SERVING THE WORLD’S INFRASTRUCTURE

PRODUCTS AND SOLUTIONS FOR THE POWER AND UTILITY INDUSTRIES

FIELDBUS INFRASTRUCTURE
SIGNAL CONDITIONING
SAFETY BARRIERS
REMOTE I/O SYSTEMS
WIRELESS TECHNOLOGY
FIELD DEVICES
VISUALIZATION SYSTEMS
CUSTOMIZED SOLUTIONS
Pepperl+Fuchs is the leading supplier of proven interface technology and application expertise for the power generation and the water and gas distribution sectors.

We combine this knowledge and experience with a broad range of products from the traditional signal interfacing of hazardous and critical loops to the latest technologies in networking fieldbus devices throughout the plant.

Whether you require the isolation of a single loop or the complete design and supply of a Remote I/O solution, we are at your service with the best choice of proven products to successfully and efficiently solve your interface challenges.

Over 60 years of experience in DELIVERING interface products and customized SOLUTIONS used in Power and Utility Plants worldwide, we have what it takes to create a complete customized solution that makes sense FOR YOU.
Fieldbus provides seamless data communication between the plant and the control system while supplying power to all field devices. FOUNDATION fieldbus H1 and PROFIBUS PA link field instrumentation to any process plant. Power supplies with optional redundancy, fieldbus couplers, and process interfaces connect and power field devices for control and configuration. Advanced Diagnostics monitor the physical layer.

Signal Conditioning, also referred to as signal isolators, signal converters or signal interfaces are very useful to solve everyday ground loop and signal conversion challenges. They can also be used to share, split, boost, protect, linearize and digitize process signals while providing the galvanic isolation that breaks the path between the input and output. The Signal Conditioner range from Pepperl+Fuchs has many solutions and features to solve even the most challenging applications.

For intrinsic safety applications our safety barriers limit the power that is transmitted to the explosive area. Isolated barriers guarantee a galvanic isolation to prevent ground loops between field loop and DCS-loop. Zener barriers without isolation only limit the power to the field device. Pepperl+Fuchs has a wide range of isolated barriers in the K-System and zener barriers for DIN-Rail mounting.

This modern process instrumentation interface offers the power industry a reliable redundant bus system to save hardware, installation space, and wiring. It lends itself to safe area applications as well as hazardous areas involving analog and digital inputs and outputs. It is well integrated into all major DCS and PLC systems with hundreds of thousands of modules in operation worldwide.
FIELD DEVICES
From the very basic to the most complex, Pepperl+Fuchs can engineer a complete solution by incorporating our industry-leading selection of interface technology with our unmatched offering of level measurement instruments and inductive proximity sensors. With this extensive line of products, Pepperl+Fuchs can solve your specific application for many industries by offering solutions to accurately detect a wide range of medium in various conditions.

WIRELESS TECHNOLOGY
From Wi-Fi to Bluetooth – wireless technologies have become an everyday aspect of our lives. With the WirelessHART® standard, wireless communication is now reaching the process automation world. Whenever wired connections are too costly or simply impossible to install, the new WirelessHART components from Pepperl+Fuchs are the ideal solution.

VISUALIZATION SYSTEMS
The Ethernet-based Visualization Systems are fit for applications in hazardous areas and extremely demanding industrial environments. The product portfolio for operating and monitoring consists of complete PC systems, remote monitors, monitor systems and operator panels as well as peripherals such as barcode readers or stand-alone keyboards. We provide the right choice for any visualization application.

CABINET SOLUTIONS
From basic concept evaluations, detailed engineering and assembly to factory acceptance and site start-up, our automation engineers customize fieldbus junction box solutions, remote I/O cabinet solutions, or control and interface cabinets to meet your specific project requirements. By providing a custom-fit solution for your application, Pepperl+Fuchs cabinet engineering reduces engineering costs and allows the fastest possible site installation.
THE RIGHT CHOICE FOR EVERY INTERFACE CHALLENGE

REDUNDANT POWER SUPPLIES
Safe and Hazardous Area
- High integrity
- N+1 redundancy

ENTERPRISE WORKSTATION

FIELD DEVICES

FIELDBUS INFRASTRUCTURE

DCS/PLC

FOUNDATION FIELDBUS H1
Safe and Hazardous Area
- Fieldbus Power Supplies
- Fieldbus Distribution
- Accessories
- Advanced Diagnostics

PROFIBUS PA
Safe and Hazardous Area
- Profibus DP/PA Couplers
- Profibus Distribution
- Advanced Diagnostics

SIGNAL CONDITIONING
Safe Area
- Switch Amplifier
- Signal Converters
- Signal Splitters
- Trip Amplifiers

SIGNAL CONDITIONERS

FIELDBUS INFRASTRUCTURE
SAFETY BARRIERS

- SAFETY BARRIERS
  - Hazardous Area
    - Switch Amplifier
    - Signal Converters
    - Solenoid Drivers
    - Transmitter Power Supplies

REMOTE I/O SYSTEMS

- REMOTE I/O SYSTEMS
  - Safe and Hazardous Area
    - Zone 1 FB-Remote I/O Systems
    - Zone 2 LB-Remote I/O Systems

WIRELESS TECHNOLOGY

- WIRELESS TECHNOLOGY
  - Safe and Hazardous Area
    - WirelessHART® Gateway
    - WirelessHART® Adapters
    - Temperature Input

ENTERPRISE WORKSTATION

INDUSTRIAL MONITORS AND HMI SOLUTIONS

- Operator workstations
- Operator panels
- Peripherals
- Industrial monitors

SAFETY BARRIERS
- REMOTE I/O SYSTEMS
- WIRELESS TECHNOLOGY
FIELDBUS INFRASTRUCTURE FOR PROFIBUS PA AND FOUNDATION

FIELDCONNEX®: SIMPLIFYING APPLICATION OF FIELDBUS

With its unique FieldConnex® fieldbus infrastructure Pepperl+Fuchs goes beyond the standard of fieldbus technology. The innovative design speeds up planning, installation and commissioning, while new technologies allow total control over the fieldbus physical layer.

FIELDCONNEX® – INCREASED PROCESS AVAILABILITY

FieldConnex fieldbus solutions form the perfect solution for integrating the fieldbus infrastructure, for PROFIBUS PA and FOUNDATION fieldbus H1 (IEC 61158-2).

All device information is available directly in the control room. Costly and time-consuming on site maintenance work is replaced to a great extent by remote troubleshooting and segment commissioning tools. Fieldbus turns into a highly transparent process control infrastructure and now it is even available for safety related signals up to SIL3.

FIELDCONNEX® – FIELDBUS POWER SUPPLY

Our FieldConnex Power Hub is a modular power supply for FOUNDATION fieldbus H1 or transparent coupling of PROFIBUS PA segments to PROFIBUS DP.

- Integration into any process control system
- Fully redundant power modules and gateways optional
- Extremely low heat dissipation

FIELDCONNEX® – FIELDBUS DISTRIBUTION

Fieldbus distribution with FieldConnex products in conjunction with FieldConnex power supplies form the complete solution for connection of your field devices to the control system. The innovative High-Power Trunk concept is implemented using Segment Protectors and FieldBarriers in the hazardous area at the spur where the device is connected, removing limitations for cable length, redundancy, or number of instruments.

FIELDCONNEX® – PROCESS INTERFACES

Simple IO such as: proximity switches, on/off valves, digital inputs, low-power valves are connected to the fieldbus via Process Interfaces. Up to eight IOs share a single Process Interface and fieldbus address. Integration into the DCS is achieved via standard EDDL or FDT/DTM technology. They can be installed close to the sensors in Zone 1/Class I, Div. 2, while the sensors themselves can be located in Zone 0/Class I, Div. 1.
ADVANCED DIAGNOSTICS – LIFE MADE EASY WITH FIELDBUS

A solidly performing fieldbus infrastructure is a fundamental requirement for smooth process plant operation. The Advanced Diagnostic Module (ADM) automates working procedures in the everyday life of a plant automation system, replacing cumbersome methods and crude tools. The fieldbus practitioners enjoy support during:

- Commissioning – A few mouse clicks initiate automated testing of the installation quality and produce detailed documentation.
- Monitoring – The ADM checks against limits set during commissioning, generating alarms for timely intervention rather than unwanted plant shut-downs.
- Troubleshooting – The ADM provides the expert knowledge that indicate possible causes, allowing maintenance crews to charge ahead and reduce repair time.

Fieldbus has never been this easy and manageable.

THE DIAGNOSTIC MANAGER – EXPERT AT HAND

The Diagnostic Manager is the software and interface to the physical layer. It communicates simultaneously with all diagnostic modules. The expert system learns the conditions of each segment individually and provides extremely pointed feedback in clear text, relieving the user of time-consuming guess work. Reports, alarm lists and historic data can be exported for detailed analysis. It provides access to the powerful built-in fieldbus oscilloscope. Various analysis functions and data export to the maintenance system enable proactive maintenance strategies to increase overall system availability at reduced maintenance cost.

FIELDBUS APPLICATION EXAMPLES

THAMES WATER IN BECKTON, UK
Thames Water in Beckton, UK uses Pepperl+Fuchs Profinet products for control and monitoring of its desalination plant operation.

GÄRSTAVERKET WASTE TO ENERGY FURNACE PROJECT
Gästavärtket Waste to Energy Furnace Project in Sweden uses Pepperl+Fuchs PROFIBUS DP/PA interfacing between the control system and field devices.

XCEL ENERGY’S COMANCHE 3 POWER STATION IN COLORADO
Xcel Energy’s Comanche 3 Power Station in Colorado installed a Pepperl+Fuchs FOUNDATION fieldbus solution in their coal fired electric generating unit.

NAM GLT IN THE PROVINCE OF GRONINGEN, NETHERLANDS
NAM GLT in the province of Groningen, Netherlands purchased a complete FOUNDATION fieldbus H1 distribution solution from Pepperl+Fuchs during its gas field renovation.
Signal conditioning is an important part of any automation system where electrical isolation, electronic signal conversion, and measurement accuracy are critical characteristics of the control loop architecture.

In order to facilitate efficient processing of today’s various measurement values, signals need to be converted to specific formats. The mutual interaction of measuring loops can be eliminated with galvanic isolation.

Signal conditioners support the transmission of precise measurement values, isolation and the elimination of ground loops. Specific converters collect analog signals from a wide range of field instruments, such as thermocouples and RTDs, and transform them to standard signals, such as 1 ... 5 V or 4 ... 20 mA.

**K-SYSTEM INTERFACE MODULES**

K-System signal conditioners offer the same system features as intrinsic safety isolators. Just pick the right signal conditioner for your application from a wide module portfolio.

- Reduced wiring with power rail
- Save energy due to low power consumption
- Fully compatible with isolated barriers

**UNIVERSAL SIGNAL CONDITIONER**

The KFU8-USC-1.D signal conditioner converts a wide range of input values into a standard output signal. Configuration is easy with a highly visible display and easy-to-use-buttons.

- Universal input 0 V ... 10 V, 0 mA ... 20 mA, 0 mV ... 60 mV
- Graphical display for multiple units with trip relay
- Analog output 0/4 mA ... 20 mA, 0 V ... 10 V
- AC/DC wide range power supply

**SURGE PROTECTION**

Surge and lightning 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.

- For all measurement and control signals
- Easy and fast installation
- Self-resting and maintenance-free
Scottish & Southern’s Fiddlers Ferry Power Station in Yorkshire, UK uses Pepperl+Fuchs Signal Conditioners in its operation.

**SCOTTISH & SOUTHERN’S FIDDLERS FERRY POWER STATION YORKSHIRE, UK**

Scottish & Southern’s Fiddlers Ferry Power Station in Yorkshire, UK uses Pepperl+Fuchs Signal Conditioners in its operation.
KEPCO BORYUNG POWER PLANT IN KOREA

Kepco Boryung Power Plant in Korea has installed 1,500 intrinsic safety barriers from Pepperl+Fuchs that are used to connect field devices in a hazardous area environment.
SAFETY BARRIERS

SAFE AND EFFICIENT SIGNAL TRANSMISSION

Safety barriers guarantee a safe, reliable and efficient signal transmission between your field device and the control system. In addition to their inherent power limitation, isolated barriers feature galvanic isolation between the signal loop and all other power loops.

THE K-SYSTEM – ISOLATED BARRIERS

The K-System, with more than 150 modules, is the leading intrinsic safety isolated barriers portfolio. K-System is a full line of DIN rail-mounted isolators that are packed with features that make process control interface applications simple to design and easy to install.

- Supply and collective error messaging via Power Rail
- Comprehensive module portfolio and accessories
- International approvals

K-System KC-Modules feature a housing with a width of only 12.5 mm. As a result, cabinet space requirements are reduced by as much as 40%. Sophisticated circuit design minimizes power dissipation – the cabinet stays cool.

- Digital and analog input/output modules
- System features similar to widely used K-System
- Lead monitoring

THE Z-SYSTEM – ZENER BARRIERS

Z-System zener barriers provide cost-saving Ex-protection for a variety of 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 include DIN rail and accessories for each application. Field-replaceable fuses provide a convenient means of disconnecting or open-circuiting the instrument loop without interfering with the wiring, making commissioning and maintenance operations much easier.
Remote I/O from Pepperl+Fuchs represents a new approach to process availability. Full integration of all analog and digital I/O signals allows unsurpassed system transparency. Redundancy provides enhanced control and increased process reliability. It is compatible with all major DCS and PLC systems.

**System Integration Across Technologies**

Remote I/O from Pepperl+Fuchs represents a new approach to process availability. Full integration of all analog and digital I/O signals allows unsurpassed system transparency. Redundancy provides enhanced control and increased process reliability. It is compatible with all major DCS and PLC systems.

**DraStically Reduced Wiring With Remote I/O**

Remote I/O is an efficient signal conditioning system that saves wiring and hardware on an impressive scale. It uses modular electronics throughout to adapt input and output signals to PROFIBUS, Modbus, FOUNDATION Fieldbus, or the Ethernet. Signals are galvanically isolated from the bus and the power supply ensuring high reliability.

**Remote I/O in the Power Industry**

Remote I/O has been used to great advantage in waste incineration plants, gas storage and distribution, as well as many other locations. They are equally competitive in safe area and hazardous area applications serving intrinsically safe and safe loops.

**HART Communication**

Remote I/O offers extensive HART communication with field devices, enhancing preventive maintenance activities and allowing access to secondary instrument variables. This can be achieved either via the DCS or a secondary master using standard software with EDDL or FDT/DTM technologies.
REMOTE I/O APPLICATION EXAMPLES

BEB
BEB, a major player in the oil and gas business, has been using Remote I/O for many years. They control many of their gas storage facilities as well as their oil production sites in northern Germany using Siemens S7 and Pepperl+Fuchs intrinsically safe Remote I/O.

KH AUTOMATION PROJECTS OF GERMANY
KH Automation Projects of Germany builds waste incineration plants using their expert software to interface with safe area LB Remote I/O via PROFIBUS. They successfully commissioned a power generation plant in Frankfurt three years ago and are now in the process of enlarging the operation, plus, they are building another new plant in Oberhausen.

NATIONAL GRID, UK
National Grid, UK has installed a large number of Pepperl+Fuchs intrinsically safe Remote I/O products at sites throughout the United Kingdom.
Whenever wired connections are too costly, or are simply impossible to install, WirelessHART® provides new opportunities. The new WirelessHART components from Pepperl+Fuchs enable communication without the need of wires, while integrating conventional field devices into the wireless world.

INTELLIGENT NETWORK STRUCTURE

WirelessHART networks are structured as mesh networks, which means that each sensor acts both as router and repeater. In this way, the range of the network does not depend on one central gateway. It allows the setup of large distributed network structures. With interrupted communication paths, the system automatically re-routes the signal in order to maintain uninterrupted communication. This results in the high level of availability of this form of wireless communication. WirelessHART networks are able to use multiple communication paths simultaneously, providing a considerably higher data transfer rate. WirelessHART is an intelligent solution, which was tailored especially to the requirements of the process industry.

WirelessHART® GATEWAY, ADAPTER AND TEMPERATURE CONVERTER

The WirelessHART Gateway sets up the communication paths and determines when and over which channel the individual devices within the network communicate with each other. The primary focus of this process is the best possible use of the network resources in order to gain maximum performance in speed, data transfer and energy consumption. Additionally, the WirelessHART Gateway serves as the interface between the mesh network and the plant’s process control or asset management system. It features a serial RS485 interface and an Ethernet terminal. Both interfaces allow data transmission in full accordance with Modbus or HART protocol.

The adapter is battery operated and also powers the connected field device. Since it operates as a router within the mesh network, it constantly remains powered. The temperature converter, however, is only powered during the actual communication process. It acts as a router within the mesh network and is also battery operated. Temperature measurements can be obtained at variable time intervals.
FIELD DEVICES

FIELD DEVICE APPLICATION EXAMPLES

CNOOC FUJIAN LNG POWER PLANT IN CHINA
CNOOC Fujian LNG Power Plant in China uses Pepperl+Fuchs online, real-time CorrTran MV Corrosion Monitoring Transmitters on the plant cooling water system.

LEVEL MEASUREMENT INSTRUMENTS
Our continuous and point level measurement technologies include the principles of guided microwave, ultrasonic, and vibration limit switch, in addition to a wide variety of application-specific solutions. They allow multiple process connections and are fieldbus compatible. They are perfectly engineered for use in hazardous area solutions.

ONLINE CORROSION MONITORING CorrTran MV
Meant to take corrosion evaluation out of the laboratory and into everyday process control, CorrTran MV from Pepperl+Fuchs is the first, 2-wire, 4...20 mA transmitter that evaluates either general and localized (pitting) corrosion in the same industrialized transmitter housing.

INDUCTIVE SENSORS
Pepperl+Fuchs introduced the world’s first industrial proximity sensor in 1958, and ever since that time we have been providing the automation industry with the highest quality industrial sensors.

TO COMPLETE YOUR PLANT’S AUTOMATION SYSTEM
From the very basic to the most complex, Pepperl+Fuchs can engineer complete solutions by incorporating our industry-leading selection of interface technology with our unmatched offering of level measurement instruments, online corrosion monitoring and inductive sensors.
VISUALIZATION SYSTEMS

Pepperl+Fuchs offers a broad range of operator workstations and operator panels or hazardous areas as well as for rough industrial conditions.

VISUNET RM

The VisuNet RM Remote Monitor system comprises in the core an LCD monitor with a network interface. The data transfer from the host PC to the display and also from the keyboard, the mouse and other peripheral equipment, such as a barcode reading device or RFID reader to the PC takes place completely digitally. The “Remote Desktop Protocol” (RDP) is used as the protocol for the data transfer from and to the monitor. Thus a Microsoft protocol is used, which is an integral part of the Microsoft operating systems Windows 7 Vista, Windows XP Professional and Windows 2003 Server. VNC and ICA protocols are as well possible.

VISUNET PC

With VisuNet PC, on the other hand, there is a panel PC with a monitor, keyboard and mouse. The core components are supplemented with an extensive accessory program. This includes keyboards with integrated mouse functions, various stainless steel housings and mounting components. VisuNet is approved in accordance with ATEX, Categories II 2G (Zone 1 Gas) and II 2D (Zone 21 Dust) as well as IEC-Ex and is also available in a non-Ex version.

TERMEX

Approved for ATEX Zones 1 and 22, Intrinsically safe operator panels are ideal for the flexible and cost-effective operating and monitoring of machines and processes. TERMEX terminals are typically connected to a PLC. A range of interfaces is available for the transfer of data. These include interfaces such as RS232, RS485 or TTY as well as fieldbus protocols such as Modbus or PROFIBUS DP. Today’s standard programmable logic controllers from all major manufacturers can also communicate with TERMEX terminals. The TERMEX terminals are also available with an approval for Class I, Div.1. The software TERMEXpro provides TERMEX users with a Windows based tool for graphical project designs that allows even complex projects to be realized.
Pepperl+Fuchs is able to offer its world-class products in a variety of panels and enclosures designed and built according to your specifications at our own facility. From the initial concept to start-up and commissioning, Pepperl+Fuchs will provide professional service and unmatched performance.

FIELDCONNEX® – FIELDBUS HOUSING SOLUTIONS

No application is quite the same as another; every application always places demands on the design and the features of a fieldbus housing solution. To meet the unique needs, we introduce our new modular Field Junction Box System for our popular FieldConnex products. In addition to the housing size, you can customize your Field Junction Box to your own personal needs, from the cable glands to the electronics. Besides presenting a custom-fit solution for your application, the Field Junction Box reduces engineering costs and allows the fastest possible installation on location.

REMOTE I/O CABINET SOLUTIONS

Proven Remote I/O Systems can be mounted into a variety of panels and enclosures. Different housing materials make sure that the demanding environmental conditions of your applications are met. Closely cooperating with our customers, our project engineers will offer customized and standard solutions that allow fast and easy installation on site.

CABINET SOLUTION WITH K-SYSTEM AND Z-SYSTEM

Pepperl+Fuchs supports a wide range of cabinet solutions equipped with Isolated Barriers, Signal Conditioners and Zener Barriers. This reduces commissioning time, and most importantly, reduces upfront costs. The components can be combined into a complete project solution to meet the exact requirements of any application. The design team is available to assist you during any phase of the project.
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.