

# Safety Switches

Enhancing Safety and Productivity

 **Allen-Bradley**

 **Guardmaster®**



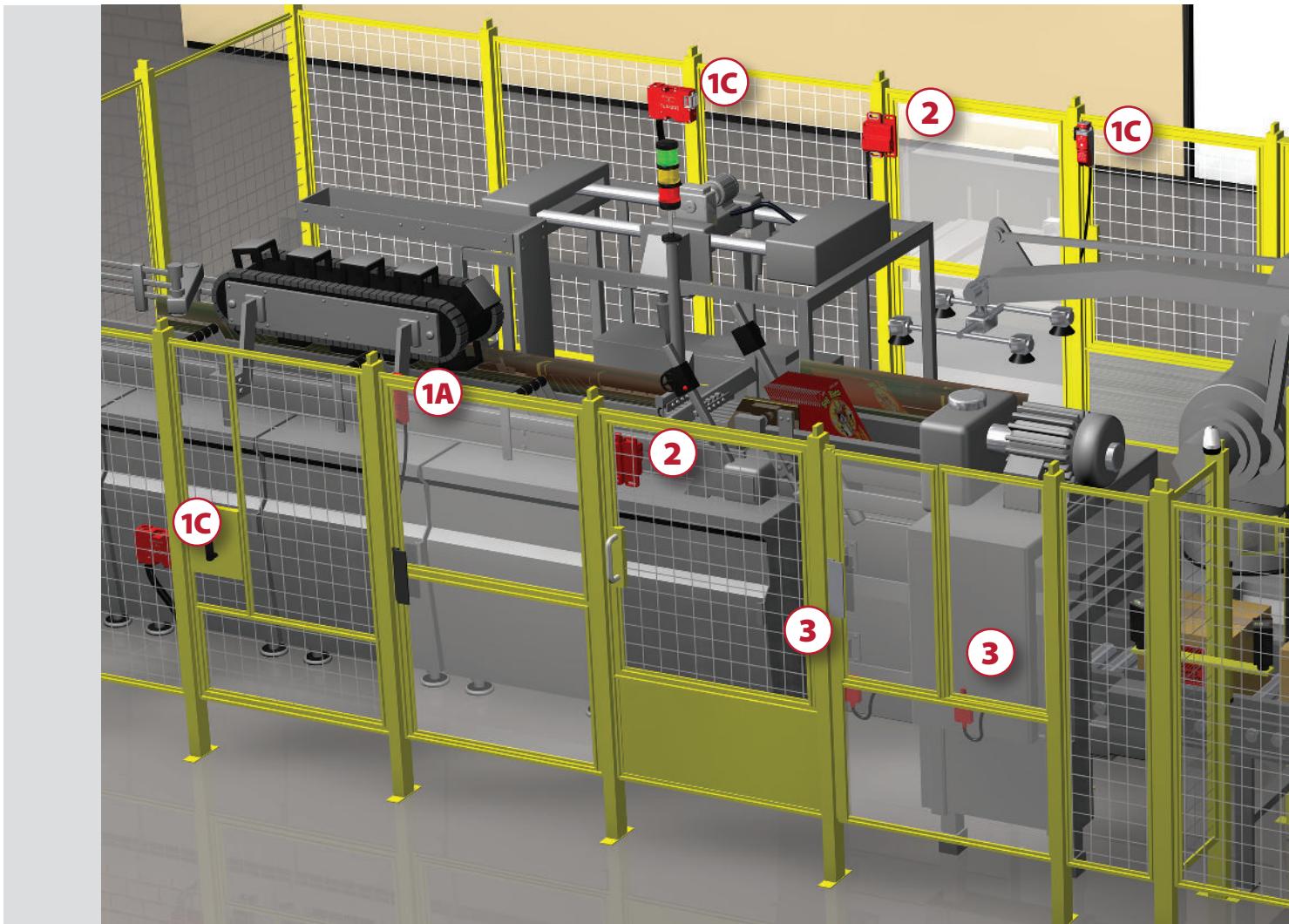
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 **Allen-Bradley** • **Rockwell Software**

**Rockwell  
Automation**

# A COMPREHENSIVE FAMILY OF SAFETY SWITCHES

Allen-Bradley® Guardmaster® safety switches from Rockwell Automation® help protect personnel and equipment by providing physical interlocking of guard doors and equipment, allowing access to potentially hazardous areas only when the area is safe.



Note: Representative applications only. Actual solutions may vary.

## 1 Safety Interlock Switches



Ideal for interlocking sliding, hinge and lift-off guard doors, safety interlock switches offer electrical interlocking of the machine's control circuit to the guard door. They include:

- 1A Tongue operated interlock switches
- 1B Hinge operated interlock switches
- 1C Guard locking interlock switches

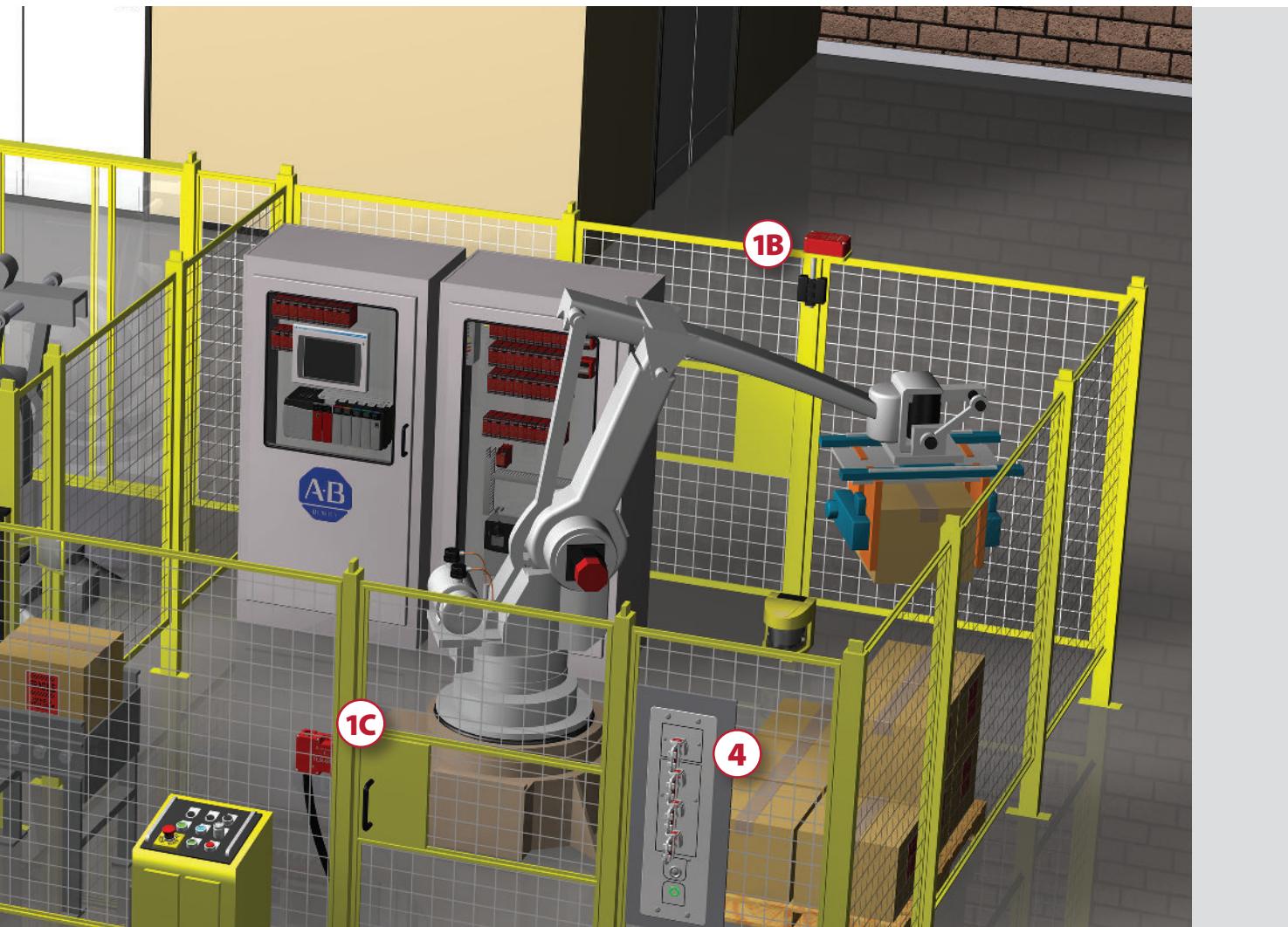
## 2 Non-contact Interlock Switches



Ideal for sliding, hinge, or lift-off machine guard doors, non-contact switches offer simple setup and alignment, less wear, and fully-sealed IP67 and IP69K housings. They include:

- RFID-coded switches (standard and unique coding)
- Magnetically actuated switches (coded or non-coded)
- Plastic or metal housings

Built to global standards for high reliability, stability and quality, Allen-Bradley Guardmaster safety switches are ideally suited for applications where personnel safety is a priority. Our innovative products help protect your people, machinery and environment while maximizing uptime.



### 3 Safety Limit Switches



Safety limit switches are designed for position limit control in applications such as sliding guard doors and moving machine beds. They are ideal for applications requiring sensing at either side of a sliding guard door. Available in:

- A variety of actuator and contact configurations
- NEMA or IEC versions
- Plastic or metal housings

### 4 Prosafe Trapped Key Interlocks



Prosafe trapped key interlock switches are ideal for enforced sequential interlocking and are designed for safety applications requiring a pre-defined sequence of operations.

- Electrical isolators
- Key exchange units
- Interlocks

# PRODUCT SPOTLIGHTS

## SensaGuard™ RFID Coded Non-Contact Interlocks

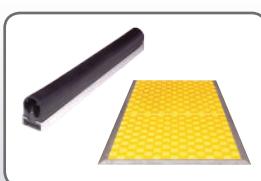
Featuring RFID technology for coding, inductive technology for sensing and combining a large sensing range with optimal operation and a generous tolerance to misalignment, SensaGuard switches offer a cost-effective solution that is ideally suited to a wide range of safety applications and is intended for use with all types of guard doors.

- RFID unique (high) or standard (low) coded actuators
- No dedicated controller required
- PLe, Cat 4, SIL 3 rating maintained when connected in series
- Switches can be connected in series with other devices
- Flat pack and barrel (plastic and stainless steel housing)
- Stainless steel versions suitable for use in harsh environments
- Standard, magnetic hold, and integrated latch versions available
- IP69K washdown rating
- 10 to 25 mm assured ON (depending on version)

### Rectangular Flat Pack Version



### Other Rockwell Automation safety products...





### 440G-LZ

The Allen-Bradley Guardmaster 440G-LZ from Rockwell Automation is a guard locking switch designed for partial body access guards. Combining microprocessor technology with an RFID coded actuator, the 440G-LZ features a locking bolt drive mechanism that will only lock when the correct actuator is detected. The locking bolt is continuously monitored for correct insertion within the actuator. This extra functionality allows the 440G-LZ to be certified PLe, Cat 4, SIL 3 – the highest level of safety for guard position and lock monitoring – and it can be connected directly or in series with other PLe, Cat 4, or SIL 3 rated safety devices.

The 440G-LZ runs “cool” and has low power (2.5 W) consumption due to its bi-stable solenoid and built-in energy storage.

The 440G-LZ consumes up to 60% less energy when compared to other guard locking switches, making it a truly ‘green’ safety solution. It achieves this level of energy efficiency thanks to advanced algorithms and a bi-stable solenoid design that consumes little power for switching, regardless of whether it is in the locked or unlocked state.

**TÜV certification to the new rigorous EN/ISO 14119:2013 and EN/ISO 13849-1 standards for achieving Performance Level “e”, Cat 4 – the highest level of safety for guard position and lock monitoring.**



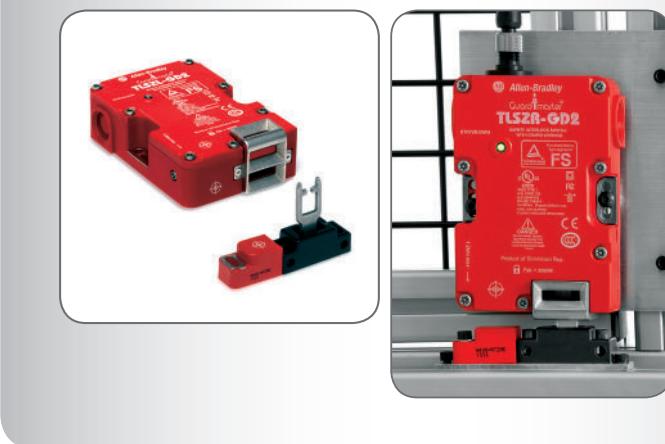
QR code links to the 440G-LZ User Manual

Bright 270 degree wrap-around LEDs provide status and smart local diagnostics

### TLS-Z Guard Locking Switch

The TLS-Z features an RFID door target that is mounted with the supplied fully-flexible actuator. Using built-in microprocessor technology and two channel OSSD solid-state outputs, these switches operate using a logic-level signal input. The RFID door target is uniquely coded and provides the internal microprocessor with additional door position information. This device can be used in a guard locking system to achieve PLe, Cat 4 and SIL 3.

- RFID unique (high) coded door target
- Power-to-Release (safety of people) and Power-to-Lock (protection of machine production) versions available
- Solid-state OSSD outputs allow the switch to be connected in series with other devices while maintaining safety ratings
- Meets EN/ISO 14119:2013, EN/ISO 13849-1 and EN 62061
- PLe, Cat 4 and SIL 3 for guard position and lock monitoring



### 440G-LZ Features

- TÜV certified to PLe, Cat 4 per EN/ISO 13849-1, SIL 3 per EN 62061 and EN/ISO 14119:2013
- Uses up to 60% less power than competitive products
- RFID unique (high) or standard (low) coded actuators provide application flexibility
- High holding force (Fzh) per EN/ISO 14119:2013
- Power-to-Release (safety of people) and Power-to-Lock (protection of machine production) versions available
- IP69K washdown rating
- Compact 45 mm housing with four actuator positions for flexibility of mounting



GuardLogix and Compact GuardLogix



SmartGuard 600



Safety relays and configurable safety relays

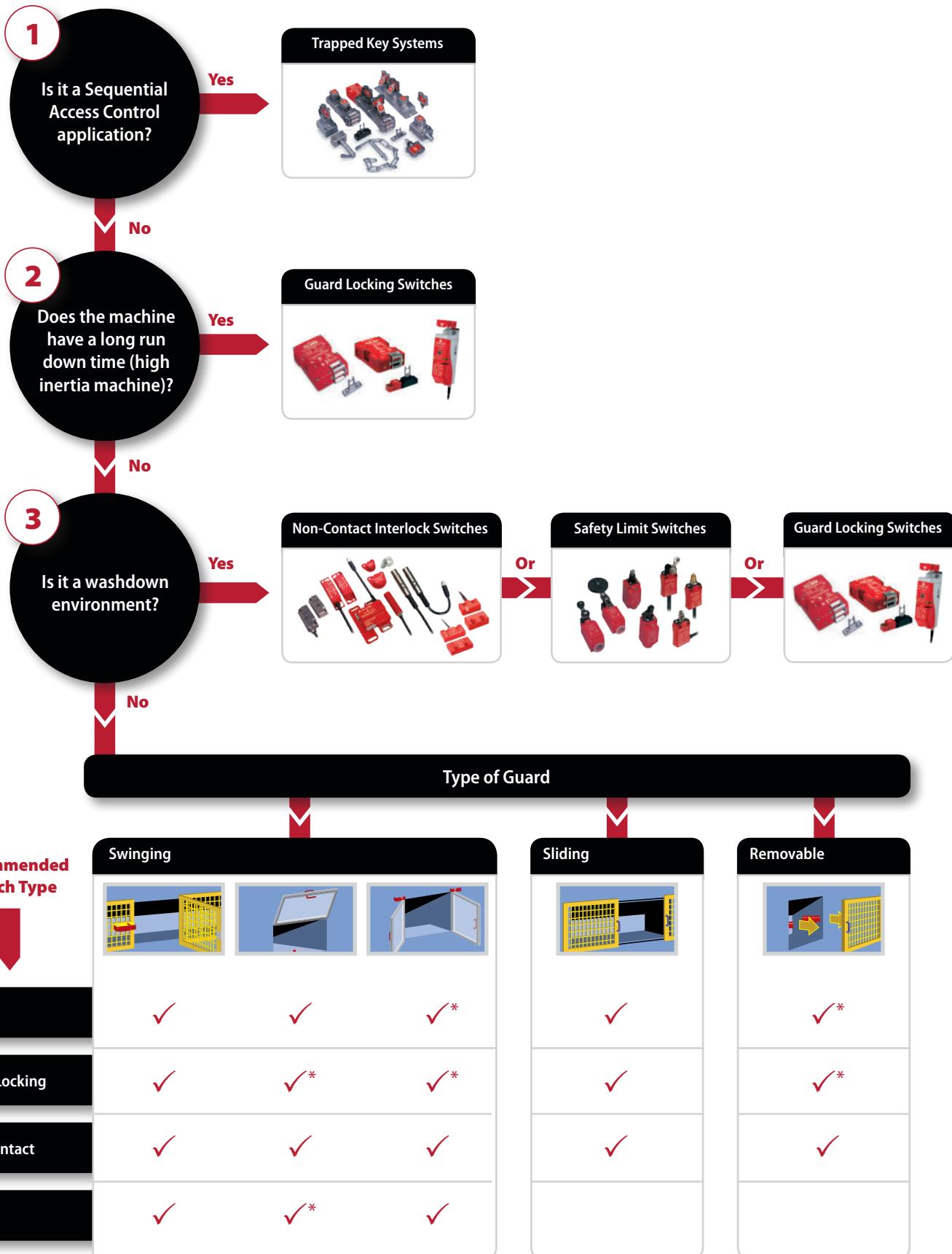


Variable speed and servo drives

# SAFETY SWITCH SELECTION



Scan to learn more about safety switches and interlocks on ab.com



# SAFETY SWITCHES AND INTERLOCKS

## Tongue Operated Interlock Switches – 440K



### Description

- Provide electrical interlocking of a machine's control circuit to the guard door
- Offering flexible keys for enhanced tolerance to misalignment to meet a wide range of applications
- Available in a variety of packages, contact configurations and degrees of holding force
- Easy to install and cost-effective

## Safety Limit Switches – 440P



### Description

- Available in four different body styles with a broad selection of operator types, circuit arrangements and connection options
- 30 mm metal, 22 mm metal and plastic, and 15 mm plastic body styles
- Wide range of actuator and contact configurations for installation flexibility
- Positive opening-action contacts, making them ideal for safety-related applications

## Guard Locking Switches – 440G



### Description

- Provide electrical interlocking of a machine's control circuit to the guard door
- Ideal for applications that require a guard door to remain closed and locked until potential hazards have stopped or come to a predetermined safe state
- Help reduce the risk that a guard opens during hazardous machine motion
- Cost-effective solution for protecting machines from interruptions in production

## Prosafe Interlocks – 440T



### Description

- Ideal for interlocking guard doors, cams and valves
- By using coded Prosafe keys, the system ensures the interlocks cannot be operated or opened while the key is being used in another part of the system
- Unlocking of the interlocks can be carried out only when the correct coded key is inserted

## Hinge Operated Interlock Switches – 440H



### Description

- Connect directly to a guard door hinge and allow immediate opening of the guard
- Provide good clearance due to convenient, unobtrusive mounting
- Well-suited for machines where product is loaded through a hinged guard
- Ideal for machines with misaligned guards or applications with contaminants that could get caught in a key slot

## Prosafe Electrical Isolators – 440T



### Description

- Designed to isolate the machine's power and ensure the power remains off while the key is being used in another part of the interlocking system
- Basic rotary switch isolators for immediate power isolation
- Solenoid key release units
- Timed delay isolators offering a pre-determined delay before the key can be removed
- Stopped motion units that don't allow the key to be removed until all monitored hazardous motion has come to a stop or a pre-determined safe state

## Non-Contact Interlock Switches – 440N



### Description

- Require no physical contact with the actuator, allowing immediate opening of the guard door
- No contact between sensor and actuator helps reduce risk of debris contamination
- Large sensing field helps compensate for door misalignment
- Types: RFID coded (standard & unique) and magnetically coded
- Control units are required for some systems
- Simple setup and alignment, helping to reduce installation costs

## Prosafe Key Exchange Units – 440T



### Description

- Used in an interlocking sequence to link other devices
- Caters to complex operating sequences
- Primary keys remain trapped until all secondary keys have been re-inserted, rotated, and trapped in the key exchange unit
- Used to trap and release keys in a pre-determined sequence
- Options for multiple keys to be entered or withdrawn
- Can be used as part of a lock-out process
- Solutions do not need power for interlocking
- Up to 25 key sequence

# SAFETY CONNECTION SYSTEMS

The Allen-Bradley Guardmaster safety connection systems are complete wiring solutions dedicated to machine safety. These quick disconnect-based systems consist of:

- Safety wired t-ports
- Distribution boxes
- Patchcords
- Shorting plugs

Our safety connection systems are designed to reduce installation costs, ease system expansion and simplify troubleshooting.



Rockwell Automation provides a full suite of electronic tools to help build your safety system including:

- Safety Automation Builder
- Safety Functions
- SISTEMA
- Safety Accelerator Toolkit, and more

[http://discover.rockwellautomation.com/SFTY\\_EN\\_tools.aspx](http://discover.rockwellautomation.com/SFTY_EN_tools.aspx)



#### On-Line Product Directory

Our extensive product portfolio is designed to improve your processes through every stage of your manufacturing cycle. <http://www.rockwellautomation.com/products/>



#### Product Selection Toolbox

Our powerful range of product selection and system configuration tools assist you in choosing and applying our products. <http://www.rockwellautomation.com/en/e-tools/>

**Our innovative safety products and solutions improve the functional operation of your machinery while helping to increase personnel safety, efficiency and productivity. Our safety portfolio includes:**

- Connection Devices	- Motion Control / Motor Control	- Push Buttons and Signaling Devices
- Drives and motors	- Programmable Controllers	- Relays and Timers
- Input/Output (I/O) Modules	and Safety PLCs	

Rockwell Automation, Inc. (NYSE:ROK), the world's largest company dedicated to industrial automation, makes its customers more productive and the world more sustainable. Throughout the world, our flagship Allen-Bradley® and Rockwell Software® product brands are recognized for innovation and excellence.

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For more information about our Safety Switches solutions, please visit:

<http://ab.rockwellautomation.com/Sensors-Switches/Safety-Interlock-Switches>

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