

## MASS FLOW RATE MEASUREMENT FOR BULK SOLIDS

### Function

The D-MASS is a flow meter used to determine the mass flow rate of bulk material. Almost any product such as dust, powders or granulates which are being transported in pneumatic conveying systems or by gravity in pipelines can be measured contactless.

Simultaneously the device measures the concentration and the velocity of the bulk material in the pipeline. With these two values and the given diameter of the measuring pipeline the mass flow rate is calculated and output through the evaluation unit.

**Concentration:** Utilizing the capacitive measurement principle, the D-MASS generates a homogeneous electromagnetic field. Any bulk material which is transported through the sensor has a higher dielectric permittivity than air and will hence increase the measured capacity of the field.

The changing capacity is proportional to the concentration of the bulk material. Calibration can either be done by filling the sensor pipeline completely with the bulk material, or by performing a reference weighing.

**Velocity:** For a runtime measurement, two sensors in the instrument record signals. The time which the product needs for the distance from sensor 1 to sensor 2 is calculated by means of the two signals using a correlation calculation. Since this is an absolute value, it is not required to calibrate the velocity measurement.

The evaluation unit is equipped with a 4 line LCD display, function keys and provides the following output and interfaces: 2x analog output (4...20 mA), 3x relay output, RS485, Ethernet.

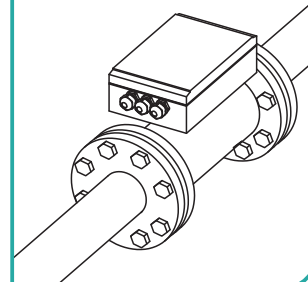
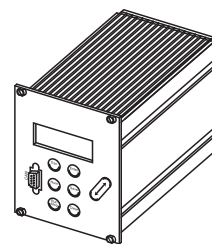
- Non-contact measurement
- Independent from transport velocity
- Easy calibration



CE

### Technical Data

Materials		see Product Configurator
Accuracy	typically	+/- 1-3 %
Process	temperature	Ceramic: max. 130°C (266°F) Optional High Temp 150°C
	pressure	max. 64 bar (900 lbs)
Ambient	temperature	-20°C...+60°C (-4°F...140°F)
	protection class	IP 68 (EN 60529)
	interference immunity	according to EN 61326-1
Parameterization		with Keypad or Laptop
Output	Analog and Relay	Transmitter outputs: Mass flow rate, concentration, velocity, failure, simulation value, limit status
CAN-Bus	transmission rate	40 kBaud cable length max. 1000 m
Supply voltage		24 VDC, max. 10 W
Damping		1-30 s, fast adaptation to rapid change of the value

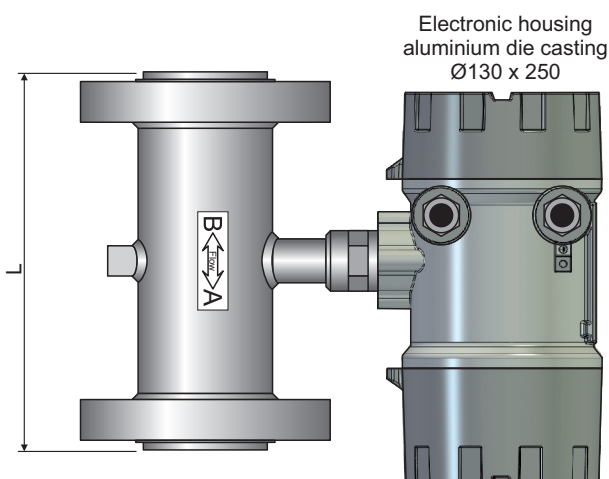


## Dimensions in mm

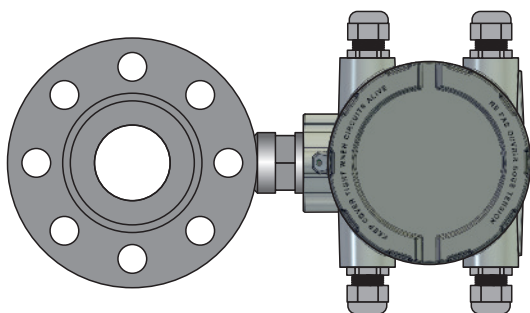
### DIN-Flange DF

DN	L	ØV	ØR	f1	f2	PN 10				PN 16				PN 25				PN 40				PN 64			
						ØD	Ød1	Ød2	Anz.	ØD	Ød1	Ød2	Anz.	ØD	Ød1	Ød2	Anz.	ØD	Ød1	Ød2	Anz.	ØD	Ød1	Ød2	Anz.
10	250	34,9	35	4	3	90	60	14	4	90	60	14	4	90	60	14	4	90	60	14	4	100	70	14	4
15	250	39,9	40	4	3	95	65	14	4	95	65	14	4	95	65	14	4	95	65	14	4	105	75	14	4
20	250	50,9	51	4	3	105	75	14	4	105	75	14	4	105	75	14	4	105	75	14	4	130	90	14	4
25	250	57,9	58	4	3	115	85	14	4	115	85	14	4	115	85	14	4	115	85	14	4	140	100	18	4
32	250	65,9	66	4	3	140	100	18	4	140	100	18	4	140	100	18	4	140	100	18	4	155	110	22	4
40	250	75,9	76	4	3	150	110	18	4	150	110	18	4	150	110	18	4	150	110	18	4	170	125	22	4
50	250	87,9	88	4	3	165	125	18	4	165	125	18	4	165	125	18	4	165	125	18	4	180	135	22	4
65	250	109,9	110	4	3	185	145	18	4	185	145	18	4	185	145	18	8	185	145	18	8	205	160	22	8
80	250	120,8	121	4	3	200	160	18	8	200	160	18	8	200	160	18	8	200	160	18	8	215	170	22	8
100	250	149,8	150	4,5	3,5	220	180	18	8	220	180	18	8	235	190	22	8	235	190	22	8	250	200	26	8
125	250	175,8	176	4,5	3,5	250	210	18	8	250	210	18	8	270	220	26	8								
150	300	203,7	204	4,5	3,5	285	240	22	8	285	240	22	8	300	250	26	8								
200	350	259,7	260	4,5	3,5	340	295	22	8	340	295	22	12	360	310	26	12								

Larger diameters on request

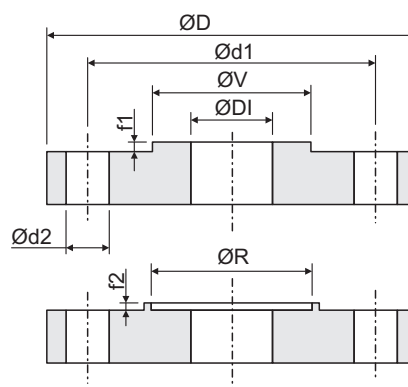


Electronic housing  
aluminium die casting  
Ø130 x 250



Sensor flange  
male facing

Sensor flange  
female facing



### Product Configurator: D-MASS/a/b/c/d/e/f/g/h

\* = Standard

#### a: Flange form

- 1: Male and female facing
- 3: Female facing on both sides
- \* 5: Male facing on both sides

#### b: Nominal pressure PN

- 10, 16, 25, 40, 64 bar

#### c: Nominal diameter DN in mm

- 25, 32, 40, 50, 65,
- 80, 100, 125, 150, 200

#### d: Inner diameter DI

in mm, standard:

- \* 10,4 / 13,6 / 16,0 / 17,3 / 20,4 /
- \* 22,3 / 24,8 / 25,0 / 32,8 / 39,3 /
- \* 43,1 / 51,2 / 54,5 / 70,3 / 80,0 /
- \* 82,5 / 100,0 / 100,8 / 107,1 /
- \* 125,0 / 131,7 / 150,0 / 159,3 /
- \* 207,3 / 210,9

#### e: Material of housing

- 00: Steel galvanized, chromated, varnished

- \* 10: Stainless steel
- 1.4301 / AISI 304

- 13: Steel galvanized, chromated, varnished, flanges V2A

- 20: Stainless steel
- 1.4571 / AISI 316 Ti

- 21: Stainless steel
- 1.4541 / AISI 321

#### f: Material of sensor pipe

- \* 01: Glass fiber reinforced epoxy resin
- 02: Glass fiber reinforced vinyl ester resin

- 20: PTFE

- 30: PEEK

- 50: PVC

- 51: PA

- 52: PE

- 54: UHMW PE

- 55: POM

- 56: PVDF

#### g: Material of seals

- 00: Nitrile butadiene rubber (NBR)

- \* 10: Fluorinated rubber (FPM/FKM)

- 20: Silicone (MH)

#### h: Certificates

- II 2G Ex d e IIC T4 Gb

- II 2D Ex tbIIIC T130°C Db IP 68



Technical data subject to change without notice.