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Endress+Hauser
People for Process Automation



prosense®



Flow Sensors

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Mechatronic Flow Sensors

Mechatronic flow sensors work on the principle of a spring-supported piston lifted by the flowing medium against the spring resistance. The flow sensor determines the flow rate by monitoring the piston and providing a corresponding discrete, frequency, and/or analog output based on its position. The spring resistance forces the

piston to return to its original position with decreasing flow, preventing backflow. Mechatronic flow sensors are immune to rapid media temperature changes and are ideal for applications requiring fast response times, such as machining or cooling water applications.



Starting at
\$171.00
(FSD75-AP-6H)

proSense® FSD Series Flow Switches

ProSense FSD series mechatronic flow switches monitor liquid media and provide reliable flow detection by using a spring-supported piston with an inductive sensor to provide a discrete output signal. Mechatronic flow switches have a fast response time, a long lifespan, and are ideal for applications requiring precise flow control.

Features

- Up to 26.4 GPM setpoint range
- N.O. PNP DC output
- Easy setpoint adjustment via rotary dial
- 3/4" or 1" NPT process connections
- 4-pin M12 quick disconnect
- IP65/67 protection rating

proSense® FSA Series Flow Transmitters

ProSense FSA series mechatronic flow transmitters monitor liquid media and use a spring-supported piston to provide an analog output proportional to the flow rate. Mechatronic flow transmitters are ideal for applications requiring fast response times.

Features

- Up to 27 GPM sensing range
- 4 to 20 mA analog output
- 3/4" or 1" NPT process connections
- 4-pin M12 quick disconnect
- IP65/67 protection rating



Starting at
\$185.00
(FSA75-42-6H)

proSense® FSC Series Flow Sensors

ProSense FSC series mechatronic flow sensors monitor liquid media and provide two outputs configurable for switching, frequency, or analog signals for either flow rate or temperature. A convenient pushbutton interface offers quick and easy setup and a bright two-color digital display.

Features

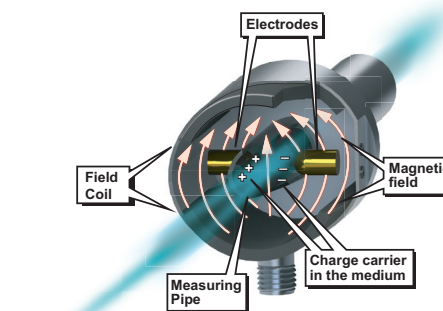
- Up to 50 GPM sensing range
- Switch, frequency, or 4 to 20 mA analog outputs
- Measures media temperature in addition to flow
- 4-digit, two-color digital display
- 3/4", 1", or 1-1/2" NPT process connections
- 4-pin M12 quick disconnect
- IP65/67 protection rating



Starting at
\$260.00
(FSC75-00-42-6H)

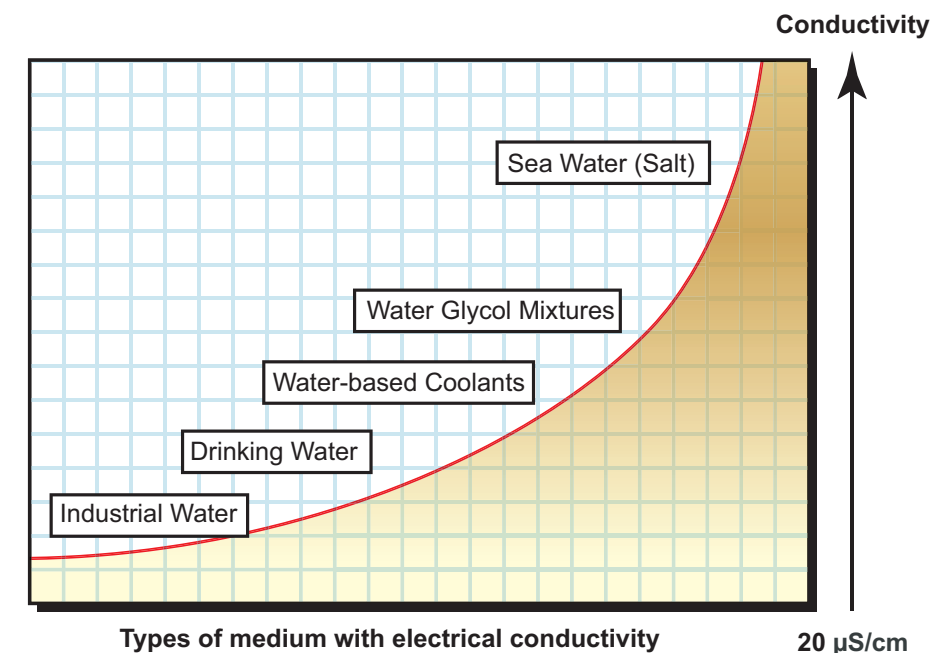
Magnetic-Inductive Flow Meters

Operating Principle



Magnetic-inductive flow meters, or magmeters, use Faraday's law of induction to measure flow rate. Current-carrying coils generate a magnetic field in a measuring pipe. When a conductive media flows through the pipe, its ions are diverted perpendicularly to the magnetic field. The positive and negative charge carriers flow in opposite directions, inducing a voltage that is measured by two electrodes immersed in the media. The induced voltage is directly proportional to the average flow velocity, and the volumetric flow rate is calculated using the flow velocity and cross-sectional area of the pipe.

Magmeters are suitable for use with a variety of conductive liquids in industrial process applications such as those in the following graph:



proSense® FMM Series Flow Meters

ProSense FMM series magmeters are designed to reliably detect the flow rate of conductive media up to 160 gallons per minute. The stainless steel, mechanically-robust design mounts directly in-line, providing a compact, low-profile installation for process control.

A 4-digit numeric display with pushbutton setup simultaneously indicates flow rate, fluid temperature, and total volume. Simple to set up and easy to install, the ProSense FMM is a reliable alternative to traditional flow meters and mechanical flow switches. These flow meters are the new benchmark for price and performance for your flow sensing applications.

Features

- For water and water based media
- Flow rates up to 160 gpm
- Pipe sizes up to 2 inches
- DC switching, pulse, frequency, and analog outputs
- Monitor flow rate, total volume, and temperature in one sensor



Starting at
\$556.00
(FMM50-1002)

Magnetic-Inductive Flow Meters (cont.)

Endress+Hauser Picomag Series Flow Meters

People for Process Automation

Endress+Hauser Picomag series magnetic-inductive flow meters provide a reliable and versatile solution for measuring and monitoring conductive liquids such as drinking and industrial water. They allow simultaneous measurement of flow, temperature, and volume, and provide two configurable output points.

Picomag's large, user-friendly TFT color display allows for quick reading of flow, temperature, conductivity, totalizer values, and warning and alarm messages. For optimal readability, the screen rotates automatically depending on the orientation. Configuration parameters can be called up and monitored by simply knocking on the device.

Picomag flow meters are configured and monitored with a Bluetooth® wireless interface on Android and iOS devices via the free SmartBlue Mobile App. With a wireless connection distance of up to 32 feet, Picomag is ideal for space-limited applications and difficult-to-reach locations.

Features

- Flow rates up to 198 GPM
- Large user-friendly TFT color display
- Configuration and monitoring via the Bluetooth SmartBlue Mobile App
- Measures process medium temperature and conductivity in addition to flow and total volume
- IO-Link v1.1 compatible
- 20 to 30,000 µS/cm media conductivity range
- 1/2 to 2 in NPT process connections
- Two configurable outputs
- No minimum inlet or output pipe run requirements
- NSF/ANSI 61 certified for drinking water applications
- IP65/67 protection rating

I/O options

- Volumetric pulse output
- Switch output
- 4 to 20 mA current output
- 2 to 10 VDC voltage output
- Discrete input for totalizer reset
- IO-Link connection

FREE SmartBlue Mobile App

The SmartBlue Mobile App allows configuration as well as comprehensive access to device data.



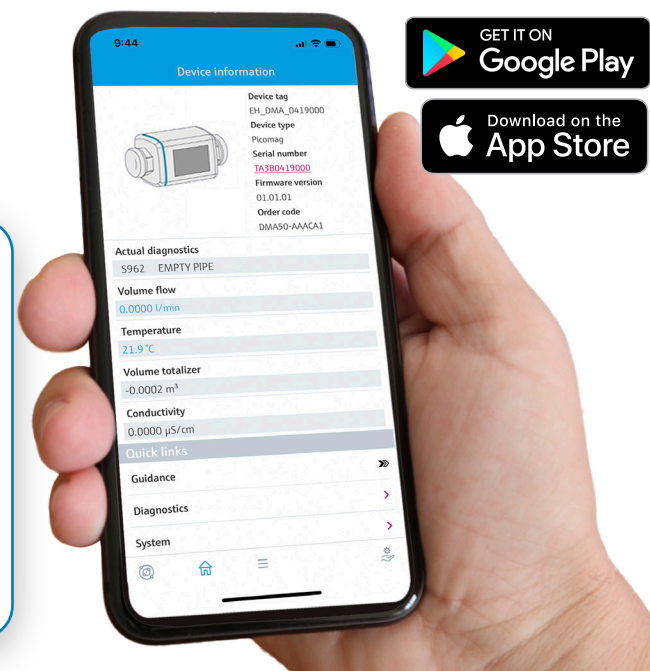
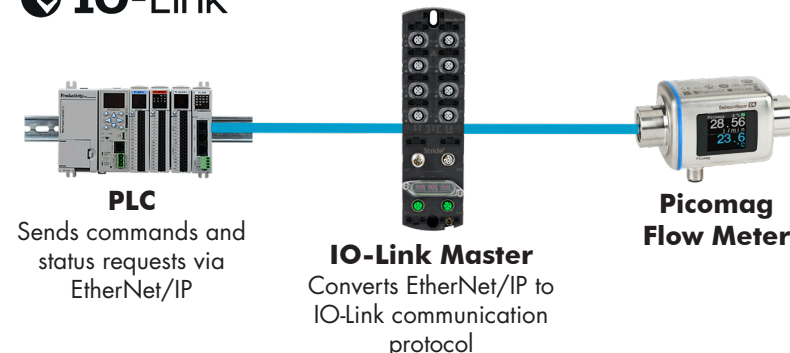
- Simple and fast navigation through device and diagnostic functions
- Configuration of display, outputs, flow direction, and units
- Requesting diagnostics and status messages
- Available for Android and iOS
- Range up to 32 feet



IO-Link Features

- Seamless integration into established fieldbus systems
- Direct access to process and diagnostics data
- Simple parameterization without additional tools
- Enables "on the fly" device configuration
- Automatic configuration after device replacement

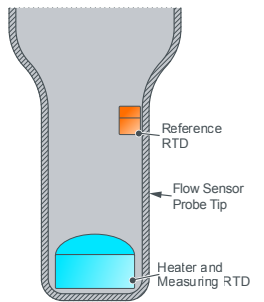
IO-Link



Thermal Flow Sensors

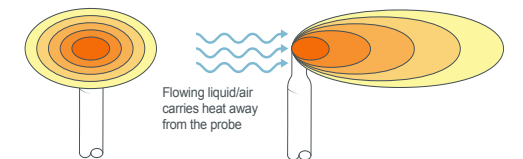
proSense® FTS Series Thermal Flow Sensors

ProSense FTS series liquid/air thermal flow sensors use an RTD temperature sensor to measure the temperature of the fluid or air as it passes through the probe and this reading as a reference. A heating element, also located in the probe, heats up the fluid or air and raises its temperature as it passes through. This rise in temperature is measured by a second RTD temperature sensor in the probe, which then is used to calculate the flow based on the temperature difference. A faster flow transfers less heat resulting in a smaller temperature difference between the RTD sensors. Slower flow will transfer more heat resulting in a greater temperature difference between the RTD sensors.



Features

- Measuring range up to 9.85 ft/s (liquids) or 328 ft/s (air)
- Optimized for water and glycol solutions, or air
- Cost effective solution for flow switch or flow transmitter
- Volumetric flow rate and temperature measurement
- 4-digit, two color alphanumeric display with pushbutton setup
- Two outputs selectable for switch or frequency signals



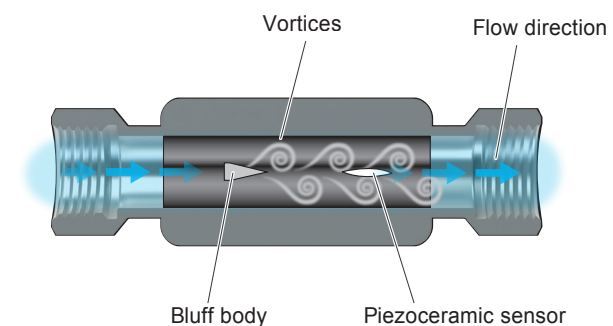
Vortex Flow Sensors

proSense® VFS Series Vortex Flow Sensors

ProSense VFS series vortex flow sensors offer a very cost-effective solution to measure water based liquid flow. They are optimized to monitor water and deionized water flow in industrial applications. The pushbuttons and display allow easy sensor set up to measure flow rate and temperature, and the outputs can be used for continuous flow or temperature monitoring or as a flow or temperature limit switch. The Vortex technology uses alternating vortices created by a bluff body as the liquid flow passes through. The vortices are detected by a piezoceramic sensor, which allows the electronics to determine the flow velocity based on the frequency of the vortices.

Features

- Up to 26.4 GPM measuring range
- Volumetric flow rate and temperature measurement
- 1/2 or 3/4 inch NPT process connections
- Two selectable outputs with switch, frequency, or analog options
- Rotatable TFT color display for concurrent readout of flow and temperature
- IP65/67 protection rating



Paddle Wheel Flow Meters



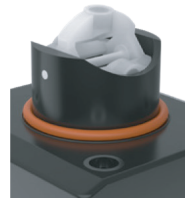
Starting at
\$944.00
(TKM-15-P)



Truflo® TKM Series Flow Meters

ICON Process Controls Truflo® TKM series paddle wheel liquid flow meters provide reliable, full-pipe liquid flow measurement with exceptional long-term performance. These rugged, highly repeatable sensors deliver outstanding value with no scheduled maintenance required. Built with a chemically resistant PVC body, they are ideal for corrosive liquid process applications. Their true-union design ensures easy installation and maintenance, allowing quick sensor removal and servicing without disrupting the pipeline. Each unit comes preprogrammed and includes a bright, 360° rotatable LED display for clear, convenient readability.

The ShearPro® paddle wheel assembly features a revolutionary design offering a contoured flow profile with reduced turbulence and 78% less drag than older flat paddle designs. The assembly also includes a micro-polished zirconium ceramic rotor pin and bushings to firmly secure the paddle wheel into a 360° housing and provide excellent chemical and mechanical wear-resistant properties.



ShearPro®

Protective 360° Housing

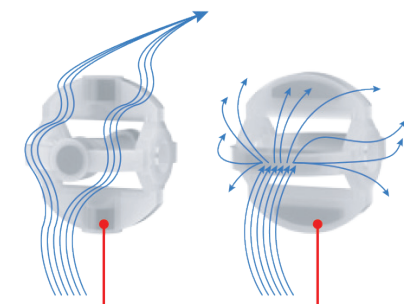
Features

- Sensing ranges up to 357 GPM
- 4 to 20 mA and pulse outputs
- 10 to 30 VDC operating voltage
- ShearPro® paddle wheel and through-pin designs
- +/- 0.5% accuracy
- Low pressure drop
- 1/2 to 2 inch pipe sizes
- Chemically resistant to many corrosive liquid process applications
- NEMA 4X and IP66 protection rating



ShearPro® Paddle Wheel Assembly

- High-performance Tefzel® paddle
- Micro-polished zirconium rotor pin and bushings
- 360° housing protects the paddle wheel



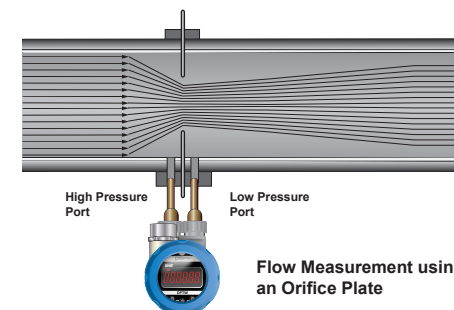
ShearPro® vs. Flat Paddle Contoured Flow Profile

- Reduced turbulence
- 78% less drag than older paddle designs

Differential Pressure Flow Transmitters



Starting at
\$897.00
(DPTW-4)



prosense® DPTW Differential Flow Transmitters

ProSense DPTW series differential pressure transmitters are precision engineered for accurate differential or gauge pressure measurement of a wide variety of liquids, gases, and steam applied to both pressure sensing ports. This series is ideal for flow measurement using primary differential pressure flow elements such as an annular pitot tube, orifice plate, or venturi tube.

Features

- Integral pressure port manifold with 1/4in female NPT process connections and built-in equalizing valve
 - Digital filter function dampens pulsations and provides a more stable output and display
 - Key lock function prevents unauthorized changes to configuration settings
 - Bright backlit 6-digit LCD display
 - Scaling function allows user defined units of measure
 - Internal "pushbutton" for quick range changes
 - "Loop check" function allows unit to output 4-20 mA without applying pressure
 - Square root extraction function for display and output of linear flow rate or display of integrated flow volume
 - Up to 8X smaller than a conventional style DP transmitter
- Easily rotatable display
- Rugged NEMA 4X protection rating

Variable Area Mechanical Flow Meters



Starting at
\$75.00
(FG1W-100PP-2)

prosense® FG1 Series Flow Meters

The ProSense FG1 series flow meter is a mechanical variable area instrument designed with a precision molded, sharp-edged orifice located within the piston assembly to form an annular opening with the metering cone. Flow passing through the meter creates a pressure differential across the orifice, which causes the piston to move precisely in direct proportion to the rate of flow against the spring. These flow meters are optimized for water or petroleum based fluids and can be installed in-line in any position. The flow rate is indicated by a red indicator relative to the numerical flow scale.

Features

- Up to 28 GPM (100 LPM) measuring range
- Easy to read flow scales in GPM and LPM
- 1/2, 3/4, or 1 inch NPT process connections
- High-impact polysulfone plastic construction
- Adjustable limit pointers
- Accuracy +/-5% of full scale
- Repeatability +/-1%

