

Compact Reliable Durable

### MASS FLOW RATE MEASUREMENT FOR BULK SOLIDS PROCESS COUPLING: DIN-FLANGE

#### Function

The DYNAmas 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 DYNAcon.

**Concentration:** Utilizing the capacitive measurement principle the DYNAmas 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 DYNAcon 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.

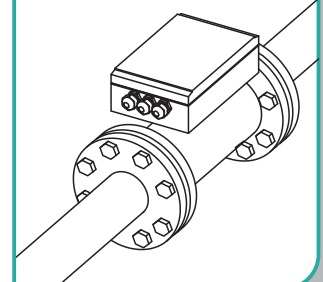
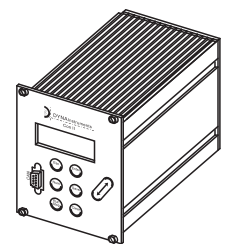
- Non-contact measurement
- Independent from transport velocity
- Easy calibration



CE

#### Technical Data

|                |                       |  |
|----------------|-----------------------|--|
| Materials      |                       | see overleaf   |
| Accuracy       | typically             | 1-3 %  |
| Process        | temperature           | standard: max. 130°C (266°F)   |
|                | pressure              | max. 64 bar (900 lbs)  |
| Ambient cond.  | temperature           | -20°C...+60°C (-4°F...140°F)   |
|                | protection class      | IP 68 (EN 60529)   |
|                | interference immunity | according to EN 61326-1  |
| Output         | via CAN-Bus           | through DYNAcon:<br>Mass flow rate, concentration,<br>velocity, failure, simulation<br>value, limit status |
| CAN-Bus        | transmission rate     | 40 kBaud<br>cable length max. 1000 m   |
| Supply voltage |                       | 19...31 VDC, max. 10 W   |
| Damping        |                       | 1-30 s, fast adaptation to rapid<br>change of the value  |



# DYNA Instruments

Instrumentation for Powder and Bulk Industries

DYNA Instruments GmbH  
Tempowerkring 7, D-21079 Hamburg  
Tel: (+49) 40 / 790 185 - 0  
Fax: -18  
E-mail: [info@dynainstruments.com](mailto:info@dynainstruments.com)  
Internet: [www.dynainstruments.com](http://www.dynainstruments.com)

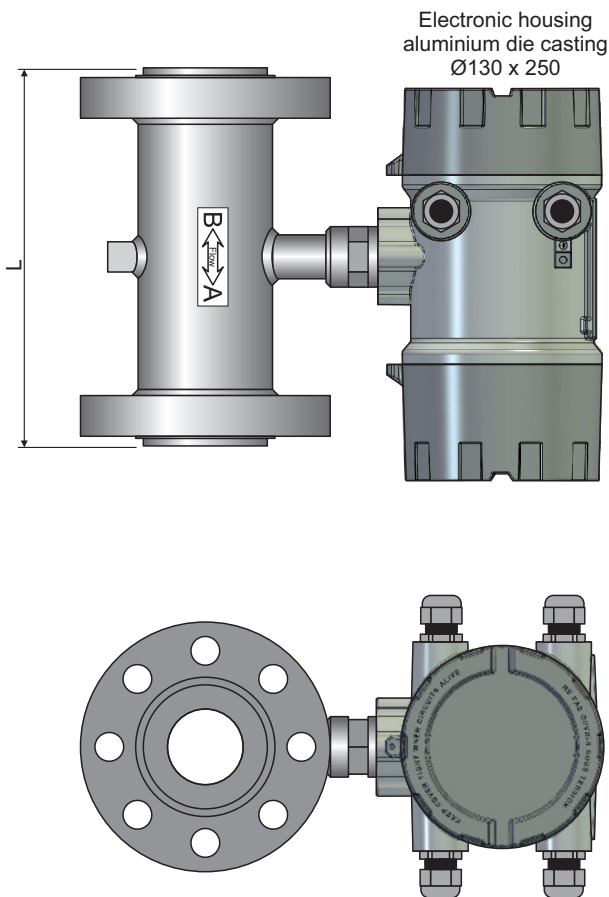
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### Dimensions in mm

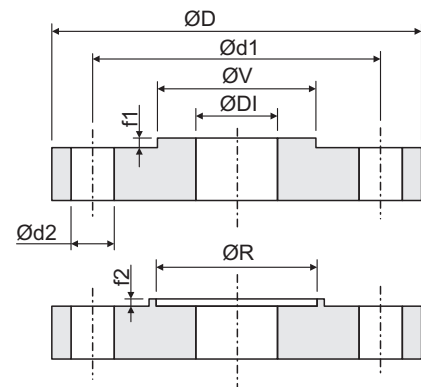
#### DIN-Flange DF

| 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



Sensor flange male facing



Sensor flange female facing

### Ordering key DYNAmas\_DF/a/b/c/d/ef/fg/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
- 22: Stainless steel 1.4435 / AISI 316 L (Mo+)

#### 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.



# HAUSNET

## DYNA Instruments

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Contact your national or area sales and service office.

**HAUSNET S.R.L.**

Tel Argentina: (+54-11) 5219-2211

Tel Chile: (+56-2) 2897-3999

E-Mail: hausnet@hausnet.com.ar

Web: www.hausnet.com.ar