

Next Generation Guardmaster® Safety Relays

Innovative technology for monitoring safety components

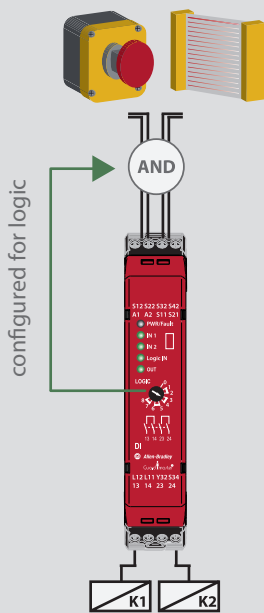


LISTEN.
THINK.
SOLVE.®

 Allen-Bradley • Rockwell Software

Rockwell
Automation

DUAL INPUT FUNCTION



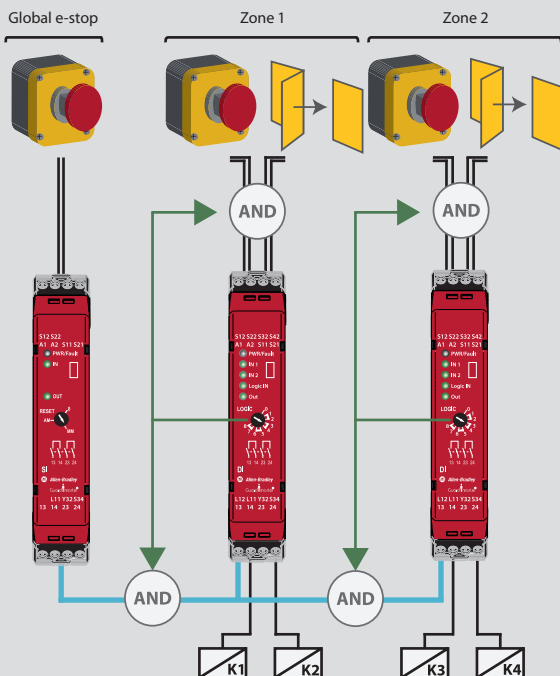
- Multiple types of safety devices can be connected to the relay because of universal input
- Dual input relay can handle two dual channel devices, simplifying wiring and commissioning
- Rotary switch on front of device configures reset mode and logic between two devices
- The unit is configured to "AND" 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

A patented, single wire connection capability helps eliminate the need for dual channel connection between relays.

Safety function can be expanded and cascaded up to a SIL 3 / PL e rating using a single wire to connect devices. "AND / OR" logic can be set via a rotary switch on the front of the relay, offering a variety of configurations including local and global e-stop architectures.

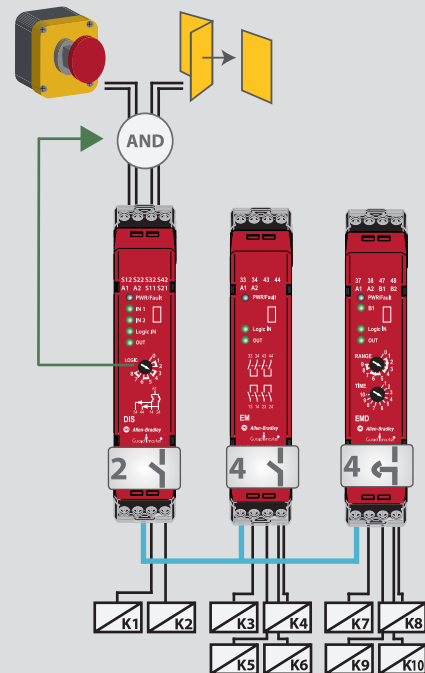
The new innovative concepts provide flexible combinations and expansion capabilities of your safety solution in numerous applications.

ZONING



- The SI device controls the global e-stop that distributes its signal over the single wire output which is wired to all zones in parallel maintaining PL e, SIL3
- Multiple devices dedicated to one zone through dual input relays. Each DI device is dedicated to a zone which is supporting multiple devices through "AND" logic configuration. The system can also be configured to a mixture of logic functions ("AND", "OR", "AND/OR")

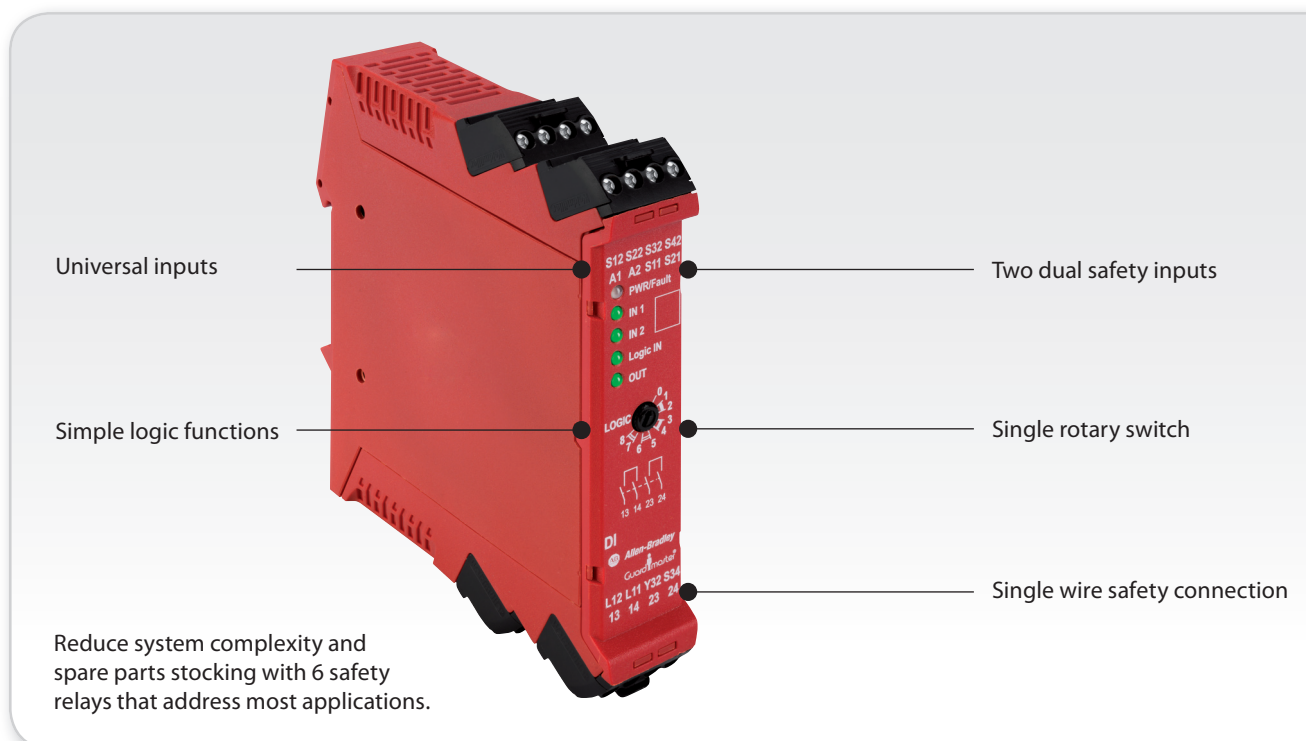
EXPANSION



- Simplified expansion of safety outputs through single wire connection without using up any of the safety outputs from the base module
- Four additional electromechanical outputs per expansion relay, delayed or instantaneous
- Maintains SIL3, PL e

NEW GUARDMASTER SAFETY RELAY

Conform to IEC 61508 : SIL 3 / EN ISO 13849-1 : PL e



WELCOME TO THE NEXT GENERATION OF SAFETY RELAYS

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 switches

SAFETY INTERLOCK SWITCHES

EMERGENCY STOP AND ENABLING SWITCHES

RELAYS

COST SAVINGS

compared to other single function relay solutions.



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



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



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

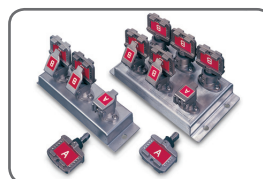
Can replace the following Guardmaster safety relays: MSR126, MSR127, MSR131, MSR142, MSR144.



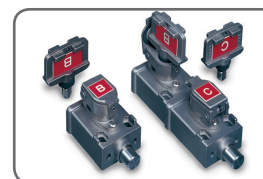
Enabling switches



Power isolators



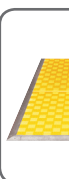
Key exchange units



Interlock switches



Safety light curtains and scanners



Presence sensing safety mats

PROSAFE TRAPPED KEY INTERLOCK SYSTEM

PRESENCE SENSING SAFETY

Ordering details

RELAY FUNCTION		DUAL INPUT		SINGLE INPUT		EXPANSION MODULES	
MODEL		DI	DIS (SOLID STATE)	SI	CI	EM	EMD (DELAYED)
Catalog number		440R-D22R2	440R-D22S2	440R-S12R2	440R-S13R2	440R-EM4R2	440R-EM4R2D
Inputs		2		1		–	
Input type		Safety light curtains, E-stops, pressure sensitive mats, interlock switches					
Terminal layout		Optimized		Optimized	Legacy	Optimized	
Configuration		Rotary Switch		Rotary Switch		–	Rotary Switch
Logic function		Yes		No		–	
Reset		Yes		Yes		–	
Single-wire connection		Yes		Output only		Yes	
Housing-size (mm)		22.5 mm		22.5 mm		22.5 mm	
Safety outputs		2 N.O.	2 PNP	2 N.O.	3 N.O.	4 N.O. instantaneous	4 N.O. delayed
Auxiliary outputs		1 PNP		1 PNP	1 N.C.	1 PNP	
EN ISO 13849-1	PL	PLe (Cat. 4, 99 % DC avg.)					
	MTTFd	355 years	484 years	262 years	164 years	190 years	165 years
IEC/EN 61508/ IEC/EN 62061	SIL	SIL 3 (99 % SFF, 99 % DC)					
	PFH	4.35 x 10 ⁻⁹	4.39 x 10 ⁻⁹	3.98 x 10 ⁻⁹	4.26 x 10 ⁻⁹	1.81 x 10 ⁻⁹	4.40 x 10 ⁻⁹

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

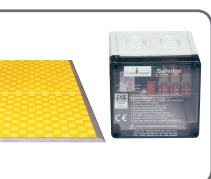
Can replace the following Guardmaster safety relays: MSR126, MSR127, MSR131, MSR142, MSR144.

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

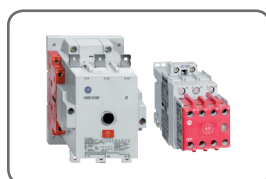
Can replace the following Guardmaster safety relays: MSR132E, MSR132ED.



Pressure sensitive devices
SAFETY DEVICES



Variable speed and servo drives



Safety contactors



Guardlogix and compact Guardlogix



Smartguard 600

POWER CONTROL

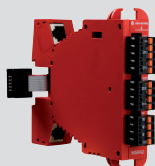
SAFETY LOGIC CONTROLLERS

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

PRODUCT	CAT. NO.	TERMINALS
MSR57		
24V DC	440R-S845AER-NNL	Removable
MSR125		
24V DC	440R-D23171	Removable (MSR125HP)
115V AC	440R-D23169	
230V AC	440R-D23168	
24V DC	440R-D23166	Fixed (MSR125H)
115V AC	440R-D23164	
230V AC	440R-D23163	
MSR42		
24V DC	440R-P226AGS-NNR	Removable
Safedge		
24V AC / DC	440F-C251D	2 N.O.
115 / 230V AC		
24V AC / DC	440F-C252D	1 N.O.

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/>

SISTEMA software tool: Available for free download on BGIA website.

<http://www.dguv.de/bgia/en/prs/softwa/sistema/index.jsp>



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/>



Safety Catalog

Within this catalog you'll find an extensive selection of your Allen-Bradley safety products.

<http://www.ab.com/catalogs/>

www.rockwellautomation.com

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