

**SIEMENS**

*Ingenuity for life*



Process Instrumentation

Battery-powered, reliable  
and cost efficient.

SITRANS F M MAG 8000 water meter for  
long-term accuracy.

[usa.siemens.com/mag](http://usa.siemens.com/mag)

# The water meter of choice for distribution and billing.

The SITRANS F M MAG 8000 portfolio of battery-operated flowmeters combines world-class performance with a low cost of ownership, tailored to meet the needs of your specific water application. No mains power required.



The robust SITRANS F M MAG 8000 operates in even the most challenging environments with consistently high accuracy and virtually no maintenance — making it a highly cost-efficient water metering solution.

### High-precision water metering – no compromises necessary

Engineered for maximum flexibility without sacrificing accuracy, the SI-TRANS F M MAG 8000 is the ideal flow solution for a wide range of water applications, including abstraction, distribution, revenue and bulk metering, and irrigation.

The MAG 8000 is available in both compact and remote versions with OD inlet/outlet requirements, making it easy to install virtually anywhere – even underground or in flood-prone locations.

Its sturdy construction according to ISO 12944-2 is built to resist solids and other debris. And when powered by a highly efficient external lithium battery pack, the MAG 8000 can operate continually for up to 15 years in areas lacking mains power.

An integrated power management program calculates the amount of power remaining, and a configurable “low battery” alarm alerts you when replacement is necessary.

### Reliable and robust, it also features:

- Remote transmitter option with factory-mounted cables and connectors
- No moving parts resulting in less wear and tear
- Bidirectional accuracy
- Unrestricted flow tube for minimal pressure loss even at high flow rates
- IP68 / NEMA 6P enclosure and cable, allowing for sensor burial and operation in flooding conditions
- Durable enough to withstand extreme temperatures, high humidity and erosion



### Abstraction and distribution

To ensure that consumers receive a consistent supply of drinkable water, the MAG 8000 monitors all stages of network water flow from production plants and trunk lines to local delivery systems with:

- Bidirectional flow capability - one solution for all applications
- Network load monitoring - reduces leakage and saves energy
- Early leakage detection - achieved with reliable and repeatable measurements of low flow at night

### Irrigation

Where irrigation systems are used in crop production, the MAG 8000 keeps water wastage to a minimum and ensures that farmers get a fair deal with:

- No moving parts - not prone to wear and tear in the usual way
- IP68 / NEMA 6P enclosure - allows for installation in places where flooding can occur, or even complete underground burial
- Optional conduit adaptor - provides a clean, protected pathway for device cables to secure integrity in any conditions
- Battery power and easy connection to solar panels - ensures long-term performance in locations without reliable mains power

### Bulk water and revenue

To ensure water bills are fair, and to reduce the need for verification, the MAG 8000 CT measures usage precisely and cost effectively with:

- High accuracy - 0.2 to 0.4% of flow rate
- Custody transfer approval - according to international revenue standards OIML 49 and MI-001
- No moving parts - minimal maintenance requirements optimize your cost of ownership
- OD inlet/outlet - offers greater flexibility in meter installation



# Intelligence at your fingertips.



The 3G/UMTS-based wireless communication module collects measurement data from meters anywhere in the world covered by the 3G/2G network. Alarms from the MAG 8000 are sent immediately to the customer once an alarm signal is detected by the module at a minimum sample interval of 1 minute.

## Data flows better with Siemens

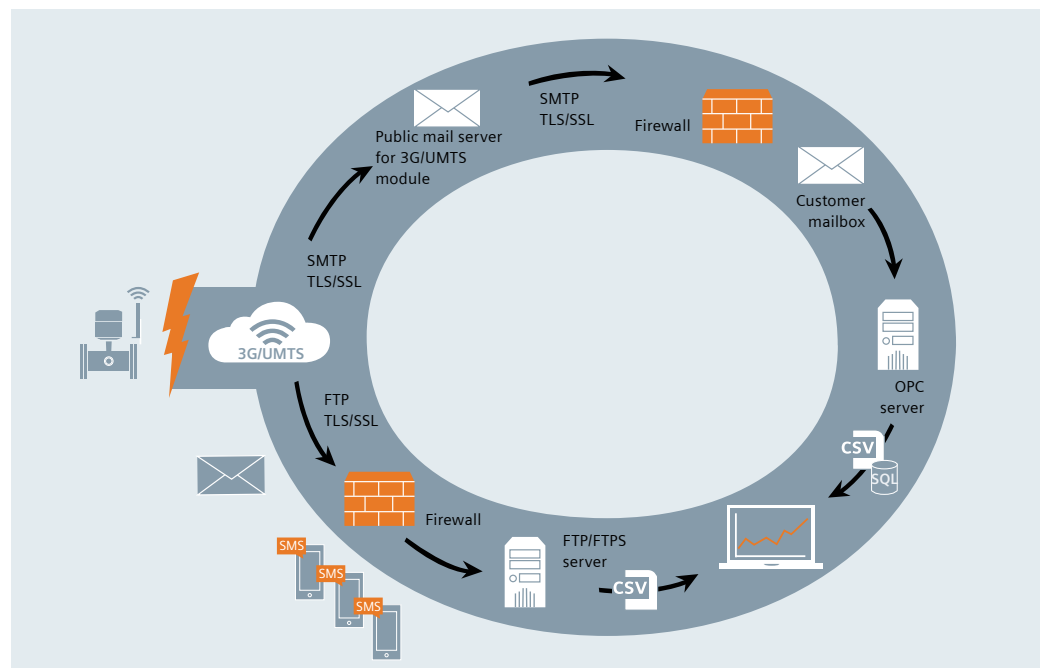
To enhance operational efficiency, improve billing accuracy and significantly reduce costs, the SITRANS F M MAG 8000 includes a built-in wireless automated meter reading (AMR) solution designed for use in Water Fixed Networks. Flow measurement data from any site can be accessed via a web browser and secure password protection.

The MAG 8000 also features a standard IrDA interface for configuration, data collection and documentation using SIMATIC Process Device Manager or Flow Tool software. For remote monitoring of water applications, a compact wireless communication module can be added to log all data from the meter and transmit it via FTP, email or SMS at customizable intervals throughout the day.

## The MAG 8000 keeps you connected with:

- 2-channel analog input measurement for external ratiometric pressure transmitter, transmission together with flow measurement (2-in-1 solution)
- 4-20 mA alarm signal detection and real-time SMS alarm for tamper protection and flooding situations
- Real-time clock synchronization with internet NTP server, ensuring that all measurement data is accurately time-stamped
- Data transmission at customer-specified points in time, allowing for synchronization of information from multiple MAG 8000 devices
- Seamless communication via both the 2G and 3G networks

MAG 8000 3G communication allows for data transmission via numerous protocols including SMS, email via SMTP, email via SMTPS (TLS/SSL-based encryption), FTP, and FTPS (TLS/SSL-based encryption). This provides customers with the flexibility to receive data via email or text message as well to relay data directly to internet-capable monitoring and control systems anywhere in the world. The MAG 8000 also ensures the security of transmitted data to the levels required by individual customer standards.



With comprehensive data collection and logging options, advanced diagnostic functions and the capability for remote monitoring, the SITRANS F M MAG 8000 keeps you fully in control of your water application – whether you're on-site or on-the-go.

Once the MAG 8000 is installed, a wide range of smart features ensures reliable performance with minimal maintenance:

- An electrode resistance module measures the meter's contact with the media
- A product sizing 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
- Remote Qualification Certificate integrated into the 3G module enables offsite quality audits on devices anywhere in the world



The free plug-in integrated into the SIMATIC PDM tool allows for on-site meter assessment and prints a Qualification Certificate for monitoring and auditing purposes.

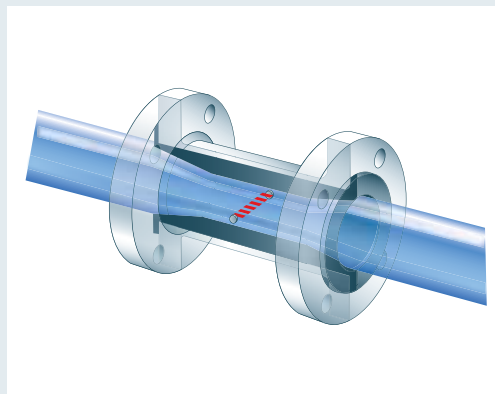
**Flow simulation**

Integrated flow simulator verifies and adjusts the pulse output to any connected device or system, with configuration possible via the standard IrDA interface or the communication channel.



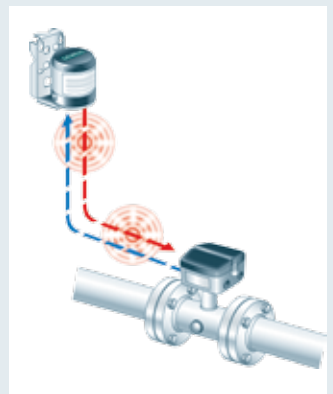
**Improved low-flow performance**

Siemens' conical flow tube design improves low-flow performance with negligible pressure drop across the meter for reduced energy loss.



**Insulation test**

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



# Accredited calibration for more accurate water measurement.



Every Siemens water meter is calibrated in-house at facilities that are individually accredited in accordance with ISO / IEC 17025.

**SIEMENS CALIBRATION REPORT**

**SITRANS F M**

Customer: MAG8000 CF      Serial No. 585322-045  
 Meter type: MAG8000 DN100      Serial No. 187822-085  
 Gas Piping: 0.75x0.25x10      System Serial No. TME802 885322-045

Calibration data  
 Q3: 100.000 m³/h      Calibration liquid: Water  
 60.000 m³/h      Calibration rig: Berni FRU 2

Calibration settings  
 Frequency output: -

Calibration results

Test no.	Q3 scale flow	Water temp.	True Flowrate	Flowmeter Output	Flowmeter Frequency output	Error
1	100.00	23.0	41.7544	100.000	37.7160	2.24
2	0.00	24.0	0.2871	1.0007	0.2862	1.0000
3	0.00	23.7	0.1905	0.9922	0.1898	-0.91

Calibrated by: Gross      Date:      Time: 20:42:58      Approved by:      Date:

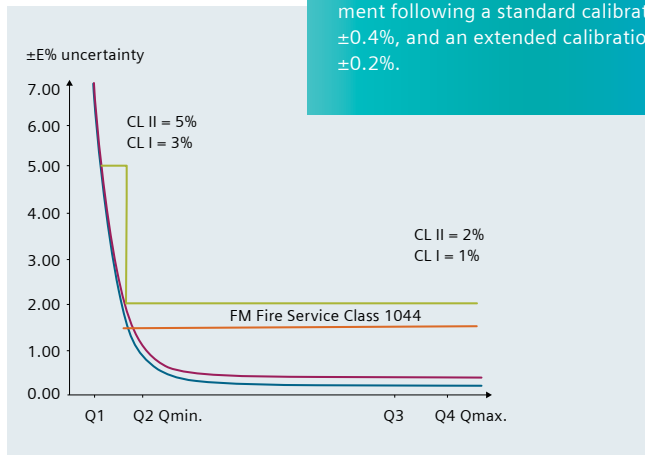
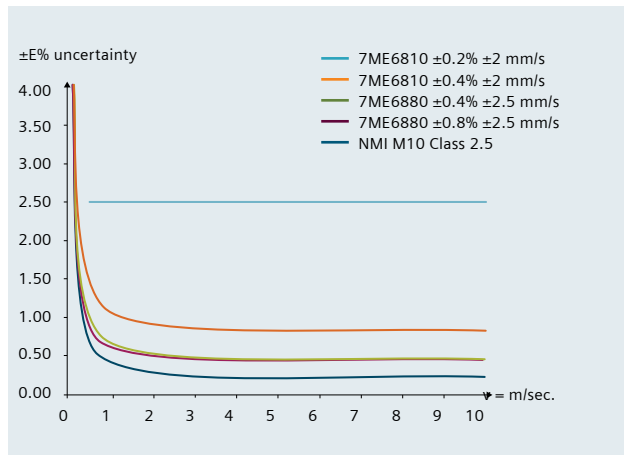
A calibration certificate is supplied with every water meter, and all calibration data is stored in the instrument.

Flowmeter calibration is a vital step in ensuring consistently accurate measurement. All SITRANS F M electromagnetic meters are wet calibrated at Siemens flow facilities with traceable instruments referring directly to the physical unit of measurement according to the International System of Units (SI).

A certificate is supplied with every calibration to satisfy worldwide traceability standards, including NIST in the United States.

Siemens offers accredited calibrations assured to ISO/IEC 17025 in the flow range from 0.0001 to 10,000 m³/h.

Siemens Flow Instruments accredited laboratories are recognized by the International Laboratory Accreditation Corporation Mutual Recognition Arrangement (ILAC-MRA), ensuring international acceptance of test results.



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

A suitable meter for every water application.



	MAG 8000 Standard	MAG 8000 CT
Application	Abstraction and distribution networks	Bulk water and revenue
Transmitter type	Basic version Advanced version for advanced information and functionality	
Custody transfer version		Type-approved and verified according to OIML R 49 / MI-001
Sensor size DN	1" – 48" with EPDM liner	2" – 24" with EPDM liner
Enclosure sensor and transmitter	IP68 / NEMA 6P, compact and remote with connectors and factory-mounted cable	
Display	Display with touch keypad	
Output	2 individual pulse outputs (forward, reverse and net volume)	
Communication	Integrated standard IrDA interface, wireless communication module, RS232 / RS485 with MODBUS RTU protocol, encoder interface module with sensus protocol	
Power supply	Internal 2 D-cell or external 4 D-cell battery pack 12 – 24 V AC/DC and 115 – 230 V AC with battery backup	
Certifications	Approved to the international water meter standard OIML R 49/MI-001 (EU), complying with the European CEN – EN 14154, ISO 4064 specifications and FM Fire Service Class 1044	
Transmitter features	Data logger with configurable log interval up to 26 months, time and date, data protection, application identifier, alarm handling, meter status, diagnostics, battery power management, insulation test  Advanced version only (not valid for MAG 8000 I): Leakage detection, flow statistics and consumption profile, advanced diagnostics, self-check, meter utilization, tariff and settle date (revenue)	
Accuracy	$\pm 0.4\% \pm 2 \text{ mm/s}$ 1" – 48" $\pm 0.2\% \pm 2 \text{ mm/s}$ 2" – 12"	OIML R 49 Class 1 and 2 MI-001 Class 2
Bi-directional measurement	Yes	
Drinking water approvals for sensor part	NSF/ANSI Standard 61 (USA),	
Process connections	EN 1092-1 (DIN 2501), ANSI 16.5 Class 150 lb , AS 4087, and AWWA C207	
Operating pressure	145 psi or 232 psi	
Media temperature	32 – 158 °F	32 – 122 °F
Electrodes and earthing electrodes	Hastelloy C276	

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

Calibration type	Applications	Accuracy	Water meter type
<b>Standard</b>	General water	0.4%	MAG 8000 Standard
<b>Extended</b>	High-performance	0.2%	MAG 8000 Standard
<b>Bulk water / revenue</b>	Custody transfer (CT) FM fire service	OIML R49 Class 1 / Class 2 OIML R49 Class 1044	MAG 8000 CT

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