Monitoring Safety Relays
Minotaur MSR121RT

Description

The Allen-Bradley Guardmaster Minotaur MSR121RT is a safety monitoring relay that provides three normally open safety contacts, a normally open auxiliary contact and a solid state auxiliary output for use with interfacing to PLCs.

The MSR121RT has a versatile input arrangement. It can be connected to a single or dual channel safety gate or e-stop, a safety mat input or a light curtain that provides cross fault detection.

Reset and output monitoring is determined by the wiring configuration. Automatic/manual reset can use a jumper or can be used to check operation of external contactors. Monitored manual requires the use of a manually operated normally open momentary switch.

The MSR121RT has 3 normally open safety rated outputs. The safety outputs have independent and redundant internal contacts to help ensure the safety function. It has one normally closed auxiliary output as well as a solid state PNP auxiliary output to indicate the status of the MSR121RT to a indicator lamp or a PLC.

Features

- Category 4 per EN 954-1
- Stop category 0
- 3 Safety contacts N.O.
- 1 Auxiliary contact N.C.
- 1 Solid state PNP auxiliary contact
- Single/dual channel operation
- Cross fault monitoring
- Monitored or automatic reset
- E-stop, safety gate, safety mat or light curtain applications

Contact Current Limit Curve
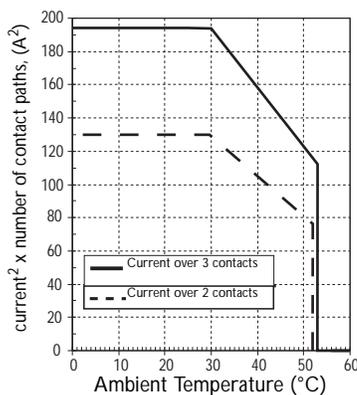
Specifications

Standards	EN 954-1, ISO 13849-1, IEC/EN60204-1, IEC 60947-4-1, IEC 60947-5-1, ANSI B11.19, AS4024.1
Category	Cat. 4 per EN954-1 (ISO 13849-1)
Approvals	C-Tick, CE marked for all applicable directives, cULus & BG
Power Supply	24V AC/DC, 115/230V AC 0.8–1.1 x rated voltage, 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	Auto./Man. or Monitored Man.
Outputs	3 N.O. Safety, 1 N.C. Aux, 1 S.S. PNP Aux.
Output Utilization per IEC 60947-4-1 (Resistive)	AC-1: 8A/250V AC DC -1L 8A/24V DC
❶ Output Utilization per IEC 60947-5-1 (Inductive)	A300 AC-15; 6A/250V AC, 6A/125V AC N300 DC-13; 3A/24V DC; 6A/24V DC @ 6 ops/min
Output, Solid State	20mA @ 24V DC
Thermal Current (non switching)	See limit curve Max 10A in one current path
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
Fuses, output external	6A slow blow or 10A quick blow
Min. Switched Current/Voltage	10mA/10V
Contact Material	$AgSnO_2$ + 0.5µAu
Power On Delay	1s
Response Time 24V DC 24/115/230V AC	15ms 20ms
Recovery Time	100ms
Indication LEDs	Green = Power on; Green = K1 Closed; Green = K2 Closed
Impulse Withstand Voltage	2500V
Operating Temperature	-5°C to +55°C (+23° to +131°F)
Humidity	90% RH
Enclosure Protection	IP40 (NEMA 1), DIN 0470
Terminal Protection	IP20, DIN 0470
Electronic Short Circuit Prot.	Inputs & solid state output
Pollution Degree	2
Conductor Size	0.2 - 4mm^2 (24 - 12AWG)
Mounting	35mm DIN rail
Weight 24V DC 110 and 230V AC	290g (0.64lbs) 370g (0.82lbs)
Mechanical Life	2,000,000 operations
Vibration	10-55Hz, 0.35mm
Shock	10g, 16ms, 100 shocks

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

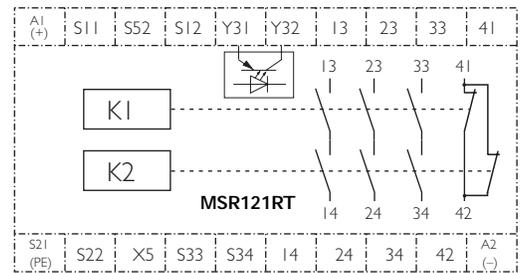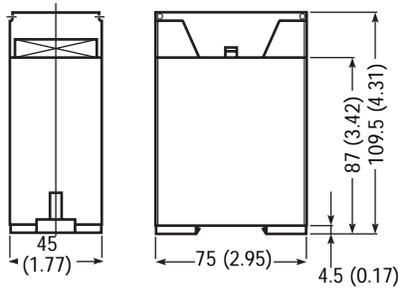**Allen-Bradley**

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Product Selection

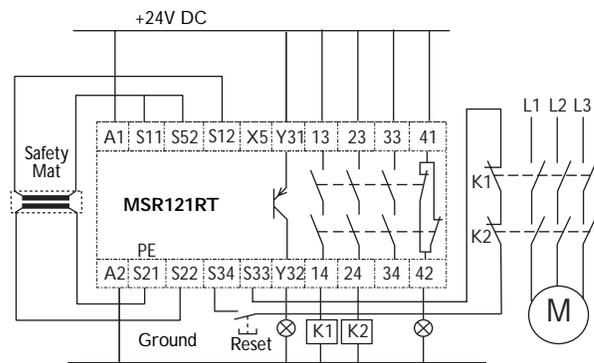| Inputs	Safety Outputs	Auxiliary Outputs	Power Supply	Catalogue Number
1 N.C., 2 N.C., Safety Mat or Light Curtain	3 N.O.	1 N.C. 1 S.S. PNP	24V AC/DC	440R-J23102
			115V AC	440R-J23100
			230V AC	440R-J23099

Dimensions—mm (inches) Block Diagram
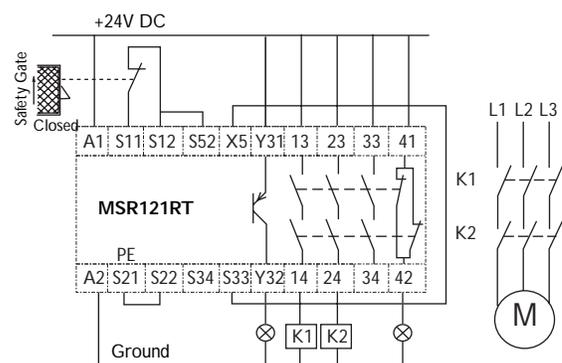

Typical Wiring Diagrams
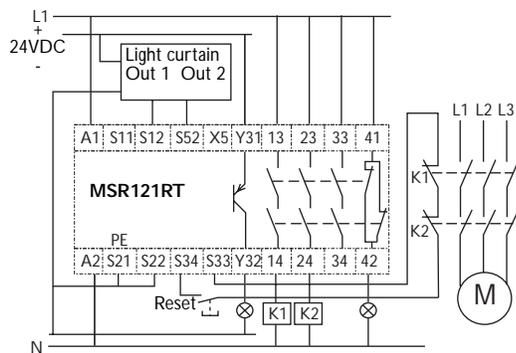
24V DC Light Curtain, 115/230V AC Safety Relay, Monitored Manual Reset, Monitored Output

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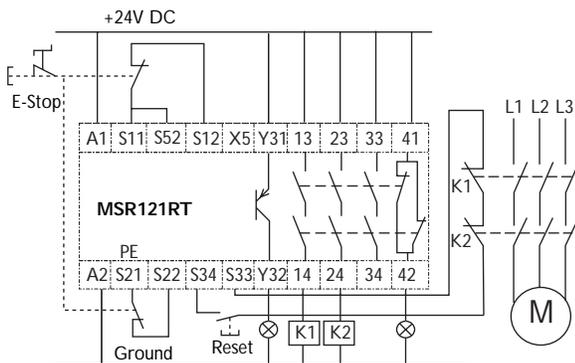
Dual Channel E-Stop, Monitored Manual Reset, Monitored Output

Single Channel Safety Gate, Automatic Reset, No Output Monitoring

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