

# Migration Solutions



## Minotaur Safety Relays (MSR) Family to Guardmaster Safety Relays (GSR)

### Why Upgrade or Migrate

Over the years, new functional safety requirements and directives have changed machine designs. To meet these requirements and prepare for future ones, several of the Allen-Bradley Guardmaster® Minotaur™ Safety Relays (MSR) will no longer be available for sale after December 31, 2017\*.

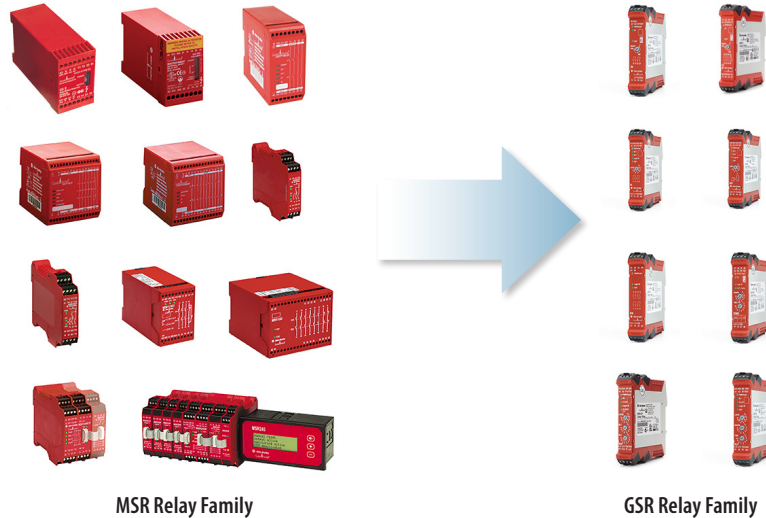
Equipped with the latest technology, Allen-Bradley Guardmaster Safety Relays (GSR) will replace the features and functionality of the MSR safety relays being discontinued. With a compact, narrow housing (22.5 mm (0.88 in.)) that optimizes panel space, these flexible relays are capable of monitoring a broad range of devices in a variety of applications to help lower costs for your operation.

The eight GSR relays consolidate various functions of the MSR line resulting in fewer catalog numbers which helps streamline purchasing and parts management. The GSR family meets the latest functional safety standards such as ISO 13849-1 and IEC 62061 while offering key functions to help simplify installation and reduce system complexity.

### GSR Relays Features and Benefits

- GSR Relays meet the latest safety standards including ISO 13849-1 and IEC 62061
- New functions such as Single Wire Safety help simplify system installation and expansion
- Compact, narrow housing (22.5 mm (0.88 in.)) optimizes panel space
- Optical Bus Technology allows the relays to seamlessly communicate with EtherNet/IP network adapter via embedded optical interface

\* Discontinued date may be subject to change



### Identify, Mitigate and Help Eliminate the Risk of Automation Obsolescence

In today's economy, it is necessary to have migration solutions that help you to achieve increased productivity and lessen your risk of maintaining your legacy equipment. You need to work with a supplier that has the product, service and industry knowledge to partner with you on an upgrade strategy that will help you maximize your competitive advantage.

Rockwell Automation and its partners will work with you to outline a plan that fits your application needs and long-term goals. We can help you migrate all at once or in phases, at the pace that is comfortable for you and fits your budget.

With your goals in mind, Rockwell Automation has developed a migration strategy that will allow you to quickly and easily migrate from MSR safety relays to the new GSR relays.

### Product Lifecycle

Use the [Product Lifecycle Status](#) search tool on the web to find specific lifecycle information by catalog number.



- ACTIVE: Most current offering within a product category.
- ACTIVE MATURE: Product is fully supported, but a newer product or family exists. Gain value by migrating.
- END OF LIFE: Discontinued date announced – actively execute migrations and last time buys. Product generally orderable until the discontinued date.<sup>1</sup>
- DISCONTINUED: New product no longer manufactured or procured.<sup>2</sup> Repair/exchange services may be available.

<sup>1</sup> - Outages on specific items may occur prior to the Discontinued date.

<sup>2</sup> - Limited stock may be available in run-out mode, regionally.

LISTEN.  
THINK.  
SOLVE.™

## Catalog Number Migration

The MSR to GSR Relays Conversion Manual includes detailed specifications, wiring schematics, bills of material and other considerations to help you seamlessly convert from a legacy MSR solution to a smarter, more cost-effective machine design featuring GSR relays. Download the conversion manual by clicking on this publication [440R-RM001B-EN-P](#) published on [www.ab.com](http://www.ab.com).

### MSR to GSR Conversion Chart

MSR Family	Part / Catalog Number	Preferred migration to GSR#	Panel Space - DC unit (mm)		Panel Space - AC unit (mm)		Response Time		DC load capability		AC load capability		Thermal (non-switching load)		Notes		
			MSR unit (DC) Panel space (mm)	GSR unit (DC) Panel Space (mm)	MSR unit (AC) Panel Space (mm)	GSR unit (add 1606-XLP15E) Panel Space (22.5 mm)	MSR unit response time (ms)	GSR unit response time (ms)	MSR unit - DC load	GSR unit - DC load	MSR unit - AC inductive load	GSR unit - AC inductive load	MSR unit - thermal load	GSR unit - thermal load			
CU2	440R-S07139 (24V AC/DC)	440R-GL2S2P (GSR GLP)	45	22.5	-	-	90	35	3A @ 24V	0.5A@24V	-	-	4A	0.5A	The CU2 uses one NPN and one PNP proximity sensor's outputs to sense the hazardous motion. The GSR GLP uses two PNP sensor's outputs.		
	440R-S07140 (115V/230V AC)	440R-GL2S2P (GSR GLP) 1606-XLP15E	-	-	45	45			-	-	5A @ 120V	-			-	-	Replacing an AC powered unit with the GLP requires a 1606-XLP15E power supply to power the GLP.
MSR6	440R-C23017 (24V AC/DC)	440R-S13R2 (GSR CI)	45	22.5	-	-	50	35	3A @ 24V	2A@24V	-	-	4A	2A	The power, safety inputs and outputs of the MSR6 and GSR CI are similar while the reset/monitoring circuit is slightly different.		
	440R-C23018 (115V AC)	440R-S13R2 (GSR CI) 1606-XLP15E	-	-	45	45			-	-	4A @ 120 V	1.5A			-	-	Replacing an AC powered unit with the GLP requires a 1606-XLP15E power supply to power the GLP.
	440R-C23019 (230V AC)	440R-S13R2 (GSR CI) 1606-XLP15E	-	-	45	45			-	-	4A @ 120 V	1.5A			-	-	Replacing an AC powered unit with the GLP requires a 1606-XLP15E power supply to power the GLP.
MSR17T	440R-ZBL220Z24	440R-S13R2 (GSR CI)	45	22.5	-	-	13	35	2A @ 24V	2A@24V	0.75A	1.5A	-	2A	The response time of the MSR17T is faster than the GSR CI so the safety distance must be examined and adjusted as necessary.		
MSR18T	440R-ZBR520AZ1 (24V AC/DC, 120V AC)	440R-S13R2 (GSR CI)	90	45	90	90	20	70	2A @ 24V	2A@24V	1.5A @ 120V	4A @ 250V	8A	6A	Replacing MSR18T with 1 N.C or 2 N.C. inputs, the GSR CI (440R-S13R2) and GSR EM (440R-EM4R2) are required. If the MSR18T is powered by AC voltage, a 1606-XLP15E is required to convert AC supply to DC supply for the GSR solution. For two-hand control applications, the MSR125 (440R-D231) is recommended to replace the MSR18T. If additional outputs are required, the MSR132E (440R-E2319*) can be used.		
	440R-ZBR520AZ2 (24V AC/DC, 240V AC)	(2) 440R-EM4R2 (GSR EM) 1606-XLP15E															
MSR19E	440R-ZBE820AZ1 (24V AC/DC, 120V AC)	(2) 440R-EM4R2 (GSR EM)	90	45	90	67.5	20	35	2A @ 24V	2A @ 24V	1.5A @ 120V	1.5A @ 250V	8A	6A	The MSR19E is an expansion relay which requires two GSR EM (440R-EM4R2) modules to equal the MSR19E functionality. The MSR19E must be driven by a host safety relay such as the GSR CI (440R-S13R2). For AC powered applications, a 1606-XLP15E should be used to convert the AC supply to DC voltage to power the GSR safety relay solution.		
	440R-ZBE820AZ2 (24V AC/DC, 240V AC)	(2) 440R-EM4R2 (GSR EM) 1606-XLP15E															
MSR30	440R-N23197 (24V DC)	440R-D22S2 (GSR DIS)	22.5	22.5	-	-	15	25	2A @ 24V	1.5A@24V	-	-	-	-	The GSR DIS (440R-D22S2) replaces the MSR30. The MSR30RT/RTP has a Startup Test function which the GSR DIS does not have. In automatic reset mode, closing the safety inputs automatically energizes the safety outputs of the GSR DIS, so an additional manual action must be designed in to initiate the hazard. The MSR30 has a faster response time than the GSR DIS so the safety distance needs to be evaluated and adjusted as necessary.		
	440R-N23198 (24V DC)	440R-D22S2 (GSR DIS)															
MSR38	440R-M23203 (24V DC)	440R-GL2S2T (GSR GLT)	22.5	22.5	-	-	15	55	2A @ 24V	0.3A @ 24V	-	-	-	-	The GSR GLT replaces most MSR38D applications. For safety mat applications, the GSR SI (440R-S12R2) and GSR EMD (440R-EM4R2D) is a better solution. Closing of the safety inputs automatically energizes the safety outputs so an additional manual action is required to initiate the hazard. The MSR38 has a faster response time than the GSR solution, so the safety distance needs to be evaluated and adjusted as necessary.		
	440R-M23204 (24V DC)																
MSR121RT	440R-J23099 (230V AC)	440R-S13R2 (GSR CI)	-	-	55	45	20	35	-	-	6A @ 250V	1.5A	6A	2A	The GSR CI solution requires a 1606-XLP15E to convert the AC supply to DC voltage. It is also possible to use a MSR127 AC relay. The response time of the MSR 121RT is faster than the GSR CI solution so the safety distance must be examined and adjusted if necessary.		
	440R-J23100 (115V AC)		-	-	-	-			-	-							
	440R-J23102 (24V DC/AC)		55	22.5	-	-			6A @ 240V DC	2A @ 24V DC	-	-					

**MSR to GSR Conversion Chart (continued)**

			Panel Space - DC unit (mm)		Panel Space - AC unit (mm)		Response Time		DC load capability		AC load capability		Thermal (non-switching load)		Notes	
MSR Family	Part / Catalog Number	Preferred migration to GSR#	MSR unit (DC) Panel space (mm)	GSR unit (DC) Panel Space (mm)	MSR unit (AC) Panel Space (mm)	GSR unit (add 1606-XLP15E) Panel Space (22.5mm)	MSR unit response time (ms)	GSR unit response time (ms)	MSR unit - DC load	GSR unit - DC load	MSR unit - AC inductive load	GSR unit - AC inductive load	MSR unit - thermal load	GSR unit - thermal load		
MSR122E	440R-E21356 (230V AC)	(2) 440R-EM4R2	100	67.5	100	67.5	30	35	-	-	4A @ 250V	1.5A @ 250V	-	-	The MSR122E is an expansion relay module which requires two GSR EM (440R-EM4R2) modules to equal the MSR122E functionality. A safety relay such as the GSR CI (440R-S13R2) is also required. For AC powered applications, a 1606-XLP15E should be used to convert the AC supply to DC voltage to power the GSR safety relay solution. The response time of the MSR122E is faster than the GSR EM module so the safety distance must be examined and adjusted as necessary.	
	440R-E21357 (115V AC)															
	440R-E21358 (24V DC/AC)			45	-	-			2A @ 24V	2A @ 24V	-	-				
MSR144RTP	440R-C23205 (24V DC/AC)	440R-S13R2	45	22.5	-	-	15	35	3A @ 24V	4A @ 24V	-	-	6A	4A	It is also possible to use the GSR SI (440R-S12R2) if the application does not use the normally closed outputs of the MSR144. The outputs of the MSR144 can be expanded by using a MSR230 for immediate outputs or the MSR238 for delayed outputs. The MSR230 is replaced by the GSR EM (440R-EM4R2) and the MSR 238 is replaced by the GSR EMD (440R-EM4R2D). The response time of the system must be evaluated to determine the new system response time and adjust safety distance as necessary.	
MSR210	440R-H23176	440R-D22R2	45	22.5	-	-	32	35	2.5A @ 24V	4A @ 24V	-	-	6A	4A		
MSR211	440R-H23177	440R-D22R2	45	22.5	-	-	32	35	2.5A @ 24V	4A @ 24V	-	-	6A	4A		
MSR220	440R-H23178	440R-D22R2	17.5	22.5	-	-	32	35	-	-	-	-	-	-		
MSR221	440R-H23179	440R-D22R2	17.5	22.5	-	-	32	35	-	-	-	-	-	-		
MSR230	440R-H23180	440R-EM4R2	22.5	22.5	-	-	-	35	3A @ 24V	2A @ 24 V	6A @ 250V	1.5A @ 250V	6A	6A	MSR230P is an expansion module, requires a GSR relay (CI, SI or DI).	
MSR238	440R-H23196	440R-EM4R2D	22.5	22.5	-	-	Varies	35	2.5A @ 24V	2A @ 24 V	3A @ 250V	1.5A @ 250V	6A	6A	The MSR 238P is a time delay expansion module, requires a GSR relay (CI, SI, DI).	
MSR240	440R-H23181	440R-ENETR	17.5	22.5	-	-	-	-	-	-	-	-	-	-	The MSR240P is a communications module for the MSR200 family. There is no direct replacement. The GSR ENETR is the communication module for the GSR family of safety relays.	
	440R-H23183	440R-ENETR														
MSR241	440R-H23186	440R-ENETR	17.5	22.5	-	-	-	-	-	-	-	-	-	-	The MSR241P is a communications module for the MSR200 family. There is no direct replacement. The GSR ENETR is the communication module for the GSR family of safety relays.	
	440R-H23187	440R-ENETR														
MSR245	440R-H23184	N/A	144	N/A	-	-	-	-	-	-	-	-	-	-	The MSR245P is a display module for the modular Minotaur MSR200 family of monitoring safety relays. There is no direct replacement.	
	440R-H23185															



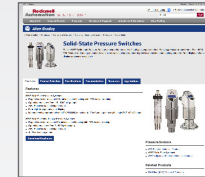
### Local Distributor

Visit our website to find your global Distributor.  
[www.rockwellautomation.com/distributor](http://www.rockwellautomation.com/distributor)



### On-Line Product Directory

Our portfolio of motor protection devices are designed to protect your manufacturing investments.  
<http://ab.rockwellautomation.com/Sensors-Switches/Temperature-Sensors>



### Product Selection Toolbox

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



## Why Upgrade or Migrate

To better understand your options, contact your local authorized Allen-Bradley distributor or Rockwell Automation sales office or visit:  
[www.rockwellautomation.com/global/go/lifecycle](http://www.rockwellautomation.com/global/go/lifecycle)

Allen-Bradley, Listen.Think.Solve., Rockwell Automation, Studio Logix 5000 Designer and Rockwell Software are trademarks of Rockwell Automation, Inc. Trademarks not belonging to Rockwell Automation are property of their respective companies.

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

### Power, Control and Information Solutions Headquarters

Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444

Europe/Middle East/Africa: Rockwell Automation NV, Pegasus Park, De Kleetlaan 12a, 1831 Diegem, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640

Asia Pacific: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846