

### Opto-electronic proximity sensors

These sensors use the light spectrum to accurately determine the position of any object. Their detection distance is much greater than that of other types of proximity sensors.

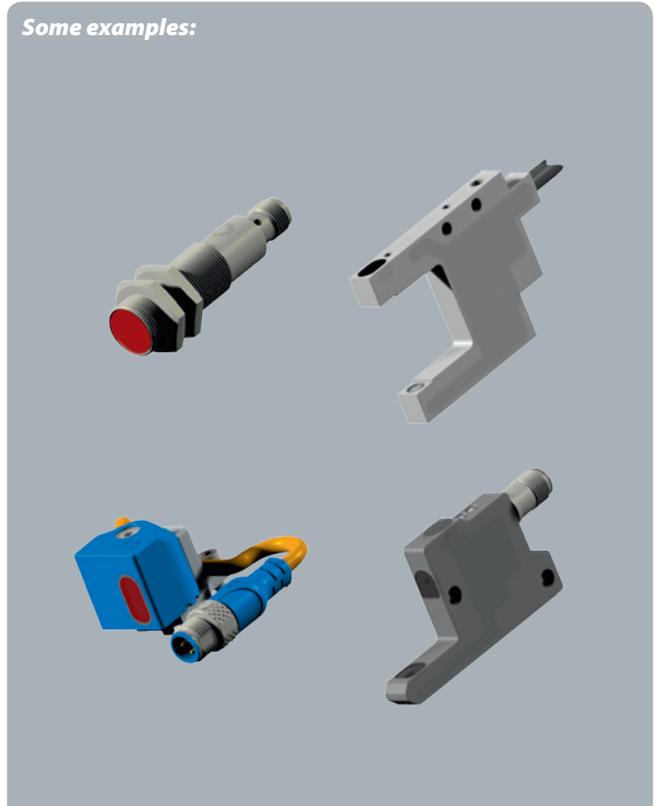
#### Selection guide

Depending on the intended application, the user has the choice between:

-  the "Direct Reflex" series,
-  the "Background suppression" series,
-  the "Retro Reflex" series,
-  the "Through beam" range (transmitter, receiver),
-  the "Optical fork" and "L Sensor" series,
- or any number of other special sensors (e.g. brightness control sensors).

These different types of opto-electronic sensors are described in the pages that follow.

#### Some examples:



The table below will enable you to select the range best suited to your application:

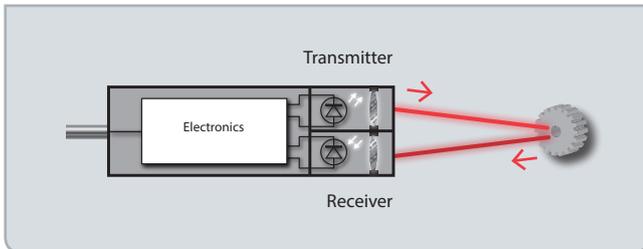
Selection table

Series					
Decisive criteria					
Operating range	0 - 1.6 m	0 - 0.5 m	0.2 - 8 m	0 - 10 m	0 - 0.2 m
Independent of object colour		✓	✓	✓	✓
Independent of brightness			✓	✓	✓
Recognition of very small objects	With LASER	With LASER	With LASER or small sensor	With diaphragm (or with LASER if the target is larger than the lens)	



### Operating principle of the "Direct Reflex" series

"Direct reflex" sensors contain a transmitter and a receiver in the same housing. A part of the light emitted by the transmitter is reflected by the object to be detected.

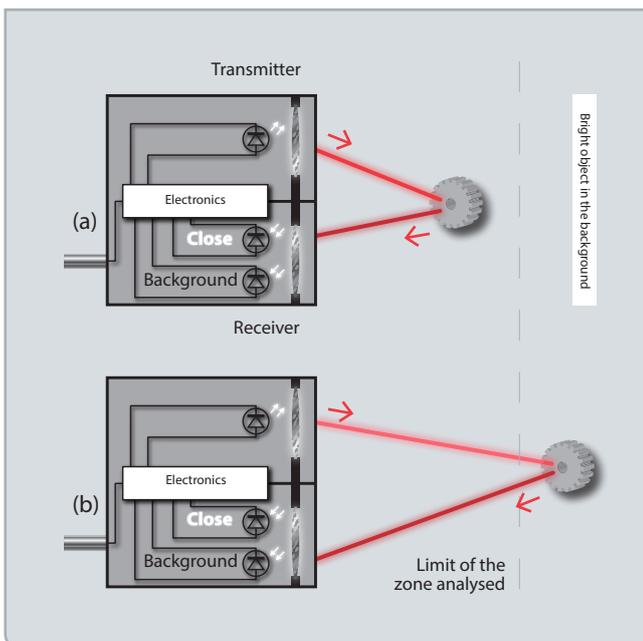


These sensors usually use visible red or infrared light. In all cases it is necessary to adjust the sensitivity to the distance of the object and its ability to reflect the light.

### "Background suppression" series

The sensors in the "Background suppression" series have two receivers – one for the "close zone" and one for the "background", which makes it possible to ignore an object situated in the background.

In diagram (a), the object is in the zone analysed. Most of the light reflected is received by the "Close" receiver; the sensor triggers the signal. All the light reflected by any objects present in the background will be suppressed. In diagram



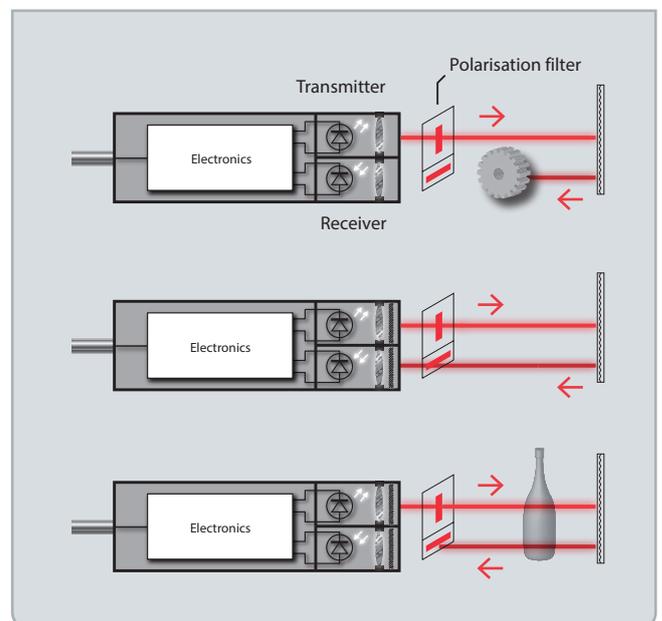
(b), the object is in the background zone. Most of the light reflected is received by the "Background" receiver; the sensor does not trigger the output signal.

This type of detection operates relatively independently of the colour of the object.



### Operating principle of the "Retro Reflex" series

This type of sensor is based on the same principle as the "Direct Reflex" series, the difference being that the light is polarised and reflected back by a reflector situated on the front of the sensor. Any object that interrupts the beam will trigger the sensor.



The light transmitted is polarised at a given angle. The reflector turns this polarisation 90° and the receiver receives only this light polarised at 90°. This technique makes it possible to detect transparent or reflective objects.

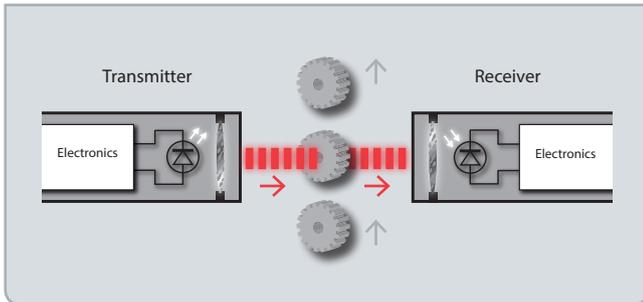
Using a LASER source increases the sensing range.

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### Operating principle of the "Through beam" series

The sensors in the "Through beam" series comprise two separate parts: a transmitter and a receiver placed opposite each other. The transmitter emits a characteristic pulsed light with which the receiver is synchronised. Any object that cuts off the light beam is recognised by the receiver.

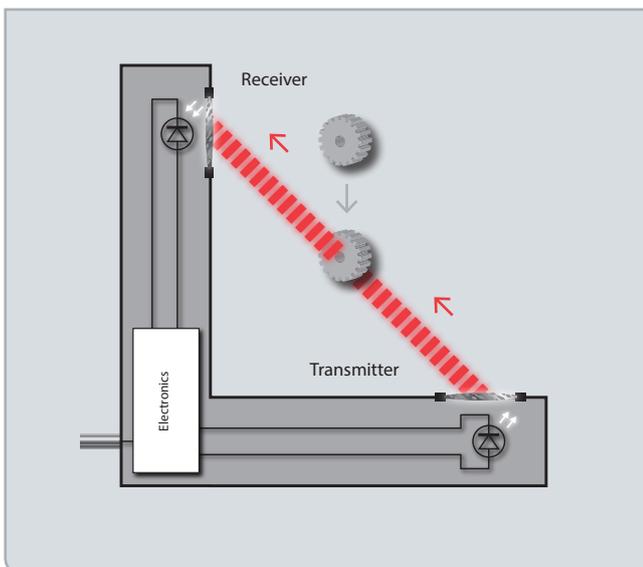


This configuration using two separate elements makes it possible to work with greater distances. Using a laser diode allows this distance to be extended.

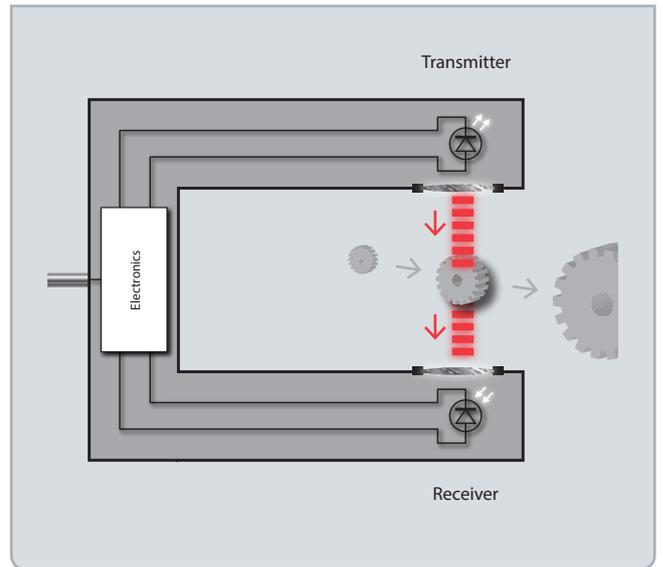


### Operating principle of the "Optical fork" and "L Sensor" series

In the "L Sensor" series of angle sensors, the transmitter and the receiver are joined together, mounted at a right angle or adjustable angle and managed by the same electronics.



In the "Optical fork" series, the transmitter and the receiver are joined together, mounted at the ends of a U and managed by the same electronics. The sensors in the "Optical fork" series do not require any particular mounting support



or alignment. They also use only one cable. As a result, they are extremely quick to install and very easy to replace.

Both series require no adjustment.

### The SENSTRONIC range

#### Main features

Technologies	direct reflection ( <i>diffuse</i> ), direct reflection with background suppression, retro-reflection and through beam
Light	visible red, infrared and LASER
Sensing range	0 to 10 m (" <i>through beam</i> " technology)
Material	plastic, aluminium, steel or nickel-plated brass
Shape	cylindrical or rectangular

#### "L" Series

Light	infrared
Beam	length 60 to 150 mm

#### "Fork" series

Detection	objects from 0.25 mm in diameter
Frequency	up to 20 kHz

#### "Brightness control" series

Preprogrammed or teachable	
With or without effort control	
With or without guard to protect the optical parts	

### Special products

SENSTRONIC is at your disposal to discuss special applications or development requests. Do not hesitate to contact our sales department.