

ELECTRONIC FLAME MONITORING

MODEL: FM

Revision: 0

BULLETIN
7301

DESCRIPTION

The model 7301 Flame Monitor is a compact 12 channel combustion monitor.

This is not a combustion Safeguard.

The Flame Monitor provides a visual indication of a burner's status. If flame is detected on a burner being monitored, an LED will be powered.

Up to 12 Burners may be monitored at one time.

The sensor terminals will accept signals from either an Ultra Violet detector (series 7150 or 7155), or a rectifying flame rod.

Mounts on the face of a control panel.

SPECIFICATIONS

Voltage : 120V 50/60Hz +10% -15%

Current : 30VA

Ambient Temperature : 0 degrees to 125 degrees F (-16 degrees to 52 degrees C)

Flame Response Time : 1 to 2 seconds

Hold in Current : 1 microamp or greater

Display Lights : Solid state LED's

Detector : Flame rod and/or 7150 or 7155 series Ultra Violet detectors

Mounting : Refer to dimension drawing on page 2

NOT A FLAME COMBUSTION SAFEGUARD



FEATURES

- Monitor 1 to 12 Burners
- Panel Mounted
- Gasketed and sealed display enclosure to prevent entrance of dust and dirt
- Less than 2 Second response Time
- LED Readout of Burner Status
- Toggle Switch to Test all Flame Amplifiers

APPLICATIONS

- Combustion Systems that do not require Combustion Safeguards.
- Reduce maintenance time. Display locates problems fast and identifies specific burner location.
- Simplify light-off.

CAUTION: Operation of combustion equipment can be hazardous resulting in bodily injury or equipment damage. Each burner should be supervised by a combustion safeguard and only qualified personnel should install, make system adjustments and perform any required service.



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NOTICE: PYRONICS practices a policy of continuous improvement in the design of its products. It reserves the right to change the specifications at any time without prior notice.

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DIMENSIONS

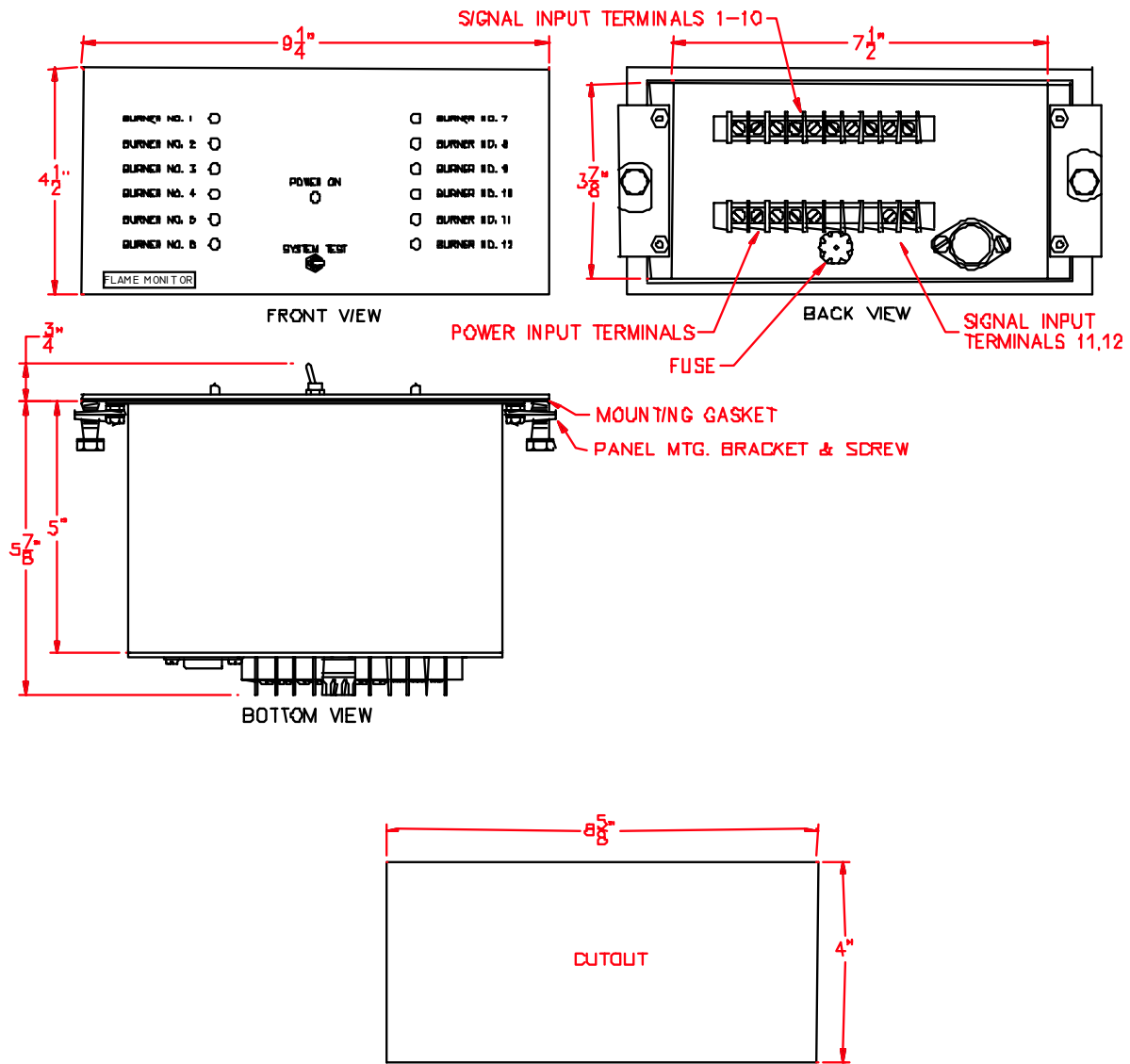
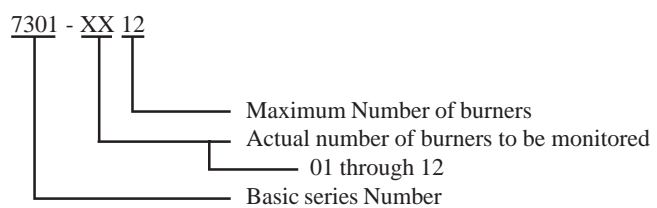


FIGURE 1

ORDERING INFORMATION



INSTALLATION INSTRUCTIONS

1. Make a panel cutout according to Figure 1 on pg. 2. Allow 6" clearance behind the cutout.
 2. Remove 2 mounting brackets and 4 mounting nuts attached to the FM . *Do not* remove the nuts holding the housing to the display units front.
 3. Insert the FM into the cutout. Replace the mounting brackets and secure them to the housing with mounting nuts.
 4. Align the unit in the panel and tighten the 2 hold-down screws to secure the FM to the panel.
 5. Connect power (120V 60Hz) to the input power terminal strip. Ground the FM using the appropriately marked input on the terminal strip.
 6. Wiring must conform to electrical codes, regulations and ordinances. All wiring to lettered and numbered terminals must be NEC Class 1. Type TW moisture resistant wire is recommended.
 7. Maximum current in any flame wire is 100 microamperes. Any number of flame wires may be run in a common metal grounded conduit, but NOT with LINE VOLTAGE or IGNITION WIRES. A single white bus wire tapped at each scanner is recommended. Maximum length of any flame wire is 100 feet. Contact factory when longer runs are required. No. 14 - 600TW wire is recommended. Moisture resisting wire should be used. ASBESTOS wire is NOT ACCEPTABLE because it absorbs moisture.
 8. Terminal E supplies potential for flame rod operation. Connect terminal E to burner piping ground. Use interconnecting bus to each burner if required. A DIRECT CONNECTION between terminal E and burner piping is required.
 9. When Ultra Violet detectors are used, All white wires are tied to a common bus from terminal U. DO NOT GROUND TERMINAL U or DAMAGE WILL RESULT.
 10. Flame rods and Ultra Violet detectors are powered from an AC source (terminal E, 30 Volts for flame rods and terminal U, 270 Volts for Ultra Violet detectors) and provide a rectified signal to the amplifier. They can be used interchangeably. They may be connected in parallel if used to monitor pilot and main flame separately. Choice of sensors depends on application.
- Follow the burner manufacturer's recommendation when selecting and installing sensors. Consult the factory when data is not available.
11. Flame rods require :
 - a) An adequate grounding area in contact with the flame. This area should be four times the surface of the flame rod in contact with the flame or greater. Grounding vanes, or rods can be attached to pilots to improve the flame grounding ratio. Cut the flame rod length (rod extending beyond the flame centerline) to improve the grounding ratio. This will result in a stronger signal.
 - b) That flame rod insulators be kept clean and rods free of carbon.
 - c) Sensing of the pilot at a point that assures main flame ignition.
 - d) That line and other burners lighted in series have the flame rod installed at the end opposite the pilot.
 12. Ultra Violet detectors should be installed as recommended by the burner manufacturer. The following considerations should be observed :
 - a) When sighting both pilot and main flame, sight on pilot at a point where main flame ignition is assured.
 - b) Detector MUST NOT view ignition spark directly or by reflection.
 - c) Other burners MUST NOT, be within the detectors sight.
 - d) Flame must remain within the UV detectors view at all firing rates. Greatest UV radiation is in the first third of the flame length. UV emission is blocked by dirt, smoke and moisture (vapor or condensed). Never apply Ultra Violet detector without Quartz window when sighting through fuel line or where condensation can be expected. Temperature limit of Ultra Violet detector is 212 degrees F. The use of purge air from the combustion air line will aid in cooling the detector and reduce dirt and moisture problems. A 1/4" NPT connection for purge air is provided on all detectors except models 7150-0100, 7150-0101 and 7155-0001. The black wire from each UV detector is connected to an amplifier terminal.
 13. Flame current fluctuation is normal. The average value should be noted. The Flame Monitor will prove flame at a minimum signal of 1 microampere. A higher signal is desirable.

INSTALLATION CHECKOUT

1. Check all wiring for shorts or loose connections. On UV detectors all white wires connect to terminal U, black wires to flame terminals.
2. When using flame rods, signal wires connect to amplifier terminals. All burner pipes should be grounded and connected to terminal E.
3. Adjust pilots to provide an adequate signal to the amplifiers. Check signal over full range of burner operation.

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