

Overview



The SITRANS FM MAG 3100 (7ME641) is an electromagnetic flow sensor with the PTFE liner, which is suitable for volume flow measurement of conductive liquids in most of the applications in process industry. Like water & waste water treatment, chemical industry, steel industry, mining, utility, power generation and distribution, etc.

Benefits

- Sensor sizes: DN 50 to DN 300 (2" to 12")
- Various electrode materials to fit even the most extreme process media
- Flexible with integrated grounding electrodes, or optional grounding rings as accessory
- Sensor built-in length according to ISO 20456 (up to DN 300 mm)
- SENSORPROM Technology provides an automatic upload of startup settings and calibration data for easy commissioning
- High temperature sensor for applications with temperatures up to 120 °C
- 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:

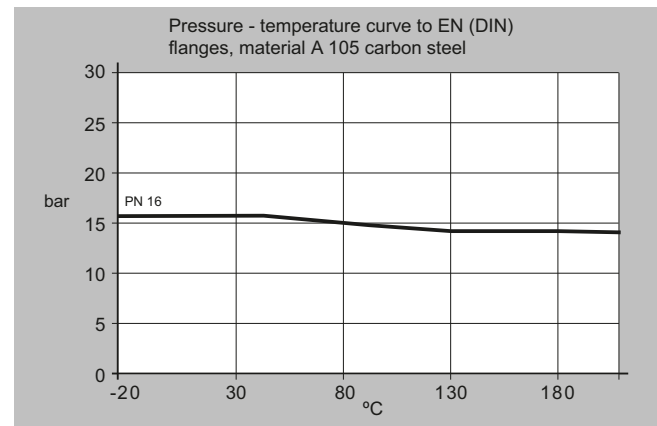
- Process industry
- Chemical industry
- Steel industry
- Mining
- Utility
- Power generation and distribution
- Oil and gas/HPI
- Water and waste water

Integration

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

The flexible communication concept simplifies integration and update to a variety of fieldbus systems such as HART, FOUNDATION Fieldbus H1, PROFIBUS DP and PA, Modbus RTU/RS 485.

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



Note: The pressure-temperature curves only assist in the selection of a system. No responsibility is taken for the correctness of the information.

Flow Measurement

SITRANS FM (electromagnetic)

Flow sensors / SITRANS FM MAG 3100 China Edition

Selection and ordering data

	Article No.												Order code
Sensor SITRANS FM MAG 3100	7ME641-												
	●	-	●	●	●	●	●	●	-	●	●	A	●
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.													
Transmitter variant													
No transmitter (sensor only)	0												
Transmitter classic	9												
Transmitter MAG 5000, IP67, with display	9											G	5 Y
Transmitter MAG 6000, IP67, with display	9											G	6 Y
Diameter													
DN 50, 2 inch			2	Y									
DN 65, 2½ inch			3	F									
DN 80, 3 inch			3	M									
DN 100, 4 inch			3	T									
DN 125, 5 inch			4	B									
DN 150, 6 inch			4	H									
DN 200, 8 inch			4	P									
DN 250, 10 inch			4	V									
DN 300, 12 inch			5	B									
Process connection													
EN 1092-1 PN16					C								
Flange material and coating													
Carbon steel ASTM A 105 with corrosion-resistant coating acc. to EN ISO 12944 grade C4					0								
Carbon steel ASTM A 105 with corrosion-resistant coating acc. to EN ISO 12944 grade C5					1								
Liner material													
PTFE					3								
Electrode material													
Stainless steel AISI 316Ti / 1.4571								0					
Hastelloy C276 / 2.4819								1					
Tantalum								4					
Transmitter design, Enclosure material													
Sensor for remote transmitter (order transmitter separately)									A				
Compact design (integral mount), polycarbonate enclosure									G				
Power supply													
None (sensor only)										0			
11 ... 30 V DC / 11 ... 24 V AC 50/60 Hz										2			
115 ... 230 V AC 50/60 Hz										3			

	Order code
Additional information	
Please add "-Z" to Article No. and specify Order code(s) and plain text.	
Cable glands	
M20 × 1.5 cable glands, material polyamide	A02
1/2 inch NPT cable glands, material polyamide	A05
Certificates	
Declaration of compliance with the order 2.1 (EN 10204)	C00
Inspection certificate 3.1 (EN 10204) - Material of pressure-containing and wetted parts	C12
Test report 2.2 (EN 10204)	C14
Inspection certificate 3.1 (EN 10204) - Pressure test	C18
Calibration	
5-point factory calibration (DN ≤ 200, ≤ 8")	D10
5-point factory calibration (DN 250 ... 600, 10" ... 24")	D11

	Order code
10-point factory calibration (DN ≤ 200, ≤ 8")	D15
10-point factory calibration (DN 250 ... 600, 10" ... 24")	D16
Default matched-pair factory calibration (DN ≤ 200, ≤ 8")	D20
Default matched-pair factory calibration (DN 250 ... 600, 10" ... 24")	D21
5-point, matched-pair factory calibration (DN ≤ 200, ≤ 8")	D25
5-point, matched-pair factory calibration (DN 250 ... 600, 10" ... 24")	D26
10-point, matched-pair factory calibration (DN ≤ 200, ≤ 8")	D30
10-point, matched-pair factory calibration (DN 250 ... 600, 10" ... 24")	D31
Communication	
HART	F01
Modbus RTU / RS 485	F04

Selection and ordering data (continued)

	Order code
PROFIBUS PA PROFILE 3	F05
PROFIBUS DP PROFILE 3	F06
FOUNDATION Fieldbus H1	F08
Grounding electrodes	
Without	J50
Stainless steel AISI 316Ti / 1.4571	J51
Hastelloy C276 / 2.4819	J52
Tantalum	J55
Standard cable	
Cable kit with coil and electrode cable, standard type (3 × 1.5 mm ²), PVC jacket	
5 m (16 ft)	T00
10 m (33 ft)	T01
20 m (65 ft)	T03
30 m (98 ft)	T05
40 m (131 ft)	T06
50 m (164 ft)	T07
60 m (196 ft)	T08
100 m (328 ft)	T11
150 m (492 ft)	T14
200 m (656 ft)	T16
500 m (1640 ft)	T18
Special cable	
Cable kit with coil cable standard type (3 × 1.5 mm ²) and electrode cable special type (3 × 0.25 mm ²), PVC jacket	
5 m (16 ft)	T50
10 m (33 ft)	T51
15 m (49 ft)	T52
20 m (65 ft)	T53
25 m (82 ft)	T54
30 m (98 ft)	T55
40 m (131 ft)	T56
50 m (164 ft)	T57
60 m (196 ft)	T58
100 m (328 ft)	T61
150 m (492 ft)	T64
200 m (656 ft)	T66
500 m (1640 ft)	T68
Nameplate Language	
Product nameplate in English (Chinese as default)	W01
Device identification	
Tag label (Device parameter, max. 32 characters), stainless steel plate 316L/1.4404	Y15
Tag label (Device parameter, max. 32 characters), adhesive label	Y18

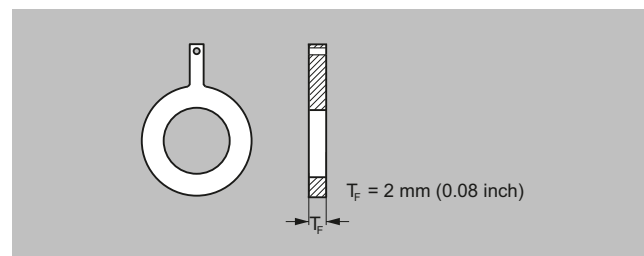
Please use online Product selector to get latest updates.

Product selector link:

<http://www.pia-portal.automation.siemens.com>

Accessories for MAG 3100 sensor (7ME641)

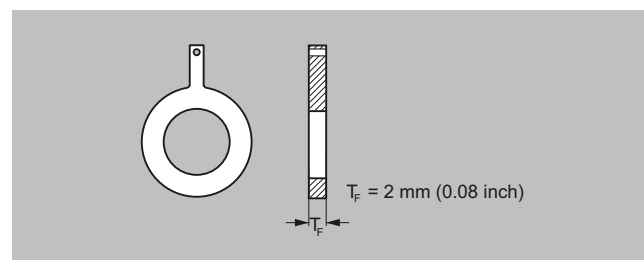
Grounding ring - Type Flat ring (Stainless steel)



- Material AISI 316
- For all liners (PTFE max. 120 °C (248 °F))
- 1 pc.

Size DN	EN 1092-1 PN 16
	Article No.
DN 50	A5E01151121
DN 65	A5E01191940
DN 80	A5E01152876
DN 100	A5E01158875
DN 125	A5E01191941
DN 150	A5E01191943
DN 200	A5E01191944
DN 250	A5E01191946
DN 300	A5E01191947

Grounding ring - Type Flat ring (Hastelloy)



- Material Hastelloy C276
- For all liners (PTFE max. 120 °C (248 °F))
- 1 pc.

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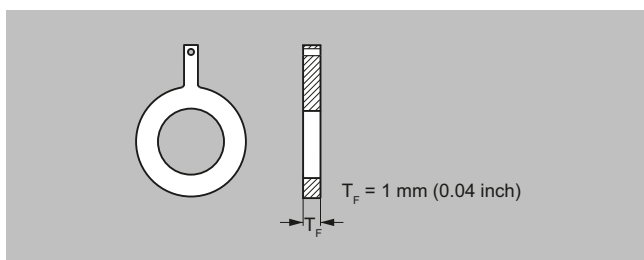
Selection and ordering data (continued)

Size DN	EN 1092-1 PN 16
	Article No.
DN 50	A5E01151124
DN 65	A5E01191971
DN 80	A5E01152889
DN 100	A5E01158886
DN 125	A5E01191973
DN 150	A5E01191974
DN 200	A5E01191975
DN 250	A5E01191976
DN 300	A5E01191977

- Material: Tantalum
- For all liners (PTFE max. 120 °C (248 °F))
- 1 pc.

Size DN	EN 1092-1 PN 16
	Article No.
DN 50	A5E01151129
DN 65	A5E01192005
DN 80	A5E01152890
DN 100	A5E01158891

Grounding ring - Type Flat ring (Tantalum)



Flow Measurement

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Technical specifications

Version	MAG 3100 (7ME6410)
Product characteristic	Flexible product program
Nominal size	DN 50 ... 300 (2" ... 12")
Measuring principle	Electromagnetic induction
Excitation frequency (Mains supply: 50 Hz/60 Hz)	• DN 50 ... 65 (2" ... 2½"): 12.5 Hz/15 Hz • DN 80 ... 150 (3" ... 6"): 6.25 Hz/7.5 Hz • DN 200 ... 300 (8" ... 12"): 3.125 Hz/3.75 Hz
Process connection	
Flanges	EN 1092-1, flat face • DN 50 ... 300 (2" ... 12"): PN 16 (232 psi) Other flanges and pressure ratings on request
Rated operating conditions	
Ambient temperature (conditions also dependent on liner characteristics)	
• Standard sensor	-20 ... +100 °C (-4... +248 °F)
• Compact with transmitter MAG 5000/6000	-20 ... +60 °C (-4 ... +140 °F)
Operating pressure [abs bar]	• PTFE DN ≤ 300 (≤ 12"): 1 ... 17 bar (14.5 ... 246.56 psi)
Temperature of medium	• PTFE -20 ... +120 °C (-4 ... +248 °F)
Mechanical load (vibration)	• 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
Pressure drop	• DN 50 ... 300 (2" ... 12"): Max. 25 mbar (0.36 psi) at 3 m/s (10 ft/s)
Test pressure	• 1.5 × PN (where applicable)
Protection class	IP66/67, NEMA 4X/6
EMC	2014/30/EU
Design	
Weight	See dimensional drawings
Material	
• Flange and sensor housing	Carbon steel ASTM A 105 with corrosion protection EN ISO 12944 grade C4 or grade C5 (medium durability ≤15 years)
• Measuring tube	Carbon steel ASTM A 106
• Electrode	• Stainless steel AISI 316Ti/1.4571 • Hastelloy C276/2.4819 • Tantalum
• Grounding electrode	• PTFE: optional in Stainless steel, Hastelloy C, or Tantalum
• Terminal box	
- Standard	Fibre glass reinforced polyamide
Cable entries	• Remote installation: 2 × M20 or 2 × ½" NPT • Compact installation: MAG 5000/MAG 6000: 4 × M20 or 4 × ½" NPT
Certificates and approvals	
Calibration	
• Default calibration	Zero-point, 2 × 25% and 2 × 90% (default)

Technical specifications (continued)

Version	MAG 3100 (7ME6410)
• 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
General purpose	CPA (China)

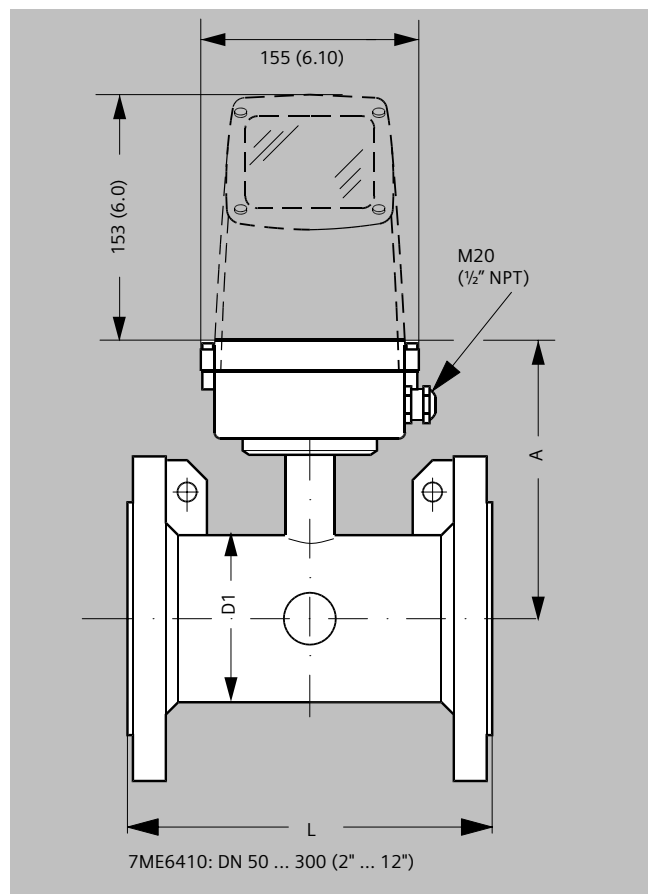
Technical specification for transmitter - please see the document about transmitters.

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Dimensional drawings



DN		A		D1		L ¹⁾		Weight	
[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[kg]	[lbs]
50	2	188	7.4	76	3.0	200	7.9	10	22
65	2½	194	7.6	89	3.5	200	7.9	13	29
80	3	200	7.9	102	4.0	200	7.9	15	33
100	4	207	8.1	114	4.5	250	9.8	20	44
125	5	217	8.5	140	5.5	250	9.8	27	59
150	6	232	9.1	168	6.6	300	11.8	36	79
200	8	257	10.1	219	8.6	350	13.8	54	119
250	10	284	11.2	273	10.8	450	17.7	82	180
300	12	310	12.2	324	12.8	500	19.7	116	255

¹⁾ Tolerances on built-in length: DN 50 to DN 200 (2" to 8"): +0/-3 mm (+0/-0.12"), DN 250 to DN 300 (10" to 12"): +0/-5 mm (+0/-0.20").