

# Industrial Ethernet for Proline flowmeters

## The system integration of the future

### Flexible and powerful from start to finish

- Versatile range of applications: industrial Ethernet technology for Coriolis and electromagnetic flowmeters
- Flawless engineering: reduced wiring effort without additional components
- Reliable maintenance: automatic parametrization via the system after a device replacement
- Quick installation: use of industrial Ethernet cables and connection components
- Seamless system integration: continuous communication system from control to the field device level
- Optimum process monitoring: access to all process and diagnostic parameters
- Reliable production processes: highest possible real-time data transmission rates of up to 100 Mbit/s

EtherNet/IP™

PROFI®  
NET





# Industrial Ethernet

## Continuous networks from office to sensor

No matter which sector of the process industry you operate in, Endress+Hauser is the right place to come to if you want to combine the advantages of state-of-the-art flow measuring technology with those of data transmission via industrial Ethernet. Now you can also use Endress+Hauser's Proline flowmeters, which have been tried-and-tested for decades, for digital communication via EtherNet/IP or PROFINET.

Flexible production systems, transparent processes, efficient plant maintenance, environmentally friendly utilization of resources and smooth operations are just some of the important aspects that users need to consider in order to remain competitive in the long term. In addition, users face increasingly stricter regulations, necessitating even more rigorous process monitoring which in turn calls for an increased use of field devices. Traditional fieldbus technology has its limits, particularly in large-scale plants with their massive diagnostic and process data. This applies especially to modern, multivariable field devices which record several

process variables at the same time to ensure maximum operational transparency.

In this case particularly, new and promising opportunities are created by the significantly higher data transmission rates of modern Ethernet protocols such as EtherNet/IP and PROFINET. This is not least due to the fact that modern digitalization is becoming more important in the field level of process automation. Moreover, process data can now be integrated seamlessly in cross-sectoral data acquisition systems, such as for logistics or quality assurance departments.

Industrial Ethernet technology has firmly established itself in the automation technology sector and is used more and more frequently. This holds particularly true for sectors where performance capabilities of process control, IT functions (e.g. diagnostics) or very large data volumes are top priorities. Industrial Ethernet also gives plant engineering companies even greater flexibility when it comes to plant planning, components and system architecture.



### Advantages of Industrial Ethernet

- Uniform and continuous communication system from control to the field device level
- Simultaneous transmission of real-time measuring data and IT data via a single network
- Highest possible data transmission rates of up to 100 Mbit/s
- Significantly reduced wiring costs thanks to standard Ethernet cables and connection components (RJ45 or M12)
- Increased product quality in less time and at lower costs
- High level of investment protection since existing field-bus systems can be integrated at any point via couplers

### Advantages of Proline flowmeters with Industrial Ethernet

- Cost-efficient system integration without additional components (e.g. gateways or couplers)
- Fast device parametrization via the integrated webserver without a device driver
- HistoROM data storage concept: easy device replacement with automatic device recognition and configuration
- Direct access to all measuring values and diagnostic parameters via PC, control room or Internet (remote diagnostics)
- High level of plant availability and process reliability
- Heartbeat Technology for reliable self-diagnostics and device verification

### Making use of IT functions thanks to an integrated webserver

Industrial Ethernet technology makes it possible to use the highly versatile IT functions of automation devices optimally. For this reason, the Proline 100, Proline 400 and Proline 300/500 flowmeters have been equipped with a webserver as a standard. Status or diagnostic messages can now be viewed or retrieved in their entirety using a conventional web browser – via Ethernet (PC, laptop) or via a WLAN access point (tablet, smartphone).



# EtherNet/IP

EtherNet/IP™

## Tried-and-tested, flexible and powerful

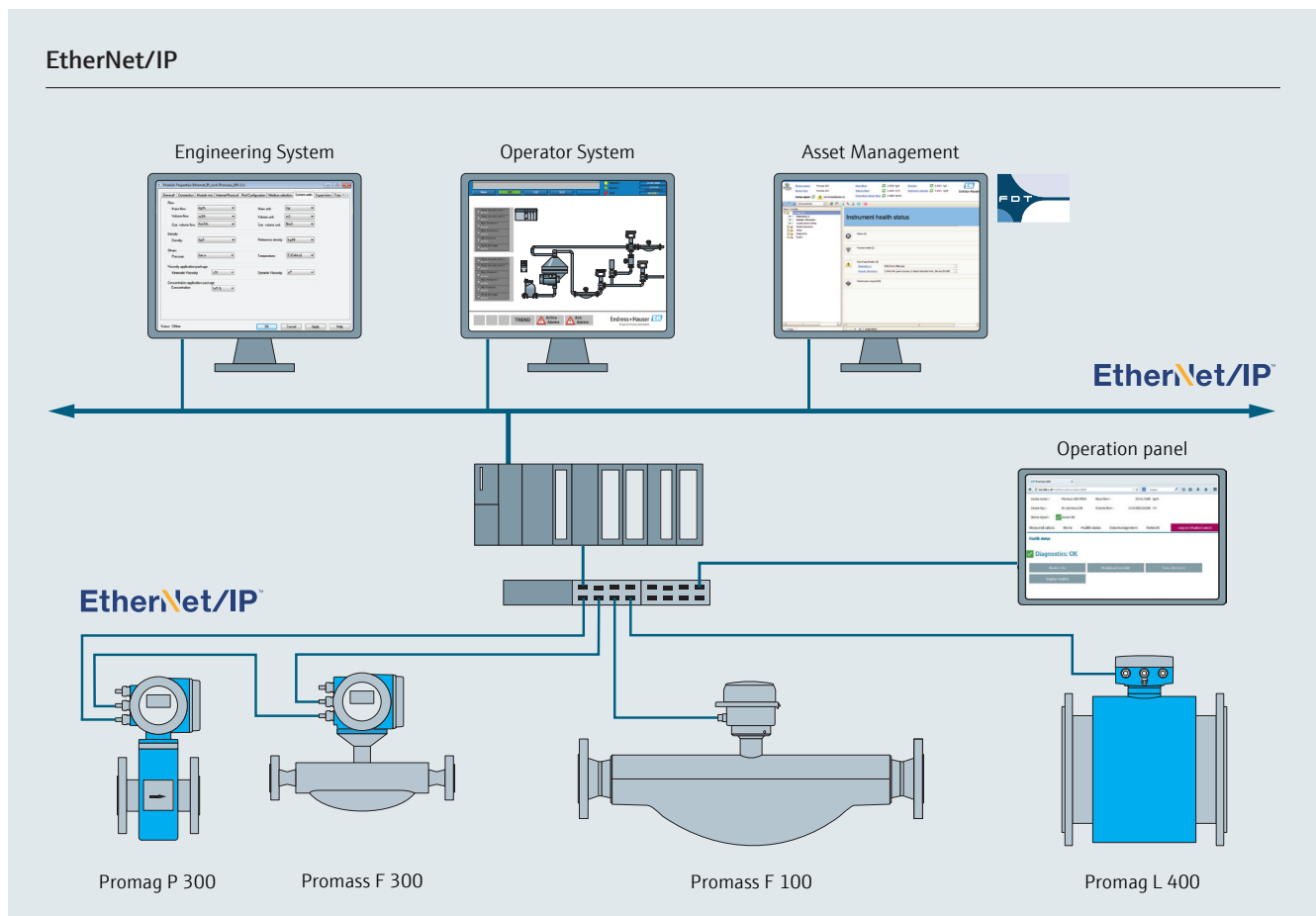
EtherNet/IP was originally developed by Allen-Bradley (Rockwell Automation). Today it represents one of the most reliable and sophisticated industrial Ethernet network solutions for manufacturing automation with a market share of 30%. Among others, ODVA (of which Endress+Hauser is a member) has played a decisive role in the release of this industry standard.

As a technological leader, Endress+Hauser introduced the first flowmeters with EtherNet/IP back in 2010, along with devices for registration and analysis, continuing to refine them to date. The Proline 300 and Proline 500 process device line are new additions to the product range. The tried-and tested Proline 100 and Proline 400 device line for the water industry round out the product range with their proven ability in mechanical and plant engineering.

What does this mean for our customers? It means excellent integration in all important automation systems such as RSLogix 5000 from Rockwell Automation or Unity from Schneider Electric as well as in plant asset management operating tools such as Endress+Hauser's FieldCare

### Advantages at a glance

- Open standard
- Integrated webserver for easy configuration and troubleshooting
- Direct upload of the system integration file (EDS) from the device
- Add-on profiles (Custom AOP) for seamless integration in Rockwell automation systems as well as a time-saving parametrization of the network nodes
- One or two Ethernet ports for a flexible star, ring and line topology
- FDT/DTM technology for advanced system configuration, asset information and calibration management
- Preventive maintenance thanks to the provision of reliable diagnostic data (e.g. with Heartbeat Technology)
- Immediate device identification as network nodes
- All Endress+Hauser EtherNet/IP instruments are ODVA-certified



### Proline with EtherNet/IP

Endress+Hauser has been offering a wide range of tried-and-tested Coriolis, as well as electromagnetic flowmeter systems with EtherNet/IP technologies since 2010, such as for process monitoring, quality assurance and plant protection.

- Tried-and-tested sensors with long-term stability
- Installation could not be easier ("fit and forget")
- Resistant against pipe vibrations and external pipe forces
- Greatest possible measuring accuracy
- Low-maintenance; no moving parts



Promass 300



Promass 100



Promag 300



Promag 400

### Coriolis flowmeters

- Promass 100 (P, S, I, E, F, H, A, O, X, G, Cubemass C)
- Promass 300/500 (F, E, S, P, H, I, A, O, X, Q)

### Electromagnetic flowmeters

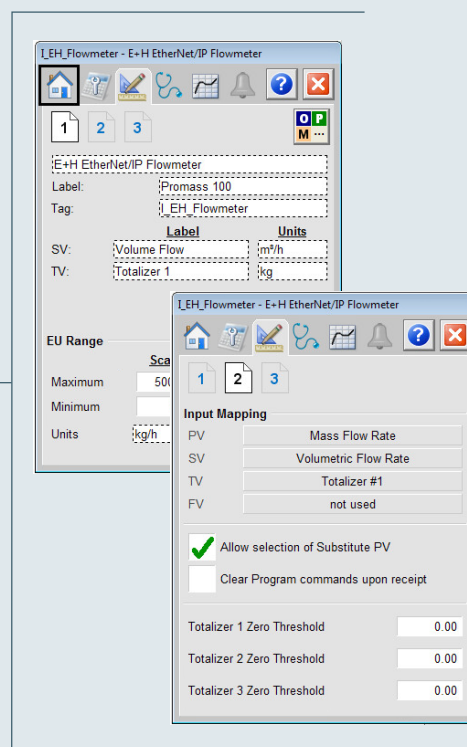
- Promag 100 (H, P)
- Promag 400 (W, L, D)
- Promag 300/500 (H, P, W)

### Add-on profiles for seamless integration in Rockwell automation systems

We provide add-on profiles (Custom AOPs) containing the corresponding data structures and device information for all Proline flowmeters with EtherNet/IP. This interface also features a graphical environment and ensures seamless integration of our devices in control systems from Rockwell Automation:

- Efficient planning thanks to a uniform user interface for all measuring devices
- Simplified engineering thanks to a well-structured and clear parameter display
- Error-free configuration thanks to automatic validation of device parameters

### Custom add-on profiles and user interfaces



**Rockwell  
Automation**

# PROFINET

## A true innovation in flow measurement



PROFINET represents the technological advancement of the PROFIBUS fieldbus on the basis of industrial Ethernet. This protocol was originally developed by Siemens as well as Profibus & Profinet International (PI). As a successor of PROFIBUS DP, PROFINET has proven its worth for years in manufacturing automation and mechanical engineering. It currently holds a market share of 30%.

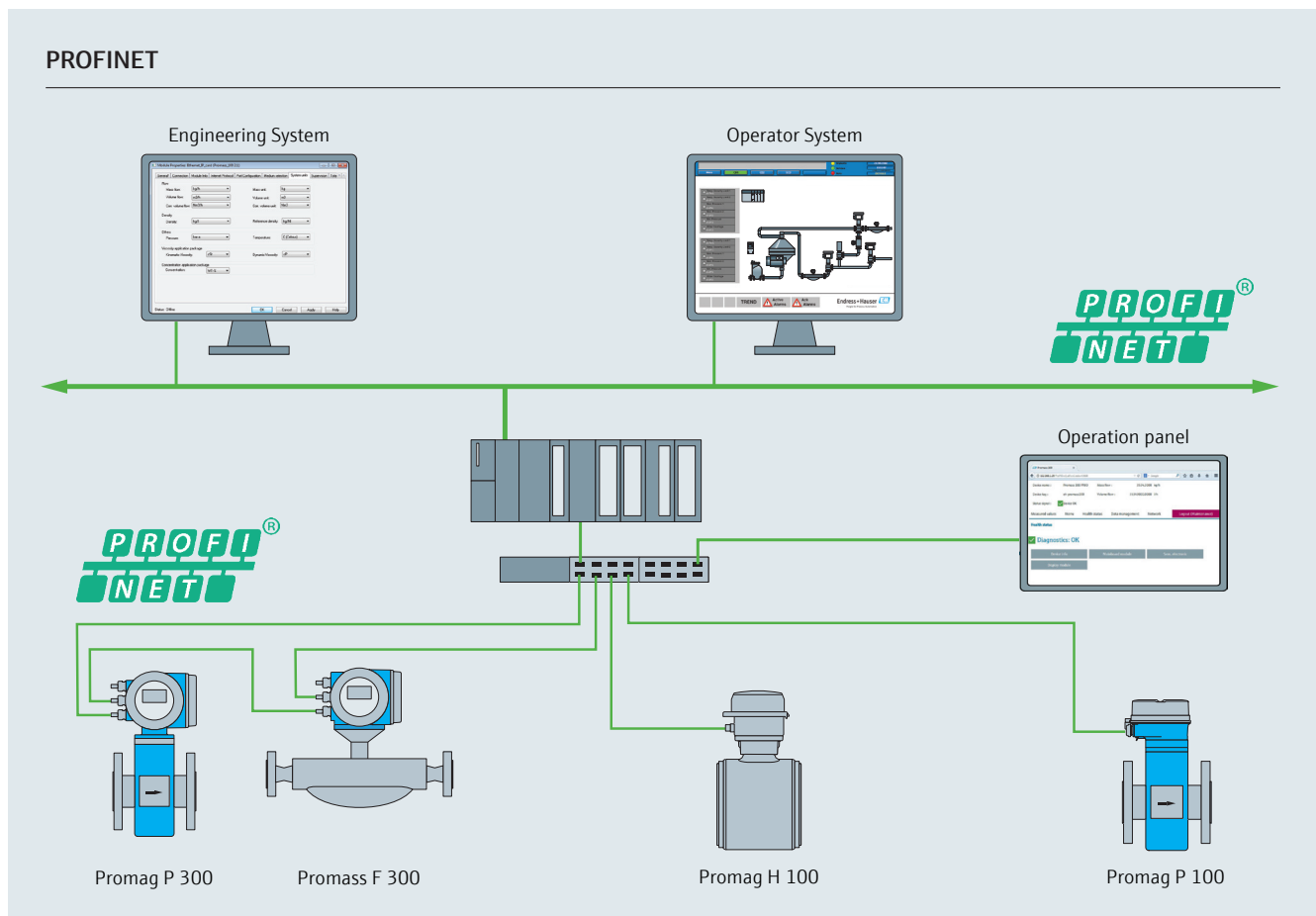
PROFINET, similar to EtherNet/IP, ensures complete interoperability, which means a uniform and continuous communication system from control to the field device level. It is also possible to operate multiple protocols simultaneously or to integrate existing fieldbus systems with the help of proxy technology. PROFINET thus has the same advantages of an industrial Ethernet protocol, including real-time transmission of extensive diagnostic and process data volumes from multivariable field devices.

Due to the increasing importance of PROFINET, Endress+Hauser as the first manufacturer in the world has been offering flowmeters with this pioneering

protocol for more than a year. These flowmeters are the tried-and-tested Proline 100 ultracompact device family and the new Proline 300/500 series.

### Advantages at a glance

- Integrated web server for easy configuration and troubleshooting
- Preventive maintenance thanks to the provision of reliable diagnostic data (e.g. with Heartbeat Technology)
- Quick and reliable device integration directly from the device with the device description file (GSD)
- Increased plant safety and easy maintenance thanks to easy replacement of field devices without the need for tools (automatic parameter configuration)
- Flexible network setup (star, ring and line topology)
- Simple offline parameter configuration without using additional tools. And the ability to upload files to the field device automatically
- Network redundancy in ring topology
- EDD device drivers for integration into asset management systems



## Proline with PROFINET

Proline is the first flowmeter line worldwide which offers digital communication via PROFINET.

- Tried-and-tested sensors with long-term stability
- Resistant against pipe vibrations and external pipe forces
- Greatest measuring accuracy
- Low-maintenance, no moving parts

## Proline 100

- Multifunctional measuring technology for the process industry
- Highest degree of protection (IP69K) guarantees an absolutely tight seal, even during cleaning processes

## Proline 300

- Multifunctional measuring technology for the process industry
- Extremely easy and intuitive operation using local display, web server, WLAN, operating tools or fieldbuses
- With worldwide recognized Ex approvals

## Coriolis flowmeters

- Promass 100 (P, S, I, E, F, H, A, O, X, G, Cubemass C)
- Promass 300/500 (F, E, S, P, H, I, A, O, X, Q)

## Electromagnetic flowmeters

- Promag 100 (H, P)
- Promag 300/500 (H, P, W)



Promass 100

Promag 100

Promass 300

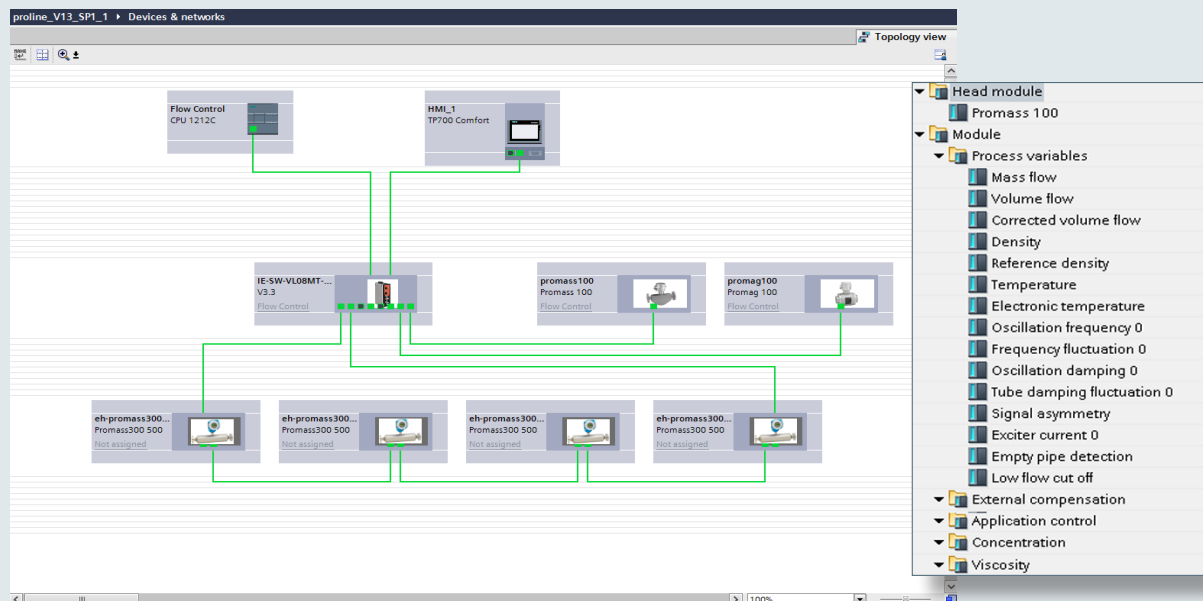
Promag 500

## Maximum transparency in the process

Proline flowmeters can be integrated seamlessly into the PROFINET engineering environment. Therefore, it is possible to retrieve all diagnostic and process data at any time during operation, allowing for optimum monitoring

and evaluation of data. Malfunctions or disturbances can be easily recognized and taken care of immediately, leading to long-term increase in plant availability.

## Network typology and process data



# Endress+Hauser

## Your Partner

Endress+Hauser provides sensors, instruments, systems and services for level, flow, pressure and temperature measurement as well as analytics and data acquisition. The company supports you with automation engineering, logistics and IT services and solutions. With dedicated sales centers and

a strong network of partners, Endress+Hauser guarantees competent support worldwide. Our production centers in twelve countries are able to meet your needs and requirements quickly and effectively. The Group is managed and coordinated by a holding company in Reinach, Switzerland.



### Market leader in fieldbus technology

Endress+Hauser is one of the pioneers of fieldbus technology and plays a leading role in the implementation of HART, PROFIBUS DP/PA and FOUNDATION fieldbus technology.

As a market leader, Endress+Hauser continues to implement the groundbreaking industrial Ethernet trend and is the first manufacturer worldwide to offer flowmeters with PROFINET in addition to EtherNet/IP.

Endress+Hauser operates its own fieldbus laboratory in Reinach (Switzerland):

- Accredited PROFIBUS and PROFINET Competence Center
- Engineering of fieldbus networks
- System integration testing
- Training courses, seminars
- Customer service

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