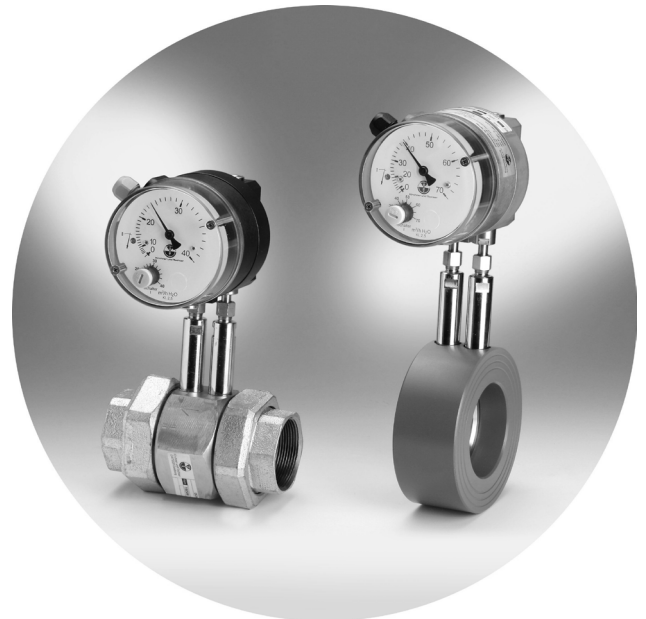


# Differential-Pressure Flow Meter

## DDM-DS11

### Design and application

The DDM-DS11 metering orifice measures and monitors the flow rate of liquids. The user mounts the orifice between flanges or with Rp screwed connections into the conduit. The unimpeded, straight tube length has to show 6 DN before and 4 DN behind the mounting position. At the orifice, a differential pressure drop, which is square proportional to the volume flow rate passing the conduit. The display pressure gauge can be equipped with one or with two microswitches.



- mounted in-between flanges in accordance with DIN EN 1092-1, internal screw thread, external screw thread or with Rp-threading in accordance with ISO 7-1
- optional assembly in the horizontal or vertical positions
- one device for all installation situations and flow directions
- suitable for liquids and gases
- no moving parts, non-wearing
- calibration for standard measuring ranges or as per customer specification
- metering range 1:6
- accuracy 5% FS
- simple assembly and disassembly
- incl. differential pressure gauge DS11
- microswitches optionally available



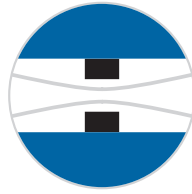
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Version 3.1

# Differential-Pressure Flow Meter



## DDM-DS11

### Type series

| Design       | Description   |
|--------------|---|
| DDM-DS11     | Measuring orifice with indicator DS11                           |
| DDM-DS11-MS1 | Measuring orifice with indicator DS11 and one microswitch MS1   |
| DDM-DS11-MS2 | Measuring orifice with indicator DS11 and two microswitches MS2 |

### Technical data

|                                       |   |
|---------------------------------------|---|
| Measuring principle                   | Differential pressure measurement on the orifice  |
| Perm. ambient temperature             | -10... +70 °C   |
| Perm. media temperature <sup>*)</sup> | Standard -10 °C to + 70 °C<br>max. 130 °C (insulated line)<br>optionally HT-Type above 130 °C |
| Protection class                      | IP65 as per DIN 40050   |
| Display unit                          | Mechanical differential pressure measuring unit   |

<sup>\*)</sup>media must not freeze

### Materials

|   |   |
|---|---|
| DDM-DS11 for in-between flange assembly                 |   |
| Connection  | between flanges acc. to DIN EN 1092-1                     |
| in-between flange assembly                              | Typ 11 or Typ 13  |
| Ring  | S355, optionally stainless steel                          |
| Orifice   | stainless steel   |
| DDM-DS11 for screwed connection                         |   |
| Connection  | DDM-DS11 tube fittings consisting of                      |
| Screw connection  | nut and insertion part in acc. to EN 10226-1 (ISO 7 - 1)  |
| Screwed connections                                     | malleable cast iron, galvanized                           |
| Orifice   | brass   |
| Seals   | NBR, others on request                                    |
| Materials of fastenings between orifice plate and gauge |   |
| Straight screw-in fitting 1/4"                          | nickel-plated brass or stainless steel                    |
| Screw fitting G 1/4" dia. Ø 8                           | nickel-plated brass or stainless steel                    |
| Olives, union nuts                                      | galvanized steel or stainless steel                       |
| Steel washers   | galvanized steel with NBR gasket                          |
| Indicator DS11  |   |
| Pressure chamber  | aluminium GkAlSi12 (Cu) with HART-COAT surface protection |
| Measuring diaphragm                                     | NBR   |
| Dial cover  | polycarbonate   |

### Differential pressures and crushing strength

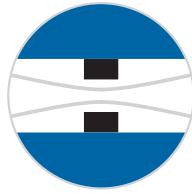
|                                  |   |
|----------------------------------|---|
| Differential pressure for fluids | 250 mbar  |
| Differential pressure for gases  | 200 mbar  |
| Pressure loss for fluids         | appr. 30 - 60% from the differential pressure <sup>*)</sup> |
| Pressure loss for gases          | appr. 30 - 60% from the differential pressure <sup>*)</sup> |
| Crushing strength                | PN 16   |

<sup>\*)</sup>in case of enquiry it should be gathered from the quotation

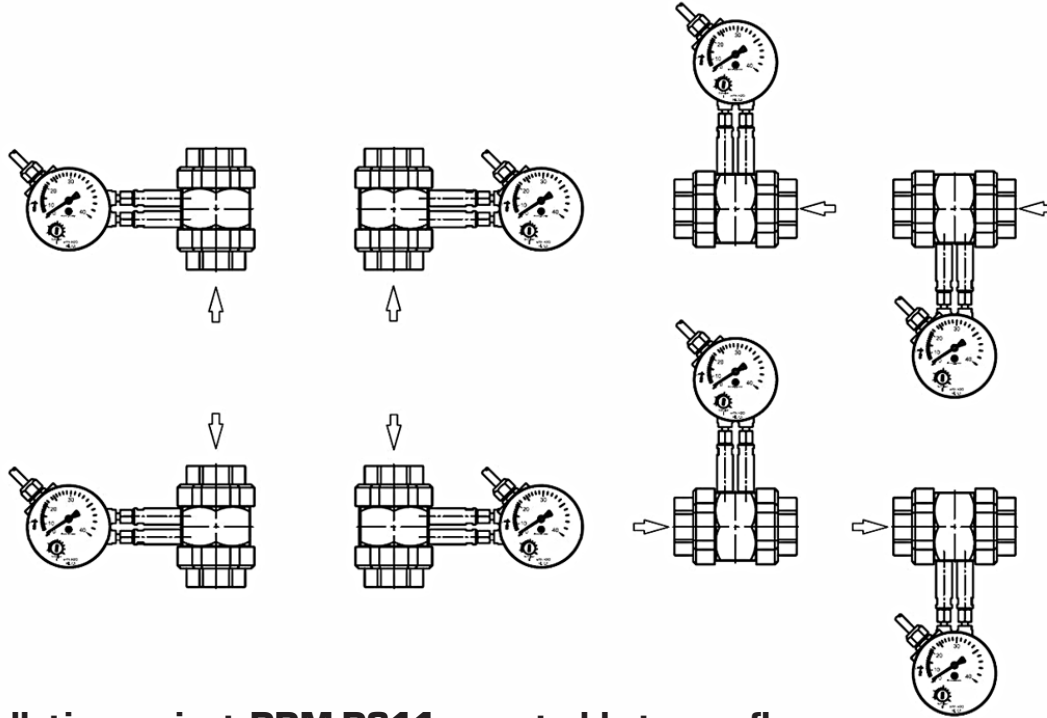
### Technical data Measuring unit

|  |                                      |
|--|--------------------------------------|
| Measuring principle                          | Differential pressure at the orifice |
| Permissible ambient temperature              | - 10° C ... + 70° C                  |
| Permissible medium temperature <sup>*)</sup> | -10 °C to + 70° C                    |
| Protection class                             | IP54 acc. to DIN 40050               |
| Measuring accuracy                           | ± 2,5 % FS                           |

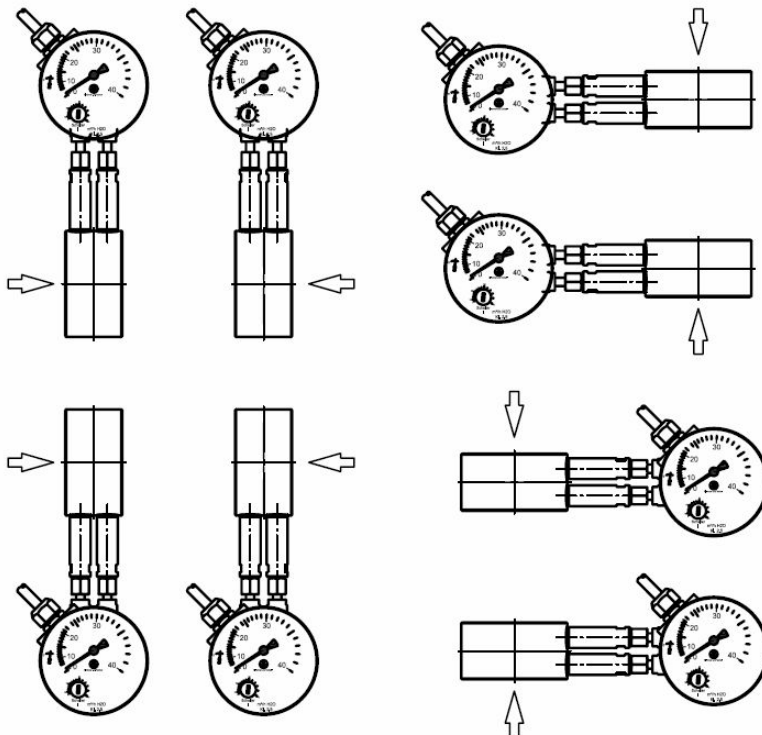
<sup>\*)</sup>media must not freeze



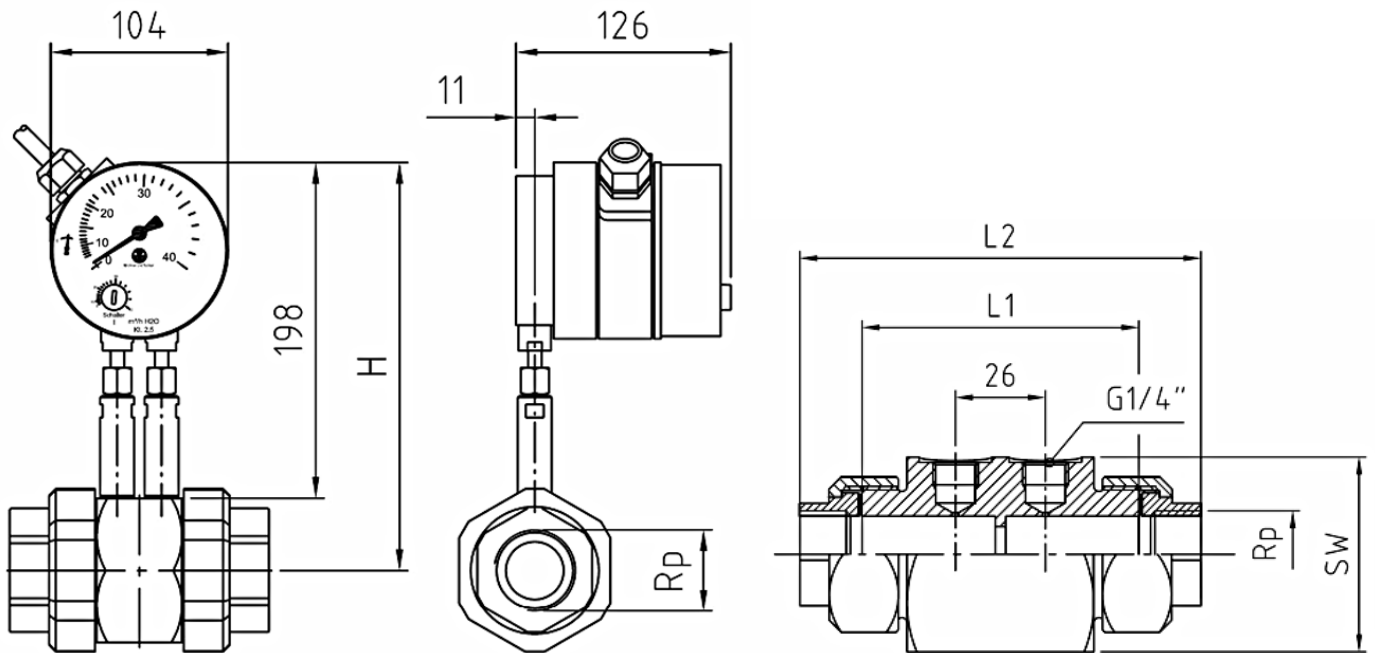
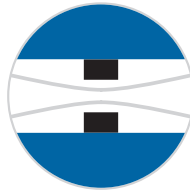
### Installation variant DDM-DS11 with screw connections



### Installation variant DDM-DS11 mounted between flanges



The devices are delivered in ready assembled condition to customer specifications. All displayed situations could be installed by the customer with the delivered device. For backfitting you will need appr. 20 min and requires no additional materials.

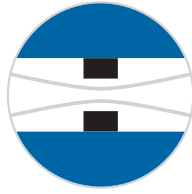


### Dimensions for DDM-DS11 for screwed connections

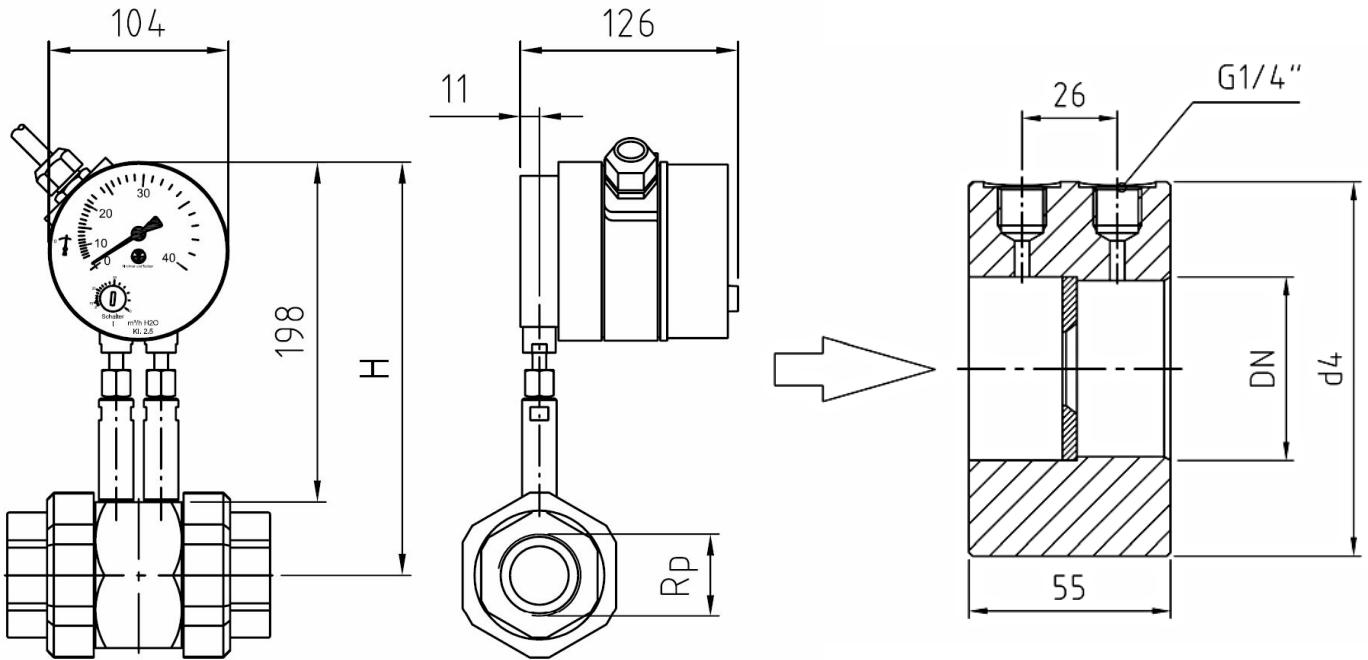
| Rp <sup>*)</sup> | L <sub>1</sub> | L <sub>2</sub> | SW | H   |
|------------------|----------------|----------------|----|-----|
| 1/4              | 80             | 124            | 41 | 218 |
| 3/8              | 80             | 128            | 46 | 221 |
| 1/2              | 80             | 128            | 46 | 221 |
| 3/4              | 80             | 128            | 50 | 223 |
| 1                | 80             | 136            | 60 | 228 |
| 1 1/4            | 80             | 146            | 70 | 233 |
| 1 1/2            | 80             | 149            | 70 | 233 |
| 2                | 90             | 164            | 85 | 240 |

<sup>\*)</sup> Inside diameter made after details provided of inside pipe diameter.

# Differential-Pressure Flow Meter



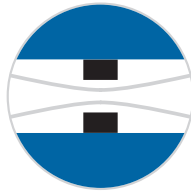
## DDM-DS11



### Dimensions for DDM-DS11 for in-between flange assembly

| DN <sup>1)</sup> | d <sub>4</sub> | H   |
|------------------|----------------|-----|
| 50               | 102            | 249 |
| 65               | 122            | 259 |
| 80               | 138            | 267 |
| 100              | 158            | 277 |
| 125              | 188            | 292 |
| 150              | 212            | 304 |
| 200              | 268            | 332 |

<sup>1)</sup> Inside diameter made after details provided of inside pipe diameter.



# Differential-Pressure Flow Meter

## DDM-DS 11

### Flow rates for Water for screwed connection fittings

| RP | smallest measuring range<br>[m <sup>3</sup> /h] H <sub>2</sub> O |       | largest measuring range<br>[m <sup>3</sup> /h] H <sub>2</sub> O |        |
|----|--|-------|---|--------|
| ¼  | 0,05   | - 0,3 | 0,2   | - 1,2  |
| ⅜  | 0,05   | - 0,4 | 0,4   | - 2,3  |
| ½  | 0,1  | - 0,7 | 0,75  | - 4,5  |
| ¾  | 0,2  | - 1,3 | 1,4   | - 8,5  |
| 1  | 0,35   | - 2,0 | 2,25  | - 13,5 |
| 1¼ | 0,6  | - 3,5 | 4,0   | - 24   |
| 1½ | 0,85   | - 5,0 | 5,35  | - 32   |
| 2  | 1,25   | - 7,5 | 8,65  | - 52   |

Other measuring ranges on request.

### for in-between flange assembly

| DN  | smallest measuring range<br>[m <sup>3</sup> /h] H <sub>2</sub> O |       | largest measuring range<br>[m <sup>3</sup> /h] H <sub>2</sub> O |       |
|-----|--|-------|---|-------|
| 50  | 1,2  | - 7,0 | 8,7   | - 52  |
| 65  | 2,0  | - 12  | 13  | - 78  |
| 80  | 3,0  | - 18  | 19,7  | - 118 |
| 100 | 4,7  | - 28  | 30,7  | - 184 |
| 125 | 7,3  | - 44  | 48  | - 288 |
| 150 | 10,7   | - 64  | 68,8  | - 413 |
| 200 | 18,8   | - 113 | 122,5   | - 735 |

Other measuring ranges on request.

### Technical data of microswitches

|                                |   |
|--------------------------------|---|
| Contact output                 | 1 or 2 microswitches,<br>1-pol change-over contact        |
| Adjustment of switching points | external adjustment by standard value scales              |
| smallest adjustable value      | approx. 5 % of full scale range                           |
| Switching hysteresis           | approx. 2,5 %   |
| Load data / contacts           | U~ max. = 250 V AC,<br>I max. = 5 A,<br>P max. = 10 W     |
| AC                             | U~ max. = 30 V DC,<br>I max. = 0,4 A,<br>P max. = 10 W    |
| Electrical connection          | prewired numbered cable 2,5 m,<br>optionally terminal box |

### Flow rates for air for screwed connection fittings

| RP | smallest measuring range<br>[m <sup>3</sup> /h] air <sup>1)</sup> |      | largest measuring range<br>[m <sup>3</sup> /h] air <sup>1)</sup> |       |
|----|---|------|--|-------|
| ¼  | 0,5   | - 3  | 1,3  | - 8   |
| ⅜  | 0,8   | - 5  | 2,3  | - 14  |
| ½  | 1,0   | - 6  | 3,5  | - 21  |
| ¾  | 1,3   | - 8  | 7,5  | - 45  |
| 1  | 2,0   | - 12 | 9,0  | - 54  |
| 1¼ | 4,0   | - 24 | 18,0   | - 108 |
| 1½ | 5,8   | - 35 | 25,0   | - 150 |
| 2  | 8,3   | - 50 | 45,0   | - 270 |

<sup>1)</sup> at STP (0° C and 1013 mbar)  
In-between ranges possible

### for in-between flange assembly

| DN  | smallest measuring range<br>[m <sup>3</sup> /h] air <sup>1)</sup> |       | largest measuring range<br>[m <sup>3</sup> /h] air <sup>1)</sup> |        |
|-----|---|-------|--|--------|
| 50  | 9,0   | - 54  | 45   | - 270  |
| 65  | 13,5  | - 81  | 83   | - 500  |
| 80  | 20  | - 120 | 125  | - 750  |
| 100 | 35  | - 210 | 142  | - 850  |
| 125 | 60  | - 360 | 292  | - 1750 |
| 150 | 75  | - 450 | 433  | - 2600 |
| 200 | 125   | - 750 | 667  | - 4000 |

<sup>1)</sup> at STP (0° C and 1013 mbar)  
In-between ranges possible

### Low voltage directive

The DS11 gauge meets the protection requirements of the low-voltage directive 72/23/EWG.

The equipment from **Kirchner und Tochter** has been tested in compliance with applicable CE-regulations of the European Community.

The respective declaration of conformity is available on request.

The **Kirchner und Tochter** QM-System is certified in accordance with DIN-EN-ISO 9001:2008. The quality is systematically adapted to the continuously increasing demands.



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