

# Single-Function Safety Relays

## MSR127RTP



### Description

The MSR127RTP can be connected in three different input wiring configurations: one normally closed, two normally closed, or with two PNP connections from a light curtain. When connected in the two normally closed fashion, the MSR127RTP checks for cross faults across the two inputs. When connected to light curtains, the light curtain must perform the cross fault detection.

The MSR127RP has a monitored manual reset. The MSR127TP has an automatic/manual reset. Models with automatic/manual reset can have the reset jumpered or can be converted to an unmonitored manual reset by adding a normally open switch in the monitoring loop. Models with monitored manual reset provide checking of the output monitoring circuit.

The outputs include three normally open safety-rated outputs as well as one normally closed auxiliary output. The safety outputs have independent and redundant internal contacts to support the safety function. The auxiliary output is a nonsafety output intended to provide an external signal about the status of the safety outputs.

### Features

- Category 4 per EN 954-1
- Stop category 0
- Three safety contacts
- One auxiliary contact
- Cross fault monitoring
- Monitored or automatic reset
- Removable terminals
- Light curtain, E-stop or safety gate applications

### LED Indicators

Green	Power On
Green	CH1 Closed
Green	CH2 Closed

5-Safety Relays

### Specifications

Safety Ratings	
Standards	EN 954-1, ISO 13849-1, IEC/EN 60204-1, IEC 60947-4-1, IEC 60947-5-1, ANSI B11.19, AS4024.1
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 *	PFH <sub>D</sub> : < 1.45 x 10 <sup>-9</sup> MTTF <sub>d</sub> : > 398 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
Note:	For up-to-date information, visit <a href="http://www.ab.com/Safety/">http://www.ab.com/Safety/</a>
Certifications	CE Marked for all applicable directives, cULus and BG
Power Supply	
Input Power Entry	24V AC/DC, 115V AC or 230V AC 50/60 Hz
Power Consumption	2 W
Inputs	
Safety Inputs	1 N.C. or 2 N.C. or LC
Input Simultaneity	Infinite (ch2 before ch1) with Auto Reset
Input Resistance, Max.	110 Ω
Reset	Auto./Manual or Monitored Manual
Power On Delay/Recovery Time	1 second/100 ms
Response Time	15 ms
Outputs	
Safety Contacts	3 N.O.
Auxiliary Contacts	1 N.C.
Thermal Current I <sub>th</sub>	Units with 24V AC/DC supply: 3 x 4 A or 2 x 5 A nonswitching Units with 115/230V AC supplies: 3 x 3 A or 2 x 4 A or 1 x 5 A nonswitching
Rated Impulse withstand Voltage	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/2.5 A/625VA cosφ = 1...0.5 M 250V AC/1.5 A/375VA cosφ = 0.35...0.3 M 250V AC/5 A/1250VA 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	UL: B300, R300 5 A/250V AC, 24V DC
Resistive: AC-1	5 A/250V AC
Resistive: DC-1	5 A/24V DC
Inductive: AC-15	5 A/250V AC
Inductive: DC-13	3 A/24V DC
	5 A/24V DC @ 6 ops/min
Environmental and Physical Characteristics	
Enclosure Type Rating/Terminal Protection	IP40 (NEMA 1)/IP20
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)]	24V DC: 210 (0.46), 115/230V AC: 260 (0.57)
Conductor Size, Max.	0.2...4 mm <sup>2</sup> (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

**Product Selection**

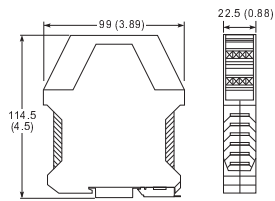
Inputs	Safety Outputs	Auxiliary Outputs	Terminals	Reset Type	Power Supply	Cat. No.
1 N.C., 2 N.C., Light Curtain	3 N.O.	1 N.C.	Fixed	Auto./Manual	24V AC/DC	440R-N23126
				Monitored Manual		440R-N23129
				Auto./Manual	115V AC	440R-N23125
				Monitored Manual		440R-N23128
				Auto./Manual	230V AC	440R-N23124
				Monitored Manual		440R-N23127
			Removable (Screw)	Auto./Manual	24V AC/DC	440R-N23132
				Monitored Manual		440R-N23135
			Removable (Spring Clamp)	Auto./Manual	24V AC/DC	440R-N23132S
				Monitored Manual		440R-N23135S
			Removable (Screw)	Auto./Manual	115V AC	440R-N23131
				Monitored Manual		440R-N23134
Auto./Manual	230V AC	440R-N23130				
Monitored Manual		440R-N23133				

**Accessories**

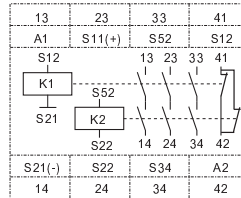
Description	Cat. No.
4 Replacement 4-pin Terminals (screw)	440R-A23209
4 Replacement 4-pin Terminals (spring clamp)	440R-A23228

**Approximate Dimensions**

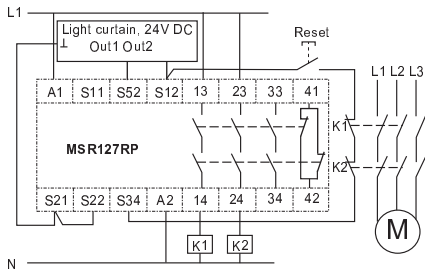
Dimensions are shown in mm (in.). Dimensions are not intended to be used for installation purposes.



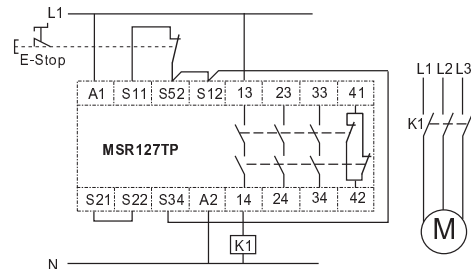
**Block Diagram**



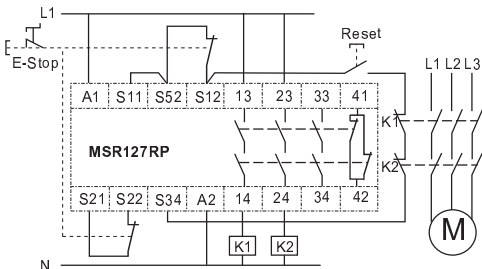
**Typical Wiring Diagrams**



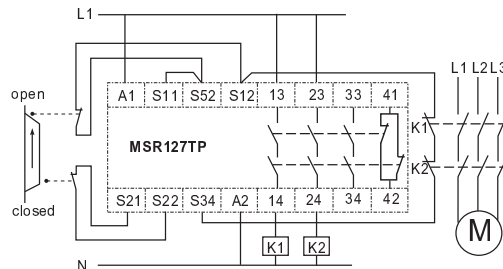
**Light Curtain, Monitored Manual Reset, Monitored Output**



**Single Channel E-Stop, Automatic Reset, No Output Monitoring**



**Dual Channel E-Stop, Monitored Manual Reset, Monitored Output**



**Dual Channel Safety Gates, Automatic Reset, Monitored Output**

**5-Safety Relays**