

Logic

Single-Function Safety Relays

MSR126RT



Description

The Allen-Bradley Guardmaster Minotaur MSR126R/T is a safety monitoring relay that provides the very basics for safety control systems in a 22.5 mm package.

The MSR126R/T is designed for connection to a single channel safety gate, a single channel e-stop or a light curtain that provides cross fault detection. The MSR126.1R/T is designed for connection to a dual channel safety gate or e-stop, as it performs cross fault detection across the inputs.

The MSR126R and MSR126.1R are designed for applications where a monitored manual reset is required. Monitored manual reset requires the use of a momentary normally open switch to activate the outputs.

The MSR126T and MSR126.1T are designed for applications where automatic/manual reset is required.

The outputs are only two normally open safety-rated outputs. The safety outputs have independent and redundant internal contacts to support the safety function.

Features

- Category 4 per EN 954-1
- Stop category 0
- Two safety contacts N.O.
- Single/dual channel operation
- Cross fault monitoring
- Monitored or automatic reset
- E-stop, safety gate or light curtain applications

LED Indicators

Green	Power On
Green	K1 Closed
Green	K2 Closed

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, AS 4024.1
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 *	<p>PFH_D: < 1.45 x 10⁻⁹</p> <p>MTTF_d: > 398 years</p> <p>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</p>
Certifications	CE Marked for all applicable directives, cULus, c-Tick, and BG
Power Supply	
Input Power Entry	24V AC/DC, 115/230V AC
Power Consumption	4 W
Inputs	
Safety Inputs	1 N.C., 2 N.C., or LC
Input Simultaneity	Infinite
Input Resistance, Max.	90 Ω
Reset	Auto./Manual or Monitored Manual
Power On Delay/Recovery Time	300 ms/100 ms
Response Time	15 ms
Outputs	
Safety Contacts	2 N.O.
Thermal Current/ <i>I_{th}</i>	Max 6 A in one current path (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)	<p>(With surge suppression)</p> <p>250V AC/6 A/1500VA cosφ = 1...0.1 M</p> <p>250V AC/2.5 A/625VA cosφ = 1...0.5 M</p> <p>250V AC/1.5 A/375VA cosφ = 0.35...0.3 M</p> <p>250V AC/5 A/1250VA cosφ = 0.6...0.1 M</p> <p>24V DC/2 A/48 W = 1 M</p> <p>10V DC/0.01 A/0.1 W = 2 M</p>
Mechanical Life	2,000,000 operations
Utilization Category	
Resistive: AC-1	6 A/250V AC
Resistive: DC-1	6 A/24V DC
Inductive: AC-15	6 A/250V AC
Inductive: DC-13	3 A/24V DC
	6 A/125V AC
	6 A/24V DC @ 6 ops/min
Environmental and Physical Characteristics	
Enclosure Type Rating/Terminal Protection	IP40 (NEMA 1), DIN 0470/ IP20, DIN 0470
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: 160 (0.35); 115/230V AC: 215 (0.47)
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:

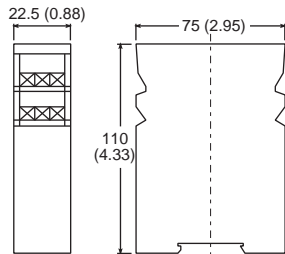
- Mission time/Proof test interval of 20 years
- Functional test at least once within six-month period

Product Selection

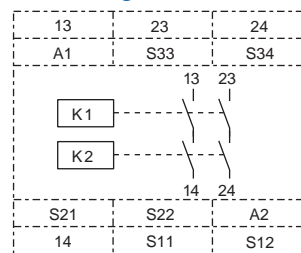
Inputs	Safety Outputs	Auxiliary Outputs	Terminals	Reset Type	Power Supply	Cat. No.
Light Curtain or Single Channel (MSR126T)	2 N.O.	None	Fixed	Auto./Manual	24V AC/DC	440R-N23117
Dual Channel 2 N.C. (MSR126.IT)					115V AC	440R-N23116
					230V AC	440R-N23115
					24V AC/DC	440R-N23114
					115V AC	440R-N23113
					230V AC	440R-N23112
Light Curtain or Single Channel (MSR126R)				Monitored Manual	24V AC/DC	440R-N23123
Dual Channel 2 N.C. (MSR126.IR)					115V AC	440R-N23122
					230V AC	440R-N23121
					24V AC/DC	440R-N23120
					115V AC	440R-N23119
					230V AC	440R-N23118

Approximate Dimensions

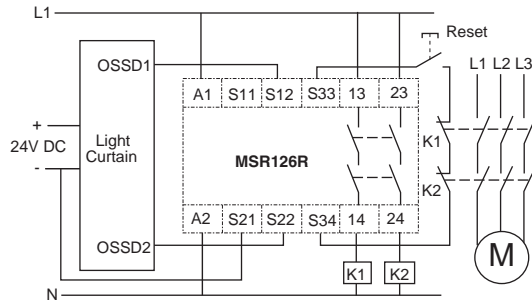
Dimensions are shown in mm (in.). Dimensions are not intended to be used for installation purposes.



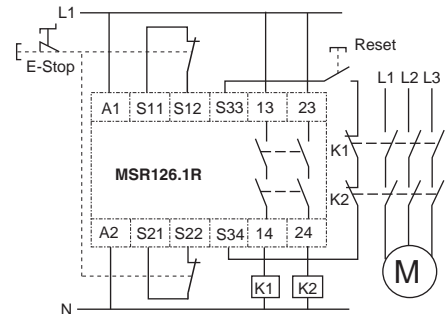
Block Diagram



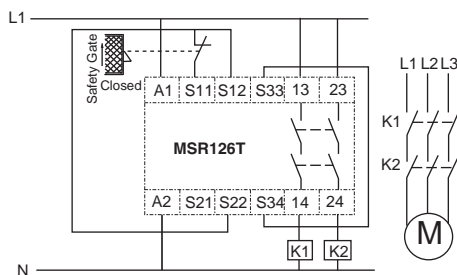
Typical Wiring Diagrams



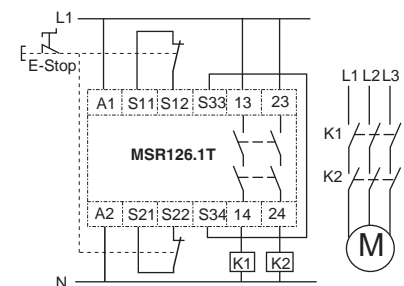
**115/230V Supply, 24V DC Light Curtain,
Monitored Manual Reset, Monitored Output**



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



**Single Channel Safety Gate,
Automatic Reset, No Output Monitoring**



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

Logic

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

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 ★ Note: For up-to-date information, visit http://www.ab.com/Safety/	PFH _D : < 1.45 x 10 ⁻⁹ MTTF _d : > 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	
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 _{th}	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		
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 mm² (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

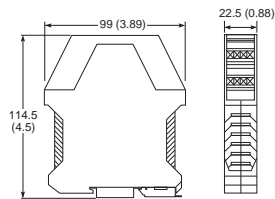
Inputs	Safety Outputs	Auxiliary Outputs	Terminals	Reset Type	Power Supply	Cat. No.
1 N.C., 2 N.C., Light Curtain	3 N.O.	1 N.C.	Fixed	Auto./Manual	24V AC/DC	440R-N23126
				Monitored Manual		440R-N23129
				Auto./Manual	115V AC	440R-N23125
				Monitored Manual		440R-N23128
				Auto./Manual	230V AC	440R-N23124
				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

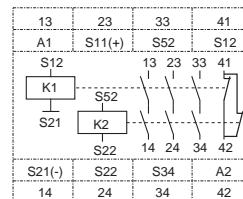
Description	Cat. No.
4 Replacement 4-pin Terminals (screw)	440R-A23209
4 Replacement 4-pin Terminals (spring clamp)	440R-A23228

Approximate Dimensions

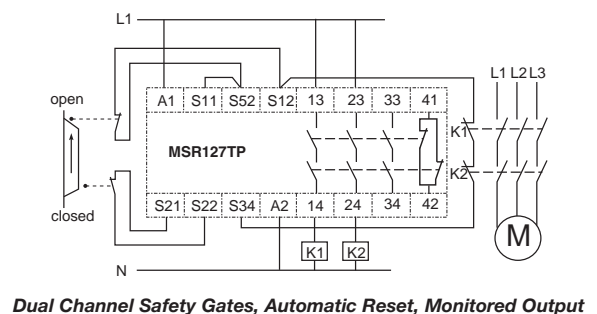
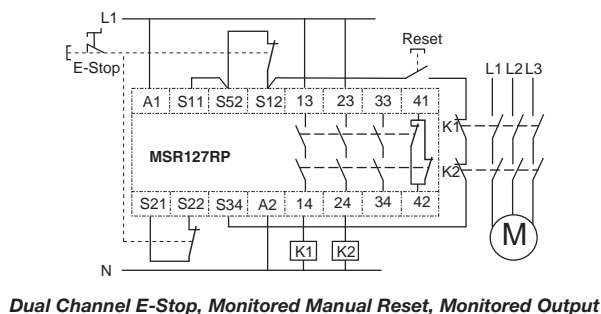
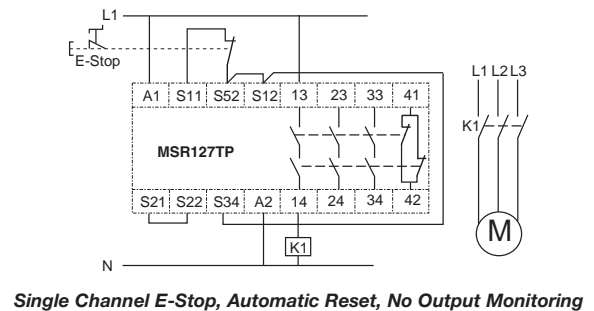
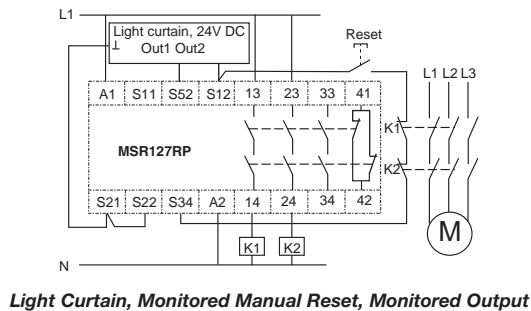
Dimensions are shown in mm (in.). Dimensions are not intended to be used for installation purposes.

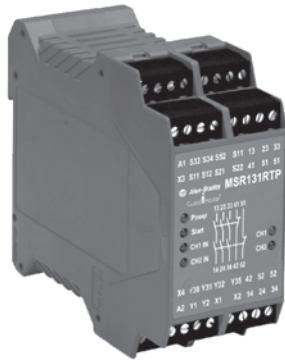


Block Diagram



Typical Wiring Diagrams





Description

The MSR131RTP is a versatile monitoring safety relay. It can be connected in four different input wiring configurations: one normally closed, 2 normally closed, 2 PNP connections from a light curtain, or a four-wire safety mat. When connected in the two normally closed 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 three normally open safety rated outputs, two 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 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
- Three safety contacts
- Two auxiliary contact
- Two solid-state outputs
- Cross fault monitoring
- Monitored or automatic reset
- Removable terminals

LED Indicators

Green	Power
Green	Start
Green	CH1 Input Closed
Green	CH2 Input Closed
Green	CH1 Output Active
Green	CH2 Output Active

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 ★ Note: For up-to-date information, visit http://www.ab.com/Safety/	PFH _D : < 1.67 x 10 ⁻⁹ MTTF _d : > 389 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, BG, and c-Tick	
Power Supply		
Input Power Entry	24V AC/DC, 115V AC or 230V AC	
Power Consumption	4 W	
Inputs		
Safety Inputs	1 N.C., 2 N.C., LC or SM	
Input Simultaneity	Infinite	
Input Resistance, Max.	45 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	2 N.C.; 1 SS PNP inputs closed; 1 SS PNP outputs active; 30V DC/20 mA solid state	
Thermal Current/ <i>I</i> _{th}	1 x 6 A or 3 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		
Resistive: AC-1	6 A/250V AC	
Resistive: DC-1	6 A/24V DC	
Inductive: AC-15	6 A/250V AC	6 A/125V AC
Inductive: DC-13	3 A/24V DC	6 A/24V DC @ 6 ops/min
UL	B300, R300, 1 x 6 A or 2 x 5 A resistive/250V AC, 24V DC	
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	45 mm housing, 35 mm DIN Rail	
Weight [g (lbs)]	24V DC: 320 (0.71) 115/230V AC: 450 (0.99)	
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

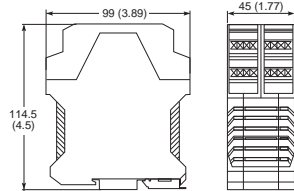
Inputs	Safety Outputs	Auxiliary Outputs	Terminals	Reset Type	Power Supply	Cat. No.	
1 N.C., 2 N.C., Light Curtain, Safety Mat	3 N.O.	2 N.C., 2 PNP Solid State	Removable (Screw)	Auto./Manual or Monitored Manual	24V AC/DC	440R-C23139	
			Removable (Spring Clamp)			440R-C23139S	
			Removable (Screw)		115V AC	440R-C23137	
					230V AC	440R-C23136	

Accessories

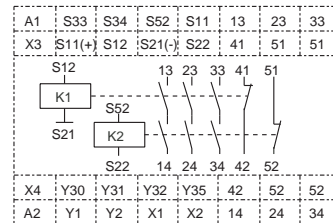
Description	Cat. No.
Bag of 4, 4-Pin Screw Terminal Blocks	440R-A23209
Bag of 4, 4-Pin Spring Clamp Terminal Blocks	440R-A23228

Approximate Dimensions

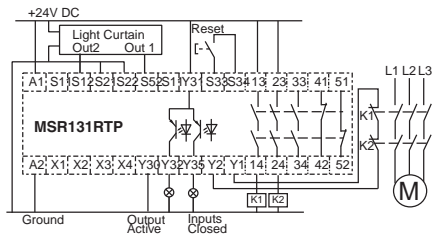
Dimensions are shown in mm (in.). Dimensions are not intended to be used for installation purposes.



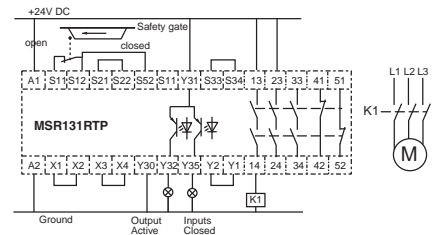
Block Diagram



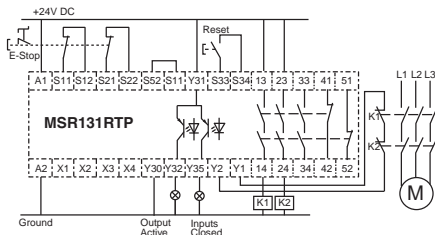
Typical Wiring Diagrams



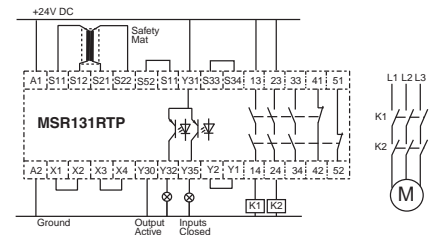
Light Curtain, Monitored Manual Reset, Monitored Output



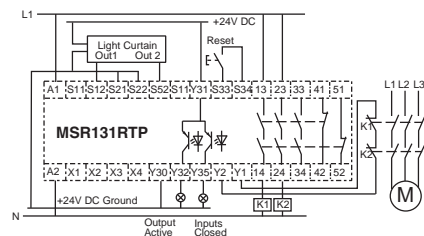
Single Channel Safety Gate, Automatic Reset, No Output Monitoring



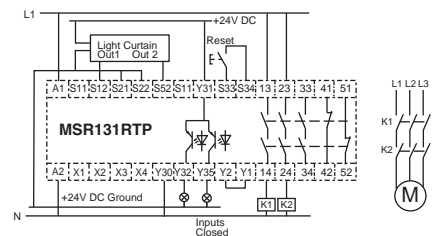
Dual Channel E-Stop, Monitored Manual Reset, Monitored Output



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



Description

The CU4 is an off-delay timing unit which can be operated standalone or as an extension of a host relay. The timed outputs are used in applications where power must be maintained for a fixed duration after an input signal is received. For example, driving a power to lock TLS2-GD2 to maintain a guard door in the locked position for a fixed duration after a stop button is pressed. Another example would be maintaining the connection of a drive to a motor until the braking function is achieved, and then dropping out a contactor to remove power to the motor.

The inputs can be connected in either a single channel or dual channel configuration. The inputs must remain open during the complete timing cycle. Closing the contacts before the timing cycle completes causes the timer to be reset to zero.

The CU4 has a redundant structure with two independent safe timer circuits. The outputs include two normally open safety delayed outputs as well as one normally closed auxiliary output. The safety outputs have independent and redundant internal contacts to support the safety function. When used as an extension of a host relay, the normally closed contacts should be used in the feedback loop of the host relay. If used in standalone application, the normally closed contacts can be used to signal an auxiliary device or PLC.

A typical operation starts with power applied to A1/A2 and the input circuits open.

1. Close the B11/B12 and B21/B22 circuits.
 - a. The safety outputs (17/18 & 27/28) close immediately.
2. Open the B11/B12 or B21/B22 circuits.
 - a. The timing process starts.
 - b. The safety outputs (17/18 & 27/28) open after the time expires.
3. Go to Step 1.

Features

- Category 3 per EN 954-1
- Stop category 1
- Timed off-delay 0.15...30 s
- Two safety contacts
- One auxiliary contact

LED Indicators

Green	Power
Green	CH1 t1 Active
Green	CH2 t2 Active

Specifications

Safety Ratings		
Standards	EN 954-1, ISO 13849-1, IEC/EN 60204-1, IEC 60947-5-1, ANSI B11.19, AS4024.1	
Safety Classification	Cat. 3 per EN 954-1 (ISO 13849-1), SIL CL2 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 : < 2.16 x 10 ⁻⁹ MTTF _D : > 345 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, c-Tick, and BG	
Power Supply		
Input Power Entry	24V AC/DC, 50/60 Hz; 0.85...1.1 x rated voltage	
Power Consumption	2.5 W	
Inputs		
Safety Inputs	1 N.C. or 2 N.C.	
Input Simultaneity	Infinite	
Reset	Automatic	
Response Time	30 ms	
Outputs		
Safety Contacts	2 N.O.	
Auxiliary Contacts	1 N.C.	
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)	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		
AC-15	5 A @ 250V AC	5 A @ 125V AC
DC-13	3 A/24V DC	
UL:	B300, 5 A/250V AC, 24V DC	
Environmental and Physical Characteristics		
Enclosure Type Rating/ Terminal Protection	IP40, DIN 0470/ 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)]	165 (0.36)	
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:

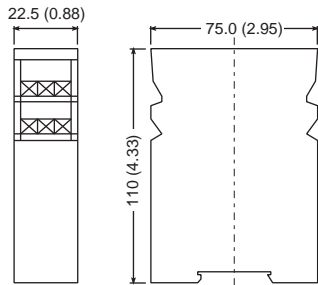
- Mission time/Proof test interval of 20 years
- Functional test at least once within six-month period

Product Selection

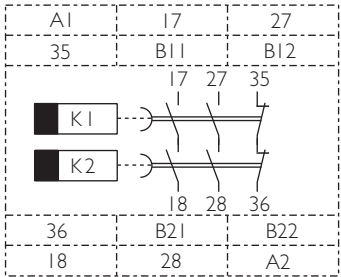
Inputs	Safety Outputs	Auxiliary Outputs	Time Range	Reset Type	Power Supply	Cat. No.
1 N.C. or 2 N.C.	2 N.O.	1 N.C.	0.15...3s	Automatic	24V AC/DC, 50/60 Hz 0.85...1.1 x rated voltage	440R-S23173
			0.5...10s			440R-S23174
			1.5...30s			440R-S23175

Approximate Dimensions

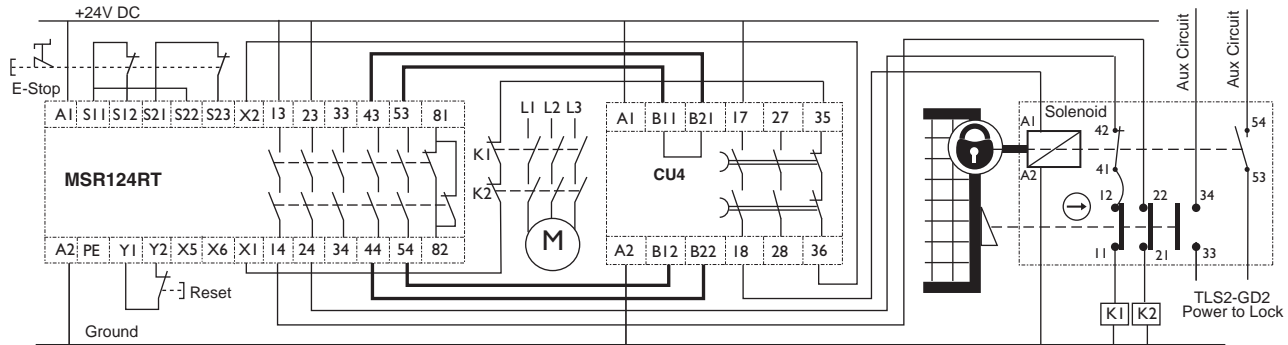
Dimensions are shown in mm (in.). Dimensions are not intended to be used for installation purposes.



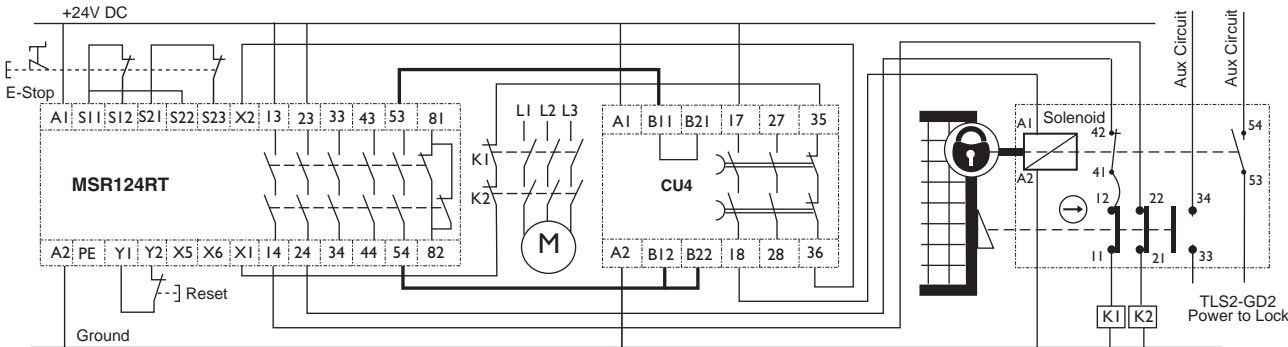
Block Diagram



Typical Wiring Diagrams



Dual Channel Wiring to CU4 Inputs



Single Channel Wiring to CU4 Inputs

Single-Function Safety Relays with Delayed Outputs

MSR138DP



Description

The MSR138DP can be connected in 3 different input wiring configurations: 1 normally closed, 2 normally closed, or 2 OSSD. When connected in the two normally closed fashion, the MSR138DP checks for cross faults across the two inputs. When connected to light curtains, the light curtain must perform the cross-fault detection.

The MSR138DP 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 MSR138DP 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 MSR138DP checks the output monitoring circuit through the manual application of the reset switch. The unit cannot be reset until the timing function has completed.

The outputs of the MSR138DP include two normally open immediate safety outputs and three normally open delayed safety outputs. The outputs of the MSR138.1DP include two normally open immediate safety rated outputs, two normally open delayed safety outputs and one normally closed delayed safety output. The safety outputs have independent and redundant internal contacts to support the safety function. If a reset request is made during the time cycle, it will cause a lockout condition. Cycle inputs after timing has completed and reset after the delay time has expired to clear lockout. Connecting contacts 55-56 of the MSR138.1DP in series to Y1-Y2 can avoid this lockout.

A normally closed timer reset switch can be added to force the delayed contacts open prior to the completion of the timing cycle.

Features

- Category 4/3 per EN 954-1
- Stop category 0 and 1
- Light curtain, E-stop, safety gate inputs
- Two immediate safety outputs
- Delayed outputs: 3 N.O. safety or 2 N.C. safety and 1 N.C. aux.
- Cross fault monitoring
- Monitored or automatic reset
- Removable terminals

LED Indicators

Green	Power—Illuminates when power on
Green	Start—Illuminates when S33-S34 is closed
Green	CH1 IN—Illuminates when channel 1 input is closed
Green	CH2 IN—Illuminates when channel 2 input is closed
Green	CH1—Illuminates when K1 is closed
Green	CH2—Illuminates when K2 is closed
Green	CHT1—Illuminates during timing period
Green	CHT2—Illuminates during timing period

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 ★ Note: For up-to-date information, visit http://www.ab.com/Safety/	PFH _D : < 2.38 x 10 ⁻⁹ MTTF _d : > 195 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, c-Tick, and TÜV	
Power Supply		
Input Power Entry	24V AC/DC, 115V AC or 230V AC	
Power Consumption	4 W	
Inputs		
Safety Inputs	1 N.C., 2 N.C. or LC	
Input Simultaneity	Infinite	
Input Resistance, Max.	135 Ω	
Reset	Auto./Manual or Monitored Manual	
Power On Delay/ Recovery Time	1 second/100 ms	
Response Time	15 ms	
Outputs		
Safety Contacts	2 N.O.	
Auxiliary Contacts	Delayed 3/2 N.O.	
Thermal Current/I _{th}	5 x 2.5 A or 3 x 3.5 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 cycles	
Utilization Category		
Resistive: AC-1	7 A@ 250V AC	
Resistive: DC-1	7 A/24V DC	
Inductive: AC-15	6 A@ 250V AC	6 A @ 125V AC
Inductive: DC-13	3 A/24V DC	6 A/24V DC @ 6 ops/min
UL	B300, 5 A/250V AC, 24V DC	
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: 350 (0.77); 115/230V AC: 490 (1.08)	
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

Single-Function Safety Relays with Delayed Outputs

MSR138DP

Logic

Product Selection

Inputs	Safety Outputs	Delayed Safety Outputs	Delayed Auxiliary Outputs	Time Delay	Terminals	Reset Type	Power Supply	Cat. No.
1 N.C., 2 N.C., Light Curtain	2 N.O.*	3 N.O.* (MSR138DP)	—	1.0 seconds, fixed	Removable	Auto./Manual or Monitored Manual	115V AC	440R-M23080
				0.15...3 s	Spring Clamp		24V AC/DC	440R-M23143 440R-M23143S
				0.15...3 seconds	Removable		115V AC	440R-M23141
				0.5...10 s	Spring Clamp		230V AC	440R-M23140
				0.5...10 seconds	Removable		24V AC/DC	440R-M23147 440R-M23147S
				1.5...30 seconds			115V AC	440R-M23145
		2 N.O.* (MSR138.1DP)	1 N.C.	0.15...3 seconds			230V AC	440R-M23144
				0.5...10 seconds			24V AC/DC	440R-M23151
				1.5...30 seconds			115V AC	440R-M23149
				0.15...3 seconds	230V AC		440R-M23148	
				0.5...10 seconds	24V AC/DC		440R-M23084	
				1.5...30 seconds	115V AC		440R-M23082	
				0.15...3 seconds	230V AC		440R-M23081	
				0.5...10 seconds	24V AC/DC		440R-M23088	
	1.5...30 seconds	115V AC	440R-M23086					
	0.15...3 seconds	230V AC	440R-M23085					
	0.5...10 seconds	24V AC/DC	440R-M23092					
	1.5...30 seconds	115V AC	440R-M23090					
	0.15...3 seconds	230V AC	440R-M23089					

* Instantaneous safety outputs Cat. 4

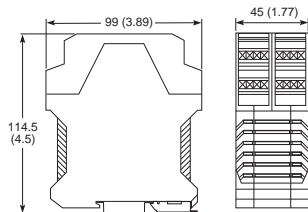
* Delayed safety outputs are Cat. 3

Accessories

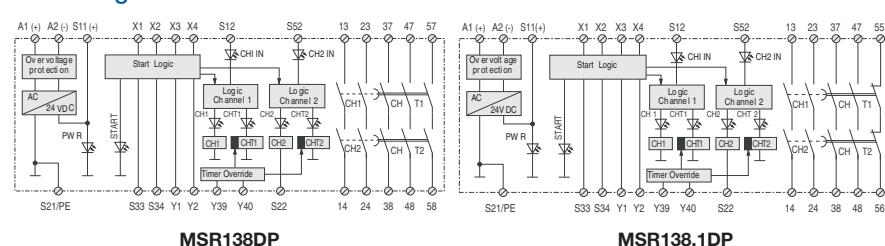
Description	Cat. No.
Bag of 4, 4-Pin Screw Terminal Blocks	440R-A23209
Bag of 4, 4-Pin Spring Clamp Terminal Blocks	440R-A23228

Approximate Dimensions

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



Block Diagram

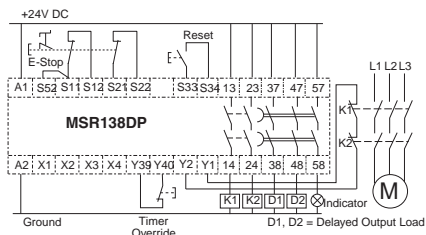


MSR138DP

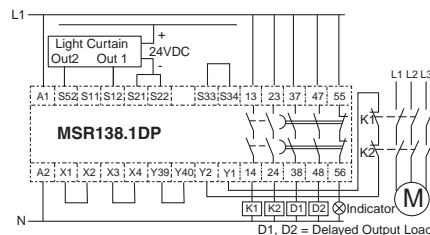
MSR138.1DP

In applications with 24V AC supply: terminal S21 must not be connected to PE.

Typical Wiring Diagrams



24V DC Supply Dual Channel E-Stop,
Monitored Manual Reset, Monitored Output



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