

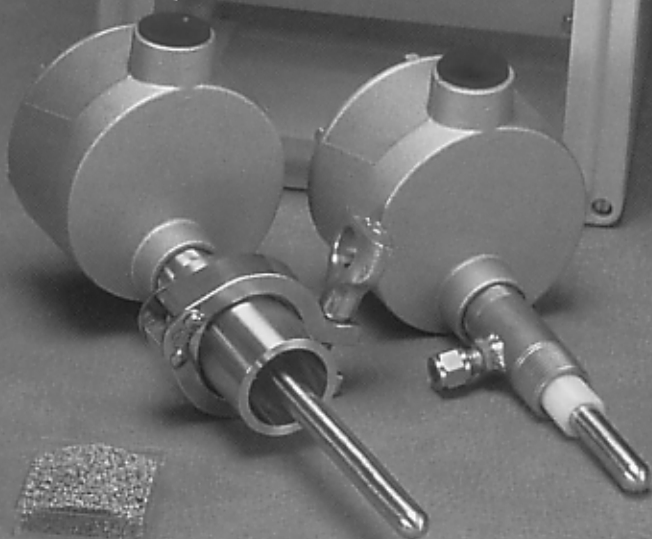
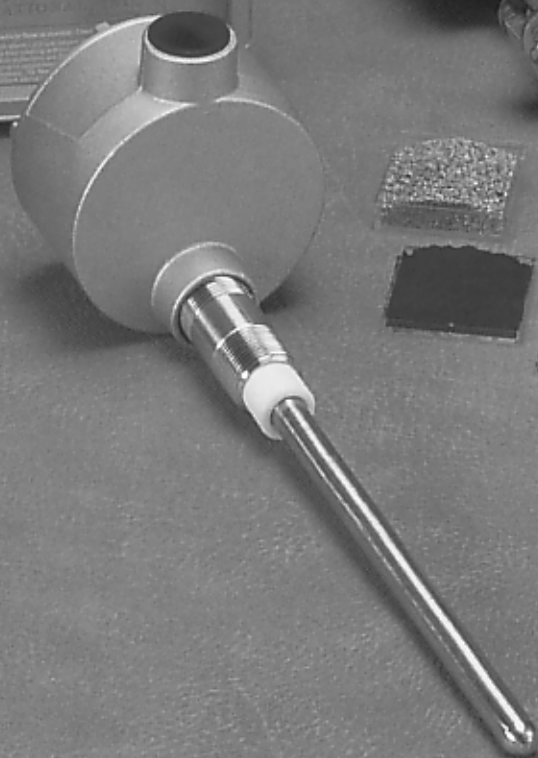
BABBITT  
INTERNATIONAL, INC.

# Dust Emission Monitors

**FS 10000  
Broken Bag  
Alarm**



**FT 4000 Dust  
Emission  
Transmitter**



**Detect and record  
dust emissions before  
they are visible**

# FS 10000 Flow Switch

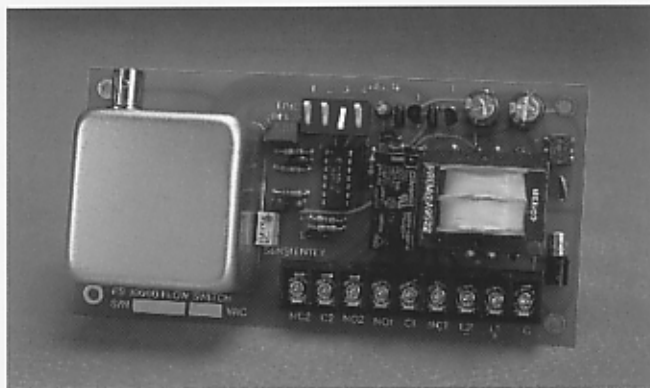
*The FS 10000 is designed to detect the flow of dust through a filter in a dust collector or bag house. In some cases it can also be used as a flow / no-flow switch for powders or granulars, in chutes or pneumatic conveying lines. When particles collide with the sensing probe, a small electrical charge is transferred to the probe and sensed via the FS 10000's proprietary circuit. This charge transfer is called the triboelectric effect, or "frictional electricity". Output is via an on-board relay, that may be used to sound an alarm or perform other control functions.*

## Simple Calibration

All necessary calibration indicators are on the remote mounted electronics, so all you need to calibrate the FS 10000 is a small screwdriver. Each unit has a field adjustable time delay that may be used to ignore nuisance indications or intermittent gaps in product feed.

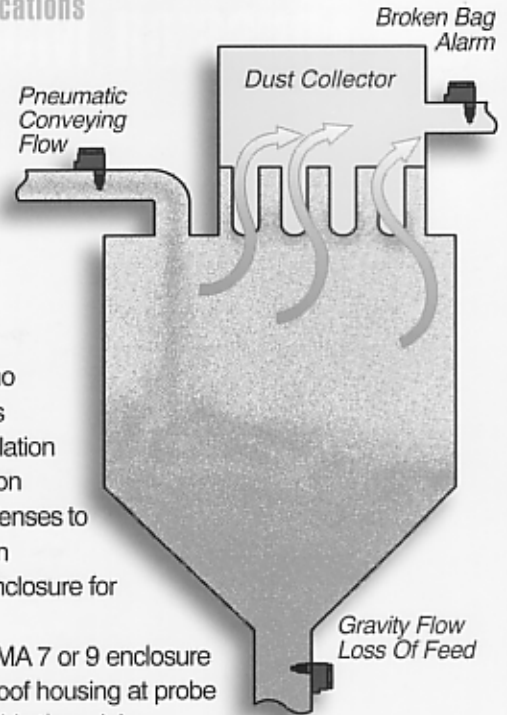
## Complete System

The FS 10000 comes complete with the electronic circuit board mounted in a NEMA 4X enclosure, 15 feet of low noise coaxial cable and connectors, and a 316 stainless steel probe mounted in an explosion proof housing.



*The FS 10000 can detect dust collector emissions before they are visible*

## Typical Applications



## Features

- Solid state, no moving parts
- Simple installation and calibration
- No optics or lenses to clean or align
- NEMA 4X enclosure for electronics
- Optional NEMA 7 or 9 enclosure
- Explosion proof housing at probe
- Field Adjustable time delay

## Applications

- Detect torn filters in dust collectors
- Pneumatic conveying flow/no flow
- Plugged chute detection

The FS 10000 is designed for applications where the velocity is 1800 feet per minute or greater. To calculate velocity when you know CFM use the formula below:

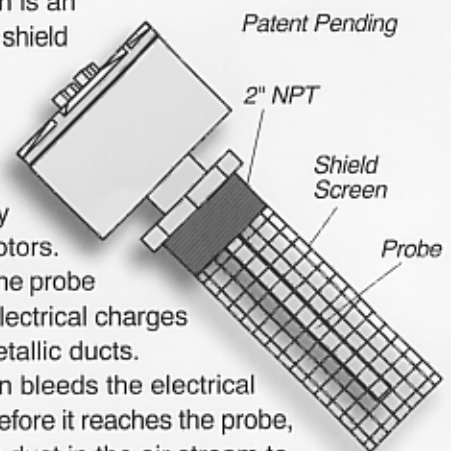
$$\text{AIR VELOCITY (FEET/MINUTE)} = \frac{\text{CFM}}{\text{Duct Diameter in Feet}^2 \times .78}$$

## Shield Screens

The Shield Screen is an option designed to shield the probe from unwanted electrical noise in the duct that may be caused by nearby fans or motors.

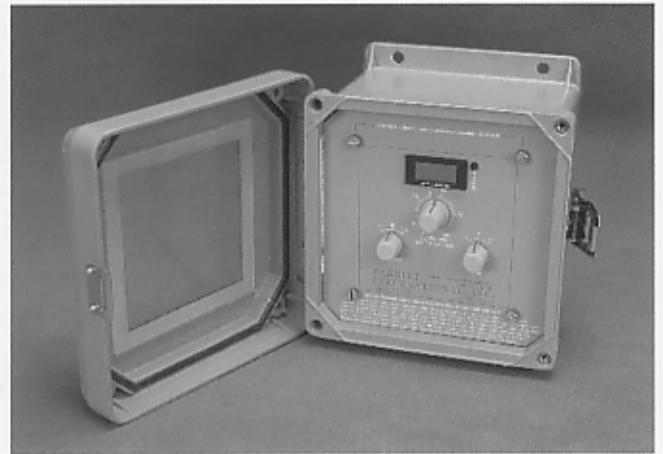
It can also shield the probe from stray static electrical charges created in non-metallic ducts.

The Shield Screen bleeds the electrical noise to ground, while allowing the dust in the air stream to collide with the sensing probe.



# FT 4000 Flow Transmitter

*The FT 4000 Flow Transmitter is designed to sense dust emissions passing through a filter in a dust collector or bag house. This very sensitive device allows the user to continuously monitor the level of emission, and record the data.*



*No tools required - three knobs set the unit; #1 selects the operating range, #2 adjusts the alarm point, #3 selects the alarm delay.*

## Theory Of Operation

The FT 4000 uses the triboelectric effect, or frictional electricity, to detect the flow of dust particles. When particles collide with the probe installed in the air stream, a small electrical current is generated. This signal travels along a low noise coaxial cable to the electronics where it is converted to a linear 4-20mA signal.

the sensitivity is velocity dependent, this unit is capable of sensing 0.3 micron particles in concentrations from 0.002 gr/cf to 2.0 gr/cf (5.0 to 5000 mg/cubic meter).

## Display And Outputs

The digital display is factory calibrated in "pico amps of charge on the probe". This is an actual reading of the condition inside the duct and provides a "no guess work" base line for the performance of the unit, as well as a handy troubleshooting tool. The 4-20mA output is automatically calibrated to the selected range. When the signal exceeds the alarm point for a period longer than the time delay, a 10A SPDT relay is energized.

## Application Range

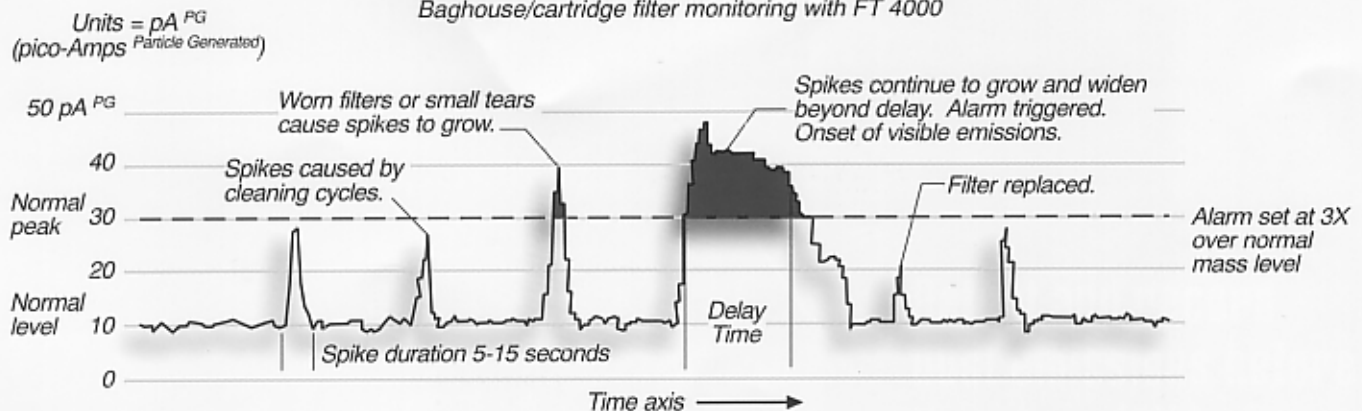
The FT 4000 is suitable for all types of filters, both bag and cartridge, and most cyclones and process lines. It will sense all solids with moisture content up to 40%. The minimum required air velocity is 300 FPM. Although

## PROBE OPTIONS

*FS 10000 and FT 4000 have a variety of options for the sensing probe. Special materials of construction are available. The standard probe is 316 stainless steel and has a 3/4" NPT process connection. Quick disconnect type process connections are available to facilitate easy cleaning and inspection of the probe (1.5" Triclamp type). An air purge option is available for applications where an electrically conductive material may coat the sensor.*

## Emission Detection

*Baghouse/cartridge filter monitoring with FT 4000*



*FT 4000 system does not dampen out cleaning cycle spikes, thus providing superior alarming/recording.*

## FS 10000 Flow Switch

### ELECTRICAL

Power: 115 VAC ( $\pm 15\%$ ) 50/60 Hz  
(230 VAC Optional)  
Output: 2 Form C Contacts, DPDT Relay,  
5 Amp Resistive @ 125, 250  
VAC; 30VDC  
Time Delay: Select: ON or OFF Delay  
Adjust: 1/8 Sec. - 2 Hrs.  
Fuse: On-board 1/2 Amp  
MECHANICAL  
Process Entry: 3/4" NPT  
Conduit Entry: 3/4" NPT  
Probe: 1/2" Diameter, 316 Stainless Steel,  
1-1/2" or 3" or 6" length standard  
Insulator: Ultra High Molecular Weight  
Polyethylene (Teflon optional)  
Enclosure: Probe: Copper free cast aluminum  
Electronics: Non-metallic  
10" x 8" x 5" with clear acrylic window

### ENVIRONMENTAL

Temp.  
Electronics: -30° to 170°F  
Temp. Probe: -30° to 200°F Standard  
(400° F Optional)  
Pressure: 85 PSI  
Housing Probe: Class I, Grp. C&D, Class II,  
Grp. E,F,G, Class III  
Enclosure Elec: NEMA 4X-12-13

*Specifications subject to change without notice.*

## FT 4000

### ELECTRICAL

Power Supply: 120 VAC, 220 VAC or 24 VDC  
Power Consumption: 10 watts maximum  
Passive Sensor: No voltage or active electronics  
Intrinsic Safety: Barrier built into control unit  
Display: LCD calibrated to unit of charge  
Output-alarm: 10 A SPDT @ 240 VAC or  
24 VDC  
Output-analog: 4-20mA proportional to display  
Non-isolated, 0-500 Ohms  
Time Delay: Knob selected 1, 5 or 30 seconds  
ON DELAY

### MECHANICAL

Process Connection: 3/4" NPT standard, 1.5" Triclamp  
quick connect optional (Air purge  
available as an option on both  
process connections.)  
Conduit Entry: 3/4" NPT  
Probe: 1/2" Diameter, 316 SS standard,  
Teflon insulator, insertion length  
of 1.5", 3", 6" and 12" standard.

### ENCLOSURES:

### ENVIRONMENTAL

Temp. Electronics: 10 to 120 degrees F  
Probe: 450 degrees F Standard  
85 PSI  
Pressure (probe): Probe: Class I, Grp. C&D,  
Class II, Grp. E,F, & G, Class III  
Housing: Electronics: NEMA 4X, 12, 13

*Specifications subject to change without notice.*

## Ordering Information

FS 10000-115VAC-S-3

Model \_\_\_\_\_

Supply Voltage \_\_\_\_\_

"S" - 316 Stainless steel probe \_\_\_\_\_

Probe length in inches \_\_\_\_\_

This describes a FS 10000 flow switch, complete with electronics mounted in the NEMA 4X enclosure, 15 feet of coaxial cable, and 3" stainless steel sensing probe with explosion proof housing.

**Distributed By:**

**BABBITT  
INTERNATIONAL, INC.**

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