



INTELLIGENT FIELDBUS

KEEPS YOUR PROCESS RUNNING



Automation Is Our World. A Perfect Application Solution Is Our Goal.

A willingness to take entrepreneurial risks, a pioneering spirit, and a firm belief in their own inventive powers – these were the assets that Walter Pepperl and Ludwig Fuchs started out with when they opened their Mannheim radio repair shop in 1945. Their invention of the proximity switch a few years later proved their strength. It was also the starting point in a successful history defined by close customer relationships as well as innovative automation technologies and procedures.

Then as now, our focus is directed squarely on the individual requirements of each customer. Whether as a pioneer in electrical explosion protection or as a leading innovator of highly efficient sensors, close communication with our customers is what allowed us to become the leader in automation technology. Our main objective is combining state-of-the-art technologies and comprehensive services to optimize our customers' processes and applications.

For more information, please visit our website: www.pepperl-fuchs.com

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Intelligent Fieldbus – the New Dimension in Availability

Maximum availability and plant safety are core requirements in the process industry – no matter what the application. The new, upgraded FieldConnex components from Pepperl+Fuchs offer an integrated fully diagnostic-enabled fieldbus infrastructure for seamless transparency with many perfectly integrated features. The result: state-of-the-art monitoring for a new level of plant safety and availability.



Zero Tolerance for Gaps in Performance Monitoring

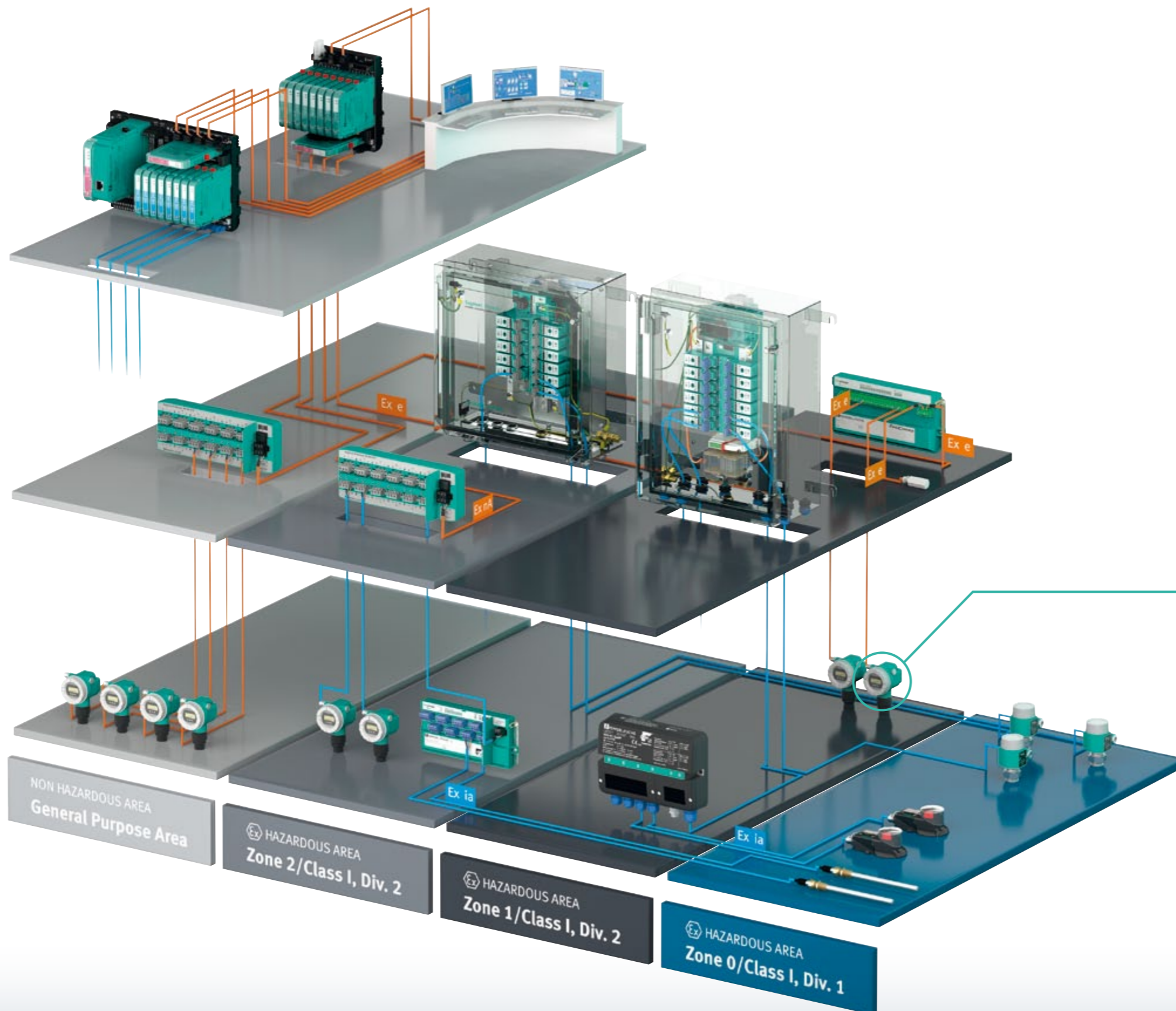
FieldConnex Advanced Diagnostics have new functionalities that monitor the fieldbus physical layer with components installed in the field. They enable active, preplanned, targeted intervention to eliminate problems of installation and the physical layer before they have a chance to interfere with process communications.

Easy to Integrate Into the Control System

Important for proactive plant upkeep is that all status and diagnostics are readily available on control room displays. And this is what FieldConnex components provide: perfectly integrated asset management.



Intelligent Fieldbus – the First Infrastructure with Protection Right in the Field



Uninterrupted Diagnostics and Monitoring

The new FieldConnex components offer maximum protection of each fieldbus segment and diagnostic abilities where they are needed: directly in field devices, junction boxes, and control cabinets.

What makes this possible are the new Diagnostic Gateways, the new FieldBarrier and the Segment Protectors, self-monitoring surge protectors, and enclosure leakage sensors. All components can be connected quickly and easily to the control technology without additional engineering. All alarms are transmitted to the control room automatically in parallel with fieldbus communications without requiring addressing, engineering, or configuration. This simplifies planning tremendously, as plant protection with new components comes at no extra cost or effort at the configuration stage.

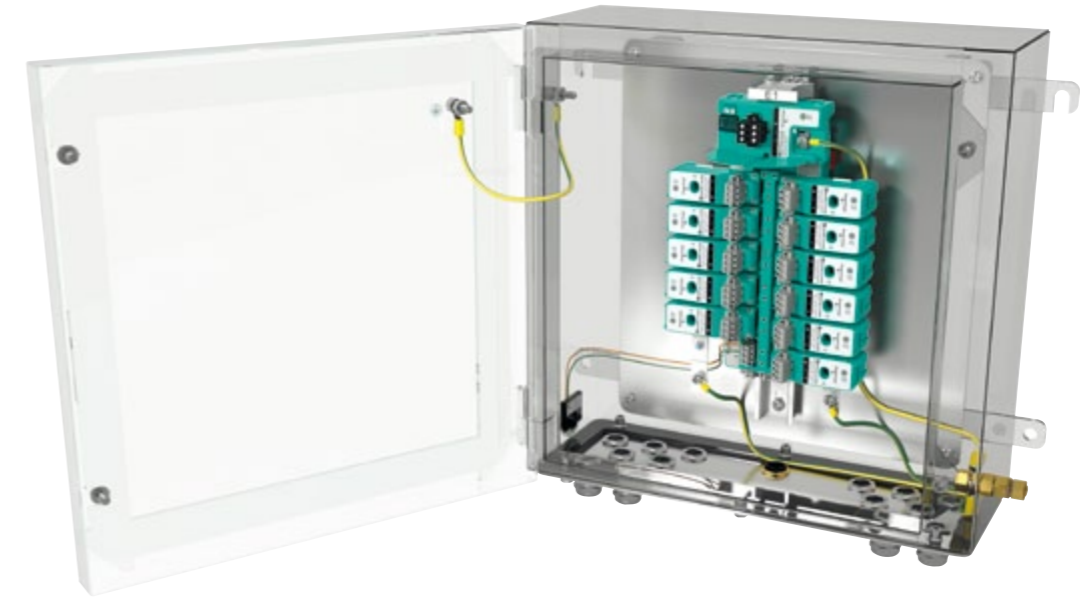
Finally: an innovative technology that guarantees maximum protection for all critical points in the infrastructure. For plant operators, this means unequalled levels of availability.



The Water Ingress Sensor can also be added to your fieldbus field devices.

Diagnostic-Enabled Components at the Distribution Level

The critical and most important location in terms of uninterrupted plant operation and reliable productivity is the interface from the control system to the field devices. The FieldConnex FieldBarriers and Segment Protectors offer various innovative features providing maximum protection for each fieldbus segment. The features are identical for both components, but precisely designed for Zone 1/Div. 1 and Zone 2/Div. 2.

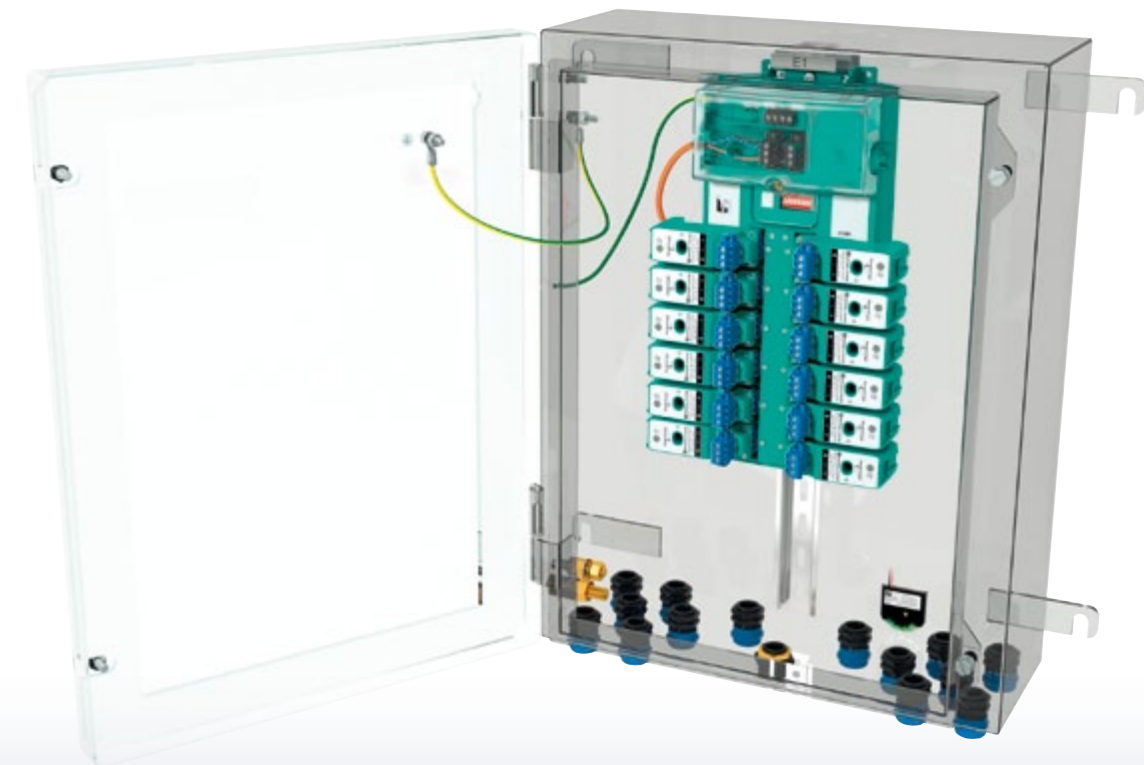


Design Freedom for Maximum Dimensions

Such freedom is unprecedented with fieldbus: up to twelve outputs are selectable. Up to three FieldBarriers and even more Segment Protectors can be operated on one segment. No more limits: This adds up to maximum engineering flexibility allowing the cable distance and device count that a fieldbus allows in safe and hazardous areas.

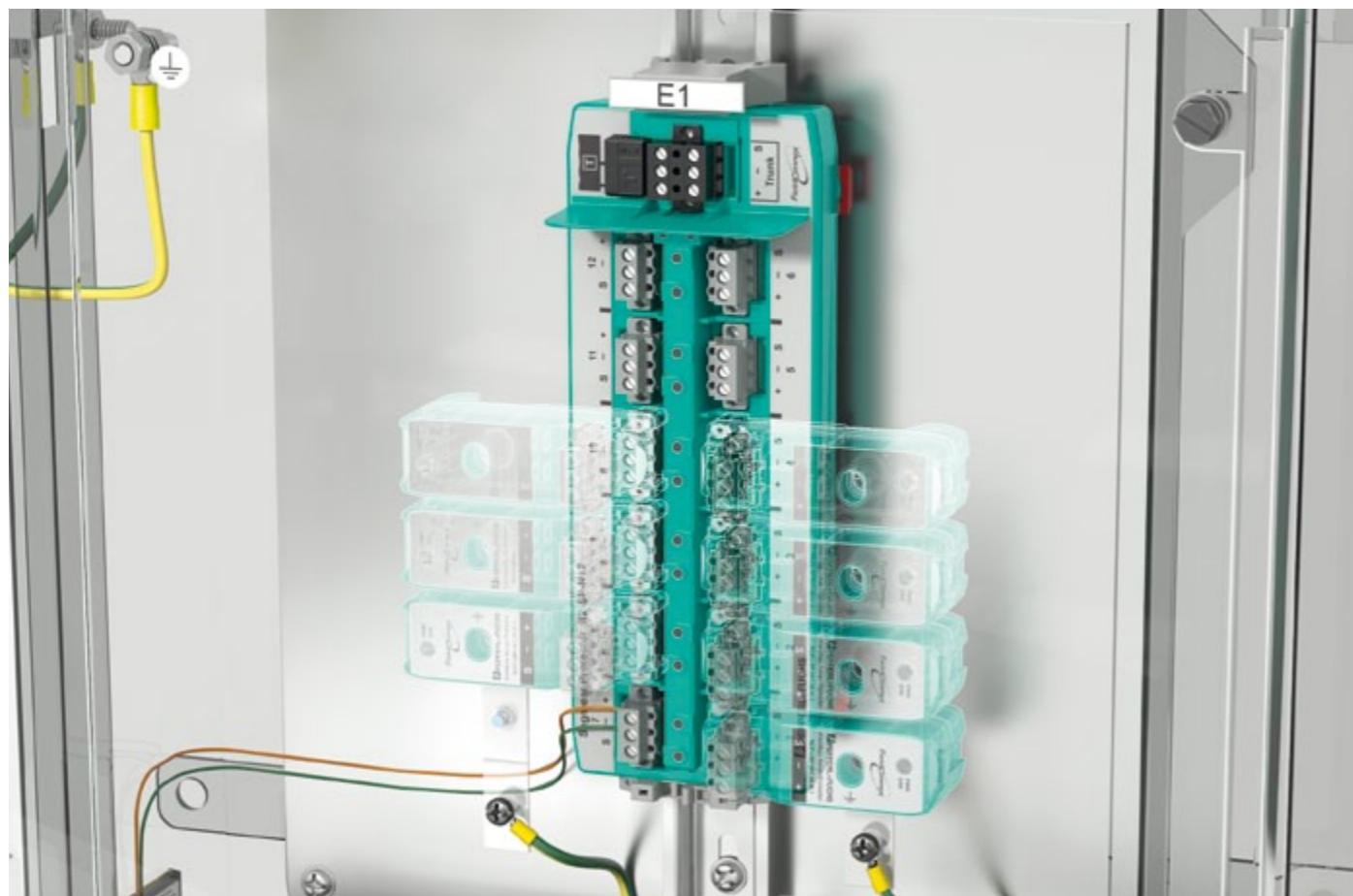
Automatic Early Warning for Added Availability

These state-of-the-art device couplers offer protection from interruptions in process communication. They detect possible causes such as insufficient insulation between conductors, loose contacts, changes in load conditions due to water ingress, contact bounce from live maintenance work, or surge protectors at the end of their expected life. With their intelligent diagnostic functions, the device couplers isolate the affected spur immediately protecting the segment or communicate a negative status of communications quality that will allow teams to intervene before production uptime is at risk.



Segment Protectors: Intelligent Fault Detection for Greater Productivity

FieldConnex Segment Protectors provide innovative and reliable short-circuit protection in fieldbus trunk lines. With fault detection and targeted isolation of spur lines, unintentional plant outages can be reliably prevented. This guarantees operators maximum availability of their plants.



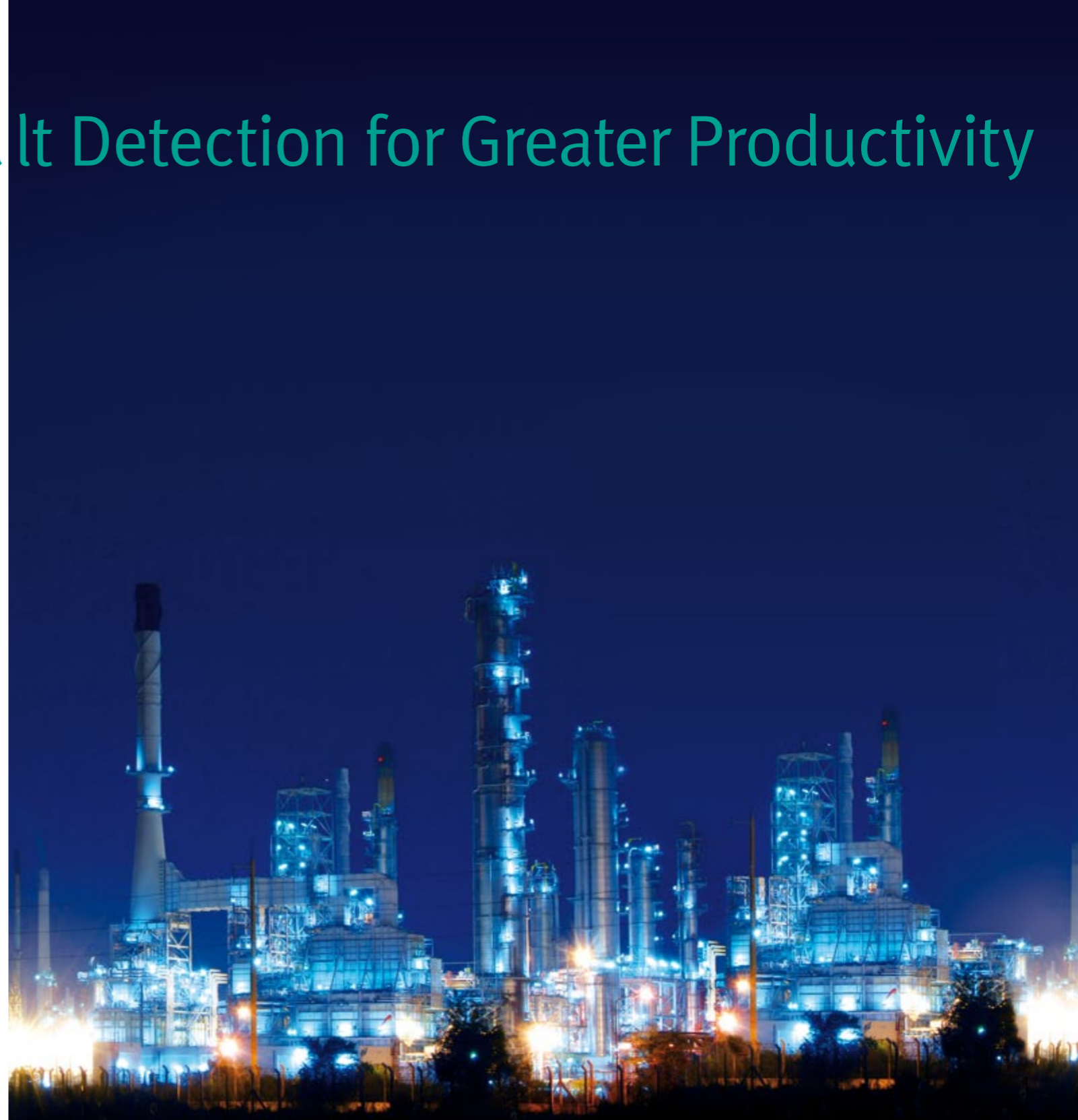
Monitoring Everywhere: Fault Detection at Each Output

The FieldConnex Segment Protector features a completely new function: for the first time, the device detects and suppresses typical fault situations that can occur at each output.

- Gradual changes to the communication signal and load characteristics can be caused by factors such as water ingress, leading to temporary and often hard-to-find faults. The intelligent diagnostic function deactivates the output thus maintaining segment operation.
- Contact bounce that occurs when connecting or removing connectors during live maintenance or that is caused by vibrations.

- Even harsher contact bounce occurs during device exchange, when the installation cable is pulled through the gland.

The Segment Protector automatically detects and isolates the output. The same is true for continuous signals caused by an occasional device fault (jabber). The Segment Protector is an excellent choice for non-hazardous areas, Zone 2/Div. 2 applications with intrinsic safety (Ex ic) or with increased safety protection with devices even in Zone 1/Div. 1.

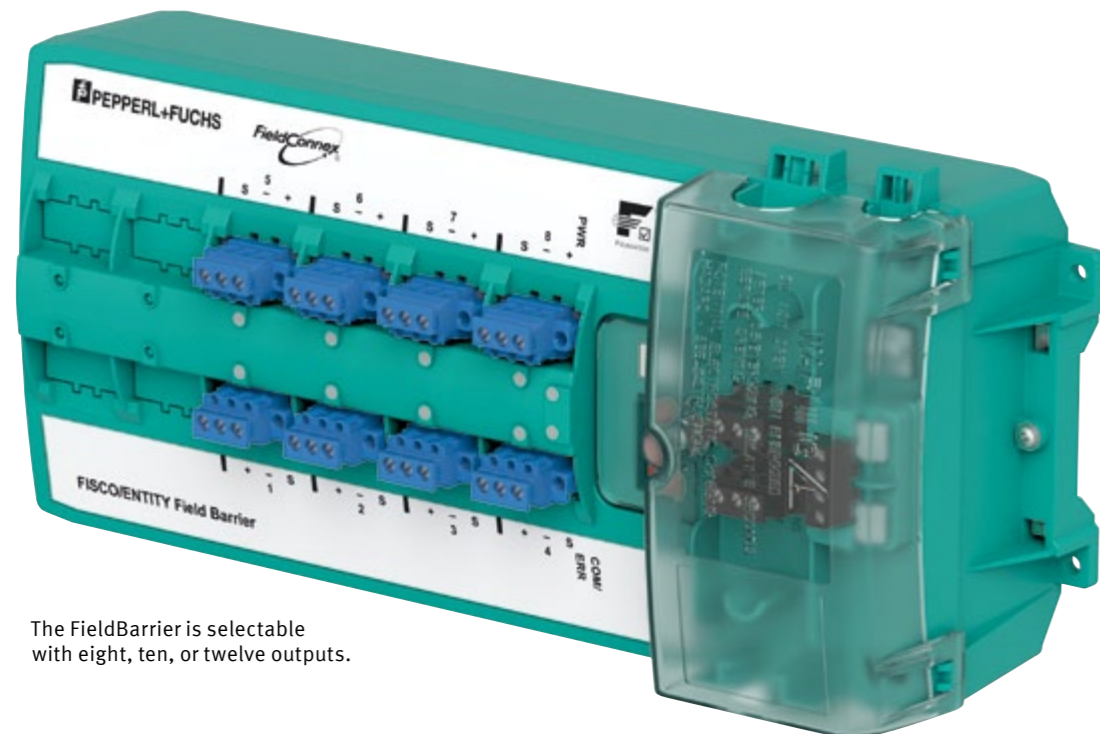


Prewired in the Fieldbus Distributor

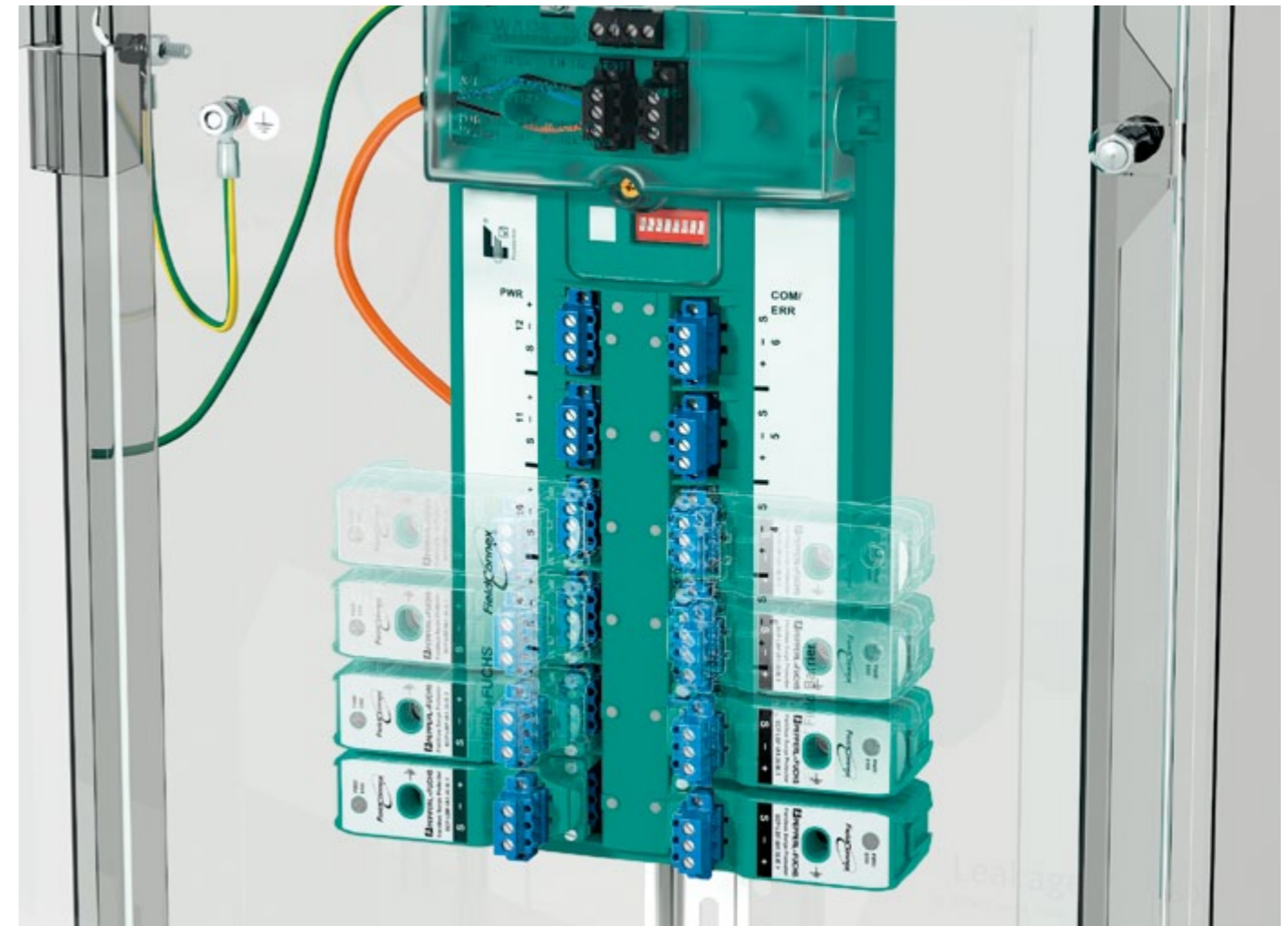
Segment Protectors and FieldBarriers are tested, prewired in the distributor housing, and delivered with a certificate to the construction site. This saves valuable time during installation and testing. Segment Protectors allow for convenient and safe fieldbus installation even in large plants and meet the requirements for Zones 1 and 2/Div. 2.

FieldBarrier: Innovative Features for Higher Availability

The new FieldBarrier represents an advanced level of technology that sets new standards in reliability: this new technology focuses on achieving the greatest level of availability for each individual segment. As a result, the FieldBarrier boasts innovative, state-of-the-art features that all add up to one benefit: maximum protection against segment failure in any hazardous area – zone or division.



The FieldBarrier is selectable with eight, ten, or twelve outputs.



Uniquely Innovative: Physical Layer Diagnostics at the Spur

The FieldBarrier sports the superior fault detection described for the Segment Protector and adds one more significant aspect: as an industry first, the new FieldBarrier offers physical layer monitoring at the spur. An alarm is sent to the control room whenever the communication quality reaches critical levels. Monitoring at the spur provides the highest level of transparency of the installation. Intervention takes place before an unwanted shutdown can occur.

Protection Right from the Start: Intelligent Load Management

When the segment starts, the FieldBarrier activates the outputs in sequence to prevent excessive inrush currents. If an overload is imminent during normal operation, noncritical loads are shed – and the process system remains optimally protected. A unique total load management system limits the maximum current the FieldBarrier consumes at any time.

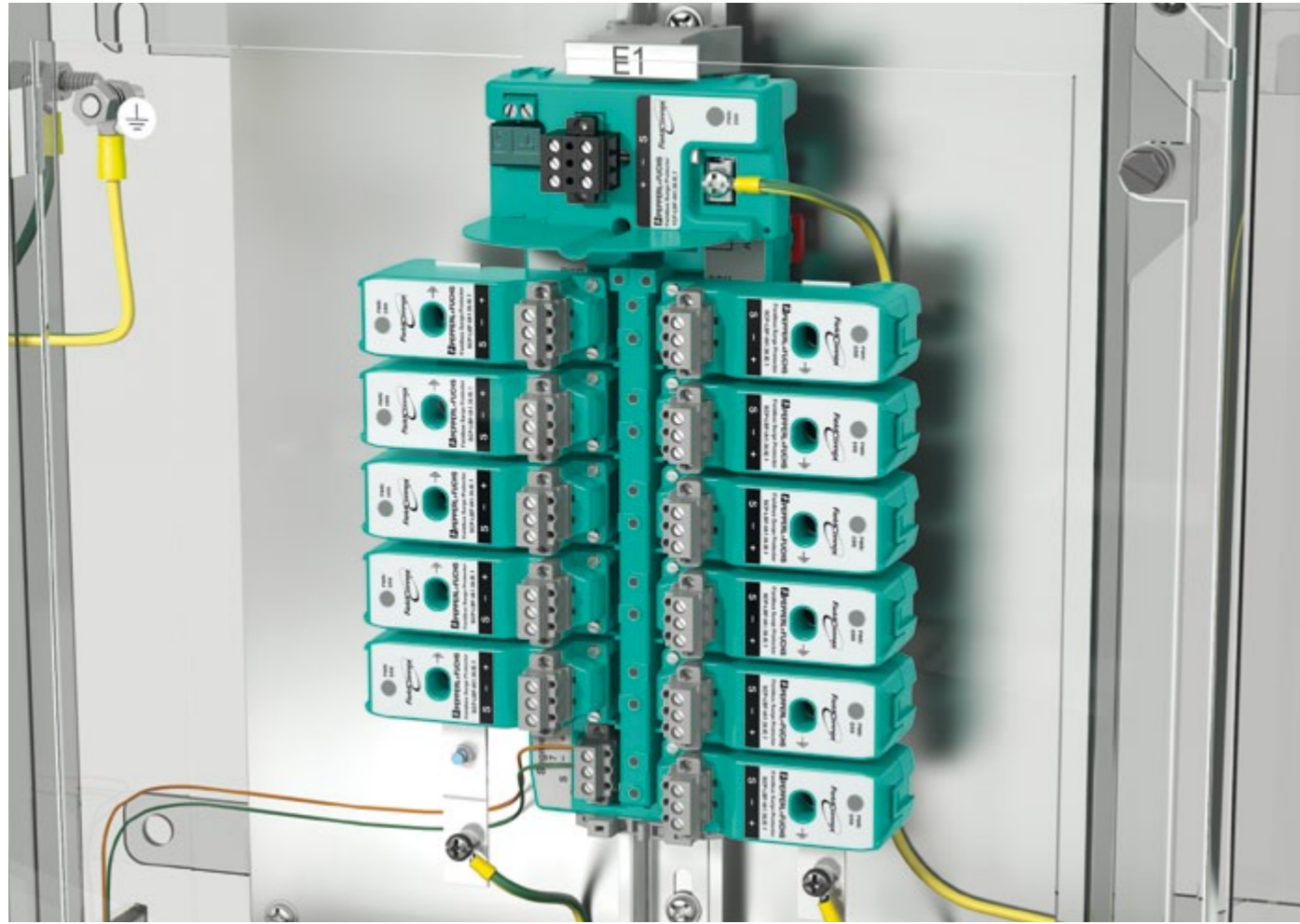
Intelligence Inside: Self-Monitoring for Reliable Segments

To retain full functionality, a whole range of features are integrated in the device to eliminate any risk. Sensitive components are redundant in design, and the self-monitoring function detects aging before components are close to failure. An alarm in the control room displays any maintenance requirements – another feature that minimizes the level of risk and enhances availability.

If a fault occurs at the spur, the output switches off quickly reducing the current to 1 mA (fold back). The output returns to normal operation when the fault has been cleared. Moreover if an overload condition is imminent, the FieldBarrier will shed outputs with lower priority. Even in the unlikely event of multiple concurrent short circuits, the additional current demanded of the fieldbus power supply is minimized. This prevents the risk of a segment shutdown due to power supply overload.

Compact, Intelligent, Safe: Surge Protection + Diagnostics

Surge protectors from Pepperl+Fuchs protect the fieldbus infrastructure against lightning strikes and power surges. Pluggable and intrinsically safe, the modules can be deployed without any additional wiring or tedious planning. This saves users time and investment costs.



Integrated Diagnostic Features for Plant Safety

The surge protectors developed by Pepperl+Fuchs can reliably prevent damage to process automation equipment resulting from lightning strikes or voltage peaks. An automatic self-monitoring function registers the strength of the power surge and reports the end of the useful life. This means defective devices can be replaced in a timely manner, making regular, manual checks a thing of the past.

Junction-Box-Mounted for Ease of Use

The new surge protectors are plugged directly into the fieldbus junction box or the control cabinet and eliminate the need for an additional level of wiring thus reducing installation time and expense considerably. Retrofitting an existing plant with surge protectors can be done without additional engineering or costly construction: they can be mounted on the FieldConnex Power Hub in the control room or the device coupler. Ignition protection is perfectly matched with the installation: surge protectors come with intrinsic or increased safety approvals.

An Early Warning System for More Plant Availability

Increased plant availability thanks to early warnings from enclosure leakage sensors that can detect water ingress at the device level. Potential disturbance of process communication can be detected and dealt with, reducing the risk of shutdown due to excess moisture to practically zero.



Safety Guaranteed through Efficient Diagnostics

The ELS-1 enclosure leakage sensor reports moisture contamination as soon as it occurs and can detect even the smallest changes thanks to its reliable diagnostic function. If sensor contact conductivity increases, an alarm is sent immediately to plant asset management via the FieldConnex field devices.



Reliable Water Ingress Detection

Even minor amounts of liquid in devices and junction boxes can trigger process interruptions. But short-lived problems caused by rain or changes in ambient temperature are difficult to detect. Excess moisture can lead to a dampening of the fieldbus communication signal or to temporary shorts. In the long run, they can result in corrosion inside the terminals or electronic components. Pepperl+Fuchs has the answer to these problems: compact enclosure leakage sensors that can fit into even the tightest housing.



Install Anywhere

The compact design of the ELS-1 makes it suitable for installation anywhere, and it provides protection for both field devices and installations such as prewired fieldbus junction boxes. To protect field devices, the enclosure leakage sensors are simply wired in parallel to the instrument. An open Segment Protector output is used when the sensor is installed in a fieldbus junction box. Signals are transmitted automatically, indicating the affected spur without the need for additional engineering. Enclosure leakage sensors can be used in combination with surge protectors on the same spur or trunk.

Diagnostic Gateway – Maximum Protection Inside the Control Cabinet

The Advanced Diagnostic Gateways is the brain behind FieldConnex component interaction. They respond to each and every parameter diagnostic and status change.

Identify Threats Early

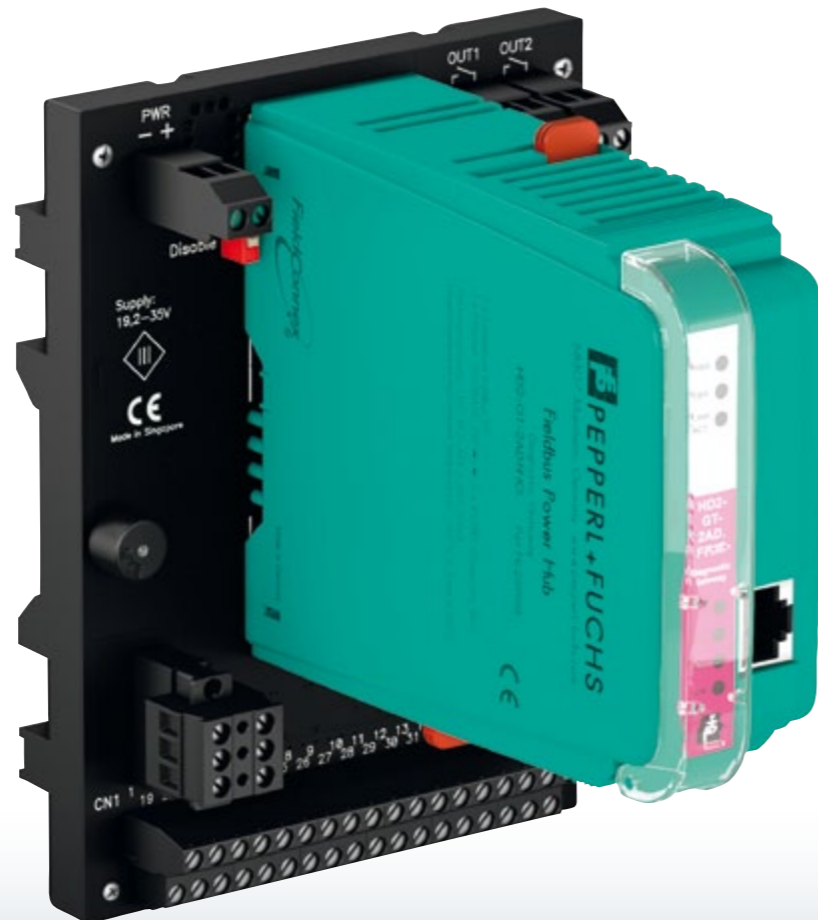
The uninterrupted monitoring and control of process plants includes control cabinet security and safety. The pioneering Advanced Diagnostic Gateways respond instantly to parameter changes, such as temperature, humidity, or AC status, and intervene as soon as they are detected.

Integrated I/O Functionality for Precise Monitoring

One of the most important new developments in the Advanced Diagnostic Gateways is the integrated, easily configured inputs and outputs as well as a configurable control loop function block. It was developed especially for monitoring control cabinets and has inputs for frequency, temperature, and humidity as well as switches, such as NAMUR sensors or door contacts. It comes with an integrated humidity sensor. Two power relays for the control of AC devices are also included. This turns every control cabinet into an area with flexible and permanent monitoring. With its ability to activate integrated AC devices, such as heaters or air conditioners, or to monitor access control, the gateway is your guarantee for maximum safety.

Flexible Connectivity to the Control Room

The Advanced Diagnostic Gateways act as the interface between the Advanced Diagnostic Modules and the asset management system. Connectivity and communication to the gateway is flexible; it supports either the FOUNDATION Fieldbus H1 node or Ethernet. Pepperl+Fuchs can integrate up to sixteen Advanced Diagnostic Modules as FF-H1 nodes with well-known device management via EDD or FDT/DTM. The software has built-in detection routines that detects all gateways and diagnostic modules automatically. Setup is completed with just a few mouse clicks. This is zero engineering effort.



FieldConnex – Peak Technology for All Markets

Peak performance, maximum availability, and uninterrupted plant safety – the demands on fieldbus process plant technology are enormous, and they are increasing daily. FieldConnex from Pepperl+Fuchs offers secure, proactive solutions based on innovations that are setting new safety standards for all branches of the industry.



The Ideal Solution for Every Application

No matter what your process safety requirements, FieldConnex has the right solution. Fieldbus communication can function safely and problem-free only when the components are designed specifically for a given application. Ongoing and close interaction with our customers is one way we can guarantee success,

as it means our technology is becoming increasingly customized for individualized applications. With our years of experience in explosion protection and a vertical integration of manufacture of over 90% we provide operators with a technology that allows them to run their plants at maximum efficiency.

Safety First: Expertise from the Technology Leader

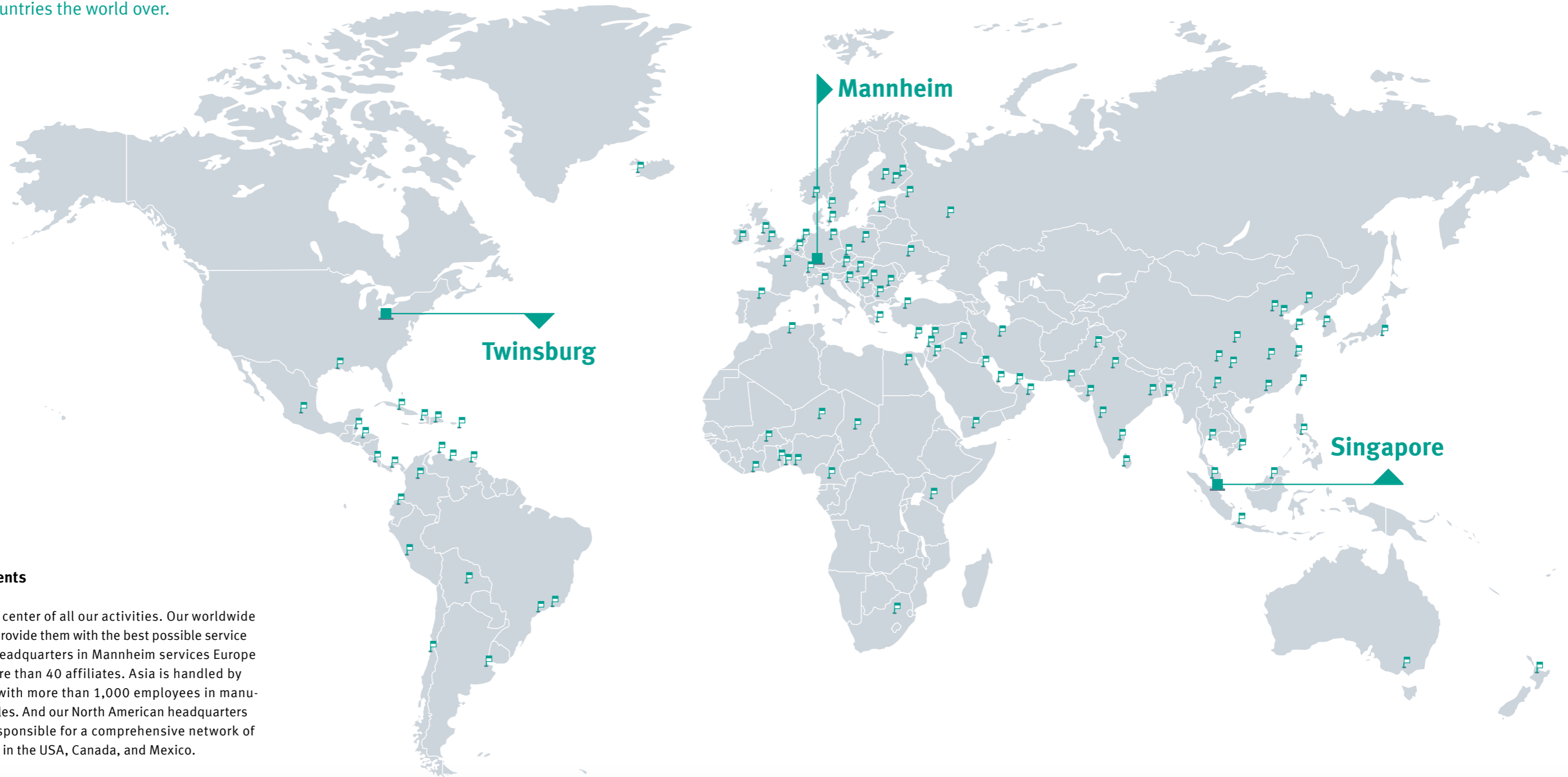
FieldConnex meets all current national and international safety requirements. The advanced diagnostic technology underlying the modules means they can offer maximum safety even under the most extreme conditions – on oil rigs, aboard ships, in the chemical and pharmaceutical industries, in energy production, and in the water and waste water industries.

Expertise in Explosion Protection

Because of the explosive materials involved, increased safety, intrinsic safety, or the High-Power Trunk concept are high priorities in the oil and gas industries. The same is true for the chemical industry, which works primarily with easily combustible substances. Pepperl+Fuchs has the advantage of decades of experience. Our components meet the most stringent safety requirements and environmental regulations for these industries – on both national and international levels.

Staying in Touch. The World Over.

Good customer relationships need care and attention. They are an indication of genuine interest, trust, and a cooperative spirit: the foundation of Pepperl+Fuchs' strengths. No matter where you might be, we are always nearby. And we speak your language – in more than 140 countries the world over.



At Home on All Continents

Our customers are at the center of all our activities. Our worldwide network ensures that we provide them with the best possible service and support. Our world headquarters in Mannheim services Europe through a network of more than 40 affiliates. Asia is handled by our office in Singapore, with more than 1,000 employees in manufacturing, service, and sales. And our North American headquarters in Twinsburg, Ohio, is responsible for a comprehensive network of offices and sales partners in the USA, Canada, and Mexico.

No matter where in the world you may be, Pepperl+Fuchs is right nearby – and always there for you.

YOUR APPLICATION. OUR CHALLENGE.

PROCESS INTERFACES

- Intrinsically safe barriers
- Signal conditioners
- Fieldbus infrastructure
- Remote I/O systems
- HART interface solutions
- Wireless solutions
- Level measurement
- Purge and pressurization systems
- Industrial monitors and HMI solutions
- Explosion protection equipment
- Solutions with process interfaces

INDUSTRIAL SENSORS

- Proximity sensors
- Photoelectric sensors
- Industrial vision
- Ultrasonic sensors
- Rotary encoders
- Positioning systems
- Inclination and acceleration sensors
- AS-Interface
- Identification systems
- Logic control units

