



Fluidic Flowmeters

SPECIALTY
FLOW MEASUREMENT &
LEVEL TECHNOLOGY



MICROWAVE LEVEL SWITCH

www.fluidicflowmeters.com



Fluidic Flowmeter

Fluidic Flowmeter is internationally recognized as a world leader in the design and manufacture of high performance Microwave Sensors for industry.

Fluidic Flowmeter's sensors are engineered to solve many problems that are normally impossible for other technologies. As pioneers in our field, our advanced engineering techniques and innovative ideas have kept us on the cutting edge.

Our robust sensors will operate perfectly under the most adverse circumstances; increasing efficiency and reducing both labour and maintenance costs.

Principle of Operation

General

The microwave sensor is a level switch consisting of a transmitter and a receiver installed face-to-face.

The transmitter emits a continuous, low power microwave beam towards the receiver and an output relay is released when the beam is obstructed.

The sensor has wide application across all areas of industry where highly reliable, non-contact level detection is required. The sensor is generally used for process control by monitoring presence/absence of product, flow/no flow conditions and point level detection in bins and silos. The sensor may also be used as a proximity switch for detection of vehicles such as dump trucks and rail cars.

Penetrability of Microwaves

Harsh environments may result in a buildup of contaminants on the sensing head; however, the sensor is easily able to penetrate such

As the demand for reliable, efficient and low maintenance technologies continues to increase, Fluidic Flowmeter's microwave sensors are rapidly replacing the outdated methods of the past.

The Microwave Level Switches are non-contact microwave level sensors for single point level detection of solid and liquid materials in all manner of containers, tanks, vessels, chutes, silos, bunkers and sumps. Main industries served include mining, agricultural, cement, iron and steel, manufacturing, municipal facilities such as waste disposal, water/sewage treatment and power utilities.

buildup thanks to the high penetrability of microwaves.

When microwaves transmitted through air encounter an object, some will be reflected, some absorbed and the rest will pass through the object. The amount of microwaves passing through the object depends on its composition.

Generally speaking, microwaves cannot penetrate metals and are reflected; water absorbs the most microwaves.

Microwaves can easily pass through plastics, glass, ceramic, paper etc.

Safety of Microwaves

The sensor's output is regulated to assure compliance with FCC Rule 15, covering field disturbance devices.

With low output power, the sensor's power is well below the American OSHA exposure specifications as stated in Section 1910.97.



The Microwave Level Switch complies with FCC Title Rule 15 and OSHA exposure specification stated in Section 1910.97. Caution sign posting not required.

Standard Model

Type

Transmitter
Receiver

Power Supply

- AC100~120V $\pm 10\%$ 50/60Hz &
- AC200~240V $\pm 10\%$ 50/60Hz or
- DC24V $\pm 10\%$ (optional)

Operating Distance

- 150 feet (30 meters)

Note:

Operating distance may vary from sensor to sensor and according to installation.

Frequency & Transmission Power

- Approx. 24GHz, less than 10mW

Note:

Complies with FCC Title Rule 15 and OSHA exposure specification stated in Section 1910.97. Caution sign posting not required.

Radiation Angle

- Approx. $\pm 15^\circ$ at 3 dB

Output Contact (On Receiver)

- 1C relay contacts AC250V, 5A

On Delay Function

- 0.1 ~ 30sec

Condition of Output Function

- Output occurs on change of state, but only after any delay period has past.
- Output relay is unexcited during output state.

Delay Time From Power On To Function

- Transmitter: Approx. 30m sec.
- Receiver: Approx. 1.0 sec.

Power Consumption

- Transmitter: 4VA
- Receiver: 3VA

Operating Ambient Temperature

- $-14^\circ\text{F} \sim 131^\circ\text{F}$ ($-10^\circ\text{C} \sim +55^\circ\text{C}$)

Non-function Ambient Temperature

- $-4^\circ\text{F} \sim 158^\circ\text{F}$ ($-20^\circ\text{C} \sim +70^\circ\text{C}$)

Continuous Maximum Pressure

- 73Psi (0.5MPa)

Enclosure Rating

- NEMA 4, IP65 Equivalent

Enclosure Construction

- Diecast aluminum

Color

- Metallic silver grey

Weight

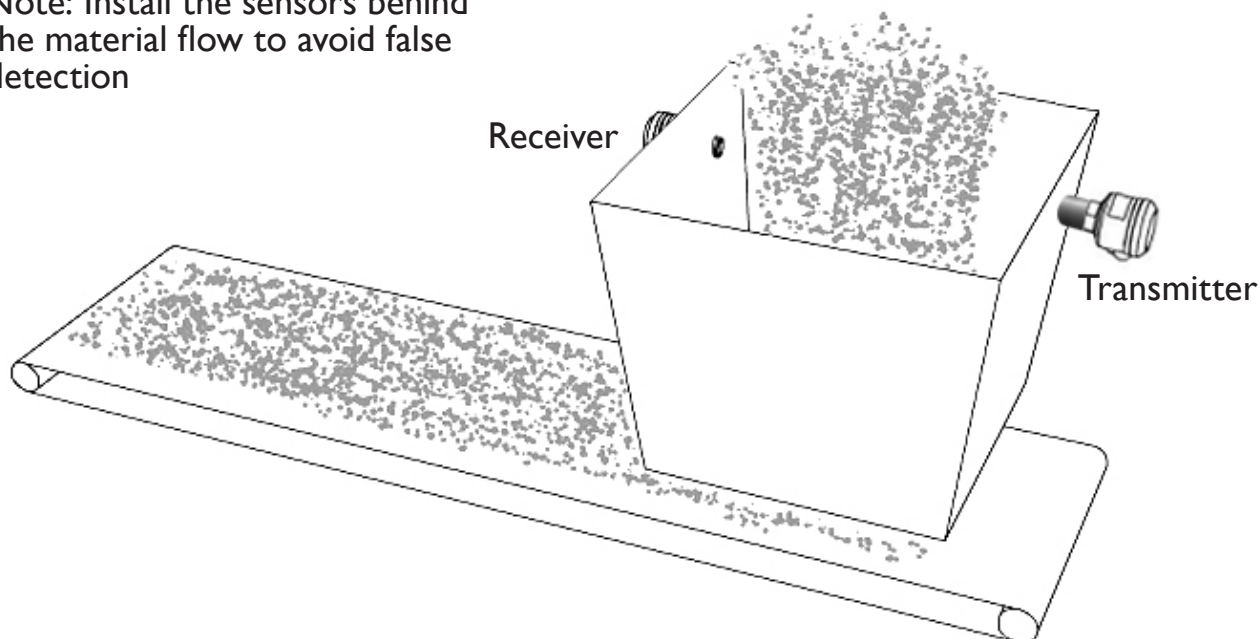
- Transmitter: 4.5lbs
- Receiver: 4.8lbs



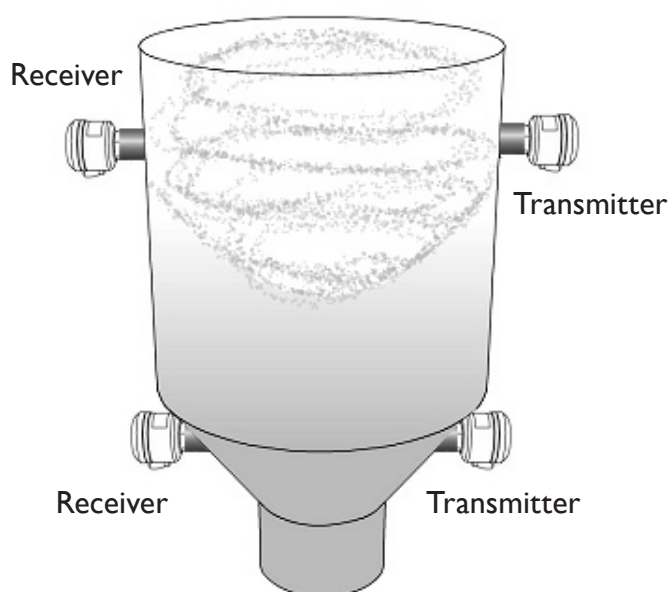
Standard Applications

Blocked Chute Detection

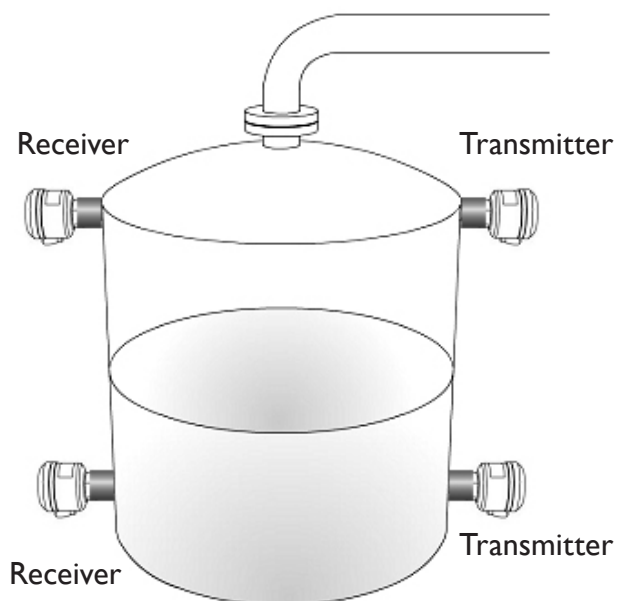
Note: Install the sensors behind the material flow to avoid false detection



Hi/low level of solids in cyclone bins, hoppers, silos etc.



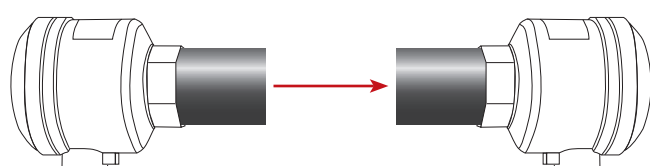
Hi/low level of liquids in tanks, and other storage vessels.





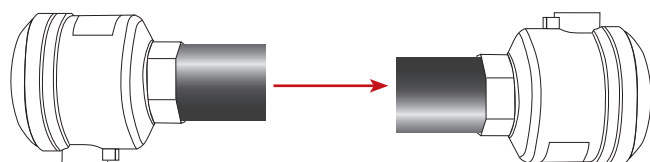
Mounting Angle

The transmitter emits linear polarized microwaves; as such it is necessary to align the transmitter and its corresponding receiver in the same plane. The cable entry of both the transmitter and receiver should be facing in the same direction, or be 180° opposite each other



Transmitter

Receiver



Transmitter

Receiver

If the units are installed with the cable entries at 90° to each other they will not function.

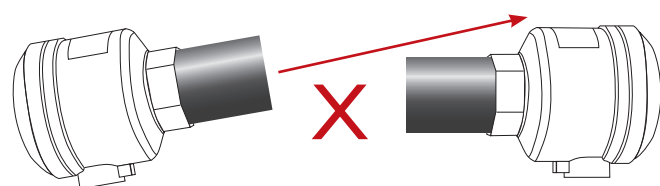


Transmitter

Receiver

Elevation Angle

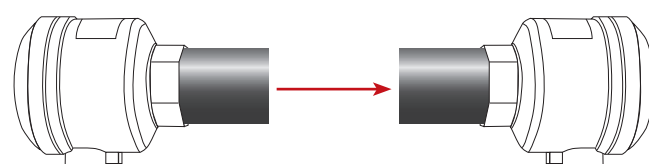
The sensors should be mounted with the antennas facing each other on the same horizontal axis.



Note that the sensors do not have to be perfectly aligned, thanks to the wide beam angle, however suitable care should be taken.

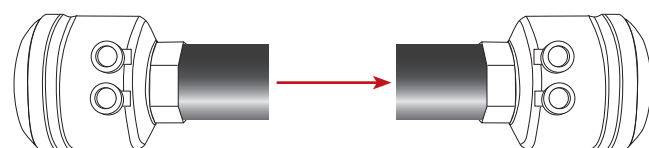
Set-to-set interference

If two transmitter receiver sets are installed in close proximity to each other, one set should be mounted at 90° to the other to eliminate set-to-set interference.



Transmitter I

Receiver I



Transmitter I

Receiver I

Mounting flush

It is desirable to mount the units flush so as to minimize material buildup on the antenna. This is especially important if the process material contains moisture. Microwaves are able to penetrate most surface containments; however it is recommended that you optimize the installation to gain maximum reliability.

Penetrability of walls

Microwaves are able to penetrate walls made from non-conductive materials such as refractory/firebrick, ceramic, plastic, glass etc. Microwaves can not penetrate metallic or conductive wall linings: a hole must be made and a suitable process connection welded to the vessel.

Temperature Variation

The ambient temperature between the transmitter and receiver should not vary by more than 18°F (10°C).



Fluidic Flowmeters & Level Technology

Customer satisfaction and the support of our products are our highest priorities. Should you encounter any issues that prevent your complete satisfaction, please contact us as indicated below:

264 N. Chippewa Place, Suite E, Chandler, AZ 85224 USA

Ph: +1 480 289 5203 / +1 888 429 5725

Fax: 480 289 5206

Email: info@fluidicflowmeters.com

