

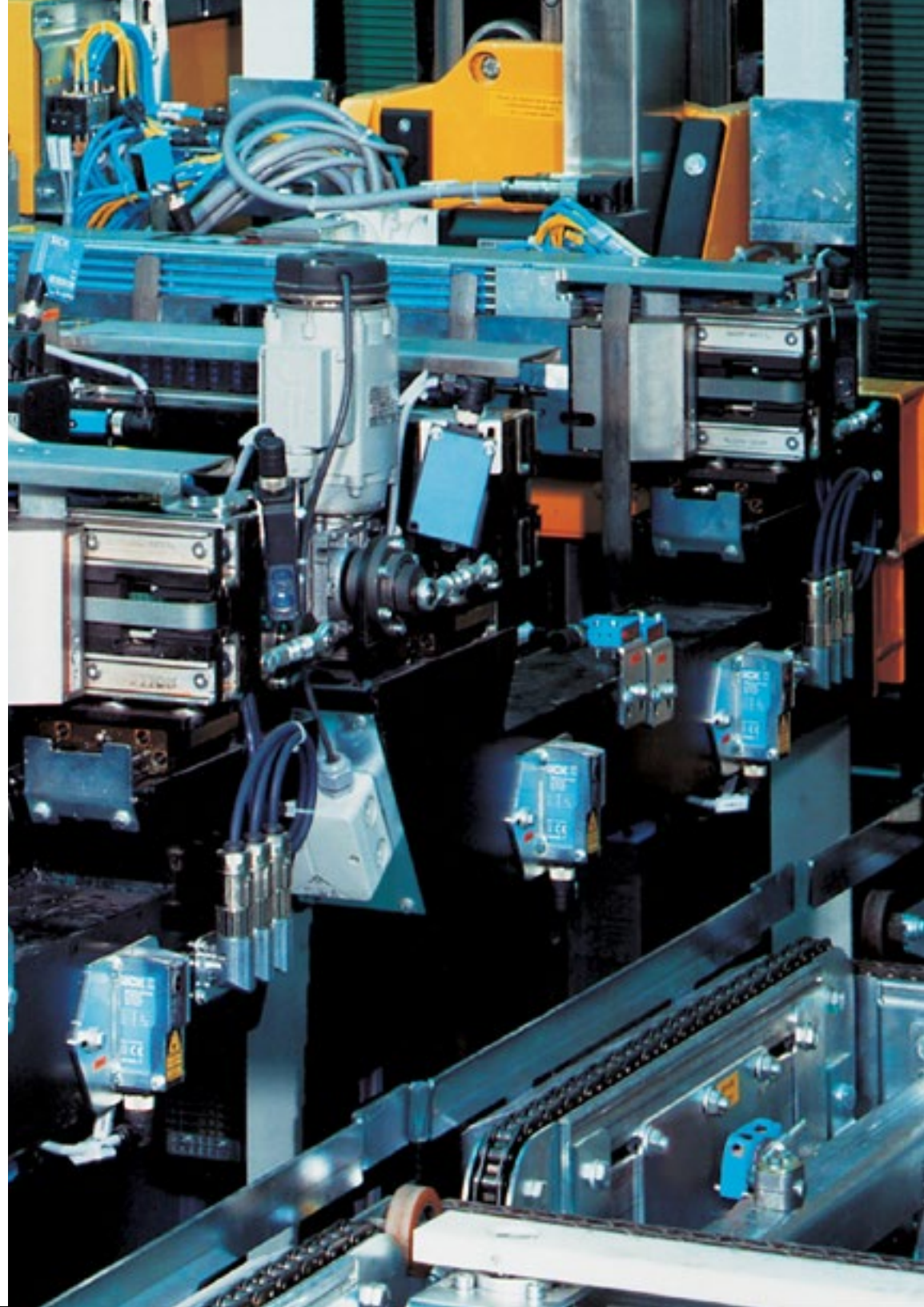
# INDUSTRIAL SENSORS SELECTION GUIDE

There are many different types of industrial sensors that can be used for detection applications – from photoelectric sensors to inductive sensors to fiber-optic sensors.

So which one makes sense for your application?

To answer your questions, check out this comprehensive guide for some of the most reliable and commonly used sensors in industrial manufacturing today!

**SICK**  
Sensor Intelligence.



# CAPACITIVE PROXIMITY SENSORS

Capacitive proximity sensors detect all objects. Capacitive proximity sensors are ideal for level and feed monitoring. From solid material, such as paper or wood, to granules or liquids, they reliably detect the status of the product during the production process and final inspection. The sensing range increases with the dielectric constant of the object to be detected. They are installed in a wide range of industries, such as food, automotive, or in storage and conveyor systems.



## APPLICATIONS

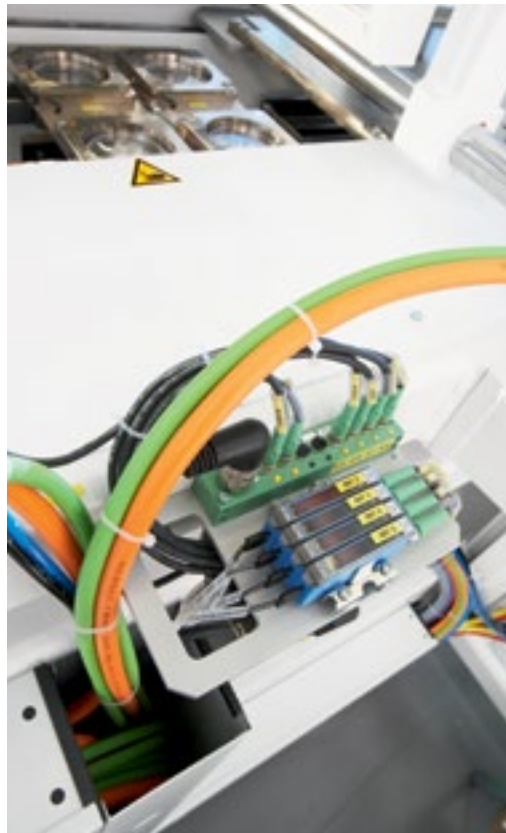
- Level monitoring when filling containers
- Level monitoring of bulk materials
- Final inspection in packaging processes

[CLICK HERE TO DISCOVER  
CAPACITIVE PROXIMITY  
SENSORS](#)

# FIBER-OPTIC PHOTOELECTRIC SENSORS

With fiber-optic photoelectric sensors, the sender and receiver are contained in a single housing. For use as a through-beam system, separate fiber-optic cables are used for the sender and the receiver. For a proximity system, the sender and receiver fiber-optic cables are joined in one fiber-optic cable.

When installation space is extremely limited or the objects to be detected are tiny, fiber-optic sensors are the ideal solution. Fiber-optic sensors can be used in many environments including hazardous and harsh environments, and in high temperature applications.



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EXPLORE FIBER-OPTIC  
PHOTOELECTRIC SENSORS](#)

# INDUCTIVE PROXIMITY SENSORS

Inductive proximity sensors offer reliable detection in nearly all areas and industry sectors. They detect metal targets and are suitable for diverse applications due to their variety of housing shapes and sizes.



## APPLICATIONS

- Position sensing
- Transport monitoring
- Pulse generation
- RPM monitoring
- Detection of direction of rotation
- Feed and reject control
- Monitoring of idle running or congestion

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EXPLORE INDUCTIVE  
PROXIMITY SENSORS](#)

# MAGNETIC CYLINDER SENSORS

For many tasks in automation it is necessary to precisely detect the position of pneumatic cylinders. Specially designed magnetic cylinder sensors are used to determine the position of the pistons in pneumatic cylinders. They are mounted directly on the cylinder body. They reliably detect a magnet in the piston through the housing wall of aluminum, brass, and trigger a switching signal. Magnetic-cylinder-sensorsor stainless steel, and trigger a switching signal. The magnetic cylinder sensors from SICK feature high sensitivity and switching precision, plus practical mounting accessories for all commonly used pneumatic cylinders.

Click to watch the video on the MZ2Q, a magnetic cylinder sensor with two adjustable switching points in one sensor.



**VIDEO**

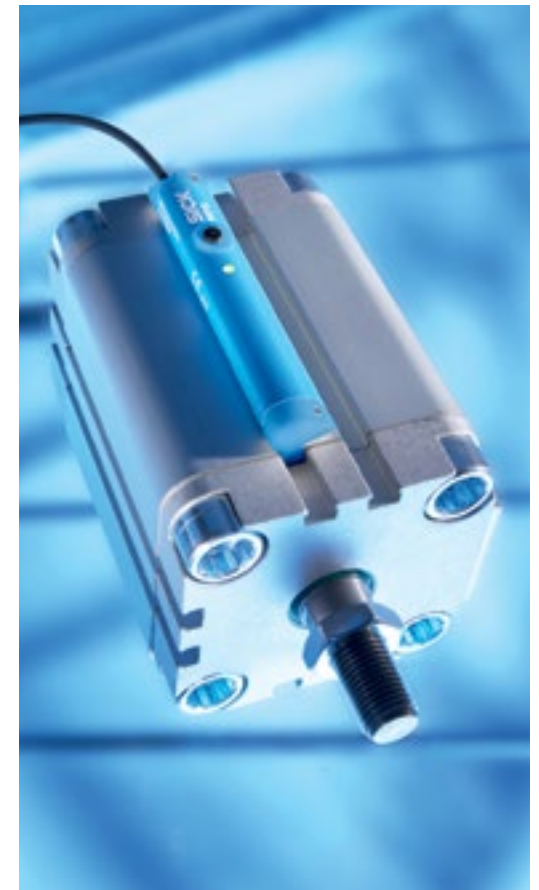


**TAILORED FOR DIFFERENT APPLICATIONS**  
Click one of the categories to learn more

**POSITION SENSORS**

**SENSORS FOR  
C-SLOT CYLINDERS**

**SENSORS FOR  
T-SLOT CYLINDERS**



# MAGNETIC PROXIMITY SENSORS

The defining feature of magnetic proximity sensors is their long sensing ranges, even with small housing sizes. They detect magnetic objects, usually permanent magnets, which are used to trigger switching. As magnetic fields can penetrate many non-magnetizable materials, switching can be triggered even through other materials. By using magnetic conductors (such as iron) the magnetic field can also be transported relatively long distances for various tasks, such as taking a signal out of an area of high temperature.

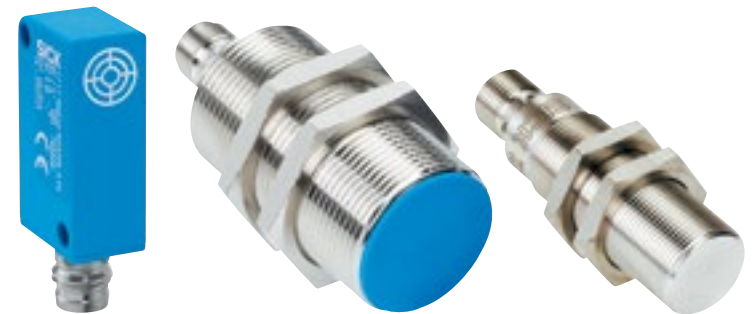
Click to watch the video to learn more about magnetic proximity sensors.



**VIDEO**



**CLICK HERE TO EXPLORE  
MAGNETIC PROXIMITY SENSORS**



## APPLICATIONS

- Object detection through plastic containers/tubes
- Object detection in aggressive media through a protective PTFE wall
- Object detection in high temperature zones
- Detection of coding using magnets

# PHOTOELECTRIC PROXIMITY SENSOR

The most affordable photoelectric solution is the energetic proximity sensor. A light colored surface reflects more light than a dark one and can therefore be detected from a greater distance away. To achieve similar results with a dark surface, the sensitivity of the sensor must be increased. However, detecting a dark object against a light background is not without its problems for energetic sensors. The object is obscured by glare from the background due to the higher reflectivity of the background. Light colored objects against dark backgrounds are easier to detect.



[CLICK HERE TO EXPLORE  
BGS PHOTOELECTRIC  
PROXIMITY SENSOR](#)

[CLICK HERE TO EXPLORE  
FGS PHOTOELECTRIC  
PROXIMITY SENSOR](#)

## BGS

Photoelectric proximity sensors with background suppression (BGS) operate on the basis of the triangulation between the sender and receiving element. Signals from objects behind the set sensing range are suppressed. Sensors with SICK's advanced BGS technology will ignore highly reflective objects in the background and be immune to ambient lighting.

## FGS

Photoelectric proximity sensors with foreground suppression (FGS) are able to detect objects at a defined sensing distance. All objects between the sensing distance (set to the background) and the sensor are detected. For reliable functioning of these sensors, the background (for example, a conveyor belt) needs to be relatively bright and should not vary in height.

# PHOTOELECTRIC PROXIMITY SENSOR

## RETRO-REFLECTIVE SENSORS

With a photoelectric retro-reflective sensor, the emitted light is returned by a reflector and is received and evaluated by the sensor. Polarizing filters prevent errors when detecting reflective objects. Transparent plastic wrapping and stretch film can affect the functioning of photoelectric retro-reflective sensors. In such cases it helps to use devices with reduced sensitivity. The use of lasers allows greater sensing ranges while simultaneously maintaining a high resolution. Focus ranges can be set with high precision.



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LEARN MORE ABOUT  
RETRO-REFLECTIVE SENSORS](#)

## RETRO-REFLECTIVE SENSORS FOR DETECTING TRANSPARENT OBJECTS

These photoelectric retro-reflective sensors are characterized by an especially low switching hysteresis. Even minimal light attenuation between the sensor and reflector – that would be caused by glass bottles or even PET bottles – is detected reliably.

In sensors with AutoAdapt, an innovative system monitoring feature continuously regulates and adapts the switching threshold in the event of gradual contamination that would otherwise lead to failure.





# PHOTOELECTRIC PROXIMITY SENSOR

## ZONE CONTROL SENSORS

Specially designed for material handling, these photoelectric proximity sensors detect product on conveyors without contact. The detection signal is evaluated in the logic unit and actuated via the valve of the electro-pneumatic cylinder. This technique allows the principle of accumulating conveying to be realized without the use of additional control elements.



[CLICK HERE TO  
LEARN MORE ABOUT  
SENSORS FOR ZONE CONTROL](#)

[CLICK HERE TO EXPLORE  
THROUGH-BEAM  
SENSORS](#)

## THROUGH-BEAM PHOTOELECTRIC SENSORS

The through-beam photoelectric sensor consists of two devices, a sender and a receiver. The separation makes long sensing ranges possible. The use of laser diodes allows greater sensing ranges while simultaneously maintaining a high resolution. Focus ranges can be set with high precision.

# CONNECTIVITY SOLUTIONS

The M8 and M12 standard cables produced by SICK provide multiple options for connecting your industrial automation processes. With PVC, PP, PUR, and field wireable cable connectors, these can be used in a variety of applications and are able to withstand harsh industrial environments.



[CLICK HERE  
TO LEARN MORE ABOUT  
M12 STANDARD CABLE](#)

[CLICK HERE  
TO LEARN MORE ABOUT  
M8 STANDARD CABLE](#)

# LET US HELP YOU FIND THE PERFECT SENSOR FOR YOUR APPLICATION



**SICK**  
Sensor Intelligence.

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