

## Flow Measurement

### SITRANS FM (electromagnetic)

#### Flow sensors

#### MAG 3100 and MAG 3100 HT

##### Overview



The SITRANS FM MAG 3100 is an electromagnetic flow sensor in a large variety that meets the demands of almost every flow application.

##### Benefits

- Wide range of sizes: DN 15 to DN 2000 ( $\frac{1}{2}$ " to 78")
- The flexible design is for all applications not covered by the standard industry-specific sensors: MAG 1100, MAG 1100 F, MAG 3100 P and MAG 5100 W
- Wide pressure range: PN 6 to PN 100
- ANSI Class 150/300, AS 2129, AS 4087, JIS K10 and K20. On request up to 690 bar (10 000 psi)
- Wide range of electrode and liner material to fit even the most extreme process media
- Fully welded construction provides a ruggedness that suits the toughest applications and environments.
- Easy commissioning, the SENSORPROM unit automatically updates settings.
- Designed to allow patented SITRANS FM in-situ verification using the SENSORPROM fingerprints.

##### Application

The main applications of the SITRANS FM electromagnetic flow sensors can be found in the following fields:

- Process industry
- Chemical industry
- Steel industry
- Mining
- Utility
- Power generation and distribution
- Oil and gas/HPI
- Water and waste water

##### Design

- Compact or remote mounting possible
- Easy "plug & play" field changeability of transmitter
- ATEX and FM/CSA versions
- High temperature sensor for applications with temperatures up to 180 °C (356 °F)
- Meets EEC directives: PED, 2014/68/EU pressure directive for EN 1092-1 flanges
- Built-in length according to ISO 20456, the standard includes sizes up to DN 400
- Onsite or factory upgrade to IP68/NEMA 6P of a standard sensor.

##### Mode of operation

The flow measuring principle is based on Faraday's law of electromagnetic induction according to which the sensor converts the flow into an electrical voltage proportional to the velocity of the flow.

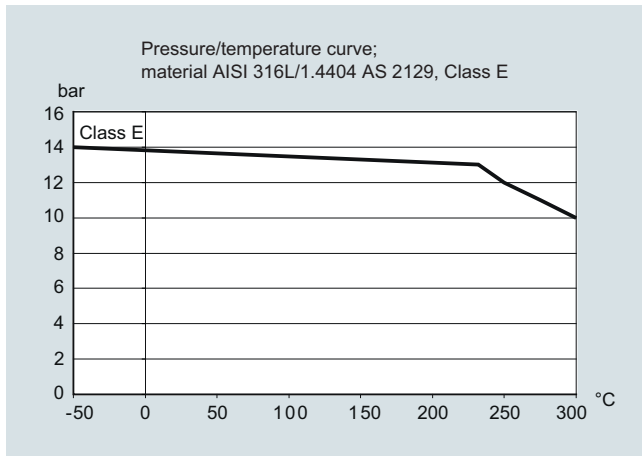
##### Integration

The complete flowmeter consists of a flow sensor and an associated transmitter MAG 5000, 6000 and 6000 I.

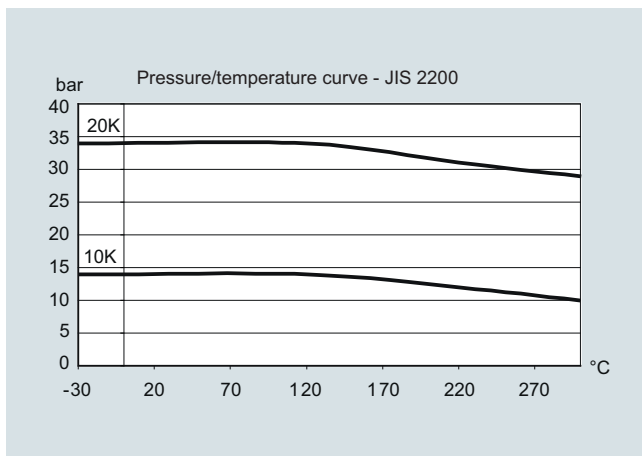
The flexible communication concept USM II simplifies integration and update to a variety of fieldbus systems such as HART, FOUNDATION Fieldbus H1, DeviceNet, PROFIBUS DP and PA, Modbus RTU/RS485.

### Integration (continued)

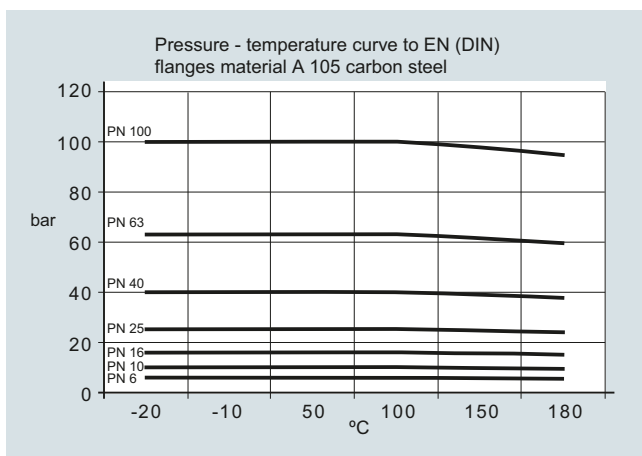
#### Pressure/temperature curve; material AISI 316L/1.4404 AS 2129, Class E



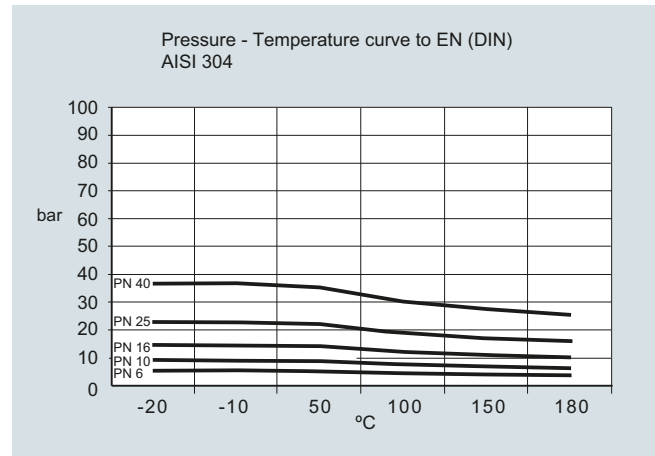
#### Pressure/temperature curve - JIS 2200



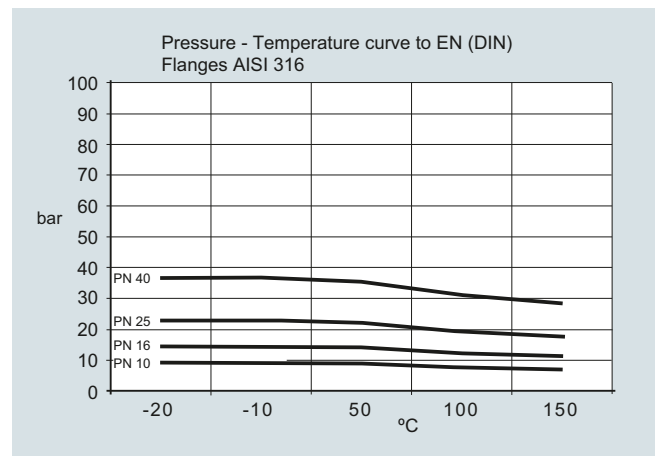
#### Pressure/temperature curve to EN (DIN) flanges, material A 105 carbon steel



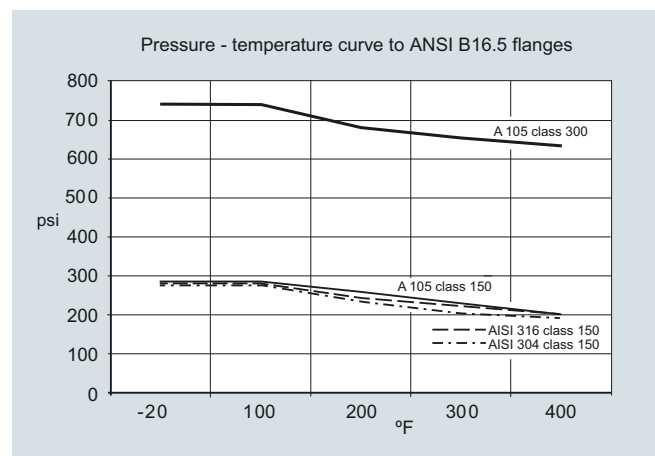
#### Pressure/temperature curve to EN (DIN) flanges AISI 304



#### Pressure/temperature curve to EN (DIN) flanges AISI 316



#### Pressure/temperature curve to ANSI B16.5 flanges



**Note:** The pressure-temperature curves only assist in the selection of a system. No responsibility is taken for the correctness of the information. For further information on PED standard see Pressure Equipment Directive in Appendix (chapter 10).

## Flow Measurement

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#### MAG 3100 and MAG 3100 HT

#### Technical specifications

| Version  | MAG 3100  | MAG 3100 HT (High Temperature)   |
|--|---|--|
| Product characteristic   | Flexible product program  | Flexible product program   |
| Nominal size   | DN 15 ... DN 2000 (½" ... 78")  | DN 15 ... DN 300 (½" ... 12")  |
| Measuring principle  | Electromagnetic induction   | Electromagnetic induction  |
| Excitation frequency<br>(Mains supply: 50 Hz/60 Hz)  | <ul style="list-style-type: none"> <li>• DN 15 ... 65 (½" ... 2½"): 12.5 Hz/15 Hz</li> <li>• DN 80 ... 150 (3" ... 6"): 6.25 Hz/7.5 Hz</li> <li>• DN 200 ... 1200 (8" ... 48"): 3.125 Hz/3.75 Hz</li> <li>• DN 1400 ... 2000 (54" ... 78"): 1.5625 Hz/1.875 Hz</li> </ul>   | <ul style="list-style-type: none"> <li>• DN 15 ... 65 (½" ... 2½"): 12.5 Hz/15 Hz</li> <li>• DN 80 ... 150 (3" ... 6"): 6.25 Hz/7.5 Hz</li> <li>• DN 200 ... 300 (8" ... 12"): 3.125 Hz/3.75 Hz</li> </ul>   |
| <b>Process connection</b>  |   |  |
| Flanges  | <p>EN 1092-1, raised face<sup>1)</sup> (EN 1092-1, DIN 2501 &amp; BS 4504 have the same mating dimensions)</p> <ul style="list-style-type: none"> <li>• DN 65 ... 2000 (2½" ... 78"): PN 6 (87 psi)</li> <li>• DN 200 ... 2000 (8" ... 78"): PN 10 (145 psi)</li> <li>• DN 65 ... 2000 (2½" ... 78"): PN 16 (232 psi)</li> <li>• DN 200 ... 600 (8" ... 24"): PN 25 (362 psi)</li> <li>• DN 15 ... 600 (½" ... 24"): PN 40 (580 psi)</li> <li>• DN 50 ... 300 (2" ... 12"): PN 63 (913 psi)</li> <li>• DN 25 ... 300 (1" ... 12"): PN 100 (1450 psi)</li> </ul> <p>ANSI B16.5 (~BS 1560), raised face:</p> <ul style="list-style-type: none"> <li>• ½" ... 24": Class 150 (20 bar (290 psi))</li> <li>• ½" ... 24": Class 300 (50 bar (725 psi))</li> <li>• ½" ... 18": Class 600 (100 bar (1450 psi))</li> </ul> <p>AWWA C-207, flat face 28" ... 78": Class D (10 bar)</p> <p>AS 2129, raised face ½" ... 48": Table E</p> <p>AS 4087, raised face:</p> <ul style="list-style-type: none"> <li>• PN 16 (DN 50 ... 1200, 16 bar (232 psi))</li> <li>• PN 21 (DN 50 ... 600, 21 bar (304 psi))</li> <li>• PN 35 (DN 50 ... 600, 35 bar (508 psi))</li> </ul> <p>JIS B 2220:2004</p> <ul style="list-style-type: none"> <li>• K10 (1" ... 24")</li> <li>• K20 (1" ... 24")</li> </ul> <p>Other flanges and pressure ratings on request</p> | <p>EN 1092-1, raised face (EN 1092-1, DIN 2501 &amp; BS 4504 have the same mating dimensions)</p> <ul style="list-style-type: none"> <li>• DN 15 ... 300 (½" ... 12"): PN 40 (580 psi)</li> <li>• DN 65 ... 300 (2½" ... 12"): PN 16 (232 psi)</li> <li>• DN 200 ... 300 (8" ... 12"): PN 10 (145 psi)</li> <li>• DN 200 ... 300 (8" ... 12"): PN 25 (362 psi)</li> </ul> <p>ANSI B16.5 (~BS 1560), raised face:</p> <ul style="list-style-type: none"> <li>• ½" ... 12": Class 150 (20 bar (290 psi))</li> <li>• ½" ... 12": Class 300 (50 bar (725 psi))</li> </ul> <p>AS 2129, raised face ½" ... 12": Table E</p> <p>Other flanges and pressure ratings on request</p> |
| <b>Rated operation conditions</b>  |   |  |
| Ambient temperature<br>(conditions also dependent on<br>liner characteristics)   |   |  |
| <ul style="list-style-type: none"> <li>• Standard sensor</li> <li>• Ex sensor</li> </ul>   | <p>-40 ... +100 °C (-40 ... +212 °F)</p> <p>-20 ... +60 °C (-4 ... +140 °F)</p>   | <p>-40 ... +100 °C (-40 ... +212 °F)</p> <p>For medium temperature up to 150 °C (302 °F): -20 ... +60 °C (-4 ... +140 °F)</p> <p>For medium temperature 150 ... 180 °C (302 ... 356 °F): -20 ... +50 °C (-4 ... +122 °F)</p>   |
| <ul style="list-style-type: none"> <li>• Compact with transmitter</li> <li>- MAG 5000/6000</li> <li>- MAG 6000 I</li> <li>- MAG 6000 I Ex</li> </ul> | <p>-20 ... +60 °C (-4 ... +140 °F)</p> <p>-20 ... +60 °C (-4 ... +140 °F)</p> <p>-20 ... +60 °C (-4 ... +140 °F)</p>  | <p>-20 ... +60 °C (-4 ... +140 °F)</p> <p>-20 ... +60 °C (-4 ... +140 °F)</p> <p>-20 ... +60 °C (-4 ... +140 °F)</p>   |

#### Technical specifications (continued)

| Version   | MAG 3100   | MAG 3100 HT (High Temperature)  |
|---|--|---|
| <b>Operating pressure</b><br>[abs. bar] (maximum operating pressure decreases with increasing operating temperature and with stainless steel flanges) | <ul style="list-style-type: none"> <li>• Softrubber 0.01 ... 100 bar (0.15 ... 1450 psi)</li> <li>• EPDM 0.01 ... 40 bar (0.15 ... 580 psi)</li> <li>• Linatex 0.01 ... 40 bar (0.15 ... 580 psi)</li> <li>• Ebonite 0.01 ... 100 bar (0.15 ... 1450 psi)</li> <li>• PTFE <ul style="list-style-type: none"> <li>- DN ≤ 300 (≤ 12"): 0.3 ... 50 bar (4 ... 725 psi)</li> <li>- 350 ≤ DN ≤ 600 (14" ≤ DN ≤ 24"): 0.3 ... 40 bar (4 ... 580 psi)</li> </ul> </li> <li>• PFA <ul style="list-style-type: none"> <li>- DN 15 ... 150 (½" ... 6"): Vacuum 0.02 ... 50 bar (0.29 ... 725 psi)</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>• PTFE Teflon <ul style="list-style-type: none"> <li>- DN 15 ... 300 (½" ... 12"): 0.3/0.6 ... 50 bar (4/8 ... 725 psi) (180 °C (356 °F)).<br/>Factory mounted grounding rings type E in stainless steel and stainless steel terminal box. Can only be used with remote transmitter.</li> </ul> </li> <li>• PFA <ul style="list-style-type: none"> <li>- DN 15 ... 150 (½" ... 6"): Vacuum 0.02 ... 50 bar (0.29 ... 725 psi)</li> </ul> </li> </ul> |
| Enclosure rating  | IP67 to EN 60529/NEMA 6P/10, 1 mH <sub>2</sub> O for 30 min<br>Option: IP68 to EN 60529/NEMA 6P,10 mH <sub>2</sub> O cont.   | IP67 to EN 60529/NEMA 4X/6, 1 mH <sub>2</sub> O for 30 min<br>Option: IP68 to EN 60529/NEMA 6P,10 mH <sub>2</sub> O cont.   |
| Pressure drop at 3 m/s  | As straight pipe   |   |
| Test pressure   | 1.5 x PN (where applicable)  |   |
| Mechanical load (vibration)   | 18 ... 1000 Hz random in x, y, z, directions for 2 hours according to EN 60068-2-36<br>Sensor: 3.17 g RMS<br>Sensor with compact MAG 5000/6000 mounted transmitter: 3.17 g RMS<br>Sensor with compact MAG 6000 I/6000 I Ex mounted transmitter: 1.14 g RMS   | 18 ... 1000 Hz random in x, y, z, directions for 2 hours according to EN 60068-2-36<br>Sensor: 3.17 g RMS<br>Sensor with compact MAG 5000/6000 mounted transmitter: 3.17 g RMS<br>Sensor with compact MAG 6000 I/6000 I Ex mounted transmitter: 1.14 g RMS  |
| Temperature of medium   | <ul style="list-style-type: none"> <li>• Soft rubber 0 ... +70 °C (32 ... 158 °F)</li> <li>• EPDM -10 ... +70 °C (14 ... 158 °F)</li> <li>• Linatex (rubber) -40 ... +70 °C (-40 ... +158 °F) (for temperatures below -20 °C (-4 °F) AISI 304 or 316 flanges must be used)</li> <li>• Ebonite 0 ... 95 °C (32 ... 203 °F)</li> <li>• PTFE -20 ... +100 °C (-4 ... +212 °F)</li> <li>• PFA -20 ... +100 °C (-4 ... +212 °F)</li> </ul>  | <ul style="list-style-type: none"> <li>• PTFE -20 ... +130 °C (-4 ... +266 °F)</li> <li>• PTFE -20 ... +180 °C (-4 ... +356 °F) Factory mounted grounding rings type E in stainless steel and stainless steel terminal box. Can only be used with remote transmitter.</li> <li>• PFA -20 ... +150 °C (-4 ... +300 °F)</li> </ul>  |
| EMC   | 2014/30/EU   | 2014/30/EU  |
| <b>Design</b>   |  |   |
| Weight  | See dimensional drawings   |   |
| Flange and housing material   | Carbon steel ASTM A 105, with corrosion resistant coating of category C4 or C5 according to ISO 12944-2<br>or<br>Stainless steel AISI 304/1.4301 flanges and carbon steel housing, with corrosion resistant coating of category C4 or C5 according to ISO 12944-2<br>or<br>Stainless steel AISI 316L/1.4404 flanges and housing, polished  | Carbon steel ASTM A 105, with corrosion resistant coating of category C4 according to ISO 12944-2<br>or<br>Stainless steel AISI 304/1.4301 flanges and carbon steel housing, with corrosion resistant coating of category C4 according to ISO 12944-2<br>or<br>Stainless steel AISI 316L/1.4404 flanges and housing, polished   |
| Measuring pipe material   | Stainless steel AISI 304/1.4301  | Stainless steel AISI 304/1.4301   |
| Electrode material  | <ul style="list-style-type: none"> <li>• Stainless steel AISI 316Ti/1.4571</li> <li>• Hastelloy C276/2.4819 (PFA: Hastelloy C22/2.4602)</li> <li>• Platinum</li> <li>• Titanium</li> <li>• Tantalum</li> <li>• Ceramic coated stainless steel</li> <li>• Ceramic coated Hastelloy C</li> </ul>   | <ul style="list-style-type: none"> <li>• Stainless steel AISI 316Ti/1.4571</li> <li>• Hastelloy C276/2.4819 (PFA: Hastelloy C22/2.4602)</li> <li>• Platinum</li> <li>• Titanium</li> <li>• Tantalum</li> </ul>  |
| Grounding electrode material  | <ul style="list-style-type: none"> <li>• Soft rubber, EPDM, Linatex, Ebonite: grounding electrodes built-in by default for stainless steel and Hastelloy C.</li> <li>• PTFE: optional in Stainless steel, Hastelloy C, Titanium, Platinum or Tantalum</li> <li>• PFA: optional in Hastelloy, Tantalum or Platinum</li> <li>• Ceramic coated stainless steel and Hastelloy C276: grounding electrodes built-in by default</li> </ul>  | <ul style="list-style-type: none"> <li>• PTFE: no grounding electrodes</li> <li>• PFA: optional in Hastelloy, Tantalum or Platinum</li> </ul>   |

## Flow Measurement

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#### Flow sensors

#### MAG 3100 and MAG 3100 HT

#### Technical specifications (continued)

| Version   | MAG 3100  | MAG 3100 HT (High Temperature)  |
|---|---|---|
| <b>Design (continued)</b>   |   |   |
| Terminal box (remote version only)  | <ul style="list-style-type: none"> <li>Standard fibre glass reinforced polyamide</li> <li>Option Stainless steel AISI 316/1.4436</li> <li>Ex Stainless steel AISI 316/1.4436</li> </ul>   | <ul style="list-style-type: none"> <li>Standard fibre glass reinforced polyamide (max. 150 °C (302 °F))</li> <li>Stainless steel AISI 316/1.4436</li> <li>Ex Stainless steel AISI 316/1.4436</li> </ul>   |
| Cable entries   | <ul style="list-style-type: none"> <li>Remote installation 2 x M20 or 2 x ½" NPT</li> <li>Compact installation</li> <li>MAG 5000/MAG 6000: 4 x M20 or 4 x ½" NPT</li> <li>MAG 6000 I: 2 x M25 or 2 x ½" NPT (for supply/output)</li> <li>MAG 6000 I Ex: 2 x M25 or 2 x ½" NPT (for supply/output)</li> </ul>  | <ul style="list-style-type: none"> <li>Remote installation 2 x M20 or 2 x ½" NPT</li> </ul>   |
| <b>Certificates and approvals</b>   |   |   |
| Calibration   |   |   |
| <ul style="list-style-type: none"> <li>Default calibration</li> <li>Special calibration</li> </ul>          | Zero-point, 2 x 25 % and 2 x 90 % (default)<br>5-point calibration: 20%, 40%, 60%, 80%, 100% of factory Q <sub>max</sub><br>10-point calibration: ascending and descending at 20%, 40%, 60%, 80%, 100% of factory Q <sub>max</sub><br>Matched pair calibration: default, 5-point or 10-point  | Zero-point, 2 x 25 % and 2 x 90 %   |
| Hazardous areas <sup>2)</sup>   |   |   |
| <ul style="list-style-type: none"> <li>Ex-sensor in compact or remote version with MAG 6000 I Ex</li> </ul> | <ul style="list-style-type: none"> <li>ATEX, FM, CSA, IECEx, EAC Ex, NEPSI               <ul style="list-style-type: none"> <li>- Zone 1 Ex d e ia IIC T6 Gb<sup>4)</sup></li> <li>- Zone 1 Ex e ia IIC T6 Gb<sup>5)</sup></li> </ul> </li> <li>ATEX, FM, CSA, IECEx               <ul style="list-style-type: none"> <li>- Zone 21 Ex tD A21 IP67</li> </ul> </li> <li>FM               <ul style="list-style-type: none"> <li>- XP IS Class I Div. 1 Groups A, B, C, D<sup>6)</sup></li> <li>- DIP Class II+III Div. 1 Groups E, F, G<sup>6)</sup></li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>ATEX, FM, CSA, IECEx, EAC Ex, NEPSI               <ul style="list-style-type: none"> <li>- Zone 1 Ex d e ia IIC T6 Gb<sup>4)</sup></li> <li>- Zone 1 Ex e ia IIC T6 Gb<sup>5)</sup></li> </ul> </li> <li>ATEX, FM, CSA, IECEx               <ul style="list-style-type: none"> <li>- Zone 21 Ex tD A21 IP67</li> </ul> </li> <li>FM               <ul style="list-style-type: none"> <li>- XP IS Class I Div. 1 Groups A, B, C, D<sup>6)</sup></li> <li>- DIP Class II+III Div. 1 Groups E, F, G<sup>6)</sup></li> </ul> </li> </ul> |
| <ul style="list-style-type: none"> <li>Standard sensor with/without MAG 5000/6000/6000 I</li> </ul>         | <ul style="list-style-type: none"> <li>FM               <ul style="list-style-type: none"> <li>- NI Class I Div. 2 Groups A, B, C, D</li> <li>- NI Class I Zone 2 Groups IIC</li> </ul> </li> </ul>   | <ul style="list-style-type: none"> <li>FM               <ul style="list-style-type: none"> <li>- NI Class I Div. 2 Groups A, B, C, D</li> <li>- NI Class I Zone 2 Groups IIC</li> </ul> </li> </ul>   |
| Drinking water  | EPDM liner: <ul style="list-style-type: none"> <li>WRAS (WRc, BS690 cold water, GB)</li> <li>NSF/ANSI Standard 617) (Cold water, US)</li> <li>ACS listed (F)</li> <li>DVGW W270 (D)</li> <li>Belgaqua (B)</li> <li>MCERTS (GB) (EPDM or PTFE lining with AISI 316 or Hastelloy electrodes)</li> </ul>   |   |
| Pressure equipment  | <ul style="list-style-type: none"> <li>PED conforming: All EN1092-1 flanges               <ul style="list-style-type: none"> <li>- 2014/68/EU<sup>3)</sup></li> </ul> </li> <li>CRN</li> </ul>  | <ul style="list-style-type: none"> <li>PED conforming: All EN1092-1 flanges               <ul style="list-style-type: none"> <li>- 2014/68/EU<sup>3)</sup></li> </ul> </li> <li>CRN</li> </ul>  |
| Others  | <ul style="list-style-type: none"> <li>EAC (Russia, Belarus, Kazakhstan)</li> <li>KCC (South Korea)</li> <li>CMC/CPA (China)</li> </ul>   | <ul style="list-style-type: none"> <li>EAC (Russia, Belarus, Kazakhstan)</li> <li>KCC (South Korea)</li> </ul>  |

Technical specification for transmitter - please see section about transmitters.

<sup>1)</sup> PN 6-40: DN ≤ 600 type 01 (SORF); DN > 600 type 11 (WNRF); PN 63-100: type 11 (WNRF)

<sup>2)</sup> Not for sensors with 300 µm coating.

<sup>3)</sup> For sizes larger than 600 mm (24") in PN 16 PED conformity is available as a cost-added option. The basic unit will carry the LVD (Low Voltage Directive) and EMC approval. All products sold outside of EU and EFTA are excluded from the Pressure Equipment directive, also products sold into certain market sectors are excluded. These include

a) Meters used in networks for the supply, distribution and discharge of water.

b) Meters used in pipelines for the conveyance of any fluid from offshore to onshore.

c) Meters used in the extraction of petroleum or gas, including christmas tree and manifold equipment.

d) Any meter mounted on a ship or mobile offshore platform. For further information on the PED standard and requirements see Pressure Equipment Directive in Appendix (chapter 10).

<sup>4)</sup> In remote version with sensor size DN 15 ... DN 300 (½" ... 12")

<sup>5)</sup> In remote version with sensor size DN 350 ... DN 2000 (14" ... 48")

<sup>6)</sup> In compact version with sensor size DN 15 ... DN 300 (½" ... 12")

<sup>7)</sup> Has to be ordered with the meter. It is not possible to order the certificate afterwards.

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## Flow sensors

## MAG 3100 and MAG 3100 HT

## Operating instructions for SITRANS FM MAG 3100

All literature is available to download for free, in a range of languages, at

## Accessories

| Description   | Article No.  |
|---|--------------|
| Potting kit for IP68/NEMA 6P sealing of sensor junction box | FDK-085U0220 |

Please use online Product selector to get latest updates.

- 1) 20 %, 40 %, 60 %, 80 %, 100 % of factory  $Q_{\max}$
- 2) Ascending and descending at 20 %, 40 %, 60 %, 80 %, 100 % of factory  $Q_{\max}$
- 3) Product Variation Request (PVR)



| Selection and ordering data   | Article No.  | Article No.                          |
|---|--|--------------------------------------|
| <b>Sensor SITRANS FM MAG 3100 HT (High Temperature)</b><br><a href="#">Click on the Article No. for the online configuration in the PIA Life Cycle Portal.</a>  | 7ME6320-   | 7ME6320-                             |
| <b>Diameter</b><br>DN 15 (½")<br>DN 25 (1")<br>DN 40 (1½")<br>DN 50 (2")<br>DN 65 (2½")<br>DN 80 (3")<br>DN 100 (4")<br>DN 125 (5")<br>DN 150 (6")<br>DN 200 (8")<br>DN 250 (10")<br>DN 300 (12")   | 1 V<br>2 D<br>2 R<br>2 Y<br>3 F<br>3 M<br>3 T<br>4 B<br>4 H<br>4 P<br>4 V<br>5 D                             | A<br>B<br>F<br>G<br>E<br>J           |
| <b>Flange norm and pressure rating</b><br>EN 1092-1<br>PN 10 (DN 200 ... 300 (8" ... 12"))<br>PN 16 (DN 65 ... 300 (2½" ... 12"))<br>PN 25 (DN 200 ... 300 (8" ... 12"))<br>PN 40 (DN 15 ... 300 (½" ... 12"))<br>ANSI B16.5<br>Class 150 (½" ... 12")<br>Class 300 (½" ... 12")<br>AS<br>2129, table E   | B<br>C<br>E<br>F<br>J<br>K<br>M  | 1<br>2<br>3<br>4                     |
| <b>Flange material</b><br>Carbon steel flanges ASTM A 105<br>Stainless steel flanges, AISI 304/1.4301<br>Stainless steel flanges and sensor body, AISI 316L/1.4404, polished  | 1<br>2<br>3  | 1<br>2<br>3<br>4                     |
| <b>Liner material</b><br>PTFE (150 °C (302 °F))<br>PTFE including type E protection rings<br>AISI 316/1.4436 (180 °C (356 °F))<br>PFA (150 °C (302 °F)) (DN 15 ... 150 (½" ... 6"))   | 2<br>3<br>7  | 1<br>2<br>3<br>4<br>5<br>6<br>7<br>8 |
| <b>Electrode material</b><br>AISI 316Ti/1.4571 (not for PFA)<br>Hastelloy C276/2.4819 (PFA liner: Hastelloy C22/2.4602)<br>Platinum<br>Titanium (not for PFA)<br>Tantalum<br>Hastelloy C22/2.4602 incl. grounding electrodes (only PFA)<br>Platinum incl. grounding electrodes (only PFA)<br>Tantalum incl. grounding electrodes (only PFA)   | 1<br>2<br>3<br>4<br>5<br>6<br>7<br>8   | 1<br>2<br>3<br>4<br>5<br>6<br>7<br>8 |
| <b>Transmitter</b><br>Standard sensor for remote transmitter (Order transmitter separately)<br>Ex sensor for remote transmitter (Order transmitter separately)<br>MAG 6000 I, Alu. 18 ... 90 V DC, 115 ... 230 V AC<br>MAG 6000 I, Alu. 18 ... 30 V DC, Ex<br>MAG 6000 I, Alu. 115 ... 230 V AC, Ex<br>MAG 6000, Polyamide, 11 ... 30 V DC/11 ... 24 V AC<br>MAG 6000, Polyamide, 115 ... 230 V AC<br>MAG 5000, Polyamide, 11 ... 30 V DC/11 ... 24 V AC<br>MAG 5000, Polyamide, 115 ... 230 V AC   | A<br>B<br>C<br>D<br>E<br>H<br>J<br>K<br>L  | A<br>B<br>F<br>G<br>E<br>J           |
| <b>Sensor SITRANS FM MAG 3100 HT (High Temperature)</b><br><b>Communication</b><br>No communication, add-on possible<br>HART<br>PROFIBUS PA Profile 3 (only MAG 6000/MAG 6000 I)<br>PROFIBUS DP Profile 3 (only MAG 6000/MAG 6000 I)<br>Modbus RTU/RS 485 (only MAG 6000/MAG 6000 I)<br>FOUNDATION Fieldbus H1 (only MAG 6000/MAG 6000 I)<br><b>Cable glands/terminal box</b><br>Metric: Polyamide terminal box (max. 150 °C (302 °F)) or MAG 6000 I compact<br>½" NPT: Polyamide terminal box (max. 150 °C (302 °F)) or MAG 6000 I compact<br>Metric: Stainless steel terminal box<br>½" NPT: Stainless steel terminal box | 7ME6320-<br>1<br>2<br>3<br>4   | A<br>B<br>F<br>G<br>E<br>J           |
| <b>Additional information</b><br>Please add "-Z" to Article No. and specify Order code(s) and plain text.   | Order code   |                                      |
| <b>Certificates</b><br>• Pressure test certificate according to EN 10204-3.1<br>• Material certificate according to EN 10204-3.1<br>• Factory certificate according to EN 10204-2.2<br>• Factory certificate according to EN 10204-2.1  | C01<br>C12<br>C14<br>C15   |                                      |
| <b>Terminal blocks</b><br>• Factory mounted terminal blocks   | N02  |                                      |
| <b>Country specific label</b><br>• CRN (Canadian Registration Number)   | H25  |                                      |
| Tag name made, stainless steel (specify in plain text)  | Y17  |                                      |
| Tag name plate, plastic (self adhesive)   | Y18  |                                      |
| Customer-specific transmitter setting   | Y20  |                                      |
| <b>Factory mounted sensor cables</b><br>• Sensor cables wired (specify Article No. for sensor cables and order cables separately)<br>• Sensor cables wired and IP68 sealing (specify Article No. for sensor cables and order cables separately)   | Y40<br>Y41   |                                      |
| <b>Additional calibrations</b><br>• Matched-pair calibration<br>• Accredited matched-pair calibration acc. to ISO/IEC 17025: 2005<br>• Customer-specified calibration up to 10 points<br>• Customer-witnessed calibration<br>Any of above calibration   | On request <sup>1)</sup><br>On request <sup>1)</sup><br>On request <sup>1)</sup><br>On request <sup>1)</sup> |                                      |
| <sup>1)</sup> Product Variation Request (PVR).  |  |                                      |



## Flow Measurement

### SITRANS FM (electromagnetic)

#### Flow sensors

#### MAG 3100 and MAG 3100 HT

#### Selection and ordering data

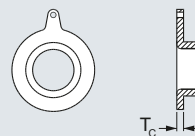
Article No.

#### Accessories for MAG 3100 and MAG 3100 HT sensor

##### Grounding and protection ring - Type C (Stainless steel)<sup>1)</sup>

- Material AISI 304
- For all liners except PTFE and PFA
- 1 pc.

Type C



| Size<br>DN | Nominal pressure<br>PN 6 | PN 10        | PN 16        | PN 25        | PN 40        | AS 2129 Table E |
|------------|--------------------------|--------------|--------------|--------------|--------------|-----------------|
|            | Article No.              | Article No.  | Article No.  | Article No.  | Article No.  | Article No.     |
| DN 25      |                          |              |              |              | FDK:083N8361 | FDK:083N8361    |
| DN 40      |                          |              |              |              | FDK:083N8362 | FDK:083N8362    |
| DN 50      |                          |              |              |              | FDK:083N8344 | FDK:083N8344    |
| DN 65      | FDK:083N8345             |              | FDK:083N8345 |              | FDK:083N8345 | FDK:083N8346    |
| DN 80      | FDK:083N8347             |              | FDK:083N8347 |              | FDK:083N8347 | FDK:083N8347    |
| DN 100     | FDK:083N8070             |              | FDK:083N8025 |              | FDK:083N8025 | FDK:083N8025    |
| DN 125     | FDK:083N8071             |              | FDK:083N8071 |              | FDK:083N8071 | FDK:083N8071    |
| DN 150     | FDK:083N8072             |              | FDK:083N8008 |              | FDK:083N8073 | FDK:083N8008    |
| DN 200     | FDK:083N8074             | FDK:083N8011 | FDK:083N8011 | FDK:083N8011 | FDK:083N8075 | FDK:083N8011    |
| DN 250     | FDK:083N8078             | FDK:083N8013 | FDK:083N8013 | FDK:083N8013 | FDK:083N8079 | FDK:083N8013    |
| DN 300     | FDK:083N8080             | FDK:083N8012 | FDK:083N8012 | FDK:083N8081 | FDK:083N8082 | FDK:083N8012    |
| DN 350     | FDK:083N8083             | FDK:083N8039 | FDK:083N8039 | FDK:083N8084 | FDK:083N8085 | FDK:083N8039    |
| DN 400     | FDK:083N8099             | FDK:083N8100 | FDK:083N8100 | FDK:083N8101 | FDK:083N8102 | FDK:083N8100    |
| DN 450     | FDK:083N8103             | FDK:083N8103 | FDK:083N8104 | FDK:083N8104 | FDK:083N8105 | FDK:083N8104    |
| DN 500     | FDK:083N8107             | FDK:083N8107 | FDK:083N8108 | FDK:083N8108 | FDK:083N8109 | FDK:083N8108    |
| DN 600     | FDK:083N8111             | FDK:083N8111 | FDK:083N8112 | FDK:083N8112 |              | FDK:083N8113    |
| DN 700     | FDK:083N8300             | FDK:083N8294 | FDK:083N8294 |              |              | FDK:083N8372    |
| DN 750     |                          |              |              |              |              |                 |
| DN 800     | FDK:083N8303             | FDK:083N8304 | FDK:083N8304 |              |              | FDK:083N8373    |
| DN 900     | FDK:083N8306             | FDK:083N8307 | FDK:083N8307 |              |              | FDK:083N8396    |
| DN 1000    | FDK:083N8309             | FDK:083N8310 | FDK:083N8310 |              |              | FDK:083N8397    |
| DN 1100    |                          | FDK:083N8367 | FDK:083N8367 |              |              | FDK:083N8367    |
| DN 1200    | FDK:083N8312             | FDK:083N8313 | FDK:083N8313 |              |              | FDK:083N8398    |
| DN 1400    | FDK:083N8467             | FDK:083N8468 | FDK:083N8469 |              |              |                 |
| DN 1500    | FDK:083N8471             | FDK:083N8472 | FDK:083N8473 |              |              |                 |
| DN 1600    | FDK:083N8475             | FDK:083N8476 | FDK:083N8477 |              |              |                 |
| DN 1800    | FDK:083N8479             | FDK:083N8480 | FDK:083N8481 |              |              |                 |
| DN 2000    | FDK:083N8483             | FDK:083N8484 | FDK:083N8485 |              |              |                 |

<sup>1)</sup> Also for MAG 5100 W (7ME6520 > DN 300/12 inch and 7ME6580).

| Size<br>Inch | ANSI<br>Class 150 | Class 300    | JIS K10      | JIS K20      |
|--------------|-------------------|--------------|--------------|--------------|
|              | Article No.       | Article No.  | Article No.  | Article No.  |
| 1"           | FDK:083N8361      | FDK:083N8361 | FDK:083N8361 | FDK:083N8361 |
| 1½"          | FDK:083N8362      | FDK:083N8362 | FDK:083N8362 | FDK:083N8362 |
| 2"           | FDK:083N8344      | FDK:083N8344 | FDK:083N8344 | FDK:083N8344 |
| 2½"          | FDK:083N8345      | FDK:083N8345 | FDK:083N8345 | FDK:083N8345 |
| 3"           | FDK:083N8347      | FDK:083N8347 | FDK:083N8347 | FDK:083N8347 |
| 4"           | FDK:083N8025      | FDK:083N8025 | FDK:083N8070 | FDK:083N8025 |
| 5"           | FDK:083N8071      | FDK:083N8071 | FDK:083N8071 | FDK:083N8071 |
| 6"           | FDK:083N8008      | FDK:083N8073 | FDK:083N8008 | FDK:083N8008 |
| 8"           | FDK:083N8011      | FDK:083N8076 | FDK:083N8011 | FDK:083N8011 |
| 10"          | FDK:083N8013      | FDK:083N8079 | FDK:083N8013 | FDK:083N8079 |
| 12"          | FDK:083N8012      | FDK:083N8082 | FDK:083N8012 | FDK:083N8081 |
| 14"          | FDK:083N8039      | FDK:083N8085 | FDK:083N8083 | FDK:083N8039 |
| 16"          | FDK:083N8100      | FDK:083N8102 | FDK:083N8100 | FDK:083N8101 |
| 18"          | FDK:083N8104      | FDK:083N8106 | FDK:083N8103 | FDK:083N8104 |
| 20"          | FDK:083N8107      | FDK:083N8110 | FDK:083N8107 | FDK:083N8108 |
| 24"          | FDK:083N8113      | FDK:083N8114 | FDK:083N8111 | FDK:083N8112 |

| Size<br>Inch | AWWA C-207   |
|--------------|--------------|
|              | Article No.  |
| 28"          | FDK:083N8302 |
| 30"          | FDK:083N8366 |
| 32"          | FDK:083N8305 |
| 36"          | FDK:083N8308 |
| 40"          | FDK:083N8311 |
| 42"          | FDK:083N8394 |
| 44"          | FDK:083N8395 |
| 48"          | FDK:083N8314 |
| 54"          | FDK:083N8470 |
| 60"          | FDK:083N8474 |
| 66"          | FDK:083N8478 |
| 72"          | FDK:083N8482 |
| 78"          | FDK:083N8486 |

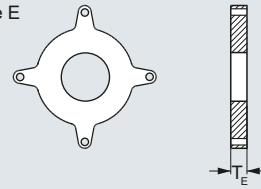
**Selection and ordering data** (continued)**Grounding and protection ring - Type E (Stainless steel)**

- Material: AISI 316
- For all PTFE liners
- 1 pc. incl. straps and screws

**Note:**

For MAG 3100 HT High temperature version 7ME6320... for PTFE 180 °C (356 °C) versions - grounding ring type E is included and factory mounted.

Type E



| Size<br>DN | Nominale pressure |              |              |              |              |                 |
|------------|-------------------|--------------|--------------|--------------|--------------|-----------------|
|            | PN 6              | PN 10        | PN 16        | PN 25        | PN 40        | AS2129, Table E |
|            | Article No.       | Article No.  | Article No.  | Article No.  | Article No.  | Article No.     |
| DN 15      |                   |              |              |              | FDK:083N8365 | FDK:083N8365    |
| DN 25      |                   |              |              |              | FDK:083N8271 | FDK:083N8272    |
| DN 40      |                   |              |              |              | FDK:083N8278 | FDK:083N8280    |
| DN 50      |                   |              |              |              | FDK:083N8282 | FDK:083N8281    |
| DN 65      | FDK:083N8284      |              | FDK:083N8285 |              | FDK:083N8286 | FDK:083N8284    |
| DN 80      | FDK:083N8288      |              | FDK:083N8289 |              | FDK:083N8290 | FDK:083N8293    |
| DN 100     | FDK:083N8116      |              | FDK:083N8117 |              | FDK:083N8118 | FDK:083N8117    |
| DN 125     | FDK:083N8120      |              | FDK:083N8121 |              | FDK:083N8122 | FDK:083N8121    |
| DN 150     | FDK:083N8124      |              | FDK:083N8125 |              | FDK:083N8126 | FDK:083N8128    |
| DN 200     | FDK:083N8129      | FDK:083N8130 | FDK:083N8130 | FDK:083N8131 | FDK:083N8132 | FDK:083N8134    |
| DN 250     | FDK:083N8135      | FDK:083N8136 | FDK:083N8137 | FDK:083N8138 | FDK:083N8139 | FDK:083N8143    |
| DN 300     | FDK:083N8144      | FDK:083N8144 | FDK:083N8145 | FDK:083N8146 | FDK:083N8147 | FDK:083N8151    |
| DN 350     | FDK:083N8152      | FDK:083N8153 | FDK:083N8154 | FDK:083N8155 | FDK:083N8156 | FDK:083N8153    |
| DN 400     | FDK:083N8160      | FDK:083N8161 | FDK:083N8162 | FDK:083N8163 | FDK:083N8164 | FDK:083N8161    |
| DN 450     | FDK:083N8168      | FDK:083N8169 | FDK:083N8170 | FDK:083N8171 | FDK:083N8172 | FDK:083N8176    |
| DN 500     | FDK:083N8177      | FDK:083N8178 | FDK:083N8179 | FDK:083N8180 | FDK:083N8181 | FDK:083N8185    |
| DN 600     | FDK:083N8186      | FDK:083N8187 | FDK:083N8188 | FDK:083N8189 |              | A5E32710253     |

| Size<br>Inch | ANSI<br>Class 150 | Class 300    | JIS K10      | JIS K20      |
|--------------|-------------------|--------------|--------------|--------------|
|              | Article No.       | Article No.  | Article No.  | Article No.  |
| ½"           | FDK:083N8365      | FDK:083N8365 |              |              |
| 1"           | FDK:083N8272      | FDK:083N8272 | FDK:083N8271 | FDK:083N8271 |
| 1½"          | FDK:083N8279      | FDK:083N8279 | FDK:083N8278 | FDK:083N8278 |
| 2"           | FDK:083N8283      | FDK:083N8283 | FDK:083N8282 | FDK:083N8282 |
| 2½"          | FDK:083N8287      | FDK:083N8287 | FDK:083N8285 | FDK:083N8285 |
| 3"           | FDK:083N8291      | FDK:083N8292 | FDK:083N8288 | FDK:083N8289 |
| 4"           | FDK:083N8118      | FDK:083N8119 | FDK:083N8116 | FDK:083N8117 |
| 5"           | FDK:083N8122      | FDK:083N8123 | FDK:083N8121 | FDK:083N8122 |
| 6"           | FDK:083N8126      | FDK:083N8127 | FDK:083N8125 | FDK:083N8126 |
| 8"           | FDK:083N8370      | FDK:083N8133 | FDK:083N8130 | FDK:083N8370 |
| 10"          | FDK:083N8140      | FDK:083N8141 | FDK:083N8137 | FDK:083N8139 |
| 12"          | FDK:083N8148      | FDK:083N8149 | FDK:083N8144 | FDK:083N8146 |
| 14"          | FDK:083N8157      | FDK:083N8158 | FDK:083N8152 | FDK:083N8154 |
| 16"          | FDK:083N8165      | FDK:083N8166 | FDK:083N8160 | FDK:083N8165 |
| 18"          | FDK:083N8173      | FDK:083N8174 | FDK:083N8169 | FDK:083N8171 |
| 20"          | FDK:083N8182      | FDK:083N8183 | FDK:083N8178 | FDK:083N8180 |
| 24"          | FDK:083N8190      | FDK:083N8191 | A5E32709738  | A5E32710253  |

**Note:**

For use as protection ring order 2 pcs.  
For use as grounding ring order 1 pc.

## Flow Measurement

SITRANS FM (electromagnetic)

Flow sensors

### MAG 3100 and MAG 3100 HT

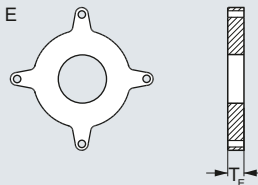
#### Selection and ordering data

#### Article No.

##### Grounding and protecting ring - Type E (Hastelloy)<sup>1)</sup>

- Material: Hastelloy C276
- For all PTFE liners
- 1 pc. incl. straps and screws

Type E

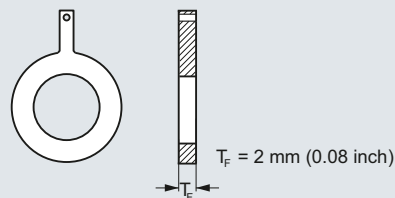


| Size<br>DN | Nominale pressure |              |              | Size<br>Inch | ANSI<br>Class 150 | Class 300    |
|------------|-------------------|--------------|--------------|--------------|-------------------|--------------|
|            | PN 6              | PN 16        | PN 40        |              | Article No.       | Article No.  |
|            | Article No.       | Article No.  | Article No.  |              |                   |              |
| DN 15      |                   |              | FDK:083N8487 | ½"           | FDK:083N8487      | FDK:083N8487 |
| DN 25      |                   |              | FDK:083N8488 | 1"           | FDK:083N8489      | FDK:083N8489 |
| DN 40      |                   |              | FDK:083N8490 | 1½"          | FDK:083N8491      | FDK:083N8491 |
| DN 50      |                   |              | FDK:083N8492 | 2"           | FDK:083N8493      | FDK:083N8493 |
| DN 65      | FDK:083N8494      | FDK:083N8495 | FDK:083N8496 | 2½"          | FDK:083N8497      | FDK:083N8497 |
| DN 80      | FDK:083N8498      | FDK:083N8499 | FDK:083N8500 | 3"           | FDK:083N8501      | FDK:083N8502 |
| DN 100     | FDK:083N8503      | FDK:083N8504 | FDK:083N8505 | 4"           | FDK:083N8506      | FDK:083N8507 |

<sup>1)</sup> Also for MAG 5100 W (7ME6580).

##### Grounding ring - Type Flat ring (Stainless steel)

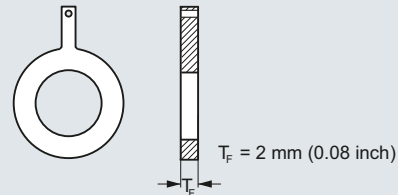
- Material: AISI 316
- For all liners (PTFE max. 150 °C (302 °F))
- 1 pc. incl. straps and screws



| Size<br>DN | Nominale pressure |             |             | Size<br>Inch | ANSI<br>Class 150 | Class 300   |
|------------|-------------------|-------------|-------------|--------------|-------------------|-------------|
|            | PN 10             | PN 16       | PN 40       |              | Article No.       | Article No. |
|            | Article No.       | Article No. | Article No. |              |                   |             |
| DN 15      |                   |             | A5E01191968 | ½"           | A5E01191969       |             |
| DN 25      |                   |             | A5E01150880 | 1"           | A5E01150022       | A5E01150378 |
| DN 40      |                   |             | A5E01191952 | 1½"          | A5E01191961       |             |
| DN 50      |                   | A5E01192006 | A5E01150918 | 2"           | A5E01151121       | A5E01151194 |
| DN 65      |                   | A5E01191940 | A5E01191954 | 2½"          | A5E01191962       |             |
| DN 80      |                   | A5E01152876 | A5E01152876 | 3"           | A5E01152910       | A5E01153422 |
| DN 100     |                   | A5E01158875 | A5E01159072 | 4"           | A5E01159146       | A5E01159628 |
| DN 125     |                   | A5E01191941 | A5E01191956 | 5"           | A5E01191963       |             |
| DN 150     |                   | A5E01191943 | A5E01191957 | 6"           | A5E01191964       |             |
| DN 200     | A5E01191951       | A5E01191944 | A5E01191958 | 8"           | A5E01191965       |             |
| DN 250     | A5E01191950       | A5E01191946 | A5E01191959 | 10"          | A5E01191966       |             |
| DN 300     | A5E01191949       | A5E01191947 | A5E01191960 | 12"          | A5E01191967       |             |

**Selection and ordering data** (continued)**Grounding ring - Type Flat ring (Hastelloy)**

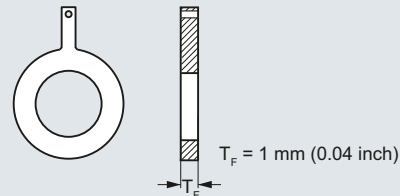
- Material: Hastelloy C276
- For all liners (PTFE max. 150 °C (302 °F))
- 1 pc. incl. straps and screws



| Size<br>DN | Nominale pressure   |                      |                      | Size<br>Inch | ANSI<br>Class 150 | Class 300   |
|------------|---------------------|----------------------|----------------------|--------------|-------------------|-------------|
|            | PN 6<br>Article No. | PN 16<br>Article No. | PN 40<br>Article No. |              | Article No.       | Article No. |
| DN 15      |                     |                      | A5E01191981          | ½"           | A5E01191989       |             |
| DN 25      |                     |                      | A5E01150882          | 1"           | A5E01150028       | A5E01150379 |
| DN 40      |                     |                      | A5E01191982          | 1½"          | A5E01191990       |             |
| DN 50      |                     |                      | A5E01150922          | 2"           | A5E01151124       | A5E01151197 |
| DN 65      |                     | A5E01191971          | A5E01191983          | 2½"          | A5E01191991       |             |
| DN 80      |                     | A5E01152889          | A5E01152889          | 3"           | A5E01152913       | A5E01153424 |
| DN 100     |                     | A5E01158886          | A5E01159074          | 4"           | A5E01159150       | A5E01159629 |
| DN 125     |                     | A5E01191973          | A5E01191984          | 5"           | A5E01191992       |             |
| DN 150     |                     | A5E01191974          | A5E01191985          | 6"           | A5E01191993       |             |
| DN 200     | A5E01191978         | A5E01191975          | A5E01191986          | 8"           | A5E01191994       |             |
| DN 250     | A5E01191979         | A5E01191976          | A5E01191987          | 10"          | A5E01191995       |             |
| DN 300     | A5E01191980         | A5E01191977          | A5E01191988          | 12"          | A5E01191996       |             |

**Grounding ring - Type Flat ring (Tantalum)**

- Material: Tantalum
- For all liners (PTFE max. 150 °C (302 °F))
- 1 pc. incl. straps and screws



| Size<br>DN | Nominale pressure    |                      | Size<br>Inch | ANSI<br>Class 150 | Class 300   |
|------------|----------------------|----------------------|--------------|-------------------|-------------|
|            | PN 16<br>Article No. | PN 40<br>Article No. |              | Article No.       | Article No. |
| DN 15      |                      | A5E01192007          | ½"           | A5E01192010       |             |
| DN 25      |                      | A5E01150883          | 1"           | A5E01150030       | A5E01150381 |
| DN 40      |                      | A5E01192008          | 1½"          | A5E01192011       |             |
| DN 50      |                      | A5E01150926          | 2"           | A5E01151129       | A5E01151199 |
| DN 65      | A5E01192005          | A5E01192009          | 2½"          | A5E01192012       |             |
| DN 80      | A5E01152890          | A5E01152890          | 3"           | A5E01152916       | A5E01153427 |
| DN 100     | A5E01158891          | A5E01159076          | 4"           | A5E01159156       | A5E01159631 |

## Flow Measurement

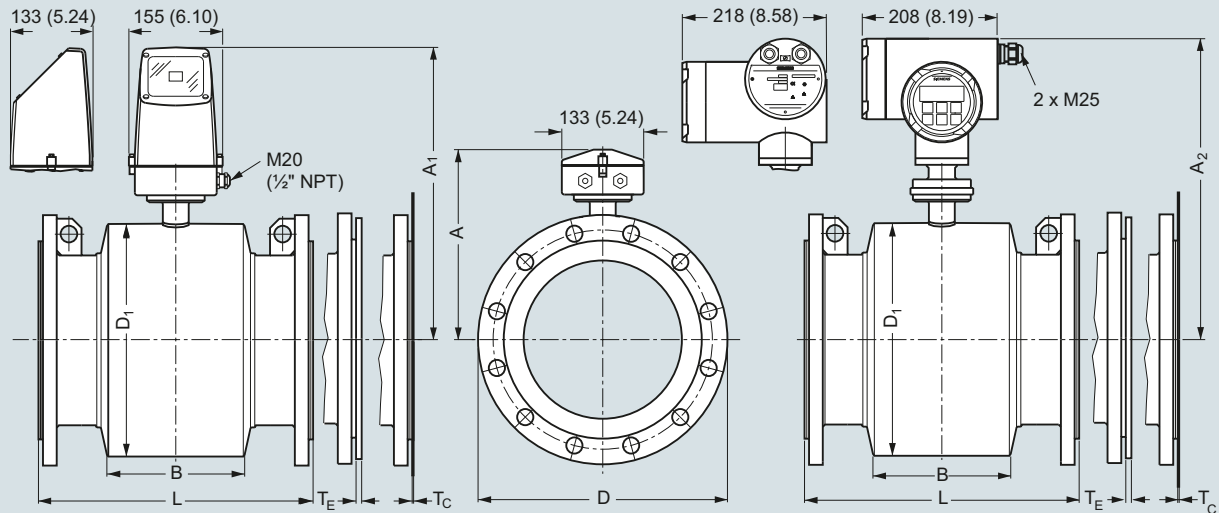
SITRANS FM (electromagnetic)

Flow sensors

### MAG 3100 and MAG 3100 HT

#### Dimensional drawings

##### MAG 3100 and MAG 3100 HT sensor with compact or remote transmitter



Dimensions in mm (inch)

Metric

| DN   | A <sup>1)</sup> | A <sub>1</sub> | A <sub>2</sub> | B    | D <sub>1</sub> | L <sup>2)3)</sup><br>EN 1092-1-201 |                     |       |                   |       |        | ANSI 16.5         |                   |
|------|-----------------|----------------|----------------|------|----------------|------------------------------------|---------------------|-------|-------------------|-------|--------|-------------------|-------------------|
|      |                 |                |                |      |                | PN 6, 10                           | PN 16/PN 16 non-PED | PN 25 | PN 40             | PN 63 | PN 100 | Class 150         | Class 300         |
| [mm] | [mm]            | [mm]           | [mm]           | [mm] | [mm]           | [mm]                               | [mm]                | [mm]  | [mm]              | [mm]  | [mm]   | [mm]              | [mm]              |
| 15   | 187             | 341            | 338            | 59   | 104            | -                                  | -                   | -     | 200               | -     | -      | 200               | 200               |
| 25   | 187             | 341            | 338            | 59   | 104            | -                                  | -                   | -     | 200               | -     | 260    | 200               | 200               |
| 40   | 197             | 351            | 348            | 82   | 124            | -                                  | -                   | -     | 200               | -     | 280    | 200               | 200               |
| 50   | 205             | 359            | 356            | 72   | 139            | -                                  | -                   | -     | 200               | 276   | 300    | 200               | 200               |
| 65   | 212             | 366            | 363            | 72   | 154            | 200                                | 200/-               | -     | 200               | 320   | 350    | 200               | 272               |
| 80   | 222             | 376            | 373            | 72   | 174            | 200                                | 200/-               | -     | 272 <sup>4)</sup> | 323   | 340    | 272 <sup>4)</sup> | 272 <sup>4)</sup> |
| 100  | 242             | 396            | 393            | 85   | 214            | 250                                | 250/-               | -     | 250               | 380   | 400    | 250               | 310               |
| 125  | 255             | 409            | 406            | 85   | 239            | 250                                | 250/-               | -     | 250               | 420   | 450    | 250               | 335               |
| 150  | 276             | 430            | 427            | 85   | 282            | 300                                | 300/-               | -     | 300               | 415   | 450    | 300               | 300               |
| 200  | 304             | 458            | 455            | 137  | 338            | 350                                | 350/-               | 350   | 350               | 480   | 530    | 350               | 350               |
| 250  | 332             | 486            | 483            | 157  | 393            | 450                                | 450/-               | 450   | 450               | 550   | 620    | 450               | 450               |
| 300  | 357             | 511            | 508            | 157  | 444            | 500                                | 500/-               | 500   | 500               | 600   | 680    | 500               | 500               |
| 350  | 362             | 516            | 513            | 270  | 451            | 550                                | 550/-               | 550   | 550               | -     | -      | 550               | 550               |
| 400  | 387             | 541            | 538            | 270  | 502            | 600                                | 600/-               | 600   | 600               | -     | -      | 600               | 600               |
| 450  | 418             | 572            | 569            | 310  | 563            | 600                                | 600/-               | 600   | 600               | -     | -      | 600               | 640               |
| 500  | 443             | 597            | 594            | 350  | 614            | 600                                | 600/-               | 625   | 680               | -     | -      | 600               | 730               |
| 600  | 494             | 648            | 645            | 320  | 715            | 600                                | 600/-               | 750   | 800               | -     | -      | 600               | 860               |
| 700  | 544             | 698            | 695            | 450  | 816            | 700                                | 875/700             | 800   | -                 | -     | -      | 800               | -                 |
| 750  | 571             | 725            | 722            | 556  | 869            | -                                  | -/-                 | -     | -                 | -     | -      | 950               | -                 |
| 800  | 606             | 760            | 757            | 560  | 927            | 800                                | 1000/800            | 900   | -                 | -     | -      | 900               | -                 |
| 900  | 653             | 807            | 804            | 630  | 1032           | 900                                | 1125/900            | 1000  | -                 | -     | -      | 1100              | -                 |
| 1000 | 704             | 858            | 855            | 670  | 1136           | 1000                               | 1250/1000           | 1100  | -                 | -     | -      | 1100              | -                 |
| 1050 | 704             | 858            | 855            | 670  | 1136           | -                                  | -/-                 | -     | -                 | -     | -      | -                 | -                 |
| 1100 | 755             | 904            | 901            | 770  | 1238           | -                                  | -/-                 | -     | -                 | -     | -      | -                 | -                 |
| 1200 | 810             | 964            | 961            | 792  | 1348           | 1200                               | 1500/1200           | 1300  | -                 | -     | -      | 1400              | -                 |
| 1400 | 925             | 1079           | 1076           | 1000 | 1574           | 1400                               | -/1400              | -     | -                 | -     | -      | -                 | -                 |
| 1500 | 972             | 1126           | 1123           | 1020 | 1672           | 1500                               | -/1500              | -     | -                 | -     | -      | -                 | -                 |
| 1600 | 1025            | 1179           | 1176           | 1130 | 1774           | 1600                               | -/1600              | -     | -                 | -     | -      | -                 | -                 |
| 1800 | 1123            | 1277           | 1274           | 1250 | 1974           | 1800                               | -/1800              | -     | -                 | -     | -      | -                 | -                 |
| 2000 | 1223            | 1377           | 1374           | 1375 | 2174           | 2000                               | -/2000              | -     | -                 | -     | -      | -                 | -                 |

<sup>1)</sup> 14.5 mm shorter with stainless steel terminal box (Ex and high temperature version)

<sup>2)</sup> When grounding rings are used, the thickness of the grounding ring must be added to the built-in length

<sup>3)</sup> Tolerances on built-in length (PN 6, PN 10, PN 16, PN 25 and PN 40):

DN 15 to DN 200: +0/-3 mm, DN 250 to DN 400: +0/-5 mm, DN 450 to DN 600: +5/-5 mm, DN 700 to DN 2000: +10/-10 mm

Tolerances on built-in length (PN 63 and PN 100): All sizes +8/-8 mm

<sup>4)</sup> Not according to ISO 20456

### Dimensional drawings (continued)

| DN   | L <sup>1)2)</sup><br>AS 2129 E<br>AS 4087<br>PN 16, 21, 35 | AWWA C-207<br>Class D | JIS K10           | JIS K20           | T <sub>C</sub> <sup>3)</sup> | T <sub>E</sub> <sup>3)</sup> | T <sub>F</sub> <sup>3)</sup> | Weight <sup>4)</sup> |
|------|--|-----------------------|-------------------|-------------------|------------------------------|------------------------------|------------------------------|----------------------|
| [mm] | [mm]   | [mm]                  | [mm]              | [mm]              | [mm]                         | [mm]                         | [mm]                         | [kg]                 |
| 15   | 200  | -                     | 200               | 200               | -                            | 6                            | 2                            | 4                    |
| 25   | 200  | -                     | 200               | 200               | 1.2                          | 6                            | 2                            | 5                    |
| 40   | 200  | -                     | 200               | 240               | 1.2                          | 6                            | 2                            | 8                    |
| 50   | 200  | -                     | 200               | 240               | 1.2                          | 6                            | 2                            | 9                    |
| 65   | 200  | -                     | 200               | 272               | 1.2                          | 6                            | 2                            | 11                   |
| 80   | 200 <sup>5)</sup>  | -                     | 200 <sup>9)</sup> | 272 <sup>9)</sup> | 1.2                          | 6                            | 2                            | 12                   |
| 100  | 250  | -                     | 250               | 310               | 1.2                          | 6                            | 2                            | 16                   |
| 125  | 250  | -                     | 250               | 335               | 1.2                          | 6                            | 2                            | 19                   |
| 150  | 300  | -                     | 300               | 300               | 1.2                          | 6                            | 2                            | 27                   |
| 200  | 350  | -                     | 350               | 350               | 1.2                          | 8                            | 2                            | 40                   |
| 250  | 450  | -                     | 450               | 450               | 1.2                          | 8                            | 2                            | 60                   |
| 300  | 500  | -                     | 500               | 500               | 1.6                          | 8                            | 2                            | 80                   |
| 350  | 550  | -                     | 550               | 550               | 1.6                          | 8                            | -                            | 110                  |
| 400  | 600  | -                     | 600               | 600               | 1.6                          | 10                           | -                            | 125                  |
| 450  | 600  | -                     | 600               | 640               | 1.6                          | 10                           | -                            | 175                  |
| 500  | 600 <sup>6)</sup>  | -                     | 600               | 680               | 1.6                          | 10                           | -                            | 200                  |
| 600  | 600 <sup>7)</sup>  | -                     | 600               | 800               | 1.6                          | 10                           | -                            | 287                  |
| 700  | 700 <sup>8)</sup>  | 700                   | -                 | -                 | 2.0                          | -                            | -                            | 330                  |
| 750  | 750 <sup>8)</sup>  | 750                   | -                 | -                 | 2.0                          | -                            | -                            | 360                  |
| 800  | 800 <sup>8)</sup>  | 800                   | -                 | -                 | 2.0                          | -                            | -                            | 450                  |
| 900  | 900 <sup>8)</sup>  | 900                   | -                 | -                 | 2.0                          | -                            | -                            | 530                  |
| 1000 | 1000 <sup>8)</sup>   | 1000                  | -                 | -                 | 2.0                          | -                            | -                            | 660                  |
| 1050 | -  | 1000                  | -                 | -                 | 2.0                          | -                            | -                            | 660                  |
| 1100 | -  | 1100                  | -                 | -                 | 2.0                          | -                            | -                            | 1140                 |
| 1200 | 1200 <sup>6)</sup>   | 1200                  | -                 | -                 | 2.0                          | -                            | -                            | 1180                 |
| 1400 | -  | 1400                  | -                 | -                 | 2.0                          | -                            | -                            | 1600                 |
| 1500 | -  | 1500                  | -                 | -                 | 3.0                          | -                            | -                            | 2460                 |
| 1600 | -  | 1600                  | -                 | -                 | 3.0                          | -                            | -                            | 2525                 |
| 1800 | -  | 1800                  | -                 | -                 | 3.0                          | -                            | -                            | 2930                 |
| 2000 | -  | 2000                  | -                 | -                 | 3.0                          | -                            | -                            | 3665                 |

<sup>1)</sup> When grounding rings are used, the thickness of the grounding ring must be added to the built-in length.

<sup>2)</sup> Tolerances on built-in length (PN 6, PN 10, PN 16, PN 25 and PN 40):

DN 15 to DN 200: +0/-3 mm, DN 250 to DN 400: +0/-5 mm, DN 450 to DN 600: +5/-5 mm, DN 700 to DN 2000: +10/-10 mm

Tolerances on built-in length (PN 63 and PN 100): All sizes +8/-8 mm

<sup>3)</sup> T<sub>C</sub> = Protection ring type C, T<sub>E</sub> = Grounding ring type E (included and factory mounted for 180 °C PTFE liner), T<sub>F</sub> = Grounding ring Type Flat ring

<sup>4)</sup> Weights are approx. (for PN 16) without transmitter.

<sup>5)</sup> PN 35 DN 80 = 272 mm (not according to ISO 20456)

<sup>6)</sup> PN 35 DN 500 = 680 mm

<sup>7)</sup> PN 35 DN 600 = 750 mm

<sup>8)</sup> Not AS 4087 PN 21 or PN 35

<sup>9)</sup> Not according to ISO 20456

D = Outside diameter of flange, see flange tables

## Flow Measurement

SITRANS FM (electromagnetic)

Flow sensors

### MAG 3100 and MAG 3100 HT

#### Dimensional drawings (continued)

Imperial

| DN     | A <sup>1)</sup> | A <sub>1</sub> | A <sub>2</sub> | B      | D <sub>1</sub> | L <sup>2)3)</sup> |                     |        |                     |        |        | ANSI 16.5/ASME B16.47 <sup>4)</sup> |                     |            |
|--------|-----------------|----------------|----------------|--------|----------------|-------------------|---------------------|--------|---------------------|--------|--------|-------------------------------------|---------------------|------------|
|        |                 |                |                |        |                | EN 1092-1-201     |                     |        |                     |        |        | Class 150 Class 300 Class 600       |                     |            |
|        |                 |                |                |        |                | PN 6, 10          | PN 16/PN 16 non-PED | PN 25  | PN 40               | PN 63  | PN 100 |                                     |                     |            |
| [inch] | [inch]          | [inch]         | [inch]         | [inch] | [inch]         | [inch]            | [inch]              | [inch] | [inch]              | [inch] | [inch] | [inch]                              | [inch]              | [inch]     |
| ½      | 7.36            | 13.31          | 13.25          | 2.32   | 4.09           | -                 | -                   | -      | 7.87                | -      | -      | 7.87                                | 7.87                | -          |
| 1      | 7.36            | 13.31          | 13.25          | 2.32   | 4.09           | -                 | -                   | -      | 7.87                | -      | 10.24  | 7.87                                | 7.87                | 11.02      |
| 1½     | 7.76            | 13.70          | 13.64          | 3.23   | 4.88           | -                 | -                   | -      | 7.87                | -      | 11.02  | 7.87                                | 7.87                | 12.60      |
| 2      | 8.07            | 14.01          | 13.95          | 2.83   | 5.47           | -                 | -                   | -      | 7.87                | 10.87  | 11.81  | 7.87                                | 7.87                | 12.99      |
| 2½     | 8.35            | 14.29          | 14.23          | 2.83   | 6.06           | 7.87              | 7.87/-              | -      | 7.87                | 12.60  | 13.78  | 7.87                                | 10.71               | on request |
| 3      | 8.74            | 14.69          | 14.63          | 2.83   | 6.85           | 7.87              | 7.87/-              | -      | 10.71 <sup>5)</sup> | 12.72  | 13.39  | 10.71 <sup>5)</sup>                 | 10.71 <sup>5)</sup> | 13.78      |
| 4      | 9.53            | 15.47          | 15.41          | 3.35   | 8.43           | 9.84              | 9.84/-              | -      | 9.84                | 14.96  | -      | 9.84                                | 12.20               | 18.11      |
| 5      | 10.04           | 15.98          | 15.92          | 3.35   | 9.41           | 9.84              | 9.84/-              | -      | 9.84                | 16.54  | -      | 9.84                                | 13.10               | 18.90      |
| 6      | 10.87           | 16.81          | 16.75          | 5.39   | 11.10          | 11.81             | 11.81/-             | -      | 11.81               | 16.34  | -      | 11.81                               | 11.81               | 19.68      |
| 8      | 11.97           | 17.91          | 17.85          | 5.39   | 13.31          | 13.78             | 13.78/-             | 13.78  | 13.78               | 18.90  | -      | 13.78                               | 13.78               | 23.62      |
| 10     | 13.07           | 19.02          | 18.96          | 6.18   | 15.47          | 17.72             | 17.72/-             | 17.72  | 17.72               | -      | -      | 17.72                               | 17.72               | 23.62      |
| 12     | 14.05           | 20.00          | 19.94          | 6.18   | 17.48          | 19.69             | 19.69/-             | 19.69  | 19.69               | -      | -      | 19.69                               | 19.69               | 27.56      |
| 14     | 14.25           | 20.20          | 20.14          | 10.63  | 17.76          | 21.65             | 21.65/-             | 21.65  | 21.65               | -      | -      | 21.65                               | 21.65               | -          |
| 16     | 15.24           | 21.18          | 21.12          | 10.63  | 19.76          | 23.62             | 23.62/-             | 23.62  | 23.62               | -      | -      | 23.62                               | 23.62               | -          |
| 18     | 16.45           | 22.40          | 22.34          | 12.20  | 22.16          | 23.62             | 23.62/-             | 23.62  | 23.62               | -      | -      | 23.62                               | 23.62               | -          |
| 20     | 17.44           | 23.39          | 23.33          | 13.78  | 24.17          | 23.62             | 23.62/-             | 24.61  | 26.77               | -      | -      | 23.62                               | 28.70               | -          |
| 24     | 19.45           | 25.39          | 25.33          | 12.59  | 28.15          | 23.62             | 23.62/-             | 29.53  | 31.50               | -      | -      | 23.62                               | 33.80               | -          |
| 28     | 21.42           | 27.36          | 27.30          | 17.72  | 32.13          | 27.56             | 34.45/27.56         | 31.50  | -                   | -      | -      | 31.50                               | -                   | -          |
| 30     | 22.48           | 28.43          | 28.37          | 21.89  | 34.21          | -                 | -/-                 | -      | -                   | -      | -      | 37.41                               | -                   | -          |
| 32     | 23.86           | 29.80          | 29.74          | 22.05  | 36.50          | 31.50             | 39.37/31.50         | 35.44  | -                   | -      | -      | 35.44                               | -                   | -          |
| 36     | 25.71           | 31.65          | 31.59          | 24.80  | 40.63          | 35.43             | 44.29/35.43         | 39.38  | -                   | -      | -      | 43.32                               | -                   | -          |
| 40     | 27.72           | 33.85          | 33.79          | 26.38  | 44.72          | 39.37             | 49.21/39.37         | 43.32  | -                   | -      | -      | 43.32                               | -                   | -          |
| 42     | 27.72           | 33.85          | 33.79          | 26.38  | 44.72          | -                 | -/-                 | -      | -                   | -      | -      | -                                   | -                   | -          |
| 44     | 29.72           | 35.67          | 35.61          | 30.31  | 48.74          | -                 | -/-                 | -      | -                   | -      | -      | -                                   | -                   | -          |
| 48     | 31.89           | 37.83          | 37.77          | 31.18  | 53.07          | 47.24             | 59.06/47.24         | 51.19  | -                   | -      | -      | 55.12                               | -                   | -          |
| 54     | 36.42           | 42.36          | 42.30          | 39.37  | 61.97          | 55.12             | -/55.12             | -      | -                   | -      | -      | -                                   | -                   | -          |
| 60     | 38.27           | 44.21          | 44.15          | 40.15  | 65.83          | 59.06             | 59.06/59.06         | -      | -                   | -      | -      | -                                   | -                   | -          |
| 66     | 40.35           | 46.30          | 46.24          | 44.49  | 69.84          | 62.99             | -/62.99             | -      | -                   | -      | -      | -                                   | -                   | -          |
| 72     | 44.21           | 50.16          | 50.10          | 49.21  | 77.72          | 70.87             | -/70.87             | -      | -                   | -      | -      | -                                   | -                   | -          |
| 78     | 48.15           | 54.09          | 54.03          | 54.13  | 85.59          | 78.74             | -/78.74             | -      | -                   | -      | -      | -                                   | -                   | -          |

<sup>1)</sup> 0.571 inch shorter with stainless steel terminal box (Ex and high temperature version)

<sup>2)</sup> When grounding rings are used, the thickness of the grounding ring must be added to the built-in length

<sup>3)</sup> Tolerances on built-in length (PN 6, PN 10, PN 16, PN 25 and PN 40):

½" to 8": +0/-0.12", 10" to DN 16": +0/-0.20", 18" to DN 24": +0.20/-0.20", 28" to DN 78": +0.39/-0.39"

Tolerances on built-in length (PN 63 and PN 100): All sizes +0.31/-0.31"

<sup>4)</sup> ANSI 16.5 for DN ≤ 24"; ASME B16.47 for DN ≥ 28"

<sup>5)</sup> Not according to ISO 20456



## Dimensional drawings (continued)

| DN     | L <sup>1)2)</sup><br>AS 2129 E<br>AS 4087<br>PN 16, 21, 35 | AWWA C-207<br>Class D | JIS K10 | JIS K20 | T <sub>C</sub> <sup>3)</sup> | T <sub>E</sub> <sup>3)</sup> | T <sub>F</sub> <sup>3)</sup> | Weight <sup>4)</sup> |
|--------|--|-----------------------|---------|---------|------------------------------|------------------------------|------------------------------|----------------------|
| [inch] | [inch]   | [inch]                | [inch]  | [inch]  | [inch]                       | [inch]                       | [inch]                       | [lb]                 |
| ½      | 7.87   | -                     | 7.87    | 7.87    | -                            | 0.24                         | 0.08                         | 9                    |
| 1      | 7.87   | -                     | 7.87    | 7.87    | 0.05                         | 0.24                         | 0.08                         | 11                   |
| 1½     | 7.87   | -                     | 7.87    | 9.44    | 0.05                         | 0.24                         | 0.08                         | 17                   |
| 2      | 7.87   | -                     | 7.87    | 9.44    | 0.05                         | 0.24                         | 0.08                         | 20                   |
| 2½     | 7.87   | -                     | 7.87    | 10.70   | 0.05                         | 0.24                         | 0.08                         | 24                   |
| 3      | 7.875)   | -                     | 7.878)  | 10.709) | 0.05                         | 0.24                         | 0.08                         | 26                   |
| 4      | 9.84   | -                     | 9.84    | 12.20   | 0.05                         | 0.24                         | 0.08                         | 35                   |
| 5      | 9.84   | -                     | 9.84    | 13.18   | 0.05                         | 0.24                         | 0.08                         | 42                   |
| 6      | 11.81  | -                     | 11.81   | 11.81   | 0.05                         | 0.24                         | 0.08                         | 60                   |
| 8      | 13.78  | -                     | 13.77   | 13.77   | 0.05                         | 0.31                         | 0.08                         | 88                   |
| 10     | 17.72  | -                     | 17.71   | 17.71   | 0.05                         | 0.31                         | 0.08                         | 132                  |
| 12     | 19.69  | -                     | 19.68   | 19.68   | 0.06                         | 0.31                         | 0.08                         | 176                  |
| 14     | 21.65  | -                     | 21.65   | 21.65   | 0.06                         | 0.31                         | -                            | 242                  |
| 16     | 23.62  | -                     | 23.62   | 23.62   | 0.06                         | 0.39                         | -                            | 275                  |
| 18     | 23.62  | -                     | 23.62   | 25.19   | 0.06                         | 0.39                         | -                            | 385                  |
| 20     | 23.626)  | -                     | 23.62   | 26.77   | 0.06                         | 0.39                         | -                            | 440                  |
| 24     | 23.627)  | -                     | 23.62   | 31.49   | 0.06                         | 0.39                         | -                            | 633                  |
| 28     | 27.568)  | 27.56                 | -       | -       | 0.08                         | -                            | -                            | 728                  |
| 30     | 29.538)  | 29.52                 | -       | -       | 0.08                         | -                            | -                            | 794                  |
| 32     | 31.807)  | 31.50                 | -       | -       | 0.08                         | -                            | -                            | 992                  |
| 36     | 35.438)  | 35.43                 | -       | -       | 0.08                         | -                            | -                            | 1168                 |
| 40     | 39.378)  | 39.37                 | -       | -       | 0.08                         | -                            | -                            | 1455                 |
| 42     | -  | 39.37                 | -       | -       | 0.08                         | -                            | -                            | 1455                 |
| 44     | -  | 43.31                 | -       | -       | 0.08                         | -                            | -                            | 2513                 |
| 48     | 47.248)  | 47.24                 | -       | -       | 0.08                         | -                            | -                            | 2601                 |
| 54     | -  | 55.12                 | -       | -       | 0.12                         | -                            | -                            | 3528                 |
| 60     | -  | 59.06                 | -       | -       | 0.12                         | -                            | -                            | 5423                 |
| 66     | -  | 63.00                 | -       | -       | 0.12                         | -                            | -                            | 5566                 |
| 72     | -  | 70.87                 | -       | -       | 0.12                         | -                            | -                            | 6460                 |
| 78     | -  | 78.74                 | -       | -       | 0.12                         | -                            | -                            | 8080                 |

1) When grounding rings are used, the thickness of the grounding ring must be added to the built-in length.

2) Tolerances on built-in length (PN 6, PN 10, PN 16, PN 25 and PN 40):  
½" to 8": +0/-0.12", 10" to 16": +0/-0.20", 18" to 24": +0.2/-0.2", 28" to 78": +0.39/-0.39"  
Tolerances on built-in length (PN 63 and PN 100): All sizes +0.31"/-0.31"

3) T<sub>C</sub> = Protection ring type C, T<sub>E</sub> = Grounding ring type E (included and factory mounted for 180 °C PTFE liner), T<sub>F</sub> = Grounding ring Type Flat ring

4) Weights are for ANSI 150 without transmitter.

5) PN 35 DN 80 = 10.07 inch

6) PN 35 DN 500 = 26.77 inch

7) PN 35 DN 600 = 2.53 inch

8) Not AS 4087 PN 21 or PN 35

9) Not according to ISO 20456

D = Outside diameter of flange, see flange tables