

Flow Measurement of Bulk Solids with Microwave-Technology

Application and Function

The solid flow meter DYNA M-flow is designed for flow measurement in metallic pipes from a few kg/h to many t/h. The system is suitable for on-line measurement of powders, dust, pellets and granulate in pneumatic conveying or free fall applications.

The measurement principle of the DYNA M-flow 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 an accurate determination of the mass flow rate. Non-moving particles like dust accumulation are excluded from calculations.



Technical Data Sensor

material	antenna	stainl. steel 1.4571 (AISI 316Ti)
	isolation	polyamide (PA 6.6)
	process coupling	welding branch
		stainl. steel 1.4571 (AISI 316Ti)
ambient cond.	temperature	-20°C...+70°C (-4°F...158°F)
	degree of protection	IP 65 (EN 60529)
	EMC	according to EN 61326-1

Technical Data Evaluating Unit

	design	DIN-rail 22.5 mm
	supply voltage	18...31 V DC, 3 W
ambient cond.	temperature	-10°C...+60°C (14°F...140°F)
	degree of protection	IP 30 (EN 60529)
output	analog	0/4...20 mA (load < 750 Ohm) 0/2...10 V
	digital	pulse as open collector alarm relay 30 V AC/DC; 0.5 A
	interfaces	RS 232 und RS 485

Process Data

process cond.	temperature	-20°C...+90°C (opt.+180°C)
	Pressure	max. 6 bar (opt. 30 bar)
	particle size	0.01 µm ... 20 mm
	pipe cross section	max.300 mm (16", higher on request)
	mass flow rate	min.1 kg/h

Characteristics

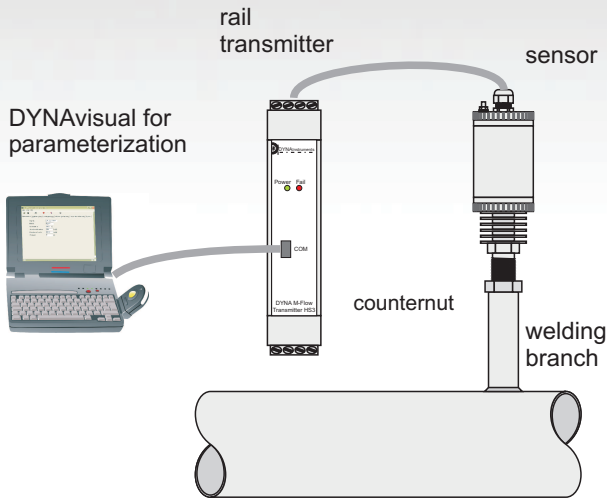
- For pneumatic conveyors and free fall processes
- IN-LINE measuring without weighing
- Easy installation and start up
- Up to 24 different products storable
- Contactless and integral measuring
- Inside flush fitting
- Adjustable sensitivity
- Long-term stable
- Robust, compact, abrasion-free
- DIN-Rail Transmitter with COM-interface for direct online-connection
- Galvanically isolated RS485-Interface for PLC-connection
- Sensor supply for connections up to 1200 m
- Limit value monitoring with alarm contact

Options

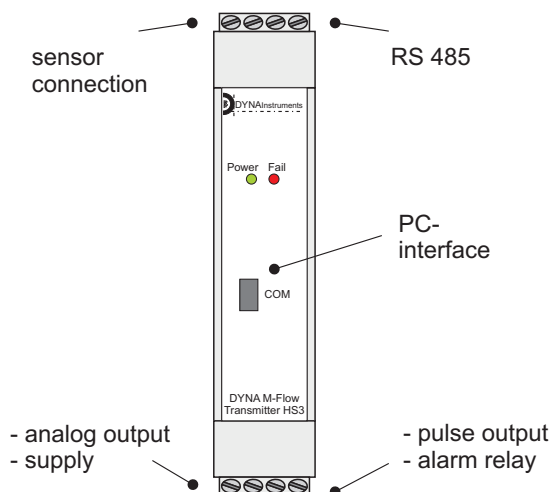
- Pressure up to 30 bar
- Temperature up to + 180°C (356°F)
- Approved for the use in ATEX zone 2/22



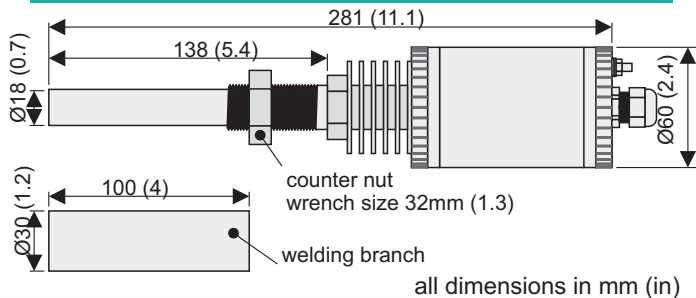
design



transmitter



probe with welding branch



build-up and start-up

The DYNA M-flow consists of a probe, a DIN-rail transmitter, a welding branch and the PC-software DYNAvisual.

The process interface occurs by a welding branch, through which the sensor is screwed flush with the inside of the pipe. With this a flanging at perpendicular and horizontal pipes for free fall and pneumatic conveying occurs.

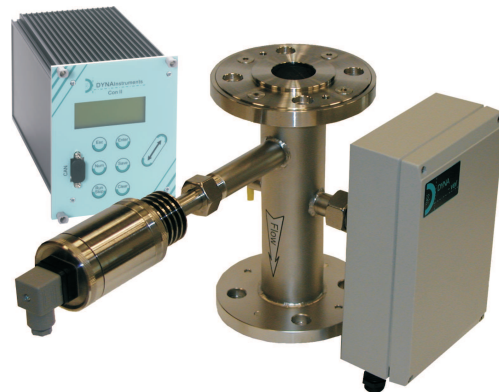
The probe is connected by a four core cable to a DIN-rail mounted transmitter with 4...20 mA, pulse output, error relay, RS232 and RS485 output.

For commissioning and calibration a notebook with our DYNAvisual software is 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.

concentration and speed

For the determination of the mass flow rate at transport processes with changing solids speed (e.g. pneumatic conveying) a combination of DYNA M-flow with the speed measurement DYNAvel is recommended.



technical data subject to change without notice