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Overview

The SITRANS FM MAG 3100 P is designed to meet the most common specifications within chemical and process industries.

Benefits

- DN 15 to DN 300 (½" to 12")
- Included in Quick Ship Program
- Excellent chemical resistance
- High temperature sensor for applications with temperatures up to 150 °C (302 °F)
- Fully welded construction provides a ruggedness that suits the toughest applications and environments
- SENSORPROM Technology provides an automatic upload of startup settings and calibration data for easy commissioning
- Designed to allow in-situ verification for easy performance check
- Approved for hazardous areas for maximum safety and reliability
- Conforming to NAMUR recommendations NE 21, NE 32, NE 43, NE 53 and NE 70
- Meets EEC directive PED 2014/68/EU
- Sensor face-to-face length according to ISO 20456
- Option for IP68 / NEMA 6P protection class ex works or for upgrading on site

Application

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

- Chemical industry
- Process industry
- Pulp and paper
- Industrial waste water

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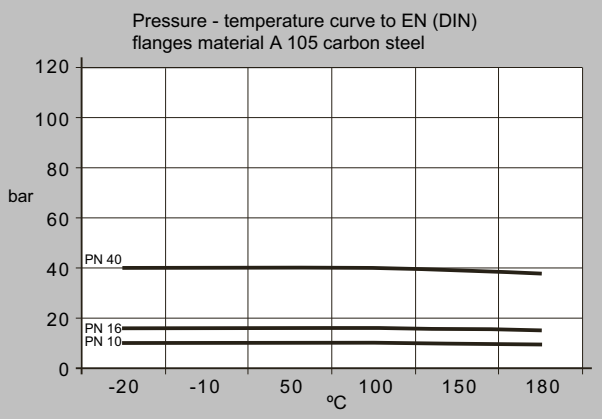
Integration

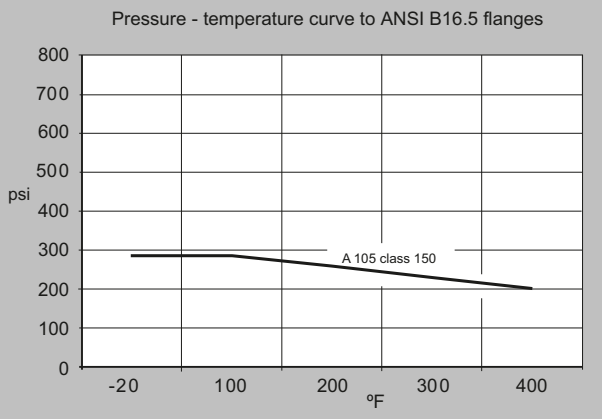
The complete flowmeter consists of a flow sensor and an associated transmitter MAG 5000, 6000 and 6000 I.

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.

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



Pressure-temperature curve to ANSI B16.5 flanges



Note: The pressure-temperature curves only assist in the selection of a system. No responsibility is taken for the correctness of the information. For exact data please refer to the PED requirements.

For further information on the PED standard and requirements, see the section about Pressure Equipment Directive.

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Selection and ordering data

Sensor SITRANS FM MAG 3100 P (Short delivery time)	Article No. 7ME6340-									
	●	●	●	●	●	-	●	●	●	●
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.										
Diameter										
DN 15 (½")	1	V								
DN 25 (1")	2	D								
DN 40 (1½")	2	R								
DN 50 (2")	2	Y								
DN 65 (2½")	3	F								
DN 80 (3")	3	M								
DN 100 (4")	3	T								
DN 125 (5")	4	B								
DN 150 (6")	4	H								
DN 200 (8")	4	P								
DN 250 (10")	4	V								
DN 300 (12")	5	D								
Flange norm and pressure rating										
EN 1092-1										
PN 10 (DN 200 ... 300 (8" ... 12"))			B							
PN 16 (DN 65 ... 300 (2½" ... 12"))			C							
PN 40 (DN 15 ... 50 (½" ... 2"))			F							
ANSI B16.5										
Class 150 (½" ... 12")			J							
Flange material										
Carbon steel flanges ASTM A 105				1						
Liner material										
PTFE (150 °C (302 °F))					3					
PFA (150 °C (302 °F)) (DN 15 ... 150 (½" ... 6"))					7					
Electrode material										
Hastelloy C							2			
Platinum							3			
Tantalum							5			
Hastelloy C incl. grounding electrodes							6			
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, 115 ... 230 V AC, Ex								E		
MAG 6000 I, Aluminum, 18 ... 90 V DC, 115 ... 230 V AC (non-Ex)								F		
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	
Modbus RTU/RS 485 (not for Ex) (only MAG 6000/MAG 6000 I)									E	
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	
FOUNDATION Fieldbus H1 (only MAG 6000/6000 I)									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										4

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Selection and ordering data (continued)

	Order code
Additional information	
Please add "**-Z**" to Article No. and specify Order code(s) and plain text.	
Certificates	
Factory certificate according to EN 10204-2.2	**C14**
Factory certificate according to EN 10204-2.1	**C15**
Terminal blocks	
Factory mounted terminal blocks	**N02**
Country specific label	
CRN (Canadian Registration Number)	**H25**
Device identification	
Tag name, stainless steel plate for transmitter (specify in plain text)	**Y15**
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	
Matched-pair calibration	***On request*** [1]
Accredited matched-pair calibration acc. to ISO/IEC 17025: 2005	***On request*** [1]
Customer-specified calibration up to 10 points	***On request*** [1]
Customer-witnessed calibration (any of above calibration)	***On request*** [1]

[1] Product Variation Request (PVR).

Description	Article No.
• English	**A5E03005599**
• German	**A5E03086288**

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

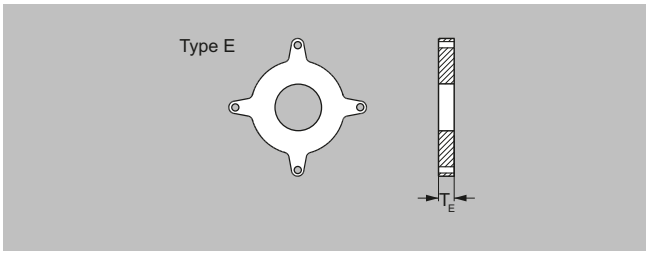
Accessories

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

Please use online Product selector to get latest updates.
Product selector link:
http://www.pia-portal.automation.siemens.com

Accessories for MAG 3100 P sensor

Grounding and protection ring - Type E (Stainless steel)



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

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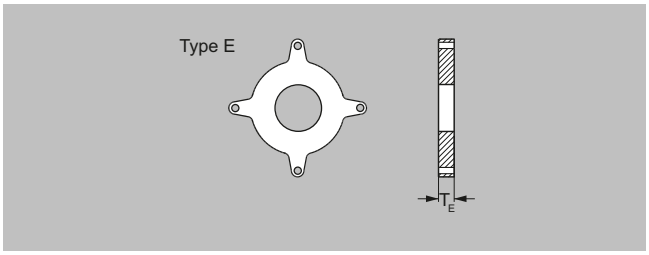
Selection and ordering data (continued)

Size DN	Nominale pressure PN 10	PN 16	PN 40	Size Inch	ANSI[1] Class 150
	Article No.	Article No.	Article No.		Article No.
DN 15			FDK:083N8365	½"	FDK:083N8365
DN 25			FDK:083N8271	1"	FDK:083N8272
DN 40			FDK:083N8278	1½"	FDK:083N8279
DN 50			FDK:083N8282	2"	FDK:083N8283
DN 65		FDK:083N8285		2½"	FDK:083N8287
DN 80		FDK:083N8289		3"	FDK:083N8291
DN 100		FDK:083N8117		4"	FDK:083N8118
DN 125		FDK:083N8121		5"	FDK:083N8122
DN 150		FDK:083N8125		6"	FDK:083N8126
DN 200	FDK:083N8130	FDK:083N8130		8"	FDK:083N8370
DN 250	FDK:083N8136	FDK:083N8137		10"	FDK:083N8140
DN 300	FDK:083N8144	FDK:083N8145		12"	FDK:083N8148

Note:

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

Grounding and protection ring - Type E (Hastelloy)

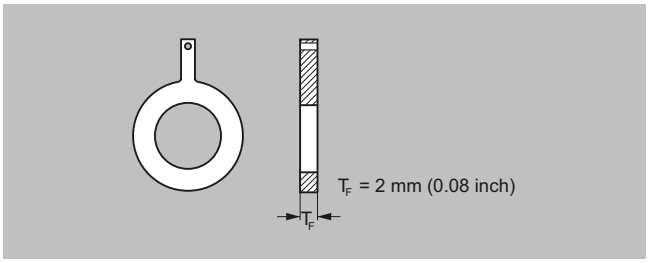


- Material: Hastelloy C276
- For liner PTFE
- 1 pc. incl. straps and screws

Size DN	Nominale pressure PN 16	PN 40	Size Inch	ANSI[1] Class 150
	Article No.	Article No.		Article No.
DN 15		FDK:083N8487	½"	FDK:083N8487
DN 25		FDK:083N8488	1"	FDK:083N8489
DN 40		FDK:083N8490	1½"	FDK:083N8491
DN 50		FDK:083N8492	2"	FDK:083N8493
DN 65	FDK:083N8495		2½"	FDK:083N8497
DN 80	FDK:083N8499		3"	FDK:083N8501
DN 100	FDK:083N8504		4"	FDK:083N8506

[1] For dimensions of MAG 3100 P see Dimensional drawings.

Grounding ring - Type Flat ring (Stainless steel)



- Material: AISI 316
- For liner PTFE and PFA
- 1 pc.

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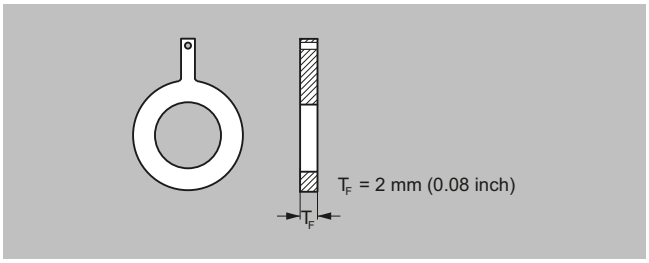
Selection and ordering data (continued)

Size DN	Nominale pressure PN 10	PN 16	PN 40	Size Inch	ANSI[1] Class 150
	Article No.	Article No.	Article No.		Article No.
DN 15			A5E01191968	½"	A5E01191969
DN 25			A5E01150880	1"	A5E01150022
DN 40			A5E01191952	1½"	A5E01191961
DN 50			A5E01150918	2"	A5E01151121
DN 65		A5E01191940		2½"	A5E01191962
DN 80		A5E01152876		3"	A5E01152910
DN 100		A5E01158875		4"	A5E01159146
DN 125		A5E01191941		5"	A5E01191963
DN 150		A5E01191943		6"	A5E01191964
DN 200	A5E01191951	A5E01191944		8"	A5E01191965
DN 250	A5E01191950	A5E01191946		10"	A5E01191966
DN 300	A5E01191949	A5E01191947		12"	A5E01191967

[1] For dimensions of MAG 3100 P see Dimensional drawings.

Grounding ring - Type Flat ring (Hastelloy)



- Material: Hastelloy C276
- For liner PTFE and PFA
- 1 pc.

Size DN	Nominale pressure PN 10	PN 16	PN 40	Size Inch	ANSI[1] Class 150
	Article No.	Article No.	Article No.		Article No.
DN 15			A5E01191981	½"	A5E01191989
DN 25			A5E01150882	1"	A5E01150028
DN 40			A5E01191982	1½"	A5E01191990
DN 50			A5E01150922	2"	A5E01151124
DN 65		A5E01191971		2½"	A5E01191991
DN 80		A5E01152889		3"	A5E01152913
DN 100		A5E01158886		4"	A5E01159150
DN 125		A5E01191973		5"	A5E01191992
DN 150		A5E01191974		6"	A5E01191993
DN 200	A5E01191978	A5E01191975		8"	A5E01191994
DN 250	A5E01191979	A5E01191976		10"	A5E01191995
DN 300	A5E01191980	A5E01191977		12"	A5E01191996

[1] For dimensions of MAG 3100 P see Dimensional drawings.

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Technical specifications

Version	MAG 3100 P
Product characteristic	Chemical and process industry-oriented (included in Quick Ship Program)
Nominal size	• PTFE: DN 15 ... 300 (½" ... 12")
	• PFA: DN 15 ... 150 (½" ... 6")
Measuring principle	Electromagnetic induction
Excitation frequency (Mains supply: 50 Hz/60 Hz)	• DN 15 ... 65 (½" ... 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, raised face[1] (EN 1092-1, DIN 2501 & BS 4504 have the same mating dimensions)
	• DN 15 ... 50 (½" ... 2"): PN 40 (580 psi)
	• DN 65 ... 300 (2½" ... 12"): PN 16 (232 psi)
	• DN 200 ... 300 (8" ... 12"): PN 10 (145 psi)
	ANSI B16.5 (BS 1560), raised face
	• ½" ... 12": Class 150 (20 bar (290 psi))
Rated operating conditions	
Ambient temperature	
(conditions also dependent on liner characteristics)	
• Standard sensor	-40 ... +100 °C (-40 ... +212 °F)
• Ex sensor	-20 ... +60 °C (-4 ... +140 °F)
• Compact with transmitter	
- MAG 5000/6000	-20 ... +60 °C (-4 ... +140 °F)
- MAG 6000 I [3]	-20 ... +60 °C (-4 ... +140 °F)
- MAG 6000 I Ex [3]	-20 ... +60 °C (-4 ... +140 °F)
Operating pressure [abs. bar] (maximum operating pressure decreases with increasing operating temperature and with stainless steel flanges)	• PTFE
	- DN 15 ... 300 (½" ... 12"): 0.3 ... 40 bar (4 ... 580 psi)
	• PFA
	- DN 15 ... 150 (½" ... 6"): Vacuum 0.02 ... 50 bar (0.29 ... 725 psi)
Temperature of medium	• PTFE -20 ... +150 °C (-4 ... +302 °F)
	• PFA -20 ... +150 °C (-4 ... +302 °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
	• Sensor with compact MAG 6000 I/6000 I Ex mounted transmitter: 1.14 g RMS
Pressure drop at 3 m/s	As straight pipe
Test pressure	1.5 x PN (where applicable)
Protection class	IP67, NEMA 6
	Optional: IP68 and NEMA 6P (10m, continuously) for sensor in remote design
EMC	2014/30/EU
Design	
Weight	See dimensional drawings
Material	

Version	MAG 3100 P
• Flange and sensor housing	Carbon steel ASTM A 105 with corrosion protection EN ISO 12944 grade C4
• Measuring tube	Stainless steel AISI 304/1.4301
• Electrode	PTFE: Hastelloy C276/2.4819, Tantalum
	PFA: Hastelloy C22/2.4602
• Grounding electrode	Optional in Hastelloy C22/2.602
• Terminal box	
- Standard	Fibre glass reinforced polyamide
- Option	Stainless steel AISI 316/1.4436
Cable entries	• Remote installation 2 x M20 or 2 x ½" NPT
	• Compact installation
	- MAG 5000/MAG 6000: 4 x M20 or 4 x ½" NPT
	- MAG 6000 I: 2 × M20 (M25 for PROFIBUS) or 2 × ½" NPT
Certificates and approvals	
Calibration	
• Default calibration	Zero-point, 2 x 25 % and 2 x 90 %
Hazardous areas	
• Ex-sensor in compact or remote version with MAG 6000 I Ex	• ATEX, FM, CSA, IECEx, EAC Ex, NEPSI
	- Zone 1 Ex d e ia IIC T6 Gb
	• ATEX, FM, CSA, IECEx
	- Zone 21 Ex tD A21 IP67
	• FM
	- XP IS Class I Div. 1 Groups A, B, C, D[2]
	- DIP Class II+III Div. 1 Groups E, F, G[2]
	• KCs
	- Zone 1 Ex d e ia IIC T6
• Standard sensor with/without MAG 5000/6000/6000 I	• FM
	- NI Class I Div. 2 Groups A, B, C, D
	- NI Class I Zone 2 Groups IIC
Pressure equipment	PED conforming: All EN1092-1 flanges - 2014/68/EU
Others	• CRN (Canadian Registration Number)
	• CPA (China)
	• EAC (Kazakhstan)

[1] DN ≤ 600 type 01 (SORF); DN > 600 type 11 (WNRF).
[2] In compact version only.
[3] With HART communication max. ambient temperature 50 °C (122 °F).

Available Options for the SITRANS MAG 3100 P

The MAG 3100P is designed to meet the most common specifications within chemical and process industries. Therefore not all options are available. If you miss a few options please check out or product MAG 3100 which is covering many more options.

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Technical specifications (continued)

Available Options for Liner PTFE with Platinum electrodes

Diameter MAG 3100 P	Order code	Connection EN 1092-1, PN 10	EN 1092-1, PN 16	EN 1092-1, PN 40	ANSI B 16.5, class 150
DN 15, ½"	*1V*			●	
DN 25, 1"	*2D*			●	●
DN 40, 1 ½"	*2R*			●	
DN 50, 2"	*2Y*			●	●
DN 65, 2 ½"	*3F*				
DN 80, 3"	*3M*		●		
DN 100, 4"	*3T*		●		
DN 125, 5"	*4B*		●		
DN 150, 6"	*4H*		●		
DN 200, 8"	*4P*				
DN 250, 10"	*4V*				
DN 300, 12"	*5D*				

Available Options for Liner PTFE with Tantalum electrodes

Diameter MAG 3100 P	Order code	Connection EN 1092-1, PN 10	EN 1092-1, PN 16	EN 1092-1, PN 40	ANSI B 16.5, class 150
DN 15, ½"	*1V*			●	
DN 25, 1"	*2D*			●	●
DN 40, 1 ½"	*2R*			●	
DN 50, 2"	*2Y*			●	●
DN 65, 2 ½"	*3F*		●		
DN 80, 3"	*3M*		●		●
DN 100, 4"	*3T*		●		●
DN 125, 5"	*4B*				
DN 150, 6"	*4H*		●		
DN 200, 8"	*4P*		●		
DN 250, 10"	*4V*		●		
DN 300, 12"	*5D*				

Available Options for Liner PTFE with Hastelloy C electrodes incl. grounding electrodes

Diameter MAG 3100 P	Order code	Connection EN 1092-1, PN 10	EN 1092-1, PN 16	EN 1092-1, PN 40	ANSI B 16.5, class 150
DN 15, ½"	*1V*			●	
DN 25, 1"	*2D*			●	●
DN 40, 1 ½"	*2R*			●	
DN 50, 2"	*2Y*			●	●
DN 65, 2 ½"	*3F*		●		
DN 80, 3"	*3M*		●		●
DN 100, 4"	*3T*		●		●
DN 125, 5"	*4B*				
DN 150, 6"	*4H*		●		●

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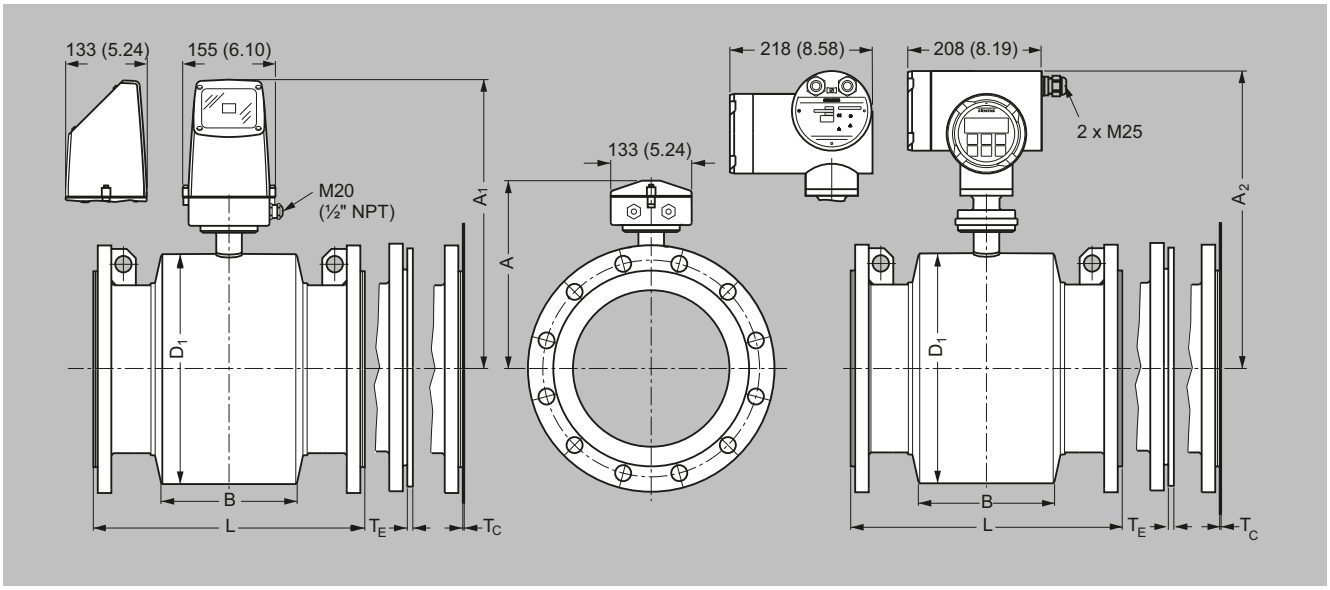
Technical specifications (continued)

Diameter MAG 3100 P	Order code	Connection EN 1092-1, PN 10	EN 1092-1, PN 16	EN 1092-1, PN 40	ANSI B 16.5, class 150
DN 200, 8"	***4P***				●
DN 250, 10"	***4V***				●
DN 300, 12"	***5D***				

Dimensional drawings

MAG 3100 P sensor with compact or remote transmitter



Dimensions in mm (inch)

Metric

DN	A[1]	A1	A2	B	D1	L[2] EN 1092-1			ANSI B16-.5	TE[3]	TF[3]	Weight[4]
						PN 10	PN 16	PN 40	Class 150			
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]
15	187	341	338	59	104	-	-	200	200	6	2	4
25	187	341	338	59	104	-	-	200	200	6	2	5
40	197	351	348	82	124	-	-	200	200	6	2	8
50	205	359	356	72	139	-	-	200	200	6	2	9
65	212	369	366	72	154	-	200/-	-	200	6	2	11
80	222	376	373	72	174	-	200/-	-	272[5]	6	2	12
100	242	396	393	85	214	-	250/-	-	250	6	2	16
125	255	409	406	85	239	-	250/-	-	250	6	2	19
150	276	430	427	85	282	-	300/-	-	300	6	2	27
200	304	458	455	137	338	350	350/-	-	350	8	2	40
250	332	486	483	157	393	450	450/-	-	450	8	2	60
300	357	511	508	157	444	500	500/-	-	500	8	2	80

1) 14.5 mm shorter with stainless steel terminal box
2) When grounding rings are used, the thickness of the grounding ring must be added to the sensor face-to-face length
3) T_E = Grounding ring Type E, T_F = Grounding ring Type Flat ring
4) Weights are appr. for sensor with EN 1092-1 PN 16 flanges without transmitter
5) Not according to ISO 20456

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Dimensional drawings (continued)

MAG 3100 P sensor with compact or remote transmitter

Imperial

DN	A[1]	A_1	A_2	B	D1	L[2] EN 1092-1			ANSI B16-.5	T_E[3]	T_F[3]	Weight[4]
						PN 10	PN 16	PN 40	Class 150			
[inch]	[inch]	[inch]	[inch]	[inch]	[inch]	[inch]	[inch]	[inch]	[inch]	[inch]	[inch]	[lbs]
½	7.36	13.4	13.34	2.32	4.09	-	-	7.87	7.87	0.24	0.08	9
1	7.36	13.4	13.34	2.32	4.09	-	-	7.87	7.87	0.24	0.08	11
1½	7.76	13.8	13.74	3.23	4.88	-	-	7.87	7.87	0.24	0.08	17
2	8.07	14.1	14.04	2.83	5.47	-	-	7.87	7.87	0.24	0.08	20
2½	8.35	14.4	14.34	2.83	6.06	-	7.87/-	-	7.87	0.24	0.08	24
3	8.74	14.8	14.74	2.83	6.85	-	7.87/-	-	10.71[5]	0.24	0.08	26
4	9.53	15.6	15.54	3.35	8.43	-	9.84/-	-	9.84	0.24	0.08	35
5	10.04	16.1	16.04	3.35	9.41	-	9.84/-	-	9.84	0.24	0.08	42
6	10.87	16.9	16.84	3.35	11.10	-	11.81/-	-	11.81	0.24	0.08	60
8	11.97	18.0	17.94	5.39	13.31	13.78	13.78/-	-	13.78	0.31	0.08	88
10	13.07	19.1	19.04	6.18	15.47	17.72	17.72/-	-	17.72	0.31	0.08	132
12	14.05	20.1	20.04	6.18	17.48	19.69	19.69/-	-	19.69	0.31	0.08	176

1) 0.571 inch shorter with stainless steel terminal box (Ex and high temperature version)
2) When grounding rings are used, the thickness of the grounding ring must be added to the built-in length.
3) T_E = Grounding ring Type E, T_F = Grounding ring Type Flat ring
4) Weights are for ANSI 150 without transmitter.
5) Not according to ISO 20456
D = Outside diameter of flange, see flange tables