



**OUR SIGNALS
MOVE THE WORLD –
SENSOR TECHNOLOGY
FOR STORAGE AND
MATERIALS HANDLING
TECHNOLOGY**



PEPPERL+FUCHS – YOUR SENSOR EXPERTS

FOR STORAGE AND MATERIALS HANDLING TECHNOLOGY

As a specialist for sensor technology in storage and materials handling technology, Pepperl+Fuchs offers an extensive range of products. It includes a wide variety of inductive, capacitive and photoelectric sensors as well as ultrasonic sensors, rotary encoders and safety systems. AS-Interface, the position encoding system WCS as well as identification and image processing systems round off the product range, which plays a decisive role for the automatic and reliable flow of goods in storage and materials handling systems.

Pepperl+Fuchs has produced inductive proximity switches since 1958. With the acquisition of the company Visolux in 2000, we were able to add even more experience and competence in the field of photoelectric sensor technology to our company, this also includes laser distance measuring devices and optical data couplers.

With the takeover of the company Omnitron in 2004, Pepperl+Fuchs acquired a pioneering company in the field of Data Matrix systems. Moreover, with the acquisition of the position encoding system WCS at the beginning of 2005, Pepperl+Fuchs now offers a system for absolute and contact-free position detection.

Decades of experience and continuous development has given Pepperl+Fuchs extensive product and application know-how, which is steadily growing thanks to close cooperation with our customers worldwide.

Pepperl+Fuchs – the sensor technology specialist for half a century, with a worldwide presence – is already working today on the solutions for your applications of tomorrow!

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POSITIONING

Two different solutions are available for the exact positioning of the storage and retrieval machine both in horizontal and vertical direction: The position encoding system WCS3 measures the absolute position by photoelectrically scanning a code rail. This is done without contact and in a reproducible way. One read head each is used for travelling carts, lifting devices and crosswise movement. Alternatively, the position can be detected by means of laser distance measuring devices VDM80.





DATA TRANSMISSION

The position data of the storage and retrieval machine is transmitted via optical data couplers LS610 to hand-over points – depending on the requirements in vertical or horizontal direction. In the version for Profibus DP, LS610-DA-P, our telegram verification technology (TVT) avoids corrupted data telegrams e.g. in case of beam interruption.



FINE POSITIONING

For the precise positioning of the storage and retrieval machine when loading and unloading a bay, four diffusive sensors RL28-8-H-FFP with background suppression are used. For a quick and smooth fine positioning, this task is performed by the vision sensors VOS110-FFP and VOS120-FFP.



BAY OCCUPANCY MONITORING

The diffusive sensors RL28-8-H check whether a bay is already occupied. Thanks to the excellent background suppression, error signals due to reflections on the metal construction are avoided.



GAP MONITORING

To protect the warehouse against damage due to material protrusion, the gap between the storage and retrieval machine and the racking is controlled by means of laser sensors RL28-LAS or MLV12-LAS. In a diagonal arrangement, only one sensor is used due to the narrow light spot at a long range.







CONTAINER IDENTIFICATION FOR PICKING

Identification systems are used for quick and reliable picking of containers prior to storage. Often they are labelled with barcodes which are detected by a scanner VB14. Alternatively, data carriers are attached to the carrier, which are read and evaluated by the inductive identification systems IDENT-I or IDENT-P.



ROLLER CONVEYOR CONTROL

The roller conveyor control with background suppression SBL8-H located directly between the rollers of the conveyor prevents piece goods from colliding. Direct control of valves as well as cascading of several sensors is possible.

This sensors are optionally equipped with a magnetic valve to control material flow directly.





OBJECT DETECTION

Whether roller, chain or belt conveyor: To control subsequent processes, a large variety of sensor technology is required for detecting the position of the material to be conveyed. Photoelectric sensors RL29 with rectangular housing have a clever solution for mounting. Like the cylindrical shaped photoelectric sensors of the series VL18, they are available in different ranges or electrical designs. If space is limited, the optical series ML8-55 is the clear favourite. This great choice of position sensor technology even offers the right solution for very specific applications!



SIGNAL TRANSMISSION

With AS-Interface, the sensor signals of the conveyor line are connected to a simple networking system. The simple installation and free topology, convincing diagnostic options and the transmission of binary, analogue and safety-related signals via a flat 2-wire cable are the clear benefits of AS-Interface.



ACCESS PROTECTION OF DANGER AREAS

For protecting danger areas, for example at material hand-over points, safety light grids SLPC with integrated control unit or safety light barriers SLA are used. The great choice of safety photoelectric sensors ensures the protection of persons in various applications.



OBJECT IDENTIFICATION

Barcode systems VB14A or VB34 are used to identify the goods to be conveyed. Alternatively, larger data amounts are stored very compactly by means of Data Matrix code. Data Matrix readers ODT read the code highly reliably, even at high conveyor speeds.





PROTRUSION MONITORING

Profiling of the goods to be stored is effected by means of profile light grids PLVScan. They have an integrated control unit, they can be easily parameterised by software for optimum performance and are especially characterised by their robust housing.

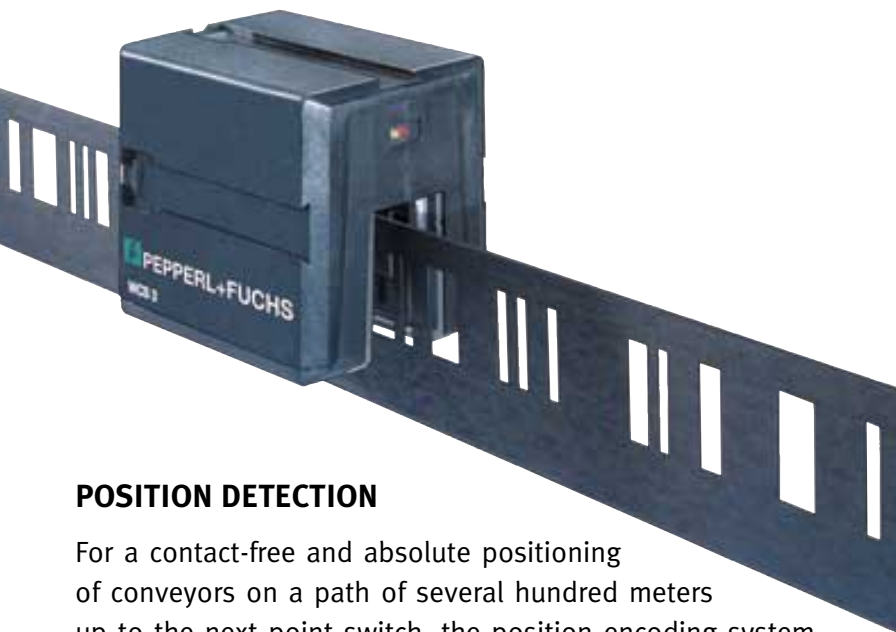
OVERHEAD CONVEYORS



COLLISION PROTECTION

The distance sensors VDM35 and EDM/EHB ensures that overhead rail carrier keep a sufficient distance from the conveyor in front of them, e.g. after a point switch or the exit of conveyors

from a buffer memory. The distance sensor EDM/EHB, which is optimised for measuring straight travel and curved travel, reliably prevents collisions, even at high speeds.



POSITION DETECTION

For a contact-free and absolute positioning of conveyors on a path of several hundred meters up to the next point switch, the position encoding system WCS consisting of a read head and a code rail is used. Special code rails can be fitted to curved sections of monorail conveyors.



POSITION DETECTION

Inductive VariKont proximity switches NBN40 emit a signal as soon as a monorail carrier has reached a certain position for triggering subsequent processes.

The compact design in connection with a clever concept a sensor head that can be aligned in five directions supports the simple and flexible assembly. Bright LEDs located all around the device show the switch state in a clearly visible way, even at large distances.



Quelle: Eisenmann



POSITION DETECTION

Absolute value rotary encoders are another possibility to detect the position of overhead conveyors. With AS-Interface rotary encoders BVM and intelligent wiring, 16-bit data packets can be transmitted to the control in realtime. Rotary encoders PVM with Fieldbus interfaces for Profibus DP are available for a smart integration on conveyors.



COLLISION PROTECTION BY MEANS OF SAFETY EDGE

To prevent the collision of automated transport systems, inductive Varikont-L sensors NBB scan safety edges, which are attached to the vehicle. The head of the proximity switches can be aligned in five different directions for a very flexible assembly.

SPEED MONITORING

Two redundantly mounted rotary encoders RHI58 are used to monitor the rotation speed or the speed of the automated transport system. The incremental rotary encoders in slim housings are ideally suited for use in conditions where space is restricted and are preferably mounted directly on the shaft.



DATA TRANSMISSION AT HAND-OVER POINTS

The use of optical data barriers DAD15 makes it possible to transmit state, freight and position data. It is characterised by a highly compact design and transmits the data quickly and reliably via an 8-bit parallel port.



COLLISION PROTECTION BY MEANS OF ROOM MONITORING

Ultrasonic sensors UB monitor the area in front of automated transport systems in order to prevent a collision with objects. For this purpose, an extensive range of sensors with different designs, ranges and outputs are available.



ROTATION SPEED MONITORING OF FORKLIFT TRUCKS

Incremental rotary encoders RH158 or inductive sensors NBN3 monitor the rotation speed of forklift trucks for speed limitation and skid control. Due to the small sensor design, they can be used without problem even if space is limited!



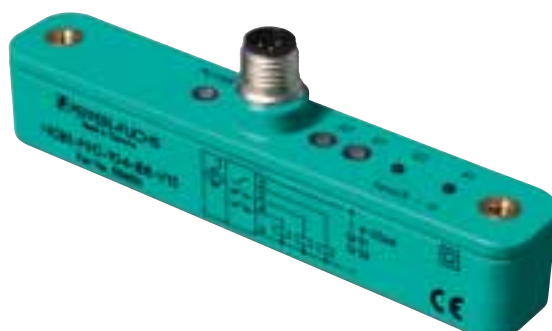
LIFT HEIGHT CONTROL OF FORKLIFT TRUCKS

Rotary encoders with cable pull monitor the height of the fork of forklift trucks. The extensive range of different versions makes it possible to use the right rotary encoder for every application.



POSITIONING OF THE FORK OF FORKLIFT TRUCKS

The linear distance measurement system NCB3-F90 at the fork can be used for both sideshift and reach distance positioning. Moreover, by means of monitoring the mast tilt angle, the forklift truck can be checked for overload. In addition to an analogue output, the system, which detects the position without contact and very precisely, also allows teach-in of two switch points.









COLLISION PROTECTION FOR GANTRY CRANES

For the protection of gantry cranes against collision, ultrasonic sensors UC are used. They detect approaching objects at a distance of several meters and their output signal can be used to activate braking procedures.

Also useful for this applications are our photoelectric distance sensors VDM35.



POSITIONING OF GANTRY CRANES

Gantry cranes are positioned by the position encoding system WCS in an absolute and contact-free way. For this purpose, only a code rail and an appropriate read head are required. Alternatively, absolute value rotary encoders PVM58 with cable pull are used.

Another solution for this application is the use of optical distance measuring devices VDM80.



ENDPOINT POSITION MONITORING OF GANTRY CRANES

For endpoint position monitoring of gantry cranes, inductive sensors NCB40 are used. They are characterised by a long range and accessories for simple and rapid mounting.





SIGNALS FOR THE WORLD OF AUTOMATION

For half a century Pepperl+Fuchs has been continually providing new impetus to the world of automation. We develop, manufacture and market electronic sensors and interface modules through our worldwide network. Our global presence and highly flexible production and service organisations enable us to offer you complete individual solutions – right where you need us! We know what we are talking about – because today Pepperl+Fuchs is the company with the largest selection of industrial sensor technology in the world – serving an exceptionally broad spectrum of applications.

Our signals move the World.



www.pepperl-fuchs.com

Worldwide Headquarters

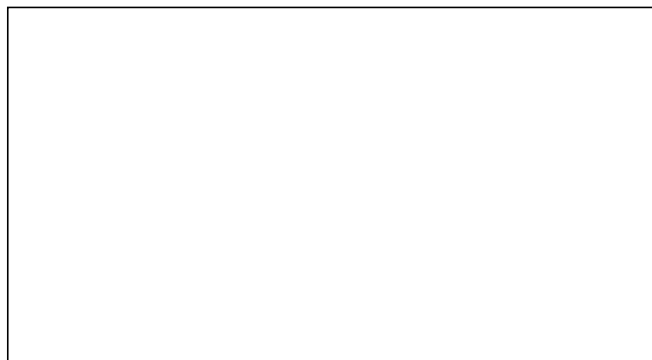
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