

SIEMENS



When it's really flowing – magnetic flow measurement with SITRANS F M

SITRANS F M



We have extended our product spectrum for you. Now, you can also obtain magnetic flow measuring systems from us.

When this technology is used, measurement does not interfere with the measured media.

DC or alternating field – your demands are decisive

The principle of magnetic flow measurement is based on Faraday's induction law: the measured conductive media are moved through a magnetic field, where they generate a voltage that is proportional to the velocity (the magnetic field is generated by coils in the converter). The voltage is tapped off the measuring sensor's electrodes, and the magnetic field is generated with DC or with patented alternating field excitation. The latter is particularly suitable for viscous media and for media with a minimum of conductivity.

**Thin, thick,
or really extreme:
simply observe discretely**

SITRANS



Everything that takes place can be defined more as discrete observation. Our magnetic flow meter systems are highly suited to both standard and extreme solutions alike. Be it pulsating flows, media with a low conductivity or a large amount of solids, thanks to patented solutions, our magnetic flow meter specialists measure everything highly precisely.

Complete units for all application areas

We combine our measuring sensors with the SITRANS F M Intermag and Transmag converters to arrive at complete units that are available both as compact and as remote units. Siemens magnetic flow meters are equally suitable for all sectors, for example water/sewage and power engineering, the chemical industry, the paper processing industry, pharmaceuticals and foodstuffs.

Perfect with DC or patented alternating field

SITRANS F M InterMag operates with a pulsed magnetic DC field and is therefore suitable for standard applications. SITRANS F M TransMag is ideal for pulsating and viscous media and for media of very low conductivity ($> 0.008 \mu\text{S}/\text{cm}$), measuring with a patented pulsed alternating field process.



Also internally patented

Entirely according to our motto of "Get a bit more", you can expect even more from the Siemens SITRANS F M flow meters. Thus, diagnostics and dosing functions, for example, are a matter of course, just like freely programmable inputs and outputs. The sensors themselves also have something to boast about. This is because we line the sensors with the NOVOLAK insulating lining, which has been patented for our magnetic flow meter systems, or optionally with other linings, to avoid a voltage terminal for the measured signal. You will find more in the adjacent text.

Our recommendation:
when things really get flowing,
measure with Siemens magnetic flow
meter systems.

NOVOLAK:

the patented lining for extreme solutions

We have lined our magnetic flow meter systems with NOVOLAK.

NOVOLAK is a novel material that was patented for use in Siemens magnetic flow meter systems. The properties mentioned below enable universal use of the units – above all also in extreme solutions.



- NOVOLAK is highly resistant to chemicals, thus permitting its use even in highly aggressive media.
- NOVOLAK is extremely resistant to wear and tear. This is particularly important when it comes to measuring mixtures of sand and water.
- NOVOLAK withstands high pressures and absolute vacuum.
- NOVOLAK has a smooth, non-porous surface.
- NOVOLAK makes our measuring sensors suitable for use in drinking water.

SITRANS F M Intermag: your converter for standard applications



SITRANS F M 711/A

The sensor with diverse lining and electrode materials – for all standard applications in diameters from DN 15 to DN 2000 (1/2"–80"). You simply choose the connection flanges and pressure stages to suit your application.



SITRANS F M 711 S

This is the flangeless variant in DN 15 to DN 100 (1/2"–4") and the ideal solution for all plastic pipes. Thanks to its light weight, the pipe does not need additional supporting. With its sturdy housing, the SITRANS F M 711 S can also be used in steel pipes.

SITRANS F M InterMag is the converter that operates with a pulsed magnetic DC field. Use it for flow rates from 0.25 to 12 m/s.

This covers all standard applications. SITRANS F M InterMag is available with diverse measuring sensors, in each case as a complete solution.

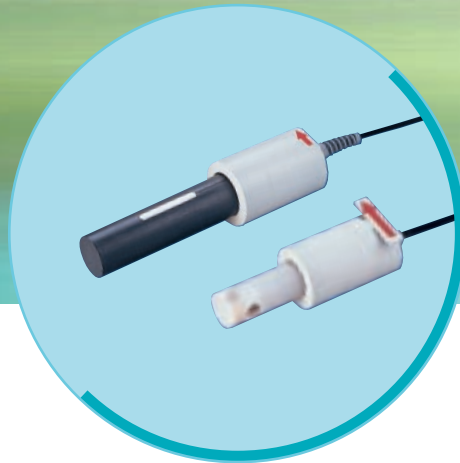


INTERMAG



SITRANS F M 711/F5

Minimum flow rates (from 5 l/h) and rated pipe diameters from 2–12 mm? No problem. We have developed the universally applicable ceramic measuring tube with platinum electrodes for the most extreme stresses. Featuring thread, flange, Triclamp or DIN 11851 connection variants, this variant is suitable for almost all applications.



SITRANS F M S1 + S2

These consist of magnetic insertion sensors are the low-cost alternative to the standard measuring sensor. They are especially suitable for monitoring the flow rate through large pipe diameters. Later installation is no problem, even under pressure. Appropriate replacement tools are optionally available.

SITRANS F M Transmag: your converter for highly sophisticated measuring tasks



SITRANS F M 911/E

This is the measuring sensor for pulsating media and for media of low conductivity and/or with a high proportion of solids. As far as the other technical details are concerned, with the exception of its overall length it is identical with SITRANS F M 711/A.

SITRANS F M 911/F5

Minimum flow rates (from 3 l/h) and also pulsating media of low conductivity? No problem for this variant. Otherwise, it is identical with SITRANS F M 711/F5.

Thanks to its patented pulsed alternating field system, the SITRANS F M Transmag is capable of measuring pulsating flows and media of low conductivity and/or with high proportion of solids. Use it wherever you cannot cope with conventional DC field technology, e.g. in sludges, pastes or mushes.

The alternating field system boosts the magnetic field in the measuring tube. This is why it measures reliably and highly precisely even when the media are flowing only slowly or contain more foreign matter.

SITRANS F M Transmag is obtainable as a complete solution with two different sensors.



Siemens MID solutions: entirely ideal

Flexible for your requirements. SITRANS F M InterMag can be combined with all SITRANS F M sensor types based on DC field technology. Be it wall-mounted or built-on, whether it has default settings specific to the system or basic settings that can be adjusted variably on-site: the choice is yours!

Solutions for extreme applications

With Siemens magnetic flow meter technology, you measure even extreme media: pulsating flows, low conductivity and large amounts of solids. Here, the patented Transmag alternating field system and the NOVOLAK lining demonstrate what they can do.

The smartPLUG contains all calibration information and is permanently connected to the sensor. This means: no data loss, not even if the electronics are replaced.

Safety has priority

A number of diagnostics possibilities are integrated as standard. The cabling, the magnetic coils, the electrodes, outputs and any existing long-term drift are checked automatically, and as often as you want. You do not need any additional field tools, thus again saving costs. And: all parameterization possibilities are password-protected.

SITRANS F M

One converter for all

We have limited ourselves to a small number of variants. For you, this signifies a great cost saving because you have reduced maintenance costs, a need for less training and personnel, and the system documentation is also simplified.

Automatic set-up and no-problem installation

Plug and Play is the installation motto. This saves time, money and uncertainty during commissioning. The intelligent InterMag and Transmag converters also recognize the connected SITRANS F M sensor by means of the integrated smartPLUG feature. Defaults specific to the system are loaded and measurement can begin.



Entirely modular for new wishes

This is made possible by the standard software. Use in other applications? No problem. Dosing function suddenly required? The operator simply goes to the integrated display/operator panel, enters the required parameters and dosing starts to run. You suddenly need a display? Simply order one and plug it on – swiftly, without complications and without technical risks. The unit is parameterized via HART/PDM. This means: interfacing to the SIMATIC world is possible.



Our magnetic flow meter solutions in detail

Converter	Intermag	Transmag
Operating principle	Pulsed DC field	Pulsed alternating field
Degree of protection	IP 67 / NEMA 5	IP 67 / NEMA 5
Housing material	Cast aluminum	Cast aluminum
Mains connection	85–264 V AC 18–30 V UC 10–28 V DC	84–264 V AC
Analog output	0/4–20 mA potential-free/HART	0/4–20 mA potential-free/HART
Switched/outputs	3 outputs, of which 1 optional switched input	3 outputs, of which 1 optional switched input
Error tolerance	± 0.5% of reading with $v = 0.25\text{--}12\text{ m/s}$ (see also catalog data)	± 0.5% of reading with $v = 0.25\text{--}12\text{ m/s}$ (see also catalog data)
Optional Ex protection	In preparation	In preparation
Display	Optionally 2 x 16 characters	Optionally 2 x 16 characters
Counters	3 counters as standard	3 counters as standard
Compact version	Possible depending on sensor	Possible depending on sensor

Sensor	SITRANS F M 711/A			SITRANS F M 711/S	
Measuring tube	Stainless steel, non-magnetic			PVC	PVDF
Tube lining	Hard rubber	PTFE	NOVOLAK	None	None
Connections	DN 15–2000 1/2"–80"	DN 15–600 1/2"–24"	DN 50–1600 1/2"–60"	DN 15–100 1/2"–4"	DN 15–100 1/2"–4"
Min. meas. range ($v = 0\text{--}25\text{ m/s}$)	0–0.16 m ³ /h 0–0.7 gpm	0–0.16 m ³ /h 0–0.7 gpm	0–1.77 m ³ /h 0–0.8 gpm	0–0.16 m ³ /h 0–0.7 gpm	0–0.16 m ³ /h 0–0.7 gpm
Max. meas. range ($v = 0\text{--}12\text{ m/s}$)	0–135 800 m ³ /h 0–600 000 gpm	0–12 215 m ³ /h 0–54 000 gpm	0–86 900 m ³ /h 0–383 000 gpm	0–339 m ³ /h 0–15 000 gpm	0–339 m ³ /h 0–15 000 gpm
Max. temperature	90 °C / 195 °F	180 °C / 355 °F	130 °C / 265 °F	60 °C / 140 °F	120 °C / 248 °F
Max. pressure	250 bar / 3500 psig	40 bar / 570 psig	250 bar / 3500 psig	18 bar / 260 psig	18 bar / 260 psig
Vacuum resistance	Yes	No	Yes	Yes	Yes

Sensor	SITRANS F M 711/F5 SITRANS F M 911/F5
Measuring tube	Ceramic (2–12 mm) 0.08"–0.47"
Measuring tube lining	None
Connections	G 1/2," NPT 1/2" DN 15, 1/2" ANSI and further options
Min. meas. range ($v = 0\text{--}25\text{ m/s}$)	0–5 / 0–3 l/h 0–0.02 / 0–0.013 gpm
Max. meas. range ($v = 0\text{--}12\text{ m/s}$)	0–4880 l/h 0–21.48 gpm
Max. temperature	150 °C / 300 °F
Max. pressure	25 bar / 350 psig
Vacuum resistance	Yes

Probes	SITRANS F S 2	SITRANS F S 1
Tube diameter	From DN 100 4"	From DN 500 20"
Operating pressure	20 bar, 290 psig	10 bar, 240 psig
Probe diameter	34 mm / 1.34"	54 mm / 2.13"
Velocity	0.5–10 m/s 1.5–30 ft	0.5–10 m/s 1.5–30 ft
Installation under pressure	Optionally with additional tool	
Adaption to flow profile	Use of several probes	Use of several probes
Probe material	PVDF	PVC
Support material	ST 37 / 1.4571 Plastic	ST 37 / 1.4571
Medium	Clean media	Sewage



Your quite personal contacts

Technology is all well and good. But you might still have questions. Or maybe you have special wishes and requirements? You can reach contacts with worldwide competence at our regional offices and national companies.

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Siemens Aktiengesellschaft

You will find your Siemens partners worldwide ...

... on our Internet homepages:

<http://www.feldgeraete.de>
under "Contacts"

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