

Flow Measurement

SITRANS FM (electromagnetic)

Flow sensors / SITRANS FMS100

Overview



The SITRANS FMS100 is a magnetic flow sensor suitable for volume flow measurement of liquids (conductive) with a large variety of product options to meet the demands of almost any flow application.

The sensor model provides a high level of flexibility and has a comprehensive set of product features. The FMS100 is deliverable in small sizes for precise dosing, with a high variety of flanges included grounding electrodes as standard and F&B approvals.

Combined with a flow meter transmitter it is a traditional externally powered electromagnetic flow meter system.

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
- Unique mechanical design with a wide range of sanitary process connections for the F&B version
- Sanitary design for CIP/SIP cleaning for the F&B version
- Corrosion resistant AISI 316 stainless steel sensor housing
- Highly resistant liner and electrodes fitting most extreme process media
- High temperature version is available for applications with temperatures up to 200 °C (392 °F)
- Hose proof IP67/NEMA 6 enclosure rating
- Option for IP68/NEMA 6P protection class ex works or for upgrading on site
- No moving parts for maintenance-free operation over many years
- Smooth surface with minimal risk of build-up
- SENSORPROM™ Technology provides an automatic upload of start-up 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
- Meets EMC requirements acc. to NAMUR recommendation
- Meets EEC directives: PED, 2014/68/EU pressure directive for EN 1092-1 flanges

Application

The SITRANS FMS100 is designed to meet the most common specifications within the chemical and process as well as F&B industries. The field proven flow sensor with high temperature resistance is also the ideal solution for the toughest and challenging applications.

The main applications of the SITRANS FMS100 flow sensor can be found in the following fields:

- Process industry
- Chemical industry
- Water treatment
- Food industry
- Beverage industry
- Pharmaceutical industry

For a complete magnetic flowmeter, the FMS100 flow sensor can be combined with a FMT020 transmitter. The entire flowmeter system either mounted remotely or as a compact unit is operated under the product name SITRANS FM120.

SITRANS FM120: This versatile magnetic flowmeter finds its primary applications in the food and beverage industry as well as in the process, chemical and pharmaceutical industry.

Available sensor sizes from DN 2 to DN 100 ($1/12$... 4").

Measuring accuracy $\pm 0.4\%$ of flow rate, optional $\pm 0.2\%$ of flow rate available.

Selection and ordering data

Sensor SITRANS FMS100	Article No. 7ME616											
	●	-	●	●	●	●	●	-	●	●	A	●
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.												
Transmitter variant												
No transmitter (sensor only)	0											
Transmitter SITRANS FMT020	2											
Diameter												
DN 2, 1/12 inch			1	D								
DN 3, 1/8 inch			1	H								
DN 6, 1/4 inch			1	M								
DN 10, 3/8 inch			1	R								
DN 15, 1/2 inch			1	V								
DN 25, 1 inch			2	D								
DN 40, 1 1/2 inch			2	R								
DN 50, 2 inch			2	Y								
DN 65, 2 1/2 inch			3	F								
DN 80, 3 inch			3	M								
DN 100, 4 inch			3	T								
Process connection												
No process connection									A			
Pipe connection R 1/2", AISI 316L									B			
Pipe connection 1/2" NPT, AISI 316L									C			
Pipe connection R 1/2", Hastelloy C									D			
Pipe connection 1/2" NPT, Hastelloy C									E			
Pipe connection R 1/2", PVDF									F			
Pipe connection 1/2" NPT, PVDF									G			
Weld in, DIN 11850 / EN10357 (FDA)									H			
Weld in, ISO 2037 / SMS 3008 (FDA)									J			
Weld in, Tri-Weld / BS 4825-1, (FDA)									K			
Clamp type, DIN 32676 (FDA)									M			
Clamp type, ISO 2852 / SMS 3016 (FDA)									N			
Clamp type, Tri-Clamp / BS 4825-3 (FDA)									P			
Threaded type, DIN 1185 (FDA)									R			
Threaded type, SMS 1145 (FDA)									S			
Gasket material												
EPDM flat gasket (FDA)									0			
Graphite flat gasket									1			
EPDM P gasket (FDA)									3			
PTFE flat gasket									4			
Liner material												
PFA									1			
Ceramic									2			
Electrode material												
Hastelloy C22 / 2.4602									1			
Platinum									2			
Transmitter mounting & enclosure type												
No transmitter (sensor only)										A		
Polycarbonate housing, compact design										G		
Polycarbonate housing, remote design (wall-mounting unit and sensor terminal board included)										J		
Terminal box, electrical connection												
Polycarbonate terminal box, M20 thread											B	
Polycarbonate terminal box, M20 thread with 1/2" NPT adapter											C	
Stainless steel terminal box, M20 thread											P	
Stainless steel terminal box, M20 thread with 1/2" NPT adapter											Q	
Power supply												
No transmitter (sensor only)											0	
12 ... 42 V DC											2	
100 ... 240 V AC, 50/60 Hz											3	

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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.	
Cable glands	
Without cable glands (blind plugs)	A00
M20x1.5 cable glands, material Polyamide	A02
½ inch NPT cable glands, material Polyamide	A05
M20x1.5 cable glands, material Brass	A12
½ inch NPT cable glands, material Brass	A15
M20x1.5 cable glands, material Stainless steel	A22
½ inch NPT cable glands, material Stainless steel	A25
Certificates	
Test report 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
Declaration of compliance with the order 2.1 (EN 10204)	C18
High accuracy calibration	
High accuracy factory calibration 0.2% of act. vol. flow	D01
5-point calibration	
5-point factory calibration	D10
10-point calibration	
10-point factory calibration	D15
General safety	
CSA General Purpose	E06
Country specific approvals	
CRN (Canada)	E70
Special certificates	
3A approval	E85
Country of origin	
France	E90
Communication	
HART with 4 ... 20 mA output, active or passive	F01
Modbus RTU / RS 485	F04
PROFIBUS PA	F05
PROFIBUS PA	F06
PROFINET	F07
EtherNet/IP	F09
MODBUS TCP/IP	F10
I/O Extension	
Digital input or output, passive	F30
Device options	
Sensor terminal board factory mounted	J00
Sensor cables factory mounted	J01
Factory preconfigured for transmitter mounting in compact design (integral mount)	J02
Display with protection cover	J03
Breathing vent M20 thread	J04
Micro-SD memory card, 20 GB	J06
Special sensor design	
High temperature version 200 °C (ceramic liner only)	J30
Food grade Version	J33
Type of protection (IP)	
IP68 (NEMA 6P) protection type for transmitter and sensor, without potting (to 2 m depth, 10 days)	L50
IP68 (NEMA 6P) protection class for sensor in remote design, factory potted (to 10 m depth, continuously)	L51
Sensor cables	
Cable kit with coil and electrode cable, standard type (3 × 1.5 mm²), PVC jacket	
• 5 m (16 ft)	T00

	Order code
• 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 (197 ft)	T08
• 100 m (328 ft)	T11
• 150 m (492 ft)	T14
• 200 m (656 ft)	T16
• 500 m (1640 ft)	T18
Cable kit with coil cable standard type (3 × 1.5 mm²) and electrode cable special type (3 × 0.25 mm²), 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 (197 ft)	T58
• 100 m (328 ft)	T61
• 150 m (492 ft)	T64
• 200 m (656 ft)	T66
• 500 m (1640 ft)	T68
Device settings	
Measuring range setting: Upper range value (Q_{max}), unit	Y01
Current output damping	Y02
Current output signal range	Y03
Flow direction (default setting: Positive)	Y05
Empty pipe detection (default setting: On)	Y06
Mains frequency (default setting: 50 Hz)	Y07
Operation language display (default setting English)	Y24
Device address (PROFIBUS 0 ... 125)	Y25
Device identification	
Stainless steel TAG shield for transmitter, line 1, max. 32 characters	Y11
Stainless steel TAG shield for transmitter, line 2, max. 32 characters	Y12
TAG adhesive label for transmitter, line 1, max. 32 characters	Y13
TAG adhesive label for transmitter, line 2, max. 32 characters	Y14
Stainless steel TAG shield for sensor, line 1, max. 32 characters	Y15
Stainless steel TAG shield for sensor, line 2, max. 32 characters	Y16
TAG adhesive label for sensor, line 1, max. 32 characters	Y18
TAG adhesive label for sensor, line 2, max. 32 characters	Y19
Totalizer 1 settings	
Preset value	Y30
Unit (Default setting: m³)	Y31

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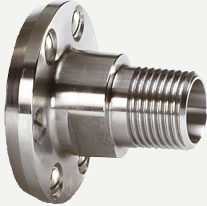
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Selection and ordering data (continued)

	Order code
Direction (Default setting: Forward counting)	Y32
Failure mode (Default setting: Continue counting)	Y33
Decimal places (Default setting: 2)	Y34
Totalizer 2 settings	
Preset value	Y35
Unit (Default setting: m³)	Y36
Direction (Default setting: Backward counting)	Y37
Failure mode (Default setting: Continue counting)	Y38
Decimal places (Default setting: 2)	Y39

	Order code
Totalizer 3 settings	
Preset value	Y40
Unit (Default setting: m³)	Y41
Direction (Default setting: Forward / backward counting, net)	Y42
Failure mode (Default setting: Continue counting)	Y43
Decimal places (Default setting: 2)	Y44
Pulse output settings	
Volume per pulse	Y50
Pulse width	Y51

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. M4×12 screws • R½" ISO 7-1 tapered 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. M4×12 screws • R½" ISO 7-1 tapered 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. M4×16 and M4×25 • R½" ISO 7-1 tapered 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 • DN 2 ... 10 (1/12" ... 3/8") • DN 15 (½") • DN 25 (1") • DN 40 (1½") • DN 50 (2") • DN 65 (2½") • DN 80 (3") • DN 100 (4")	FDK:083G3116	
	FDK:083G3117	
	FDK:083G3119	
	FDK:083G3121	
	FDK:083G3122	
	FDK:083G3123	
	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. M4×14) • DN 2 ... 10 (1/12" ... 3/8") • DN 15 (½") • DN 25 (1") • DN 40 (1½")	FDK:083G0156	
	FDK:083G0157	
	FDK:083G0159	
	FDK:083G0161	

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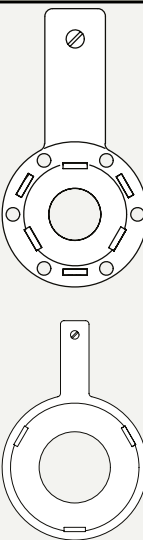
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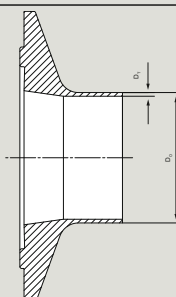
Selection and ordering data (continued)

Description	Article No.	
• DN 50 (2") • DN 65 (2½") • DN 80 (3") • DN 100 (4")	FDK:083G0162 FDK:083G0163 FDK:083G0164 FDK:083G0165	
Graphite gaskets Material: Graphite; conductive, each set includes: 2 pcs. gaskets (can also be used as grounding ring) • DN 2 ... 10 (1/12" ... 3/8") • DN 15 (½") • DN 25 (1") • DN 40 (1½") • DN 50 (2") • DN 65 (2½") • DN 80 (3") • DN 100 (4")	FDK:083G0116 FDK:083G0117 FDK:083G0119 FDK:083G0121 FDK:083G0122 FDK:083G0123 FDK:083G0124 FDK:083G0125	
Grounding ring (stainless steel) Material: AISI 316L/1.4404; each set includes: 1 pc. grounding ring ¹⁾ , 3 pcs. PTFE gaskets, 1 pc. earth wire, 1 pc. M6 screw • DN 2 ... 10 (1/12" ... 3/8") • DN 15 (½") • DN 25 (1") • DN 40 (1½") • DN 50 (2") • DN 65 (2½") • DN 80 (3") • DN 100 (4")	FDK:083G0686 FDK:083G0687 FDK:083G0689 FDK:083G0691 FDK:083G0692 FDK:083G0693 FDK:083G0694 FDK:083G0695	
Grounding ring (Hastelloy C) Material: Hastelloy C22/2.4602; each set includes: 1 pc. grounding ring ¹⁾ , 3 pcs. PTFE gaskets, 1 pc. earth wire, 1 pc. M6 screw • DN 2 ... 10 (1/12" ... 3/8") • DN 15 (½") • DN 25 (1") • DN 40 (1½") • DN 50 (2") • DN 65 (2½") • DN 80 (3") • DN 100 (4")	FDK:083G3256 FDK:083G3257 FDK:083G3259 FDK:083G3261 FDK:083G3262 FDK:083G3263 FDK:083G3264 FDK:083G3265	

Selection and ordering data (continued)

Description	Article No.	
Grounding ring (Tantalum) Material: Tantalum; each set includes: 1 pc. grounding ring ¹⁾ , 3 pcs. PTFE gaskets, 1 pc. earth wire, 1 pc. M6 screw • 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")	A5E01181599 A5E01181606 A5E01181610 A5E01181613 A5E01181615 A5E01181616 A5E01181619 A5E01181622	
Studs and nuts For DN 100 PN 25/40, 8 pcs. M20 studs, 16 pcs. M20 nuts Material: AISI 304/1.4305 • DN 100 (4")	FDK:083G0226	

¹⁾ Thickness of grounding ring is 2 mm (0.08 inch)

Description				Article No.
Weld-in connection fittings for use with P gaskets (stainless steel)				
Material: AISI 316L (1.4404)				
Only for PFA liner				
2 pcs. fittings				
2 pcs. clamps (to join flow sensor and fitting), P gaskets not included				
DIN 11850 ¹⁾				
Adapter		Sensor		
DN (mm)	D _o (mm)	D _i (mm)	DN (mm)	
				
10	13	1.5	10	A5E02054630
15	19	1.5	15	A5E02054633
20	23	1.5	15	A5E02054634
25	29	1.5	25	A5E02054635
32	35	1.5	25	A5E02054637
40	41	1.5	40	A5E02054638
50	53	1.5	50	A5E02054640
65	70	2.0	65	A5E02054643
80	85	2.0	80	A5E02054644
100	104	2.0	100	A5E02054646

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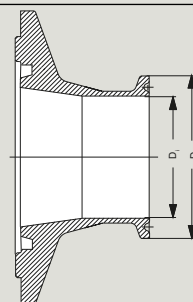
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Selection and ordering data (continued)

Description				Article No.
ISO 2037¹⁾				
<u>Adapter</u>			<u>Sensor</u>	
DN (mm)	D _o (mm)	D _T (mm)	DN (mm)	
12.7	12.7	1.0	10	A5E03727946
17.2	17.2	1.0	15	A5E03728098
25	25	1.6	25	A5E02196073
33	33.7	1.6	25	A5E02196074
38	38	1.6	40	A5E02196075
40	40	1.6	40	A5E02196076
51	51	1.6	50	A5E02196077
63.5	63.5	1.6	65	A5E02196078
76.1	76.1	1.6	80	A5E02196080
101.6	101.6	2.0	100	A5E02196082
Tri-Weld (BS 4825-1)¹⁾				
<u>Adapter</u>			<u>Sensor</u>	
DN (mm)	D _o (mm)	D _T (mm)	DN (mm)	
12.7	12.7	1.2	10	A5E02199113
19.05	19.05	1.2	15	A5E02199114
25.4	25.4	1.6	25	A5E02199115
38.1	38.1	1.6	40	A5E02199116
50.8	50.8	1.6	50	A5E02199117
63.5	63.5	1.6	65	A5E02199118
76.2	76.2	1.6	80	A5E02199119
101.6	101.6	2.0	100	A5E02199120

¹⁾ Suitable for 3A

Description				Article No.
Clamp-type connection fittings for use with P gaskets (stainless steel)				
Material: AISI 316L (1.4404)				
Only for liner PFA				
2 pcs. fittings				
2 pcs. clamps (to join flow sensor and fitting), P gaskets not included				
DIN 32676¹⁾				
<u>Adapter</u>			<u>Sensor</u>	
DN (mm)	D _o (mm)	D _i (mm)	DN (mm)	
10	34	10	10	A5E02211143
15	34	16	15	A5E02211144
25	50.5	22.6	25	A5E02211146
40	50.5	38	40	A5E02211147
50	64	50	50	A5E02211148
65	91	66	65	A5E02211151
80	106	81	80	A5E02211152
100	119	100	100	A5E02211153
ISO 2852¹⁾				
<u>Adapter</u>			<u>Sensor</u>	
DN (mm)	D _o (mm)	D _i (mm)	DN (mm)	

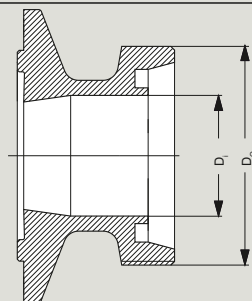


Selection and ordering data (continued)

Description				Article No.
25	50.5	22.6	25	A5E02213581
33.7	50.5	31.3	25	A5E02213582
38	50.5	35.6	40	A5E02213583
51	64	48.6	50	A5E02213584
63.5	77.5	60.3	65	A5E02213585
76.1	91	72.9	80	A5E02213586
101.6	119	97.6	100	A5E02213587
Tri-Clamp (BS 4825-3)¹⁾				
<u>Adapter</u>			<u>Sensor</u>	
DN (mm)	D _o (mm)	D _i (mm)	DN (mm)	
12.7	25.4	9.5	10	A5E02213596
19.05	25.4	15.85	15	A5E02213597
25.4	50.5	22.2	25	A5E02213598
38.1	50.5	34.9	40	A5E02213599
50.8	64	47.6	50	A5E02213600
63.5	77.5	60.3	65	A5E02213601
76.2	91	73	80	A5E02213602
101.6	119	97.6	100	A5E02213603

D_o: Outer diameterD_i: Inner diameter¹⁾ Suitable for 3A

Description				Article No.
Threaded type connection fittings for use with P gaskets (stainless steel)				
Material: AISI 316L (1.4404)				
Only for PFA liner				
2 pcs. fittings				
2 pcs. clamps (to join flow sensor and fitting), P gaskets not included				
DIN 11851¹⁾				
<u>Adapter</u>			<u>Sensor</u>	
DN (mm)	D _o (mm)	D _i (mm)	DN (mm)	
10	28	10	10	A5E02218293
15	34	16	15	A5E02218294
20	44	20	15	A5E02218295
25	52	26	25	A5E02218296
32	58	32	25	A5E02218297
40	65	38	40	A5E02218298
50	78	50	50	A5E02218299
65	95	66	65	A5E02218300
80	110	81	80	A5E02218301
100	130	100	100	A5E02218302
SMS 1145²⁾				
<u>Adapter</u>			<u>Sensor</u>	

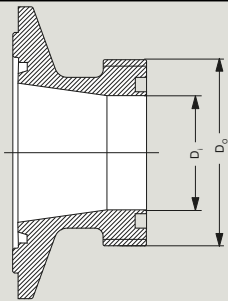


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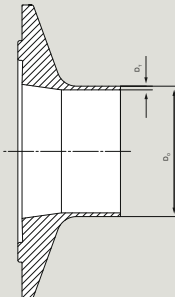
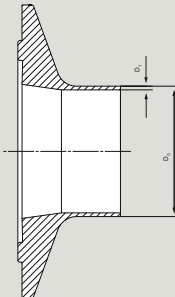
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Selection and ordering data (continued)

Description				Article No.
DN (mm)	D _o (mm)	D _i (mm)	DN (mm)	
25	40	22.6	25	
38	60	35.6	40	
51	70	48.6	50	
63.5	85	60.3	65	
76	98	72	65	

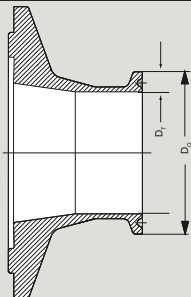
D_o: Outer diameterD_i: Inner diameter¹⁾ Suitable for 3A²⁾ Not suitable for 3A

Description				Article No.	
Weld-in connection fittings for use with flat gaskets (stainless steel)					
Material: AISI 316L (1.4404) For PFA liner and ceramic 2 pcs. fittings 2 pcs. clamps (to join flow sensor and fitting), Flat gaskets not included					
DIN 11850 ¹⁾					
Adapter		Sensor			
DN (mm)	D _o (mm)	D _T (mm)	DN (mm)		
10	13	1.5	10		FDK:083G2116
15	19	1.5	15		FDK:083G2117
20	23	1.5	15		FDK:083G2118
25	29	1.5	25		FDK:083G2119
32	35	1.5	25		FDK:083G2120
40	41	1.5	40		FDK:083G2121
50	53	1.5	50		FDK:083G2122
65	70	2.0	65		FDK:083G2123
80	85	2.0	80		FDK:083G2124
100	104	2.0	100		FDK:083G2125
ISO 2037 ¹⁾					
Adapter		Sensor			
DN (mm)	D _o (mm)	D _T (mm)	DN (mm)		
12.7	12.7	1.0	10		A5E03720273
17.2	17.2	1.0	15		FDK:083G2107
25	25.6	1.6	25	FDK:083G2109	

Selection and ordering data (continued)

Description				Article No.
33.7	33.7	1.6	25	FDK:083G2100
38	38	1.6	40	FDK:083G2111
40	40	1.6	40	FDK:083G2101
51	51	1.6	50	FDK:083G2112
63.5	63.5	1.6	65	FDK:083G2113
76.1	76.1	1.6	80	FDK:083G2114
101.6	101.6	2.0	100	FDK:083G2115
114.3	118.3	2.0	100	FDK:083G2105
Tri-Weld (BS 4825-1)¹⁾				
<u>Adapter</u>			<u>Sensor</u>	
DN (mm)	D _o (mm)	D _T (mm)	DN (mm)	
12.7	12.7	1.2	10	FDK:083G2276
19.05	19.05	1.2	15	FDK:083G2277
25.4	25.4	1.6	25	FDK:083G2279
38	38.1	1.6	40	FDK:083G2281
50.8	50.8	1.6	50	FDK:083G2282
63.5	63.5	1.6	65	FDK:083G2283
76.2	76.2	1.6	80	FDK:083G2284
101.6	101.6	2.0	100	FDK:083G2285

¹⁾ Suitable for 3A

Description				Article No.
Clamp-type connection fittings for use with flat gaskets (stainless steel)				
Material: AISI 316L (1.4404) For PFA liner and ceramic 2 pcs. fittings 2 pcs. clamps (to join flow sensor and fitting), Flat gaskets not included				
DIN 32676¹⁾				
<u>Adapter</u>			<u>Sensor</u>	
DN (mm)	D _o (mm)	D _T (mm)	DN (mm)	
				
10	34	10	10	FDK:083G2186
15	34	16	15	FDK:083G2187
25	50.5	26	25	FDK:083G2179
40	50.5	38	40	FDK:083G2181
50	64	50	50	FDK:083G2182
65	91	66	65	FDK:083G2183
80	106	81	80	FDK:083G2184
100	119	100	100	FDK:083G2185
ISO 2852¹⁾				
<u>Adapter</u>			<u>Sensor</u>	
DN (mm)	D _o (mm)	D _T (mm)	DN (mm)	
25	50.5	22.6	25	FDK:083G2189
33.7	50.5	31.3	25	FDK:083G2190
38	50.5	35.6	40	FDK:083G2191
51	64	48.6	50	FDK:083G2192
63.5	77.5	60.3	65	FDK:083G2193
76.1	91	72.9	80	FDK:083G2194

Flow Measurement

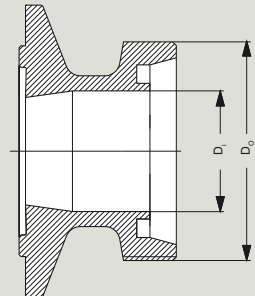
SITRANS FM (electromagnetic)

Flow sensors / SITRANS FMS100

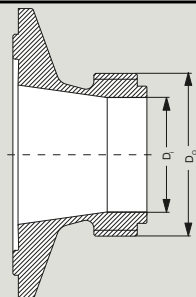
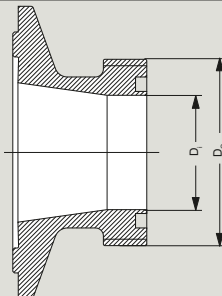
Selection and ordering data (continued)

Description				Article No.
101.6	119	97.6	100	FDK:083G2195
Tri-Clamp (BS 4825-3)¹⁾				
<u>Adapter</u>		<u>Sensor</u>		
DN (mm)	D _o (mm)	D _i (mm)	DN (mm)	
12.7	25.4	9.5	10	FDK:083G2286
19.05	25.4	15.85	15	FDK:083G2287
25.4	50.5	22.2	25	FDK:083G2289
38.1	50.5	34.9	40	FDK:083G2291
50.8	64	47.6	50	FDK:083G2292
63.5	77.5	60.3	65	FDK:083G2293
76.2	91	73	80	FDK:083G2294
101.6	119	97.6	100	FDK:083G2295

D_o: Outer diameterD_i: Inner diameter¹⁾ Suitable for 3A

Description				Article No.
Threaded type connection fittings for use with flat gaskets (stainless steel)				
Material: AISI 316L (1.4404)				
For PFA liner and ceramic				
2 pcs. fittings				
2 pcs. clamps (to join flow sensor and fitting), Flat gaskets not included				
DIN 11851¹⁾				
<u>Adapter</u>		<u>Sensor</u>		
DN (mm)	D _o (mm)	D _i (mm)	DN (mm)	
				
10	28	10	10	FDK:083G2156
15	34	16	15	FDK:083G2157
20	44	20	15	FDK:083G2158
25	52	26	25	FDK:083G2159
32	58	32	25	FDK:083G2160
40	65	38	40	FDK:083G2161
50	78	50	50	FDK:083G2162
65	95	66	65	FDK:083G2163
80	110	81	80	FDK:083G2164
100	130	100	100	FDK:083G2165
ISO 2853¹⁾				
<u>Adapter</u>		<u>Sensor</u>		

Selection and ordering data (continued)

Description				Article No.
DN (mm)	D _o (mm)	D _i (mm)	DN (mm)	
25	37	22.6	25	
38	51	35.6	40	
51	64	48.6	50	
63.5	78	60.3	65	
76.1	91	72.9	80	
BS 4825-4¹⁾				
<u>Adapter</u>		<u>Sensor</u>		
DN (mm)	D _o (mm)	D _i (mm)	DN (mm)	FDK:083G2145
101.6	126	97.6	100	
SMS 1145²⁾				
<u>Adapter</u>		<u>Sensor</u>		
DN (mm)	D _o (mm)	D _i (mm)	DN (mm)	
25	40	22.6	25	
38	60	35.6	40	
51	70	48.6	50	
63.5	85	60.3	65	
76	98	72	65	

D_o: Outer diameterD_i: Inner diameter¹⁾ Suitable for 3A²⁾ Not suitable for 3A

Description	Article No.
Gaskets (delivered in pairs, to be placed between flow sensor and adapter)	
MAG 1100 F (PFA) - P gaskets	
Rubber: EPDM ¹⁾	
• DN 10	A5E02055286
• DN 15	A5E02055287
• DN 25	A5E02055290
• DN 40	A5E02055291

Description	Article No.
• DN 50	A5E02055292
• DN 65	A5E02055293
• DN 80	A5E02055295
• DN 100	A5E02055297
MAG 1100 F (ceramic) - Flat gaskets	
Rubber: FKM/FPM ²⁾	
• DN 10	A5E00915707

Flow Measurement

SITRANS FM (electromagnetic)

Flow sensors / SITRANS FMS100

Selection and ordering data (continued)

Description	Article No.
• DN 15	A5E00915764
• DN 25	A5E00915771
• DN 40	A5E00915773
• DN 50	A5E00915775
• DN 65	A5E00915780
• DN 80	A5E00915782
• DN 100	A5E00915784
MAG 1100 F (PFA, ceramic) - Flat gaskets	
Rubber: EPDM ¹⁾	
• DN 10	FDK:083G2206
• DN 15	FDK:083G2207
• DN 25	FDK:083G2209
• DN 40	FDK:083G2211

Description	Article No.
• DN 50	FDK:083G2212
• DN 65	FDK:083G2213
• DN 80	FDK:083G2214
• DN 100	FDK:083G2215
Rubber: NBR ¹⁾	
• DN 10	FDK:083G2216
• DN 15	FDK:083G2217
• DN 25	FDK:083G2219
• DN 40	FDK:083G2221
• DN 50	FDK:083G2222
• DN 65	FDK:083G2223
• DN 80	FDK:083G2224
• DN 100	FDK:083G2225

1) Suitable for 3A

2) Not suitable for 3A

Flow Measurement

SITRANS FM (electromagnetic)

Flow sensors / SITRANS FMS100

Technical specifications

SITRANS FMS100	
Product characteristic	Versatile product to meet the diverse demands of various industries such as process, chemical, Pharmaceutical, Beverage, Food, Water treatment.
Measurement of	Volume flow, flow velocity, electrical conductivity
Nominal diameter	Full bore sensor: DN 2 ... 100 (1/12" ... 4")
Mode of operation	
Measuring principle	Electromagnetic induction
Medium conductivity	Liquids with an electrical conductivity $\geq 5 \mu\text{S/cm}$
Excitation frequency (Main 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
Performance characteristics	
Electrical conductivity	Repeatability: Max. $\pm 5\%$ of measured value
Process connection	
Flanges	
• No process connection	PN 40 (580 psi) DN 2 ... 65 (1/12" ... 2 1/2") PN 37.5 (540 psi) DN 80 (3") PN 30 (435 psi) DN 100 (4")
• Pipe connection R 1/2"	DN 2 ... 10 (1/12" ... 3/8")
• Pipe connection 1/2" NPT	DN 2 ... 10 (1/12" ... 3/8")
• Weld in, DIN 11850 (EN 10357)	PN 40 (600 psi) DN 10 ... 65 (3/8" ... 2 1/2") PN 25 (350 psi) DN 80 ... 100 (3" ... 4")
• Weld in, ISO 2037 (SMS 3008)	PN 40 (600 psi) DN 10 ... 65 (3/8" ... 2 1/2") PN 25 (350 psi) DN 80 ... 100 (3" ... 4")
• Weld in, Tri-Weld (BS 4825-1)	PN 40 (600 psi) DN 10 ... 65 (3/8" ... 2 1/2") PN 25 (350 psi) DN 80 ... 100 (3" ... 4")
• Clamp type, DIN 32676	PN 16 (200 psi) DN 10 ... 50 (3/8" ... 2") PN 10 (150 psi) DN 65 ... 100 (2 1/2" ... 4")
• Clamp type, ISO 2852 (SMS 3016)	PN 16 (200 psi) DN 10 ... 50 (3/8" ... 2") PN 10 (150 psi) DN 65 ... 100 (2 1/2" ... 4")
• Clamp type, Tri-Clamp (BS 4825-3)	PN 16 (200 psi) DN 10 ... 50 (3/8" ... 2") PN 10 (150 psi) DN 65 ... 100 (2 1/2" ... 4")
• Threaded type, DIN 11851	PN 40 (600 psi) DN 10 ... 40 (3/8" ... 1 1/2") PN 25 (350 psi) DN 50 ... 100 (2" ... 4")
• Threaded type, SMS 1145	PN 6 (80 psi) DN 25 ... 65 (1" ... 2 1/2")
Rated operating conditions	
Ambient temperature	
• Sensor	-40 ... +100 °C (-40 ... +212 °F)
• Compact with transmitter	-40 ... +65 °C (-40 ... +149 °F)
Operating pressure (abs) (Maximum operating pressure depending on flange)	
• Ceramic	DN 2 ... 65: 40 barg (1/12" ... 2 1/2": 580 psig) DN 80: 37.5 barg (3": 540 psig) DN 100: 30 barg (4": 435 psig) Vacuum: 1×10^{-6} bar _{abs} (1.5×10^{-5} psi _{abs})
• Ceramic & Option J30	DN 15 ... 50: 40 barg (1/2" ... 2": 580 psig) DN 80: 37.5 barg (3": 540 psig) DN 100: 25 barg (4": 363 psig) Vacuum: 1×10^{-6} bar _{abs} (1.5×10^{-5} psi _{abs})
• Ceramic & Option J33	DN 10 ... 65: 40 barg (3/8" ... 2 1/2": 580 psig) DN 80 ... 100: 25 barg (3" ... 4": 363 psig) Vacuum: 1×10^{-6} bar _{abs} (1.5×10^{-5} psi _{abs})
• PFA	20 bar (290 psi) Vacuum: 0.02 bar _{abs} (0.3 psi _{abs}) DN 80 ... 100: C ₀ 2 pressure max. 7 bar (101.5 psi)
Temperature of medium	
• Ceramic	-20 ... +150 °C (-4 ... 302 °F) Suitable for steamsterilization
• Ceramic & Option J30	-20 ... +200 °C (-4 ... +392 °F)

Technical specifications (continued)

SITRANS FMS100	
• PFA	-30 ... +130 °C (-22 ... +266 °F) Suitable for steamsterilization at 150 °C (302°F)
Temperature shock	Duration ≤ 1 min, followed by 10 min rest
• Ceramic	DN 2, DN 3 (1/12", 1/8") No limitations DN 6, DN 10, DN 15, DN 25: Max. $\Delta T \leq 80$ °C/min (1/4", 3/8", 1/2", 1": Max. $\Delta T \leq 144$ °F/min) DN 40, DN 50, DN 65: Max. $\Delta T \leq 70$ °C/min (1 1/2", 2", 2 1/2": Max. $\Delta T \leq 126$ °F/min) DN 80, DN 100: Max. $\Delta T \leq 60$ °C/min (3", 4": Max. $\Delta T \leq 108$ °F/min)
• Ceramic & Option J30	DN 10, DN 15, DN 25: Max. $\Delta T \leq 80$ °C/min (3/8", 1/2", 1": Max. $\Delta T \leq 144$ °F/min) DN 40, DN 50, DN 65: Max. $\Delta T \leq 70$ °C/min (1 1/2", 2", 2 1/2": Max. $\Delta T \leq 126$ °F/min) DN 80, DN 100: Max. $\Delta T \leq 60$ °C/min (3", 4": Max. $\Delta T \leq 108$ °F/min)
• Ceramic & Option J33	DN 15, DN 25: Max. $\Delta T \leq 80$ °C/min (1/2", 1": Max. $\Delta T \leq 144$ °F/min) DN 40, DN 50: Max. $\Delta T \leq 70$ °C/min (1 1/2", 2": Max. $\Delta T \leq 126$ °F/min) DN 80, DN 100: Max. $\Delta T \leq 60$ °C/min (3", 4": Max. $\Delta T \leq 108$ °F/min)
• 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) DN 80, DN 100: Max. ΔT 110 °C/min (3", 4": Max. ΔT 230 °F/min)
Degree of protection	
• Standard	IP66/67, NEMA 4X/6
• Optional	IP68 and NEMA 6P (2 m, 10 days) IP68 and NEMA 6P (10 m, continuously) (only in remote design)
Mechanical load (vibration)	
Integral mount / compact version	2 ... 8.4 Hz, 3.5 mm peak 8.4 ... 500 Hz, 1 g peak Vibration broad-band random, according to IEC 60068-2-64 10 ... 200 Hz, 0.003 g²/Hz 200 ... 500 Hz, 0.001 g²/Hz - Total: 1.54 g rms
• Remote version	Vibration, sinusoidal according to IEC 60068-2-6
Sensor	2 ... 8.4 Hz, 7.5 mm peak 8.4 ... 500 Hz, 2 g peak
Transmitter	2 ... 8.4 Hz, 1.5 mm peak 8.4 ... 500 Hz, 0.7 g peak
	Vibration broad-band random, according to IEC 60068-2-64
Sensor	10 ... 200 Hz, 0.01 g²/Hz 200 ... 500 Hz, 0.003 g²/Hz - Total: 1.54 g rms
Transmitter	10 ... 200 Hz, 0.003 g²/Hz 200 ... 500 Hz, 0.001 g²/Hz - Total: 1.54 g rms
Pressure drop	(in progress)
Test pressure	1.5 x PN (where applicable)
Design	
Dimensions	See dimensional drawings
Weight	See dimensional drawings
Material	
• Housing and flanges	Stainless steel AISI 316L / 1.4404 flanges and housing, polished
• Measuring electrode	Hastelloy C22 / 2.4602 Platinum

Flow Measurement

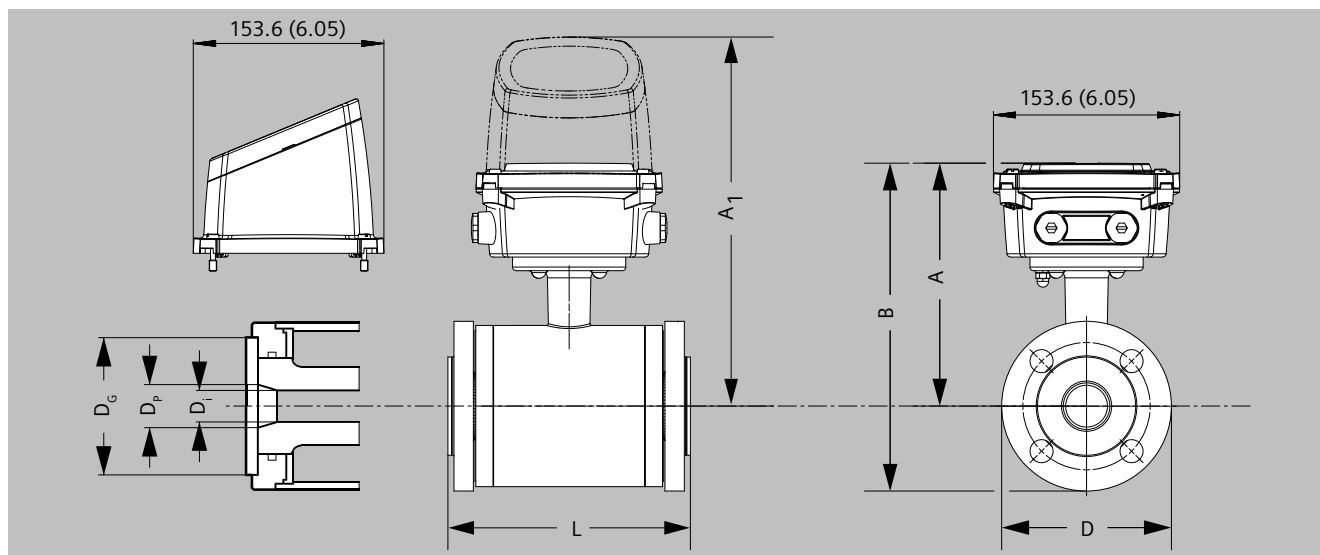
SITRANS FM (electromagnetic)

Flow sensors / SITRANS FMS100

Technical specifications (continued)

SITRANS FMS100	
• Grounding electrode	Hastelloy C22 / 2.4602 Platinum
• Measuring tube	Stainless steel AISI 316L / 1.4404
• Terminal box	Polycarbonate Optional Stainless steel AISI 316 / 1.4436
Cable entries	4 × metric thread (size M20 × 1.5)
Pressure equipment	Conforming with 97/23 EC
Electromagnetic compatibility	Conforming with 2004/108/EC
Calibration	
• Standard	Zero-point, 2 × 25% and 2 × 90%
• Optional	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 $Q_{\max}$
Certificates and approvals	
General purpose	CE (LVD, PED, EMC, RoHS), UKCA
Hygienic	
• Ceramic & Option J33	FDA declaration of conformity (food contact - US) 3A certificate (Hygienic – US)
• PFA & Option J33	FDA declaration of conformity (food contact - US) 3A certificate (Hygienic – US) EC/1935/2004 Food contact declaration of conformity (food contact - EU)
Others	Environmental Product Declaration (EPD) CRN (Canadian Registration Number) UL 61010 (ordinary locations US/C) RCM (Australia) EAC (KZ) KC (Ko)

Dimensional drawings



SITRANS FMS100 in compact (integral-mount transmitter) and remote design. Dimensions in mm (inch)

Metric

DN [mm]	A ¹⁾ [mm]	B ¹⁾ [mm]	A ₁ [mm]	D [mm]	D _i [mm]	D _i (PFA) [mm]	D _p [mm]	D _G [mm]	Weight ²⁾ [kg]
2	154	179	258	48.7	2		17.3	34	2.2
3	154	179	258	48.7	3		17.3	34	2.2
6	154	179	258	48.7	6		17.3	34	2.2
10	154	179	258	48.7	10	10	13.6	34	2.2
15	154	179	258	48.7	15	16	17.3	40	2.2
25	162	194	266	63.5	25	26	28.5	56	2.7
40	172	214	276	84.0	40	38	43.4	75	3.4
50	181	232	285	101.6	50	50	54.5	90	4.2
65	191	251	294	120.9	65	66	68.0	112	5.5
80	197	263	300	133.0	80	81	82.5	124	7.0
100	210	289	313	159.0	100	100	107.1	150	10.0

¹⁾ 7.5 mm shorter when the stainless steel terminal box is used (High temperature 200 °C (392 °F) version).

²⁾ With transmitter FMT020 installed, weight is increased by approximately 1 kg.

Imperial

DN [inch]	A ¹⁾ [inch]	B ¹⁾ [inch]	A ₁ [inch]	D [inch]	D _i [inch]	D _i (PFA) [inch]	D _p [inch]	D _G [inch]	Weight ²⁾ [lb]
1/12	6.1	7.05	10.2	1.92	0.08		0.68	1.34	4.8
1/8	6.1	7.05	10.2	1.92	0.12		0.68	1.34	4.8
¼	6.1	7.05	10.2	1.92	0.24		0.68	1.34	4.8
3/8	6.1	7.05	10.2	1.92	0.39	0.39	0.53	1.34	4.8
½	6.1	7.05	10.2	1.92	0.59	0.63	0.68	1.57	4.8
1	6.4	7.64	10.5	2.50	0.98	1.02	1.12	2.20	5.9
1½	6.8	8.42	10.9	3.31	1.57	1.50	1.71	2.95	7.5
2	7.1	9.13	11.2	4.00	1.97	1.97	2.15	3.54	9.2
2½	7.5	9.88	11.6	4.76	2.56	2.60	2.68	4.41	12
3	7.8	10.35	11.8	5.24	3.15	3.19	3.25	4.88	15
4	8.3	11.37	12.3	6.26	3.94	3.94	4.22	5.91	22

¹⁾ 0.29 inch shorter when the stainless steel terminal box is used (High temperature 200 °C (392 °F) version).

²⁾ With transmitter FMT020 installed, weight is increased by approximately 2.2 lb.

Flow Measurement

SITRANS FM (electromagnetic)

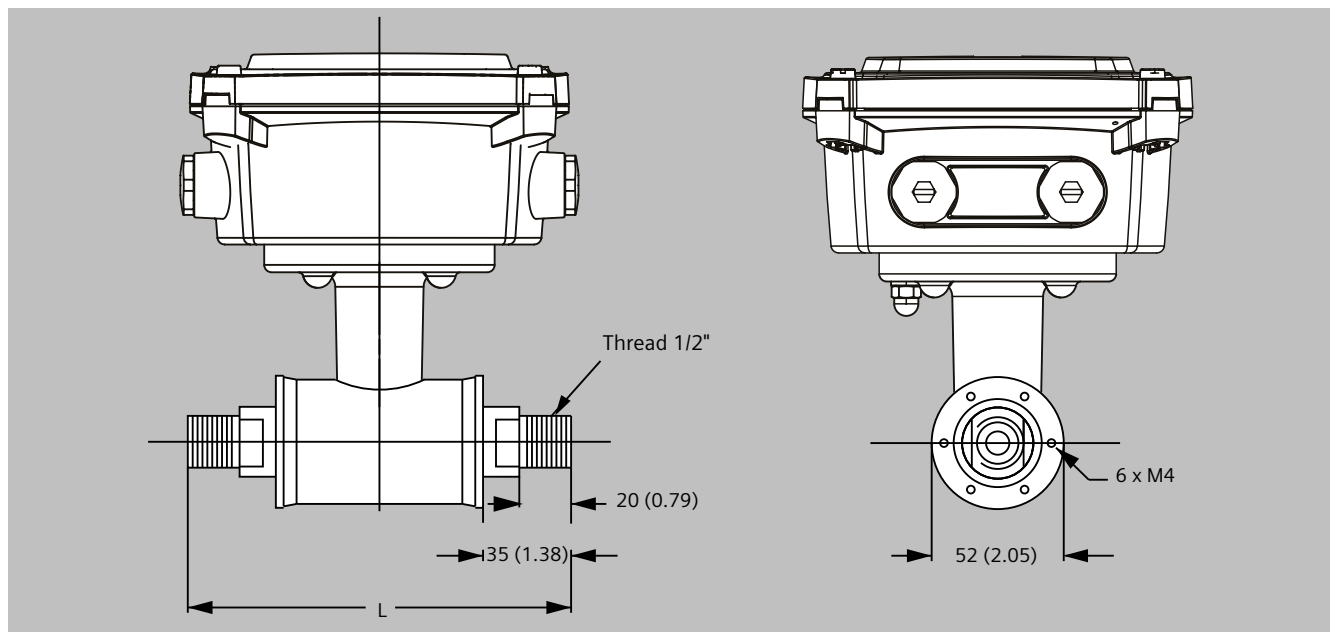
Flow sensors / SITRANS FMS100

Dimensional drawings (continued)

SITRANS FMS100 built-in length without flanges (sandwich version)

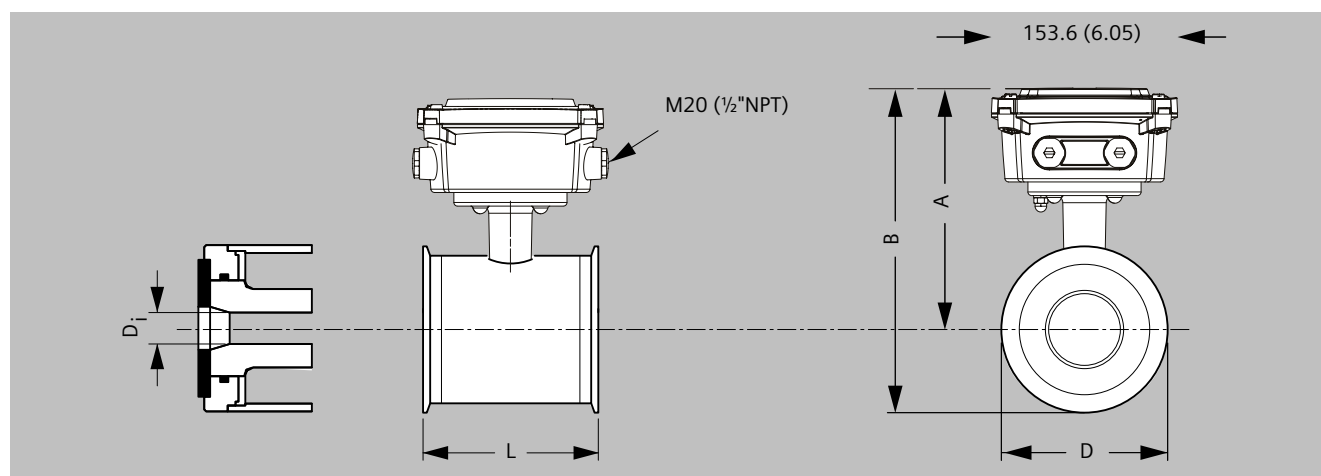
Nominal size		L ¹⁾									
		EN 1092-1-201									
DN	inch	EPDM [mm]	[inch]	Graphite [mm]	[inch]	PTFE (Teflon) [mm]	[inch]	Without gasket [mm]	[inch]	Grounding ring [mm]	[inch]
2 ... 10 ¹⁾	1/12 ... 3/8 ¹⁾	64	2.52	66	2.60	70	2.75	64	2.52	77	3.03
15	1/2	65	2.56	66	2.60	70	2.75	64	2.52	77	3.03
25	1	80	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⁾ When earthing flanges are used, the thickness of the earthing flange must be added to the built-in length.



SITRANS FMS100 built-in length DN 2 ... 10 (1/12" ... 3/8") with adapters

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

Dimensional drawings (continued)


SITRANS FMS100 Food grade version remote design

Metric

DN [mm]	L [mm]	A [mm]	B [mm]	D [mm]	D _i (Al ₂ O ₃) [mm]	D _i (PFA) [mm]	Weight ¹⁾ [kg]
10	64	161	193.7	64.0	10	10	2.2
15	64	161	193.7	64.0	15	16	2.2
25	79	169	207.5	77.5	25	26	2.7
40	94	179	228.0	91.0	40	38	3.4
50	104	188	247.7	119.0	50	50	4.2
65	131	197.5	262.6	130.0	65	66	5.5
80	156	204	281.0	155.0	80	81	7.0
100	186	217	308.0	183.0	100	100	10.0

¹⁾ With transmitter FMT020 installed, weight is increased by approximately 1 kg.

Imperial

DN [inch]	L [inch]	A [inch]	B [inch]	D [inch]	D _i (Al ₂ O ₃) [inch]	D _i (PFA) [inch]	Weight ¹⁾ lb
3/8	2.52	6.34	7.62	2.52	0.39	0.39	4.8
1/2	2.52	6.34	7.62	2.52	0.59	0.63	4.8
1	3.11	6.66	8.17	3.05	0.98	1.02	5.9
1 1/2	3.70	7.05	8.98	3.58	1.57	1.50	7.5
2	4.09	7.40	9.75	4.68	1.97	1.97	9.2
2 1/2	5.16	7.78	10.34	5.12	2.56	2.60	12.0
3	6.14	8.03	11.06	6.10	3.15	3.19	15.0
4	7.32	8.54	12.13	7.20	3.94	3.94	22.0

¹⁾ With transmitter FMT020 installed, weight is increased by approximately 2.2 lb.

DN [inch]	A ¹⁾ [inch]	B ¹⁾ [inch]	A ₁ [inch]	D [inch]	D _i [inch]	D _i (PFA) [inch]	D _p [inch]	D _G [inch]	Weight ²⁾ [lb]
1/12	6.1	7.05	10.2	1.92	0.08		0.68	1.34	4.8
1/8	6.1	7.05	10.2	1.92	0.12		0.68	1.34	4.8
1/4	6.1	7.05	10.2	1.92	0.24		0.68	1.34	4.8
3/8	6.1	7.05	10.2	1.92	0.39	0.39	0.53	1.34	4.8
1/2	6.1	7.05	10.2	1.92	0.59	0.63	0.68	1.57	4.8
1	6.4	7.64	10.5	2.50	0.98	1.02	1.12	2.20	5.9
1 1/2	6.8	8.42	10.9	3.31	1.57	1.50	1.71	2.95	7.5
2	7.1	9.13	11.2	4.00	1.97	1.97	2.15	3.54	9.2
2 1/2	7.5	9.88	11.6	4.76	2.56	2.60	2.68	4.41	12
3	7.8	10.35	11.8	5.24	3.15	3.19	3.25	4.88	15
4	8.3	11.37	12.3	6.26	3.94	3.94	4.22	5.91	22

¹⁾ 0.29 inch shorter when the stainless steel terminal box is used (High temperature 200 °C (392 °F) version).

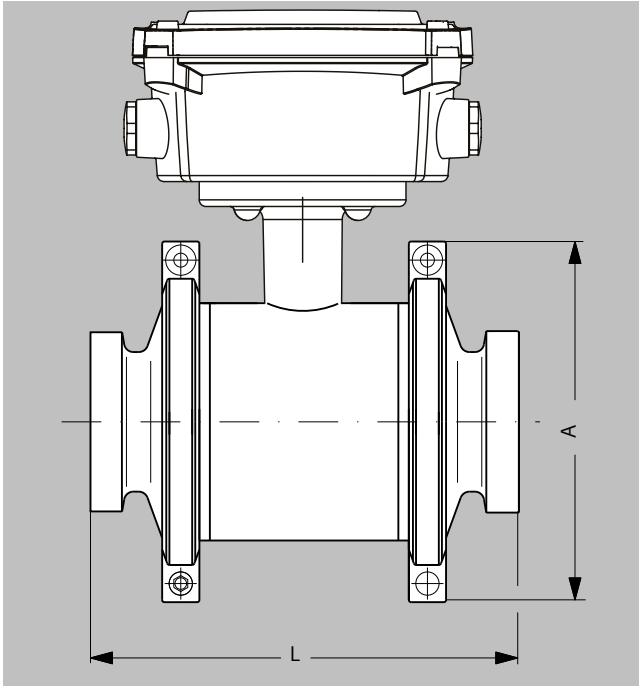
²⁾ With transmitter FMT020 installed, weight is increased by approximately 2.2 lb.

Flow Measurement

SITRANS FM (electromagnetic)

Flow sensors / SITRANS FMS100

Dimensional drawings (continued)



SITRANS FMS100 Food grade version built-in length with flanges

DN [mm]	[inch]	A [mm]	[inch]	L ¹⁾ [mm]	[inch]
10	3/8	99	3.90	146	5.75
15	1/2	99	3.90	146	5.75
25	1	113	4.45	161	6.34
40	1 1/2	126	4.96	176	6.93
50	2	154	6.06	186	7.32
65	2 1/2	165	6.50	223	8.78
80	3	200	7.87	258	10.16
100	4	225	8.86	288	11.34

¹⁾ The total built-in length "L" is independent of the adapter type selected.