Expansion Safety Relays with Delayed Outputs

MSR132E

Description

The Minotaur MSR132E is a monitoring safety expansion relay unit with single or dual channel input and either immediate or timed off-delay outputs. It is designed to be operated as an “extension” of a “master” safety relay. When wired properly, the outputs of the MSR132E will mimic the outputs of the master relay.

The outputs include four normally open safety rated outputs used to shut down the manufacturing system and two normally closed auxiliary outputs to indicate status of the MSR132E. One additional normally closed output is available to allow the host relay to monitor the status of the MSR132E. The safety, auxiliary and monitoring outputs have independent and redundant internal contacts to support the safety function.

A delayed output version is also available (MSR132ED) that have off-delayed outputs with a fixed time without the need for an auxiliary supply during the off-delay time.

Features

- Category 4/3 per EN 954-1
- Stop Category 0 or 1
- Four safety contacts N.O.
- Two auxiliary contacts N.C.
- One monitoring contact N.C.
- Single channel input

LED Indicators

Green	K1 Closed
Green	K2 Closed

Specifications

Safety Ratings		
Standards	EN 954-1, ISO 13849-1, IEC/EN 60204-1, IEC 60947-5-1, ANSI B11.19, AS 4024.1	
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 *http://www.ab.com/Safety/*	PFH_D: < 0.46 x 10^{-9} MTTFd: > 417 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 BG	
Power Supply		
Input Power Entry	24V AC/DC 50/60 Hz or 24V DC 0.8…1.1	
Power Consumption	1.5 W	
Inputs		
Safety Inputs	1 N.C. or 2 N.C.	
Reset	Automatic	
Power On Delay/ Recovery Time	100 ms/100 ms	
Response Time	50 ms	
Outputs		
Safety Contacts	4 N.O.	
Auxiliary Contacts	2 N.C.	
Thermal Current/I_{th}	2 x 6 A or 3 x 5 A or 4 x 4 A nonswitching	
Rated Impulse withstand Voltage/I_{th}	2500V	
Switching Current @ Voltage, Min.	10 mA @ 10V	
Fuses, Output	External 6 A slow blow or 10 A fast acting	
Electrical Life (Operations)	(With surge suppression) 250V AC/6 A/1500VA cosϕ = 1…0.1 M 250V AC/2 A/500VA cosϕ = 1…0.5 M 250V AC/4 A/1000VA cosϕ = 0.35…0.3 M 250V AC/1.5 A/1000VA cosϕ = 0.6…0.1 M 24V DC/2 A/48 W = 1 M 10V DC/0.01 A/0.1 W = 2 M	
Mechanical Life	2,000,000 operations	
Utilization Category		
Resistive: AC-1	6 A @ 250V AC	
Resistive: DC-1	3 A @ 24V DC	
Inductive: AC-15	6 A @ 250V AC	6 A @ 125V AC
Inductive: DC-13	3 A @ 24V DC	
UL:	B300, R300, 6 A/250V AC, 3 A/24V DC	
Environmental and Physical Characteristics		
Enclosure Type Rating/ Terminal Protection	IP40 (NEMA 1), DIN 0470/ 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 (lbs)]	215 (0.474)	
Conductor Size, Max.	0.2…4 mm^2 (24…12 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

Expansion Safety Relays with Delayed Outputs

MSR132E

Product Selection

Inputs	Safety Outputs	Auxiliary Outputs	Time Delay	Terminals	Reset Type	Power Supply	Cat. No.
1 N.C. or 2 N.C.	4 N.O.	2 N.C.	0 s	Fixed	Automatic	24V AC/DC	440R-E23191✶
			0.5 s			24V DC	440R-E23192
			1 s				440R-E23193
			2 s				440R-E23194
			3 s				440R-E23195
			0 s	Removable		24V AC/DC	440R-E23097✶
			0.5 s			24V DC	440R-E23159
			1 s				440R-E23160
			2 s				440R-E23098
			3 s				440R-E23161
			4 s				440R-E23162❄

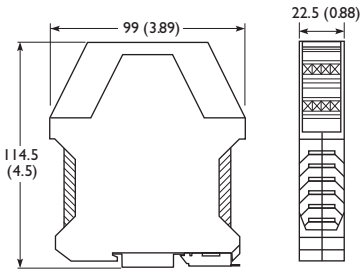
✶ Cat. 4 rated.
❄ 45 mm wide housing.

Accessories

Description	Cat. No.
Bag of 4, 4-Pin Screw Terminal Blocks	440R-A23209
Bag of 4, 4-Pin Spring Clamp Terminal Blocks	440R-A23228

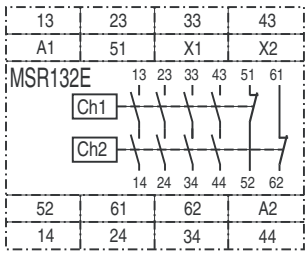
Approximate Dimensions

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

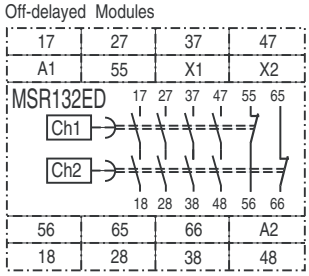


Block Diagram

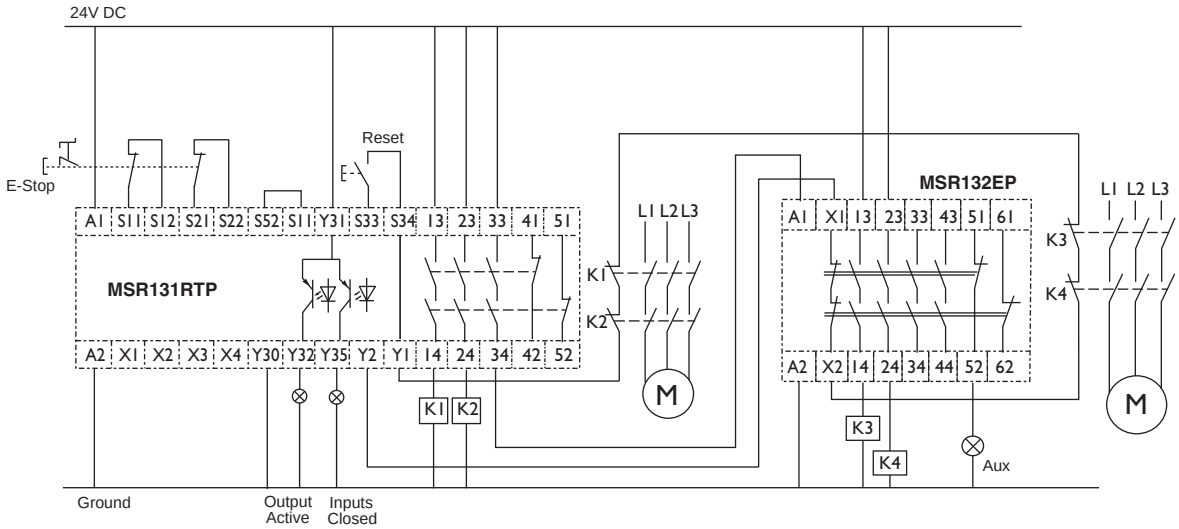
Standard Module



Off-delayed Modules



Typical Wiring Diagrams



Dual Channel E-Stop, Monitored Manual Reset, Dual Channel Output, Single Channel Delayed Expansion, Monitored Output

Modular Safety Relays

Module Selection

Input Module Selection

To determine the base module and input modules needed, start on the left side and count down the number of OSSD input devices you have to connect to the system. Then move to the right according to the number of non-OSSD input devices you need, such as 1 N.C. or 2 N.C. input devices. Count the modules and this will be your total required for the system.

# of OSSD Inputs \ # of non-OSSD Devices	0	1 2	3 4	5 6	7 8	9 10	11 12	13 14	15 16	17 18	19 20	21 22
0		**MSR210**	MSR220	MSR220	MSR220	MSR220	MSR220	MSR220	MSR220	MSR220	MSR220	MSR220
1 2	**MSR211**	MSR220	MSR220	MSR220	MSR220	MSR220	MSR220	MSR220	MSR220	MSR220	MSR220	
3 4	MSR221	MSR220	MSR220	MSR220	MSR220	MSR220	MSR220	MSR220	MSR220	MSR220		
5 6	MSR221	MSR220	MSR220	MSR220	MSR220	MSR220	MSR220	MSR220	MSR220			
7 8	MSR221	MSR220	MSR220	MSR220	MSR220	MSR220	MSR220	MSR220				
9 10	MSR221	MSR220	MSR220	MSR220	MSR220	MSR220	MSR220					
11 12	MSR221	MSR220	MSR220	MSR220	MSR220	MSR220						
13 14	MSR221	MSR220	MSR220	MSR220	MSR220							
15 16	MSR221	MSR220	MSR220	MSR220								
17 18	MSR221	MSR220	MSR220									
19 20	MSR221	MSR220										
21 22	MSR221											

Example 1: 7 OSSD inputs and 5 non-OSSD inputs required.
Solution: MSR211, 3 MSR221, and 3 MSR220.

Example 2: 9 non-OSSD inputs required.
Solution: 1 MSR210 Base, 4 MSR220.

Note: This selection chart assumes that **if** you have OSSD input devices, they will be connected to the base module. If you do **not** want this, then change the MSR211 to the MSR210 and change one MSR220 to an MSR221. This will provide you the same system, but now the OSSD input device will not be on the base module.

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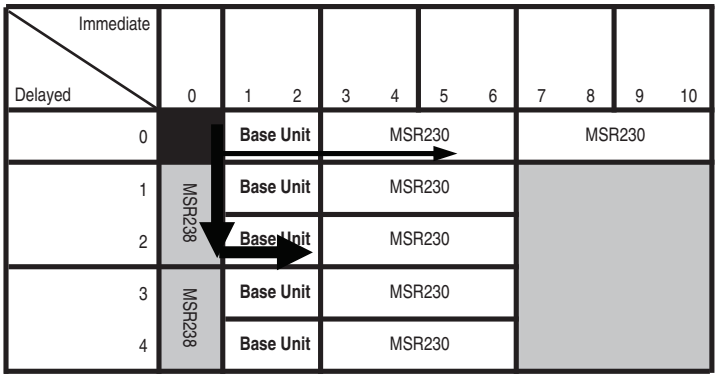
Output Module Selection

Start at the top left and count the number of delayed outputs required. Then count across the number of immediate outputs required. Ensure you only have a total of two output modules total.



Example 1: 2 Delayed outputs and 2 Immediate outputs

Solution: (black lines) One MSR238, 2 Immediate outputs built in the base module

Example 2: 5 Immediate outputs required

Solution: (red line) 1 MSR230 Output module and 2 immediate outputs built into base module

Note: The base module has two N.O. safety outputs built in.