

# Electromagnetic flowmeter FSM4000

The new ultimate flowmeter for simple to extreme flow applications



- Ideal for pulp & paper, pharmaceutical, food & beverage industries
  - for applications with high solids content, low conductivity, pulsating flows or any other typically noisy process
- Simple and fast start-up, works right out of the box
- Lower operating and maintenance costs due to the latest in self-diagnostics
- Backwards compatible with previously designed primaries to optimize performance

ABB Instrumentation



# ABB – Your knowledgeable partner for the pulp and paper, pharmaceutical, and food and beverages industries

Process automation within the industrial markets is pushing the boundaries for electromagnetic flowmeters.

For example, in the pulp and paper industry the operating conditions have changed due to higher pulp consistencies in the systems and a continuing trend to more closed piping system with higher concentrations of noise producing substances.

In the food and beverages industry, flowmeters have to meet the growing demands of fruit content measurements in mixture control systems, concentrate measurements and applications with pulsating flows. Flow measurements of high signal stability are an absolute necessity for reliable operation in these systems.

ABB has now developed a universal flowmeter with applicability anywhere in the system based on an enhancement of its MAG-SM, Hygienic/Sanitary and Slurry Magmaster flow measurement systems.

## The new FSM4000

- Improved measurement performance with quick response and noise free outputs
- universal applicability
- reduces spare part inventory
- a single measurement system for all flow measurements of conductive liquids
- latest technology at a competitive price



The system accuracy of the electromagnetic flowmeter FSM4000 exceeds even the accuracy of the pulsed DC electromagnetic flowmeters (typically 0.5% of rate) resulting from an improved excitation method. This is achieved using the most advanced digital signal processors which set a new standard for electromagnetic flow measurement technology. The signal gain of the new measurement technology is unique and exceeds that of existing systems.

Therefore the FSM4000 is equally well suited for the measurement of fluids with extremely low conductivities, e.g. defoamers, deionized water, condensate, polymers or liquid sugar.

→F 54.1515 m <sup>3</sup> /h	→F 54.0636
→F 523.55 m <sup>3</sup>	
→R 53.23 m <sup>3</sup>	→F 936.05 usgpm
FSM4_021	
Damping	
30_	sek
Min	0.1
Max	99.0

## Typical applications

Flow measurement of...

- liquids with high solids content (e.g. pulp stock up to 15%, yogurt with cereal)
- pulsating flows (e.g. dosing of chemical additives) with highly accurate and repeatable outputs
- liquids with low conductivity (as low as 0.5  $\mu\text{S}/\text{cm}$ ) and liquids with varying conductivities
- non-homogeneous fluids
- rapidly changing processes
- processes with extremely short response time (e.g. in the headbox)

## Technology leading

### Flowmeter primary

- Flanged connections DIN DN 3 to DN1000 or ANSI 1/10" to 40"
- Standardized installation length, DVGW-ISO 4064 (short design) or ISO 13359, VDE/VDI 2641
- Primaries completely made of stainless steel, DN 1 to 100 or 1/25" to 4" with a variety of process connections options (wafer design, pipe connections, weld stubs, Tri-Clamp)
- Fluid temperature  $-40\text{ }^{\circ}\text{C}$  to  $+130\text{ }^{\circ}\text{C}$  /  $-40\text{ }^{\circ}\text{F}$  to  $+266\text{ }^{\circ}\text{F}$
- High-temperature design up to  $+180\text{ }^{\circ}\text{C}$  /  $+356\text{ }^{\circ}\text{F}$
- Ambient temperature  $-25\text{ }^{\circ}\text{C}$  to  $+60\text{ }^{\circ}\text{C}$  /  $-13\text{ }^{\circ}\text{F}$  to  $+140\text{ }^{\circ}\text{F}$
- Hygienic certificates: FDA, 3A, EHEDG
- Liners: PFA, PTFE, hard rubber



## Integrated diagnostics tool with system monitoring and diagnosis

The FSM4000 continuously monitors itself by checking the electrodes, coils and interconnecting cables. All relevant signals are measured to allow evaluation of the signal quality and check for deviation of the measuring functions as compared to the values during original calibration. This reduces the routine maintenance effort, since maintenance work is only made when necessary. Clear text messages are displayed and alarms are signaled via a contact output in the event of any deviation. On-line diagnostics can also be accessed via a PC connection.

### ■ Fingerprint

The fingerprint is the permanent reference used by the on-line diagnostics to verify its own flowmeter performance.

- All calibration and device data are permanently stored in a non-volatile memory
- quick exchange, without the need for re-configuration
- automatic error indication and alarm signaling.

## Converters

- Simple, menu-driven configuration routines using a 4-line backlit graphics display
- Direct data entry via push buttons or magnetic sensors
- Flow rate simulation to test all converter outputs and can also be used to assist in commissioning the flow loop
- Short and quick data entry for all user-specific parameters required for instrument operation (e.g. range, current and pulse output) through Easy Set-up
- Contact inputs and outputs
- Current output according to NAMUR
- Pulse output, active or passive
- Protocol availability: HART, PROFIBUS PA, FOUNDATION Fieldbus (on request)
- Power supply: 115/230 V AC 50/60 Hz, 24 V AC/DC

**Easy Set-up**

ABB is a leader in power and automation technologies that enable utility and industry customers to improve performance while lowering environmental impact. The ABB Group of companies operates in around 100 countries and employs about 104,000 people.

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