Next Generation
Guardmaster® Safety Relays

Innovative technology for monitoring safety components
Multiple types of safety devices can be connected to the relay because of universal input.

Dual input relay can handle two dual channel devices, simplifying wiring and commissioning.

Rotary switch on front of device configures reset mode and logic between two devices.

The unit is configured to "AND" logic to detect a change in state of the inputs from either device. If either device changes state, the relay will send a signal to initiate a safe condition.
The new family of Allen-Bradley Guardmaster Safety Relays from Rockwell Automation includes six units capable of monitoring a broad range of safety devices in a variety of applications. These six units can achieve most of the functions safety systems require, helping simplify purchasing and parts management. The family is designed to meet new functional safety standards, such as EN ISO 13849-1 or IEC / EN 62061 and offers key functions to simplify installation and system complexity.

**Single Rotary Switch**
This TÜV approved feature utilizes a single rotary switch to set the required function of the safety relay and eliminates typical redundant switch setting. Selectable functions include simple logic, reset, timing and diagnostics.

**Single Wire Safety Connection**
This innovative concept simplifies cascading and expanding safety functions by linking relays with a single wire connection. A dynamic signal from device to device provides a linkage in accordance with SIL3, PL e, allowing easy addition of extra I / O which can be configured with simple logic combinations.

**Simple logic functions**
Flexible “AND / OR” logic can be configured simply in a single relay or through a combination of relays via single wire connection. Commissioning a global e-stop is a much easier process.

**Universal Inputs**
A broad range of safety devices including safety interlock switches, emergency stop devices, pressure sensitive safety mats and OSSD devices such as safety light curtains are all compatible with the same relay without any additional configuration. With default crossloop monitoring all these devices are wired into the same set of terminals.

**Two Dual Safety Inputs**
The functionality of two standard safety relays can be achieved in one device, allowing connection of two dual channel input devices into one safety relay.

**A COMPREHENSIVE FAMILY OF SAFETY PRODUCTS FOR A COMPLETE SAFETY SOLUTION**

- Tongue and hinge switches
- Non-contact switches
- E-stops
- Cable pull switches
- Emergency stop and enabling switches

Reduce system complexity and spare parts stocking with 6 safety relays that address most applications.
RELAYS

COST SAVINGS
compared to other single function relay solutions.

10 %
Purchase cost
Select one safety relay that can replace the need for two devices and save on associated purchase costs and inventory management.

50 %
Space savings
Reduce the footprint on your DIN rail by consolidating two safety relay functions into a single housing.

30-50 %
Wiring reduction
Significant wiring reduction through the ability to connect two safety input devices to one safety relay, thus removing the need for complex relay-to-relay wiring. Connection between relays can also be achieved via simple single wire safety connection.

FEATURES
- A broad range of safety functions
- Versatility through simple logic, reset and timing configurations
- Single wire safety relay connection allows for ease of installation and system flexibility
- Terminals are grouped together for power, inputs and outputs for clear connection
- Compact solution saves energy and space on DIN rail
- Consistent terminal layouts and configuration allow simplified installation

FAMILY OVERVIEW

Guardmaster Safety Relays

DUAL INPUT DEVICES: GUARDMASTER DI / DIS
- Consolidates functionality of two safety relays into a single 22.5 mm housing
- Electromechanical relay (DI) or solid state (DIS) outputs
- "AND / OR" logic between single wire safety input and standard inputs can be configured in a variety of safety functions for zoning and muting
- Configurable reset mode
- Simple to add additional outputs with expansion module, connected by a single wire safety connection

Can replace a pair of the following Guardmaster safety relays: MSR127, MSR131, MSR142, MSR144, MSR30.

SINGLE INPUT DEVICE: GUARDMASTER SI
- Ideal for simple safety applications using one dual or single channel safety device
- Configurable reset mode
- 2 N.O. outputs and 1 PNP auxiliary output
- Simple to add additional outputs with expansion module, connected by a single wire safety connection

Can replace the following Guardmaster safety relays: MSR126, MSR127, MSR131, MSR142, MSR144.
### Ordering details

<table>
<thead>
<tr>
<th>RELAY FUNCTION</th>
<th>DUAL INPUT</th>
<th>SINGLE INPUT</th>
<th>EXPANSION MODULES</th>
</tr>
</thead>
<tbody>
<tr>
<td>MODEL</td>
<td>DI</td>
<td>DIS (SOLID STATE)</td>
<td>SI</td>
</tr>
<tr>
<td>Catalog number</td>
<td>440R-D22R2</td>
<td>440R-D22S2</td>
<td>440R-S12R2</td>
</tr>
<tr>
<td>Inputs</td>
<td>2</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Input type</td>
<td>Safety light curtains, E-stops, pressure sensitive mats, interlock switches</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Terminal layout</td>
<td>Optimized</td>
<td>Optimized</td>
<td>Legacy</td>
</tr>
<tr>
<td>Configuration</td>
<td>Rotary Switch</td>
<td>Rotary Switch</td>
<td>–</td>
</tr>
<tr>
<td>Logic function</td>
<td>Yes</td>
<td>No</td>
<td>–</td>
</tr>
<tr>
<td>Reset</td>
<td>Yes</td>
<td>Yes</td>
<td>–</td>
</tr>
<tr>
<td>Single-wire connection</td>
<td>Yes</td>
<td>Output only</td>
<td>Yes</td>
</tr>
<tr>
<td>Housing-size (mm)</td>
<td>22.5 mm</td>
<td>22.5 mm</td>
<td>22.5 mm</td>
</tr>
<tr>
<td>Safety outputs</td>
<td>2 N.O.</td>
<td>2 PNP</td>
<td>2 N.O.</td>
</tr>
<tr>
<td>Auxiliary outputs</td>
<td>1 PNP</td>
<td>1 PNP</td>
<td>1 N.C.</td>
</tr>
<tr>
<td>EN ISO 13849-1</td>
<td>PLe (Cat. 4, 99 % DC avg.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MTTFd</td>
<td>355 years</td>
<td>484 years</td>
<td>262 years</td>
</tr>
<tr>
<td>IEC/EN 61508/IEC/EN 62061</td>
<td>SIL 3 (99 % SFF, 99 % DC)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PFH</td>
<td>4.35 x 10⁹</td>
<td>4.39 x 10⁹</td>
<td>3.98 x 10⁹</td>
</tr>
</tbody>
</table>

**SINGLE INPUT DEVICE: GUARDMASTER CI**

- Same functionality as SI but terminals on the CI are arranged in a similar layout to legacy Allen-Bradley Guardmaster MSR safety relays and other brands of safety relays
- 3 N.O. outputs and 1 N.C. auxiliary output
- Configurable reset mode
- Simple to add additional outputs with expansion module, connected by a single wire safety connection

**EXPANSION MODULES: GUARDMASTER EM / EMD**

- Easily add 4 N.C. instantaneous (EM) or delayed (EMD) outputs to a system
- Single wire safe connection expands system without using any outputs of base module
- Self-monitoring outputs
- Time delay configured from 0-300 s
- Timer functions include: on delay, off delay and jogging

Can replace the following Guardmaster safety relays: MSR126, MSR127, MSR131, MSR142, MSR144.

Can replace the following Guardmaster safety relays: MSR132E, MSR132ED.
The full range of safety applications are covered with the new products and current relays from Rockwell Automation, including two-hand control, speed monitoring, and light curtain muting.

**MSR57 Speed monitoring**
With Safe-Speed control functionality, you can monitor and control the speed of your application allowing operators to perform tasks such as the removal of jams, and perform other similar maintenance work without stopping the application completely.

**MSR42 Muting**
The MSR42 multi-function safety relay is the control module for the GuardShield Micro 400 safety light curtain, and offers muting and blanking functions. It can also be used with other light curtains to offer muting only.

**MSR125 Two-hand control**
The MSR125H/HP is a logic unit for monitoring and interfacing two-hand control devices with a safety-related circuit.

**Safedge**
The Safedge controllers are designed to operate with the Safedge pressure sensitive edge strips. The controller continuously monitors the edge profile for contact and generates an output signal.

### Ordering Details

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>CAT. NO.</th>
<th>TERMINALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSR57</td>
<td>24V DC</td>
<td>440R-S845AER-NNL</td>
</tr>
<tr>
<td></td>
<td>115V AC</td>
<td>440R-D23169</td>
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<tr>
<td></td>
<td>230V AC</td>
<td>440R-D23168</td>
</tr>
<tr>
<td>MSR125</td>
<td>24V DC</td>
<td>440R-D23166</td>
</tr>
<tr>
<td></td>
<td>115V AC</td>
<td>440R-D23164</td>
</tr>
<tr>
<td></td>
<td>230V AC</td>
<td>440R-D23163</td>
</tr>
<tr>
<td>MSR42</td>
<td>24V DC</td>
<td>440R-P226AGS-NNR</td>
</tr>
<tr>
<td>Safedge</td>
<td>24V AC / DC</td>
<td>440F-C251D</td>
</tr>
<tr>
<td></td>
<td>115 / 230V AC</td>
<td>440F-C252D</td>
</tr>
</tbody>
</table>

Rockwell Automation® offers a breadth of quality Allen-Bradley® products to fit your specific needs. In order to assist you with your product selection, we offer a variety of configuration and selection tools.

**SISTEMA**
SISTEMA Product Library is available to download to aid in safety performance level calculations. [http://discover.rockwellautomation.com/](http://discover.rockwellautomation.com/)

**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/](http://www.rockwellautomation.com/products/)

**Product Selection Toolbox**

**Safety Catalog**
Within this catalog you’ll find an extensive selection of your Allen-Bradley safety products. [http://www.ab.com/catalogs/](http://www.ab.com/catalogs/)