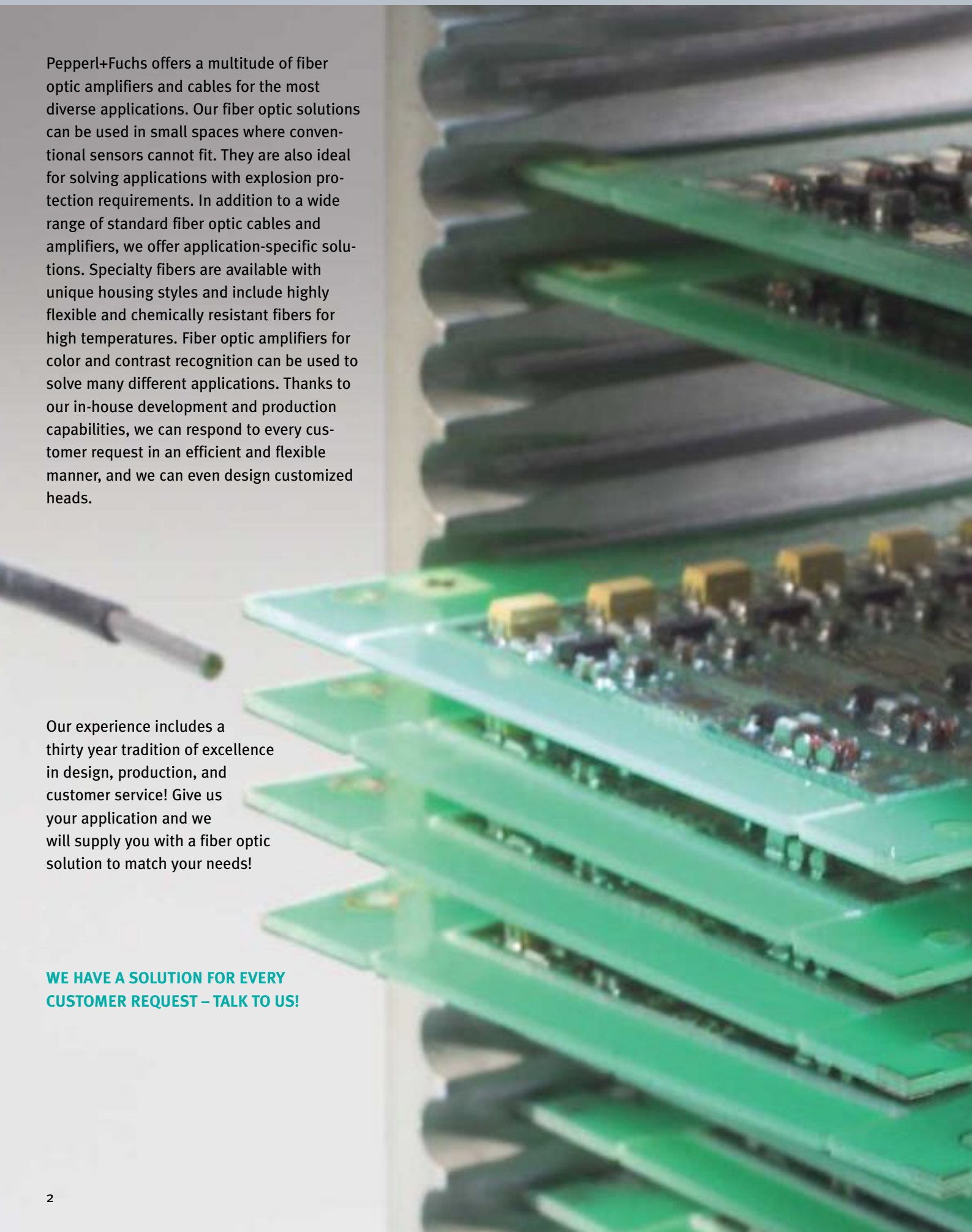
FIBER OPTICS AND FIBER OPTIC AMPLIFIERS

SOLUTIONS FOR EVERY APPLICATION

PEPPERL+FUCHS
SENSING YOUR NEEDS

FIBER OPTIC AMPLIFIERS AND CABLES

Pepperl+Fuchs offers a multitude of fiber optic amplifiers and cables for the most diverse applications. Our fiber optic solutions can be used in small spaces where conventional sensors cannot fit. They are also ideal for solving applications with explosion protection requirements. In addition to a wide range of standard fiber optic cables and amplifiers, we offer application-specific solutions. Specialty fibers are available with unique housing styles and include highly flexible and chemically resistant fibers for high temperatures. Fiber optic amplifiers for color and contrast recognition can be used to solve many different applications. Thanks to our in-house development and production capabilities, we can respond to every customer request in an efficient and flexible manner, and we can even design customized heads.



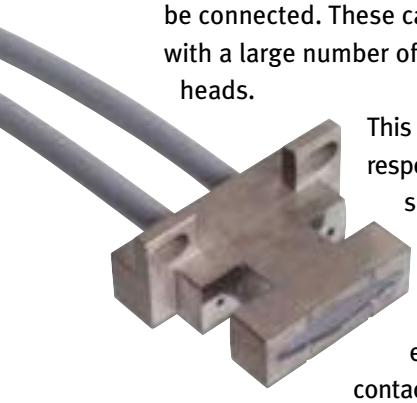
Our experience includes a thirty year tradition of excellence in design, production, and customer service! Give us your application and we will supply you with a fiber optic solution to match your needs!

WE HAVE A SOLUTION FOR EVERY CUSTOMER REQUEST – TALK TO US!

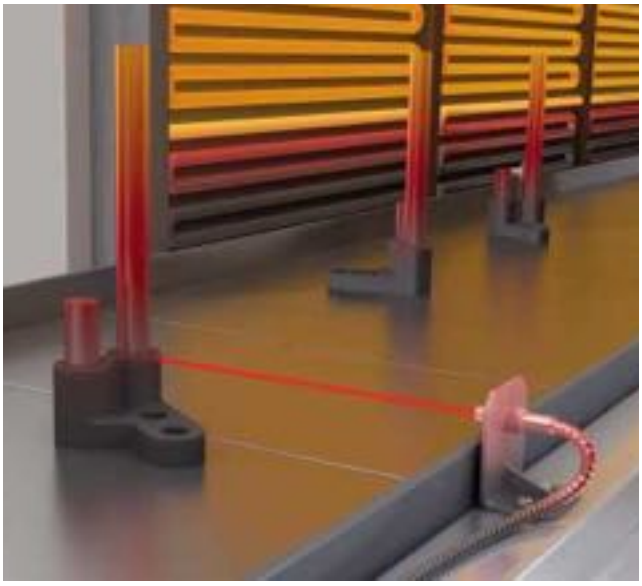
A WIDE SELECTION GIVES YOU THE POWER OF CHOICE!

FIBER OPTICS ADAPTED TO THE REQUIREMENTS

Flexible fiber optic cables are the ideal solution for applications with especially small mounting spaces. These fiber optic cables have PVC or PE coverings with bend radii up to 15 mm and can be used at temperatures ranging between –20 °C to +85 °C. If smaller bend radii or a higher temperature stability to +180 °C are required, flexible glass fiber optics are the right choice. For harsh conditions, such as those where cleaning agents are used or where temperatures rise as high as +300 °C, fiber optic cables with metal or silicone coverings are available. These fiber optics are characterized by their resistance in corrosive environments. Versions are available that can be used in paint processing with no adverse effects. Special applications need special fiber heads. Depending on the type of fiber optic amplifier, glass fiber optics or plastic fiber optics of up to several meters in length can be connected. These can be supplied with a large number of different heads.



This ensures mounting approriate for the respective application under almost any space conditions. Due to our in-house development, design, and production, Pepperl+Fuchs can supply fiber optics for special requirements. Our experience speaks in our favor. Please contact our experts and we will be happy to provide an appropriate solution!



FIBER OPTIC AMPLIFIERS

Each fiber optic requires a powerful analyser unit. Like the fiber optic cables, amplifiers are available in various designs depending on the requirement and application.

Pepperl+Fuchs fiber optic amplifiers feature a state-of-the-art device design, powerful outputs, fast response times and versatile connection options.
The spectrum ranges from devices for mounting rail installation via M18 and M30 screw thread designs to compact, miniaturized devices in plastic and metal housings.

A VARIETY OF APPLICATIONS

DETECTION OF SMALL PARTS AND WIRE

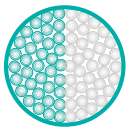
Diffuse – coaxial

Components as small as 0.05 mm can be detected using diffuse coaxial fiber optics.

Thru-beam

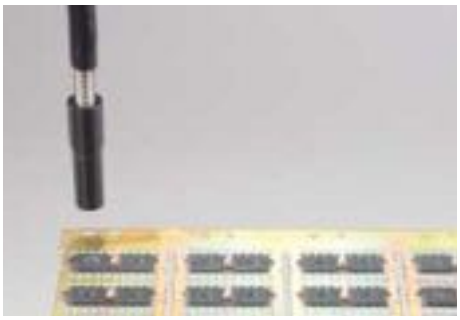
Thru-beam fiber optics with a very small light beam can also be used as long as the target is covered by the light beam.

PRESENCE CONTROL

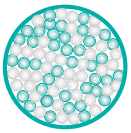


Diffuse – optically separated

Diffuse fiber optic cables are easy to mount and can be installed even in very small spaces. Object detection is ensured by reflecting the light beam on the target in the fiber optic field of view. Diffuse fiber optic cables can be supplied with various sensing heads and with very small light beams using focussing lenses. If backgrounds in the near range are available in object detection, fiber optics with beam crossing can be used. The optically crossed field of view permits suppression of the near background and effects a trouble-free switching characteristics as compared to traditional fiber optics.



EDGE DETECTION AND QUALITY CONTROL

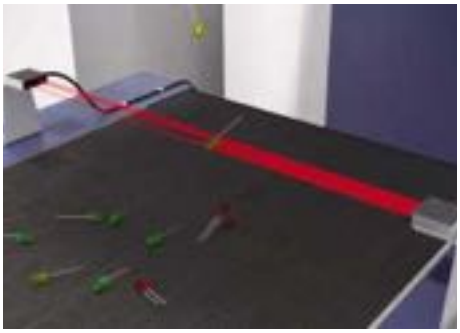


Reflex – statistically mixed

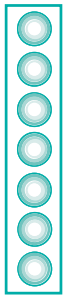
Diffuse fiber optics with statistically mixed transmitting and receiving fibers are excellent for edge detection. The removal of the optical separation between sender and receiving areas permits a very precise detection of edges. Additionally, fiber optics can be used to solve tasks in quality control, such as detecting material ruptures or uneven surfaces. These tasks can also be carried out by using diffuse coaxial fiber optics or thru-beam fiber optics.

DROP CONTROL

Objects that are dropped can be detected using fiber optics with an array. The light beam transmitted through an array covers an entire area, such as an assembly line band. Objects that drop anywhere through the surface can be detected and counted reliably.



DETECTION AND POSITIONING



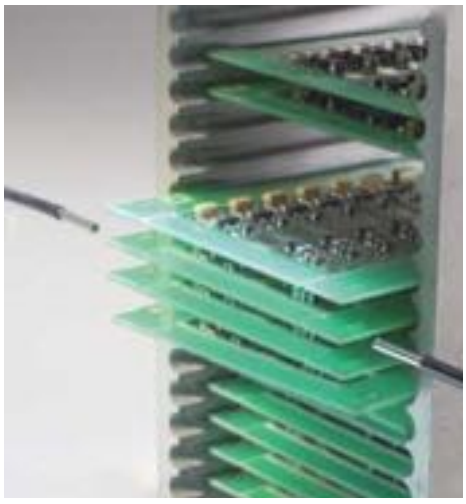
Thru-beam with array

Thru-beam fiber optics with array are ideal for detecting and positioning objects with indexing bore holes or break-outs.

CONTROL OF STACK HEIGHT OR FILLING LEVEL

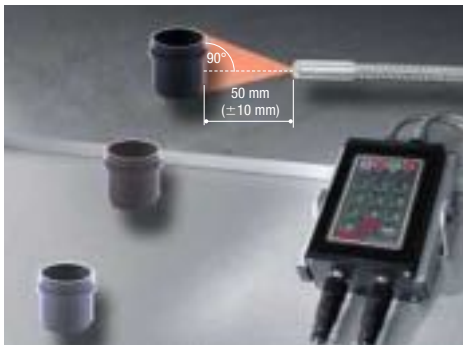
Thru-beam

Thru-beam fiber optics can be used to check stack heights and to control filling levels. The light beam is sufficiently damped by the presence of a liquid at a determined height, permitting the liquid level to be controlled. Diffuse fiber optic cables are also available to control filling levels.



CONTRAST AND COLOR RECOGNITION

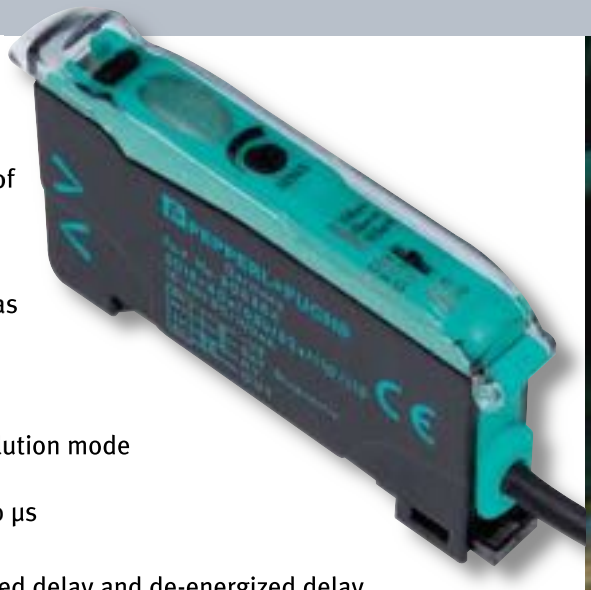
Glass fiber optic cables offer an excellent solution in solving contrast and color detection applications with difficult mounting conditions.
They provide a significantly lower damping than plastic fiber optics and contribute significantly to precise contrast or color recognition when fitted with a suitable sensor.



FIBER OPTICS FOR HAZARDOUS AREAS

Fiber optics can also be used in hazardous areas to detect objects where conventional sensor systems cannot be used.
Pepperl+Fuchs offer fiber optic solutions for ambient temperatures up to +300 °C.

SU18 – FIBER OPTIC AMPLIFIER WITH ADDED FEATURES

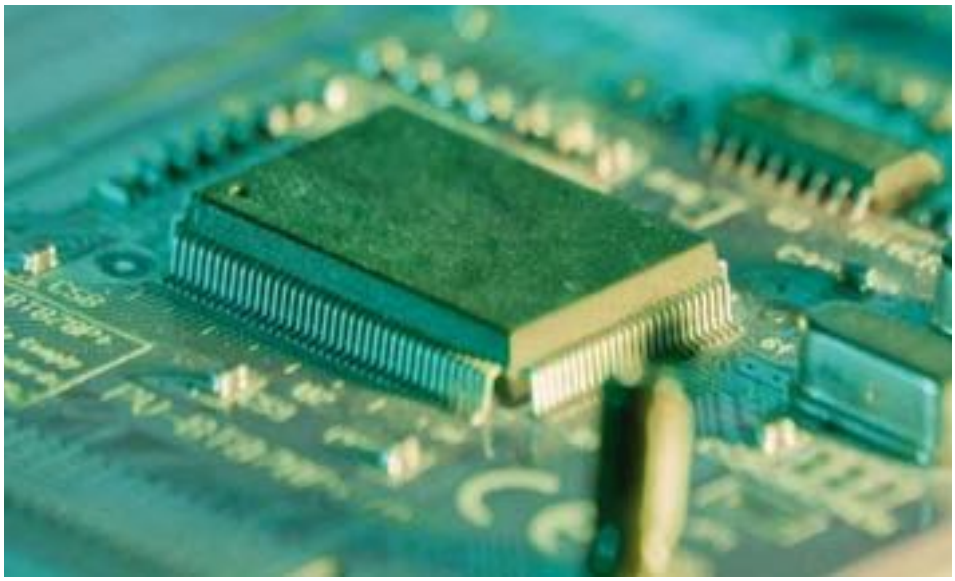


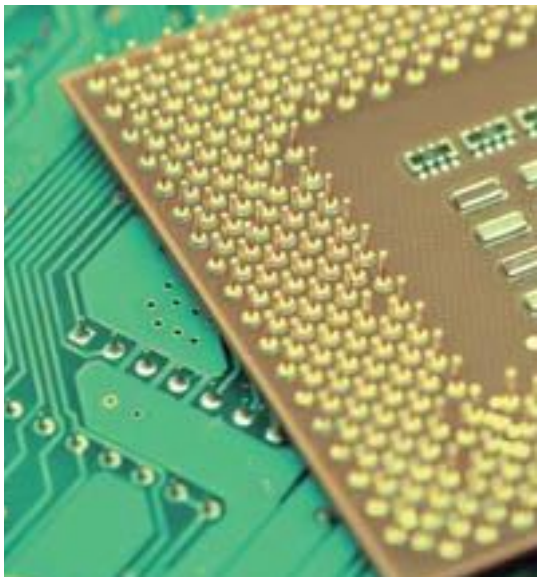
FEATURES OF THE SU18

- Suitable for use in all the fields of assembly automation and in the electronics and semiconductor industries.
- Available as a potentiometer or as a Teach-In model
- Three different Teach-In options: Dynamic, Maximum, Position
- High-speed mode and high-resolution mode integrated into one device
- Short response times of up to 80 µs
- Low no-load current (30 mA)
- Select time functions for energized delay and de-energized delay
- Used with highly flexible plastic fiber optics and robust glass fiber optics

NARROW HOUSING

SU18 offers a very narrow housing that permits mounting in places with very little space.





BENEFITS OF THE SU18

- Three different operating modes in one device
- Simple Teach-In saves time
- Space-saving, narrow housing
- Simple and fast operation via DIP switches – no programming needed
- Flexible fiber optic amplifier that can be combined with various fiber optic types.

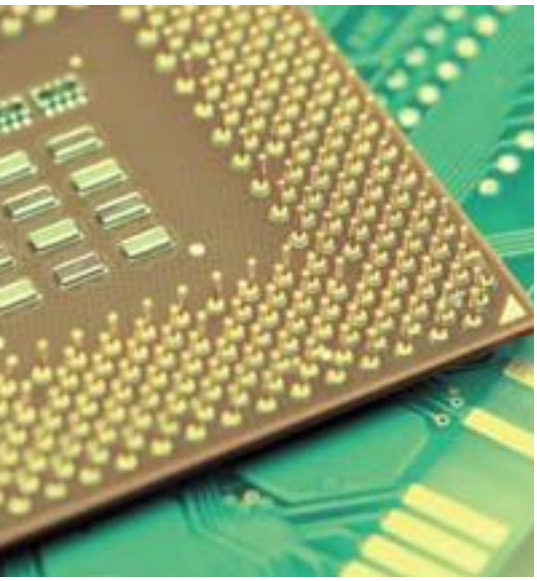
Thru-beam fiber optics: range of up to 675 mm

Retro-reflective fiber optics: range of up to 140 mm

1 DEVICE – 3 DIFFERENT OPERATING MODES

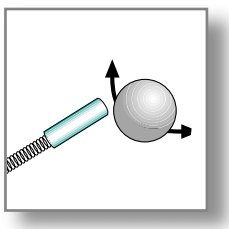
- Standard mode
- High-resolution mode
- High-speed mode

User-friendly DIP switches enable fast and easy setting of the appropriate operating mode and time functions.

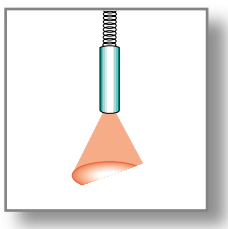


SIMPLE TEACH-IN

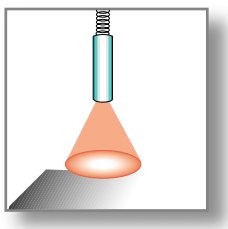
The simple Teach-In function permits teach-in of various objects simply by pressing a button.



Dynamic
Detection of dynamic objects



Maximum
Teach-in without objects



Position
Detection of a specific threshold value

ML17-LL – COMPACT AND POWERFUL

The ML17-LL series proves that compact dimensions do not imply short sensing ranges.

These powerful devices offer strong optical performance and small space requirements.

CHARACTERISTICS OF THE ML17-LL

- Setting of the sensor via potentiometer
- 4-in-1, state-of-the-art output
- 360° visible LEDs with diagnostic function
- Five different connection possibilities with fixed cable option, M8 or M12 connector or pigtail
- Flexible mounting with M18 front threading or mounting holes

BENEFITS OF THE ML17-LL

- Facilitates optimum space usage in the system
- Very large sensing range in a compact housing
- Economical

Thru-beam fiber optics: range of up to 400 mm

Retro-reflective fiber optics: range of up to 100 mm

SIMPLE CONNECTION PROVIDES FOR FAST COMMISSIONING

The sensor series do not only shine due to their compact dimensions but also due to their innovative connection concept that permits simple and safe connection of fiber optics to the amplifier unit. A simple screw driver is the only tool required for connection – rings or adapters are not necessary. A 1/4 turn of the fiber optic interlock fastens the fiber optic cable quickly and securely.
This simplifies and considerably shortens the commissioning procedure.

MLV41-LL – ROBUST IN ROUGH ENVIRONMENTS

The MLV41-LL is appropriate for all machines used in assembly automation as well as for packaging machines. The device combines powerful performance with a robust design, which makes it possible to use the MLV41-LL in tough environmental conditions. The MLV41-LL is the best choice when – apart from fiber optics – fiber optic amplifiers are also exposed to tough environmental conditions.

CHARACTERISTICS OF THE MLV41-LL

- Setting of the sensor via potentiometer
- State-of-the-art push-pull output
- Versatile connection possibilities with fixed cable option, M8 or M12 connector
- Response time of 500 µs
- Used with robust glass fiber optics
- Ranges depend on the fiber optics used

BENEFITS OF THE ML41-LL

- Fiber optic amplifier for use in rough environments
- Narrow housing dimensions
- Fast connection of robust fiber optic types
- Degree of protection IP67

4 FOUR OUTPUTS IN 1 ONE SENSOR

Thru-beam fiber optics: range of up to 200 mm

Retro-reflective fiber optics: range of up to 100 mm

OTHER FIBER OPTIC AMPLIFIERS AND ACCESSORIES

In addition to the new fiber optic amplifiers, a broad range of proven basic devices are available for your application.

VL18LL / GLV30-LL

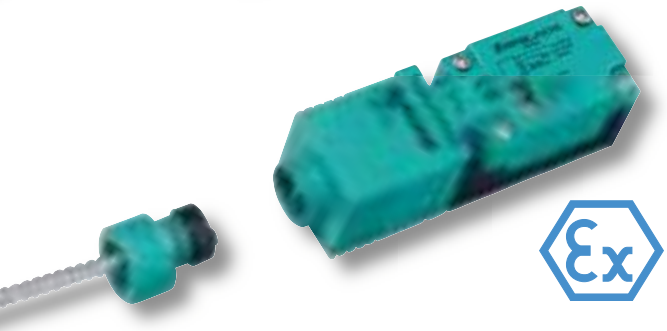
Ideal fiber optic amplifiers for tough environmental conditions.

- M18 or M30 thread designs
- Degree of protection IP67
- Multiple devices possible
- Light source: red light or infrared
- For robust glass fiber optics up to an ambient temperature of 300 °C.

SU15-G / SU15.1-K

The proven fiber optic amplifiers for use with glass fiber optics or plastic fiber optics.

- Appropriate for DIN rail installation
- Permits parameterization via an optical interface, e.g. freely selectable time steps and logic operations.



VARIKONT-M

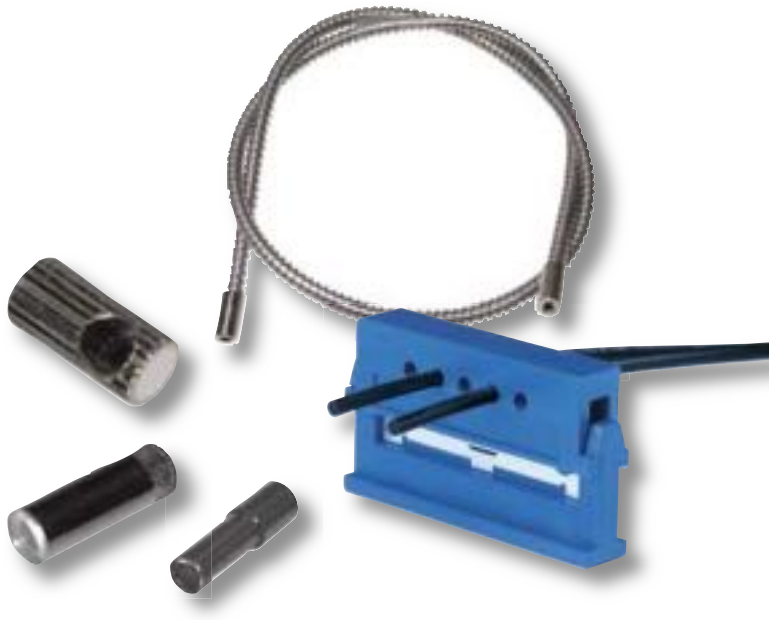
Due to its robust design with a variable head, it offers optimum mounting possibilities in hazardous areas.

- For EX Zone 1 and Zone 20 also suitable with fiber optics
- Degree of protection IP67
- Multiple devices possible
- Appropriate for robust glass fiber optics up 300 °C

FIBER OPTIC ACCESSORIES

The comprehensive fiber optic series by Pepperl+Fuchs is further supplemented by powerful accessories.

- Different offset lenses for focusing the light beam or increasing the range
- Metal hoses protect the plastic fiber optics in rough environments
- Cutter, for adapting the length of plastic fiber optics
- Adapter set for connecting fiber optics
- Mounting flanges for cylindrical fiber optics



TYPE CODE

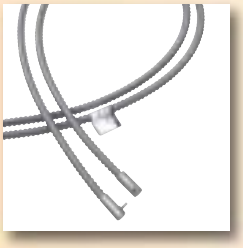
PLASTIC

GLASS

K — Core material — **L**

L — Fiber optic sheathing — **H C S L M**

L PVC/PE



H Highly flexible covering
C PVC/PE
S Silicon
L Metal-Silicon
M Metal

R Diffuse
E Thru-beam

E R — Principle of Operation — **R E**

R Diffuse
E Thru-beam

A Array
C Coaxial

A C — Special characteristics — **– F C**

– Optically separated
F Statistically mixed fiber core
C Coaxial

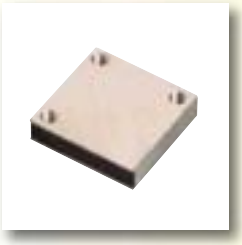
Series — **04**

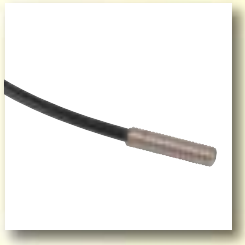
Fiber diameter (in mm) — **3,2**

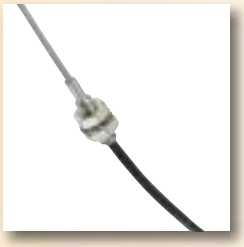
Fiber optic length in m — **0,5**

00/-	SU15.1-K, SU18, ML17-LL
04	MLV41-LL
05	VCS110
06	SU15-G
18	VL18-LL and VariKont M
18/30	GLV30-LL
30	RL5-LL

Heads, etc.







FACTORY AUTOMATION – SENSING YOUR NEEDS

Pepperl+Fuchs sets the standard in quality and innovative technology for the world of automation. Our expertise, dedication, and heritage of innovation have driven us to develop the largest and most versatile line of industrial sensor technologies and interface components in the world. With our global presence, reliable service, and flexible production facilities, Pepperl+Fuchs delivers complete solutions for your automation requirements – wherever you need us.

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