

Safety Relays

Monitoring Safety Relays with Delayed Outputs

Minotaur MSR38D/DP



Housing with removable terminals shown.



Description

The Minotaur MSR38D/DP is a microprocessor-based, monitoring safety relay, with delayed, safety-rated, solid state outputs.

The inputs of the MSR38D/DP are the same as the MSR30. They can be connected to gate interlocks, e-stop devices or 4-wire safety mats. The gate interlocks and e-stops can be either single channel or dual channel normally-closed circuits.

The reset capability of the MSR38D/DP allows it to set up for manual or automatic start and restart.

The outputs include two delayed normally-open safety rated outputs that can be connected to loads up to 2A at 24V DC. These outputs can be used to send a safety stop signal to a machine or manufacturing system. The delay is accomplished by the configuration of jumpers on the terminals. The delay can be easily adjusted by reconfiguring the jumpers.

The MSR38D/DP also has one solid state normally-closed auxiliary output, which must only be used to indicate the status of the MSR38D/DP. The auxiliary output responds immediately to the change in input status; it is not delayed.

Features

- Cat. 4 per EN954-1
- Stop Category 0 or 1
- 2 Delayed Solid State Safety Outputs
- 1 Solid State Auxiliary Output
- 1 N.C., 2 N.C. or Safety Mat Input
- Monitored Manual or Automatic/Manual Reset

Specifications

Standards	EN954-1, ISO13849-1, IEC/EN60204-1, ANSI B11.19, AS4024.1
Safety Category	Cat. 4 per EN954-1 (ISO13849-1)
Approvals	CE for all applicable directives, C-Tick, cULus, TUV
Power Supply	24V DC SELV
Power Consumption	3W
Safety Inputs	1 N.C.
Max. Allowable Input Resistance	200 ohms
Outputs	2 N. O. Safety, 1 N.C. Aux,
Output Rating Safety	2A @ 24V DC
Auxiliary	50mA @ 24V DC
Fuses, Output External	6A slow blow or 10A quick blow
Power On Delay	3s
Response Time	15ms
Recovery Time	20ms
Indication LEDs	Green = Power (Pwr) Green = K1 Closed Green = K2 Closed
Pwr LED 3s Blink	Initialization
Diagnostics Constant	Normal operation
2 Blinks	Config. change during operation
4 Blinks	Solid state output switch fault
Continuous Blinking	Internal Fault
Operating Temperature	-5°C to +55°C (+14° to +131°F)
Humidity	90% RH
Enclosure Protection	IP40 (NEMA 1), DIN 0470
Terminal Protection	IP20, DIN 0470
Pollution Degree	2
Conductor Size	0.2 – 2.5mm ² (24 – 14AWG)
Mounting	35mm DIN rail
Weight	130g (0.287 lbs)
Vibration	10-55Hz, 0.35mm
Shock	10g, 16ms, 100 shocks

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

Wiring Terminations

S11 & S21	Pulse train output
S12 & S22	Input contacts
A1 – S34	Reset switch
S11 – S34	Automatic reset, start-up test disabled
S21 – S34	Automatic reset, start-up test enabled
A1 – Y2	Monitoring circuit
A1 – Y41	Cross-fault monitoring disabled

Safety Relays

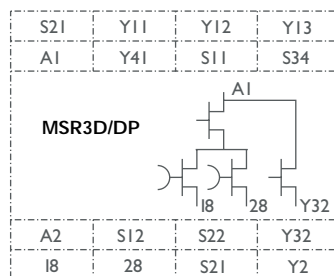
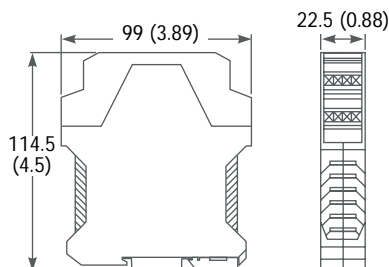
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Product Selection

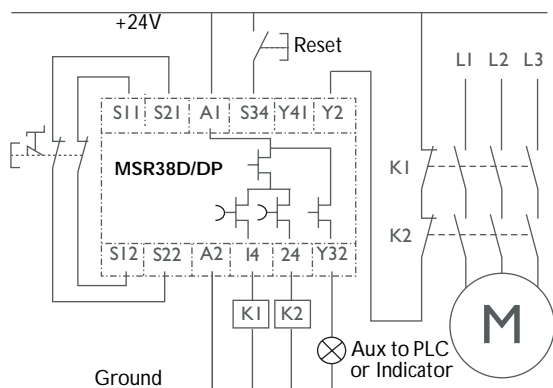
Inputs	Safety Outputs	Auxiliary Outputs	Terminals	Catalogue Number
1 N.C., 2 N.C., or Safety Mat	2 N.O. Solid state	1 N.C. Solid state	Fixed	440R-M23203
			Removable	440R-M23204

Dimensions—mm (inches) Block Diagram

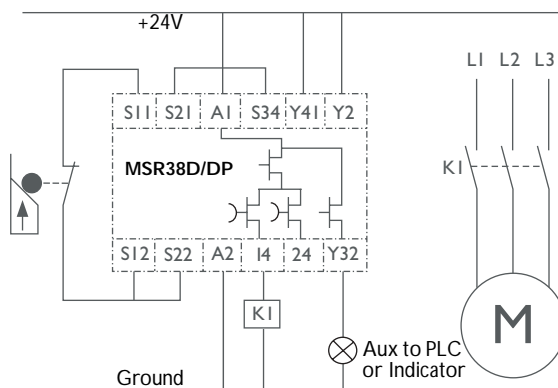


Typical Wiring Diagrams

See MSR30 (page 4-26) for additional input wiring configurations.



Dual Channel E-Stop, Dual Channel Delayed Outputs, Monitored Manual Reset, Output Monitoring



Single Channel Gate Interlock, Single Channel Delayed Output, Automatic Reset, No Output Monitoring

Application Details (Typical)

Apply jumpers (links) on the terminals identified to achieve the desired off delay.

Delay (s)	Y11	Y12	Y13	Delay (s)	Y11	Y12	Y13	Delay (s)	Y11	Y12	Y13
0	—	—	—	8	S21	S11	—	50	—	S21	S21
0.5	S11	—	—	10	—	S11	S21	60	S11	S11	S11
1	—	S11	—	12	S21	—	S11	80	S11	S11	S21
1.5	—	—	S11	15	—	S21	S11	100	S11	S21	S11
2	S21	—	—	18	S11	S11	—	120	S11	S21	S21
3	—	S21	—	21	S11	—	S11	160	S21	S11	S11
4	—	—	S21	26	—	S11	S11	200	S21	S11	S21
5	S11	S21	—	30	S21	S21	—	250	S21	S21	S11
6	S11	—	S21	40	S21	—	S21	300	S21	S21	S21