

SITRANS F flowmeters

SITRANS F M

System information SITRANS F M electromagnetic flowmeters

Overview

SITRANS F M electromagnetic flowmeters are designed for measuring the flow of electrically conductive mediums.

The full SITRANS F M program consists of three different types of flowmeters making Siemens unique in that it covers all possible applications where electromagnetic flowmeters are a suitable match:

Modular pulsed DC flowmeters cover all ordinary applications within all industries. The wide variety of combinations and versions from the modular system means that ideal adaptation is possible to each measuring task and application.



SITRANS F M products

Battery-operated water meters (fully electronic) are the perfect match for drinking water applications like network distribution, revenue metering and irrigation where mains power is not available. In addition, it complies with the MID (EU) and OIML R49 water meter standards and has the MCERTS certificate.



SITRANS F M MAG 8000

High-powered flowmeters are used for difficult applications where other flowmeters can't stand up to the task. This flowmeter can handle liquids and heavy slurries in industries such as mining, cement and pulp & paper.



SITRANS F M 911/TRANSMAG 2

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Benefits



Greater flexibility

- Wide product program
- Compact or remote installation using the same transmitter and sensor
- USM II communication platform for easy integration with all systems

Easier commissioning of MAG 5000, 6000, 6000 I

All SITRANS F M pulsed DC electromagnetic flowmeters feature a unique SENSORPROM memory unit which stores sensor calibration data and transmitter settings for the lifetime of the product.

At commissioning the flowmeter commences measurement without any initial programming.

The factory settings matching the sensor size are stored in the SENSORPROM unit. Also customer specified settings are downloaded to the unit. Should the transmitter be replaced, the new transmitter will upload all previous settings and resume measurement without any need for reprogramming.

Further, the „fingerprint“ used in connection with the SITRANS F M Vericator is stored during the initial sensor calibration.

Easier service

Transmitter replacement requires no programming. SENSORPROM automatically updates all settings after initialization.

Room for growth

USM II the Universal Signal Module with "plug & play" simplicity, makes it easy to access and integrate the flow measurement with almost any system and bus-protocol and it ensures the flowmeter will be easy to upgrade to future communication/bus platforms.

Application

Electromagnetic flowmeters are suitable for measuring the flow of almost all electrically conductive liquids, pastes and slurries.

A prerequisite is that the medium must have a minimum conductivity of 5 $\mu\text{S}/\text{cm}$. The temperature, pressure, density and viscosity have no influence on the result.

The main applications of the electromagnetic flowmeters can be found in the following sectors:

- Water and waste water
- Chemical and pharmaceutical industries
- Food and beverage industry
- Mining, aggregates and cements industries
- Pulp and paper industry
- Steel industry
- Power; utility and chilled water industry

The wide variety of combinations and versions from the modular system means that ideal adaptation is possible to each measuring task.

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Please see Product selector on the Internet, because some constraints might be related to some of the features:

www.pia-selector.automation.siemens.com



MAG 3100	MAG 3100 HT	MAG 3100 P	MAG 5100 W	MAG 1100	MAG 1100 HT	MAG 1100 F	911/E	MAG 8000/MAG 8000 CT	
7ME6310	7ME6320	7ME6340	7ME6520	7ME6580	7ME6110	7ME6120	7ME6140	7ME6510	7ME6810 7ME6820

Industry

Water / waste water	XX		X	XXX	XXX	XX				XXX
Chemical	XXX	XXX	XXX	X	X	XXX	XXX	XX		X
Pharmaceutical	XX	XX	XX	X	X	XX	XX	XXX		X
Food & beverage	X	X	X	X	X	XX		XXX		X
Mining, aggregates & cement	XXX			X	X	XX			XXX	X
HPI	XX	X	XX	X	X	XX	X			X
Other	XX	XX	XX	XX	XX	XX	XX	XX	XXX	X

Design

Compact	●	●	●	●	●	●		●		●
Remote	●	●	●	●	●	●	●	●	●	●
Constant field (DC)	●	●	●	●	●	●	●	●		●
Alternating field (AC)									●	
Battery-operated constant field (DC)										●

Size

DN 2 (1/12")						●				
DN 3 (1/8")						●				
DN 6 (1/4")						●				
DN 10 (3/8")						●		●		
DN 15 (1/2")	●	●	●			●	●	●	●	
DN 20 (3/4")									●	
DN 25 (1")	●	●	●	●	●	●	●	●	●	●
DN 32 (1 1/4")								●	●	
DN 40 (1 1/2")	●	●	●	●	●	●	●	●	●	●
DN 50 (2")	●	●	●	●	●	●	●	●	●	●
DN 65 (2 1/2")	●	●	●	●	●	●	●	●	●	●
DN 80 (3")	●	●	●	●	●	●	●	●	●	●
DN 100 (4")	●	●	●	●	●	●	●	●	●	●
DN 125 (5")	●	●	●	●	●				●	●
DN 150 (6")	●	●	●	●	●				●	●
DN 200 (8")	●	●	●	●	●				●	●
DN 250 (10")	●	●	●	●	●				●	●
DN 300 (12")	●	●	●	●	●				●	●
DN 400 (16")	●			●	●				●	●
DN 450 (18")	●			●	●				●	●
DN 500 (20")	●			●	●				●	●
DN 600 (24")	●			●	●				●	●
DN 700 (28")	●			●	●					●
DN 750 (30")	●			●	●					●
DN 800 (32")	●			●	●					●
DN 900 (36")	●			●	●					●
DN 1000 (40")	●			●	●					●
DN 1050 (42")	●			●	●					●
DN 1100 (44")	●			●	●					●
DN 1200 (48")	●			●	●					●
DN 1400 (54")	●			●	●					●
DN 1500 (60")	●			●	●					●
DN 1600 (66")	●			●	●					●
DN 1800 (72")	●			●	●					●
DN 2000 (78")	●			●	●					●

● = available, X = can be used, XX = often used, XXX = most often used

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	MAG 3100	MAG 3100 HT	MAG 3100 P	MAG 5100 W		MAG 1100	MAG 1100 HT	MAG 1100 F	911/E	MAG 8000/ MAG 8000 CT
	7ME6310	7ME6320	7ME6340	7ME6520	7ME6580	7ME6110	7ME6120	7ME6140	7ME5610	7ME6810 7ME6820

Process connection

Wafer design						●	●			
Sanitary process connections								●		
Flanges	●	●	●	●	●				●	●

Flange norms

EN 1092-1	●	●	●	●	●				●	●
ANSI B 16.5 class 150	●	●	●	●	●				●	●
ANSI B 16.5 class 300	●	●							●	
AWWA class D	●			●	●				●	●
AS 2129	●	●								
AS 4087, PN 16	●	●		●	●					●
AS 4087, PN 21	●	●								
AS 4087, PN 35	●	●								
JIS 10K	●	3)			●				●	
JIS 20K	●									

Pressure rating ¹⁾

PN 6	●				●					
PN 10	●	●	●	●	●				●	●
PN 16	●	●	●	●	●	●		●	●	●
PN 25	●	●							●	
PN 40	●	●	●	●	●	●	●	●	●	●
PN 63	●									
PN 100	●									

Accuracy

0.2%	●	●	●	●	●	●	●	●		●
0.4%	●	●	●	●	●	●	●	●		●
0.5%									●	

Grounding electrodes, incl. ²⁾

	●			●	●				(●)	●
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Cable glands

M20	●	●	●	●	●	●	●	●	●	●
½" NPT	●	●	●	●	●	●	●	●	●	

● = available

¹⁾ Pressure may be limited by the liner material chosen

²⁾ Not for PTFE and PFA liner and tantalum/platinum electrodes and PN 100.
For 911/E grounding electrodes are optional

³⁾ On request

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MAG 3100	MAG 3100 HT	MAG 3100 P	MAG 5100 W		MAG 1100	MAG 1100 HT	MAG 1100 F	911/E	MAG 8000/ MAG 8000 CT
7ME6310	7ME6320	7ME6340	7ME6520	7ME6580	7ME6110	7ME6120	7ME6140	7ME5610	7ME6810 7ME6820

Materials / temperature:

Liner material / max. temperatures

NBR Hard Rubber: 70 °C (158 °F)				●					
EPDM: 70 °C (158 °F)	●			●					●
Neoprene: 70 °C (158 °F)	●							●	
PTFE: 100 °C (212 °F)	●								
PTFE: 130 °C (266 °F)		●	●					●	
PTFE: 180 °C (356 °F)		●						(●) ⁴⁾	
Ebonite Hard Rubber: 95 °C (203 °F)	●			● ⁷⁾				●	
Linatex: 70 °C (158 °F)	●							●	
Ceramic: 150 °C (302 °F) ⁶⁾					●		●		
Ceramic: 200 °C (392 °F)						●			
PFA: 100 °C (212 °F)	●								
PFA: 150 °C (302 °F)		●	●			●		●	
Novolak: 130 °C (266 °F)								●	

Electrodes

S/S AISI 316 Ti	●	●						●	
Hastelloy C	●	●	●	●	●	●		●	●
Platinum	●	●				●	●	●	
Titanium	●	●						●	
Tantalum	●	●						●	

Flange/housing material

Carbon steel	●	●	●	●	●				●	●
Stainless steel / carbon steel	●	●							●	
Polished stainless steel	●	●				●	●	●		

● = available

⁴⁾ 150 °C (302 °F)

⁶⁾ ATEX: 180 °C (356 °F)

⁷⁾ 70 °C (158 °F)

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7ME6310	7ME6320	7ME6340	7ME6520	7ME6580	7ME6110	7ME6120	7ME6140	7ME5610	7ME6810 7ME6820

Approvals (Order as specials except for MAG 8000 CT version):

Custody transfer

Cold water - MI 001 (EU)				•						•
Cold water - DANAK TS 22.36.001	•		•							
Cold water pattern approval - OIML R 49 (Denmark)				•						•
Cold water pattern approval PTB (Germany)	•		•	•		•		•		•
Heat meter pattern approval - OIML R 75 (Denmark)	•	•	•			•	•			
Hot water pattern approval - PTB (Germany)	•	•	•			•	•	•		
Other media than water pattern approval - OIML R 117 (Denmark)	•		•			•		•		

Hazardous areas

ATEX - 2 GD Zone 1	•	•	•			•	•	•		
FM Class 1, Zone 1	•	•	•							
CSA Class 1, Zone 1	•	•	•							
IEC Ex Zone 1	•	•	•							
FM - class 1, div 2 / Zone 2	•	•	•	•	•	•	•	•		
CSA - class 1, div 2 / Zone 2	•	•	•							

Hygienic

EHEDG								•		
3A								•		

Drinking water

WRAS (WRc) - (UK)	•			• ⁴⁾	•					•
ANSI / NSF 61 (US)	• ⁵⁾			•	• ⁶⁾					•
ACS (FR) EPDM liner	•			•						•
Belgaqua (B) EPDM liner	•			•						•
DVGW-W270 (D) EPDM liner	•			•						•
Mcert (UK environmental)	• ⁷⁾			• ⁴⁾						•

Other

GOSS / GOST (Russia)	•	•	•	•		•	•	•		•
CRN (Canada)	•	•		• ³⁾		• ¹⁾		• ¹⁾		
Other national approvals, see internet	•	•	•	•	•	•	•	•	•	•

Verificator compatible²⁾

	•	•	•	•	•	•	•	•		
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• = available

¹⁾ Only PFA liner.

²⁾ Only for MAG 5000 and MAG 6000 transmitters.

³⁾ Only DN 50 ... 300/2" ... 12".

⁴⁾ EPDM liner

⁵⁾ Only EPDM with Hastelloy electrodes

⁶⁾ Pending

⁷⁾ EPDM or PTFE liner with AISI 316 or Hastelloy electrodes.

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MAG 5000	MAG 6000	MAG 6000 I	MAG 6000 I Ex d	MAG 6000 + Ex Safety barrier	TRANSMAG 2	MAG 8000/ MAG 8000 CT
7ME6910	7ME6920	7ME6930	7ME6930	7ME6920	7ME5034	7ME6810 7ME6820

Industry

Water / waste water	XXX	XXX	XX	X		X	XXX
Chemical	X	XX	XX	XXX	X		X
Pharmaceutical	X	XXX	XX	XXX	X		X
Food & beverage	XX	XXX	XX				X
Mining, aggregates & cement	XX	X	XX	X		XXX	X
HPI	X	X	X	XX			X
Other	XX	XX	XX	XX		X	X

Design

Compact	●	●	●	●			●
Remote	●	●	●	●	●	●	●
Constant field (DC)	●	●	●	●	●		●
Alternating field (AC)						●	
Battery-operated constant field (DC)							●

Enclosure transmitter

Polyamide, IP67	●	●					
Die-cast aluminium			●	●		●	
Stainless steel		●					● ¹⁾
19" rack	●	●			●		
Back of panel	●	●			●		
Panel mounting	●	●			●		
IP67 wall mounting	●	●	●	●	●		

Accuracy

0.2%		●	●	●	●		●
0.4%	●						●
0.5%						●	

Communication

HART	●	●	●	●	●	●	
PROFIBUS PA		●	●	●	●	●	
PROFIBUS DP		●	●		●		
FOUNDATION Fieldbus H1		●	●	●	●		
DeviceNet		●	●		●		
MODBUS RTU/RS 485		●	●		●		● ²⁾
Encoder interface module (Sensus protocol) for Itron 200WP radio							●

Batching

		●	●	●	●		
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Cable glands

M20	●	●	● ³⁾	●		●	●
½" NPT	●	●	●	●		●	

● = available, X = can be used, XX = often used, XXX = most often used

1) IP68 enclosure









2) Modbus RTU also as serial RS232

3) M25

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	MAG 5000	MAG 6000	MAG 6000 I	MAG 6000 I Ex d	MAG 6000 + Ex Safety barrier	TRANSMAG 2	MAG 8000/MAG 8000 CT
	7ME6910	7ME6920	7ME6930	7ME6930	7ME6920	7ME5034	7ME6810 7ME6820
Power supply							
24 V	● ¹⁾	● ¹⁾	●	●			● ^{1) 2)}
115 V - 230 V	●	●	●	●	●	●	● ²⁾
Battery							●
Approvals:							
<u>Custody transfer</u>							
Cold water - MI-001 (EU)	●	●					●
Cold water - DANAK TS 22.36.001	●	●					
Cold water pattern approval - OIML R 49 (Denmark)	●	●					●
Cold water pattern approval PTB (Germany)	●	●					●
Heat meter pattern approval - OIML R 75 (Denmark)		●					
Hot water pattern approval PTB (Germany)		●					
Other media than water pattern approval - OIML R 117 Denmark		●					
<u>Hazardous areas</u>							
ATEX - 2 GD zone 1				●	(●)		
FM Class 1, Zone 1				●			
CSA Class 1, Zone 1				●			
IECEx Zone 1				●			
FM - class 1 div 2	●	●	●				
CSA - class 1 div 2	●	●					
UL / C-UL- general safety	●	●			●		
<u>Other</u>							
C - tick (Australia)	●	●	●	●	●		
GOSS / GOST (Russia)	●						●
Other national approvals, see internet	●	●	●	●	●	●	●
Verifactor compatible	●	●					

● = available

¹⁾ 12/24 V AC/DC²⁾ Main power with battery backup

For more national approvals please check our internet page

<http://support.automation.siemens.com/WW/view/en/10806954/134200>

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Practical examples of ordering

SITRANS F M compact installation



Example

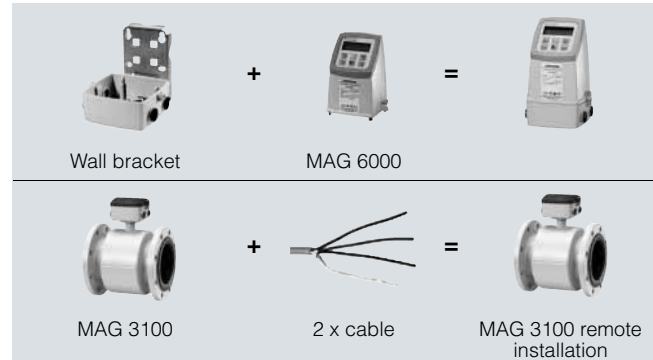
Sensor	7ME6310-3TC11-1JA1
Pipe size	DN 100
Liner	Neoprene
Electrodes	SS 316
Flanges	EN 1092-1, PN 16
Transmitter	MAG 6000, Polyamide, 115 ... 230 V AC
Accuracy	± 0.2 % ± 1 mm/s
Supply	230 V AC

Note:

MAG 5000/6000 transmitters and sensors are packed in separate boxes, the final assembly takes place during installation at the customer's place.

Please also see www.siemens.com/SITRANSFordering for practical examples of ordering

SITRANS F M remote installation



Example

Sensor	7ME6310-3TC11-1AA1
Pipe size	DN 100
Liner	Neoprene
Electrodes	SS 316
Flanges	EN 1092-1, PN 16
Transmitter	7ME6920-1AA10-0AA0
Accuracy	± 0.2 % ± 1 mm/s
Supply	230 V AC
Wall mounting kit	FDK-085U1018
Cable kit with sensor cable and electrode cable	A5E01181647