

# Safety Relays

## Monitoring Safety Relays

### Minotaur MSR18T



### Description

The Minotaur MSR18T is a monitoring safety relay unit with dual channel input, 5 safety outputs and 2 auxiliary outputs. It is designed for operation as E-Stop, safety gate applications, and 2-hand control applications.

The MSR18T is a versatile unit with extensive diagnostics. It can be used with E-Stop buttons, gate interlocks, two-hand controls as well as expansion relays when additional inputs are needed.

When used in a suitably configured circuit, the MSR18T provides additional safety rated output circuits with checking and monitoring of its status. Safety critical faults or power failures will cause them to initiate a lock-out to a safe state.

### Features

- Category 4 per EN 954-1
- Stop category 0
- 24V AC/DC and 110V AC or 240V AC
- Dual channel inputs
- 5 N.O. safety outputs
- 2 N.C. auxiliary outputs
- E-Stop and gate applications
- 2-hand control applications
- 5 LEDs for comprehensive diagnostics

### Specifications

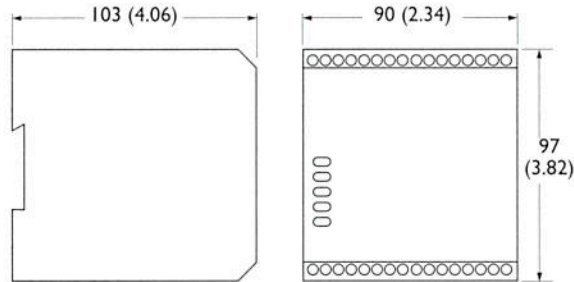
|                                                    |                                                                                                 |                                                                                              |
|----------------------------------------------------|-------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| Standards                                          | EN 954-1, ISO 13849-1, IEC/EN 60204-1, IEC 60947-5-1, ANSI B11.19, AS4024.1, EN 574             |                                                                                              |
| Category                                           | Cat. 4 per EN 954-1 (ISO 13849-1)                                                               |                                                                                              |
| Approvals                                          | CE marked for all applicable directives, cULus & TÜV                                            |                                                                                              |
| Power Supply                                       | AZ1 and AZ2<br>AZ1<br>AZ2                                                                       | 24V AC/DC -20%, +10%<br>120V AC -15%, +10%<br>240V AC -15%, +10%                             |
| Power Consump.                                     | 24V AC/DC<br>120V and 240V AC                                                                   | 3.6W<br>6.1VA, 5.7W                                                                          |
| Safety Inputs                                      |                                                                                                 | 1 N.C. or 1 N.C. & 1 N.O. or 2 N.C.                                                          |
| Input Simultaneity                                 |                                                                                                 | 0.5 seconds                                                                                  |
| Maximum Input Resistance                           |                                                                                                 | 100Ω                                                                                         |
| Reset                                              |                                                                                                 | Automatic/Man. or Monitored Man.                                                             |
| Outputs                                            |                                                                                                 | 5 N.O. Safety; 2 N.C. Auxiliary                                                              |
| ① Output Utilization per IEC 60947-5-1 (Inductive) |                                                                                                 | C300 AC-15<br>0.75A/250V AC, 1.5A/120V AC<br>Q300 DC-13<br>2A/24V DC                         |
| Thermal Current (non switching)                    |                                                                                                 | 1 x 8A, 2 x 7A, 3 x 5.5A, 4 x 5A, 5 x 4.5A                                                   |
| Fuses                                              | Input (internal elect.)<br>Output (external)                                                    | 20s reset time<br>1.6 slow blow                                                              |
| Min. Switched Current/Voltage                      |                                                                                                 | 24V AC/DC, 20mA                                                                              |
| Maximum Dropout Time                               |                                                                                                 | 20ms                                                                                         |
| Indication LEDs                                    |                                                                                                 | Red = Input Short<br>Green = Power<br>Green = Run<br>Red = Input Fault<br>Red = Output Fault |
| Impulse Withstand Voltage                          |                                                                                                 | 3000V                                                                                        |
| Installation Group                                 |                                                                                                 | C in accordance with VDE 0110                                                                |
| Pollution Degree                                   |                                                                                                 | 2                                                                                            |
| Operating Temperature                              |                                                                                                 | -25°C to +55°C (-13°F to +131°F)                                                             |
| Humidity                                           |                                                                                                 | 95% RH                                                                                       |
| Enclosure Protection                               |                                                                                                 | IP40, (NEMA 1), DIN 0470                                                                     |
| Terminal Protection                                |                                                                                                 | IP20, DIN 0470                                                                               |
| Conductor Size                                     |                                                                                                 | 1 x 2.5mm <sup>2</sup> (14AWG)                                                               |
| Torque Settings—term. screws                       |                                                                                                 | 0.8N·m (7lb·in)                                                                              |
| Case Material                                      |                                                                                                 | Red Polyester PBT                                                                            |
| Mounting                                           |                                                                                                 | 35mm DIN rail                                                                                |
| Weight                                             |                                                                                                 | 395g (0.87lbs)                                                                               |
| Electrical Life                                    | 222V AC/4A/880VA cosφ=0.35<br>220V AC/1.7A/375VA cosφ=0.6<br>30V DC/2A/60W<br>10V DC/0.01A/0.1W | 100,000 operations<br>500,000 operations<br>1,000,000 operations<br>2,000,000 operations     |
| Mechanical Life                                    |                                                                                                 | 5,000,000 operations                                                                         |
| Vibration                                          |                                                                                                 | 0.75mm (0.30in) peak, 10-55Hz                                                                |
| Shock                                              |                                                                                                 | 5g, 11ms half sine                                                                           |

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

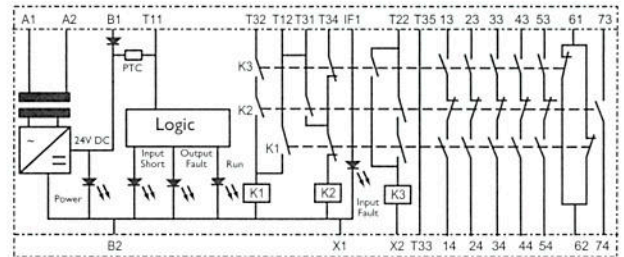
**Product Selection**

| Inputs                                 | Safety Outputs | Auxiliary Output | Power Supply          | Catalogue Number      |
|----------------------------------------|----------------|------------------|-----------------------|-----------------------|
| 1 N.C. or 1 N.C. & 1 N.O.<br>or 2 N.C. | 5 N.O.         | 2 N.C.           | 24V AC/DC and 120V AC | <b>440R-ZBR520AZ1</b> |
|                                        |                |                  | 24V AC/DC and 240V AC | <b>440R-ZBR520AZ2</b> |

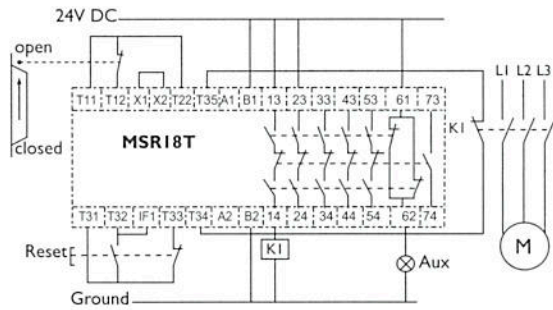
**Dimensions—mm [inches]**



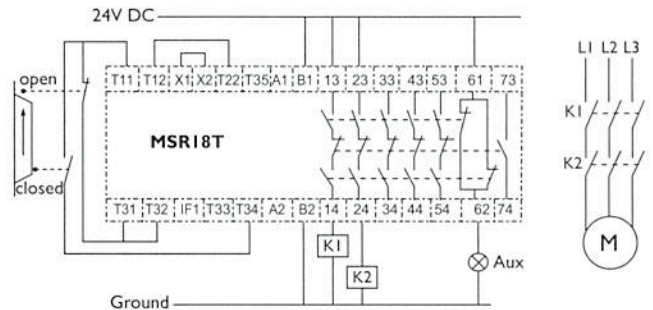
**Block Diagram**



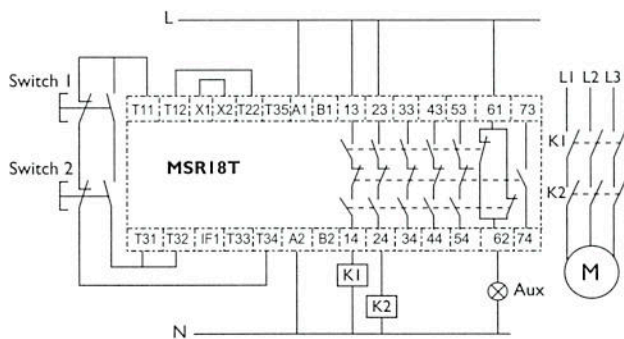
**Typical Wiring Diagrams**



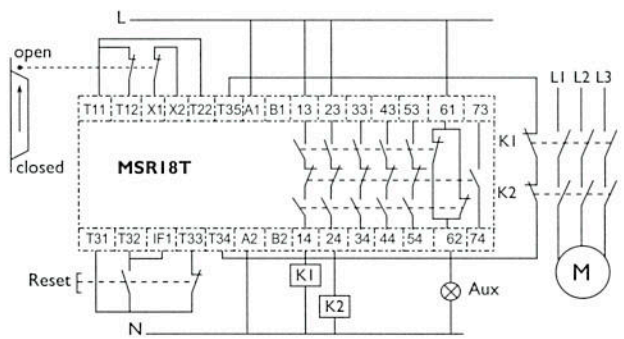
*Single-Channel Input, Monitored Manual Reset,  
 Single-Channel Output, Monitored Output*



*Dual-Channel Input 1 N.O. & 1 N.C., Automatic Reset,  
 Dual-Channel Output, No Monitored Output*



*Two-Hand Control, Automatic Reset,  
 Dual-Channel Output, No Monitored Output*



*Dual-Channel Input (2 N.C.), Monitored Manual  
 Reset, Dual-Channel Output, Monitored Output*

**4-Safety Relays**