Sensors

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Applications

Food and Beverage


Verify liquid level in sealed bottle


Confirm quantity and size of bread


Detect glass and plastic bottles

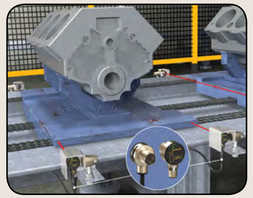
Packaging

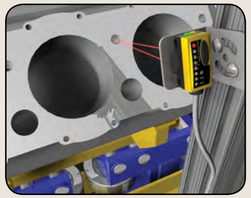

Confirm full case of bottles

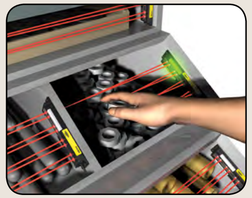

Measure box dimensions


Count small parts

Automotive


Detect engines on conveyor


Confirm presence of threads in hole


Indicate proper assembly sequence to operator

Other


Read and verify linear and 2D barcodes


Detect registration marks


Remote tank level monitoring with SureCross wireless I/O

Product Overview

Photoelectric Sensors
Photoelectric sensors in all sensing modes and a choice of universal housings solve almost any application situation.

iVu Vision Sensors
Touch screen image sensors require no PC for configuration. Four vision tools, plus 1D and 2D barcode reading capability allow you to solve more complex applications.

Fiber Optic Sensors
Fiber optic amplifiers offer flexibility for applications that require minimal mounting space, high speed detection, and small parts detection. A complete line of plastic and glass fibers is available to complement the amplifier.

Laser Sensors
Laser sensors solve precise and long range measurement applications, and provide pinpoint accuracy for critical detection.

Ultrasonic Sensors
Ultrasonic sensors provide added sensing capability for clear materials, liquids and more. Select models have enhanced chemical resistance for aggressive environments.

Specialty Sensors
Specialty sensors solve more applications, including color and contrast detection, measurement, anti-collision, operator guidance and more.

Indicator Lights
Bright, versatile indicator lights communicate machine status and provide operator guidance.

Safety Products
Advanced safety systems protect personnel and equipment.

Accessories


Brackets


Retroreflectors


Cordsets

Basics of Photoelectric Sensing

Sensing Modes

The method in which a sensor sends and receives light defines its sensing mode. Basic photoelectric modes include opposed, retroreflective and proximity.

Opposed mode: The emitter and receiver are separate devices. An object is detected when it breaks the effective beam between the emitter and receiver.

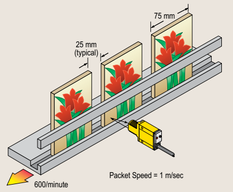
Retroreflective mode: These sensors contain the emitter and receiver in a single housing. Light is returned to the sensor from a reflector, and an object is detected when it interrupts this beam of light.

Proximity mode: These sensors contain the emitter and receiver in a single housing. An object is detected when light is reflected from the object back to the sensor.

Calculating Response Time

You can determine a sensor's required response time when you know the size, speed and spacing of the objects to be detected.

$$\text{Response Time} = \frac{\text{Object width (or gap between objects)}}{\text{Object velocity}}$$



Calculate Response Time for Seed Packets with a Convergent Sensor

Measuring Excess Gain (EG)

Excess gain is a measurement of the sensing light energy above the minimum amount required to operate the sensor receiver's amplifier. Choose a sensor that will give you the optimal excess gain for your application.

$$\text{Excess Gain} = \frac{\text{Light energy falling on receiver element}}{\text{Sensor's amplifier threshold}}$$

Excess Gain Guidelines

EG	General Conditions
1.5x	**Clean air:** No dirt on lenses or reflectors.
5x	**Slightly dirty:** Slight buildup of dust, dirt, oil, moisture, etc. on lenses or reflectors. Lenses are cleaned on a regular schedule.
10x	**Moderately dirty:** Obvious contamination of lenses or reflectors.
50x	**Very dirty:** Heavy contamination of lenses. Heavy fog, mist, dust, smoke, or oil film. Minimal cleaning of lenses.

Contrast

Contrast is the ratio of the amount of light on the receiver in the 'light' condition compared to the 'dark' condition. Maximum contrast is always recommended.