



Magnetic Inductive Flowmeter



measuring
•
monitoring
•
analysing

EPS



- High accuracy:
0.3 % of actual flow
- Maintenance-free
- No pressure drop
- Numerous lining materials
- Numerous electrode materials
- Low-cost grounding electrode instead of earthing rings, also available in special materials e.g. tantalum

SS



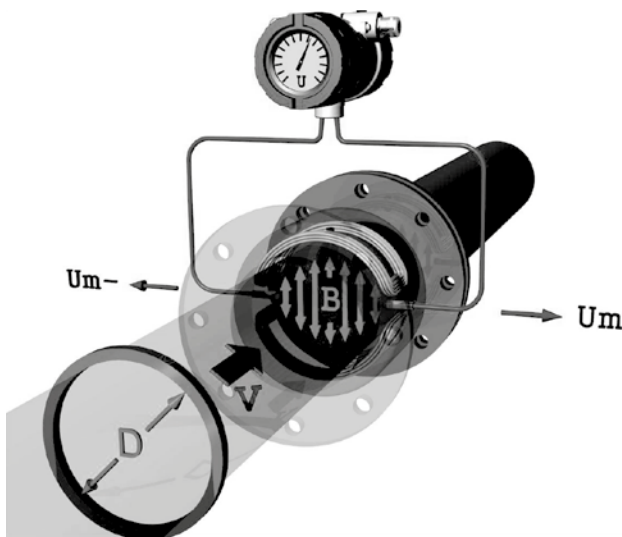
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Function

An electrically conductive medium flowing through an orientated magnetic field in accordance to Faraday's law of induction will induce a voltage proportional to the mean flow velocity rate and hence the volumetric flow. A magnetic inductive flowmeter consists of an isolated lined tube, through which a conductive liquid flows, a magnetic field coil and two electrodes. The electrode voltage is detected by a transmitter and converted into standardised electrical signal such as 4-20 mA or pulses. The sensor EPS can be used in combination with the KOBOLD UMF2 transmitter. The transmitter can be mounted compact or separately to the sensor.



Application

The magnetic-inductive flow sensor EPS is used to measure the volume flow of liquids, slurries, pastes and other electrically conductive media without any pressure drop. Pressure, temperature, density and viscosity do not affect the volume measurements. Solid particles and small gas bubbles should be avoided.

The sensor EPS has the following significant characteristics:

- Wide variety of lining materials
- Electrodes in stainless steel, Hastelloy® C276, tantalum, Platinum
- Large selection of process connections
- Deployable in harsh environments

Technical Details

Sensor EPS

| | |
|----------------------|--|
| Armature: | painted steel (standard), stainless steel at DIN11851; Tri-Clamp® and ceramic lined 2/3/6/10 mm inside diameter |
| Nominal sizes: | 2/3/6/10 mm inside diameter process connection in DIN-DN10 or ASME ½" EN1092-1/JIS DN15... DN1200-ASME ½" ... 24" (other nominal sizes on request) |
| Process connection: | flanges of steel or stainless steel 1.4301 (EN1092 and ASME B16.5), food connection DIN 11851, Tri-Clamp® (other connections on request) |
| Lining material: | hard rubber, soft rubber, PTFE, ceramics, EPDM |
| Electrode material: | Hastelloy® C276, stainless steel 1.4571/316 Ti titanium, tantalum and platinum-rhodium |
| Grounding ring: | on request |
| Nominal pressure: | PN40, (40 bar) (580 psi) DN15 ... 300 PN16, (16 bar) (232 psi) DN50 ... 600 PN10, (10 bar) (145 psi) DN200 ... 1200 (higher pressures on request) |
| Process temperature: | -10 ... +70 °C (14 ... +158 °F) EPDM -20 ... +150 °C (-4 ... +302 °F) PTFE (EPDM gasket) -20 ... +130 °C (-4 ... +266 °F) PTFE (PTFE gasket) -20 ... +150 °C (-4 ... +302 °F) ceramics 0 ... +95 °C (32 ... +203 °F) hard rubber 0 ... +70 °C (+32 ... +158 °F) soft rubber |
| Ambient temperature: | -20 °C ... +60 °C (-4 ... +140 °F), depending on process temperature |
| Conductivity: | ≥ 5 µS/cm ≥ 20 µS/cm with demineralised water |
| Measuring ranges: | 0.5 m/s ... 10 m/s |
| Accuracy: | ± 0.3% of measured value ± 0.01% * (Q at 10 m/s) (under reference conditions) |
| Repeatability: | ± 0.15% of measured value ± 0.005% * (Q at 10 m/s) (under reference conditions) |
| Protection: | IP67 (EN60529), IP68 |

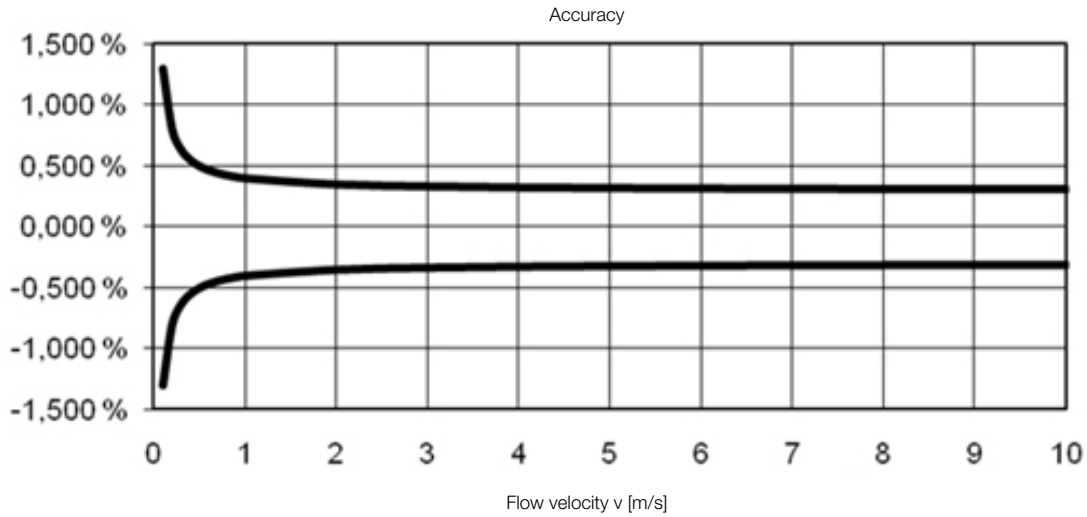


Flow Specific Values

| Di | Connection | | Litres/sec | | m ³ /h | |
|------|------------|------|------------------|------------------|-------------------|------------------|
| | DN | ASME | Q _{min} | Q _{max} | Q _{min} | Q _{max} |
| 2 | 10 | ½" | 0.002 | 0.031 | 0.006 | 0.113 |
| 3 | 10 | ½" | 0.004 | 0.071 | 0.013 | 0.254 |
| 6 | 10 | ½" | 0.014 | 0.283 | 0.051 | 1.018 |
| 10 | 10 | ½" | 0.039 | 0.785 | 0.141 | 2.827 |
| 15.3 | 15 | ½" | 0.092 | 1.847 | 0.332 | 6.648 |
| 26 | 25 | 1" | 0.265 | 5.309 | 0.956 | 19.113 |
| 36.8 | 40 | 1 ½" | 0.532 | 10.636 | 1.915 | 38.290 |
| 49.9 | 50 | 2" | 0.976 | 19.529 | 3.515 | 70.305 |
| 64.5 | 65 | 2 ½" | 1.632 | 32.649 | 5.877 | 117.537 |
| 77.5 | 80 | 3" | 2.357 | 47.143 | 8.486 | 169.713 |
| 98.5 | 100 | 4" | 3.807 | 76.139 | 13.705 | 274.102 |
| 124 | 125 | 5" | 5.993 | 119.864 | 21.575 | 431.509 |
| 149 | 150 | 6" | 8.774 | 175.480 | 31.586 | 631.727 |
| 198 | 200 | 8" | 15.428 | 308.553 | 55.540 | 1110.792 |
| 251 | 250 | 10" | 24.815 | 496.308 | 89.335 | 1786.709 |
| 301 | 300 | 12" | 35.552 | 711.047 | 127.988 | 2559.768 |
| 336 | 350 | 14" | 44.327 | 886.542 | 159.578 | 3191.553 |
| 385 | 400 | 16" | 58.208 | 1164.156 | 209.548 | 4190.963 |
| 433 | 450 | 18" | 73.740 | 1474.803 | 265.465 | 5309.292 |
| 486 | 500 | 20" | 92.627 | 1852.535 | 333.456 | 6669.127 |
| 582 | 600 | 24" | 132.864 | 2657.286 | 478.311 | 9566.228 |
| 687 | 700 | 28" | 185.342 | 3706.836 | 667.230 | 13344.609 |
| 789 | 800 | 32" | 244.463 | 4889.269 | 880.068 | 17601.367 |
| 889 | 900 | 36" | 310.126 | 6202.513 | 1116.452 | 22329.046 |
| 991 | 1000 | 40" | 385.403 | 7708.058 | 1387.450 | 27749.009 |
| 1190 | 1200 | 44" | 556.413 | 11128.255 | 2003.086 | 40061.718 |
| 1384 | 1400 | 48" | 752.198 | 15043.956 | 2707.912 | 54158.242 |
| 1584 | 1600 | - | 985.304 | 19706.080 | 3547.094 | 70941.887 |
| 1777 | 1800 | - | 1240.037 | 24800.746 | 4464.134 | 89282.684 |
| 1976 | 2000 | - | 1533.323 | 30666.468 | 5519.964 | 110399.285 |

Accuracy

$\pm 0.3\%$ of measured value + $0.0001 \cdot (Q \text{ at } 10 \text{ m/s})$

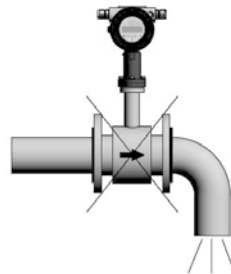


Repeatability

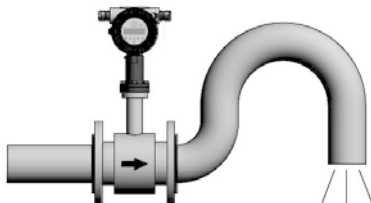
$\pm (0.15\%$ of measured value + $0.00005 \cdot (Q \text{ at } 10 \text{ m/s}))$

Installation Conditions

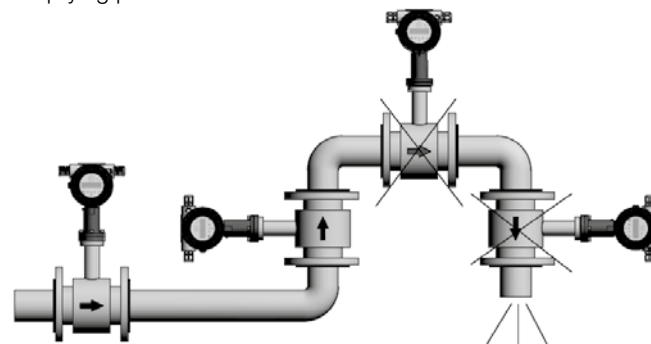
To avoid vacuum, emptying of pipes or gas aggregation please take notice of the following mounting advice.



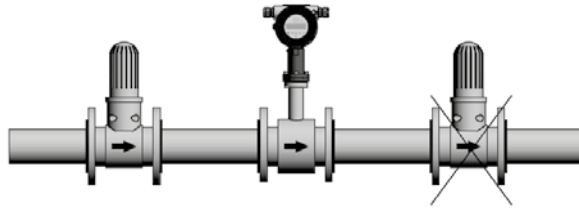
Emptying possible



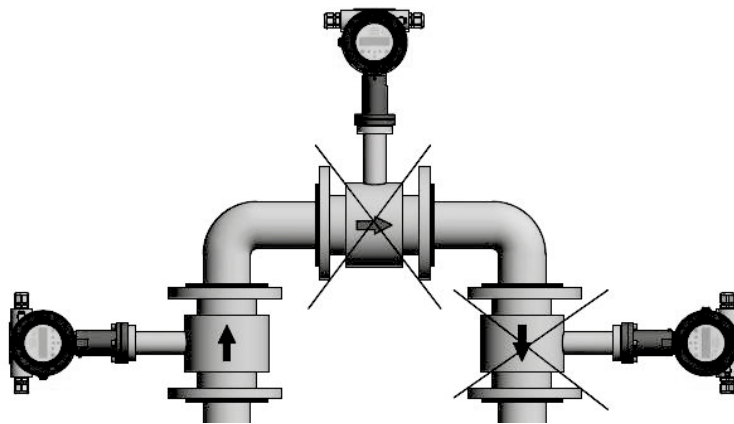
Emptying avoided



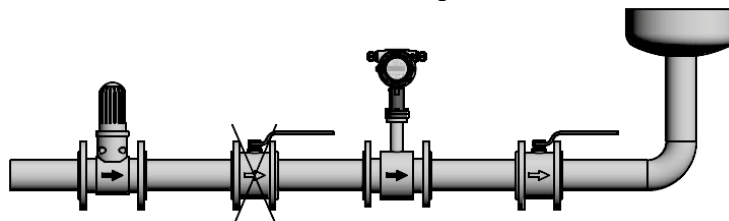
Installation Conditions (continued)



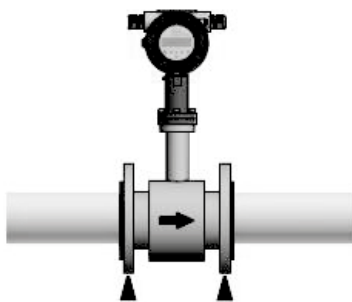
Upstream of pump, vacuum possible



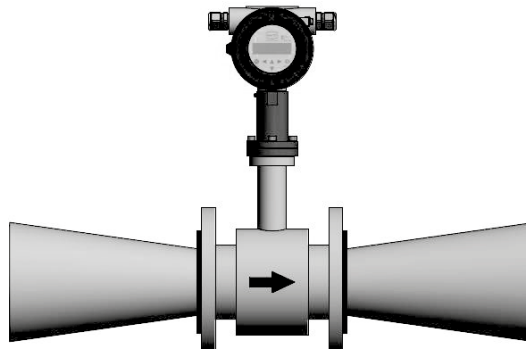
Mount in ascending main



Do not mount downstream of a valve



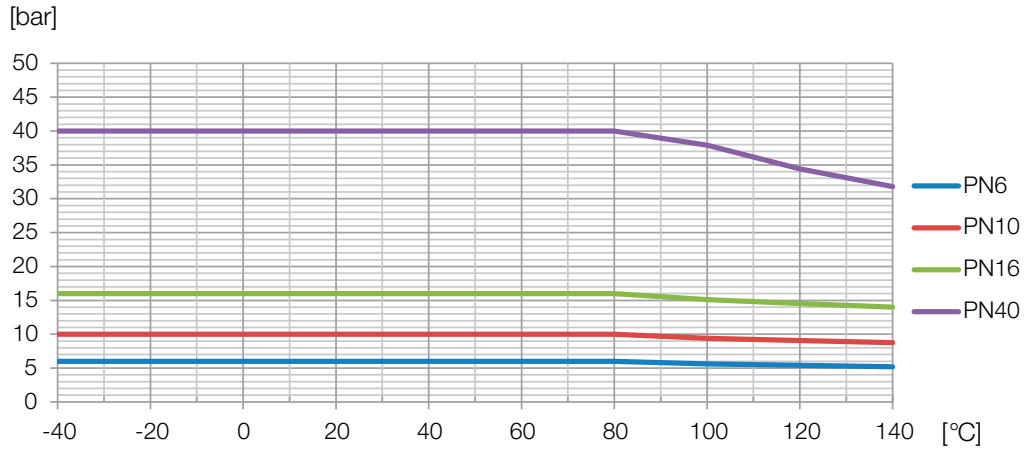
Use support to prevent vibrations



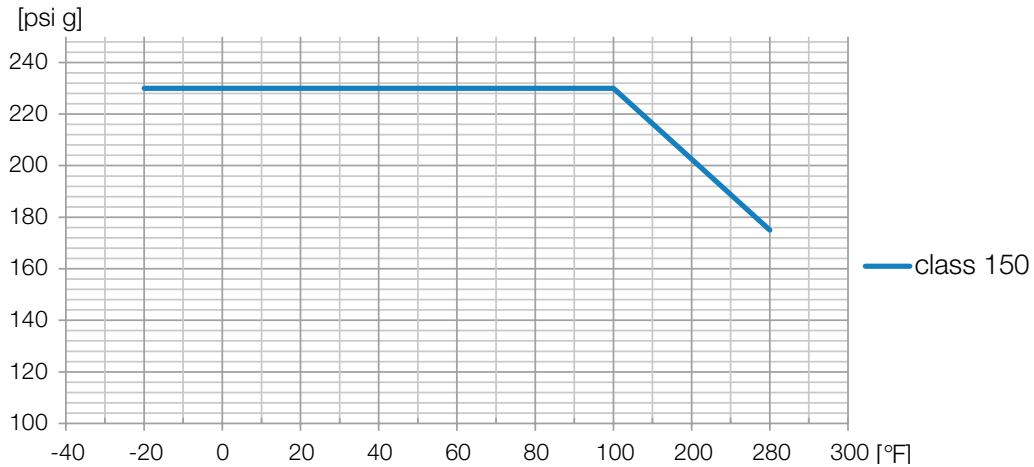
Pipe narrowing with maximum 8° angle



Material Load Curves



For stainless steel flanges (1.4404 / 316L) according to EN1092-1



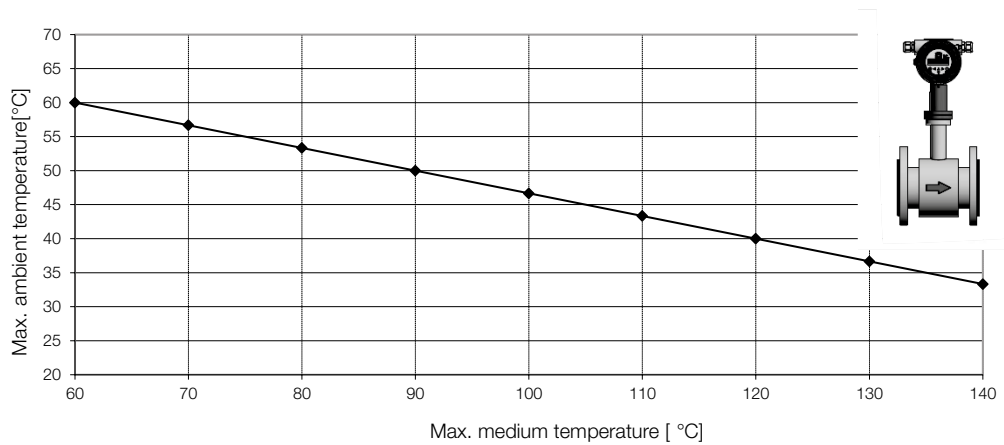
For stainless steel flanges (1.4404 / 316L) according to ASME B16.5

Ambient Conditions

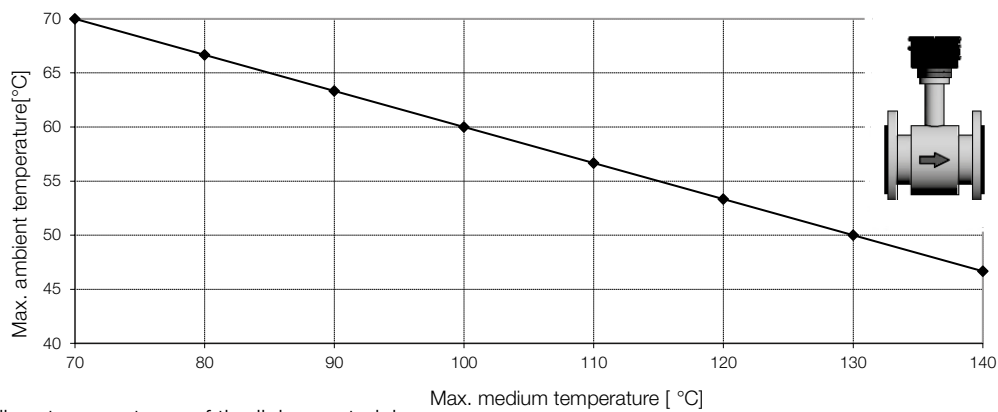
As the sensors are an element of the pipe, these are normally thermally isolated when installed to save energy and prevent accidental physical contact. The heat of the process temperature will be transferred through the supports neck of the compact mounted transmitter or the terminal box. For this

reason the thermal insulation of the sensor should only extend half way up the support of the transmitter. It is essential not to include the transmitter or the terminal box into the thermal insulation. The maximum permissible liquid temperature range is stated on the rating plate of the respective version.

Maximum ambient temperature according to medium temperature with a direct mounted transmitter



Maximum ambient temperature according to medium temperature with a mounted connection box



Apply the medium temperatures of the lining materials.

Technical Details Transmitter

UMF2

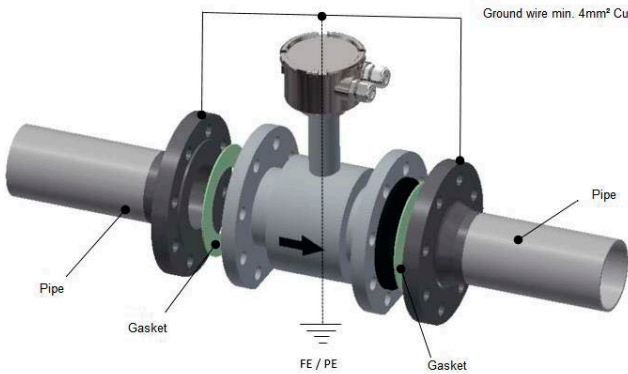


Mounting options: compact or remote
 Housing: die cast aluminium, painted
 Power supply: 115/230 V_{AC} 50/60 Hz, 10 VA
 24 V_{DC} 10 W

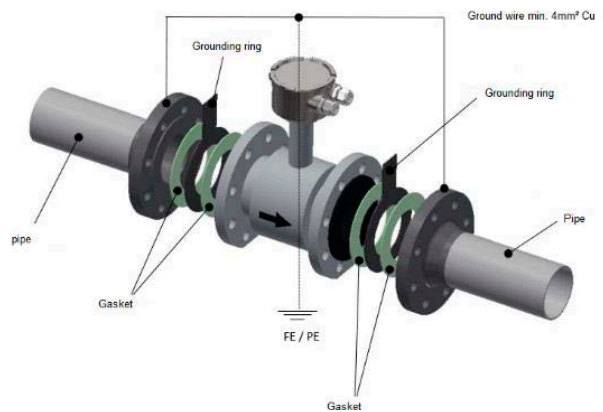
Indication: LCD, 2-lines, 16 digits, background lighted
 Interface language: English, German
 Output:
 Analogue: 1 x 0/4-20 mA, active, galvanically isolated
 Pulse output: passive, galvanically isolated 24 V, 60 mA
 Status: passive, galvanically isolated 24 V, 60 mA
 Ambient temperature: -20 °C ... +60 °C (-4 ... +140 °F), depending on process temperature
 Protection: IP68 (EN60529)
 Communication: HART®
 Diagnostic functions: empty pipe detection, coil current surveillance
 Electromagnetic tolerance: EMC-Directive 2014/30/EU (EMC)

Potential equalisation

The potential equalisation is achieved via the grounding terminal of the junction box.

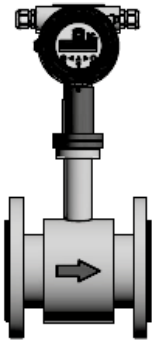


For metallic pipelines we recommend connecting the grounding terminal to the pipe.

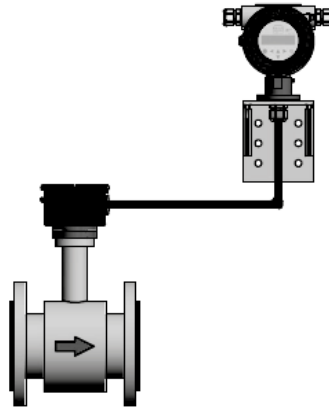


For non-metallic pipelines we recommend connecting the grounding terminal to the grounding discs.

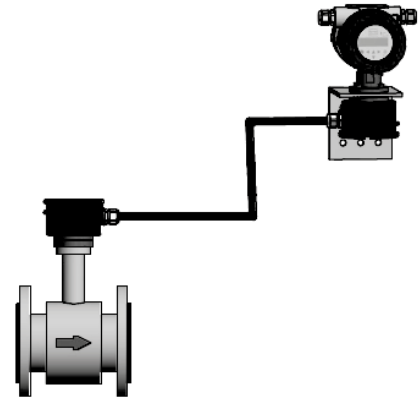
Electrical Connections
Mounting types



Compact IP 67 according to
DIN/EN 60529
Dust tight, short time submersible.



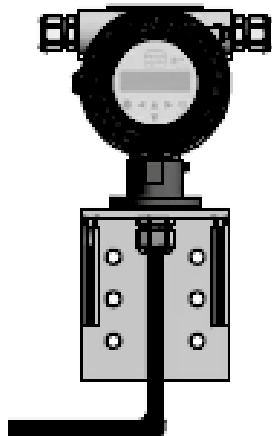
Remote IP 67 according to
DIN/EN 60529
Dust tight, short time submersible.



Remote IP 68 according to
DIN/EN 60529
Dust tight, suitable for continuous
immersion.

With 2.5 m, 5 m and 10 m factory
mounted cable on transmitter.

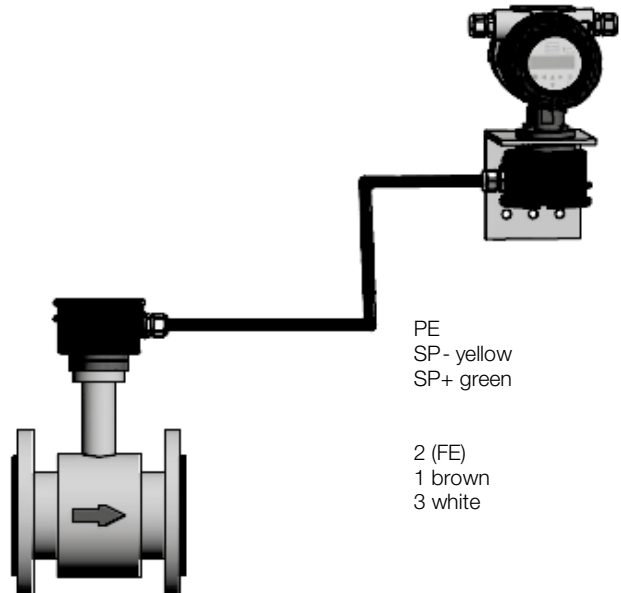
For distances >10 m, factory mounted
cable on transmitter, junction box on
sensor resin filled.



PE
SP- yellow
SP+ green

2 (FE)
1 brown
3 white

Remote version up to 10 m cable



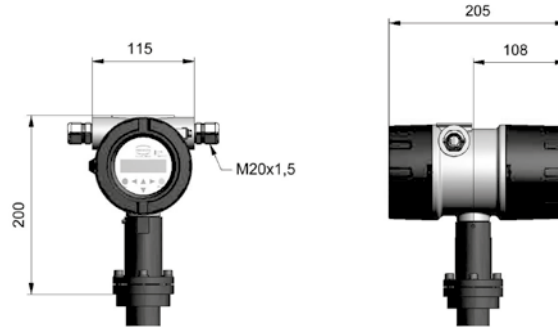
PE
SP- yellow
SP+ green

2 (FE)
1 brown
3 white

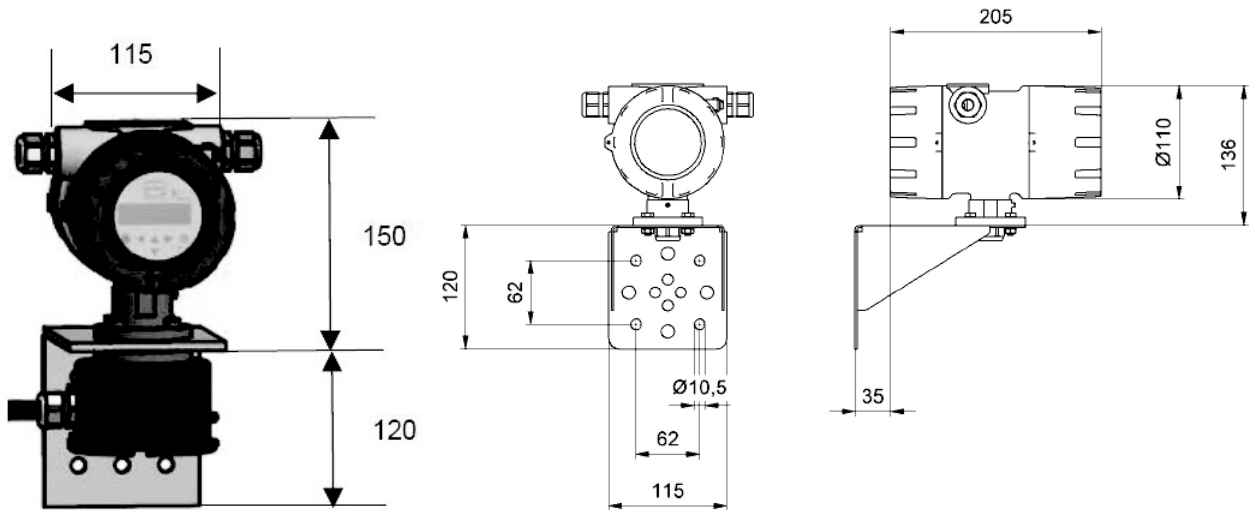
Remote version >10 m cable

Dimensions of the Transmitter UMF2 [mm]

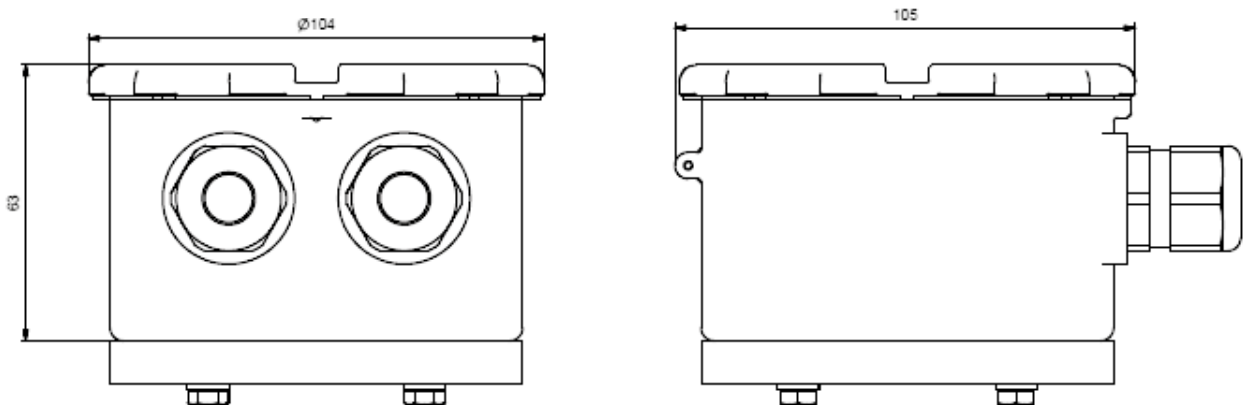
Transmitter compact mounted



Transmitter for remote mounting



Junction box (sensor) for remote mounting

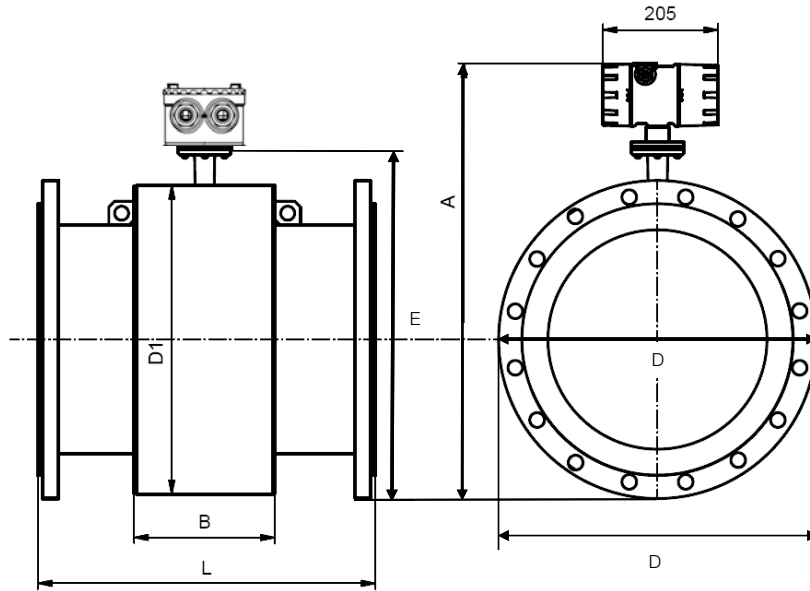




Dimensions [mm]

Sensor EPS

Flange design



| Standard pressure level | DN | ASME | D | | | | D1 | E | | | | A | | | | | | B [mm] | L | | Weight/mass [kg] |
|-------------------------|------|------|---------|---------|-----------|-----------|--------|-----------|---------|------------------|--------|---------|-------------------|--------|---------|---------|------|--------|------|--|------------------|
| | | | ASME | | EN 1092-1 | EN 1092-1 | | ASME | | with transmitter | | | with junction box | | | mm | Inch | | | | |
| | | | 150 lbs | 300 lbs | | | | EN 1092-1 | ASME | EN | ASME | EN | ASME | EN | ASME | | | | | | |
| | | | 150 lbs | 300 lbs | 1092-1 | ASME | | 1092-1 | 150 lbs | 300 lbs | 1092-1 | 150 lbs | 300 lbs | 1092-1 | 150 lbs | 300 lbs | | | | | |
| PN40 | 15 | ½" | 88.9 | 95.2 | 90 | 104 | 159 | 159 | 159 | 312 | 312 | 312 | 225.5 | 225.5 | 225.5 | 59 | 200 | 7.9 | 4 | | |
| | 25 | 1" | 108 | 124 | 115 | 104 | 164.5 | 161 | 169 | 317.5 | 314 | 322 | 231 | 227.5 | 235.5 | 59 | 200 | 7.9 | 5 | | |
| | 40 | 1½" | 127 | 155.4 | 150 | 124 | 192 | 180.5 | 194.7 | 345 | 333.5 | 347.7 | 258.5 | 247 | 261.2 | 82 | 200 | 7.9 | 8 | | |
| | 50 | 2" | 152.4 | 165.1 | 165 | 139 | 207 | 200.7 | 207.05 | 360 | 353.7 | 360.1 | 273.5 | 267.2 | 273.6 | 72 | 200 | 7.9 | 9 | | |
| PN16 PN10* | 65 | 2½" | 177.8 | 190.5 | 185 | 154 | 224.5 | 220.9 | 227.25 | 377.5 | 373.9 | 380.3 | 291 | 287.4 | 293.8 | 72 | 200 | 7.9 | 11 | | |
| | 80 | 3" | 190.5 | 209.6 | 200 | 174 | 242 | 237.25 | 246.8 | 395 | 390.3 | 399.8 | 308.5 | 303.8 | 313.3 | 72 | 200 | 7.9 | 12 | | |
| | 100 | 4" | 228.6 | 254 | 220 | 214 | 272 | 276.3 | 289 | 425 | 429.3 | 442 | 338.5 | 342.8 | 355.5 | 85 | 250 | 9.8 | 16 | | |
| | 125 | 5" | 254 | 279.4 | 250 | 239 | 299.5 | 301.5 | 314.2 | 452.5 | 454.5 | 467.2 | 366 | 368 | 380.7 | 85 | 250 | 9.8 | 19 | | |
| | 150 | 6" | 279.4 | 317.5 | 285 | 282 | 338.5 | 335.7 | 354.75 | 491.5 | 488.7 | 507.8 | 405 | 402.2 | 421.3 | 85 | 300 | 11.8 | 27 | | |
| | 200 | 8" | 342.9 | 381 | 340 | 338 | 394 | 395.45 | 414.5 | 547 | 548.5 | 567.5 | 460.5 | 462 | 481 | 137 | 350 | 13.8 | 40 | | |
| PN 10 PN 16* | 250 | 10" | 406.4 | 444.5 | 395 | 393 | 449 | 454.7 | 473.75 | 602 | 607.7 | 626.8 | 515.5 | 521.2 | 540.3 | 157 | 450 | 17.7 | 60 | | |
| | 300 | 12" | 482.6 | 520.7 | 445 | 444 | 499.5 | 518.3 | 537.35 | 652.5 | 671.3 | 690.4 | 566 | 584.8 | 603.9 | 157 | 500 | 19.7 | 80 | | |
| | 350 | 14" | 533.4 | 584.2 | 505 | 451 | 533 | 547.2 | 572.6 | 686 | 700.2 | 725.6 | 599.5 | 613.7 | 639.1 | 270 | 550 | 21.7 | 110 | | |
| | 400 | 16" | 596.9 | 647.7 | 565 | 502 | 588.5 | 604.45 | 629.85 | 741.5 | 757.5 | 782.9 | 655 | 671 | 696.4 | 270 | 600 | 23.6 | 125 | | |
| | 450 | 18" | 635 | 711.2 | 615 | 563 | 644 | 654 | 692.1 | 797 | 807 | 845.1 | 710.5 | 720.5 | 758.6 | 310 | 600 | 23.6 | 175 | | |
| | 500 | 20" | 698 | 774.7 | 670 | 614 | 697 | 711 | 749.35 | 850 | 864 | 902.4 | 763.5 | 777.5 | 815.9 | 350 | 600 | 23.6 | 200 | | |
| | 600 | 24" | 812.8 | 914.4 | 780 | 715 | 802.5 | 818.9 | 869.7 | 955.5 | 971.9 | 1022.7 | 869 | 885.4 | 936.2 | 320 | 600 | 23.6 | 287 | | |
| | 700 | - | - | - | 880 | 816 | 903 | - | - | 1056 | - | - | 969.5 | - | - | 450 | 700 | 27.6 | 330 | | |
| | 800 | - | - | - | 1015 | 927 | 1026 | - | - | 1179 | - | - | 1092.5 | - | - | 560 | 800 | 31.5 | 450 | | |
| | 900 | - | - | - | 1115 | 1032 | 1128.5 | - | - | 1281.5 | - | - | 1195 | - | - | 630 | 900 | 35.4 | 530 | | |
| | 1000 | - | - | - | 1230 | 1136 | 1238 | - | - | 1391 | - | - | 1304.5 | - | - | 670 | 1000 | 39.4 | 660 | | |
| | 1200 | - | - | - | 1455 | 1348 | 1456.5 | - | - | 1609.5 | - | - | 1523 | - | - | 792 | 1200 | 47.2 | 1180 | | |

* Higher pressure on request

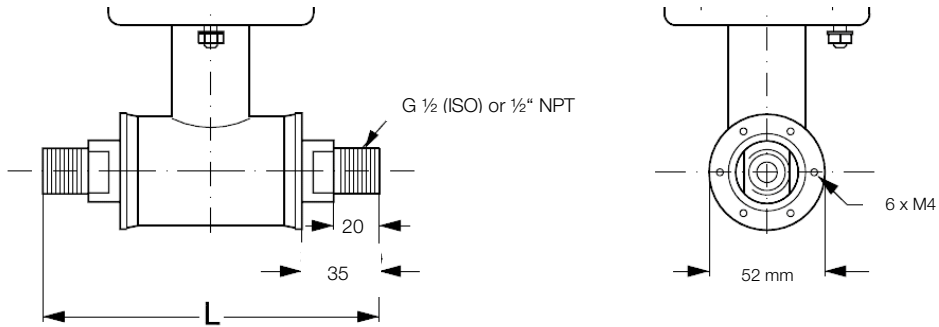
Weights are proximate (for PN16) without transmitter. For transmitter additional weight of 2.4 kg



Magnetic Inductive Flowmeter Model EPS

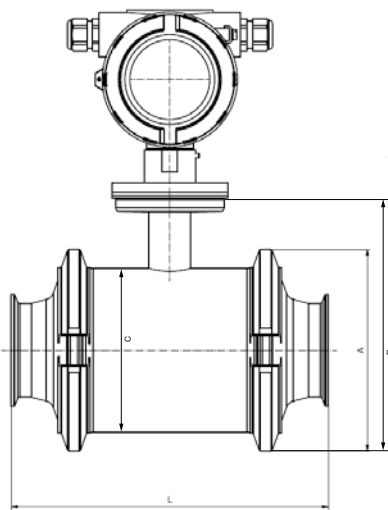
Dimensions [mm]

Wafer-version DN 2, 3, 6, 10 incl. G 1/2 (ISO) or 1/2" NPT connection



| DN | L [mm] (w/o gasket) | L [mm] EPDM | L [mm] graphite | L [mm] Teflon |
|------|-----------------------|---------------|-------------------|-----------------|
| 2 | 150 | 150 | 152 | 156 |
| 3 | | | | |
| 6 | | | | |
| 10 | | | | |
| Size | L [inch] (w/o gasket) | L [inch] EPDM | L [inch] graphite | L [inch] Teflon |
| 1/12 | 5.9 | 5.9 | 6 | 6.1 |
| 1/8 | | | | |
| 1/4 | | | | |
| 3/8 | | | | |

EPS Food design is possible in DIN 11851, Tri-Clover®



| Size DN | A [mm] | B [mm] | C [mm] | Standard | |
|------------|----------|----------|----------|-----------------|-----------------------|
| | | | | 11851 L [mm] | Tri-Clover® L [mm] |
| 10 | 99 | 159.2 | 64 | 146 | 146 |
| 15 | 99 | 159.2 | 64 | 146 | 146 |
| 25 | 113 | 180 | 77.5 | 161 | 161 |
| 40 | 126 | 207 | 91 | 176 | 176 |
| 50 | 154 | 240.7 | 119 | 186 | 186 |
| 65 | 165 | 261.1 | 130 | 223 | 223 |
| 80 | 200 | 297 | 155 | 258 | 258 |
| 100 | 225 | 336.5 | 183 | 288 | 288 |
| ANSI | A [inch] | B [inch] | C [inch] | L [inch] | L [inch] |
| 3/8" | 3.90 | 6.26 | 2.52 | 5.75 | 5.75 |
| 1/2" | 3.90 | 6.26 | 2.52 | 5.75 | 5.75 |
| 1" | 4.45 | 7.09 | 3.05 | 6.34 | 6.34 |
| 1 1/2" | 4.96 | 8.15 | 3.58 | 6.93 | 6.93 |
| 2" | 6.06 | 9.47 | 4.68 | 7.32 | 7.32 |
| 2 1/2" | 6.50 | 10.28 | 5.12 | 8.78 | 8.78 |
| 3" | 7.87 | 11.69 | 6.1 | 10.16 | 10.16 |
| 4" | 8.86 | 13.25 | 7.2 | 11.34 | 11.34 |



Order Details

| Model code | Description | | | | | | | | |
|-----------------|---------------------------------------|--|--|---------------------|-----------------|-------------|-------------|------|----------|
| Sensor | | | | | | | | | |
| EPS- | Material lining | Electrodes | Process temperature | | Material lining | | | | |
| E | EPDM | standard 2x measuring- & 2x grounding electrodes | -10...+70 °C | | EPDM | Hard rubber | Soft rubber | PTFE | Ceramics |
| H | hard rubber (Ebonit) | standard 2x measuring- & 2x grounding electrodes | 0...95 °C | | | | | | |
| W | soft rubber | standard 2x measuring- & 2x grounding electrodes | 0...70 °C | | | | | | |
| P | PTFE | standard 2x measuring electrodes / optionally with ground electrode up to DN600 PN16 | -20...+150 °C | | | | | | |
| A | ceramics | standard 2x measuring electrodes | -20...+150 °C (EPDM gasket) -20...+130 °C (PTFE gasket) | | | | | | |
| | Process connection | Material lining/electrodes/sealing | Max. measuring range (water 20 °C, 1 mPas) | Installation length | | | | | |
| DIN connections | | | | | | | | | |
| 002E | DN2 G½ (316L)/incl.gasket/EPDM | ceramics/platinum/EPDM | 156 l/h | 150mm | - | - | - | - | ✓ |
| 003E | DN3 G½ (316L)/incl.gasket/EPDM | ceramics/platinum/EPDM | 254 l/h | 150 mm | - | - | - | - | ✓ |
| 006E | DN6 G½ (316L)/incl.gasket/EPDM | ceramics/platinum/EPDM | 1017 l/h | 150 mm | - | - | - | - | ✓ |
| 010E | DN10 G½ (316L)/incl.gasket/EPDM | ceramics/platinum/EPDM | 2827 l/h | 150 mm | - | - | - | - | ✓ |
| H02E | DN2 G½ (Hastelloy®)/incl.gasket/PTFE | ceramics/platinum/PTFE | 156 l/h | 156 mm | - | - | - | - | ✓ |
| H03E | DN3 G½ (Hastelloy®)/incl.gasket/PTFE | ceramics/platinum/PTFE | 254 l/h | 156 mm | - | - | - | - | ✓ |
| H06E | DN6 G½ (Hastelloy®)/incl.gasket/PTFE | ceramics/platinum/PTFE | 1017 l/h | 156 mm | - | - | - | - | ✓ |
| H10E | DN10 G½ (Hastelloy®)/incl.gasket/PTFE | ceramics/platinum/PTFE | 2827 l/h | 156 mm | - | - | - | - | ✓ |
| DIN flanges | | | | | | | | | |
| 305B | DN15 PN40 Form B1 DIN EN 1092-1 | | 6.3 m³/h | 200 mm | ✓ | - | - | ✓ | - |
| 309B | DN25 PN40 Form B1 DIN EN 1092-1 | | 17.6 m³/h | 200 mm | ✓ | ✓ | ✓ | ✓ | - |
| 317B | DN40 PN40 Form B1 DIN EN 1092-1 | | 45 m³/h | 200 mm | ✓ | ✓ | ✓ | ✓ | - |
| 320B | DN50 PN16 Form B1 DIN EN 1092-1 | only EPDM | 70 m³/h | 200 mm | ✓ | - | - | - | - |
| 321B | DN50 PN40 Form B1 DIN EN 1092-1 | | 70 m³/h | 200 mm | - | ✓ | ✓ | ✓ | - |
| 325B | DN65 PN16 Form B1 DIN EN 1092-1 | | 119 m³/h | 200 mm | ✓ | ✓ | ✓ | ✓ | - |
| 326B | DN65 PN40 Form B1 DIN EN 1092-1 | | 119 m³/h | 200 mm | - | ✓ | ✓ | - | - |
| 330B | DN80 PN16 Form B1 DIN EN 1092-1 | | 180 m³/h | 200 mm | ✓ | ✓ | ✓ | ✓ | - |
| 331B | DN80 PN40 Form B1 DIN EN 1092-1 | | 180 m³/h | 272 mm | - | ✓ | ✓ | - | - |
| 335B | DN100 PN16 Form B1 DIN EN 1092-1 | | 282 m³/h | 250 mm | ✓ | ✓ | ✓ | ✓ | - |
| 336B | DN100 PN40 Form B1 DIN EN 1092-1 | | 282 m³/h | 250 mm | - | ✓ | ✓ | - | - |
| 340B | DN125 PN16 Form B1 DIN EN 1092-1 | | 441 m³/h | 250 mm | ✓ | ✓ | ✓ | ✓ | - |
| 341B | DN125 PN40 Form B1 DIN EN 1092-1 | | 441 m³/h | 250 mm | - | ✓ | ✓ | - | - |
| 345B | DN150 PN16 Form B1 DIN EN 1092-1 | | 636 m³/h | 300 mm | ✓ | ✓ | ✓ | ✓ | - |
| 346B | DN150 PN40 Form B1 DIN EN 1092-1 | | 636 m³/h | 300 mm | - | ✓ | ✓ | - | - |
| 349B | DN200 PN10 Form B1 DIN EN 1092-1 | | 1130 m³/h | 350 mm | ✓ | ✓ | ✓ | ✓ | - |
| 350B | DN200 PN16 Form B1 DIN EN 1092-1 | | 1130 m³/h | 350 mm | ✓ | ✓ | ✓ | ✓ | - |
| 351B | DN200 PN40 Form B1 DIN EN 1092-1 | | 1130 m³/h | 350 mm | - | ✓ | ✓ | - | - |
| 355B | DN250 PN10 Form B1 DIN EN 1092-1 | | 1767 m³/h | 450 mm | ✓ | ✓ | ✓ | ✓ | - |
| 356B | DN250 PN16 Form B1 DIN EN 1092-1 | | 1767 m³/h | 450 mm | ✓ | ✓ | ✓ | ✓ | - |
| 358B | DN250 PN40 Form B1 DIN EN 1092-1 | | 1767 m³/h | 450 mm | - | ✓ | ✓ | - | - |
| 362B | DN300 PN10 Form B1 DIN EN 1092-1 | | 2544 m³/h | 500 mm | ✓ | ✓ | ✓ | ✓ | - |
| 363B | DN300 PN16 Form B1 DIN EN 1092-1 | | 2544 m³/h | 500 mm | ✓ | ✓ | ✓ | ✓ | - |
| 365B | DN300 PN40 Form B1 DIN EN 1092-1 | | 2544 m³/h | 550 mm | - | ✓ | ✓ | - | - |
| 369B | DN350 PN10 Form B1 DIN EN 1092-1 | | 3463 m³/h | 550 mm | ✓ | ✓ | ✓ | - | - |
| 370B | DN350 PN16 Form B1 DIN EN 1092-1 | | 3463 m³/h | 550 mm | ✓ | ✓ | ✓ | - | - |
| 375B | DN400 PN10 Form B1 DIN EN 1092-1 | | 4523 m³/h | 600 mm | ✓ | ✓ | ✓ | - | - |
| 376B | DN400 PN16 Form B1 DIN EN 1092-1 | | 4523 m³/h | 600 mm | ✓ | ✓ | ✓ | - | - |
| 3B1B | DN450 PN10 Form B1 DIN EN 1092-1 | | 5725 m³/h | 600 mm | ✓ | ✓ | ✓ | - | - |
| 3B2B | DN450 PN16 Form B1 DIN EN 1092-1 | | 5725 m³/h | 600 mm | ✓ | ✓ | ✓ | - | - |
| 380B | DN500 PN10 Form B1 DIN EN 1092-1 | | 7086 m³/h | 600 mm | ✓ | ✓ | ✓ | - | - |
| 381B | DN500 PN16 Form B1 DIN EN 1092-1 | | 7086 m³/h | 600 mm | ✓ | ✓ | ✓ | - | - |
| 384B | DN600 PN10 Form B1 DIN EN 1092-1 | | 10178 m³/h | 600 mm | ✓ | ✓ | ✓ | - | - |
| 385B | DN600 PN16 Form B1 DIN EN 1092-1 | | 10178 m³/h | 600 mm | ✓ | ✓ | ✓ | - | - |
| 38AB | DN700 PN10 Form B1 DIN EN 1092-1 | | 13854 m³/h | 700 mm | ✓ | ✓ | ✓ | - | - |
| 389B | DN800 PN6 Form B1 DIN EN 1092-1 | | 18095 m³/h | 800 mm | - | ✓ | ✓ | - | - |
| 390B | DN800 PN10 Form B1 DIN EN 1092-1 | | 18095 m³/h | 800 mm | ✓ | - | - | - | - |
| 391B | DN900 PN6 Form B1 DIN EN 1092-1 | | 22902 m³/h | 900 mm | - | ✓ | ✓ | - | - |
| 392B | DN900 PN10 Form B1 DIN EN 1092-1 | | 22902 m³/h | 900 mm | ✓ | - | - | - | - |
| 393B | DN1000 PN6 Form B1 DIN EN 1092-1 | | 27274 m³/h | 1000 mm | - | ✓ | ✓ | - | - |
| 394B | DN1000 PN10 Form B1 DIN EN 1092-1 | | 27274 m³/h | 1000 mm | ✓ | - | - | - | - |
| 395B | DN1200 PN6 Form B1 DIN EN 1092-1 | | 40715 m³/h | 1200 mm | - | ✓ | ✓ | - | - |
| 396B | DN1200 PN10 Form B1 DIN EN 1092-1 | | 40715 m³/h | 1200 mm | ✓ | - | - | - | - |



Magnetic Inductive Flowmeter Model EPS

Order Details (continued)

| Model code | Process connection | Material lining/electrodes/sealing | Max. measuring range (water 20 °C, 1 mPas) | Installation length | Material lining | | | | |
|-------------------------|---|------------------------------------|---|------------------------|-----------------|-------------|-------------|------|----------|
| | | | | | EPDM | Hard rubber | Soft rubber | PTFE | Ceramics |
| ANSI connections | | | | | | | | | |
| 002A | DN2 ½" NPT(316L)/incl. gasket/EPDM | ceramics/platinum/EPDM | 113 l/h | 150 mm | - | - | - | - | ✓ |
| 003A | DN3 ½" NPT(316L)/incl. gasket/EPDM | ceramics/platinum/EPDM | 254 l/h | 150 mm | - | - | - | - | ✓ |
| 006A | DN6 ½" NPT(316L)/incl. gasket/EPDM | ceramics/platinum/EPDM | 1020 l/h | 150 mm | - | - | - | - | ✓ |
| 010A | DN10 ½" NPT(316L)/incl. gasket/EPDM | ceramics/platinum/EPDM | 2830 l/h | 150 mm | - | - | - | - | ✓ |
| H02A | DN2 ½" NPT(Hastelloy®)/incl. gasket/PTFE | ceramics/platinum/PTFE | 113 l/h | 156 mm | - | - | - | - | ✓ |
| H03A | DN3 ½" NPT(Hastelloy®)/incl. gasket/PTFE | ceramics/platinum/PTFE | 254 l/h | 156 mm | - | - | - | - | ✓ |
| H06A | DN6 ½" NPT(Hastelloy®)/incl. gasket/PTFE | ceramics/platinum/PTFE | 1020 l/h | 156 mm | - | - | - | - | ✓ |
| H10A | DN10 ½" NPT(Hastelloy®)/incl. gasket/PTFE | ceramics/platinum/PTFE | 2830 l/h | 156 mm | - | - | - | - | ✓ |
| ANSI flanges | | | | | | | | | |
| 201R | ½" Class 150 RF ASME B16.5-2003 | | 6.6 m³/h | 200 mm | ✓ | - | - | ✓ | - |
| 221R | ½" Class 300 RF ASME B16.5-2003 | | 6.6 m³/h | 200 mm | - | - | - | - | - |
| 203R | 1" Class 150 RF ASME B16.5-2003 | | 19.1 m³/h | 200 mm | ✓ | ✓ | ✓ | ✓ | - |
| 223R | 1" Class 300 RF ASME B16.5-2003 | | 19.1 m³/h | 200 mm | - | ✓ | ✓ | - | - |
| 205R | 1½" Class 150 RF ASME B16.5-2003 | | 38 m³/h | 200 mm | ✓ | ✓ | ✓ | ✓ | - |
| 225R | 1½" Class 300 RF ASME B16.5-2003 | | 38 m³/h | 200 mm | - | ✓ | ✓ | - | - |
| 206R | 2" Class 150 RF ASME B16.5-2003 | | 70 m³/h | 200 mm | ✓ | ✓ | ✓ | ✓ | - |
| 226R | 2" Class 300 RF ASME B16.5-2003 | | 70 m³/h | 200 mm | - | ✓ | ✓ | - | - |
| 207R | 2½" Class 150 RF ASME B16.5-2003 | | 117 m³/h | 200 mm | ✓ | ✓ | ✓ | ✓ | - |
| 227R | 2½" Class 300 RF ASME B16.5-2003 | | 117 m³/h | 272 mm | - | ✓ | ✓ | - | - |
| 208R | 3" Class 150 RF ASME B16.5-2003 | | 170 m³/h | 272 mm | ✓ | ✓ | ✓ | ✓ | - |
| 228R | 3" Class 300 RF ASME B16.5-2003 | | 170 m³/h | 272 mm | - | ✓ | ✓ | - | - |
| 210R | 4" Class 150 RF ASME B16.5-2003 | | 274 m³/h | 250 mm | ✓ | ✓ | ✓ | ✓ | - |
| 230R | 4" Class 300 RF ASME B16.5-2003 | | 274 m³/h | 310 mm | - | ✓ | ✓ | - | - |
| 211R | 5" Class 150 RF ASME B16.5-2003 | | 431 m³/h | 250 mm | ✓ | ✓ | ✓ | ✓ | - |
| 231R | 5" Class 300 RF ASME B16.5-2003 | | 431 m³/h | 335 mm | - | ✓ | ✓ | - | - |
| 212R | 6" Class 150 RF ASME B16.5-2003 | | 632 m³/h | 300 mm | ✓ | ✓ | ✓ | ✓ | - |
| 232R | 6" Class 300 RF ASME B16.5-2003 | | 632 m³/h | 300 mm | - | ✓ | ✓ | - | - |
| 213R | 8" Class 150 RF ASME B16.5-2003 | | 1110 m³/h | 350 mm | ✓ | ✓ | ✓ | ✓ | - |
| 233R | 8" Class 300 RF ASME B16.5-2003 | | 1110 m³/h | 350 mm | - | ✓ | ✓ | - | - |
| 214R | 10" Class 150 RF ASME B16.5-2003 | | 1786 m³/h | 450 mm | ✓ | ✓ | ✓ | ✓ | - |
| 234R | 10" Class 300 RF ASME B16.5-2003 | | 1786 m³/h | 450 mm | - | ✓ | ✓ | - | - |
| 215R | 12" Class 150 RF ASME B16.5-2003 | | 2560 m³/h | 500 mm | ✓ | ✓ | ✓ | ✓ | - |
| 235R | 12" Class 300 RF ASME B16.5-2003 | | 2560 m³/h | 500 mm | - | ✓ | ✓ | - | - |
| 216R | 14" Class 150 RF ASME B16.5-2003 | | 3191 m³/h | 550 mm | ✓ | ✓ | ✓ | - | - |
| 236R | 14" Class 300 RF ASME B16.5-2003 | | 3191 m³/h | 550 mm | - | ✓ | ✓ | - | - |
| 217R | 16" Class 150 RF ASME B16.5-2003 | | 4191 m³/h | 600 mm | ✓ | ✓ | ✓ | - | - |
| 237R | 16" Class 300 RF ASME B16.5-2003 | | 4191 m³/h | 600 mm | - | ✓ | ✓ | - | - |
| 218R | 18" Class 150 RF ASME B16.5-2003 | | 5309 m³/h | 600 mm | ✓ | ✓ | ✓ | - | - |
| 238R | 18" Class 300 RF ASME B16.5-2003 | | 5309 m³/h | 640 mm | - | ✓ | ✓ | - | - |
| 219R | 20" Class 150 RF ASME B16.5-2003 | | 6669 m³/h | 600 mm | ✓ | ✓ | ✓ | - | - |
| 239R | 20" Class 300 RF ASME B16.5-2003 | | 6669 m³/h | 730 mm | - | ✓ | ✓ | - | - |
| 220R | 24" Class 150 RF ASME B16.5-2003 | | 9566 m³/h | 600 mm | ✓ | ✓ | ✓ | - | - |
| 240R | 24" Class 300 RF ASME B16.5-2003 | | 9566 m³/h | 860 mm | - | ✓ | ✓ | - | - |
| 2A1R | 28" Class 150 RF ASME B16.5-2004 | | 13344 m³/h | 800 mm | - | - | - | - | - |
| 2A3R | 32" Class 150 RF ASME B16.5-2006 | | 17601 m³/h | 900 mm | - | - | - | - | - |
| 2A4R | 36" Class 150 RF ASME B16.5-2007 | | 22329 m³/h | 1100 mm | - | - | - | - | - |
| 2A5R | 40" Class 150 RF ASME B16.5-2008 | | 27749 m³/h | 1100 mm | - | - | - | - | - |
| 2A6R | 48" Class 150 RF ASME B16.5-2010 | | 54158 m³/h | 1400 mm | - | - | - | - | - |



Order Details (continued)

| Model code | Process connection | Material lining/electrodes/sealing | Max. measuring range (water 20 °C, 1 mPas) | Installation length | Material lining | | | | |
|--------------------|------------------------------------|------------------------------------|---|------------------------|-----------------|-------------|-------------|------|----------|
| | | | | | EPDM | Hard rubber | Soft rubber | PTFE | Ceramics |
| JIS flanges | | | | | | | | | |
| 416R | 1" JIS K10 | | 19.1 m³/h | 200 mm | - | - | - | - | - |
| 418R | 1" JIS K20 | | 19.1 m³/h | 200 mm | - | ✓ | ✓ | - | - |
| 426R | 1½" JIS K10 | | 38 m³/h | 200 mm | - | ✓ | ✓ | - | - |
| 428R | 1½" JIS K20 | | 38 m³/h | 240 mm | - | ✓ | ✓ | - | - |
| 431R | 2" JIS K10 | | 70 m³/h | 200 mm | - | ✓ | ✓ | - | - |
| 433R | 2" JIS K20 | | 70 m³/h | 240 mm | - | ✓ | ✓ | - | - |
| 436R | 2½" JIS K10 | | 117 m³/h | 200 mm | - | ✓ | ✓ | - | - |
| 438R | 2½" JIS K20 | | 117 m³/h | 272 mm | - | ✓ | ✓ | - | - |
| 441R | 3" JIS K10 | | 170 m³/h | 200 mm | - | ✓ | ✓ | - | - |
| 443R | 3" JIS K20 | | 170 m³/h | 272 mm | - | ✓ | ✓ | - | - |
| 446R | 4" JIS K10 | | 274 m³/h | 250 mm | - | ✓ | ✓ | - | - |
| 448R | 4" JIS K20 | | 274 m³/h | 310 mm | - | ✓ | ✓ | - | - |
| 451R | 5" JIS K10 | | 431 m³/h | 250 mm | - | ✓ | ✓ | - | - |
| 453R | 5" JIS K20 | | 431 m³/h | 335 mm | - | ✓ | ✓ | - | - |
| 456R | 6" JIS K10 | | 632 m³/h | 300 mm | - | ✓ | ✓ | - | - |
| 458R | 6" JIS K20 | | 632 m³/h | 300 mm | - | ✓ | ✓ | - | - |
| 461R | 8" JIS K10 | | 1110 m³/h | 350 mm | - | ✓ | ✓ | - | - |
| 463R | 8" JIS K20 | | 1110 m³/h | 350 mm | - | ✓ | ✓ | - | - |
| 466R | 10" JIS K10 | | 1786 m³/h | 450 mm | - | ✓ | ✓ | - | - |
| 468R | 10" JIS K20 | | 1786 m³/h | 450 mm | - | ✓ | ✓ | - | - |
| 471R | 12" JIS K10 | | 2560 m³/h | 500 mm | - | ✓ | ✓ | - | - |
| 473R | 12" JIS K20 | | 2560 m³/h | 500 mm | - | ✓ | ✓ | - | - |
| 476R | 14" JIS K10 | | 3191 m³/h | 550 mm | - | ✓ | ✓ | - | - |
| 478R | 14" JIS K20 | | 3191 m³/h | 550 mm | - | ✓ | ✓ | - | - |
| 481R | 16" JIS K10 | | 4191 m³/h | 600 mm | - | ✓ | ✓ | - | - |
| 483R | 16" JIS K20 | | 4191 m³/h | 600 mm | - | ✓ | ✓ | - | - |
| 486R | 18" JIS K10 | | 5309 m³/h | 600 mm | - | ✓ | ✓ | - | - |
| 488R | 18" JIS K20 | | 5309 m³/h | 640 mm | - | ✓ | ✓ | - | - |
| 491R | 20" JIS K10 | | 6669 m³/h | 600 mm | - | ✓ | ✓ | - | - |
| 493R | 20" JIS K20 | | 6669 m³/h | 680 mm | - | ✓ | ✓ | - | - |
| 496R | 24" JIS K10 | | 9566 m³/h | 600 mm | - | ✓ | ✓ | - | - |
| 498R | 24" JIS K20 | | 9566 m³/h | 800 mm | - | ✓ | ✓ | - | - |
| Food design | | | | | | | | | |
| 7000 | DN15 Tri-Clamp®-connection | ceramics/platinum | 6.3 m³/h | 144 mm | - | - | - | - | ✓ |
| 7010 | DN25 Tri-Clamp®-connection | ceramics/platinum | 17.6 m³/h | 159 mm | - | - | - | - | ✓ |
| 7020 | DN40 Tri-Clamp®-connection | ceramics/platinum | 45 m³/h | 174 mm | - | - | - | - | ✓ |
| 7030 | DN50 Tri-Clamp®-connection | ceramics/platinum | 70 m³/h | 184 mm | - | - | - | - | ✓ |
| 7040 | DN65 Tri-Clamp®-connection | ceramics/platinum | 119 m³/h | 221 mm | - | - | - | - | ✓ |
| 7050 | DN80 Tri-Clamp®-connection | ceramics/platinum | 180 m³/h | 256 mm | - | - | - | - | ✓ |
| 7060 | DN100 Tri-Clamp®-connection | ceramics/platinum | 282 m³/h | 286 mm | - | - | - | - | ✓ |
| 6610 | DN 15 sanitary connection DIN11851 | ceramics/platinum | 6.3 m³/h | 144 mm | - | - | - | - | ✓ |
| 6630 | DN 25 sanitary connection DIN11851 | ceramics/platinum | 17.6 m³/h | 159 mm | - | - | - | - | ✓ |
| 6650 | DN 40 sanitary connection DIN11851 | ceramics/platinum | 45 m³/h | 174 mm | - | - | - | - | ✓ |
| 6660 | DN 50 sanitary connection DIN11851 | ceramics/platinum | 70 m³/h | 184 mm | - | - | - | - | ✓ |
| 6670 | DN 65 sanitary connection DIN11851 | ceramics/platinum | 119 m³/h | 221 mm | - | - | - | - | ✓ |
| XXXX | special on request | | xx | xx | on request | | | | |



Order Details (continued)

| Model code | Description | | | Material lining | | | | |
|------------|---|--|---|---|-------------|-------------|------|----------|
| | | | | EPDM | Hard rubber | Soft rubber | PTFE | Ceramics |
| | Material process connection | | | | | | | |
| 0 | w/o | | | - | - | - | - | - |
| 1 | flange steel painted | | | ✓ | ✓ | ✓ | ✓ | - |
| 2 | flange stainless steel 1.4301 (DN2...10 in 1.4404) | | | see add-on prices stainless steel flanges | | | | |
| X | special on request | | | on request | | | | |
| | Material electrodes | | | | | | | |
| S | stainless steel 1.4571 | | | - | ✓ | ✓ | - | - |
| H | Hastelloy® | | | ✓ | ✓ | ✓ | ✓ | - |
| T | tantalum | | | - | - | ✓ | ✓ | - |
| N | platinum/iridium | PTFE max. DN300/12" | | - | - | ✓ | ✓ | ✓ |
| M | titanium | | | - | ✓ | - | ✓ | - |
| X | special on request | | | on request | | | | |
| | Earthing electrode | | | | | | | |
| 0 | w/o | | | - | - | - | ✓ | - |
| S | stainless steel 1.4571 | | | - | ✓ | ✓ | - | - |
| H | Hastelloy® | PTFE max. DN600/24" | | ✓ | ✓ | ✓ | ✓ | - |
| T | tantalum | PTFE max. DN600/24" | | - | - | ✓ | ✓ | - |
| N | platinum | PTFE max. DN300/12" | | - | - | ✓ | ✓ | - |
| M | titanium | PTFE max. DN600/24" | | - | ✓ | - | ✓ | - |
| X | special on request | | | on request | | | | |
| | Transmitter mounting | Protection | | | | | | |
| 1 | integrated transmitter | IP 67 | | | | | ✓ | |
| 2 | remote transmitter | IP67 terminal connection box via M20x1.5 | cable >10 m add. term. conn. box on transmitter | | | | ✓ | |
| 3 | remote transmitter | IP68, term. connection box via M20x1.5, encapsulated | add. term. conn. box on transmitter | | | | ✓ | |
| | Certificates | | | | | | | |
| 0 | w/o | | | | | | ✓ | |
| 1 | Certificate of compliance with order 2.1 | | | | | | ✓ | |
| 2 | Test report 2.2 | | | | | | ✓ | |
| B | Inspection/material certificate 3.1 DIN/EN 10204:2008 | | | | | | ✓ | |
| C | Inspection/material certificate 3.2 DIN/EN 10204:2008 | | | | | | ✓ | |



Order Details (continued)

| Model code | Description | | |
|---------------------------------|---|--|---|
| Transmitter | | | |
| UMF2- | Mounting | Connection to sensor | Thread-electrical connection |
| IP 67 | | | |
| A | integrated transmitter IP 67 standard | | ½" NPT (f) |
| B | integrated transmitter IP 67 standard | | M20x1.5 |
| C | remote transmitter | incl 2.5 m cable, c/w pipe/wall mounting bracket | cable >10 m add. term. conn. box on transmitter |
| D | remote transmitter | incl 2.5 m cable, c/w pipe/wall mounting bracket | |
| IP 68 | | | |
| G | remote transmitter | incl 2.5 m cable, c/w pipe/wall mounting bracket | transmitter c/w term. conn. box |
| H | remote transmitter | incl 2.5 m cable, c/w pipe/wall mounting bracket | transmitter c/w term. conn. box |
| Display and control unit | | | |
| 1 | integrated | | |
| Power supply | | | |
| 1 | 230 V _{AC} (+10%, -15%), 50/60 Hz | | |
| 2 | 115 V _{AC} (+10%, -15%), 50/60 Hz | | |
| 4 | 24 V _{DC} (±15%) | | |
| Output signal | | | |
| F | current output: 1x0/4-20 mA pulse output: passive U _m =24 V _{DC} status output: passive U _m =24 V _{DC} | | |
| G | current output: 1x0/4-20 mA c/w HART® protocol pulse output: passive U _m =24 V _{DC} status output: passive U _m =24 V _{DC} | | |
| Version | | | |
| OBH | Heinrichs | | |
| OBK | Kobold | | |
| Options | | | |
| Longer cable | | | |
| IP 67 | | | |
| 0 | 2.5 m standard on remote version | breakout cable | |
| 1 | 5 m | | |
| 2 | 10 m | | |
| 3 | 15 m | | |
| 4 | 20 m | add junction box to transmitter | |
| 5 | 30 m | | |
| 6 | 40 m | | |
| 7 | 50 m | | |
| IP 68 | | | |
| A | 2.5 m standard on remote version | add junction box to transmitter | |
| B | 5 m | | |
| C | 10 m | | |
| D | 15 m | | |
| E | 20 m | | |
| F | 30 m | | |
| G | 40 m | | |
| H | 50 m | | |
| X | special on request | | |