# Your Perfect Automation.

The right solution for every application. Regardless of the technology. Standard or customized.

Product Guide
Industrial Sensors, Systems, and Communication

Your automation, our passion.

PEPPERL+FUCHS

# Enabling the Evolution in Manufacturing—Sensor and Connectivity Solutions

**The right solution for every application—at Pepperl+Fuchs, this claim has applied to all components, systems, and solutions that we have been developing for you in the field of industrial sensors for more than seven decades. We are driven by providing absolutely reliable support for your applications and continually optimizing them.**

To achieve the best results, we intensively research your markets and the special challenges you face every day. This is why continuous dialog with you and cooperation at eye level is so important to our work. Together for success—that is our path.

Partnership needs proximity. That is why you will always find your contact person at more than 50 Pepperl+Fuchs locations worldwide. What's more, in close communication with you, our team of experts has been developing customized, individual solutions on a daily basis for many years—as one of a few, sometimes even the only manufacturer worldwide, where this service is standard. That is why Pepperl+Fuchs Customized Solutions are not only successfully established, but have become one of our most important performance features.

The broadest portfolio on the market, covering a variety of technologies and operating principles is the basis on which we develop the right solution for every application. Since the invention of the proximity switch in 1958, we have been constantly advancing our technologies and adding groundbreaking innovations. For example, the product range in the Industrial Vision area is so extensive that it can solve even highly complex vision applications—and it continues to expand. Pepperl+Fuchs' LiDAR sensors are state of the art worldwide with products such as the R2000 360° 2-D laser scanner. Pepperl+Fuchs is a global leader in ultrasonic and time-of-flight technology. Pepperl+Fuchs also provides technological highlights for safety-critical applications, such as the safePGV and safePXV safety sensors or the USi-safety ultrasonic safety sensor system.

Whether conventional applications or complex tasks such as the digital transformation of your application to Industry 4.0, rethinking established technologies and turning forward-looking concepts into real innovations are our focus. One example is industrial communication: to enable the integration of different components, sensors are needed with interfaces such as IO-Link, CAN, Ethernet, etc. We equip our sensors with these and other features so that every smart sensor can process even more data and information in the future. In doing this, we use the expertise of the entire Pepperl+Fuchs Group: fresh ideas from young start-ups combined with many years of expertise and experience in automation—paving the way for you to meet future challenges.

**Join us in the future of factory automation!**

### New Additions to Our Industrial Sensor Portfolio

To develop the innovations that will make your vision of the digitalized factory possible, we are building on our established areas of expertise. With a strong focus on innovation, user input, and close customer cooperation, Pepperl+Fuchs is continuously looking for new ways to solve existing problems and anticipate the roadblocks ahead. Our strong portfolio of core technologies is the ideal foundation for solving the automation challenges of the future. Read on to learn about the products we have added to our ever-growing portfolio.

# Highlights

**For over 75 years, Pepperl+Fuchs has relied on the highest quality standards to develop innovative solutions. This is a claim that has made us one of the world's leading manufacturers of industrial sensors, with a portfolio based on a wide range of technologies that provides exactly the right solution for every application.**

### IIoT Starter Kit: Sophisticated Technologies and Solutions for Industry 4.0 Applications

- Connect factory floor sensors to the cloud with the user-friendly IO-Link masters and start the digital transformation of your plant
- Kit includes an IO-Link master, three IO-Link sensors, an Ethernet switch, a power supply, RFID tags, and all the necessary cabling to get started
- Sensor-to-cloud connection: IIoT protocols such as OPC UA, MQTT, and REST API enable this type of communication as well as the implementation of hybrid systems consisting of a PLC and a cloud


### WILSEN Series Wireless Sensors: Smart. Wireless. Autonomous.

- Rugged wireless sensors, ready for use in harsh environments
- Globally standardized LoRaWAN® network for efficient, long-range signal transmission
- Maintenance-free runtimes of several years due to high-performance lithium battery with 13,000 mAh
- Easy device and system configuration via downlink channel, mobile app, and free web services

### Industrial Radar Sensors with CAN Interface: Defying Elements

- Distance and velocity measurement over more than 25 m
- Even in rain, fog, wind, or dust: reliable operation under extreme conditions
- Interference-free measurement of the target object through objects with a lower reflection amplitude
- Also suitable for particularly fast applications due to the sampling rate of up to 200 Hz

**R200 Series Distance Sensor with Pulse Ranging Technology: Small But Powerful**

- High-precision distance measurement up to 10 m, or up to 60 m with reflector
- Particularly compact design—for more flexibility where space is limited
- Intelligent Pulse Ranging Technology with a repeat accuracy of up to ≤ 3 mm
- Standardized IO-Link interface with Smart Sensor profile for future-oriented automation


**F800 Series UHF RFID Read/Write Device for Gate Applications: Seamless Traceability**

- Cost-effective RFID gate solution for logistics applications
- Powerful UHF read/write device with up to 4 external antennas
- High reception sensitivity and high output power ensure reliable tag detection
- Fast reading of large UHF transponder populations—even in time-critical applications

**Signal Light with IO-Link: Setting New Signals**

- Numerous modes for a wide range of applications from alarming to level monitoring
- Individual setting of the nine segments with over one million colors each
- 105 dB siren for additional acoustic warning for personal and plant protection in case of an emergency
- Uniquely robust: high degree of protection and temperature range for use in demanding environmental conditions

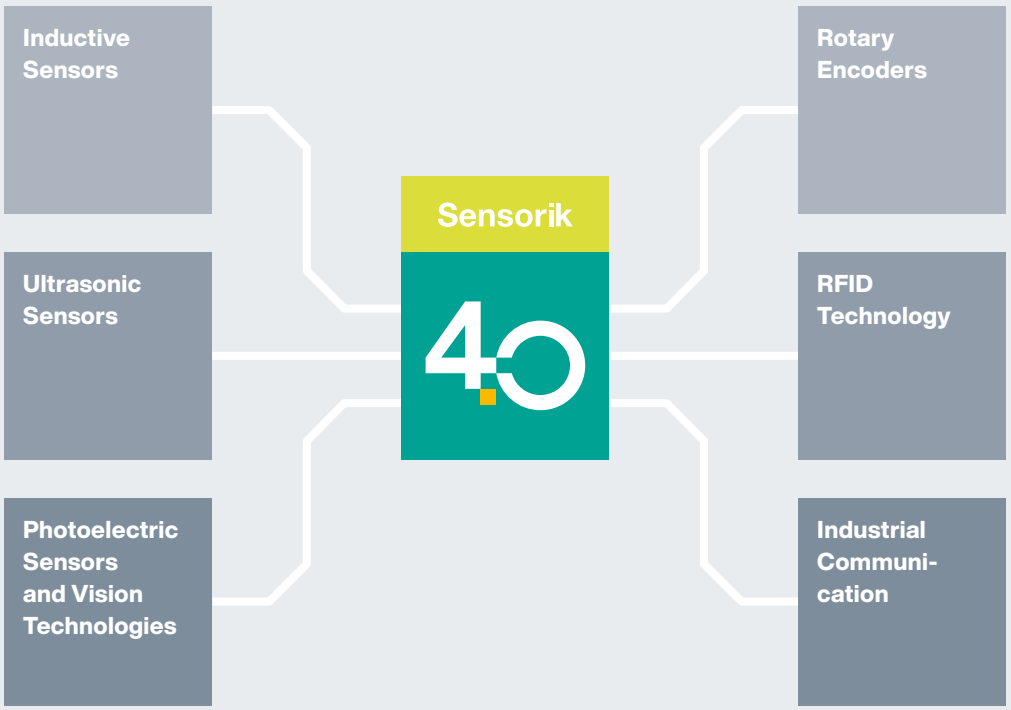
Joining the IIoT Revolution

# Innovative Solutions for Perfect Applications.

**At Pepperl-Fuchs, we are committed to helping you harness the transformative potential of Industry 4.0. Our focus is on enabling and supporting fully digitalized manufacturing processes. Our vision for the next generation of technologies is grounded in digital transformation, providing you with a competitive edge in an ever-changing landscape through sophisticated technologies and solutions tailored to your digital transformation projects.**

The ideas behind our approach have not only led us to develop new sensors that can communicate with cloud frameworks and applications, but have also expanded our focus beyond sensors to include the infrastructure at the heart of Industry 4.0.

As we plan and design our next innovations, this roadmap guides us through the challenges, possibilities, and opportunities ahead. Our success has always been driven by our passion for your automation needs.




**The Role of Industry 4.0 and IIoT in Achieving Climate Neutrality**

Achieving climate neutrality requires a three-pronged approach: comprehensive electrification, expansion of renewable energy sources, and increasing energy efficiency. Automation and digitization are essential for making plants more energy-efficient. To intelligently link the areas of energy generation and consumption, both must first be digitized. Consumers can automatically negotiate their energy requirements with producers, potentially flattening consumption peaks. Industry 4.0 plays a crucial role in this process.

# Stepping toward a New Generation.

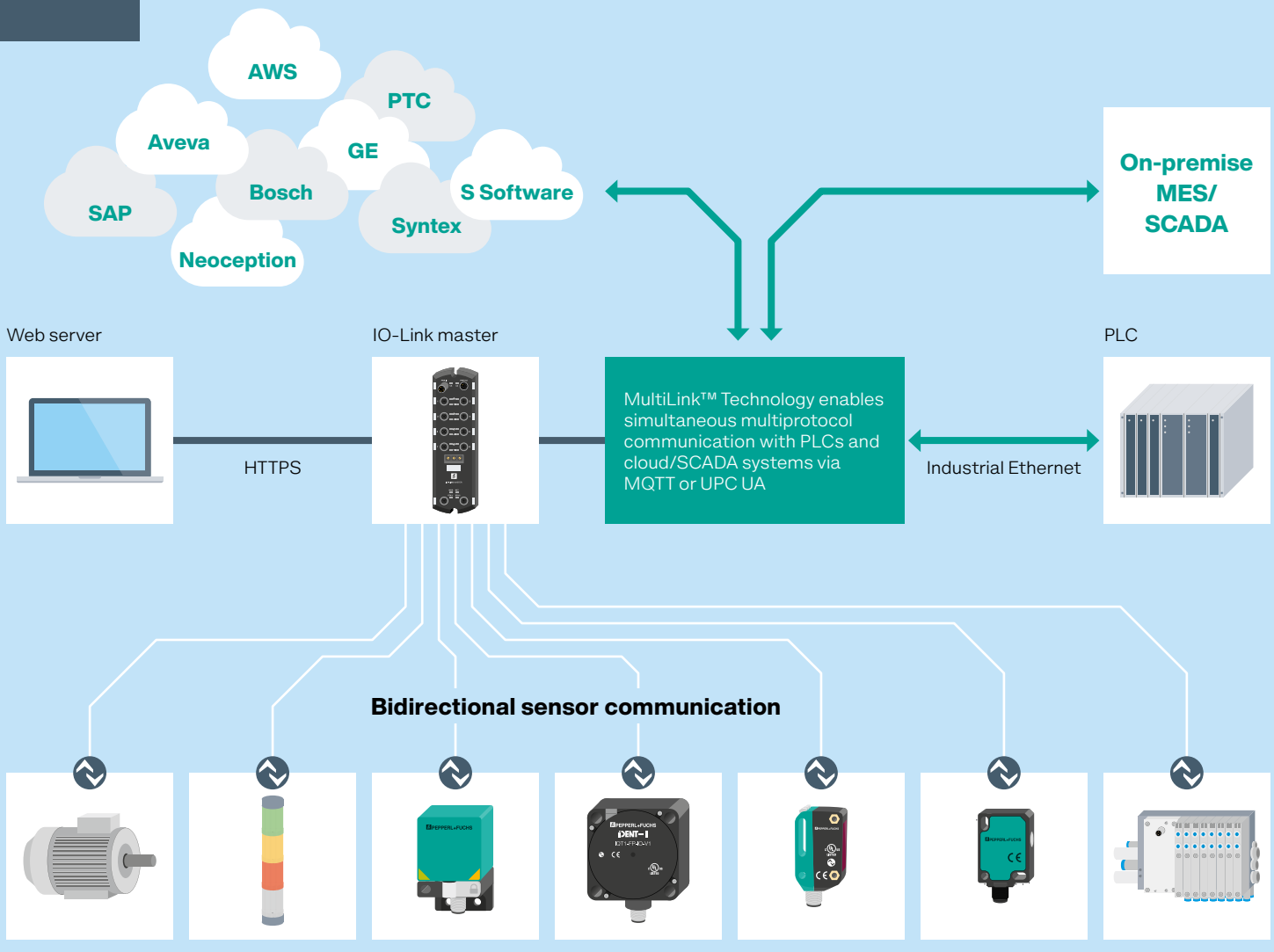
**Powerful IIoT connectivity, advanced functionalities, multi-sensor systems, and value-added services are the cornerstones of your plant's digital transformation. Connecting sensors on the factory floor to the cloud or the edge is a fundamental step on this journey.**

IIoT and Industry 4.0 are not possible without bidirectional sensors. The ability to communicate automatically with every machine and production system is a fundamental requirement. This includes automation devices ranging from simple sensors to complex devices such as RFID, edge sensor gateways, and network communication solutions.

Our approach to digital transformation and smart manufacturing lays the foundation for sensors and communication gateways to communicate with all levels of control. In partnership with software providers, new data protocols such as MQTT, OPC UA, and REST APIs allow direct sensor communication to share necessary data analysis with multiple roles within the company.

**IIoT vendors we cooperate with**

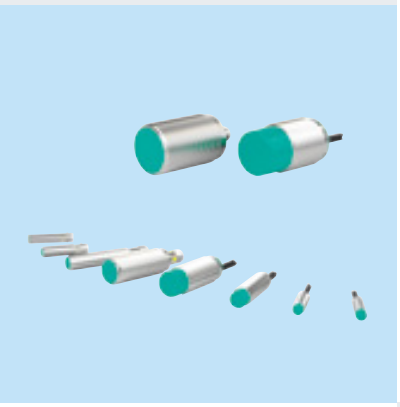
## Sensor-to-Cloud Connection



# Inductive Sensors

Inductive proximity sensors are the preferred choice for the majority of applications requiring accurate, noncontact detection of metallic objects in machinery or automation equipment up to 100 mm. Advanced features include:

- IO-Link versions
- Stainless-steel face and body for harsh duty
- Reduction factor 1 for detecting all metals at full range
- NAMUR and valve indication models
- Degree of protection (IP68/69K) and –40 °C ... +250 °C extended temperature versions
- Safety-rated versions
- Rugged, weld-immune PTFE-coated sensors for harsh welding environments

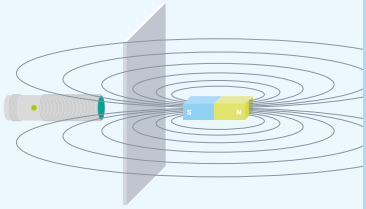


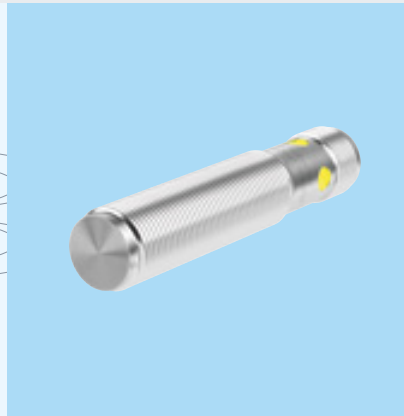
For more information, visit
**pepperl-fuchs.com/pf-inductive**

# Magnetic Field Sensors

Magnetic sensors offer the advantage of providing larger detection ranges compared to inductive sensors. By using Hall-effect or magnetic-reed-switch technologies, these sensors can be used for difficult-to-solve applications that require detection of an opposing magnetic target over a longer range.

- Rectangular or cylindrical housings
- Plastic or metal construction
- NAMUR versions for explosive environments
- Easily mountable noncontact piston detection



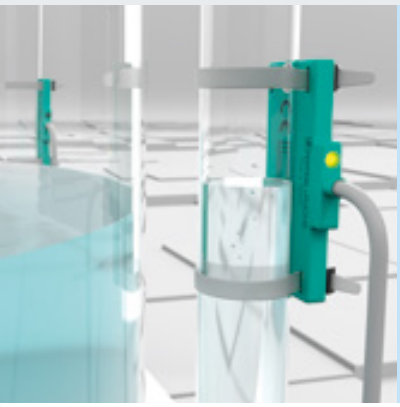


For more information, visit
**pepperl-fuchs.com/pf-magnetic**

# Capacitive Sensors

Capacitive sensors can be used to detect metal objects as well as nearly all other materials. These sensors are often used in applications including level and flow control for detection of liquids, grains, and powders.

- Stainless-steel or chemically resistant plastic housings
- Cylindrical or rectangular housing designs
- Fixed or adjustable sensitivity
- NAMUR versions for hazardous locations
- Sensing range up to 40 mm



For more information, visit
**pepperl-fuchs.com/pf-capacitive**

# Photoelectric Sensors

Photoelectric sensors offer noncontact sensing solutions for a variety of automation applications. Available in a broad range of housing styles, operating principles, and specifications, it is easy to find the appropriate thru-beam, retroreflective, diffuse mode, or Triangulation (BGS) sensor with measurement core technology.

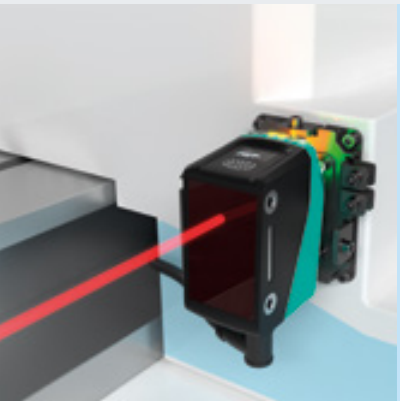
- Choice of sensing mode and output type
- LED options in infrared, visible red, or blue
- Red laser versions for increased distance and reduced light spot
- Multipixel array for superior background suppression
- Retroreflective sensors for glass detection
- IO-Link versions available

For more information, visit
**pepperl-fuchs.com/pf-photoelectric**

# Distance Sensors

Distance-based photoelectric sensors address more challenging applications than photoelectric sensors that only detect the absence and presence of an object. Not only do they determine the presence of something, but also its position or distance by using either MPT (Multipixel Technology) or PRT (Pulse Ranging Technology).

- Versions for small, medium, and large detection ranges
- 2-D and 3-D LiDAR sensors with PRT
- Versions for low-temperature applications
- R2000 series includes detection, HD (high density), and UHD (ultrahigh density) versions with gapless 360° all-around visibility and high-resolution raw data



For more information, visit
**pepperl-fuchs.com/pf-distance**

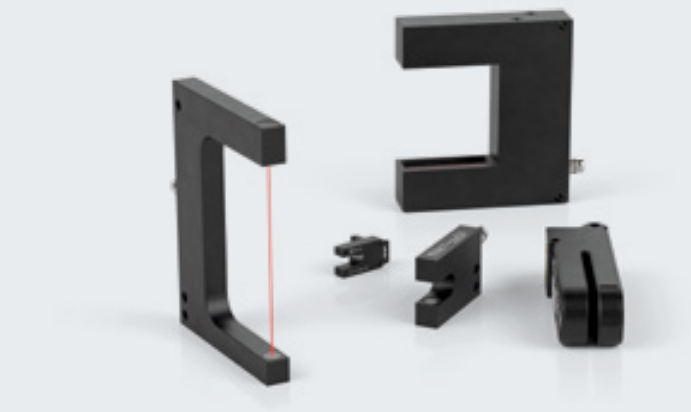
# Fiber Optic Sensors

Fiber optic sensors and cables are the perfect solution for applications where direct mounting of sensors is not possible due to lack of space, extreme temperatures, etc. Small fiber optic beams are ideal for detecting tiny objects.

- Cylindrical or rectangular housing styles
- DIN rail-mountable versions
- Multiple amplifiers providing numerous cost/performance options
- Wide assortment of glass and plastic fiber optic cables
- Diffuse and thru-beam fiber configurations

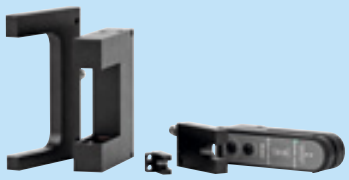
For more information, visit
**pepperl-fuchs.com/pf-su**

# Slot and Slot Grid Sensors



Slot and slot grid sensors are a special design of a thru-beam sensor used where only a short sensing distance is required. Ideal for detecting objects on vibrating and oscillating conveyors or in high-speed counting applications.

- Choice of slot widths from 2 mm to 220 mm
- Available in metal or plastic housings
- One-piece design eliminates alignment issues
- High switching frequency provides fast response times
- Slot grid versions for challenging counting and monitoring tasks

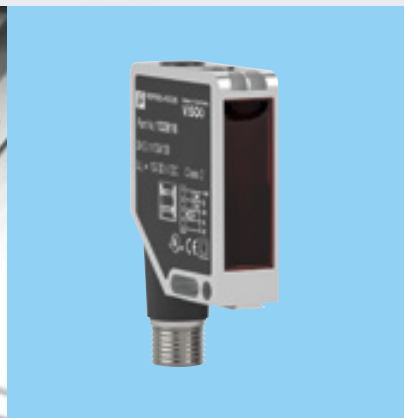


For more information, visit
**pepperl-fuchs.com/pf-gl**

# Contrast and Color Sensors

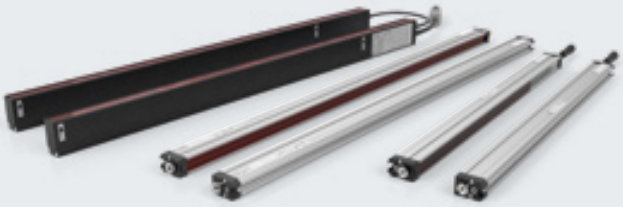
Contrast and color sensors are used to detect print or color marks on colored backgrounds. These sensors are used for precise object positioning in printing machines, packaging plants, and labeling machines in the food, beverage, and pharmaceutical industries.

- RGB light source
- High switch point accuracy
- Suitable for fast scanning processes
- IO-Link contrast sensor versions available



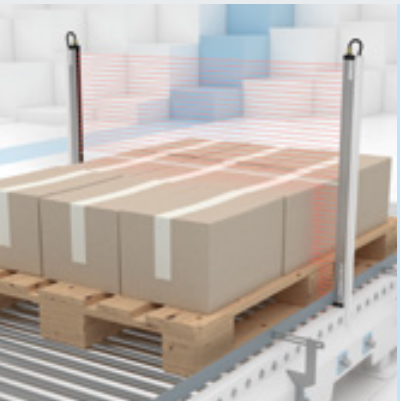
For more information, visit
**pepperl-fuchs.com/pf-contrast-color**

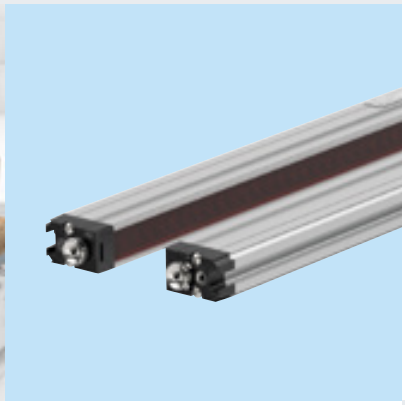
# Light Grids



Light grids consist of a transmitter and a receiver that have an array of infrared beams. The two-dimensional detection field is used for monitoring large areas in the packaging industry and in warehousing and material handling.

- Plug-and-play installation
- IO-Link versions
- Fast object detection
- Measurement versions for dimensioning applications



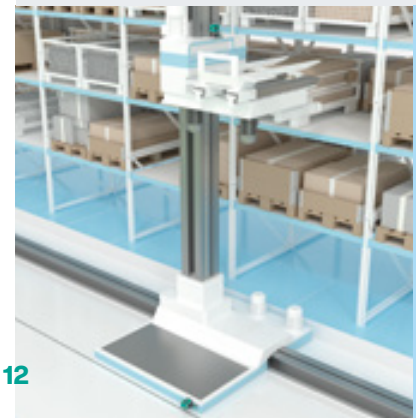


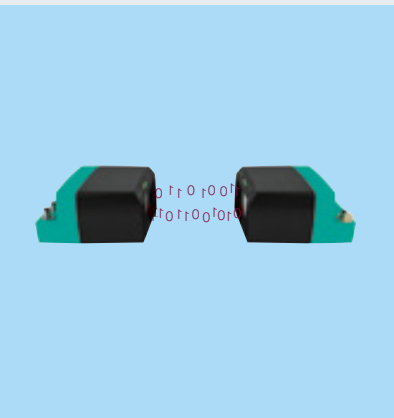
For more information, visit
**pepperl-fuchs.com/pf-lgs**

# Optical Data Couplers

Optical data couplers provide bidirectional industrial Ethernet data transfer via a modulated light beam. Since this technology is optical rather than mechanical, there are no moving parts and wear is reduced. It is ideal for storage and retrieval systems, transfer cars, automated guided vehicles, and monorail conveyors.

- Consistently high data rate, regardless of distance up to 300 m
- Protocol-free data transmission
- 100 Mbps/full duplex speed
- Solves wireless Ethernet networking challenges



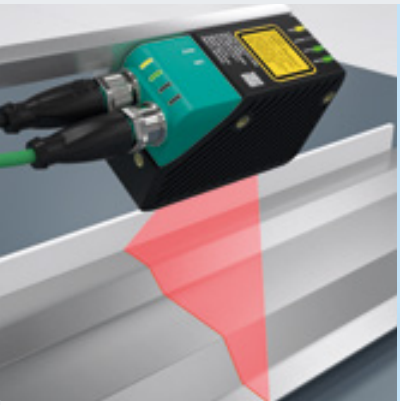


For more information, visit
**pepperl-fuchs.com/pf-optical-data**

# Industrial Vision

The wide range of vision sensors is tailored to the needs of your specific application. The solutions include:

- 2-D SmartRunner laser profile sensors
- 3-D SmartRunner stereo vision or time-of-flight technologies providing high-precision 3-D point cloud images
- 2-D vision sensors for tracking, positioning, feature recognition, quality control, identification, and measurement
- Intuitive ViSolution software interface for all vision sensor technologies
- Industrial event camera for documenting relevant situations



For more information, visit
**pepperl-fuchs.com/tf-vision**

# Ultrasonic Sensors

Easily integrate our standard designs into any machine environment. Special features, like offset or angled transducers, increase the ways in which these sensors can be integrated. Available as thru-beam, diffuse mode, or retroreflective mode, these products offer the user maximum flexibility—in both standard and specialized industrial applications.

- Various housing sizes and ranges
- Choice of sensing mode and output type
- IO-Link versions
- Vibration-resistant models for use in harsh and mobile applications
- High noise immunity and multiplex capability for added reliability
- Automatic sensor synchronization versions

For more information, visit
**pepperl-fuchs.com/pf-ultrasonic**

# Ultrasonic Safety Sensors

The USi-safety ultrasonic sensor system is breaking new ground for safety applications—whether in challenging, dusty environments, or in outdoor areas. Machines and vehicles can be reliably protected using state-of-the-art ultrasonic technology and all of the advantages this brings.

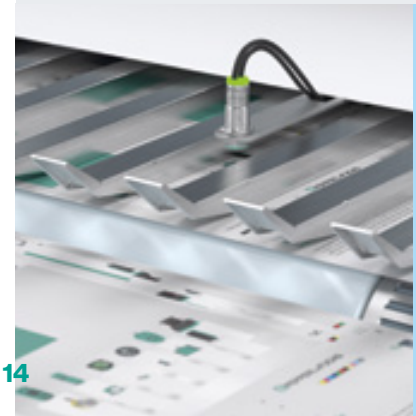
- Safety up to Category 3 PL d for each of the two sensor channels per system
- Miniature sensor units are decoupled from the control interface
- Quick and easy parameterization and automatic documentation
- Multiple device installation possible, no mutual interference (no cross-talk)

For more information, visit
**pepperl-fuchs.com/pf-usi-safety**

# Double Sheet Sensors

Double sheet, label, and splice detector sensors are a unique version of thru-beam ultrasonic sensors for detecting single or multilayer material, including paper, plastics, metals, and any other shiny material.

- Up to 150 mm range
- Models to detect a wide range of materials and thicknesses
- High switching frequency
- Insensitive to dust and dirt
- Circuit board versions for commercial equipment



For more information, visit
**pepperl-fuchs.com/pf-double-material**

# Radar Sensors

Interference-free measurement even in rain, fog, wind, or dust. The industrial radar sensors defy the elements and are perfect for outdoor applications where fast distance and velocity measurement over long distances is required.

- Distance and velocity measurement over more than 25 m
- Interference-free measurement of the target object through objects with a lower reflection amplitude
- Integrated CAN interface, vehicle-specific connectors, and extended EMC enable easy integration into mobile machines

For more information, visit
**pepperl-fuchs.com/pf-radar**

# Wireless Sensors

Smart applications need a solid information source. The autonomous wireless IoT sensors in the WILSEN series create this source—reliably supplying data on level, distance, valve position, and object presence without a cable connection. The measurement data is transmitted wirelessly and energy-efficiently in the globally standardized LoRaWAN® network over distances of up to several kilometers.

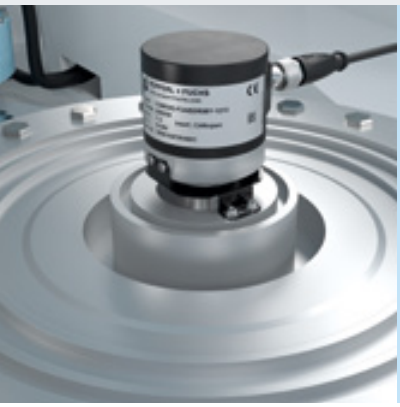
- Globally standardized LoRaWAN network for efficient, long-range signal transmission
- Maintenance-free runtimes of several years due to high-performance lithium battery with 13,000 mAh
- Easy device and system configuration via downlink channel, mobile app, and free web services

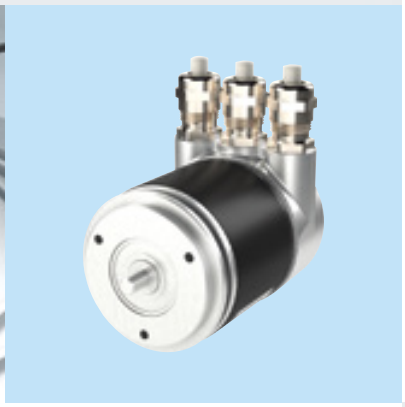

For more information, visit
**pepperl-fuchs.com/pf-wilsen**

# Absolute Rotary Encoders

Absolute rotary encoders provide highly accurate measurements through a variety of output protocols that are not affected by constant shock and vibration or power failures.

- Cost-effective magnetic or high-precision optical positioning scanning methods
- Singleturn and multiturn options
- Solid, hollow, and recessed hollow shaft options
- Wide range of electrical and mechanical interfaces including IO-Link, parallel, SSI, AS-Interface, CAN, DeviceNet, EtherNet/IP, PROFIBUS, and PROFINET





For more information, visit
**pepperl-fuchs.com/pf-abs-encoder**

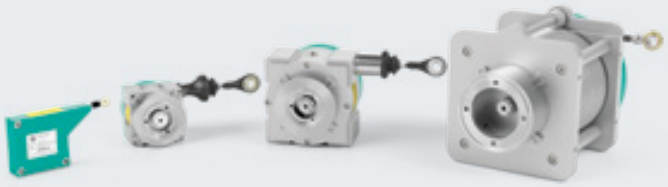
# Incremental Rotary Encoders

Incremental rotary encoders generate a pulse output so that a controller can determine the speed or position of a rotating part with high measurement accuracy and process reliability.

- Optical and magnetic noncontact scanning methods
- Solid, hollow, and recessed hollow shaft options
- Versions with 6 output channels: A, B, Z, A', B' and Z'

For more information, visit
**pepperl-fuchs.com/pf-incr-encoder**

# Cable Pulls



Cable pulls allow encoders to measure linear motion by using a steel cable and a spring-loaded drum in combination with a suitable incremental or absolute rotary encoder.

- Attach directly to an incremental or absolute rotary encoder
- Cable wraps around an internal spring-loaded drum to ensure accuracy
- Excellent for linear measurements with high resolution

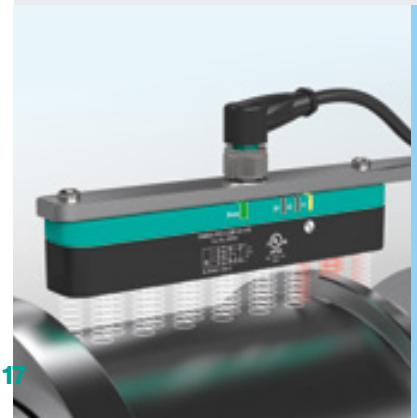
For more information, visit
**pepperl-fuchs.com/pf-cable-pulls**

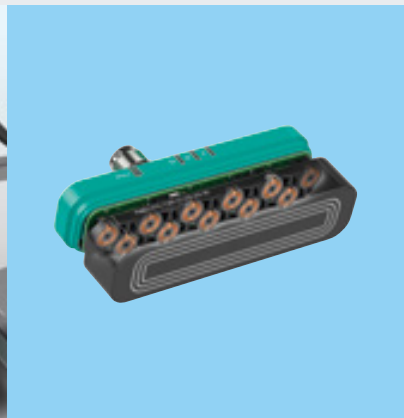
# Inductive Position Measuring Systems (PMI)

Patented technology for precise position detection: The inductive position measuring system offers tremendous flexibility with a wide range of functions along with programmable measurements and switching ranges. The noncontact technology ensures reliable operation even in demanding environments.

- Measuring and switching in one sensor
- Sensor lengths from 14 mm to 810 mm
- Linear position or rotational position models
- Measurement output options include analog or IO-Link for network integration

For more information, visit
**pepperl-fuchs.com/pf-pmi**

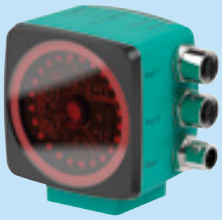




# Camera-Based Linear Positioning (PCV, PXV)

The PCV, PXV, safePXV and safePXV/PUS Data Matrix positioning systems use Data Matrix codes for precise positioning.

- The best and most reliable absolute positioning system in the world—a unique combination of 2-D camera and Data Matrix code tape
- Noncontact positioning with a code tape length of up to 100,000 m
- Uncompromising reliability: multicode redundancy provides resistance to contamination and damage
- safePXV and safePXV/PUS enable SIL 3/PL e safe absolute positioning
- Reliable detection even if code tape is gapped, dirty, or damaged



For more information, visit
**pepperl-fuchs.com/pf-pxv**

# Camera-Based Track Guidance (PGV)

Colored tape for lane tracking, Data Matrix code tape for positioning and tags for navigation: Position Guided Vision (PGV) is the first and only Data Matrix positioning system that combines these technologies in one device.

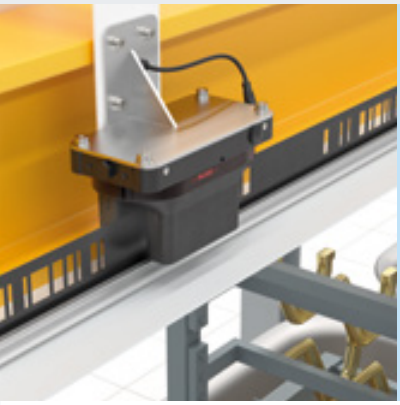
- Reliably detects colored route-tracking tape/paint and Data Matrix codes, even on highly reflective surfaces
- Excellent ambient light immunity, > 100,000 lux, eliminates the need for additional contrast tape
- Wide scan window coupled with the 2-D Data Matrix technology provides seamless navigation over damaged or dirty tape
- safePGV enables SIL 3/PL e safe absolute positioning with a single sensor

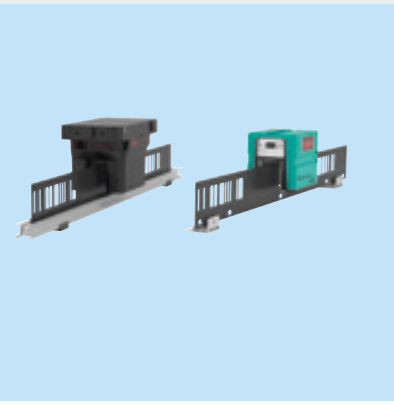
For more information, visit
**pepperl-fuchs.com/pf-pgv**

# Position Encoding System (WCS)

The absolute linear encoder system provides fraction-of-a-millimeter position feedback to a wide range of industrial and commercial applications.

- Reliable position detection with the sophisticated position encoding system—even on curved tracks, inclines, declines, lane changes, and gradients
- Flexible integration with all common control systems
- IP69 protective housing for use in extreme outdoor applications
- Code rails and ID pads for harsh environments: laminate code rails for chemical resistance, stainless-steel code rails for corrosion resistance
- safeWCS/PUS enables SIL 3/PL e safe absolute positioning



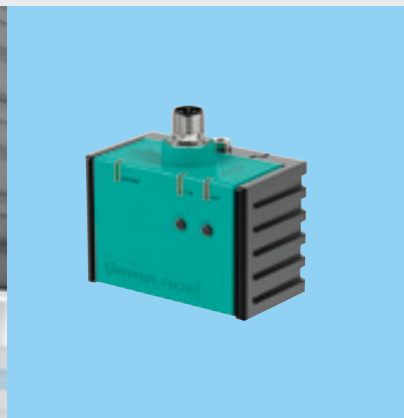


For more information, visit
**pepperl-fuchs.com/pf-wcs**

# Inclination Sensors, Inertial Measurement Units (IMUs), and Acceleration Sensors

Static inclination sensors reliably detect inclination angles in one or two axes. Acceleration sensors monitor strong vibration or acceleration on equipment. The inertial measurement unit F99 combines both inclination and acceleration detection for dynamic applications providing six-axis, 360° measurement.

- Rugged and suited for outdoor applications, including off-road and marine
- Extended temperature range down to –40 °C and degree of protection (IP68/69)
- Measuring range can be individually configured to meet application requirements
- Analog, CANopen, J1939, and MODBUS RTU interface options

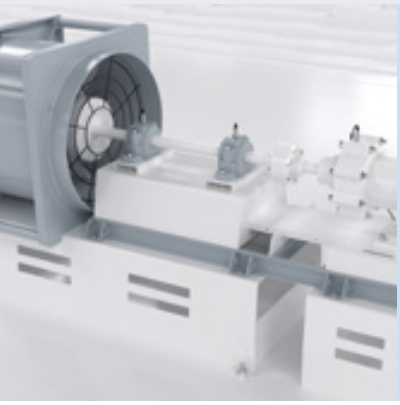


For more information, visit
**pepperl-fuchs.com/pf-inc-acc**

# Vibration Sensors

A reliable portfolio of robust vibration sensors for machine condition monitoring in many environments to prevent untimely breakdowns.

- Machine monitoring—options for velocity, acceleration, bearing wear, and temperature
- Intelligent advanced warning
- Vibration diagnostics
- Rugged housings and encapsulated electronics
- Analog and IO-Link versions
- SIL 1/PL c and SIL 2/PL d variants
- Suitable for use in hazardous areas up to Zone 1/21



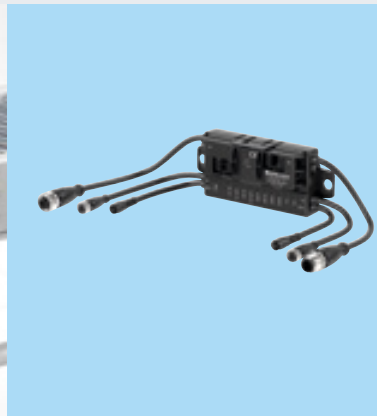
For more information, visit
**pepperl-fuchs.com/pf-vim**

# AS-Interface

AS-Interface has firmly established itself as a worldwide standard for the cost-effective transfer of power and communication along a single cable. AS-Interface Safety at Work is a safety-related extension of the AS-Interface and is simply integrated in an existing AS-Interface network.

- Open system, compatible with common fieldbus systems
- Topology-free and ideal for long conveyor runs
- Safe and non-safe signals on one cable
- Insulation piercing technology minimizes installation time and cost
- KE5 gateway is suitable for use in IoT applications: REST API interface enables easy data access parallel to fieldbus connection

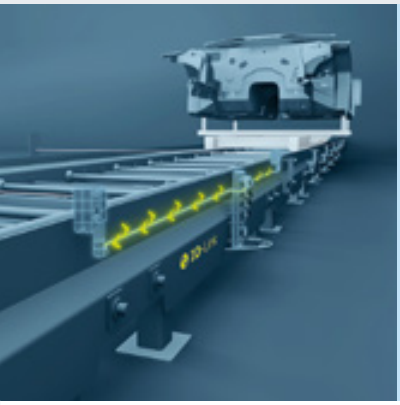
For more information, visit
**pepperl-fuchs.com/pf-g20**



# IO-Link

Paving the way for a digital, transparent data exchange, IO-Link enables comprehensive diagnostics and individualized production with central data storage and automatic configuration.

- Bidirectional communication between the control system and the sensor
- IO-Link devices can be configured via the control system, which simplifies commissioning and enables rapid recipe changes without extended downtimes
- Unshielded industry-standard cabling
- International standardized interface
- IO-Link can be used across brands; integrate new devices into your existing systems



For more information, visit
**pepperl-fuchs.com/tf-io-link**

# IO-Link Masters, Ethernet IO Modules, and I/O Hubs

Fieldbus systems ensure reliable data transfer between the control and sensor/actuator levels and enable fast connection of digital and IO-Link devices.

- Support the most common Ethernet protocols: PROFINET, EtherNet/IP, EtherCAT, and MODBUS TCP with MQTT, OPC UA, and REST API capabilities for IIoT applications
- Field mount and panel mount versions, configurable with rotary switch
- ICE2 and ICE3 series IO-Link masters with integrated OPC UA interface enable cloud-based Industry 4.0 solutions
- I/O hubs with IO-Link interface decentralize collection of numerous binary sensor signals and connect them to an IO-Link infrastructure

For more information, visit
**pepperl-fuchs.com/pf-io-link-masters**

# RocketLinx® Managed and Unmanaged Ethernet Switches

RocketLinx series managed and unmanaged Ethernet switches are designed for mission-critical environments that require extended operating temperatures, rugged enclosures, high-performance communication, and reliable data transfer.

- Power-over-Ethernet versions for power and communications on a single cable
- Copper and SFP fiber ports
- Fast Ethernet and gigabit speeds
- Alarm relays and redundant power inputs
- PortVision Discovery and Management Software for easy configuration

For more information, visit
**pepperl-fuchs.com/pf-rocketlinx**

# Serial Gateways (DeviceMaster)

Pepperl+Fuchs DeviceMaster industrial gateways offer a range of connectivity solutions for devices supporting serial, MODBUS, and TCP/IP communications with Ethernet and industrial Ethernet networks.

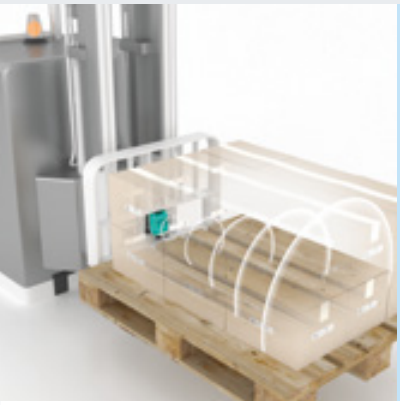
- EtherNet/IP, PROFINET, MODBUS TCP, TCP/IP
- RS232/422/485 serial communication
- Simple commissioning and powerful diagnostics
- PortVision DX management software

For more information, visit
**pepperl-fuchs.com/pf-devicemaster**

# Identification Systems—RFID

RFID (radio frequency identification) refers to technologies that use radio waves to automatically identify objects or people. Typically, a serial number or other product-/object-related information ("identifier") is stored on an RFID tag, which is attached to an asset. This information can be wirelessly read or updated as needed in the application.

- Eliminates error-prone manual data collection
- Provides better transparency and huge speed gains
- Interface options include PROFIBUS, PROFINET, EtherNet/IP, TCP/IP, MODBUS TCP/IP, EtherCAT
- Low, high, and ultrahigh frequency range readers and tags
- Tags for challenging environments: extended temperatures, excessive wear and tear, mounting in or on metal, and hazardous locations



For more information, visit
**pepperl-fuchs.com/pf-rfid**

# Optical Identification

From 2-D code readers and handhelds to barcode scanners and special solutions—the mobile and stationary sensors reliably and safely solve track-and-trace applications with a wide variety of code types and under the most challenging conditions.

- Stationary and handheld 1-D and 2-D code readers, special solutions
- OIT systems offer highly reliable read performance with a wide variety of code types, at temperatures up to 500 °C
- Solutions for distances of 0.1 mm up to 2 m
- Reliable in extreme temperatures, dusty or dirty environments and in applications requiring high scan rates
- Interface options include Ethernet TCP/IP, USB, serial interfaces, I/Os, or even radio interfaces such as Bluetooth®

For more information, visit
**pepperl-fuchs.com/pf-opto-ident**

# Functional Safety

For decades, Pepperl+Fuchs has been a driving force in industrial automation. Our in-depth understanding of functional safety norms and regulations is the basis for trusted safety components. We have a department of trained engineers who safely apply traditionally “non-safe” or “safe” devices in product or process-safe applications.

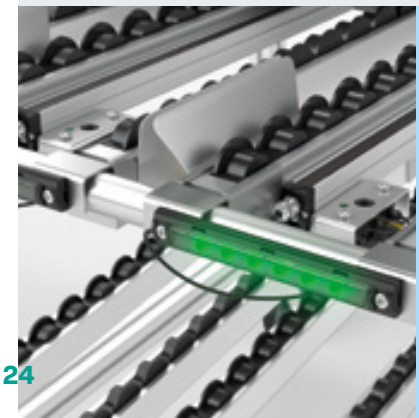
- More than 750 SIL/PL assessed devices, ensuring the best solution for your individual applications
- Safety-rated ultrasonic sensors, inductive sensors, rotary encoders, and AS-Interface Safety at Work
- Safety edges, light barriers, and safe positioning
- Wide range of training programs for automation professionals, geared toward management, engineering, production, and safety equipment design for potentially hazardous atmospheres

For more information, visit
**pepperl-fuchs.com/tf-functional-safety**

# Displays and Signal Processing

In many counting and control processes, sensor signals need to be clearly displayed, monitored, or processed.

- Pulse counter units and displays count and measure events. Sensor signals representing positions, velocities, and flow rates can also be displayed, controlled, and monitored.
- Signal converters convert sensor signals into more application-specific or user-friendly formats.
- Process displays visually display analog signals using large LEDs.

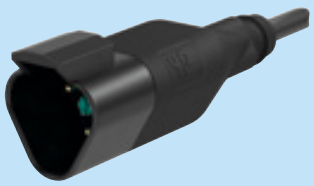


For more information, visit
**pepperl-fuchs.com/pf-displays**

# Connectivity

This portfolio features high-performance sensor cables, data and field connectors, junction blocks, sensor actuators, sensor-actuator receptacles, and splitters for industrial automation as well as various connectors for mobile applications.

- M8, M12, ½" and 7/8" sensor-actuator cables in PVC, PUR, PUR Automotive, and POC (for welding areas) jacket materials
- Valve connectors, field-attachable connectors, splitters, and junction blocks
- Data connectors for almost any industrial interface, from Ethernet and CANopen to USB and RS-232
- Mobile equipment connectivity (MEC): overmolded DT connectors optimized for mobile equipment
- Bulk raw cable available
- 100° angled M8/M12 versions extend service life and reduce stress on cable conductor



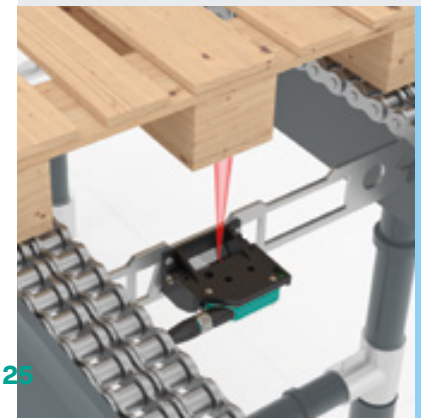
For more information, visit
**pepperl-fuchs.com/pf-connectivity**

# Our Solutions, as Individual as You.

Every customer is unique. That's why Pepperl+Fuchs doesn't just offer a broad portfolio of standard products—we also engineer a tailor-made solution that perfectly meets your requirements. Because our work is only technically perfect when it works perfectly for you.

- Optimizing inductive, photoelectric, ultrasonic, and position feedback sensor attributes to save time and reduce costs
- Customized products are ready for immediate use
- Solutions range from minor adjustments and specially designed products to a complete package that includes integration and certification

For more information, visit
**pepperl-fuchs.com/if-custom-solutions**



# Quality Standards That Exceed Even the Highest Demands

**At Pepperl+Fuchs, quality stands for much more than simply complying with the prescribed standards. The company aims to offer the best products on the market, so it applies test criteria that far exceed the requirements. High-quality, customer-oriented sensor solutions are developed based on decades of experience, expert knowledge of the industry, and in-depth technical know-how.**

### Expertise across All Industries

The requirements for sensor solutions in factory automation are as diverse as the industries that use them. In-depth knowledge of the wealth of application- and approval-specific requirements is essential to support customers across the globe with their individual processes—from vehicle approval to complex specifications for offshore or hazardous-location applications. Decades of experience in all industries makes Pepperl+Fuchs an expert partner for customers all over the world.

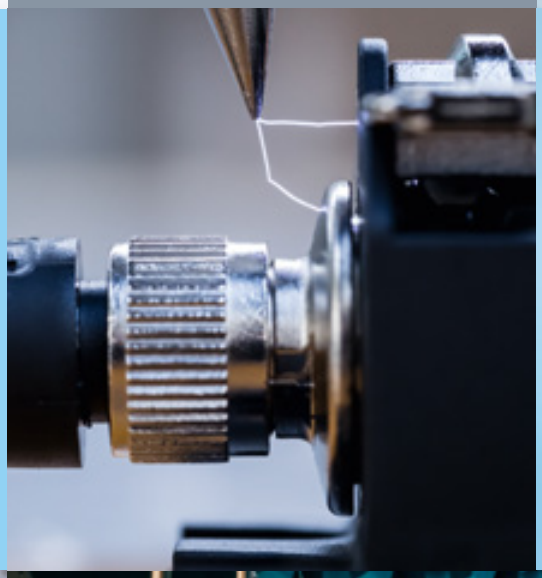
### Strict Quality and Performance Standards

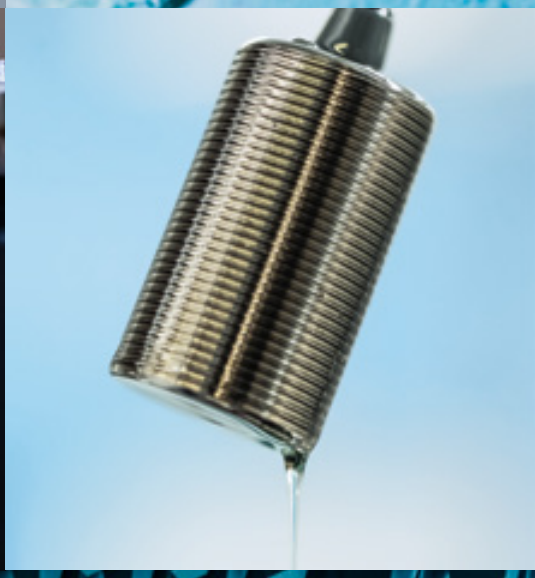
Ensuring the highest quality standards across the entire portfolio is both a fundamental requirement and a driving force for Pepperl+Fuchs. The company relies on rigorous quality management and an in-house audit department with criteria far beyond the normative requirements. A range of tests are carried out, including environmental tests that verify optimal functionality under extreme loads. In the mobile equipment range, for instance, testing includes:

- Humidity tests (according to DIN EN 60068-2-38)
- Repeated temperature cycles
- Chemical resistance testing through exposure to vehicle and hydraulic oil, brake fluid, battery acid, and road salt

These strict criteria ensure that Pepperl+Fuchs devices have a long service life, are incredibly reliable, and exceed the most stringent global performance standards. They are available with all major international certifications and approvals, such as:

- E1 approval for mobile equipment
- SIL and PL certification
- DNV GL for marine approval
- ATEX Directive 2014/34/EU, IECEx, UL Hazardous Locations, Ex NEPSI for hazardous areas
- Special approvals for specific countries and applications (e. g., ANZ-Ex/Mining Queensland)





# Your automation, our passion.

- Industrial Sensors
- Industrial Communication and Interfaces
- Enterprise Mobility
- Hazardous Area Products and Solutions

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