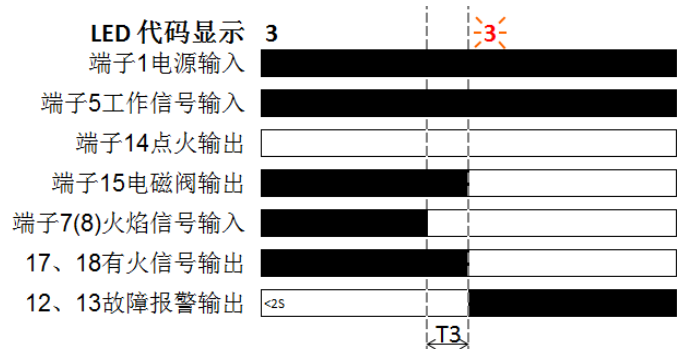
If the flame simulation detects a flame signal during the startup process, the controller will enter the flame simulation delay time T5. If the flame signal disappears within T5, the burner will proceed to the normal startup process. Otherwise, the system will enter a fault lockout state, and the LED will flash to display the fault code "1."

4、Flame extinguishing fault triggers self-lock or restart

The control panel setting determines whether the burner self-locks immediately or restarts once after a flame failure. The default setting is self-lock after a fault.

(1) Self-lock after flame failure

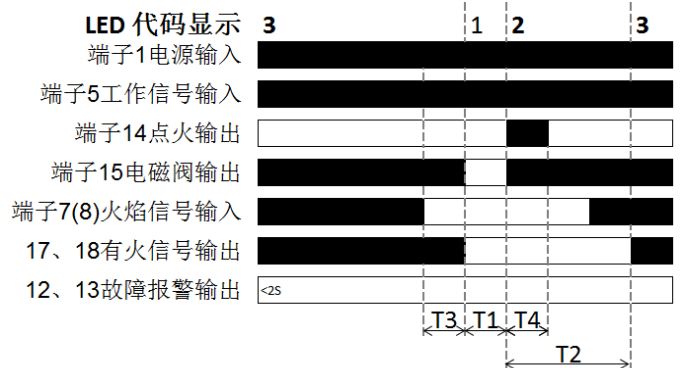
Set to self-lock after fault via the control panel.



If a flame fault occurs during operation, the controller will enter a fault lockout state within the T3 time, with the gas valve closing. The fault signal output terminals 12 and 13 will close, and the LED will flash to display the fault code "3."

(2) Automatic restart after flame failure extinguishment

Set to automatically restart after a fault via the control panel.



When the controller is operating normally and detects a flame signal strength below the threshold value, the gas valve will close within the T3 time, and output terminals 17 and 18 will open. The burner will automatically restart once. If the restart fails, the system will enter a fault lockout state, and the LED will flash to display the fault code "2." If the controller detects a flame signal within the T2 time and it is above the threshold value, output terminals 17 and 18 will close, and the LED will display the current operating status code "3," indicating the restart is complete.

5、Frequent opening and closing within T2 time

If the startup signal is switched on and off more than three times during the same startup process, the controller will enter a fault lockout state, and the LED will flash to display the fault code "4."

6、The time between two startups is too short

If the startups are too frequent, the LED will flash to display the fault code "7."

7、Continuous remote reset.

If the controller receives a continuous remote reset signal for longer than T7, the LED will flash to display the fault code "6," and the device will remain in its current operating state. The fault will be cleared once the remote reset signal disappears.

8、Excessive remote reset frequency.

If the remote reset operation frequency is too high, the LED will flash to display the fault code "5." The controller will enter a fault lockout state, and this fault can only be cleared through manual reset.

9、Fault signal summary

Table1 Fault information table

Code -Flashing	Fault	Result	Fault clearance method
1	Flame simulation failure	Stop	Remote reset / On-site reset
2	Flame ignition failure	Stop	Remote reset / On-site reset
3	Flame failure during operation	Stop	Remote reset / On-site reset
4	Frequent startups	Stop	Remote reset / On-site reset
5	Frequent remote reset	Stop	On-site reset
6	Continuous remote reset	Keep running	Cancel remote reset
7	The interval between two startups is too short	Can't startup	Startup interval exceeds T6
8	Internal temporary error	Stop	Remote reset / On-site reset
9	Internal storage error	Stop	Contact Service Engineer

10、Time definition

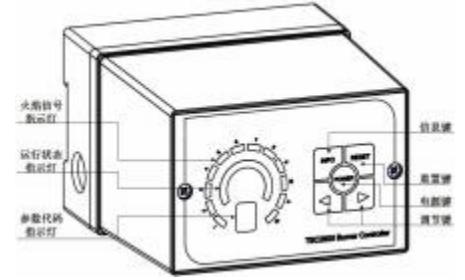
Table 2 Time definition

Remark: If T3=2s Refer to EN7462

Time	Definition	Scope	Involved faults
T1	Waiting Time		
T2	Ignition safety time	3,5,10S	
T3	Operation safety time	1,2s	
T4	Ignition time	2,3,6 S Associated with T2	
T5	Flame simulation delay time	Max. 25S	
T6	Time interval between two startup signals	10,12,15S Associated with T2	The interval between two startups is too short
T7	Remote reset duration	10s	Continuous remote reset

11、Explanation of operating parameter codes

- | | |
|-----------------------------|--|
| 1 Sleep mode: "-" | 4 Ignition steps(T2): "2" |
| 2 Ready: "0" | 5 Operation steps: "3" |
| 3 Flame simulation(T1): "1" | 6 Fault lockout code: refer to table 1 |



12、Buttons

1) 、Information key, adjustment key: Parameter configuration and viewing.

- Press and hold the information key for 2 seconds to display the parameter code. Use the left/right keys to select the code to configure or view. The flame signal indicator will show the current parameter configuration value.
- Press and hold the left and right keys simultaneously for 2 seconds. The dot at the lower right corner of the parameter code will light up, and the set value (effect value) will blink, indicating that the setting layer is entered and adjustments can be made.
- Use the left/right keys to adjust the target set value or view the recorded value.
- After setting or viewing, press and hold the left and right keys for 2 seconds to save and return to the parameter code layer.
- At this point, you can continue selecting other parameters to configure using the left/right keys. Follow steps B, C, and D for adjustment, or press and hold the information key for 2 seconds to exit the setting. The controller will restart, and the settings will take effect.

Note:

- Parameters can only be configured when the system is in standby mode. During operation or fault lockout status, parameters can only be viewed and cannot be modified.
- During the setting process, if the key press interval exceeds 30 seconds, the controller will exit the setting, return to its original state, and clear the values that have been set.
- For the explanation of parameter codes and related values, please refer to Table 3.

Table3 Parameter definition table

Type	Data	Scope	Default	Adjusted by
Flame threshold value	F	1~10	1	Control panel
Flame Detection Mode	P	1- Flame Rod 2- UV detector	1	Control panel
Operating sequence	C	1, 2, 3, 4, 5, 6	2	Control panel
Burner restart	H	1-Failure lockout 2-Restart once	1	Control panel
Fault information record	E	1~9	-	
Software version	U	-	-	

2) 、Reset key: Clears fault lockout after activation

Press the reset key to perform fault clearance.

13、Indicator Lights

1、Flame signal indicator light

- Real-time display of flame intensity
- Indicates the set value when setting parameters

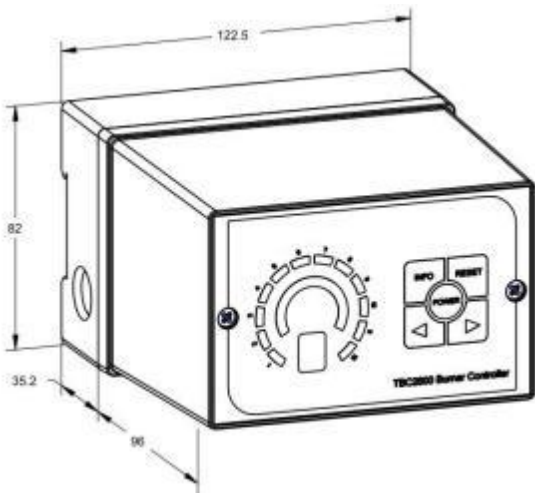
2、Operation status indicator light

- When in startup or parameter setting mode, the indicator light is off.
- When in normal operation mode, the indicator light displays green.
- When a fault occurs during operation, the indicator light displays red.

3、Code indicator light

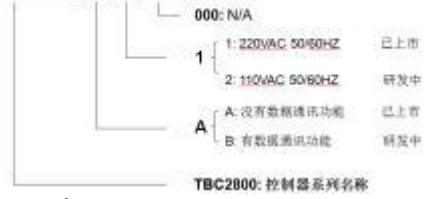
- Displays the operation status code (steady light)
- Displays the parameter code

Dimension diagram (mm)



Model Number

TBC2800 A 1 000

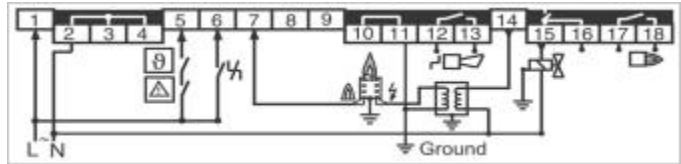


Time Code

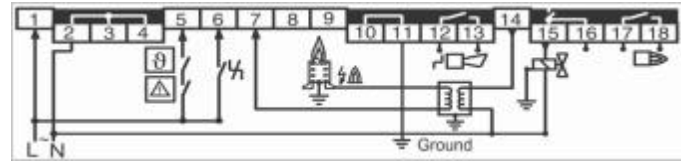
代码	T2 (秒)	T3 (秒)
1	3	1
2	5	1
3	10	1
4	3	2
5	5	2
6	10	2

Regular usage

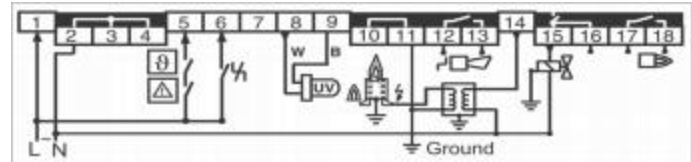
Dual-end flame rod



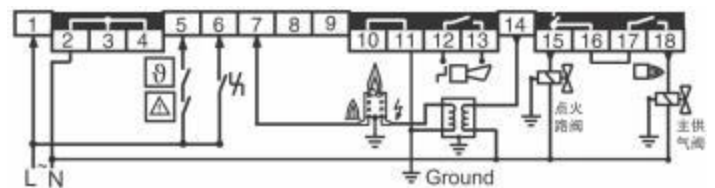
Single-end flame rod



UV flame detection

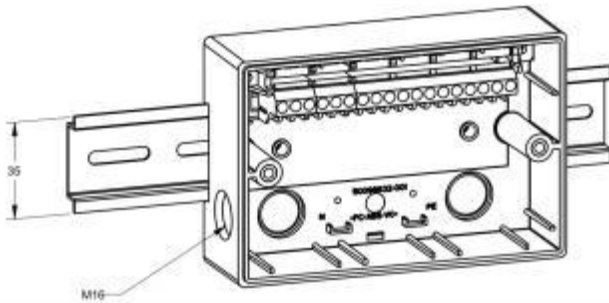


Pilot Burner and Main Burner Control (dual-fe)



Installation

Rail installation



Mounting plate installation

