MSR142RTP

Description

The MSR142RTP is a versatile monitoring safety relay. It can be connected in four different input wiring configurations: one normally closed, two normally closed, two PNP connections from a light curtain, or a four-wire safety mat. When connected in the two normally closed fashion, the MSR142RTP checks for cross faults across the two inputs. When connected to light curtains, the light curtain must perform the cross-fault detection.

The MSR142RTP has output monitoring that can accommodate either automatic/manual reset or a monitored manual reset. When configured with automatic/manual reset (jumpers on X1-X2 and X3-X4), the MSR142RTP can have the reset terminals S33-S34 jumpered or can be converted to an unmonitored manual reset by adding a normally open switch in the monitoring loop (S33-S34). When configured to monitored manual reset, the MSR142RTP checks the output monitoring circuit through the manual application of the reset switch.

The outputs include seven normally open safety-rated outputs, four normally closed auxiliary outputs, and two solid-state outputs. One solid-state output indicates that the inputs are closed. The second solid-state output indicates that the safety outputs are active. The safety outputs have independent and redundant internal contacts to support the safety function. The auxiliary outputs are nonsafety outputs intended to provide an external signal about the status of the safety outputs.

Features

- Category 4 per EN 954-1
- Stop category 0
- Light curtain, safety mat, E-stop inputs
- Seven electromechanical N.O. state safety outputs
- Four electromechanical N.C. auxiliary outputs
- Two solid-state auxiliary outputs
- Cross-fault monitoring
- Monitored or automatic reset
- Removable terminals

LED Indicators

Green	Power
Green	Start
Green	CH1 IN
Green	CH2 IN
Green	CH1 output energized
Green	CH2 output energized

Specifications

Safety Ratings	
Standards	EN 954-1, ISO 13849-1, IEC/EN 60204-1, IEC 60947-5-1, AS 4042.1, ISOTR 12100, B11.19
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: < 1.92 x 10^{-9} MTTFd: > 210 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, TÜV, and c-Tick
Power Supply	
Input Power Entry	24V AC/DC, 115V AC or 230V AC 50/60 Hz
Power Consumption	5 W
Inputs	
Safety Inputs	1 N.C., 2 N.C., Light Curtain or 4-Wire Safety Mat
Input Simultaneity	Infinite
Input Resistance, Max.	45 ohms
Reset	Auto./Manual or Monitored Manual
Power On Delay/ Recovery Time	1 s/100 ms
Response Time	15 ms
Outputs	
Safety Contacts	7 N.O.
Auxiliary Contacts	4 N.C., 2 PNP
Rated Impulse withstand Voltage	2500V
Switching Current @ Voltage, Min.	10 mA @ 10V DC
Fuses, Output	6 A slow blow or 10 A quick blow (external)
Electrical Life (Operations)	220V AC/4 A/880VA cosϕ = 0.35...0.1 M 220V AC/1.7 A/375VA cosϕ = 0.6...0.5 M 30V DC/2 A/60 W = 1 M 10V DC/0.01 A/0.1 W = 2 M
Mechanical Life	2,000,000 operations
Utilization Category	
Inductive: Safety & Aux.: AC-15	6 A/250V AC
Inductive: AC-13	3 A/24V DC
Resistive: DC-13	20 mA/30V DC short-circuit protected
UL	4 x B300 or 7 x 4 A Resistive
Environmental and Physical Characteristics	
Enclosure Type Rating/ Terminal Protection	IP40 (NEMA 1), DIN VDE 0470-1/ IP20
Operating Temperature [C (F)]	-5...+55 ° (14...131 °)
Vibration	10...55 Hz, 0.35 mm
Shock	10 g, 16 ms, 100 shocks
Mounting	35 mm DIN Rail
Weight [g (lb)]	24V: 470 (1.04); 115/230V AC: 607 (1.34)
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

Product Selection

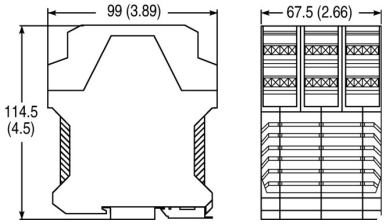
Inputs	Safety Outputs	Auxiliary Outputs	Terminals	Reset Type	Power Supply	Cat. No.
1 N.C., 2 N.C., Light Curtain, Safety Mat	7 N.O.	4 N.C., 2 PNP, solid state	Removable	Monitored Manual or Auto/Manual	24V AC/DC	440R-G23216
					115V AC	440R-G23215
					230V AC	440R-G23214

Accessories

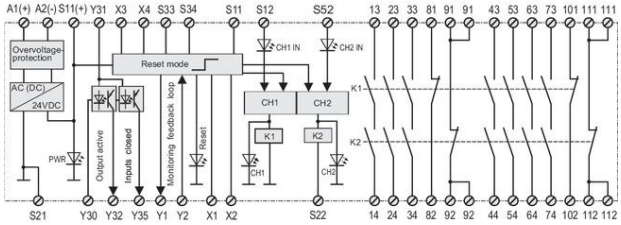
Description	Cat. No.
Bag of 4, 4-Pin Screw Terminal Blocks	440R-A23209
Bag of 4, 4-Pin Spring Clamp Terminal Blocks	440R-A23228

Approximate Dimensions

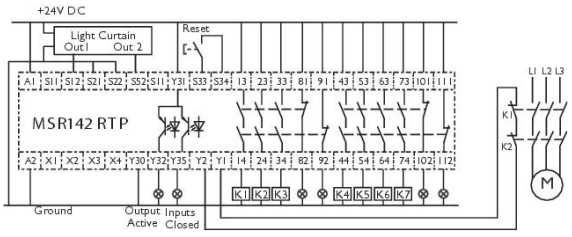
Dimensions are shown in mm (in.). Dimensions are not intended to be used for installation purposes.



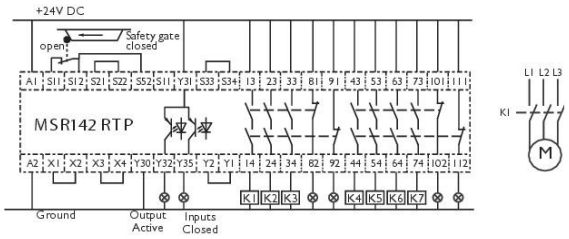
Block Diagram



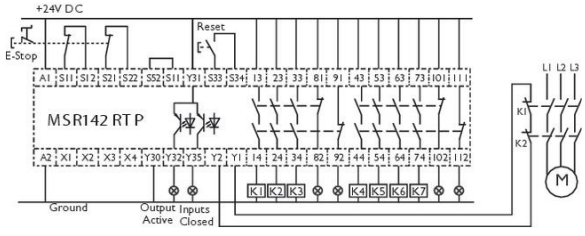
Typical Wiring Diagrams



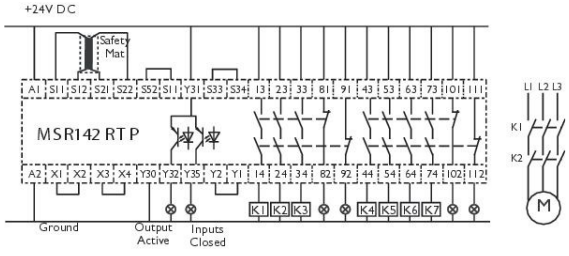
LIght Curtain, Monitored Manual Reset, Monitored Output



Single Channel Safety Gate, Auto Reset, No Output Monitoring



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



Safety Mat, Automatic Reset, No Output Monitoring