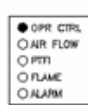


FLAME SAFETY CONTROLLERS

The flame safety controller is the device that monitors the presence of flame in the heater. The direct fired flame safety control is made by Fireye and the indirect fired flame safety control is made by Robertshaw. The flame safety controls the automatic burner sequencing, flame supervision, system status, and troubleshooting.

DIRECT FIRED FLAME SAFETY CONTROLLER

The Fireye M-Series II Flame Safety Control, shown below, uses a flame rectification sensor mounted on the burner assembly to detect the presence of flame in the burner. The FSC is also wired into an air flow switch, which tells it weather there is proper air flow through the unit (not just any airflow, but proper airflow). The FSC controls the opening of the redundant solenoid gas valve and the operation of the spark igniter to initiate a pilot flame upon start-up. There is a status light panel on the front of the FSC and is described below:



Fireye FSC Sequence of Operations

Power is supplied to the FSC – *OPR CTRL LED*



Proper air-flow is established – *AIRFLOW LED*

FSC pauses and purges the cabinet for 5 seconds



Pilot valve and ignition transformer are powered for 10 seconds – *PTFI LED*



If a flame is sensed at the burner, the main gas valve is powered, and the ignition transformer is de-energized – *FLAME LED*



If no flame is sensed in the burner the FSC will go into alarm until it is reset or de-energized – *ALARM LED*

INDIRECT FIRED FLAME SAFETY CONTROLLER

The Robertshaw 780-845 Flame Safety Control, shown below, uses a sensor mounted on the burner pilot assembly to sense for pilot establishment. The FSC controls the opening of the redundant solenoid gas valve and the operation of the spark igniter to initiate a pilot flame upon start-up. When there is a call for heat (determined by the Maxitrol temperature control system), the LED on the FSC is energized indicating that the unit has power. Then, there is a Pilot Trial For Ignition (PTFI). During the PTFI, the FSC opens the pilot gas valve and allows gas to pass through the pilot line. At the same moment, the spark igniter is started, causing the electrode on the burner to ignite the gas. This results in a pilot flame. Then the sensor detects the flame it powers the modulating gas system. This is the normal operating mode. The FSC continues to monitor the flame for presence.

The FSC control provides 90 seconds of PTFI, followed by a 6 minute time delay (purge) between ignition attempts. After three tries, if no pilot flame is sensed, the control goes into a one hour lockout period. At the end of the lockout period, if the demand for heat is still present, the unit will repeat the three tries for ignition. During lockout, you may override the auto-system, and manually reset the unit at the thermostat.

The green diagnostic light will be on continuously for normal operation. The LED will be off for internal lockout and will flash continuously for not sensing flame.



780-845