# Safety Selection Guide

# Complete Safety Solutions from Banner

## Safety Light Curtains

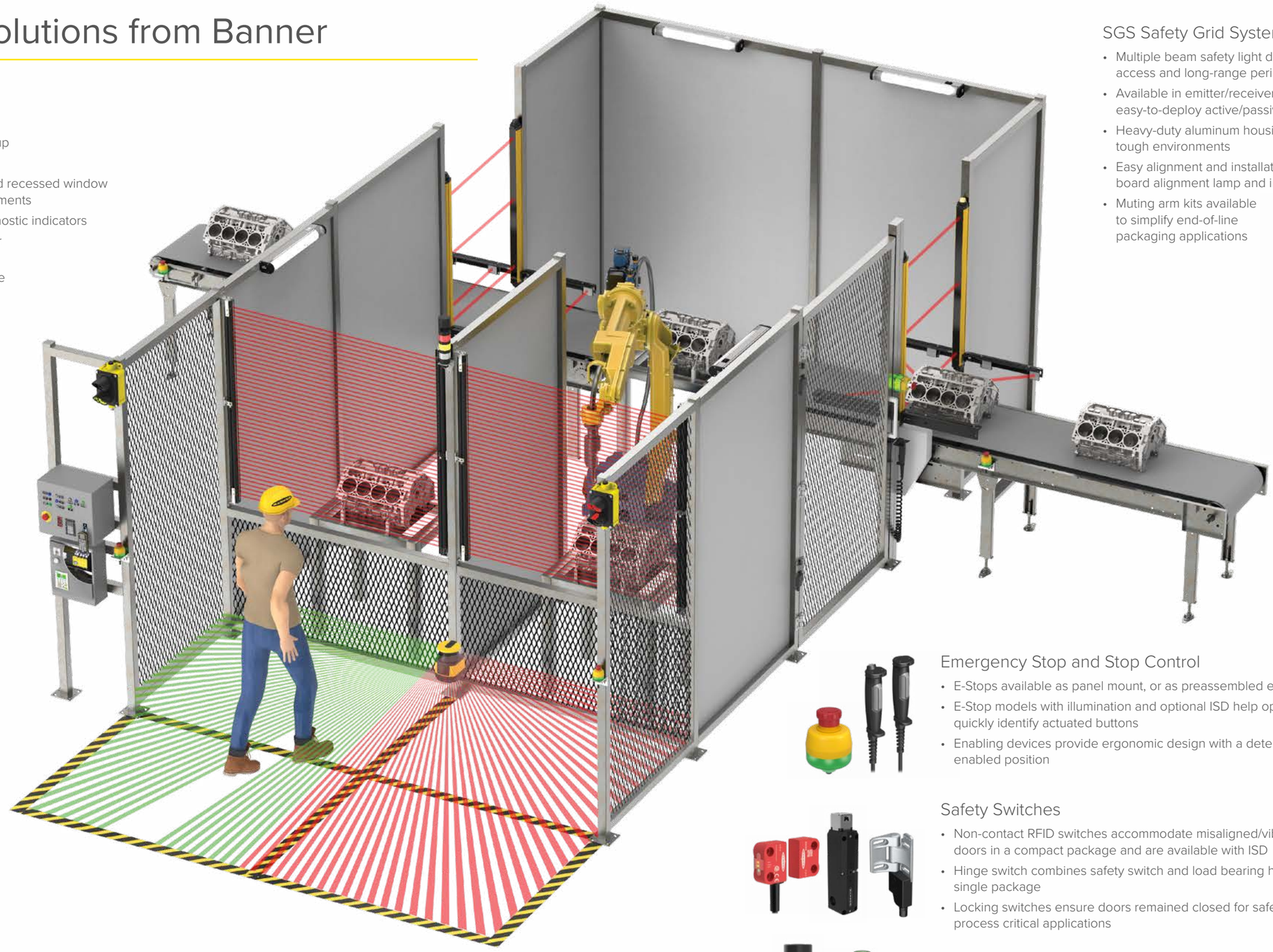
- Intuitive and easy-to-use and set up
- End-to-end sensing
- Heavy-duty aluminum housing and recessed window to avoid damage in harsh environments
- Highly visible alignment and diagnostic indicators
- IP69 hygienic models available for washdown environments
- Cascade capable models available

## Safety Controllers

- Up to eight expansion I/O modules can be added as your safety application grows or changes
- Configuration software is so simple that you will be programming in minutes
- Simulator functionality allows users to test their configurations without being connected to a controller
- Available with ISD, which provides an array of data including device status, voltage, temperature, RFID tag value, sensing distance, and more
- View and configure your controller remotely using Banner's network access feature

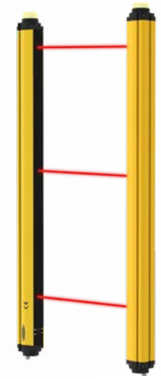
## Safety Laser Scanners

- Two-dimensional laser scanner with easy-to-use software
- Programming of irregular shaped warning and detection zones
- 275° scanning angle with selectable resolutions and 5.5 m range



## SGS Safety Grid Systems

- Multiple beam safety light devices for access and long-range perimeter guarding
- Available in emitter/receiver models and in easy-to-deploy active/passive models
- Heavy-duty aluminum housing for tough environments
- Easy alignment and installation with on-board alignment lamp and indicators
- Muting arm kits available to simplify end-of-line packaging applications





## Emergency Stop and Stop Control

- E-Stops available as panel mount, or as preassembled enclosures
- E-Stop models with illumination and optional ISD help operators quickly identify actuated buttons
- Enabling devices provide ergonomic design with a detent enabled position



## Safety Switches

- Non-contact RFID switches accommodate misaligned/vibrating doors in a compact package and are available with ISD
- Hinge switch combines safety switch and load bearing hinge in a single package
- Locking switches ensure doors remained closed for safety and process critical applications

## Lighting and Indication

- Preassembled and preconfigured multi-segment LED tower light indicators
- Programmable multicolor LED indicators, panel mount models available
- Pro Editor software offers a wide variety of color and animation options

# Banner In-Series Diagnostics (ISD)

## Easy-to-Implement Diagnostic Capabilities for Complex Safety Systems

In-Series Diagnostics allows connection of up to 32 devices with one in-series connection and communicate directly with the most commonly used PLCs.

When a safety event occurs the system receives an alert that includes information about which safety device tripped, making troubleshooting a breeze.

In-Series Diagnostics provides an array of additional data points for each in-series device used, including a unique tag value, internal temperature, voltage, and more, along with device-specific details such as the alignment and distance between a safety switch's sensor and actuator.

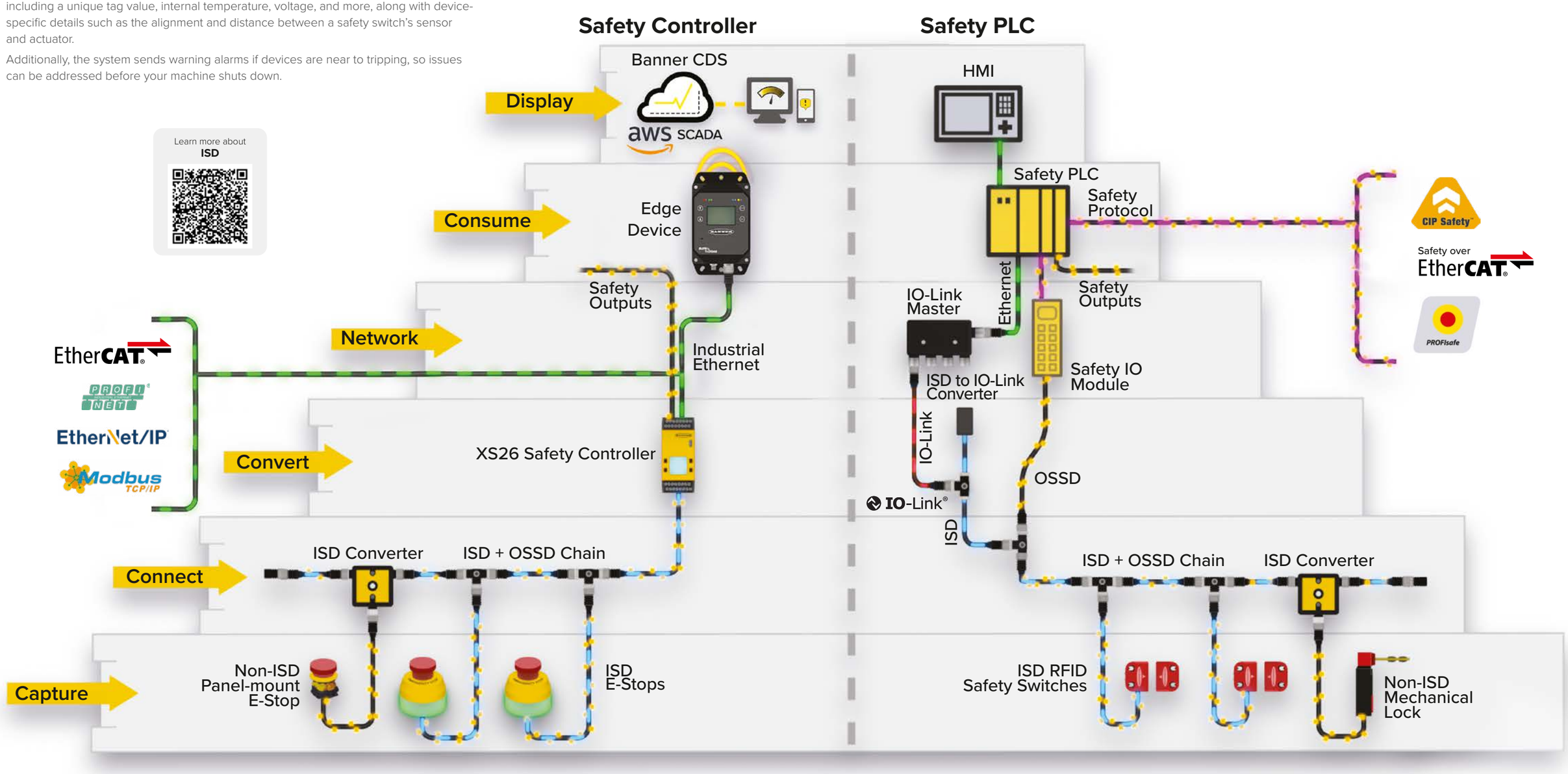
Additionally, the system sends warning alarms if devices are near to tripping, so issues can be addressed before your machine shuts down.

Learn more about **ISD**

Cut Costs

Simplify Installation & Troubleshooting

Prevent & Reduce Downtime



# Safety Light Curtain Selection Guide

| | S4B | EZ-SCREEN LS | EZ-SCREEN 14/30 | | EZ-SCREEN LP | EZ-SCREEN LS2 | SGS Grids |
|---|---|---|---|---|---|---|---|
| **Type IEC 61496-1, -2** | Type 4 | Type 4 | Type 4 | | Type 4 | Type 2 | Type 4 |
| **Safety Rating EN ISO 13849-1; IEC 61508; IEC 62061** | Category 4 PL e; SIL3 | Category 4 PL e; SIL3 | Category 4 PL e; SIL3 | | Category 4 PL e; SIL3 | Category 2 PL c | Category 4 PL e; SIL3 |
| **IP Rating** | IP65 | IP65, IP67, IP69K option | IP65 | | IP54, IP65 | IP65 | IP65 |
| **Dimensions W x D (mm)** | 38 x 38 | 36 x 45 | 36 x 45 | | 28 x 26 | 25 x 32 | 52 x 56.9 |
| **Resolution (mm)** | 14, 30 | 14, 23, 40 | 14 | 30 | 14, 25 | 30 | 300, 400, 500 |
| **Max Sensing Range (m)** | 12 | 12 | 6 | 18 | Basic: 4<br>Standard: 7 | 15 | Standard: 30<br>Long Distance: 60 |
| **Defined Area (mm)** | 14 mm: 300 to 1200<br>30 mm: 300 to 1800 | 14 mm: 280 to 1820<br>23 mm: 280 to 2380<br>40 mm: 280 to 1820 | 150 to 1800 | 150 to 2400 | Basic: 270, 410, 550, 690<br>Standard: 270 to 1250 | 150 to 1800 | 500 to 1200 |
| **Increments (mm)** | 150 | 70 | 150 | | Standard: 140 | 150 | 2, 3, 4 Beams |
| **Functions** | | | | | | | |
| **Hand Detection** | ✓ | ✓ | ✓ | | ✓ | ✓ | |
| **Finger Detection** | ✓ | ✓ | ✓ | | ✓ | | |
| **Body Detection** | | | | | | | ✓ |
| **Cascade** | ✓ | SLLC | SLSC | | SLPC | | |
| **Scan Codes** | ✓ | ✓ | ✓ | | ✓ | | ✓ |
| **Fixed Blanking** | Accessory | Accessory | ✓ | | ✓ | | |
| **Reduced Resolution** | | | ✓ | | ✓ | | |
| **EDM** | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ |
| **Reset** | | | ✓ | | ✓ | ✓ | ✓ |
| **Integrated Muting** | | | | | ✓ | | ✓ |
| **LED on Top** | | Accessory | | | | | ✓ |

# Safety Scanner Selection Guide

| | SX5-B6 | SX5-M10 | SX5-M70 | SX5-ME70 | SX5-R |
|---|---|---|---|---|---|
| **Dimensions W x D x H (mm)** | 102 x 112 x 152 | 102 x 112 x 152 | 102 x 112 x 152 | 102 x 112 x 152 | 102 x 112 x 152 |
| **Presence Detection** | 50/70 mm | 50/70 mm | 50/70 mm | 50/70 mm | 50/70 mm |
| **Body Detection** | 70/150 mm | 70/150 mm | 70/150 mm | 70/150 mm | 70/150 mm |
| **Hand Detection** | 30/40 mm | 30/40 mm | 30/40 mm | 30/40 mm | 30/40 mm |
| **Range** (depending on resolution) | 30 mm = 2.5 m<br>40 mm = 3 m<br>50 mm = 4 m<br>70/150 mm = 5.5 m | 30 mm = 2.5 m<br>40 mm = 3 m<br>50 mm = 4 m<br>70/150 mm = 5.5 m | 30 mm = 2.5 m<br>40 mm = 3 m<br>50 mm = 4 m<br>70/150 mm = 5.5 m | 30 mm = 2.5 m<br>40 mm = 3 m<br>50 mm = 4 m<br>70/150 mm = 5.5 m | 30 mm = 2.5 m<br>40 mm = 3 m<br>50 mm = 4 m<br>70/150 mm = 5.5 m |
| **Max. Zone Sets** (depending on configuration) | 6 | 10 | 70 | 70 | depending on master |
| **Master Remote** | | Master (up to 3 remotes) | Master (up to 3 remotes) | Master (up to 3 remotes) | Remote |
| **Removable Memory** | | SXA-RM-10 | SXA-RM-70 | SXA-RM-70 | |
| **Speed Monitoring** | | | | ✓ | |
| **Max. OSSD Outputs** (depending on configuration) | 1x 2 OSSD | 2x 2 OSSD | 3x 2 OSSD | 3x 2 OSSD | |
| **Inter Device Connection** | | 8-Pin M12 | 8-Pin M12 | 8-Pin M12 | 8-Pin M12 |
| **Integral Muting** | ✓ | ✓ | ✓ | ✓ | ✓ |
| **Programmable Dust Filter** | ✓ | ✓ | ✓ | ✓ | ✓ |
| **Measurement Data** | ✓ | ✓ | ✓ | ✓ | ✓ |
| **Field-replaceable Window** | ✓ | ✓ | ✓ | ✓ | ✓ |
| **Muting/bypass** | | | ✓ | ✓ | |

# Relay and Controller Selection Guide

| | GM/ES | UM | SM | AT | MMD | SSM | SR | IM | EM | SC10 | SC26/XS26 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Device Type** | Preconfigured Safety Relay Modules | | | | | Preconfigured Safety Relay Modules | | | | Configurable Controllers | |
| **Self Testing Safety Device** | | ✓ | | | ✓ | | | | | ✓ | ✓ |
| **Self Testing Safety Device with EDM Function** | | ✓ | | | ✓ | | ✓ | ✓ | | ✓ | ✓ |
| **E-Stop** | ✓ | ✓ | | | ✓ (secondary function) | | | | | ✓ | ✓ |
| **Rope Pull** | ✓ | ✓ | | | ✓ (secondary function) | | | | | ✓ | ✓ |
| **Gate Switch (potential free contacts)** | ✓ | ✓ | | | ✓ | | | | | ✓ | ✓ |
| **RFID Gate Switch (OSSD contacts)** | | ✓ | | | ✓ | | | | | ✓ | ✓ |
| **ISD Functionality** | | | | | | | | | | 2 chains | 8 chains |
| **Modbus TCP/IP, PROFINET, EtherNet/IP, EtherCAT** | | | | | | | | | | ✓ | ✓ (XS Series only) |
| **Network Access and View** | | | | | | | | | | | ✓ |
| **Safety Mat Monitoring** | | | ✓ | | | | | | | ✓ | ✓ |
| **Two-Hand Control** | | | | ✓ | | | | | | ✓ | ✓ |
| **Enabling Device** | ✓ | ✓ | | | | | | | | ✓ | ✓ |
| **Expandable** | | | | | | | | | ✓ | | ✓ |
| **Muting** | | | | | ✓ | | | | | ✓ | ✓ |
| **ON/OFF Delay** | | | | | | | | | OFF delay available | ✓ | ✓ |
| **Speed Monitoring** | | | | | | ✓ | | | | | |
| **Safety Standard** | Cat. 4 PL e, per EN ISO 13849-1; SIL 3 per IEC 61508 and IEC 61062 | | | | | Cat. 4 PL e, per EN ISO 13849-1; SIL 3 per IEC 61508 and IEC 61062 | | | | | |
| **Inputs** | 1 NC and 1 NO (single or dual)<br>1 NC (single)<br>2 NC (dual) | 1 NC (single) or 2 NC (dual) or 2 PNP | 1 (or multiple in series)<br>4-wire safety mat | 2 STB or buttons with complementary contacts | 2 NC mutable (dual) and 2 NC SSI (dual) | 2 PNP | 2 NC (dual) or 2 PNP | 2 NC (dual) or 2 PNP | 1 NC (single) or 2 NC (dual) | 10 | SC26: up to 26<br>XS26: up to 154 |
| **Safety Outputs** | 2 NO, 3 NO, 4 NO | 2 NO or 3 NO | 4 NO | 2 NO | 2 PNP OSSD or 2 NO | 2 NO | 2 NO, 3 NO | 2 NO, 3 NO | 4 NO or 4 NO with delay | 2x 3 NO | SC: 2<br>XS: up to 68 |
| **Maximum Safety Output Rating** | 6A, 7A | 7A | 6A | 6A | 6A | 4A | 6A | 6A | 6A | 6A each | 0.5A each |
| **Auxiliary Outputs** | 1 NC or 1 NC and 2 PNP | 1 NC, depending on model | 1 NC and 2 PNP | | 1 PNP or 1 NC | 1 NC | 1 NC | 1 NC, depending on model | | depends on configuration | depends on configuration |
| **Power Supply** | 24 V AC/DC<br>115 V AC and 12-24 V DC<br>or 230 V AC and 12-24 V DC | 24 V AC/DC | 115 V AC and 12-24 V DC<br>or 230 V AC and 12-24 V DC | 24 V AC/DC | 24 V DC | 24 V DC | 24 V DC | 24 V DC | 24 V DC or 24 V AC/DC, depending on model | 24 V DC | 24 V DC |

# Safety Switches Selection Guide

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **SI-MAG** | **SI-RF** | **SI-LS** | **SI-QS** | **SI-GL42** | **SI-LS42** | **SI-LS83** | **SI-HG63** | **SI-HG80** |
| **Device Type** | Magnetic | RFID | Mechanical | | Mechanical | | | Hinge | |
| **Switch Style** | Non-Contact | Non-Contact | Separate Actuator | Separate Actuator | Separate Actuator | Separate Actuator | Limit | Hinge | Hinge |
| **Non-Locking** | ✓ | ✓ | ✓ | ✓ | | | ✓ | ✓ | ✓ |
| **Locking** | | | | | ✓ | ✓ | | | |
| **Position** | ✓ | ✓ | | | | | Plunger, Roller, Spindle-mount, Lever | | |
| **Contacts** | 1 NC, 1 NO | OSSD PNP | 2 NC, 1 NO<br>1 NC, 1 NO<br>2 NC | 1 NC, 1 NO<br>2 NC<br>2 NC, 1 NO<br>1 NC | 1 NO<br>1 NC<br>1 NC, 1 NO<br>2 NC<br>2 NC, 1 NO<br>3 NC | 1 NC, 1 NO<br>2 NC, 1 NO<br>1 NC<br>2 NC<br>3 NC | 1 NC, 1 NO<br>2 NC<br>2 NC, 1 NO | 2 NC, 1 NO | 1 NC, 1 NO |
| **Locking or Unlocking Power** | | | | | 24 V AC/DC | 24 V AC/DC<br>110 V AC/230 V AC | | | |
| **Straight Rigid Inline** | | | ✓ | | ✓ | ✓ | | | |
| **Rigid Inline** | | | ✓ | ✓ | ✓ | | | | |
| **Flexible Inline** | | | ✓ | ✓ | ✓ | ✓ | | | |
| **High-Force Accessory** | | | | ✓ | | | | | |
| **LED Status Indication** | | ✓ | | | | | | | |
| **Cascadable** | | ✓ | | | | | | | |
| **ISD (In-Series Diagnostics)** | | ✓ | | | Compatible with ISD connect | | | Compatible with ISD connect | |
| **Coding level / Manipulation protection EN ISO 14119** | Low coding | Unique/Low/High coding | Low coding | Low coding | Low coding | Low coding | Uncoded | Uncoded | Uncoded |
| **Housing Material** | Plastic | Plastic | Plastic | Plastic | Head: Metal<br>Body: Plastic | Plastic | Plastic | Metal | Metal |
| **Locking** | | | | | Spring lock<br>Solenoid lock | Spring lock<br>Solenoid lock | | | |
| **Actuation Extraction Force** | | | 10 N | 10 N<br>High-Force models: adjust. from 50-100 N | 1500 N<br>when locked | 2000 N<br>when locked | | | |
| **Resettable Switching Point** | | | | | | | | ✓ | |

# E-Stop Devices Selection Guide

| | SSA-EBM | SSA-EB | SSA-EB1PL | SSA-EB1P | SSA-EB1M |
|---|---|---|---|---|---|
| | Panel Mount Emergency Stop Buttons | | Emergency Stop Buttons | | |
| **E-Stop** | ✓ | ✓ | ✓ | ✓ | ✓ |
| **Rope Pull** | | | | | |
| **Button Size (mm)** | 40 mm | 40, 44, 60 mm | 40, 60 mm | 40, 60 mm | 44 mm |
| **Illuminated Housing** | | | ✓ | | ✓ |
| **Illuminated Button** | | ✓ | ✓ | ✓ | |
| **Release** | ✓ | ✓ | ✓ | ✓ | ✓ |
| **Lock/Unlock Button** | | ✓ (SSA-EB1M only) | | | ✓ |
| **Rope Length (m)** | | | | | |
| **Rope Connection** | | | | | |
| **ISD (In-Series Diagnostics)** | | | ✓ | ✓ | |
| **Safety Contacts** | 1 NC<br>2 NC | 1 NC<br>2 NC<br>3 NC<br>4 NC | 1 NC<br>2 NC<br>4 NC | 1 NC<br>2 NC<br>4 NC | 1 NC<br>2 NC<br>4 NC |
| **Auxiliary Contacts** | 1 NO | 1 NO<br>2 NO | 1 NO<br>2 NO | 1 NO<br>2 NO | 1 NO<br>2 NO |
| **OSSD Outputs** | | | ✓ | ✓ | |
| **Connection** | Screw terminals | Screw terminals | M12 or Screw terminals | M12 or Screw terminals | M12 or Screw terminals |
| **Panel/Bracket Hole (mm)** | 22 mm | 30 mm | 30 mm | 30 mm | |

| | RP-RM83 | RP-LS42 | RP-QM(T)72 | RP-LM40 | RP-QM90 |
|---|---|---|---|---|---|
| | Rope Pull Emergency Stop Switches | | | | |
| **E-Stop** | ✓ | ✓ | | | |
| **Rope Pull** | ✓ | ✓ | ✓ (only stop control) | ✓ (only stop control) | ✓ |
| **Button Size (mm)** | 32 mm | 32 mm | | | |
| **Illuminated Housing** | | | | | |
| **Illuminated Button** | | | | | |
| **Release** | ✓ | | | | |
| **Lock/Unlock Button** | | | | | |
| **Rope Length (m)** | 38 m<br>70 m | 25 m<br>37.2 m<br>75 m | 6 m<br>12 m<br>20 m | 6 m | 50 + 50 m |
| **Rope Connection** | Built-in turnbuckle or ring connection | Built-in turnbuckle or ring connection | Ring connection | Ring connection | Ring connection |
| **ISD (In-Series Diagnostics)** | | | | | |
| **Safety Contacts** | 2 NC | 2 NC | 2 NC<br>4 NC | 2 NC | 2 NC |
| **Auxiliary Contacts** | 2 NO | 2 NO | 1 NO (specific models) | | 2 NO |
| **OSSD Outputs** | | | | | |
| **Connection** | Screw terminals | Screw terminals | Screw terminals | Screw terminals | Screw terminals |

Related Product:

## ISD Connect

- Connects a non-ISD-enabled safety device with 2 normally closed sets of contacts, such as a panel-mount E-stop or safety switch, to an ISD chain
- IP67-rated and installs easily, with no assembly or individual wiring required
- Access diagnostic data, prevent system faults, and reduce equipment downtime of non-ISD devices
- Built-in indication for input device and ISD status

# Smarter Automation. Better Solutions.™

Banner Engineering designs and manufactures industrial automation products including sensors, smart IIoT and industrial wireless technologies, LED lights and indicators, measurement devices, machine safety equipment, as well as barcode scanners and machine vision. These solutions help make many of the things we use every day, from food and medicine to cars and electronics. A high-quality, reliable Banner product is installed somewhere around the world every two seconds. Headquartered in Minneapolis since 1966, Banner is an industry leader with more than 10,000 products, operations on five continents, and a worldwide team of more than 5,500 employees and partners. Our dedication to innovation and personable service makes Banner a trusted source of smart automation technologies to customers around the globe.

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