High Performance Clear Object Sensor

RETRO✛SMART®

High Performance Clear Object Sensor

The **SMARTEYE® RETROSMART®** retroreflective sensor is optimized to detect translucent/transparent containers and shiny objects. You can depend on the **RETROSMART®** sensor's ability to reliably sense any object, regardless of the size or shape, from the leading edge to the trailing edge without false signals, a requirement when the sensing task involves monitoring a conveyor line for jam detection. The sensor's red, narrow light beam assures accuracy in detecting the leading edge of any product to trigger the response, such as filling, capping, labeling, and coding.

Many of today's industrial control functions require a sensor that can provide dependable detection of position or presence of transparent containers. The **RETROSMART®** will provide a single, non-chattering output for each transparent container that passes by, independent of size, shape, empty, or full.

Imagine… just point the **RETROSMART®** sensor's red, narrow light beam at the reflector and push the AUTOSET button one time. Now sit back and watch the sensor flawlessly detect any size PET bottle filled with water, with no need to worry about burn-through or double signals. When the efficiency of an entire production line depends on the performance of a photoelectric sensor, the **RETROSMART®** is the smart choice.

Features

n 100µs response time

n Polarized Retroreflective - from a few inches up to 8 feet

n Remote AUTOSET

n Light State Tracking

n Button lockout

n Cable or quick disconnect versions

n Immune to most ambient light, including strobes

Benefits

n Reliable and repeatable detection of the clearest and shiniest of materials from leading to trailing edge

n No false triggers

n Easy Remote AUTOSET for hard to reach areas

n Through-hole or bracket mounting for easy installation

n Robust design to improve up-time

Applications

Trigger Sensor for Code Marking

n Accurate from leading edge to trailing edge.

n No false triggers

n Remove print distortion errors

n Easy setup

n Available with glass lens for ink-jet applications
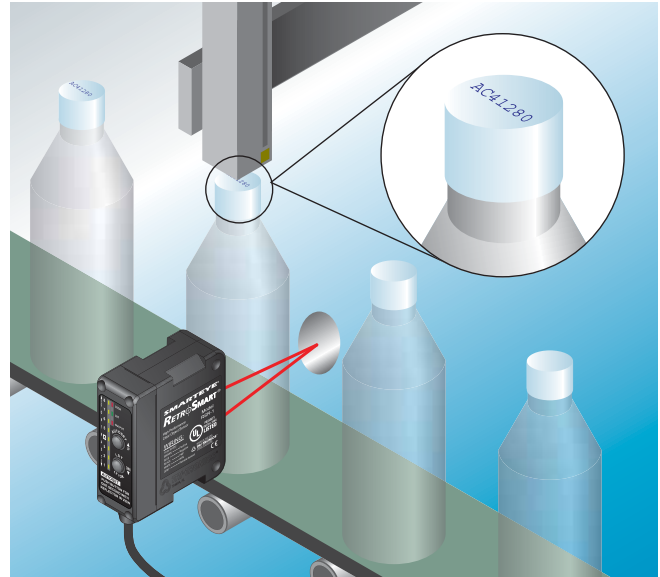
Detection of Transparent Containers

n Full or empty, no false triggers

n Solid, repeatable performance regardless of the shape, shininess, or transparency

n Works on glass, plastic, acrylic, or clear Mylar films
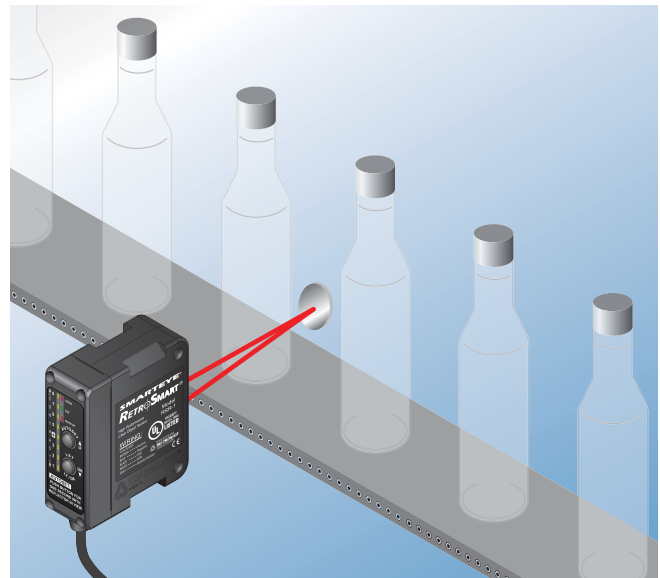
Clear Detection Applications

n Clear bottles, vials, food containers (clamshell boxes), syringes, liquids, etc.

n Clear web break/web splice

n Inspection systems for glass bottles, PET bottles, food products, etc.

n No false signals sensing shiny bags, foil webs, or cans

Features

RETROSMART®
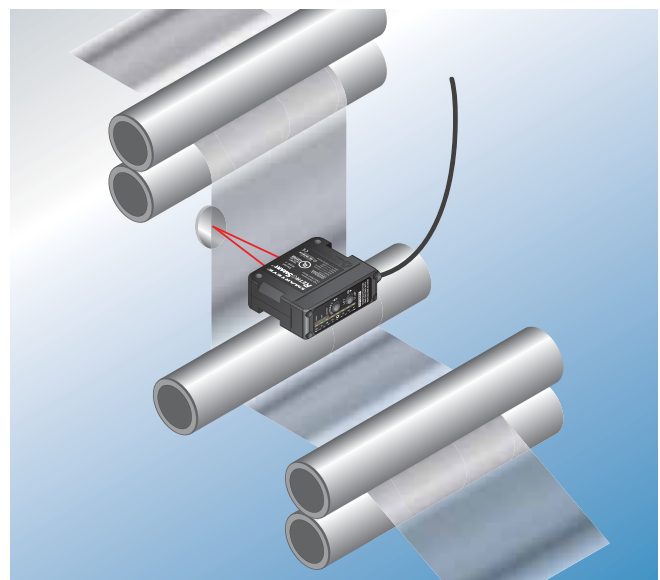
AGS
AGS (Automatic Gain Select) is an unique feature that provides automatic digital selection of amplifier gain based upon your sensing requirements.

AUTOSET ADJUSTMENT
The AUTOSET adjustment routine only requires the push of one button, one time. Even in a dynamic operating condition, with ongoing input events, all you have to do is push the button for a perfect setting.

EDR®
Another unique feature is the digitally controlled EDR® (Enhanced Dynamic Range) circuit. It prevents dark state saturation and expands the operating range without reducing amplifier gain.

REMOTE AUTOSET
To remotely AUTOSET the sensor, apply a momentary contact closure from the AUTOSET input wire to negative as shown in the wiring diagram.

8 LED DUAL FUNCTION INDICATOR
Contrast Indicator – Provides "at-a-glance" performance data.

LOCK
When this feature is enabled the sensor becomes tamperproof. *Note: The remote AUTOSET is not affected by the lock.*

LST
LST (Light State Tracking) automatically adjusts the sensor up in order to maintain a perfect setting. When diminishing conditions occur, as in a dusty environment, or slight misalignment issues, the sensor will "bump" up the gain to compensate for the reduced performance.

HIGH SPEED
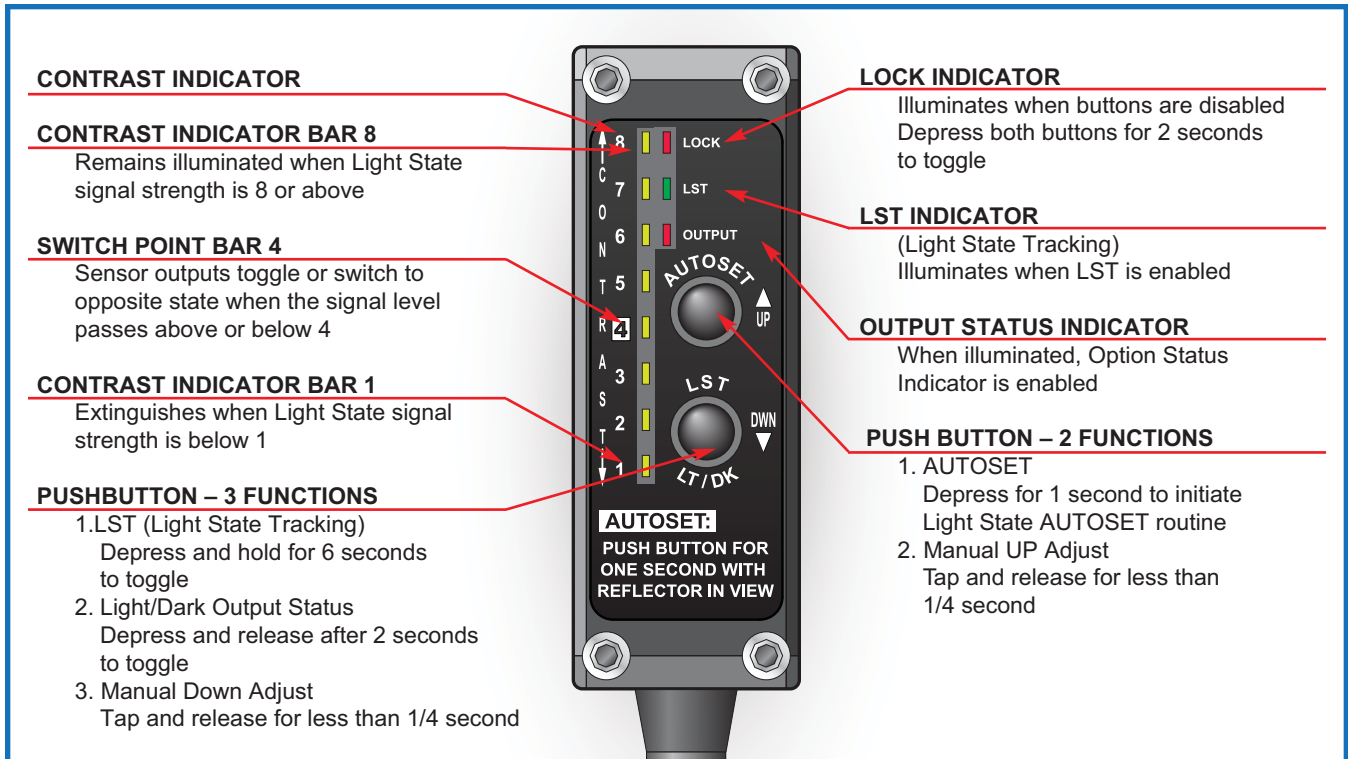100 microsecond response time f high-speed bottling, filling, or printing applications.

CONNECTIONS
Built-in 12mm connector or 6' cable.

MOUNTING OPTIONS
Through-hole, or bracket mount.

CONTRAST INDICATOR

CONTRAST INDICATOR BAR 8
Remains illuminated when Light State signal strength is 8 or above

SWITCH POINT BAR 4
Sensor outputs toggle or switch to opposite state when the signal level passes above or below 4

CONTRAST INDICATOR BAR 1
Extinguishes when Light State signal strength is below 1

PUSHBUTTON – 3 FUNCTIONS
1. LST (Light State Tracking)
   Depress and hold for 6 seconds to toggle
2. Light/Dark Output Status
   Depress and release after 2 seconds to toggle
3. Manual Down Adjust
   Tap and release for less than 1/4 second

LOCK INDICATOR
Illuminates when buttons are disabled Depress both buttons for 2 seconds to toggle

LST INDICATOR
(Light State Tracking)
Illuminates when LST is enabled

OUTPUT STATUS INDICATOR
When illuminated, Option Status Indicator is enabled

PUSH BUTTON – 2 FUNCTIONS
1. AUTOSET
   Depress for 1 second to initiate Light State AUTOSET routine
2. Manual UP Adjust
   Tap and release for less than 1/4 second

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How to Specify

RETROSMART®

1. **Select Sensor:**
   SMARTEYE® RETROSMART®
2. **Select Cable or Connector:**
   Blank = 6 foot (1.8m)
   C = 6 inch (152mm) pigtail with 5-pin connector *(accessory cable required)*
3. 1 = Standard RetroSmart
4. **Select Lens Material:**
   Blank = Acrylic
   G = Chemical Resistant Glass Window

   NOTE: All models include AR6151 high perfomance prizmatic reflector.

Example: RSR C -1 G

SMARTEYE®
RETROSMART®

Blank = 6' Cable (1.8m)
C = 5-Pin Pigtail Connector
      6" (152 mm)

Standard RetroSmart

Lens Material
Blank = Acrylic
G = Glass
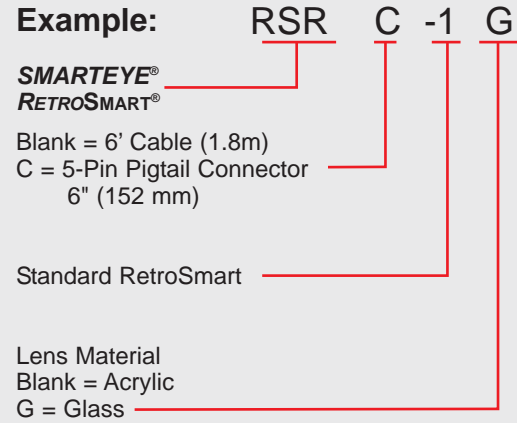
Hardware & Accessories
Extension Cable and Bracket Selection Guide

Cables

5-Wire Shielded MicroCable, M-12

GSEC-6
6' (1.8m) cable with connector

GSEC-15
15' (4.6m) cable with connector

GSEC-25
25' (7.62m) cable with connector

GRSEC-6
6' (1.8m) cable/right angle connector

GRSEC-15
15' (4.6m) cable/right angle connector

GRSEC-25
25' (7.6m) cable/right angle connector

GPSEC-15
15' (4.6m) cable with connector, non-metallic shell

5-Wire Unshielded Cable, M-12, Low Cost

GSEC-2MU
5.5' (2.0m) cable with connector

GSEC-5MU
16.4' (5.0m) cable with connector

5-Wire Extension Cable, M-12

GX-25
25' (7.6m) extension cable

Reflectors

Screw Mount

AR4060
1.6" x 2.36" (40.5 x 60mm)

AR6151
2.4" x 2.0" (61 x 51mm)

AR6151G (Chemical Resistant Glass Cover)
2.4" x 2.0" (61 x 51mm)

Glue Mount

AR46
1.8" diam. (46mm diam.)

Economical Reflective Discs with Adhesive Backing

PRD1
1" x .03" (25mm x .75mm)

PRD2
2" x .03" (50mm x .75mm)

Note: See page 5-5 in the Accessories section for a full listing of reflectors.

Mounting Bracket

SEB-4
Stainless Steel
Mounting Bracket

Specifications

RETRO**S**MART®

SUPPLY VOLTAGE
• 10 to 30 VDC
• Polarity Protected

CURRENT REQUIREMENTS
• 50mA (exclusive of load)

OUTPUT TRANSISTORS
• (1) NPN and (1) PNP output transistor:
  NPN: Sink up to 150mA
  PNP: Source up to 150mA
• Continuous short-circuit protection
• Outputs protected from pulsing during power up

REMOTE AUTOSET INPUT
• Opto-isolated momentary sinking input (10mA)

RESPONSE TIME
• Light State = *100* microseconds
• Dark State = *100* microseconds

LED LIGHT SOURCE
• Red 660 nm
• Pulse Modulated

PUSH BUTTON CONTROL
• "One-Touch" AUTOSET pushbutton setup
• Tweak adjustments with "up" or "down" buttons
• LST (Light State Tracking) Enable/Disable
• Light "ON"/Dark "ON" selection

RANGE
• Optimum from 6 in. to 8 ft. (15.24 cm to 2.4m) distance to the AR6151 reflector

HYSTERESIS
• Two bars as displayed on Contrast Indicator
  Light State Switch = 5
  Dark State Switch = 3

LIGHT IMMUNITY
• Responds to sensor's pulse-modulated light source, resulting in high immunity to most ambient light, including high intensity strobes

DIAGNOSTIC INDICATORS
• Contrast Indicator - Display scaled reading of sensor's response to contrasting light levels (light vs. dark) on an 8- bar LED display
• Red LED Indicator - LOCK
• Green LED Indicator - LST (Light State Tracking)
• Red LED Indicator - OUTPUT

NOTE: If Output LED flashes, a short circuit condition exists.

AMBIENT TEMPERATURE
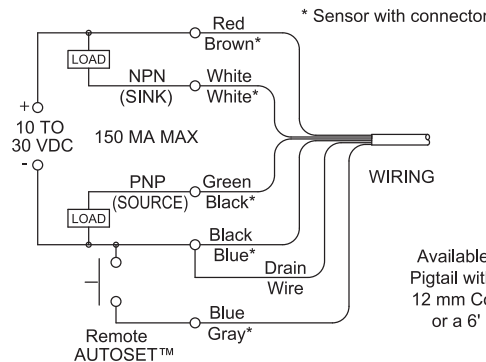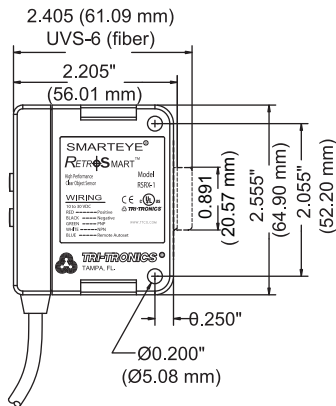• -40°C to 70°C (-40°F to 158°F)

RUGGED CONSTRUCTION
• Chemical resistant, high-impact polycarbonate housing
• Waterproof ratings: NEMA 4, IP66

RoHS Compliant
Product subject to change without notice

Connections and Dimensions

SMARTEYE® RETROSMART®

2.405 (61.09 mm)
UVS-6 (fiber)

2.205" (56.01 mm)

SMARTEYE® RETROSMART™
High Performance Fiber Object Sensor   Model RSRk-1
WIRING

0.891 (20.57 mm)
2.555" (64.90 mm)
2.055" (52.20 mm)

0.250"
Ø0.200" (Ø5.08 mm)

Red / Brown*
LOAD
NPN (SINK)   White / White*
+ 10 TO 30 VDC -
150 MA MAX
PNP (SOURCE)   Green / Black*
LOAD
Black / Blue*   Drain Wire
Blue / Gray*
Remote AUTOSET™

* Sensor with connector

WIRING

Available with 6" Pigtail with a 5-pin 12 mm Connector or a 6' Cable

AR6151 High Performance Reflector Included

2.01" (51.0 mm)
1.56" (39.6 mm)
0.78" (19.8 mm)
0.139 (3.5 mm)
0.17" (4.3 mm)
Reflective Surface
0.21" (5.4 mm)
2.40" (61.0 mm)
0.39" (9.8 mm)
0.32" (8.1 mm)

0.90" (22.9 mm)
LOCK
LST
OUTPUT
PUSH BUTTON FOR ONE SECOND WITH REFLECTOR IN VIEW

SEB-4 Mounting Bracket with Hardware

15°
0.26" (6.6 mm)
2.06" (52.2 mm)
3.95" (100.4 mm)
0.63" (15.9 mm)
1.00" (25.4 mm)
1.00" (25.4 mm)

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