



Measurement & Analytics | Measurement made easy

SwirlMaster

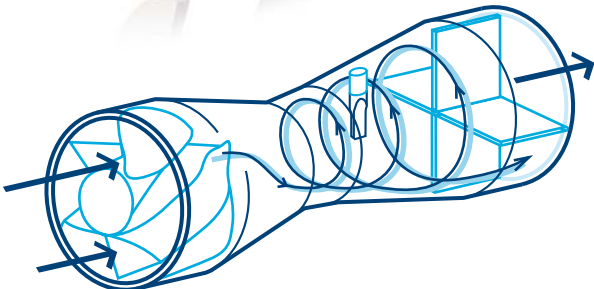
The new generation of
swirl flowmeters

SwirlMaster FSS430/FSS450

Measurement made easy

The most important data at a glance

Accuracies for liquids	± 0.50 % of rate
Accuracies for gases and steam	± 0.50 % of rate
Process connection	Flange design
Meter sizes	DN 14 ... DN 400 (1/2 in. to 16 in.)
Media temperature	-55 ... 280 °C (-67 ... 536 °F)
Media viscosity	max. 30 cP
Upstream and downstream pipe runs (typical value after narrowing)	
Upstream section	3 x DN
Downstream section	1 x DN
Ex approvals	IECEX, ATEX, NEPSI 0/1/2/ Zone 20/21/22 certificates cFMus Class 1 Div. 1, Zone 0/1
Communication	HART 7 or Modbus RTU-RS485 with 1200, 2400, 4800 or 9600 bps
Output	4 ... 20 mA / HART or Modbus, binary output for pulses, frequency up to 10 kHz or contact output
Input signals from external sensors	Pressure, temperature, density, methane content



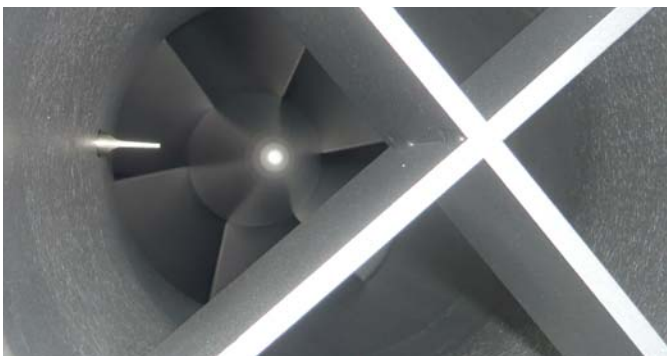
SwirlMaster FSS430/FSS450

Reliable and versatile

Drift-free sensor for high long-term stability

The robust and versatile SwirlMaster enables the reliable measurement of liquids, gases and steam in units of volume, mass and energy.

- Digital signal processing for volume measurement and volume totalizing with analog and digital outputs
- Mass/energy flow or standard flow measurement without additional flow computer
- Plug-in display unit for simple parameterization
- Integrated 4 ... 20 mA and/or HART input for external pressure, temperature, density or concentration input
- Global approvals for explosion protection
- Shortest up- and downstream sections for compact, space saving installation
- Significantly lower pressure loss than Vortex flowmeters with a reduced bore



SwirlMaster FSS430/FSS450

Easy to operate

Fast and reliable commissioning

Intuitive user interface

- Common operating concept across the measurement portfolio including Easy Set-up function for comfortable and easy configuration
- Intuitive operation through the glass via capacitive keys with plain-text operating menus
- Integrated online self-verification without process interruption or meter removal
- Status messages according to NAMUR NE107
- SensorMemory technology enabling plug and play electronics replacement for maximum data security
- Automated zero point adjustment for easy commissioning



SwirlMaster FSS430/FSS450

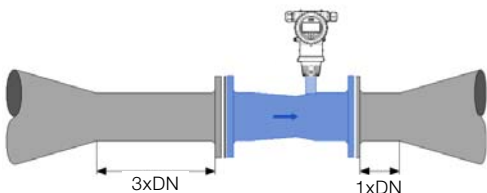
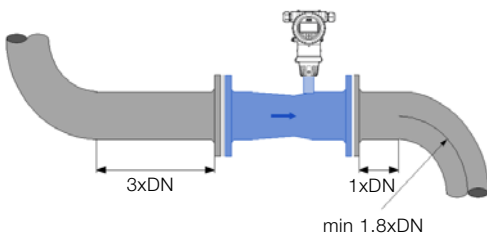
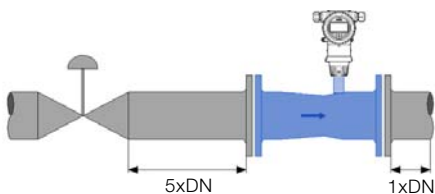
Shortest inlet sections

Lowest inlet- and outlet section requirements enable many applications

Immune to turbulence

Depending on the integration within the process:

- Pipeline reduction not necessary
- No additional flow straightener needed
- After elbow and / or reduction only 3 diameters inlet section and 1 diameter outlet section needed
- After control valve only 5 diameters inlet section needed



SwirlMaster FSS430/FSS450

Excellent measuring performance

Broad range of applications due to the latest transmitter technology and a proven sensor

Latest transmitter technology

- Wide flow range up to 50:1 flow turn down
- Highest accuracy in liquid, gas and steam measurement
- Shortest response time (200 ms)
- Special operation modes for hot water / condensate and steam gross or net energy flow in accordance with IAPWS-IF97
- Gas engine for natural gas measurement according to AGA/GERG standards
- Integrated vibration compensation
- SIL2-certified in accordance with IEC 61508



SwirlMaster FSS430/FSS450

Extensive flow calculations

Integrated flow computer functionality for standard volume, mass or energy units

With integrated flow computer

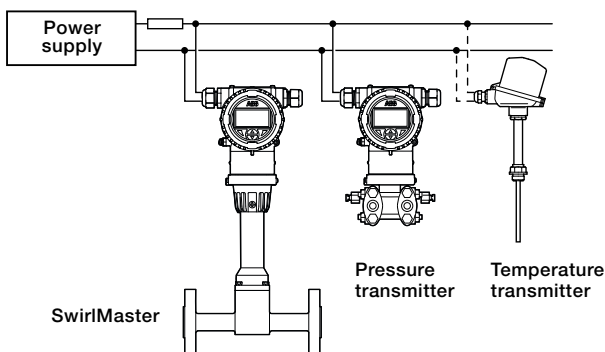
- Integrated interfaces, analog or HART, for the connection of external instruments such as: pressure, temperature, density or gas analysis
- Internal calculation and output of standard volume, mass or energy flows

SwirlMaster FSS430

The standard device with optional digital outputs, graphical display and excellent vibration immunity for your application. Optionally available in an integral mount design or in a separate version with up to 30 m cable length. Optionally with an integrated temperature sensor.

SwirlMaster FSS450

The SwirlMaster transmitter with integrated temperature sensor additionally offers analog input for your mass or energy flow monitoring. The built-in calculation of mass and/or energy for steam and hot water in accordance with the IAPWS-IF97 standard replaces complex installations and separate flow computers in many applications.



Contact us

ABB Limited

Process Automation

Howard Road, St. Neots
Cambridgeshire, PE19 8EU, UK
Phone: +44 (0) 870 600 6122
Fax: +44 (0)1480 213 339
E-Mail: enquires.mp.uk@gb.abb.com

ABB Inc.

Process Automation

125 E. County Line Road
Warminster, PA 18974, USA
Phone: +1 215 674 6000
Fax: +1 215 674 7183

ABB Automation Products GmbH

Process Automation

Dransfelder Str. 2
37079 Goettingen, Germany
Phone: +49 551 905-534
Fax: +49 551 905-555

ABB Engineering (Shanghai) Ltd.

Process Automation

No. 4528, Kangxin Highway, Pudong New District
Shanghai, 201319, P.R. China
Phone: +86(0) 21 6105 6666
Fax: +86(0) 21 6105 6677
E-Mail: china.instrumentation@cn.abb.com

www.abb.com/measurement

Note:

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