



SITRANS F M MAG 8000 indukčný batériový prietokomer

Overview



MAG 8000 is a comprehensive meter which intelligent information and high performance measurement as well as the easy to install concept take cost of ownership and customer service to a new level for water meter.

Benefits

Easy to install

- Compact or remote solution with factory mounted cable and customer setting from factory
- 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

Superior measurement

- Down to 0.2 % maximum uncertainty
- OIML R 49 type approval
- Bi-directional measurement

Long lasting performance/Low cost of Ownership

- Verification according to Directive 2004/22/EC of the European Parliament and Council of March 31, 2004 on measuring instruments (MID), Annex MI-001
- No moving parts means less wear and tear
- Up to 6 to 10 years maintenance-free operation in typical revenue application
- Robust construction build for the application

Intelligent information, easy to access

- Advanced information on site
- Data logger
- Advanced statistics and diagnostics
- Add-on communication modules

Application

The following MAG 8000 versions are available as stand-alone water meters:

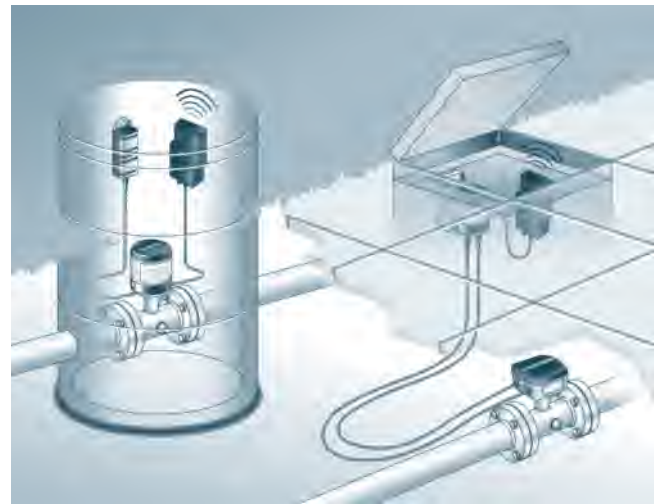
- MAG 8000 (7ME6810) for abstraction and distribution network
- MAG 8000 CT (7ME6820) for revenue and bulk metering
- MAG 8000 (7ME6880) for irrigation

Design

MAG 8000 is designed to minimize power consumption.

The product program consists of

- Basic and advanced version
- Sensor sizes from DN 25 to 1200 (1" to 48")
- Compact and remote installation in IP68/NEMA 6P enclosure and factory-mounted cable
- SIMATIC PDM and Flow Tool PC configuration softwares



Add-on communication module (left), PC-IrDA connection (right)

Distributor Slovakia: Mahrlo www.marweb.sk

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Function

MAG 8000 is a microprocessor-based water meter with graphical display and key for optimum customer operation and information on site. The transmitter drives the magnetic field in the sensor, evaluates the flow signal from the sensor and calculates the volume passing through. It delivers the required information via the integrated pulse output or communication interfaces as part of a system solution. Its intelligent functionality, information and diagnostics ensure optimum meter performance and information to optimize water supply and billing.



MAG 8000 can be ordered as a Basic or an Advanced version.

The SIMATIC PDM tool gives the possibility of testing and verifying the flowmeter on site and creating a printed "Qualification Certificate" with all specific data that define the quality status of the measurement.

The Qualification Certificate consists of two pages with information about the actual status of the sensor:

Part 1 provides general settings, sensor and battery info, totalizer values and pulse output settings.

Part 2 provides detailed information about electronic and sensor functionality and a main parameter list for evaluating the functionality of the MAG 8000 water meter.



Features / Version	MAG 8000 Basic/ MAG 8000 Irrigation	MAG 8000 Advanced
Measuring frequency in battery power mode (Manually selected)	1/15, 1/30 or 1/60 Hz	from 6.25 to 1/60 Hz depending of sensor size
Output MAG 8000	2 FW/RV/AI/CA (max. 50 Hz pulse rate)	2 FW/RV/AI/CA (max. 100 Hz pulse rate)
Communication	Add-on	Add-on
Data logger	Yes	Yes
Insulation test	No	Yes
Leakage detection	No	Yes
Meter utilization	No	Yes
Statistics	No	Yes
Tariff	No	Yes
Settle date (Revenue)	No	Yes

Some information is accessible via the display whereas all information is accessible via the IrDA communication interface with the PDM software. Data and parameters are registered in a EEPROM. They can all be read, but changing the information demands a software password or a hardware key attached to the printed circuit board.

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Technical specifications

Transmitter	
Installation	Compact (integral) Remote with factory-mounted cable 5, 10, 20 or 30 m (16.4, 32.8, 65.6 or 98.4 ft)
Enclosure	Stainl. steel top housing (AISI 316) and coated brass bottom. Remote wall mount bracket in stainless steel (AISI 304).
Cable entries	2 x M20 (one gland for one cable of size 6 ... 8 mm (0.02 ... 0.026 ft) is included in the standard delivery)
Display	Display with 8 digits for main information. Index, menu and status symbols for dedicated information
Resolution	Totalized information can be displayed with 1, 2 or 3 decimals or automatic adjustment (default)
Flow unit	
Europe	Volume in m ³ and flow rate in m ³ /h
US	Volume in Gallon and flow rate in GPM
Australia	Volume in Ml and flow rate as Ml/d
Optional display units	Volume: m ³ x 100, l x 100, G x 100, G x 1000, MG, CF x 100, CF x 1000, AF, Al, kl Flow: m ³ /min, m ³ /d, l/s, l/min, GPS, GPH, GPD, MGD, CFS, CFM, CFH
Digital output	2 passive outputs (MOS), individual galvanically isolated Maximum load ± 35 V DC, 50 mA short circuit protected
Output A function	Programmable as pulse volume – forward – reverse – forward/net – reverse/net
Output B function	Programmable as pulse volume (like output A), alarm
Output	Max. pulse rate of 50 Hz (only Basic version) and 100 Hz (only Advanced version), pulse width of 5, 10, 50, 100, 500 ms
Communication	IrDA: Standard integrated infrared communication interface with Modbus RTU protocol
Add-on modules	<ul style="list-style-type: none"> • RS 232 serial interface with Modbus RTU (Rx/Tx/GND), point to point with max. 15 m cable • RS 485 serial interface with Modbus RTU (+/-/GND), multidrop with up to 32 devices with max. 1000 m cable • Encoder interface module (for Itron 200WP) "Sensus protocol"
Power supply	Auto detection of power source with display symbol for operation power.
Internal battery pack	1 D-Cell 3.6 V/16.5 Ah
External battery pack	2 D-Cell 3.6 V/33 Ah 4 D-Cell 3.6 V/66 Ah

Mains power supply

- 12 ... 24 V AC/DC (10 ... 32 V) 2 VA
- 115 ... 230 V AC (85 ... 264 V) 2 VA

Both mains power supply systems are upgradable for battery backup via internal D-Cell (3.6 V 16.5 Ah) or external battery pack.

Cable

3 m (9.8 ft) for external connection to mains supply (without cable plug)

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Features	
Application identification	Tag number up to 15 characters
Time and date	Real time clock
Totalizer	
MAG 8000	3 totalizer: Configurable to Forward, Reverse and Bidirectional netflow 1 totalizer (following totalizer 1 setting) resettable via display key
Measurement	
Low flow cut-off	0.05 % of Q3 free adjustable
Empty pipe detection	Symbolised in display
Data logger	Logging of 26 records: selectable as daily, weekly or monthly logging
Alarm	Active alarm is indicated on the display
Data protection	All data stored in an EEPROM. Totalizers 1 and 2 are backed up every 10 min, statistic every hour and power consumption and temperature measurement every 4 hour. Password protection of all parameters and hardware protection of calibration and revenue parameters.
Battery power management	Optimal battery information on remaining capacity. Calculated capacity includes all consuming elements and available battery capacity is adjusted related to change in ambient temperature. Numbers of power-ups Date and time registered for first and last time power alarm.
Diagnostic	
Continuous self test including	Coil current to drive the magnetic field Signal input circuit Data calculation, handling and storing
Alarm statistics and logging for fault analyzing	Electrode impedance to check actual media contact Flow simulation to check pulse and communication signal chain for correct scaling Number of sensor measurements (excitations) Transmitter temperature (battery capacity calculation) Low impedance alarm for change in media Flow alarm when defined high flow exceeds Verification mode for fast measure performance check
Insulation test (only Advanced version)	Test of signal immunity against disturbance and bad installation. Test interval is selectable and measurement is interrupted during the test period of 4 min.
Leakage detection (only Advanced version)	Monitoring the lowest flow or volume during selected time window within 24 hours. Leakage is detected over a selectable period where monitored value exceed the possible leakage level. Min and max values are stored with date registration. Last store value visible on the display.
Meter Utilization (only Advanced version)	6 registers for monitoring total time the meter has operated in different flow intervals. Registered intervals are free selectable as % of Q_n (Q3)
Tariff (only Advanced version)	6 tariff registers count the volume delivered within the selected tariff windows, based on time of day or flow rates or a combination. Tariff can also be used for consumption profile where consumption is related to different time intervals or flow rates. Tariff values visible on the display.
Settling date (only Advanced version)	On a predefined date the totalizer 1 index value is stored. Old values are stored to show the latest two totalized 1 index values. Settling values visible on the display.
Statistic (only Advanced version)	Min. flow rate with time and date registration Max. flow rate with time and date registration Min. daily consumption with date registration Max. daily consumption with date registration Latest 7 days total and daily consumption Actual month consumption Latest month consumption
PC Configuration Software PDM	<ul style="list-style-type: none">• Meter configuration – online and offline mode• Own parameter settings• Parameter documentation• Print and export of data and parameters PDM 6.0 Service Pack 2 – Basic and Online version

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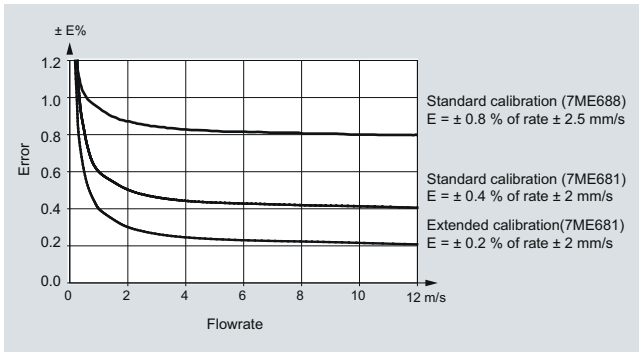
MAG 8000 water meter uncertainty

To ensure continuous accurate measurement, flowmeters must be calibrated. The calibration is conducted at Siemens flow facilities with traceable instruments referring directly to the physical unit of measurement according to the International System of Units (SI).

Therefore, the calibration certificate ensures recognition of the test results worldwide, including the US (NIST traceability).

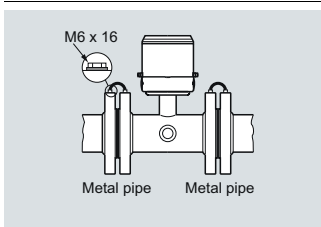
Siemens offers accredited calibrations assured to ISO 17025 in the flow range from 0.0001 m³/h to 10 000 m³/h. Siemens Flow Instruments accredited laboratories are recognized by ILAC MRA (International Laboratory Accreditation Corporation - Mutual Recognition Arrangement) ensuring international traceability and recognition of the test results worldwide.

The selected calibration determines the accuracy of the meter. A standard calibration results in max. ± 0.4 % uncertainty and an extended calibration ± 0.2 % (for MAG 8000 irrigation ± 0.8 %). A calibration certificate follows every sensor and calibration data are stored in the meter unit.



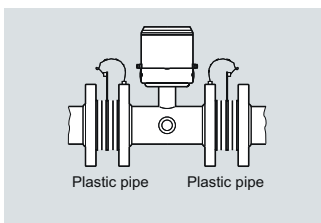
Grounding

The sensor body must be grounded using grounding straps and/or grounding rings to protect the flow signal against stray electrical noise. This ensures that the noise is carried through the sensor body and a noise-free measuring area within the sensor body. For MAG 8000 Irrigation grounding rings on both sides are factory-mounted.



Metal pipes

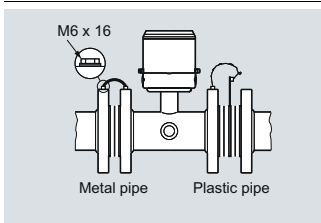
On metal pipes, connect the straps to both flanges.



Plastic pipes

On plastic pipes and lined metal pipes, optional grounding rings must be used at both ends.

Grounding rings has to be ordered separately see „Grounding ring kit“



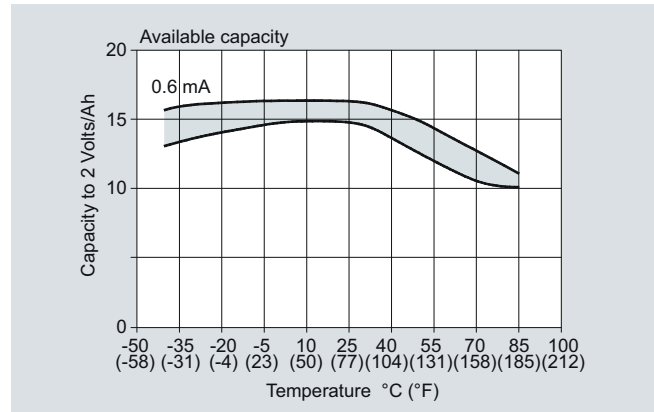
Combination of metal and plastic pipes

A combination of metal and plastic requires straps for metal pipe and grounding rings for plastic pipe.

Battery operation time and calculation

The battery operation time depends on the connected battery pack as well as the operation condition of the meter.

MAG 8000 calculates the remaining capacity every 4 hours and includes all consuming elements. Calculation compensates for temperature influence on battery capacity.



The graphic shows the effect from other temperatures. A variation in temperature from 15 °C to 55 °C (59 to 131 °F) reduces the capacity by 17 % from 15 Ah to 12.5 Ah.

At typical revenue scenario of expected battery operation time can be seen in the table below.

The measurement for calculating the rest capacity of the battery life time is only completed if the system has no active fatal faults or the empty pipe is active. Maximum battery specification is 10 years operation.

Scenario - Revenue application

Output A	Pulse rate max. 10 Hz
Output B	Alarm or call-up
Meter dialog	1 hour per month
Add-com	None
Temperature	<ul style="list-style-type: none"> • 5 % at 0 °C (32 °F) • 80 % at 15 °C (59 °F) • 15 % at 50 °C (122 °F)

SITRANS F M MAG 8000 indukčný batériový prietokomer

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

Overview



Benefits

- Bury meters, IP 68
- Low cost of ownership
- Long-term stability
- Leak detection
- Low flow measurement

Technical specifications

Meter	
Accuracy	Standard calibration: ± 0.4 % of rate ± 2 mm/s Extended calibration DN 50 ... DN 300 (2" ... 12"): ± 0.2 % of rate ± 2 mm/s
Media conductivity	Clean water > 20 µs/cm
Temperature	
Ambient	-20 ... +60 °C (-4 ... +140 °F)
Media	0 ... 70 °C (32 ... 158 °F)
Storage	-40 ... +70 °C (-40 ... +158 °F)
Enclosure rating	IP68/NEMA 6P; Cable glands mounted requires Sylgard potting kit to remain IP68/NEMA 6P, otherwise IP67/NEMA 4 is obtained; Factory-mounted cable provides IP68/NEMA 6P
Certificates and approvals	
Calibration	2 x 25 % and 2 x 90 %
Drinking water approvals	<ul style="list-style-type: none"> • NSF/ANSI Standard 61 (cold water) USA • WRAS (BS 6920 cold water) UK • ACS Listed France • DVGW W270 Germany • Belgaqua (B) • MCERTS (GB) • PED: 97/23EC¹⁾
Conformity	For pressure/temperature curves see MAG 3100 on page 4/88. <ul style="list-style-type: none"> • EMC: IEC/EN 61000-6-3, IEC/EN 61000-6-2

Sensor version	DN 25 ... 1200 (1" ... 48")
Measuring principle	Electromagnetic induction
Excitation frequency	
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
Advanced version	
• 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
Flanges	
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)
Liner	EPDM
Electrode and grounding electrodes	Hastelloy C276/2.4819
Grounding straps	Grounding straps are premounted from the factory on each side of the sensor.

¹⁾ For further information on the PED standard and requirements see page 10/9.



SITRANS F M MAG 8000 indukčný batériový prietokomer

Selection and Ordering data	Order No.	Selection and Ordering data	Order No.
SITRANS F M MAG 8000 water meter	7 ME 6 8 1 0 -	SITRANS F M MAG 8000 water meter	7 ME 6 8 1 0 -
Diameter		Communication interface	
DN 25 (1")	2 D	No additional "add-on" communication module installed	A
DN 40 (1½")	2 R	Serial RS 485 with Modbus RTU (Terminated as end device)	B
DN 50 (2")	2 Y	Serial RS 232 with Modbus RTU	C
DN 65 (2½")	3 F	GSM/GPRS module without analog inputs cable	S
DN 80 (3")	3 M	GSM/GPRS module with analog inputs cable	T
DN 100 (4")	3 T		
DN 125 (5")	4 B	Power supply	
DN 150 (6")	4 H	Internal battery (no battery included)	0
DN 200 (8")	4 P	Internal battery pack installed ²⁾	1
DN 250 (10")	4 V	External battery with 1.5 m (4.9 ft) power cable with IP68/NEMA 6P plugs, no battery included	2
DN 300 (12")	5 D	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
DN 350 (14")	5 K	115 ... 230 V AC power supply with battery backup and 3 m (9.8 ft) power cable for external connection (no battery included)	4
DN 400 (16")	5 R		
DN 450 (18")	5 Y		
DN 500 (20")	6 F		
DN 600 (24")	6 P		
DN 700 (28") ¹⁾	6 Y		
DN 750 (30") ¹⁾	7 D		
DN 800 (32") ¹⁾	7 H		
DN 900 (36") ¹⁾	7 M		
DN 1000 (40") ¹⁾	7 R		
DN 1050 (42") ¹⁾	7 T		
DN 1100 (44") ¹⁾	7 V		
DN 1200 (48") ¹⁾	8 B		
Flange norm and pressure rating		Operating instructions for SITRANS F M MAG 8000	
EN 1092-1		Description	Order No.
PN 10 (DN 200 ... 1200 (8" ... 48"))	B	• English	A5E03071515
PN 16 (DN 50 ... 1200 (2" ... 48"))	C	• German	A5E00740986
PN 16 non-PED (DN 700 ... 1200 (28" ... 48"))	D	• Spanish	A5E00741031
PN 40 (DN 25 ... 40 (1" ... 1½"))	F	• French	A5E00741021
ANSI B16.5			
Class 150	J		
AWWA C-207			
Class D (28" ... 48")	L		
AS4087			
PN 16 (DN 50 ... 1200 (2" ... 48"))	N		
Sensor version		Operating instructions for MAG 8000 GSM/GPRS communication module	
EPDM liner and Hastelloy electrodes	3	Description	Order No.
Calibration		• English	A5E03644134
Standard ± 0.4 % of rate ± 2 mm/s	1		
Extended ± 0.2 % of rate ± 2 mm/s DN 25... 300 (1" ... 12")	2		
Region version			
Europe (m ³ , m ³ /h, 50 Hz)	1		
USA (Gallon, GPM, 60 Hz)	2		
Australia (MI, MI/d, 50 Hz)	3		
Transmitter type and installation			
Basic version integral on sensor	A		
Basic version remote, cable 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		
Advanced version remote, cable 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		

1) The Diameter DN 700 (28") to DN 1200 (48") is only available as remote transmitter type installation.
2) 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.

This device is shipped with a Quick Start guide and a CD containing further SITRANS F literature.

All literature is also available for free at:
<http://www.siemens.com/flowdocumentation>



SITRANS F M MAG 8000 indukčný batériový prietokomer

Selection and Ordering data	Order code	Selection and Ordering data	Order code
Additional information		Additional information	
Please add "-Z" to Order No. and specify Order code(s) and plain text.		Please add "-Z" to Order No. and specify Order code(s) and plain text.	
<u>Flow unit</u>		<u>Data logger set up</u> (default month logging)	
l/s	L00	DataloggerInterval = Daily	M31
MGD	L01	DataloggerInterval = Weekly	M32
CFS	L02	<u>Factory mounted cables</u>	
l/min	L03	5 m (16.4 ft) pulse cable A+B	M81
m ³ /min	L04	5 m (16.4 ft) communication cable RS 232/RS 485 terminated as end device	M82
GPM	L05	20 m (65.6 ft) pulse cable A+B	M84
CFM	L06	20 m (65.6 ft) communication cable RS 232/RS 485 terminated as end device	M85
l/h	L07	Cello 2 channel, input cable 3 m (9.84 ft) with Brad Harrison micro-change 3 way connector	M87
m ³ /h	L08	Cello 2 channel, input cable 5 m (16.4 ft) with MIL-C-26482 spec. connectors	M89
GPH	L09	SOFREL data logger cable 2 m with connector for SOFREL GSM module	M92
CFH	L10		
GPS	L11		
MI/d	L12		
m ³ /d	L13		
GPD	L14		
<u>Totalizer</u>			
Volume calculation (default totalizer 1 = forward and totalizer 2 = reverse)			
Totalizer 1 = RV, reverse flow	L20		
Totalizer 1 = NET, net flow	L22		
Totalizer 2 = FW, forward flow	L30		
Totalizer 2 = NET, net flow	L31		
<u>Volume unit</u>			
m ³	L40		
MI	L41		
G	L42		
AF	L43		
l x 100	L44		
m ³ x 100	L45		
G x 100	L46		
CF x 100	L47		
MG	L48		
G x 1000	L49		
CF x 1000	L50		
AI	L51		
kl	L52		
<u>Pulse set up</u> (default pulse A = forward and pulse B = Alarm)			
A function = RV, reverse flow	L62		
A function = FWnet, forward net flow	L63		
A function = RVnet, reverse net flow	L64		
A function = Off	L65		
Volume per pulse A = x 0.0001	L70		
Volume per pulse A = x 0.001	L71		
Volume per pulse A = x 0.01	L72		
Volume per pulse A = x 0.1	L73		
Volume per pulse A = x 1	L74		
B function = FW, forward flow	L80		
B function = RV, reverse flow	L81		
B function = FWnet, forward net flow	L82		
B function = RVnet, reverse net flow	L83		
B function = Alarm	L84		
B function = Call up	L85		
Volume per pulse B = x 0.0001	L90		
Volume per pulse B = x 0.001	L91		
Volume per pulse B = x 0.01	L92		
Volume per pulse B = x 0.1	L93		
Volume per pulse B = x 1	L94		

SITRANS F M MAG 8000 indukčný batériový prietokomer

MAG 8000 CT for revenue and bulk metering (7ME6820)

Overview



Benefits

- MI-001, OIML R 49/OIML R49 MAA
- Measurement in both directions
- Bury meters, IP 68
- Long-term stability/accuracy
- No moving parts - no maintenance
- Insignificant pressure drop
- Connectable to most common AMR systems
- Low flow measurement

Technical specifications

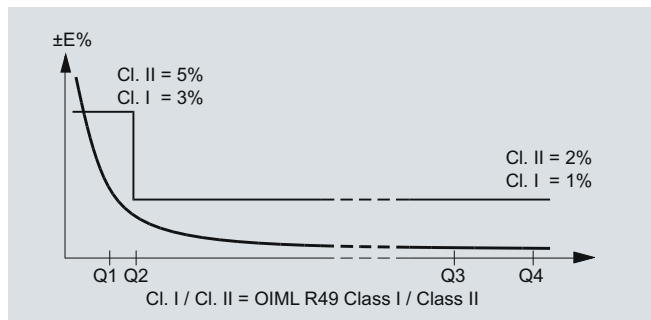
Meter	
Accuracy (standard calibration)	OIML R 49 for DN 50 ... DN 300 (2" ... 12"), Class I and II with turn down up to Q3/Q1 = 400 at Q2/Q1 = 1.6 MI-001 verification for DN 50 ... DN 400 (2" ... 16"), Class II with turn down ratio Q3/Q1 = 250, Q3/Q1 = 200 or Q3/Q1 = 160 at Q2/Q1 = 1.6
Media conductivity	Clean water > 20 µs/cm
Temperature	
Ambient	-20 ... +60 °C (-4 ... +140 °F)
Media	0.1 ... 50 °C (32 ... 122 °F)
Storage	-40 ... +70 °C (-22 ... +158 °F)
Enclosure rating	IP68/NEMA 6P Cable glands mounted requires Sylgard potting kit to remain IP68/NEMA 6P, otherwise IP67/NEMA 4 is obtained; Factory-mounted cable provides IP68/NEMA 6P
Certificates and approvals	
Calibration	2 x 25 % and 2 x 90 %
Drinking water approvals	<ul style="list-style-type: none"> • NSF/ANSI Standard 61 (cold water) USA • WRAS (BS 6920 cold water) UK • ACS Listed France • DVGW W270 Germany • Belgaqua (B) • MCERTS (GB)

Custody transfer approval	<ul style="list-style-type: none"> • OIML R 49 and OIML R 49 MAA approval (DN 50 ... DN 300 (2" ... 12")) • MI-001 approval (DN 50 ... DN 400 (2" ... 16")) (Number: DK-0200-MI-001-002 and DK-0200-MI-001-011)
Conformity	<ul style="list-style-type: none"> • CEN EN 14154, ISO 4064 • PED: 97/23/EC¹⁾ <p>For pressure/temperature curves, see MAG 3100 on page 4/88.</p> <ul style="list-style-type: none"> • EMC: IEC/EN 61000-6-3, IEC/EN 61000-6-2
Sensor version	DN 50 ... 600 (2" ... 24")
Measuring principle	Electromagnetic induction
Excitation frequency	
Basic version	
• Battery-powered	DN 50 ... 150 (2" ... 6"): 1/15 Hz DN 200 ... 600 (8" ... 24"): 1/30 Hz
• Mains-powered	DN 50 ... 150 (2" ... 6"): 6.25 Hz DN 200 ... 600 (8" ... 24"): 3.125 Hz
Advanced version	
• Battery-powered	DN 50 ... 150 (2" ... 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)
• Mains-powered	DN 50 ... 150 (2" ... 6"): 6.25 Hz DN 200 ... 600 (8" ... 24"): 3.125 Hz
Flanges	
EN 1092-1 (DIN 2501)	DN 50 ... 150 (2" ... 6"): PN 16 (232 psi) DN 200 ... 300 (8" ... 12"): PN 10 or PN 16 (145 psi or 232 psi) up to DN 600 (24") in preparation
ANSI 16.5 Class 150	2" ... 12": 20 bar (290 psi) up to DN 600 (24") in preparation
AWWA C-207	28" ... 48": PN 10 (145 psi)
AS 4087	DN 50 ... 300 (2" ... 12"): PN 16 (232 psi) up to DN 600 (24") in preparation
Liner	EPDM
Electrode and grounding electrodes	Hastelloy C276/2.4819
Grounding straps	Grounding straps are premounted from the factory on each side of the sensor

¹⁾ For further information on the PED standard and requirements see page 10/9.

MAG 8000 CT (Revenue program) water meter type approval

MAG 8000 CT program is type approved and verified according to international water meter standard OIML R 49. The Custody Transfer program is approved as Class I and Class II, for the sensor program from DN 50 to DN 300, at different Q3 and Q3/Q1. Q2/Q1 = 1.6 and follows OIML R 49 specification.





SITRANS F M MAG 8000 indukčný batériový prietokomer

Selection and Ordering data	Order No.	Selection and Ordering data	Order No.
SITRANS F M		SITRANS F M	
MAG 8000 CT water meter with EPDM liner and Hastelloy electrodes	7 ME 6 8 2 0 -	MAG 8000 CT water meter with EPDM liner and Hastelloy electrodes	7 ME 6 8 2 0 -
	0 -		0 -
Diameter		Communication interface	
DN 50 (2")	2 Y	No additional "add-on" communication module installed	A
DN 65 (2½")	3 F	Serial RS 485 with Modbus RTU (Terminated as end device)	B
DN 80 (3")	3 M	Serial RS 232 with Modbus RTU	C
DN 100 (4")	3 T	Encoder interface for ITRON 200WP radio with "Sensus" protocol	D
DN 125 (5")	4 B	GSM/GPRS module without analog inputs cable	S
DN 150 (6")	4 H	GSM/GPRS module with analog inputs cable	T
DN 200 (8")	4 P		
DN 250 (10")	4 V	Power supply	
DN 300 (12")	5 D	Internal battery (no battery included)	0
DN 350 (14")	5 K	Internal battery pack installed ²⁾	1
DN 400 (16")	5 R	External battery with 1.5 m (4.9 ft) power cable with IP68/NEMA 6P plugs, no battery included	2
DN 450 (18") ¹⁾	5 Y	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
DN 500 (20") ¹⁾	6 F	115 ... 230 V AC power supply with battery backup and 3 m (9.8 ft) power cable for external connection. (no battery included)	4
DN 600 (24") ¹⁾	6 P		
Flange norm and pressure rating		1) Under preparation.	
EN 1092-1		2) 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.	
PN 16	C	3) For more details and references of the ranges please see the tables on pages 4/123 and 4/124.	
ANSI B16.5		4) Standard calibration	
Class 150	J		
AS4087			
PN 16	N		
Approval/Verification³⁾		Operating instructions for SITRANS F M MAG 8000	
Without verification according to OIML R 49 ⁴⁾	0	Description	Order No.
MI-001 Q3/Q1 = 25	1	• English	A5E03071515
MI-001 Q3/Q1 = 63	2	• German	A5E00740986
MI-001 Q3/Q1 = 80	3	• Spanish	A5E00741031
MI-001 Q3/Q1 = 160	4	• French	A5E00741021
MI-001 Q3/Q1 = 200	5		
MI-001 Q3/Q1 = 250	6		
Without verification calibrated to OIML R 49-Class II (Q3/Q1 = 100)	7		
Without verification calibrated to OIML R 49-Class II (Q3/Q1 = 250)	8		
Region version		Operating instructions for MAG 8000 GSM/GPRS communication module	
Europe (m ³ , m ³ /h, 50 Hz)	1	Description	Order No.
USA (m ³ , m ³ /h, 60 Hz)	2	• English	A5E03644134
Transmitter type and installation			
Basic version integral on sensor	A		
Basic version remote, 5 m (16.4 ft) mounted cable on sensor with IP68/NEMA 6P plugs	B		
Do - 10 m (32.8 ft)	C		
Do - 20 m (65.6 ft)	D		
Do - 30 m (98.4 ft)	E		
Advanced version integral on sensor	K		
Advanced version remote, 5 m mounted cable on sensor with IP68/NEMA 6P plugs	L		
Do - 10 m (32.8 ft)	M		
Do - 20 m (65.6 ft)	N		
Do - 30 m (98.4 ft)	P		



SITRANS F M MAG 8000 indukčný batériový prietokomer

Selection and Ordering data	Order code
Additional information	
Please add "-Z" to Order No. and specify Order code(s) and plain text.	
<u>Totalizer</u>	
Volume calculation (default totalizer 1= forward and totalizer 2 = reverse)	
Totalizer 1 = RV, reverse flow	L20
Totalizer 1 = NET, net flow	L22
Totalizer 2 = FW, forward flow	L30
Totalizer 2 = NET, net flow	L31
<u>Pulse set up</u> (default pulse A= forward and pulse B = Alarm)	
A function = RV, reverse flow	L62
A function = FWnet, forward net flow	L63
A function = RVnet, reverse net flow	L64
A function = Off	L65
Volume per pulse A = x 0.001	L71
Volume per pulse A = x 0.01	L72
Volume per pulse A = x 0.1	L73
Volume per pulse A = x 1	L74
B function = FW, forward flow	L80
B function = RV, reverse flow	L81
B function = FWnet, forward net flow	L82
B function = RVnet, reverse net flow	L83
B function = Alarm	L84
B function = Call up	L85
Volume per pulse B = x 0.001	L91
Volume per pulse B = x 0.01	L92
Volume per pulse B = x 0.1	L93
Volume per pulse B = x 1	L94
<u>Data logger set up</u> (default month logging)	
DataloggerInterval = Daily	M31
DataloggerInterval = Weekly	M32
<u>Factory mounted cables</u>	
5 m (16.4 ft) pulse cable A+B	M81
5 m (16.4 ft) communication cable RS 232/RS 485 terminated as end device	M82
20 m (65.6 ft) pulse cable A+B	M84
20 m (65.6 ft) communication cable RS 232/RS 485 terminated as end device	M85
Cello 2 channel, input cable 3 m (9.84 ft) with Brad Harrison micro-change 3 way connector	M87
Cello 2 channel, input cable 5 m (16.4 ft) with MIL-C-26482 spec. connectors	M89
5 ft. Encoder interface cable with connector for ITRON 200WP radio	M91
25 ft. Encoder interface cable with connector for ITRON 200WP radio	M90
SOFREL data logger cable 2 m with connector for SOFREL GSM module	M92



SITRANS F M MAG 8000 indukčný batériový prietokomer

Overview



Benefits

- Tamper-proof
- No maintenance
- Long-term stability/accuracy
- Connectable to most common AMR systems
- Custody transfer approval

Technical specifications

Meter	
Accuracy	± 0.8 % ± 2.5 mm/s
Media conductivity	Clean water > 20 µs/cm
Temperature	
Ambient	-20 ... +60 °C (-4 ... +140 °F)
Media	0 ... 70 °C (32 ... 158 °F)
Storage	-40 ... +70 °C (-40 ... +158 °F)
Enclosure rating	
IP68/NEMA 6P rating	
Cable glands mounted requires Sylgard potting kit to remain IP68/NEMA 6P, otherwise IP67/NEMA 4 is obtained;	
Factory-mounted cable provides IP68/NEMA 6P rating	
Approvals	
Drinking water approvals	<ul style="list-style-type: none">• ANSI/NSF 61 (cold water) USA• WRAS (BS 6920 cold water) UK
Custody transfer approval	NMI10 Australia (under preparation)
Conformity	
IEC/EN 61000-6-3, IEC/EN 61000-6-2	
Flanges	
Drilled to:	
<ul style="list-style-type: none">• EN 1092-1 (DIN 2501) PN 10• ANSI 16.5 Class 150• AS 2091-1 Table D	DN 50 ... 600 (2" ... 24") (max. pressure 7 bar (101.5 psi)) 2" ... 24" (max. pressure 7 bar (101.5 psi)) DN 50 ... 600 (2" ... 24") (max. pressure 7 bar (101.5 psi))
Excitation frequency	
Battery-powered	DN 50 ... 600 (2" ... 24"): 1/15 Hz
Mains-powered	DN 50 ... 600 (2" ... 24"): 3.125 Hz
Liner	Ebonite
Electrodes	Stainless steel



SITRANS F M MAG 8000 indukčný batériový prietokomer

Selection and Ordering data	Order No.	Selection and Ordering data	Order No.
SITRANS F M MAG 8000 water meter including factory-mounted grounding rings	7 ME 6 8 8 0 -	SITRANS F M MAG 8000 water meter including factory-mounted grounding rings	7 ME 6 8 8 0 -
	0 -		0 -
Diameter		Communication interface	
DN 50 (2")	2 Y	No additional "add-on" communication module installed	A
DN 65 (2½")	3 F	Serial RS 485 with Modbus RTU (Terminated as end device)	B
DN 80 (3")	3 M	Serial RS 232 with Modbus RTU	C
DN 100 (4")	3 T	Encoder interface	D
DN 125 (5")	4 B		
DN 150 (6")	4 H		
DN 200 (8")	4 P	Power supply	
DN 250 (10")	4 V	Internal battery (no battery included)	0
DN 300 (12")	5 D	Internal battery pack installed 2 D-cell ¹⁾	1
DN 350 (14")	5 K	External battery with 1.5 m (4.9 ft) power cable with IP68/NEMA 6P plugs, no battery included	2
DN 400 (16")	5 R	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
DN 450 (18")	5 Y	115 ... 230 V AC power supply with battery backup and 3 m (9.8 ft) power cable for external connection (no battery included)	4
DN 500 (20")	6 F	Internal battery pack installed 1 D-cell ¹⁾	5
DN 600 (24")	6 P		
Flange norm and pressure rating			
EN 1092-1 drilled pattern PN 10/max. 7 bar (101 psi)	B		
ANSI B16.5 drilled pattern CI 150/max. 7 bar (101 psi)	J		
AS2129 drilled pattern table D/max. 7 bar (101 psi)	M		
Sensor version			
Ebonite liner and stainless steel electrodes	4		
Region version		Operating instructions for SITRANS F M MAG 8000	
Europe (m ³ , m ³ /h, 50 Hz)	1	Description	Order No.
USA (Gallon, GPM, 60 Hz)	2	• English	A5E03071515
Australia (MI, MI/d, 50 Hz)	3	• German	A5E00740986
		• Spanish	A5E00741031
		• French	A5E00741021
Transmitter type and installation			
Basic version integral on sensor	A		
Basic version remote, 2 m (6.56 ft) mounted cable on sensor with IP68/NEMA 6P plugs	T		
Do - 5 m (16.4 ft)	B		
Do - 10 m (32.8 ft)	C		

¹⁾ 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.



SITRANS F M MAG 8000 indukčný batériový prietokomer

Selection and Ordering data	Order code	Selection and Ordering data	Order code
Additional information		Additional information	
Please add "-Z" to Order No. and specify Order code(s) and plain text.		Please add "-Z" to Order No. and specify Order code(s) and plain text.	
<u>Flow unit</u>		<u>Data logger set up</u> (default month logging)	
I/s	L00	DataloggerInterval = Daily	M31
MGD	L01	DataloggerInterval = Weekly	M32
CFS	L02	<u>Factory mounted cables</u>	
I/min	L03	5 m (16.4 ft) pulse cable A+B	M81
m ³ /min	L04	5 m (16.4 ft) communication cable RS 232/RS 485 terminated as end device	M82
GPM	L05	20 m (65.6 ft) pulse cable A+B	M84
CFM	L06	20 m (65.6 ft) communication cable RS 232/RS 485 terminated as end device	M85
I/h	L07	Cello 2 channel, input cable 3 m (9.84 ft) with Brad Harrison micro-change 3 way connector	M87
m ³ /h	L08	Cello 2 channel, input cable 5 m (16.4 ft) with MIL-C-26482 spec. connectors	M89
GPH	L09	5 ft Encoder interface cable with connector for ITRON 200WP radio	M91
CFH	L10	25 ft Encoder interface cable with connector for ITRON 200WP radio	M90
GPS	L11	SOFREL data logger cable 2 m with connector for SOFREL GSM module	M92
MI/d	L12		
m ³ /d	L13		
GPD	L14		
<u>Totalizer</u>			
Volume calculation (default totalizer 1 = forward and totalizer 2 = reverse)			
Totalizer 1 = RV, reverse flow	L20		
Totalizer 1 = NET, net flow	L22		
Totalizer 2 = FW, forward flow	L30		
Totalizer 2 = NET, net flow	L31		
<u>Volume unit</u>			
m ³	L40		
MI	L41		
G	L42		
AF	L43		
I x 100	L44		
m ³ x 100	L45		
G x 100	L46		
CF x 100	L47		
MG	L48		
G x 1000	L49		
CF x 1000	L50		
AI	L51		
kl	L52		
<u>Pulse set up</u> (default pulse A = forward and pulse B = Alarm)			
A function = RV, reverse flow	L62		
A function = FWnet, forward net flow	L63		
A function = RVnet, reverse net flow	L64		
A function = Off	L65		
Volume per pulse A = x 0.0001	L70		
Volume per pulse A = x 0.001	L71		
Volume per pulse A = x 0.01	L72		
Volume per pulse A = x 0.1	L73		
Volume per pulse A = x 1	L74		
B function = FW, forward flow	L80		
B function = RV, reverse flow	L81		
B function = FWnet, forward net flow	L82		
B function = RVnet, reverse net flow	L83		
B function = Alarm	L84		
B function = Call up	L85		
Volume per pulse B = x 0.0001	L90		
Volume per pulse B = x 0.001	L91		
Volume per pulse B = x 0.01	L92		

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