



Process sensors

# Exceeding limits: the best flow meter in its class



Flow sensors / flow meters



**High accuracy for constant process reliability**

**New measuring pipe design reduces pressure losses**

**Optimised design allows parallel installation in standard splitter boxes and the omission of inlet and outlet pipe lengths**

**Ideal for high process temperatures of up to 90 °C**

**Reduction of set-up and hardware costs thanks to IO-Link**



Energy-efficient



IP 65  
IP 67



IO-Link



Broad  
measurement  
dynamics



4...20 mA

## Precise monitoring of processes

Thanks to its optimised measuring pipe, the new magnetic-inductive flow meter of the SM series now covers measuring ranges of up to 150 l/min. Besides the flow, the temperature and the total quantity are measured.

## High temperature resistance despite compact dimensions

The high temperature resistance of up to 90 °C allows operation in difficult applications such as ovens, where the cooling water reaches very high temperatures.

## Quick set-up and easy handling

The TFT display shows several process values simultaneously, the two separate switch point LEDs and the optional colour change provide an ideal overview. In combination with the intuitive operation via 3 buttons, the self-explanatory menu items considerably reduce the set-up time of the sensor.



## Advantages and customer benefits

### Process reliability and energy monitoring

The overheating of tools, welding guns or ovens leads to increased wear and eventually to production downtime. Continuous monitoring of the water cooling ensures the process reliability of applications requiring intensive cooling. For this, the SM type flow meter features high accuracy and integrated temperature measurement. In combination with the total quantity meter (totaliser function) it is also possible to implement reliable energy monitoring.

### Pump output can be reduced thanks to the minimisation of pressure loss

The optimised design of the measuring pipe with an increased internal diameter reduces pressure drops. Advantage: Pump outputs can be reduced. This saves energy costs.

### Reduction of set-up and hardware costs thanks to IO-Link

Several measuring parameters (flow, temperature, total quantity) can be evaluated in the controller via only one input. Measuring points, wiring and PLC input cards are reduced, which saves costs.

The integrated simulation function simplifies the set-up. The sensors can be integrated into the controller and be checked without the plant being in operation.

### Slim design optimised for standard splitter boxes



To separately monitor individual cooling lines, several flow meters are used simultaneously. Their slim design featuring an ideal installation position and a connector position optimised for practical use renders complex piping and the displacement of sensors unnecessary. This allows use in standard water distributors with an internal diameter of 50 mm.

Another characteristic: No inlet and outlet pipe lengths upstream and downstream of the sensor are required. This enables maximum flexibility for the layout and installation of the plant.

| Measuring range [l/min] | Sealing material | Process connection | Order no.     |
|-------------------------|------------------|--------------------|---------------|
| 0.005...5               | FKM              | G 1/4              | <b>SM4020</b> |
| 0.005...5               | EPDM             | G 1/4              | <b>SM4120</b> |
| 0.05...35               | FKM              | G 1/2              | <b>SM6020</b> |
| 0.05...35               | EPDM             | G 1/2              | <b>SM6120</b> |
| 0.1...75                | FKM              | G 3/4              | <b>SM7020</b> |
| 0.1...75                | EPDM             | G 3/4              | <b>SM7120</b> |
| 0.2...150               | FKM              | G 1                | <b>SM8020</b> |
| 0.2...150               | EPDM             | G 1                | <b>SM8120</b> |

#### Common technical data Type SM

##### Flow

|                      |         |                      |
|----------------------|---------|----------------------|
| Accuracy             | [%]     | ± (0.8 MV + 0.2 VMR) |
| Repeatability        | [%]     | ± 0.2                |
| Medium temperature   | [°C]    | -20...90             |
| Minimum conductivity | [µS/cm] | ≥ 20                 |

##### Temperature

|                 |      |          |
|-----------------|------|----------|
| Measuring range | [°C] | -20...90 |
| Response time   | [s]  | ± 0.5    |

|                     |       |    |
|---------------------|-------|----|
| Pressure resistance | [bar] | 16 |
|---------------------|-------|----|

|                 |      |  |
|-----------------|------|--|
| Output function | OUT1 | frequency output (V/T),<br>switching output (V/T),<br>pulse output (V),<br>IO-Link |
|                 | OUT2 | switching output (V/T),<br>analogue output<br>4...20 mA (V/T/p)                    |

## Application examples

### Injection moulding machine

The cooling water quantity and the temperature are key factors when it comes to the quality of the final product. Clogging must be detected without delay. This is ensured by the SM flow sensor.

### Hardening system

The cooling curves of workpieces must be adhered to during hardening processes. This is done by applying a defined quantity of cooling water to the previously heated workpiece. The SM detects potential clogging, ensuring a continuously high product quality.

### Machine tools

Permanent cooling water supply ensures consistent quality and extends the lifetime of the tool. Swarf can clog cooling water pipes. The SM detects this in time and prevents overheating of the tools.

### Oven construction

Lack of cooling water can lead to dangerous excessive temperatures in the oven. The SM monitors the cooling water quantity and temperature up to 90 °C. Expensive downtime due to excess temperature is a thing of the past.