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Installation Instructions

Original Instructions

Allen-Bradley by ROCKWELL AUTOMATION

Guardmaster®

Minotaur MSR132E/ED Monitoring Safety Relay

Catalog Number 440R-E23159, 440R-E23160, 440R-E23161, 440R-E23162, 440R-E23191, 440R-E23192, 440R-E23193, 440R-E23194, 440R-E23195, 440R-E23097, 440R-E23098

Summary of Changes

This publication contains the following new or updated information. This list includes substantive updates only and is not intended to reflect all changes.

Topic	Page
Updated Declaration of Conformity	4

Introduction

This device is intended to be part of the safety-related control system of a machine.

IMPORTANT Before installation, perform a risk assessment to determine whether the specifications of this device are suitable for all foreseeable operational and environmental characteristics of the machine to which it is to be fitted. At regular intervals during the life of the machine, check whether the characteristics foreseen remain valid.

WARNING: Danger of serious injuries. Misuse can result in malfunction.
- Only authorized and trained personnel can start up, assemble, or retrofit the device.
- Installation must be in accordance with the following steps.

WARNING: Danger of serious injuries.
Incorrect installation or manipulation can result in serious injuries. Do not defeat, tamper, remove, or bypass this unit.

ATTENTION: If any malfunction or damage is present, do not attempt to repair. Replace the unit before machine operation is allowed. Do not dismantle the unit.

Rockwell Automation does not accept responsibility for the failure of this device if you do not implement the procedures that are given in this publication, or if you use the unit outside the recommended specifications that are listed in this publication.

IMPORTANT The safety inputs of these products are described as normally closed (N.C.), that is, with the guard closed, the actuator in place (where relevant), and the machine able to start. You must prevent exposure to shock and/or vibration in excess of those specifications in IEC 60068 part: 2-6/7. Adherence to the recommended inspection and maintenance instructions forms part of the warranty.

IMPORTANT All information complies with the state of this publication and is subject to change without notice.

Description

If both internal relays activate, the safety output contacts close. The two status indicators in the front indicate the status of the relays. The N.C. contact X1-X2 must connect to the feedback loop of the control unit to monitor the safe function or the MSR132E/ED. The off-delay versions of MSR132ED are active until the fixed delay time runs down. All MSR series safety relays can connect to the contact module MSR132E/ED. The use of single or dual-channel activation depends on the level of safety that is required for the control unit. The off-delay versions are only available for DC supply and are limited to Cat 3 applications. Available time ranges 0.5 s/1 s/2 s/3 s. Versions with removable terminals end with P.

Pay attention to Wiring Examples on page 3.

Rockwell Automation

Specifications

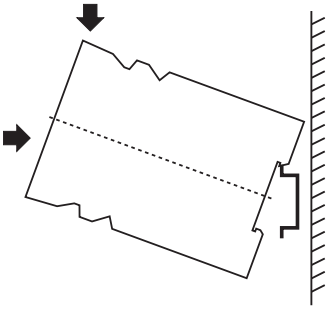
Attribute	MSR132E	MSR132ED
Functional safety data	According to ISO 13849-1: • PLe, Cat. 4 • $MTTF_d$ [a]: 452 • DC average: 99%	According to ISO 13849-1: • PLd, Cat. 3 • $MTTF_d$ [a]: 452 • DC average: 99%
	According to IEC 62061 and IEC 61508: • SIL 3 • PFH [1/h]: 234E-10 • HFT: 1 • DC: 99%	According to IEC 62061 and IEC 61508: • SIL 2 • PFH [1/h]: 234E-10 • HFT: 1 • DC: 99%
	• TM (PTI) [a]: 20 • dop [d]/hop [h] (1): 365/24 • tcycle [h]/[s] (2): 8/28,800	
Power supply	24V AC/DC (delay types only DC) 0.85...1.1 x rated voltage 50/60 Hz	
Power consumption	3 W	
Input simultaneity	Infinite	
Allowable input resistance, max	160 Ω	
Outputs	4 N.O. safety, 2 N.C. auxiliary, 1 N.C. monitoring	
Output rating	• UL: B300, R300 6 A/250V AC, 3 A/24V DC • AC-15: 6 A/250V AC • DC-13: 3 A/24 V DC	
Fuses output (external)	6 A slow blow or 10 A quick blow	
Switched current/voltage, min	10 mA/10V	
Contact material	$AgSnO_2$ + 0.5µAu	$AgSnO_2$ + 0.5µAu
Electrical life (operations)	• 100,000 (220V AC/4 A/880VA cosφ = 0.35) • 500,000 (220V AC/1.7 A/375VA cosφ = 0.6) • 1,000,000 (30V DC/2 A/60 W) • 2,000,000 (10V DC/0.01 A/0.1 W)	
Mechanical life	10,000,000 cycles	
Power on delay	< 50 ms	
Response time	< 100 ms (or 0.5 s, 1 s, 2 s, 3 s)	
Impulse withstand voltage	2500V	
Pollution degree	2	
Installation group	Overvoltage category III, VDE 0110-1	
Operating temperature	-5...+55 °C (23...131 °F)	
Relative Humidity	90%	
Enclosure protection	IP40 (NEMA 1)	
Terminal protection	IP20	
Wiring	Use copper that withstands 60/75 °C (140/167 °F)	
Conductor size	0.2...2.5 mm^2 (24...12 AWG)	
Torque settings	Terminal screws: 0.6...0.8 N•m (5...7 lb•in)	
Case material	Polyamide PA 6.6	
Mounting	35 mm (1.38 in.) DIN rail in enclosure to a minimum of IP54	
Weight	215 g (0.47 lb)	
Vibration	10...55 Hz, 0.35 mm (0.01 in.)	

(1) Operation time (day, hour)
(2) Cycle time (hour, sec)

Installation

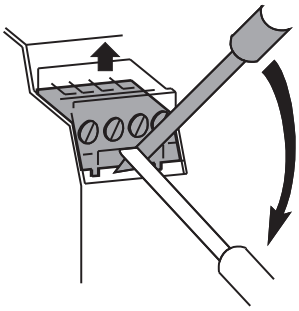
Do not install this product until the installer obtains a copy of the instructions of the manufacturer, in a language that they can understand. This instruction publication is available in multiple languages at rok.auto/literature.

Figure 1 - Mounting



Mount the enclosure to a minimum of IP54.

Figure 2 - Removable Terminals (P versions only)



To remove the terminals, insert a screwdriver and slowly move as shown in Figure 2.

Wiring Examples

Figure 3 - 24V DC Host (MSR131) with Dual-channel Safety Light Curtain Input and Single-channel Delayed Expansion (MSR132ED) with Monitoring

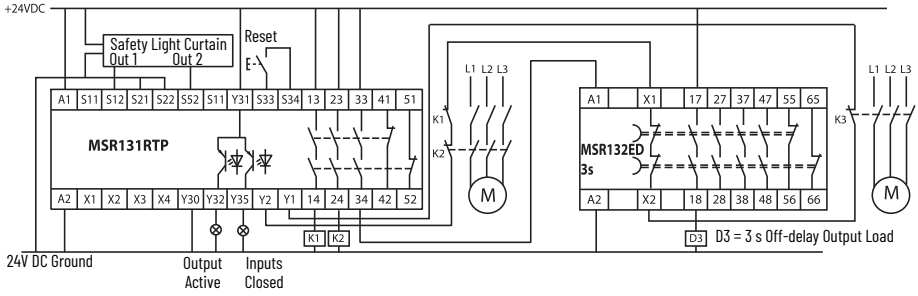
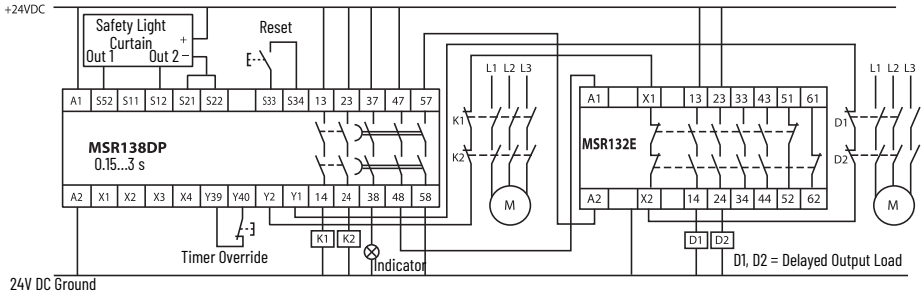


Figure 4 - 24V DC Host (MSR138) with Dual-channel Safety Light Curtain Input and Dual-channel Expansion (MSR132E) Delayed with Adjustable Timed MSR138 Outputs



Circuit Diagram

Figure 5 - Diagram

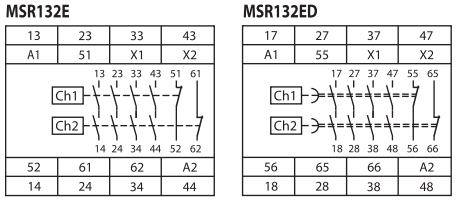


Table 1 - Circuit Diagram Explanation

Abbreviation		Description
MSR132E/MSR132 EP	MSR132ED/MSR132 EDP	
A1, A2	-	Power
X1, X2	-	Monitoring loop feedback
13, 14, 23, 24, 33, 34, 43, 44	17, 18, 27, 28, 37, 38, 47, 48	Safety output (N.O.)
51, 52, 61, 62	55, 56, 65, 66	Auxiliary output (N.C.)

Approximate Dimensions

Figure 6 - Dimensions [mm (in.)]

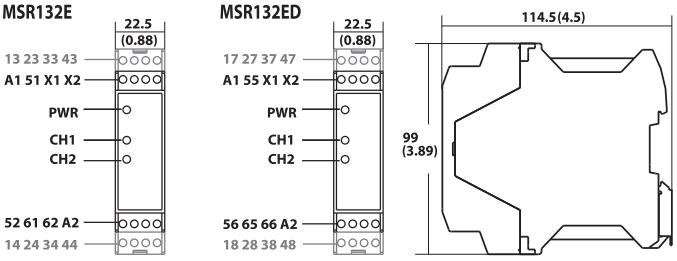


Table 2 - Status Indicators

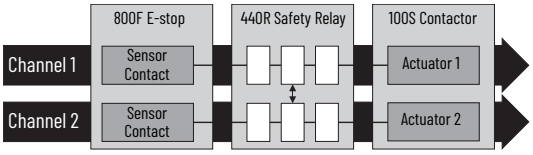
Indicator	Description
PWR	Status indicator illuminates green when the unit is powered, flashing green if cross-loop faults occur
CH1	Status indicator illuminates green when the safety output channel 1 activates
CH2	Status indicator illuminates green when the safety output channel 2 activates

Safety Specifications

You can use the MSR132E/ED safety relay in safety circuits according to DIN EN 60204-1/VDE 0113 part 1. Safety requirements that are specified in Specifications on page 2 are maximum, based on the operation mode and wiring.

Specifications are applicable only if the safety function is demanded at least once within 6 months. All diagnostic tests are conducted at least before next demand. The mission time (TM) for the proof test interval (PTI) is adopted. Components failure rates according to SN29500.

Figure 7 - Example Safety Circuits



Declaration of Conformity

CE Conformity

Rockwell Automation declares that the products that are shown in this document conform with the Essential Health and Safety Requirements (EHSRs) of the European Machinery Directive (2006/42/EC) and EMC Directive (2014/30/EU).

For a comprehensive CE certificate visit: rok.auto/certifications.

UKCA Conformity

Rockwell Automation declares that the products that are shown in this document are in compliance with the Supply of Machinery (Safety) Regulations (2008 No. 1597) and Electromagnetic Compatibility Regulations (2016 No. 1091).

For a comprehensive UKCA certificate visit: rok.auto/certifications.

Waste Electrical and Electronic Equipment (WEEE)



At the end of life, this equipment should be collected separately from any unsorted municipal waste.

Rockwell Automation maintains current product environmental compliance information on its website at rok.auto/pec.

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