

# MSR312P

## Description

The MSR312P is one of the base units available for the MSR300 system. It can be combined with other modules of the MSR300 Series to configure a safety control system with numbers of inputs and outputs matching users' specific application requirements, as well as diagnostic and networking capabilities. Up to ten input modules and six output modules can be connected to one base unit by simply removing the terminator, included with each base unit, and connecting the ribbon cables of the neighboring module. The terminators must be inserted into the final input and output modules. A fully utilized system can support up to 20 inputs devices (e-stops/gates) and 18 normally open outputs.



The MSR300 System supports up to three group outputs. The input modules can be configured to control one or more of the output groups. This creates flexibility for the customer to solve applications requiring simple logic functions (simple AND and OR function). No software is needed for configuration, only rotary switches on the Input Modules are required. Please see the Input Modules for more information.

The base module supports multiple reset configurations for each group output. The user can select from the following choices: manual, manual monitored and automatic reset. The reset configuration is set up by jumpers on the base module terminals. If manual monitored and automatic reset is mixed, the preferred combination of Output Group Modules should be considered.

The MSR312P base module does not have any inputs or safety outputs within the device. A minimum of one input module and one output module are required to make a functional system. The base module does have three solid-state auxiliary outputs to signify the status of the output groups—one output for each group (1, 2, or 3).

The MSR312P has the capability to monitor external devices individually for each group with a separate feedback loop control.

## Features

- Category 4 per EN 954-1
- SIL3 per IEC 61508
- EN 574 Type III C
- Stop category 0
- Pulsed input monitoring
- Three auxiliary group outputs
- One PNP solid state output controlled via DeviceNet™ connection
- Six diagnostic LEDs
- Manual, monitored or automatic reset
- Zone control—up to three
- DeviceNet™ Comms including UCMM
- Support baud rates: 125 k, 250 k, 500 k
- Removable terminals

## Specifications

Safety Ratings	
Standards	IEC/EN 60204-1, ISOTR 12100, EN 61508, ISO 13849-1
Safety Classification	Cat. 4 per EN 954-1 (ISO 13849-1), SIL CL3 per EN IEC 62061, PLe per ISO 13849-1
Functional Safety Data * Note: For up-to-date information, visit <a href="http://www.ab.com/safety/">http://www.ab.com/safety/</a>	PFH <sub>D</sub> : < 3.15 x 10 <sup>-9</sup> MTTF <sub>d</sub> : > 396 years Suitable for performance levels PLe (according to ISO 13849-1:2006) and for use in SIL3 systems (according to IEC 62061) depending on the architecture and application characteristics
Certifications	CE Marked for all applicable directives, cULus, c-Tick, and TÜV
Power Supply	
Input Power Entry	24V DC 0.8...1.1 x rated voltage PELV/SELV
Power Consumption	3 W
Inputs	
Safety Inputs	MSR300 Series Input Modules
Input Simultaneity	Infinite or 3 seconds
Reset	Auto./Manual or Monitored Manual
Power On Delay/ Recovery Time	3 seconds/26 ms + 6 ms per connected input
Response Time	26 ms + 6 ms per connected input
Outputs	
Auxiliary Contacts	3 PNP, Diagnostic, 1 PNP Output, 24V DC @ 50 mA
Switching Current @ Voltage, Min.	24V DC @ 50 mA
Environmental and Physical Characteristics	
Enclosure Type Rating/ Terminal Protection	IP40 (NEMA 1)/ IP20, DIN 0470
Operating Temperature [C (F)]	-5...+55 ° (23...131 °)
Vibration	10...55 Hz, 0.35 mm
Shock	10 g, 16 ms, 100 shocks
Mounting	35 mm DIN Rail
Weight [g (lb)]	210 (0.46)
Conductor Size, Max.	0.2...2.5 mm <sup>2</sup> (24... AWG)

\* Usable for ISO 13849-1:2006 and IEC 62061. Data is based on the following assumptions:  
- Mission time/Proof test interval of 20 years  
- Functional test at least once within six-month period

## System-Supported Inputs

- 1 N.C., 2 N.C., or 3 N.C. inputs—E-stops/Gates
- 1 N.C. and 1 N.O inputs—Gates
- Two-Hand Control
- Two OSSD—Light Curtains
- Safety Mats

## Product Selection

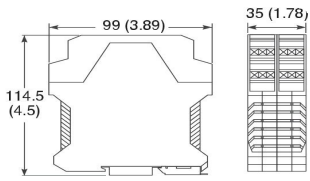
Safety Inputs	Safety Outputs	Auxiliary Outputs	Terminals	Reset Type	Power Supply	Cat. No.
MSR300 Series Input Modules	MSR300 Series Output Modules	3 PNP, DeviceNet	Removable	Auto./Manual or Monitored Manual	24V DC	440R-W23220

## Accessories

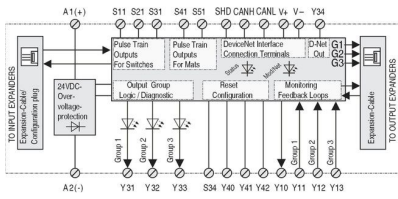
Description	Cat. No.
MSR300 Two Terminators	440R-A17234
Bag of 4, 3-Pin Screw Terminal Blocks	440R-A23210
Bag of 4, 3-Pin Spring Clamp Terminal Blocks	440R-A23229

## Approximate Dimensions

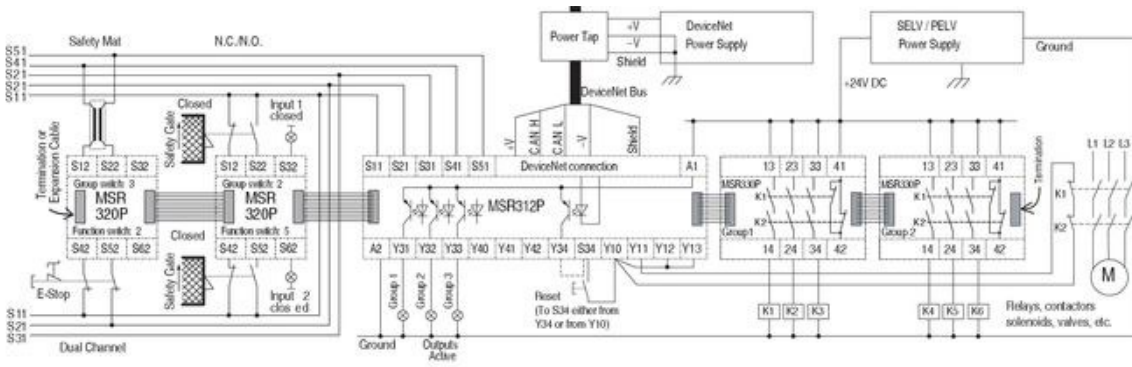
Dimensions are shown in mm (in.). Dimensions are not intended to be used for installation purposes.



## Block Diagram



## Typical Wiring Diagrams



MSR300 system with various inputs, Two Output Groups with common monitored reset (reset alternative via DeviceNet with S34 linked to Y34), Group 1 with monitored contactors Safety Mat or E-Stop shut down both Output modules, Safety Gates only shut down the Group 2 module.

## Reset Behavior

Reset Behavior	Circuit
Groups 1 and 2: manual, monitored reset Group3: automatic reset	
Groups 1 and 2: automatic reset Group3: manual, monitored reset	
Groups 1, 2, and 3: manual, monitored reset	
Groups 1, 2, and 3: automatic reset	