CARLO GAVAZZI
Automation Components

CARLO GAVAZZI

Photoelectric Sensors

- ***Diffuse Reflective Sensing***
  Offered with or without
  Background suppression
- ***Retro-reflective Sensing***
  Offered with or without
  Polarizing filters
- ***Through-beam Sensing***
- ***Transparent Object Sensing***
- ***Fiber Optic Sensing***
- ***Contrast Sensing***
- ***Color Sensing***
- ***Laser Sensing***
- ***Optical Level Sensing***

Sensors

Elevator and Entrance Control

New photoelectric sensors with one-step snap mounting and long sensing distances provide the benefits that are most desired in the elevator and entrance control industry – simple, flexible, and reliable. Available as stand-alone units or with external amplifier and relay output. These compact sensors feature a 15 meter sensing distance, giving great range for a great price.

Material Handling

Carlo Gavazzi's extensive line of photoelectric sensors includes many of the most popular configurations and styles used for material handling applications. With extended sensing ranges in through-beam, polarized retroreflective, diffuse, and transparent object detection, finding the right sensor for any application is no problem.

Wood

Thanks to exceptionally high excess gains, many of our photoelectric sensors are used in environments where dirt and dust normally cause detection problems. With external amplifiers capable of controlling up to ten pairs of sensors, the flexibility exists to detect timber, paper, tools, and more, with outstanding reliability.

Carwash

Carlo Gavazzi's photoelectric sensors have long been the standard in the carwash industry. We offer high power photoelectric systems built to operate reliably in mist, fog, splashing water and detergents. With amplifiers that can control up to ten pairs of sensors, which offer full diagnostic and alignment capabilities, vehicle detection in this demanding environment has never been easier.

Automatic Industrial Doors

Carlo Gavazzi's photoelectric sensors are designed to meet the latest regulations for automatic industrial doors in Europe and North America. A door controller can verify the sensing function through the built-in control input. The sensors are designed for object as well as forsafety edge detection. A broad range of sensors in different shapes and sizes are available.

Packaging, Food and Beverage

Carlo Gavazzi offers a broad range of photoelectric sensors for packaging and food/beverage machinery. The sensing program consists of various sensing principles: Diffuse, background suppression, retroreflective with or without polarization, throughbeam, contrast, color sensors and clear object detection. Also available are fiber optic sensors which can be mounted in extreme temperature and atmospheric conditions, as well as slotted sensors for labeling applications.

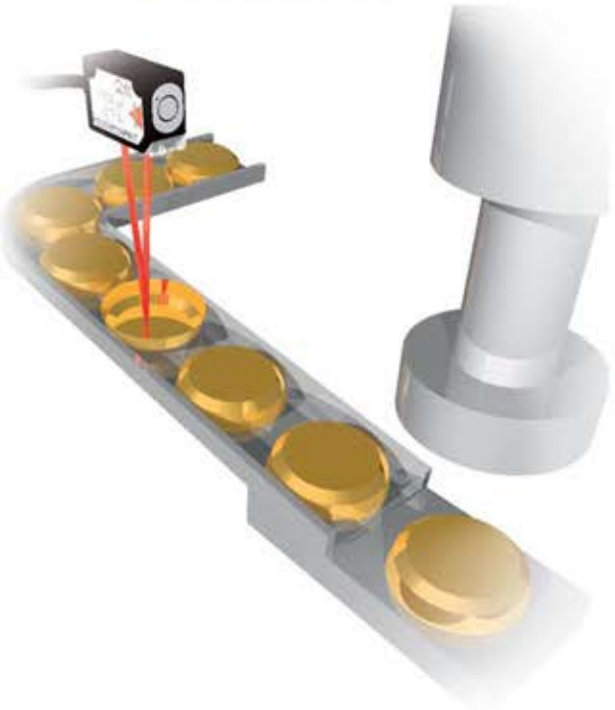
Sensing Principles

Diffuse-reflective Photoelectric Switches

In diffuse-reflective photoelectric sensors, the emitter and receiver are integrated in the same unit. The emitter generates a modulated light beam. An object placed in front of the photoelectric sensor will reflect diffused light at all angles with a certain intensity (refl ectivity) depending on its surface, size, color and distance from the sensor. The output changes state if the receiver senses sufficient light. Emitter and receiver are synchronized to reduce interference from ambient light. The sensing distance can be adjusted by potentiometer or by teach-in.

Diffuse-reflective Photoelectric Switches with Background Suppression

Diffuse-reflective photoelectric sensors with background suppression avoid false signals caused by shiny backgrounds by suppressing all light reflected behind the target object. It is the angle of reflected light that is sensed and not only the intensity that makes it possible to distinguish between an object and a background. The background can therefore reflect more light than the actual object without causing a false signal. Only light reflected in front of the background will cause a change in the output state. The background suppression is adjustable within a certain range and can be done either electrically or manually.

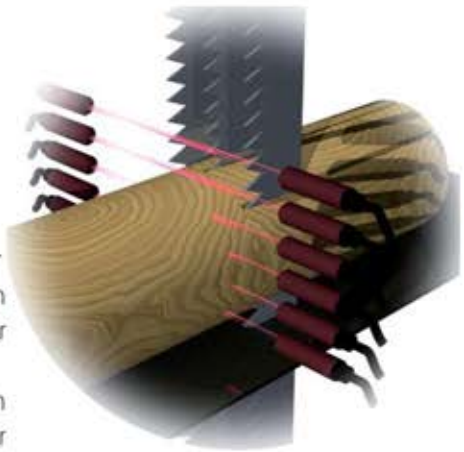


Polarized Retro-reflective Photoelectric Switches

With retro-reflective photoelectric sensors, the emitter and receiver are integrated in the same unit. The emitter generates a modulated light beam, which, if reflected by a reflector or special refl ective tape, is sensed by the receiver. The output changes state if an object interrupts the light reflected by the reflector. Emitter and receiver are synchronized to reduce interference from ambient light. In certain types the sensing distance can be adjusted by potentiometer or by teach-in. To increase immunity from targets with highly reflective surfaces, a retro-reflective sensor can be equipped with polarization filters (antiglare filters).

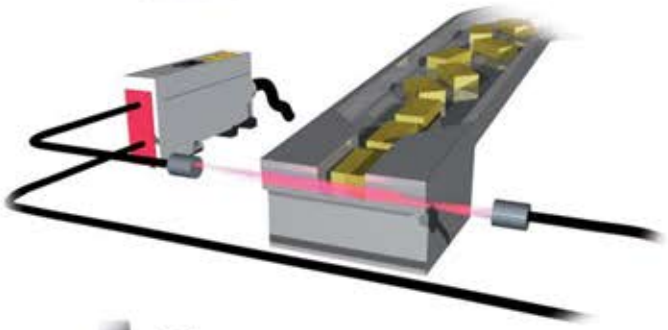
Through-beam Photoelectric Switches

Through-beam photoelectric sensors have a separate emitter and receiver unit. The switching element changes state when an object interrupts the modulated light beam between the emitter and receiver.
The amplifier stage can be in a separate unit or self-contained in the receiver unit. In separate amplifier types, emitter and receiver are electrically synchronized. In other types, the sensitivity of the receiver element is adjusted by potentiometer or by teach-in.



Fiber Optical Photoelectric Switches

A fiber optic sensor can be configured as a diffuse or through-beam sensor depending on the fibers attached. The advantage of using fibers is that they can enter areas where standard sensors cannot be mounted. Safe operation in high temperature, vibrations, large electromagnetic fields etc. can be achieved.



Contrast Photoelectric Switches

Contrast sensors are used for detecting color marks on items such as labels. The sensor works like a standard diffuse sensor with the difference being that the light beam is concentrated to a small spot. The emitter uses white light and the receiver is optimized to distinguish between several shades of gray tones from a scale ranking from black to white.

Color Photoelectric Switches

The color sensor can detect real colors. The emitter, consisting of three LEDs (red, green and blue), emits light to the object; the reflected light is analyzed by the receiver circuit and compared with the stored reference signal. The output changes state if the received signal is within the selected tolerances.
The sensor consists of an amplifier and detachable fiber heads with different focus distance. The sensor can be used for both reflective as well as transparent materials.

Fork Photoelectric Switches

The sensor is a through-beam sensor where the emitter and receiver are mounted in each side of the slot on the sensor. The sensor can be set up to detect the smallest variation of light interruption and can therefore be used for detecting a label from its carrier foil.

Series

PB10, PB18, PE12

Sensing Principle

Through-beam:	Up to 20 m
Supply Voltage:	10-30 VDC
Output:	100 mA, NO or NC, NPN or PNP transistor
Operating Temperature:	- 20 to +50°C
Enclosure Rating:	IP67
LED Indication:	Power or Output
Connection:	Cable or pigtail connector
Dimensions:	
PB10:	Ø10 x 42 mm
PB18:	Ø18 x 30 mm
PE12:	Ø12 x 29 mm

CE UL 325

M18

Sensing Principle

Through-beam:	10 or 20 m
Retroreflective:	3 m
Pol. retro-reflective:	2 m
Diffuse reflective:	400 m
Supply Voltage:	10-40 VDC or 20-265 VAC
Output: DC:	200 mA NO+NC
AC:	500 mA NO or NC
Operating Temperature:	- 20 to +60°C
Operating Frequency:	100 Hz
Enclosure Rating:	IP67
LED Indication:	Power or Output
Connection:	Cable or M12 Plug
Dimensions:	M8 x 55 (72 mm)

CE UL CSA

PD40

Sensing Principle

Through-beam:	4 m
Pol. retro-reflective:	1,5 m
Diffuse reflective:	500 mm
Backgr. suppression:	80 mm
Fiber optic:	120 mm
Supply Voltage:	10-30 VDC
Output:	NO or NC, 200 mA NPN or PNP
Operating Temperature:	0 to +50°C
Operating Frequency:	500 Hz
Enclosure Rating:	IP67
LED Indication:	Power and Output
Connection:	Cable or M8 Plug
Dimensions:	10 x 40 x 12,5 mm

CE cULus

PD32, LD 32

Sensing Principle

Through-beam:	6 m
Pol. retro-reflective:	3 m
Diffuse reflective:	500 mm
Backgr. suppression:	120 mm
Clear Object:	500 mm
Supply Voltage:	10-30 VDC
Output:	NO + NC, 200 mA NPN or PNP
Operating Temperature:	- 25 to +60°C
Operating Frequency:	1000 Hz
Enclosure Rating:	IP67
LED Indication:	Power and Output
Connection:	Cable or M8 Plug
Dimensions:	12 x 20 x 32 mm

CE cULus

PA, PB

Sensing Principle

Backgr. suppression:	150 mm
Pol. retro-reflective:	3 m
Supply Voltage:	10-30 VDC
Output:	200mA, NO and NC, NPN or PNP transistor
Operating Temperature:	-25 to +50°C
Operating Frequency:	1.000 Hz
Enclosure Rating:	IP67
LED Indication:	Output
Connection:	Cable or M12 Plug
Dimensions:	
PA:	18 x 36 x 63 mm
PB:	18 x 75 x 36 mm

CE

Ex55

Sensing Principle

Through-beam:	5 m
Pol. retro-reflective:	2 m
Diffuse reflective:	200 mm
Supply Voltage:	10-30 VDC
Output:	NO and NC, 200 mA NPN or PNP
Operating Temperature:	-20 to +60°C
Operating Frequency:	100 Hz
Enclosure Rating:	IP67
LED Indication:	Output
Connection:	Cable or M12 Plug
Dimensions:	35 x 55 x 15 mm

CE

PD60

Sensing Principle

Pol. retro-reflective:	1,5 m
Diffuse reflective:	500 m
Clear Object:	0,8 m or 1,4 m
Contrast:	18 mm (fiber dependent)
Fiber optic:	200 mm
Supply Voltage:	10-30 VDC
Output:	NO or NC, 200 mA NPN or PNP
Operating Temperature:	0 to +60°C
Operating Frequency:	1.000 Hz or 10.000 Hz (contrast)
Enclosure Rating:	IP67
LED Indication:	Power and Output
Connection:	Cable or M8Plug
Dimensions:	13 x 30 x 60 mm

CE cULus

PC 50

Sensing Principle

Through-beam:	20 m
Retro-reflective:	10 m
Pol. retro-reflective:	6 m
Diffuse reflective:	1 m or 2 m
Supply Voltage:	10-30 VDC, 12-240 VDC/24-240 VAC
Output:	NO or NC, 200 mA NPN/PNP or 3A SPDT
Operating Temperature:	-20 to +60°C
Operating Frequency:	500 Hz
Enclosure Rating:	IP67
LED Indication:	Power and Output
Connection:	Cable or M12 Plug
Dimensions:	17 x 50 x 50 mm

CE UL CSA

Series

PM

Sensing Principle

Through-beam:	Up to 20 m
Pol. retro-reflective:	12 m
Retro-reflective:	10 m
Diffuse reflective:	0,8 mm
Supply Voltage:	12-265 VDC and 24-265 VAC
Output:	SPDT relay, AC15: 2A/250 VAC DC13: 3A/30 VDC
Operating Temperature:	-25 to +55°C
Operating Frequency:	20 Hz
Enclosure Rating:	IP67
LED Indication:	Output ON
Connection:	Screw terminals
Dimension:	25 x 68 x 81 mm

EN12445 EN12453 EN12978

PF80

Sensing Principle

Fork width:	3 mm
Supply Voltage:	10-30 VDC
Output:	NO or NC, 100 mA NPN and PNP - Push-pull
Operating Temperature:	-20 to +60°C
Operating Frequency:	10 kHz
Enclosure Rating:	IP65
LED Indication:	Red and Yellow LED
Connection:	M8 Plug
Dimension:	12 x 38 x 80 mm

PD12

Sensing Principle

Diffuse reflective:	Colour: 2-60 mm Storage of up to 4 independent colours
Supply Voltage:	24 VDC
Output:	1 or 4 outputs NO or NC, 100 mA NPN and PNP - Push-pull
Operating Temperature:	0 to +40°C
Operating Frequency:	500 (25) Hz
Enclosure Rating:	IP65
LED Indication:	Power, Output, Teach
Connection:	M12 Plug
Dimension:	12 x 20 x 32 mm
Accessories:	Optical fibers

MPF

Sensing Principle

Through-beam:	15 m
Channels (sensor set):	1,2 or 3
Supply Voltage:	12-24 VAC/DC, 115 VAC or 230 VAC
Output:	SPST relay, AC15: 0,75A/ 240 VAC DC13: 0,22A/125 VDC
Operating Temp:	-20 to +60°C
Operating Freq:	10 Hz
Enclosure Rating:	Amp. IP40, Sens. IP67
LED Indication:	Output and supply
Connection:	Screw terminals
Dimension:	4 DIN (70 x 86 x 57 mm)
Sensors:	MPF.. 4: Ø12 x 20 mm MPF.. 4-M14: M14 x 28 mm MPF.. 4-D18: Ø18 x 25 mm

EN12445 EN12453 EN12978

MOF

Sensing Principle

Through-beam:	20 or 50 m
Supply Voltage:	12-24 VAC/DC, 115 VAC or 230 VAC
Output:	SPDT relay, AC1: 8A/250 VAC DC1: 0,2A/250 or 2A/25 VDC
Operating Temp:	AMP: -20 to +50°C Sensor: -20 to +60°C
Operating Freq:	16 kHz
Enclosure Rating:	Amp. IP40, Sens. IP67
LED Indication:	Supply, Output, Signal
Connection:	11 pole circular socket
Dimension:	35 x 80 x 84 mm
Sensors:	MOF..: Ø10 x 42 mm MOF..M12: M12 x 42 mm MOF..M14: M14 x 42 mm

EN12445 EN12453 EN12978

VP

Sensing Principle

Liquid level sensing
(Sensor tip in contact with liquid)

Supply Voltage:	10 - 40 VDC, 15 VAC or 230 VAC
Output:	NO or NC, 200 mA NPN or PNP or 100 mA NO/NC SCR
Operating Temperature:	-20 to +80°C
Operating Frequency:	30 Hz
Enclosure Rating:	IP67,
LED Indication:	Output
Connection:	Cable or M12 plug
Dimension:	3/8" x 74 mm
Options:	Glass or plastic tip

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