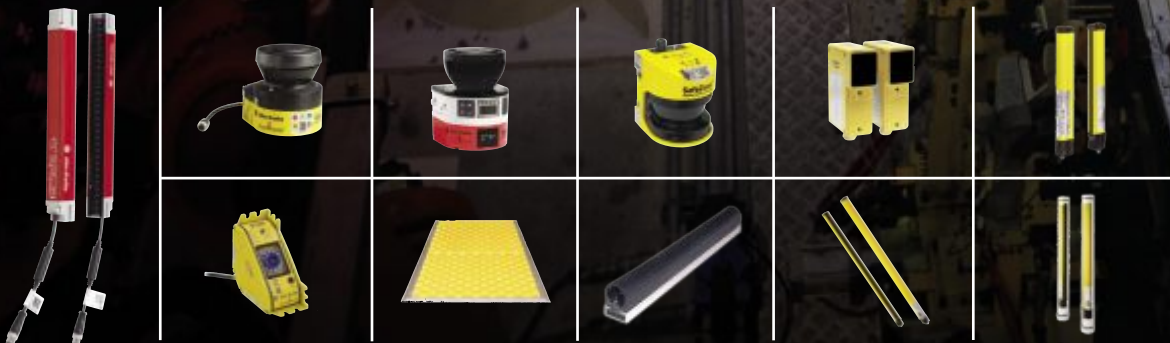# Presence sensing safety devices

Smart safety solutions that enhance productivity

Rockwell Automation

MULTIVISTA

Allen-Bradley
by ROCKWELL AUTOMATION

Rockwell Automation takes safety seriously

Allen-Bradley® GuardShield™ presence sensing safety devices from Rockwell Automation help protect personnel and equipment by detecting the presence of people and objects within a guarded area around machinery. Presence sensing safety devices are ideal for applications where personnel need frequent and easy yet safe access to hazardous areas such as near robotic welding, machining centers, stamping, hydraulic presses, filter presses or packaging equipment, etc. Our range of presence sensing safety devices cover basic on/off functionality to more advanced features including blanking and muting, all of which are available with CIP Safety over EtherNet/IP™ connectivity. Whether the need is finger, hand or whole body detection, our knowledgeable team of experts understand how to apply a comprehensive safety solution for your manufacturing facility.

Built to global standards for high reliability, stability and quality, Rockwell Automation solutions are ideally suited for applications where personnel safety is a priority. Our innovative products and services help protect your people, machinery, and environment while maximizing uptime.

PRESENCE SENSING SAFETY DEVICES

	GuardShield 450L-B	GuardShield 450L-E	GuardShield 440L Type4 POC	SC300 Hand Detection Safety Sensor	Micro 400 with MSR41 Controller	Micro 400 with MSR42 Controller	GuardShield 440L-Type4 PAC	445L Safe4 PAC	Area Access Control (AAC) Single Beam	SafeZone Safety Laser Scanners	MatGuard Safety Mats	Safedge Safety Edges
Finger Detection	●	●	●		●	●						●
Hand Detection	●	●	●	●	●	●				●		●
Whole Body Detection							●	●	●	●	●	●
FUNCTIONALITY												
Point of Operation Control (POC)	●	●	●	●	●	●				●		●
Perimeter Access Control (PAC)							●	●		●		
Area Access Control (AAC)									●	●	●	
ADVANCED FEATURES												
Transceiver Architecture One stick can be transmitter or receiver	●	●										
Fixed Blanking		●	●			●						
Floating Blanking/Reduced Resolution		●	●			●						
Integrated Laser Alignment		●	●				●	●				
Beam Coding		●	●				●					
External Device Monitoring (EDM)	●	●	●	●		●	●			●	●	
Auto/Manual Restart Selection	●	●	●	●		●	●	●		●		
Auxiliary Output	●	●	●			●	●				●	
Cascading Series connection of multiple safety light curtains		●	●	●			●					
Integrated Muting Temporary automatic disabling of the safety function		●					●					
CIP Safety Over EtherNet/IP	●	●								●		

Variable speed and servo drives

Safety contactors

GuardLogix® and Compact GuardLogix

Safety relays

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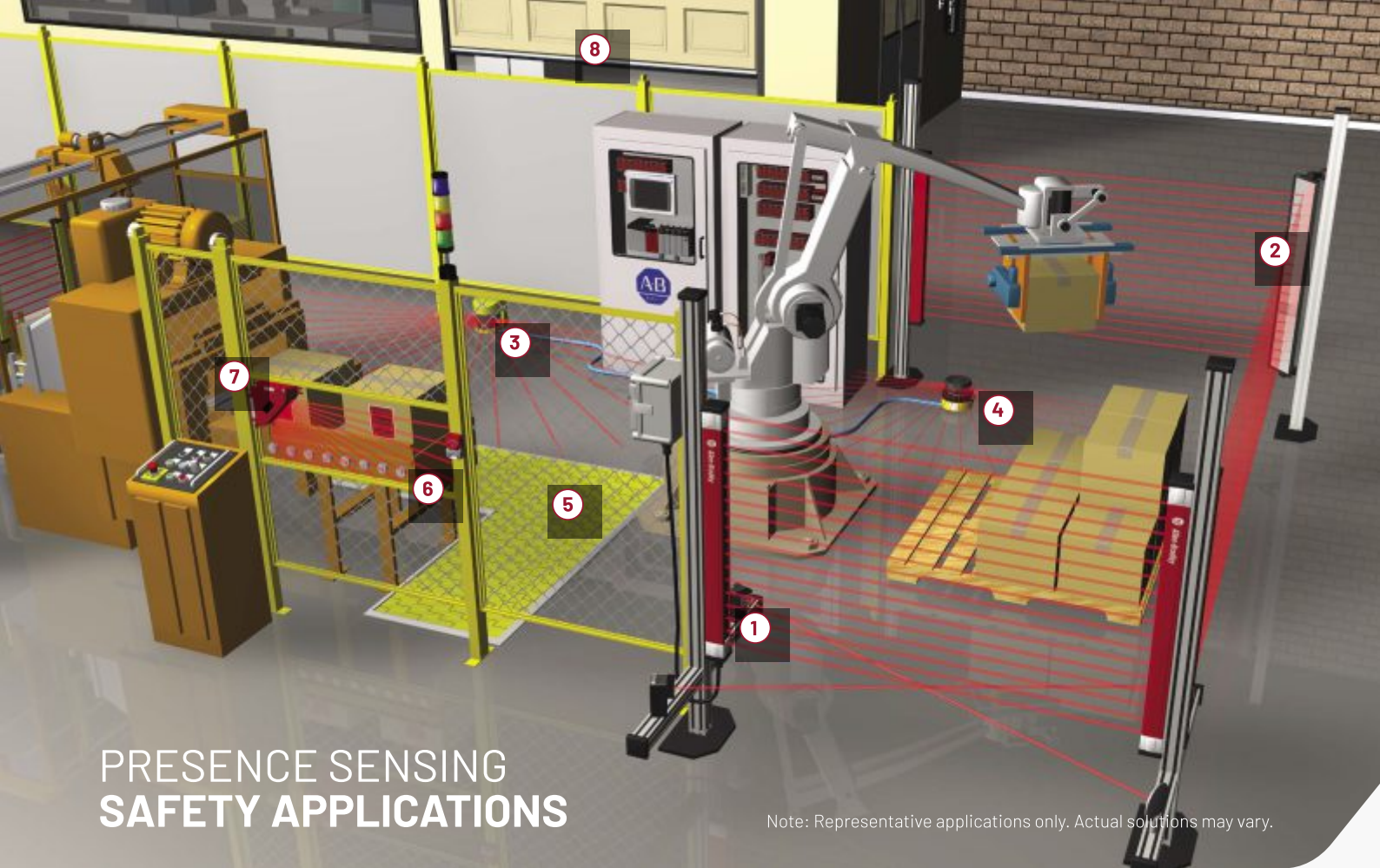
PRESENCE SENSING
SAFETY APPLICATIONS

Note: Representative applications only. Actual solutions may vary.

1 GuardShield™ safety light curtain with two retroreflective muting sensors allows work cell access without stopping all processes. This design allows an operator to enter the work cell to remove and replace material.

2 Safety light curtain with corner mirror provides perimeter guarding for the work cell. This configuration allows elimination of fencing or hard guarding and offers detection of personnel if they interrupt the sensing field.

3
4 SafeZone™ safety laser scanners mounted horizontally provide area detection inside the work cell. Safety laser scanners can be easily configured to scan irregular areas inside of the work cell. They are a non-contact alternative to pressure-sensitive safety mats.

5 MatGuard™ pressure sensitive safety mats around the entry area of a machine process help to detect the presence of personnel inside of the work cell.

6 Gate interlock safety switches help to stop hazardous motion inside of the work cell if personnel attempt to enter through the gate area.

7 The SC300 safety sensor is used for hand detection at a hazardous machine access point of the work cell. The SC300 is a reflective safety sensor that creates a detection plane in openings of various shapes and sizes.

8 A Safedge™ pressure-sensitive safety edge is mounted to a moving piece of machinery such as the bottom of a powered garage door to prevent personnel from bodily injury. Light pressure from any direction through 90° on the profile will trip the system.

Safety light curtains and scanners

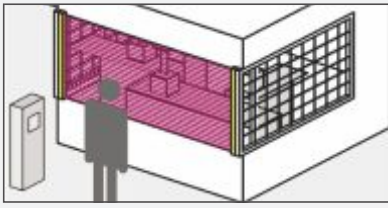Pressure sensitive devices

Tongue and hinge switches

Cable pull switches

Enabling switches

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Functionality and advanced features

### POINT OF OPERATION CONTROL (POC)

POC safety light curtains are typically designed to detect the presence of a finger or hand. These devices are usually positioned in front of the point of operation hazard, close to the machine opening. However, they may also be used for perimeter guarding applications. They can be mounted vertically or horizontally.
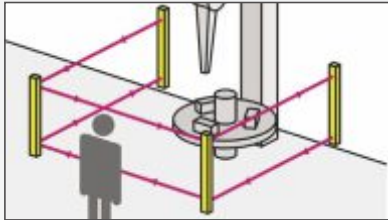
PERIMETER ACCESS CONTROL (PAC)

PAC safety light curtains are used as whole body detection devices for detection of personnel or large objects when they pass through the sensing field. They are typically positioned around an area or in front of a process entry or exit area. Typically they do not require frequent interaction between personnel and the hazard during regular operation. Multi-sided access control is attained through the use of corner mirrors.
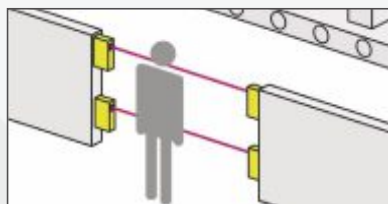
### AREA ACCESS CONTROL (AAC)

AAC uses a single-beam emitter and receiver unit to create a protective barrier around hazardous machines including robotic cells, transfer stations, palletizers and loading machines. Two-beam or multi-sided access control is attained through the use of corner mirrors.
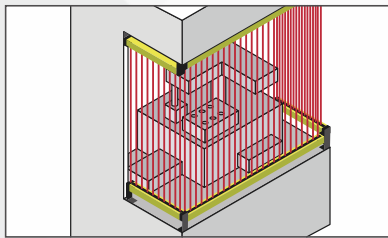
CASCADED SAFETY LIGHT CURTAINS

With a single cascaded light curtain system, the user can safeguard two adjacent points of entry. Using the cascade configuration, up to four pairs of light curtain segments can combine to offer protection in different planes. Often cascaded safety light curtains are used to combine vertical protection against reaching in with horizontal protection to detect someone standing behind the vertical light curtain.

Blanked Beam

Floating Blanking Beams

Workpiece

Press Brake Die
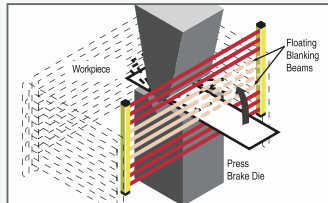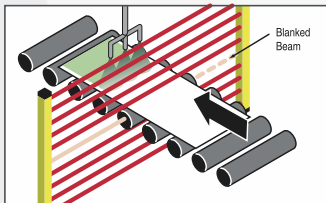
FIXED AND FLOATING BLANKING

The blanking function is a means of disabling one or more sections of a POC light curtain's sensing field. There are two blanking modes: fixed for static and floating for moving disabled sections.
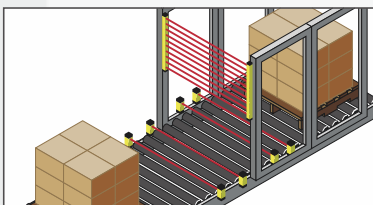
MUTING

This function allows access for parts or objects to enter a hazardous area without stopping the machine. However, if a person enters the dangerous zone, the machinery will stop.

Power isolators

Trapped key switches

E-stops

Non- contact switches

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Presence sensing safety devices

GuardShield 450L-B

- ON/OFF functionality
- Transmitter or receiver via innovative plug-in modules
- Active protective field over the entire length of a transceiver
- Operating range: up to 7.0 m (22.97 ft)
- Finger 14 mm (0.55 in.) or hand 30 mm (1.18 in.) detection
- Start mode, external device monitoring (EDM), scanning range are configured easily by DIP switches
- IP65 enclosure rating
- CIP Safety EtherNet/IP connectivity via plug-in module
- Connected Components Workbench (CCW) compatible for advanced diagnostics

GuardShield 450L-E

- Advanced features and functionality
  - Cascading, built-in muting and blanking, start mode, external device monitoring (EDM)
- Enhanced Integrated Laser Alignment System (ILAS)
- Transmit or receive via an innovative plug-in module
- Active protective field over the entire length of a transceiver
- Operating range: up to 16.2 m (53.15 ft)
- Finger 14 mm (0.55 in.) or hand 30 mm (1.18 in.) detection
- IP65 standard
- CIP Safety EtherNet/IP connectivity via plug-in module
- CCW compatible for easy set-up and advanced diagnostics

Micro 400 with MSR41 or MSR42 controller

- Slim (15 mm x 20 mm) (0.59 in. x 0.78 in.) profile
- ON/OFF (MSR41) or advanced functions (MSR42) controller
- Cascadeable
- Range: 5 m (16.4 ft)
- Finger 14 mm (0.55 in.) or hand 30 mm (1.18 in.) detection
- M12 QD connectors on 20 inch integrated cable
- IP54 standard /IP69K option

GuardShield 440L Type 4

- Advanced features and functionality
  - Fixed and floating blanking, EDM (External Device Monitoring), beam coding, Start/Restart interlock
- Range: 16 m (52.5 ft)
- Integrated laser alignment options
- Auxiliary output
- Finger 14 mm (0.55 in.) or hand 30 mm (1.18 in.) detection
- Cascadeable
- M12 QD connectors
- IP65 standard/IP67 kits available

GuardShield 440L Type4 PAC

- 2-beam with 500 mm (19.68 in.) and 3-beam with 400 mm (15.74 in.) spacing
- Range: 16 m (52.49 ft)
- Integrated laser alignment and DeviceNet safe connectivity options
- Beam coding
- External Device Monitoring (EDM)
- Start/Restart interlock
- Auxiliary output

445L Safe4 PAC

- ON/OFF functionality standard
- 2-beam, 3-beam and 4-beam options
- Range: 30 m (98.42 ft)
- Integrated laser alignment system
- M12 QD connectors

MatGuard™ Safety Mats

- Specially hardened steel plate construction
- Active sensing over entire mat surface
- Four-wire system for fault detection
- Minimum detection weight of 66 lbs. (29.9 Kg)
- Variety of aluminum trim options
- Special sizes and shapes are possible
- IP67

Safedge™ Safety Edges

- Conductive rubber profiles
- 5 mm, 19 mm or 41 mm (0.19 in., 0.74 in. or 1.61 in.) cushion factors available
- 50 m (164.04 ft) maximum lengths
- Variety of profile shapes
- IP65

Area Access Control Single Beam (AAC)

- ON/OFF functionality
- Short range 20 m (65.61 ft) or long range 70 m (229.65 ft) options
- Whole body detection
- Heated front lens
- PG 13.5 cable gland connection
- IP65/IP67

SafeZone™ Safety Laser Scanners
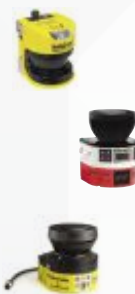
- 190° (SafeZone Single and Multizone), 270° (SafeZone Mini) and 275° (SafeZone 3) scan angles
- Safely field range: Mini: 2 m (6.6 ft), 3 m (9.8 ft), Single and Multizone: 4 m (13.12 ft), 5 m (16.4 ft) SafeZone3: 5.5 m (18 ft)
- Configurable resolutions: 30 mm to 200 mm (1.18 in. to 7.9 in.)
- Multiple sampling (2 to 16 scans)
- Configurable restart delay
- Horizontal or vertical mounting
- Seven segment display for diagnostic information (Singlezone, Multizone, Mini)
- Graphic display screen (SafeZone 3 CIP Safety scanner) with action buttons to scroll through the menu
- IP65

SC300 Hand Detection Safety Sensor

- ON/OFF functionality
- EDM, restart interlock functionality
- Fits openings up to 1.5 m X 1.5 m (4.92 ft x 4.92 ft)
- 24 mm or 30 mm (0.94 in. or 1.18 in.) resolution tape kits
- Vertical or horizontal mounting
- IP54

LEARN MORE ABOUT
Allen-Bradley Guardmaster safety products

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Product spotlight

GuardShield 450L-B and GuardShield 450L-E Safety Light Curtains

### POINT OF OPERATION CONTROL (POC) FOR FINGER OR HAND PROTECTION

Allen-Bradley® GuardShield POC safety light curtains are unlike traditional safety light curtains, which are based on separate transmitter and receiver units. Patented technology allows each transceiver to be used as a transmitter or receiver via an innovative plug-in module. These light curtains are available with CIP Safety over EtherNet/IP connectivity and TÜV certified PLe, Type 4 IEC 61496-1/-2, SIL CL3 per EN ISO 13849-1 and IEC 62061.

- Simple on/off functionality
- Innovative plug-in modules (available separately) for application flexibility, advanced functionality and reduced inventory costs
- Protection heights up to 1950 mm (76.7 in.) with active sensing field along the entire length
- Compact design 30 mm x 30 mm (1.18 in. x 1.18 in.)
- Integrated laser alignment system helps provide quick and more reliable installation (450L-E only)

EtherNet/IP™

CIP Safety

8-pin connection for manual/auto restart and external monitoring
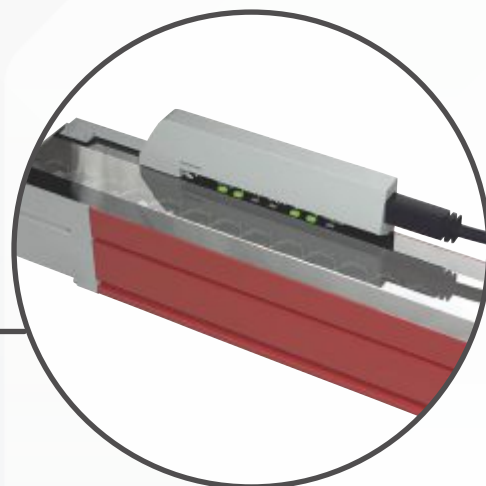
Optical interface device for setup and troubleshooting

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Universal plug-in for either transmitting or receiving

Plug-ins establish light curtain mode, advanced features and EtherNet/IP connectivity

GuardLink **EtherNet/IP**

SMART SAFETY TECHNOLOGY

Rockwell Automation smart safety products enhance safety while providing connectivity through The Connected Enterprise. Allen-Bradley Guardmaster smart safety devices featuring EtherNet/IP connectivity or GuardLink enabling technology deliver information, diagnostics, advanced functionality and flexibility, while enhancing safety and increasing efficiency machine- and plant-wide.

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Presence sensing safety accessories

	GuardShield 450L-B	GuardShield 450L-E	GuardShield 440L Type4	Micro 400 with MSR41 Controller	Micro 400 with MSR42 Controller	GuardShield 440L Type4 PAC	GuardShield 445L Safe 4 PAC	Area Access Control (AAC) Single Beam
CORNER MIRRORS Offer multi-sided guarding	●	●	●	●	●	●	●	●
WASHDOWN ENCLOSURES Environmentally protective enclosures			●	●	●	●		
WELD SHIELDS Protection for front window	●	●	●			●		
OPTICAL INTERFACE Provides fast diagnostic with CCW	●	●						
SHOCK MOUNTS Protect internal optical and electronic components	●	●	●			●	●	
MOUNTING STAND	●	●	●	●	●	●	●	●
MUTING BLOCK		●						
LAMP	●	●						
MUTING STATION		●						

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