The Original.

Choose from 6,000+ sensors, unmatched quality, and in-depth expertise from the inventor.

Proximity Sensors
from Pepperl+Fuchs

Your automation, our passion.

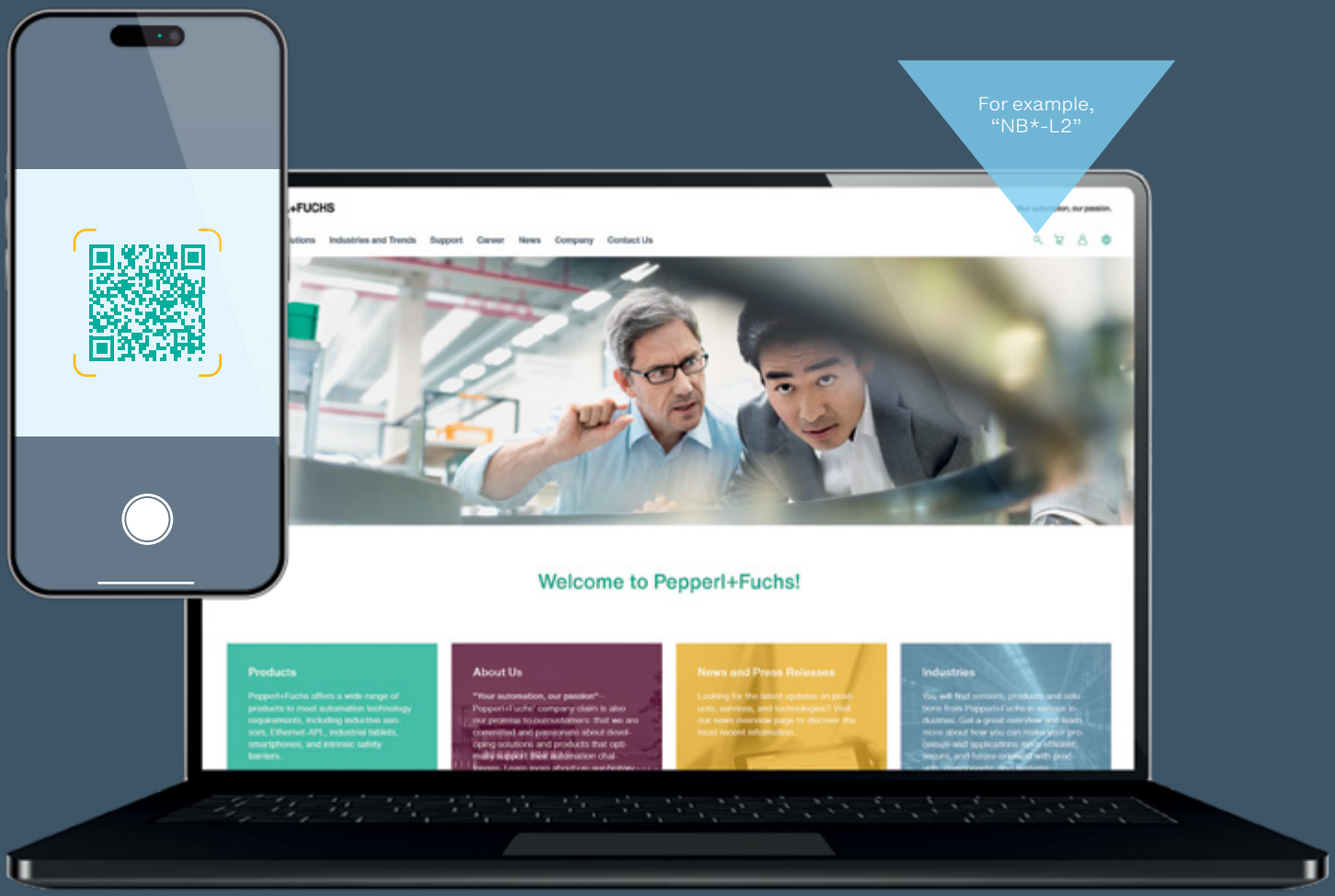
PEPPERL+FUCHS

Find Your Device in Just a Few Clicks.

Go online. Specify your requirements. Select your device. You can find the right solution for your application in just a few clicks. If you have any questions, our experts are available to take your call.

Online Search on the Pepperl+Fuchs Website

Simply scan the respective QR code or enter the order designation in the search field on the Pepperl+Fuchs website and get to your product selection immediately. Order designation can be found in this brochure in the technical data summaries. Or you can navigate through our range of product families and groups. Product selectors help you select the optimal device.



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

Contents

Pepperl+Fuchs

Innovations for the Future of Automation

“Your automation, our passion”—Pepperl+Fuchs’ company claim is also our promise to our customers: that we are committed and passionate about developing solutions and products that optimally support their automation challenges.

A spirit of research, entrepreneurial vision, and a belief in their own abilities—in 1945, founding fathers Walter Pepperl and Ludwig Fuchs laid the foundations for a success story in a small radio workshop in Mannheim that continues to this day. A look back at Pepperl+Fuchs’ more than 75-year history reveals many milestones, including the invention of the inductive proximity sensor in 1954, which not only demonstrates the company’s consistently high level of innovation. It also reflects a fundamental attitude that has been the most important pillar of this success story from the very beginning: working in partnership with our customers, working together as equals.

The individual needs and challenges of each customer, which we identify together in an intensive dialogue, are the focus of our actions, both today and in the future. This applies in particular to the digital transformation of processes and applications in the automation industry. We continue to drive this progress forward: with innovations and investments in a well-rounded range of services that pave the way for IIoT-enabled applications. Reinterpreting proven technologies is just as important to us as developing state-of-the-art technological concepts such as Ethernet-APL.

Always thinking one step ahead, developing and realizing visions for automation, and shaping its development in the future—this is what drives us.

Welcome to our world—let us inspire you!
www.pepperl-fuchs.com

Development and History

The Original: Sensor Solutions Directly from the Inventor

Inventing the proximity sensor and introducing the first magnetic amplifier for intrinsically safe circuits were just the start—forging ahead with innovative ideas has a long tradition at Pepperl+Fuchs. The ability to identify new solutions and markets early on is still key to providing customers around the world with the best sensor solutions for their applications.

From an Individual Solution to a Success Story

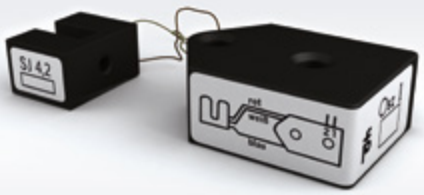
Company founders Ludwig Fuchs and Walter Pepperl embodied a pioneering spirit and technical know-how. They drew on their experience in broadcasting technology for a customer who wanted to replace mechanical contacts with noncontact alternatives. Therefore, in 1958, the company developed the first proximity sensor, daring to employ a completely new technology. What was intended as a customer-specific solution for intrinsically safe circuits in the chemical industry quickly impressed others with its almost unlimited service life. The sensors quickly found their way into a variety of industries and became a worldwide success story.

Committed to Quality from the Start

Right from the beginning, Pepperl+Fuchs proximity sensors stood for quality and reliability. The company ensures its portfolio is always on the cutting edge of technology with maximum quality standards and test criteria far beyond the normative requirements.

At the same time, the inventor of the proximity sensor always has its eye on the future. This has enabled it to continue to develop and perfect the technology. Building on its technical know-how and market experience, Pepperl+Fuchs offers customers consulting expertise at subsidiaries around the world. And if the perfect sensor solution is not already available in its comprehensive portfolio, Pepperl+Fuchs experts partner with customers to develop custom products—tailored to the unique requirements of their application.


RADIO
Peppert Fuchs



Quality Promise

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-area applications. Decades of experience in all industries makes Pepperl+Fuchs an expert partner for customers all over the world.

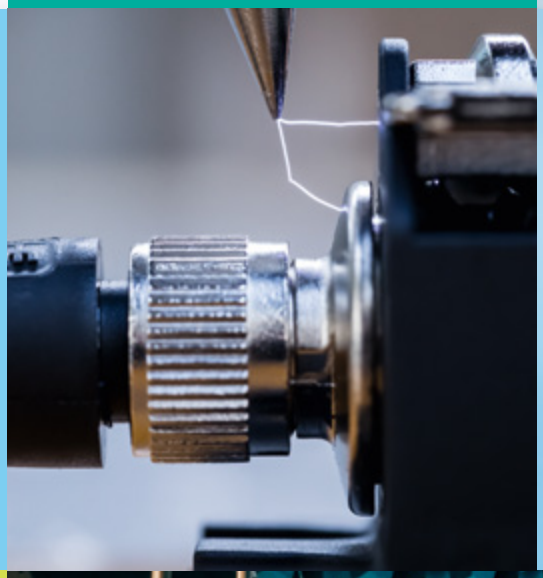
Strict Quality and Performance Standards

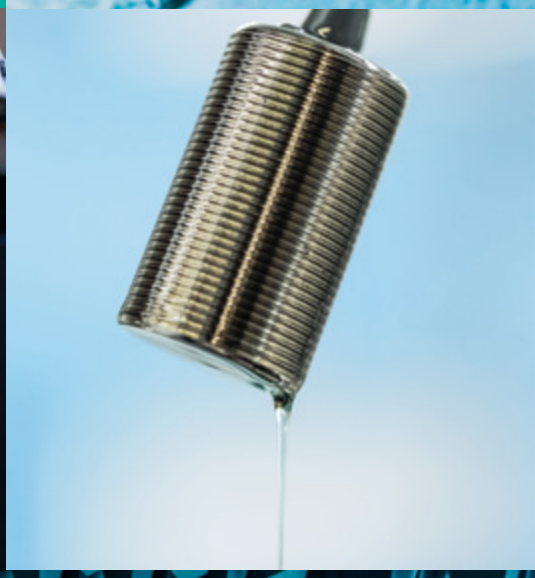
Ensuring maximum quality standards across the entire portfolio is both a fundamental requirement and a driving force for Pepperl+Fuchs. The company relies on rigorous quality management and an in-house audit department with criteria far beyond the normative requirements. A range of tests are carried 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)



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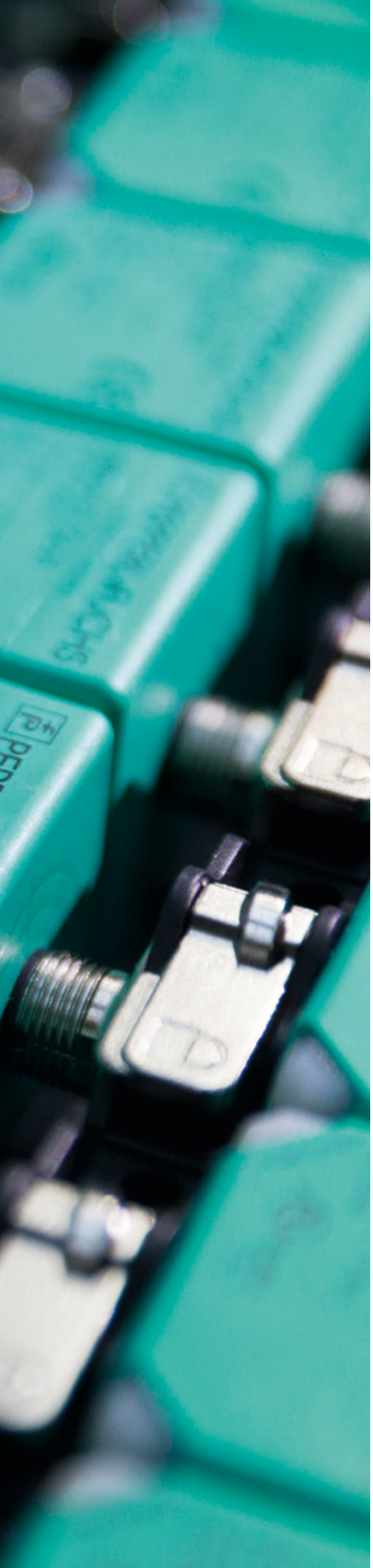


Standard Inductive Sensors

Perfectly Versatile, Suitable for Any Task

The application possibilities for inductive proximity sensors are virtually unlimited. Pepperl+Fuchs offers a diverse portfolio designed to meet various requirements, featuring a wide range of designs, materials, and output signals, all with global approvals across multiple technologies. With over 6,000 sensors, choosing the best solution is simple.

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

Cube-Style Standard Inductive Sensors

A Portfolio That Covers Every Application

As the inventor of the proximity sensor, Pepperl+Fuchs continues to set standards for product quality and variety. Especially when it comes to cube-style standard inductive sensors, the company offers a vast range of designs for any kind of installation.

Reliable Technology, Global Approvals

Inductive proximity sensors are used wherever reliable, noncontact detection of metallic objects up to a distance of 100 mm is required. Pepperl+Fuchs' portfolio of cube-style standard sensors offers the largest selection of global approvals. This includes country- and industry-specific approvals such as DNV GL, UL, and CCC.

Sensors are available for all supply voltages (DC, AC, universal current) and output signals (analog, digital, and AS-Interface). A wide variety of designs and materials, combined with a complete range of cables and connectors, offers the right solution for every application.

Highlights

- Maximum quality standards in sensor production ensure complete application reliability
- Portfolio guarantees the ideal sensor solution for every application
- Customer-specific adaptations tailored to individual applications
- Extreme ruggedness and durability, perfect for harsh industrial environments
- Expert customer consulting and technical know-how backed by in-house development and extensive market expertise

Extract of technical data	F41 series	F79 series	F33 series	FP series	VariKont L2 series	VariKont series
						
Search term	N*-F41*	NBB1,5-F79-E*	NB*-F33*	N*-FP-*	NB*-L2*	NB*-U1*
Max. operating distance Flush Nonflush	3 mm	1.5 mm	8 mm 10 mm	40 mm 50 mm	20 mm 40 mm	20 mm 40 mm
Type of output	DC 3-/4-wire PNP/NPN	DC 3-wire PNP/NPN	DC 3-/4-wire PNP/NPN	DC 2-/3-/4-wire PNP, AC	DC 2-/3-/4-wire PNP, NPN	DC 2-/3-/4-wire PNP, NPN, AC, NAMUR
Electrical connection type	Cable, M8 plug connector	Cable	Cable	Terminal compartment, cable, M12 plug connector	Cable, M12 plug connector	Terminal compartment, cable, M12 plug connector
Housing material	Brass nickel-plated	PA plastic	PBT plastic/metal	PBT plastic/metal	PA plastic	PA plastic
Temperature range	–25 °C ... +70 °C	–25 °C ... +70 °C	–35 °C ... +70 °C	–25 °C ... +70 °C	–25 °C ... +85 °C	–25 °C ... +85 °C
Dimensions	8 × 8 × 55 mm	17.5 × 8 × 4.7 mm	50 × 25 × 10 mm	80 × 80 × 40 mm	40 × 40 × 67 mm	40 × 40 × 118 mm

Cube-Style Standard Inductive Sensors

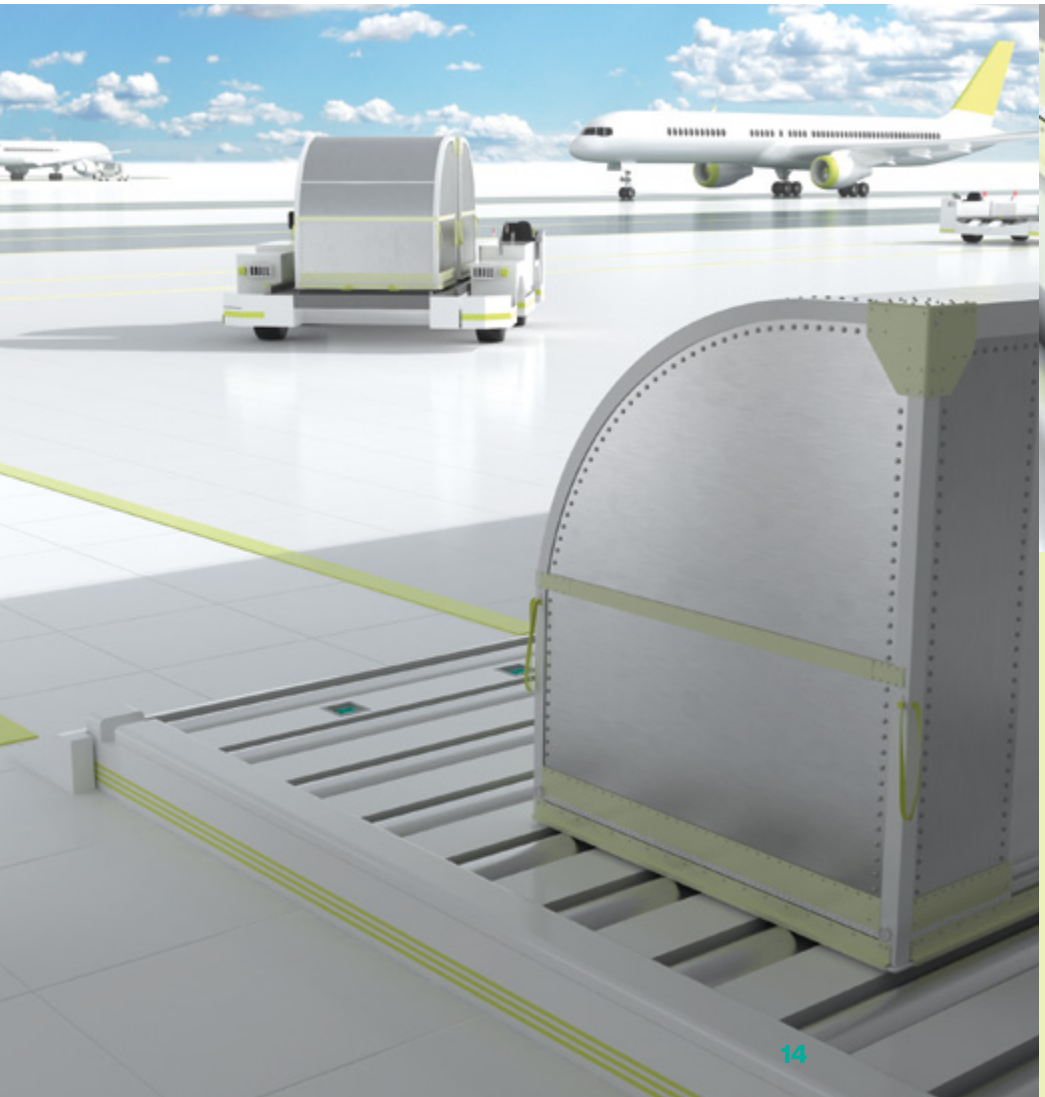
Error-Free, Rain or Shine

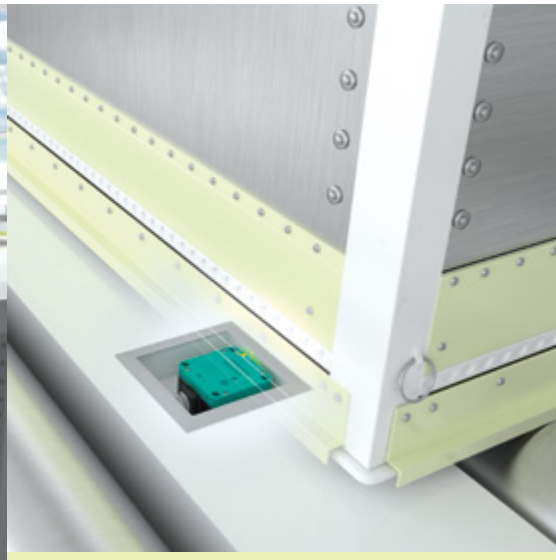
Pepperl+Fuchs standard inductive sensors do not just perform in traditional industrial applications. Their quality is unmistakable where ambient conditions are most demanding. Reliable, rugged, and extremely durable, they come into their own in outdoor applications with temperatures well below freezing.

Air Freight: Precise and Efficient Positioning

Air freight must be loaded reliably and efficiently to ensure the smooth flow of air traffic. To this end, cargo containers are transported from an interim storage location to loading points via conveyor elements. Two inductive sensors detect when a container has reached the required position. Transport is then stopped, and the air freight is ready for collection. As soon as the container is transported away, the ramp is reported as available, and new air freight can advance.

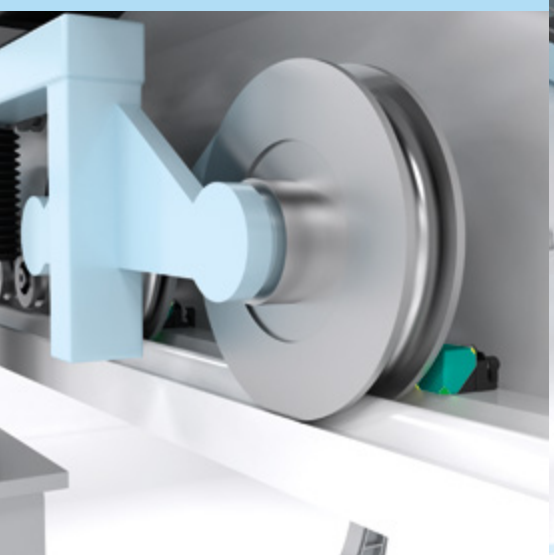
FP series inductive sensors are perfect for this task. They are rugged and unaffected by the movements and vibrations of heavy containers. They also have long sensing ranges for both a flush and nonflush mount, ensuring reliable and efficient processes.

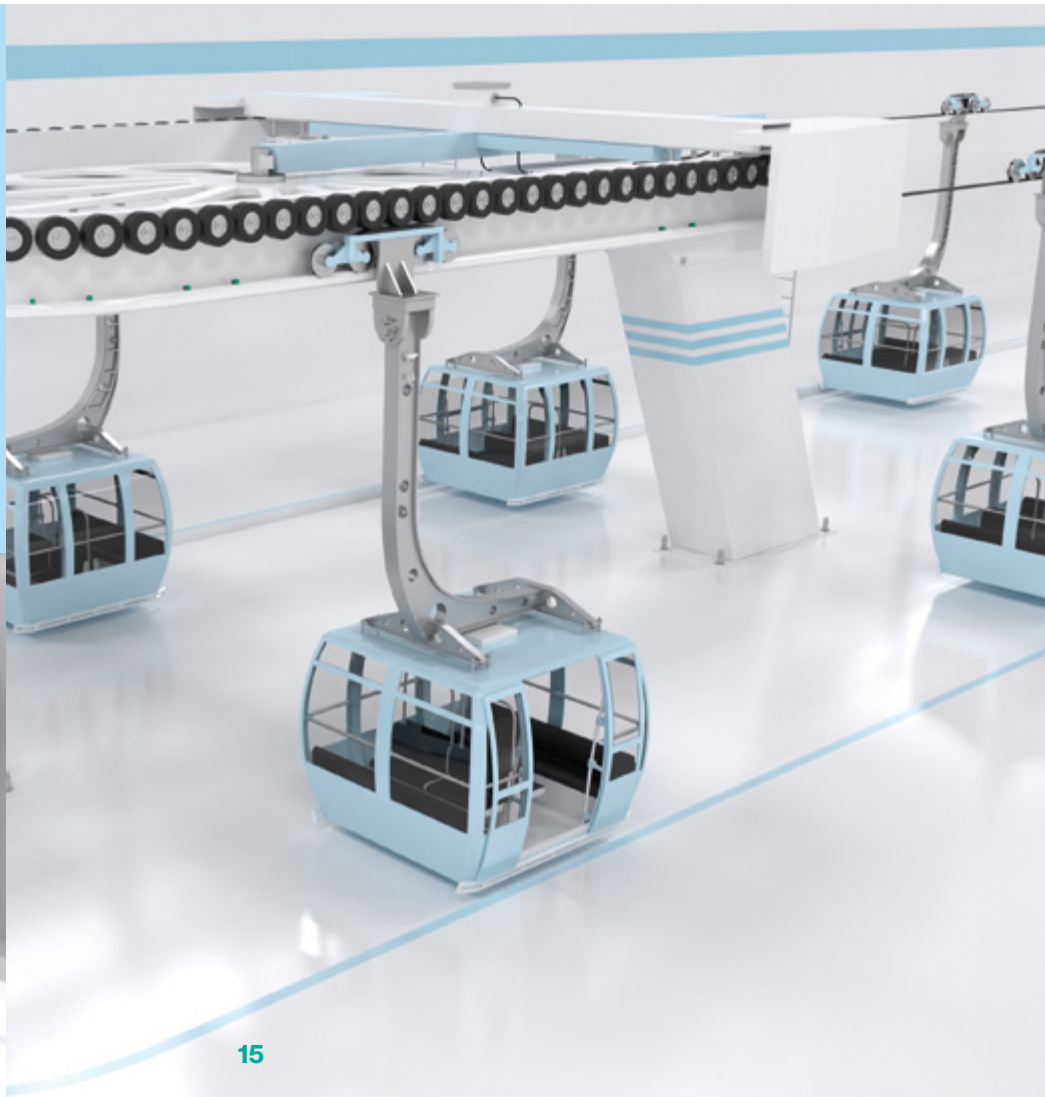




Transport: Getting Passengers to Their Destination Safely

Smooth and safe operation is essential for gondola lifts in skiing and hiking areas. Sensors are installed around the entrance and exit areas of gondola stations. They detect the conveyor rollers of each cabin to ensure that speed and position are controlled precisely. The sensors also trigger the door opening and closing operations. Since temperatures can drop well below freezing in winter, rugged VariKont L2 series sensors are ideal for outdoor applications like this. They have long sensing ranges, are easy to install, and offer absolute reliability.





A Housing Design for Every Installation

The extensive range of inductive proximity sensors from Pepperl+Fuchs meets diverse global customer needs. With the largest portfolio of cylindrical designs, we offer solutions for any size, connection type, or sensing range.

Wide Variety of Standard Designs

In addition to cube-style housing designs, Pepperl+Fuchs also offers a broad portfolio of cylindrical standard sensors. These are used for position detection in machine tools and monitoring safe end positions, among many other applications. The sensors are available for all supply voltages (DC, AC, universal current) and output signals (analog, digital, and AS-Interface). A wide range of designs, materials, cables, and connectors means the right solution is available for every application. In addition, the devices offer necessary approvals, such as DNV GL, UL, and CCC.

For users looking to configure the ideal 3- or 4-wire sensor, a variety of options are available, all of which can be combined flexibly. These options include not only the diameter and length of the housing, but also the type of installation, the operating distance, and the type of connection.

Highlights

- Maximum quality standards in sensor production ensure reliability
- Complete portfolio provides the optimal sensor solution for every application
- Customer-specific adaptations tailored to individual applications
- Exceptional ruggedness and durability, perfect for use in harsh industrial environments
- Expert customer consulting and technical know-how backed by in-house development and extensive market expertise

Extract of technical data	D3/M4 series	D4/M5 series	D6.5 series	M8 series	M12 series	M18 series	M30 series
							
Search term	NB*-3M22-* NB*-4GM22-*	NB*-4M25-* NB*-5GM25-*	N*-6,5*	N*-8G*	N*-12G*	N*-18G*	N*-30G*
Max. operating distance Flush Nonflush	1 mm	1.5 mm	3 mm 6 mm	3 mm 6 mm	6 mm 10 mm	12 mm 20 mm	15 mm 40 mm
Type of output	PNP, NPN, DC 2-/3-/4-wire						
Electrical connection type	Fixed cable	Fixed cable, M8 connector plug	Fixed cable, M8 × 1, M12 × 1 connector plug	Fixed cable, M8 × 1, M12 × 1 connector plug	Fixed cable, M8 × 1, M12 × 1 connector plug	Fixed cable, M12 × 1 connector plug	Fixed cable, M12 × 1 connector plug
Temperature range	–25 °C ... +70 °C	–25 °C ... +70 °C	–40 °C ... +85 °C	–40 °C ... +85 °C	–40 °C ... +85 °C	–40 °C ... +85 °C	–40 °C ... +85 °C
Dimensions	Ø 3 mm	Ø M5	Ø M6.5	Ø M8	Ø M12	Ø M18	Ø M30

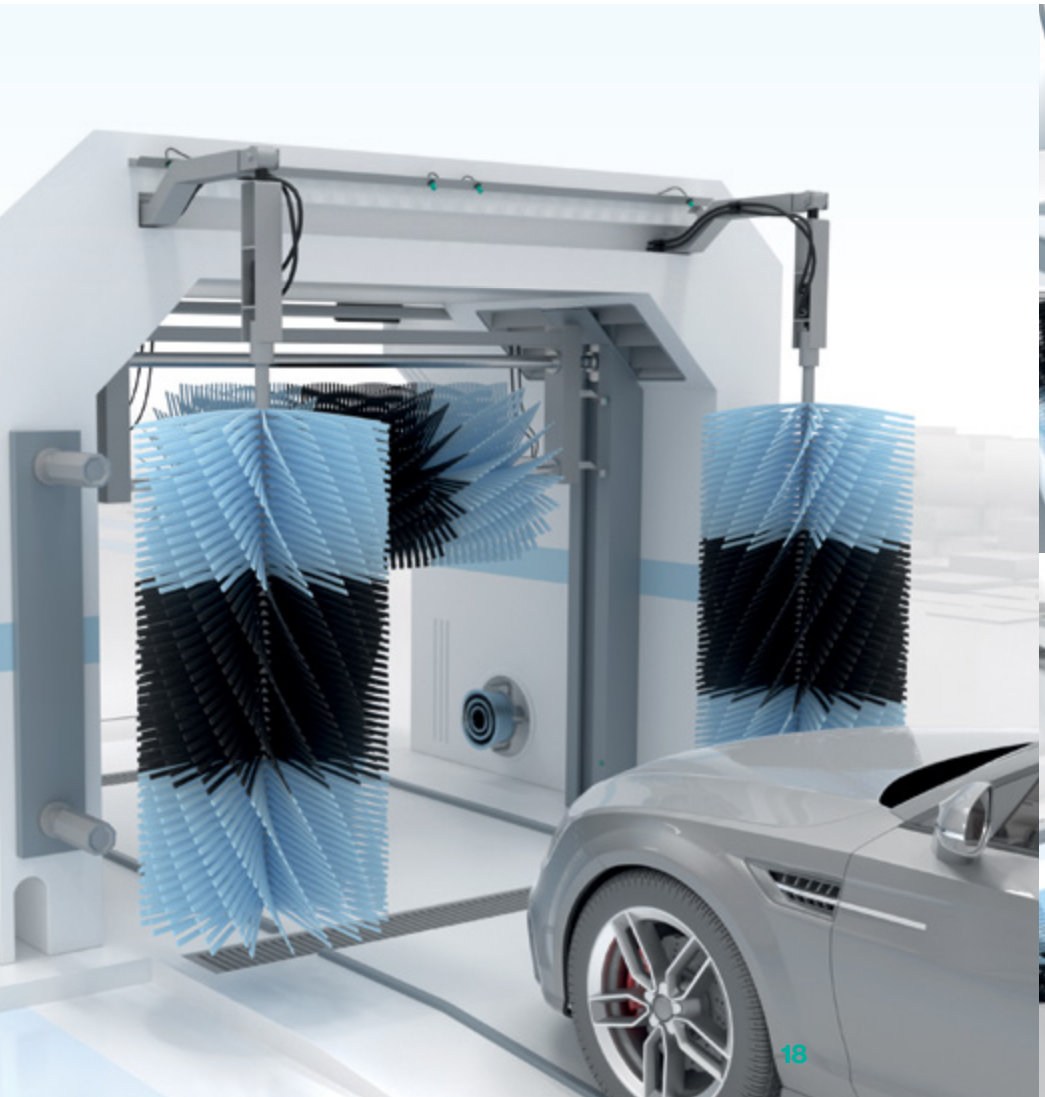
Optimal Performance, Even Under the Most Difficult Conditions

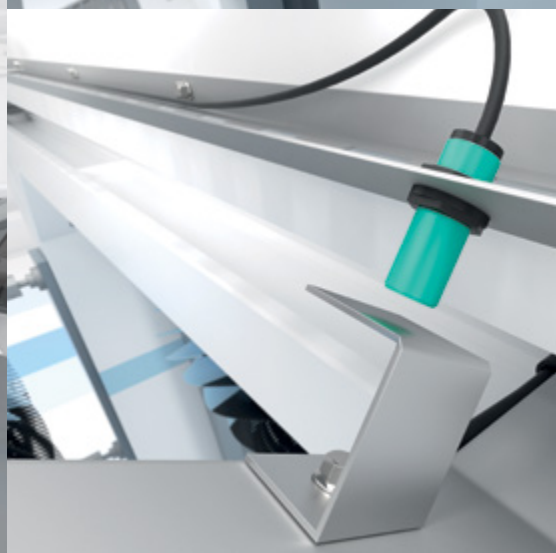
Whether for indoor applications or harsh conditions in automated car washes, Pepperl+Fuchs offers a broad portfolio of cylindrical standard sensors for every application.

Chemical Plants: Reliable Valve Position Monitoring

Linear valves are used to control the flow of all types of process media. They open or close the pipes that feed or discharge these substances. Inductive sensors detect the end position of the lifting rods to monitor whether the valve position is open or closed. A set of two proximity sensors can be used to provide the required redundancy for safety-critical applications.

This application is common throughout chemical plants, tank farms, and petrochemical plants. Since hazardous areas are par for the course in these industries, sensors with the relevant global approvals are available. The sensors can be used for any valve size, and their noncontact, wear-free technology ensures an extremely long service life.

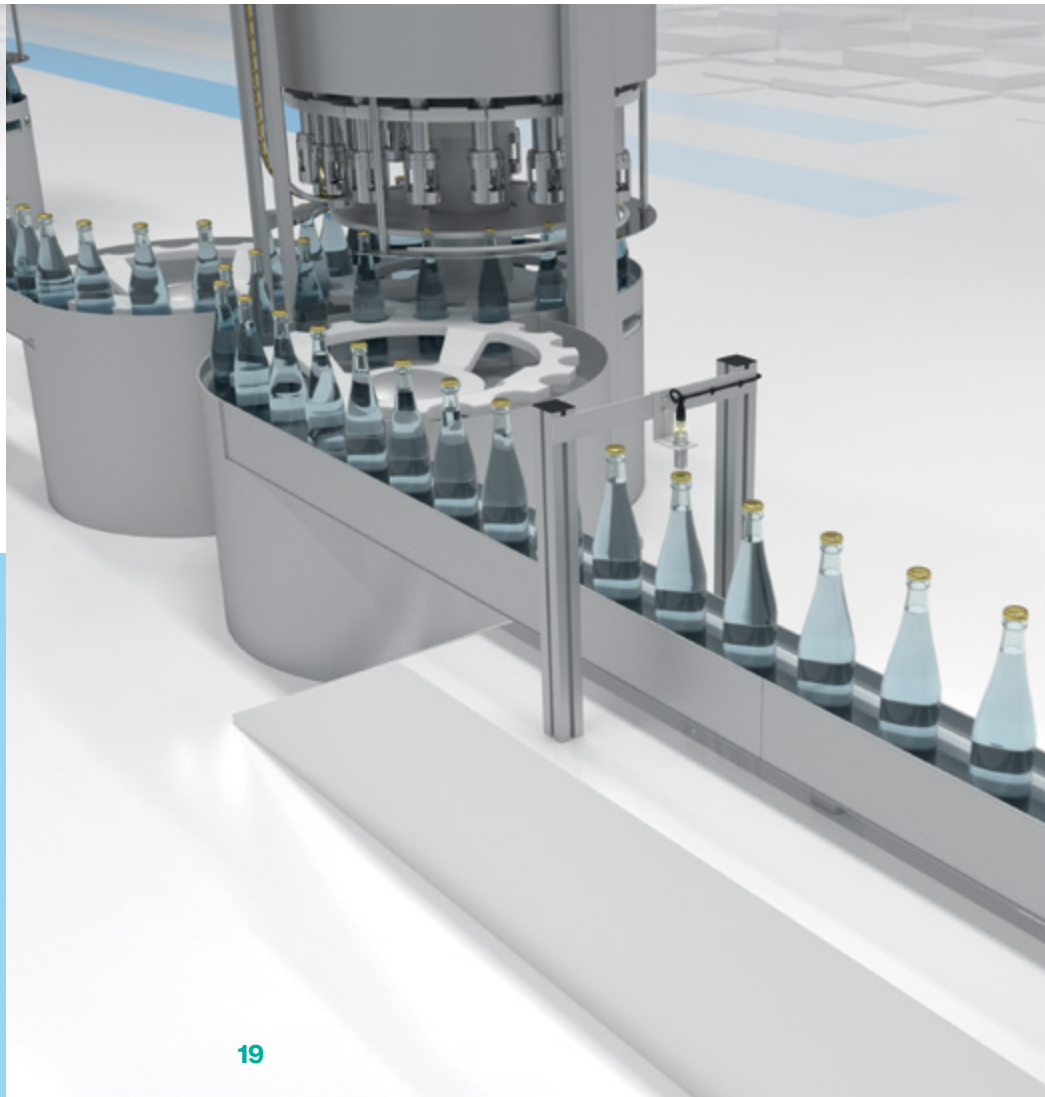


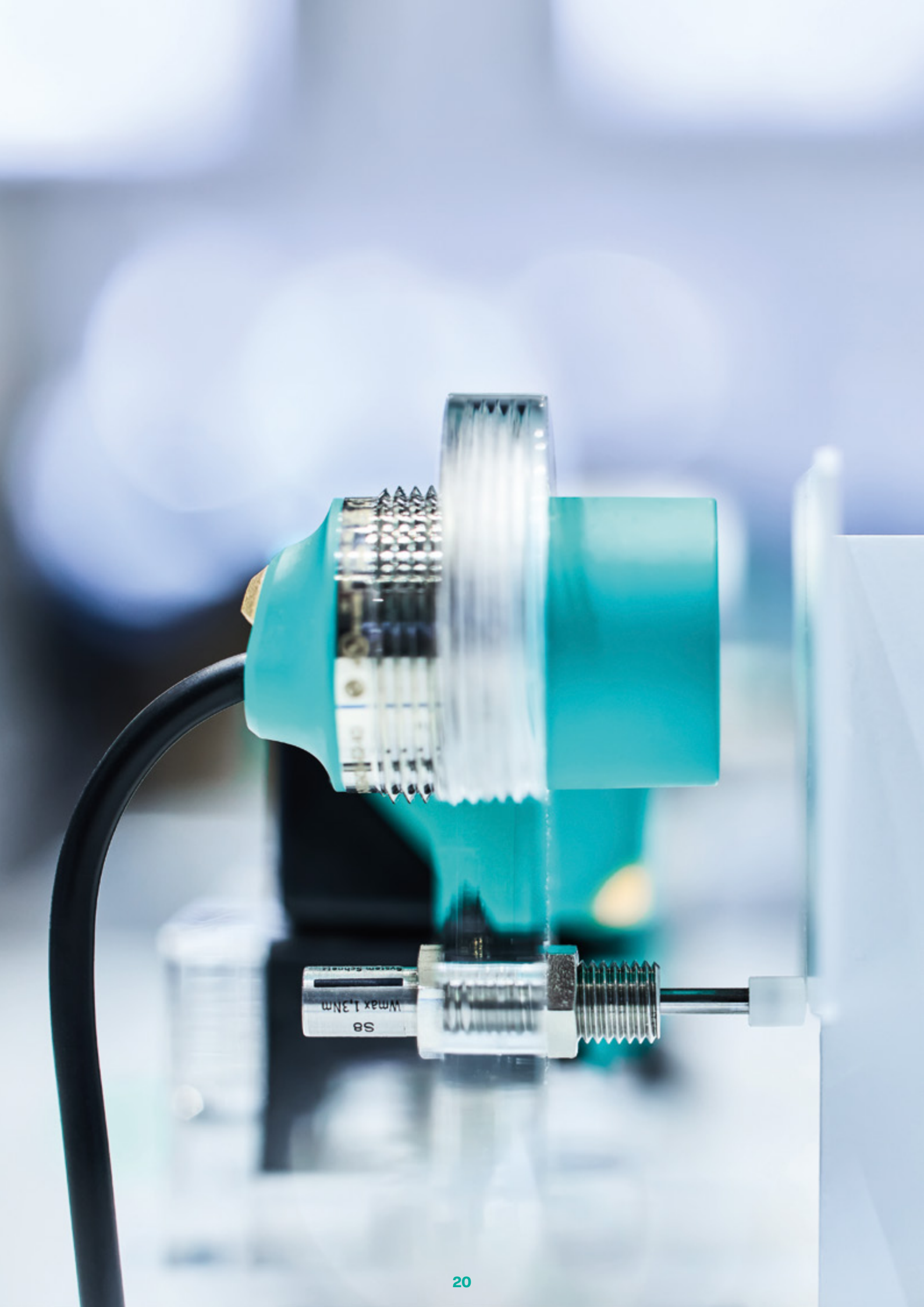


Wind Energy: Flexible and Cost-Effective Rotational Speed Measurement

Cylindrical inductive sensors perform important tasks during power generation in wind turbines. One example is ensuring the rotational speed in the huge turbines' gondolas. The sensors are also used in the rotor blade actuator area to ensure that the blades are properly aligned with the wind.

Inductive sensors not only offer a cost-effective detection option, they can also be installed anywhere due to the enormous variety of housing sizes and designs. The rugged sensor technology also ensures reliability, even under extreme operating conditions.

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Inductive Sensors for Distance Measurement

Committed to Tradition: Continuous Innovation in Inductive Sensor Technology

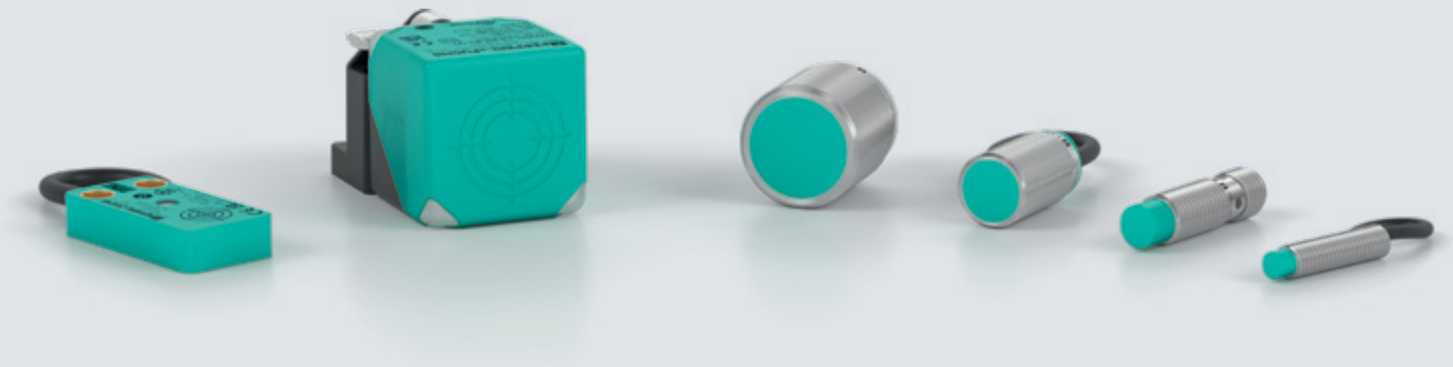
Pepperl+Fuchs has always made inductive sensor technology ready for industrial use. A technology that offers great potential for the future. This also applies to the latest innovation: the inductive distance sensors with speed measurement and IO-Link interface.

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

Inductive Distance Sensors with IO-Link

Inductive Multitasking

The inductive distance sensors with IO-Link determine the speed and acceleration of actuating elements for the first time, enabling predictive maintenance. Unexpected machine and system failures are avoided and maintenance processes can be planned in a more targeted manner.



Speed as a Success Factor

Inductive distance sensors provide precise continuous condition monitoring in high-speed applications. They not only detect the position, but also the speed and acceleration, even at very high object speeds of up to 3 m/s. By parameterizing two measuring windows, differentiated acceleration values can be achieved for precise process monitoring.

For example, changes in acceleration can indicate the condition of wear parts or contamination. With parameterized threshold values, timely warnings can be triggered to prevent damage and unplanned downtime. Through the IO-Link interface, sensors can also integrate process and status data into applications and, in addition to distance values, provide additional information such as temperature and operating times, which enables detailed condition monitoring.

Highlights

- Integrated condition monitoring functions: for example, continuous monitoring of the speed and acceleration of actuating elements
- Enables predictive maintenance of shock absorbers, hydraulic cylinders, valves, etc.
- Comprehensive data and customizable limits for temperature, operating times, and counters via IO-Link
- High measuring speed of up to 3 m/s for the fastest throughput times and increased productivity
- Developed and manufactured in-house, backed by the longest experience on the market, ensuring first-class consulting expertise and continuous innovation

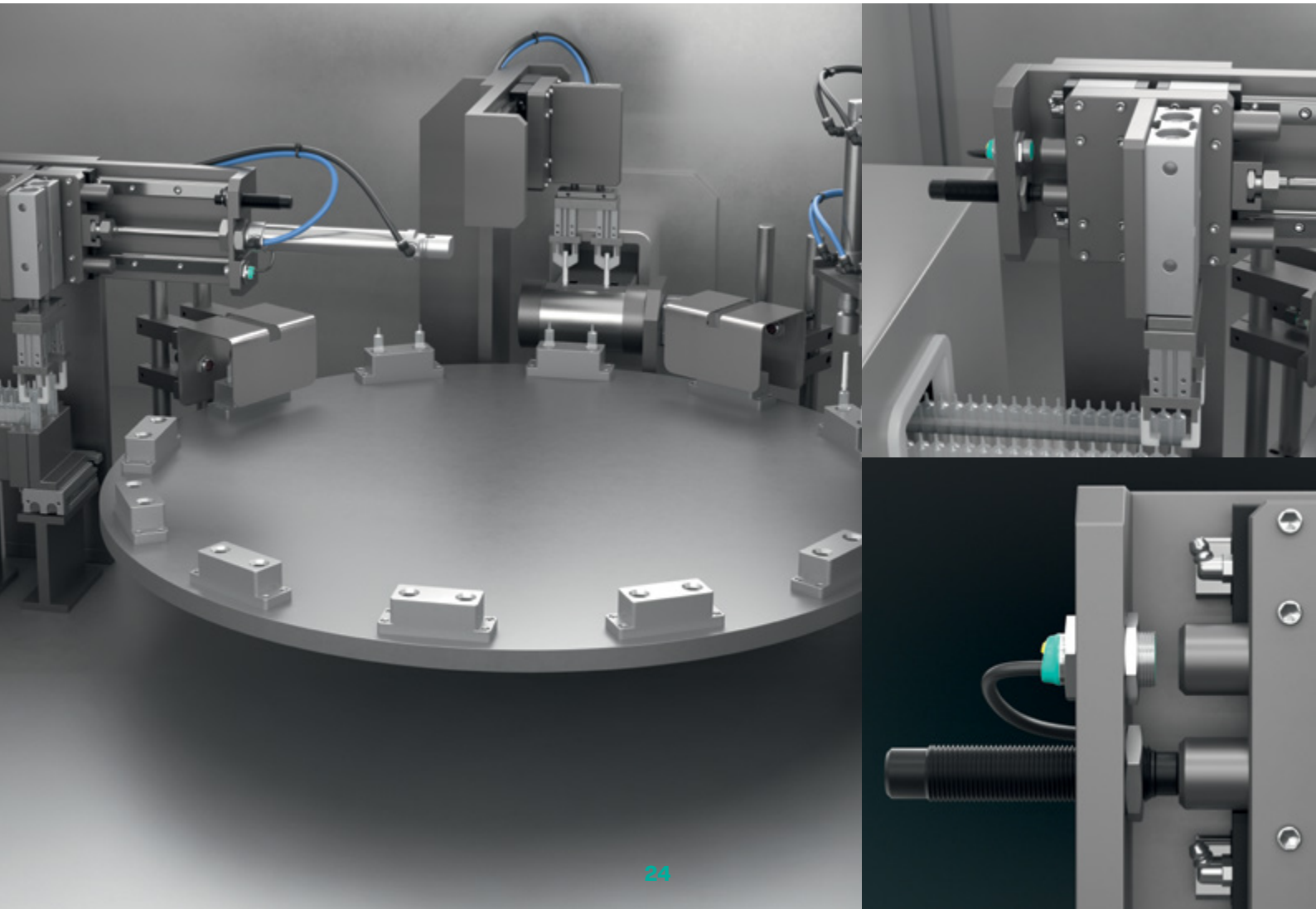
Extract of technical data	M8 Series	M12 Series	M18 Series	M30 Series	F33 Series	L2 Series
						
Search term	NAB*-8GM* NAN*-8GM*	NAB*-12GM* NAN*-12GM*	NAB*-18GM* NAN*-18GM*	NAB*-30GM* NAN*-30GM*	NAB8-F33*	NAN30-L2*
Max. operating distance Flush Nonflush	 2 mm 4 mm	 4 mm 7 mm	 8 mm 12 mm	 10 mm 20 mm	 8 mm	 30 mm
Measurable velocity Flush Nonflush	 0.7 m/s 1.1 m/s	 1.4 m/s 2.1 m/s	 2.7 m/s 3.0 m/s	 2.4 m/s 3.0 m/s	 2.7 m/s	 3.0 m/s
Connection	Cable, M8 plug	Cable, M12 plug	Cable, M12 plug	Cable, M12 plug	Cable	M12 plug
Type of output	IO-Link	Voltage (0–10 V), current (4–20 mA), IO-Link				
Linearity	±3 %					
Repeat accuracy	±5 %					

The Application Always in View

The inductive distance sensors with IO-Link continuously provide differentiated information about moving components. This means that the control system always keeps a close eye on critical process steps in machines and systems.

Continuous Condition Monitoring in High-Speed Applications

The acceleration of an actuating element can be used to draw conclusions about the condition of wearing parts or the degree of contamination. The inductive distance sensors with IO-Link interface always capture this reliably, including in high-speed applications: For example, if a damping element moves more and more slowly, this can be an indication of increasing contamination; increased acceleration can indicate wear or tearing loose after adhesion. This is how the condition of valves, shock absorbers, and other components can be accurately determined. Configurable threshold values can trigger timely warnings to prevent damage, avoid unplanned downtime, and ensure timely maintenance.

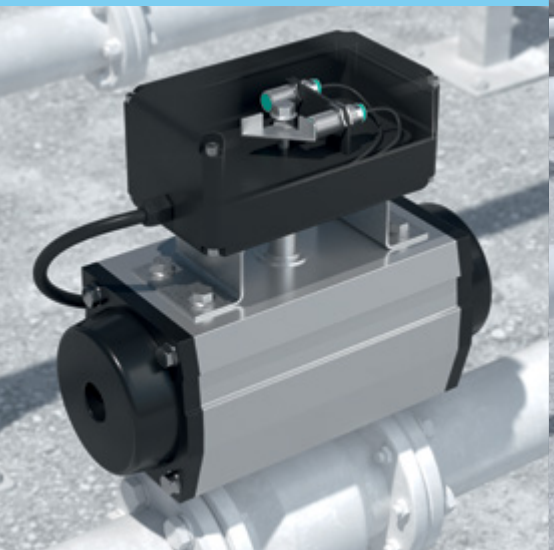


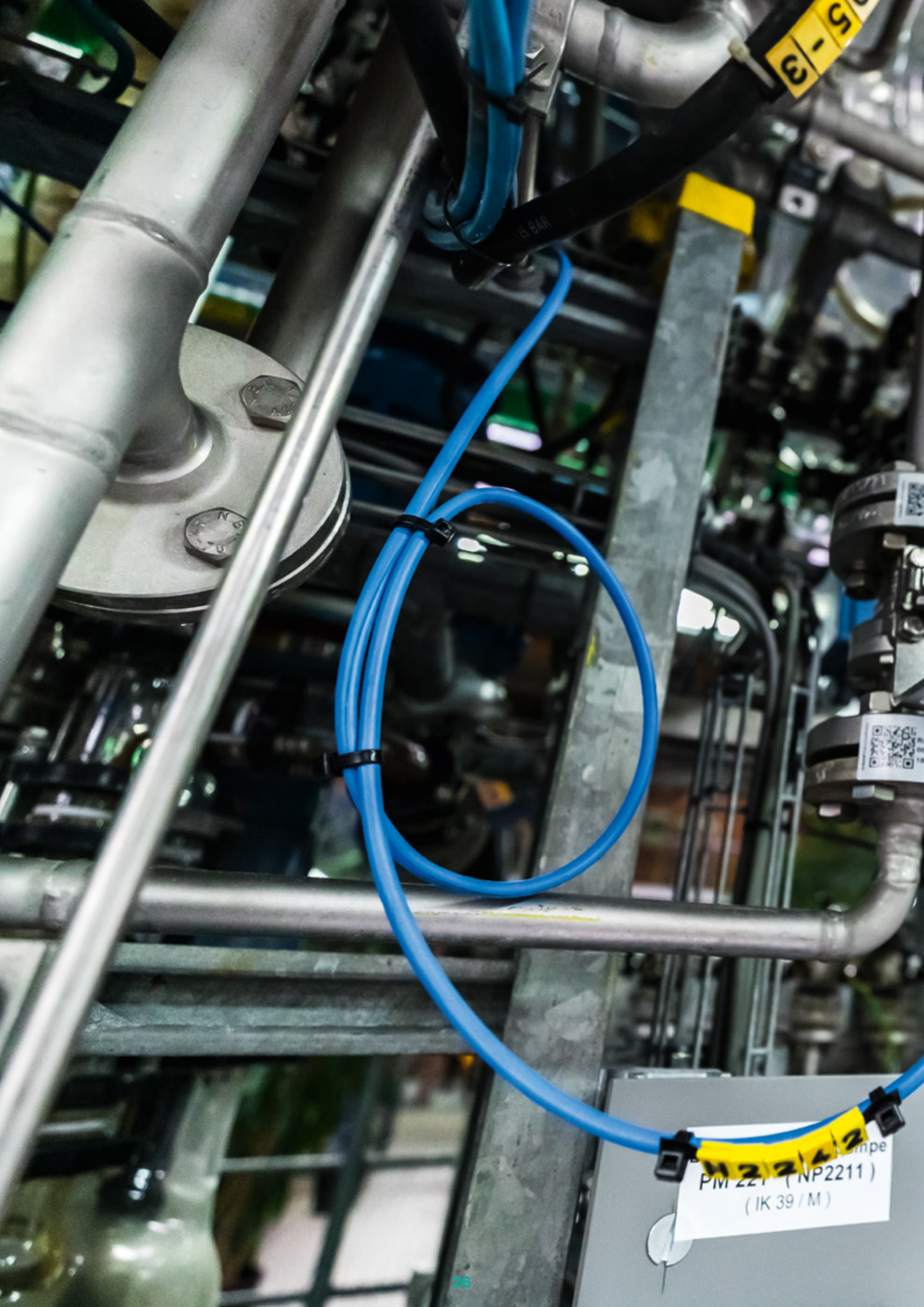
Wear Monitoring for Pick and Place

In pick-and-place applications, such as the production of syringes in the pharmaceutical industry, shock absorbers slow down the movement of certain actuators. At high cycle rates, they inevitably wear out. An inductive distance sensor carries out two speed measurements each time the shock absorber moves and calculates the braking effect as negative acceleration. The degree of wear can be identified based on the measurement data. Maintenance can be planned in a targeted manner to avoid unplanned system downtime.

Valve Position Detection and Progress Analysis

Defined end positions are reached when flaps or valves are opened and closed. Two inductive distance sensors detect not only the valve position, but also the speed of motion. This provides information on soiling and wear of the valve. Predictive maintenance can be planned based on the measured data depending on the condition. Compared to purely time-based cyclical maintenance, this also saves on manpower and costs.

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Inductive Sensors for Specific Requirements

Specialized for the Demands of Any Industry

Inductive sensors are used in virtually every industry, and the requirements they have to meet are as diverse as the application areas they are used in. The automotive industry demands sensors that can handle high temperatures and magnetic fields, while sensors with increased pressure resistance are required in construction machinery. Pepperl+Fuchs offers a range of highly specialized sensors that meet every challenge and are suited to any environmental condition.

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

Wireless Remote Monitoring with a Robust Communication Platform

Smart applications require a solid information base. The autonomous IoT wireless sensors in the WILSEN series provide this without a cable connection: for example, for smart industry, smart city, smart logistics, smart environment, or smart farming. The measurement and diagnostic data is transmitted to the internet via LoRaWAN®.

IoT Wireless Sensors Bring Intelligence to the Field

WILSEN wireless sensors are designed for tough outdoor use and have proven themselves in industrial and municipal applications. Without a cable connection, they reliably provide data on valve position and object presence. Their lithium battery lasts for many years, and data transmission in the globally standardized LoRaWAN® network is extremely energy-efficient. No complex cabling for power supply and control is required.

WILSEN.valve—Monitor Valve Position

WILSEN.valve is equipped with energy-optimized inductive sensors. Depending on the valve type and application, single or double sensors are connected to monitor the valve position and indicate changes. The device allows for the connection of either NAMUR or 2-wire low-power DC sensors. A ready-to-use mounting solution in accordance with EN ISO 5211 with mounting brackets, mounting plates, and complete mounting kits is optionally available. It allows for easy adaptation of the system to the most common valves and fittings.

WILSEN.node—Detecting Object Presence

Various measuring methods can be combined with the WILSEN platform here: For example, up to two inductive or capacitive sensors can detect the presence of target objects such as manhole covers or plastic containers on Kanban racks. This makes the configurable device suitable for a wide range of detection applications. Optionally, 2-wire low-power DC or NAMUR sensors of different technologies can be connected.

Highlights

- 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

Extract of technical data	**WS-VAL-*-F406-B41-01-02**	**WSN-2*-F406-B41-01-02**
		
Sensor types that can be connected	NAMUR single sensors NAMUR dual sensor(s) 2-wire single sensors 2-wire dual sensor(s)	NAMUR sensor(s) 2-wire sensor(s)
Power supply	Replaceable high-power lithium battery, service life up to 10 years 3.6 V, 13,000 mAh	
Interface	LoRaWAN®	
Frequency band	EU868	
Degree of protection	IP66/67	
Temperature range	–25 °C ... +70 °C	

Wireless Sensors

Location-Independent Intelligence

The IoT wireless sensors in the WILSEN.valve and WILSEN.node series are ideal for a wide range of applications. They reliably detect the position of hand lever valves or the presence of objects and can therefore monitor, for example, whether drain and distribution valves are properly closed or whether critical threshold values have been reached in Kanban racks.

Continuous Monitoring of the Valve Position

Monitoring the end position and providing feedback on the position of manual lever valves provides important information for optimizing production processes. In addition, the waste of process heat or products is avoided by additional information, as accidentally opened valves can be quickly identified. WILSEN.valve detects the valve position using a dual inductive sensor with two inductive sensor elements, one for each end position (open/closed). They monitor the position of the actuator and thereby detect the position of the valve.

Guaranteeing Automated Material Supply

In modular flow racks in production logistics, it is important to reliably determine when a reporting limit or critical threshold has been reached. WILSEN.node can be used to solve a wide variety of detection tasks without contact: Capacitive sensors can be used to detect nonmetallic materials such as plastic containers or cardboard boxes, while inductive sensors can detect metallic objects—from small components such as screws to large items. The recorded measurement values are transmitted directly to the desired target system via LoRaWAN®.

Weld-Proof Sensors

Reliable and Resistant

Magnetic-Field and Weld-Spark Resistant

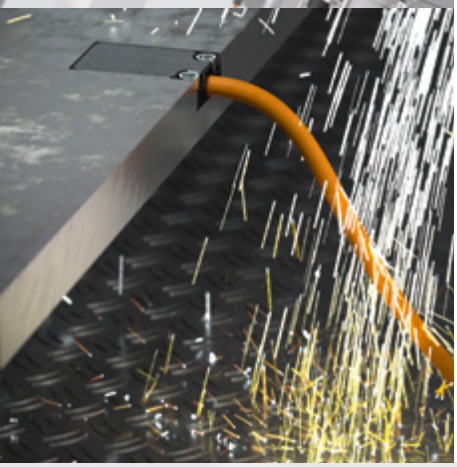
Weld-proof sensors rated up to IP68 are the ideal detection solution in welding areas and other harsh operating environments. Designed with two coupled air-core coils, they are resistant to magnetic fields, such as those that can arise from electric welding or frequency converters. The sensor electronics also ensure immunity to EMC interference. The housing designs ensure durability and availability. PTFE-coated brass sleeves on the cylindrical sensors ensure they are as well protected against welding sparks and metal chips as the cube-style versions made of metal and special weld-proof plastic.

Highlights

- High magnetic-field resistance ensures reliable sensing
- Extreme durability: rugged housing designs (IP67 and IP68) with PTFE coating or weld-proof plastic
- Available with IO-Link
- Many years of experience in the selection and integration of sensors

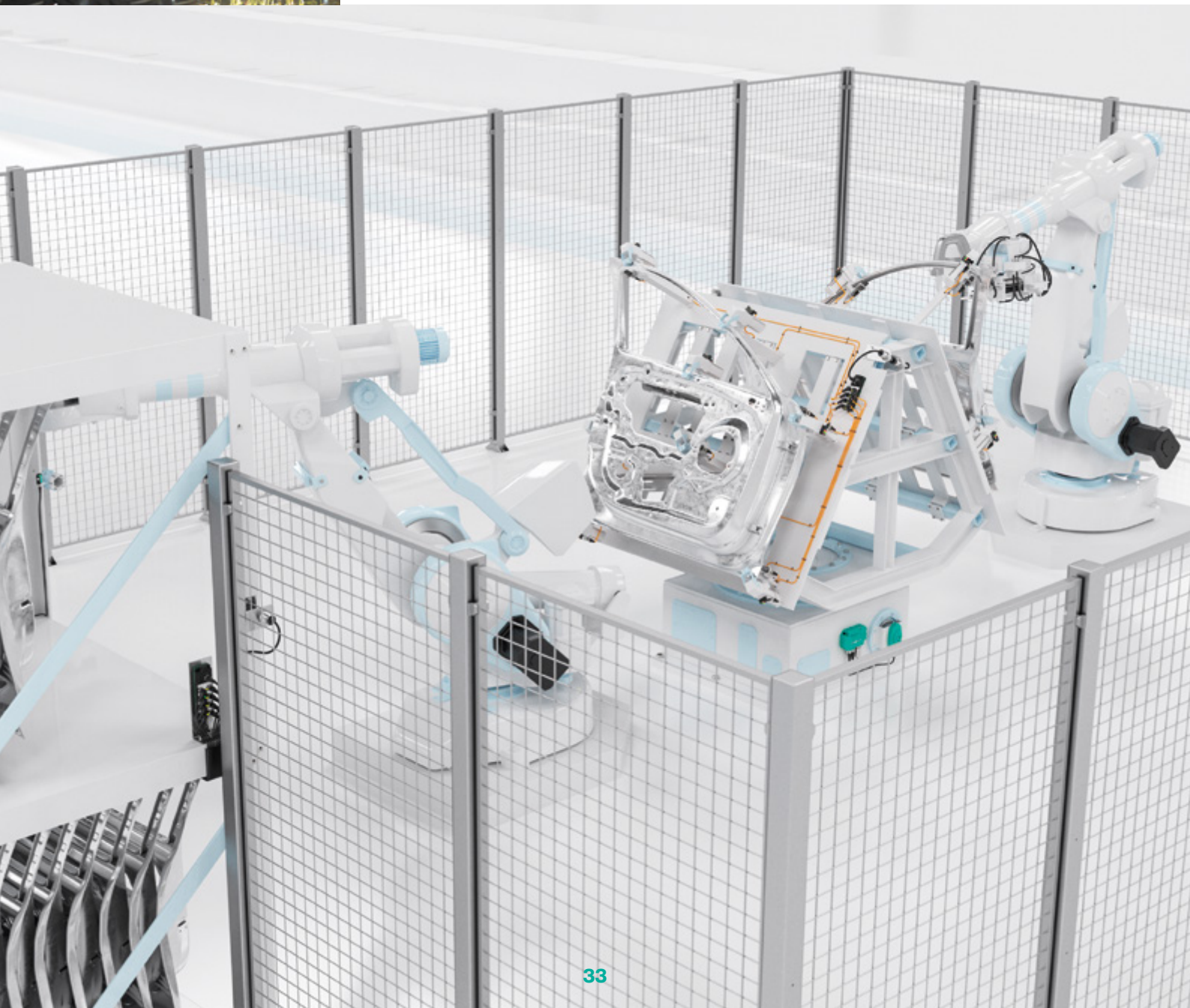
Extract of technical data	M12 series	M18 series	M30 series	F76M series	F104M series	VariKont series	FP series
							
Search term	N*-12GM*-C	N*-18GM*-C	N*-30GM*-C	N*-F76M*-C	NMB6-F104M-E*-C	N*-L3*-C	N*-FP*-C
Max. operating distance Flush Nonflush	 4 mm 10 mm	 12 mm 15 mm	 15 mm 30 mm	2 mm	6 mm	20 mm 40 mm	50 mm 75 mm
Type of output	2-/3-/4-wire PNP, IO-Link			DC 3-wire PNP	DC 3-wire PNP/NPN	AC, DC 3-/4-wire PNP/NPN, IO-Link	DC 3-/4-wire PNP
Housing material	Brass, PTFE coated			Stainless steel 1.4305/AISI 303, coated	Stainless steel 1.4305/AISI 303, coated	PA6 plastic/metal, coated	PBT plastic/metal, coated
Temperature range	–25 °C ... +70 °C	–25 °C ... +70 °C	–25 °C ... +70 °C	–25 °C ... +70 °C	–25 °C ... +70 °C	–25 °C ... +85 °C	–25 °C ... +70 °C
Dimensions	Ø M12	Ø M18	Ø M30	30 × 7.9 × 5.5 mm	32 × 20 × 8 mm	40 × 40 × 67 mm	80 × 80 × 40 mm

Weld-proof sensors are available in standard, reduction factor 1, and metal face versions.



Automotive Industry: Connectivity on Welding Robots

When car body parts are welded, the sensors and cables used need to be resistant to magnetic fields and flying sparks. To ensure fault-free operation, Pepperl+Fuchs offers POC and PUR cables that provide optimal connectivity, even in the immediate vicinity of welding operations. The cables withstand extreme mechanical loads and are resistant to welding beads, temperatures up to 150 °C, as well as oil and chemicals.

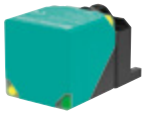


Reduction Factor 1 Sensors

Highly Adaptable, Regardless of Metal Type

Flexible and Reliable in All Areas

The broad Pepperl+Fuchs portfolio of reduction factor 1 sensors enables flexible machine and plant design, with industry-standard cylindrical and cube-style designs, different cable versions, versions with IO-Link, and weld-proof and chemical-resistant special sensors for harsh operating conditions. Customer- and application-specific adaptations offer users the benefit of Pepperl+Fuchs' technical know-how and decades of experience as inductive sensor technology pioneers.

Extract of technical data	M8 series	M12 series	M18 series	M30 series	VariKont series	FP series
						
Search term	NR*-8G	NR*-12G	NR*-18G	NR*-30G	NR*-L3*	NR*-FP
Max. operating distance Flush Nonflush	 2 mm 6 mm	 4 mm 10 mm	 8/12 mm 15 mm	 15 mm 30 mm	 20 mm 35/40 mm	 50 mm 70 mm
Switching frequency Flush Nonflush	 4,000 Hz 2,500 Hz	 2,400 Hz 1,500 Hz	 1,400 Hz 600 Hz	 750 Hz 300 Hz	 100 Hz 100 Hz	 80 Hz 75 Hz
Type of output	3-wire PNP NO contact	3-wire PNP, NPN NO, NC 4-wire PNP, NPN, complementary, IO-Link				3-wire PNP NO contact, 4-wire PNP, complementary
Housing material	Stainless steel V2A, LCP Brass, PTFE-coated, LCP		Stainless steel V2A, PBT Stainless steel V4A, LCP Brass, PTFE-coated, PPS		GD-ZnAl4Cu1-coated, PA 6 Grivory	PBT/metal, PTFE-coated
Dimensions	Threaded sleeve M8 × 1 Smooth sleeve 6.5 mm	Threaded sleeve M12 × 1	Threaded sleeve M18 × 1	Threaded sleeve M30 × 1.5	40 × 40 × 40 mm (VariKont L) 40 × 40 × 120 mm (VariKont)	80 × 80 × 40 mm

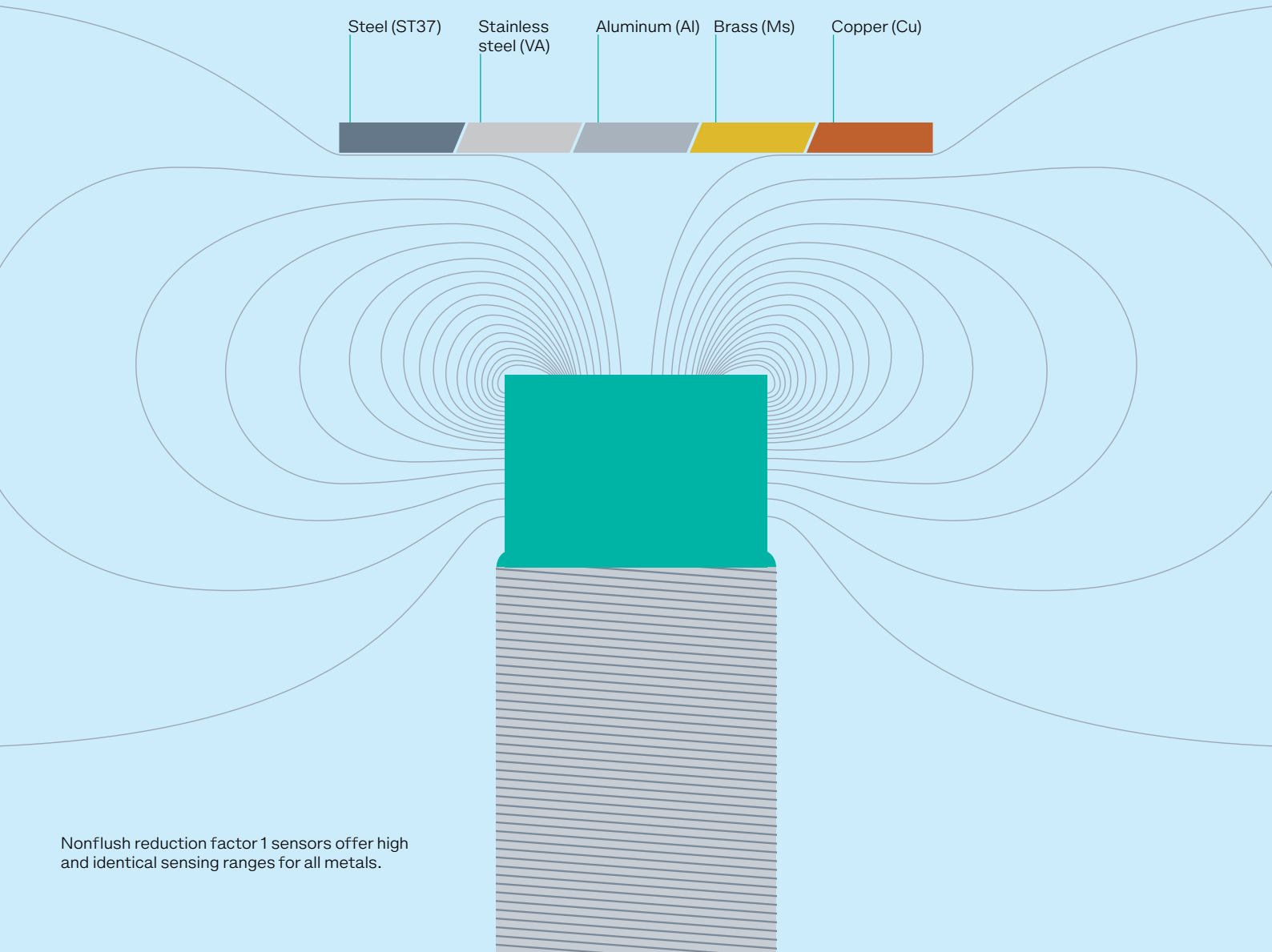
Standard, IO-Link, and weld-resistant versions available.

Ideal for Applications with Variable Objects

Starting with steel, the sensing ranges of conventional inductive sensors decrease by a certain reduction factor from metal to metal. This is not the case with reduction factor 1 sensors. They offer identical sensing ranges for all metals with a single sensor. This enables more flexible machine design and use in applications with variable objects. Using a single sensor instead of multiple sensors reduces procurement, storage, and administrative costs. In addition, reduction factor 1 sensors offer high resistance to magnetic fields arising from welding fields and frequency converters.

Highlights

- Complete solution from a single source: comprehensive IO-Link portfolio of standard and special sensors, as well as associated infrastructure
- Predictive maintenance with IO-Link features such as stability alarm and temperature indicator
- Wide range of sensors for material-independent detection of metallic objects with identical sensing range
- Highly rugged and weld-proof sensors rated up to IP68/IP69K for use in harsh industrial environments



Nonflush reduction factor 1 sensors offer high and identical sensing ranges for all metals.

Metal Face Sensors

Perfect for Harsh Conditions

Resistant to Heavy Loads and Forces

In extremely harsh industrial environments, inductive sensors are often exposed to mechanical stress that can shorten their life cycle. For example, when used in machine tools, high forces, abrasion, and aggressive chemicals take a toll on sensors. For such applications, Pepperl+Fuchs offers metal-face sensors that feature a self-contained stainless-steel housing with a metal sensing face.

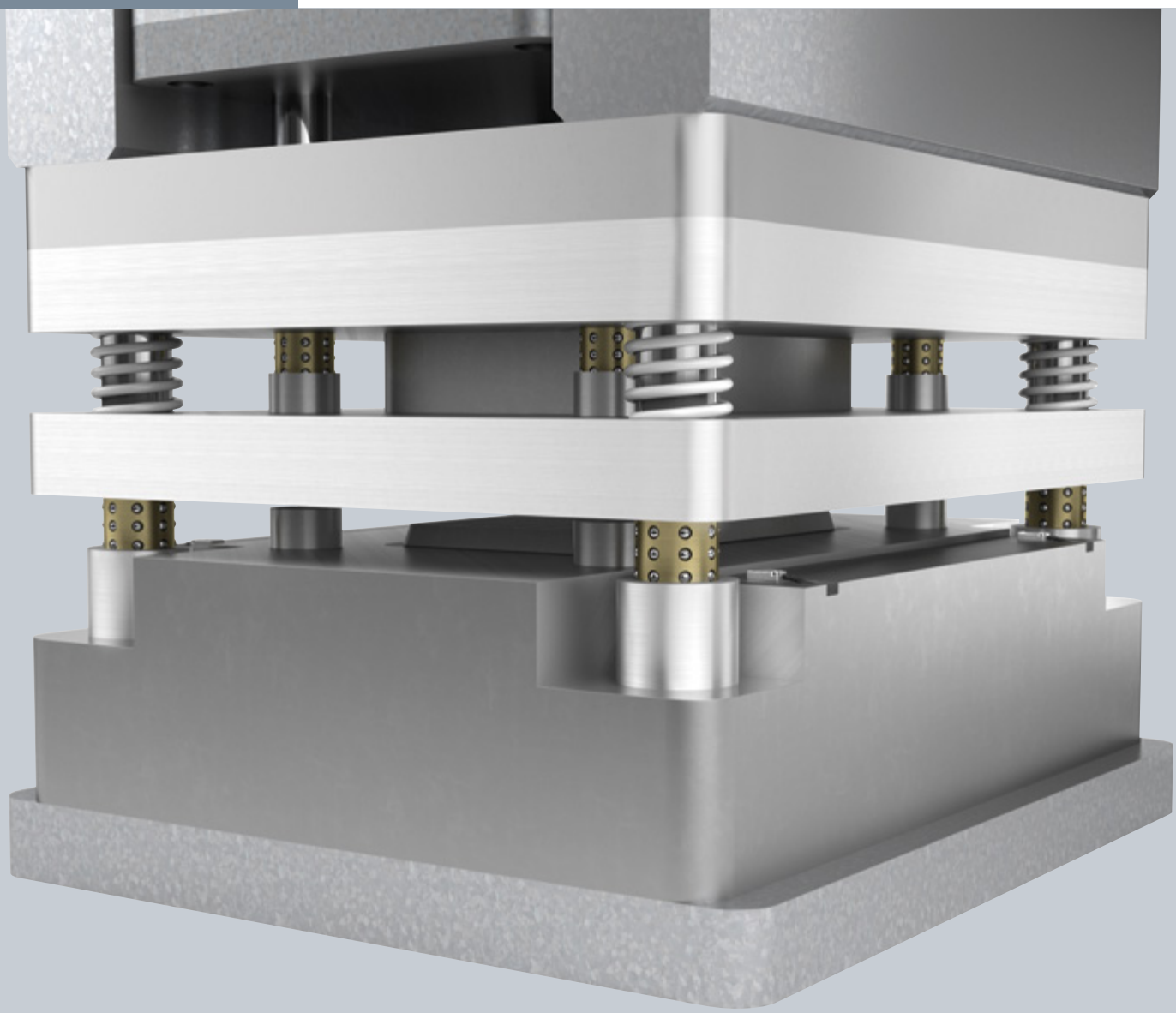
Highlights

- Resistant to harsh ambient conditions such as humidity and mechanical shock
- A self-contained, stainless-steel housing with metal sensing face ensures corrosion resistance, impermeability, pressure resistance, resistance to wear, durability, reliability, and increased plant availability
- C-series metal face sensors are resistant to weld spatter
- Extended sensing range

Extract of technical data	F104M series	F76M series	8GM series	12GM series	18GM series
					
Search term	NMB6-F104M-E*	NMB2-F76M*	NMB3-8GM*	NMB5-12GM*	NMB10-18GM*
Max. operating distance Flush	6 mm	2 mm	3 mm	5 mm	10 mm
Type of output	DC 3-wire PNP/NPN	DC 3-wire PNP	DC 3-wire PNP/NPN		
Housing material	Stainless steel 1.4305/AISI 303				
Dimensions	32 × 20 × 8 mm	30 × 7.9 × 5.5 mm	Ø M8	Ø M12	Ø M18

Metal Forming: Reliable Detection of Fault States

In metal forming, panels are fed into a cutting die in a press. The die pierces through the material to produce the desired contours. By means of spring force, a stripper plate prevents the metal panel from getting stuck in the cutting die when the press opens. If this stripper plate does not return to the home position after the die-cutting operation, a metal panel could still be in the mold cavity. The process must be stopped immediately to prevent downtime and costly damage to the die. Metal face sensors provide reliable detection despite contact and shocks.



Pressure-Resistant Sensors

Effective Under Pressure

Rugged and Resilient

Pressure-resistant inductive sensors are typically used to detect components in applications that involve high hydraulic and pneumatic pressures—such as end position detection of pistons. The required pressure resistance is achieved by means of a ceramic sensing face that is embedded in a stainless-steel housing (which enables a flush mount).

Pepperl+Fuchs offers several sensors that are designed to withstand operating pressures of up to 500 bar and pressure peaks of up to 1,000 bar. In addition, the portfolio offers models with different sensing ranges, designs, and output and connection options to ensure optimal solutions.

Highlights

- Extremely rugged design for pressures up to 1,000 bar
- Optimized portfolio—tailored to applications in hydraulic and pneumatic cylinders
- Different sensing ranges and output and connection options ensure optimal solutions

Extract of technical data	12GM series	18GM series
		
Search term	NCB1,5-12GM*	N*-18GM*-D
Max. operating distance Flush	1.5 mm	1.5 mm
Type of output	PNP, DC 3-wire	PNP, NAMUR
Electrical connection type	M12 × 1 connector plug	M12 × 1 connector plug, fixed cable
Housing material	Stainless steel 1.4305/AISI 303 (V2A)	
Temperature range	–25 °C ... +100 °C	–25 °C ... +85 °C –35 °C ... +80 °C (NAMUR)
Dimensions	Ø M12	Ø M18

Hydraulic Applications: Reliable, Even Under High Pressure

Pressure-resistant sensors are found in the pneumatic controls of production lines, cylinders in truck tilting devices, and hydraulic cylinders on excavator arms. To precisely control such machines and identify critical operating states, it is crucial to reliably detect defined piston positions at all times. For this purpose, sensors are screwed directly into the cylinder housing and detect the piston rod or piston itself. The active surface of the proximity sensor is in direct contact with hydraulic oil and is subject to the full pressure of the system, with peaks of up to 1,000 bar. Only extremely resistant sensors can be used in such applications. Equally important are quick mounting and the reliability of measured values.

High-Temperature Sensors

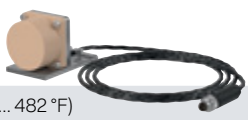
High Performance Under Extreme Conditions

Inductive Sensor Set for High-Temperature Ranges

The inductive sensors of the F135 series from Pepperl+Fuchs enable reliable object detection at temperatures of up to 250 °C. With an operating distance of up to 50 mm, they are ideal for applications such as industrial paint curing ovens in the automotive industry. The minimal temperature drift and long service life ensure high operational reliability in harsh environments. In the event of maintenance, the sensor head can be easily replaced without re-parameterization. The F135 series is characterized by flexible connection options and selectable cable lengths from 1 to 30 m. Due to IO-Link, users receive important status information, including limit value warnings and operating hours, enabling predictive maintenance. With the synchronization of multiple sensors and the possibility of plug-and-play operation, the F135 series is a future-oriented solution for demanding production environments.

Highlights

- Robust object detection under extreme temperatures of up to 250 °C
- Increased flexibility due to large operating distance of up to 50 mm
- Trouble-free operation even when the sensor heads are connected directly due to automatic synchronization
- Plug-and-play: simple commissioning and replacement of the sensor head in the event of maintenance

Extract of technical data	NBN25-F135-250-*M-V31 NBN25-F135-250-L4	NBN50-F135L-250-*M-V31 F135-M18-E2-IO-V31-V1	F135-M18-E2-IO-V31-V1
			
Ambient temperature	0 ... 250 °C (32 ... 482 °F)		0 ... 70 °C (32 ... 158 °F)
Dimensions	44 × 40 × 67 mm	69 × 65 × 74 mm	109.5 mm (L), 18 mm (Diameter)
Max. operating distance	25 mm	50 mm	–
Interface type	–	–	IO-Link
Switching frequency	0 ... 30 Hz		
Connection type	Fixed cable with plug		Connector plug
Degree of protection	IP65, IP50 (LEMO connector)	IP65, IP50 (LEMO connector)	IP67

Automotive Industry: Continuous Use in High Temperatures

High-temperature sensors have been relied on in automotive applications for many years. Their main field of application is in drying ovens. At the transfer points between conveyor systems in the oven, sensors detect skids and confirm their entry. The speed of the skids can likewise be controlled by the frequent signals from the sensors.

A New Chapter in Safety

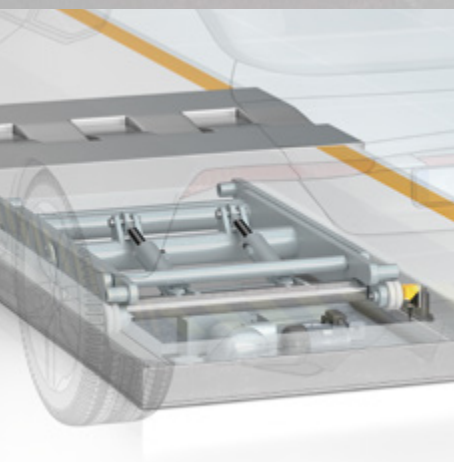
Intelligent Technology, Simple Operation

Pepperl+Fuchs inductive safety sensors come with SIL 2 functional safety and PL d Machinery Directive approvals. With redundant implementation, even SIL 3/PL e can be achieved. High characteristic safety values enable easy integration into the safety loop and prolong operating intervals. With intelligent electronics, the sensors do not have a dead band. This means that no minimum distance needs to be maintained between the sensor and the target. Simple standard metal targets can be used for detection; no special coding is required. A standardized OSSD interface and comprehensive safety documentation ensure quick and easy integration of the new safety sensors.

Highlights

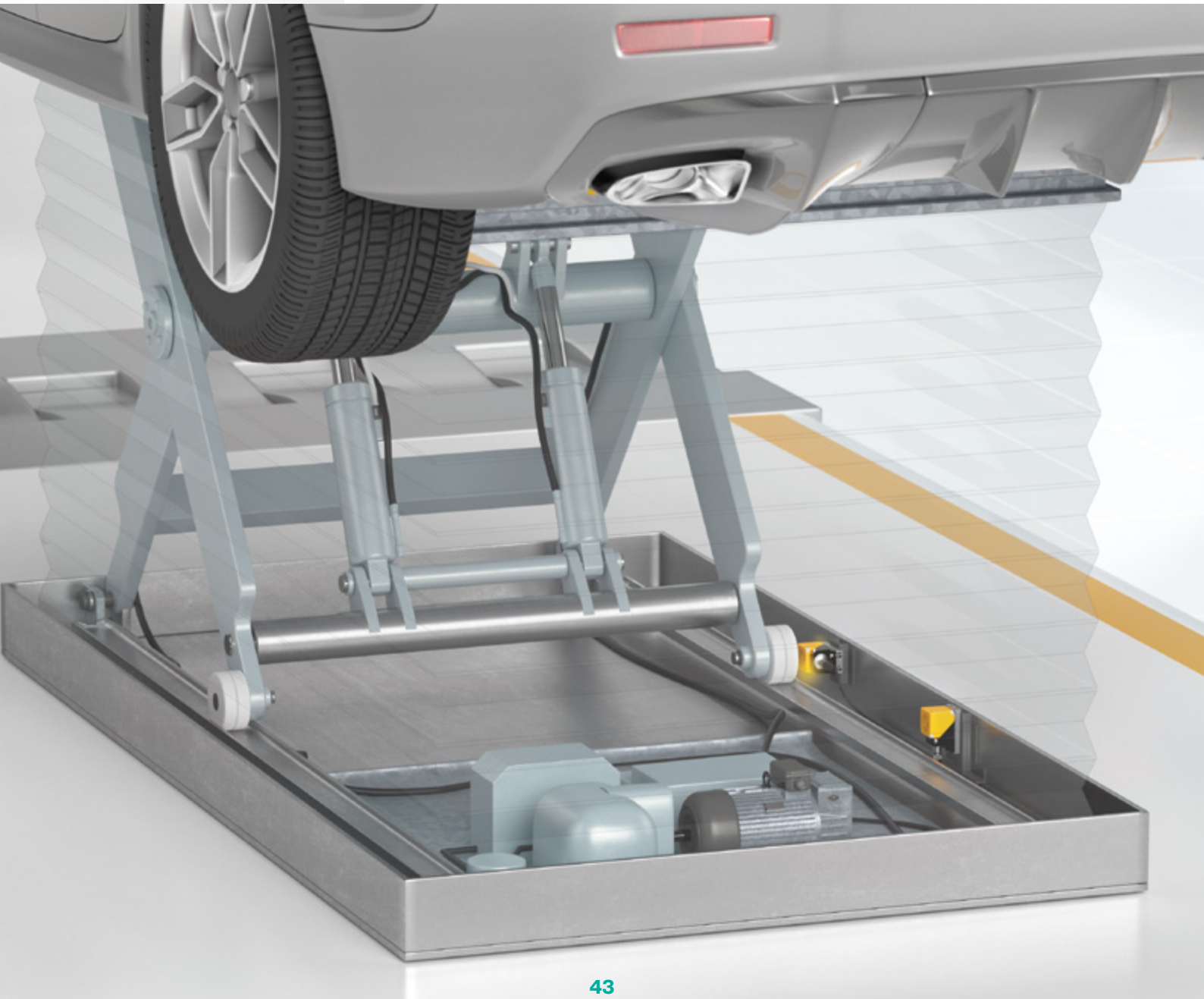
- OSSD interface for direct connection to the safety control or I/O module
- Use of standard metal actuators with no dead band in front of the sensor—no adjustment required
- Ideal for demanding applications with extended voltage and temperature range as well as E1 approval
- High safety values for reduced inspection intervals and easier integration into the safety loop

Extract of technical data	12GM/GH series	18GM/GH series	30GM/GH series	VariKont L2M series
				
Search term	NS*-12G*	NS*-18G*	NS*-30G*	NS*-L2M*
Max. operating distance Flush Nonflush	 2 mm 4 mm	 5 mm 8 mm	 10 mm 15 mm	 15 mm 20 mm
Type of output	DC, OSSD			
Connection	M12, cable connection			M12
Temperature range	–20 °C ... +70 °C, –40 °C ... +85 °C (M1)			–20 °C ... +70 °C
Approvals	PL d/SIL 2 (red. PL e/SIL 3), CE, UL, E1			PL d/SIL 2 (red. PL e/SIL 3), CE, UL
Housing material	Brass, stainless steel (V4A)			Plastic (PA)
Dimensions	Ø M12	Ø M18	Ø M30	40 × 40 × 40 mm

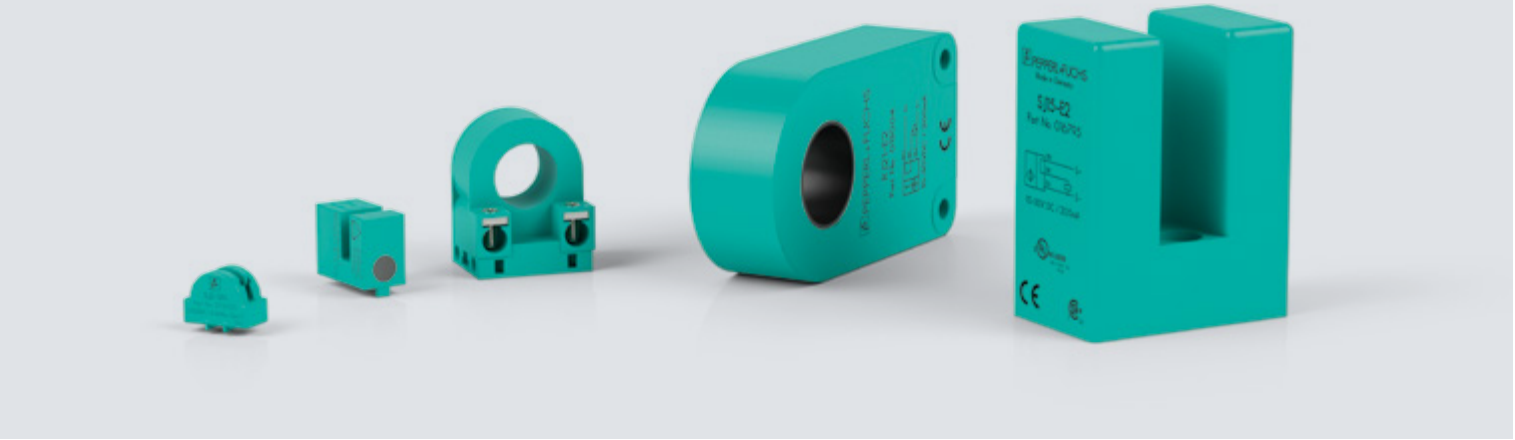


Automotive Industry: Reliable End Position Detection

In production environments, the protection of people and machines is the top priority—this is precisely where the Pepperl+Fuchs safety sensors are used. They ensure that welding operations can only be carried out when the protective doors of the welding cells are closed. On scissor lift tables in production lines, they ensure reliable end position detection in accordance with SIL 2/ PL d. As soon as the table is extended, the sensors check that the correct end position has been reached.



Special Designs for Special Tasks



Slot and Ring Sensors, Adapted to Specific Installation Conditions

Sensors with a special housing design are required for unique application requirements. Ring sensors, for example, are equipped with a circular coil to detect the flow of materials through a ring. As soon as a metallic object is inside this ring, the sensor is activated. These sensors are typically used to detect and count small metal parts.

Special designs also include inductive slot sensors, which consist of two opposing coil systems. They are used to detect a target between the slot walls of the sensor and are ideal for pointer monitoring in flowmeters, among other applications.

Slot Sensor Highlights

- Compact design for a wide range of applications
- Meet functional safety criteria (SIL 2/SIL 3) according to IEC 61508
- LED for visual function verification

Ring Sensor Highlights

- 10 mm and 15 mm diameter for applications in flow transmitters
- Highly reliable NAMUR electronics

Extract of technical data	RC series	RJ series	SJ2 series	SJ15 series	SJ15 series
					
Search term	RC*-14-N*	RJ*-*	SJ*-*N*	SJ*-E*	SJ*-A*
Ring diameter	10 mm, 15 mm	15 mm, 21 mm, 43 mm	–	–	–
Slot width	–	–	2 mm, 3.5 mm, 5 mm, 10 mm, 30 mm	10 mm, 15 mm	15 mm, 30 mm
Temperature range	–20 °C ... +100 °C –25 °C ... +70 °C	–25 °C ... +70 °C	–25 °C ... +100 °C –50 °C ... +100 °C	–25 °C ... +70 °C	–25 °C ... +70 °C
Type of output	NAMUR, bistable	NAMUR 3-wire PNP, NO contact	NAMUR Safety NAMUR	3-wire PNP 3-wire NPN	4-wire PNP, complementary 4-wire NPN, complementary
Approvals	ATEX, cULus	ATEX, cULus	cULus, SIL 2/3, ATEX, IECEx, cULus-hazardous location and more	cULus	cULus

Limit Detection on Flowmeters: NAMUR Ring Sensors

Pepperl+Fuchs offers special ring sensors for determining the limit values in glass cone variable area flowmeters. The sensors are available with internal diameters of 10 mm and 15 mm, and their sensitivity is designed for common damping bodies. The limit value signal is absolutely reliable in monostable or bistable operation. The bistable sensors detect whether the float is above or below a sensor. They can be operated with standard NAMUR amplifiers and do not require a separate control unit.

High-End Components for Hazardous Areas

Advanced Sensor Technology for Demanding Tasks

Ever since inventing the proximity sensor, Pepperl+Fuchs has continuously developed and perfected the technology. The result is a comprehensive range of sensors in all designs and housing materials with a wide variety of detection ranges. With high degrees of protection, extended temperature ranges, or extreme pressure resistance, they are ideally suited for demanding applications in hazardous areas. Valve position detection and limit value monitoring are typical applications. With the widest-ranging expertise on the market and a complete portfolio, Pepperl+Fuchs can always offer an optimal solution for these application requirements and more.

Highlights

- Cylindrical sensors with diameters from 4.5 mm to 30 mm
- Slot sensors with a slot width from 2 mm to 30 mm
- Cube-style sensors with sensing ranges from 1.5 mm to 50 mm

Extract of technical data	12GM/GK series	18GM/GK series	30GM/GK series	V3 series	L2 series	VariKont series	FP series
							
Search term	N*-12G*-*N*	N*-18G*-*N*	N*-30G*-*N*	N*-V3-N*	N*-L2-N*	N*0-U*-N*	N*-FP-*N*
Max. operating distance Flush Nonflush	 2 ... 4 mm 4 mm	 5 ... 8 mm 8 mm	 4 ... 15 mm 15 mm	 3 mm 4 mm	 20 mm 40 mm	 20 mm 40 mm	 40 mm 50 mm
Temperature range	–50 °C ... +100 °C	–40 °C ... +150 °C	0 °C ... +200 °C –25 °C ... +150 °C –50 °C ... +100 °C	–25 °C ... +100 °C		–40 °C ... +100 °C	
Type of output	NAMUR, Safety NAMUR			NAMUR		NAMUR, Safety NAMUR	
Housing material	Stainless steel V2A, PBT plastic			PBT plastic	PA plastic	PA or PBT plastic	PBT plastic, optionally with metal base
Approvals	cULus, SIL 2/3, ATEX, IECEx, cULus-hazardous location, and more			cULus, SIL 2, ATEX, IECEx, cULus-hazardous location, and more		cULus, SIL 2/3, ATEX, IECEx, cULus-hazardous location, and more	

Oil and Gas Industry: Presence Monitoring

Oil production on offshore platforms does not just place great demands on people. The technology used there is also exposed to extreme weather conditions, corrosive atmospheres, and massive vibration. Since extraction is carried out at depths of up to several thousand meters, various drill pipes are required. A pipe handler transports the pipes from the interim storage location to the drilling device. An inductive sensor is used during this process to monitor whether the gripping unit has actually picked up a drill pipe and whether it is present during the entire supply process. A highly resistant sensor from the VariKont series—in a rugged housing with an extended temperature range of –40 °C to 100 °C—is used to provide
the perfect match even for extreme offshore conditions.

Sensors for Valve Position Detection

Ruggedness Meets Innovation

Innovative Solutions for Valve Position Detection

Pepperl+Fuchs developed the unique concept of the dual sensor for position detection on valves. It combines two adjacent or overlapping inductive sensor elements that detect the position of an actuator to determine the position of the valve (open/closed). The innovative concept reduces installation costs, and the wear-free noncontact sensing technology ensures that the devices are extremely durable and low-maintenance. Suitable actuators are available for the entire range of modern drives. This includes rugged models with highly visible valve position indicators that consist of an actuator and two-color visual on/off display.

Highlights

- Easy to mount on standard valve actuators without the need for additional mounting aids
- Open solution with integrated high-visibility valve position indicator
- Flexible, modular housing design
- Tightly sealed thanks to inductive, noncontact detection of the valve position

Extract of technical data	F25 series		F31 series		F31K2 series
					
Search term	N*-F25*	N*-F25K*	N*-F31*	N*-F31K*	N*-F31K2*
Type of output	3-wire DC, 2-wire DC (small residual current), NAMUR		3-wire DC, 2-wire DC, NAMUR, AS-Interface		3-wire DC, 2-wire DC (small residual current), NAMUR
Housing material	Glass fiber reinforced plastic				Glass fiber reinforced plastic or translucent plastic, aluminum
Temperature range	–25 °C ... +70 °C				–40 °C ... +70 °C
Degree of protection	IP67				IP66, 67, 69K
Certification	NAMUR (Ex i)		NAMUR (Ex i), SIL 2		NAMUR (EX i), SIL 2, 2-wire, DC (Ex nA, Ex tc), small residual current, 3-wire, DC (Ex nA, Ex tc)

Solutions for Valves of All Types and Sizes

The valve position detection portfolio consists of three sensor series. Depending on the drive size, these can be combined with one of two actuators to ensure the optimal solution for any application requirement. The F25/F25K series is used for small basic applications, such as manual valves in indoor areas. It is available as a cable, plug, or terminal compartment version and combines the two sensor elements in the smallest possible space.

The F31/F31K series is used in applications on standard valve actuators in indoor and outdoor areas. It is easy to install and is also available for hazardous areas. The F31K2 series is designed for outdoor use. It combines high flexibility, ruggedness, and excellent performance—even under extreme conditions.

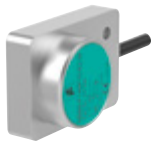
Specialists for Mobile Equipment

Reliability under the Toughest Conditions

Applications in the mobile equipment sector place highly specific demands on sensor technology. In addition to approval for road traffic (E1 type approval), these proximity sensors must also have electromagnetic compatibility. Other typical requirements include high impermeability, resistance to shock, vibration, and chemicals, and an extended temperature range of –40 °C to +85 °C. With this in mind, Pepperl+Fuchs offers an extensive portfolio that guarantees maximum flexibility. The selection includes exceptionally rugged devices which, thanks to a special internal test procedure, ensure a level of impermeability beyond the IP68 standard—a new benchmark in quality.

Highlights

- Maximum mechanical and electrical properties for reliable operation in the harshest outdoor conditions
- Optimized for mobile equipment (E1 type approval for use on public roads)
- Comprehensive portfolio and application-specific adaptations for maximum flexibility in sensor selection
- The highest quality standards (internal testing according to criteria far beyond the normative requirements)

Extract of technical data	12GM series	18GM series	30GM series	F148 series
				
Search term	N*-12G*-M1	N*-18G*-M1	N*-30G*-M1	N*-F148-*-M
Max. operating distance Flush Nonflush	 4 mm 8 mm	 8 mm 12 mm	 15 mm 25 mm	 15 mm 25 mm
Temperature range	–40 °C ... +85 °C			
Type of output	PNP, NPN, DC 3-wire			
Housing material	Brass nickel-plated			Anodized aluminum
Dimensions	Ø M12	Ø M18	Ø M30	50 × 35 × 20 mm

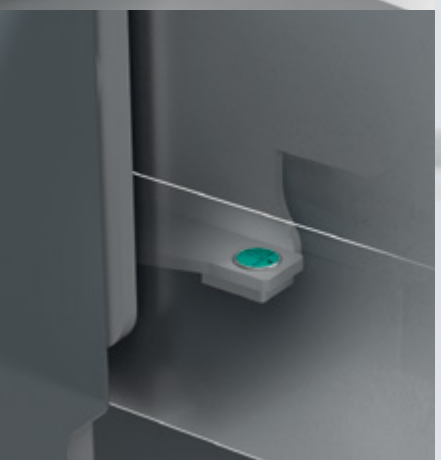
Mobile Machinery: Position Monitoring for Safe Workflows

To prevent tipping as mobile cranes lift and move loads of several tons, the vehicles must be secured. To this end, the cranes have support legs that are extended according to the terrain and the load. Inductive sensors are used to monitor the position of the extended/retracted support legs.

For such applications, Pepperl+Fuchs offers a flat proximity sensor that is ideal for installation in the limited space between the vehicle trim and the support leg. With a heavy-duty design and approval for road traffic, the sensor also ensures reliability and safety in mobile agriculture, forestry, construction, and mining machines.

Rugged Connection Technology for Mobile Applications

The Mobile Equipment Connectivity (MEC) series from Pepperl+Fuchs has been consistently designed for use in the harshest environmental conditions and offers maximum reliability in mobile applications.



Capacitive Sensors

Reliable Detection of Nonmetallic Objects

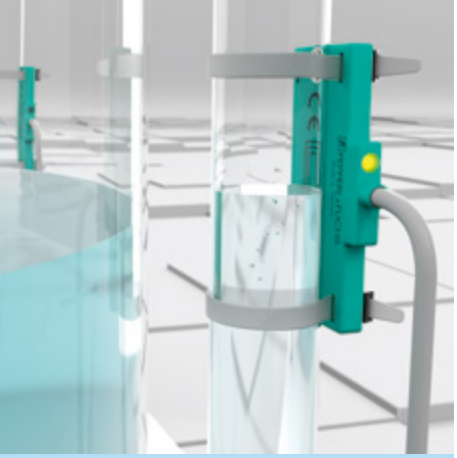
Durable and Rugged

Capacitive sensors are the perfect solution for detecting nonmetallic objects and substances. Whether for liquids, granules, paper, or wood, they reliably monitor the fill level in production processes. A vast array of designs and sensing ranges ensures flexible use in virtually every kind of application. In the agricultural industry or wood processing industry, they are used to monitor the fill level of liquids and solids. In process engineering in the chemical and pharmaceutical industries, they enable reliable detection of materials in plastic containers. Particularly rugged, durable versions made of stainless steel or chemically resistant housing material are available for use in harsh industrial environments.

Highlights

- Maximum quality standards in sensor production ensure application reliability
- Optimal solution for detecting nonmetallic objects
- Extreme ruggedness and durability, perfect for use in harsh industrial environments
- Application-related advice at the highest technical level

Extract of technical data	12GH/GK series	18GS/GK series	30GS/30GK series	F46 series	F64 series	FP series
						
Search term	C*-12G*	C*-18G*	C*-30G*	CB*-F46*	CBN15-F64*	CBN60-FPA*
Max. operating distance Flush Nonflush	 4 mm 8 mm	 8 mm 15 mm	 10 mm 15 mm	 10 mm	 15 mm	 60 mm
Type of output	DC 3-wire PNP/NPN NAMUR	DC 3-wire PNP/NPN NAMUR	DC 3-/4-wire PNP/NPN NAMUR	DC 3-wire PNP/NPN	DC 3-/4-wire PNP/NPN	DC 3-wire PNP
Housing material	PBT plastic/stainless steel 1.4404/AISI	PBT plastic/stainless steel 1.4305/AISI 303	PBT plastic/stainless steel 1.4305/AISI 303	PBT plastic	PBT plastic	PPE plastic
Dimensions	Ø M12	Ø M18	Ø M30	50 × 20 × 5 mm	40 × 25 × 12 mm	105 × 80 × 40 mm



Precise Fill Level Monitoring

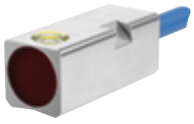
To prevent plant shutdowns in liquid and powder mixing plants, it is necessary to continuously check whether there is sufficient media in containers. Here, F46 series sensors are used: As soon as a defined fill level is reached, the capacitive sensors send a message to the control system to initiate refilling. In tanks made of nonconductive material, the capacitive sensors can also determine the fill level from the outside. Extremely slim housing designs and the versatile mounting holes make the sensors easy to mount. Highly visible LEDs indicate whether a substance is detected or not.

Multipurpose Sensors for Demanding Tasks

Fast Processes, High Sensing Ranges

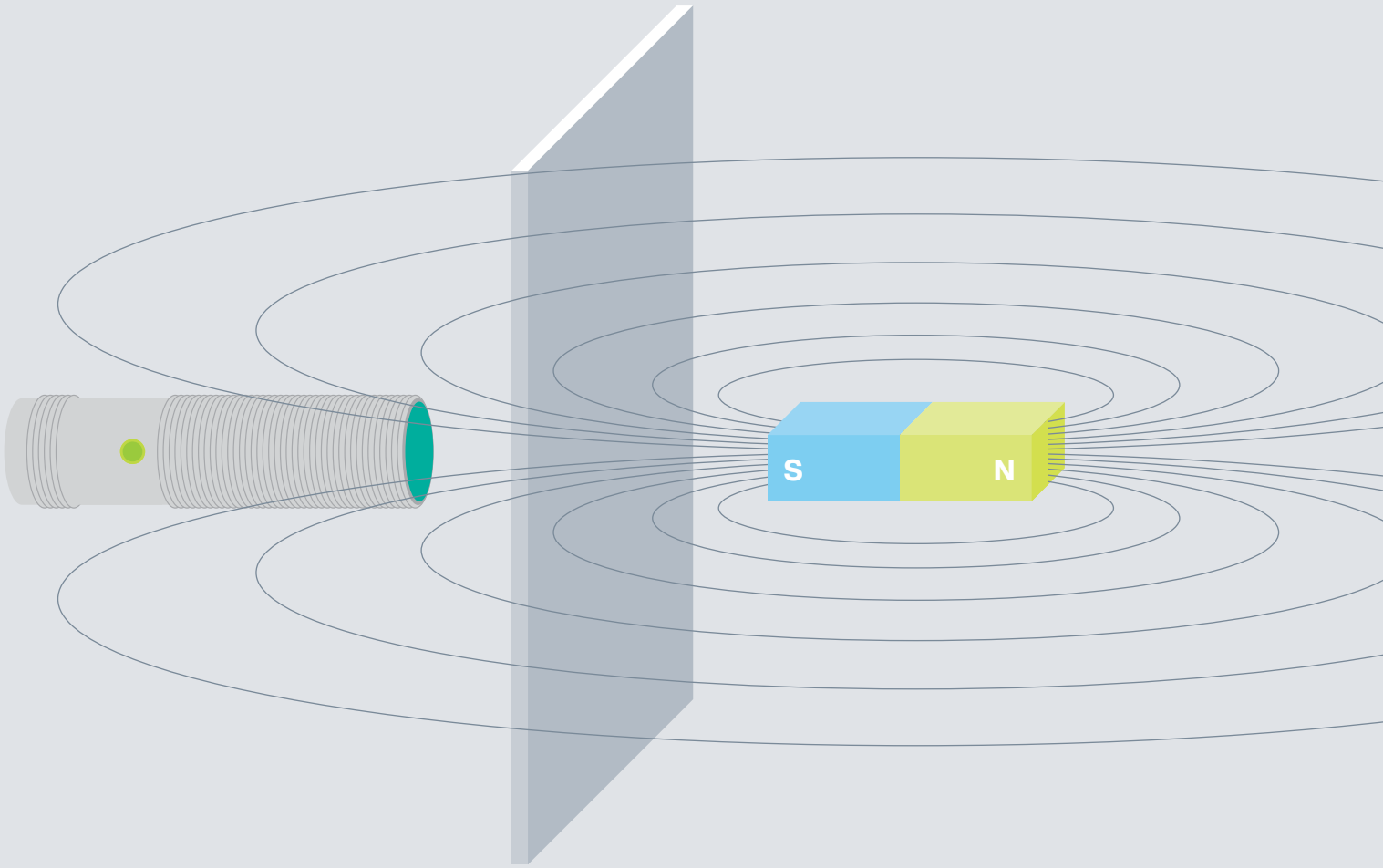
Where the technology of inductive sensors reaches its limits, magnetic field sensors are a highly versatile alternative. They can reliably detect magnetic fields through nonmagnetizable materials. Pepperl+Fuchs offers an optimized portfolio of cylindrical and cube-style housings in different designs and sizes. Versions with sensing ranges of up to 70 mm, high switching frequencies of up to 5,000 kHz, and a wide range of output and connection options ensure the optimal solution for any application requirement.

The sensors are available in plastic and stainless steel, and special NAMUR versions enable use in hazardous areas. Sensor versions made of stainless steel with degree of protection up to IP69 are also available for particularly demanding conditions. Rugged designs and noncontact detection make these sensors durable and maintenance-free.

Extract of technical data	8GM series	12GM/12GS series 18GH series	F32 series	F12 series
				
Search term	MB*-8GM*	M*-12G*, M*-18G*	MB-F32*	MJ35-F12*
Max. operating distance	60 mm	60/70 mm	50 mm	35 mm
Switching frequency	5,000 Hz	5,000 Hz	–	5,000 Hz
Type of output	DC, PNP	DC, PNP, NAMUR	DC, PNP	DC, NAMUR
Approvals	CE, UL	CE, UL, ATEX	CE	CE, ATEX, FM
Dimensions	Ø M8	Ø M12/M18	21 × 18 × 75 mm	12 × 12 × 30 mm

Highlights

- Detection of magnetic fields through nonmagnetizable materials
- Extremely rugged design
- Long service life due to noncontact detection
- High switching frequencies (up to 5,000 kHz) ensure quick and reliable process flows
- Special models with approvals for hazardous areas



Detection of Magnetic Fields

The sensors are able to detect a magnetic field through nonmagnetizable materials. This is especially beneficial when the object to be detected or the sensor itself lacks direct visual contact with the object.

The Perfect Addition: Accessories and Other Components

Perfectly coordinated connectivity and mounting accessories make optimal sensor integration possible. The comprehensive range of accessories from Pepperl+Fuchs offers the components necessary for ready-to-install solutions.

Sensor-Actuator Splitters

Sensor-actuator splitters enable you to easily merge two signals into one slot. Also suitable for cost-effective looping of bus signals with minimal wiring.

- Fully encapsulated housing with IP68 degree of protection
- With rear sockets or molded cables
- Various cable lengths available

Field-Attachable Connectors

A wide range of connectors suitable for a diverse range of applications. Ideal for maintenance, easy repair, or plant expansion on-site.

- Plastic or metal version
- Shielded and unshielded versions
- Different connections, including M8, M12, 1/2NPT, 7/8", and others, with screw technology or QUICKON technology
- Precise configuration on-site

Passive Splitters

M8 and M12 passive splitter with a molded master cable for reduced installation costs.

- Fully encapsulated housing with IP68 degree of protection
- 100 % tested for complete reliability
- Integrated LEDs for easier diagnostics
- Large socket spacing (M12) or offset sockets (M8) for easy mounting of the connection

Receptacles

Signal routing from the control cabinet directly into the field.

- Sealing with IP67/68 degree of protection
- Different connection types
- Available with PG or metric thread
- Cabinet wall mounting, front or back

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

Data Connectors

Fieldbus cables enable you to create a permanently reliable network between the different components of an automation system.

- PROFINET
- Industrial Ethernet
- PROFIBUS
- CAN/DeviceNet

Valve Connectors with Cable

As a system provider, Pepperl+Fuchs provides ready-made components with exceptionally robust designs.

- Fully overmolded housing design with IP68 degree of protection
- Overmolded, captive seal
- Diverse circuit types to provide electromagnetic compatibility suppression
- Various versions in accordance with DIN and industry standard

Bulk Raw Cables

A variety of raw cable variants in proven quality, available in practical 100-meter spools as well as in small run lengths.

- PVC and PUR standard types, as well as UL-approved cables
- Spark-resistant PUR-A and POC cables
- High-grade PUR-R cables for use in robotics
- UV-resistant PUR-O cables for outdoor use
- CAN cables for indoor and outdoor applications
- Ethernet and fieldbus cables, AS-Interface profile cables

Cable Protection System for Cylindrical Sensors

Various requirements in the installation environment require cylindrical sensors and their cables to be protected. With the wide range of sensor adapters, flexible conduits, and cable glands in industry-standard sizes, the first choice of sensor can be used in spite of adverse conditions. Due to the integrated seal of the gland, the electronics in the terminal box are protected against penetrating liquids and process flows.

No Two Applications Are Alike. Pepperl+Fuchs Cables Cover a Wide Variety of Physical Characteristics.

Each operating environment has its own set of requirements. The mechanical and chemical properties of the connection technology are crucial in determining the solution. Pepperl+Fuchs offers the right cable for every situation.

Easier Cable Stripping Optimizes Field Installation

When working with traditional cables, it can be difficult to strip the cable sheath, resulting in longer installation times.

The minimal friction between the sheath and the wires makes stripping Pepperl+Fuchs cables simple and quick, regardless of the length. This speeds up installation on site, as the sheath can be stripped easily and with consistent force.

PVC—Solid and Economical

Cables with PVC sheathing are designed for use in areas subject to moderate mechanical stress.

- Moderate mechanical strength
- Good resistance to chemical agents
- Suitable for use in the food industry
- UL approval optional

PUR—Durable and Highly Flexible

Cables with PUR sheathing are characterized by long-lasting flexibility for continuous use in machine tools.

- Superior mechanical strength
- Resistant to chemical agents and oils
- Halogen-free

PUR U—Highly Flexible with UL Approval

These highly flexible cables with PUR sheathing are designed for particularly harsh operating conditions. Typical applications include conveyor chains and swivel and rotary tables in mechanical engineering.

- Maximum mechanical strength
- Resistant to chemical agents and oils
- High flame resistance
- Halogen-free
- Suitable for conveyor chains

PUR-A—Resistant to Welding Sparks for the Automotive Industry

PUR-A cables are an alternative to irradiated PUR cables. Their resistance to welding sparks makes them ideal for use in the automotive industry.

- Maximum mechanical strength
- Resistant to chemical agents and oils
- PUR sheathing resistant to welding sparks
- Halogen-free
- Suitable for conveyor chains
- UL approval

STOOW—Designed Specifically for the American Market

As a heavy-duty PVC compound, STOOW is mainly used in the American engineering and automotive industry.

- Resistant to chemical agents and oils
- Highly flame-retardant
- Heavy-duty PVC compound in accordance with STOOW-A
- Proven in outdoor applications
- Approval up to 600 V

PUR-O—Durability for Outdoor Applications

PUR-O cables are very robust. Specifically designed for outdoor applications, these cables are used predominantly in the mobile-equipment field.

- Maximum mechanical strength
- Highly flame-retardant
- UV-, seawater-, oil-, and diesel-resistant
- Temperature range of –50 °C to +105 °C
- Halogen-free
- Suitable for conveyor chains
- UL approval

POC—Specifically for Welding Areas

These highly resistant special cables are used in the i mmediate vicinity of welding processes. They are used in areas where irradiated PUR sheathings cannot be used.

- Extreme mechanical strength
- Thermal resistance of 150 °C continuous operating temperature
- Resistant to welding slag

PUR-R—for Extreme Mechanical Stress

PUR-R cables are extremely flexible cables that are used primarily in robotics applications.

- 10 million cycles per conveyor chain
- Withstands 10 million twist cycles ±360°/meter
- Excellent chemical and oil resistance
- Wide temperature range from –25 °C to +80 °C
- Halogen-free
- UL approval

PP—for the Food Industry

- Maximum mechanical load capacity
- Halogen-free
- Ecolab tested
- Suitable for conveyor chains
- Torsion-resistant
- Wide temperature range from –25 °C to +80 °C

Our Solutions, as Individual as You.

Automating processes often requires custom sensing solutions to ensure seamless integration. And when designing these solutions, the requirements of our customers are just as diverse as the customers themselves. Based on decades of experience and sound technical know-how, we collaborate with you to develop the perfect sensing solution.

Customized Sensors and Systems

Completely Customized, Seamlessly Integrable

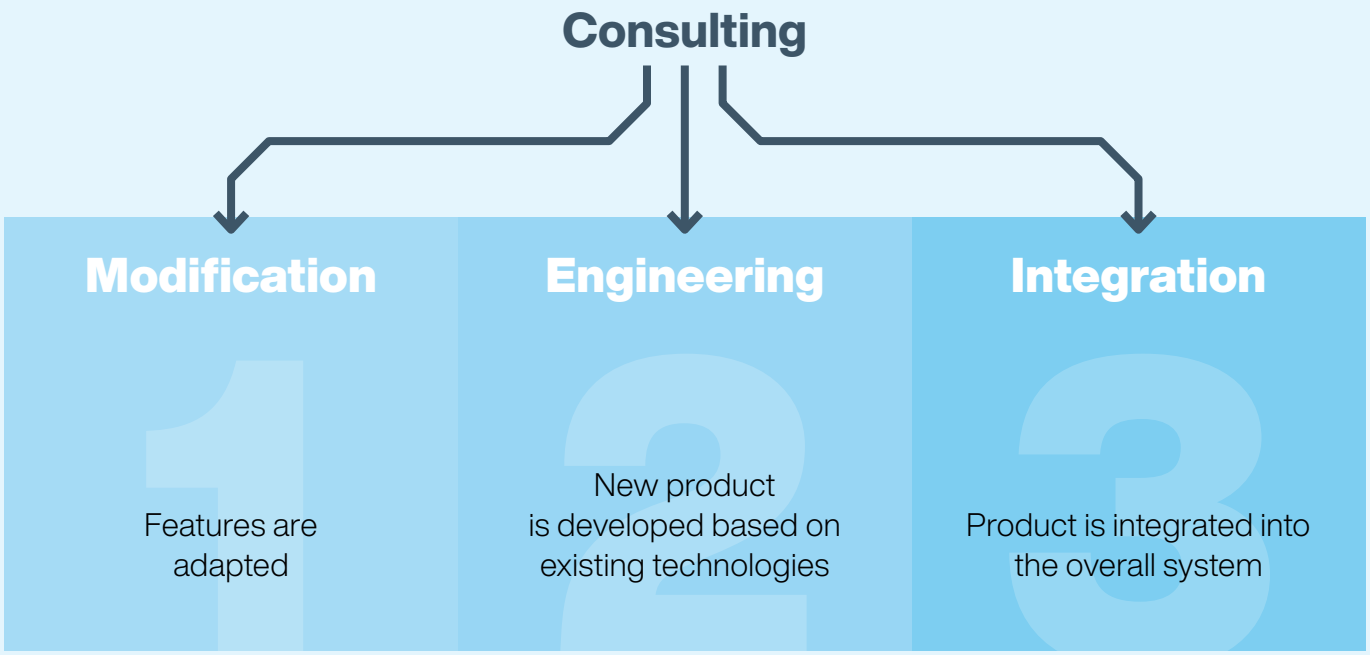
Handing your sensing needs over to the specialists offers clear advantages: You always get a technically superior solution—quickly and with no compromises. In addition, seamless integration into existing systems and the right support are always guaranteed.

This is why Pepperl+Fuchs offers custom sensors and systems in addition to a huge standard portfolio. This ranges from the modification of existing products, such as customizing housing designs, to the collaborative development of new sensors, to the development and integration of entire sensor systems.

You get exactly what you need—technically perfect solutions for a clear competitive advantage.

Highlights

- Best possible advice and identification of the right sensing solution
- Customer-specific solutions, from customized cable lengths to newly developed products
- Seamless system integration for perfect processes
- The right solution, no compromises



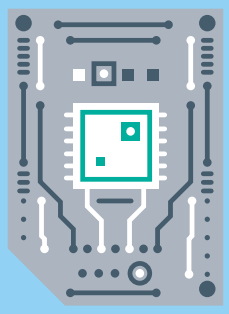
For more information, visit
pepperl-fuchs.com/if-solutions

Unique Solutions from the Inventor of the Proximity Sensor

Application-specific housing designs, different operating principles, special materials, adapted evaluation electronics, optimized connection technology—all these are characteristics of an individual sensor solution. Pepperl+Fuchs also offers countless sensor customization possibilities for an individual and technically perfect solution in the field of proximity sensors.

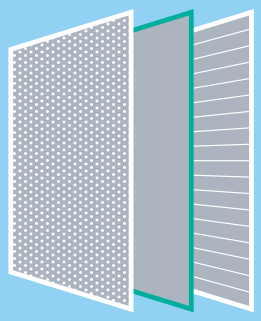
Housing Design

- Cylindrical
- Cubic
- Slot-shaped
- Ring-shaped
- Double sensors
- Individual designs



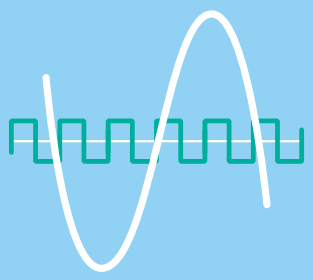
Technology

- Inductive
- Capacitive
- Magnetic



Materials

- Plastic
- Metal
- Stainless steel
- Special coatings



Evaluation Electronics

- Specific evaluation electronics adapted to the application

Sensor Elements

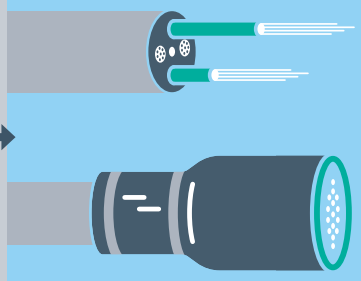
- One sensor element
- Multiple sensor elements
- Hybrid

Signals

- Switching signals
- Analog signals
- IO-Link signals
- CAN signals
- Customized signals

Connectors

- Fixed cables
- Plug-in connection
- Open cable ends
- DT
- AMP
- Individual, industry-specific connectors

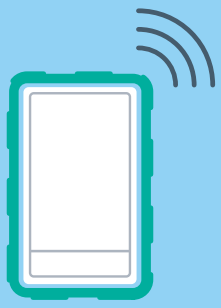


Cable Features

- Weld-resistant
- Temperature-resistant
- Chemically resistant

Cable Lengths

- Individual cable lengths



System Components

- Wireless
- Specific software
- ERP connection
- External evaluation units
- External visualizations/ displays

Environmental Influences

- Hazardous areas
- Increased EMV
- Shock/vibration
- Pressure
- Ambient temperature
- Chemicals
- Degree of protection (IP)

Labeling

- Customer-specific labeling

Certifications/ Approvals/Norms

- Worldwide
- Industry-specific

Your automation, our passion.

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

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