

### Overview



The SITRANS FM MAG 1100 is an electromagnetic flow sensor in a compact wafer design designed for flow applications in the process industry.

### Benefits

- Sensor sizes: DN 2 to DN 100 ( $\frac{1}{12}$ " to 4")
- Compact wafer-type design matching for mating flange according to EN 1092-1 and ANSI B16.5 standard
- Corrosion resistant AISI 316 stainless steel sensor housing
- Highly resistant liner and electrodes fitting most extreme process media
- Hose proof IP67/NEMA 6 enclosure rating
- Option for IP68 / NEMA 6P protection class ex works or for upgrading on site
- High temperature sensor for applications with temperatures up to 200 °C (392 °F)
- Approved for hazardous areas for maximum safety and reliability
- Designed to allow in-situ verification for easy performance check

### Application

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

- Process industry
- Chemical industry
- Pharmaceutical industry
- Water treatment like e.g. chemical dosing

### Integration

The complete flowmeter consists of a flow sensor and an associated transmitter SITRANS FM MAG 5000, 6000 or 6000 I. The flexible communication concept simplifies integration and update to a variety of fieldbus systems such as HART, FOUNDATION Fieldbus H1, DeviceNet, PROFIBUS DP and PA, Modbus RTU/RS 485.

## Flow Measurement

### SITRANS FM (electromagnetic)

#### Flow sensors / SITRANS FM MAG 1100 and 1100 HT

#### Selection and ordering data

|                                                                                     |                                                |   |  |   |  |  |   |  |   |   |
|-------------------------------------------------------------------------------------|------------------------------------------------|---|--|---|--|--|---|--|---|---|
| Sensor SITRANS FM MAG 1100<br>EPDM gaskets included                                 | Article No.<br>7ME6110-<br>● ● A ● 0 - ● ● ● ● |   |  |   |  |  |   |  |   |   |
| Click on the Article No. for the online configuration in the PIA Life Cycle Portal. |                                                |   |  |   |  |  |   |  |   |   |
| Diameter                                                                            |                                                |   |  |   |  |  |   |  |   |   |
| DN 2, 1/12 inch                                                                     | 1                                              | D |  |   |  |  |   |  |   |   |
| DN 3, 1/8 inch                                                                      | 1                                              | H |  |   |  |  |   |  |   |   |
| DN 6, ¼ inch                                                                        | 1                                              | M |  |   |  |  |   |  |   |   |
| DN 10, 3/8 inch                                                                     | 1                                              | R |  |   |  |  |   |  |   |   |
| DN 15, ½ inch                                                                       | 1                                              | V |  |   |  |  |   |  |   |   |
| DN 25, 1 inch                                                                       | 2                                              | D |  |   |  |  |   |  |   |   |
| DN 40, 1½ inch                                                                      | 2                                              | R |  |   |  |  |   |  |   |   |
| DN 50, 2 inch                                                                       | 2                                              | Y |  |   |  |  |   |  |   |   |
| DN 65, 2½ inch                                                                      | 3                                              | F |  |   |  |  |   |  |   |   |
| DN 80, 3 inch                                                                       | 3                                              | M |  |   |  |  |   |  |   |   |
| DN 100, 4 inch                                                                      | 3                                              | T |  |   |  |  |   |  |   |   |
| Liner material                                                                      |                                                |   |  |   |  |  |   |  |   |   |
| PFA (no ATEX)                                                                       |                                                |   |  | 1 |  |  |   |  |   |   |
| Ceramic                                                                             |                                                |   |  | 2 |  |  |   |  |   |   |
| Electrode material                                                                  |                                                |   |  |   |  |  |   |  |   |   |
| Hastelloy C22 / 2.4602 (only with PFA liner)                                        |                                                |   |  |   |  |  | 1 |  |   |   |
| Platinum (only with ceramic liner)                                                  |                                                |   |  |   |  |  | 2 |  |   |   |
| Transmitter                                                                         |                                                |   |  |   |  |  |   |  |   |   |
| Standard sensor for remote transmitter (order transmitter separately)               |                                                |   |  |   |  |  |   |  | A |   |
| Ex sensor for remote transmitter (order transmitter separately)                     |                                                |   |  |   |  |  |   |  | B |   |
| MAG 6000 I, Aluminum 18 ... 90 V DC, 115 ... 230 V AC, FM / CSA Class I Div. 2      |                                                |   |  |   |  |  |   |  | C |   |
| MAG 6000 I, Aluminum 18 ... 30 V DC, Ex                                             |                                                |   |  |   |  |  |   |  | D |   |
| MAG 6000 I, Aluminum, 18 ... 90 V DC, 115 ... 230 V AC (non-Ex)                     |                                                |   |  |   |  |  |   |  | F |   |
| MAG 6000 I, Aluminum 115 ... 230 V AC, Ex                                           |                                                |   |  |   |  |  |   |  | E |   |
| MAG 6000 Polyamide, 11 ... 30 V DC/11 ... 24 V AC                                   |                                                |   |  |   |  |  |   |  | H |   |
| MAG 6000, Polyamide, 115 ... 230 V AC                                               |                                                |   |  |   |  |  |   |  | J |   |
| MAG 5000, Polyamide, 11 ... 30 V DC/11 ... 24 V AC                                  |                                                |   |  |   |  |  |   |  | K |   |
| MAG 5000, Polyamide, 115 ... 230 V AC                                               |                                                |   |  |   |  |  |   |  | L |   |
| Communication                                                                       |                                                |   |  |   |  |  |   |  |   |   |
| No communication, add-on possible                                                   |                                                |   |  |   |  |  |   |  |   | A |
| HART                                                                                |                                                |   |  |   |  |  |   |  |   | B |
| PROFIBUS PA Profile 3                                                               |                                                |   |  |   |  |  |   |  |   | F |
| PROFIBUS DP Profile 3 (not for Ex)                                                  |                                                |   |  |   |  |  |   |  |   | G |
| Modbus RTU/RS 485 (not for Ex)                                                      |                                                |   |  |   |  |  |   |  |   | E |
| FOUNDATION Fieldbus H1                                                              |                                                |   |  |   |  |  |   |  |   | J |
| Cable glands/terminal box                                                           |                                                |   |  |   |  |  |   |  |   |   |
| Metric: Polyamide terminal box or MAG 6000 I compact                                |                                                |   |  |   |  |  |   |  |   | 1 |
| ½" NPT: Polyamide terminal box or MAG 6000 I compact                                |                                                |   |  |   |  |  |   |  |   | 2 |
| Metric: Stainless steel terminal box                                                |                                                |   |  |   |  |  |   |  |   | 3 |
| ½" NPT: Stainless steel terminal box                                                |                                                |   |  |   |  |  |   |  |   |   |

<sup>1)</sup> Quick ship only in combination with Ceramic liner

|                                                                          | Order code |
|--------------------------------------------------------------------------|------------|
| <b>Additional information</b>                                            |            |
| Please add "-Z" to Article No. and specify Order code(s) and plain text. |            |
| <b>Certificates</b>                                                      |            |
| Material certificate according to EN 10204-3.1                           | C12        |
| Factory certificate according to EN 10204-2.2                            | C14        |
| Factory certificate according to EN 10204-2.1                            | C15        |
| <b>Special calibration</b>                                               |            |
| 5-point calibration <sup>1)</sup>                                        | D01        |
| 10-point calibration <sup>2)</sup>                                       | D06        |

|                                                          | Order code |
|----------------------------------------------------------|------------|
| Default (2 × 25 % and 2 × 90 %) matched-pair calibration | D11        |
| 5-point, matched-pair calibration <sup>1)</sup>          | D15        |
| 10-point, matched-pair calibration <sup>2)</sup>         | D18        |
| <b>Terminal blocks</b>                                   |            |
| Factory mounted terminal blocks                          | N02        |
| <b>Country specific label</b>                            |            |
| CRN (Canadian Registration Number)                       | H25        |

## Flow Measurement

### SITRANS FM (electromagnetic)

#### Flow sensors / SITRANS FM MAG 1100 and 1100 HT

#### Selection and ordering data (continued)

|                                                                            | Order code |
|----------------------------------------------------------------------------|------------|
| <b>Device identification</b>                                               |            |
| Tag name, stainless steel plate for transmitter (specify in plain text)    | <b>Y16</b> |
| Tag name, stainless steel plate (specify in plain text)                    | <b>Y17</b> |
| Tag name, adhesive label (specify in plain text)                           | <b>Y18</b> |
| <b>Device settings</b>                                                     |            |
| Customer-specific transmitter setting                                      | <b>Y20</b> |
| <b>Sensor cables</b>                                                       |            |
| Factory mounted sensor cables wired                                        | <b>Y40</b> |
| Factory mounted and potted sensor cables, IP68 protection class for sensor | <b>Y41</b> |

|                                                                 | Order code                      |
|-----------------------------------------------------------------|---------------------------------|
| <b>Additional calibrations</b>                                  |                                 |
| Accredited matched-pair calibration acc. to ISO/IEC 17025: 2005 | <b>On request</b> <sup>3)</sup> |
| Customer-specified calibration up to 10 points                  | <b>On request</b> <sup>3)</sup> |
| Customer-witnessed calibration (any of above calibration)       | <b>On request</b> <sup>3)</sup> |

<sup>1)</sup> 20 %, 40 %, 60 %, 80 %, 100 % of factory  $Q_{\max}$

<sup>2)</sup> Ascending and descending at 20 %, 40 %, 60 %, 80 %, 100 % of factory  $Q_{\max}$

<sup>3)</sup> Product Variation Request (PVR)

| Sensor SITRANS FM MAG 1100 HT High Temperature<br>Ceramic liner, Platinum electrode, Graphite gaskets included | Article No.<br>7ME6120- |
|----------------------------------------------------------------------------------------------------------------|-------------------------|
|                                                                                                                | ● ● A 2 0 - 2 ● A ●     |
| Click on the Article No. for the online configuration in the PIA Life Cycle Portal.                            |                         |
| <b>Diameter</b>                                                                                                |                         |
| DN 15, ½ inch                                                                                                  | 1 V                     |
| DN 25, 1 inch                                                                                                  | 2 D                     |
| DN 40, 1½ inch                                                                                                 | 2 R                     |
| DN 50, 2 inch                                                                                                  | 2 Y                     |
| DN 80, 3 inch                                                                                                  | 3 M                     |
| DN 100, 4 inch                                                                                                 | 3 T                     |
| <b>Transmitter</b>                                                                                             |                         |
| Standard sensor for remote transmitter (order transmitter separately)                                          |                         |
| Ex sensor for remote transmitter (order transmitter separately)                                                | A                       |
| Cable glands/terminal box                                                                                      | B                       |
| Metric: Stainless steel terminal box                                                                           | 3                       |
| ½" NPT: Stainless steel terminal box                                                                           | 4                       |

|                                                                          | Order code |
|--------------------------------------------------------------------------|------------|
| <b>Additional information</b>                                            |            |
| Please add "-Z" to Article No. and specify Order code(s) and plain text. |            |
| <b>Certificates</b>                                                      |            |
| Material certificate according to EN 10204-3.1                           | <b>C12</b> |
| Factory certificate according to EN 10204-2.2                            | <b>C14</b> |
| Factory certificate according to EN 10204-2.1                            | <b>C15</b> |
| <b>Special calibration</b>                                               |            |
| 5-point calibration <sup>1)</sup>                                        | <b>D01</b> |
| 10-point calibration <sup>2)</sup>                                       | <b>D06</b> |
| Default (2 × 25 % and 2 × 90 %) matched-pair calibration                 | <b>D11</b> |
| 5-point, matched-pair calibration <sup>1)</sup>                          | <b>D15</b> |
| 10-point, matched-pair calibration <sup>2)</sup>                         | <b>D18</b> |
| <b>Terminal blocks</b>                                                   |            |
| Factory mounted terminal blocks                                          | <b>N02</b> |
| <b>Device identification</b>                                             |            |
| Tag name, stainless steel plate (specify in plain text)                  | <b>Y17</b> |
| Tag name, adhesive label (specify in plain text)                         | <b>Y18</b> |
| <b>Device settings</b>                                                   |            |
| Customer-specific transmitter setting                                    | <b>Y20</b> |

|                                                                            | Order code                      |
|----------------------------------------------------------------------------|---------------------------------|
| <b>Sensor cables</b>                                                       |                                 |
| Factory mounted sensor cables                                              | <b>Y40</b>                      |
| Factory mounted and potted sensor cables, IP68 protection class for sensor | <b>Y41</b>                      |
| <b>Additional calibrations</b>                                             |                                 |
| Accredited matched-pair calibration acc. to ISO/IEC 17025: 2005            | <b>On request</b> <sup>3)</sup> |
| Customer-specified calibration up to 10 points                             | <b>On request</b> <sup>3)</sup> |
| Customer-witnessed calibration (any of above calibration)                  | <b>On request</b> <sup>3)</sup> |

<sup>1)</sup> 20 %, 40 %, 60 %, 80 %, 100 % of factory  $Q_{\max}$

<sup>2)</sup> Ascending and descending at 20 %, 40 %, 60 %, 80 %, 100 % of factory  $Q_{\max}$

<sup>3)</sup> Product Variation Request (PVR)

| Description | Article No.        |
|-------------|--------------------|
| • English   | <b>A5E02435647</b> |

All literature is available to download for free, in a range of languages, at [www.siemens.com/processinstrumentation/documentation](http://www.siemens.com/processinstrumentation/documentation)

## Flow Measurement

### SITRANS FM (electromagnetic)

#### Flow sensors / SITRANS FM MAG 1100 and 1100 HT

#### Selection and ordering data (continued)

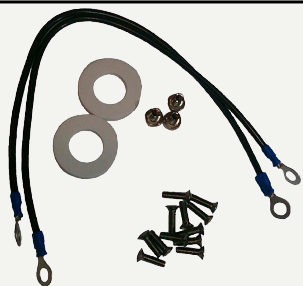
##### Accessories

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

##### Accessories for MAG 1100 sensor

| Description                                                                                                                                                                                                                                                                                                                                                                                                                          | Article No.                                                                                                                  |                                                                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <b>Pipe connection ½" external thread</b><br>For DN 2 ... 10 (1/12" ... 3/8") sensor<br>Material: Stainless steel AISI 316L 2 pcs. pipe connections, 2 pcs. EPDM gaskets, 12 pcs. M4×12 screws <ul style="list-style-type: none"> <li>• R½" ISO 7-1 tapered thread</li> <li>• ½" NPT thread</li> </ul>                                                                                                                               | FDK:083G0080<br>FDK:083G4330                                                                                                 |    |
| For DN 2 ... 10 (1/12" ... 3/8") sensor<br>Material: Hastelloy C, 2 pcs. pipe connections, 2 pcs. PTFE gaskets, 12 pcs. M4×12 screws <ul style="list-style-type: none"> <li>• R½" ISO 7-1 tapered thread</li> <li>• ½" NPT thread</li> </ul>                                                                                                                                                                                         | FDK:083G4332<br>FDK:083G4331                                                                                                 |                                                                                       |
| For DN 2 ... 10 (1/12" ... 3/8") sensor<br>Material PVDF (Kynar 1000) 2 pcs. pipe connections (Max. 70 °C, PN 8 bar/max 158 °F, 116 PSI), 1 pc. grounding ring <sup>1)</sup> , 1 pc. grounding wire, 3 pcs. PTFE gaskets, 2 pcs. space rings, 6 pcs. M4×12 and 6 pcs. M4×16 screws <ul style="list-style-type: none"> <li>• G½" ISO 7-1 tapered thread incl. grounding ring</li> <li>• ½" NPT thread incl. grounding ring</li> </ul> | A5E01018395<br>A5E01018400                                                                                                   |                                                                                       |
| <b>EPDM gaskets</b><br>Material: EPDM; each set includes: 2 pcs. EPDM gaskets, 1 pc. grounding wire, 1 pc. M6 screw, 1 pc. nut, 1 pc. washer, 1 pc. bolt grounding plate <ul style="list-style-type: none"> <li>• DN 2 ... 10 (1/12" ... 3/8")</li> <li>• DN 15 (½")</li> <li>• DN 25 (1")</li> <li>• DN 40 (1½")</li> <li>• DN 50 (2")</li> <li>• DN 65 (2½")</li> <li>• DN 80 (3")</li> <li>• DN 100 (4")</li> </ul>               | FDK:083G3116<br>FDK:083G3117<br>FDK:083G3119<br>FDK:083G3121<br>FDK:083G3122<br>FDK:083G3123<br>FDK:083G3124<br>FDK:083G3125 |                                                                                       |
| <b>PTFE gaskets</b><br>Material: PTFE; each set includes: 2 pcs. gaskets, 2 pcs. grounding wires, 3 pcs. M6 screws (DN 2 ... 10: 12 pcs. M4×14) <ul style="list-style-type: none"> <li>• DN 2 ... 10 (1/12" ... 3/8")</li> </ul>                                                                                                                                                                                                     | FDK:083G0156                                                                                                                 |  |

### Selection and ordering data (continued)

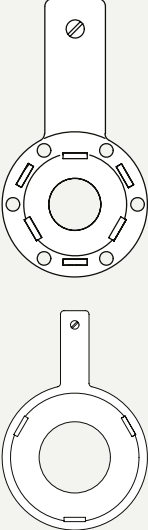
| Description                                                                                                                                                                                                                                                                                                                                                                                                                        | Article No.                                                                                                                  |                                                                                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• DN 15 (½")</li> <li>• DN 25 (1")</li> <li>• DN 40 (1½")</li> <li>• DN 50 (2")</li> <li>• DN 65 (2½")</li> <li>• DN 80 (3")</li> <li>• DN 100 (4")</li> </ul>                                                                                                                                                                                                                              | FDK:083G0157<br>FDK:083G0159<br>FDK:083G0161<br>FDK:083G0162<br>FDK:083G0163<br>FDK:083G0164<br>FDK:083G0165                 |    |
| <b>Graphite gaskets</b><br>Material: Graphite; conductive, each set includes: 2 pcs. gaskets (can also be used as grounding ring) <ul style="list-style-type: none"> <li>• DN 2 ... 10 (1/12" ... 3/8")</li> <li>• DN 15 (½")</li> <li>• DN 25 (1")</li> <li>• DN 40 (1½")</li> <li>• DN 50 (2")</li> <li>• DN 65 (2½")</li> <li>• DN 80 (3")</li> <li>• DN 100 (4")</li> </ul>                                                    | FDK:083G0116<br>FDK:083G0117<br>FDK:083G0119<br>FDK:083G0121<br>FDK:083G0122<br>FDK:083G0123<br>FDK:083G0124<br>FDK:083G0125 |    |
| <b>Grounding ring (stainless steel)</b><br>Material: AISI 316L/1.4404; each set includes: 1 pc. grounding ring <sup>1)</sup> , 3 pcs. PTFE gaskets, 1 pc. earth wire, 1 pc. M6 screw <ul style="list-style-type: none"> <li>• DN 2 ... 10 (1/12" ... 3/8")</li> <li>• DN 15 (½")</li> <li>• DN 25 (1")</li> <li>• DN 40 (1½")</li> <li>• DN 50 (2")</li> <li>• DN 65 (2½")</li> <li>• DN 80 (3")</li> <li>• DN 100 (4")</li> </ul> | FDK:083G0686<br>FDK:083G0687<br>FDK:083G0689<br>FDK:083G0691<br>FDK:083G0692<br>FDK:083G0693<br>FDK:083G0694<br>FDK:083G0695 |  |
| <b>Grounding ring (Hastelloy C)</b><br>Material: Hastelloy C22/2.4602; each set includes: 1 pc. grounding ring <sup>1)</sup> , 3 pcs. PTFE gaskets, 1 pc. earth wire, 1 pc. M6 screw <ul style="list-style-type: none"> <li>• DN 2 ... 10 (1/12" ... 3/8")</li> <li>• DN 15 (½")</li> <li>• DN 25 (1")</li> <li>• DN 40 (1½")</li> <li>• DN 50 (2")</li> <li>• DN 65 (2½")</li> <li>• DN 80 (3")</li> <li>• DN 100 (4")</li> </ul> | FDK:083G3256<br>FDK:083G3257<br>FDK:083G3259<br>FDK:083G3261<br>FDK:083G3262<br>FDK:083G3263<br>FDK:083G3264<br>FDK:083G3265 |  |

## Flow Measurement

### SITRANS FM (electromagnetic)

#### Flow sensors / SITRANS FM MAG 1100 and 1100 HT

#### Selection and ordering data (continued)

| Description                                                                                                                                                                                                                                                                                                                                                                                                                    | Article No.                                                                                                                                      |                                                                                      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| <b>Grounding ring (Tantalum)</b><br>Material: Tantalum; each set includes: 1 pc. grounding ring <sup>1)</sup> , 3 pcs. PTFE gaskets, 1 pc. earth wire, 1 pc. M6 screw<br><ul style="list-style-type: none"> <li>• DN 2 ... 10 (1/12" ... 3/8")</li> <li>• DN 15 (1/2")</li> <li>• DN 25 (1")</li> <li>• DN 40 (1 1/2")</li> <li>• DN 50 (2")</li> <li>• DN 65 (2 1/2")</li> <li>• DN 80 (3")</li> <li>• DN 100 (4")</li> </ul> | A5E01181599<br><br>A5E01181606<br><br>A5E01181610<br><br>A5E01181613<br><br>A5E01181615<br><br>A5E01181616<br><br>A5E01181619<br><br>A5E01181622 |   |
| <b>Studs and nuts</b><br>For DN 100 PN 25/40, 8 pcs. M20 studs, 16 pcs. M20 nuts<br>Material: AISI 304/1.4305<br><ul style="list-style-type: none"> <li>• DN 100 (4")</li> </ul>                                                                                                                                                                                                                                               | FDK:083G0226                                                                                                                                     |  |

<sup>1)</sup> Thickness of grounding ring is 2 mm (0.08 inch)

## Flow Measurement

### SITRANS FM (electromagnetic)

#### Flow sensors / SITRANS FM MAG 1100 and 1100 HT

#### Technical specifications

| Version                                                | MAG 1100                                                                                                                                                                                                                                                                                                                 | MAG 1100 HT (High Temperature)                                                                                                                                                                          |
|--------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Measuring principle                                    | Electromagnetic induction                                                                                                                                                                                                                                                                                                | Electromagnetic induction                                                                                                                                                                               |
| Excitation frequency (mains supply: 50 Hz/60 Hz)       | DN 2 ... 65 (1/12" ... 2½"): 12.5 Hz/15 Hz<br>DN 80, 100 (3", 4"): 6.25 Hz/7.5 Hz                                                                                                                                                                                                                                        | DN 15 ... 50 (½" ... 2"): 12.5 Hz/15 Hz<br>DN 80, 100 (3", 4"): 6.25 Hz/7.5 Hz                                                                                                                          |
| <b>Process connection</b>                              |                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                         |
| Nominal size                                           |                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                         |
| • MAG 1100 (Ceramic)                                   | DN 2 ... 100 (1/12" ... 4")                                                                                                                                                                                                                                                                                              | DN 15 ... 100 (½" ... 4")                                                                                                                                                                               |
| • MAG 1100 (PFA)                                       | DN 10 ... 100 (3/8" ... 4")                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                         |
| Mating flanges                                         | EN 1092-1 (DIN 2501), ANSI B16.5 class 150 and 300 or equivalent<br>Option:<br>DN 2 ... 10 (1/12" ... 3/8"): G½"/1/2" NPT pipe connection adapters                                                                                                                                                                       | EN 1092-1 (DIN 2501), ANSI B16.5 class 150 and 300 or equivalent                                                                                                                                        |
| <b>Rated operating conditions</b>                      |                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                         |
| <b>Ambient temperature</b>                             |                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                         |
| • Standard sensor                                      | -40 ... +100 °C (-40 ... +212 °F)                                                                                                                                                                                                                                                                                        | -40 ... +100 °C (-40 ... +212 °F)                                                                                                                                                                       |
| • Ex sensor                                            | -20 ... +60 °C (-4 ... +140 °F)                                                                                                                                                                                                                                                                                          | -20 ... +60 °C (-4 ... +140 °F)                                                                                                                                                                         |
| • Compact with transmitter MAG 5000/6000               | -20 ... +60 °C (-4 ... +140 °F)                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                         |
| • Compact with transmitter MAG 6000 I <sup>1)</sup>    | -20 ... +60 °C (-4 ... +140 °F)                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                         |
| • Compact with transmitter MAG 6000 I Ex <sup>1)</sup> | -20 ... +60 °C (-4 ... 140 °F)                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                         |
| <b>Temperature of medium</b>                           |                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                         |
| • MAG 1100 (Ceramic)                                   | -20 ... +150 °C (-4 ... +302 °F)                                                                                                                                                                                                                                                                                         | -20 ... +200 °C (-4 ... +392 °F)                                                                                                                                                                        |
| • MAG 1100 Ex (Ceramic)                                | -20 ... +150 °C (-4 ... +302 °F)                                                                                                                                                                                                                                                                                         | -20 ... +180 °C (-4 ... +356 °F)                                                                                                                                                                        |
| • MAG 1100 (PFA)                                       | -30 ... +130 °C (-22 ... +266 °F)<br>Suitable for steam sterilization at 150 °C (302 °F)                                                                                                                                                                                                                                 |                                                                                                                                                                                                         |
| <b>Temperature shock</b>                               |                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                         |
| • MAG 1100 (Ceramic)                                   | Duration ≤ 1 min, followed by 10 min rest<br>• DN 2, 3 (1/12", 1/8") No limitations<br>• DN 6, 10, 15, 25: Max. ΔT ≤ 80 °C/min (¼", 3/8", ½", 1": Max. ΔT ≤ 144 °F/min)<br>• DN 40, 50, 65: Max. ΔT ≤ 70 °C/min (1½", 2", 2½": Max. ΔT ≤ 126 °F/min)<br>• DN 80, 100: Max. ΔT ≤ 60 °C/min (3", 4": Max. ΔT ≤ 108 °F/min) | • DN 15, 25: Max. ΔT ≤ 80 °C/min (½", 1": Max. ΔT ≤ 144 °F/min)<br>• DN 40, 50: Max. ΔT ≤ 70 °C/min (1½", 2": Max. ΔT ≤ 126 °F/min)<br>• DN 80, 100: Max. ΔT ≤ 60 °C/min (3", 4": Max. ΔT ≤ 108 °F/min) |
| • MAG 1100 (PFA)                                       | • DN 15, 25, 40, 50, 65: Max. ΔT 120 °C/min (1/2", 1", 1 1/2", 2", 2 1/2": Max. ΔT 248 °F/min)<br>• DN 80, 100: Max. ΔT 110 °C/min (3", 4": Max. ΔT 230 °F/min)                                                                                                                                                          |                                                                                                                                                                                                         |
| <b>Operating pressure</b>                              |                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                         |
| • MAG 1100 (Ceramic)                                   | • DN 2 ... 65: 40 bar (1/12" ... 2½": 580 psi)<br>• DN 80: 37.5 bar (3": 540 psi)                                                                                                                                                                                                                                        | • DN 15 ... 50: 40 bar (½" ... 2": 580 psi)<br>• DN 80: 37.5 bar (3": 540 psi)                                                                                                                          |

#### Technical specifications (continued)

| Version                                                                  | MAG 1100                                                                                                                                                                                                                                                                                                                                                                                           | MAG 1100 HT (High Temperature)                                                                                                     |
|--------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| • MAG 1100 (Ceramic)                                                     | • DN 100: 30 bar (4": 435 psi)<br><br>Vacuum: 1 × 10 <sup>-6</sup> bar <sub>abs</sub> (1.5 × 10 <sup>-5</sup> psi <sub>abs</sub> )<br>20 bar (290 psi)<br>Vacuum: 0.02 bar <sub>abs</sub> (0.3 psi <sub>abs</sub> )<br>DN 80 ... 100: CO <sub>2</sub> pressure max. 7 bar (101.5 psi)                                                                                                              | • DN 100: 30 bar (4": 435 psi)<br><br>Vacuum: 1 × 10 <sup>-6</sup> bar <sub>abs</sub> (1.5 × 10 <sup>-5</sup> psi <sub>abs</sub> ) |
| • MAG 1100 (PFA)                                                         |                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                    |
| <b>Mechanical load (vibration)</b>                                       | • 18 ... 1000 Hz random in x, y, z, directions for 2 hours according to EN 60068-2-36<br><br>• Sensor: 3.17 g RMS<br><br>• Sensor with compact MAG 5000/6000 mounted transmitter: 3.17 g RMS<br><br>• Sensor with compact MAG 6000 I/6000 I Ex mounted transmitter: 1.14 g RMS<br><br>• For compact installation with the MAG 6000 I, transmitter to be supported to avoid tension on sensor part. | • 18 ... 1000 Hz random in x, y, z, directions for 2 hours according to EN 60068-2-36<br><br>• Sensor: 3.17 g RMS                  |
| <b>Protection class</b>                                                  | IP67, NEMA 6                                                                                                                                                                                                                                                                                                                                                                                       | IP67, NEMA 6                                                                                                                       |
| <b>EMC</b>                                                               | 2014/30/EU                                                                                                                                                                                                                                                                                                                                                                                         | 2014/30/EU                                                                                                                         |
| <b>Design</b>                                                            |                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                    |
| Weight                                                                   | See Dimensional drawings                                                                                                                                                                                                                                                                                                                                                                           | See Dimensional drawings                                                                                                           |
| Material                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                    |
| • Enclosure                                                              | Stainless steel<br>AISI 316L/1.4404                                                                                                                                                                                                                                                                                                                                                                | Stainless steel<br>AISI 316L/1.4404                                                                                                |
| • Terminal box                                                           |                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                    |
| - Standard                                                               | Fibre glass reinforced polyamide (not for Ex)                                                                                                                                                                                                                                                                                                                                                      | Stainless steel<br>AISI 316/1.4436                                                                                                 |
| - Option                                                                 | Stainless steel<br>AISI 316/1.4436                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                    |
| • Fixing studs                                                           | Stainless steel<br>AISI 304/1.4301, Number and size to EN 1092-1:2001                                                                                                                                                                                                                                                                                                                              | Stainless steel<br>AISI 304/1.4301, Number and size to EN 1092-1:2001                                                              |
| • Gaskets                                                                |                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                    |
| - Standard                                                               | EPDM (max. 150 °C, PN 40 (max. 302 °F, 600 psi))                                                                                                                                                                                                                                                                                                                                                   | Graphite (max. 200 °C, PN 40 (max. 392 °F, 600 psi))                                                                               |
| - Option                                                                 | • Graphite (max. 200 °C, PN 40 (max. 392 °F, 600 psi))<br><br>• PTFE (max. 130 °C, PN 25 (max. 266 °F, 300 psi))                                                                                                                                                                                                                                                                                   |                                                                                                                                    |
| • Pipe connection adapters: DN 2, 3, 6 and 10 (1/12", 1/8", ¼" and 3/8") | • Stainless steel, AISI 316 /1.4436<br><br>• Hastelloy C22/2.4602<br><br>• PVDF                                                                                                                                                                                                                                                                                                                    |                                                                                                                                    |
| • Liner                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                    |
| - MAG 1100 (Ceramic)                                                     | • DN 2, 3 (1/12", 1/8"): Zirconium oxide (ZrO <sub>2</sub> )<br><br>• DN 6 ... 100 (¼" ... 4"): Aluminum oxide (Al <sub>2</sub> O <sub>3</sub> )                                                                                                                                                                                                                                                   | DN 15 ... 100 (½", 4"): Aluminum oxide Al <sub>2</sub> O <sub>3</sub>                                                              |

## Flow Measurement

### SITRANS FM (electromagnetic)

#### Flow sensors / SITRANS FM MAG 1100 and 1100 HT

#### Technical specifications (continued)

| Version                                                                                                                                          | MAG 1100                                                                                                                                                                                                                                                                                      | MAG 1100 HT (High Temperature)                                                                                                                           |
|--------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>- MAG 1100 (PFA)</li> <li>• Electrodes</li> <li>- MAG 1100 (Ceramic)</li> <li>- MAG 1100 (PFA)</li> </ul> | Reinforced PFA (not for Ex) <ul style="list-style-type: none"> <li>• DN 10 ... 100 (3/8" ... 4"):<br/>Platinum with Gold / Titanium brazing alloy</li> <li>• DN 2 ... 6 (1/12" ... 1/4"):<br/>Platinum</li> <li>• DN 10 ... 100 (3/8" ... 4"):<br/>Hastelloy C22/2.4602</li> </ul>            | Platinum with Gold / Titanium brazing alloy                                                                                                              |
| Cable entries                                                                                                                                    | <ul style="list-style-type: none"> <li>• Remote installation<br/>2 × M20 or 2 × 1/2" NPT</li> <li>• Compact installation</li> <li>- MAG 5000/MAG 6000:<br/>4 × M20 or 4 × 1/2" NPT</li> <li>- MAG 6000 I : 2 × M20 (M25 for PROFIBUS) or 2 × 1/2" NPT</li> </ul>                              | Remote installation 2 × M20 or 2 × 1/2" NPT                                                                                                              |
| <b>Certificates and approvals</b>                                                                                                                |                                                                                                                                                                                                                                                                                               |                                                                                                                                                          |
| Calibration                                                                                                                                      |                                                                                                                                                                                                                                                                                               |                                                                                                                                                          |
| <ul style="list-style-type: none"> <li>• Default calibration</li> <li>• Special calibration</li> </ul>                                           | Zero-point, 2 × 25 %, 2 × 90 %<br><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 × 25 %, 2 × 90 %                                                                                                                           |
| Hazardous areas                                                                                                                                  |                                                                                                                                                                                                                                                                                               |                                                                                                                                                          |
| <ul style="list-style-type: none"> <li>• MAG 1100 F (Ceramic)</li> </ul>                                                                         |                                                                                                                                                                                                                                                                                               |                                                                                                                                                          |
| <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, EAC Ex</li> <li>- Zone 1 Ex d e ia IIB T6 Gb</li> <li>• ATEX</li> <li>- Zone 21 Ex tD A21 IP67</li> </ul>                                                                                                                                      | <ul style="list-style-type: none"> <li>• ATEX, EAC Ex</li> <li>- Zone 1 Ex d e ia IIB T6 Gb</li> <li>• ATEX</li> <li>- Zone 21 Ex tD A21 IP67</li> </ul> |
| <ul style="list-style-type: none"> <li>- Standard sensor in compact or remote version with MAG 5000/6000/6000 I</li> </ul>                       | <ul style="list-style-type: none"> <li>• FM</li> <li>- NI Class I Div. 2 Groups A, B, C, D</li> </ul>                                                                                                                                                                                         | <ul style="list-style-type: none"> <li>• FM</li> <li>- NI Class I Div. 2 Groups A, B, C, D</li> </ul>                                                    |
| <ul style="list-style-type: none"> <li>• MAG 1100 F (PFA)</li> </ul>                                                                             |                                                                                                                                                                                                                                                                                               |                                                                                                                                                          |
| <ul style="list-style-type: none"> <li>- Standard sensor in compact or remote version with MAG 5000/6000/6000 I</li> </ul>                       | <ul style="list-style-type: none"> <li>• FM</li> <li>- NI Class I Div. 2 Groups A, B, C, D</li> </ul>                                                                                                                                                                                         |                                                                                                                                                          |
| General purpose                                                                                                                                  | <ul style="list-style-type: none"> <li>• CE (LVD, PED, EMC, RoHS), UKCA</li> <li>• CRN (only PFA)</li> </ul>                                                                                                                                                                                  | <ul style="list-style-type: none"> <li>• CE (LVD, PED, EMC, RoHS), UKCA</li> </ul>                                                                       |
| Others                                                                                                                                           | <ul style="list-style-type: none"> <li>• EAC (Kazakhstan)</li> </ul>                                                                                                                                                                                                                          | <ul style="list-style-type: none"> <li>• EAC (Kazakhstan)</li> </ul>                                                                                     |

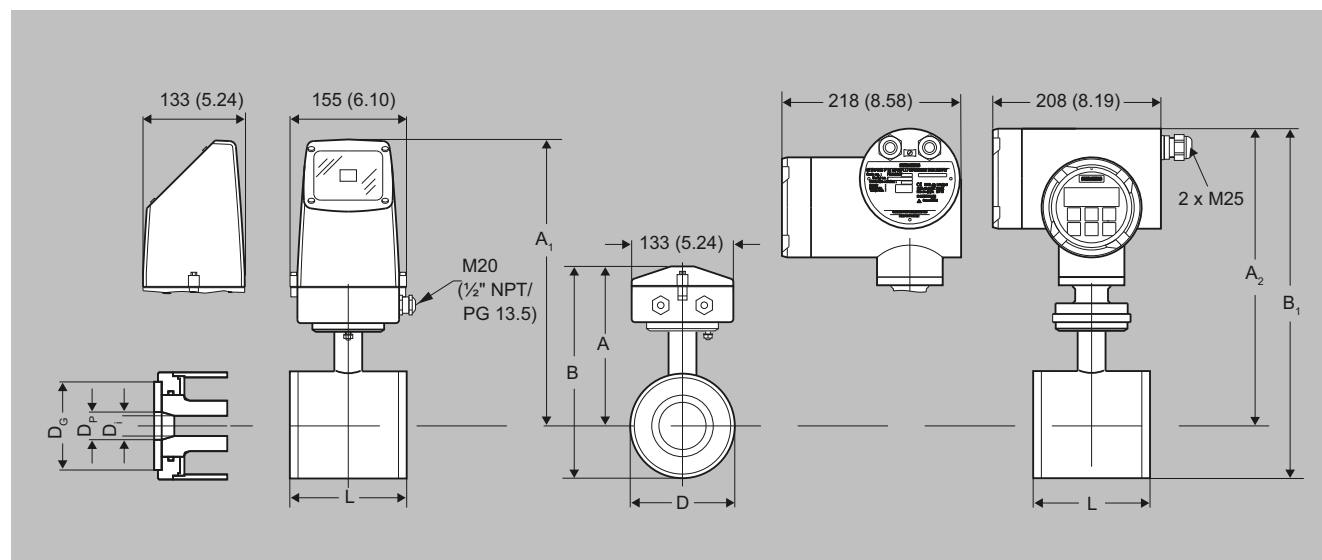
<sup>1)</sup> With HART communication max. ambient temperature 50 °C (122 °F).

For technical specification for transmitter - please see section about transmitters.



### Dimensional drawings

#### Sensor MAG 1100, compact/remote



Dimensions in mm (inch)

**Important note:** For compact installation with MAG 6000 I/Ex - transmitter to be supported to avoid tension on the sensor part

| Size<br>DN | A <sup>1)</sup><br>[mm] | B <sup>1)</sup><br>[mm] | A <sub>1</sub> /A <sub>2</sub> <sup>3)</sup><br>[mm] | B <sub>1</sub><br>[mm] | D<br>[mm] | D <sub>i</sub><br>[mm] | D <sub>i</sub> (PFA)<br>[mm] | D <sub>p</sub><br>[mm] | D <sub>G</sub><br>[mm] | Weight <sup>2)</sup><br>[kg] |
|------------|-------------------------|-------------------------|------------------------------------------------------|------------------------|-----------|------------------------|------------------------------|------------------------|------------------------|------------------------------|
| 2          | 161                     | 186                     | 315                                                  | 340                    | 48.7      | 2                      |                              | 17.3                   | 34                     | 2.2                          |
| 3          | 161                     | 186                     | 315                                                  | 340                    | 48.7      | 3                      |                              | 17.3                   | 34                     | 2.2                          |
| 6          | 161                     | 186                     | 315                                                  | 340                    | 48.7      | 6                      |                              | 17.3                   | 34                     | 2.2                          |
| 10         | 161                     | 186                     | 315                                                  | 340                    | 48.7      | 10                     | 10                           | 13.6                   | 34                     | 2.2                          |
| 15         | 161                     | 186                     | 315                                                  | 340                    | 48.7      | 15                     | 16                           | 17.3                   | 40                     | 2.2                          |
| 25         | 169                     | 201                     | 323                                                  | 354                    | 63.5      | 25                     | 26                           | 28.5                   | 56                     | 2.7                          |
| 40         | 179                     | 221                     | 333                                                  | 375                    | 84.0      | 40                     | 38                           | 43.4                   | 75                     | 3.4                          |
| 50         | 188                     | 239                     | 342                                                  | 393                    | 101.6     | 50                     | 50                           | 54.5                   | 90                     | 4.2                          |
| 65         | 198                     | 258                     | 351                                                  | 412                    | 120.9     | 65                     | 66                           | 68.0                   | 112                    | 5.5                          |
| 80         | 204                     | 270                     | 357                                                  | 424                    | 133.0     | 80                     | 81                           | 82.5                   | 124                    | 7.0                          |
| 100        | 217                     | 296                     | 370                                                  | 450                    | 159.0     | 100                    | 100                          | 107.1                  | 150                    | 10.0                         |

| Size<br>[inch] | A <sup>1)</sup><br>[inch] | B <sup>1)</sup><br>[inch] | A <sub>1</sub> /A <sub>2</sub> <sup>3)</sup><br>[inch] | B <sub>1</sub><br>[inch] | D<br>[inch] | D <sub>i</sub><br>[inch] | D <sub>i</sub> (PFA)<br>[inch] | D <sub>p</sub><br>[inch] | D <sub>G</sub><br>[inch] | Weight <sup>2)</sup><br>[lbs] |
|----------------|---------------------------|---------------------------|--------------------------------------------------------|--------------------------|-------------|--------------------------|--------------------------------|--------------------------|--------------------------|-------------------------------|
| 1/12           | 6.34                      | 7.33                      | 12.40                                                  | 13.39                    | 1.92        | 0.08                     |                                | 0.68                     | 1.34                     | 4.8                           |
| 1/8            | 6.34                      | 7.33                      | 12.40                                                  | 13.39                    | 1.92        | 0.12                     |                                | 0.68                     | 1.34                     | 4.8                           |
| 1/4            | 6.34                      | 7.33                      | 12.40                                                  | 13.39                    | 1.92        | 0.24                     |                                | 0.68                     | 1.34                     | 4.8                           |
| 3/8            | 6.34                      | 7.33                      | 12.40                                                  | 13.39                    | 1.92        | 0.39                     | 0.39                           | 0.53                     | 1.34                     | 4.8                           |
| 1/2            | 6.34                      | 7.33                      | 12.40                                                  | 13.39                    | 1.92        | 0.59                     | 0.63                           | 0.68                     | 1.57                     | 4.8                           |
| 1              | 6.66                      | 7.92                      | 12.72                                                  | 13.94                    | 2.50        | 0.98                     | 1.02                           | 1.12                     | 2.20                     | 5.9                           |
| 1 1/2          | 7.05                      | 8.70                      | 13.11                                                  | 14.76                    | 3.31        | 1.57                     | 1.50                           | 1.71                     | 2.95                     | 7.5                           |
| 2              | 7.40                      | 9.41                      | 13.47                                                  | 15.47                    | 4.00        | 1.97                     | 1.97                           | 2.15                     | 3.54                     | 9.2                           |
| 2 1/2          | 7.80                      | 10.16                     | 13.82                                                  | 16.22                    | 4.76        | 2.56                     | 2.60                           | 2.68                     | 4.41                     | 12                            |
| 3              | 8.03                      | 10.63                     | 14.06                                                  | 16.70                    | 5.24        | 3.15                     | 3.19                           | 3.25                     | 4.88                     | 15                            |
| 4              | 8.54                      | 11.65                     | 14.57                                                  | 17.72                    | 6.26        | 3.94                     | 3.94                           | 4.22                     | 5.91                     | 22                            |

<sup>1)</sup> 14.5 mm (0.571") shorter when the stainless steel terminal box is used (Ex or high temperature 200 °C (392 °F) version).

<sup>2)</sup> With transmitter MAG 5000 or MAG 6000 installed, weight is increased by approximately 0.8 kg (1.8 lb). With MAG 6000 I weight is increased with 5.5 kg (12.1 lbs).

<sup>3)</sup> A<sub>2</sub> is 3 mm (0.12") shorter than A<sub>1</sub>

The total built-in length "L" [mm]/[inch] before assembling depends on the gasket selected.

## Flow Measurement

### SITRANS FM (electromagnetic)

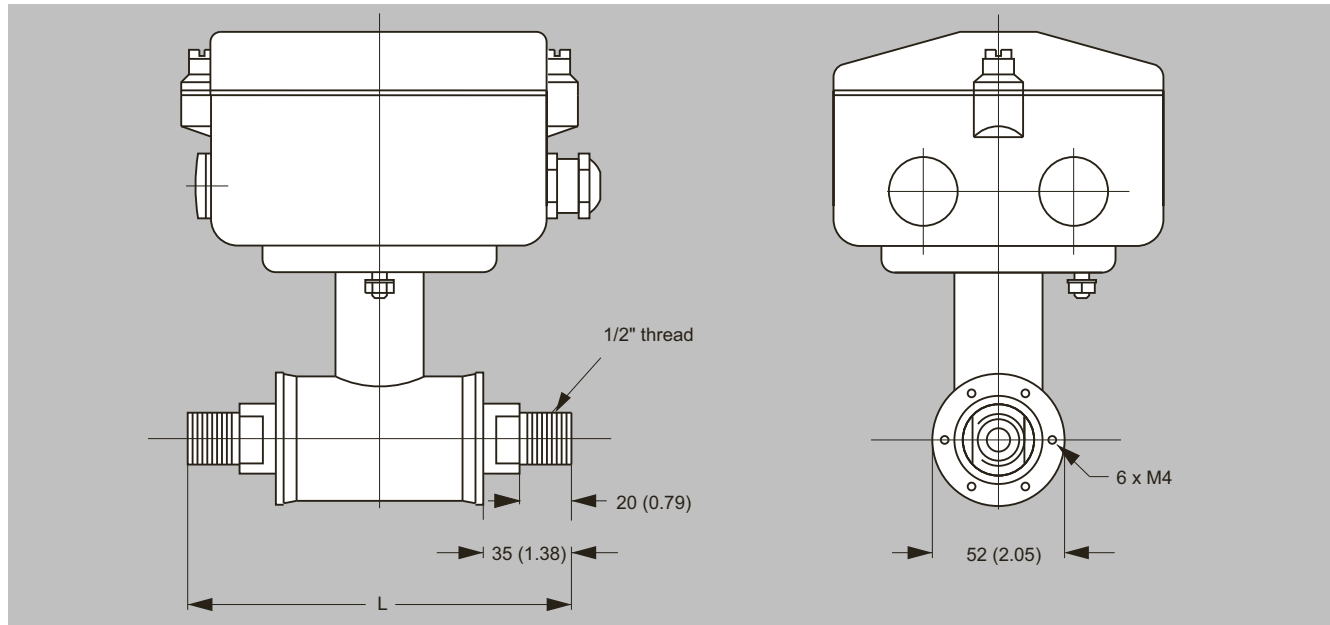
#### Flow sensors / SITRANS FM MAG 1100 and 1100 HT

#### Dimensional drawings (continued)

| Size                   |                                  | EPDM |        | Graphite |        | PTFE (Teflon) |        | Without gasket |        | Grounding ring |        |
|------------------------|----------------------------------|------|--------|----------|--------|---------------|--------|----------------|--------|----------------|--------|
| DN                     | Inch                             | [mm] | [inch] | [mm]     | [inch] | [mm]          | [inch] | [mm]           | [inch] | [mm]           | [inch] |
| 2 ... 10 <sup>1)</sup> | $\frac{1}{12}$ ... $\frac{3}{8}$ | 64   | 2.52   | 66       | 2.60   | 70            | 2.75   | 64             | 2.52   | 77             | 3.03   |
| 15                     | $\frac{1}{2}$                    | 65   | 2.56   | 66       | 2.60   | 70            | 2.75   | 64             | 2.52   | 77             | 3.03   |
| 25                     | 1                                | 80   | 3.15   | 81       | 3.19   | 85            | 3.35   | 79             | 3.10   | 92             | 3.62   |
| 40                     | $1\frac{1}{2}$                   | 95   | 3.74   | 96       | 3.78   | 100           | 3.94   | 94             | 3.70   | 107            | 4.21   |
| 50                     | 2                                | 105  | 4.13   | 106      | 4.17   | 110           | 4.33   | 104            | 4.05   | 117            | 4.61   |
| 65                     | $2\frac{1}{2}$                   | 130  | 5.12   | 131      | 5.15   | 135           | 5.31   | 129            | 5.05   | 142            | 5.60   |
| 80                     | 3                                | 155  | 6.10   | 156      | 6.14   | 160           | 6.30   | 154            | 6.00   | 167            | 6.57   |
| 100                    | 4                                | 185  | 7.28   | 186      | 7.31   | 190           | 7.48   | 184            | 7.20   | 197            | 7.76   |

<sup>1)</sup> Mounting between two flanges

#### Sensor MAG 1100 DN 2 ... 10 ( $\frac{1}{12}$ " ... $\frac{3}{8}$ ") with adapters



The MAG 1100 DN 2, 3, 6 and 10 ( $\frac{1}{12}$ ",  $\frac{1}{8}$ ",  $\frac{1}{4}$ " and  $\frac{3}{8}$ ") are prepared for assembly with the  $\frac{1}{2}$ " pipe connections. Dimensions in mm (inch)

The length "L" varies dependent on the gasket choice.

| Stainless steel and Hastelloy pipe connections |        |      |        |          |        | PVDF pipe connections |        |      |        |
|------------------------------------------------|--------|------|--------|----------|--------|-----------------------|--------|------|--------|
| Without gasket                                 |        | EPDM |        | Graphite |        | PTFE                  |        | PTFE |        |
| [mm]                                           | [inch] | [mm] | [inch] | [mm]     | [inch] | [mm]                  | [inch] | [mm] | [inch] |
| 150                                            | 5.9    | 150  | 5.9    | 152      | 6.0    | 156                   | 6.1    | 133  | 5.2    |

#### Important note:

For compact installation with the MAG 6000 I, transmitter to be supported to avoid tension on sensor part.