

MILLIVOLT FIREPLACE DAMPER

Model: FSM Low Profile Series



The Flue Sentinel® Millivolt Fireplace Damper is designed to operate with millivolt, standing pilot gas log fireplaces. The FSM consists of a stainless steel pipe/blade assembly with mounting ring, a solid-state battery-powered controller in a weather-proof enclosure and a jacketed cable wiring harness. The FSM is installed outdoors on top of the chimney of a gas-fired fireplace and is electrically interlocked with the appliance's safety control. The damper automatically opens the flue outlet when the fireplace is turned on and automatically closes off the flue outlet when the fireplace is turned off. By closing off the flue outlet when the fireplace is not in use, the damper prevents drafts and conserves energy by preventing heat in the building from escaping through an open flue.

The Flue Sentinel® is design certified by the Canadian Standards Association (CSA) to CSA Requirement No. 2.03-US for Automatic Vent Damper Devices for Use Outdoors on Fireplace Chimneys and is covered by U.S. Patent No. 6,915,799.

⚠ WARNING: Do NOT install this damper on a chimney burning solid fuel such as wood. Do NOT install this damper on a chimney used for venting central heating or water heating appliances.

READ THESE INSTRUCTIONS CAREFULLY AND COMPLETELY BEFORE PROCEEDING WITH THE INSTALLATION.

This device **MUST** be installed by a qualified agency in accordance with the manufacturer's installation instructions. The definition of a qualified agency is: any individual, firm, corporation or company which either in person or through a representative is engaged in, and is responsible for, the installation and operation of HVAC appliances, who is experienced in such work, familiar with all the precautions required, and has complied with all the requirements of the authority having jurisdiction.

Please retain these instructions after installation.

Installed By: _____ Phone: _____ Installation Date: _____



MFG BY:

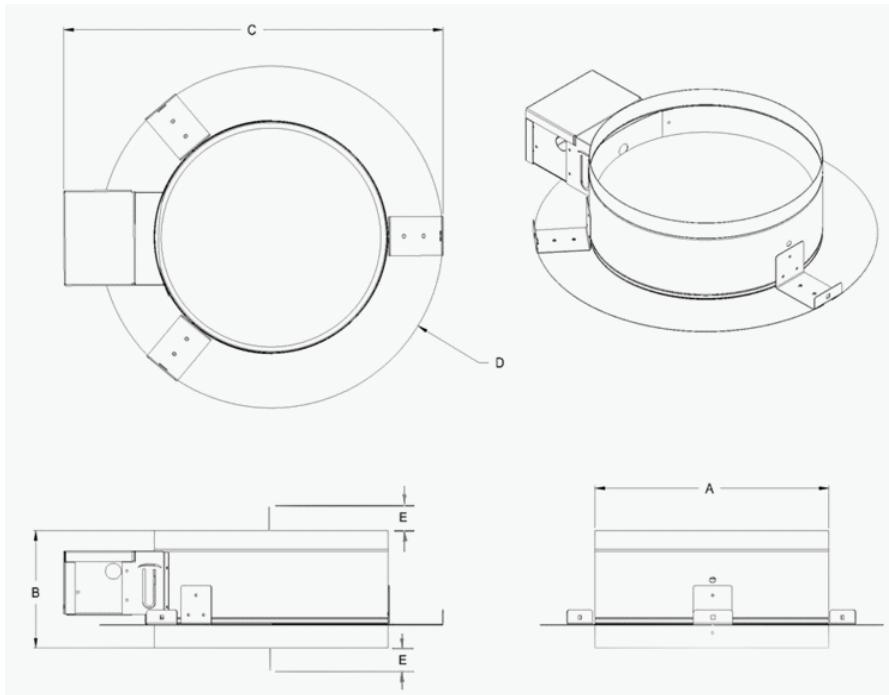


FIELD CONTROLS
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SPECIFICATIONS

OPERATING SPECIFICATIONS	
Controller Voltage	3.6 VDC
Switching Voltage	100-750 mVDC
Battery Life	10 yrs*
Operating Temperature Range	Controller: (-40) - 140°F Pipe: (-40) - 650°F
Timing	7 seconds to open 30-40 seconds to close @ 450mV

*Based on normal usage as presented by HPBA Market Survey findings



Flue Sentinel® Dimensions, Weights and Clearances

MODEL	DIM A	DIM B	DIM C	DIM D	WT. (LB)	Damper Blade Clearance Required
FSM-L6	5.9	6.0	14.5	11.8	4.02	.25
FSM-L8	7.9	6.0	16.5	13.8	4.25	1.25
FSM-L10	9.9	6.0	18.5	15.8	5.25	2.25
FSM-L11	10.9	6.0	19.5	16.8	5.81	2.75
FSM-L12	11.9	6.0	21.5	17.8	6.36	3.25
FSM-L13	12.9	6.0	22.5	18.8	6.55	3.75
FSM-L14	13.9	6.0	23.5	19.8	7.07	4.25
FSM-L16	15.9	6.0	25.5	21.8	8.25	5.25
FSM-L18	17.9	6.0	27.5	23.8	9.80	6.25
FSM-L20	19.9	6.0	29.5	25.8	11.25	7.25
FSM-L22	21.9	6.0	31.5	27.8	12.35	8.25
FSM-L24	23.9	6.0	33.5	29.8	13.75	9.25

*All dims are in inches

INSTALLATION

The Flue Sentinel® has been designed to fit a variety of chimney types including masonry and manufactured chimneys. It features a mounting collar that seals the chimney, adjustable legs for means of attachment and a crimped outlet for mounting the chimney top. Figure 1 is an example of a typical installation

Installation of the Flue Sentinel® must comply with the following requirements

- The Flue Sentinel® must be installed only on a factory built chimney or vent complying with a recognized standard, or a masonry or concrete chimney acceptable to the authority having jurisdiction.
- The Flue Sentinel® must be located on a chimney so that it serves only the single fireplace appliance for which it is installed.
- The Flue Sentinel® shall be installed in accordance with local codes, or in the absence of local codes, in accordance with the National Fuel Gas Code, ANSI Z223.1.
- If the Flue Sentinel® is to be installed on an air-cooled chimney, it must be installed with the appropriate Flue Sentinel® Mounting Kit per the kit instructions.

Installation Steps:

1. Set the damper in the opening of the chimney flue to check the fit. The damper's mounting collar should rest evenly on the top edge of the flue. Also check the orientation of the damper control housing and mounting legs to ensure the proper attachment and routing of the wiring harness.
2. Remove the damper and apply a bead of high temperature sealant on the top edge of the flue.
3. Center the damper in the opening of the chimney flue.
4. Adjust mounting legs to rest flush with the exterior of the chimney before attaching to flue with worm gear clamps or screws no longer than $\frac{1}{4}$ inch. Tighten the mounting leg bolts at the collar brackets.
5. Place the cap above the unit where it sits on top of the brackets. Install $\frac{1}{4}$ inch screws in the top hole on the bracket to hold cap in position. Use high temp silicon to seal the bottom of the cap at the bead on the Flue Sentinel®.

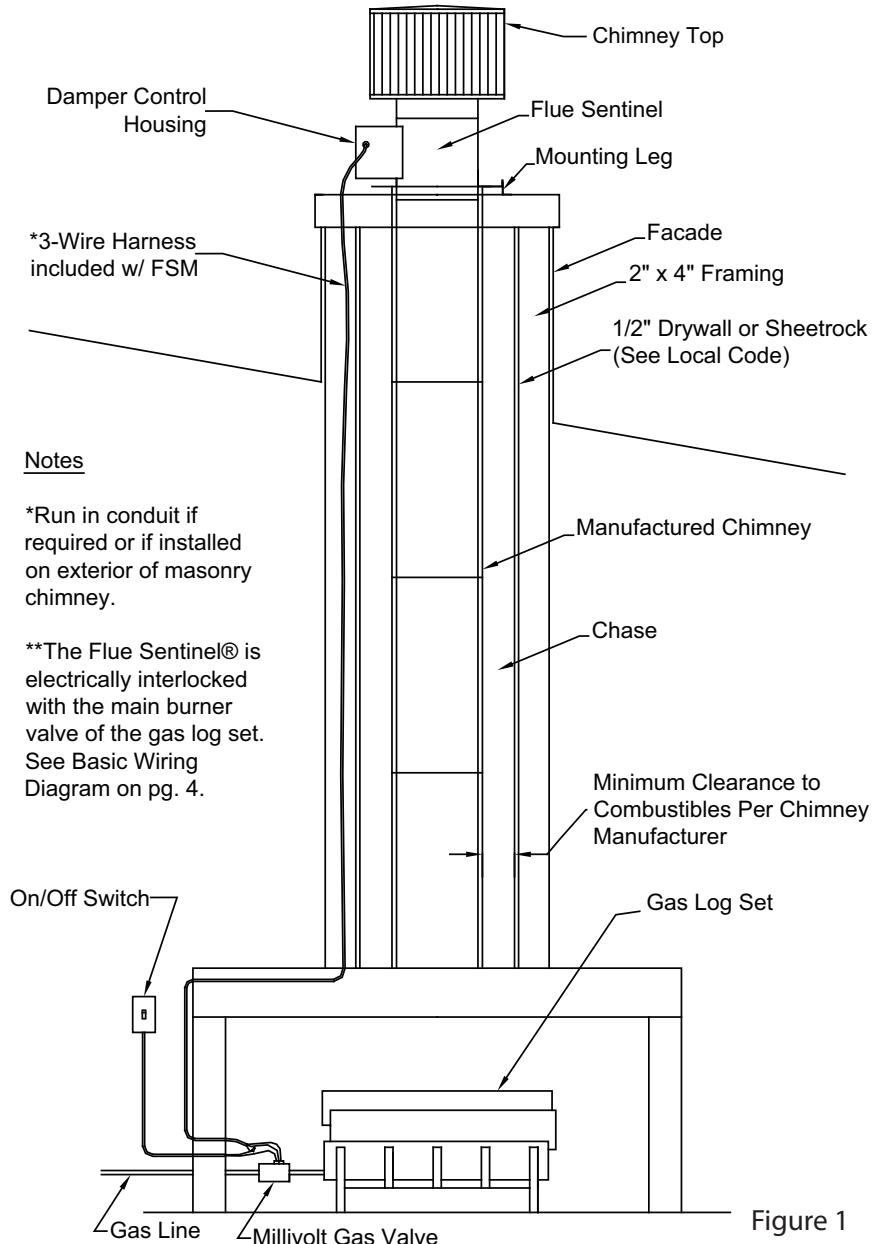


Figure 1

WARNING: Before installing a cap other than one offered by Flue Sentinel®, insure that the clearance inside the cap meets the clearance noted in Dimensions and Clearance table on page 2 for the size of the unit that is being installed. Failure to do so will damage the unit and will void the warranty

WIRING

WARNING: This damper device MUST be interlocked with all automatic gas valves on the fireplace appliance. DO NOT negate the action of any existing safety of operational control.

The following requirements must be met to ensure safe and proper operation:

- Do **NOT** use this damper with a 24V or greater system as it will damage the controls. This damper has been designed to operate with millivolt (.75V or less) systems only.
- The Flue Sentinel® Electronic Fireplace Damper must be electrically connected to the fireplace appliance using the chimney upon which the damper is installed.
- The damper must be installed using the 50 foot wiring harness and wire terminals supplied with it. The harness should be cut to remove any excess length.
- Figure 2 is the Basic Wiring Diagram for a FSM with a millivolt gas valve typically used with gas log sets and must be wired as follows:

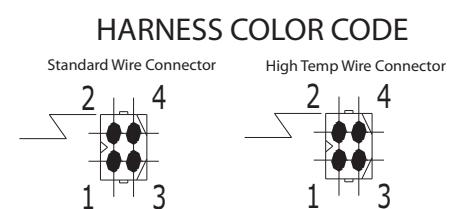
FSM Harness

Orange - On/Off Switch
Yellow - TH
Black - TP

Thermopile Leads

Red (Positive) - TH/TP
White (Negative) - TP

Note: If you have a gas valve or thermopile with connection callouts different from those pictured here, contact Flue Sentinel® for assistance.



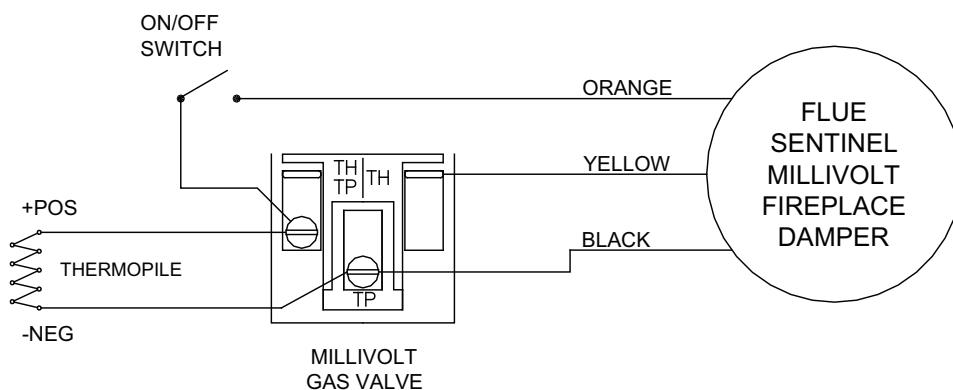
VIEW SHOWING
END OF RECEPTACLE

VIEW SHOWING
END OF RECEPTACLE

WIRE CONNECT	
CODE	COLOR
1	BROWN
2	ORANGE
3	YELLOW
4	BLACK

WIRE CONNECT	
CODE	COLOR
1	WHITE
2	RED
3	GREEN
4	BLACK

Figure 2



SEQUENCE OF OPERATION

When the fireplace is turned on, a millivolt signal is sent by the fireplace control to the damper controller. The damper controller motor then rotates the damper blade, which is indexed to a cam, to the open position to allow products of combustion to pass through the flue outlet. The cam proves the damper is in the open position and sends the millivolt signal to the main gas valve, which fires the main burner.

When the fireplace is turned off, the fireplace control removes the millivolt signal to the damper controller, shutting off the main burner. The damper controller then waits 30 seconds* then rotates the damper blade to the closed position and resets itself for the next time the fireplace is turned on.

*Average time delay at 450mV. Time delay ranges from 10 to 50 seconds and will be longer at a higher voltage, shorter at a lower voltage.

FINAL INSPECTION

 **WARNING:** If a damper was installed prior to installing the Flue Sentinel®, this damper MUST be blocked completely open or removed.

CAUTION: Do NOT turn damper by hand. Manually rotating the Flue Sentinel® damper will damage the motor and void the warranty.

Turn on the gas to the appliance and light the pilot. Check the operation of the Flue Sentinel® by cycling the appliance at least three times as follows:

1. Switch the fireplace control to turn on the fireplace.
2. The damper will open and fire the main burner. **The damper must be in the open position when appliance main burner is operating.**
3. Switch the fireplace control to turn off the fireplace. The main burner will immediately shut off and, depending on the system voltage, the damper will rotate to the closed position after approximately 10-50 seconds.

If the Flue Sentinel® Electronic Fireplace Damper and/or fireplace appliance does not operate as described above, consult the Troubleshooting Chart below for the proper course of action to resolve the problem.

TROUBLESHOOTING CHART

PROBLEM	POSSIBLE CAUSES	ACTION
Damper won't open	Signal voltage at Orange wire less than 100 mV	Check connections, adjust pilot, and/ or replace thermopile
	Obstruction in damper	Remove obstruction
	No power or insufficient power at damper	Check damper battery & replace if less than 2.8V
	Defective damper controller	Replace controller
Damper opens but appliance main burner(s) does not fire	Signal voltage at Yellow wire less than 100 mV	Check connections, adjust pilot, and/ or replace thermopile
	Signal voltage at Yellow wire greater than 100 mV	Make sure valve knob is On, if so replace valve operator
Damper rotates continuously	Defective damper controller	Replace controller
Damper won't close, main burner off	Signal voltage at Orange wire	Check on/off switch
	Thermopile polarity reversed	Re-connect thermopile leads per Figure 2
	Obstruction in damper	Remove obstruction
	No power or insufficient power at damper	Check damper battery & replace if less than 2.8V
	Defective damper controller	Replace controller
Damper won't close, main burner on	Fireplace control still sending signal to damper to open	Check for shorts in fireplace control/circuit and correct

MAINTENANCE

CAUTION: Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation.

The Flue Sentinel® has been designed to provide years of maintenance free service. However, for continued safe operation, the Flue Sentinel®, chimney and fireplace appliance should be examined once a year by a qualified service agency. It is also recommended that the homeowner examine these components at least every (6) months, with particular attention given to deterioration from corrosion or other source

WARRANTY

For warranty about this or any Field Controls product, visit:
www.fieldcontrols.com/warranty



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