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MBPF-1001
APRIL 4,2013

MBPF-100S
MB-600PF
MBPF-200S
MBPF-202S
Sensor Modules

FM APPROVED

c UL US

DESCRIPTION

The MBPF-100S, MB-600PF, MBPF-200S and MBPF-202S modules provide visual indication and electrical output that signal the user regarding flame presence in a combustion chamber. The module uses Fireye optical ultra-violet scanners and/or flame rod to sense flame presence independently or as components in a burner man- agement system. Many operational characteristics are provided including:

• UL recognized and FM approved-MBPF-100S, MB-600PF
• FM approved - MBPF-200S, MBPF-202S
• Self-contained: 120 VAC, 50/60: MBPF-100S, MB-600PF
                   220 VAC, 50/60: MBPF-200S, MBPF-202S
• UV detection or flame rod or both
• Flame ON LED
• User controlled Flame Fail LED
• Analog output test points permits direct reading of flame signal
• Uses standard 11-pin relay base
• Panel surface or DIN-rail mounting
• Remote testing of contacts available
• Self-check scanner available for MBPF-100S and MB-600PF

Check with Fireye for more details by contacting your local distributor or by check- ing the Fireye home page at www.fireye.com.

NOTE: When the MBPF modules are used, additional means must be furnished to provide those func- tions usually provided by flame safeguard control systems to meet local regulations (i.e.: safe start check, valve closure, starting and running interlocks, safety timings, etc.).

⚠ NOTICE: When Fireye products are combined with equipment manufactured by others and/ or integrated into systems designed or manufactured by others, the Fireye warranty, as stated in its General Terms and Conditions of Sale, pertains only to the Fireye products and not to any other equipment or to the combined system or it's overall performance.

ORDERING INFORMATION

PART NUMBER	DESCRIPTION	BULLETIN
	Flame Sensor	
MBPF-100S	Single channel module, 120VAC 50/60 Hz, use with UV detection or flame rod or both.	MBPF-1001
MB-600PF	Single channel module, 120VAC 50/60 Hz, use with UV detection or flame rod or both. Mounting ears provided for use with MB-600S multiburner programming module.	MB-6001
MBPF-200S	Single channel module, 220VAC 50/60 Hz, use with UV detection or flame rod or both.	MBPF-1001
MBPF-202S	Single channel module, 220VAC 50/60 Hz, use with UV detection or flame rod or both, 2 sec. FFRT.	MBPF-1001
	Wiring Base	
60-2726	Socket, 11-pin, DIN rail or panel surface mounting.	133-647
129-172	Kit, retaining, secures module on socket, 60-2627.	133-658
	Mounting Rails	
60-2539-12	DIN style mounting rail, 12 inches., mounts up to 4 modules.	
60-2539-24	DIN style mounting rail, 24 inches., mounts up to 8 modules.	
60-2539-36	DIN style mounting rail, 36 inches., mounts up to 12 modules.	
	Scanners	
UV7A4	Ultra-violet scanner, non-self check applications, 1/2" NPT mount, 4' lead with insulating coupling.	SC-107
UV7A4W	Ultra-violet scanner, non-self check applications, NEMA 4, 1/2" NPT mount, 4' lead with insulating coupling.	SC-107
UV7R4	Ultra-violet scanner, non-self check applications, 1/2" NPT, 90°, 6' lead with insulating coupling.	SC-107
UV7SC	Ultraviolet scanner, self check applications, 120VAC, 1" NPT mount. (MBPF-100S only).	SC-107
59-504-010	Cable/connector for self-check scanner, 10 foot.	SC-107
	Flame Rods	
69ND1-1000K4	Flame rod 1/2"NPT mount, 12" length.	SC-103
69ND1-1000K6	Flame rod 1/2"NPT mount, 18" length.	SC-103
69ND1-1000K8	Flame rod 1/2"NPT mount, 21" length.	SC-103

PRODUCT SPECIFICATIONS

Supply Voltage: MBPF-100S/MB-600PF - 120 VAC (+10%, -15%), 50/60 Hz (@ 0.1 Amp consumption)
MBPF-200S/MBPF-202S - 220 VAC (+10%, -15%), 50/60 Hz (@ 0.1 Amp consumption)

Flame Relay Output: SPDT 2 Amp Resistive @ 240VAC, 3Amp @ 24VDC

Flame Fail Response Time: 3 seconds: MBPF-100S, MB-600PF, MBPF-200S
2 seconds: MBPF-202S

Operating Temperature: - 40° F to 140° F (- 40° C to 60° C)

Storage Temperature: - 40° F to 176° F (- 40° C to 80° C)

Humidity: 85% RH (max), non-condensing.

Agency Approvals:
    MBPF-100S: Underwriters Laboratories (UR)
    Factory Mutual (FM)
    MBPF-200S: Factory Mutual (FM)
    MBPF-202S: Factory Mutual (FM)

Shipping Weight: 1 lb (.5 Kg)

Scanner Voltage:
    Ultra-Violet
    Terminals 7 & 8   460 VDC - 530VDC

Flame Rod:
    Terminals 9 & 8   120 - 150VAC
    Note: Measured with digital VOM
        Terminals 1 and 8 are internally connected.

Sensitivity: Flame Rod - 3 μAmps (80 Meg ohms), Vmeter ~ 3.0 VDC
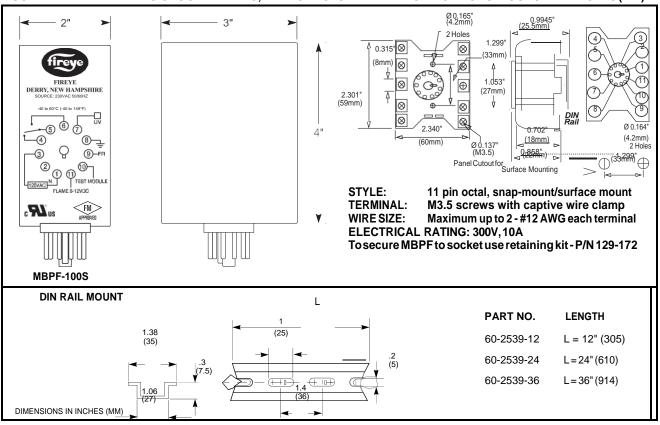Ultra-Violet - 50 pW/cm^2@210nm, Vmeter ~ 8.0 VDC

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FIGURE 1.   **DIMENSIONS OF DIN RAILS, WIRING BASES AND FLAME SWITCH MODULES SHOWN IN INCHES (MM)**

STYLE: **11 pin octal, snap-mount/surface mount**
TERMINAL: **M3.5 screws with captive wire clamp**
WIRE SIZE: **Maximum up to 2 - #12 AWG each terminal**
ELECTRICAL RATING: 300V, 10A
To secure MBPF to socket use retaining kit - P/N 129-172

MBPF-100S

DIN RAIL MOUNT

PART NO.	LENGTH
60-2539-12	L = 12" (305)
60-2539-24	L = 24" (610)
60-2539-36	L = 36" (914)

DIMENSIONS IN INCHES (MM)

WARNING: Incorrect sensor installation may cause the sensor to generate a false flame signal, causing unburned fuel to collect in the combustion chamber. The result can be explosions, injuries and property damage. Be certain that the flame sensor detects only pilot and main flames, not glowing refractory, burner or ignition parts.

SENSOR INSTALLATION

Route sensor wiring a sufficient distance from ignition and other high voltage or high current wiring to avoid electrical interference. Interference from ground currents, nearby conductors, radio-frequency emitters (wireless devices), and inverter drives can induce false flame signals. Shielded cables can help reduce interference with the shield connected to ground at the control end only. The wire type and its capacitance (picofarads or microfarads) to ground may cause low signal problems, so a grounded shield may decrease the signal due to the cable's internal capacitance. Multiple UV tube-type sensor leads run together without shielding may interfere or "cross talk", so the shield or flexible armor must be grounded to prevent this situation. For flame rod sensor runs approximately 100 feet (30 meters) or greater, use Belden P/N 8254-RG62 coax cable. To achieve the maximum wiring distance, the shield should not be grounded (keep in mind that an underground shield pro- vides less protection against electrical interference). Depending on field connections, sensor wiring can be up to 200 feet (61 meters).

Do not ground the shield to terminal GND.

Unshielded sensor wiring must not be run in common with other wires; it must be run in separate-conduit. Multiple flame sensor wiring must not be run together in a common conduit or wireway.Use #14 to #18 AWG wire suitable for 90 °C (194 °F) and 600 volt insulation, and run each pair of leads in its own shielded cable. Multiple shielded cables can be run in a common conduit.

Flame rods should be used only on gas burners. They accumulate soot on oil burners, causing nuisance shutdowns and unsafe operating conditions.
See the burner manufacturer's literature for flame rod mounting location.
Use only Fireye scanner models UV7A4, UV7R4 & UV7SC. Consult the burner manufacturer's instructions for mounting location.
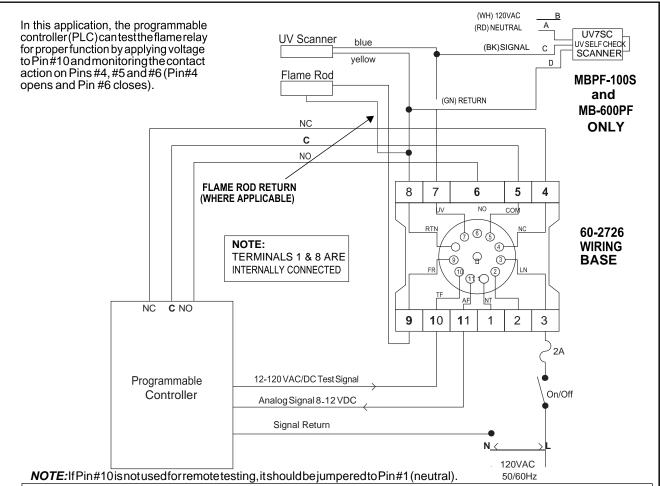
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FIGURE 2.   TYPICAL APPLICATION - MBPF-100S

In this application, the programmable controller (PLC) can test the flame relay for proper function by applying voltage to Pin #10 and monitoring the contact action on Pins #4, #5 and #6 (Pin #4 opens and Pin #6 closes).

NOTE:
TERMINALS 1 & 8 ARE INTERNALLY CONNECTED

MBPF-100S and MB-600PF ONLY

60-2726 WIRING BASE

NOTE: If Pin #10 is not used for remote testing, it should be jumpered to Pin #1 (neutral).

SPECIAL CONDITIONS OF USE
1. The equipment shall be installed in compliance with the enclosure, mounting spacing and segregation requirements of the ultimate application.
2. Line voltage and extra-low voltage wiring to and from this device is intended to be wired in the field to become part of a Class 1 circuit only.

Test Signal Terminal #10	Flame Condition	RF Relay	"FLAME ON" LED	"FLAME FAIL" LED
0	OFF	OFF	OFF	OFF
0	ON	ON	ON	OFF
12-120 vac/vdc	OFF	ON	OFF	ON
12-120 vac/vdc	ON	ON	OFF	ON