Logic

Expansion Safety Relays with Delayed Outputs



Description

The Minotaur MSR132E is a monitoring safety expansion relay unit with single or dual channel input and either immediate or timed offdelay 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

Standards	Safety Ratings		_	
En IEC 62061, PLe per ISO 13849-1	Standards			
Functional Safety Data × Note: For up-to-date information, visit http://www.ab.com/Safety/ information dapplication characteristics Certifications CE Marked for all applicable directives, cULus, c-Tick, and BG Power Supply Input Power Entry Input Power Consumption 1.5 W Inputs 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 2 N.C. Safety Contacts 4 N.O. Auxiliary Contacts 2 N.C. Thermal Currentl/ _{Int} 2 x 6 A or 3 x 5 A or 4 x 4 A nonswitching Rated Impulse withstand Voltage/ _{Int} 2500V Voltage, Min. 10 mA @ 10V Fuses, Output External 6 A slow blow or 10 A fast acting Wift surge suppression) 250V AC/6 A/1500VA cose = 10.1 M 250V AC/2 A/50VAC cose = 10.1 M 250V AC/6 A/1500VA cose = 0.350.3 M 250V AC/2 A/30VA us 1 M 10V DC/0.01 A/0.1 W = 2 M	Safety Classification			
C-Tick, and BG	Note : For up-to-date information, visit	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		
Input Power Entry	Certifications			
Power Consumption 1.5 W Inputs	Power Supply			
Inputs	Input Power Entry	24V AC/DC 50/60 Hz or	24V DC 0.81.1	
Safety Inputs	Power Consumption	1.5 W		
Reset	Inputs			
Power On Delay/Recovery Time	Safety Inputs	1 N.C. or 2 N.C.		
Recovery Time Too ms/ too ms	Reset	Automatic		
Outputs Safety Contacts 4 N.O. Auxiliary Contacts 2 N.C. Thermal Current/Ith 2 x 6 A or 3 x 5 A or 4 x 4 A nonswitching Rated Impulse withstand Voltage/Ith 2500V Switching Current @ Voltage, Min. 10 mA @ 10V Fuses, Output External 6 A slow blow or 10 A fast acting (With surge suppression) 250V AC/6 A/1500VA cosφ = 10.1 M 250V AC/6 A/500VA cosφ = 10.5 M 250V AC/2 A/500VA cosφ = 10.5 M 250V AC/4 A/1000VA cosφ = 0.350.3 M 250V AC/4 A/1000VA cosφ = 0.60.1 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/ Operating Temperature [C (F)] -555° (23131°) Vibration 1055 Hz, 0.35 mm Shock 10 g, 16 ms, 100 shocks		100 ms/100 ms		
Safety Contacts 4 N.O. Auxiliary Contacts 2 N.C. Thermal Current/Ith 2 x 6 A or 3 x 5 A or 4 x 4 A nonswitching Rated Impulse withstand Voltage/Ith 2500V Switching Current @ Voltage, Min. 10 mA @ 10V Fuses, Output External 6 A slow blow or 10 A fast acting (With surge suppression) 250V AC/6 A/1500VA cosφ = 10.1 M 250V AC/2 A/500VA cosφ = 0.350.3 M 250V AC/4 A/1000VA cosφ = 0.350,3 M 250V AC/1.5 A/1000VA cosφ = 0.350,3 M 250V AC/1.5 A/1000VA cosφ = 0.60.1 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 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)] -555° (23131°) Vibration 1055 Hz, 0.35 mm Shock 10 g, 16 ms, 100 shocks Mounting 35 mm DIN Rail <	Response Time	50 ms		
Auxiliary Contacts 2 N.C. Thermal CurrentI _{Ith} 2 x 6 A or 3 x 5 A or 4 x 4 A nonswitching Rated Impulse withstand Voltage _{Ith} 2500V Switching Current @ Voltage, Min. 10 mA @ 10V Fuses, Output External 6 A slow blow or 10 A fast acting (With surge suppression) 250V AC/6 A/1500VA cosφ = 10.1 M 250V AC/2 A/500VA cosφ = 0.350.3 M 250V AC/4 A/1000VA cosφ = 0.350.3 M 250V AC/1.5 A/1000VA cosφ = 0.60,1 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 Enclosure Type Rating/Terminal Protection IP40 (NEMA 1), DIN 0470/IP20, DIN 0470 Operating Temperature [C (F) -555° (23131°) Vibration 10 g, 16 ms, 100 shocks Mounting 35 mm DIN Rail Weight [g (lbs)] 215 (0.474)	Outputs			
Thermal CurrentInth 2 x 6 A or 3 x 5 A or 4 x 4 A nonswitching Rated Impulse withstand VoltageInth 2500V Switching Current ② 10 mA ② 10V Fuses, Output External 6 A slow blow or 10 A fast acting (With surge suppression) 250V AC/6 A/1500VA cosφ = 10.1 M 250V AC/2 A/500VA cosφ = 10.5 M 250V AC/4 A/1000VA cosφ = 0.350.3 M 250V AC/1.5 A/1000VA cosφ = 0.350.1 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 ② 250V AC 8 250V AC 6 A ② 125V AC Inductive: DC-13 3 A ② 24V DC Inductive: AC-15 6 A ② 250V AC 6 A ② 125V AC Inductive: DC-13 3 A ② 24V DC UL: B300, R300, 6 A/250V AC, 3 A/24V DC Environmental and Physical Characteristics Enclosure Type Rating/ IP40 (NEMA 1), DIN 0470/ IP20, DIN 0470 Operating Temperature [C (F)] -555° (23131°) Vibration 1055 Hz, 0.35 mm Shock 10 g, 16 ms, 100 shocks Mounting 35 mm DIN Rail Weight [g (lbs)] 215 (0.474)	Safety Contacts	4 N.O.	_	
Rated Impulse withstand VoltageI _{Ith} 2500V Switching Current @ Voltage, Min. 10 mA @ 10V Fuses, Output External 6 A slow blow or 10 A fast acting (With surge suppression) 250V AC/6 A/1500VA cosφ = 10.1 M 250V AC/2 A/500VA cosφ = 10.5 M Electrical Life (Operations) 250V AC/4 A/1000VA cosφ = 0.350.3 M 250V AC/1.5 A/1000VA cosφ = 0.60.1 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 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/ Operating Temperature [C (F)] -555° (23131°) Vibration 1055 Hz, 0.35 mm Shock 10 g, 16 ms, 100 shocks Mounting 35 mm DIN Rail Weight [g (lbs)] 215 (0.474)	Auxiliary Contacts	2 N.C.		
Voltage I _{Ith} 2500V	Thermal CurrentI _{Ith}	2 x 6 A or 3 x 5 A or 4 x	4 A nonswitching	
Voltage, Min. External 6 A slow blow or 10 A fast acting Fuses, Output External 6 A slow blow or 10 A fast acting (With surge suppression) 250V AC/6 A/1500VA cosφ = 10.1 M 250V AC/2 A/500VA cosφ = 10.5 M Electrical Life (Operations) 250V AC/4 A/1000VA cosφ = 0.350.3 M 250V AC/1.5 A/1000VA cosφ = 0.60.1 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 Enclosure Type Rating/ Terminal Protection IP40 (NEMA 1), DIN 0470/ IP20, DIN 0470 Operating Temperature [C (F)] -555° (23131°) Vibration 1055 Hz, 0.35 mm Shock 10 g, 16 ms, 100 shocks Mounting 35 mm DIN Rail Weight [g (lbs)] 215 (0.474)		2500V		
(With surge suppression) 250V AC/6 A/1500VA cosφ = 10.1 M 250V AC/6 A/1500VA cosφ = 10.5 M 250V AC/2 A/500VA cosφ = 0.350.3 M 250V AC/1.5 A/1000VA cosφ = 0.350.3 M 250V AC/1.5 A/1000VA cosφ = 0.60.1 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/ IP40 (NEMA 1), DIN 0470/ Terminal Protection IP20, DIN 0470 Operating Temperature [C (F)] Vibration 1055 Hz, 0.35 mm Shock 10 g, 16 ms, 100 shocks Mounting 35 mm DIN Rail Weight [g (lbs)] 215 (0.474)		10 mA @ 10V		
Electrical Life (Operations) 250V AC/6 A/1500VA cosφ = 10.1 M 250V AC/2 A/500VA cosφ = 10.5 M 250V AC/2 A/500VA cosφ = 0.350.3 M 250V AC/4 A/1000VA cosφ = 0.350.3 M 250V AC/1.5 A/1000VA cosφ = 0.60,1 M 24V DC/2 A/48 W = 1 M 10V DC/0.01 A/0.1 W = 2 M 2,000,000 operations 2,000,000 oper	Fuses, Output	External 6 A slow blow or 10 A fast acting		
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)] -555° (23131°) Vibration 1055 Hz, 0.35 mm Shock 10 g, 16 ms, 100 shocks Mounting 35 mm DIN Rail Weight [g (lbs)] 215 (0.474)	Electrical Life (Operations)	250V AC/6 A/1500VA $\cos \phi = 10.1$ M 250V AC/2 A/500VA $\cos \phi = 10.5$ M 250V AC/4 A/1000VA $\cos \phi = 0.350.3$ M 250V AC/1.5 A/1000VA $\cos \phi = 0.60.1$ M 24V DC/2 A/48 W = 1 M		
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)] -555° (23131°) Vibration 1055 Hz, 0.35 mm Shock 10 g, 16 ms, 100 shocks Mounting 35 mm DIN Rail Weight [g (lbs)] 215 (0.474)	Mechanical Life	2,000,000 operations		
Resistive: DC-1	Utilization Category			
Inductive: AC-15	Resistive: AC-1	6 A @ 250V AC		
Inductive: DC-13	Resistive: DC-1	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)] -555° (23131°) Vibration 1055 Hz, 0.35 mm Shock 10 g, 16 ms, 100 shocks Mounting 35 mm DIN Rail Weight [g (lbs)] 215 (0.474)	Inductive: AC-15	6 A @ 250V AC	6 A @ 125V AC	
Environmental and Physical Characteristics Enclosure Type Rating/ Terminal Protection IP40 (NEMA 1), DIN 0470/ IP20, DIN 0470 Operating Temperature [C (F)] -555° (23131°) Vibration 1055 Hz, 0.35 mm Shock 10 g, 16 ms, 100 shocks Mounting 35 mm DIN Rail Weight [g (lbs)] 215 (0.474)	Inductive: DC-13	3 A @ 24V DC		
Enclosure Type Rating/ Terminal Protection	UL:	B300, R300, 6 A/250V AC, 3 A/24V DC		
Terminal Protection IP20, DIN 0470 Operating Temperature [C (F)] -555° (23131°) Vibration 1055 Hz, 0.35 mm Shock 10 g, 16 ms, 100 shocks Mounting 35 mm DIN Rail Weight [g (lbs)] 215 (0.474)	Environmental and Physica	al Characteristics		
C (F) -555 (23131)			0/	
Shock 10 g, 16 ms, 100 shocks Mounting 35 mm DIN Rail Weight [g (lbs)] 215 (0.474)		-555° (23131°)		
Mounting 35 mm DIN Rail Weight [g (lbs)] 215 (0.474)	Vibration	1055 Hz, 0.35 mm		
Weight [g (lbs)] 215 (0.474)	Shock	10 g, 16 ms, 100 shocks		
	Mounting	35 mm DIN Rail		
Conductor Size, Max. 0.24 mm² (2412 AWG)	Weight [g (lbs)]	215 (0.474)		
	Conductor Size, Max.	0.24 mm² (2412 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

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.			0 s	Fixed	Automatic	24V AC/DC	440R-E23191*
			0.5 s			24V DC	440R-E23192
			1 s				440R-E23193
		4 N.O. 2 N.C.	2 s				440R-E23194
			3 s				440R-E23195
	4 N.O.		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*

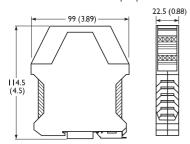
Cat. 4 rated.

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

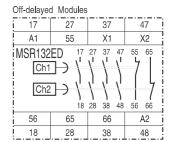
Approximate Dimensions

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

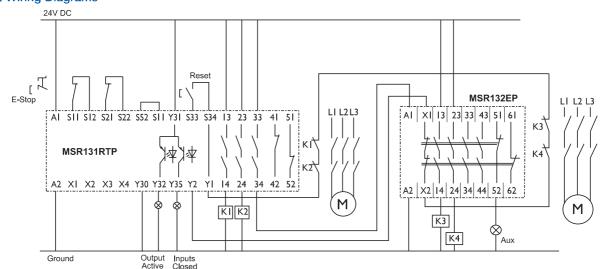


Block Diagram

Standard Module				
i 13	23	33	43	
. A1	51	X1	X2	
! 5	Ch2 13	23 33 43	51 61 52 62	
52	61	62	A2	
! 14	24	34	44	



Typical Wiring Diagrams



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

⁴⁵ mm wide housing.