



## RELIABLE SIGNALS

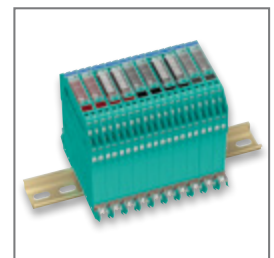
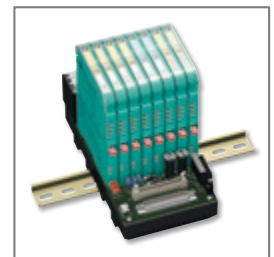
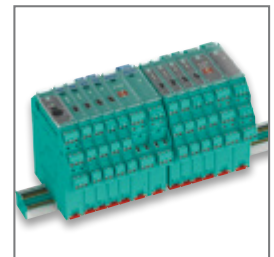
## INTERFACE TECHNOLOGY PRODUCT OVERVIEW

ISOLATED BARRIERS

SIGNAL CONDITIONERS

ZENER BARRIERS

HART INTERFACE SOLUTIONS





## PEPPERL+FUCHS COMPANY OVERVIEW

### PROTECTING YOUR PROCESS

Pepperl+Fuchs is the market leader in intrinsically safe explosion protection components.

As a preferred partner of industries such as oil and gas, chemical, pharmaceutical as well as power and utility, we offer comprehensive, application-oriented system solutions, including customer-specific control cabinets and enclosures for the process automation industry.

We are more than just a supplier. We provide expert development, manufacturing, and commissioning of a wide range of solutions – at every step along the way. From the initial start-up and commissioning to support after installation, we provide professional service and unmatched performance.

### SELECTION OF CHOICE

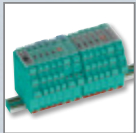
We offer the widest selection of products for protection of electrical signals located in hazardous areas or demanding environments.

From simple zener barriers and intrinsic isolators to complex and highly functional logic control units, these systems guarantee high signal availability from the field device through the interface module to the control system.

Suited to meet the requirements of the modern-day process plant, our interface technology products are the perfect choice to meet all applications and installation requirements.

Further information about Pepperl+Fuchs and your local contacts are available at [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com)

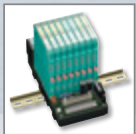




### **K-SYSTEM – MULTI-PURPOSE AND FLEXIBLE**

From an individual module to a complete system solution, flexible installation and application-oriented solutions characterize the entire product range of isolated barriers and signal conditioners.

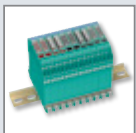
▶ p. 04



### **H-SYSTEM – PLUG AND PLAY**

Connecting several isolated barriers to a termination board, the H-System greatly simplifies and minimizes wiring.

▶ p. 06



### **Z-SYSTEM AND SB-SYSTEM – SIMPLE AND COST EFFECTIVE**

Zener barriers limit energy to a safe level incapable of igniting the explosive atmosphere – a simple and cost-effective, not isolated solution for hazardous areas.

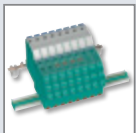
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### **HART INTERFACE SOLUTIONS – TRANSPARENT COMMUNICATION**

HART interface solutions enable transparent communication between intelligent field instruments and host systems.

▶ p. 10



### **SURGE PROTECTION – INCREASED RELIABILITY**

Surge protection barriers divert harmful voltage transients and surge currents to ground, safely protecting all measurement and control signals.

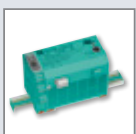
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### **CUSTOMIZED CABINET SOLUTIONS – PROFESSIONAL SERVICE**

The full line of interface components can be specified to form a comprehensive cabinet solution – tailored to the application.

▶ p. 13



### **ACCESSORIES – FOR PERFECT INSTALLATION**

Accessories are important for any installation and make the interface technology from Pepperl+Fuchs a well-rounded solution.

▶ p. 14

# K-SYSTEM – MULTI-PURPOSE AND FLEXIBLE

The large selection of K-System isolated barriers and signal conditioners consists of more than 150 different products. From a single module application to a complete system solution, its flexible installation and application-oriented solutions characterize the entire K-System product range.

K-System isolated barriers offer an extensive range of intrinsic safety interface modules for many signals and applications – from simple isolators to highly functional modules. Furthermore, the signal conditioners are the perfect choice for general-purpose. Both types of modules can be mounted on the same Power Rail. They are clearly differentiated by color as signal conditioners have grey front labels. K-System modules are available in a variety of housing widths so they easily fit into any cabinet or enclosure. Whether one chooses the 12.5 mm KC-modules or the 20 mm and 40 mm KF-modules, the electrical and mechanical characteristics of the K-System are maintained.



## COST-EFFECTIVE MOUNTING

- Up to 30% space saving in the control cabinet due to slim design of 12.5 mm housings
- Horizontal and vertical mounting without derating
- Simple expansion and replacement during operation
- Modules simply snap onto Power Rail

## EFFICIENT SUPPLY WITH POWER RAIL

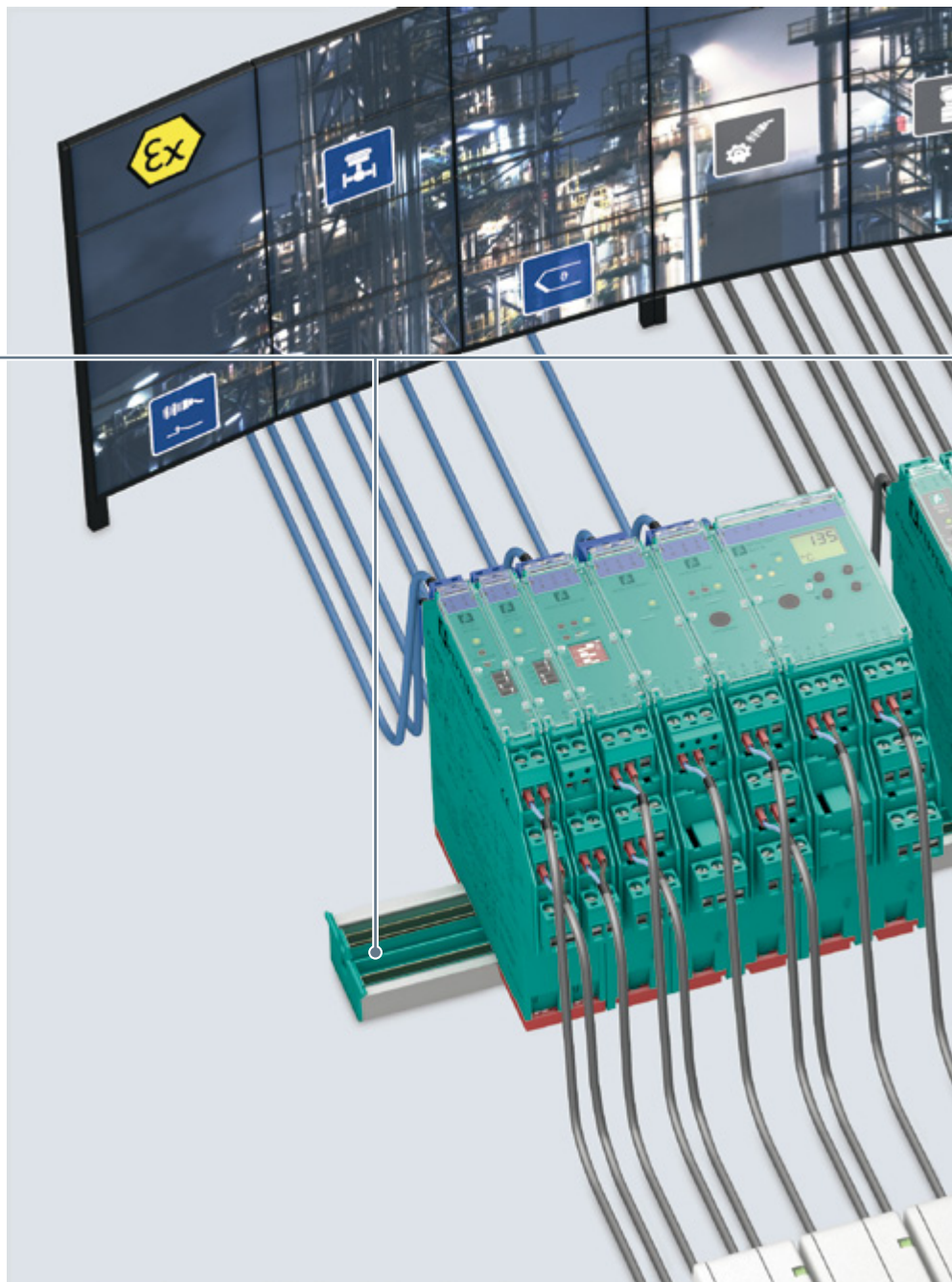
- Ensures group protection with fused power feed modules or power supplies
- Enables redundant power supply
- Avoids daisy chains

## HIGH AVAILABILITY

- Line fault detection of field loops
- Reduced power consumption and efficient design result in very low heat dissipation
- Longer lifetime due to less heat in cabinet

## EASY MAINTENANCE

- Internal diagnostic functions
- Error, power and input signal status with LEDs for each device
- HART signal transparency for easy access to field devices
- Removable terminal blocks with test sockets

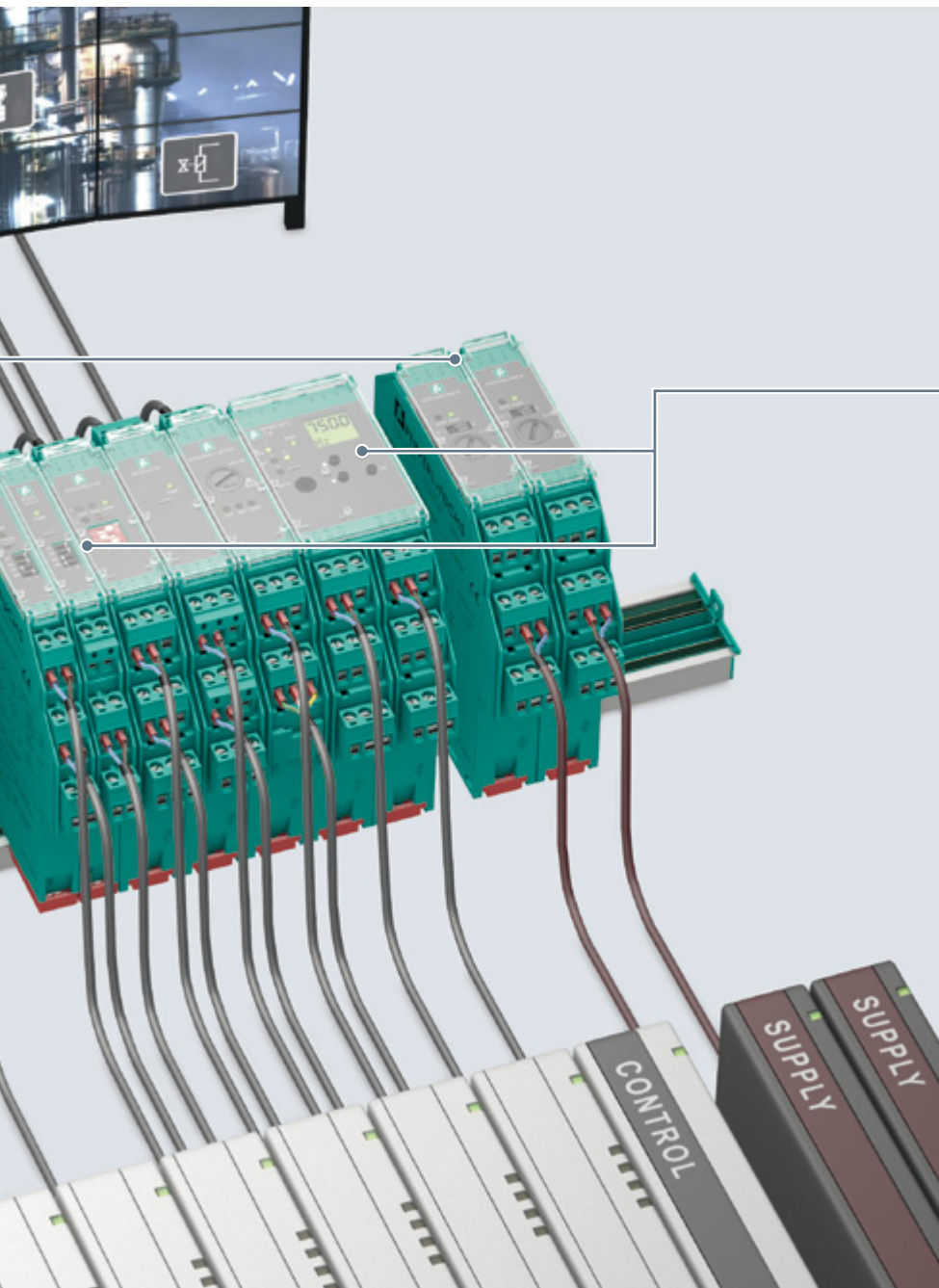


## MOUNTING AND CONNECTING WITH ONE CLICK ON POWER RAIL

Power Rail is an insert in the standard 35 mm DIN rail. When the intended application requires DIN rail mounting, K-System modules are simply snapped in place. Power Rail supplies the modules with power and provides a single path for collective error messages from each module. It also simplifies expansion. All barriers can be combined on Power Rail – just snap in a new module. Due to very low power dissipation, K-System modules can be mounted horizontally and vertically without derating.

## EASY SETUP OF MODULES

The K-System modules can easily be configured via top-mounted switches without removing the modules. Multifunctional devices have pushbuttons and display for setup as well as software (FDT-DTM) for quick setup.



### FITS TO ANY APPLICATION

- Single-loop integrity with one-channel modules in small 12.5 mm housings
- Maximum channel density in the 20 mm housings – only 5 mm per channel
- Highly functional modules for temperature, frequency transmitters and strain gauges

### EASY CONFIGURATION

- Setup with top-mounted switches
- Configuration with PC or pushbuttons
- Display for monitoring
- Large label flaps for tagging and identification

### PLANNING MADE SIMPLE AND SAFE

- Many devices with SIL2 and SIL3
- Comprehensive international support
- International approvals and safety manuals available
- Clear and useful documentation with 2-D, 3-D drawings and EPLAN macros

# H-SYSTEM – PLUG AND PLAY

**An alternative to the DIN rail mounted K-System, the H-System connects several isolated barriers to a termination board. Compared to a single interface module, the termination board can greatly simplify and minimize wiring.**

H-System connects to the control system via a system connector and cable, reducing planning and start-up time. Pre-wired boards and snap-on interface modules make maintenance simple. Combined with minimized space requirements and low power dissipation in the cabinets, the H-System is a cost-effective solution.



## PERFECT DCS INTEGRATION

- Reduced planning and wiring with system cables
- System connectors for various DCS
- Customized termination boards

## FITS TO ANY APPLICATION

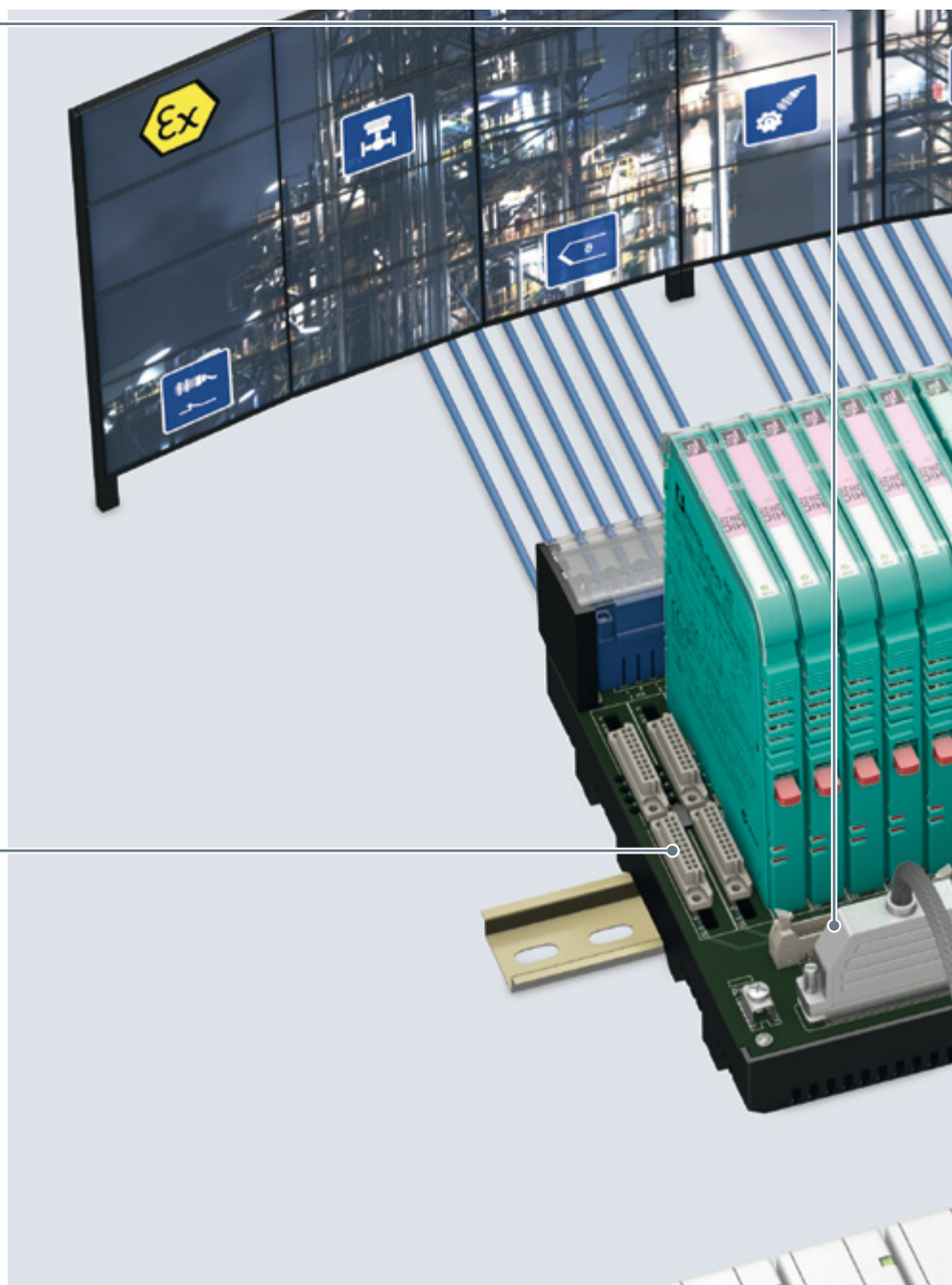
- Single loop integrity with one channel modules in small 12.5 mm housing
- Up to four channels in 18 mm HiD modules – up to 64 channels on one 16-position termination board

## COOL AND SPACE SAVING

- Reduced power consumption results in very low heat dissipation
- Longer lifetime due to less heat in cabinet
- Up to 30% space saving in the control cabinet due to slim design of 12.5 mm HiC modules

## COST-EFFECTIVE MOUNTING

- Horizontal and vertical mounting of the 8- and 16-position termination boards
- Simple snap-on of modules on pre-wired termination boards
- Modules with coding pins avoid misplacements

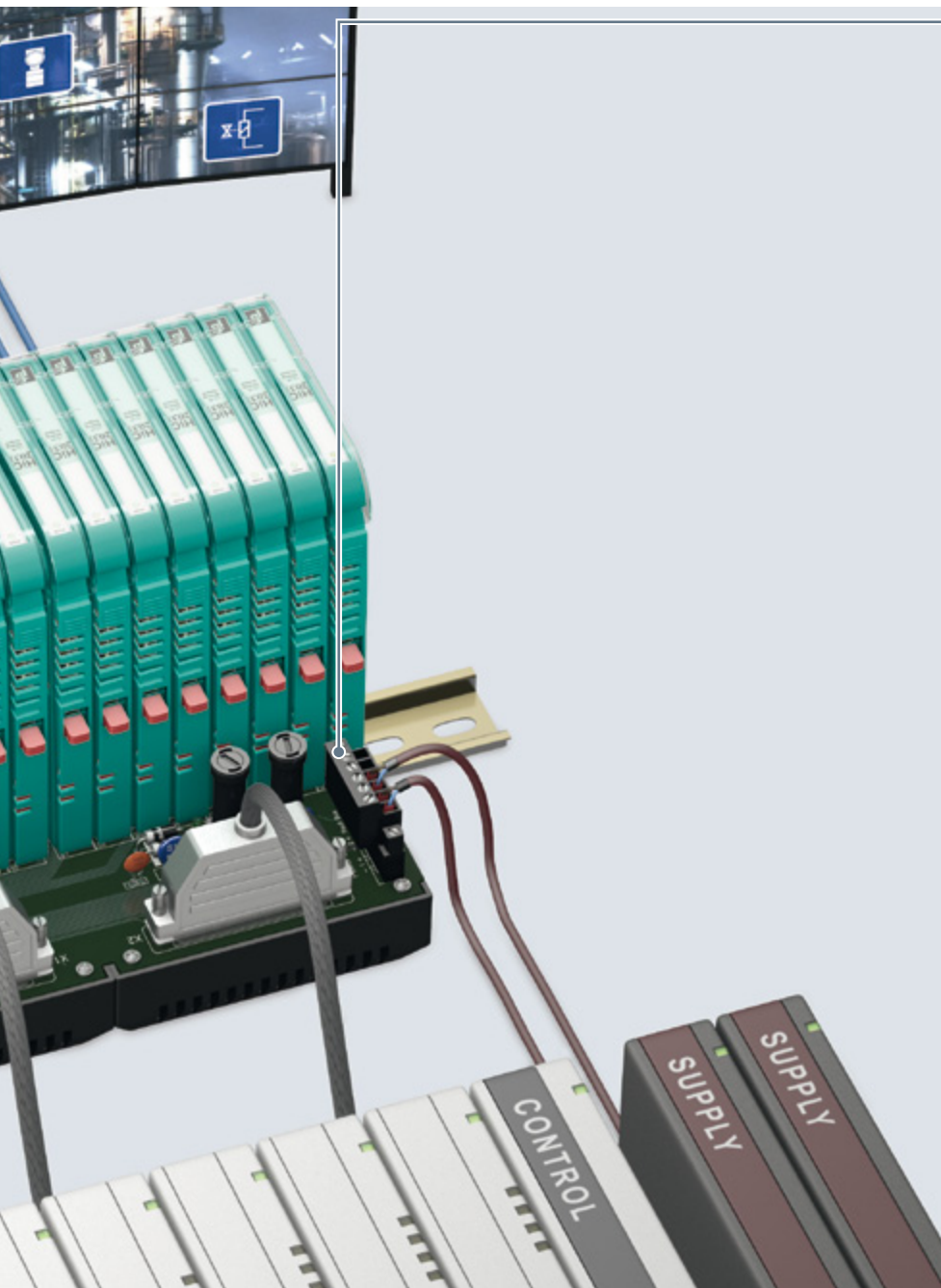


## EFFICIENT INSTALLATION WITH TERMINATION BOARDS

The termination boards have a robust, fiber-reinforced plastic housing that provides support and protection and enables fast and reliable mounting within the cabinets. H-System barriers feature tool-free mounting and are hot-swappable. For easy handling and maintenance, an optional fault monitoring board is available. Pre-assembled cables with application-specific plugs reduce the complexity in planning and documentation. These multi-channel cable connectors replace the single point-to-point wiring between board and the I/O card of the controller (DCS, ESD).

## EASY SNAP-ON OF INTERFACE MODULES WITH QUICK-LOK

H-System interface modules easily snap onto the termination boards with Quick-Lok – no wires, no tools. The modules provide galvanic isolation between the intrinsically safe field signals and the safe area. H-System interface modules feature high channel density, reduced space requirements, single loop integrity, and simple commissioning. Two module groups are available: multi-channel HiD interface modules and HiC interface modules for maximum single loop integrity.



### HIGH AVAILABILITY

- Redundant and fuse powered termination boards
- Diagnostic and line fault monitoring in the modules and termination boards

### EASY MAINTENANCE

- Line fault detection of field loops
- Error message indicated with red LED
- Collective error message for line and power faults
- Internal diagnostic functions
- HART signal transfer for easy access to field devices

### INTERNATIONAL SAFETY STANDARDS

- Global certifications
- Up to SIL3 on many devices
- Safety manuals for SIL applications

### PLANNING MADE SIMPLE

- Connection to HART multiplexer on termination board
- Large label carrier for loop labeling
- Easy documentation with 2-D, 3-D drawings and EPLAN macros

# SB- AND Z-SYSTEM – SIMPLE AND COST EFFECTIVE

**Intrinsically safe zener barriers have long been a popular solution for providing intrinsic safety protection for circuits in hazardous locations.**

Zener barriers provide cost-saving, non-isolated Ex-protection for various applications in process automation systems. The amount of energy transferred to the hazardous location is limited to a safe level incapable of igniting the explosive atmosphere. Pepperl+Fuchs offers a wide product portfolio of housing and connection styles, which includes DIN rail and termination board mounting and accessories for each application. Unlike isolated barriers, zener barriers require a dedicated earthground connection. Pepperl+Fuchs offers two distinct zener diode barrier product lines – Z-System and SB-System.



## REDUCED CABINET SPACE

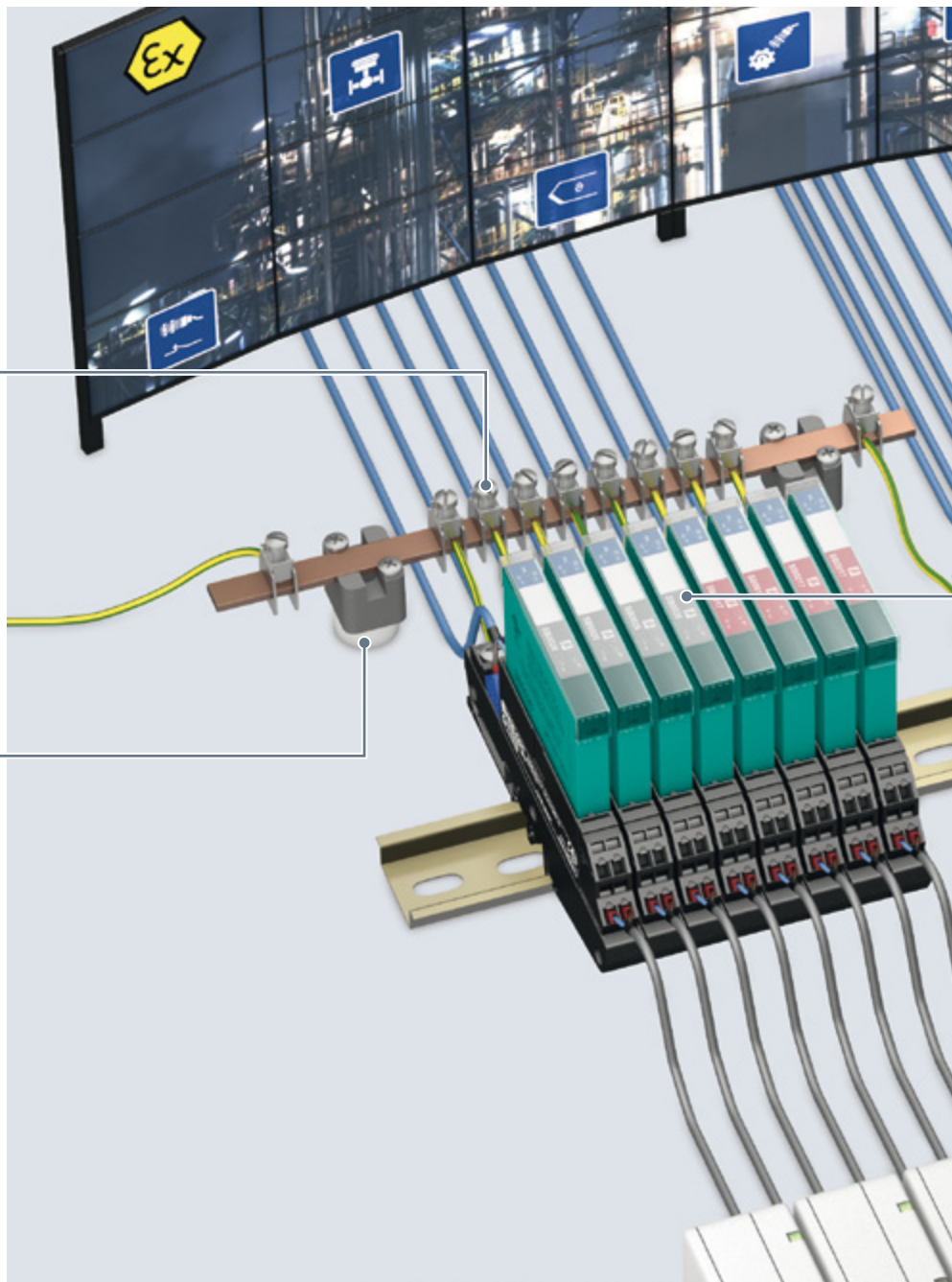
- 12.5 mm small, space saving housings in the Z- and SB-System
- Incorporate up to three channels per barrier to achieve highest packing density

## QUICK GROUNDING SOLUTIONS

- Perfect design for easy grounding
- Simple snap-on DIN rail (Z-System)
- Easy mounting on prewired termination boards (SB-System)

## GROUNDING ACCESSORIES

- Mounting blocks
- Spacing rollers
- Grounding bars

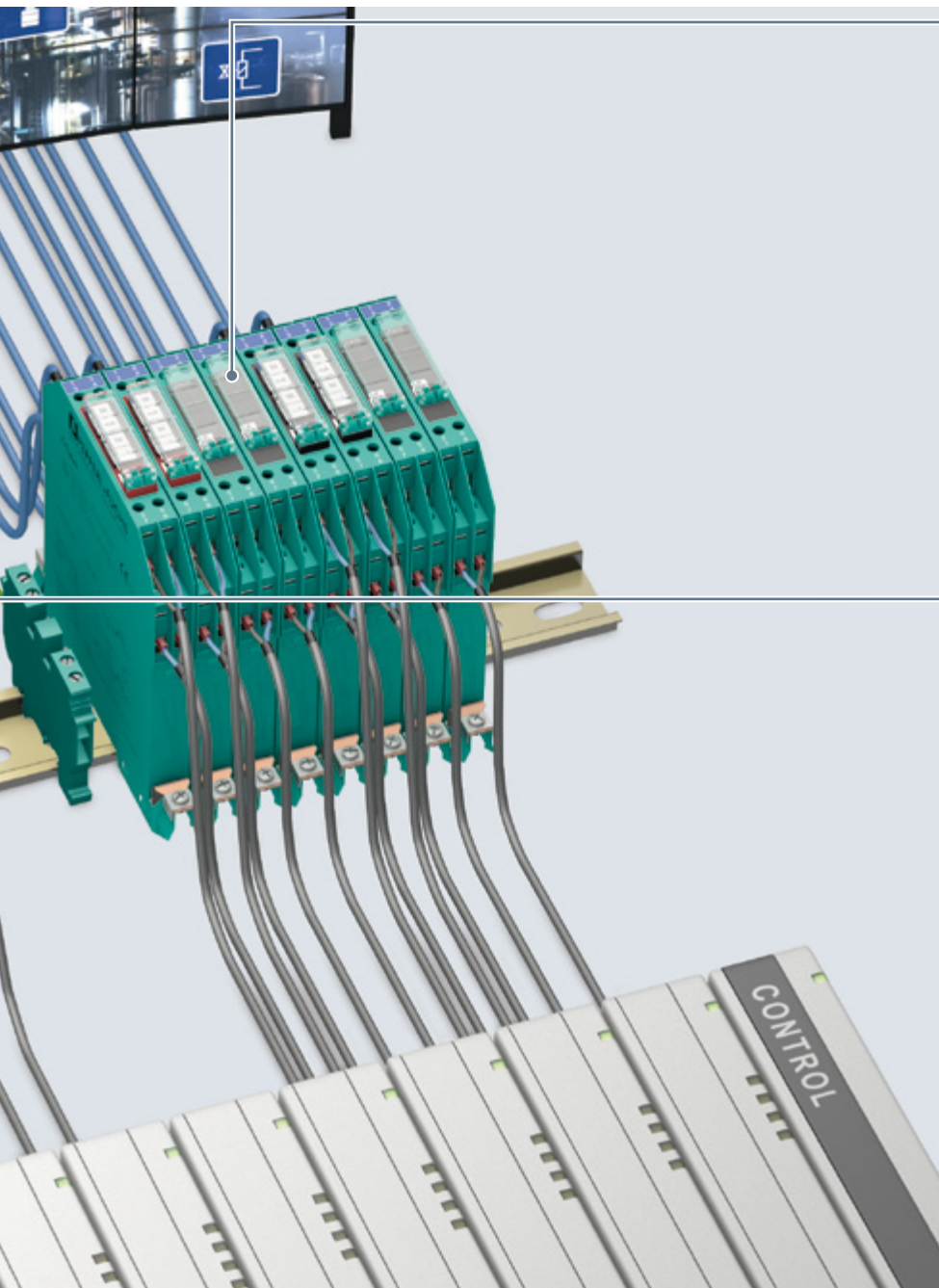


## DIN RAIL MOUNTED Z-SYSTEM

With over 70 unique versions, Z-System has a long history of proven results in a wide range of applications. These barriers are easily attached to an intrinsic safety ground by their grounded mounting clamp. Simply snap on to a grounded DIN rail and the barriers are automatically connected to ground.

## TERMINATION BOARD MOUNTED SB-SYSTEM

The latest zener diode barrier product development is the SB-System. It combines outstanding features and performance in a compact housing. Its thin width and low profile make it perfect for those hard-to-reach areas of a cabinet or enclosure. Both product lines are available with a removable fuse link making loop-disconnect a simple process and commissioning problems a thing of the past. Helpful accessories ensure solutions of all kinds of installation and grounding topologies.



### Z-SYSTEM

- Quick mounting by snapping on to the DIN rail
- Flexibility in expansion by simply adding additional barriers
- Grounded directly via the DIN rail, without additional wiring
- Replaceable fuse versions facilitate safe circuit loop checks

### SB-SYSTEM

- Easy mounting with pluggable modules on prewired termination boards
- Collective grounding for all barriers on the termination board
- High flexibility with 1-, 6- and 10-position termination boards
- Easy-to-read status LED
- Compact housing allows installation in low-profile cabinets

## HART Communication is an industrial protocol used to communicate between intelligent field instruments and host systems.

HART is the global standard for SMART process instrumentation. The majority of SMART field devices installed in plants worldwide are HART-enabled. These HART-enabled devices are the largest of all globally installed communication protocols and number more than 20 million. HART technology is easy to use and very reliable.



### TRANSPARENCY INTO THE FIELD

- Smart transmitters and valve controllers use the proven standard 4 ... 20 mA signal
- Service and maintenance cost savings are achieved by using digital HART protocol communication

### FUNCTIONAL SAFETY

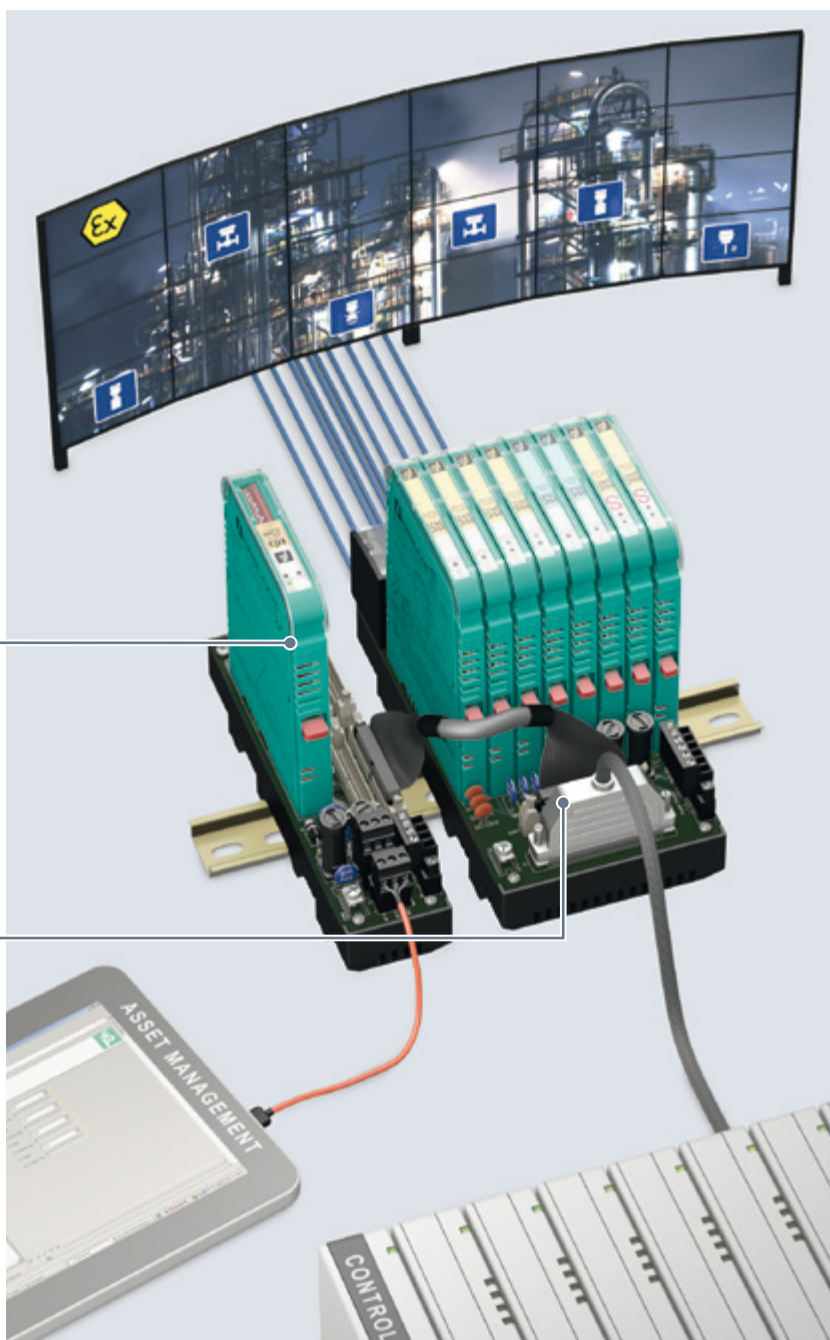
- The HART signals do not interrupt the 4 ... 20 mA signals from the transmitters or valves to the PLC/DCS
- Safety level up to SIL3

### FAST CONNECTION TO THE PROCESS

- Each H-System HART multiplexer can address up to 32 channels
- Connection to the termination boards with flat cable connectors

### PERFECT DCS INTEGRATION

- H-System features the proven termination board technology (see page 6)
- Analog 4 ... 20 mA field signals are transmitted to the PLC/DCS via system cables, reducing costs compared to point-to-point wiring



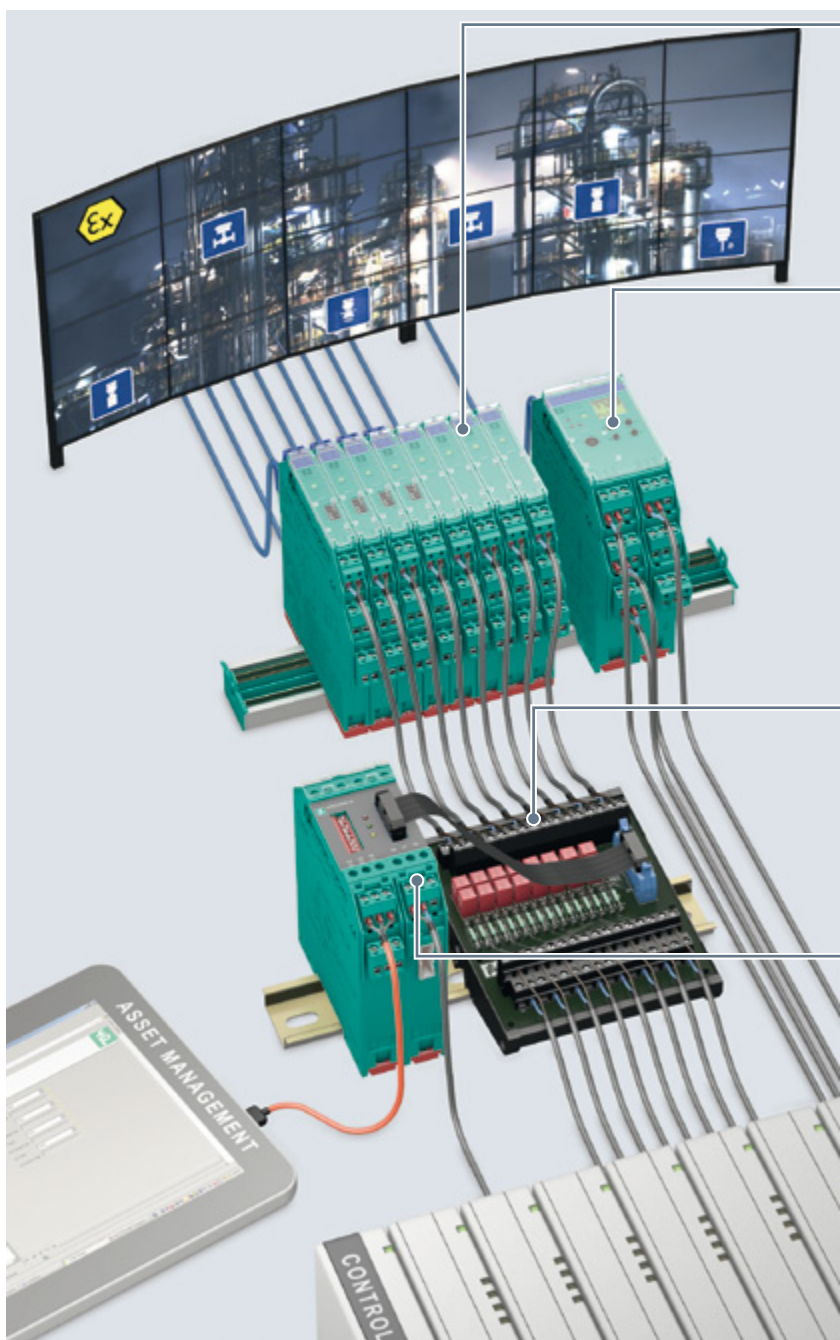
## HART MULTIPLEXER FOR MULTI-CHANNEL ACCESS

The HART multiplexer is used to connect multiple HART field devices to asset management systems. At the heart of HART Interface Solutions (HIS), the HART multiplexers in the K- and H-Systems act like gateway devices, routing communications between the asset management system and the field devices.

We offer a wide range of termination panels that can be used instead of the DCS I/O panels and where the multiplexer can be mounted directly. For use with requirements for functional safety, there are assessments for loop views up to SIL3.

## HART LOOP CONVERTER – K-SYSTEM SIGNAL EXPANDER

The HART Loop Converter (HLC) is a single loop solution and opens the full potential of new and installed multivariable HART devices like mass flow, temperature and pressure transmitters or valve positioners without additional process penetrations or wiring. Each HLC is able to power and communicate with one HART field device and convert up to four HART variables into analog, 4–20 mA signals.



**ISOLATED BARRIERS IN K-SYSTEM**

- Best protection to the hazardous area and connection to transmitters and valves
- Transparent for HART communication

**USE FULL POTENTIAL OF FIELD DEVICE**

- HLC converts up to four HART variables into analog output signals and trip values to the control side.
- Passive input for connection to existing field loops without influencing the safety parameters
- Active input for transmitter supply without the need of additional isolated or zener barriers

**EASY FEED-IN OF HART SIGNALS**

- The HART termination board couples the HART signals into the loops. The galvanic isolation remains unaffected

**K-SYSTEM HART MULTIPLEXER**

- Master-slave system for up to 7936 field devices with each RS485 interface

**Surge protection barriers provide protection for today's sensitive electronic instrumentation. They divert the destructive effects of lightning and the transient surges that accompany this phenomenon.**

Surge protection barriers divert harmful voltage transients and surge currents to ground. They protect all measurement and control signals, whether inside a control room, in the field, or even inside a hazardous area.

Surge protection barriers are used in a wide range of applications including measurement and control, instrumentation and communication. The undesired consequences of surges include both equipment damage and equipment malfunction or lockup. Damage occurs when excessive surge voltage flashes over or punctures semiconductor junctions. Semiconductors are also sensitive to accumulated over-voltage stress.

## PERFECT PROTECTION

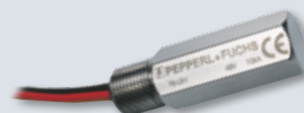
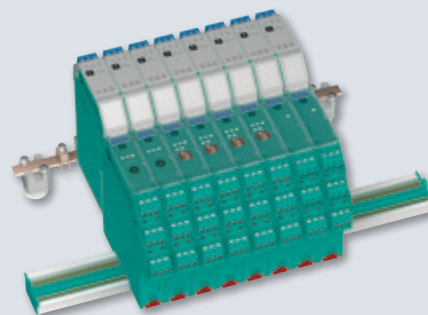
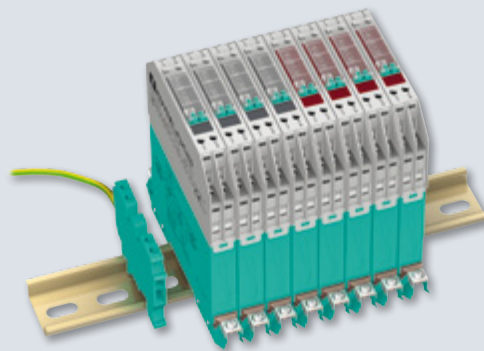
- Applicable for standard and hazardous area signal loops
- Compact housing, 12.5 mm wide
- Single and dual channel versions
- Collective ground connection via DIN rail

## EASY SNAP-ON MODULES FOR K-SYSTEM

- Simple snap-on to K-System modules
- Single and dual channel versions
- Avert danger of induced coupling effects due to unfavorable field wiring
- When plugged together, they form an electrical and mechanical unit with the device and the overvoltage protection

## FLEXIBLE PROTECTION OF FIELD DEVICES

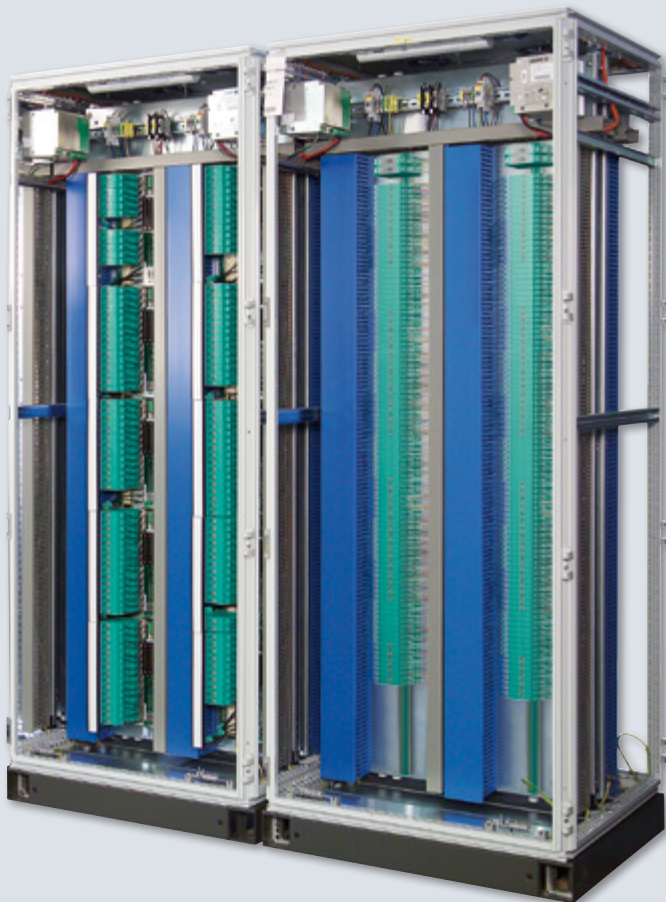
- Screwed in spare cable entry
- Various thread options available
- High IP-protection for field mounting



**The full line of point-to-point interface products can be integrated into a cabinet, reducing commissioning time, and most importantly, reducing upfront costs.**

Engineers at Pepperl+Fuchs are familiar with the special challenges of the process industry. Using this extensive experience and the expert knowledge in explosion protection, cabinet solutions are tailored to the demands of any application. From the initial concept to start-up and commissioning, Pepperl+Fuchs will provide professional service and unmatched performance.

We can integrate any of your products into custom-designed cabinet solutions. Our cabinets are engineered and assembled to your specifications and our design team is available to assist you during any phase of your project.



## RELIABLE MANUFACTURING PLAN

- Expert project analysis
- Feasibility studies
- Expert engineering support at each step in the process

## REDUCING LEAD-TIME

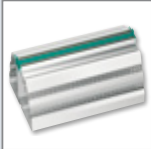
- Constructed according to customer requests
- System certification in line with international regulations
- FAT in accordance with customer specification

## REDUCED INSTALLATION COSTS

- Testing and startup support on site
- Reliable technical support

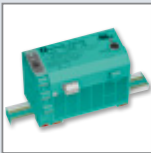
**Accessories are important for any installation. Appropriate power supplies, mounting rails, and versatile commissioning tools make the interface products from Pepperl+Fuchs a well-rounded solution.**

## K-SYSTEM



### K-DUCT AND POWER RAIL

Save installation costs with K- DUCT. Field and control signal wiring is routed underneath the installed modules, separated by an integral partition. This provides the ideal solution for installing and wiring control cabinet components. The K-DUCT also offers the advantages of a common power supply for all installed devices via Power Rail. If the objective is to save wiring and design costs using interface technology in control cabinets, K-System with Power Rail is indispensable. The Power Rail is a current-carrying insert in the DIN rail. The installed interface modules are supplied with energy via gold-plated power rails.



### POWER FEED MODULES AND POWER SUPPLIES

K-System power feed modules ensure a reliable and fused supply to the interface modules on the Power Rail. The integrated relay provides electrical and visual indication of the collective error message from the modules. The replaceable fuse protects installed devices. Also available are versions for redundant power feeding of the Power Rail for more availability. If 24 VDC is not available, power supplies can energize the modules via Power Rail.



### TERMINAL BLOCKS

K-System has removable terminals for easy prewiring and replacement of the modules. The modules are normally shipped with screw terminals. Spring-clamp terminal blocks, terminal blocks with test points or internal cold junction compensation options allow for the adaption of any installation according to the individual needs.



### COMMISSIONING

For device setup or loop checks, Pepperl+Fuchs offers a wide range of commissioning tools. Programming adapters, field simulators and software tools support you for quick installation and commissioning.

## H-SYSTEM



### LABEL CARRIER

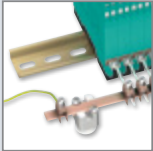
With H-System, you can label the loop either on the interface modules with its visible plastic flap, or on a label carrier that is mounted on the termination board. The advantage of the label on the termination board is a quick and easy creation. The labeling is not affected if modules are replaced.



### HART INTERFACE CABLES

HART interface cables connect the H-System termination board to the HART multiplexer that is mounted on the HART communication board. Pepperl+Fuchs offers the correct cable type and length for any cabinet topology.

## ZENER BARRIERS AND SURGE PROTECTION



### GROUNDING AND MOUNTING MATERIAL

A reliable and safe ground connection can be made for the Z- and SB-System zener barriers and also for the surge protection barrier product. Using different spacers, the height of the grounding rail can be adapted to cabinet requirements.

## HART INTERFACE SOLUTIONS



### HART TERMINATION BOARDS FOR K-SYSTEM

HART termination boards provide the access to analog loops with the HART multiplexer. Termination boards are available to solve every wiring topology. Termination boards can be connected directly to the K-System multiplexer.



### HART TERMINATION BOARDS FOR H-SYSTEM

An integrated HART interface solution consists of the termination boards with a mounting position for the H-System HART multiplexer. Up to 32 analog loops can be monitored, independent of the chosen interface modules. The boards are directly linked into the signal loops.



### HART FILTER K-22 $\mu$

Fast analog input cards can be influenced by HART signals. The K-22 $\mu$  HART filter suppresses HART communications. With its flat connection pins, it can be mounted directly into screw terminals on the K-System multiplexer – the ideal and quick solution.

## LITERATURE / DOWNLOADS



### ENGINEER'S GUIDE

In addition to over 300 product data sheets that can be used in a range of process applications, Pepperl+Fuchs Engineer's Guide reviews hazardous locations, ATEX and intrinsic safety, SIS and SIL. It also details typical hazardous location applications and how they can be solved using intrinsic safety barriers. Contact us for your copy.



### INTERNET / DOWNLOADS

Visit our website to find the latest product information. You can download multipage data sheets, manuals, software, literature, and certificate information. Find it all at [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com)

# PROCESS AUTOMATION – PROTECTING YOUR PROCESS



For over a half century, Pepperl+Fuchs has been continually providing new concepts for the world of process automation. Our company sets standards in quality and innovative technology. We develop, produce and distribute electronic interface modules, Human-Machine Interfaces and hazardous location protection equipment on a global scale, meeting the most demanding needs of industry. Resulting from our world-wide presence and our high flexibility in production and customer service, we are able to individually offer complete solutions – wherever and whenever you need us. We are the recognized experts in our technologies – Pepperl+Fuchs has earned a strong reputation by supplying the world's largest process industry companies with the broadest line of proven components for a diverse range of applications.

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