Space-saving and cost-efficient

Multiparameter measurement with Picomag: smart plug-and-play flowmeters for utilities

- Picomag portfolio
- Benefits at a glance
- Options and features
- Industry focus
- Technical data



Endress+Hauser

Picomag portfolio

Are you interested in obtaining more process information on your utilities without investing a lot of money in high-grade measuring technology? Picomag Inline and Picomag Insertion provide data for flow rate and temperature, as well as for determining water quality based on conductivity measurement – simply and reliably. Plant operators also benefit from the electromagnetic measuring technology: Picomag is insensitive to temperature fluctuations, requires little maintenance and features an empty pipe detection. In addition, Picomag can also be used as a flow switch for simple control functions.

Intuitive operation with the SmartBlue app via Bluetooth® allows for fast and safe commissioning. This way you can access your process data in real time even if the measuring point is at a location that is hard to access. Do you need simple system integration? No problem, thanks to IO-Link. The user-friendly color display automatically rotates in 90° increments to align itself with the installation position. The knock functionality enables the configured parameters to be called up quickly without complicated menu guidance. All of this makes Picomag the first choice for utilities with conductive liquids and measuring points in water monitoring – thanks to Picomag Insertion even for large pipes up to DN 1000 (40").

Picomag Inline

Picomag Insertion

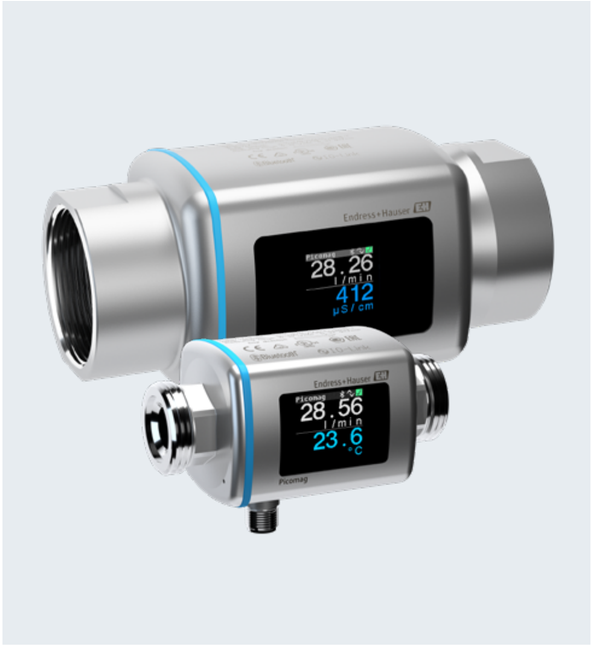


The Picomag portfolio: Picomag Insertion (left), Picomag Inline DN 15 (½") with external thread (center) and DN 50 (2") with internal thread

Picomag Inline

One for all: Picomag Inline simultaneously measures flow rate, temperature and conductivity. That way it is possible to monitor utilities reliably and precisely. In addition, it may be possible to reduce the total number of measuring points in the process. The compact housing is available with an internal and external thread, has high shock and vibration resistance and requires no inlet or outlet runs. Picomag Inline is available for nominal diameters from DN 15 to 50 (½ to 2") and can be used for temperatures from −10 to +70 °C (+14 to +158 °F), short-term even up to 85 °C (185 °F).

You can get direct insight into a process and modify parameters at any time from up to 10 meters away thanks to the SmartBlue app and Bluetooth®. For this purpose, there are two freely selectable outputs (current, pulse, switch, voltage, IO-Link) and switch inputs. The pocket-sized measuring device is thus ideal for cost-efficient process control at numerous measuring points and for retrofitting sensors in existing plants.









▶ **Video: Picomag Inline**

Picomag Inline product website

Picomag Inline

Picomag Insertion

Picomag Insertion

Multivariable measuring technology for inserting: Picomag Insertion measures flow velocity, temperature and conductivity even for large pipe diameters up to DN 1000 (40"). This opens up new fields of application and offers a space-saving and cost-effective monitoring solution for a wide variety of processes with conductive liquids. Thanks to the insertion sleeve, the operating temperatures can lie between −10 and +85 °C (+14 and +185 °F), short-term even up to 95 °C (203 °F).

The insertion technology with welding socket enables fast and easy installation without long process interruptions. Additionally, the Teach function in the SmartBlue app allows for setting threshold values as percentages so that measured values can be easily interpreted. The simple system integration is accomplished with two freely selectable outputs (current output, pulse/switch output, IO-Link).

Picomag Insertion product website

Picomag Inline

Picomag Insertion







Benefits at a glance

Your process requirements are at the center of our product developments. We make a point of understanding your challenges and optimizing the benefits of our devices for your processes. This also applies to our Picomag portfolio with multiparameter measurement. Discover the advantages for yourself:

Comprehensive process insights
Simultaneous detection of flow rate, temperature and conductivity



Space-saving installation
Compact design also for very tight spaces

Simple and fast commissioning
Bluetooth® and SmartBlue app for operation even in places that are hard to access



User-friendly status display
Large color display automatically rotates in 90° increments to align with installation position

Easy system integration
IO-Link as well as multiple configurable inputs and outputs (plug-and-play)



Fast delivery times
Thanks to regional production sites, Picomag can usually be delivered within a few days

Options and features

Whether you want to make your processes more efficient, communicate wirelessly with your devices or control them conveniently via app – the product features of our Picomag portfolio offer you the right tools for your requirements. Experience how IO-Link enables smart communication, Bluetooth® creates new freedom and our SmartBlue app elevates the operation to a new level.

IO-Link

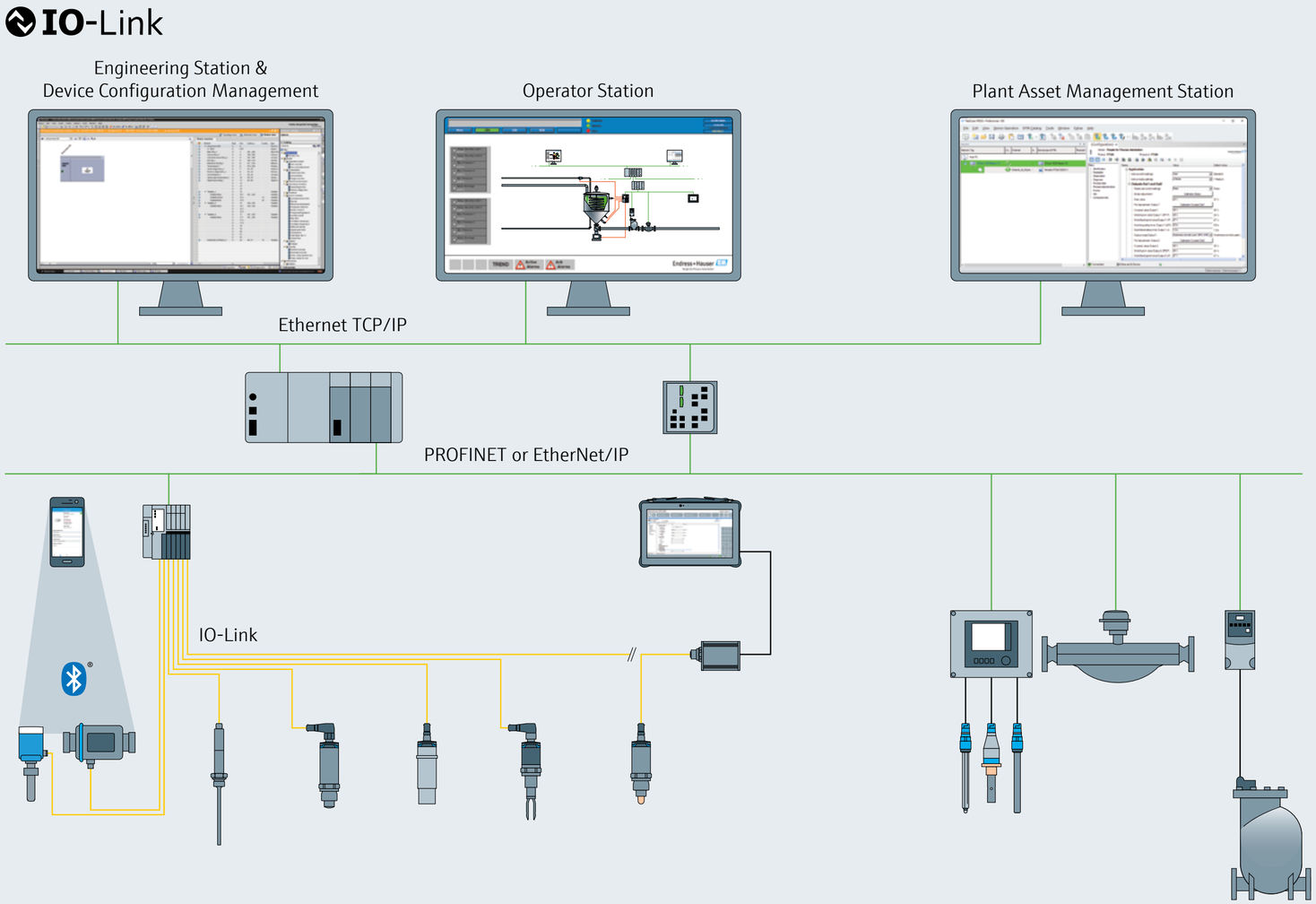
SmartBlue app



System integration with IO-Link

Do you want the easiest way to integrate your devices in the field and put them into operation? IO-Link enables digital access to your measuring points and simplifies the process of integrating your devices into Industrial Ethernet infrastructures. This minimizes the amount of wiring required and reduces the installation and maintenance costs.

Process and diagnostic data are available in real time and allow for remote monitoring, fast adjustments and predictive maintenance. This means faster commissioning, shorter downtimes and more flexibility for adaptation to changing production requirements.



Typical Industrial Ethernet network with IO-Link

IO-Link in process automation

IO-Link

SmartBlue app

SmartBlue app

Is your device installed somewhere that is hard to access? No problem – the Picomag portfolio can be commissioned and configured via Bluetooth® technology and the SmartBlue app quickly and safely from a distance of up to 10 meters. The application enables access to the process information and navigation through all the device and diagnostic functions. Thus the encrypted data is always available in real time.

Test the demo for Picomag now: The SmartBlue app is available for free download in the respective app stores for Android and iOS.



▶ Video on commissioning

More about SmartBlue app

IO-Link

SmartBlue app

Industry focus

In many industries there are water-bearing utilities to support the core processes of the plant. It takes a lot of energy to transport and distribute the water. Therefore, auxiliary processes should be run and monitored efficiently. The Picomag portfolio is a big help with this and versatile in use, for example, in cooling circuits, plant modules (skids) for water treatment, potable water measurement or leakage detection.

In the following, you will find examples of applications in utilities of various industries in which the Picomag portfolio shows its strengths.

- Water & Wastewater
- Food & Beverage
- Power & Energy
- Mining, Minerals & Metals



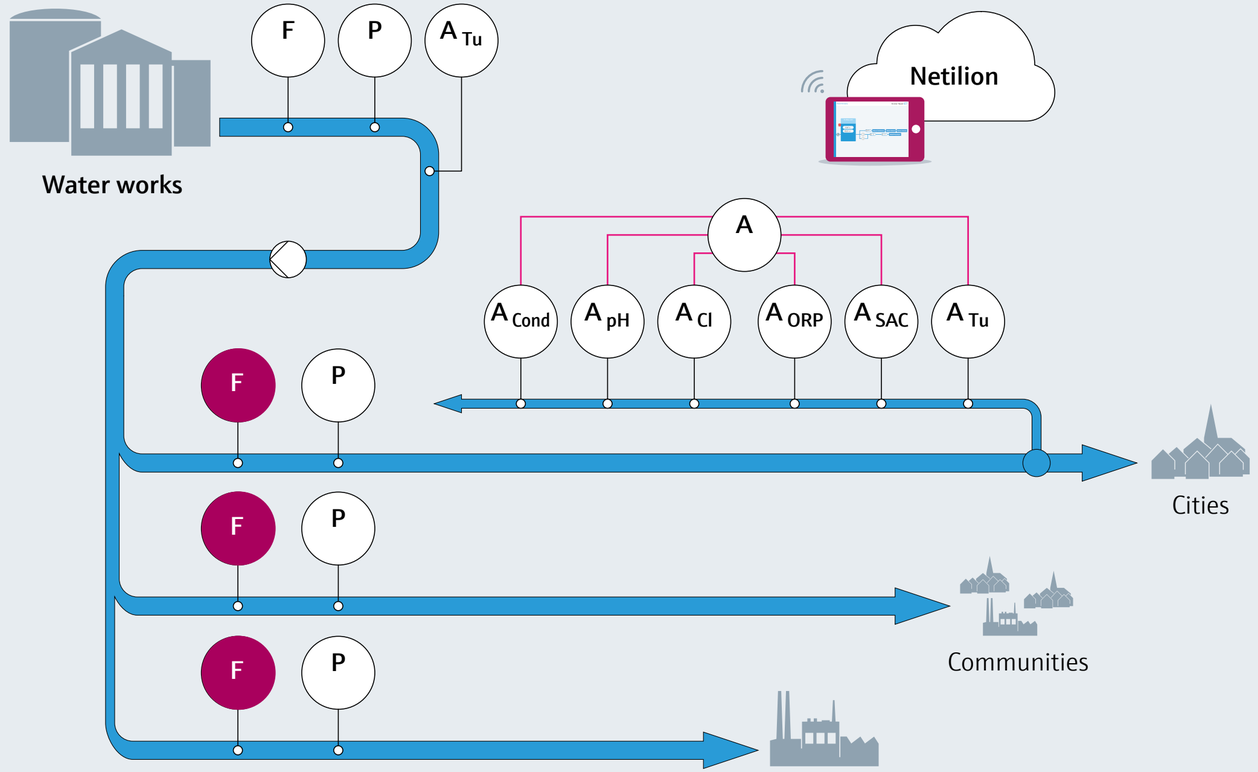






Distribution network for potable water

After being treated and stored, potable water is transported to cities, rural areas and industrial end users. Widely ramified distribution networks are used for this purpose, in which challenges such as supply reliability and water quality can arise. To monitor them is essential, so that, for example, leaks and changes in water quality can be detected early (conductivity measurement) and the overall efficiency of the network can be improved.



- Water & Wastewater
- Food & Beverage
- Power & Energy
- Mining, Minerals & Metals

Your challenge
Measuring task: Flow
Medium: Treated potable water
Pressure: Up to 10 bar (145 psi)
Temperature: 0 to 40 °C (32 to 104 °F)

Our answer
Picomag Insertion is a smart solution for measuring flow rate and conductivity. Compact and easy to install, the insertion flowmeter enables fast integration into distribution networks without lengthy process interruptions. It is ideal for monitoring the water quality and optimizing the system performance. Thanks to the flow measurement and real-time monitoring, leaks are detected early and water losses are identified. Picomag actively contributes to the reduction of non-revenue water and sustainably improves the overall efficiency of the network.

Innovative special solution for beverages at the Oktoberfest

At the Oktoberfest in Munich, the Paulaner Brewery has long used underground loop lines to supply their festival tents with beer. The underground installation was stationary and subject to weather; maintenance work could only be carried out with great effort. In 2022, the Bräurosl festival tent was completely renovated and the world's first vacuum isolated transfer piping for festival beer was developed, routed in the tent at a height of 3.5 meters. The modular design is easy to maintain and independent of weather conditions; moreover, the set-up and dismantling times are cut in half. To ensure constant monitoring of the relevant parameters, reliable and compact measuring technology is required.

"Our recipe for success: We have the innovative ideas and implement them with reliable partners such as Endress+Hauser."
Uwe Daebel, brewmaster, Paulaner Brauerei Gruppe GmbH & Co. KGaA

The whole success story

- Water & Wastewater
- Food & Beverage
- Power & Energy
- Mining, Minerals & Metals

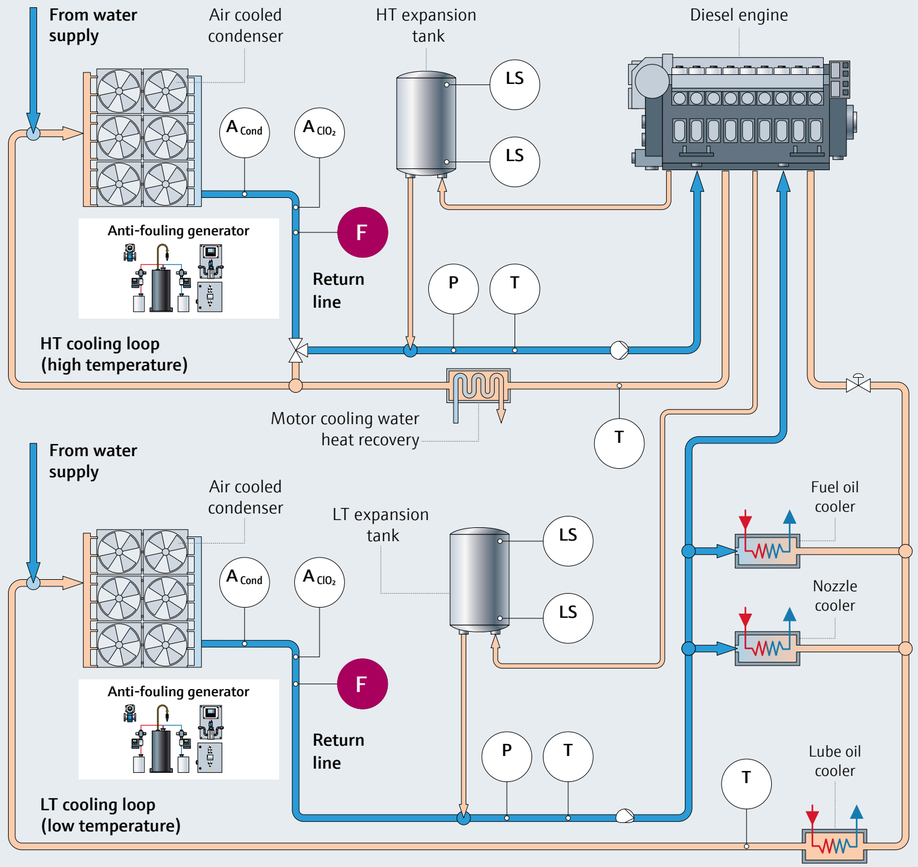


Your challenge
Measuring task: Flow rate, temperature and conductivity measurement in transfer piping
Medium: Beer and nonalcoholic beverages
Pressure: 1 to 2 bar (14.5 to 29 psi)
Temperature: 0 to 4 °C (32 to 39.2 °F)

Our answer
Picomag Inline with its compact design is ideally suited for the limited space in the festival tent. Eight devices (DN 20 / ¾") monitor the flow rate of the festival beer in the transfer piping. In addition, 30 more Picomag Inline (DN 15 / ½") detect the flow rate of the nonalcoholic beverages from the keg to the tap. The devices also measure temperature and conductivity. Both parameters are important for the CIP cleaning. And: Thanks to IO-Link, Picomag Inline can be integrated into common fieldbus systems without any problem.

Cooling water system for engines

Diesel and gasoline engines in the power industry use a dual cooling circuit system: In a closed primary circuit, a water-glycol mixture circulates through the engine to absorb heat. An open or semi-open secondary circuit releases this heat, in turn, to the environment via a heat exchanger. For reliable engine operation, it is essential to have a stable coolant flow and a constant temperature.



- Water & Wastewater
- Food & Beverage
- Power & Energy
- Mining, Minerals & Metals

Your challenge

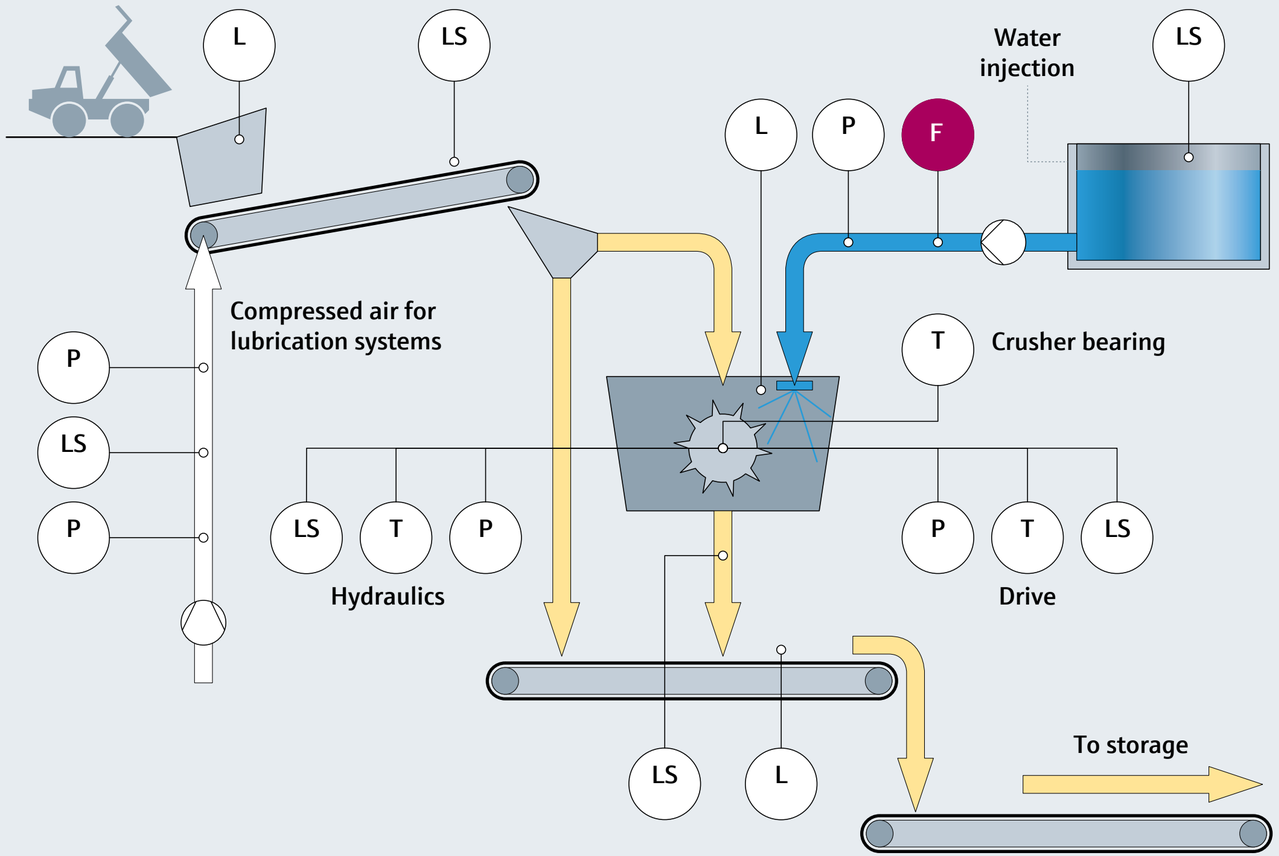
Measuring task: Monitoring flow rate and temperature for stable engine operation
Medium: Conductive liquids
Pressure: 2 to 10 bar (29 to 145 psi)
Temperature: 10 to 40 °C (50 to 104 °F)

Our answer

Picomag Insertion measures the flow rate and the temperature of the coolant directly in the piping. The insertion device offers a compact design, easy installation and compatibility with digital communication protocols. This makes it the ideal solution for continuous monitoring and for early detection of leaks and clogs. At the same time, it supports predictive maintenance and energy efficiency in industrial power plants.

Primary crushers in cement manufacturing

In the cement industry, primary crushers are used to prepare raw materials. The main task of the machines is to break up large rocks so that they can be efficiently processed further in the downstream mills. During this primary crushing phase, water is used to capture dust. For this purpose, it is imperative to monitor the volume of water being injected in order to suppress dust emissions, optimize the air quality and ensure safe and efficient operation. Exact water dosing additionally prevents the raw material from being overwetted, which could impair the material flow and the downstream processing.



Your challenge
Measuring task: Volume control during injection of water
Medium: Industrial water
Pressure: 3 to 10 bar (43 to 145 psi)

Our answer
Picomag Inline enables precise real-time measurement of water flow, even at low volumes. The compact and reliable flowmeter is resistant to machine vibrations and can also be easily integrated into digital control systems thanks to IO-Link. Picomag Inline improves the process stability, reduces the maintenance required and supports automated, consistent water injection for compliance with environmental standards.

Water & Wastewater
Food & Beverage
Power & Energy
Mining, Minerals & Metals

Technical data

Overview of Picomag portfolio

The Picomag portfolio from Endress+Hauser includes an insertion and an inline variant: Picomag Insertion and Picomag Inline. Learn more about the technical specifications of these two multivariable flowmeters on the following pages.

The Picomag measuring system meets the EMC requirements in accordance with IEC/EN 61326. It is compliant with the requirements of the EC and ACMA directives and is labeled with the CE or RCM symbol.

Picomag Inline

Picomag Insertion

Picomag Inline



- For conductive liquids at temperatures up to 70 °C (158 °F), short-term even up to 85 °C (185 °F)
- Available in four nominal diameters: DN 15 (½"), DN 20 (¾"), DN 25 (1"), DN 50 (2")
- Robust compact housing (IP65/67) with high shock and vibration resistance
- No inlet or outlet runs required

Picomag Insertion



- For conductive liquids at temperatures up to 85 °C (185 °F), short-term even up to 95 °C (203 °F)
- Insertion technology for large pipes up to DN 1000 (40")
- Welding socket for fast and easy installation without long process interruption
- Easy interpretation of current measured values with Teach function in the SmartBlue app

Picomag Inline

Picomag Inline is available with various process connections and in four nominal diameters.
A major advantage: No inlet or outlet runs are required.

Read more about the technical data on this page.

Subject to modifications and amendments.

Picomag Inline

Picomag Insertion

Picomag Inline	
Measuring principle	Electromagnetic flow measurement
Fluid	Suitable for conductive liquids (≥10 µS/cm)
Display	1.4"-TFT color display, automatic rotation (in 90° increments, depending on installation position)
Operation	▪ SmartBlue app for smartphone or tablet (Bluetooth®) ▪ IO-Link for operation in the control system
Materials	Housing: 1.4404/316L, 1.4409/CF3M Measuring tube: PEEK Electrodes: 1.4435/316L Process connections: 1.4404/316L Display: Polycarbonate Seals: FKM or EPDM
Energy supply	DC 18 to 30 V
Process temperature	–10 to +70 °C (+14 to +158 °F), short-term up to +85 °C (+185 °F) or +100 °C (+212 °F) if electronics are switched off
Degree of protection	IP65/67
Inputs/outputs	2 freely selectable inputs/outputs: current outputs (4–20 mA), pulse/switch output, voltage output (2–10 V), IO-Link, switch inputs (e.g., for resetting the totalizer)
Communication	Via Bluetooth® or IO-Link
Nominal diameter	DN 15 (½"), DN 20 (¾"), DN 25 (1"), DN 50 (2")
Measured variables	Volume flow, temperature, conductivity (temperature-compensated)
Measuring range	DN 15 (½"): 0.05 to 35 l/min (0.01 to 9.2 gal/min) DN 20 (¾"): 0.1 to 75 l/min (0.03 to 19.8 gal/min) DN 25 (1"): 0.2 to 150 l/min (0.05 to 39.6 gal/min) DN 50 (2"): 1.5 to 750 l/min (0.4 to 198.1 gal/min)
Inlet/outlet run	Not required (0 × DN)
Process pressure	16 bar (232 psi)
Max. measured error	Flow: ±0.8% o.r. ±0.1% o.f.s., temperature: ±2.5 °C (±4.5 °F)
Repeatability	Flow: ±0.2% o.f.s., temperature: ±0.5 °C (±0.9 °F), conductivity: ±5% o.r. ± 5 µS/cm
Approvals	Drinking water approvals, UL-listed (Underwriters Laboratories Inc.)

Picomag Insertion

Picomag Insertion can be used for nominal diameters up to DN 1000 (40") and operating temperatures up to 85 °C (185 °F). This means the flowmeter is the ideal choice for a variety of applications with conductive liquids.

More details on the technical data can be found on the right.

Subject to modifications and amendments.

Picomag Inline

Picomag Insertion

Picomag Insertion	
Measuring principle	Electromagnetic flow measurement
Fluid	Suitable for conductive liquids (≥20 µS/cm)
Display	1.4"-TFT color display, automatic rotation (in 90° increments, depending on installation position)
Operation	▪ SmartBlue app for smartphone or tablet (Bluetooth®) ▪ IO-Link for operation in the control system
Materials	Housing: Polycarbonate, 1.4435/316L Electrodes: 1.4435/316L Seals: FKM or EPDM Sensor sleeve: 1.4404/316L Sensor tip: PPSU
Energy supply	DC 18 to 30 V
Process temperature	−10 to +85 °C (+14 to +185 °F), short-term up to +95 °C (+203 °F)
Degree of protection	IP65/67
Inputs/outputs	2 freely selectable outputs: current outputs (4–20 mA), pulse/switch output, IO-Link
Communication	Via Bluetooth® or IO-Link
Nominal diameter	DN 25 to 1000 (1 to 40")
Measured variables	Volume flow, temperature, conductivity (temperature-compensated)
Measuring range	DN 25 to 1000 (1 to 40"): 0.05 to 10 m/s (0.16 to 32.8 ft/s)
Inlet/outlet run	5 to 10 × DN (for flow measurement, irrelevant for temperature and conductivity)
Process pressure	16 bar (232 psi)
Max. measured error	Flow: ±2% o.r. ±0.5% o.f.s. (≤ DN 300/12") ±2% o.r. ±2% o.f.s. (> DN 300/12") Temperature: ±3.5 °C (±6.3 °F), if > DN 100 (4") or v ≥0.8 m/s; otherwise, larger deviations may occur
Repeatability	Flow: ±0.5% o.r., temperature: ±0.5 °C (±0.9 °F), conductivity: ±5% o.r. ± 5 µS/cm
Approvals	Drinking water approvals, UL-listed (Underwriters Laboratories Inc.)

Registration for My Endress+Hauser

Operating our Picomag portfolio is simple – and so is navigating our customer portal My Endress+Hauser. When you create a My Endress+Hauser account, you obtain easy access to product details, your order history and more – all in one location. Register now and benefit from all the advantages that My Endress+Hauser has to offer:

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- Access knowledge base articles for immediate solutions from real support cases.
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- View your complete order and quote history, including all relevant documents for orders placed online and offline.
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