

## Safety Relays

# Modular Monitoring Safety Relays

## Minotaur MSR211P



### Description

The MSR211P 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 MSR211P has two inputs. Each input can be wired in one of three ways: 1N.C., 2 N.C., or 2 PNP connections from a light curtain. The MSR211P does not perform cross fault monitoring, and would not detect a short across the inputs of a 2 N.C. input. When connected to light curtains, the light curtain must perform the cross fault detection.

The MSR211P 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 MSR211P 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
- 2 Input circuits: light curtain, gate, or E-Stop inputs
- 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 & TUV

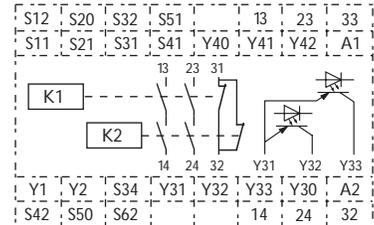
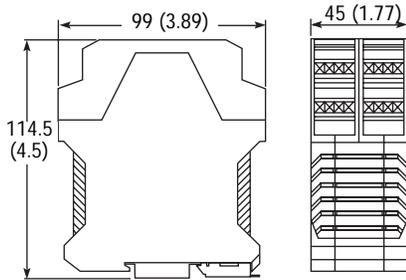
Category	Cat. 4 per EN954-1 (ISO13849-1)
Power Supply	24V DC; 0.8 to 1.1 x rated voltage
Power Consumption	8W
Safety Inputs	1 N.C., 2 N.C., light curtain
Input Simultaneity	Infinite
Max. Input Resistance Inputs Reset	1300ohms 3200ohms
Reset	Monitored Man. or Auto./Man.
Outputs	2 N.O. safety; 1 N.C. auxiliary 1 SS PNP Inputs Closed 1 SS PNP Outputs Active
Output Utilization per IEC 60947-4-1 (Resistive)	AC-1: 6A/250V AC DC-1: 6A/24V DC
Output Utilization per IEC 60947-5-1 (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 <sub>2</sub> with 2 micron gold plating
Ribbon Cable Contacts	Gold plated
Power On Delay	3s
Response Time MSR211 MSR211+ MSR221	25ms 30ms+2.4ms per MSR221
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) + diagnostics 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	Input; SS outputs
Conductor Size	0.2-4mm <sup>2</sup> (24-12 AWG)
Torque Settings—term. screws	0.4-0.5 Nm (3.54-4.43lb-in)
Case Material	Polyamide PA 6.6
Mounting	35mm DIN rail
Weight	280g (0.62lbs)
Electrical Life	222V AC/4A/880VA cosφ=0.35 220V AC/1.7A/375VA cosφ=0.6 30V DC/2A/60W 10V DC/0.01A/0.1W
Mechanical Life	2,000,000 cycles
Vibration	10-55 Hz, 0.35mm
Shock	10g, 16ms, 100 shocks

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

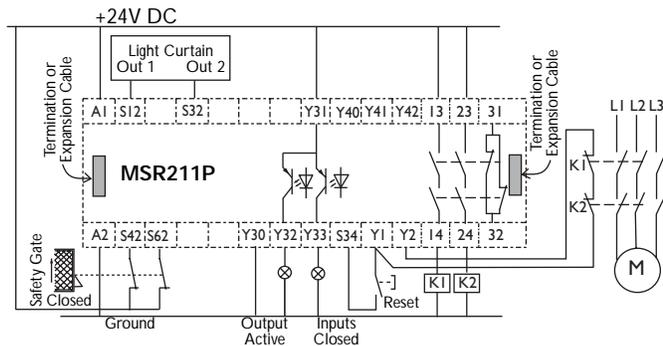
**Product Selection**

Inputs	Safety Outputs	Auxiliary Outputs	Solid State Outputs	Power Supply	Catalogue Number
Two Inputs 1 N.C. or 2 N.C. or Light Curtain	2 N.O.	1 N.C.	2	24V DC	440R-H23177

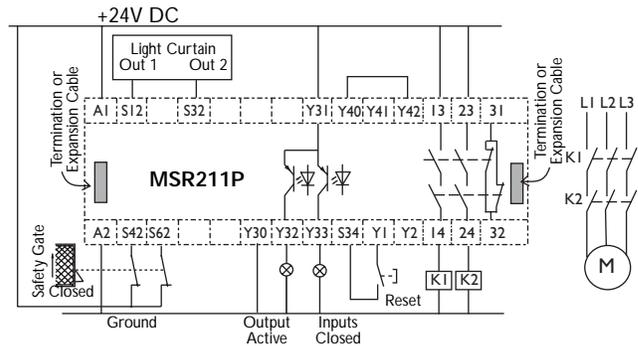
**Dimensions—mm (inches) Block Diagram**



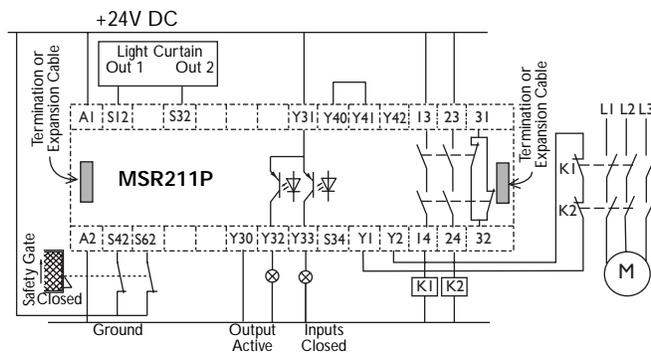
**Typical Wiring Diagrams**



*Light Curtain and Dual Channel Safety Gate,  
Monitored Manual Reset, Monitored Output*



*Light Curtain and Single Channel Safety Gate,  
Monitored Manual Reset, No Monitoring Output*



*Light Curtain and Dual Channel Safety Gate,  
Automatic Reset, 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