

Safety Relays

Monitoring Safety Relays

Minotaur MSR131RTP



Description

The MSR131RTP is a versatile monitoring safety relay. It can be connected in four different input wiring configurations: 1 N.C., 2 N.C., 2 PNP connections from a light curtain, or a four wire safety mat. When connected in the 2 N.C. fashion, the MSR131RTP checks for cross faults across the two inputs. When connected to light curtains, the light curtain must perform the cross fault detection.

The MSR131RTP 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 MSR131RTP 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 MSR131RTP checks the output monitoring circuit through the manual application of the reset switch.

The outputs include 3 normally open safety rated outputs, 2 normally closed auxiliary outputs, and 2 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 help ensure 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
- Light curtain, safety mat, E-Stop inputs
- 3 safety contacts
- 2 auxiliary contact
- 2 solid state outputs
- Cross fault monitoring
- Monitored or automatic reset
- Removable terminals

Specifications

Standards	EN 954-1, ISO 13849-1, IEC/EN 60204-1, IEC 60947-4-1, IEC 60947-5-1, ANSI B11.19, AS4024.1
Category	Cat. 4 per EN 954-1 (ISO 13849-1)
Approvals	C-Tick, CE marked for all applicable directives, cULus & BG
Power Supply	24V AC/DC, 115V or 230V AC 0.85 to 1.1 x rated volt., 50/60Hz
Power Consumption	4W
Safety Inputs	1 N.C., 2 N.C., light curtain or safety mat
Input Simultaneity	Infinite
Max. Allowable Input Resistance	45 ohms
Reset	Monitored manual or Auto./manual
Outputs	3 N.O. safety; 2 N.C. auxiliary; 1 S.S. PNP inputs closed; 1 S.S. PNP outputs active
Output Utilization per IEC 60947-4-1 (Resistive)	AC-1: 6A/250V AC DC-1: 6A/24V DC
① Output Utilization per IEC 60947-5-1 (Inductive)	B300, AC-15 3A/250V AC, 6A/125VAC P300, DC-13; 3A/24V DC 6A/24V DC @ 6 ops/min
Thermal Current (non switching)	1 x 6A, 3x5A
Output, Solid State	30mA short circuit protected
Fuses Output (external)	6A slow blow or 10A quick blow
Min. Switched Current/Voltage	10mA/10V DC
Contact Material	AgSnO ₂ + 2mAu
Power On Delay	1s
Response Time	15ms
Recovery Time	100ms
Indication LEDs	Green = Power; Green = Start Green = CH1 Input Closed Green = CH2 Input Closed Green = CH1 Output Active Green = CH2 Output Active
Impulse Withstand Voltage	2500V
Pollution Degree	2
Operating Temperature	-5°C to +55°C (+23°F to 131°F)
Humidity	90% RH
Enclosure Protection	IP40 (NEMA 1)
Terminal Protection	IP20
Conductor Size	0.2–4mm ² (24–12 AWG)
Torque Settings—term. screws	0.4–0.5Nm (3.54–4.43lb ² in)
Case Material	Polyamide PA 6.6
Mounting	35mm DIN rail
Weight 24V DC 110V AC or 230V AC	320g (0.71lbs) 450g (0.99lbs)
Electrical Life (w/Surge Supp.) 250V AC/6A/1500VA cosφ=1 250V AC/2.5A/625VA cosφ=1 250V AC/1.5A/375VA cosφ=0.35 250V AC/5A/1250VA cosφ=0.6 24V DC/2A/48W 10V DC/0.01A/0.1W	100,000 operations 500,000 operations 300,000 operations 100,000 operations 1,000,000 operations 2,000,000 operations
Mechanical Life	2,000,000 cycles
Vibration	10–55Hz, 0.35mm
Shock	10g, 16ms, 100 shocks

① See Output Ratings on page 1-29 for details. Consult factory for ratings not shown.

Safety Relays

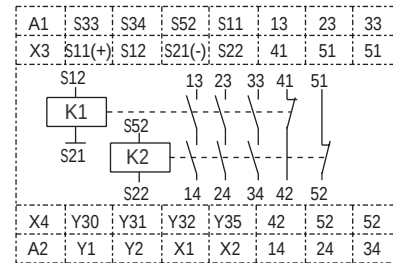
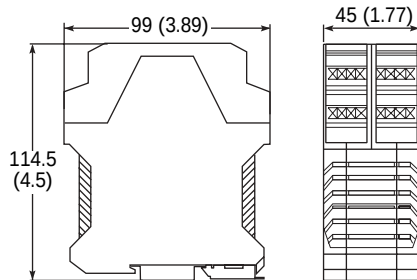
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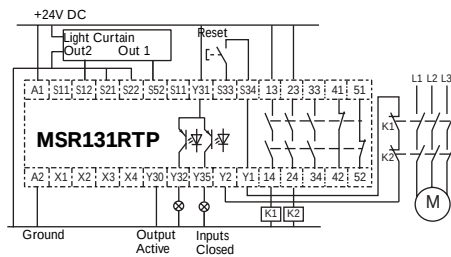
Product Selection

Inputs	Safety Outputs	Auxiliary Outputs	Power Supply	Catalogue Number
1 N.C. or 2 N.C. or Safety Mat or Light Curtain	3 N.O.	2 N.C. 2 PNP Solid State	24V AC/DC	440R-C23139
			115V AC	440R-C23137
			230V AC	440R-C23136

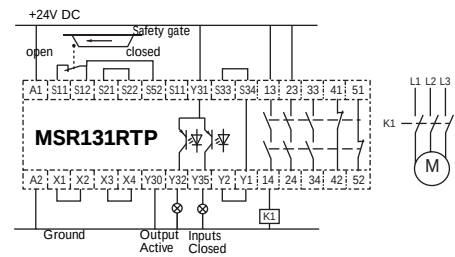
Dimensions—mm (inches) Block Diagram



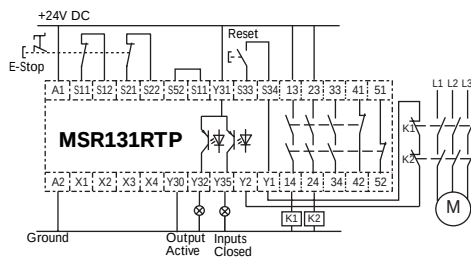
Typical Wiring Diagrams



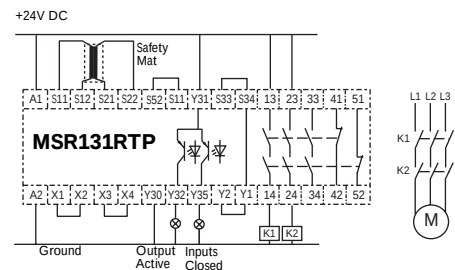
Light Curtain, Monitored Manual Reset,
Monitored Output



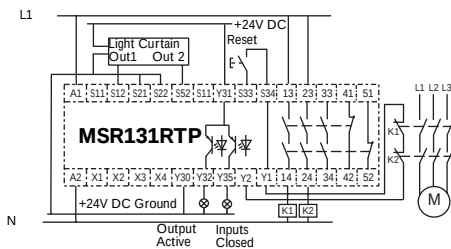
Single Channel Safety Gate, Automatic Reset,
No Output Monitoring



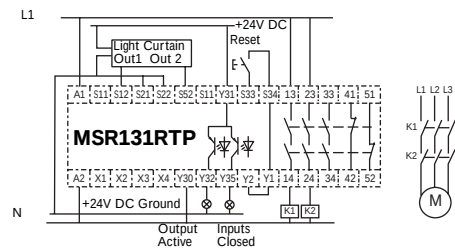
Dual Channel E-Stop, Monitored Manual Reset,
Monitored Output



Safety Mat, Automatic Reset, No
Output Monitoring



115/230V AC Supply, 24V DC, Light Curtain,
Monitored Manual Reset, Monitored Output



115/230V AC Supply, 24V DC, Light Curtain,
Monitored Manual Reset, No Output Monitoring