

SensaGuard™ 18 mm Stainless Steel Barrel Installation Instructions



Certifications



Tested To Comply
with FCC Standards



**IMPORTANT:
SAVE THESE INSTRUCTIONS FOR FUTURE USE**

Note: Refer to Technical Specifications for Certification information and ratings.

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ENGLISH:	This instruction sheet is available in multiple languages at www.rockwellautomation.com/literature . Select publication language and type "SensaGuard" in the search field.
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FRENCH:	Ces instructions sont disponibles dans différentes langues à l'adresse suivante www.rockwellautomation.com/literature . Sélectionner la langue puis taper "SensaGuard" dans le champ de recherche.
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Installation Instructions

Installation must be in accordance with the following steps and stated specifications and should be carried out by suitable competent personnel. The unit is not to be used as a mechanical stop. Guard stops and guides must be fitted. Adherence to the recommended maintenance instructions forms part of the warranty.

This device is intended to be part of the safety related control system of a machine. Before installation, a risk assessment should be performed 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. Refer to Technical Specifications for Certification information and ratings.

ATTENTION:



The presence of spare actuators compromise the integrity of the safety systems. Personal injury or death, property damage or economic loss can result. Appropriate management controls, working procedures and alternative protective measures should be introduced to control their use and availability.

Technical Specifications

Safety Ratings

Standards	IEC 60947-5-3, IEC 61508, ISO 13849-1
Safety Classification	PLe Per ISO 13849-1, SIL 3 Per IEC 61508
Functional Safety Data	PFH _D : 1.12 x 10 ⁻⁹ Dual channel interlock may be suitable for use in application up to PLe (according to ISO 13849-1) and for use up to SIL 3 systems (according to IEC 62061) depending on application characteristics.
Certifications	CE marked for all applicable directives, cULus (UL 508), and TÜV.

Operating Characteristics

Sensing Distance, Assured ON	10 mm
Sensing Distance, Assured OFF	20 mm
Typical misalignment	(±7 mm in both axes)
Repeat Accuracy	10% of sensing range
Maximum output current (all outputs, mA)	200
Input Current	50 mA (no load supply current)
Operational Current, Min.	d 1 mA DC
Off-state Current	< 0.5 mA DC
Maximum # of switches, connected in series	Unlimited. See unit response time section
Operating Voltage	24V DC +10% / -15%
Frequency of operating cycle	1 Hz
Response Time (Off)	54 ms first switch, 18 ms additional for each switch
Case Material	304 Stainless Steel
Actuator Material	304 Stainless Steel

Outputs (internally fused)

Safety	2 x PNP, 0.2 A max.	ON (+24V DC)
Auxiliary	1 x PNP, 0.2 A max.	OFF (0V DC)

Environmental

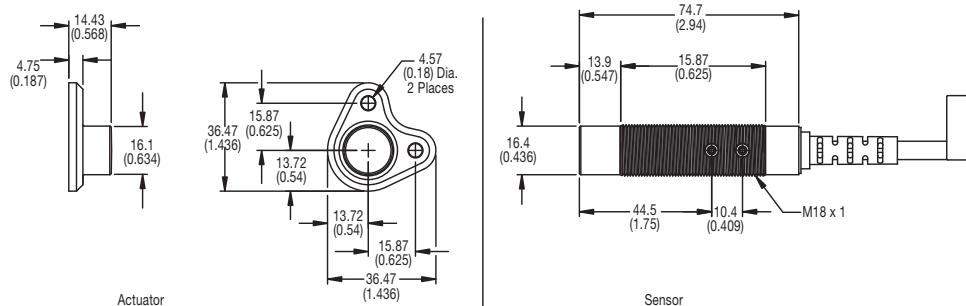
Operating Temperature	-10...+55°C (+14...+131°F)
Operating Humidity	5% -95% relative
Washdown rating	NEMA 3, 4X, 12,13, IP 69K
Shock & Vibration	IEC68-2-27 30 g, 11 ms/IEC 68-2-6 10...55Hz
Radio Frequency	IEC 61000-4-3 IEC 61000-4-6

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Protection

Short-Circuit Protection	Incorporated
Current limitation	Incorporated
Overload Protection	Incorporated
False Pulse Protection	Incorporated
Transient Noise Protection	Incorporated
Reverse Polarity Protection	Incorporated
Overvoltage protection (inc. load dump)	Incorporated
Thermal shutdown/restart	Incorporated
Electrical Life	10×10^6

Dimensions - mm (inches)



Mode of Operation

Status indicators:

- "Power/Fault" LED illuminates Green - *The unit is ready for operation.*
- "Power/Fault" LED illuminates Red: - *Door/Guard open. The unit is not ready for operation.*
- "Power/Fault" LED illuminates flashes Red or Green: - *Unit failure. See Diagnostic section below.*

Mounting Information

Use non-removable screws, bolts, or nuts to mount the switch and actuator. Do not over torque the mounting hardware.

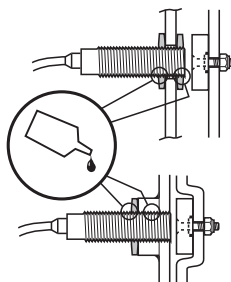
Position the switch and actuator so they are aligned with each other.

Mount the switch and actuator to removable guard, door or gate. Keep the switch and actuator within the sensing range below.

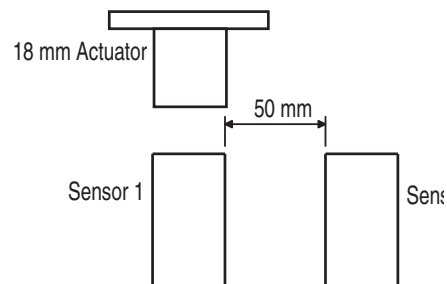
Nut Torque Specification

Barrel Switch: 2.26 N•M (20 in•lbs)

Actuators: 2.26 N•M (20 in•lbs)

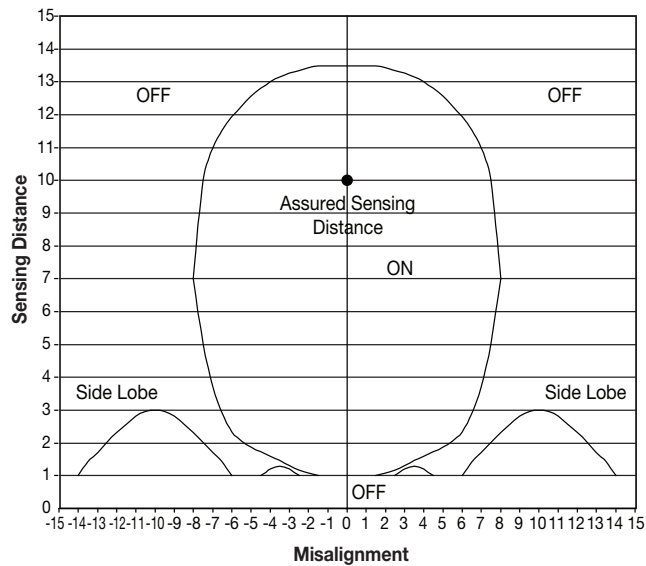


Minimum Distance Between Sensors



Typical Misalignment Curve

18 mm Unit with 18 mm Target



Note: There must be a minimum spacing of 4 mm (0.157 in) if actuator and sensor face approaches laterally. This will prevent false triggering due to the side lobe areas.

Typical Wiring Diagram

Description		Plastic
8-Pin Micro (M12)		
8-Pin Cordset 889D-F8AB- or cable version	Grey	Safety A
	Red	Safety A+
	Pink	Safety B
	Yellow	Safety B+
	White	Aux A
	Brown	24V DC+
	Blue	Gnd / 0V
	Green	N/A

* Replace symbol with 2 (2m), 5 (5m) or 10 (10m) for standard cable lengths.

Diagnostic

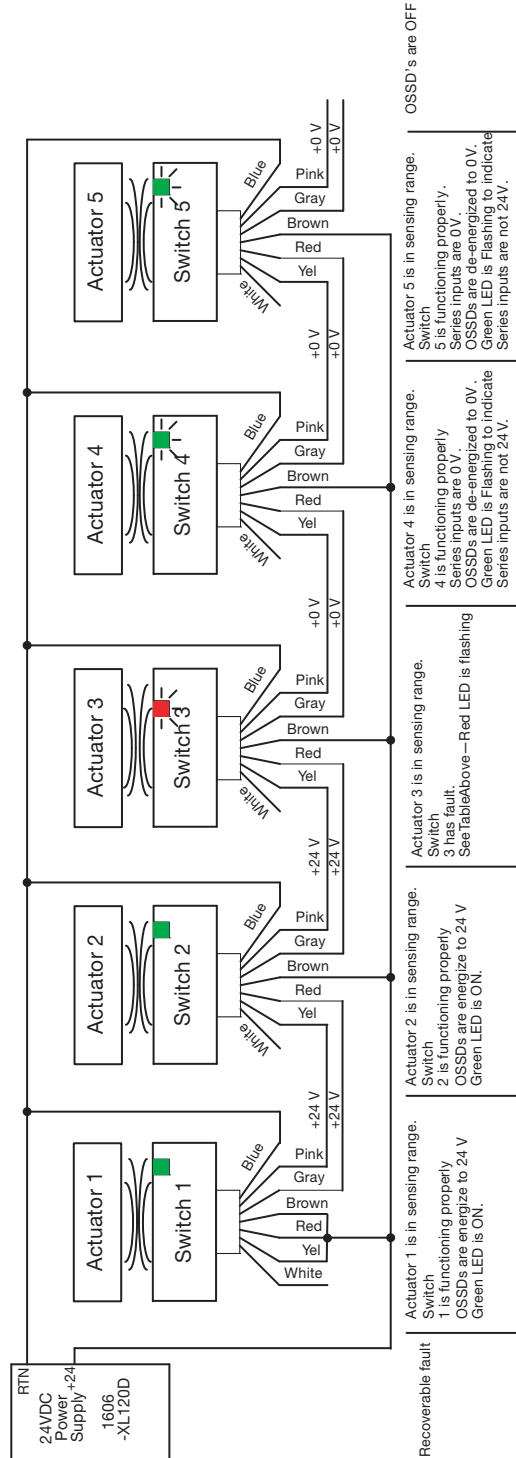
Unit Indicators (per IEC 60073)

Device Output LED	State	Status	Troubleshooting
	Off	Not Powered	NA
	Red	Not Safe, OSSD not active	NA
	Green	Safe, OSSD active	NA
	Green flash	Power up test or OSSD inputs not valid	Check 24V DC or OSSD inputs (yellow and red wire)
	Red Flash	1 Hz Flash Recoverable Fault 4 Hz Flash Non-recoverable Fault	Recoverable fault —check OSSD outputs are not shorted to GND, 24V DC or each other. Cycle power.

Note: Refer to Technical Specifications for Certification information and ratings.

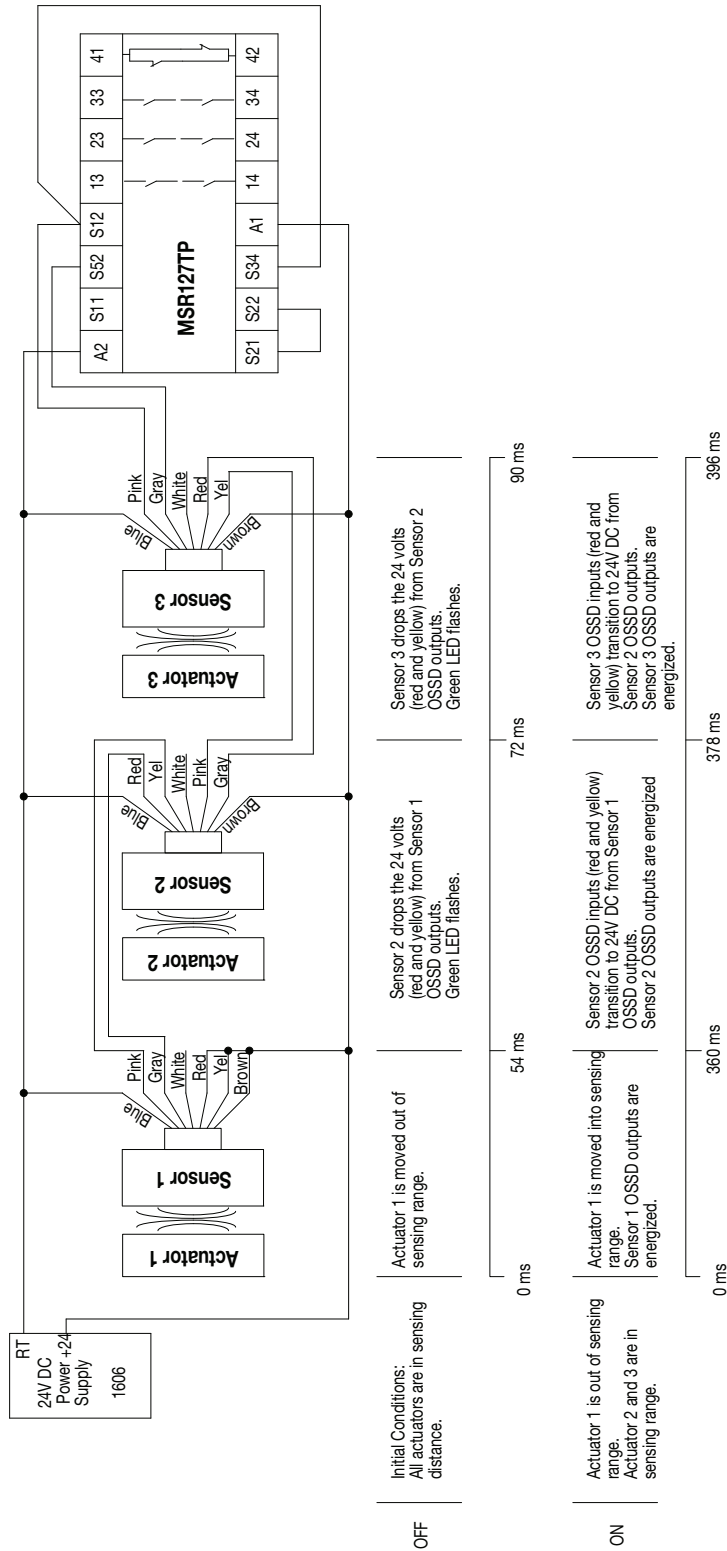
Troubleshooting

Series Circuit



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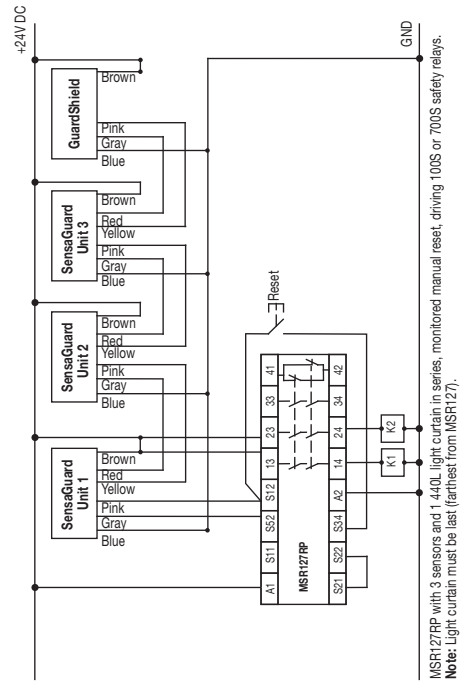
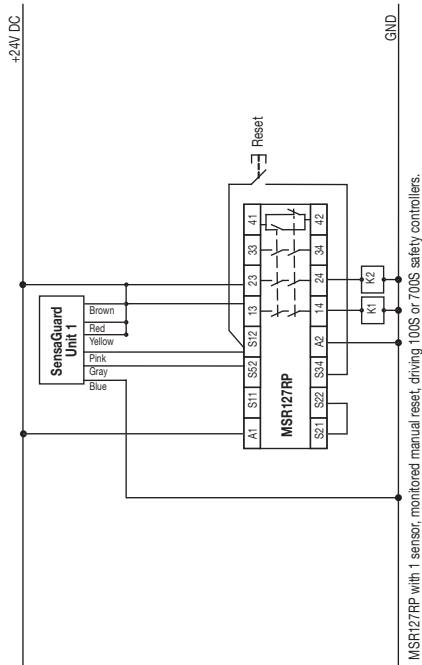
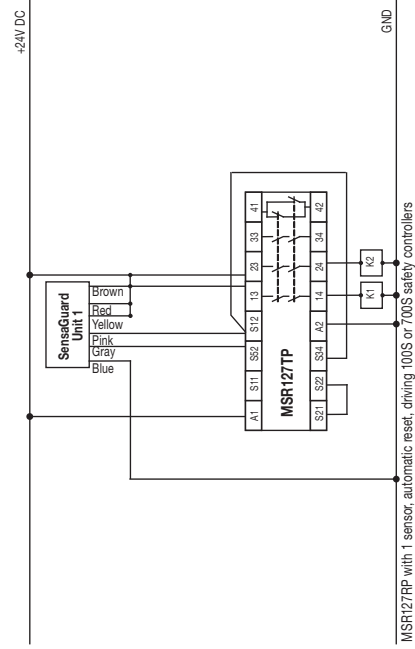
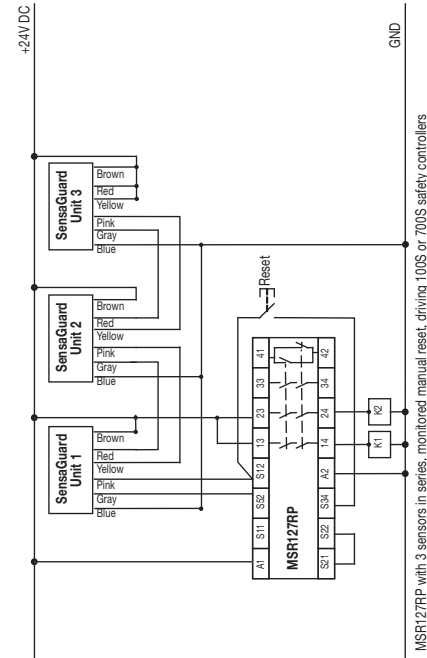
Unit Response Time (does not include safety relay response time)



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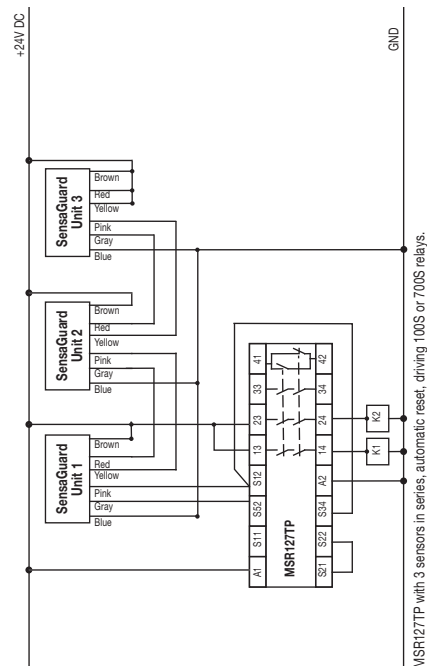
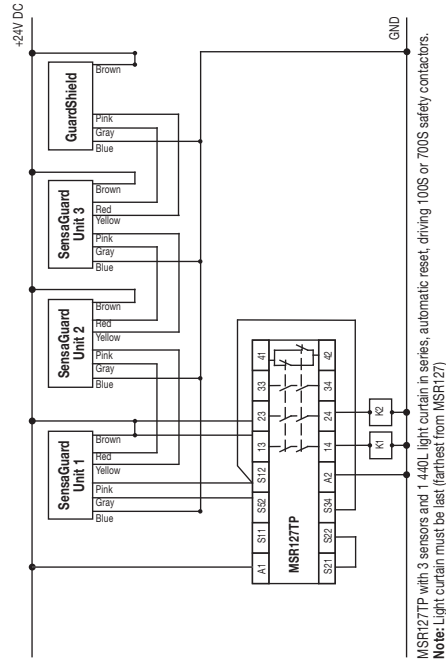
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Application Wiring Examples



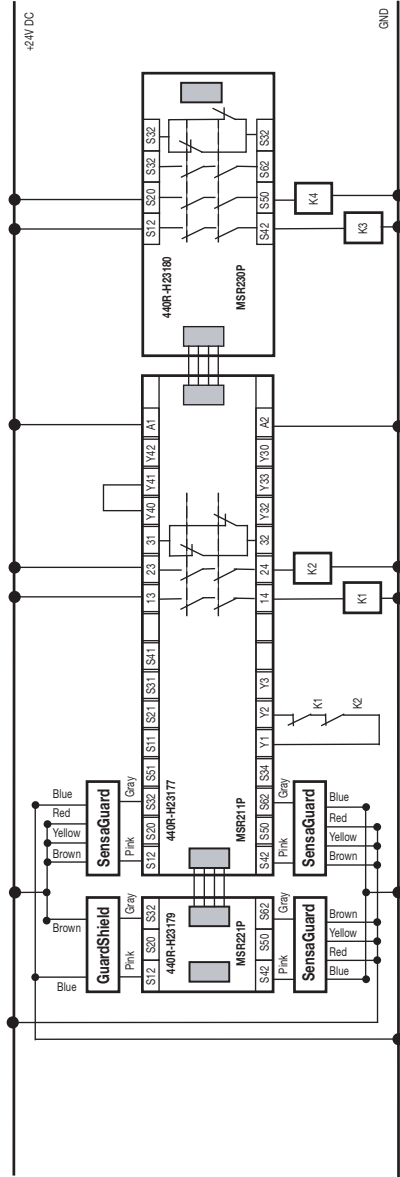
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Application Wiring Examples

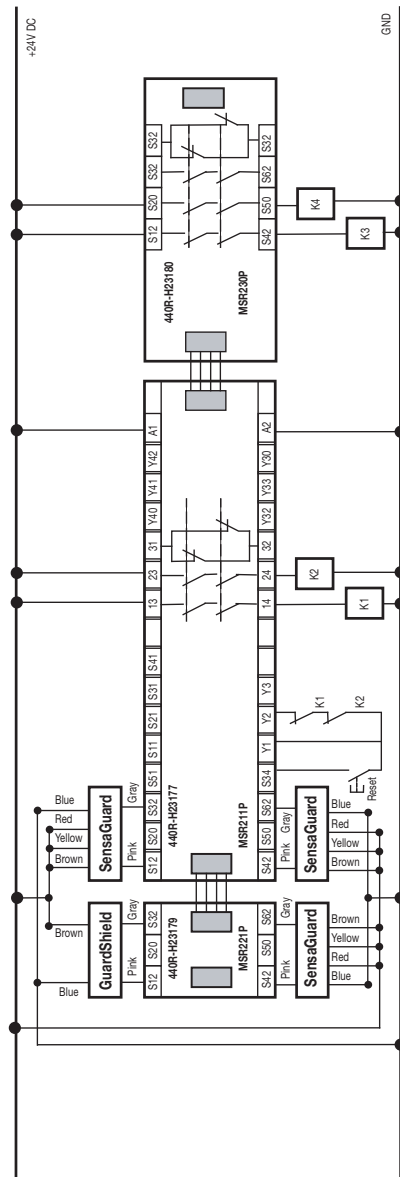


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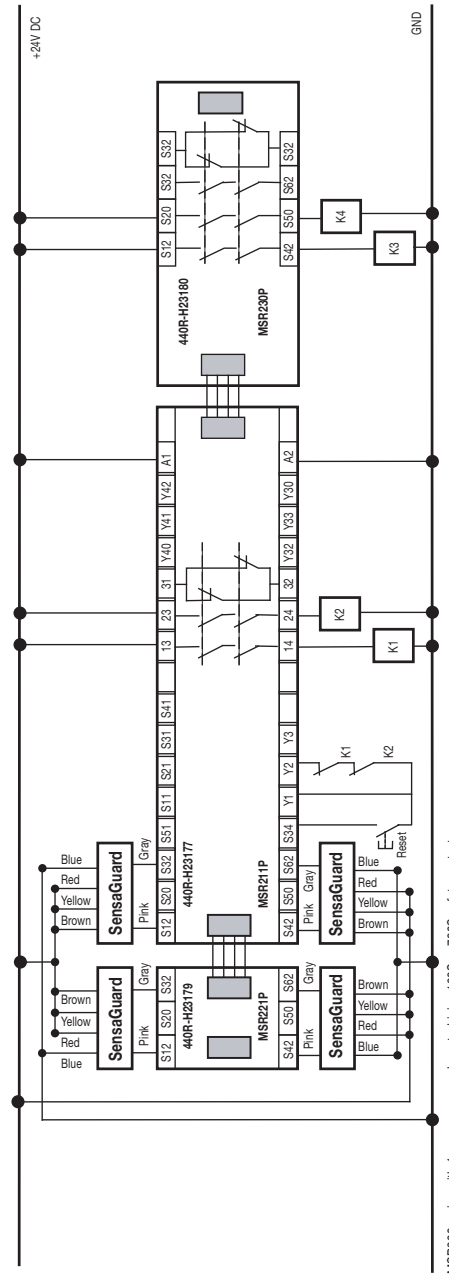
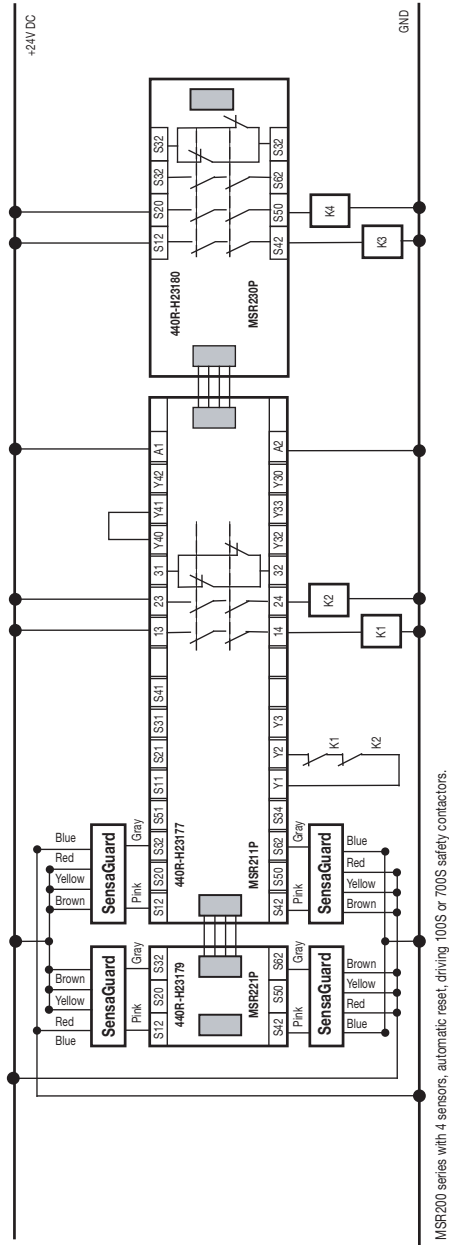


MSR200 series with 3 sensors and 1.440L light curtain, automatic reset, driving 100S or 700S safety contactors.
Note: Light curtain can be attached to any input.



MSR200 series with 3 sensors and 1.440L light curtain, manual reset, driving 100S or 700S safety contactors.
Note: Light curtain can be attached to any input.

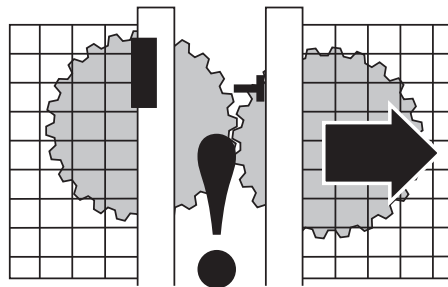
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List of recommended relays

MSR126, MSR127, MSR123, MSR124, MSR131, MSR138, MSR211, MSR121, MSR320, Guardmaster safety relay family (440R-D22R2, 440R-D22S2, 440R-S12R2, 440R-S13R2, 440R-EM4R2, 440R-EM4R20), SmartGuard, 1791 DS DeviceNet™ Safety I/O.



Check the machine is isolated and stopped whenever the interlocked guard door is open.

IMPORTANT: After installation and commissioning, the actuator, switch and switch lid fixing screws should be coated with tamper evident varnish or similar compound.

Maintenance

Every month

Check the correct operation of the switching circuit. Also check for signs of abuse or tampering. Inspect the switch casing for damage.

Repair

If there is any malfunction or damage, no attempts at repair should be made. The unit should be replaced before machine operation is allowed.



Declaration of Conformity

Rockwell Automation hereby declares that SensaGuard is in conformity with Directive 2004/108/EC, 2006/42/ED as specified in the Declaration of Conformity available from www.rockwellautomation.com/products/certification.



Allen-Bradley

Guardmaster®

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