

Overview



The SITRANS F M MAGFLO MAG 5100 W is an electromagnetic flow sensor designed to meet ground water, drinking water, wastewater, sewage or sludge applications.

Benefits

- Available in sizes from DN 25 to DN 1200 (1" to 48")
- Available with connecting flanges EN 1092-1 (DIN 2501), ANSI, AWWA and AS.
- Hard lining guarantees consistent accuracy throughout the temperature and pressure range
- Soft elastomer facing provides high abrasion resistance.
- High grade stainless steel integrated grounding and measuring electrodes
- Increased low flow accuracy for water leak detection, due to coned liner design.
- Drinking water approvals
- Suitable for direct burial and constant flooding
- Built-in length according to ISO 13359
- Easy commissioning, SENSORPROM unit automatically uploads calibration values and settings.
- Designed that patented in-situ verification can be conducted. Using SENSORPROM fingerprint.

Application

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

- Water abstraction
- Water treatment
- Water distribution network (leak detection management)
- Custody transfer water meters
- Irrigation
- Waste water treatment
- Filtration plant (e.g. reverse osmosis and ultra filtration)
- Industrial water applications

Mode of operation

The flow measuring principle is based on Faradays law of electromagnetic induction where the sensor converts the flow into an electrical voltage proportional to the velocity of the flow.

Function

- Highly resistant to a wide range of chemicals
- Conforms to OIML R49 and ISO 4064
- Meets EEC directives: PED, 97/23/EC pressure directive for EN1092-1 flanges
- Individually calibrated on UKAS EN 45001 accredited calibration facility with a $\pm 0.1\%$ uncertainty.
- Simple on site upgrade to IP68 / NEMA 6P of a standard sensor.

Integration

The complete flow meter consists of a flow sensor and an associated transmitter SITRANS F M MAGFLO MAG 5000, MAG 6000 or MAG 6000 I.

The flexible communication concept USM II simplifies integration and update to a variety of fieldbus systems, e.g. HART, PROFIBUS DP & PA, DeviceNet, CANopen, MODBUS RTU/RS485

SITRANS F flowmeters

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MAGFLO MAG 5100 W

Technical specifications

Design	Straight	Coned one size	Straight
Nominal size	DN 25 ... 40 (1" ... 1½")	DN 50 ... 300 (2" ... 12")	DN 350 ... 1200 (14" ... 48")
Measuring principle	Electromagnetic induction		
Excitation frequency	12.5 Hz	<ul style="list-style-type: none"> • 50 ... 60 mm (2" ... 2½"): 12.5 Hz • 80 ... 150 mm (3" ... 6"): 6.25 Hz • 200 ... 300 mm (8" ... 12"): 3.125 Hz 	3.125 Hz

Input

Flanges			
• EN 1092-1			
- Standard	PN 40 (580 psi)	<ul style="list-style-type: none"> • 50 ... 150 mm: PN 16 (2" ... 6": 230 psi) • 200 ... 300 mm: PN 10 (8" ... 12": 145 psi) 	PN 10 (145 psi)
- Option	--	200 ... 300 mm: PN 16 (8" ... 12": 230 psi)	PN 16 (230 psi)
• ANSI B16.5	Class 150 lb	Class 150 lb ~20 bar (290 psi)	--
• AWWA C-207	--	--	28" ... 48": Class D

Rated Operation conditions

<u>Ambient conditions</u>			
Ambient temperature			
• Remote transmitter	-40 ... +100 °C (-40 ... +212 °F)		
• Compact transmitter MAG 5000/6000	-20 ... +50 °C (-4 ... +122 °F)		
• Transmitter MAG 6000 I	-20 ... +60 °C (-4 ... +140 °F)		
Operating pressure	0.01 ... 40 bar (0.15 ... 580 psi)	0.03 ... 20 bar ²⁾ (0.44 ... 290 psi)	0.01 ... 16 bar (0.15 ... 232 psi)
Enclosure rating			
• Standard	IP67 to EN 60529 / NEMA 4X/6 (1 mH ₂ O for 30 minutes)		
• Option	IP68 to EN 60529 / NEMA 6P (10 mH ₂ O continuously)		
Pressure drop at 3 m/s (10 ft/s)	As straight pipe	Max. 25 mbar (0.36 psi)	As straight pipe
<u>Medium conditions</u>			
Temperature of medium	-5 ... +70 °C ³⁾ (23 ... +160 °F)		
EMC	89/336 EEC		

Design

Weight	See dimensional drawings		
Material			
• Housing and flanges	Carbon steel		
• Measuring pipe	AISI 304 (1.4301)	Hard elastomer (hard rubber)/Carbon steel	AISI 304 (1.4301)
• Liner	Hard elastomer (hard rubber)	Hard elastomer (hard rubber)	Hard elastomer (hard rubber)
• Electrodes	AISI 316 Ti (1.4571)		
• Grounding electrodes standard	AISI 316 Ti (1.4571)		

Certificates and approvals

Liner approvals	WRc, NSF pending
Approvals	PED – 97/23 EC ¹⁾

- 1) For sizes greater than 600 mm (24") PED conformity is available as a cost added option. The basic unit will only carry the LVD (Low Voltage Directive) and EMC approval.
- 2) 10 bar at temperature below 5 °C (40 °F)
- 3) Peak temperature up to +90 °C (194 °F) in periods < 1 hour

The effect of temperature on working pressure MAG 5100 W

Pressure in bar (psi)

Sizes 25 mm, 40 mm and > 300 mm (1", 1½" and > 12")

Flange spec.	Flange rating	Temperature			
		-5 °C (23 °F)	10 °C (50 °F)	50 °C (122 °F)	90 °C (194 °F)
EN 1092-1	PN 10	10.0 (145)	10.0 (145)	9.7 (141)	9.4 (136)
	PN 16	16.0 (232)	16.0 (232)	15.5 (225)	15.1 (219)
	PN 40	40.0 (580)	40.0 (580)	38.7 (561)	37.7 (547)
ANSI B16.5	150 lbs	19.7 (286)	19.7 (286)	19.3 (280)	18.0 (261)
AWWA C-207	Class D	10.3 (150)	10.3 (150)	10.3 (150)	10.3 (150)

Size 50 mm to 300 mm (2" to 12")

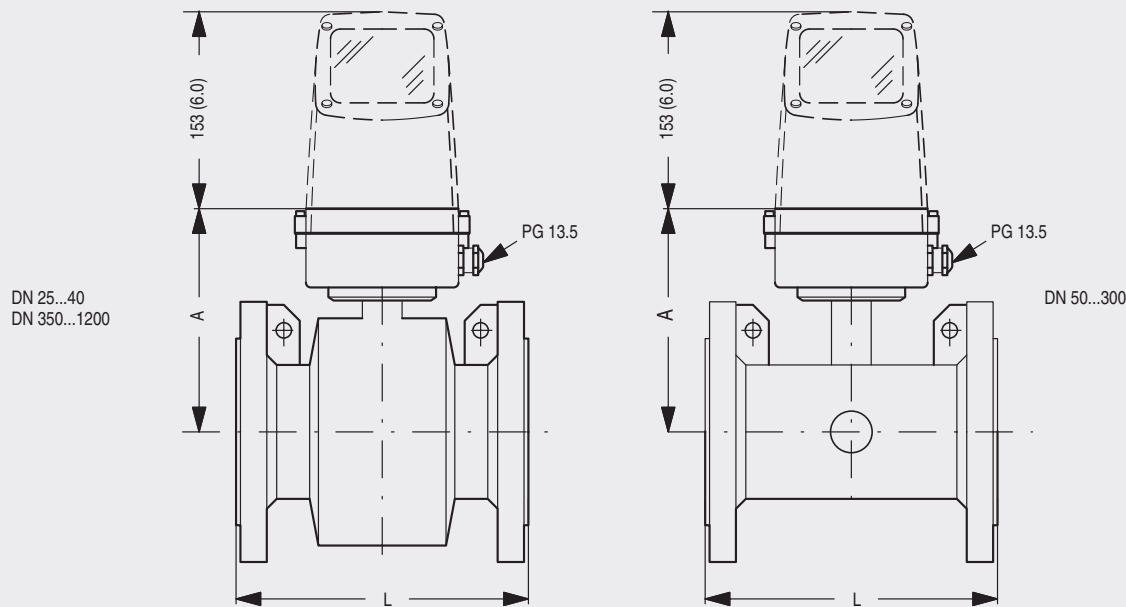
EN 1092-1	PN 10	10.0 (145)	10.0 (145)	10.0 (145)	8.2 (119)
	PN 16	10.0 (145)	16.0 (232)	16.0 (232)	13.2 (191)
	PN 40 (MWP 20 bar (290 psi))	10.0 (145)	40.0 (580)	40.0 (580)	32.9 (477)
ANSI B16.5	150 lbs	10.0 (145)	19.7 (286)	19.7 (286)	16.2 (235)

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SITRANS F M

MAGFLO MAG 5100 W

Dimensional drawings



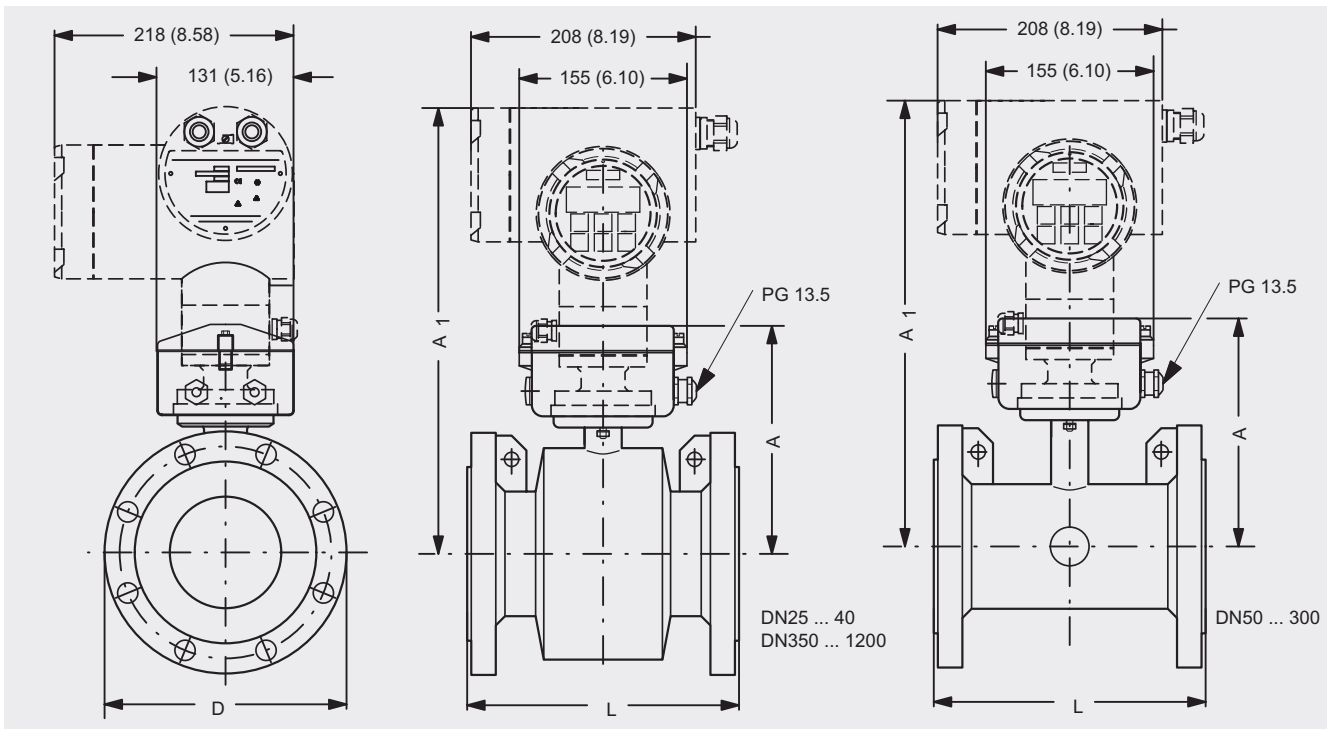
Nominal size		A		L									
				PN 10		PN 16		PN 40		Class 150		AWWA	
[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]
25	1	187	7.4	-	-	-	-	200	7.9	200	7.9	-	-
40	1½	197	7.8	-	-	-	-	200	7.9	200	7.9	-	-
50	2	188	7.4	-	-	200	7.9	-	-	200	7.9	-	-
65	2½	194	7.6	-	-	200	7.9	-	-	200	7.9	-	-
80	3	200	7.9	-	-	200	7.9	-	-	200	7.9	-	-
100	4	207	8.1	-	-	250	9.8	-	-	250	9.8	-	-
125	5	217	8.5	-	-	250	9.8	-	-	250	9.8	-	-
150	6	232	9.1	-	-	300	11.8	-	-	300	11.8	-	-
200	8	257	10.1	350	13.8	350	13.8	-	-	350	13.8	-	-
250	10	284	11.2	450	17.7	450	17.7	-	-	450	17.7	-	-
300	12	310	12.2	500	19.7	500	19.7	-	-	500	19.7	-	-
350	14	362	14.3	550	21.7	550	21.7	-	-	550	21.7	-	-
400	16	387	15.2	600	23.6	600	23.6	-	-	600	23.6	-	-
450	18	418	16.5	600	23.6	600	23.6	-	-	600	23.6	-	-
500	20	443	17.4	625	24.6	625	24.6	-	-	680	26.8	-	-
600	24	494	19.4	750	29.5	750	29.5	-	-	820	32.3	-	-
700	28	544	21.4	875	34.4	875	34.4	-	-	-	-	875	34.4
750	30	571	22.5	-	-	-	-	-	-	-	-	937	36.9
800	32	606	23.9	1000	39.4	1000	39.4	-	-	-	-	1000	39.4
900	36	653	25.7	1125	44.3	1125	44.3	-	-	-	-	1125	44.3
1000	40	704	27.7	1250	49.2	1250	49.2	-	-	-	-	1250	49.2
	42	704	27.7	-	-	-	-	-	-	-	-	1250	49.2
1100	44	755	29.7	-	-	-	-	-	-	-	-	1375	54.1
1200	48	810	31.9	1500	59.1	1500	59.1	-	-	-	-	1500	59.1

- means not available

SITRANS F flowmeters

SITRANS F M

MAGFLO MAG 5100 W



4

Nominal size		A		A ₁		L		PN 10		PN 16		PN 40		Class 150		AWWA	
[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]
25	1	187	7.4	340	13.4	-	-	-	-	200	7.9	200	7.9	-	-	-	-
40	1½	197	7.8	350	13.8	-	-	-	-	200	7.9	200	7.9	-	-	-	-
50	2	188	7.4	341	13.4	-	-	200	7.9	-	-	200	7.9	-	-	-	-
65	2½	194	7.6	347	13.7	-	-	200	7.9	-	-	200	7.9	-	-	-	-
80	3	200	7.9	353	13.9	-	-	200	7.9	-	-	200	7.9	-	-	-	-
100	4	207	8.1	360	14.2	-	-	250	9.8	-	-	250	9.8	-	-	-	-
125	5	217	8.5	370	14.6	-	-	250	9.8	-	-	250	9.8	-	-	-	-
150	6	232	9.1	385	15.2	-	-	300	11.8	-	-	300	11.8	-	-	-	-
200	8	257	10.1	410	16.1	350	13.8	350	13.8	-	-	350	13.8	-	-	-	-
250	10	284	11.2	437	17.2	450	17.7	450	17.7	-	-	450	17.7	-	-	-	-
300	12	310	12.2	463	18.2	500	19.7	500	19.7	-	-	500	19.7	-	-	-	-
350	14	362	14.3	515	20.3	550	21.7	550	21.7	-	-	550	21.7	-	-	-	-
400	16	387	15.2	540	21.3	600	23.6	600	23.6	-	-	600	23.6	-	-	-	-
450	18	418	16.5	571	22.5	600	23.6	600	23.6	-	-	600	23.6	-	-	-	-
500	20	443	17.4	596	23.5	625	24.6	625	24.6	-	-	680	26.8	-	-	-	-
600	24	494	19.4	647	25.5	750	29.5	750	29.5	-	-	820	32.3	-	-	-	-
700	28	544	21.4	697	27.4	875	34.4	875	34.4	-	-	-	-	-	-	875	34.4
750	30	571	22.5	724	28.5	-	-	-	-	-	-	-	-	-	-	937	36.9
800	32	606	23.9	759	29.9	1000	39.4	1000	39.4	-	-	-	-	-	-	1000	39.4
900	36	653	25.7	806	31.7	1125	44.3	1125	44.3	-	-	-	-	-	-	1125	44.3
1000	40	704	27.7	857	33.7	1250	49.2	1250	49.2	-	-	-	-	-	-	1250	49.2
	42	704	27.7	857	33.7	-	-	-	-	-	-	-	-	-	-	1250	49.2
1100	44	755	29.7	908	35.7	-	-	-	-	-	-	-	-	-	-	1375	54.1
1200	48	810	31.9	963	37.9	1500	59.1	1500	59.1	-	-	-	-	-	-	1500	59.1

- means not available

SITRANS F flowmeters

SITRANS F M

MAGFLO MAG 5100 W

Nominal size		PN 10		PN 16		PN 40		Class 150		AWWA	
[mm]	[inch]	[kg]	[lb]	[kg]	[lb]	[kg]	[lbs]	[kg]	[lb]	[kg]	[lb]
25	1	-	-	-	-	4	9	4	9	-	-
40	1½	-	-	-	-	7	15	6	13	-	-
50	2	-	-	9	20	-	-	8	20	-	-
65	2½	-	-	10.7	24	-	-	11	24	-	-
80	3	-	-	11.6	26	-	-	13	28	-	-
100	4	-	-	15.2	33	-	-	19	41	-	-
125	5	-	-	20.4	45	-	-	24	52	-	-
150	6	-	-	26	57	-	-	29	64	-	-
200	8	48	106	48	106	-	-	56	124	-	-
250	10	64	141	69	152	-	-	79	174	-	-
300	12	76	167	86	189	-	-	110	243	-	-
350	14	100	220	116	255	-	-	131	289	-	-
400	16	127	280	144	317	-	-	165	364	-	-
450	18	152	335	178	393	-	-	176	388	-	-
500	20	184	405	232	512	-	-	235	518	-	-
600	24	258	568	343	736	-	-	345	761	-	-
700	28	315	693	350	772	-	-	-	-	309	681
750	30	-	-	-	-	-	-	-	-	480	1058
800	32	410	904	442	975	-	-	-	-	421	928
900	36	512	1129	550	1213	-	-	-	-	539	1188
1000	40	650	1433	732	1614	-	-	-	-	670	1477
	42	-	-	-	-	-	-	-	-	700	1544
1100	44	-	-	-	-	-	-	-	-	1100	2426
1200	48	990	2183	1106	2439	-	-	-	-	1030	2271

- means not available

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

SITRANS F flowmeters

SITRANS F M

MAGFLO MAG 5100 W

4

Selection and Ordering data	Order No.
SITRANS F M Flowsensor MAGFLO MAG 5100 W	7 ME 6 5 1 0 -
Hard rubber liner, AISI 316 Ti electrodes, carbon steel flanges	1 1 - 1 A 0
Diameter	
DN 25 (1")	▶ 2 D
DN 40 (1½")	▶ 2 R
DN 50 (2")	▶ 2 Y
DN 65 (2½")	▶ 3 F
DN 80 (3")	▶ 3 M
DN 100 (4")	▶ 3 T
DN 125 (5")	▶ 4 B
DN 150 (6")	▶ 4 H
DN 200 (8")	▶ 4 P
DN 250 (10")	▶ 4 V
DN 300 (12")	▶ 5 D
DN 350 (14")	▶ 5 K
DN 400 (16")	▶ 5 R
DN 450 (18")	▶ 5 Y
DN 500 (20")	▶ 6 F
DN 600 (24")	▶ 6 P
DN 700 (28")	▶ 6 Y
DN 750 (30")	7 D
DN 800 (32")	7 H
DN 900 (36")	7 M
DN 1000 (40")	7 R
DN 1050 (42")	7 U
DN 1100 (44")	7 V
DN 1200 (48")	8 B
Flange norm and pressure rating	
to <u>EN 1092-1</u>	
PN 10 (DN 200 ... 1200/8" ... 48")	▶ B
PN 16 (DN 50 ... 1200/2" ... 48")	▶ C
PN 16, non PED (DN 700 ... 1200/28" ... 48")	D
PN 40 (DN 25 ... 40/1" ... 1½")	▶ F
to <u>ANSI B16.5</u>	
class 150 (1" ... 24")	▶ J
to <u>AWWA</u>	
C-207 (28" ... 1200")	L
to <u>AS 4087</u>	
class 14	N
Transmitter	
No transmitter	▶ A
MAG 6000 industry, 18 ... 220 V, standard (no communication)	C

▶ Available ex stock.

Additional information	Order code
Please add "-Z" to Order No. and specify Order code(s) and plain text.	
Customer specific converter setup	Y20
Tag name made, stainless steel fixed with SS wire (add plain text)	Y17
Tag name plate, plastic (self adhesive)	Y18
Factory certificate according to EN 10204-2.1	C15
Factory certificate according to EN 10204-2.2	C14
Power cable wired, specify cable order no.	Y40
Junction box IP68 NEMA 4X/6P with wired cable	Y41
Customer specific test	Y90
Special version with order no/date (add desired text)	Y99

Description	Order No.	Symbol
HART (for MAG 6000 I/Ex)	FDK:085U0321	
MODBUS RTU/RS485	FDK:085U0234	
PROFIBUS PA	FDK:085U0232	
PROFIBUS DP	FDK:085U0230	
CANopen	FDK:085U0228	
DeviceNet	FDK:085U0229	

