HYCONTROL
LEVEL MEASUREMENT SOLUTIONS

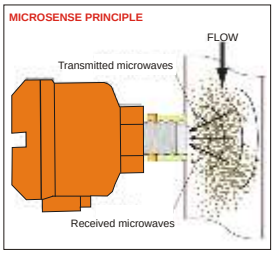
MICROSENSE FLOW SWITCH

FOR SOLIDS, GRANULES AND POWDERS

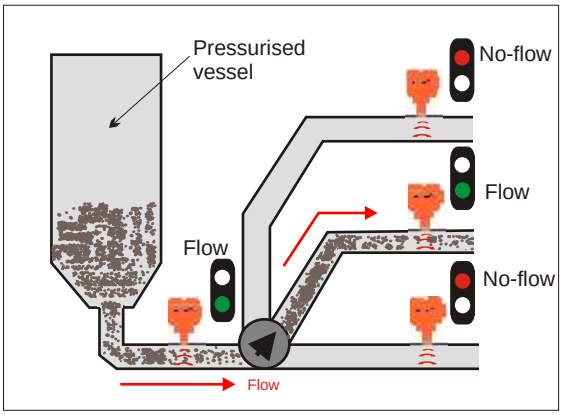
MICROSENSE - PRINCIPLE OF OPERATION

The Microsense microwave switch provides an effective way of detecting the flow or no flow of a wide range of particulate materials. The flow switch uses a microwave Doppler effect and is non-invasive.

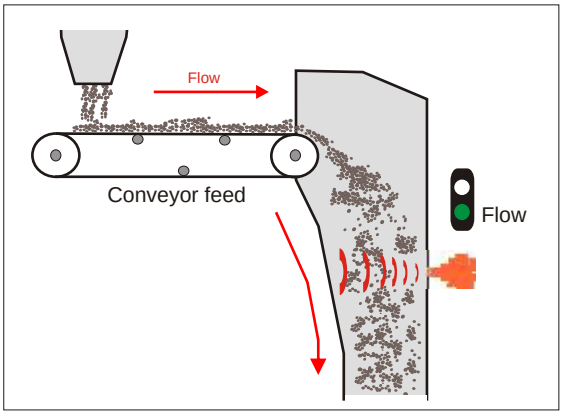
During operation the sensing head transmits a continuous low power, microwave beam towards the flowing product. Some of these microwaves are reflected back to the sensing head and are then analysed as to whether they are moving or stationary. The microwaves detect only flowing, moving material in front of the sensor ignoring stationary objects.



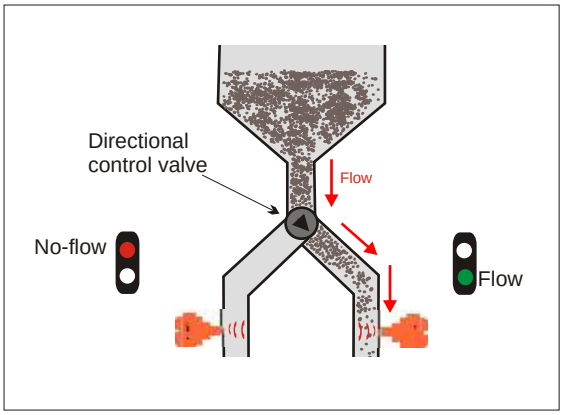
The highly penetrating microwave signal passes through any build-up on the transmitter face and will even detect through pipes of non-conducting materials such as plastic and ceramics. The switch is best suited for the detection of materials such as dry solids, granules, flakes and powders. Typical applications include grain, flour, cement, ore, stone, coal and animal feed. Flow can be detected in pipelines, chutes, conveyors, transfer bins or free air .



PNEUMATIC TRANSFER LINES



CONVEYOR FEED FLOW



SILO OUTLET DIRECTIONAL FLOW

MICROWAVE FEATURES

NON-CONTACT PRINCIPLE

The Microsense switch can be installed behind various window materials such as PTFE or polypropylene to maintain the integrity of the pipe or chute and prevent any restriction to material flow. This is ideal for vacuum lines or lined pipes.

HIGH PENETRATION AND SURFACE COATING IMMUNITY

The microwaves easily penetrate any surface contaminants, making the switch ideal for applications with high build-up on the pipe or chute walls. The switch is also immune to problems with airborne contaminants such as dust or steam.

SIMPLE INSTALLATION AND SET-UP

Simple visual adjustment and set-up of the flow switch with indication of the output and signal received, with selectable flow or no-flow detection modes.

TOTAL SAFETY FOR OPERATORS AND SITE PERSONNEL

The switch requires no special procedures for its operation and use, as microwave emmisions are well below any required industry standards.

NEW DOPPLER DETECTION PRINCIPLE

The advanced Doppler screening filter eliminates false signals from vibrating pipes, conveyors etc improving the signal-to-noise ratio to provide reliable flow indication.

EASY RETROFIT TO EXISTING INSTALLATIONS

A wide range of flanges and a standard 1" BSPP process thread make the switch extremely easy to retrofit to old installations, utilising existing process connections.

ADVANCED TEST FACILITY

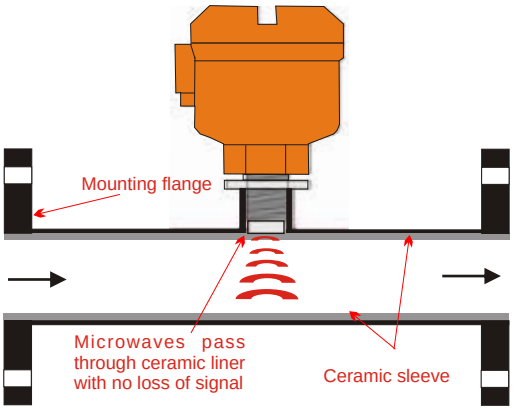
The integral test facility provides an output LED indication of the flow switch status and the internal alarm for the temperature of instrument.

RANGE OF OUTPUT OPTIONS

Alarm output options for switch status, system failure or internal instrument temperature warning are available.

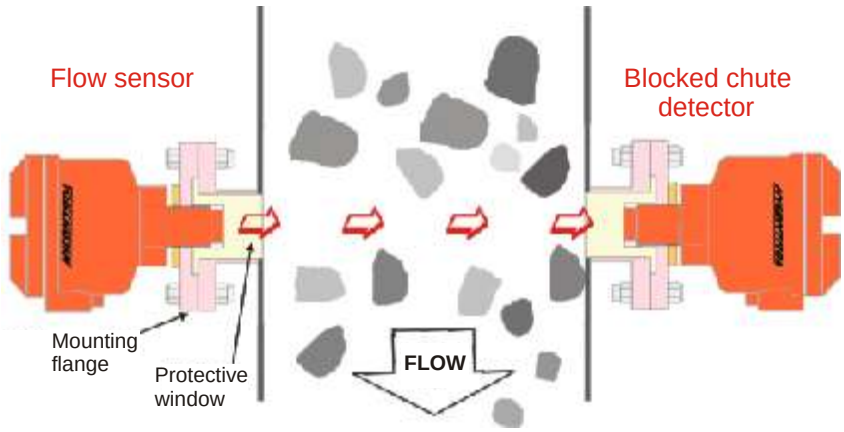
MICROSENSE - CLOSED PIPE APPLICATIONS

Microwaves will pass through low dielectric materials such as plastic or ceramic, making it possible to monitor in closed pipes. The diagram shows a stainless steel pipe with a sensor process connection half way along. This pipe section also has an inner sleeve made of a durable chemical resistant ceramic. The microwaves from the flow sensor will pass through the ceramic sleeve which is totally enclosed, providing a non-invasive flow solution.



This non-invasive mounting ensures the process remains closed, allowing easy removal of the sensor if required. This drastically reduces wear and tear on the sensor and also allows for easy access to it without having to shut down the process.

COMBINED BLOCKED CHUTE AND FLOW SWITCH



Combining the Microsense blocked chute detector with the Microsense flow switch provides a unique solution for two applications with one installation. For this application we utilise the flow switch on one side of the application and the receiver of the blocked chute switch on the other, as shown in the diagram opposite. This application would detect firstly if there is flow in the chute or pipe and secondly if the chute has blocked.

This use of two different Microwave sensors can differentiate between a blocked chute/pipe, an empty pipe/chute and a flowing pipe/chute.

MICROSENSE BENEFITS

- **IMPROVED PLANT EFFICIENCY**
- **REDUCED OPERATING COSTS**
- **EARLY DETECTION OF PLANT PROBLEMS**
- **REDUCED PLANT DOWN TIME**
- **REDUCED PRODUCT WASTEAGE**
- **INCREASE PRODUCTIVITY**

APPLICATIONS FOR SOLIDS

SPECIFICATION

Model reference
Flow switch : HYC-MWS-DP-3-24V

Power supply
Flow switch : 24VDC ±10%

Power consumption
Flow switch : 2W

Operating Range
Maximium 1.5m

Process connection
1" BSPP

Frequency & transmission power
Approx. 24GHz, less than 100mW (E.I.R.P.)

Received power level
Indicated by 1 of 7 LED indicators

Sensitivity-set-point
Indicated by 7 LED indicators

Relay contact
1 x relay contact 50 VDC, 150mA for control
1 x relay contact 50 VDC, 150mA for Fail/Temp alarm

Adjustable time delay
2 ~ 10sec

Delay time from power on to function
Flow switch : Approx. 8 seconds

Operating ambient temperature
-20ºC ~ +55ºC *Optional high temp versions*

Storage ambient temperature
-30ºC ~ +70ºC

Continuous maximum pressure
0.5 Mpa

Enclosure rating
IP65 protection

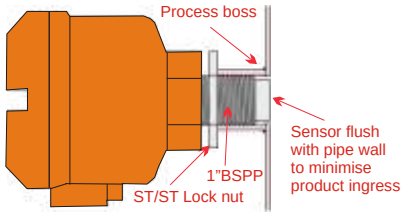
Enclosure construction
Diecast aluminum

Weight
Flow switch : 1.2kg

CE Certification Standards
EN300440-1/2
EN301489-1/3
EN61000-6-2
EN60950-1
In accordance with: R & TTE Directive
EMC Directive

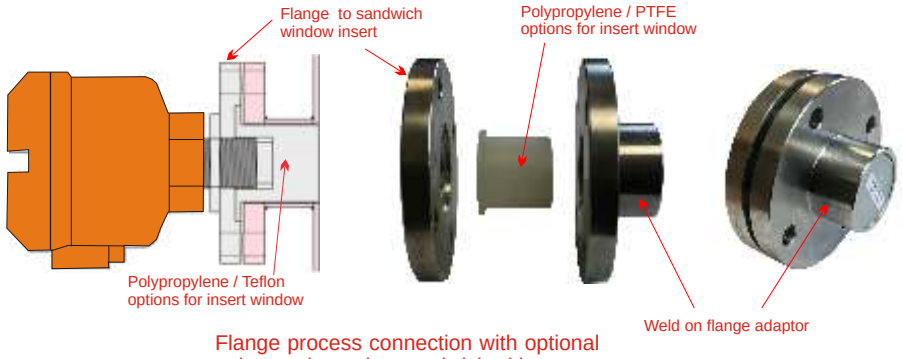
MOUNTING OPTIONS

STANDARD



Standard G1 process connection connected directly into the pipe socket. Suitable for low abrasion applications.

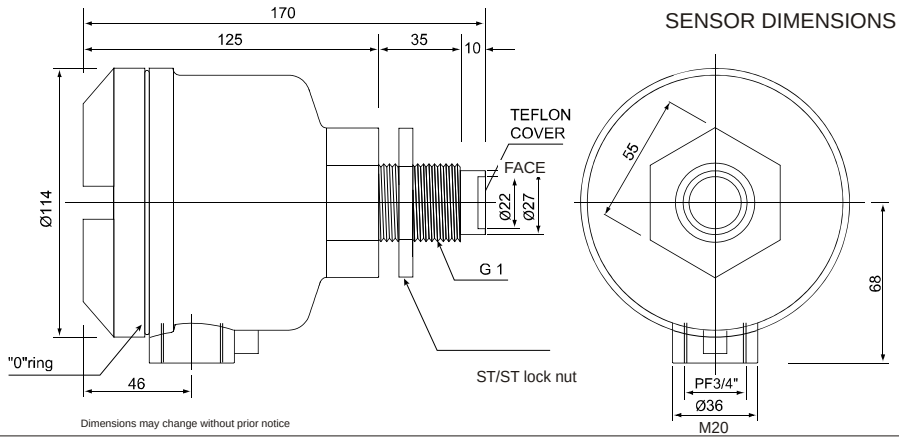
FLANGE WITH INSERT



Flange process connection with optional polypropylene plug sandwiched between flanges but flush with pipe wall. This provides additional sensor protection.

DISPLAY INFORMATION

SENSOR DIMENSIONS



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HYCONTROL LEVEL TECHNOLOGIES

Product Range For Solids :-

(1) TDR Radar For Solids

(2) Ultrasonic, ‘Through Air’

(2) 2 Wire Ultrasonic Transmitter

(3) FMCW 2 Wire Radar

(4) Continuous ‘Servo’ Level Indicator

(5) FMCW 2 Wire Radar

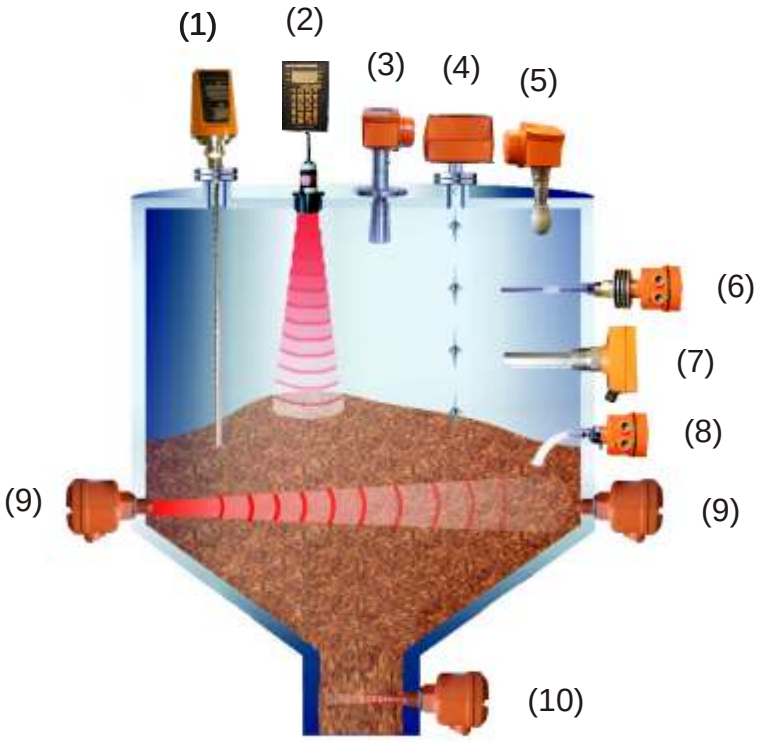
(6) Capacitance Level Switch

(7) Vibrating Probe Level Switch

(8) Rotating Paddle Level switch

(9) Microwave Level Switch

(10) Doppler Flow Switch



Product Range For Liquids :-

(1) By-Pass Level Indicator With Radar

(2) TDR Radar For Liquids

(3) 2 Wire Ultrasonic Transmitter

(4) FMCW ‘Horn’ Radar 2 Wire

(5) Magnetic Float Switches

(6) FMCW 2 Wire Radar

(7) Foam Level Switch

(8) Capacitance Level Switch

(9) RF Admittance Level Switch

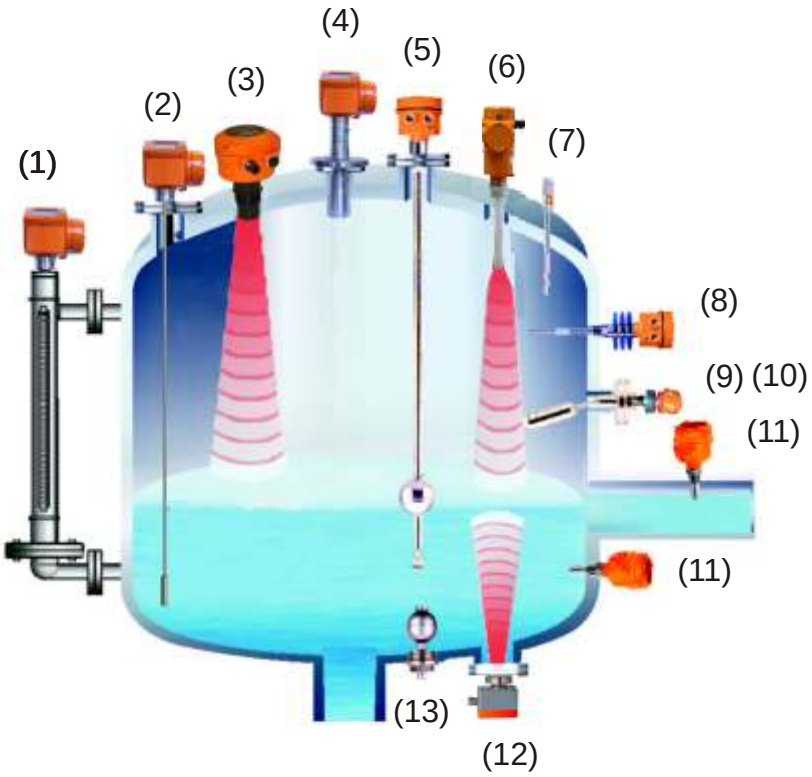
(10) Side Mounting 316 SS Float Switch

(11) Tuning Fork Level Switch

(11) Tuning Fork Level Switch

(12) Ultrasonics ‘Through Wall’

(13) Mini Magnetic Float Level Switch



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