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Photoelectric Sensors

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Photoelectric Sensors

Photoelectric sensors, also called photo eyes, detect object presence or distance using light. These sensors use a light source from an emitter and a receiver that detects changes in light intensity reflected or interrupted by the target object.

With no physical contract required, photo eyes can detect objects at extremely close range or out to a meter or more, depending on the specific photo eye technology employed.

What type of photoelectric sensor is best for me?

There are many different styles of photoelectric sensors, but really only four basic technologies: through-beam, reflective, diffuse, and background suppression. The chart describes some advantages and disadvantages of each technology.

Type	Advantages	Disadvantages
Through-beam	• Most accurate • Longest sensing range • Very reliable	• Must install at two points on system: emitter and receiver • Costly - must purchase both emitter and receiver
Reflective	• Cost less than through-beam • Only slightly less accurate than through-beam • Sensing range better than diffuse • Very reliable	• Must install at two points on system: sensor and reflector • Slightly more costly than diffuse • Sensing range less than through-beam
Diffuse	• Only install at one point • Cost less than through-beam or reflective	• Less accurate than through-beam or reflective • More setup time involved
Background Suppression	• Effective with reflective backgrounds	• Cost more than diffuse, reflective or through-beam • Most setup time required

How do these sensors benefit me?

Everybody wants to know how a particular product will help them. With AutomationDirect photoelectric sensors, you benefit from:

- Approximately 2-to-1 list pricing compared to the competition. This allows OEM-like pricing on single item purchases.
- Rectangular formats that provide mounting holes directly into the sensor. This eliminates the need for mounting plates and allows for easier installation.
- Quick-disconnect cable versions available for all sensors. The Q/D sensors make for fast and easy replacement. Troubleshooting is also much faster with Q/D devices as the user need only unscrew the connector and change out the sensor. This eliminates the need for disconnecting wires and cutting wire ties, thus speeding up the replacement process with much less room for error.
- Electrical protection against short circuit, reverse polarity, and transient noise. Even if the sensor is initially wired wrong, or wired into a noisy environment, the sensor will still operate properly.
- 45-day, money-back guarantee. Nothing else needs to be said. If you are not satisfied with the performance of your sensor, just send it back.

For the latest prices, please check AutomationDirect.com.

The Most Popular Photoelectric Sensor Styles

Along with the popular 18 mm round styles, we've also got 4mm, 5mm, 8mm, 12mm, and 30mm round barrel sensors. From a standard through-beam (plastic) sensor to a unique right-angle, background suppression diffuse sensor, AutomationDirect has a model to fit your needs.

- Metal or plastic housing
- Diffuse, polarized retroreflective, through-beam, retroflective for transparent objects and background suppression models
- Straight or unique right-angle optics
- 3-wire and 4-wire outputs
- NPN and PNP models
- Normally open and normally closed (light or dark operation) models

A photoelectric sensor must suit your application, and must also be easy to install, simple to set up, and operate flawlessly. AutomationDirect understands these needs and offers products that solve your application problems:

- **Unique right-angle mounting sensors.** We offer a right-angle sensor that a nut will fit directly over. Our competitors don't offer a product that's so easy to use. This technology will save you time and headaches during installation.
- **IP67 & IP69K ratings.** All of our sensors are watertight and some are designed to withstand the harsh conditions of washdown applications in food and beverage industries. Either way since you won't have to swap sensors out constantly you will ultimately save money.
- **Metal or plastic sensors.** Plastic sensors are great for corrosion resistance, while metal sensors are rugged and can absorb more punishment. We offer both.
- **Alignment LEDs.** With onboard indicators, our sensors simplify installation to save you time and money.

We are so confident of our sensors' quality, we offer a 45-day money-back guarantee if you don't like them.

Rectangular styles for unique mounting needs

Rectangular sensors are available as AC or DC-powered models, in varying sizes and sensing styles, including diffuse with background suppression, diffuse, retroreflective, retroreflective for transparent objects and through-beam.

Laser distance sensors

- Short Range (CMOS) or Long Range (transit time)
- Analog and switching outputs available
- Class 1 and 2 lasers available
- Measured value independent of target material, color and brightness
- Measuring ranges up to 100 meters

Color and contrast sensors

- RGB or white-light
- Wide sensing ranges
- High switching frequencies (up to 50khz)
- Class 1 and 2 lasers available
- PNP or NPN outputs

Quick-disconnect cables and accessories

Quick-disconnect cables, reflectors, mounting brackets and other accessories available include:

- Micro (12mm) and pico (8mm) Q/D sizes from 2m to 15m
- Extension cables for quick-disconnect sensors
- LED sensor cables for signal confirmation
- Round and rectangular reflectors in many sizes
- Photoelectric shutters that focus your photoelectric sensor on small targets
- Right-angle adapters for special mounting applications

General Purpose Photoelectric Sensors

General-purpose photoelectric sensors, in tubular or rectangular body styles, are suitable for many presence sensing applications. They use infrared or visible red light technology and are available in diffuse, diffuse with background suppression, retroreflective, and through-beam sensing styles.

Starting from $75.00

4mm and 5mm Tubular

Contrinex D04 and M5 Series Stainless Steel

High performance in a small package for tight installations.

- Diffuse and through-beam styles
- Sensing distances up to 600mm

8mm Tubular

AutomationDirect HE Series Stainless Steel

- Through-beam sensing style
- 1m sensing distance

Starting from $38.50

Starting from $101.00

ProSense F8 Series Stainless Steel

- Diffuse, diffuse with background suppression, polarized retroreflective, and through-beam sensing styles
- Sensing distances up to 2.2m

12mm Tubular

Starting from $40.50

Contrinex M12 Series Chrome Plated Brass

- Diffuse, retroreflective, and through-beam sensing styles
- Sensing distances up to 10m
- IO-Link V 1.0 on PNP models

AutomationDirect DM Series Nickel Plated Brass

- Diffuse, polarized retroreflective, and through-beam sensing styles
- Sensing distances up to 4m
- Teach function or potentiometer sensitivity adjustment

Starting from $47.00

18mm Tubular

AutomationDirect FA Series Laser

- Diffuse, diffuse with background suppression, polarized retroreflective, and through-beam sensing styles
- Sensing distances up to 50m
- Nickel plated brass or plastic housings
- Axial or right-angle optical head models

Starting from $111.00

Starting from $40.50

Contrinex M18 Series Stainless Steel

- Diffuse, diffuse with background suppression, polarized retroreflective, and through-beam sensing styles
- Sensing distances up to 30m
- IO-Link V 1.0 on PNP models

Contrinex M18 Series ABS Plastic

- Diffuse, diffuse with background suppression, polarized retroreflective, and through-beam sensing styles
- Sensing distances up to 30m

Starting from $23.00

Starting from $25.50

AutomationDirect FB Series M18 Plastic

- Diffuse, polarized retroreflective, and through-beam sensing styles
- Sensing distances up to 8m
- Potentiometer sensitivity adjustment on diffuse models

18mm Tubular (Continued)

Starting from $52.00

AutomationDirect FARS Series Plastic

- Diffuse with background suppression sensing style
- Sensing distances up to 130mm

AutomationDirect FF Series IP69K Stainless Steel

Starting from $78.00

- Diffuse, polarized retroreflective, and through-beam sensing styles
- Sensing distances up to 20m
- 316L stainless steel housings
- IP68/69K protection rating

Starting from $94.00

AutomationDirect FFRS Series IP69K Stainless Steel

- Diffuse with background suppression sensing style
- Sensing distances up to 130mm
- 316L stainless steel housings
- IP68/69K protection rating

AutomationDirect MQ Series AC Powered

Starting from $69.00

- Diffuse with background suppression sensing style
- Sensing distances up to 100mm
- Plastic housings
- 20-253 VAC operating voltage

Starting from $44.50

AutomationDirect MV Series AC Powered

- Diffuse, polarized reflective, and through-beam sensing styles
- Sensing distances up to 16m
- Plastic housings
- 20-253 VAC operating voltage

AutomationDirect C18 Series Chrome Plated Brass

Starting from $54.00

- Diffuse, diffuse with background suppression, polarized retroreflective, and through-beam sensing styles
- Sensing distances up to 6m
- Adjustable sensitivity (diffuse models only)
- Axial or right-angle optical head models

Starting from $32.00

ProSense F18 Series 18mm Round Plastic

- Diffuse, diffuse with background suppression, polarized retroreflective, and through-beam sensing styles
- Sensing distances up to 25m

For the latest prices, please check AutomationDirect.com.

Starting from $355.00

30mm Tubular

Eaton E58 Series Stainless Steel Harsh Duty

- Diffuse reflective with background suppression, retroreflective, polarized reflective, and through-beam sensing styles
- Sensing distances up to 800 ft.
- 10 to 30 VDC and 15 to 30VDC / 20 to 132 VAC operating voltages
- IP69K protection rating

Rectangular

AutomationDirect GX Series Plastic

Starting from $47.50

- Diffuse with background suppression, polarized retroreflective, and through-beam sensing styles
- Sensing distances up to 20m
- 18mm diameter threaded lens with mounting hex nut included

Starting from $44.00

ProSense RW Series ABS Plastic

- Diffuse, diffuse with background suppression, polarized retroreflective, and through-beam sensing styles
- Sensing distances up to 3m
- Compact 14 X 8 X 28mm ABS plastic housings

Contrinex C23 Series Miniature Rectangular

Starting from $32.00

- Diffuse, diffuse with background suppression, polarized retroreflective, and through-beam sensing styles
- Sensing distances up to 25m
- 20 X 10 X 30mm ABS plastic housings
- IO-Link v1.0 on select models

Starting from $41.00

AutomationDirect QM Series Mini-Rectangular

- Diffuse, diffuse with background suppression, polarized retroreflective, and through-beam sensing styles
- Sensing distances up to 30m
- 21 X 12.8 X 31.2mm plastic housings

Rectangular (Continued)

AutomationDirect FM Series Harsh Duty

- Diffuse, diffuse with background suppression, polarized retroreflective, and through-beam sensing styles
- Sensing distances up to 10m
- 21 X 34.8 X 13mm 316L stainless steel housings
- IP65/67/68/69K protection rating

Starting from $51.00

Starting from $102.00

ProSense F16 Series Die-Cast Zinc

- Diffuse, diffuse with background suppression, polarized retroreflective, and through-beam sensing styles
- Sensing distances up to 2.2m
- 8 X 8 X 44mm die-cast zinc housings

AutomationDirect CX Series Plastic

- Diffuse, diffuse with background suppression, polarized retroreflective, and through-beam sensing styles
- Sensing distances up to 6m
- 30 X 15 X 30mm plastic housings

Starting from $63.00

Starting from $76.00

Wenglor OPT Series Square

- Diffuse, diffuse with background suppression, polarized retroreflective, and through-beam sensing styles
- Sensing distances up to 20m
- Simple potentiometer sensitivity adjustment
- IO-Link compatibility

Eaton Enhanced 50 Series

- Diffuse, through-beam, and polarized reflective sensing styles
- Sensing distances up to 500 ft
- AC/DC output choices include robust 3A SPDT relays.
- Sensitivity adjustment on all models

Starting from $131.00

For the latest prices, please check AutomationDirect.com.

Clear Object Detection Sensors

Clear-object photoelectric sensors detect presence when a clear object interrupts light rebounding off a fixed reflector (sold separately) or when used as part of a through-beam pair. These sensors use infrared visible, red light, or UV light sources and offer detection ranges up to 4.2 meters.

Starting from $82.00

AutomationDirect FFRL series IP69K Stainless Steel

- Retroreflective for transparent objects
- 1m sensing distance
- 316L stainless steel housing
- IP68/69K protection rating

Contrinex C23 Series Transparent Object Sensors

- Retroreflective for transparent objects
- Sensing distances up to 4200mm
- IO-Link V 1.0 on PNP models
- Ecolab approved for use in hygienic areas

Starting from $54.00

Starting from $57.00

AutomationDirect QM Series Plastic

- Retroreflective for transparent objects
- Sensing distances up to 4m

Wenglor OPT Series Plastic

- Sensing distances up to 2.6m
- IO-Link compatibility

Starting from $119.00

Starting from $216.00

Eaton Enhanced 50 Series

- 45in sensing distance
- NPN/PNP, solid-state relay, or SPDT EM relay outputs
- AC or DC operating voltages
- Rugged fiberglass-reinforced plastic housing

Distance Measuring Sensors

Short-range, high-precision laser sensors measure down to 8 micrometers resolution using CMOS technology; long-range models use time of flight (measuring transit time of the reflected light) to measure distances up to 100 meters. Employing Class 1 or 2 lasers (depending on model), these DC-powered units support analog outputs of 4-20 mA or 0-10 VDC.

Starting from $778.00

Wenglor OPT Short Range High Precision Series

- Diffuse laser distance sensing style with CMOS technology
- Sensing distances up to 350mm
- Class 1 and 2 lasers available
- 4-20 mA or 0-10 VDC output

Wenglor OPT Long Range Transit Time Series

- Diffuse and retro-reflective (transit time) sensing styles
- Sensing distances up to 100m
- Analog or switching output options
- Measured value independent of material, color, and brightness
- Class 1 and 2 lasers available

Starting from $384.00

Discrete Distance Sensors

Diffuse laser sensors detect presence via reflected laser light from the target object, with background suppression to avoid false positives. Available in rectangular form factors, these DC-powered sensors employ Class 1 or 2 lasers, and offer detection ranges up to 3m.

Starting from $390.00

Wenglor OPT Short Range Series

- Diffuse laser distance sensing style with CMOS technology
- 60-660mm sensing distance
- 50 X 50 X 20mm polycarbonate housing

Wenglor OPT Long Range Transit Time Series

- Diffuse and retro-reflective (transit time) sensing style
- Sensing distances up to 3m
- 50 X 50 X 20mm plastic or polycarbonate housing

Starting from $259.00

Starting from $207.00

Wenglor OPT Compact Long Range Transit Time Series

- Diffuse and retro-reflective (transit time) sensing style
- Sensing distances up to 1m
- 32 X 22 X 12mm plastic housing or polycarbonate housing

Dark and Shiny Object Detection Sensors

Dark and shiny object detection photoelectric sensors detect presence of objects that other sensors fail to detect or erroneously detect multiple times because they are either very dark or shiny.

Starting from $95.00

Wenglor OPT Series Blue Light

- Diffuse with background suppression sensing style
- Sensing distances up to 400mm
- 50 X 20 X 50mm or 32 X 12 X 16mm plastic housings
- Potentiometer sensitivity adjustment
- IO-Link V1.1

Fiber Optic Sensors

Fiber optic sensors provide a remotely mounted electronics and optics package with fiber optic extensions to the sensing area, perfect for extremely tight locations, or where even low power electronics are not allowed. Glass and cuttable plastic fiber optic cables are also available (sold separately), with sensing distances up to 1800mm.

Starting from $172.00

AutomationDirect DFT Series

- Sensing distances and styles are dependent on the optical fiber
- Compact plastic housing
- Teach-in sensitivity adjustment
- Bar graph signal-strength indicator

AutomationDirect DFP Series

- Sensing distances and styles are dependent on the optical fiber
- Compact plastic housing
- Potentiometer sensitivity adjustment

Starting from $109.00

Starting from $101.00

Wenglor OPT Series

- Diffuse and through-beam sensing styles
- Sensing distances are dependent on the optical fiber
- Compact plastic housing
- IO-Link available on select units
- Teach-in sensitivity adjustment
- Bar graph signal-strength indicator

Micro Detectors SSF Series 18mm Tubular

- Sensing distances and styles are dependent on the optical fiber
- Plastic housings
- Teach-in sensitivity adjustment

Starting from $53.00

Color Sensors

Color sensors are used for colored object detection, quality control, and print accuracy applications. Wenglor OPT color sensors can evaluate up to 3 colors simultaneously and have a variety of mounting accessories.

Starting from $372.00

Wenglor OPT Series

- Sensing distances up to 40mm
- White light source
- Multiple colors/outputs
- Teach-in sensitivity

Contrast Sensors

Contrast print mark sensors determine contrast by sensing reflected light (either white or RGB) to detect the difference in the wavelength of the reflected light between the mark and background. Contrast sensors offer detection ranges up to 40mm, with quick-disconnect termination.

Starting from $121.00

Wenglor OPT Series

- 12 to 40 mm sensing distance
- White light emission
- Teach-in sensitivity adjustment
- Plastic housing

Starting from $80.00

Datalogic S8 Series Stainless Steel

- 6 to 12mm sensing distance
- RGB light emission
- Teach-in sensitivity adjustment
- 316L stainless steel or plastic housings
- IP67/69K protection rating

Starting from $152.00

Datalogic TL Series

- 6 to 12mm sensing distance
- RGB light emission
- Teach-in sensitivity adjustment
- Aluminum housing

Fork sensors (also called slot sensors) use through-beam photoelectric technology to detect objects passing through the slot. The rugged one-piece housing keeps the emitter and receiver in alignment, and a convenient, single-cable connection is provided. A variety of light sources are available for specialty sensing applications, with sensing distances up to 220mm.

Starting from $128.00

AutomationDirect PS Series

- Visible red light, infrared, and laser light options
- "U" and "L" housing shapes
- Light-on/Dark-on selectable
- Rugged one-piece metal housing
- Models for clear object and liquid detection

Light Grids

Light grids are multi-beam arrays of photoeyes used to detect presence anywhere within the controlled height of the sensor array. These sensors are perfect for detecting various sized and shaped objects at random positions as they pass through the (2D) target area (not for use as safety light curtains).

Detection Light Grids

Micro Detectors

Starting from $245.00

Micro Detectors CX0 Series Light Grids

- Operating distance up to 6m
- 160 and 320mm detection heights
- 5 or 10mm resolution
- 16.8-30 VDC operating voltage
- Discrete PNP output
- Teach-in sensitivity adjustment
- Painted aluminum housing

Micro Detectors BX Series Light Grids

- Operating distance up to 2m
- 70mm detection height
- 6mm resolution
- 12-24 VDC operating voltage
- Discrete NPN or PNP output
- Adjustable sensitivity
- Plastic housing

Components Starting from $204.00

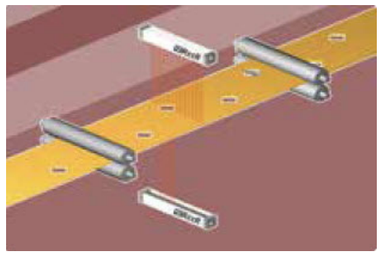
ReeR

Starting from $375.00

ReeR Micron Series Light Grids with Push-Pull Complementary Outputs

ReeR Micron series light grids with push-pull complementary outputs provide a simple way to determine whether or not an object is present in the light grid's field of view. The outputs can be used to activate or stop a machine, or trigger an alarm.

- 0-10m operating distance
- 120 to 740mm detection heights
- 10 or 30mm resolution
- 24 VDC operating voltage
- Software configurable
- Rugged anodized aluminum housing
- IP65/67 protection rating



Quality Control: verification of presence/absence/position of holes

Measuring Light Grids

Micro Detectors

Starting from $313.00

Micro Detectors CX2 Series Light Grids

The blanking function of the CX2 series provides flexible configuration options by allowing the height of the active optic window to be adapted to an application by eliminating pairs of beams.

- Operating distance up to 6m
- Detection height up to 960mm
- 5 or 10mm resolution
- Parallel beams and floating crossbeams with variable amplitude
- 16.8-30 VDC operating voltage
- PNP NO/NC configurable output
- 4-20mA or 0-10 VDC output
- Painted aluminum housing

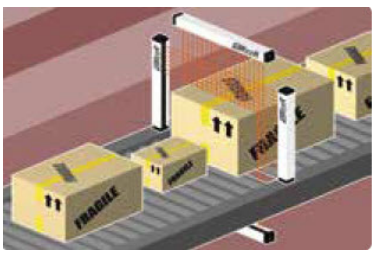
REER

ReeR Micron Series Light Grids with Analog Outputs

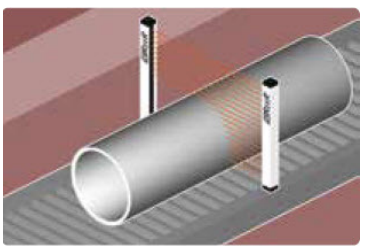
ReeR Micron series light grids with analog outputs are compact sensing devices for precision measurement and positioning tasks. They are configurable via easy-to-use software that offers an extensive parameter selection.

Starting from $551.00

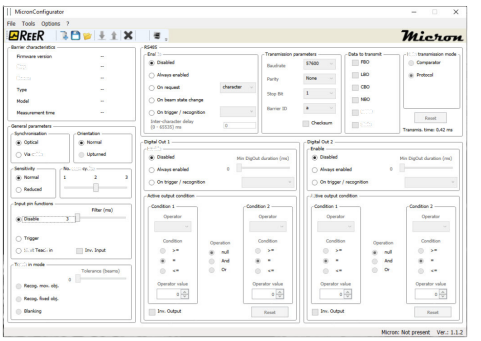
- 0-10m operating distance
- 270 to 1490mm detection heights
- 10 or 30mm resolution
- 24 VDC operating voltage
- Two 4-20mA outputs
- Two discrete push-pull outputs
- Software configurable
- Rugged anodized aluminum housing
- IP65/67 protection rating



Height Measurement



Measurement and Identification



Configurator Software

REER

ReeR Micron Series Light Grids with IO-Link Compatibility

Starting from $606.00

ReeR Micron series IO-Link compatible light grids are versatile industrial sensing devices for precise object detection, measurement, and identification. They offer flexible setup with protected heights and beam spacings to suit a variety of applications.

- 0-10m operating distance
- 270 to 1490mm detection heights
- 10 or 30mm resolution
- 24 VDC operating voltage
- Output via IO-Link v1.1.2
- Configurable via IO-Link
- Rugged anodized aluminum housing
- IP65/67 protection rating