

BINMASTER

Flow Detect 2000

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 blockages, conveyors running empty, no material flow to-and-from a process, or loose slide gates that can cause production loss and equipment failure.



BinMaster.com



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WHAT IS FLOW DETECT?

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. It offers optional hazardous location approvals for operations requiring optional protection from explosive dust.



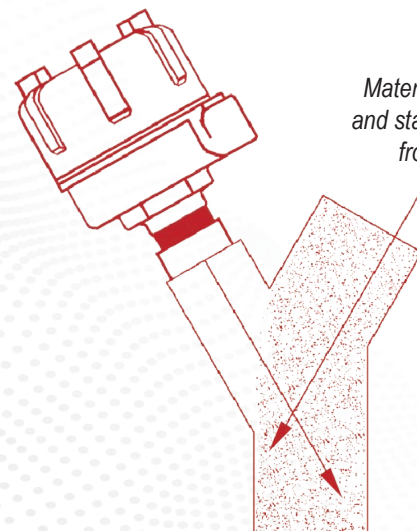
Helps Prevent Cross Contamination

The sensor is easy to install through a 1-1/4" 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
- Hazardous location approvals available



Material flows away and stays non-contact from sensor.

HOW DOES IT WORK?

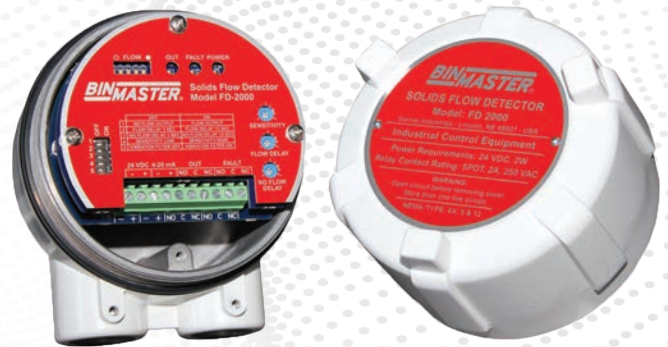
Principle of Operation

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.

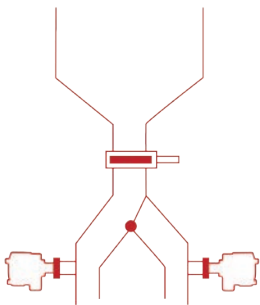
Flow/No-Flow Status

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.

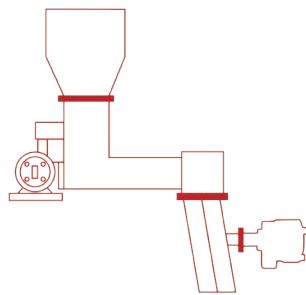


Controls are accessible under the screw-off lid.

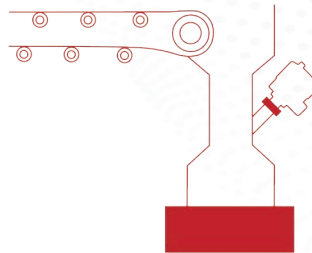
Applications



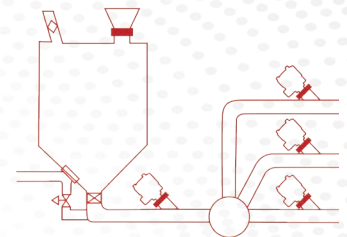
Confirming flow from a silo



Determining flow/no-flow from a chute



Monitoring backup



Manifold/Diverter

SPECIFICATIONS

Flow Detect 2000 Specifications

| | |
|------------------------|---|
| Power Requirement | 2 Watt at 24 VDC +/-10% |
| Detection Range | 1.5 m (4.9 ft.) |
| Sensitivity Adjustment | High / low selection switch with potentiometer |
| 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 |
| 4-20mA Output | No Flow: 4mA +/-4% Flow: 20mA +/-4% Fault: 22mA +/-4% |
| 4-20mA Load | 650 Ohms Maximum |
| Operating Temperature | -22°F to 140°F (-30°C to 60°C) |
| Storage Temperature | -40°F to 176°F (-40°C to 80°C) |
| Emissions | 24.11 GHz, 6.6 mW typical / 9.9 mW maximum |
| Enclosure | White Powder Coated Aluminum, NEMA 4X |
| Mounting | 1-1/4" NPS |
| Conduit Entry | 3/4" NPT |
| Process Pressure | 80 PSI |
| Approvals | North American Class II, Division 1, Group E, F & G and ATEX Zone 21 |