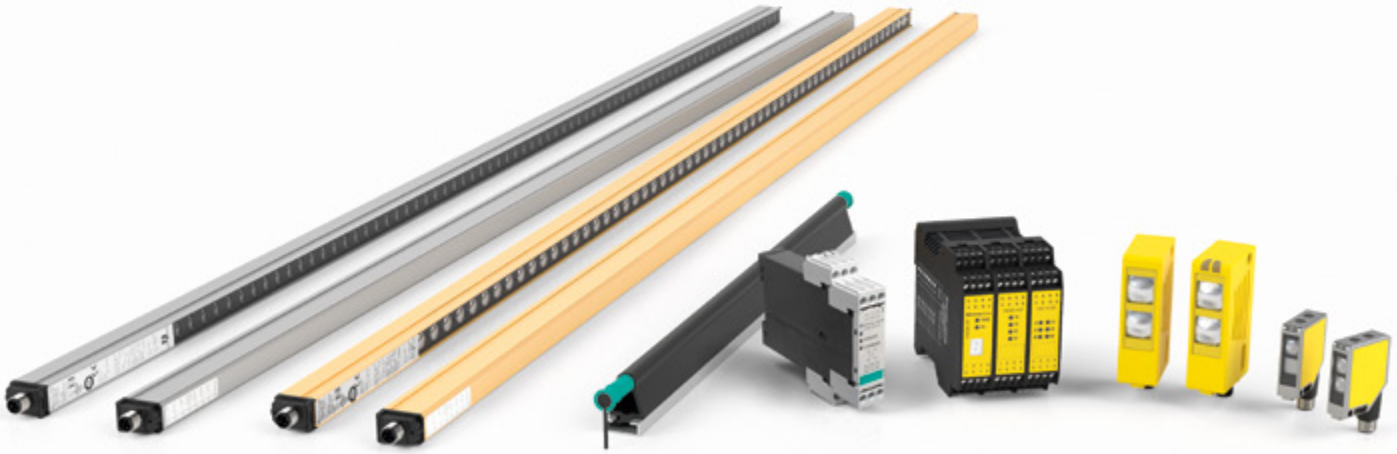
Sensors for Safety Applications

Product Overview



Your automation, our passion.

PEPPERL+FUCHS

Uncompromisingly Safe and Application Oriented: Sensors for Safety Applications from Pepperl+Fuchs

The highest quality standards and reliability for protecting personnel and machines: That is what safety-certified Pepperl+Fuchs sensors stand for. The portfolio has been specially tailored to functional safety requirements and offers excellent investment security and maximum plant availability.

Optimal Protection for Over 30 Years

More than three decades of experience, a high level of application expertise, and continuous dialogue with our customers form the basis for our optimized product portfolio, which is application oriented and focused on essentials.

Perfectly tuned to the requirements of automated processes, Pepperl+Fuchs safety sensors always combine safety and productivity: Fast and easy commissioning across the entire portfolio makes for particularly cost-efficient solutions. At the same time, the high reliability of the sensors not only ensures that the operator is optimally protected but also that processes continue uninterrupted, leading to increased plant availability.

Traditional Connectivity for Maximum Investment Security

In the area of safety engineering, Pepperl+Fuchs has consistently focused on solutions with traditional connectivity. This not only reduces potential sources of fault but also provides for a future-proof supply of spare parts and thus a high level of investment security.

Beyond that, Pepperl+Fuchs safety sensors meet the highest safety requirements up to PL e, Cat. 4, and SIL 3. With approvals such as cULus, they are also certified for global use.

Sensors for Safety Applications from Pepperl+Fuchs

Single-Beam Safety Light Barriers

Multiple-Beam Safety Light Barriers

Safety Control Units

Safety Edges





On the Way to a Safe Machine: Determining the Performance Level (PL)

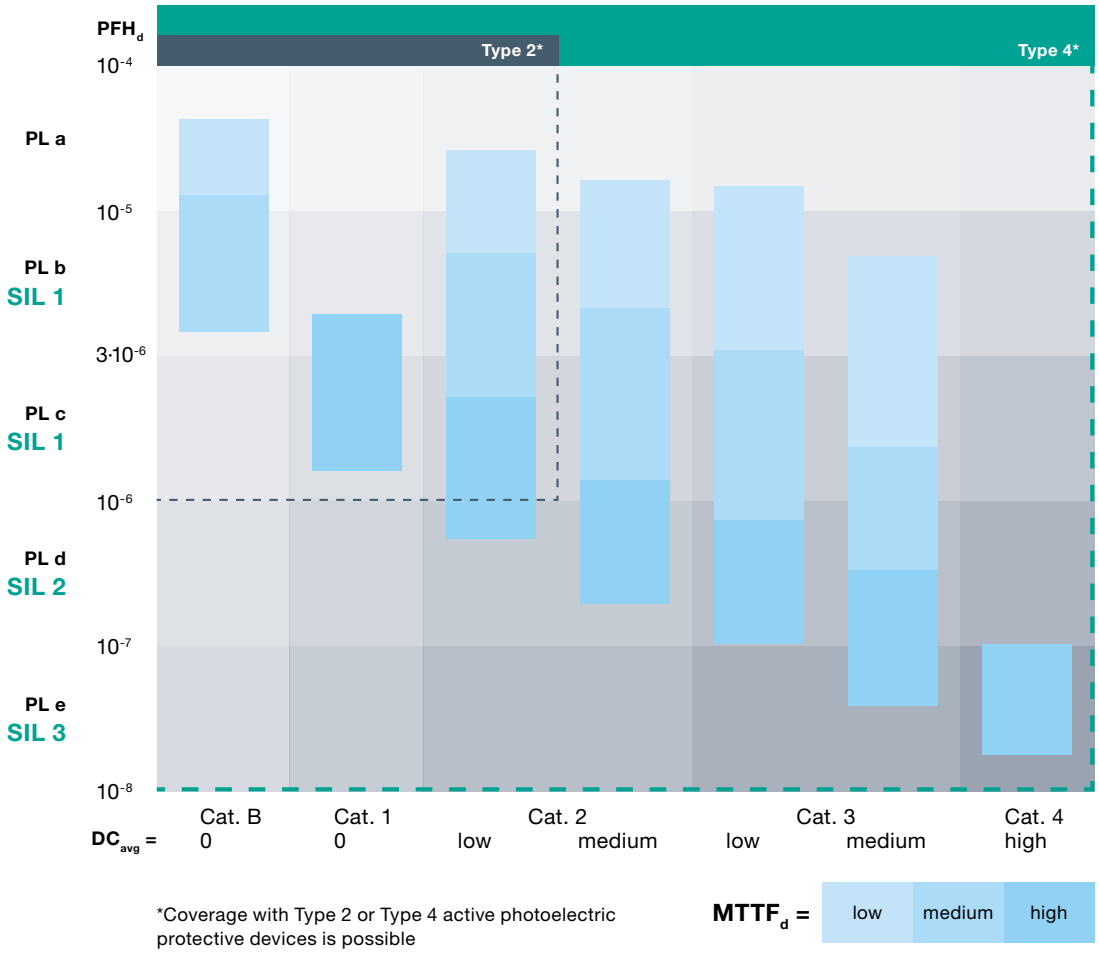


Diagram following EN ISO 13849-1 et al.

Single-Beam Safety Light Barriers: A Cost-Effective Solution Thanks to Simple Installation

Developed to be basic, reliable, and economical, the Pepperl+Fuchs SLA series offer particularly cost-effective safety solutions. Traditional connectivity without the need to use software for configuration guarantees extremely quick commissioning.

Economical Solutions for Securing Hazardous Areas

The SLA series meet all the requirements necessary for supporting effective functional safety in a wide range of hazardous areas. The portfolio consists of testable or self-monitoring emitters and receivers, which—together with the SafeBox safety control unit—comply with the highest possible level of safety.

Application Examples

- Securing edges and entries to prevent crushing and shearing
- Access protection for warehouse aisles, operator aisles, assembly lines, and processing centers
- Protection of storage systems such as high bay warehouses and shelving systems

Single-beam safety light barriers for protecting aisles between high bay shelving systems in warehouses

Quick and Cost-Effective Commissioning

The SLA safety light barriers are systematically designed for low total cost of ownership (TCO). Both the concentration on essential safety functions and the intentional lack of time-consuming software configuration contribute to this. Traditional connectivity not only ensures that potential sources of faults are reduced but also ensures fast and reliable electrical installation. The large optical aperture also facilitates the alignment of the sensors, allowing time-saving and economical mounting.

Versatility for a Wide Range of Needs

Conformity with standards and Directives, certified safety, standard mounting and connectivity, and a 20-year mission time: All this makes Pepperl+Fuchs' single-beam safety light barriers appealing for a wide range of applications and industries. The wide temperature range of up to –30 °C and the robust housing with IP67 protection allow for use even in harsh conditions.

Technical Data	SLA12	SLA29
Detection range	0.2 m ... 10 m	0.2 m ... 30 m
Extended detection range	–	6 m ... 65 m
Degree of protection	IP67	
Ambient temperature	–20 °C ... 60 °C	
Extended temperature range	–	–30 °C ... 55 °C

Conformity in Combination with SafeBox:

- **PL e, Cat. 4** (EN ISO 13849)
- **Type 4** (IEC 61496)
- **SIL 3** (IEC 61508)
- **TÜV Süd, cULus, CE**

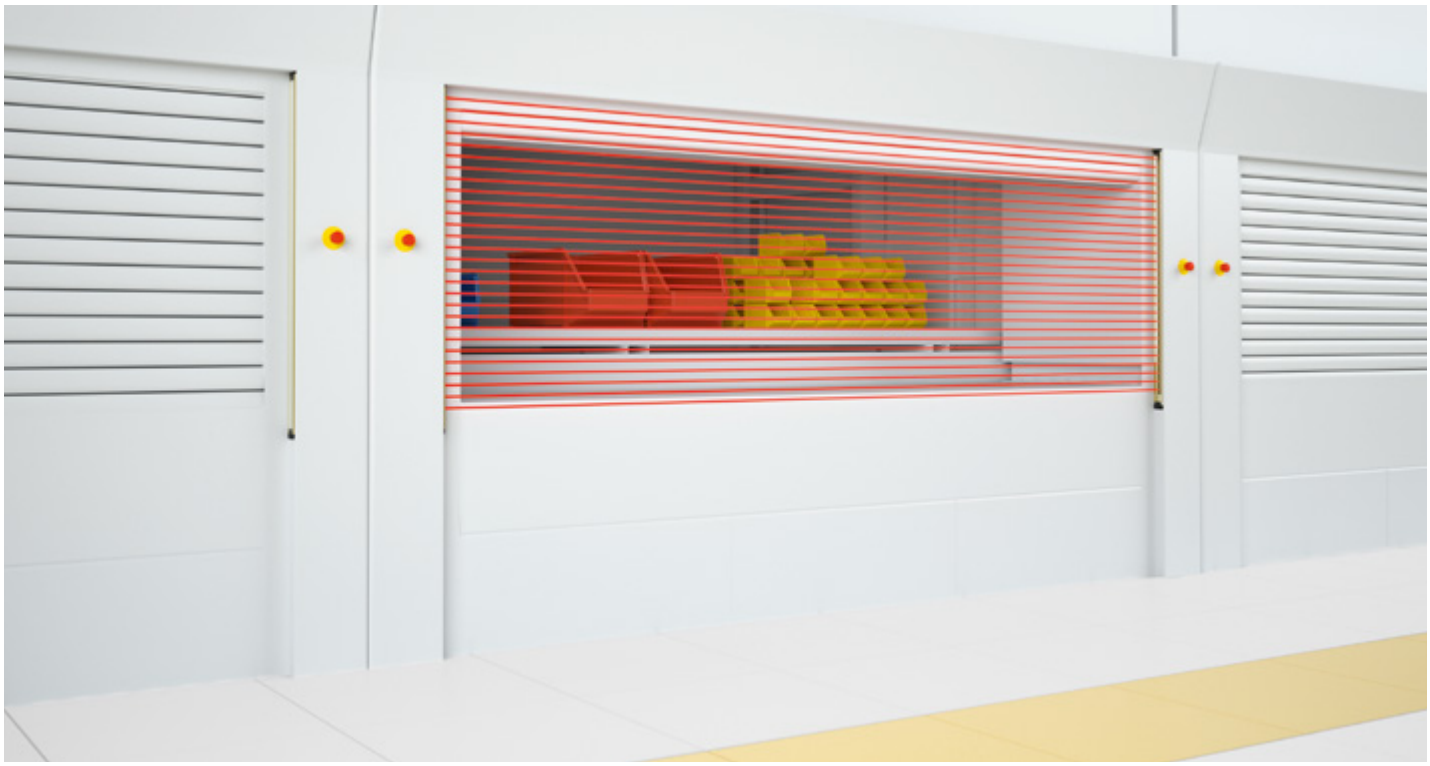
More information is available at
www.pepperl-fuchs.com/single-beam-light-barriers

Multiple-Beam Safety Light Barriers: Reliable Sensor Technology for Increased Plant Availability

Pepperl+Fuchs' multiple-beam safety light barriers ensure maximum safety with increased plant availability. Redundant tests prevent unwanted plant downtimes and guarantee efficient machine and plant operation.

Complete Safety in Every Situation

The SLCS and SLCT multiple-beam safety light barriers create a two-dimensional detection zone which can have a 14 mm, 30 mm, 60 mm, or 90 mm detection capability depending on the application requirement. Detection zone heights in increments of 100 mm to 2,400 mm guarantee flexibility for different conditions, from the insertion area on an assembly station to the multisided protection of a complete machine. Compliance with the highest safety requirements up to PL e, Cat. 4, and SIL 3 offer additional flexibility and safety when using light barriers to protect fingers, hands, or body, i.e., to keep them behind a certain area, prevent access, or to safeguard a perimeter.



Multiple-beam safety light barriers as a protection guard on an industrial storage unit

Increased Efficiency through Redundant Tests

Redundant tests during operation ensure increased plant availability and prevent an unwanted response of the safety device due to false detections. The signal evaluation is completely integrated into the space-saving housing profile. As a result, an external control box is not necessary, since the protective equipment can be connected directly to downstream relays, switching devices, or control panels and therefore integrated in a time-saving and economical way.

Quick, Space-Saving Mounting

Due to their very narrow design and the dovetail guides on the sides of the housing, the multiple-beam safety light barriers not only require a small mounting space, but they can also be attached very precisely and consistently in three directions. As the perfect supplement, comprehensive and sophisticated mounting accessories offer convenient solutions for a wide range of applications on machines or in the field. For example, the SLCT and SLCS series in combination with mirror columns significantly reduces the installation expense for the multisided protection of a processing center because only two electrical components need to be connected.

Technical Data	SLCT and SLCS		SLCT/35 and SLCS/35
Detection capability	14 mm	30/60/90 mm	30/60/90 mm
Detection range	0,2 m ... 8 m (SLCT) 0,4 m ... 8 m (SLCS)		5 m ... 20 m
Detection zone height	≤ 1.200 mm	≤ 2.400 mm	≤ 2.400 mm
Ambient temperature	- 35 °C ... 60 °C		
Degree of protection	IP67, For indoor use only		

Conformity:

- **PL c, Cat. 2** (SLCT) and **PL e, Cat. 4** (SLCS) (EN ISO 13849)
- **Type 2** (SLCT) and **Type 4** (SLCS) (IEC 61496)
- **SIL 1** (SLCT) and **SIL 3** (SLCS) (IEC 61508)
- **TÜV Süd, cULus, CE**

Mounting and mirror column

These and other accessories can be found at **www.pepperl-fuchs.com/safety-accessories**

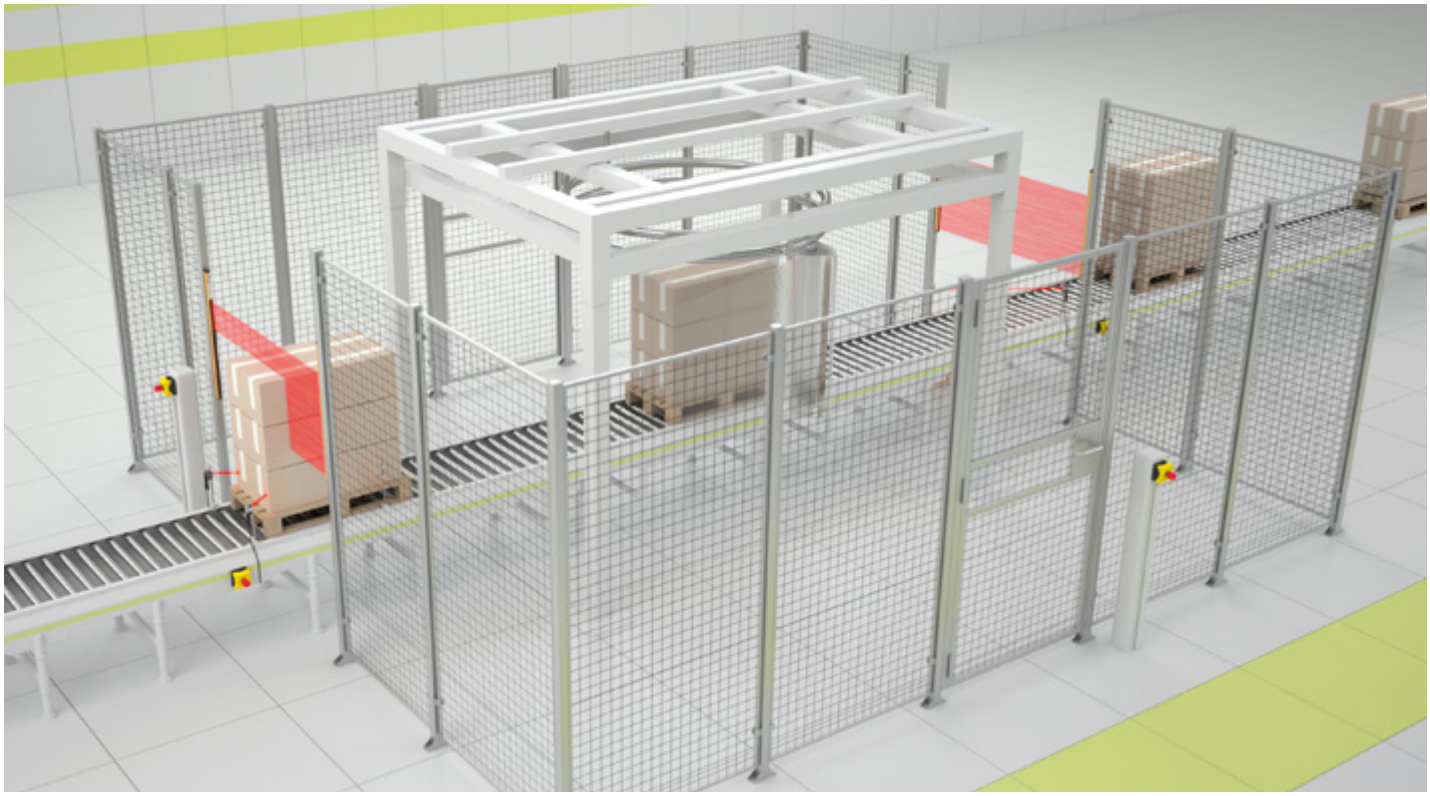
More information is available at **www.pepperl-fuchs.com/multiple-beam-light-barriers**

Safety Control Units: Building Blocks for Functional Safety Solutions

The SafeBox can be individually tailored depending on the application, or an existing solution can be easily expanded by connecting additional function modules. The modular design thus combines cost-effectiveness with the highest level of flexibility.

Perfectly Tailored to the Application

Thanks to the modular design, multiple components can be connected to a single control unit—perfectly tailored to the application every time. The various modules offer functions such as start/restart interlock, muting, override, or emergency stop, thereby providing expanded application possibilities. The SafeBox is suitable as a controller for SLA-type thru-beam sensors or as a connection device for various types of protective equipment such as safety light curtains, safety switches, or emergency stop buttons. This means that the highest safety requirements up to PL e, Cat. 4, and SIL 3 are met.



Access protection on film-wrapping systems with SafeBox and various types of protective equipment

Software-Free Configuration and Commissioning

SafeBox safety control units require no software programming, as the configuration and position of the channels are recognized autonomously. This not only facilitates commissioning but also provides increased investment security. The simple installation of up to eight modules and the setup of the various functions via DIP switches are also user-friendly and convenient.

Technical Data	SB4-OR-4CP	SB4-OR-4XP
Connections		
	Up to four 2-channel inputs	
	SLA12, SLA29, contacts	PNP semiconductor outputs, contacts
Extensions		
Inputs	Modules -4C resp. -4X	
Muting	Modules -4M	
E-Stop	Modules –2E	

Conformity:

- **PL e, Cat. 4** (EN ISO 13849)
- **Type 4** (IEC 61496)
- **SIL 3** (IEC 61508)
- **TÜV Süd, cULus, CE**

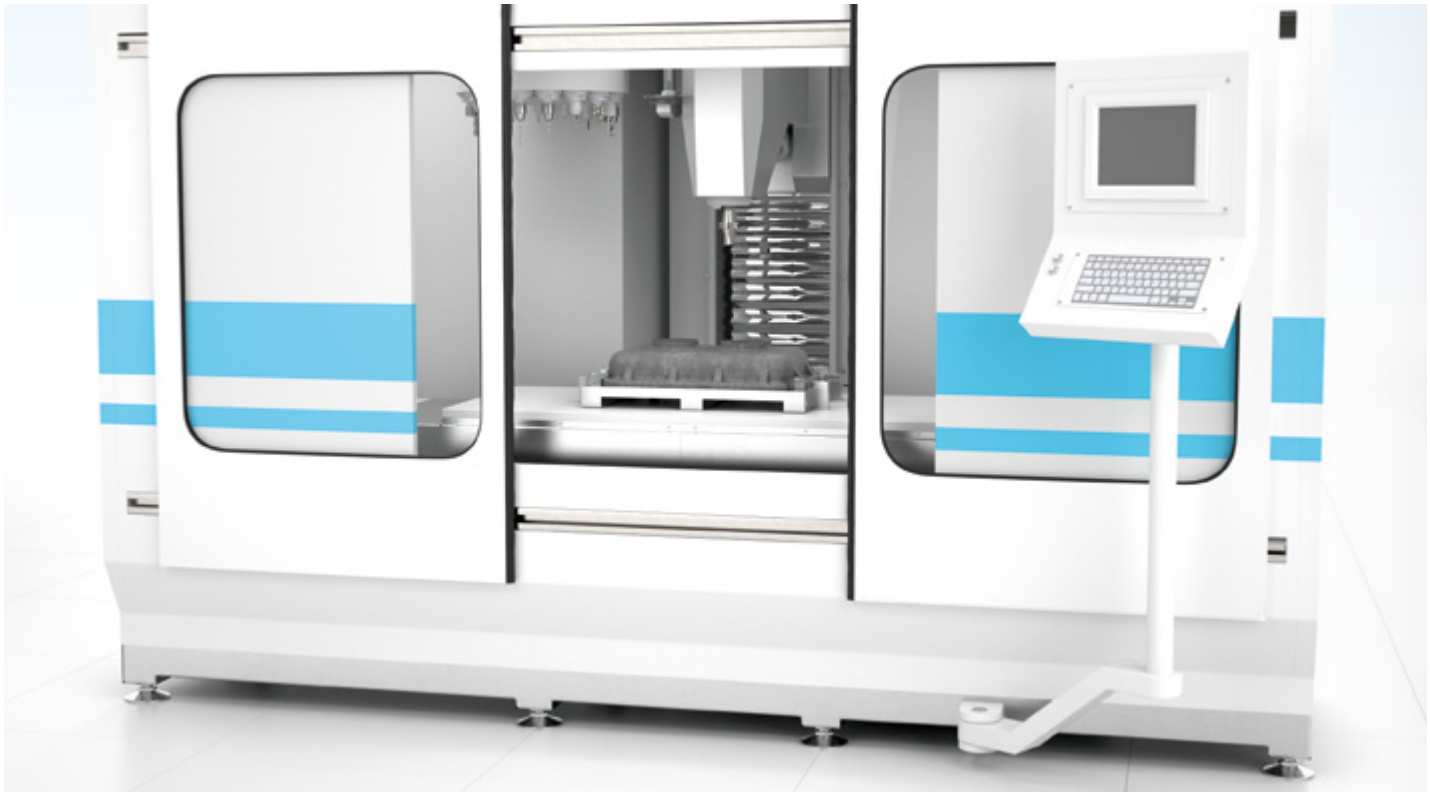
More information is available at
www.pepperl-fuchs.com/safety-control-units

Safety Edges: Individually Tailored Tactile Safety

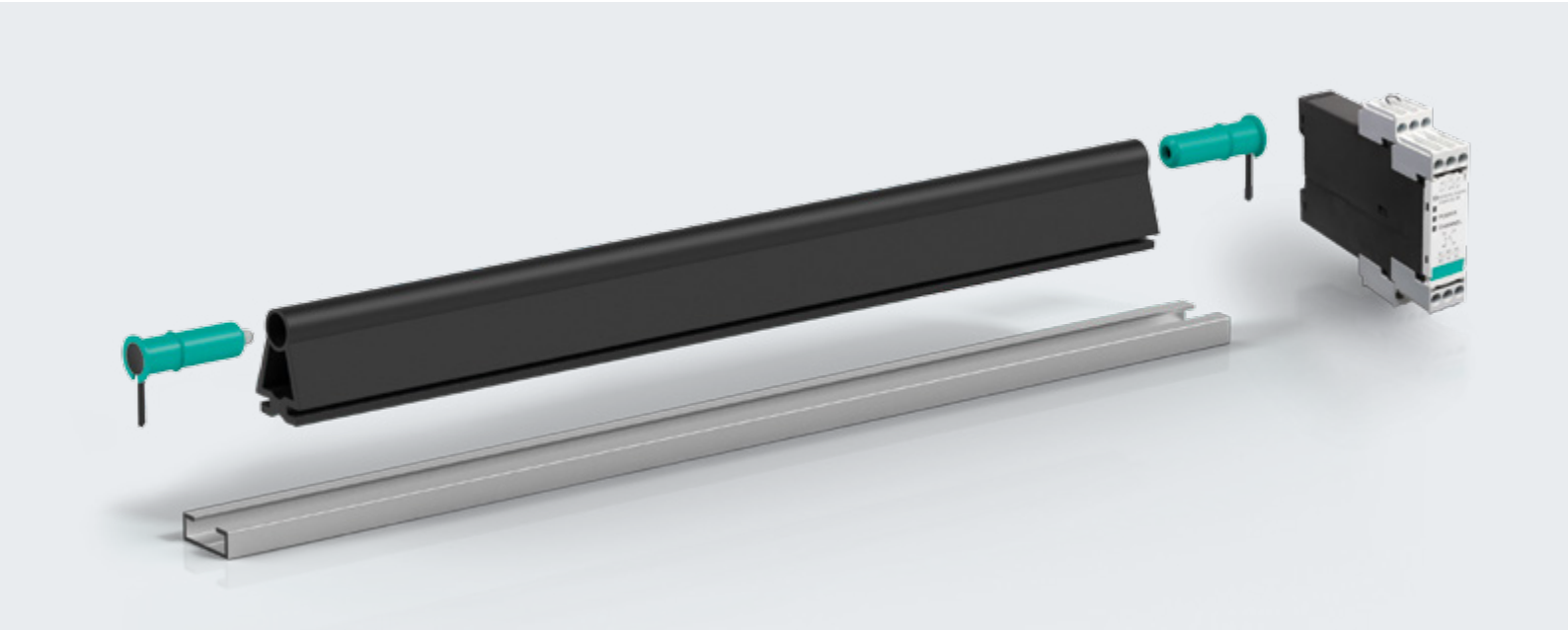
Safety edges guarantee maximum flexibility during machine integration. The use of photoelectric technology allows aluminum and rubber profiles to be shortened to almost any length and thus conveniently adapted to different situations.

Functionally Safe and Robust

Pepperl+Fuchs' safety edges make it possible to efficiently secure crushing and shearing edges. Their robust rubber profile has a light pipe in which a thru-beam sensor generates a light path. If the profile is deformed by external pressure, the cross section of the light pipe is reduced and the switching device then responds and causes a stop. This allows moving edges on powered machine parts such as covers, doors, or flaps to be secured. As a complete system, protection devices can be implemented up to PL e, Cat. 4 according to EN ISO 13849, and the highest safety standards can be met.



Safety edges for securing moving edges on a milling machine



Increased Flexibility during Machine Integration

The safety edges consist of an external safety control unit, a thru-beam sensor, and a rubber profile, which functions as an optical light pipe and is guided into an aluminum profile rail. Both profiles can be shortened to almost any length. Easily adjusted to the respective mounting and protection situation, the level of flexibility for integration into machines and systems is significantly increased.

System Components	PSE2	PSE4
Rubber profile	Height: 25 mm or 58 mm	
Aluminum profile rail	Groove: 25 mm or 30 mm	
Safety control unit	4-channel	1-channel
Safety light barrier	Thru-beam sensor	

Conformity:

- **PL d, Cat. 3** (PSE2) and **PL e, Cat. 4** (PSE4) (EN ISO 13849)
- **TÜV Rheinland, CE**
- **cULus** (PSE4)
- EN 12978
- EN ISO 13856

More information is available at
www.pepperl-fuchs.com/safety-edges

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Explosion Protection

- Intrinsically Safe Barriers
- Signal Conditioners
- Fieldbus Infrastructure
- Remote I/O Systems
- HART Interface Solutions
- Wireless Solutions
- Level Measurement
- Purge and Pressurization Systems
- Industrial Monitors and HMI Solutions
- Electrical Explosion Protection Equipment
- Solutions for Explosion Protection

Industrial Sensors

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- Photoelectric Sensors
- Industrial Vision
- Ultrasonic Sensors
- Rotary Encoders
- Positioning Systems
- Inclination and Acceleration Sensors
- Fieldbus Modules
- AS-Interface
- Identification Systems
- Displays and Signal Processing
- Connectivity

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Printed in Germany · Part. No. 122360 09/17 07