

Electromagnetic flowmeter FXE4000 (COPA-XE/MAG-XE)

Flowmeter for all applications



- Designed to meet your application
- Easy to operate, universal applicability
- Integrated function tests for easy start-up
- Extensive, diagnostic functions
- Unique, universal explosion protection, cost-saving
- Hygienic version, certified in accordance with EHEDG and 3A
- Accuracy based on customer requirements
- Approval custody transfer calibration integrated in the standard instrument for more than 10 years

ABB Instrumentation



FXE4000 (COPA-XE/MAG-XE): Stainless steel design for the food & beverage and hygienic industry

Our customers' request for a versatile and cost-effective electromagnetic flowmeter formed the foundation for the development of the new FXE4000 series. The device is economically efficient, compact, and very easy to use. Aside from a level of accuracy that is based on customer requirements, it also has extensive functional tests and diagnostic functions. The design versions available provide you with the ability to select the ideal flowmeter for your application. You only pay for what you really need.

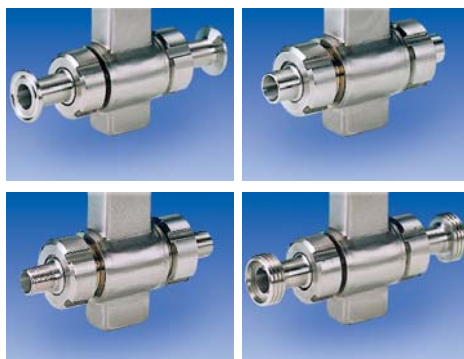


The concept

The flowmeter primary can be adapted to the various pipeline connections using threaded adapters.

Available connections:

- Weld stubs
- Threaded pipe connections
- Tri-Clamps
- External threads
- Wafers
- Flanges

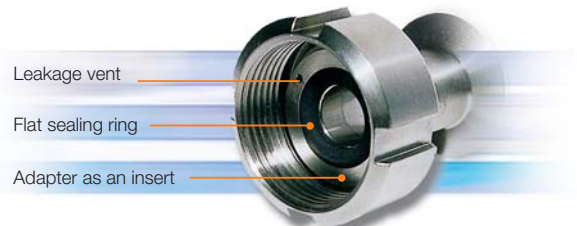


Your advantage

- **Variable connection concept with a common flowmeter primary, certified in accordance with EHEDG and 3A**
This simplifies inventory stock.
- **Vacuum-proof, form-stable PFA liner**
- **Adapter with metallic stop**
This guarantees the precise position of the adapter sealing ring and provides a gap-free transition without crevices.
- **Threaded adapter for nominal sizes DN 3 (1/10") to DN 100 (4")**
This guarantees easy meter installation. The instrument can be quickly replaced if service is ever required, and therefore minimize your system downtime.
- **The flowmeter primary is suitable for in-line cleaning and CIP/SIP up to 150 °C (302 °F) max.**
- **Made entirely of stainless steel**

Process safety

The leakage vent in the adapter shows the integrity of the sealing ring. If the sealing ring is defective, the fluid will visibly escape through this vent.



Leakage vent

Flat sealing ring

Adapter as an insert

FXE4000 (COPA-XE/MAG-XE): Cost-effective flowmeters for the water and waste water industry

The concept

The modular system with a common electronic converter system provides you with the best instrument for your application. You only pay for what you really need, creating a truly tailor-made solution.

Available connections:

- Flanges for nominal sizes DN 3-1000 (1/10" - 40")
- Wafers for nominal sizes DN 3-100 (1/10" - 4")
Perfectly suitable for integral installation due to its small dimensions



Your advantage

- **Variable device concept with a common electronic converter module**
This reduces your spare parts inventory costs.
- **A variety of converter housings**
You receive the ideal solution for every installation – the field mount housing for meter vault installation, the rail mount housing for control cabinet installation, and the panel mount housing for mounting in the control room.
- **Compact / Integral device**
With this design, you minimize your installation costs. The flowmeter primary and the converter are packaged as single entity.
- **Proven technology with more than 100,000 installations worldwide**
The FXE4000 is a flowmeter that holds a leading position in terms of reliability and a long service life.

Your safety

- **Submersible design (protection class IP 68)**
If your meter vault is not groundwater-proof or may be flooded, the submersible flowmeter primary design is the ideal solution for you.
- **Empty pipe detector eliminates erroneous measurements**
The pipeline may drain if the check valves of pumps in well pits do not shut tight. The empty pipe detector monitors this and indicates the system status, eliminating erroneous measurements.
- **Integrated ground connection**
This reduces costs if the device is installed in plastic pipes and ensures trouble-free measurements.

- **No narrowing of the meter tube**
No pressure loss and no danger of deposits or clogging.
- **Easy to use**
Clear menus combined with integrated function tests and a plug-in EEPROM for data storage all enable a quick and easy start-up. The MAG-XE requires only a common connection line between the flowmeter primary and the converter.
- **All-inclusive solution**
The instruments are factory-programmed, which enables a quick start-up and reduces costs.
- **Quick delivery**
As a result, you can reduce your inventory stock to a minimum.

Approvals

- **Liner**
The device is equipped with a high-quality, smooth PTFE liner for measurements in drinking water. It meets the plastic and drinking water recommendations of the German National Institute of Health.
- **Explosion proof design**
The compact and remote versions are available as an explosion proof design.
- **Design certified for custody transfer calibration for cold and waste water**
We have been supplying inductive flowmeters for billing purposes for more than 20 years. Fully utilize our know-how.

Rail mount housing

Panel mount housing

Field mount housing

FXE4000 (COPA-XE/MAG-XE): Explosion proof design for the chemical industry

The unique device concept

The FXE4000 is a device with a minimal variations that can be used in all applications requiring explosion protection. It allows easy planning, installation, start-up, and monitoring. It is field-proven, has a long service life, and offers maximum safety. Available with a short delivery time and easy and clear documentation.

Process safety thanks to proven technology

■ All in one unit

Inputs and outputs either in increased safety "e" and intrinsically safety "i" in one device.

This unique universal explosion protection reduces inventory stock costs and the number of variants. This line of products has been used for numerous different applications in the chemical industry for many years.

■ Double safety through an EX [ia] type of protection

■ Common planning ensures safety

The passive 20 mA output of the inductive flowmeter and the two-wire converter design enable a common electrical wiring concept. This simplifies the planning of the installation and reduces inventory costs as well as the explosion-protection-relevant calculation of the connected components.

Technology

■ Flowmeter primary

- DIN/ANSI/JIS flange for nominal sizes
DN 3-1000 (1/10" - 40")
- Stainless steel version with a variable process connection

■ Converter

Common electronic plug-in unit for all flowmeter primaries and housing versions.

Your advantage

■ Continuous self-monitoring and application-oriented diagnosis

Every measurement is accompanied by a self-monitoring check of the flowmeter primary and converter. The system continuously monitors the signal processing, coil excitation, connection to the flowmeter primary as well as communication with the external data memory (EEPROM), and data consistency. In addition, you can detect line breaks or short-circuits of the signal outputs. The pipelines are continuously monitored to ensure they are full.

■ Wide range of function tests and simulation routines

Testing of current, pulse and contact output, display, HART protocol, and electronic components. It is possible to feed in an internal test signal for a flow simulation in order to start up the device either with or without process fluid.

■ Extended diagnostic features

The modern fieldbus communication option enables access to all of the device and diagnostic parameters.

■ FXE4000 is the device standard for the chemical industry

The product line is type-tested. It meets the various requirements of NAMUR, such as NE21, NE43, NE70, NE80...

■ Universal device in the sense of the pressure equipment directive

In compliance with the requirements of NAMUR, the devices are categorized under category III for pipelines. This means that they can be used universally. This reduces inventory stock costs and increases safety.

■ Approved for custody transfer calibration for chemical liquids

This enables flow measurements for billing purposes not only for drinking water and waste water, but also for liquid chemicals – and all that with the standard device.

Approvals

- Explosion proof design in accordance with ATEX category II 2 G for use in zone 1
- Dust explosion protection approval in accordance with ATEX category II 2 D for use in zone 21
- FM, CSA, GOST, NEPSI
- Approval for custody transfer calibration for water / waste water and chemical liquids other than water



FXE4000 (COPA-XE/MAG-XE): The converter: intelligent, compact, and efficient

Your benefit

■ Fast and easy configuration with a clear text display

The clear and self-explanatory menu structure and the intuitive operation enable a fast start-up.

■ Quick converter exchange without reconfiguration

The measurement and calibration data are stored in a plug-in EEPROM. The data can be quickly transferred from the original converter to the replacement converter simply by plugging the EEPROM into the new converter.

Plug-in EEPROM for data storage

Large illuminated display

Switchable pulse output (active/passive)

DIP switch for setting the bus address



■ Large illuminated display

You can view up to six different parameters in the multiplex mode – almost simultaneously (e.g. the instantaneous flow rate in l/s, counter value in m³, measuring point name, instantaneous flow direction, min./max. alarms, and a bar graph display).

As a result you will always have your system under control.

■ The suitable signal for your signal processing

Whether you use a mechanical counter or an SPC – with the pulse output that can be switched on-site (passive optocoupler or active 24 V DC pulses). So you always have the best signal for your process

■ HART-Protocol, PROFIBUS PA/PROFIBUS DP, FOUNDATION Fieldbus

With these communication possibilities, you can monitor the measuring point with an automatic diagnosis in the event of an error. Easy setting of the bus address through easily accessible DIP switches or through the menu/bus.

■ Infinite rotation

The flowmeter can be mounted in a variety of positions. The housing and display can be rotated.

FXE4000 overview

■ Flowmeter primary for the process industry

Flange design DN 3-1000 (1/10" - 40")

Wafer design DN 3-100 (1/10" - 4")

■ Flowmeter primary for hygienic applications (stainless steel), DN 3-100 (1/10" - 4")

Fixed flange, wafer, variable process connections

■ Type of protection

IP 67 or IP 68

■ Explosion proof design

ATEX, FM, CSA, NEPSI, GOST ...

■ Approved design for custody transfer calibration

Water/waste water, chemical liquids, and other process fluids

■ Certificates for hygienic applications

EHEDG, FDA, 3A

■ Max. measurement value deviation

0.5 % of the measured value, opt. 0.25 % of the measured value

■ Power supply

85-253 V AC, 16-31 V AC/DC

■ Signal inputs/outputs

Current output 0/4...20 mA active or 4...20 mA passive

Pulse output passive or active, switchable:

Configurable switching input/output

■ Communication

HART protocol

PROFIBUS PA

PROFIBUS DP

FOUNDATION Fieldbus

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 102,000 people.

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