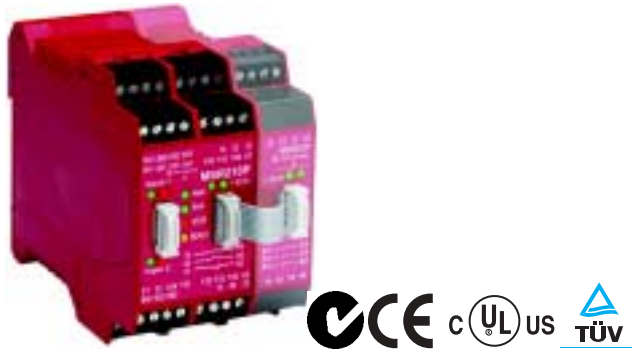


Safety Relays

Modular Monitoring Safety Relays

Minotaur MSR210P



Description

The MSR210P forms one of the base units for the modular Minotaur MSR200 family of monitoring safety relays. It can be combined with other modules of the MSR200 Series to configure a safety control system with numbers of inputs and outputs matching users' specific application requirements, as well as diagnostic and networking capabilities. Up to 10 input modules and 2 output modules can be connected to one base unit by simply removing the terminator, included with each base unit, and connecting the ribbon cables of the neighboring module. The terminators must be inserted into the final input and output modules.

The MSR210P has two inputs. Each input can be wired in one of four ways: 1 N.C., 2 N.C., 3 N.C., 1 N.C. & 1 N.O., or safety mat connections. The MSR210P uses pulsed input monitoring to check for faults to power, ground or between inputs before a demand is placed on the safety system. Connecting a single device (must be at least dual channel) to each input meets the requirements of category 4 per EN 954-1.

The MSR210P has the capability to perform external device monitoring (EDM). The EDM capability works in conjunction with the Reset option. The user selects EDM and the reset function by jumpers across terminals Y40, Y41 and Y42.

The MSR210P has two semiconductor outputs designed to send status information to a PLC. Terminal Y33 indicates the inputs are closed (the Ready LED is on). Terminal Y32 indicates the outputs are active.

The outputs include 2 normally open safety rated outputs and 1 normally closed auxiliary output. The safety outputs have independent and redundant internal contacts to help ensure the safety function.

Features

- Category 4 per EN 954-1
- Stop category 0
- Pulsed input monitoring
- 2 Input circuits: gate, E-Stop or safety mat
- 2 Safety outputs, 1 auxiliary output
- 2 Solid state outputs
- 10 Diagnostic LEDs
- 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
Approvals	C-Tick, CE marked for all applicable directives, cULUS & TÜV

Category	Cat. 4 per EN954-1 (ISO13849-1)
Power Supply	24V DC; 0.8 to 1.1 x rated voltage
Power Consumption	8W
Safety Inputs	1 N.C., 2 N.C., 3 N.C./Safety Mat
Input Simultaneity	Infinite
Max. Input Resistance Inputs Reset	1300ohms 3200ohms
Reset	Monitored Man. or Auto./Man.
Outputs	2 N.O. Safety; 1 N.O. Auxiliary 1 SS PNP Inputs Closed 1 SS PNP Outputs Active
① Output Utilization per IEC60947-5-1 (Inductive)	B300, AC-15 3A/250V AC, 3A/125VAC P300, DC-13: 2.5A/24V DC
Thermal Current (non switching)	1x6A, 2x4A
Output, Solid State	20mA @ 30V DC
Fuses Output (external)	6A Slow Blow or 10A Quick Blow
Min. Switched Current/Voltage	10mA/10V DC
Contact Material	AgSnO ₂ + 2mAu
Ribbon Cable Contacts	Gold plated
Power On Delay	3s
Response Time MSR210 MSR210 + Input Exp. Mod.	29ms 34ms + 6ms/module
Recovery Time	40-145 ms, depending on expansion modules used
Indication LEDs	Green = Input 1 Closed Red = Input 1 Open Green = Input 2 Closed Red = Input 2 Open Green = CH1 Output Active Green = CH2 Output Active Green = Power Green = Run (Outputs Active) Red = Stop (Outputs Off) + Diag. Amber = Ready (Inputs closed)
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
Short Circuit Protection	Inputs; SS Outputs
Conductor Size	0.2–4mm ² (24–12 AWG)
Torque Settings—term. screws	0.4–0.5 Nm (3.54–4.43lb ² in)
Case Material	Polyamide PA 6.6
Mounting	35mm DIN rail
Weight	280g (0.62lbs)
Electrical Life (w/Surge Supp.)	250VAC/6A/1250VA cosφ=1 100,000 operations 250VAC/2A/500VA cosφ=1 500,000 operations 250VAC/4A/1000VA cosφ=0.35 300,000 operations 250V AC/1.5A/1000VA cosφ=0.6 100,000 operations 24V DC/2A/48W 1,000,000 operations 10V DC/0.01A/0.1W 2,000,000 operations
Mechanical Life	2,000,000 cycles
Vibration	10-55 Hz, 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

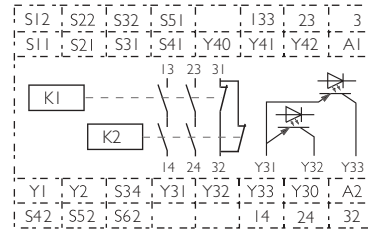
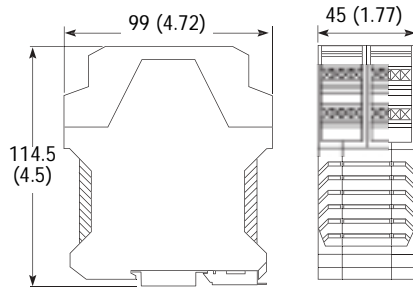
Modular Monitoring Safety Relays

Minotaur MSR210P

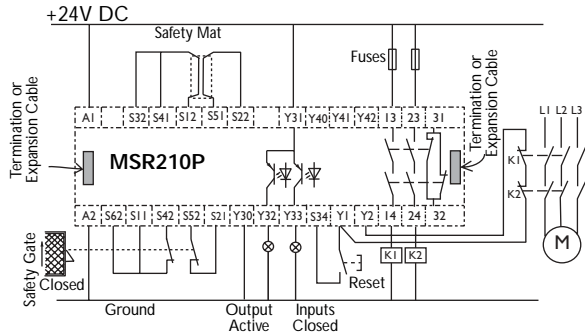
Product Selection

Inputs	Safety Outputs	Auxiliary Outputs	Solid State Outputs	Power Supply	Catalogue Number
1 N.C. or 2 N.C. or 3 N.C. or Safety Mat	2 N.O.	1 N.C.	2 PNP	24V DC	440R-H23176

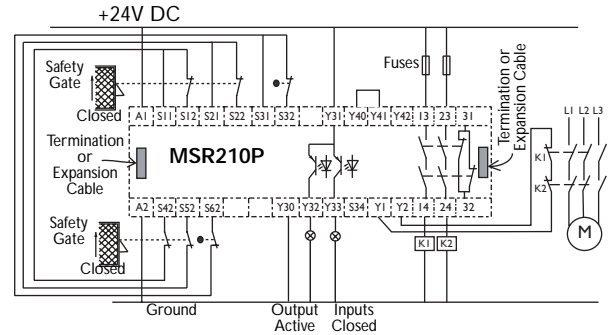
Dimensions—mm (inches) Block Diagram



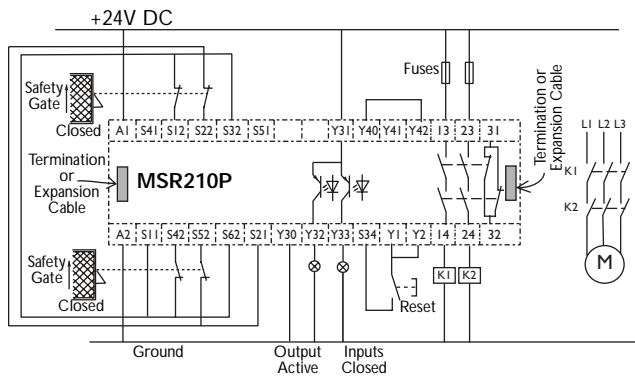
Typical Wiring Diagrams



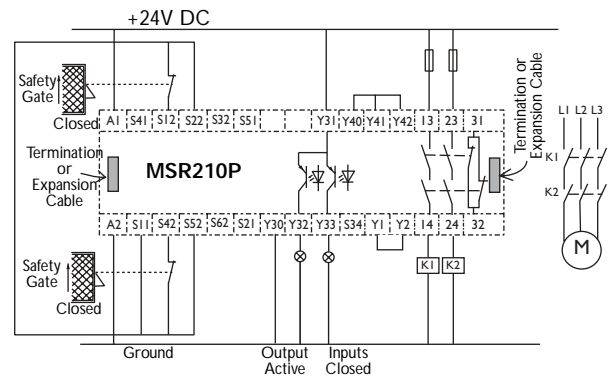
Safety Mat and Dual Channel Safety Gate, Monitored Manual Reset, Monitored Output



Two Triple Channel Inputs, Automatic Reset, Monitored Output



Two Dual Channel Safety Gates, Monitored Manual Reset, No Monitored Output



Two Single Channel Safety Gates, Automatic Reset, No Monitored Output

Diagnostics – Red Stop LED blinks

Blink Rate	Description
2	Change in Y40/Y41/Y42 circuit during operation.
3	Fault in external feedback circuit Y1-Y2. Clear fault and cycle power to reset the module.
Continuous	Internal fault in base or expansion module