

# MSR4x Multi-Function Safety Relay



Tailor Your Safety Control System Quickly and Easily with the Flexible, Plug-and-Play MSR4x Safety Relay System

## Configure to Fit Your Specific Applications

The MSR41/2 product is required for the GuardShield™ Micro 400 light curtains as a three box solution. All other light curtains can use the MSR42 to solve simple or complex applications.

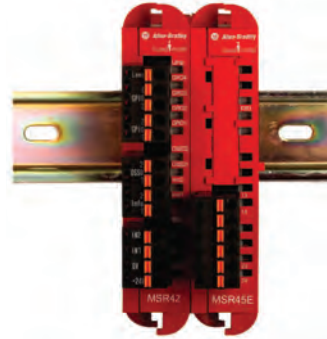
The MSR4x products are ideal for light curtain applications large or small. The “out of box” defaults allow users to attach GuardShield Micro 400 light curtains with basic On/Off functionality. If muting or additional I/O monitoring is required, the optical interface along with the “Configuration and Diagnostic Software” allows the user to configure the module for more advanced applications including two or four sensor muting.

### Hardwired “Basic Configurations”:

The MSR41/2 “out-of-the-box” default configuration satisfies four simple configurations. Manual/Automatic reset and output monitoring can be selected through external jumpers. These configurations are for simple On/Off control using the GuardShield Micro 400 Light Curtains.

### Software Configurations:

For all advanced Micro 400 applications and to use other safety devices, the MSR42 with the “Configuration and Diagnostic Software” is needed. Some of the software configurable parameters for the MSR42 include: 2 and 4 sensor muting, Category 1 stop delay and E-stop/interlock switch support.



The MSR4x family of safety relays is designed for a wide variety of light curtain applications. In the Basic Configuration (Out-of the Box) it supports four common operating modes for the GuardShield Micro 400 Light Curtain, selected via hardwiring, for On/Off control. Basic Configurations include Automatic Start without Output Monitoring, Automatic Start with Output Monitoring, Manual Start without Output Monitoring, Manual Start with Output Monitoring or Teach-in Blanking. The MSR41 base module is ideal for simple On/Off Micro 400 GuardShield Light Curtain applications. The MSR41 can only be connected to the Configuration Tool for diagnostic information, no new configurations. The MSR42 supports a variety of applications through hardwired jumpers and/or custom configurations using the free configuration software tool.

Additional functions, including optional muting and multiple light curtain systems, can be configured via a PC and the Optical Interface using the Optical Interface included software.

## Features

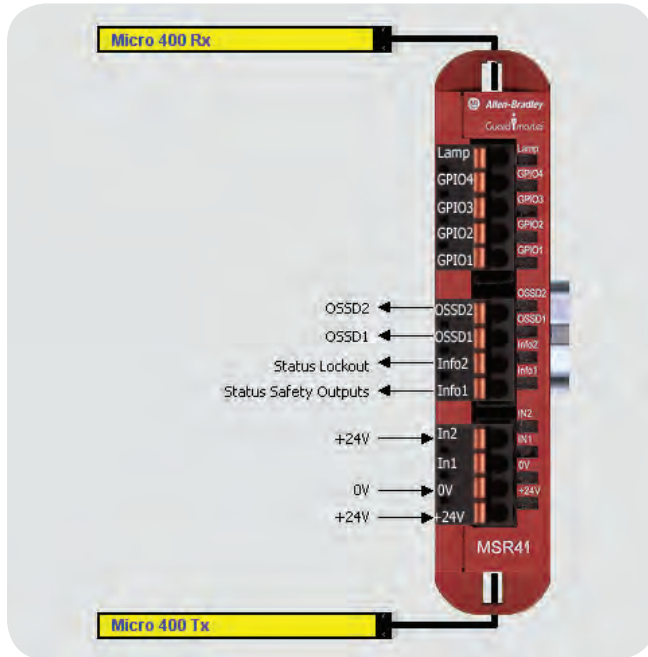
- Basic configuration
- Category 4, PLe EN ISO 13849-1
- SIL CL3 per IEC 61508, IEC 62061
- Stop category 0,1
- Manual or automatic start
- Output monitoring
- Auxiliary outputs
- Input and output status LEDs
- Removable terminals
- Additional software configurable features
- 2 and 4 sensor muting with Micro 400 light curtains
- 2 sensor muting with other standard light curtains
- Fixed Blanking with monitoring with Micro 400 light curtains
- Configurable auxiliary outputs
- Add E-stop or safety interlock

## Benefits

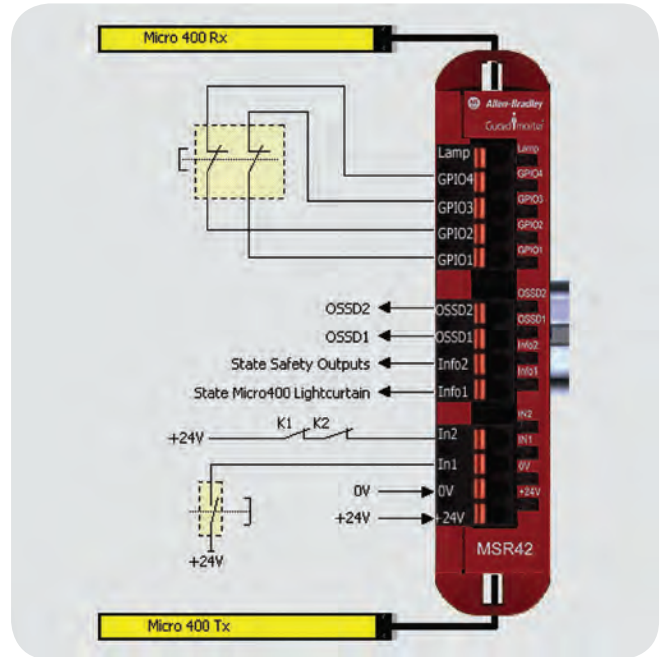
- Helps solve many standard applications with one safety relay
- Basic On/Off operation requires no software
- Up to 6 N.O. safety outputs per system
- Diagnostic LEDs for local troubleshooting
- Remotely configure and monitor via USB port and PC using Optical Interface configuration tool and software
- Connect up to three sets of light curtains (one Micro 400 plus two GuardShield light curtains, MSR42)

LISTEN.  
THINK.  
SOLVE.

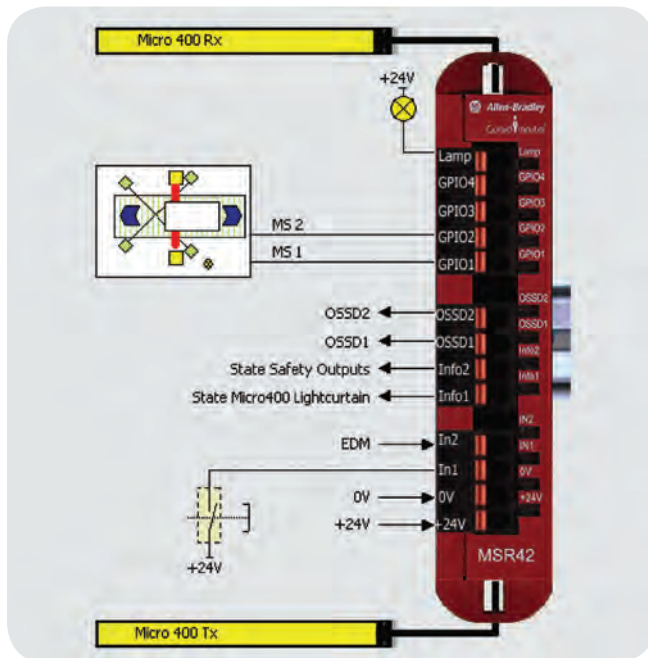
# Micro 400 Light Curtain Applications



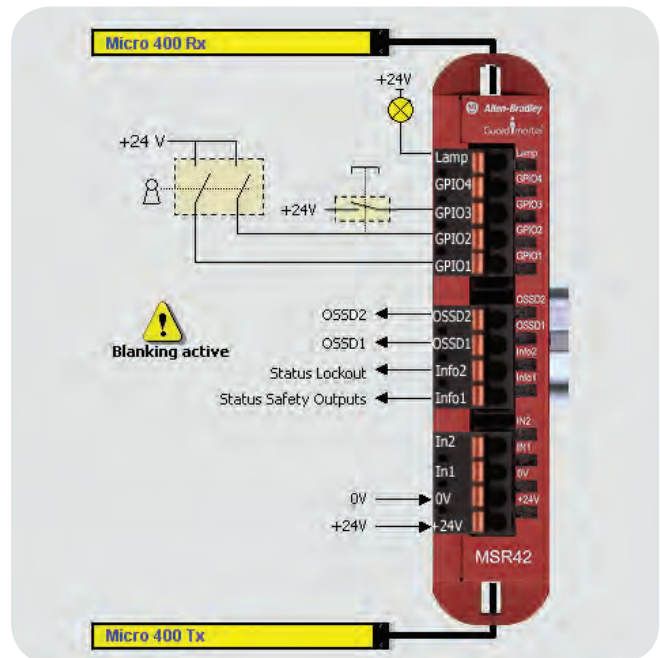
**MSR41 On/Off Control, Micro 400, Automatic Reset, No Output Monitoring:**  
 Most common three box solution for the Micro 400 Light Curtain. Simple jumper settings configure this "out-of-the-box" solution for On/Off control.



**MSR42, Micro 400 LC, E-stop, Manual Reset, Output Monitoring (EDM):**  
 This is an example of a simple punch press machine with a GuardShield Micro 400 Light Curtain and E-stop.

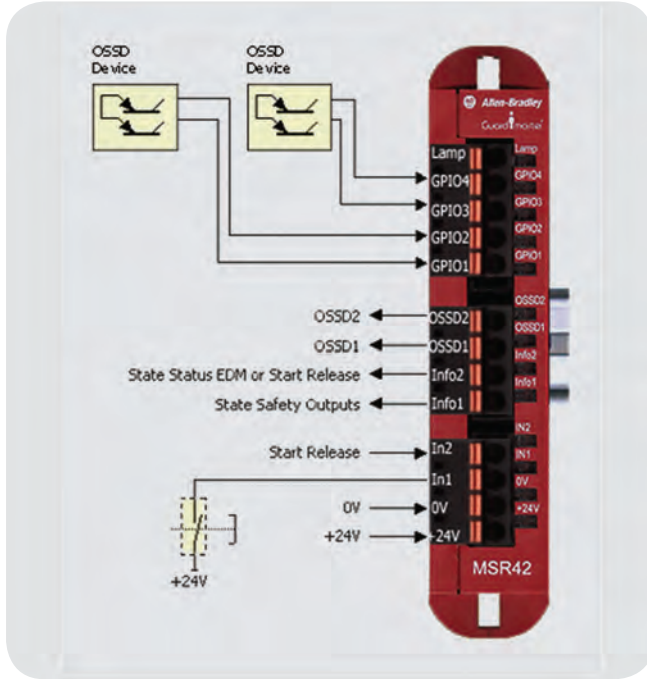


**MSR42, 2 Sensor T-type Muting, Micro 400, Manual Reset, Outputs Monitoring (EDM) with Muting Lamp:**  
 Simple 2 sensor muting with the GuardShield Micro 400 Light Curtain.

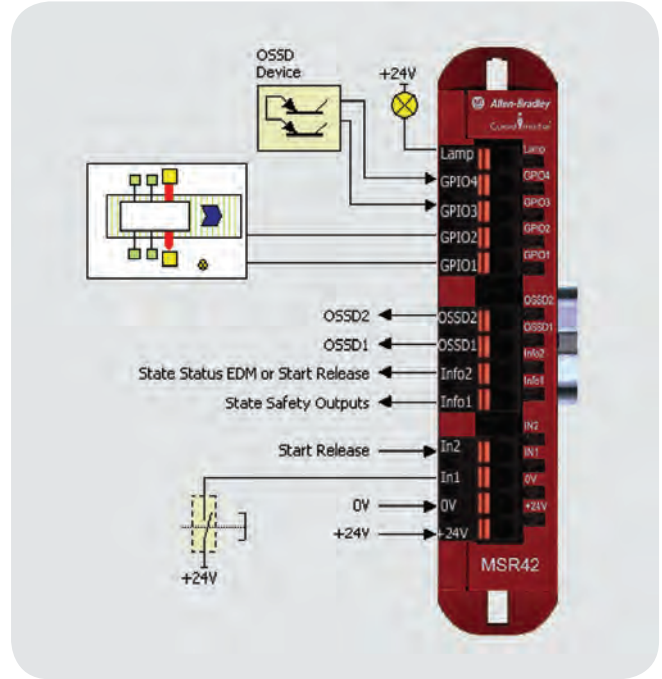


**MSR42, Teach-in Fixed Blanking with monitoring, Micro 400, Manual Reset, No Output Monitoring:**  
 Simple Fixed blanking monitoring conveyor and material with GuardShield Micro 400 Light Curtain.

# GuardShield Light Curtain Applications

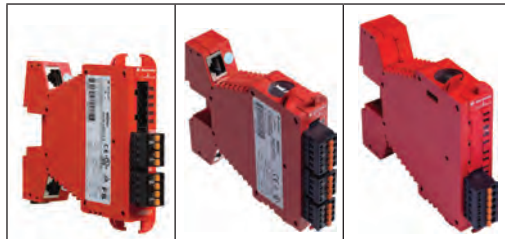


**MSR42, Two Light Curtains, Manual Reset, Output Monitoring, Start Release:**  
Two GuardShield Light Curtains for simple On/Off control.



**MSR42, 2 Sensor L-type Muting, Light Curtain, Manual Reset, Automatic Reset, Output Monitoring (Start/Release) with Muting lamp:**  
Uni-directional muting using a GuardShield Light Curtain.

## MSR4x Modules



	MSR41	MSR42	MSR45E
<b>Minimum System</b>	1**	1**	0
<b>Maximum System</b>	1	1	3*

\* Maximum of 3 MSR45E units can be used with the MSR41/2 module.  
\*\* Each system requires either MSR41 or MSR42.  
Ribbon cable ordered separately.

Catalog Number	Product Description
440R-P221AGS	MSR41 – Base Module
440R-P226AGS-NNR	MSR42 – Base Module
440R-P4NANS	MSR45E – Expander Module
440R-ACABL1	Ribbon Cable (1 expander modules)
440R-ACABL2	Ribbon Cable (2 expander modules)
440R-ACABL3	Ribbon Cable (3 expander modules)
440R-ATERM1P	Replacement Terminal Block Kit (MSR41)
440R-ATERM2P	Replacement Terminal Block Kit (MSR42)
440R-ATERM2C	Replacement Terminal Block Kit (MSR45E)
445L-AF6150	Optical Interface Tool
445L-AF6151	Replacement Suction Cup
445L-AF6152	Replacement Optical Interface Fastener
www.ab.com	Diagnostic & Configuration Software



## MSR41 Safety Relay – Simple On/Off with Micro 400 light curtains

The MSR41 safety relay is the simple On/Off control module for the GuardShield Micro 400 light curtains. All four configuration options are set with external wire jumpers (auto/manual reset, with/without output monitoring). Although the diagnostic software can monitor the MSR41, it cannot configure any functions. There are two solid state PNP outputs on the MSR41 module. When dry contact outputs are required, up to three MSR45E expansion modules can be used providing up to 6 N.O. relay outputs.



### Features

- Category 4, PLe EN ISO 13849-1
- SIL CL3 IEC 61508, IEC 62061
- 22.5 mm housing
- Stop Category 0
- 24V DC Supply Voltage
- Manual or Automatic Reset
- Output monitoring
- Supports up to three expansion modules
- RJ45 connections for Micro 400 safety light curtain
- Removable Terminal blocks

### Diagnostics

- Input/Output LEDs
- Configuration & Diagnostic Software

## MSR45E Expander Module

The MSR45E is a monitoring safety relay expansion module for the MSR41/2 multifunction safety relay controller. The MSR45E is driven by the internal OSSD outputs of the MSR41/2 safety relay. The MSR45E provides two Normally Open safety rated outputs used to shut down the manufacturing system. The MSR41/2 can support up to three MSR45E units via a ribbon cable on the back of the units, ordered separately.



### Features

- Category 4, PLe EN ISO 13849-1
- SIL CL3 IEC 61508, IEC62061
- Stop Category 0, 1
- Two Safety contacts N.O. (6Amps)
- Removable terminal block

### Diagnostics

- LEDs

## MSR42 Multi-Function Safety Relay

The MSR42 multi-function safety relay is the control module for the GuardShield Micro 400 light curtains. Although other light curtains can also be attached to the MSR42 for muting functionality, it is the only solution available for muting the GS Micro 400 light curtains. There are two Solid state PNP outputs on the MSR42 module. When dry contact outputs are required, the MSR42 accommodates the interconnection of up to three MSR45E safety relay expansion modules, each providing a pair of safety relay outputs. A ribbon cable on the back of the modules makes wiring easy for up to 2 OSSDs, and 6 N.O. relay outputs.



### Features

- Category 4, PLe EN ISO 13849-1
- SIL CL3 IEC 61508, IEC 62061
- 22.5 mm housing
- Stop Category 0, 1
- 24V DC Supply Voltage
- Manual or Automatic Reset
- Output monitoring
- 13 diagnostic LEDs
- Supports up to three expansion modules
- 2 configurable aux outputs
- RJ45 connections for Micro 400 safety light curtain
- 2 or 4 sensor muting with GuardShield Micro 400
- 2 sensor muting with any GuardShield Light Curtain
- Fixed blanking with monitoring (Teach-in)
- Connection of up to two additional safety devices
- E-stops, safety switches, laser scanners, light curtains
- Removable terminal blocks

### Diagnostics

- Input/Output LEDs
- Configuration & Diagnostic Software

GuardShield is a trademark of Rockwell Automation, Inc.

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

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