

SITRANS F M MAG 8000

Precise metering with battery powered water meters

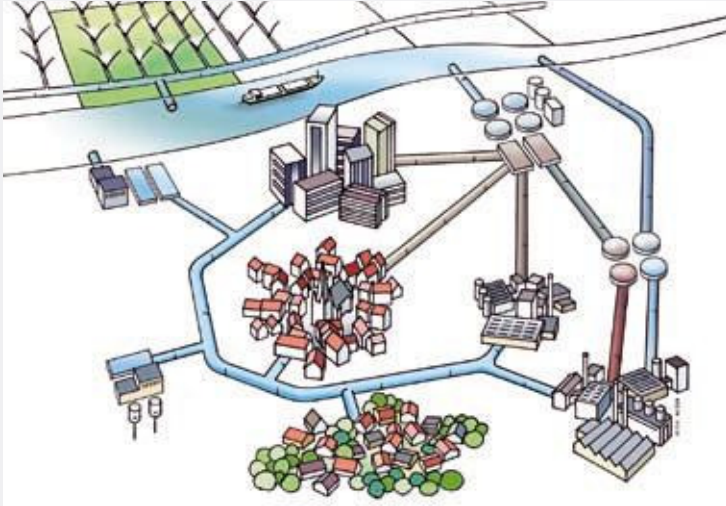


SITRANS F

Answers for industry

SIEMENS

MAG 8000 program: The water meter of choice for water supply and metering



Distribution and abstraction network

- Monitor water collection and flow between reservoirs
- Avoid draining of reservoirs
- Leakage detection
- Network load monitoring

Bulk water / Revenue metering

- Accurate water billing
- Water consumption monitoring
- Combined revenue and district metering
- Optimization of water usage

Irrigation

- Monitoring of a scarce resource
- Accurate and fair billing
- Obstruction-free gate for water delivery

The MAG 8000 program combines world-class performance with dedicated application solutions and low cost of ownership.

Distribution and abstraction Minimize maintenance and detect leaks early

To ensure consumers receive a continuous flow of drinkable water, more and more sensors are being installed in the network to monitor the flow of water from trunk lines to local systems.

By using the MAG 8000 water meter, flow can be measured in both directions with the same degree of accuracy - and an absolute minimum of maintenance. Furthermore, reliable and repeatable measurements of low flow at night aid in early leakage detection.

Bulk water / revenue metering Monitor consumption accurately and economically

To ensure water bills are fair, and to reduce the need for verification, usage must be measured cost effectively and accurately.

With a high turndown ratio, energy-saving low pressure drop, and certification to global revenue standards, the MAG 8000 / MAG 8000 CT measures flow with consistently high accuracy over a wide range of flow rates. Furthermore, the meter performs year in year out with only minimal maintenance requirements, making MAG 8000 the best choice when it comes to optimizing costs.

Irrigation Achieve robust long-term performance for optimal cost of ownership

Where irrigation systems are used in crop production, MAG 8000 / MAG 8000 CT ensures water wastage is kept to a minimum and that farmers get a fair deal.

The MAG 8000 / MAG 8000 CT has no moving parts and is not prone to wear and tear in the usual way. It is resistant to solids and debris in the water supply. Its IP68/NEMA 6P enclosure allows installation in places where flooding can occur, or even complete underground burial. The battery power option is a good choice for long-term performance in regions lacking reliable mains power.

One meter for all stand alone water applications

Meter type	MAG 8000 Basic	MAG 8000 Advanced	MAG 8000 CT Basic	MAG 8000 CT Advanced
Abstraction and distribution network	••	••••	•	•
Bulk water / Revenue metering	•	•	••••	•••
Irrigation	••••	•	••••	•

••• Most often used •• Often used • Can be used

The MAG 8000 program delivers the performance, dependability and long life that make it the water industry's water meter of choice. It includes different versions to meet different market demands.

- Standard version with basic and advanced information and functionality
- Custody Transfer version (CT) with basic or advanced information and functionality

	MAG 8000	MAG 8000 CT
Transmitter type	Basic water version for general purpose use Advanced water version for advanced information and functionality	
Custody transfer version	For billing purpose according to ISO 4064 Type-approved and verified according to OIML R49 / MI-001	
Sensor size DN	25 – 1200 mm / 1" – 48" with EPDM liner	* 50 – 300 mm / 2" – 12" with EPDM liner
Enclosure	IP68 / NEMA 6P, compact and remote with connectors and factory-mounted cable	MI-001: IP68 / NEMA 6P, compact OIML R49: IP68 / NEMA 6P, compact and remote with connectors and factory-mounted cable
Display	Display with touch keypad	
Output	2 individual pulse outputs (incl. net flow volume)	2 individual pulse outputs
Communication	Integrated standard IrDA interface Add-on communication modules, RS 232 / RS 485 with MODBUS RTU protocol	
Power supply	Internal or external battery pack 12 – 24 V AC/DC and 115 – 230 V AC with battery backup	MI-001: Internal or external battery pack OIML R49: Internal or external battery pack 12 – 24 V AC/DC and 115 – 230 V AC with battery backup
Water certifications	MAG 8000 is approved to the international water meter standard OIML R49/MI-001 (EU), complying with the European CEN – EN 14154 and ISO 4064 specifications	
Transmitter features	Data logger with selectable log interval up to 26 months, time and date, data protection, application identifier, alarm handling, meter status, diagnostics, battery power management Advanced version only: Leakage detection, flow statistics and consumption profile, advanced diagnostics, self-check, insulation test, meter utilization, tariff and settle date (revenue)	
Accuracy	0.4% ± 2 mm/s (DN 25 - 1200 / 1" – 48") 0.2% ± 2 mm/s (DN 50 - 300 / 2" – 12")	OIML R49 Class 1 and 2 MI-001 Class 2
Bi-directional measurement	Yes	No
Drinking water approvals for sensor part	ACS (France), WRc (UK), DVGW (Germany), NSF-61 (USA) and Belaqua (Belgium)	
Process connections	EN 1092-1 (DIN 2501), ANSI 16.5 Class 150 lb, and AS 4087	
Operating pressure	PN 10 or PN 16 / 145 psi or 232 psi	
Media temperature	0 – 70°C / 32 – 158 °F	0.1 – 30°C / 32 – 70 °F
Electrodes and earthing electrodes	Hastelloy C276	

* Up to DN 600 / 24" in preparation

Compact and remote installation made simple



With the MAG 8000 range, it is easy to install a reliable water meter in virtually any environment, whilst maintaining full accuracy, performance and economy of operation.

With its sturdy construction, MAG 8000 / MAG 8000 CT is built to resist environmental factors such as water containing solids and debris.

Simple, reliable and robust, this program features:

- Remote transmitter solution with factory-mounted sensor cables and connectors
- Underground installation – sensor can be buried – no manhole required
- IP68 / NEMA 6P enclosure and cable designed to withstand constant flooding
- Built-in earthing electrodes
- Robust construction built to resist environmental influence
- Long lasting performance
- Durable against
 - high/low temperature
 - flooding and high humidity
 - erosion



Easy to install

- Simply bolt into place before operation
- Minimized inlet and outlet requirements
- No additional connection or set up is required to operate the meter
- No filter required



Robust design

The remote sensor is free of electronic components, vastly reducing its vulnerability to damage during installation and operation. The sensor is factory sealed to IP 68 / NEMA 6P standards, ensuring long-term impermeability in underwater applications.



The MAG 8000 / MAG 8000 CT water meter range is high on performance, and low on running costs.

Once installed, a number of performance-enhancing features ensure that maintenance requirements are restricted to an absolute minimum.

Each meter is designed with:

- Consumption logging storing up to 26 months of data
- Leakage detection program
- Consumption profile
- Meter utilization for meter selection
- Advanced flow statistics
- Meter status and alarm handling
- Meter and application diagnostics
- Data protection and backup
- Bidirectional accuracy
- Tariff control on time and flow rate, with accumulated totalized values directly accessible from the display on site.
- Pre-account settling date function that automatically stores the totalizer value on a specific date.



Obstruction

Freedom from moving parts renders the water meter resistant to particles and debris present in water, resulting in less wear and tear. Minimal pressure drop across the meter reduces energy loss.



Low-flow detection

Siemens conical flow tube design improves low-flow performance. Low flow rates are more accurately detectable, because the conical design results in background pressure drop across the meter equivalent to that over 4 meters of straight pipe.

Best-in-class performance: 6 years of battery operation



The MAG 8000 program is designed to assure best-in-class performance, delivering reliable long-term performance with minimal cost of ownership. No mains power is required.

10 years maintenance-free operation

6 years operation time of the internal battery and an external battery pack with a 10 year life enable MAG 8000 / MAG 8000 CT to provide up to 10 years of maintenance-free operation.

Battery power management

Optimal control of power consumption ensures long operation time and reduces the number of site visits. A customer-selectable "low battery" level setting with call-up-alarm lets you know when it's time to replace the battery.

Intelligent and dependable operation

The MAG 8000 / MAG 8000 CT combines high-efficiency technology and advanced power management.



Internal 6-year life battery pack



Mains power supply



Mains power supply with up to 3 years of battery backup



External 10-year life battery pack

Flexible power supply

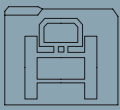
- Replaceable internal battery pack
- External battery pack with waterproof connectors (IP68 / NEMA 6P)
- Internal mains power supply, 12 – 24 V AC/DC and 115 – 230 V AC with battery backup

Intelligence at your fingertips

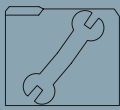
Easy to read display

Graphical display and keypad for simple operation and instant access to information.

MAG 8000 / MAG 8000 CT advanced version provides intelligent information with an on-site display.



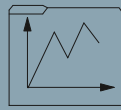
Meter information



Service



Data logger



Statistics



Revenue

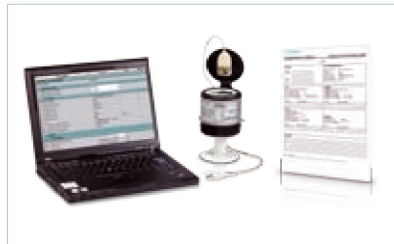


The future-proof open communication platform makes network integration easy both today and tomorrow.

Advanced self-diagnostics perform a wide range of essential checks and data analyses automatically.

Qualification Certificate

The SIMATIC PDM tool allows field testing and verification of the water meter, then creates a printed "Qualification Certificate" with specific data defining the quality status of the measurement.



Meter diagnostics

The MAG 8000 / MAG 8000 CT advanced version includes a leakage detection program that measures and monitors the lowest flow value within a customer-selected time frame each 24 hours. Observed changes during this period could indicate when a leak started.

- An electrode resistance module measures the meter's contact with the media.
- A program indicates whether the size of the meter selected is appropriate for the flow conditions on site.
- A comprehensive data logging function records and stores consumption levels, alarms and operating conditions from the site.
- Call-up function via pulse output to reduce site visits.
- Documentation of operation conditions with on-board meter self-check and diagnostics of application conditions.



Insulation test

Built-in "cross-talk" test checks the entire signal chain of the system ensuring that the sensor flow signal is unaffected by external noise.

Data flows better with Siemens...



With advanced display information, on-site data collection and remote monitoring via communication networks, MAG 8000 / MAG 8000 CT makes sure you get all the information you need.

Wireless solution

Siemens offers a complete wireless automated meter reading solution. Data from the site can be directly accessed over the Internet using a standard browser and secure password protection.

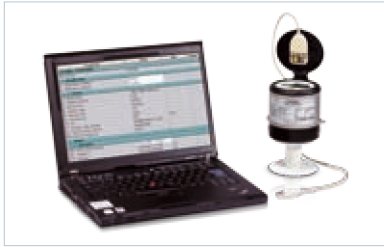
Easy access to data on-site

Standard IrDA interface for configuration, data collection and documentation using Siemens Process Device Manager or Flow Tool Software.



Add-on communication

Communication modules can be installed if network capability is required.



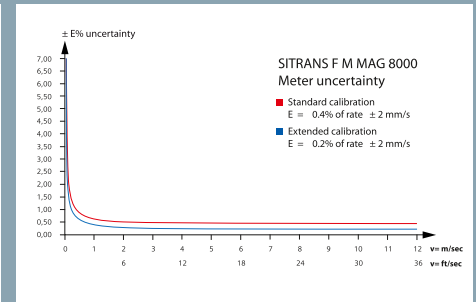
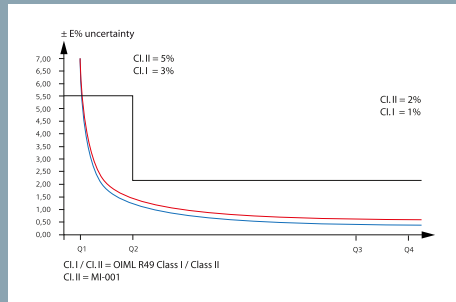
Flow simulation

Simulation checks that information flows correctly, and is configured via the standard IrDA interface or the communication channel.

Accredited calibration ensures accuracy

The maximum uncertainty of measurement following a standard calibration is $\pm 0.4\%$, and an extended calibration $\pm 0.2\%$.

A calibration certificate is supplied with every water meter, and calibration data are stored inside the instrument.



Validated calibration ensures accurate water measurement. Every Siemens water meter is calibrated in-house at facilities that are individually accredited in accordance with ISO / IEC 17025 by UKAS, DANAK and traceable to NIST.

The accuracy of each water meter is determined by the type of calibration performed. The MAG 8000 / MAG 8000 CT water meters are available with three types of calibration, suited to different application requirements.

Calibration type	Application	Accuracy	Water meter type
1. Standard	General water applications	0.4 %	MAG 8000
2. Extended	High-performance applications	0.2 %	
3. Bulk water / revenue	Custody transfer applications (CT)	Class 1: 1% at low flow 3% Class 2: 2% at low flow 5%	MAG 8000 CT

MAG 8000 / MAG 8000 CT revenue meters are verified in accordance with the Measuring Instruments Directive 2004 (MID) for custody transfer applications, comprising the following approvals.

MID module	Approval	Geographical applicability
MID Class II Module B	OIML R49 type approval	Worldwide
	MI-001 approval	European Union
MID Class II Module D	Production quality management system approval (first time inhouse certification)	European Union

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