# MF 3000

## Mass flow measurement for bulk materials

## Application and Function

Our solid flow meter MF 3000 is designed for flow measurement in metallic pipes from a few kg/h to many t/h. The system is suitable for on-line measurements of powders, dusts, pellets, and granules from 1 nm up to 2 cm in pneumatic or free fall conditions.

The measurement principle of the MF 3000 is based on the physical Doppler-Effect, whereas the sensor generates a uniform field in the microwave frequency range inside the pipe. These microwaves are being reflected by particles passing through the pipe. Calculation of frequency and amplitude changes allows for accurate determination of solid flow. Non-moving particles like dust accumulation are excluded from the calculation.

The installation is simple and cost effective via a welded branch, through which the sensor is screwed flush to the inside of the pipe. The sensor is connected to a DIN-rail mounted transmitter with 4...20 mA, RS232 and RS485 output. The calibration is easy by using our MF–SMART software and a reference flow value.

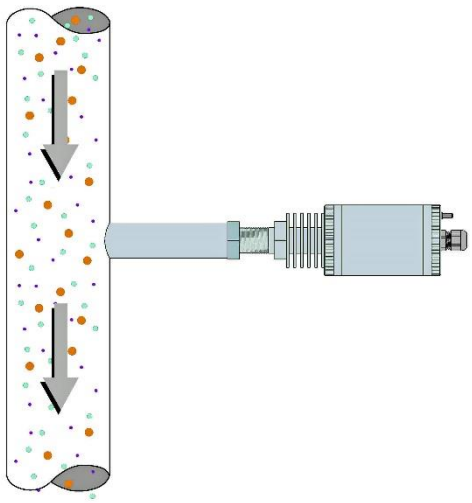
## Main Benefits

- For pneumatic conveyors and free falling processes
- For all solid materials from a few kg/h to many t/h
- No armatures inside the pipe and inside flush fitting
- Very fast and contactless measurement
- Easy, quick and cost effective installation and start-up
- Galvanic separated DIN-Rail Transmitter with RS232- and RS485-Interface
- Robust stainless steel version, abrasion and maintenance free
- Limit value monitoring with alarm contact
- Sensor-transmitter distance up to 2.000 m
- Easy and quick calibration
- Adjustable sensitivity
- Optional: ATEX for Zone 20 and Zone 2

## Putting into work

A branch is welded onto the pipe. A 18 mm hole is drilled, the sensor is mounted flush with the inner diameter of the pipe. For commissioning and calibration a notebook with our MF-SMART software needed.

Calibration can be performed with either one or multiple reference flow amounts. The measurement value is output either analog or as digital signal. A serial COM interface is available at the front of the transmitter to connect a notebook computer and a RS485 interface for connection to a PLC system.



## Application examples of successfully measured products

MF 3000 is measuring in pneumatic transportations and free falling processes. The product's grain size can be between 1 nm and 20mm.

The moisture of the measured material is allowed to be changed up to 12%.

**Materials:**

All dust, powders, granulates, panels, threads etc. Also sticking or abrasive materials

**Range of detection:**

from kg/h to many t/h

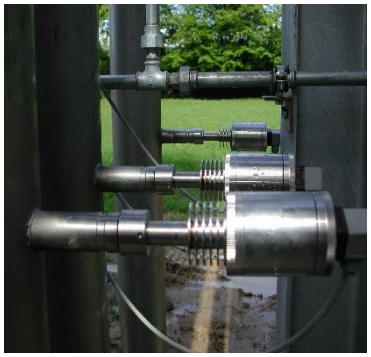
**Industries:**

Animal feed industry
Building materials industry
Cement industry
Chemical industry
Detergent industry
Engineering companies
Food industry
Glass production
Metal production
Pharmaceuticals
Pigment production
Plastic industry
Production of ceramics
Production of rubber goods
Production of textiles
Tobacco industry
Washing powder industry

## Applications

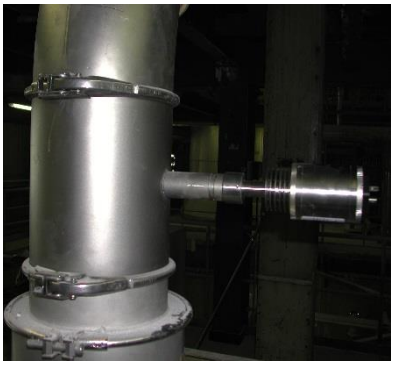
**Wood Dust**

**Jet Material**



**Plastic Granules**

**Coal Dust**



**Fertilizer**

**Iron-II-Sulfate**

## Process Data MF 3000

| | |
|---|---|
| Measurement start free fall : | Ca. 1 kg/h |
| Measurement start pneumatic transport | Ca. 1 kg/h |
| Max. pipe diameter | DN 300 (bigger diameter on request) |
| Grain size | 1 Nanometer up to 20 mm |
| Moisture | Depending on the product |
| Pressure | Up to 6 bar (Option up to 30 bar) |
| Process temperature | -20 up to +90°C (Option up to +750°C) |

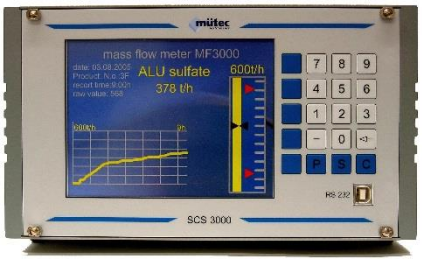
## Technical Data Sensor

| | |
|---|---|
| Medium touched parts | Stainl. steel 1.4307 and PA 6.6 |
| Process connecting | Welding flange |
| Housing material | Stainl. steel 1.4307 or ST52 |
| Protection class | IP 65 |
| Power supply | Via transmitter |

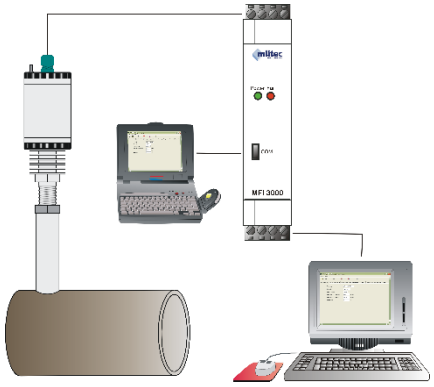
## Technical Data Transmitter

| | |
|---|---|
| Construction | DIN-Rail, 22,5 mm |
| Auxiliary energy | 24 V AC/DC |
| Power consumption | Max. 2W (+0,3 – 8,5W for thermocouple) |
| Ambient | |
| temperature | -10 to +60°C |
| Protection class | IP 30 |

## **Communication Unit** (Optional)

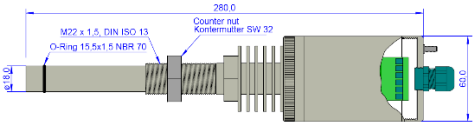



## System components




A complete measuring system MF3000 contains the sensor, a cable, a DIN-rail transmitter and the software MF-SMART .

## Sensor




## Transmitter