

SITRANS F C sensor MASS 2100 DI 3, DI 6 and DI 15 with SITRANS FCT010, FCT030 and SIFLOW FC070 transmitter

Technical specifications

Versions (mm (inch))		DI 3 (1/8)	DI 6 (¼)	DI 15 (5/8)
Inside pipe diameter (sensor consists of one continuous pipe)	mm (inch)	3.0 (0.12)	6.0 (0.24)	14.0 (0.55)
Pipe wall thickness	mm (inch)	0.5 (0.02)	1.0 (0.04)	1.0 (0.04)
Mass flow measuring range (liquids)	kg/h (lb/h)	0 ... 250 (0 ... 550)	0 ... 1000 (0 ... 2200)	0 ... 5600 (0 ... 12345)
Density	g/cm ³ (lb/inch ³)	0 ... 2.9 (0 ... 0.10)		
Fraction e.g.	°Brix	0 ... 70 (applicable temperature range: 10 ... 99 °C (50 ... 210.2 °F))		
Temperature				
Media temperature	°C (°F)	-50 ... +180 °C (-58 ... +356 °F)		
Ambient temperature	°C (°F)	-20 ... +50 °C (-4 ... +122 °F)		
Liquid pressure measuring pipe¹⁾				
Stainless steel	bar (psi)	230 (3336)	265 (3844)	130 (1885)
Hastelloy C22/2.4602	bar (psi)	350 (5076)	410 (5946)	200 (2900)
Materials				
Measuring pipe, flange and thread connection		Stainless steel AISI 316L/1.4435 Hastelloy C22/2.4602		
Enclosure and enclosure material		IP67 (NEMA 4) and stainless steel AISI 316L/1.4404, The housing is not rated for pressure containment		
Process connections²⁾				
Flange				
EN 1092-1, PN 40			DN 10	DN 15
ANSI B16.5, Class 150			½"	½"
ANSI B16.5, Class 600 (Class 300)			½"	½"
Dairy screwed connection (PN 16/25/40)³⁾				
DIN 11851			DN 10	DN 15
ISO 2853/BS 4825 part 4 (SS3351)			25mm	25mm
Dairy clamp connection (PN 16)³⁾				
ISO 2852/BS 4825 part 3 (SMS3016)			25 mm	25 mm
Thread				
ISO 228/1, PN 100		G¼" female	G¼" male	G½" male
ANSI/ASME B1.20.1, PN 100		¼" NPT female	¼" NPT male	½" NPT male
Cable connection				
		Multiple plug connection to sensor 5 x 2 x 0.35 mm ² twisted and screened in pairs, ext. Ø 12 mm		
Ex-version				
ATEX, EAC Ex, c-UL-us		Zone 0: Ex ia IIC T3...T6 Ga		
UL (c-UL-us)		Class I, Div. 1: Grp. A, B, C, D		
Weight approx.	kg (lb)	4 (8.8)	8 (17.6)	12 (26.5)

¹⁾ Max. at 20 °C (68 °F), DIN 2413, DIN 17457

²⁾ Other connections to order, see "Selection and Ordering data"

³⁾ Material, AISI 316/1.4401 or corresponding

For accuracy specification see "System information SITRANS F C".

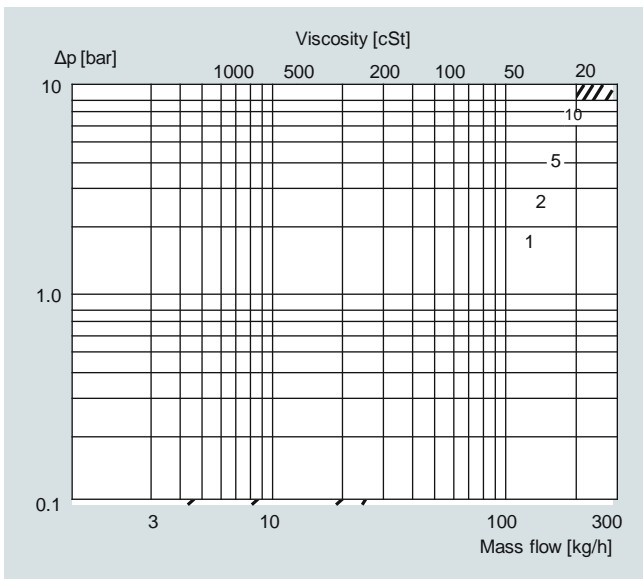
Flow Measurement

SITRANS F C

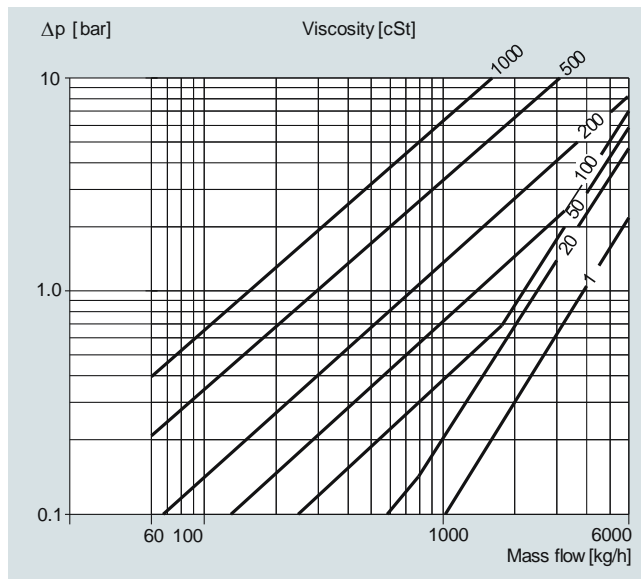
SITRANS F C sensor MASS 2100 DI 3, DI 6 and DI 15 with SITRANS FCT010, FCT030 and SIFLOW FC070 transmitter

Pressure drop

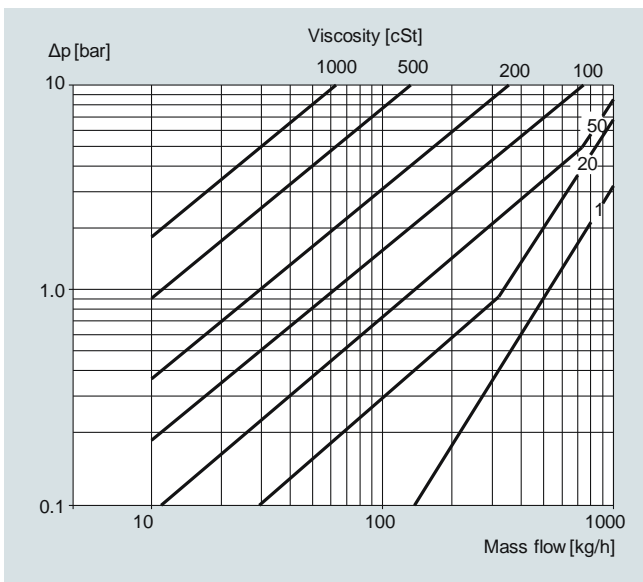
3



MASS 2100 DI 3 (1/8"), pressure drop for density = 1000 kg/m³



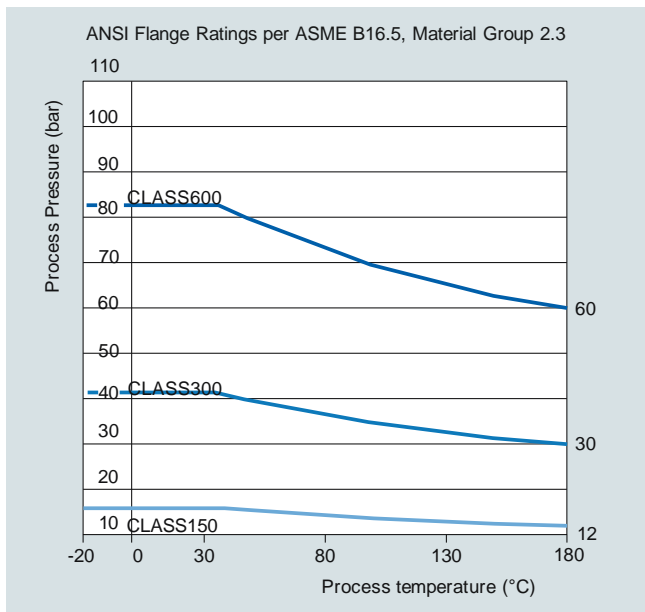
MASS 2100 DI 15 (1/2"), pressure drop for density = 1000 kg/m³



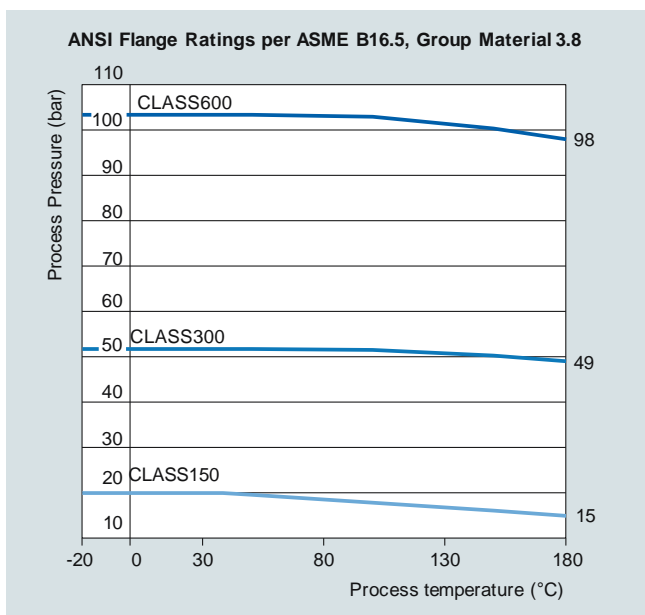
MASS 2100 DI 6 (1/4"), pressure drop for density = 1000 kg/m³

SITRANS F C sensor MASS 2100 DI 3, DI 6 and DI 15 with SITRANS FCT010, FCT030 and SIFLOW FC070 transmitter

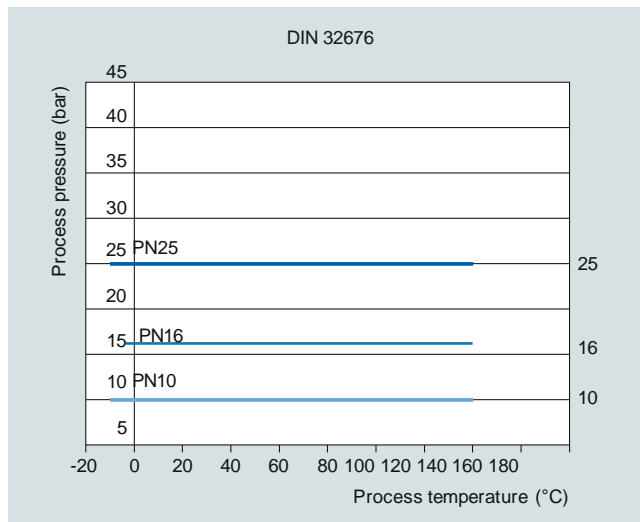
Pressure/temperature curves



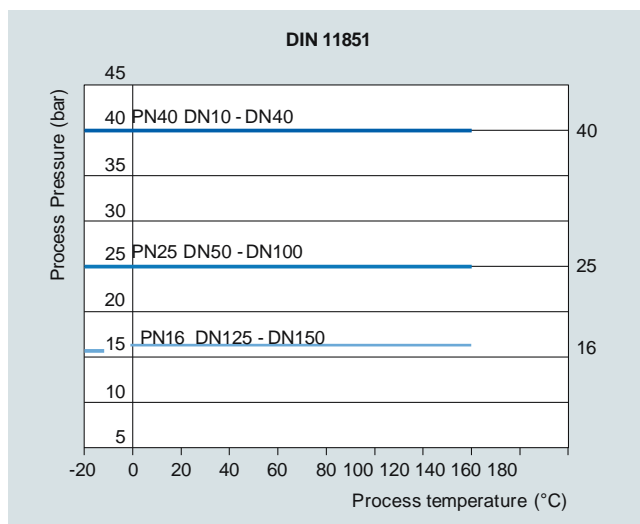
ASME flanges B16.5 stainless steel



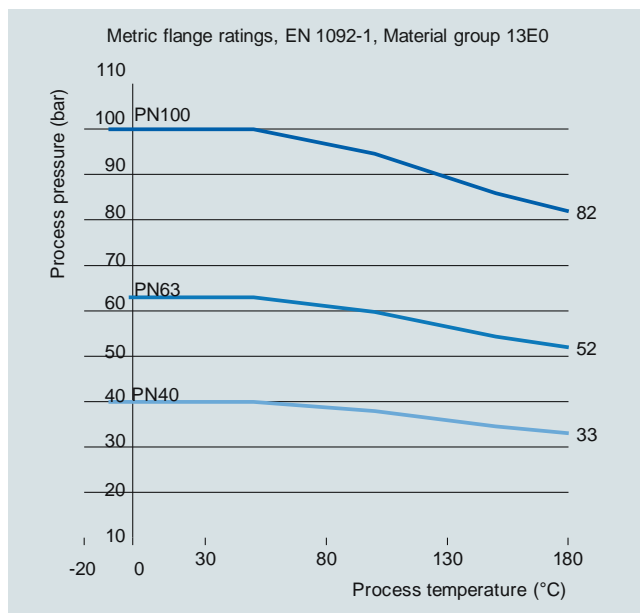
ASME flanges B16.5 Hastelloy C22/2.4602



DIN 32676 flanges stainless steel (PN 10 ... PN 25)



DIN 11851 flanges stainless steel (PN 25 ... PN 40)

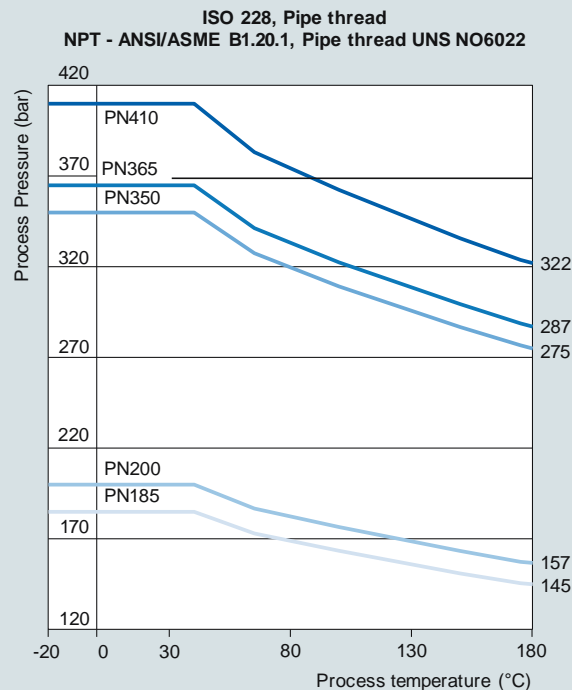
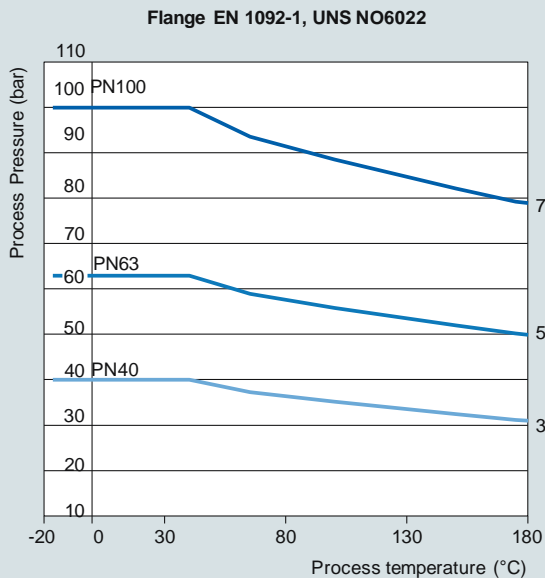


Flow Measurement

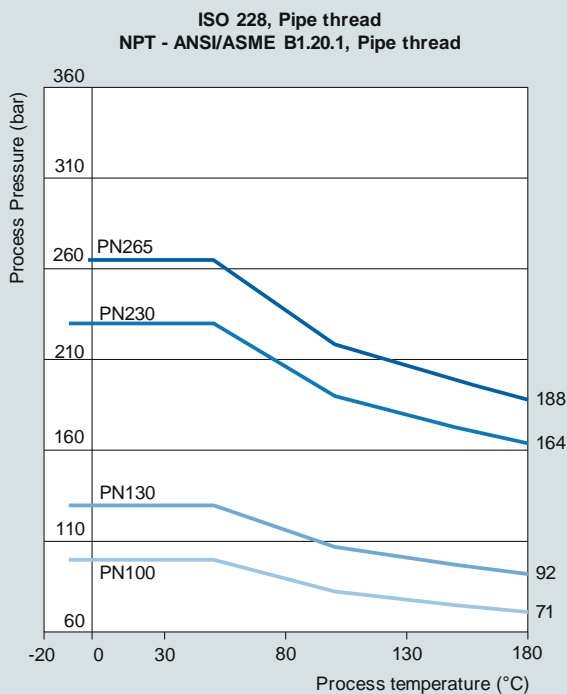
SITRANS F C

SITRANS F C sensor MASS 2100 DI 3, DI 6 and DI 15 with SITRANS FCT010, FCT030 and SIFLOW FC070 transmitter

EN 1092 flanges stainless steel (PN 40 ... PN 100)



EN 1092 flanges Hastelloy C22/2.4602 (PN 40 ... PN 100)



ISO 218 and NPT pipe thread stainless steel (PN 185 ... PN 410)

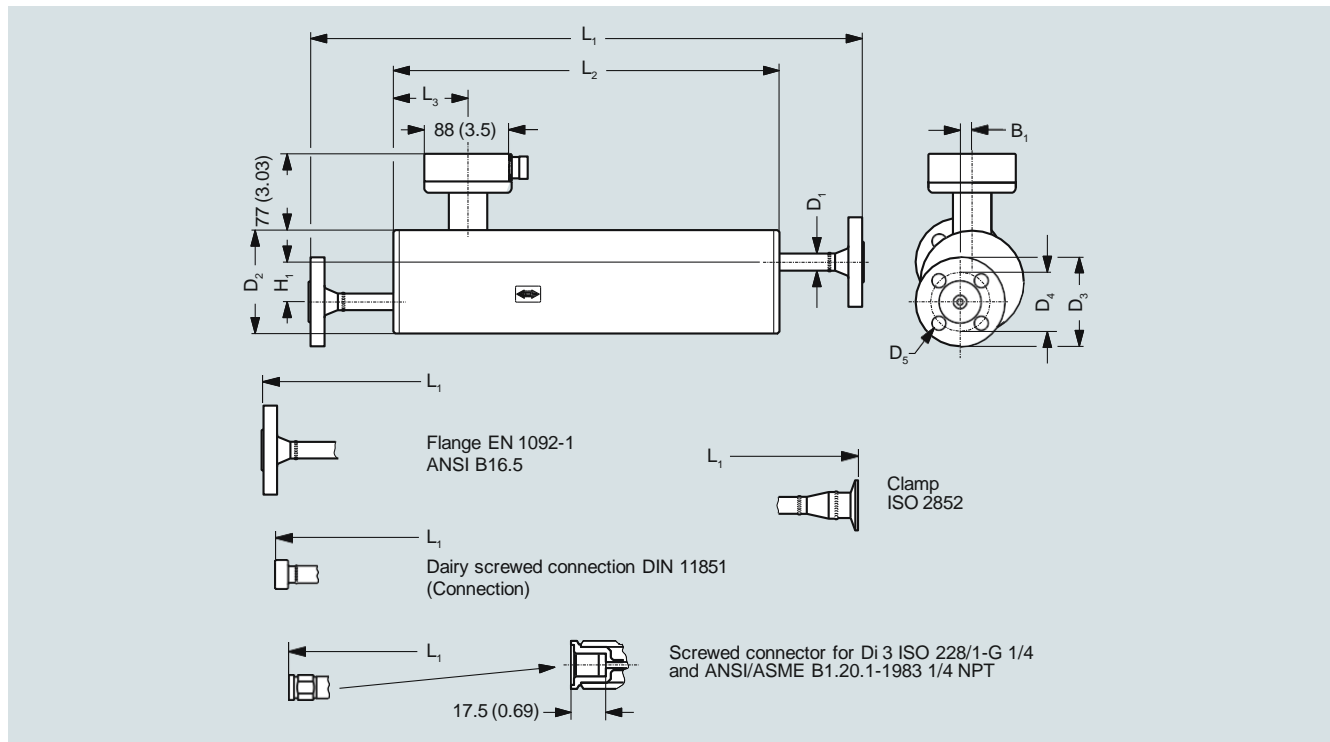
For further information on the PED standard and requirements, see page 10/15.

ISO 228 and NPT pipe thread stainless steel (PN 100 ... PN 265)

SITRANS F C sensor MASS 2100 DI 3, DI 6 and DI 15 with SITRANS FCT010, FCT030 and SIFLOW FC070 transmitter

Dimensional drawings

MASS 2100 sensor for analog cable connection



Dimension in mm (inch)

For not listed variants please contact product support

Sensor size	Connections			L1	L2	L3	H1	B1	D1	D2	D3	D4	D5
DI (inch)	Type	Pressurating	Size	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
DI 3 (1/8)	Pipe thread ISO 228/1 - G 1/4	PN 100	1/4"	400	280	75.5	60	0	21.3	104	-	-	-
	Pipe thread ANSI/ASME B 1.20.1 - 1/4" NPT	PN 100	1/4"	400	280	75.5	60	0	21.3	104	-	-	-
DI 6 (1/4)	Flange EN 1092-1	PN 100	DN 10	580	390	62.0	40	12	17.0	104	100	70.0	14.0
	Flange EN 1092-1	PN 40	DN 10	560	390	62.0	40	12	17.0	104	90.0	60.0	14.0
	Flange ANSI B16.5	Class 150	1/2"	624	390	62.0	40	12	17.0	104	88.9	60.5	15.7
	Flange ANSI B16.5	Class 600	1/2"	608	390	62.0	40	12	17.0	104	95.3	66.5	15.7
	Screwed connection DIN 11851	PN 40	DN 10	532	390	62.0	40	12	17.0	104	-	-	-
	Clamp ISO 2852	PN 16	25 mm	570	390	62.0	40	12	17.0	104	-	-	-
DI 15 (1/2)	Flange EN 1092-1	PN 100	DN 15	634	444	75.5	44	20	21.3	129	105	75.0	14.0
	Flange EN 1092-1	PN 40	DN 15	620	444	75.5	44	20	21.3	129	95.0	65.0	14.0
	Flange ANSI B16.5	Class 150	1/2"	639	444	75.5	44	20	21.3	129	88.9	60.5	15.7
	Flange ANSI B16.5	Class 600	1/2"	660	444	75.5	44	20	21.3	129	95.3	66.5	15.7
	Screwed connection DIN 11851	PN 40	DN 15	586	444	75.5	44	20	21.3	129	-	-	-
	Clamp ISO 2852	PN 16	25 mm	624	444	75.5	44	20	21.3	129	-	-	-

Flow Measurement

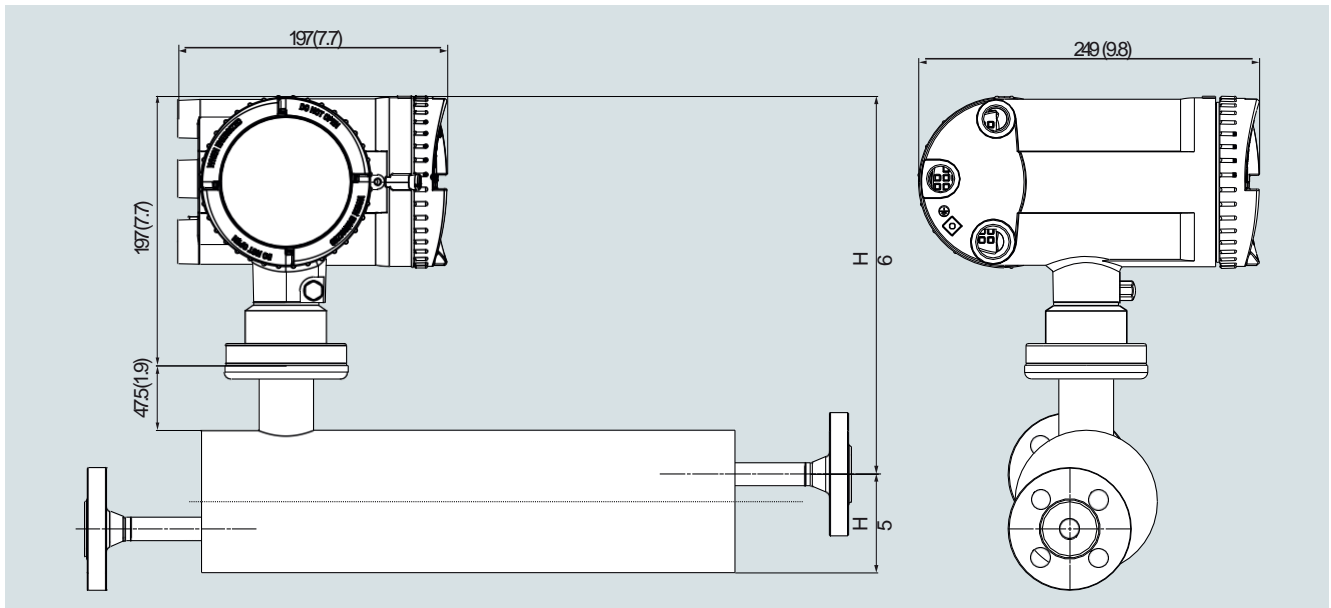
SITRANS F C

SITRANS F C sensor MASS 2100 DI 3, DI 6 and DI 15 with SITRANS FCT010, FCT030 and SIFLOW FC070 transmitter

For not listed variants please contact product support.

Sensor size	Connections			L1	L2	L3	H1	B1	D1	D2	D3	D4	D5
DI (inch)	Type	Pressure rating	Size	inch	inch	inch	inch	inch	inch	inch	inch	inch	inch
DI 3 (1/8)	Pipe thread ISO 228/1 - G $\frac{1}{4}$	PN 100	$\frac{1}{4}$ "	15.75	11.02	2.97	2.36	0	0.84	4.09	-	-	-
	Pipe thread ANSI/ASME B 1.20.1 - $\frac{1}{4}$ " NPT	PN 100	$\frac{1}{4}$ "	15.75	11.02	2.97	2.36	0	0.84	4.09	-	-	-
DI 6 ($\frac{1}{4}$)	Flange EN 1092-1	PN 100	DN 10	22.83	15.35	2.44	1.57	0.47	0.67	4.09	3.94	2.76	0.55
	Flange EN 1092-1	PN 40	DN 10	22.05	15.35	2.44	1.57	0.47	0.67	4.09	3.54	2.36	0.55
	Flange ANSI B16.5	Class 150	$\frac{1}{2}$ "	24.57	15.35	2.44	1.57	0.47	0.67	4.09	3.5	2.38	0.62
	Flange ANSI B16.5	Class 600	$\frac{1}{2}$ "	23.94	15.35	2.44	1.57	0.47	0.67	4.09	3.75	2.62	0.62
	Screwed connection DIN 11851	PN 40	DN 10	20.94	15.35	2.44	1.57	0.47	0.67	4.09	-	-	-
	Clamp ISO 2852	PN 16	25 mm	22.44	15.35	2.44	1.57	0.47	0.67	4.09	-	-	-
DI 15 ($\frac{1}{2}$)	Flange EN 1092-1	PN 100	DN 15	24.96	17.48	2.97	1.73	0.79	0.84	5.08	2.95	4.13	0.55
	Flange EN 1092-1	PN 40	DN 15	24.41	17.48	2.97	1.73	0.79	0.84	5.08	3.74	2.56	0.55
	Flange ANSI B16.5	Class 150	$\frac{1}{2}$ "	25.16	17.48	2.97	1.73	0.79	0.84	5.08	3.5	2.38	0.62
	Flange ANSI B16.5	Class 600	$\frac{1}{2}$ "	25.98	17.48	2.97	1.73	0.79	0.84	5.08	3.75	2.62	0.62
	Screwed connection DIN 11851	PN 40	DN 15	23.07	17.48	2.97	1.73	0.79	0.84	5.08	-	-	-
	Clamp ISO 2852	PN 16	25 mm	24.57	17.48	2.97	1.73	0.79	0.84	5.08	-	-	-

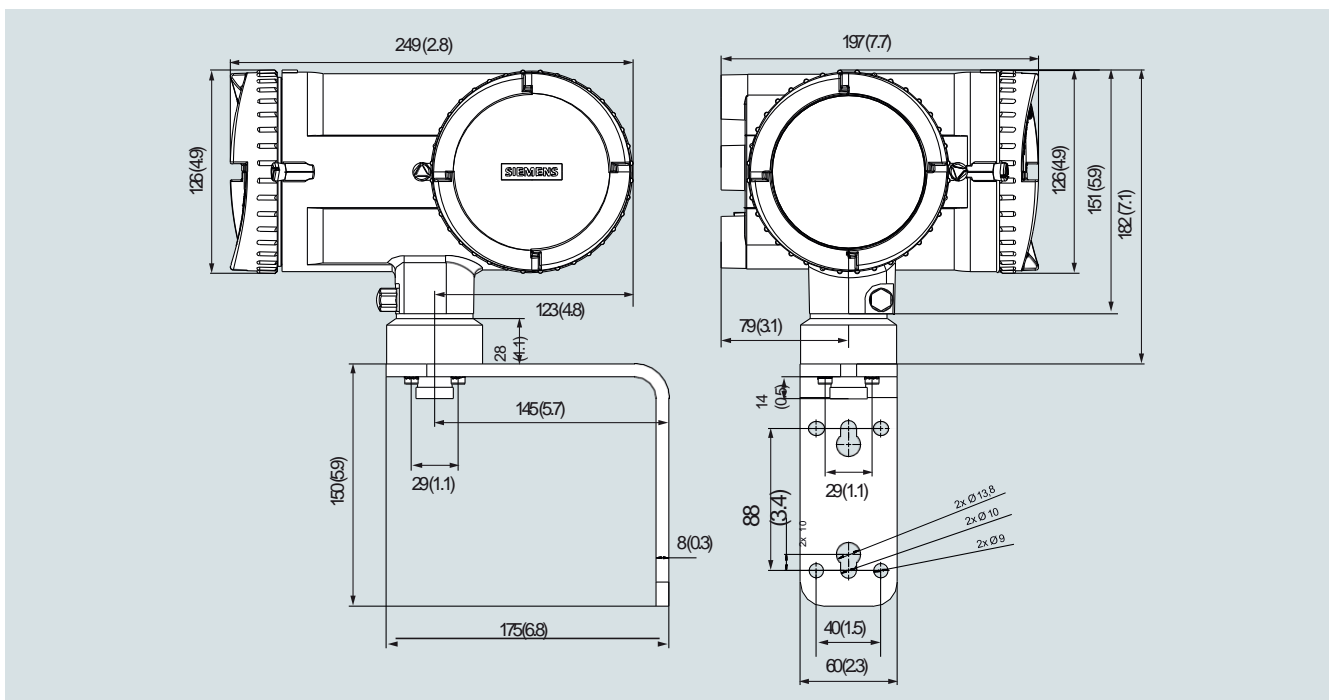
SITRANS F C sensor MASS 2100 DI 3, DI 6 and DI 15 with SITRANS FCT010, FCT030 and SIFLOW FC070 transmitter

Compact with FCT030

Dimensions in mm (inch)

MASS 2100 with FCT030 transmitter compact

Sensor size [DI (inch)]	L ₃ [mm (inch)]	H ₅ [mm (inch)]	H ₆ [mm (inch)]	H ₅ + H ₆ [mm (inch)]
3 (1/8)	75.5 (2.97)	82 (3.23)	267 (10.51)	349 (13.74)
6 (1/4)	62 (2.44)	72 (2.83)	277 (10.91)	349 (13.74)
15 (1/2)	75.5 (2.97)	86.5 (3.41)	287 (11.3)	373.5 (14.71)

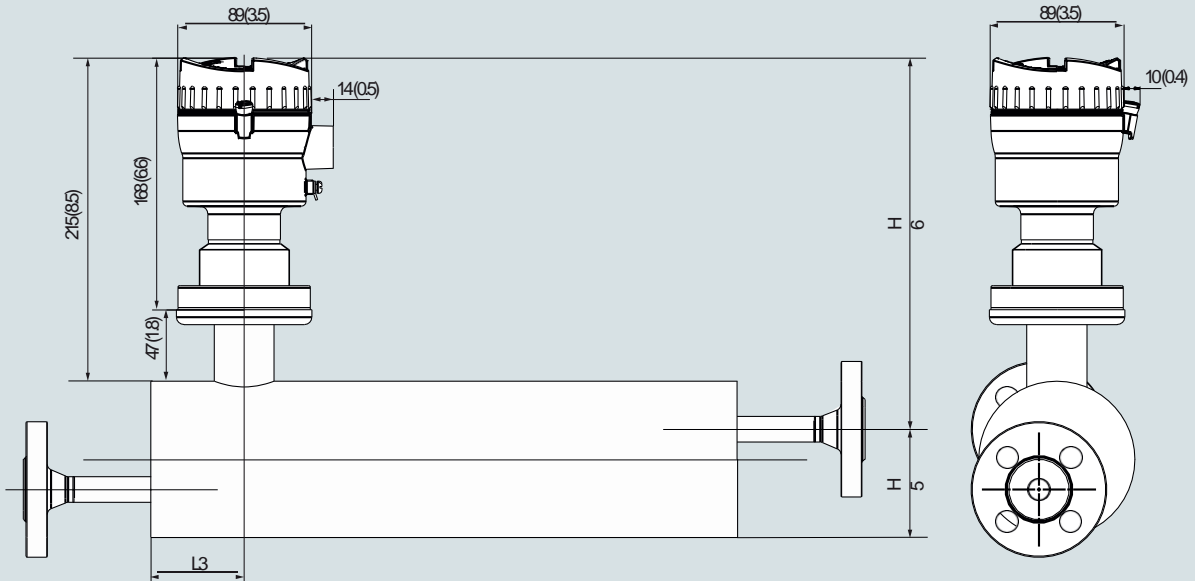
Transmitter FCT030 remote field mount for M20 analog cable connection

Dimensions in mm (inch)

Flow Measurement SITRANS F C

SITRANS F C sensor MASS 2100 DI 3, DI 6 and DI 15 with SITRANS FCT010, FCT030 and SIFLOW FC070 transmitter

Compact with FCT010

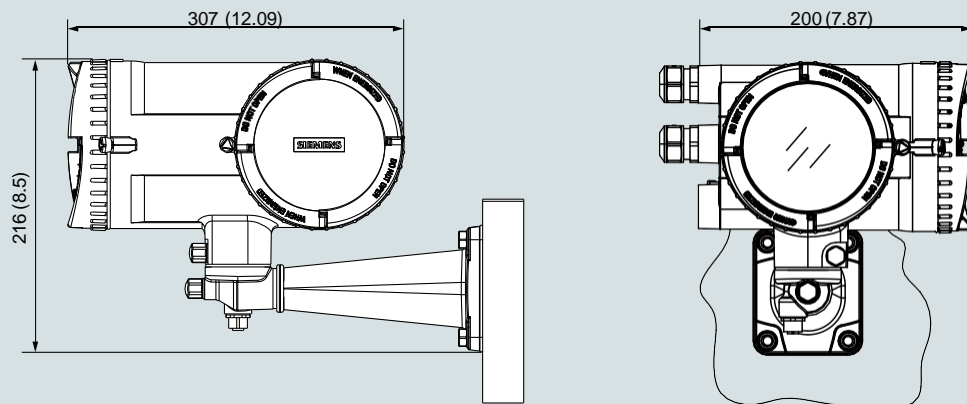


Dimensions in mm (inch)

MASS 2100 with FCT010 transmitter compact

Sensor size [DI (inch)]	L ₃ [mm (inch)]	H ₅ [mm (inch)]	H ₆ [mm (inch)]	H ₅ + H ₆ [mm (inch)]
3 (1/8)	75.5 (2.97)	82 (3.23)	237 (9.33)	319 (12.56)
6 (1/4)	62 (2.44)	72 (2.83)	247 (9.72)	319 (12.56)
15 (1/2)	75.5 (2.97)	86.5 (3.41)	257 (10.11)	343.5 (13.52)

Transmitter FCT030 remote field mount for M12 digital cable connection

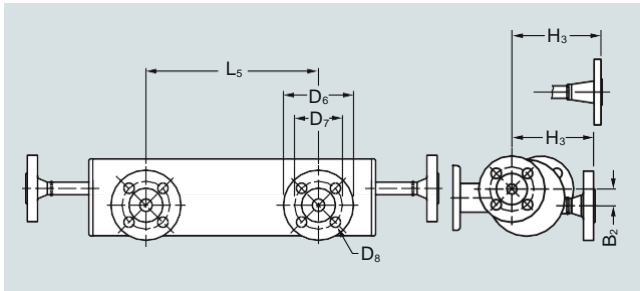


Dimensions in mm (inch)

3

SITRANS F C sensor MASS 2100 DI 3, DI 6 and DI 15 with SITRANS FCT010, FCT030 and SIFLOW FC070 transmitter

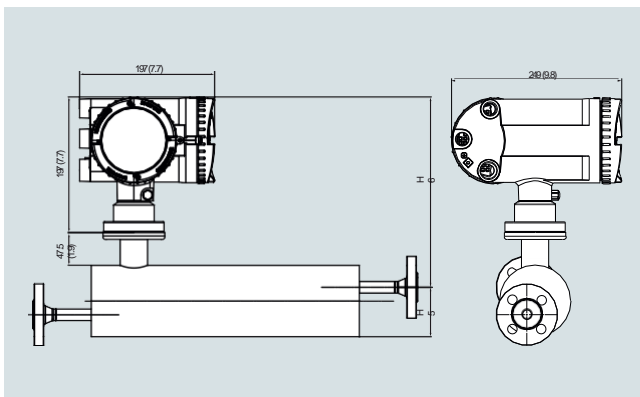
MASS 2100 sensor with "heating jacket"



Dimensions in mm (inch)

Sensor size	Connections heated			L5	H3	B2	D6	D7	D8
DI (inch)	Type	Pressure rating	Size	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)
DI 3 (1/8)	EN 1092-1	PN 40	DN 15	234 (9.21)	122 (4.8)	22 (0.87)	95 (3.74)	65.0 (2.56)	14.0 (0.55)
	ANSI B16.5	Class 150	½"	234 (9.21)	131.6 (5.18)	22 (0.87)	88.9 (3.5)	60.5 (2.38)	15.7 (0.62)
DI 6 (¼)	EN 1092-1	PN 40	DN 15	234 (9.21)	112 (4.41)	22.7 (0.89)	95 (3.74)	65.0 (2.56)	14.0 (0.55)
	ANSI B16.5	Class 150	½"	234 (9.21)	121.6 (4.79)	22.7 (0.89)	88.9 (3.5)	60.5 (2.38)	15.7 (0.62)
DI 15 (½)	EN 1092-1	PN 40	DN 15	234 (9.21)	126.5 (4.98)	31.5 (1.24)	95 (3.74)	65.0 (2.56)	14.0 (0.55)
	ANSI B16.5	Class150	½"	234 (9.21)	136.1 (5.36)	31.5 (1.24)	88.9 (3.5)	60.5 (2.38)	15.7 (0.62)

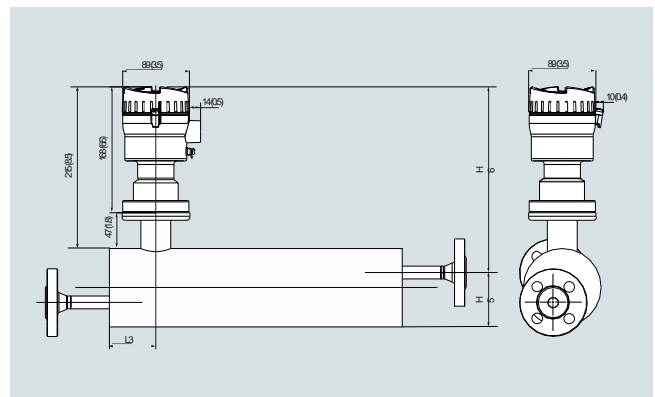
MASS 2100 and FCT030 compact version



MASS 2100 and FCT030 compact version, dimensions in mm (inch)

Sensor size [DI (inch)]	L3 [mm (inch)]	H5 [mm (inch)]	H6 [mm (inch)]	H5 + H6 [mm (inch)]
3 (1/8)	75.5 (2.97)	82 (3.23)	267 (10.51)	349 (13.74)
6 (¼)	62 (2.44)	72 (2.83)	277 (10.91)	349 (13.74)
15 (½)	75.5 (2.97)	86.5 (3.41)	287 (11.30)	373.5 (14.70)

MASS 2100 and FCT010 compact version



MASS 2100 and FCT010 compact version, dimensions in mm (inch)

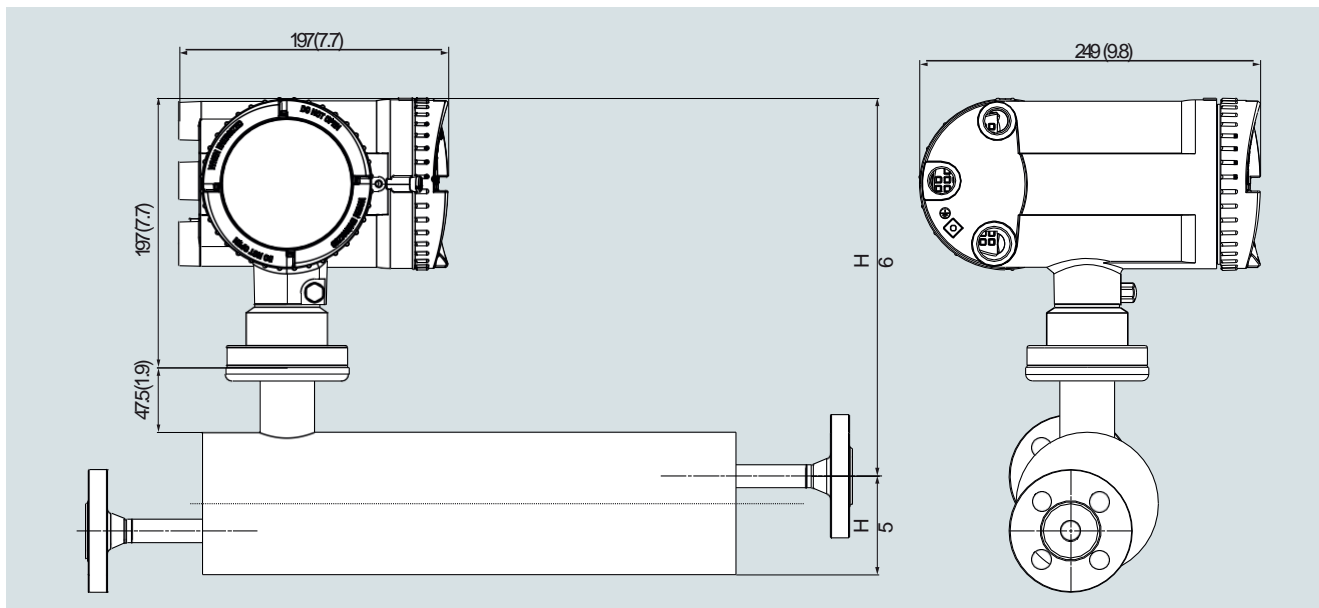
Sensor size [DI (inch)]	L3 [mm (inch)]	H5 [mm (inch)]	H6 [mm (inch)]	H5 + H6 [mm (inch)]
3 (1/8)	75 (2.95)	82 (3.23)	237 (9.33)	319 (12.56)
6 (¼)	62 (2.44)	72 (2.83)	247 (9.72)	319 (12.56)
15 (½)	75 (2.95)	87 (3.43)	257 (10.11)	343.5 (13.52)

Flow Measurement

SITRANS F C

SITRANS F C sensor MASS 2100 DI 3, DI 6 and DI 15 with SITRANS FCT010, FCT030 and SIFLOW FC070 transmitter

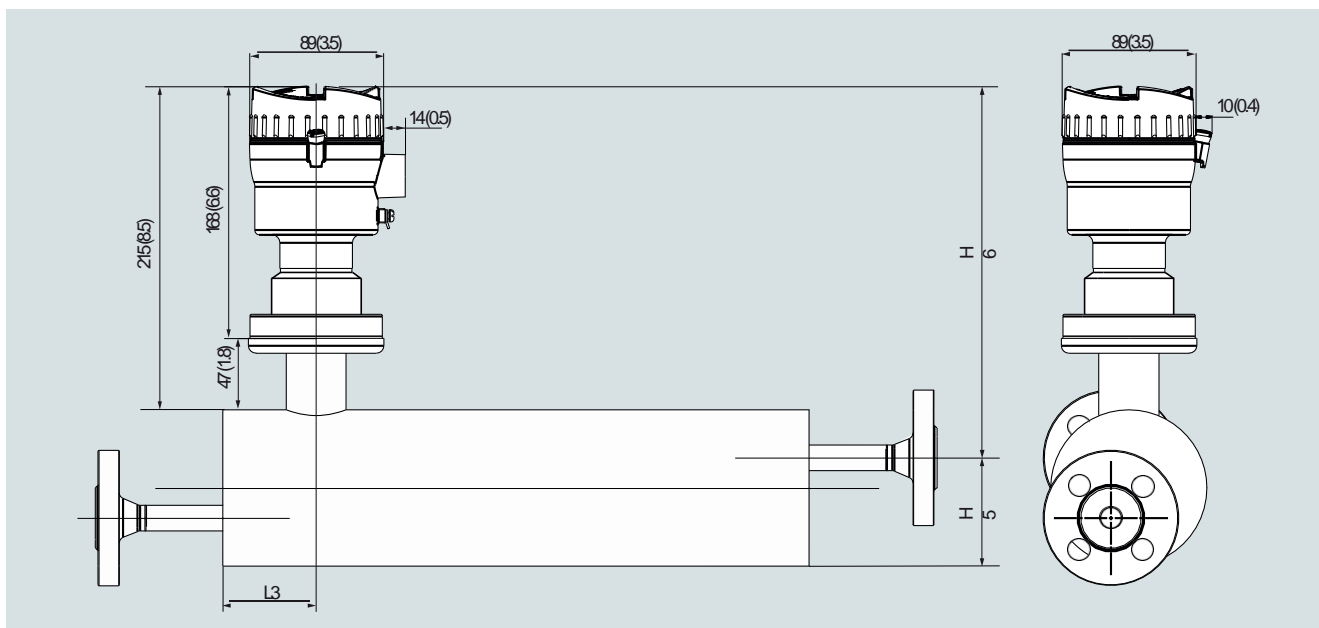
MASS 2100 and FCT030 compact version



MASS 2100 and FCT030 compact version, dimensions in mm (inch)

Sensor size [DI (inch)]	L ₃ [mm (inch)]	H ₅ [mm (inch)]	H ₆ [mm (inch)]	H ₅ + H ₆ [mm (inch)]
3 (1/8)	75.5 (2.97)	82 (3.23)	267 (10.51)	349 (13.74)
6 (1/4)	62 (2.44)	72 (2.83)	277 (10.91)	349 (13.74)
15 (1/2)	75.5 (2.97)	86.5 (3.41)	287 (11.30)	373.5 (14.70)

MASS 2100 and FCT010 compact version



MASS 2100 and FCT010 compact version, dimensions in mm (inch)

Sensor size [DI (inch)]	L ₃ [mm (inch)]	H ₅ [mm (inch)]	H ₆ [mm (inch)]	H ₅ + H ₆ [mm (inch)]
3 (1/8)	75 (2.95)	82 (3.23)	237 (9.33)	319 (12.56)
6 (1/4)	62 (2.44)	72 (2.83)	247 (9.72)	319 (12.56)
15 (1/2)	75 (2.95)	87 (3.43)	257 (10.11)	343.5 (13.52)

SITRANS F C sensors MASS 2100/FC300 with FCT010, FCT030 and SIFLOW FC070 transmitters (Low flow program)

Selection and Ordering data	Article No.	Ord. code	Selection and Ordering data	Article No.	Ord. code
SITRANS F C sensors MASS 2100/FC300 with FCT010 transmitter	7ME4811-		SITRANS F C sensors MASS 2100/FC300 with FCT010 transmitter	7ME4811-	
	77777	7777 777		77777	7777 777
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.					
Sensor type and connector size			Tube material (wetted) and max. operational temperature		
MASS 2100 DI 1.5, 1/4"	1G		AISI 316L/EN 1.4435, Max 115 °C	1	
MASS 2100 DI 3, 1/4"	3A		AISI 316L/EN 1.4435, Max 125 °C	2	
MASS 2100 DI 3, 1/4" Heated w. DIN	3B		AISI 316L/EN 1.4435, Max 180 °C	3	
MASS 2100 DI 3, 1/4" Heated w. ANSI	3C		Hastelloy C22/UNS N06022/EN 2.4602, Max. 115 °C	5	
FC300 DN 4, 1/4"	4A		Hastelloy C22/UNS N06022/EN 2.4602, Max. 125 °C	6	
MASS 2100 DI 6, 1/4"	6A		Hastelloy C22/UNS N06022/EN 2.4602, Max. 180 °C	7	
MASS 2100 DI 6, 1/4" Heated w. EN	6B				
MASS 2100 DI 6, 1/4" Heated w. ANSI	6C		Calibration		
MASS 2100 DI 6, DN 10	6D		Mass flow calibration	1	
MASS 2100 DI 6, DN 10 Heated w. EN	6E		Mass flow calibration and density calibration	4	
MASS 2100 DI 6, DN 10 Heated w. ANSI	6F				
MASS 2100 DI 6, DN 15 (1/2")	6G		Mounting style, Transmitter Housing and Material		
MASS 2100 DI 6, DN 15 (1/2") Heated w. EN	6H		Compact mounted, IP67, Aluminium transmitter housing (DI 3, DI 6 and DI 15 only)	D	
MASS 2100 DI 6, DN 15 (1/2") Heated w. ANSI	6J		Remote mounted, IP67, Aluminium transmitter housing, analog cable connection with M20 connectors	Z	P OD
MASS 2100 DI 6, DN 20 (3/4")	6K				
MASS 2100 DI 6, DN 20 (3/4") Heated w. EN	6L				
MASS 2100 DI 6, DN 20 (3/4") Heated w. ANSI	6M		Ex approvals		
MASS 2100 DI 6, DN 25 (1")	6N		Non-Ex	A	
MASS 2100 DI 6, DN 25 (1") Heated w. EN	6P		ATEX Zone 1	C	
MASS 2100 DI 6, DN 25 (1") Heated w. ANSI	6Q		IECEx Zone 1	F	
MASS 2100 DI 15, DN 15 (1/2")	7A		USA (FM, CSA, UL), Zone 1/Div1	H	
MASS 2100 DI 15, DN 15 (1/2") Heated w. EN	7B		Canada (CSA, UL), Zone 1/Div1	M	
MASS 2100 DI 15, DN 15 (1/2") Heated w. ANSI	7C				
MASS 2100 DI 15, DN 20 (3/4")	7D		Local User Interface		
MASS 2100 DI 15, DN 20 (3/4") Heated w. EN	7E		Blind	1	
MASS 2100 DI 15, DN 20 (3/4") Heated w. ANSI	7F				
MASS 2100 DI 15, DN 25 (1")	7G				
MASS 2100 DI 15, DN 25 (1") Heated w. EN	7H				
MASS 2100 DI 15, DN 25 (1") Heated w. ANSI	7J				
Process connection/Pressure					
No connections (spare part transmitter)	A0				
EN1092-1 B1, PN40	A1				
EN1092-1 B1, PN100	A3				
ASME B16.5, RF, Class 150	D1				
ASME B16.5, RF, Class 600	D3				
DIN 11851 Screwed connection	F1				
ISO2852 Hyg. Clamped	J1				
ISO2853 Hyg. Screwed	J5				
ISO 228-1 Pipe thread, PN 100	C1				
ISO 228-1 Pipe thread, PN 130	C2				
ISO 228-1 Pipe thread, PN 200	C3				
ISO 228-1 Pipe thread, PN 230	C4				
ISO 228-1 Pipe thread, PN 265	C5				
ISO 228-1 Pipe thread, PN 350	C6				
ISO 228-1 Pipe thread, PN 365	C7				
ISO 228-1 Pipe thread, PN 410	C8				
NPT ASME B 1.20.1 Pipe thread, PN 100	N1				
NPT ASME B 1.20.1 Pipe thread, PN 130	N2				
NPT ASME B 1.20.1 Pipe thread, PN 200	N3				
NPT ASME B 1.20.1 Pipe thread, PN 230	N4				
NPT ASME B 1.20.1 Pipe thread, PN 265	N5				
NPT ASME B 1.20.1 Pipe thread, PN 350	N6				
NPT ASME B 1.20.1 Pipe thread, PN 365	N7				
NPT ASME B 1.20.1 Pipe thread, PN 410	N8				

Flow Measurement

SITRANS F C

SITRANS F C sensors MASS 2100/FC300 with FCT010, FCT030 and SIFLOW FC070 transmitters (Low flow program)

Selection and Ordering data	Order code	Selection and Ordering data	Order code
Further designs		Additional data	
Please add "-Z" to Article No. and specify Order code(s).		Please add "-Z" to Article No. and specify Order code(s) and plain text.	
Cable glands		Tag name	
None (mechanical sensor)	A00	Tag name plate, stainless steel	Y17
Metric, no glands	A01	Extended calibration	
Metric, plastic	A02	Multi-point high, (5 flows x 2 passes), 10 ... 100 % of Q_{nom}	Y61
Metric, brass/Ni plated	A05	Multi-point high, (10 flows x 1 pass), 10 ... 100 % of Q_{nom}	Y63
Metric, stainless steel	A06		
NPT, no glands	A11		
NPT, plastic	A12		
NPT, brass/Ni plated	A15		
NPT, stainless steel	A16		
Integral M12 socket	A20		
SW functions & CT approvals			
Standard	B11		
I/O configuration Ch1			
Modbus RTU RS 485	E14		
I/O configuration Ch2, Ch3 and Ch4			
None	F00		
Certificates			
Press test certificate CRN	C01		
Press test certificate PED	C02		
Material certificate EN 10204-3.1	C12		
Welding inspection report	C13		
Factory certificate according to EN 10204 2.2	C14		
Factory certificate according to EN 10204 2.1	C15		
Cleaning for oil and grease/ASTM-A380	C50		
Cleaned according to PWIS	C51		
Sensor data storage			
Sensor with SensorFlash for FCT Sensor	S20		
with SensorProm for MASS 6000	S21		
Cable sensor-transmitter			
None	L50		
5 m, standard, M12 connectors	L51		
5 m, standard, without connectors	L52		
10 m, standard, M12 connectors	L55		
10 m, standard, without connectors	L56		
25 m, standard, M12 connectors	L59		
25 m, standard, without connectors	L60		
50 m, standard, M12 connectors	L63		
50 m, standard, without connectors	L64		
75 m, standard, M12 connectors	L67		
75 m, standard, without connectors	L68		
2 m cable, analog, with two M20 connectors	L85		
5 m cable, analog, with two M20 connectors	L86		
10 m cable, analog, with two M20 connectors	L87		
15 m cable, analog, with two M20 connectors	L88		

SITRANS F C sensors MASS 2100/FC300 with FCT010, FCT030 and SIFLOW FC070 transmitters (Low flow program)

Selection and Ordering data	Article No.	Ord. code	Selection and Ordering data	Article No.	Ord. code
SITRANS F C sensors MASS 2100/FC300 with FCT030 transmitter	7ME 4813 -		SITRANS F C sensors MASS 2100/FC300 with FCT030 transmitter	7ME 4813 -	
	77777 - 7777	777		77777 - 7777	777
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.					
Sensor type and connector size			Tube material (wetted) and max. operational temperature		
MASS 2100 DI 1.5, 1/4"	1G		AISI 316L/EN 1.4435, Max 115 °C	1	
MASS 2100 DI 3, 1/4"	3A		AISI 316L/EN 1.4435, Max 125 °C	2	
MASS 2100 DI 3, 1/4" Heated w. DIN	3B		AISI 316L/EN 1.4435, Max 180 °C	3	
MASS 2100 DI 3, 1/4" Heated w. ANSI	3C		Hastelloy C22/UNS N06022/EN 2.4602, Max. 115 °C	5	
FC300 DN 4, 1/4"	4A		Hastelloy C22/UNS N06022/EN 2.4602, Max. 125 °C	6	
MASS 2100 DI 6, 1/4"	6A		Hastelloy C22/UNS N06022/EN 2.4602, Max. 180 °C	7	
MASS 2100 DI 6, 1/4" Heated w. EN	6 B				
MASS 2100 DI 6, 1/4" Heated w. ANSI	6 C		Calibration		
MASS 2100 DI 6, DN 10	6D		Mass flow calibration	1	
MASS 2100 DI 6, DN 10 Heated w. EN	6E		Mass flow calibration and density calibration	4	
MASS 2100 DI 6, DN 10 Heated w. ANSI	6F		Standard fraction	8	
MASS 2100 DI 6, DN 15 (1/2")	6G				
MASS 2100 DI 6, DN 15 (1/2") Heated w. EN	6H		Mounting style, Transmitter Housing and Material		
MASS 2100 DI 6, DN 15 (1/2") Heated w. ANSI	6J		Compact mounted, IP67, Aluminium transmitter housing (DI 3, DI 6 and DI 15 only)	D	
MASS 2100 DI 6, DN 20 (3/4")	6K		Remote field mounted, IP67, Aluminium housing, M12 socket for digital cable connection (DI 3, DI6 and DI 15 only)	G	
MASS 2100 DI 6, DN 20 (3/4") Heated w. EN	6L		Remote field mount, IP67, Aluminium housing, terminal box for digital cable connection (DI 3, DI6 and DI 15 only)	K	
MASS 2100 DI 6, DN 20 (3/4") Heated w. ANSI	6M				
MASS 2100 DI 6, DN 25 (1")	6N		Wall mount aluminum transmitter housing, M12 socket for digital cable connection (DI 3, DI 6 and DI 15 only)	U	
MASS 2100 DI 6, DN 25 (1") Heated w. EN	6P		Remote field mount, IP67, Aluminium transmitter housing, analog cable connection with M20 connectors	Z	P 0 D
MASS 2100 DI 6, DN 25 (1") Heated w. ANSI	6Q		Remote wall mount, IP67, aluminum transmitter housing, analog cable connection with M20 connectors	Z	P 0 E
MASS 2100 DI 15, DN 15 (1/2")	7A				
MASS 2100 DI 15, DN 15 (1/2") Heated w. EN	7B		Ex approvals		
MASS 2100 DI 15, DN 15 (1/2") Heated w. ANSI	7C		Non-Ex	A	
MASS 2100 DI 15, DN 20 (3/4")	7D		ATEX Zone 1	C	
MASS 2100 DI 15, DN 20 (3/4") Heated w. EN	7E		IECEx Zone 1	F	
MASS 2100 DI 15, DN 20 (3/4") Heated w. ANSI	7F		USA (FM, CSA, UL), Zone 1/Div1	H	
MASS 2100 DI 15, DN 25 (1")	7G		Canada (CSA, UL), Zone 1/Div1	M	
MASS 2100 DI 15, DN 25 (1") Heated w. EN	7H				
MASS 2100 DI 15, DN 25 (1") Heated w. ANSI	7J		Local User Interface		
			Blind	1	
			Graphical, 240 x 160 pixels, glass lid	3	
Process connection/Pressure					
No connections (spare part transmitter)	A0				
EN1092-1 B1, PN40	A1				
EN1092-1 B1, PN100	A3				
ASME B16.5, RF, Class 150	D1				
ASME B16.5, RF, Class 600	D3				
DIN 11851 Screwed connection	F1				
ISO2852 Hyg. Clamped	J1				
ISO2853 Hyg. Screwed	J5				
ISO 228-1 Pipe thread, PN 100	C1				
ISO 228-1 Pipe thread, PN 130	C2				
ISO 228-1 Pipe thread, PN 200	C3				
ISO 228-1 Pipe thread, PN 230	C4				
ISO 228-1 Pipe thread, PN 265	C5				
ISO 228-1 Pipe thread, PN 350	C6				
ISO 228-1 Pipe thread, PN 365	C7				
ISO 228-1 Pipe thread, PN 410	C8				
NPT ASME B 1.20.1 Pipe thread, PN 100	N1				
NPT ASME B 1.20.1 Pipe thread, PN 130	N2				
NPT ASME B 1.20.1 Pipe thread, PN 200	N3				
NPT ASME B 1.20.1 Pipe thread, PN 230	N4				
NPT ASME B 1.20.1 Pipe thread, PN 265	N5				
NPT ASME B 1.20.1 Pipe thread, PN 350	N6				
NPT ASME B 1.20.1 Pipe thread, PN 365	N7				
NPT ASME B 1.20.1 Pipe thread, PN 410	N8				

Flow Measurement

SITRANS F C

SITRANS F C sensors MASS 2100/FC300 with FCT010, FCT030 and SIFLOW FC070 transmitters (Low flow program)

Selection and Ordering data	Order code	Selection and Ordering data	Order code
Further designs		Sensor data storage	
Please add "-Z" to Article No. and specify Order code(s).		Sensor with SensorFlash for FCT	S20
		Sensor with SensorProm for MASS 6000 (in preparation)	S21
Cable glands		SD-Card accessibility via USB (not allowed in USA by Patent)	
None (mechanical sensor)	A00	Mass storage enabled	S30
Metric, no glands	A01	Cable sensor-transmitter	
Metric, plastic	A02	None	L50
Metric, brass/Ni plated	A05	5 m, standard, M12 connectors	L51
Metric, stainless steel	A06	5 m, standard, without connectors	L52
NPT, no glands	A11	10 m, standard, M12 connectors	L55
NPT, plastic	A12	10 m, standard, without connectors	L56
NPT, brass/Ni plated	A15	25 m, standard, M12 connectors	L59
NPT, stainless steel	A16	25 m, standard, without connectors	L60
Integral M12 socket	A20	50 m, standard, M12 connectors	L63
		50 m, standard, without connectors	L64
SW functions & CT approvals		75 m, standard, M12 connectors	L67
Standard	B11	75 m, standard, without connectors	L68
I/O configuration Ch1		2 m cable, analog with two M20 connectors	L85
None (replacement sensor)	E00	5 m cable, analog with two M20 connectors	L86
4 ... 20 mA, HART, active/passive output (non-Ex)	E02	10 m cable, analog with two M20 connectors	L87
4 ... 20 mA, HART, active Ex	E06	15 m cable, analog with two M20 connectors	L88
4 ... 20 mA, HART, passive Ex	E07		
PROFIBUS PA (non-Ex)	E10	Additional data	
PROFIBUS DP	E11	Please add "-Z" to Article No. and specify Order code(s) and plain text.	
Modbus RTU RS 485	E14	Tag name	
I/O configuration Ch2, Ch3 and Ch4		Tag name plate, stainless steel	Y17
None	F00	Extended calibration	
Non Ex: Sig O, None, None	F01	Multi-point high, (5 flows x 2 passes), 10 ... 100 % of Q_{nom}	Y61
Non Ex: Sig O, Sig I/O, None	F02	Multi-point high, (10 flows x 1 pass), 10 ... 100 % of Q_{nom}	Y63
Non Ex: Sig O, Sig I/O, Sig I/O	F03		
Non Ex: Sig O, Sig I/O, R	F04		
Non Ex: Sig O, R, R	F05		
Non Ex: Sig O, R, None	F06		
Ex: pSig O, None, None	F11		
Ex: pSig O, pSig I/O, None	F12		
Ex: pSig O, pSig I/O, pSig I/O	F13		
Ex: pSig O, pSig I/O, R	F14		
Ex: pSig O, R, R	F15		
Ex: pSig O, R, None	F16		
Ex: aSig O, None, None	F21		
Ex: aSig O, aSig I/O, None	F22		
Ex: aSig O, aSig I/O, aSig I/O	F23		
Ex: aSig O, aSig I/O, R	F24		
Ex: aSig O, R, R	F25		
Ex: aSig O, R, None	F26		
Certificates			
Press test certificate CRN	C01		
Press test certificate PED	C02		
Material certificate EN 10204-3.1	C12		
Welding inspection report	C13		
Factory certificate according to EN 10204 2.2	C14		
Factory certificate according to EN 10204 2.1	C15		
Cleaning for oil and grease/ASTM-A380	C50		
Cleaned according to PWIS	C51		

SITRANS F C sensors MASS 2100/FC300 with FCT010, FCT030 and SIFLOW FC070 transmitters (Low flow program)

Selection and Ordering data	Article No.	Ord. code	Selection and Ordering data	Article No.	Ord. code
SITRANS F C sensors MASS 2100/FC300 with SIFLOW FC070 transmitter¹⁾	7ME 4818 -		SITRANS F C sensors MASS 2100/FC300 with SIFLOW FC070 transmitter¹⁾	7ME 4818 -	
	77777	7777 777		77777	7777 777
➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.					
Sensor type and connector size			Tube material (wetted) and max. operational temperature		
MASS 2100 DI 1.5, 1/4"	1G		AISI 316L/EN 1.4435, Max 115 °C	1	
MASS 2100 DI 3, 1/4"	3A		AISI 316L/EN 1.4435, Max 125 °C	2	
MASS 2100 DI 3, 1/4" Heated w. DIN	3B		AISI 316L/EN 1.4435, Max 180 °C	3	
MASS 2100 DI 3, 1/4" Heated w. ANSI	3C		Hastelloy C22/UNS N06022/EN 2.4602, Max. 115 °C	5	
FC300 DN 4, 1/4"	4A		Hastelloy C22/UNS N06022/EN 2.4602, Max. 125 °C	6	
MASS 2100 DI 6, 1/4"	6A		Hastelloy C22/UNS N06022/EN 2.4602, Max. 180 °C	7	
MASS 2100 DI 6, 1/4" Heated w. EN	6 B				
MASS 2100 DI 6, 1/4" Heated w. ANSI	6 C		Calibration		
MASS 2100 DI 6, DN 10	6D		Mass flow calibration	1	
MASS 2100 DI 6, DN 10 Heated w. EN	6E		Mass flow calibration and density calibration	4	
MASS 2100 DI 6, DN 10 Heated w. ANSI	6F		Standard fraction calibration	8	
MASS 2100 DI 6, DN 15 (1/2")	6G		Mounting style, Transmitter Housing and Material		
MASS 2100 DI 6, DN 15 (1/2") Heated w. EN	6H		SIFLOW FC070 Standard DIN rail	W	
MASS 2100 DI 6, DN 15 (1/2") Heated w. ANSI	6J		Ex approvals		
MASS 2100 DI 6, DN 20 (3/4")	6K		Non-Ex	A	
MASS 2100 DI 6, DN 20 (3/4") Heated w. EN	6L		ATEX Zone 1	C	
MASS 2100 DI 6, DN 20 (3/4") Heated w. ANSI	6M		IECEx Zone 1	F	
MASS 2100 DI 6, DN 25 (1")	6N		USA (FM, CSA, UL), Zone 1/Div1	H	
MASS 2100 DI 6, DN 25 (1") Heated w. EN	6P		Canada (CSA, UL), Zone 1/Div1	M	
MASS 2100 DI 6, DN 25 (1") Heated w. ANSI	6Q		Local User Interface		
MASS 2100 DI 15, DN 15 (1/2")	7A		Blind	1	
MASS 2100 DI 15, DN 15 (1/2") Heated w. EN	7B				
MASS 2100 DI 15, DN 15 (1/2") Heated w. ANSI	7C				
MASS 2100 DI 15, DN 20 (3/4")	7D				
MASS 2100 DI 15, DN 20 (3/4") Heated w. EN	7E				
MASS 2100 DI 15, DN 20 (3/4") Heated w. ANSI	7F				
MASS 2100 DI 15, DN 25 (1")	7G				
MASS 2100 DI 15, DN 25 (1") Heated w. EN	7H				
MASS 2100 DI 15, DN 25 (1") Heated w. ANSI	7J				
Process connection/Pressure					
No connections (spare part transmitter)	A0				
EN1092-1 B1, PN40	A1				
EN1092-1 B1, PN100	A3				
ASME B16.5, RF, Class 150	D1				
ASME B16.5, RF, Class 600	D3				
DIN 11851 Screwed connection	F1				
ISO2852 Hyg. Clamped	J1				
ISO2853 Hyg. Screwed	J5				
ISO 228-1 Pipe thread, PN 100	C1				
ISO 228-1 Pipe thread, PN 130	C2				
ISO 228-1 Pipe thread, PN 200	C3				
ISO 228-1 Pipe thread, PN 230	C4				
ISO 228-1 Pipe thread, PN 265	C5				
ISO 228-1 Pipe thread, PN 350	C6				
ISO 228-1 Pipe thread, PN 365	C7				
ISO 228-1 Pipe thread, PN 410	C8				
NPT ASME B 1.20.1 Pipe thread, PN 100	N1				
NPT ASME B 1.20.1 Pipe thread, PN 130	N2				
NPT ASME B 1.20.1 Pipe thread, PN 200	N3				
NPT ASME B 1.20.1 Pipe thread, PN 230	N4				
NPT ASME B 1.20.1 Pipe thread, PN 265	N5				
NPT ASME B 1.20.1 Pipe thread, PN 350	N6				
NPT ASME B 1.20.1 Pipe thread, PN 365	N7				
NPT ASME B 1.20.1 Pipe thread, PN 410	N8				

¹⁾ SITRANS F C sensors MASS 2100/FC300 with SIFLOW FC070 transmitter (7ME4818-) are in preparation.

Flow Measurement

SITRANS F C

SITRANS F C sensors MASS 2100/FC300 with FCT010, FCT030 and SIFLOW FC070 transmitters (Low flow program)

Selection and Ordering data	Order code
Further designs	
Please add "-Z" to Article No. and specify Order code(s).	
SW functions & CT approvals	
Standard	B11
Certificates	
Press test certificate CRN	C01
Press test certificate PED	C02
Material certificate EN 10204-3.1	C12
Welding inspection report	C13
Factory certificate according to EN 10204 2.2	C14
Factory certificate according to EN 10204 2.1	C15
Cleaning for oil and grease/ASTM-A380	C50
Cleaned according to PWIS	C51
Sensor data storage	
Sensor with SensorFlash for FCT	S20
Sensor with SensorProm for MASS 6000 and SIFLOW FC070 (in preparation)	S21
Cable sensor-transmitter	
None	L50
5 m cable for SIFLOW FC070	L79
10 m cable for SIFLOW FC070	L80
25 m cable for SIFLOW FC070	L81
50 m cable for SIFLOW FC070	L82
75 m cable for SIFLOW FC070	L83
150 m cable for SIFLOW FC070	L84
Additional data	
Please add "-Z" to Article No. and specify Order code(s) and plain text.	
Tag name	
Tag name plate, stainless steel	Y17
Extended calibration	
Multi-point high, (5 flows x 2 passes), 10 ... 100 % of Q_{nom}	Y61
Multi-point high, (10 flows x 1 pass), 10 ... 100 % of Q_{nom}	Y63

3

Overview

MASS 6000 is based on digital signal processing technology – engineered for high performance, fast flow step response, fast batching applications, high immunity against process noise, easy to install, commission and maintain.

The MASS 6000 transmitter delivers true multiparameter measurements i.e. mass flow, volume flow, density, temperature and fraction.

The MASS 6000 IP67 transmitter can be compact mounted on all sensors of type MASS 2100 DI 3 to DI 15, and can be used in remote version for all types of MASS 2100 and FC300 sensors.

Note

Due to RoHs directives active from July 22nd 2017, MASS 6000 transmitters of any model and variants are not for sale within EU, EU candidate countries, Norway, Switzerland, Iceland, Croatia, and Turkey.

Replacement products: 7ME461.-..., 7ME462.-..., 7ME471.-... and 7ME481.-...

Repair parts for MASS 6000 (all models and variants) are available. See spare part list.

Benefits

- Dedicated mass flow chip with the latest ASIC technology
- Fast batching and flow step response with an update rate of true 30 Hz
- Superior noise immunity due to a DFT (Discrete Fourier Transformation) algorithm.
- Front end resolution better than 0.35 ns improves zero point stability and enhances dynamic turn-down ratio on flow and density accuracy.
- Advanced diagnosis and service menu enhances troubleshooting and meter verification.
- Built-in batch controller with compensation and monitoring comprising 2 built-in totalizers
- Multi-parameter outputs, individual configurable for mass flow, volume flow, density, temperature or fraction flow such as Brix or Plato
- Digital input for batch control, remote zero adjust or forced output mode
- All outputs can be forced to preset value for simulation, verification or calibration purposes.
- User-configurable operation menu with password protection
 - 3 lines, 20 characters display in 11 languages
 - Self-explaining error handling/log in text format
 - Keypad can be used for controlling batch as start/stop/hold/reset

- SENSORPROM technology automatically configures transmitter at start-up providing:
 - Factory pre-programming with calibration data, pipe size, sensor type, output settings
 - Any values or settings changed by users are stored automatically
 - Automatically re-programming any new transmitter without loss of accuracy
 - Transmitter replacement in less than 5 minutes.
 - True "plug & play"
- 4-wire Pt1000 temperature measurement ensures optimum accuracy on mass flow, density and fraction flow.
- Fraction flow computation based on a 3rd-order algorithm matching all applications.
- USM II platform enables fitting of add-on bus modules without loss of functionality.
 - All modules can be fitted through true "plug & play"
 - Module and transmitter are automatically configured through the SENSORPROM.
- Installation of the transmitter to the sensor is simple "plug & play" via the sensor pedestal.

Application

SITRANS F C mass flowmeters are suitable for all applications within the entire process industry, where there is a demand for accurate flow measurement. The meter is capable of measuring both liquid and gas flow.

The main applications for the MASS 6000 IP67 transmitter can be found in:

- Food and beverage industries
- Pharmaceutical industries
- Automotive industry
- Oil and gas industry
- Power generation and utility industry
- Water and waste water industry

Design

The transmitter is designed in an IP67/NEMA 6 compact polyamide enclosure which can be compact mounted on the MASS 2100 sensor range DI 3 to DI 15 (1/8" to 1/2") and remote mounted for the entire sensor series.

The MASS 6000 IP67 is available as standard with 1 current, 1 frequency/pulse and 1 relay output and can be fitted with add-on modules for bus communication.

Function

The following functions are available:

- Mass flow rate, volume flow rate, density, temperature, fraction flow
- 1 current output, 1 frequency/pulse output, 1 relay output, 1 digital input
- All outputs can be individually configured with mass, volume, density etc.
- 2 built-in totalizers which can count positive, negative or net
- Low flow cut-off
- Density cut-off or empty pipe cut-off, adjustable
- Flow direction adjustable
- Error system consisting of error-log, error pending menu
- Display of operating time
- Uni/bidirectional flow measurement
- Limit switches with 1 or 2 limits, programmable for flow, density or temperature
- Noise filter setting for optimization of measurement performance under non-ideal application conditions
- Full batch controller
- Automatic zero adjustment menu, with zero point evaluation feed back
- Full service menu for effective and straight forward application and meter troubleshooting

Flow Measurement

SITRANS F C

Transmitter MASS 6000 IP67 compact/remote

Technical specifications

Measurement of	Mass flow [kg/s (lb/min)], volume flow [l/s (gpm)], fraction [%], °Brix, density [kg/m ³ , (lb/ft ³)], temperature [°C (°F)]
Current output	
Current	0 ... 20 mA or 4 ... 20 mA
Load	< 800 Λ
Time constant	0 ... 99.9 s adjustable
Digital output	
Frequency	0 ... 10 kHz, 50 % duty cycle
Time constant	0 ... 99.9 s adjustable
Active	24 V DC, 30 mA, 1 K Λ \leq R _{load} \leq 10 K Λ , short-circuit-protected
Passive	3 ... 30 V DC, max. 110 mA, 250 Λ \leq R _{load} \leq 10 K Λ
Relay	
Type	Change-over relay
Load	42 V/2 A peak
Functions	Error level, error number, limit, flow direction
Digital input	
Functionality	11 ... 30 V DC (R _i = 13.6 k Λ) Start/hold/continue batch, zero point adjust, reset totalizer 1/2, force output, freeze output
Galvanic isolation	All inputs and outputs are galva- nically isolated. Isolation voltage: • 500 V to supply • 50 V between outputs
Cut-off	
Low-flow	0 ... 9.9 % of maximum flow
Limit function	Mass flow, volume flow, fraction, density, sensor temperature
Totalizer	Two eight-digit counters for for- ward, net or reverse flow
Display	<ul style="list-style-type: none"> Background illumination with alphanumerical text, 3 \times 20 characters to indicate flow rate, totalized values, settings and faults. Time constant as current output 1 Reverse flow indicated by nega- tive sign
Zero point adjustment	Via keypad or remote via digital input
Ambient temperature	
Operation	-20 ... +50 °C (-4 ... +122 °F), max. rel. humidity 80 % at 31 °C (87.8 °F) decreasing to 50 % at 40 °C (104 °F) according to IEC/EN/UL 61010-1
Storage	-40 ... +70 °C (-40 ... +158 °F) (Humidity max. 95 %)
Communication	Add-on modules: HART, PROFIBUS PA and DP, Modbus RTU RS 485, DeviceNet, FOUNDATION Fieldbus H1

Enclosure	
Material	Fibre glass reinforced polyamide
Rating	IP67/NEMA 6
Mechanical load	18 ... 1000 Hz random, 3.17 g RMS, in all directions
Supply voltage	
24 V version	<ul style="list-style-type: none"> Supply 18 ... 30 V DC 20 ... 30 V AC
230 V version	<ul style="list-style-type: none"> Supply 87 ... 253 V AC, 50 ... 60 Hz
Power consumption	
24 V DC	6 W
24 V AC	10 VA
230 V AC	9 VA
Fuse	
230 V version	T 400 mA, T 250 V (IEC 127) - not replaceable by operator
24 V version	T 1 A, T 250 V (IEC 127) - not replaceable by operator
EMC performance	
Emission	EN 55011/CISPR-11 (Class A)
Immunity	EN/IEC 61326-1 (Industry)
NAMUR	Within the value limits according to "General requirements" with error criteria A in accordance with NE 21
Environment	
Environmental conditions acc. to IEC/EN/UL 61010-1:	<ul style="list-style-type: none"> Altitude up to 2000 m POLLUTION DEGREE 2
Maintenance	The flowmeter has a built-in error log/pending menu which should be inspected on a regular basis.
Cable glands	Two types of cable gland are available in polyamide in the fol- lowing dimensions: M20 or 1/2" NPT

Note



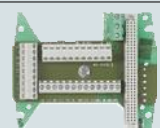
Due to RoHs directives active from July 22nd 2017, MASS 6000 transmitters of any model and variants are not for sale within EU, EU candidate countries, Norway, Switzerland, Iceland, Croatia, and Turkey.

Replacement products: 7ME461.-..., 7ME462.-..., 7ME471.-... and 7ME481.-...

Repair parts for MASS 6000 (all models and variants) are available. See spare part list.

Transmitter MASS 6000 IP67 compact/remote



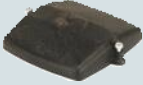

3

Selection and Ordering data		Article No.	Add-on module	Description	Article No.
SITRANS F C MASS 6000 transmitter Transmitter for wall mounting with wall mounting bracket, fibre glass reinforced polyamide (1 current output, 1 frq./pulse output, 1 relay output and con- nection board/PCB)		7 ME 4110 - 7 AA 70 - 77		HART ¹⁾	FDK:085U0226
↗ Click on the Article No. for the online configura- tion in the PIA Life Cycle Portal.				PROFIBU	FDK:085U0236
Version Remote IP67/NEMA 6 enclosure		2		FDK:083H0237 Profile 3 ¹⁾	
Supply voltage 115/230 V AC, 50 ... 60 Hz 24 V AC/DC		1 2		PROFIBU S DP	A5E02054250 FDK:085U0229
Display/Keypad				Profile 3	ed with MASS 6000
				Modbus	
				RTU RS	SITRANS F ad
				485	
				FOUNDA	
				TION	
				Fieldbus	
				H1 ¹⁾	
				DeviceNe	
				t	
				¹⁾ Modules are rated Ex i when us	A5E02318728
				Operating instruction	
				s for	
				read for free, in a range of languages, at	
				Description	
				Article No.	
Operating instructions for SITRANS F C MASS 6000 IP67 with display		1		HART	
Description				remote IP 67 ve	A5E03089708
Serial communication				Articles No.	
• English		A5E03071936		PROFIBUS	
No communication			A	PA/DP	
All literature is available to download for free, in a ran			B	• English	A5E00726137
www.siemens.com/processinstrumentation/docume			G	• German	A5E01026429
PROFIBUS PA Profile 3			F	Modbus	
PROFIBUS DP Profile 3			G	• English	A5E00753974
Accessories			E	• German	A5E03089262
Description			H	FOUNDATION	
FOUNDATION RS 485			J	N Fieldbus	
DeviceNet				• German	A5E02488856
Cable glands, screwed				FOUNDATION	
ENTRES type in polyamide				Fieldbus	
(100 °C (212 °F)) black, 2 pcs.				• English	A5E03089720
Cable glands		A5E00822490		DeviceNet	
• M20		A5E00822501		• English	
M20				1AA20-1AA0	
1/2" NPT				7ME4110	
				1AA20-1AA0	
Sun lid for MASS 6000 trans- mitter (Frame and lid)		A5E02328485			
					
				• 24 V AC/DC	
				Wall mounting unit for IP67/NEMA 6 version with wall bracket, without connection board but with	
				• 4 x M20 cable glands	FDK:085U1018
				• 4 x 1/2" NPT cable glands	A5E01164211
				Connection board/PCB	FDK:083H4260
				Supply voltage: 115/230 V/24 VAC/DC	











Flow Measurement

SITRANS F C

Transmitter MASS 6000 IP67 compact/remote

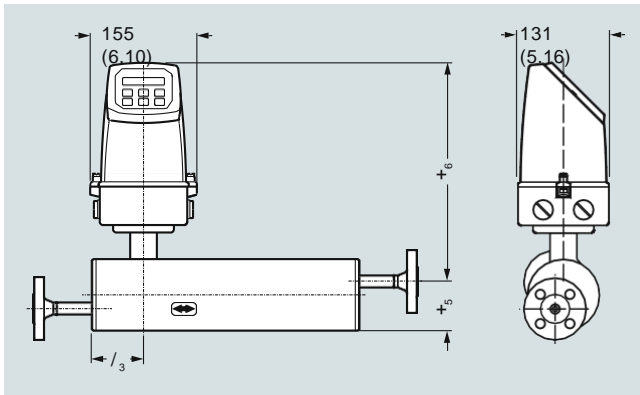
Description	Article No.	
Terminal box kit with <ul style="list-style-type: none"> • M20 cable glands • ½" NPT cable glands Change from remote to safe area compact mounting of MASS 6000 IP67/NEMA 6 with MASS 2100. The kit consists of a terminal box in polyamide incl. connection board, cable and connector between PCB and sensor pedestal, PCB, seal and screws (4 pcs.) for mounting on sensor. Not approved for hazardous locations	A5E00832338 A5E00832342	
Terminal box, in polyamide, inclusive lid <ul style="list-style-type: none"> • M20 cable glands • ½" NPT cable glands Not approved for hazardous locations	FDK:085U1050 FDK:085U1052	
Terminal box – lid in polyamide	FDK:085U1003	
Display and keypad <ul style="list-style-type: none"> • Siemens Front 	FDK:085U1039	

Add-on spare parts required due to RoHs directives and EoL for EU and EU related countries

Description	Article No.	
MASS 6000 IP67 Spare part PCB main <ul style="list-style-type: none"> • 230 V 	A5E41718138	
<ul style="list-style-type: none"> • 24 V 	A5E41718346	
MASS 6000 19"/IP20 Spare part PCB main <ul style="list-style-type: none"> • 1 current output 230 V • 3 current outputs 230 V • 1 current output 24V • 3 current outputs 24 V 	A5E43226138 A5E43226145 A5E43226154 A5E43226168	
MASS 6000 19"/IP20 Ex Spare part PCB main <ul style="list-style-type: none"> • 1 current output 230 V • 3 current outputs 230 V • 1 current output 24V • 3 current outputs 24 V 	A5E43226277 A5E43226342 A5E43226441 A5E43226455	
MASS 6000 Ex d, Spare part PCB Stainless steel, without module	FDK:083H3061	
MASS 6000 Ex d, Spare part barriere Stainless steel	A5E41718720	
MASS 6000 19"/IP20, Barriere PCB, Ex	A5E41718669	
MASS 6000 Ex d, Connection board Stainless steel	A5E41718522	
MASS 6000 IP20, Front plate Without display	A5E41718695	
MASS 6000 IP20, Front plate, Ex Without display	A5E41718706	

Dimensional drawings

Compact with MASS 6000 IP67

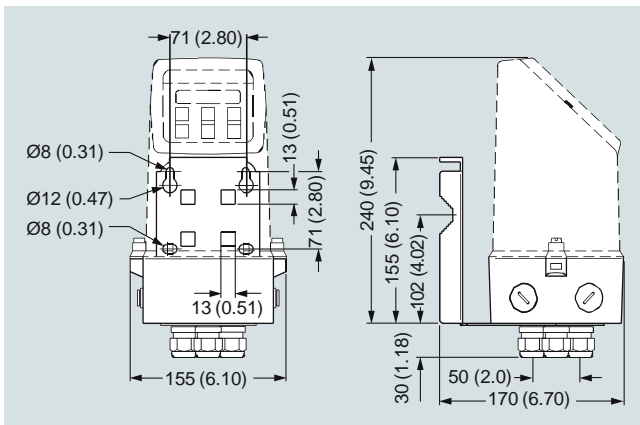


Dimensions in mm (inch)

MASS 2100 with MASS 6000 IP67 compact

Sensor size [DI (inch)]	L ₃ [mm (inch)]	H ₅ [mm (inch)]	H ₆ [mm (inch)]	H ₅ + H ₆ [mm (inch)]
3 (1/8)	75 (2.95)	82 (3.23)	306 (12.04)	388 (15.28)
6 (1/4)	62 (2.44)	72 (2.83)	316 (12.44)	388 (15.28)
15 (1/2)	75 (2.95)	87 (3.43)	326 (12.83)	413 (16.26)

Transmitter MASS 6000 IP67 wall mounted



Dimensions in mm (inch)

Schematics

Electrical connection

Grounding

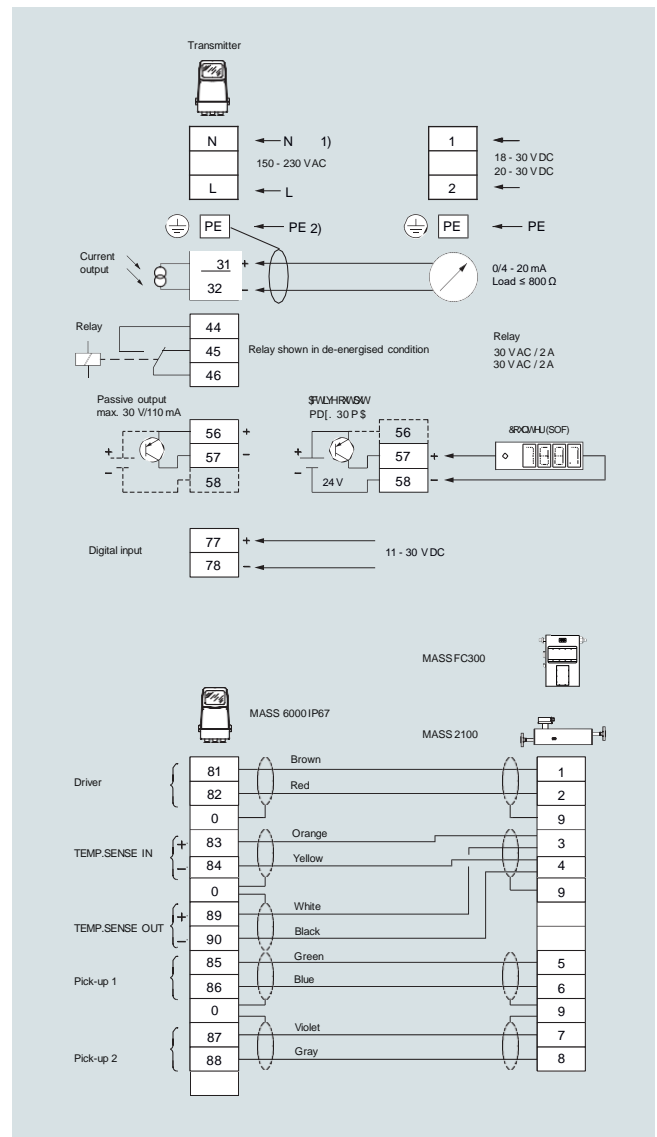
PE must be connected due to safety class 1 power supply.

Mechanical counters

When mounting a mechanical counter to terminals 57 and 58 (active output), a 1000 µF min. 35 V electrolytic capacitor must be connected to the terminals 56 and 58. Capacitor + is connected to terminal 56 and capacitor - to terminal 58.

Output cables

If long cables are used in a noisy environment, it is recommended to use shielded cables.



Flow Measurement

SITRANS F C

Transmitter MASS 6000 for 19" insert/19" wall mounting

Overview



MASS 6000 is based on digital signal processing technology – engineered for high performance, fast flow step response, fast batching applications, high immunity against process noise, easy to install, commission and maintain. The MASS 6000 transmitter delivers true multi parameter measurements i.e.: Mass flow, volume flow, density, temperature and fraction.

The MASS 6000 19" transmitter can be connected to all sensors of types MASS 2100/FC300/FCS200 and are available in different versions depending of number of output facilities, Ex protection and grade of enclosure.

Benefits

- Dedicated mass flow chip with the latest ASIC technology
- Fast batching and flow step response with an update rate of true 30 Hz
- Superior noise immunity due to a DFT (Discrete Fourier Transformation) algorithm.
- Front end resolution better than 0.35 ns improves zero point stability and enhances dynamic turn-down ratio on flow and density accuracy.
- Advanced diagnosis and service menu enhances troubleshooting and meter verification.
- Built-in batch controller with compensation and monitoring comprising 2 built-in totalizers
- Multi-parameter outputs, individual configurable for mass flow, volume flow, density, temperature or fraction flow such as Brix or Plato
- Many output capacities, up to 3 current, 2 frequency/pulse and 2 relay outputs (excludes the possibility of an add-on module)
- Digital input for batch-control, remote zero adjust or forced output mode
- All outputs can be forced to preset value for simulation, verification or calibration purposes.
- User-configurable operation menu with password protection
 - 3 lines, 20 characters display in 11 languages
 - Self-explaining error handling/log in text format
 - Keypad can be used for controlling batch as start/stop/hold/reset

- SENSORPROM technology automatically configures transmitter at start-up providing:
 - Factory pre-programming with calibration data, pipe size, sensor type, output settings
 - Any values or settings changed by users are stored automatically
 - Automatically re-programming any new transmitter without loss of accuracy
 - Transmitter replacement in less than 5 minutes. True "plug & play"
- 4-wire Pt1000 temperature measurement ensures optimum accuracy on mass flow, density and fraction flow
- Fraction flow computation based on a 3rd-order algorithm matching all applications
- USM II platform enables fitting of add-on bus modules without loss of functionality.
 - All modules can be fitted as true "plug & play"
 - Module and transmitter automatically configured through the SENSORPROM.
- Transmitter available with Ex approvals
- All electrical connections are easily accessible on the large back plane PCB

Application

SITRANS F C Coriolis mass flowmeters are suitable for all applications within the entire process industry, where there is a demand for accurate flow measurement. The meter can measure both liquids and gases.

The main applications for the MASS 6000 19" transmitter can be found in:

- Chemical and pharmaceutical industries
- Food and beverage industries
- Automotive industry
- Oil and gas industry
- Power generation and utility industry
- Water and waste water industry

Design

The transmitter is designed as a 19" insert as base to be used in:

- 19" rack system
- Panel mounting IP65
- Back of panel mounting IP20
- Wall mounting IP66

The MASS 6000 19" is available as standard or as Ex-approved transmitter which is to be mounted in the safe area.

Note

Due to RoHs directives active from July 22nd 2017, MASS 6000 transmitters of any model and variants are not for sale within EU, EU candidate countries, Norway, Switzerland, Iceland, Croatia, and Turkey.

Replacement products: 7ME461.-..., 7ME462.-..., 7ME471.-... and 7ME481.-...

Repair parts for MASS 6000 (all models and variants) are available. See spare part list.

Transmitter MASS 6000 for 19" insert/19" wall mounting

Function

The following functions are available:

- Mass flow rate, volume flow rate, density, temperature, fraction flow
- 2 output versions available as standard:
 - 1 current output, 1 frequency/pulse output, 1 relay output, 1 digital input
 - 3 current outputs, 2 frequency/pulse outputs, 2 relay outputs, 1 digital input
- All outputs can be individually configured with mass, volume, density etc.
- 2 built-in totalizers which can count positive, negative or net
- Low flow cut-off
- Density cut-off or empty pipe cut-off, adjustable
- Flow direction
- Error system consisting of error-log, error pending menu
- Operating time
- Uni/bidirectional flow measurement
- Limit switches with 1 or 2 limits, programmable for flow, density or temperature
- Noise filter setting for optimization of measurement performance under non-ideal application conditions
- Full batch controller
- Automatic zero adjustment menu, with zero point evaluation feed-back
- Full service menu for effective and straight forward application and meter troubleshooting

Technical specifications

Measurement of	Mass flow [kg/s (lb/min)], volume flow [l/s (gpm)], fraction [%], °Brix, density [kg/m ³ (lb/ft ³)], temperature [°C (°F)]
Current output	
Current	0 ... 20 mA or 4 ... 20 mA
Load	< 800 \wedge
Time constant	0 ... 99.9 s adjustable
Digital output	
Frequency	0 ... 10 kHz, 50 % duty cycle
Time constant	0 ... 30 s adjustable
Active	24 V DC, 30 mA, 1 K \wedge \leq R _{load} \leq 10 K \wedge , short-circuit-protected
Passive	3 ... 30 V DC, max. 110 mA, 250 \wedge \leq R _{load} \leq 10 K \wedge
Relay	
Type	Change-over relay
Load	42 V/2 A peak
Functions	Error level, error number, limit, direction
Digital input	11 ... 30 V DC
Functionality	Start/hold/continue batch, zero point adjust, reset totalizer 1/2, force output, freeze output
Galvanic isolation	All inputs and outputs are galvanically isolated. Isolation voltage: • 500 V to supply • 50 V between outputs
Cut-off	
Low-flow	0 ... 9.9 % of maximum flow

Limit function	Mass flow, volume flow, fraction, density, sensor temperature
Totalizer	Two eight-digit counters for forward, net or reverse flow
Display	<ul style="list-style-type: none"> • Background illumination with alphanumeric text, 3 x 20 characters to indicate flow rate, totalized values, settings and faults • Reverse flow indicated by negative sign
Zero point adjustment	Via keypad or remote via digital input
Ambient temperature	
Operation	-20 ... +50 °C (-4 ... +122 °F)
Storage	-40 ... +70 °C (-40 ... +158 °F) (Humidity max. 95 %)
Communication	Add-on modules: HART, PROFIBUS PA and DP, Modbus RTU RS 485, DeviceNet, FOUNDATION Fieldbus H1
Enclosure 19"	
Material	Aluminum/steel (DIN 41494)
Rating	IP20
Mechanical load	18 ... 1000 Hz random, 3.17 g RMS, in all directions
Supply voltage	
24 V version	
• Supply	24 V DC/AC, 50 ... 60 Hz
• Fluctuation	18 ... 30 V DC 20 ... 30 V AC
• Power consumption	6 W I _N = 250 mA, I _{ST} = 2 A (30 ms)
230 V version	
• Supply	87 ... 253 V AC, 50 ... 60 Hz
• Power consumption	9 VA
Fuse	
230 V version	T 400 mA, T 250 V (IEC 127) - not replaceable by operator
24 V version	T 1 A, T 250 V (IEC 127) - not replaceable by operator
EMC performance	
Emission	EN 55011/CISPR-11 (Class A)
Immunity	EN/IEC 61236-1 (Industry)
Ex approval	ATEX, EAC Ex: [Ex ia] IIC
Maintenance	The flowmeter has a built-in error log/pending menu which should be inspected on a regular basis.
Cable	<ul style="list-style-type: none"> • Max. 300 m • C: max. 300 [pF/m]; L_C/R_C: max. 100 [μH/\wedge] • The total cable capacity must be max. 200 nF.
Cable glands	The cable gland is available in polyamide, in dimension: PG 13.5

Note

Due to RoHs directives active from July 22nd 2017, MASS 6000 transmitters of any model and variants are not for sale within EU, EU candidate countries, Norway, Switzerland, Iceland, Croatia, and Turkey.

Replacement products: 7ME461.-..., 7ME462.-..., 7ME471.-... and 7ME481.-...

Repair parts for MASS 6000 (all models and variants) are available. See spare part list.

Flow Measurement

SITRANS F C

Transmitter MASS 6000 for 19" insert/19" wall mounting

Selection and Ordering data	Article No.
SITRANS F C MASS 6000 transmitter	7ME 4110 -
Transmitter for rack and wall mounting, incl. connection board	27777 - 77A0
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	
Enclosure	
19 inch insert IP20 (rack mount, purchase rack separately)	C
19 inch insert in IP65 (wall mount, enclosure included)	E
Output configuration	
1 current, 1 frequency, 1 relay	A
3 current, 2 frequency, 2 relay	C
Supply voltage	
115/230 V AC, 50/60 Hz	1
24 V AC/DC	2
Ex Approvals	
Standard (No Ex-approval)	0
With Ex approval	1
Display/Keypad	
With display	1
Serial communication (Only possible to connect to MASS 6000 version with 1 current output)	
No communication	A
HART	B
PROFIBUS PA Profile 3	F
PROFIBUS DP Profile 3	G
Modbus RTU RS 485	E
DeviceNet	H
FOUNDATION Fieldbus H1	J

Operating instructions for SITRANS F C MASS 6000 19"


Description	Article No.
• English	A5E02944875

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

Accessories


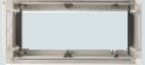



Enclosure (without PCB, connection board)

Description	Article No.
IP66/NEMA 4X, wall mounting enclosure for 19" inserts	FDK:083F5037
• 21 TE	




Enclosure

Description	Article No.
Panel mounting enclosure for 19" insert (21 TE); IP65/NEMA 2 enclosure in ABS plastic for front panel mounting	FDK:083F5030
Panel mounting enclosure for 19" insert (42 TE); IP65/NEMA 2 enclosure in ABS plastic for front panel mounting	FDK:083F5031
Back of panel mounting enclosure for 19" insert (21 TE); IP20/NEMA 1 enclosure in aluminum	FDK:083F5032
Back of panel mounting enclosure for 19" insert (42 TE); IP20/NEMA 1 enclosure in aluminum	FDK:083F5033
Front cover (7TE) for panel mounting enclosure	FDK:083F4525

Cable glands

Description	Article No.
Cable gland, screwed entry, type M20, in polyamide (100 °C (212 °F)) black, 2 pcs.	A5E00822490



Transmitter MASS 6000 for 19" insert/19" wall mounting

Add-on module

Note:

Only possible to connect to MASS 6000 versions with 1 current output.

Description	Article No.
HART (Ex-i)	FDK:085U0226
PROFIBUS PA Profile 3 (Ex-i)	FDK:085U0236
PROFIBUS DP Profile 3	FDK:085U0237
Modbus RTU RS 485	FDK:085U0234
FOUNDATION Fieldbus H1 (Ex-i)	A5E02054250
DeviceNet	FDK:085U0229

Operating instructions for SITRANS F add-on modules

Description	Article No.
HART • English	A5E03089708
PROFIBUS PA/DP • English • German	A5E00726137 A5E01026429
Modbus • English • German	A5E00753974 A5E03089262
FOUNDATION Fieldbus • English • German	A5E02318728 A5E02488856
DeviceNet • English	A5E03089720

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

Connection boards/PCB for MASS 6000 and MASS 2100 sensors

Description	Version	Article No.
Connection board MASS 6000 for 19" IP20 rack mounting version	24 V 115/230 V	FDK:083H4272
Connection board MASS 6000 Ex [ia] IIC for 19" IP20 rack mounting version	24 V 115/230 V	FDK:083H4273
Connection board MASS 6000 for 19" wall mounting version, for enclosure FDK:083F5037/FDK:083F5038	24 V 115/230 V	FDK:083H4274
Connection board MASS 6000 Ex [ia] IIC for 19" wall mounting version, for enclosure FDK:083F5037/FDK:083F5038	24 V 115/230 V	FDK:083H4275

Connection boards/PCB for MASS 6000 and MC2 sensors

Description	Version	Article No.
Connection board MASS 6000 for 19" IP20 rack mounting version	24 V 115/230 V	FDK:083H4272
Connection board MASS 6000 for Ex application ¹⁾ and 19" IP20 rack mounting version (connection board MASS 6000 to MC2 sensors Ex-approved)	24 V 115/230 V	FDK:083H4294
Connection board MASS 6000 for 19" wall mounting version, for enclosure FDK:083F5037/FDK:083F5038	24 V 115/230 V	FDK:083H4274
Connection board MASS 6000 for Ex application ¹⁾ and 19" wall mounting version 24 V (connection board MASS 6000 to MC2 sensors Ex-approved), for enclosure FDK:083F5037/FDK:083F5038	115/230 V	FDK:083H4295



¹⁾ Attention (Ex application): MC2 Ex version sensors must only be connected to connection board FDK:083H4294 or FDK:083H4295.

Description	Article No.
Wall mounting enclosure in ABS plastic IP65 with connection board/PCB for Ex application connected to MC2 Ex sensors	FDK:083H4296






Flow Measurement

SITRANS F C







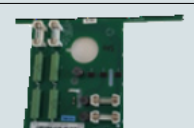



Transmitter MASS 6000 for 19" insert/19" wall mounting

Spare parts 19" versions

Enclosure (without PCB, connection board)

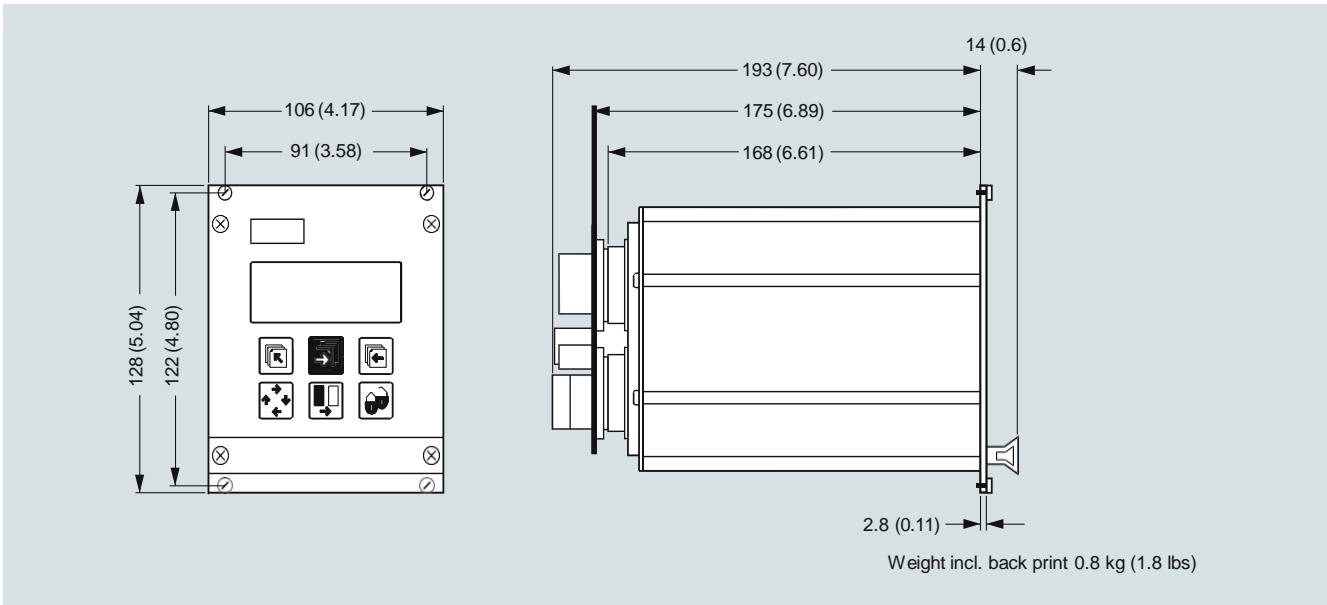
Description	Article No.	
IP66/NEMA 4X, wall mounting enclosure for 19" inserts (without back plates). Use with PCB A5E02559813 or A5E02559814		
• 21 TE	FDK:083F5037	
• 42 TE	FDK:083F5038	
Display unit for 19" versions Order the Display and Keypad accessory from MASS 6000 IP67 compact/remote (FDK:085U1039) and use the display part only for replacement	FDK:085U1039	

Add-on spare parts required due to RoHs directives and EoL for EU and EU related countries

Description	Article No.	
MASS 6000 IP67 Spare part PCB main		
• 230 V	A5E41718138	
• 24 V	A5E41718346	
MASS 6000 19"/IP20 Spare part PCB main		
• 1 current output 230 V	A5E43226138	
• 3 current outputs 230 V	A5E43226145	
• 1 current output 24V	A5E43226154	
• 3 current outputs 24 V	A5E43226168	
MASS 6000 19"/IP20 Ex Spare part PCB main		
• 1 current output 230 V	A5E43226277	
• 3 current outputs 230 V	A5E43226342	
• 1 current output 24V	A5E43226441	
• 3 current outputs 24 V	A5E43226455	
MASS 6000 Ex d, Spare part PCB	FDK:083H3061	
Stainless steel, without module		
MASS 6000 Ex d, Spare part barriere	A5E41718720	
Stainless steel		
MASS 6000 19"/IP20, Barriere PCB, Ex	A5E41718669	
MASS 6000 Ex d, Connection board	A5E41718522	
Stainless steel		
MASS 6000 IP20, Front plate	A5E41718695	
Without display		
MASS 6000 IP20, Front plate, Ex	A5E41718706	
Without display		

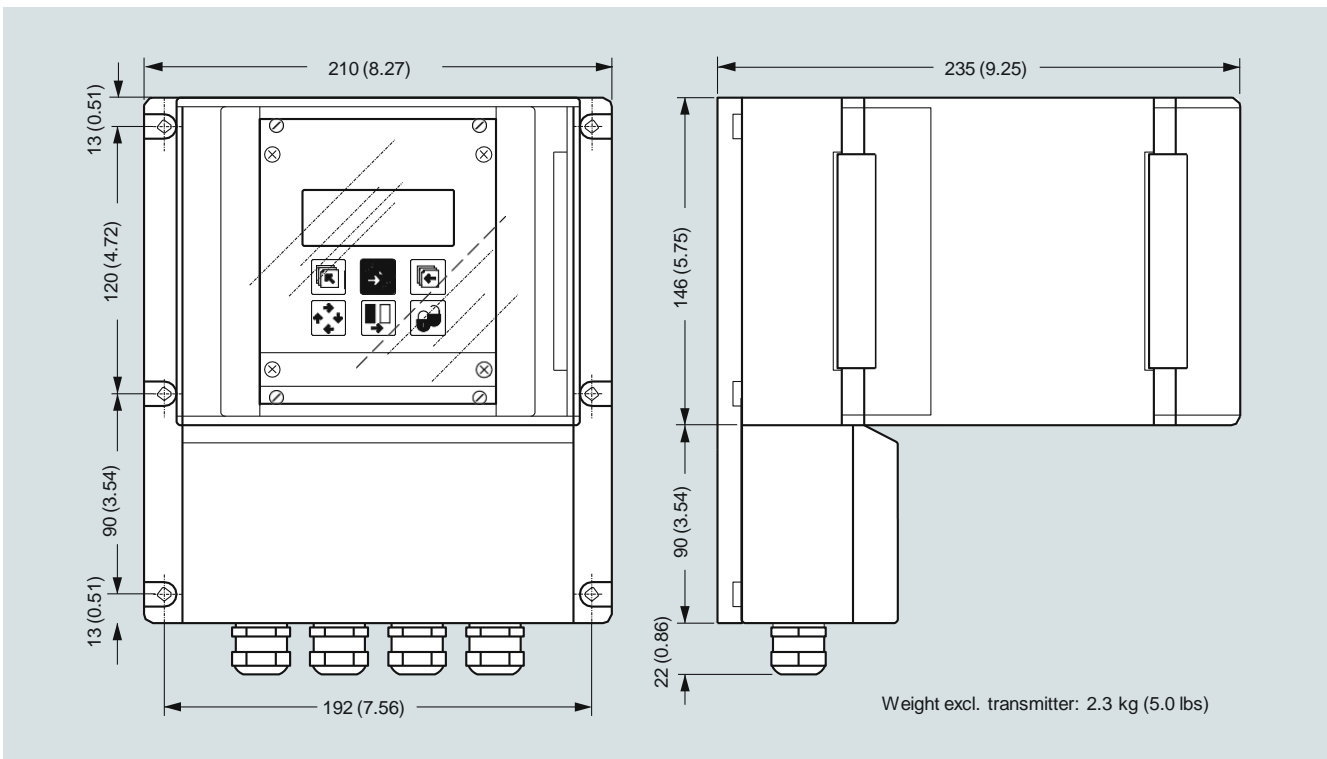
Dimensional drawings

Transmitter 19" insert



Dimensions in mm (inch)

Transmitter 19" wall mounting

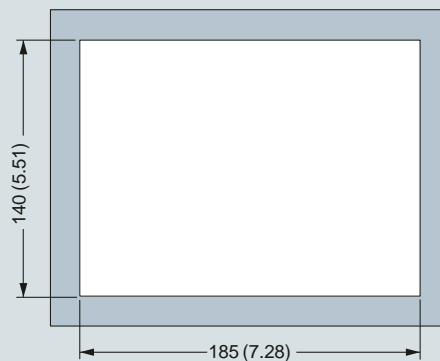
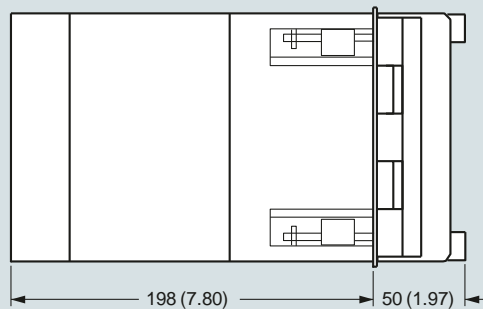
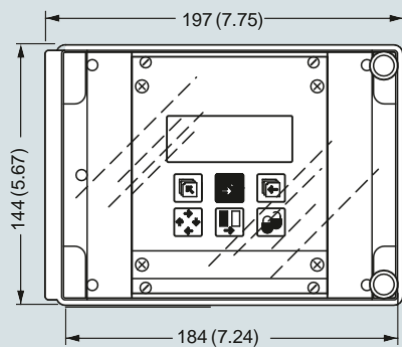


Dimensions in mm (inch)

Flow Measurement SITRANS F C

Transmitter MASS 6000 for 19" insert/19" wall mounting

Transmitter 19" front of panel

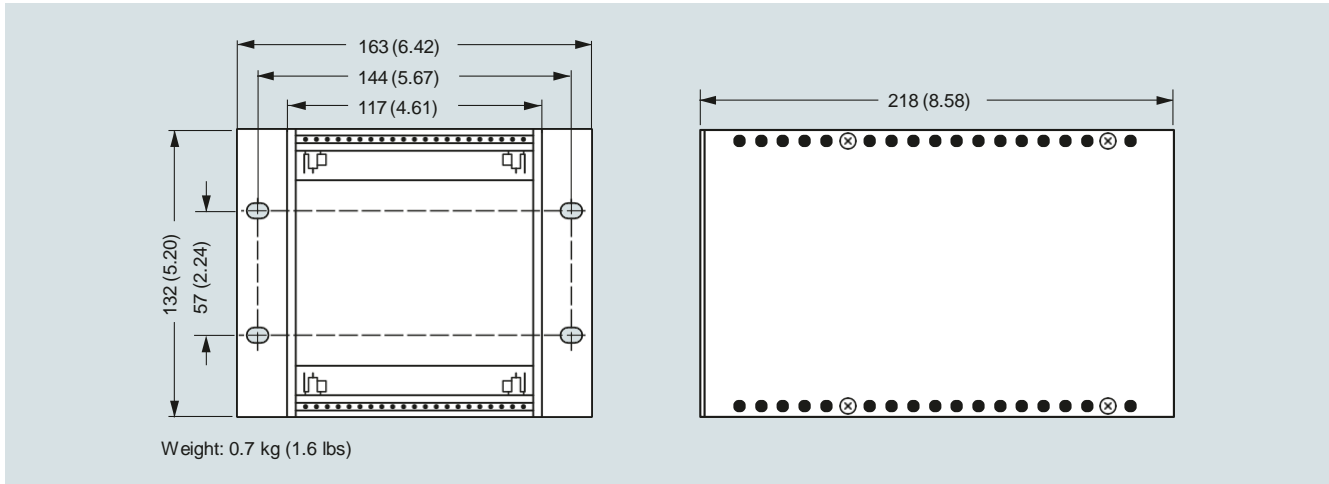


Weight excl. transmitter: 1.2 kg (2.7 lbs)

Dimensions in mm (inch)

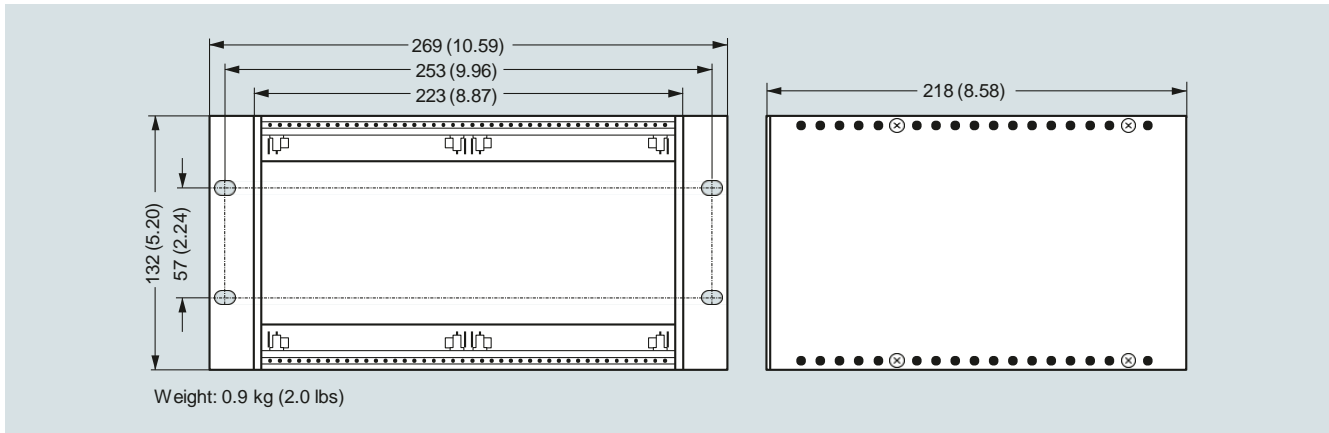
3

Transmitter, back of panel IP20/NEMA 1, 21 TE



Dimensions in mm (inch)

Transmitter, back of panel IP20/NEMA 1, 42 TE



Dimensions in mm (inch)

Flow Measurement

SITRANS F C

Transmitter MASS 6000 for 19" insert/19" wall mounting

Schematics

Electrical connection

Grounding

PE must be connected due to safety class 1 power supply.

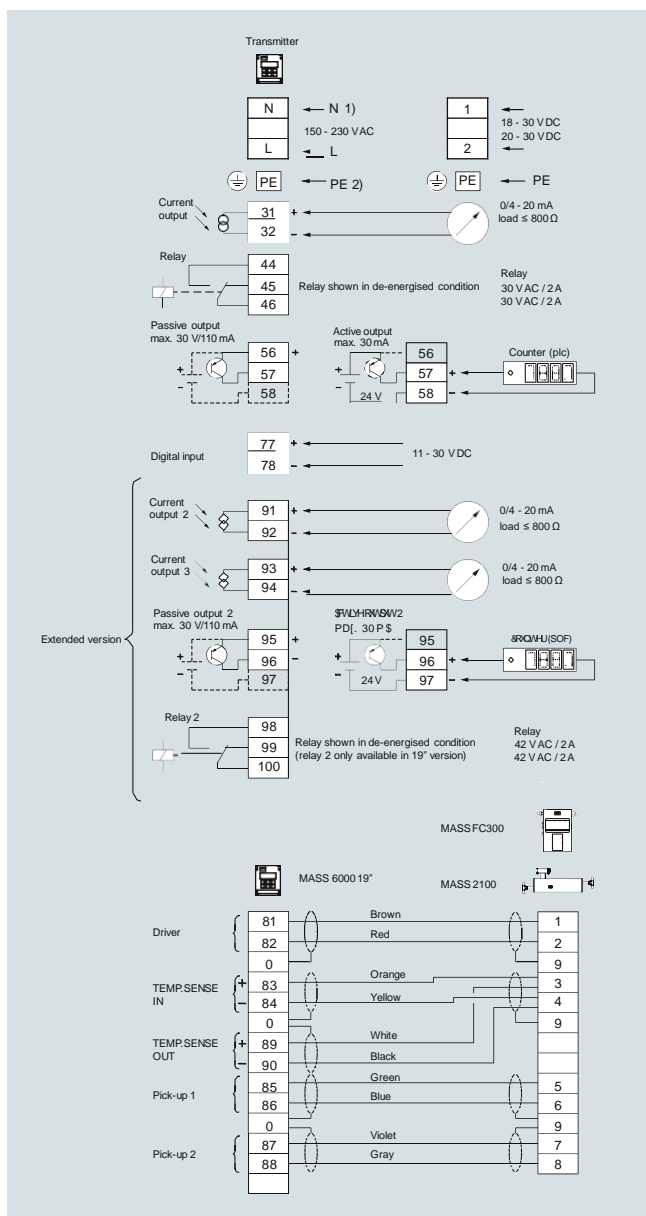
Mechanical counters

When mounting a mechanical counter to terminals 57 and 58 (active output), a 1000 µF min. 35 V electrolytic capacitor must be connected to the terminals 56 and 58. Capacitor + is connected to terminal 56 and capacitor - to terminal 58.

Output cables

If long cables are used in noisy environment, it is recommended to use shielded cables.

3



Overview

MASS 6000 is based on digital signal processing technology – engineered for high performance, fast flow step response, fast batching applications, high immunity against process noise, easy to install, commission and maintain.

The MASS 6000 transmitter delivers true multiparameter measurements i.e.: Mass flow, volume flow, density, temperature and fraction flow.

The MASS 6000 Ex d transmitter is manufactured in stainless steel (AISI 316L/1.4404) and able to withstand harsh installation conditions in hazardous applications within the process and chemical industry. The conservative choice of material guarantees the user a low cost of ownership and a long trouble-free lifetime.

The Ex d can be compact mounted on all sensors of type MASS 2100 DI 3 to DI 15, and can be used in remote version for all types of MASS 2100.

Benefits

- Fully stainless steel flameproof Ex d enclosure, ensuring optimum cost of ownership
- Intrinsically safe keypad and display directly programmable in hazardous area
- Ex-approved transmitter which can be mounted in hazardous area Zone 1 or Zone 2.
- Sensor and transmitter interface intrinsically safe Ex ia IIC
- Exchange of transmitter directly in hazardous area without shut-down of process pipe line due to ia IIC sensor/transmitter interface.
- Dedicated mass flow chip with the latest ASIC technology
- Fast batching and flow step response with an update rate of true 30 Hz
- Superior noise immunity due to a DFT (Discrete Fourier Transformation) algorithm
- Front end resolution better than 0.35 ns improves zero point stability and enhances dynamic turn-down ratio on flow and density accuracy.
- Advanced diagnosis and service menu enhances troubleshooting and meter verification.
- Built-in batch controller with compensation and monitoring comprising 2 built-in totalizers
- Multi-parameter outputs, individual configurable for mass flow, volume flow, density, temperature or fraction flow such as Brix or Plato
- 1 current output, 1 frequency/pulse and 1 relay as standard output
- Current output can be selected as passive or active output

- Digital input for batch-control, remote zero adjust or forced output mode
- All outputs can be forced to preset value for simulation, verification or calibration purposes.
- User-configurable operation menu with password protection
 - 3 lines, 20 characters display in 11 languages
 - Self-explaining error handling/log in text format
 - Keypad can be used for controlling batch as start/stop/hold/reset
- SENSORPROM technology automatically configures transmitter at start-up providing:
 - Factory pre-programming with calibration data, pipe size, sensor type, output settings
 - Any values or settings changed by users are stored automatically
 - Automatically re-programming any new transmitter without loss of accuracy
 - Transmitter replacement in less than 5 minutes. True "plug & play"
- Fraction flow computation based on a 3rd-order algorithm matching all applications
- USM II platform enables fitting of add-on bus modules without loss of functionality:
 - All modules can be fitted as true "plug & play"
 - Module and transmitter automatically configured through the SENSORPROM
- Installation of the transmitter to the sensor is simple "plug & play" via the sensor pedestal.

Application

SITRANS F C mass flowmeters are suitable for all applications within the entire process industry where there is a demand for accurate flow measurement in hazardous area. The meter can measure both liquids and gases.

The main applications for the MASS 6000 Ex d transmitter can be found in:

- Chemical process industry
- Pharmaceutical industries
- Automotive industry
- Oil and gas industry
- Power generation and utility industry

Design

The transmitter is designed in an Ex d compact stainless steel enclosure which can be compact mounted on the MASS 2100 sensor range DI 3 to DI 15, and remote mounted for the entire sensor series.

The MASS 6000 Ex d is available as standard with 1 current, 1 frequency/pulse and 1 relay output and can be fitted with add-on modules for bus communication.

- Flameproof „d“ enclosure
- Enclosure stainless steel, IP67/NEMA 6 as compact and IP65 as remote
- Supply voltage 24 V AC/DC
- MASS 6000 Ex d is Ex-approved together with all MASS 2100 sensors, but can **not** be used together with MC2 Ex versions

Note

Due to RoHS directives active from July 22nd 2017, MASS 6000 transmitters of any model and variants are not for sale within EU, EU candidate countries, Norway, Switzerland, Iceland, Croatia, and Turkey.

Replacement products: 7ME461.-..., 7ME462.-..., 7ME471.-... and 7ME481.-...

Repair parts for MASS 6000 (all models and variants) are available. See spare part list.

Flow Measurement

SITRANS F C

Transmitter MASS 6000 Ex d compact/remote

Function

The following functions are available:

- Mass flow rate, volume flow rate, density, temperature, fraction flow
- 1 current output, 1 frequency/pulse output, 1 relay output, 1 digital input
- All outputs can be individually configured with mass, volume, density etc.
- 2 built-in totalizers which can count positive, negative or net
- Low flow cut-off
- Density cut-off or empty pipe cut-off, adjustable
- Flow direction
- Error system consisting of error-log, error pending menu
- Operating time
- Uni/bidirectional flow measurement
- Limit switches with 1 or 2 limits, programmable for flow, density or temperature
- Noise filter setting for optimization of measurement performance under non-ideal application conditions
- Full batch controller
- Automatic zero adjustment menu, with zero point evaluation feed back
- Full service menu for effective and straight forward application and meter troubleshooting

Technical specifications

Measurement of	Mass flow [kg/s (lb/min)], volume flow [l/s (gpm)], fraction [%], °Brix, density [kg/m ³ (lb/ft ³)], temperature [°C (°F)]
Current output	Classified Ex ia, selectable as active or passive outputs. Default setting is active mode.
Current	0 ... 20 mA or 4 ... 20 mA
Load	< 350 Λ
Time constant	0 ... 99.9 s adjustable
Current characteristics	
Active mode	$U_o = 24 \text{ V}, I_o = 82 \text{ mA},$ $P_o = 0.5 \text{ W}, C_o = 125 \text{ nF},$ $L_o = 2.5 \text{ mH}$
Passive mode (max input from external barrier)	$U_i = 30 \text{ V}, I_i = 100 \text{ mA},$ $P_i = 0.75 \text{ W}, C_i = 52 \text{ nF},$ $L_i = 100 \mu\text{H}$
Digital output	
Frequency	1 ... 10 kHz, 50 % duty cycle
Time constant	1. ... 30 s adjustable
Passive	6 ... 30 V DC, max. 110 mA, $1 \text{ K} \Lambda \leq R_{\text{load}} \leq 10 \text{ k} \Lambda$
Output characteristics	
Active mode	Not available
Passive mode (max input from external barrier)	$U_i = 30 \text{ V}, I_i = 100 \text{ mA},$ $P_i = 0.75 \text{ W}, C_i = 52 \text{ nF},$ $L_i = 100 \mu\text{H}$
Relay	
Type	Change-over relay
Load	30 V/100 mA
Functionality	Error level, error number, limit, direction
Output characteristics	$U_i = 30 \text{ V}, I_i = 100 \text{ mA},$ $P_i = 0.75 \text{ W}, C_i = 0 \text{ nF}, L_i = 0 \text{ mH}$

Digital input	11 ... 30 V DC ($R_i = 13.6 \text{ k} \Lambda$)
Functionality	Start/hold/continue batch, zero point adjust, reset totalizer 1/2, force output, freeze output
Output characteristics	$U_i = 30 \text{ V}, I_i = 3.45 \text{ mA},$ $P_i = 0.10 \text{ W}, C_i = 0 \text{ nF}, L_i = 0 \text{ mH}$
Galvanic isolation	All inputs and outputs are galvanically isolated. Isolation voltage: • 500 V to supply • 50 V between outputs
Cut-off	
Low-flow	0 ... 9.9 % of maximum flow
Empty pipe	Detection of empty sensor
Density	0 ... 2.9 g/cm ³
Totalizer	Two eight-digit counters for forward, net or reverse flow
Display	• Background illumination with alphanumerical text, 3 × 20 characters to indicate flow rate, totalized values, settings and faults. Time constant as current output • Reverse flow indicated by negative sign
Zero point adjustment	Via keypad or remote via digital input
Ambient temperature	
Operation	-20 ... +50 °C (-4 ... +122 °F)
Storage	-40 ... +70 °C (-40 ... +158 °F) (Humidity max. 95 %)
Communication	Add-on modules: HART, PROFIBUS PA, FOUNDATION Fieldbus H1
HART	
Active mode	$U_o = 6.88 \text{ V}, I_o = 330 \text{ mA},$ $P_o = 0.57 \text{ W}, C_o = 20 \text{ nF},$ $L_o = 100 \mu\text{H}$
Passive mode (max input from external barrier)	$U_i = 10 \text{ V}, I_i = 200 \text{ mA}, P_i = 0.5 \text{ W},$ $C_i = 0 \text{ nF}, L_i = 0 \mu\text{H}$
PROFIBUS PA	
Active mode	Not available
Passive mode	$U_i = 17.5 \text{ V}, I_i = 380 \text{ mA},$ $P_i = 5.32 \text{ W}, C_i = 5 \text{ nF}, L_i = 10 \mu\text{H}$
FOUNDATION Fieldbus H1	
Active mode	Not available
Passive mode	$U_i = 17.5 \text{ V}, I_i = 380 \text{ mA}$
Enclosure	
Material	Stainless steel AISI 316/1.4435
Rating	• Compact mounted on sensor: IP67/NEMA 4X • Remote mounted: IP65
Load	18 ... 1000 Hz random, 1.14 g RMS, in all directions

Transmitter MASS 6000 Ex d compact/remote

Supply voltage	
24 V AC	
• Range	20 ... 30 V AC
• Power consumption	6 VA $I_N = 250$ mA, $I_{ST} = 2$ A (30 ms)
• Power supply	The power supply shall be from a safety isolating transformer. Maximal cable core is 1.5 mm ²
24 V DC	
• Range	18 ... 30 V DC
• Power consumption	6 W $I_N = 250$ mA, $I_{ST} = 2$ A (30 ms)
• Power supply	The power supply shall be from a safety isolating transformer. Maximal cable core is 1.5 mm ² .
EMC performance	
Emission	EN 55011/CISPR-11 (Class A)
Immunity	EN/IEC 61326-1 (Industry)
NAMUR	
	Within the value limits according to "Allgemeine Anforderung" with error criteria A in accordance with NE 21
Ex approval	
	ATEX, EAC Ex: Ex d e ib [ia Ga] IIC T4Gb

Note

Due to RoHs directives active from July 22nd 2017, MASS 6000 transmitters of any model and variants are not for sale within EU, EU candidate countries, Norway, Switzerland, Iceland, Croatia, and Turkey.

Replacement products: 7ME461.-..., 7ME462.-..., 7ME471.-... and 7ME481.-...

Repair parts for MASS 6000 (all models and variants) are available. See spare part list.

Selection and Ordering data		Article No.
SITRANS F C MASS 6000 transmitter	Transmitter Ex d for remote mounting inclusive of wall mounting kit	7ME4110- 27777-77A7
↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		
Enclosure		
Ex d SS with 5 m (16.5 ft) cable		G
Ex d SS with 10 m (32.8 ft) cable		H
Ex d SS with 25 m (82.0 ft) cable		J
Output configuration		
1 current, 1 frequency, 1 relay		A
Supply voltage		
24V AC/DC		2
Ex approvals		
Ex		1
Display/Keypad		
With display		1
Serial communication		
No communication		A
HART		B
PROFIBUS PA Profile 3		F
FOUNDATION Fieldbus H1		J
Cable gland		
M20		1

Operating instructions for SITRANS F C MASS 6000 Ex d

Description	Article No.
• English	A5E02944883

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

Note:

Only communication modules with Ex approvals are allowed.

Flow Measurement SITRANS F C


Transmitter MASS 6000 Ex d compact/remote

Selection and Ordering data

Accessories

Add-on module for remote and compact MASS 6000 Ex d

Description	Article No.
HART (Ex-i)	FDK:085U0226
PROFIBUS PA Profile 3 (Ex-i)	FDK:085U0236
FOUNDATION Fieldbus H1 (Ex-i)	A5E02054250



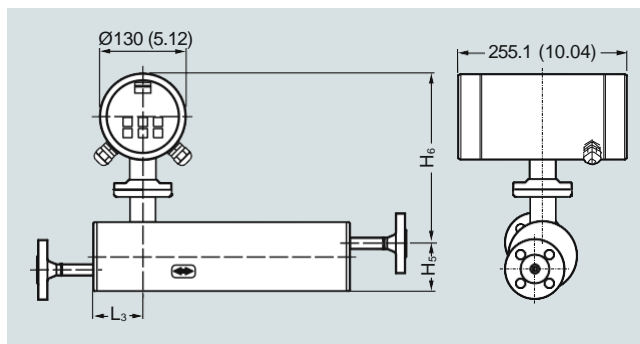
Operating instructions for SITRANS F add-on modules

Description	Article No.
HART	
• English	A5E03089708
PROFIBUS PA/DP	
• English	A5E00726137
• German	A5E01026429
FOUNDATION Fieldbus	
• English	A5E02318728
• German	A5E02488856

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

Dimensional drawings

MASS 6000 Ex d compact version

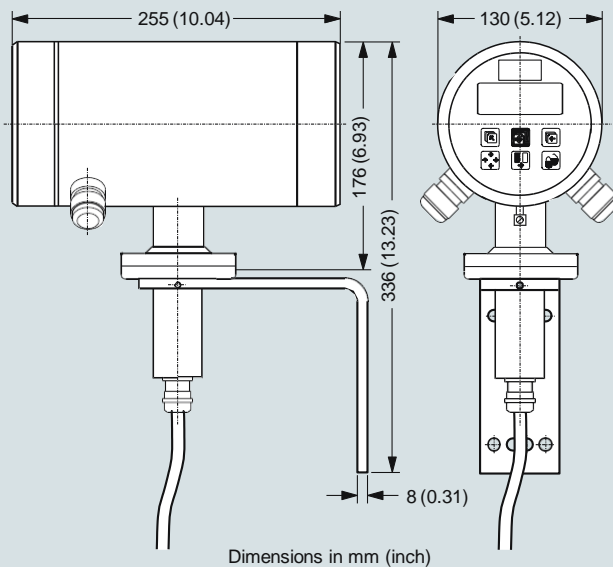
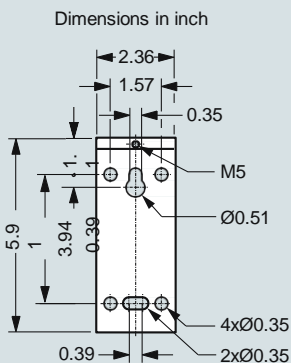
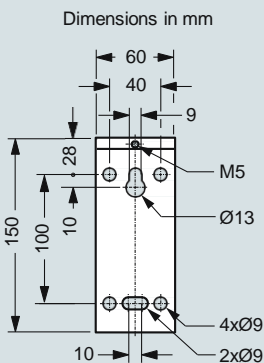


Dimensions in mm (inch)

Sensor size [DI (inch)]	L ₃ [mm (inch)]	H ₅ [mm (inch)]	H ₆ [mm (inch)]	H ₅ + H ₆ [mm (inch)]
3 (1/8)	75 (2.95)	82 (3.23)	247 (9.72)	329 (12.95)
6 (1/4)	62 (2.44)	72 (2.83)	257 (10.12)	329 (12.95)
15 (1/2)	75 (2.95)	87 (3.43)	267 (10.51)	354 (13.94)
25 (1)	75 (2.95)	173 (6.81)	271 (10.67)	444 (17.48)
40 (1 1/2)	75 (2.95)	227 (8.94)	271 (10.67)	498 (19.61)

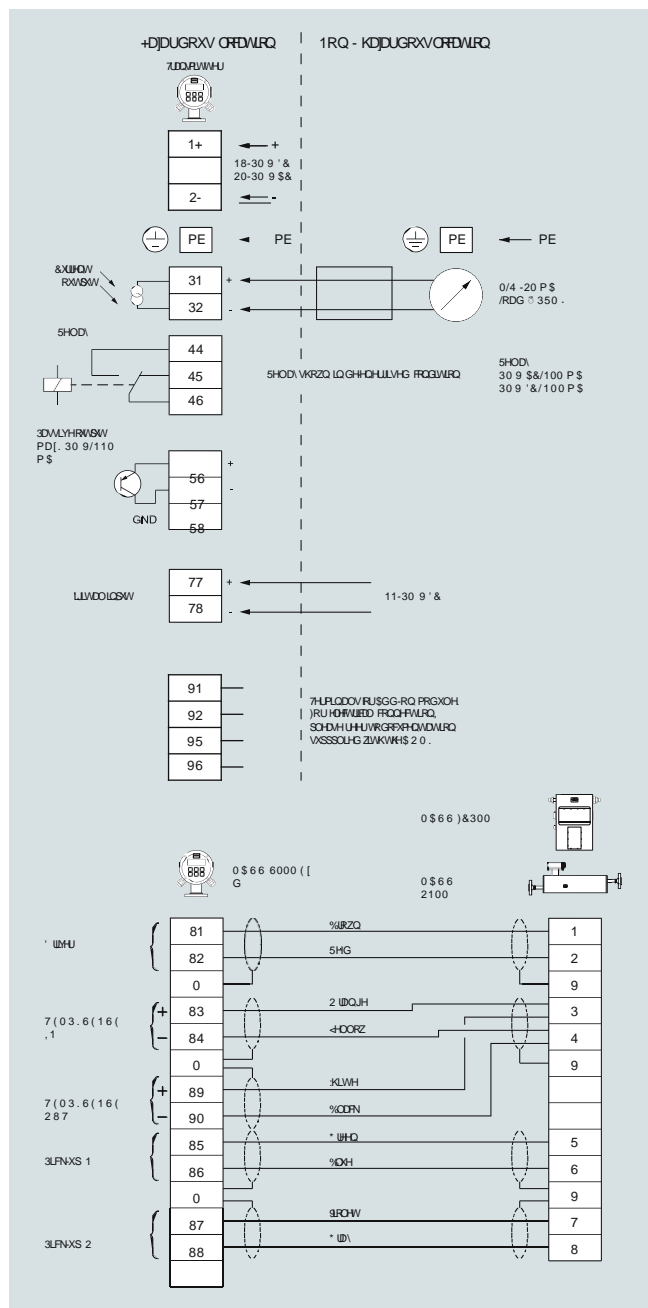
MASS 6000 Ex d remote version

Weight: 3 kg (6.6 lbs)



Schematics

Electrical connection compact or remote



Flow Measurement

SITRANS F C

Transmitter SIFLOW FC070

Overview



SIFLOW FC070 is based on the latest developments within the digital processing technology – engineered for high performance, fast flow step response, immunity against process generated noise, easy to install, commission and maintain.

SIFLOW FC070 is available in two versions:

- SIFLOW FC070 Standard
- SIFLOW FC070 Ex CT

The SIFLOW FC070 transmitter delivers true multi-parameter measurements i.e. mass flow, volume flow, density, temperature and fraction.

SIFLOW FC070 is designed for integration in a variety of automation systems, i.e.:

- Central mounted in S7-300, C7
- Decentralized in ET 200M for use with S7-300 and S7-400 as PROFIBUS DP/PROFINET masters
- Decentralized in ET 200M for use with any automation system using standardized PROFIBUS DP/PROFINET masters
- Stand-alone via a Modbus RTU master, i.e. SIMATIC PDM

The SIFLOW FC070 transmitter can be connected to all sensors of types MASS 2100, FCS200 and FC300.

Benefits

- Easy integration in SIMATIC S7 and PCS 7
- Support of SIMATIC PDM configuration tool via Modbus
- Dedicated mass flow chip with high-performance ASIC technology
- True 30 Hz update rate securing fast batching and step response
- Superior noise immunity due to a DFT (Discrete Fourier Transformation) algorithm
- Front end resolution better than 0.35 ns improves zero point stability and enhances dynamic turn-down ratio on flow and density accuracy.
- Advanced diagnostics enhancing troubleshooting and meter verification
- Built-in batch controller with two-stage control and compensation
- Digital outputs for direct batch control, frequency/pulse
- Modbus RTU RS 232/RS 485 interface for connection to SIMATIC PDM or any other Modbus master

- Digital input for batch control, zero adjust
- Extensive simulation options for measurement values, I/O and errors easy communication/fault-finding
- Multiple LED's for easy indication of flow, error and I/O state
- SENSORPROM technology automatically configures the transmitter during start-up providing:
 - Factory pre-programming with calibration data, pipe size, sensor type and I/O settings
 - Any values or settings changed by the user is stored automatically
 - Automatically re-programming of a new transmitter, without loss of settings and accuracy
 - Transmitter replacement in less than 30 seconds
- Four-wire Pt1000 measurement ensuring optimum accuracy mass flow, density and fraction flow
- Fraction flow computation based on a 3rd-order algorithm matching all applications
- SIFLOW FC070 Ex CT can be used for custody transfer approved application. (Compressed gaseous fuel measuring systems for vehicles), when using the redundant digital output or the encrypted ActiveX component for SIMATIC touch panels. The approval will have to be done locally at the customer.
- Free of charge ActiveX component for SIMATIC touch panels, enables encrypted sensor process values to be communicated between SIFLOW FC070 Ex CT and SIMATIC touch panels

Application

SIFLOW FC070 mass flowmeters are suitable for all applications within the entire process industry, where there is a demand for accurate flow measurement. The meters are suitable for measuring on liquid and gas.

The main applications for the SIFLOW FC070 transmitter can be found in the following industries:

- Food and beverage
- Pharmaceutical
- Automotive
- Oil and gas
- Power generation and utility
- Water and waste water

Design

SIFLOW FC070 is designed in an IP20 SIMATIC S7-300 enclosure and for use in central and de-central cabinets where sensors: FCS200, FC300 and MASS 2100 are remotely mounted.

Function

The following key functionalities are available:

- Mass flow rate, volume flow rate, density, temperature and fraction flow
- Two built-in totalizers which can freely be set for counting mass, volume or fraction
- 1 frequency/pulse output
- 1 phase shifted 90°/180° frequency/pulse output
- Two-stage batch controller
- 1 digital input
- Low flow cut-off
- Empty pipe detection
- Noise filter settings for different applications
- Simulation
- Automatic zero point adjustment with zero point evaluation feed back
- Configurable upper and lower alarm and warning limits for all process values
- Comprehensive status and error reporting

Technical specifications

Measurement of	Mass flow, volume flow, density, sensor temperature, fraction A flow, fraction B flow, fraction A in %	Power	
Measurement functions		Supply	24 V DC nominal
• Totalizer 1	Totalization of mass flow, volume-flow, fraction A, fraction B	Tolerance	20.4 V DC ... 28.8 V DC
• Totalizer 2	Totalization of mass flow, volume-flow, fraction A, fraction B	Consumption	Max. 7.2 W
• Single and 2-stage batch function	Batching function with the use of one or two outputs for dosing in high and low speed	Fuse	T1 A/125 V, not replaceable by operator
• 4 programmable limits	4 programmable high/low limits for mass flow, volume flow, density, sensor temperature, fraction A flow, fraction B flow, fraction A in %. Limits will generate an alarm if reached.	Environment	
Digital input		Ambient temperature	• Storage -40 ... +70 °C (-40 ... +158 °F)
Functions	Start batch, stop batch, start/stop batch, hold/continue batch, reset totalizer 1, reset totalizer 2, reset totalizer 1 and 2, zero adjust, force frequency output, freeze frequency output	Operation conditions	Horizontally mounted rail. For SIFLOW FC070 Std.: 0 ... 60 °C (32 ... 140 °F) For SIFLOW FC070 Ex CT: -40 ... +60 °C (-40 ... +140 °F) Vertically mounted rail For SIFLOW FC070 Std.: 0 ... 45 °C (32 ... 113 °F) For SIFLOW FC070 Ex CT: -40 ... +45 °C (-40 ... +113 °F)
High signal	• Nominal voltage: 24 V DC • Lower limit: 15 V DC • Upper limit: 30 VDC • Current: 2 ... 15 mA	Altitude	• Operation: -1000 ... 2000 m (pressure 795 ... 1080 hPa)
Low signal	• Nominal voltage: 0 V DC • Lower limit: -3 V DC • Upper limit: 5 VDC • Current: -15 ... +15 mA	Enclosure	
Input	Approx. 10 k Ω	Material	Noryl, color: anthracite
Switching	Max. 100 Hz.	Rating	IP20/NEMA 2 according to IEC 60529
Digital output 1 and 2		Mechanical load	According to SIMATIC standards (S7-300 devices)
Functions	• Output 1: Pulse, frequency, redundancy pulse, redundancy frequency 2-stage batch, batch • Output 2: Redundancy pulse, redundancy frequency, 2-stage batch	Ex approvals	
Voltage supply	3 ... 30 V DC (passive output)	SIFLOW FC070 Standard	ATEX: II 3G Ex nA II T4
Switching current	Max. 30 mA at 30 V DC	SIFLOW FC070 Ex CT	• ATEX, IECEx, EAC Ex, FM, CSA, INMETRO - Zone 2: Ex nA [ia] IIC T4 • FM - Class I, Div. 2: Grp. A, B, C, D (interfaceto Class I+II+III, Div. 1)
Voltage drop	≤ 3 V DC at max. current	Custody transfer approvals	
Leakage current	≤ 0.4 mA at max. voltage 30 V DC	SIFLOW FC070 Ex CT	Compressed gaseous fuel measuring systems for vehicles NTEP for USA and Canada, approval no: 97-111A3
Load resistance	1 ... 10 k Ω	EMC performance	
Switching frequency	0 ... 12 kHz 50 % duty cycle	Emission	EN 55011/CISPR-11
Functions	Pulse, frequency, redundancy pulse, redundancy frequency 2-stage batch, batch	Immunity	EN/IEC 61326-1
Communication		Certification	
Modbus RS 232C	• Max. baud rate: 115 200 baud • Max. line length: 15 m at 115 200 baud • Signal level: according to EIA-RS 232C	CE mark	Low voltage directive RoHS
Modbus RS 485	• Max. baud rate: 115 200 baud • Max. line length: 1200 m at 115 200 baud • Signal level: according to EIA-RS 485 • Bus termination: Integrated. Can be enabled by inserting wire jumpers.	NAMUR	Within the limits according to "General recommendations" with error criteria A in accordance with NE 21
Galvanic isolation	All inputs, outputs and communication interfaces are galvanically isolated. Isolation voltage: 500 V	Programming tools	
		SIMATIC S7	Configuration through backplane P-BUS, PLC program and WinCC flexible
		SIMATIC PCS7	Configuration through backplane P-BUS and PLC/WinCC faceplates, certified driver
		SIMATIC PDM	Through Modbus port RS 232C and RS 485, certified driver

Flow Measurement

SITRANS F C

Transmitter SIFLOW FC070

Selection and Ordering data






Description	Article No.
SIFLOW FC070 flow transmitter Remember to order 40 pin front plug connector.	7ME4120-2DH20-0EA0
40 pin front connector with screw contacts	6ES7392-1AM00-0AA0
40 pin connector with spring contacts	6ES7392-1BM01-0AA0
SIFLOW FC070 Ex CT flow transmitter Remember to order 20 pin front plug connector.	7ME4120-2DH21-0EA0
20 pin plug with spring contacts	6ES7392-1BJ00-0AA0
20 pin front connector with screw contacts	6ES7392-1AJ00-0AA0

Operating instructions for SITRANS F C SIFLOW FC070

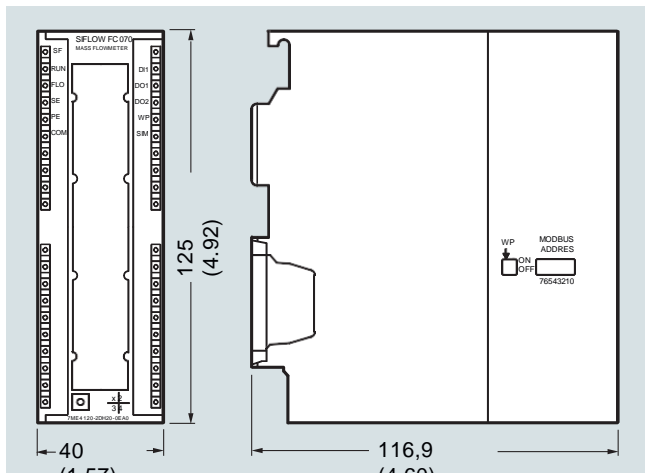
Description	Article No.
SIFLOW FC070 system manual	
• English	A5E00924779
• German	A5E00924776
SIFLOW FC070 with S7	
• English	A5E02254228
• German	A5E02665536
SIFLOW FC070 with PCS7	
• English	A5E03694109

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

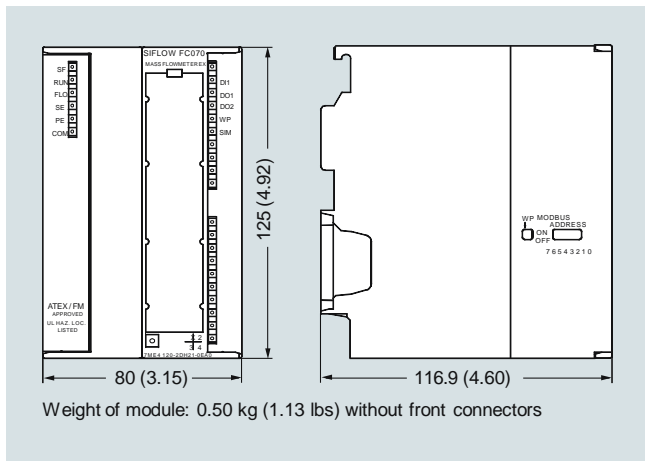
Accessories

Description	Article No.	
Cable with multiplug for connecting MASS 2100, FCS200 and FC300 sensors, 5 x 2 x 0.34 mm ² twisted and screened in pairs. Temperature range -20 ... +110°C (-4 ... +230 °F)		
• 5 m (16.4 ft)	FDK:083H3015	
• 10 m (32.8 ft)	FDK:083H3016	
• 25 m (82 ft)	FDK:083H3017	
• 50 m (164 ft)	FDK:083H3018	
• 75 m (246 ft)	FDK:083H3054	
• 150 m (492 ft)	FDK:083H3055	
Cable without multiplug for connecting MC2 sensors, 5 x 2 x 0.34 mm ² twisted and screened in pairs. Temperature range -20 ... +110°C (-4 ... +230 °F)		
• 10 m (32.8 ft)	FDK:083H3001	
• 25 m (82 ft)	FDK:083H3002	
• 75 m (246 ft)	FDK:083H3003	
• 150 m (492 ft)	FDK:083H3004	
SIMATIC S7-300 rail The mechanical mounting rack of the SIMATIC S7-300		
• 160 mm (6.3")	6ES7390-1AB60-0AA0	
• 482 mm (18.9")	6ES7390-1AE80-0AA0	
• 530 mm (20.8")	6ES7390-1AF30-0AA0	
• 830 mm (32.7")	6ES7390-1AJ30-0AA0	
• 2000 mm (78.7")	6ES7390-1BC00-0AA0	
SIFLOW FC070 Demo suitcase with MASS 2100 DI 1.5 sensor and SIMATIC HMI TP 177B touch panel	A5E01075465	
SIMATIC S7-300, stabilized power supply PS307 Input: 120/230 V AC Output: 24 V DC/2 A	6ES7307-1BA01-0AA0	

Dimensional drawings



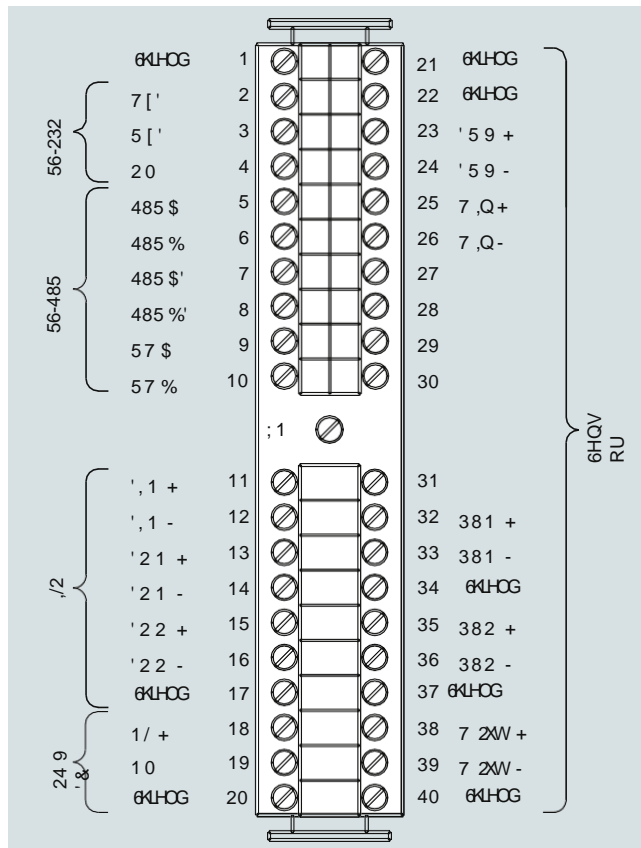
SIFLOW FC070, dimensions in mm (inch)



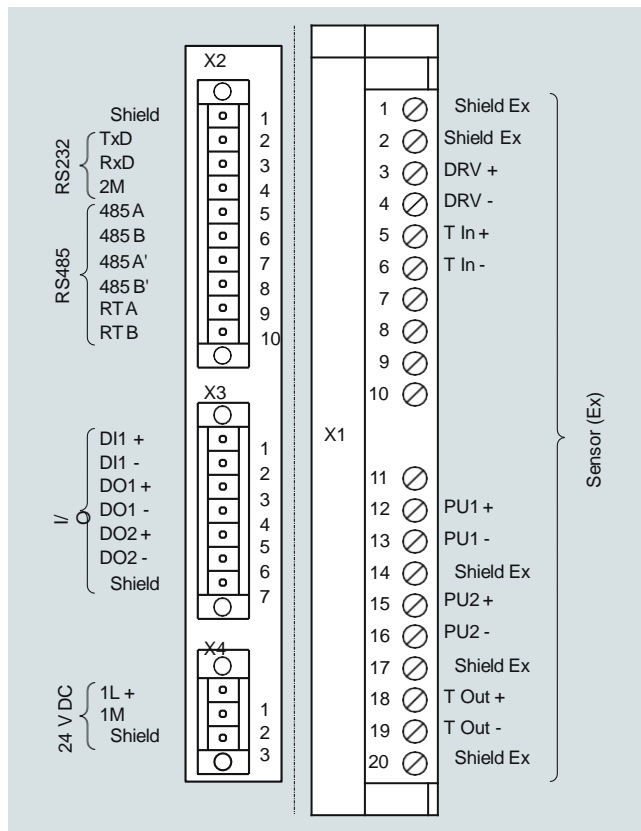
Weight of module: 0.50 kg (1.13 lbs) without front connectors

SIFLOW FC070 Ex CT, dimensions in mm (inch)

Schematics



SIFLOW FC070, electrical connection



SIFLOW FC070 Ex CT, electrical connection

Flow Measurement

SITRANS F C

Flow sensor SITRANS FCS200

Overview



SITRANS FCS200 (DN10, DN 15 and DN 25) is a Coriolis sensor specialized for accurate mass flow measurement of gases.

The sensor offers superior performance in terms of flow accuracy and turn down ratio. The ultra compact sensor design makes installation, replacement and commissioning very straight forward and easy.

Benefits

- High accuracy gas measurement
- Approved for use in hazardous area
- DN 10 and DN 15 is custody transfer approved, according to NTEP (Compressed gaseous fuel measuring systems for vehicles). For custody transfer applications SIFLOW FC070 Ex CT must be used.
- Self-draining in vertical orientation
- Pt1000 temperature measurement for optimum accuracy
- SENSORPROM enabling true "plug & play"
- Rigid enclosure design reducing influence from pipeline vibration and thermal stress
- High-pressure measurement up to 350 bar (5076 psi)
- Ultra compact sensor design with space-saving split flow

Application

SITRANS FCS200 is designed for measurement of gases and is suitable for use in the oil and gas industry:

- Filling of gas bottles
- CNG dispensers
- Metering of general gas applications

Design

SITRANS FCS200 is available in DN 10, DN 15 and DN 25.

The sensor consists of 2 parallel measuring pipes, welded directly onto a flow splitter at each end of the sensor to eliminate a direct coupling to the process connectors and significantly reduce effects from external vibrations. The flow-splitters are welded directly onto a rigid sensor housing which acts as a mechanical low pass filter.

The SITRANS FCS200 DN 10 and DN 15 wetted parts material is Hastelloy C22, and the DN 25 wetted parts material is AISI 316Ti/1.4571. The enclosure is made of stainless steel AISI 316L/1.4404 with a grade of encapsulation of IP67.

The two black rupture discs are designed to protect the enclosure from overpressure.

Function

The flow measuring principle is based on the Coriolis effect. See "System information SITRANS F C".

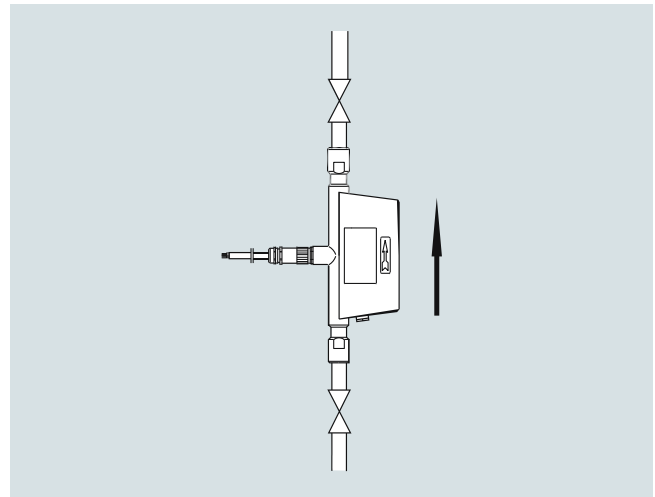
Integration

The complete flowmeter consists of the sensor (SITRANS FCS200) and a transmitter SITRANS F C MASS 6000 or SIFLOW FC070. All communication options are available for MASS 6000.

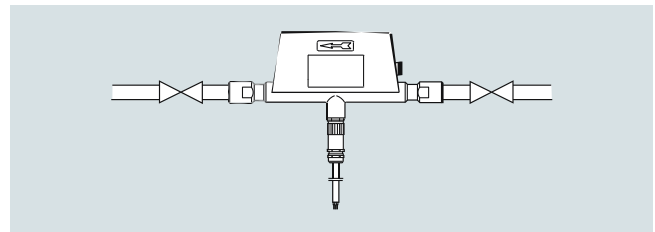
The sensor is shipped with a SENSORPROM memory unit containing all information about calibration data, device identity and factory pre-programming of transmitter settings.

Installation guidelines

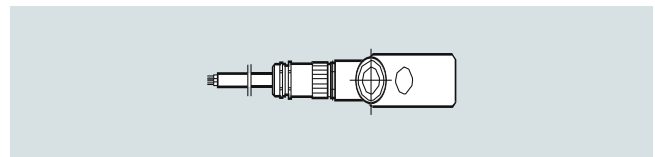
Siemens Flow Instruments recommends installing the sensor in one of the following ways:



Vertical orientation with an upwards flow



Horizontal installation, tubes up



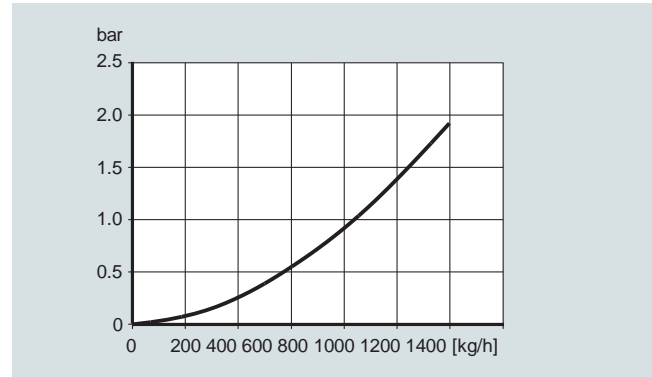
Horizontal installation, tubes sideways

Technical specifications

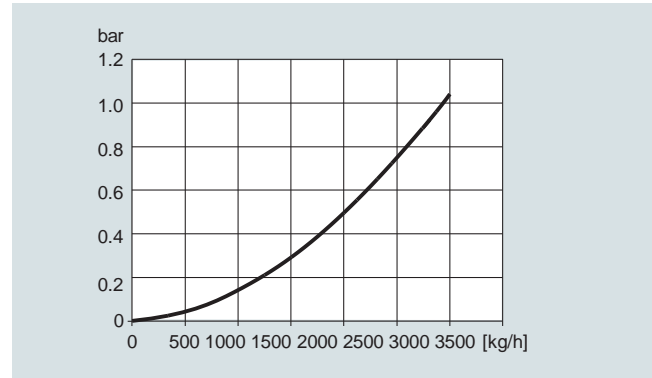
Sensor size	DN 10	DN 15	DN 25
Mass Flow			
Accuracy [% of rate]		± 0.5	
Repeatability [% of rate]		± 0.25	
Max. zero point error [kg/h (lb/h)]	0.25 (0.55)	1.2 (2.65)	3.0 (6.6)
Measuring range [kg/min (lb/min)]	0 ... 42 (0 ... 92.6)	0 ... 200 (0 ... 440.9)	0 ... 500 (0 ... 1102.3)
Process temperature	-40 ... +125 °C (-40 ... +257 °F)		
Ambient temperature	-40 ... +60 °C (-40 ... +140 °F)		
Temperature error	0.5 °C (0.9 °F)		
Pressure [bar (psi)]	350 (5076)	350 (5076)	214 (3104)
Enclosure grade	IP66/IP67 (EN 60529)		
Material			
Measuring pipe	Hastelloy C22/2.4602	Hastelloy C22/2.4602	Stainless steel AISI 316L/1.4571
Splitter	Hastelloy C22/2.4602	Stainless steel AISI 316L/1.4571	Stainless steel AISI 316L/1.4571
Enclosure and connection (flanges)	Stainless steel		
Connection thread			
	¼" NPT ½" NPT ½" VCO	½" NPT ¾" NPT 1" NPT ¾" VCO	1" NPT 1½" NPT 1" VCO
Weight approx.	2.8 kg (6.2 lb)	6.0 kg (13.2 lb)	11 kg (24.2 lb)
Ex approvals			
ATEX	II 1/2 G Ex ia IIC T5/T4 Ga/Gb		
IECEX	Ex ia IIC T5/T4 Ga/Gb		
EAC Ex	0Ex ia IIC T4/T5 Gb		
FM	Class I, Div 1, Groups A, B, C and D		
Custody transfer approvals			
DN 10/DN 15	Compressed gaseous fuel measuring systems for vehicles NTEP for USA and Canada, approval no: 97-111A3		

Characteristic curves

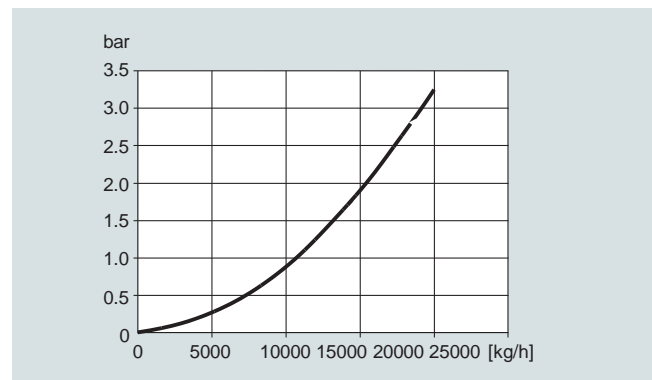
DN 10



DN 15



DN 25



The pressure drop as a function of capacity for CNG with a pressure of 200 bar (2900 psi) and an ambient temperature of 20 °C (68 °F).

Flow Measurement

SITRANS F C

Flowsensor SITRANS FCS200

Selection and Ordering data	Article No.
SITRANS F C Flow sensors	
SITRANS FCS200 sensor, without heating jacket	7ME 4500 - 77777 - 7777
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	
Sensor size and material	
DN 10, Hastelloy C22/2.4602	2D
DN 15, Hastelloy C22/2.4602	2E
DN 25, Stainless steel AISI 316Ti/1.4571	1F
Pressure	
PN 214 (DN 25)	K
PN 350 (DN 10 and DN 15)	N
Process connection/flange	
1/2" VCO	71
3/4" VCO	72
1" VCO	73
1/4" NPT pipe thread	81
1/2" NPT pipe thread	82
3/4" NPT pipe thread	83
1" NPT pipe thread	84
1 1/2" NPT pipe thread	85
Configuration	
PTB custody transfer approval	1
NTEP custody transfer approval	2
Transmitter	
None	A
Cable	
No cable	A
Calibration	
Standard calibration	1
Extended calibration	8

Selection and Ordering data	Order code
Additional information	
Please add "-Z" to Article No. and specify Order code(s) and plain text.	
Pressure testing certificate PED: 2014/68/EU	C11
Material certificate EN 10204-3.1	C12
NDT-Penetrant inspection report ISO 3452	C13
Factory certificate according to EN 10204 2.2	C14
Factory certificate according to EN 10204 2.1	C15
Tag name plate, stainless steel	Y17

Accessories

Description	Article No.
Cable with multiple connector	
5 m (16.4 ft)	FDK:083H3015
Standard blue cable between SIFLOW FC070/MASS 6000 and FCS200,	10 m (32.8 ft) FDK:083H3016
25 m (82 ft) FDK:083H3017	
5 x 2 x 0.34 mm ² twisted and screened in pairs.	50 m (164 ft) FDK:083H3018
Temperature range -20 °C ... +110 °C (-4 °F ... +230 °F)	75 m (246 ft) FDK:083H3054
	150 m (492 ft) FDK:083H3055

Operating instructions for SITRANS FCS200

Description	Article No.
• English	A5E02508199
• German	A5E03082574

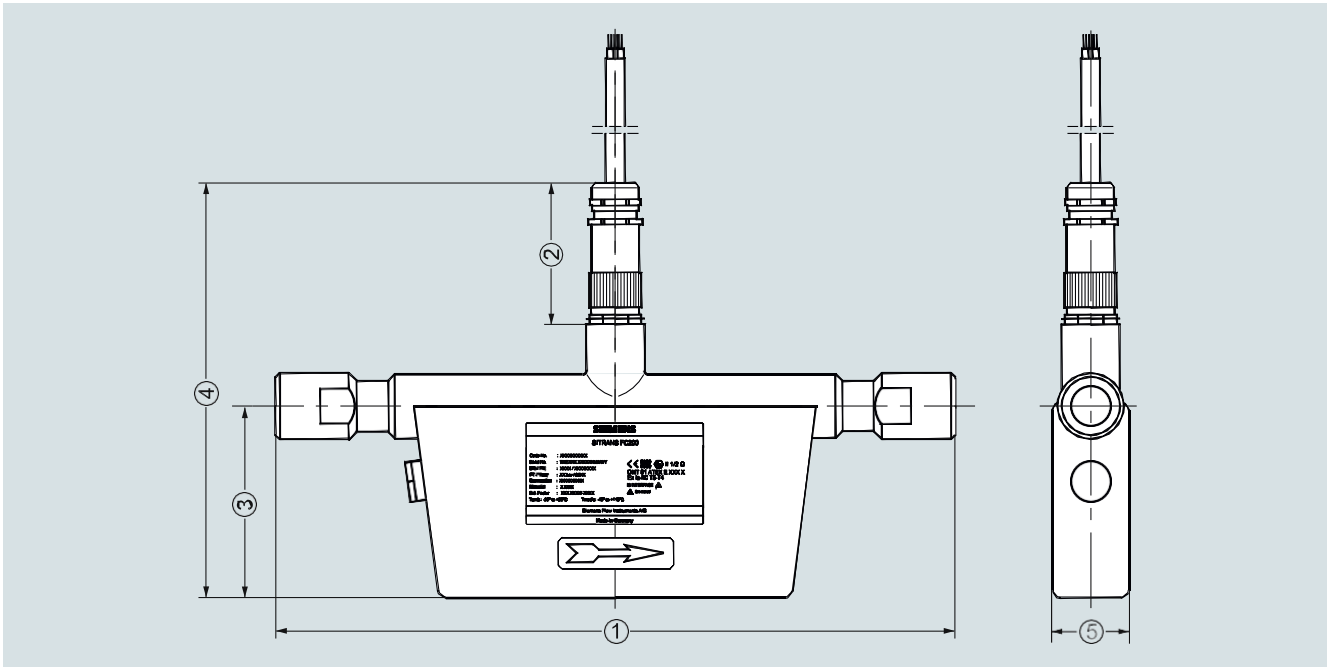
All literature is available to download for free, in a range of languages, at www.siemens.com/processinstrumentation/documentation

Spare parts

Description	Article No.
Multiple connector for cable mounting	FDK:083H5056
2 kB SENSORPROM unit (Sensor Serial No. and Article No. must be specified by ordering)	FDK:083H4410

Dimensional drawings

SITRANS FCS200, DN 10 ... DN 15



SITRANS FCS200, DN 10 ... DN 15, dimensions in mm (inch)

Position	DN 10 with NPT connectors mm (inch)	DN 10 with VCO connectors mm (inch)	DN 15 mm (inch)
(1)	350 (13.78)	330 (12.99)	450 (17.72)
(2)	72 (2.84)	72 (2.84)	72 (2.84)
(3)	100 (3.94)	100 (3.94)	148 (5.83)
(4)	204 (8.03)	204 (8.03)	253 (9.96)
(5)	40 (1.57)	40 (1.57)	48 (1.89)

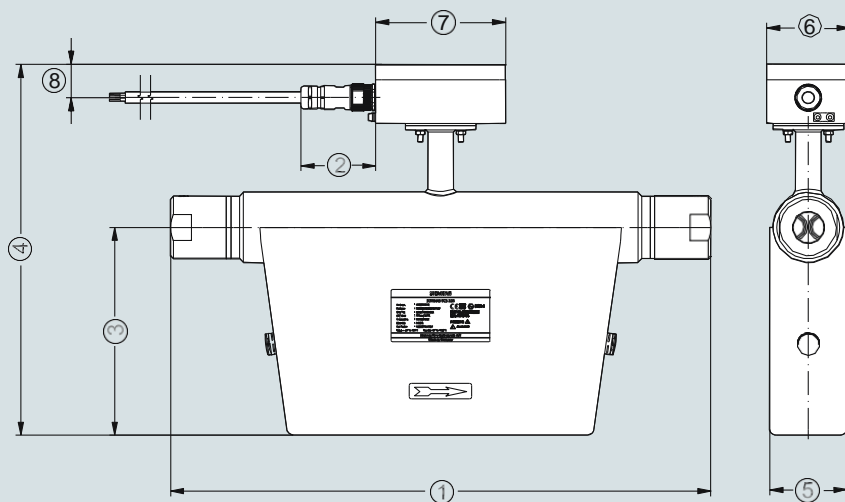
Flow Measurement

SITRANS F C

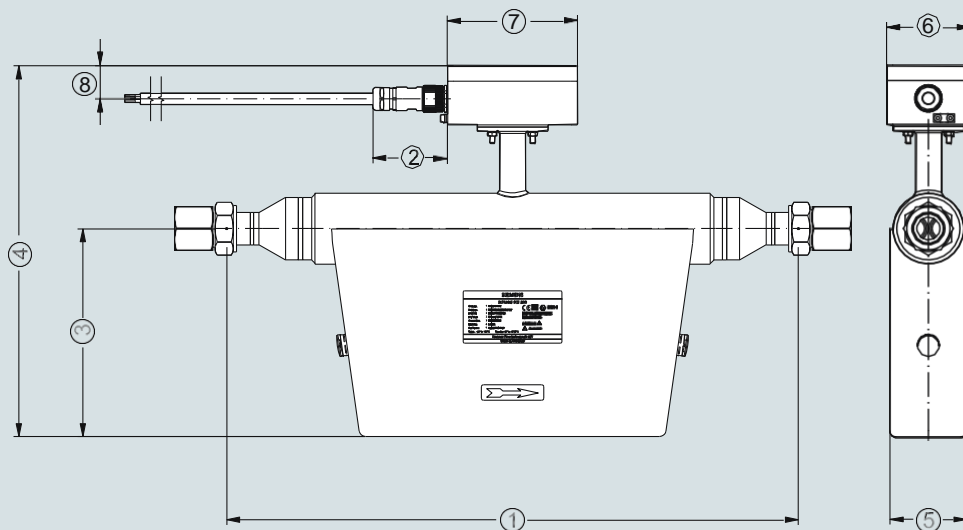
Flowsensor SITRANS FCS200

SITRANS FCS200, DN 25

DN 25 - NPT



DN 25 - VCO



SITRANS FCS200, DN 25, dimensions in mm (inch)

Position	DN 25 with NPT connection mm (inch)	DN 25 with VCO connection mm (inch)
(1)	520 (20.47)	550 (21.65)
(2)	72 (2.84)	72 (2.84)
(3)	200 (7.87)	200 (7.87)
(4)	357 (14.77)	357 (14.77)
(5)	74 (2.91)	74 (2.91)
(6)	80 (3.15)	80 (3.15)
(7)	125 (4.92)	125 (4.92)
(8)	32 (1.26)	32 (1.26)

SITRANS F C sensor MASS 2100 DI 1.5 with SITRANS MASS 6000 and SIFLOW FC070 transmitter

Note: Technical specification see page 3/180 to 3/182.

Selection and Ordering data	Article No.	Ord. code
SITRANS F C Flow sensors	7ME 4100 -	
MASS 2100 DI 1.5 (1/16") sensor	77777 - 7777	777
<p>Click on the Article No. for the online configuration in the PIA Life Cycle Portal.</p>		
Diameter		
Stainless steel AISI 316L/1.4435		
DI 1.5, max. 125 °C (257 °F)	1A	
DI 1.5, max. 180 °C (356 °F)	1B	
Hastelloy C22/2.4602		
DI 1.5, max. 125 °C (257 °F)	2A	
DI 1.5, max. 180 °C (356 °F)	2B	
Pressure		
PN 100	D	
PN 230 (AISI 316L/1.4404)	L	
PN 365 (C22/2.4602)	P	
Process connection/flange		
Pipethread		
G 1/4" male	10	
1/4" NPT male	11	
Configuration		
Standard		1
Density		2
Brix/Plato		3
Fraction (specification required)		9
Transmitter		
No transmitter, sensor and adapter only		A
MASS 6000, Ex d, stainless steel enclosure, 1 current, 1 freq./pulse and 1 relay output, 24 V AC/DC with Ex d e ib [ia Ga] IIC T4 Gb Ex-approval.		B
MASS 6000, IP67, Polyamide enclosure, cable glands M20, 1 current, 1 freq./pulse and 1 relay output, 24 V AC/DC.		C
MASS 6000, IP67, Polyamide enclosure, cable glands M20, 1 current, 1 freq./pulse and 1 relay output, 115/230 V AC 50/60 Hz		D
MASS 6000, IP67, Polyamide enclosure, cable glands 1/2" NPT, 1 current, 1 freq./pulse and 1 relay output, 24 V AC/DC		E
MASS 6000, IP67, Polyamide enclosure, cable glands 1/2" NPT, 1 current, 1 freq./pulse and 1 relay output, 115/230 V AC 50/60 Hz, 1/2" NPT		F
Cable		
No cable		A
5 m (16.4 ft) cable		B
10 m (32.8 ft) cable		C
25 m (82 ft) cable		D
50 m (164 ft) cable		E
75 m (246 ft) cable		F
150 m (492 ft) cable		G
Calibration		
Standard calibration 3 flow x 2 points		1
Standard calibration matched pair 3 flow x 2 points		2
Accredited calibration matched pair 5 flow x 2 points		3
Extended calibration customer-specified select Y60, Y61, Y62 or Y63 (see additional information)		8

Selection and Ordering data

Order code

Additional information

Please add "-Z" to Article No. and specify Order code(s) and plain text.

Pressure testing certificate PED: 2014/68/EU

C11

Material certificate EN 10204-3.1

C12

Welding certificate NDT-Penetrant: ISO 3452

C13

Factory certificate according to EN 10204 2.2

C14

Factory certificate according to EN 10204 2.1

C15

Tag name plate, stainless steel

Y17

Tag name plate, plastic

Y18

Customer-specific transmitter setup

Y20

Customer-specified, matched pair (5 x 2)

Y60

Customer-specified calibration (5 x 2)

Y61

Customer-specified, matched pair (10 x 1)

Y62

Customer-specified calibration (10 x 1)

Y63

Cleaned for oil and grease

Y80

Special version

Y99

Operating instructions for SITRANS F C MASS 2100 DI 1.5

Description	Article No.
• English	A5E03089952

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

Accessories

Description	Article No.
Cable with multiple connector	
Standard blue cable between MASS 6000 and MASS 2100, 5 x 2 x 0.34 mm ² twisted and screened in pairs. Temperature range -20 °C ... +110 °C (-4 °F ... +230 °F)	
• 5 m (16.4 ft)	FDK:083H3015
• 10 m (32.8 ft)	FDK:083H3016
• 25 m (82 ft)	FDK:083H3017
• 50 m (164 ft)	FDK:083H3018
• 75 m (246 ft)	FDK:083H3054
• 150 m (492 ft)	FDK:083H3055

Spare parts

Description	Article No.
Multiple connector for cable mounting	FDK:083H5056
2 kB SENSORPROM unit (Sensor Serial No. and Article No. must be specified by ordering)	FDK:083H4410
Bracket Mounting bracket for flow sensor MASS 2100 DI 1.5	A5E02590427

Flow Measurement

SITRANS F C

SITRANS F C sensor FC300 DN 4 with SITRANS MASS 6000 and SIFLOW FC070 transmitter

Note: Technical specification see page 3/183 to 3/186.

3

Selection and Ordering data Article No. Order code

SITRANS F C Flow sensors 7 777

7 M E 4400

SITRANS FC300 DN 4 (1/6") sensor

7777 7-7

Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Pipe material and temperature

Stainless steel AISI 316L/1.4435
115 °C (239 °F)

1G

180 °C (356 °F)

1H

Hastelloy C22/2.4602
115 °C (239 °F)

2G

180 °C (356 °F)

2H

Pressure

PN 100

D

PN 130 (316L/C22)

G

PN 410 (C22)

Q

Process connection

Pipe thread

G 1/4" male

1 0

1/4" NPT male

1

Configuration

Standard

1

Density

2

Brix/Plato

3

Fraction (specification required)

9

Transmitter

No transmitter, sensor and adapter only

MASS 6000, Ex d, stainless steel enclosure, 1 current, 1 freq./pulse and 1 relay output, 24 V AC/DC with Ex d e ib [ia Ga] IIC T4 Gb Ex-approval

MASS 6000, IP67, Polyamide enclosure, cable glands M20, 1 current, 1 freq./pulse and 1 relay output, 24 V AC/DC

MASS 6000, IP67, Polyamide enclosure, cable glands M20, 1 current, 1 freq./pulse and 1 relay output, 115/230 V AC 50/60 Hz

Siemens FI 01 · 2018

MASS 6000, IP67, Polyamide

Selection and Ordering data

Order code

Additional information

Please add "-Z" to Article No. and specify Order code(s) and plain text.

Pressure testing certificate PED: 2014/68/EU

C11

Material certificate EN 10204-3.1

C12

Welding certificate NDT-Penetrant: ISO 3452

C13

Factory certificate according to EN 10204 2.2

C14

Factory certificate according to EN 10204 2.1

C15

Tag name plate, stainless steel

Y17

Tag name plate, plastic

Y18

Customer-specific transmitter setup

Y20

Customer-specified, matched pair (5 x 2)

Y60

Customer-specified calibration (5 x 2)

Y61

Customer-specified, matched pair (10 x 1)

Y62

Customer-specified calibration (10 x 1)

Y63

Cleaned for oil and grease

Y80

Special version

Y99

Operating instructions for SITRANS F C FC300

Description	Article No.
• English	A5E00698213
• German	A5E00728101



Multiple connector for cable mounting	FDK:083H5056	
All literature is available to download at www.siemens.com/processinstruments in a range of languages, at entation		
2 x B SENSOR PROM unit (Sensor Serial No. and Article No. must be specified by ordering)	FDK:083H4410	

Accessories		
Description	A5E02590439	
Mounting bracket		
Cable with M20 connector		
Standard blue cable between MASS 6000 and MASS 2100, 5 x 2 x 0.34 mm ² twisted and screened in pairs. Cable mounted with one M20		

connector and one end for terminal connections.
Temperature range:
-20 ... +110 °C (-4 ... +230 °F)

3/2018 5 m (16.4 ft)

FDK:083H3015

SITRANS F C sensor MASS 2100 DI 3, DI 6 and DI 15 with SITRANS MASS 6000 and SIFLOW FC070 transmitter

Note: Technical specification see page 3/187 to 3/198.

Selection and Ordering data	Article No. Ord. code
SITRANS F C sensors	7ME 4100 -
MASS 2100 without heating jacket	77777 - 7777 777
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	
Diameter	
Stainless steel AISI 316L/1.4435	
DI 3 (PN 100/PN 230)	1C
DI 6	1D
DI 15	1E
Hastelloy C22/2.4602	
DI 3 (PN 100/PN 350)	2C
DI 6	2D
DI 15	2E
Pressure	
PN 16 (DI 6, DI 15)	A
PN 25 (DI 6, DI 15)	B
PN 40 (DI 6, DI 15)	C
PN 100 (DI 3, DI 6, DI 15)	D
PN 130 (DI 15, ½", AISI 316L/1.4404)	G
PN 200 (DI 15, ½", Hastelloy C22/2.4602)	K
PN 230 (DI 3, ¼", AISI 316L/1.4404)	L
PN 265 (DI 6, ¼", AISI 316L/1.4404)	M
PN 350 (DI 3, ¼", Hastelloy C22/2.4602)	N
PN 410 (DI 6, ¼", Hastelloy C22/2.4602)	Q
Class 150 (DI 6, DI 15)	R
Class 600 (DI 6, DI 15)	S
Process connection/flange	
Pipethread	
G ¼"	10
¼" NPT	11
G ½"	12
½" NPT	13
G 1	14
1" NPT	15
G 2"	16
2" NPT	17
Flange EN1092-1 Form B	
DN 10 (PN 40/PN 100)	20
DN 15 (PN 40/PN 100)	21
DN 25 (PN 40/PN 100)	22
Flange ASME/ANSI B 16.5	
½" (class 150/class 600)	30

Selection and Ordering data	Article No. Ord. code
SITRANS F C sensors	7ME 4100 -
MASS 2100 without heating jacket	77777 - 7777 777
Dairy screwed connection DIN 11851	
DN 10 (PN 40)	40
DN 15 (PN 40)	41
DN 25 (PN 40)	42
Dairy clamp connection ISO 2852 (DIN32676)	
Cone down the sensor in order to obtain self-drainage with connectors ISO 2852	
25 mm (PN 16)	50
38 mm (PN 16)	51
51 mm (PN 16)	52
Dairy screwed connection ISO 2853	
25 mm (PN 16)	60
38 mm (PN 16)	61
51 mm (PN 16)	62
Configuration/calibration type	
Standard	1
Density	2
Brix/Plato	3
Fraction (specification required)	9
Transmitter compact mounted on sensor	
No transmitter, sensor and adapter only	A
MASS 6000, Ex d, stainless steel enclosure, 1 current, 1 freq./pulse and 1 relay output, 24 V AC/DC with Ex d e ib [ia Ga] IIC T4 Gb Ex-approval	B
MASS 6000, IP67, Polyamide enclosure, cable glands M20, 1 current, 1 freq./pulse and 1 relay output, 24 V AC/DC	C
MASS 6000, IP67, Polyamide enclosure, cable glands M20, 1 current, 1 freq./pulse and 1 relay output, 115/230 V AC 50/60 Hz	D
MASS 6000, IP67, Polyamide enclosure, cable glands ½" NPT, 1 current, 1 freq./pulse and 1 relay output, 24 V AC/DC	E
MASS 6000, IP67, Polyamide enclosure, cable glands ½" NPT, 1 current, 1 freq./pulse and 1 relay output, 115/230 V AC 50/60 Hz	F
Cable	
No cable	A
Cable with one M20 connector and one end for terminal connect	B
• 5 m (16.4 ft)	B
• 10 m (32.8 ft)	C
• 25 m (82 ft)	D
• 50 m (164 ft)	E
• 75 m (246 ft)	F
• 150 m (492 ft)	G
Calibration/verification	
Standard calibration 3 flow x 2 points	1
Stand. calibration matched pair 3 flow x 2 points	2
Accredited calibration matched pair 5 flow x 2 points (ISO 17025)	3
Extended calibration customer-specified select Y60, Y61, Y62 or Y63 (see additional information)	8

Flow Measurement

SITRANS F C

SITRANS F C sensor MASS 2100 DI 3, DI 6 and DI 15 with SITRANS MASS 6000 and SIFLOW FC070 transmitter

Dairy MLFB example

MASS 2100

Sensor size DI 15,
AISI 316L/1.4435

PN 40

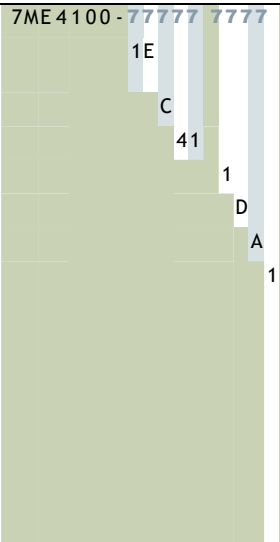
DN 15 connector

Standard configuration/calibration

MASS 6000 IP67 compact mounted

No cable

Standard calibration, 3 flow x 2 points



Selection and Ordering data

Order code

Additional information

Please add "-Z" to Article No. and specify Order code(s) and plain text.

Pressure testing certificate PED: 2014/68/EU

Material certificate EN 10204-3.1

NDT- X-ray inspection report: EN 1435

DI3 sensor only: NDT-Penetrant inspection report ISO 3452.

Factory certificate according to EN 10204 2.2

Factory certificate according to EN 10204 2.1

Tag name plate, stainless steel

Tag name plate, plastic

Customer-specific transmitter setup

Customer-specified, matched pair (5 x 2)

Customer-specified calibration (5 x 2)

Customer-specified, matched pair (10 x 1)

Customer-specified calibration (10 x 1)

Cleaned for oil and grease

Special version

C11

C12

C13

C14

C15

Y17

Y18

Y20

Y60

Y61

Y62

Y63

Y80

Y99

Operating instructions for

SITRANS F C MASS 2100 DI 3 to DI 40

Description

Article No.

• English

A5E02896535




• German


A5E03073519

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




Selection and Ordering data

Accessories

Description	Dimension	Article No.
Mating parts for hygienic fittings DIN 11851 (AISI 316L)		
Includes: • 2 unions • 2 mating parts (for welding in) • 2 EPDM gaskets		
	DN 10	FDK:085U1016
	DN 15	FDK:085U1017
	DN 25	FDK:085U1019
Mating parts for hygienic clamp ISO 2852 (AISI 316L)		
Includes: • 2 clamps • 2 mating parts • 2 EPDM gaskets		
	25 mm	FDK:085U1029
2 EPDM gaskets with collar for mounting set DIN 11851		
	DN 10	FDK:085U1006
	DN 15	FDK:085U1007
	DN 25	FDK:085U1009

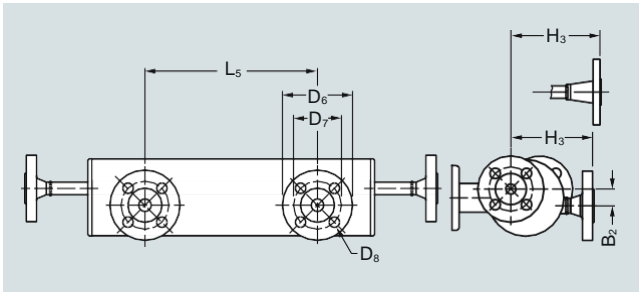
Description	Length	Article No.
Cable with M20 connector Standard blue cable between MASS 6000 and MASS 2100, 5 x 2 x 0.34 mm ² twisted and screened in pairs.		
	5 m (16.4 ft)	FDK:083H3015
	10 m (32.8 ft)	FDK:083H3016
Cable mounted with one M20 con- nector and one end for terminal connections.	25 m (82 ft)	FDK:083H3017
Temperature range -20 ... +110 °C (-4 ... +230 °F)	50 m (164 ft)	FDK:083H3018
	75 m (246 ft)	FDK:083H3054
	150 m (492 ft)	FDK:083H3055

Spare parts

Description	Article No.
Adapter for MASS 2100 M20 electrical adapter for MASS 2100 DI 3, 6, 15, 25 and 40	FDK:083L8889
	
M20 connector for cable mounting	FDK:083H5056
	
2 kB SENSORPROM unit, includ- ing programming (Sensor Serial No. and Article No. must be specified by ordering)	FDK:083H4410
	

SITRANS F C sensor MASS 2100 DI 3, DI 6 and DI 15 with SITRANS MASS 6000 and SIFLOW FC070 transmitter

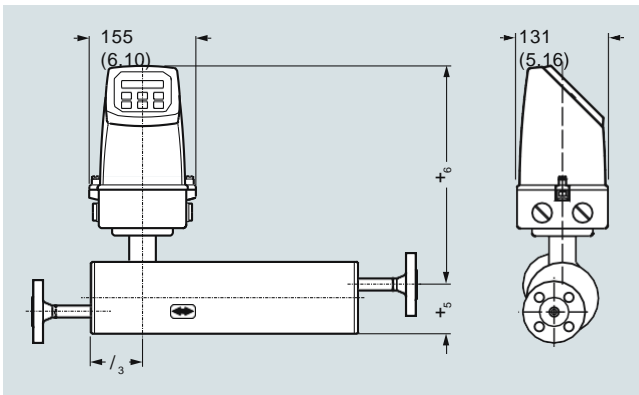
MASS 2100 sensor with "heating jacket"



Dimensions in mm (inch)

Sensor size	Connections heated			L5	H3	B2	D6	D7	D8
DI (inch)	Type	Pressure rating	Size	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)
DI 3 (1/8)	EN 1092-1	PN 40	DN 15	234 (9.21)	122 (4.8)	22 (0.87)	95 (3.74)	65.0 (2.56)	14.0 (0.55)
	ANSI B16.5	Class 150	½"	234 (9.21)	131.6 (5.18)	22 (0.87)	88.9 (3.5)	60.5 (2.38)	15.7 (0.62)
DI 6 (¼)	EN 1092-1	PN 40	DN 15	234 (9.21)	112 (4.41)	22.7 (0.89)	95 (3.74)	65.0 (2.56)	14.0 (0.55)
	ANSI B16.5	Class 150	½"	234 (9.21)	121.6 (4.79)	22.7 (0.89)	88.9 (3.5)	60.5 (2.38)	15.7 (0.62)
DI 15 (½)	EN 1092-1	PN 40	DN 15	234 (9.21)	126.5 (4.98)	31.5 (1.24)	95 (3.74)	65.0 (2.56)	14.0 (0.55)
	ANSI B16.5	Class150	½"	234 (9.21)	136.1 (5.36)	31.5 (1.24)	88.9 (3.5)	60.5 (2.38)	15.7 (0.62)

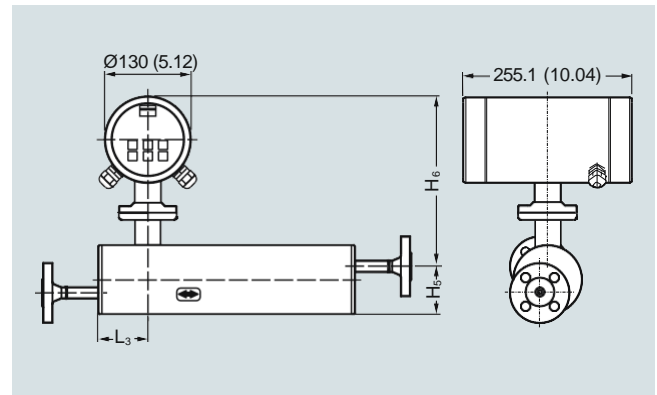
MASS 2100 and MASS 6000 IP67 compact version



MASS 2100 and MASS 6000 IP67 compact version, dimensions in mm (inch)

Sensor size [DI (inch)]	L ₃ [mm (inch)]	H ₅ [mm (inch)]	H ₆ [mm (inch)]	H ₅ + H ₆ [mm (inch)]
3 (1/8)	75 (2.95)	82 (3.23)	306 (12.04)	388 (15.28)
6 (¼)	62 (2.44)	72 (2.83)	316 (12.44)	388 (15.28)
15 (½)	75 (2.95)	87 (3.43)	326 (12.83)	413 (16.26)

MASS 2100 and MASS 6000 Ex d compact version



MASS 2100 and MASS 6000 Ex d compact version, dimensions in mm (inch)

Sensor size [DI (inch)]	L ₃ [mm (inch)]	H ₅ [mm (inch)]	H ₆ [mm (inch)]	H ₅ + H ₆ [mm (inch)]
3 (1/8)	75 (2.95)	82 (3.23)	247 (9.72)	329 (12.95)
6 (¼)	62 (2.44)	72 (2.83)	257 (10.12)	329 (12.95)
15 (½)	75 (2.95)	87 (3.43)	267 (10.51)	354 (13.94)