CARLO GAVAZZI
Automation Components

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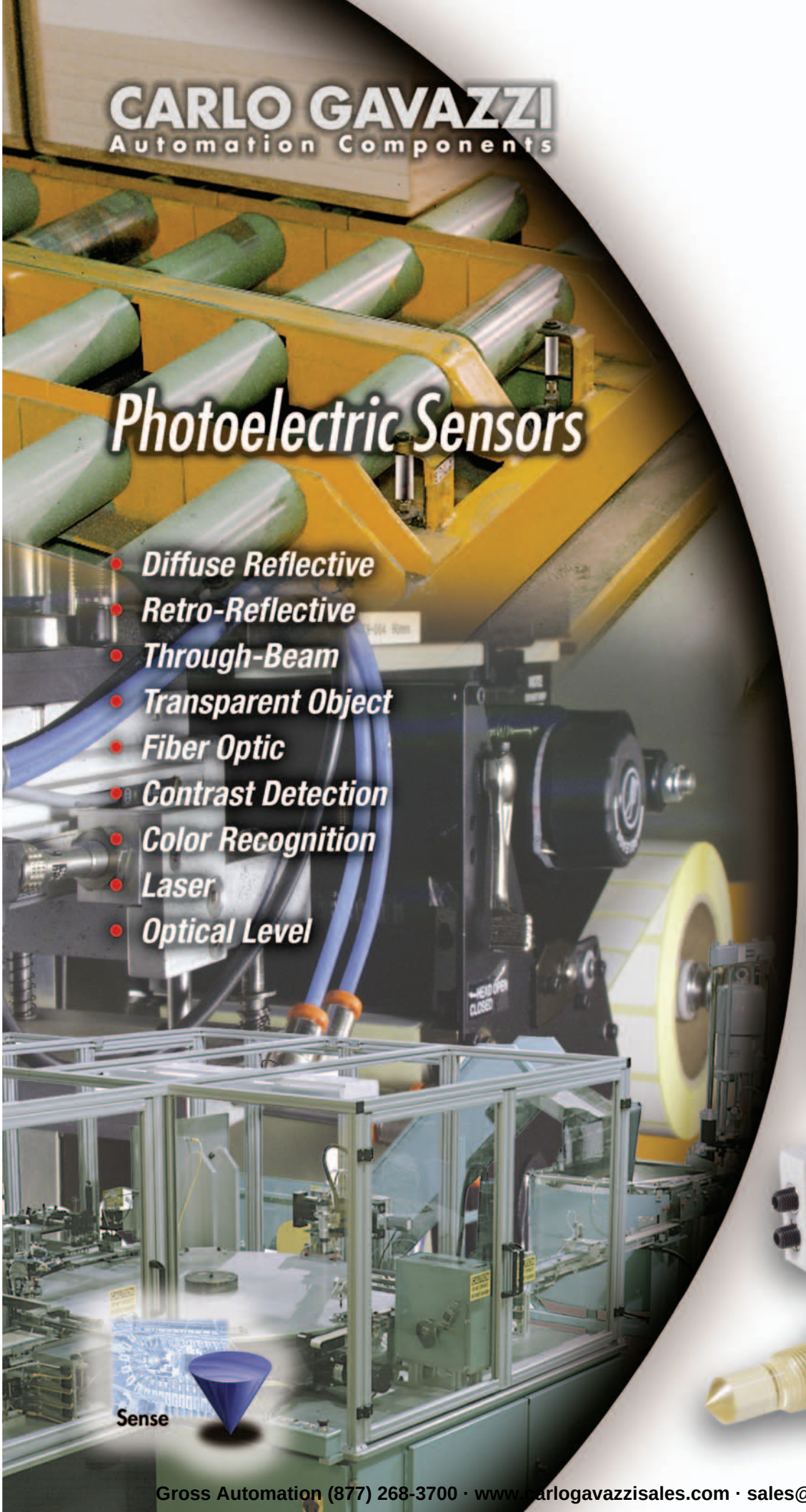
Photoelectric Sensors

- Diffuse Reflective
- Retro-Reflective
- Through-Beam
- Transparent Object
- Fiber Optic
- Contrast Detection
- Color Recognition
- Laser
- Optical Level



Photoelectric Applications

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 North America and Europe. A door controller can verify the sensing function through the built-in control input. The sensors are designed for object as well as for safety edge detection. A broad range of sensors in different shapes and sizes are available.

Packaging and Food/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, retro-reflective with or without polarization, through-beam, 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.

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

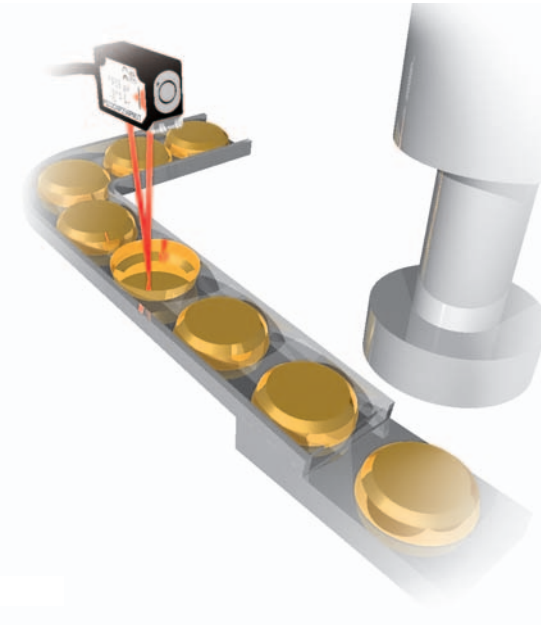
Thanks to exceptionally high excess gains, many of our photoelectric sensors are used in environments where dirt and dust normally cause detection problems. With external amplifiers capable of controlling up to ten pairs of sensors, the flexibility exists to detect timber, paper, tools, and more, with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

Diffuse-Reflective Photoelectric Sensors

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 (reflectivity) 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.

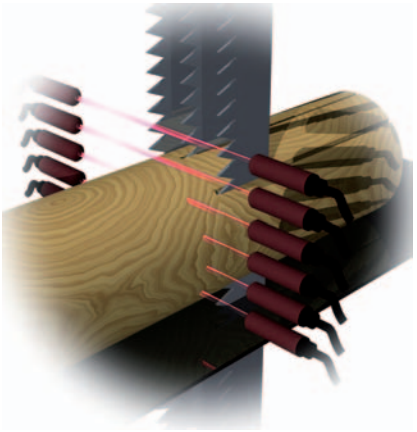
Diffuse-Reflective Photoelectric Sensors with Background Suppression

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.



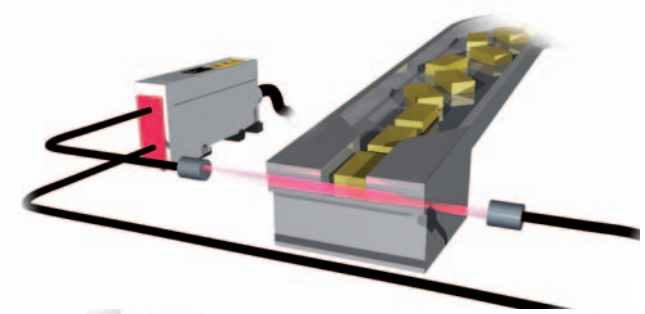
Polarized Retro-Reflective Photoelectric Sensors

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 reflective 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 (anti-glare filters).



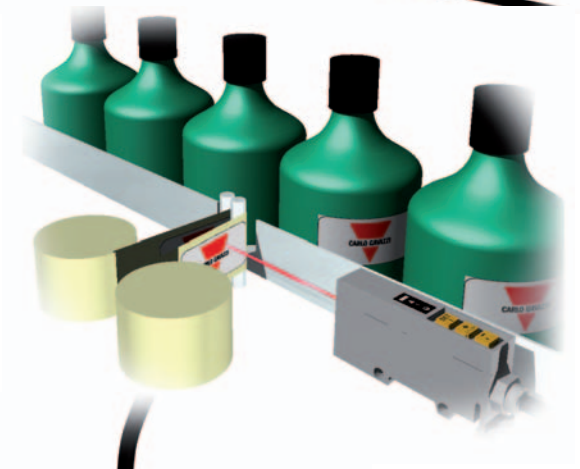
Through-Beam Photoelectric Sensors

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 Optic Photoelectric Sensors

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 electro magnetic fields etc. can be achieved.

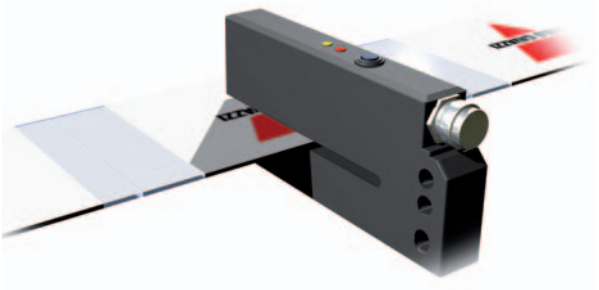


Contrast Photoelectric Sensors

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 Sensors

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.

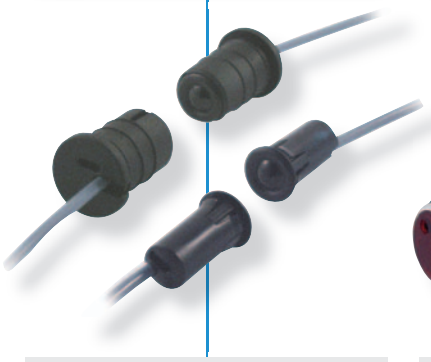


Slotted Photoelectric Sensors

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
Dimensions:
PB10: Ø10 x 42 mm
PB18: Ø18 x 30 mm
PE12: Ø12 x 29 mm

PA18, Ex18

Sensing Principle
Through-beam: 10 or 20 m
Retroreflective: 3 m
Pol. retro-reflective: 2 m
Diffuse reflective: 400 mm
Supply Voltage: 10-40 VDC or 20-250 VAC
Output: NO + NC 200mA NPN or PNP, NO or NC 500mA SCR
Operating Temperature: - 20 to +60°C
Enclosure Rating: IP67
LED Indication: Power or Output
Connection: Cable or M12 Plug
Dimensions: M18 x 55 or 72 mm

PD40

Sensing Principle
Through-beam: 4 m
Pol. retro-reflective: 1.5 m
Diffuse reflective: 500 mm
Background 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

PD32, LD32

Sensing Principle
Through-beam: 6 m
Pol. retro-reflective: 3 m
Diffuse reflective: 500 mm
Background suppression: 120 mm
Clear Object: 500 mm
Supply Voltage: 10-30 VDC
Output: NO + NC, 200mA 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

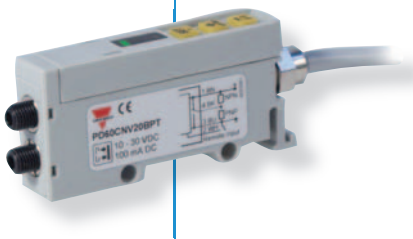
PA, PB

Sensing Principle
Background suppression: 150 mm
Pol. retro-reflective: 3 m
Through Beam: 12 m
Supply Voltage: 10-30 VDC
Output: 200mA, NO and NC, NPN or PNP transistor
Operating Temperature: -25 to +50°C
Operating Frequency: 1000 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

Ex55

Sensing Principle
Through-beam: 5 m
Pol. retro-reflective: 2 m
Diffuse reflective: 200 or 600mm
Supply Voltage: 10-30 VDC
Output: NO and NC, 200 mA NPN or PNP
Operating Temperature: -20 to +60°C
Operating Frequency: 500 Hz
Enclosure Rating: IP67
LED Indication: Output
Connection: Cable or M12 Plug
Dimensions: 35 x 55 x 15 mm

PD60



Sensing Principle
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: 1000 Hz or 20000 Hz (contrast)
Enclosure Rating: IP67
LED Indication: Power and Output
Connection: Cable or M8 Plug
Dimensions: 13 x 30 x 60 mm

PC50

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 or 12-240 VDC and 24-240 VAC
Output: NO or NC, 200mA NPN or PNP or SPDT Relay AC1: 3A/250 VAC DC1: 3A/30 VDC
Operating Temperature: -20 to +60°C
Enclosure Rating: IP67
LED Indication: Power and Output
Connection: Cable or M12 Plug
Dimensions: 17 x 50 x 50 mm

Series

PM

Sensing Principle
Through-beam: Up to 20 m
Pol. retro-reflective: 12 m
Retro-reflective: 10 m
Diffuse reflective: 0.8 m
Supply Voltage: 12-265 VDC and 24-265 VDC
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
Connections: Screw terminals
Dimensions: 25 x 68 x 81 mm

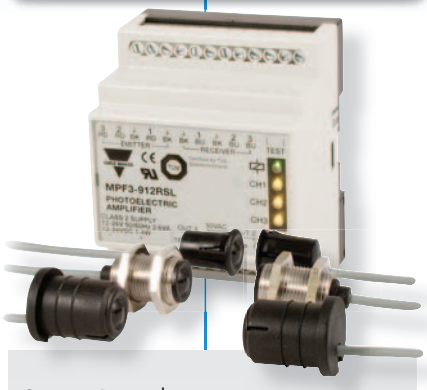
PF80

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: M18 Plug
Dimensions: 12 x 38 x 80 mm

PD12

Sensing Principle
Diffuse reflective: Color: 2-60 mm
Storage of up to 4 independent colors
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
Dimensions: 12 x 20 x 32 mm
Accessories: Optical fibers

MPF

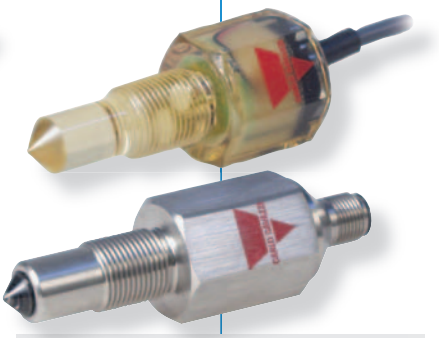


Sensing Principle
Through-beam: 15 m
Channels (sensor set): 1, 2 or 3
Supply Voltage: 12-265 VAC/DC, 115 VAC or 230 VAC
Output: SPDT relay, AC15: 0.75A/240 VAC DC13: 0.22A/125 VDC
Operating Temperature: -20 to +60°C
Operating Frequency: 10 Hz
Enclosure Rating: Amplifier IP40, Sensors IP67
LED Indication: Output and supply
Connection: Screw terminals
Dimensions: 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

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 Temperature: AMP: -20 to +50°C Sensor: -20 to +60°C
Operating Frequency: 20 Hz
Enclosure Rating: Amplifier IP40, Sensors IP67
LED Indication: Supply, Output, Signal
Connection: 11 pole circular socket
Dimensions: 35 x 80 x 84 mm
Sensors: MOF..: Ø10 x 42 mm
MOF.. M12: M12 x 42 mm
MOF.. M14: M14 x 42 mm

VP



Sensing Principle
Liquid level sensing
(Sensor tip in contact with liquid)
Supply Voltage: 10 - 40 VDC
Output: NO or NC, 200 mA NPN or PNP
Operating Temperature: -20 to +80°C
Operating Frequency: 30 Hz
Enclosure Rating: IP67,
LED Indication: Output
Connection: Cable or M12 plug
Dimensions: 3/8" x 74 mm
Options: Glass or plastic tip