

Flow Measurement

SITRANS FM (electromagnetic)

Flow sensors / SITRANS FM MAG 1100 and 1100 HT

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 ($1/12$ " 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.

Selection and ordering data

| Sensor SITRANS FM MAG 1100 EPDM gaskets included | | Article No. 7ME6110- | |
|---|-----|-------------------------|---|
| Click on the Article No. for the online configuration in the PIA Life Cycle Portal. | | ● ● A ● 0 - ● ● ● ● | |
| Diameter | | | |
| DN 2 (1/12") | 1 D | | |
| DN 3 (1/8") | 1 H | | |
| DN 6 (1/4") | 1 M | | |
| DN 10 (3/8") | 1 R | | |
| DN 15 (1/2") | 1 V | | |
| DN 25 (1") | 2 D | | |
| DN 40 (1 1/2") | 2 R | | |
| DN 50 (2") | 2 Y | | |
| DN 65 (2 1/2") | 3 F | | |
| DN 80 (3") | 3 M | | |
| DN 100 (4") | 3 T | | |
| Liner material | | | |
| PFA - DN 10 ... 100 (3/8" ... 4") | | 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 (only MAG 6000/MAG 6000 I) | | | F |
| PROFIBUS DP Profile 3 (not for Ex) (only MAG 6000/MAG 6000 I) | | | G |
| Modbus RTU/RS 485 (not for Ex) (only MAG 6000/MAG 6000 I) | | | E |
| FOUNDATION Fieldbus H1 (only MAG 6000/MAG 6000 I) | | | J |
| Cable glands/terminal box | | | |
| Metric: Polyamide terminal box or MAG 6000 I compact | | | 1 |
| 1/2" NPT: Polyamide terminal box or MAG 6000 I compact | | | 2 |
| Metric: Stainless steel terminal box | | | 3 |
| 1/2" NPT: Stainless steel terminal box | | | 4 |

1) Quick ship only in combination with Ceramic liner

| | Order code |
|--|------------|
| Additional information | |
| Please add "-Z" to Article No. and specify Order code(s) and plain text. | |
| Certificates | |
| 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 |
| Special calibration | |
| 5-point calibration ¹⁾ | D01 |
| 10-point calibration ²⁾ | D06 |

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

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Flow sensors / SITRANS FM MAG 1100 and 1100 HT

Selection and ordering data (continued)

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

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

- 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)

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

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

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


- 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)

| Description | Article No. |
|-------------|-------------|
| • English | A5E02435647 |




All literature is available to download for free, in a range of languages, at www.siemens.com/processinstrumentation/documentation

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. | |
|--|------------------------------|---|
| Pipe connection ½" external thread For DN 2 ... 10 (1/12" ... 3/8") sensor Material: Stainless steel AISI 316L 2 pcs. pipe connections, 2 pcs. EPDM gaskets, 12 pcs. M4x12 screws | |  |
| <ul style="list-style-type: none"> • ½" ISO 7-1 tapered thread • ½" NPT thread | FDK:083G0080 FDK:083G4330 | |
| For DN 2 ... 10 (1/12" ... 3/8") sensor Material: Hastelloy C, 2 pcs. pipe connections, 2 pcs. PTFE gaskets, 12 pcs. M4x12 screws | | |
| <ul style="list-style-type: none"> • ½" ISO 7-1 tapered thread • ½" NPT thread | FDK:083G4332 FDK:083G4331 | |
| For DN 2 ... 10 (1/12" ... 3/8") sensor Material PVDF (Kynar 1000) 2 pcs. pipe connections (Max. 70 °C, PN 8 bar/max 158 °F, 116 PSI), 1 pc. grounding ring ¹⁾ , 1 pc. grounding wire, 3 pcs. PTFE gaskets, 2 pcs. space rings, 6 pcs. M4x12 and 6 pcs. M4x16 screws | | |
| <ul style="list-style-type: none"> • ½" ISO 7-1 tapered thread incl. grounding ring • ½" NPT thread incl. grounding ring | A5E01018395 A5E01018400 | |
| EPDM gaskets 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"> • DN 2 ... 10 (1/12" ... 3/8") | FDK:083G3116 | |
| <ul style="list-style-type: none"> • DN 15 (½") | FDK:083G3117 | |
| <ul style="list-style-type: none"> • DN 25 (1") | FDK:083G3119 | |
| <ul style="list-style-type: none"> • DN 40 (1½") | FDK:083G3121 | |
| <ul style="list-style-type: none"> • DN 50 (2") | FDK:083G3122 | |
| <ul style="list-style-type: none"> • DN 65 (2½") | FDK:083G3123 | |
| <ul style="list-style-type: none"> • DN 80 (3") • DN 100 (4") | FDK:083G3124 FDK:083G3125 | |
| PTFE gaskets Material: PTFE; each set includes: 2 pcs. gaskets, 2 pcs. grounding wires, 3 pcs. M6 screws (DN 2 ... 10: 12 pcs. M4x14) | |  |
| <ul style="list-style-type: none"> • DN 2 ... 10 (1/12" ... 3/8") | FDK:083G0156 | |
| <ul style="list-style-type: none"> • DN 15 (½") | FDK:083G0157 | |
| <ul style="list-style-type: none"> • DN 25 (1") | FDK:083G0159 | |
| <ul style="list-style-type: none"> • DN 40 (1½") | FDK:083G0161 | |
| <ul style="list-style-type: none"> • DN 50 (2") | FDK:083G0162 | |
| <ul style="list-style-type: none"> • DN 65 (2½") | FDK:083G0163 | |
| <ul style="list-style-type: none"> • DN 80 (3") | FDK:083G0164 | |

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Flow sensors / SITRANS FM MAG 1100 and 1100 HT

Selection and ordering data (continued)

| Description | Article No. | |
|--|--|---|
| <ul style="list-style-type: none"> • DN 100 (4") | FDK:083G0165 |  |
| <p>Graphite gaskets Material: Graphite; conductive, each set includes: 2 pcs. gaskets (can also be used as grounding ring)</p> <ul style="list-style-type: none"> • DN 2 ... 10 (1/12" ... 3/8") • DN 15 (1/2") • DN 25 (1") • DN 40 (1 1/2") • DN 50 (2") • DN 65 (2 1/2") • DN 80 (3") • DN 100 (4") | <ul style="list-style-type: none"> FDK:083G0116 FDK:083G0117 FDK:083G0119 FDK:083G0121 FDK:083G0122 FDK:083G0123 FDK:083G0124 FDK:083G0125 |  |
| <p>Grounding ring (stainless steel) Material: AISI 316L/1.4404; each set includes: 1 pc. grounding ring¹⁾, 3 pcs. PTFE gaskets, 1 pc. earth wire, 1 pc. M6 screw</p> <ul style="list-style-type: none"> • DN 2 ... 10 (1/12" ... 3/8") • DN 15 (1/2") • DN 25 (1") • DN 40 (1 1/2") • DN 50 (2") • DN 65 (2 1/2") • DN 80 (3") • DN 100 (4") | <ul style="list-style-type: none"> FDK:083G0686 FDK:083G0687 FDK:083G0689 FDK:083G0691 FDK:083G0692 FDK:083G0693 FDK:083G0694 FDK:083G0695 |  |
| <p>Grounding ring (Hastelloy C) Material: Hastelloy C22/2.4602; each set includes: 1 pc. grounding ring¹⁾, 3 pcs. PTFE gaskets, 1 pc. earth wire, 1 pc. M6 screw</p> <ul style="list-style-type: none"> • DN 2 ... 10 (1/12" ... 3/8") • DN 15 (1/2") • DN 25 (1") • DN 40 (1 1/2") • DN 50 (2") • DN 65 (2 1/2") • DN 80 (3") • DN 100 (4") | <ul style="list-style-type: none"> FDK:083G3256 FDK:083G3257 FDK:083G3259 FDK:083G3261 FDK:083G3262 FDK:083G3263 FDK:083G3264 FDK:083G3265 |  |
| <p>Grounding ring (Tantalum) Material: Tantalum; each set includes: 1 pc. grounding ring¹⁾, 3 pcs. PTFE gaskets, 1 pc. earth wire, 1 pc. M6 screw</p> <ul style="list-style-type: none"> • DN 2 ... 10 (1/12" ... 3/8") • DN 15 (1/2") • DN 25 (1") • DN 40 (1 1/2") • DN 50 (2") • DN 65 (2 1/2") | <ul style="list-style-type: none"> A5E01181599 A5E01181606 A5E01181610 A5E01181613 A5E01181615 A5E01181616 | |

Selection and ordering data (continued)

| Description | Article No. | |
|--|---------------------------------------|---|
| <ul style="list-style-type: none"> • DN 80 (3") • DN 100 (4") | <p>A5E01181619</p> <p>A5E01181622</p> |  |
| <p>Studs and nuts For DN 100 PN 25/40, 8 pcs. M20 studs, 16 pcs. M20 nuts Material: AISI 304/1.4305</p> <ul style="list-style-type: none"> • DN 100 (4") | <p>FDK:083G0226</p> |  |

¹⁾ 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" ... 2 1/2"): 12.5 Hz/15 Hz DN 80, 100 (3", 4"): 6.25 Hz/7.5 Hz | DN 15 ... 50 (1/2" ... 2"): 12.5 Hz/15 Hz DN 80, 100 (3", 4"): 6.25 Hz/7.5 Hz |
| Process connection | | |
| Nominal size | | |
| • MAG 1100 (Ceramic) | DN 2 ... 100 (1/12" ... 4") | DN 15 ... 100 (1/2" ... 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 Option: DN 2 ... 10 (1/12" ... 3/8"): 3/2" x 1/2" NPT pipe connection adapters | EN 1092-1 (DIN 2501), ANSI B16.5 class 150 and 300 or equivalent |
| Rated operating conditions | | |
| Ambient temperature | | |
| • 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 ¹⁾ | -20 ... +60 °C (-4 ... +140 °F) | |
| • Compact with transmitter MAG 6000 I Ex ¹⁾ | -20 ... +60 °C (-4 ... 140 °F) | |
| Temperature of medium | | |
| • 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) Suitable for steam sterilization at 150 °C (302 °F) | |
| Temperature shock | Duration ≤ 1 min, followed by 10 min rest | |
| • MAG 1100 (Ceramic) | <ul style="list-style-type: none"> • DN 2, 3 (1/12", 1/8") No limitations • DN 6, 10, 15, 25: Max. ΔT ≤ 80 °C/min (1/4", 3/8", 1/2", 1": Max. ΔT ≤ 144 °F/min) • DN 40, 50, 65: Max. ΔT ≤ 70 °C/min (1 1/2", 2", 2 1/2": Max. ΔT ≤ 126 °F/min) • DN 80, 100: Max. ΔT ≤ 60 °C/min (3", 4": Max. ΔT ≤ 108 °F/min) | <ul style="list-style-type: none"> • DN 15, 25: Max. ΔT ≤ 80 °C/min (1/2", 1": Max. ΔT ≤ 144 °F/min) • DN 40, 50: Max. ΔT ≤ 70 °C/min (1 1/2", 2": Max. ΔT ≤ 126 °F/min) • DN 80, 100: Max. ΔT ≤ 60 °C/min (3", 4": Max. ΔT ≤ 108 °F/min) |
| • MAG 1100 (PFA) | <ul style="list-style-type: none"> • 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) • DN 80, 100: Max. ΔT 110 °C/min (3", 4": Max. ΔT 230 °F/min) | |
| Operating pressure | | |
| • MAG 1100 (Ceramic) | <ul style="list-style-type: none"> • DN 2 ... 65: 40 bar (1/12" ... 2 1/2": 580 psi) • DN 80: 37.5 bar (3": 540 psi) | <ul style="list-style-type: none"> • DN 15 ... 50: 40 bar (1/2" ... 2": 580 psi) • DN 80: 37.5 bar (3": 540 psi) |

Technical specifications (continued)

| Version | MAG 1100 | MAG 1100 HT (High Temperature) |
|--|--|---|
| • MAG 1100 (Ceramic) | <ul style="list-style-type: none"> • DN 100: 30 bar (4": 435 psi) Vacuum: 1 × 10⁻⁶ bar_{abs} (1.5 × 10⁻⁵ psi_{abs}) | <ul style="list-style-type: none"> • DN 100: 30 bar (4": 435 psi) Vacuum: 1 × 10⁻⁶ bar_{abs} (1.5 × 10⁻⁵ psi_{abs}) |
| • MAG 1100 (PFA) | <ul style="list-style-type: none"> 20 bar (290 psi) Vacuum: 0.02 bar_{abs} (0.3 psi_{abs}) DN 80 ... 100: CO₂ pressure max. 7 bar (101.5 psi) | |
| Mechanical load (vibration) | <ul style="list-style-type: none"> • 18 ... 1000 Hz random in x, y, z, directions for 2 hours according to EN 60068-2-36 • Sensor: 3.17 g RMS • Sensor with compact MAG 5000/6000 mounted transmitter: 3.17 g RMS • Sensor with compact MAG 6000 I/6000 I Ex mounted transmitter: 1.14 g RMS • For compact installation with the MAG 6000 I, transmitter to be supported to avoid tension on sensor part. | <ul style="list-style-type: none"> • 18 ... 1000 Hz random in x, y, z, directions for 2 hours according to EN 60068-2-36 • Sensor: 3.17 g RMS |
| Protection class | IP67, NEMA 6 | IP67, NEMA 6 |
| EMC | 2014/30/EU | 2014/30/EU |
| Design | | |
| Weight | See Dimensional drawings | See Dimensional drawings |
| Material | | |
| • Enclosure | Stainless steel AISI 316L/1.4404 | Stainless steel AISI 316L/1.4404 |
| • Terminal box | | |
| - Standard | Fibre glass reinforced polyamide (not for Ex) | Stainless steel AISI 316/1.4436 |
| - Option | Stainless steel AISI 316/1.4436 | |
| • Fixing studs | Stainless steel AISI 304/1.4301, Number and size to EN 1092-1:2001 | Stainless steel 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 | <ul style="list-style-type: none"> • Graphite (max. 200 °C, PN 40 (max. 392 °F, 600 psi)) • PTFE (max. 130 °C, PN 25 (max. 266 °F, 300 psi)) | |
| • Pipe connection adapters: DN 2, 3, 6 and 10 (1/12", 1/8", 1/4" and 3/8") | <ul style="list-style-type: none"> • Stainless steel, AISI 316 /1.4436 • Hastelloy C22/2.4602 • PVDF | |
| • Liner | | |
| - MAG 1100 (Ceramic) | <ul style="list-style-type: none"> • DN 2, 3 (1/12", 1/8"): Zirconium oxide (ZrO₂) • DN 6 ... 100 (1/4" ... 4"): Aluminum oxide (Al₂O₃) | DN 15 ... 100 (1/2", 4"): Aluminum oxide Al ₂ O ₃ |
| - MAG 1100 (PFA) | Reinforced PFA (not for Ex) | |
| • Electrodes | | |
| - MAG 1100 (Ceramic) | <ul style="list-style-type: none"> • DN 10 ... 100 (3/8" ... 4"): Platinum with Gold / Titanium brazing alloy | Platinum with Gold / Titanium brazing alloy |

Technical specifications (continued)

| Version | MAG 1100 | MAG 1100 HT (High Temperature) |
|--|---|--|
| - MAG 1100 (Ceramic) | • DN 2 ... 6 (1/12" ... ¼"): Platinum | |
| - MAG 1100 (PFA) | • DN 10 ... 100 (3/8" ... 4"): Hastelloy C22/2.4602 | |
| Cable entries | <ul style="list-style-type: none"> • Remote installation 2 × M20 or 2 × ½" NPT • Compact installation | Remote installation 2 × M20 or 2 × ½" NPT |
| | <ul style="list-style-type: none"> - MAG 5000/MAG 6000: 4 × M20 or 4 × ½" NPT - MAG 6000 I : 2 × M20 (M25 for PROFIBUS) or 2 × ½" NPT | |
| Certificates and approvals | | |
| Calibration | | |
| • Default calibration | Zero-point, 2 × 25 %, 2 × 90 % | Zero-point, 2 × 25 %, 2 × 90 % |
| • Special calibration | 5-point calibration: 20 %, 40 %, 60 %, 80 %, 100 % of factory Q _{max} 10-point calibration: ascending and descending at 20 %, 40 %, 60 %, 80 %, 100 % of factory Q _{max} Matched-pair calibration: default, 5-point or 10-point | |
| Hazardous areas | | |
| • MAG 1100 F (Ceramic) | | |
| - Ex-sensor in compact or remote version with MAG 6000 I Ex | <ul style="list-style-type: none"> • ATEX, EAC Ex - Zone 1 Ex d e ia IIB T6 Gb • ATEX - Zone 21 Ex tD A21 IP67 | <ul style="list-style-type: none"> • ATEX, EAC Ex - Zone 1 Ex d e ia IIB T6 Gb • ATEX - Zone 21 Ex tD A21 IP67 |
| - Standard sensor in compact or remote version with MAG 5000/6000/6000 I | <ul style="list-style-type: none"> • FM - NI Class I Div. 2 Groups A, B, C, D | <ul style="list-style-type: none"> • FM - NI Class I Div. 2 Groups A, B, C, D |
| • MAG 1100 F (PFA) | | |
| - Standard sensor in compact or remote version with MAG 5000/6000/6000 I | <ul style="list-style-type: none"> • FM - NI Class I Div. 2 Groups A, B, C, D | |
| General purpose | <ul style="list-style-type: none"> • CE (LVD, PED, EMC, RoHS), UKCA • CRN (only PFA) | <ul style="list-style-type: none"> • CE (LVD, PED, EMC, RoHS), UKCA |
| Others | • EAC (Kazakhstan) | • EAC (Kazakhstan) |

1) With HART communication max. ambient temperature 50 °C (122 °F).

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

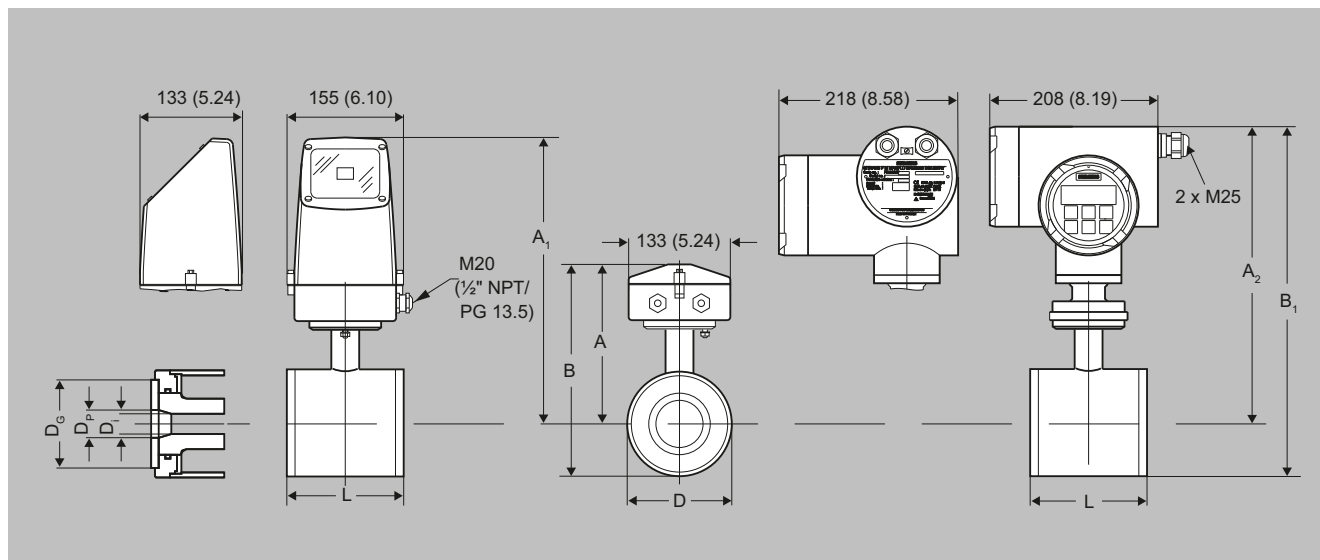
Flow Measurement

SITRANS FM (electromagnetic)

Flow sensors / SITRANS FM MAG 1100 and 1100 HT

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 DN | A ¹⁾ [mm] | B ¹⁾ [mm] | A ₁ /A ₂ ³⁾ [mm] | B ₁ [mm] | D [mm] | D _i [mm] | D _i (PFA) [mm] | D _p [mm] | D _G [mm] | Weight ²⁾ [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 [inch] | A ¹⁾ [inch] | B ¹⁾ [inch] | A ₁ /A ₂ ³⁾ [inch] | B ₁ [inch] | D [inch] | D _i [inch] | D _i (PFA) [inch] | D _p [inch] | D _G [inch] | Weight ²⁾ [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 |

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

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

³⁾ A₂ is 3 mm (0.12") shorter than A₁

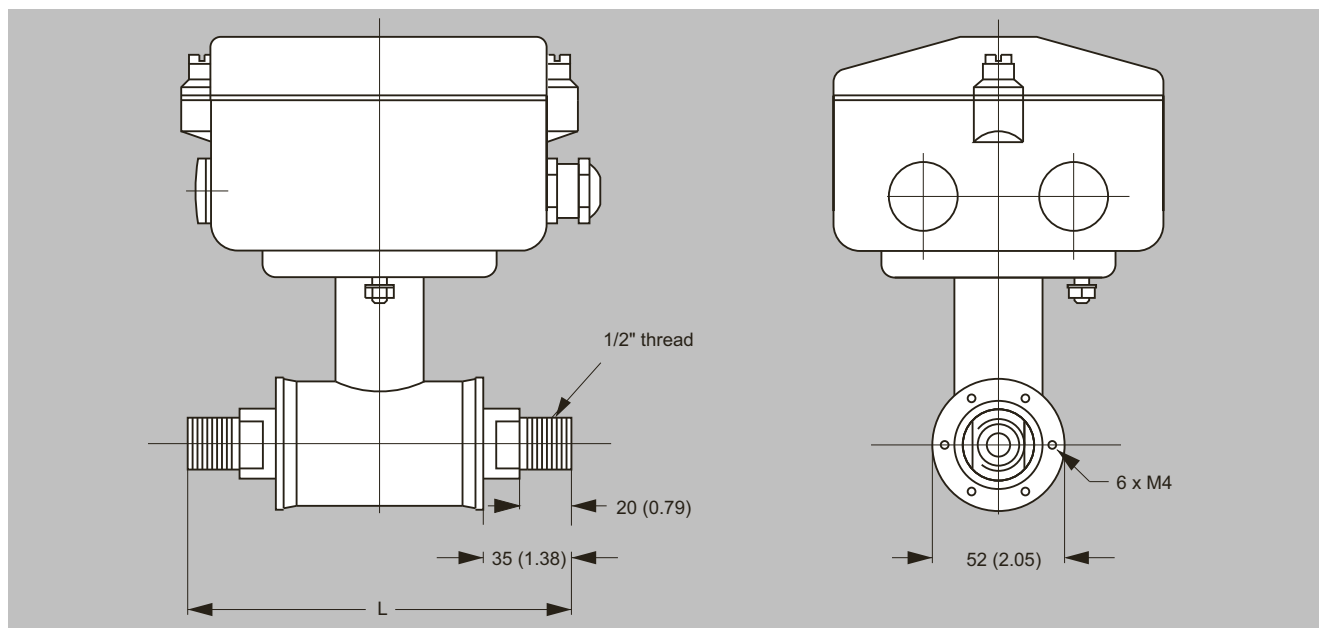
The total built-in length "L" [mm]/[inch] before assembling depends on the gasket selected.

Dimensional drawings (continued)

| Size | EPDM | | Graphite | | PTFE (Teflon) | | Without gasket | | Grounding ring | | |
|------------------------|--------------|------|----------|------|---------------|------|----------------|------|----------------|------|--------|
| | Inch | [mm] | [inch] | [mm] | [inch] | [mm] | [inch] | [mm] | [inch] | [mm] | [inch] |
| 2 ... 10 ¹⁾ | 1/12 ... 3/8 | 64 | 2.52 | 66 | 2.60 | 70 | 2.75 | 64 | 2.52 | 77 | 3.03 |
| 15 | 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 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 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 |

¹⁾ Mounting between two flanges

Sensor MAG 1100 DN 2 ... 10 (1/12" ... 3/8") with adapters



The MAG 1100 DN 2, 3, 6 and 10 (1/12", 1/8", 1/4" and 3/8") are prepared for assembly with the 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.