

## Flow Measurement

### SITRANS F M

#### MAG 8000 for abstraction and distribution network applications (7ME6810)

#### Overview



#### Benefits

##### Easy to install

- Compact or remote solution with factory mounted cable
- IP68/NEMA 6P enclosure. Sensor can be buried.
- Flexible power supply - internal or external battery pack or mains power supply with battery back-up possibilities

##### Long-term stability/Low cost of ownership

- No moving parts in a robust construction means less wear and tear
- Basic and advanced transmitter versions with different optional add-on communication modules fulfil various customer requirements for high cost efficiency
- Up to 0.2 % maximum uncertainty
- Bi-directional measurement with an outstanding low flow performance
- Up to 10 years maintenance-free operation in typical applications

##### Intelligent information, easy to access

- Advanced information on site
- Advanced statistics and diagnostics
- Optional high-performance 3G/UMTS module offers an efficient solution for remote measurement and monitor via wireless networks.

#### Technical specifications

Meter	
<b>Accuracy</b>	Standard calibration: ± 0.4 % of rate ± 2 mm/s Extended calibration DN 50 ... DN 300 (2" ... 12"): ± 0.2 % of rate ± 2 mm/s
<b>Low flow cut-off (default)</b>	15 mm/s
<b>Media conductivity</b>	Clean water > 20 µs/cm
<b>Temperature</b>	
Ambient	-20 ... +60 °C (-4 ... +140 °F)
Media	0 ... 70 °C (32 ... 158 °F)
Storage	-40 ... +70 °C (-40 ... +158 °F)
<b>Enclosure rating</b>	
Remote sensor	IP68 to EN 60529/NEMA 6P, 10 mH <sub>2</sub> O cont.
Compact version	IP68 to EN 60529/NEMA 6P, 3 mH <sub>2</sub> O for six months
<b>Certificates and approvals</b>	
Calibration	
• Standard calibration	2 x 25 % and 2 x 90 % (default)
• Special calibration	5-point calibration: 20 %, 40 %, 60 %, 80 %, 100 % of factory Q <sub>max</sub> 10-point calibration: ascending and descending at 20 %, 40 %, 60 %, 80 %, 100 % of factory Q <sub>max</sub> Matched-pair calibration: default, 5-point, 10-point
Material certificate EN 10204-3.1	Available when ordering together with meter <sup>1)</sup>
Drinking water approvals	<ul style="list-style-type: none"> <li>• NSF/ANSI Standard 61<sup>2)</sup> (cold water) USA</li> <li>• WRAS (BS 6920 cold water) UK</li> <li>• ACS Listed France</li> <li>• DVGW W270 Germany</li> <li>• Belgaqua (B)</li> <li>• MCERTS (GB)</li> </ul>
Fire Service Approvals	FM Fire Service Meter, (Class Number 1044) <sup>3)</sup>
Conformity	<ul style="list-style-type: none"> <li>• PED: 97/23EC<sup>4)</sup></li> </ul> For pressure/temperature curves see MAG 3100 on page 3/68. <ul style="list-style-type: none"> <li>• EMC: IEC/EN 61326</li> </ul>
<b>Sensor version</b>	DN 25 ... 1200 (1" ... 48")
<b>Sensor material</b>	Carbon steel ASTM A 105, with corrosion resistant two-component epoxy coating (150 µm/300 µm) Corrosivity category C4M, according to ISO 12944
<b>Measuring principle</b>	Electromagnetic induction
<b>Excitation frequency</b>	
Basic version	
• Battery-powered	DN 25 ... 150 (1" ... 6"): 1/15 Hz DN 200 ... 600 (8" ... 24"): 1/30 Hz DN 700 ... 1200 (28" ... 48"): 1/60 Hz
• Mains-powered	DN 25 ... 150 (1" ... 6"): 6.25 Hz DN 200 ... 600 (8" ... 24"): 3.125 Hz DN 700 ... 1200 (28" ... 48"): 1.5625 Hz

## MAG 8000 for abstraction and distribution network applications (7ME6810)

<b>Advanced version</b>	
• Battery-powered	DN 25 ... 150 (1" ... 6"): 1/15 Hz (adjustable up to 6.25 Hz; reduced battery lifetime) DN 200 ... 600 (8" ... 24"): 1/30 Hz (adjustable up to 3.125 Hz; reduced battery lifetime) DN 700 ... 1200 (28" ... 48"): 1/60 Hz (adjustable up to 1.5625 Hz; reduced battery lifetime)
• Mains-powered	DN 25 ... 150 (1" ... 6"): 6.25 Hz DN 200 ... 600 (8" ... 24"): 3.125 Hz DN 700 ... 1200 (28" ... 48"): 1.5625 Hz
<b>Flanges</b>	
EN 1092-1 (DIN 2501)	DN 25 and DN 40 (1" and 1½"): PN 40 (580 psi) DN 50 ... 150 (2" ... 6"): PN 16 (232 psi) DN 200 ... 1200 (8" ... 48"): PN 10 or PN 16 (145 psi or 232 psi)
ANSI 16.5 Class 150	1" ... 24": 20 bar (290 psi)
AWWA C-207	28" ... 48": PN 10 (145 psi)
AS 4087	DN 50 ... 1200 (2" ... 48"): PN 16 (232 psi)
<b>Liner</b>	EPDM
<b>Electrode and grounding electrodes</b>	Hastelloy C276/2.4819
<b>Grounding straps</b>	Grounding straps are premounted from the factory on each side of the sensor.

1) Has to be ordered with the meter. It is not possible to order the certificate afterwards.

2) Including Annex G

3) Not for sensors with 300 µm coating.

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

## Flow Measurement

### SITRANS F M

#### MAG 8000 for abstraction and distribution network applications (7ME6810)

Selection and Ordering data	Article No.
<b>SITRANS F M MAG 8000 water meter</b>	<b>7ME6810 -</b>
<p>Click on the Article No. for the online configuration in the PIA Life Cycle Portal.</p>	
<b>Diameter</b>	
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") <sup>1)</sup>	6 Y
DN 750 (30") <sup>1)</sup>	7 D
DN 800 (32") <sup>1)</sup>	7 H
DN 900 (36") <sup>1)</sup>	7 M
DN 1000 (40") <sup>1)</sup>	7 R
DN 1050 (42") <sup>1)</sup>	7 U
DN 1100 (44") <sup>1)</sup>	7 V
DN 1200 (48") <sup>1)</sup>	8 B
<b>Flange norm and pressure rating</b>	
<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
<u>ANSI B16.5</u>	
Class 150	J
<u>AWWA C-207</u>	
Class D (28" ... 48")	L
<u>AS4087</u>	
PN 16 (DN 50 ... 1200 (2" ... 48"))	N
<b>Sensor version</b>	
EPDM liner and Hastelloy electrodes, 150 µm coating	3
EPDM liner and Hastelloy electrodes, 300 µm coating	4
<b>Calibration</b>	
Standard ± 0.4 % of rate ± 2 mm/s	1
Extended ± 0.2 % of rate ± 2 mm/s DN 50... 300 (2" ... 12")	2
<b>Region version</b>	
Europe (m <sup>3</sup> , m <sup>3</sup> /h, 50 Hz)	1
USA (Gallon, GPM, 60 Hz)	2
Australia (MI, MI/d, 50 Hz)	3
<b>Transmitter type and installation</b>	
Basic version integral on sensor	A
Basic version, remote cables mounted on sensor with IP68/NEMA 6P plugs:	
• 5 m (16.4 ft)	B
• 10 m (32.8 ft)	C
• 20 m (65.6 ft)	D
• 30 m (98.4 ft)	E
Advanced version integral on sensor	K

Selection and Ordering data	Article No.
<b>SITRANS F M MAG 8000 water meter</b>	<b>7ME6810 -</b>
Advanced version, remote cables mounted on sensor with IP68/NEMA 6P plugs:	
• 5 m (16.4 ft)	L
• 10 m (32.8 ft)	M
• 20 m (65.6 ft)	N
• 30 m (98.4 ft)	P
<b>Communication interface</b>	
No additional "add-on" communication module installed	A
Serial RS 485 with Modbus RTU (Terminated as end device)	B
Serial RS 232 with Modbus RTU	C
Encoder interface with Sensus protocol	D
3G/UMTS communication module with remote antenna; 5 m (16.4 ft) cable	S
3G/UMTS communication module with analog inputs and remote antenna; 5 m (16.4 ft) cable	T
<b>Power supply</b>	
Internal battery (no battery included)	0
Internal battery pack installed <sup>2)</sup>	1
Power cable (1.5 m (4.9 ft)) with IP68/NEMA 6P plugs for external battery (no battery included)	2
12/24 V AC/DC power supply with battery backup and 3 m (9.8 ft) power cable for external connection (no battery included)	3
115 ... 230 V AC power supply with battery backup and 3 m (9.8 ft) power cable for external connection (no battery included)	4

- The Diameter DN 700 (28") to DN 1200 (48") is only available as remote transmitter type installation.
- Lithium batteries are subject to special transportation regulations according to United Nations "Regulation of Dangerous Goods, UN 3090 and UN 3091". Special transport documentation is required to observe these regulations. This may influence both transport time and costs.

#### Operating instructions for SITRANS F M MAG 8000

Description	Article No.
• English	<b>A5E03071515</b>
• German	<b>A5E00740986</b>

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

#### Operating instructions for MAG 8000 3G/UMTS communication module

Description	Article No.
• English	<b>A5E03644134</b>

## MAG 8000 for abstraction and distribution network applications (7ME6810)

Selection and Ordering data	Order code	Selection and Ordering data	Order code
<b>Additional information</b>		<b>Additional information</b>	
Please add “-Z” to Article No. and specify Order code(s) and plain text.		Please add “-Z” to Article No. and specify Order code(s) and plain text.	
<b>Certificate</b>		<b>Pulse set up</b>	
Material certificate according to EN 10204-3.1	<b>C12<sup>1)</sup></b>	G x 1000	<b>L49</b>
<b>Special calibration</b>		CF x 1000	<b>L50</b>
5-point calibration for DN 15 ... DN 200 <sup>2)</sup>	<b>D01</b>	AI	<b>L51</b>
5-point calibration for DN 250 ... DN 600 <sup>2)</sup>	<b>D02</b>	kl	<b>L52</b>
5-point calibration for DN 700 ... DN 1200 <sup>2)</sup>	<b>D03</b>	BBL42 (US oil barrel, 1 barrel = 42 US gallons)	<b>L54</b>
10-point calibration for DN 15 ... DN 200 <sup>3)</sup>	<b>D06</b>	<b>Data logger set up (default month logging)</b>	
10-point calibration for DN 250 ... DN 600 <sup>3)</sup>	<b>D07</b>	DataloggerInterval = Daily	<b>M31</b>
10-point calibration for DN 700 ... DN 1200 <sup>3)</sup>	<b>D08</b>	DataloggerInterval = Weekly	<b>M32</b>
Default (2 x 25 % and 2 x 90 %) match-pair calibration for DN 15 ... DN 200	<b>D11</b>	<b>Factory mounted cables</b>	
Default (2 x 25 % and 2 x 90 %) match-pair calibration for DN 250 ... DN 600	<b>D12</b>	5 m (16.4 ft) pulse cable A+B	<b>M81</b>
Default (2 x 25 % and 2 x 90 %) match-pair calibration for DN 700 ... DN 1200	<b>D13</b>	5 m (16.4 ft) communication cable RS 232/RS 485 terminated as end device	<b>M82</b>
5-point, matched-pair calibration for DN 15 ... DN 200 <sup>2)</sup>	<b>D15</b>	20 m (65.6 ft) pulse cable A+B	<b>M84</b>
5-point, matched-pair calibr. for DN 250 ... DN 600 <sup>2)</sup>	<b>D16</b>	20 m (65.6 ft) communication cable RS 232/RS 485 terminated as end device	<b>M85</b>
5-point, matched-pair calibr. for DN 700 ... DN 1200 <sup>2)</sup>	<b>D17</b>	Cello 2 channel, input cable 3 m (9.84 ft) with Brad Harrison micro-change 3 way connector	<b>M87</b>
10-point, matched-pair calibr. for DN 15 ... DN 200 <sup>3)</sup>	<b>D18</b>	Cello 2 channel, input cable 5 m (16.4 ft) with MIL-C-26482 spec. connectors	<b>M89</b>
10-point, matched-pair calibr. for DN 250 ... DN 600 <sup>3)</sup>	<b>D19</b>	Encoder interface cable with connector for ITRON 200WP radio, length 25 ft	<b>M90</b>
10-point, matched-pair calibr. for DN 700 ... DN 1200 <sup>3)</sup>	<b>D20</b>	Encoder interface cable with connector for ITRON 200WP radio, length 5 ft	<b>M91</b>
<b>Flow unit</b>		SOFREL cable 2 m for LS42 data logger	<b>M92</b>
l/s	<b>L00</b>	SOFREL cable 2 m for LS-Flow data logger	<b>M97</b>
MGD	<b>L01</b>	<b>FM Fire Service Approval</b>	
CFS	<b>L02</b>	(with ANSI B16.5 Class 150 flanges)	
l/min	<b>L03</b>	DN 50, DN 80 and DN 100 (2", 3" and 4")	<b>P20</b>
m <sup>3</sup> /min	<b>L04</b>	DN 150 and DN 200 (6" and 8")	<b>P21</b>
GPM	<b>L05</b>	DN 250 and DN 300 (10" and 12")	<b>P22</b>
CFM	<b>L06</b>	<b>Region/customer specific labels</b>	
l/h	<b>L07</b>	KCC label (South Korea)	<b>W28</b>
m <sup>3</sup> /h	<b>L08</b>	DIN 43863 label <sup>1)</sup>	<b>H21</b>
GPH	<b>L09</b>	DIN 43863 label with SWM mark <sup>1)</sup>	<b>H22</b>
CFH	<b>L10</b>	1) Under preparation	
GPS	<b>L11</b>	2) 20 %, 40 %, 60 %, 80 %, 100 % of factory Q <sub>max</sub>	
MI/d	<b>L12</b>	3) Ascending and descending at 20 %, 40 %, 60 %, 80 %, 100 % of factory Q <sub>max</sub>	
m <sup>3</sup> /d	<b>L13</b>	4) Pulse width = 10 ms	
GPD	<b>L14</b>		
BBL42/s	<b>L15</b>		
BBL42/min	<b>L16</b>		
BBL42/h	<b>L17</b>		
BBL42/d	<b>L18</b>		
<b>Totalizer</b>			
Volume calculation (default totalizer 1 = forward and totalizer 2 = reverse)			
Totalizer 1 = RV, reverse flow	<b>L20</b>		
Totalizer 1 = NET, net flow	<b>L22</b>		
Totalizer 2 = FW, forward flow	<b>L30</b>		
Totalizer 2 = NET, net flow	<b>L31</b>		
<b>Volume unit</b>			
m <sup>3</sup>	<b>L40</b>		
MI	<b>L41</b>		
G	<b>L42</b>		
AF	<b>L43</b>		
l x 100	<b>L44</b>		
m <sup>3</sup> x 100	<b>L45</b>		
G x 100	<b>L46</b>		
CF x 100	<b>L47</b>		
MG	<b>L48</b>		