

# Microwave Based Solids Flow Detection Sensor

The Flow Detect 2000 is a reliable, non-intrusive instrument for the detection of solids flow or no flow in various applications in the material handling industry. It prevents downtime caused by blockage, conveyors running empty, no material flow to-and-from a process, or loose slide gates that can cause production loss and equipment failure.

This affordable, non-intrusive, microwave-based flow/no flow instrument is used to detect flow conditions of solids and powders in gravity chutes, feeders, pipelines, conveyor belts, or bucket elevators. The Flow Detect 2000 contains the sensing element, power and output connections, and user adjustment controls in a single NEMA 4X enclosure.

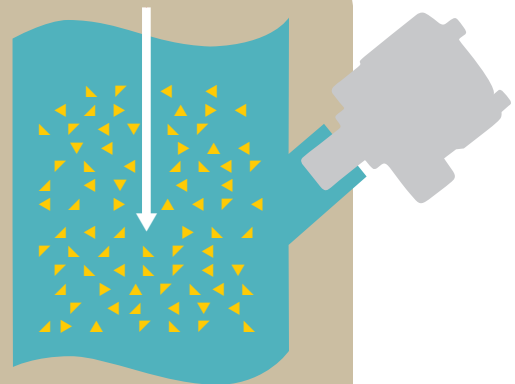


## Helps Prevent Cross Contamination

The sensor is easy to install through a 1-/14" NPT opening. It is completely non-intrusive and does not come into contact with the flow stream. This eliminates the risk of wear and assures long life and reliability. It is appropriate for solids, granules, pellets, meals and powdered materials and is suitable for most any industry including feed, grain, milling, food, cement, mining, power and plastics. An important use is to prevent cross contamination of ingredients by ensuring flow has stopped before a new material is introduced into the flow stream.

## Reliable Flow/No Flow Detection

- Single-piece design eliminates separate controller
- Detects solids, granules, pellets, meals & powders
- Low power microwave Doppler technology
- No contact with the material flow stream
- Installs quickly & easily in 1-1/4" NPT fitting
- Optional saddle style pipe mount kit available
- Ideal replacement for mechanical switches



*Proper mounting of the Flow Detect 2000.*

# Flow Detect 2000

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# Principle of Operation

The Flow Detect 2000 emits a low power microwave signal toward the material being monitored. Part of this signal is reflected off the material back to the antenna of the FD 2000. This reflected signal combines with the emitted signal to produce a beat frequency, which is the difference in frequency between the two signals. If the material being monitored is not moving, the reflected signal will be the same frequency as the emitted signal and there will be no beat frequency produced. However, if the material is moving, the reflected signal will be shifted in frequency and a difference or beat frequency will be produced. This shift in frequency is called the Doppler effect. The presence or absence of this beat frequency is sensed by the FD 2000 to detect a flow or no flow condition.



**Controls are accessible under the screw-off lid.**

## Flow/No Flow Status

The Flow Detect 2000 provides a single analog relay output to communicate flow or no flow status. Indicators and controls for the initial calibration and set up are easily accessible by simply unscrewing the lid of the device. LED indicator lights for power, flow/no flow and fault conditions show the status of the device. Controls for adjusting sensitivity and the output delays are used during the initial setup.

### Flow Detect 2000 Specifications

Power Requirement	1 Watt at 24 VDC +/-10%
Detection Range	1.5 m (4.9 ft.)
Sensitivity Adjustment	High / low selection switch with potentiometer
Minimum Velocity	2.5 ft./second
Maximum Velocity	120 ft./second
Relay Outputs	250 VAC / 220 VDC / 2A (N.C. or N.O.)
Output Delay Range	Switchable from 0.1 to 3.1 seconds / 2.3 to 15.1 seconds
Fault Conditions	Doppler sensor failure and excessive temperature
Operating Temperature	10°C to 55°C (14°F to 131°F)
Storage Temperature	-40°C to 80°C (-40°F to 176°F)
Emissions	24.11 GHz, 6.6 mW typical / 9.9 mW maximum
Enclosure	White Powder Coated Aluminum, NEMA 4X
Mounting	1-1/4" NPT
Conduit Entry	3/4" NPT
Process Pressure	80 PSI

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