

**PRODUCT GUIDE
SPECIFICATION****FIREYE MicroM
FLAME SAFEGUARD CONTROL****1. GENERAL**

1.1 OVERVIEW

Each burner shall be equipped with a Burner Management Flame Safeguard Control System. The control shall provide automatic sequencing and continuous flame monitoring of the burner through prepurge (Series 200 and Series 500 programmer modules only), pilot trial for ignition (PTFI), and run.

1.1.1 The control system shall be provided by Fireye or written approved equal.

1.2 CODES AND STANDARDS

The control shall be listed by Underwriters Laboratories, Factory Mutual, and Canadian Standards Associates for its intended purposes.

2. SYSTEM HARDWARE

2.1 FLAME SAFEGUARD CONTROL

The Burner Management Flame Safeguard Control shall be of a modular design, with the programmer and amplifier modules plugging into the chassis.

2.1.4 The programmer module shall incorporate a "run-check" switch (Series 500 programmer models only) to assist in testing the size, position, and stabilization of the pilot.

2.1.1 The programmer module shall determine timing functions for prepurge (Series 200 and Series 500 models only), PTFI, and intermittent or interrupted operation.

2.1.5 The amplifier module shall determine the type of flame scanner (ultra-violet, ultra-violet self-check, infra-red, flame rod/photocell, or cad cell) and flame failure response time (FFRT) of 0.8 or 3 seconds. Test jacks shall be provided on the amplifier module to measure flame signal strength during operation and shall be a uniform 0 to 10 volts.

2.1.2 The programmer module shall incorporate five LED indicator lights to indicate the operating status of the control. The LED's shall annunciate operating control closed, air flow (interlock) switch closed, pilot trial for ignition, flame signal present, and alarm.

2.1.6 The programmer module shall incorporate five LED indicator lights to indicate diagnostic status in the event of safety lockout. The cause for lockout shall be represented by a coded indication utilizing 4 of the LED's while the Alarm LED is blinking.

2.1.3 The programmer module shall incorporate dip-switches (Series 200 and Series 500 programmer models only) to select purge timing, pilot trial for ignition timing, prove air-flow open at start, and recycle/non-recycle operation.

2.1.7 The control shall contain non-volatile memory which allows it to remember burner history and present position, even after a power interruption.

2.2 WIRING BASE

A wiring base shall be provided which will allow for all system terminations to be completely wired prior to the installation of the control. The control shall be removable or replaceable without removing any wiring terminations. The user shall have access to the wiring terminals to test for voltages while the control is installed on the wiring base.

2.2.1 The wiring base shall provide line voltage terminal inputs from direct connection of limit and operating controls, air flow switch, burner motor, ignition, pilot valves, main fuel valves, and alarm.

3. SYSTEM SOFTWARE

3.1 SEQUENCE OF OPERATION

The control shall accomplish a safe start check during each start. If flame (real or simulated) is detected prior to a start or during purge, the fuel valves shall not be energized, and the control shall initiate a safety lockout.

3.1.1 Once the operating control circuit is closed, the control shall energize the blower motor and check to prove the air flow switch is closed.

3.1.2 After the air flow switch is proven closed, the control shall initiate a prepurge (Series 200 and Series 500 programmer modules only).

3.1.3 Upon completion of prepurge, the control shall initiate pilot trial for ignition (PTFI).

3.1.4 When flame signal is proven during PTFI, the control shall de-energize the ignition transformer and energize the main fuel valve.

3.2 SAFETY PROVISIONS

A self diagnostic circuit within the control will identify module failures and an appropriate LED indication will be displayed for servicing. This circuit will cause a safety shutdown should any component in the control fail.

3.3 REMOTE COMMUNICATIONS

3.3.1 The MicroM shall provide a Modbus communications protocol through the use of an optional plug-in board located on the chassis. Available information via Modbus shall be current status (lockout or run), flame signal, safety lockouts, current status, total burner cycles, burner on time, system on time. The physical configuration shall be two-wire differential RS-485 allowing up to 32 MicroM controls to be connected on each node.

3.1.5 Safety shutdown shall occur following (1) failure to prove the pilot flame during PTFI, or (2) loss of flame signal after main fuel valve is energized for the selected Flame Failure Response Time and the programmer is set for non-recycle operation (Series 200 and Series 500 programmer modules only).

3.1.5 The system shall recycle automatically under control of the operating control and when power is restored following a power failure. Manual reset shall be required following any safety lockout, even after a power failure. When in a lockout condition, power interruptions will not recycle the control.

3.2.1 The control will continually test the status of all safety critical loads (ignition transformer, pilot fuel valve, main fuel valve) to insure they are operating properly.

3.4 REMOTE DISPLAY

3.4.1 The MicroM shall provide the capability to output message information to a remotely mounted alpha-numeric display. The messages shall be clear, concise information concerning system timing, present burner sequence position, lockout causes, historical data and control configuration.

4. PRODUCT INFORMATION

- 4.1** - The control chassis shall be the Fireye MEC120 (or appropriate model).
- The Programmer Module shall be the MEP230 (or appropriate model).
- The Amplifier Module shall be the MEUV4 ultra-violet type (or appropriate model).
- The ultra-violet scanner shall be the Fireye UV1A6 (or appropriate model).