

SensaGuard™

18 mm Stainless Steel Barrel Installation Instructions



Certifications



IMPORTANT:
SAVE THESE INSTRUCTIONS FOR FUTURE USE

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

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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.

WARNING:



Do not defeat, tamper, remove or bypass this unit. Severe injury to personnel could result. The sensor MUST be connected to a Class 2 SELV 24V DC, +10% / -15% power supply.

Technical Specification

Safety Ratings	CAT4/SIL3
Safety Certifications	TUV, CE
Safety Standards	IEC60947, IEC61508, EN954
Certifications Standards	cULus UL 508
PFHd	1.119 - 10 ⁻⁹

Operating Characteristics

Sensing Distance (Actuator)	18 mm
Assured Make (mm)	10
Assured Break (mm)	20
Typical misalignment	(±7 mm in both axes)
Repeat Accuracy	10% of sensing range
Maximum output current (all outputs, mA)	200
Input Current	50 mA
Maximum # of switches, connected in series	Unlimited. See unit response time section
Operating Voltage	24V DC +10% / -15% Class 2 SELV power supply
Frequency of operating cycle	1 Hz
Response Time (Off)	54 ms
Case Material	316 Stainless Steel
Actuator Material	316 Stainless Steel

Outputs (internally fused)

QSSD	2
Auxiliary	1

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

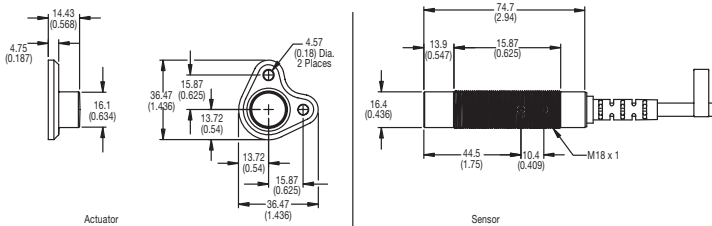
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Protection

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 x 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.

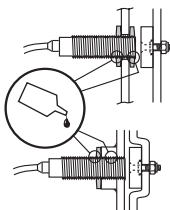
Position the switch and actuator so they are aligned with each other.

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

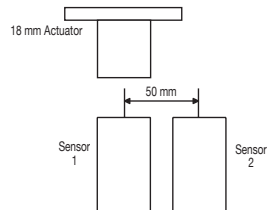
Nut Torque Specification

Barrel Switch: 2.26 N•M (20 in•lbs)

Actuators: 2.26 N•M (20 in•lbs)

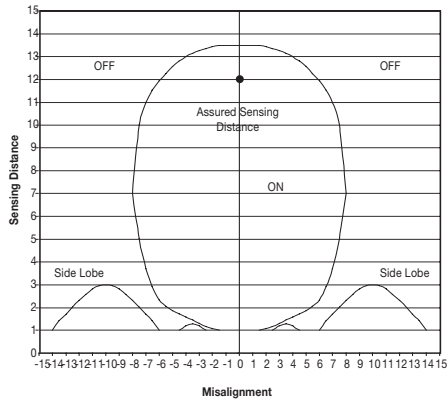


Minimum Distance Between Sensors



Misalignment Curve

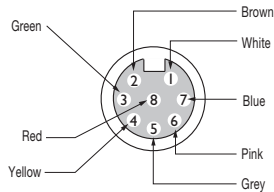
18 mm Unit with 18 mm Target



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

Wiring Diagram

Pin #	Wire Color	Signal
1	White	Aux Outputs
2	Brown	+24V
3	Green	Shield
4	Yellow	OSSD 2, +24V Input
5	Grey	OSSD 1
6	Pink	OSSD 2
7	Blue	0V
8	Red	OSSD 1, +24V Input



Recommended mating cable, 2 m (6.5 ft), 889D-F8AC-2. Lengths are available up to 30 m (98.4 ft)

Diagnostic

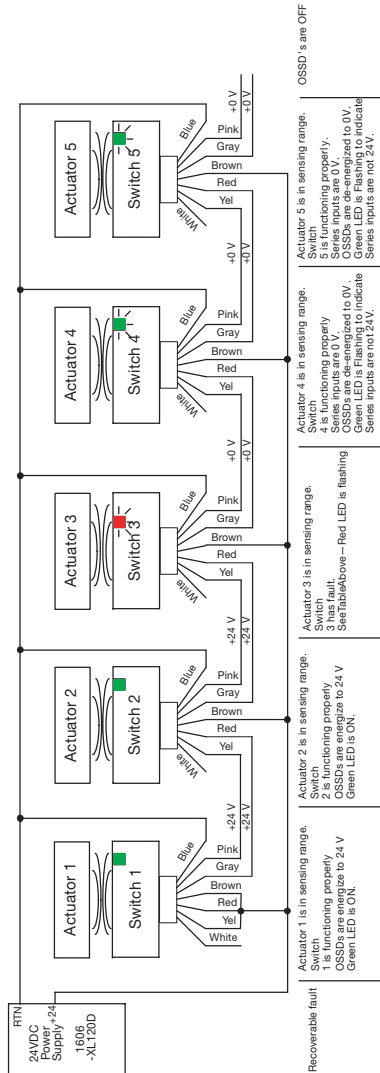
Unit Indicators (per IEC 60073)

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.

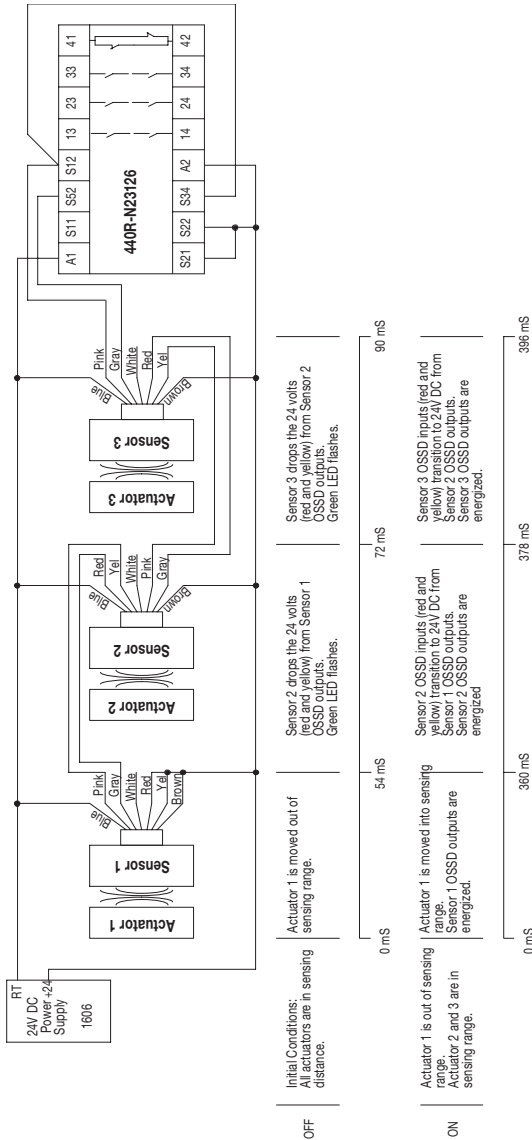
Troubleshooting

Series Circuit



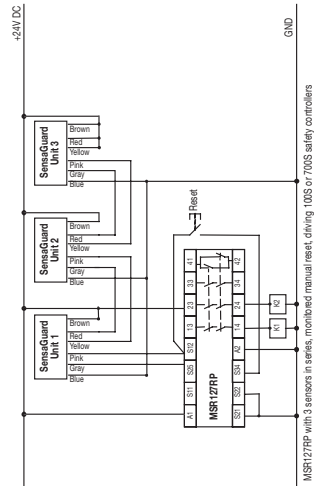
Note: Refer to Technical Specifications for Certification information and ratings.

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

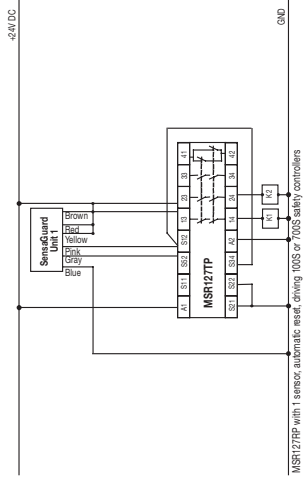


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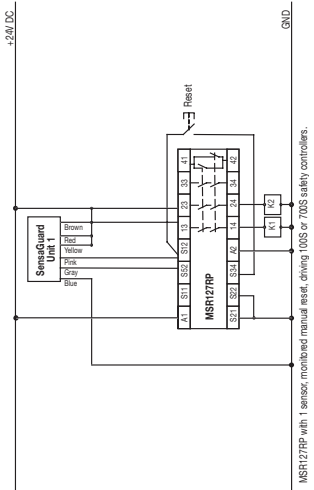
Application Wiring Examples



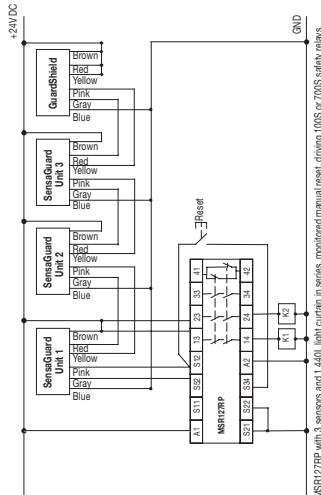
MSRI27RP with 3 sensors in series, monitored manual reset, driving 100S or 700S safety controllers



MSRI27RP with 1 sensor, automatic reset, driving 100S or 700S safety controllers



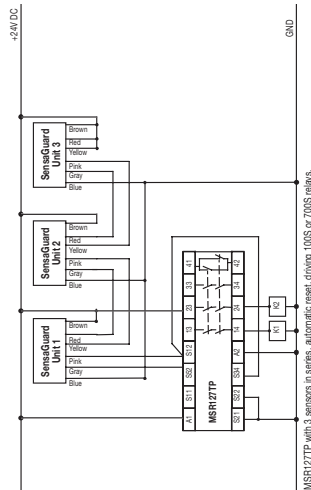
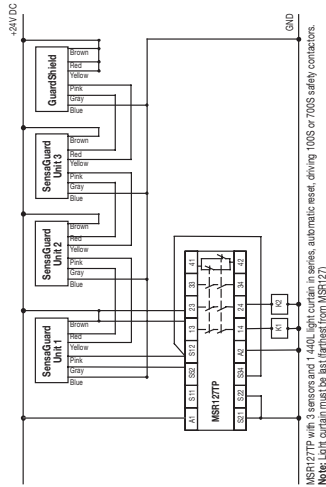
MSRI27RP with 1 sensor, monitored manual reset, driving 100S or 700S safety controllers.



MSRI27RP with 3 sensors and 1 440L light curtain in series, monitored manual reset, driving 100S or 700S safety relays.
 Note: Light curtain must be last (farnest from MSRI27).

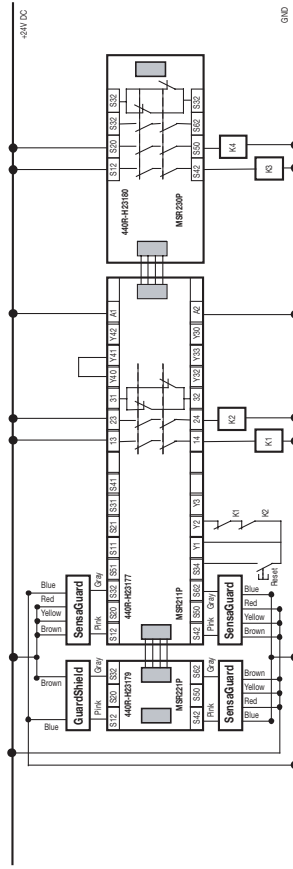
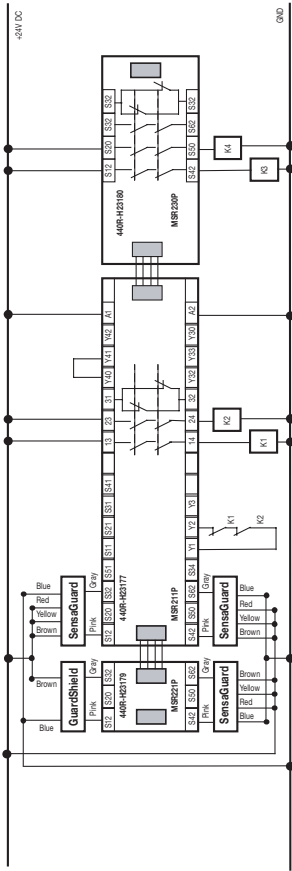
Note: Refer to Technical Specifications for Certification information and ratings.

Application Wiring Examples



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

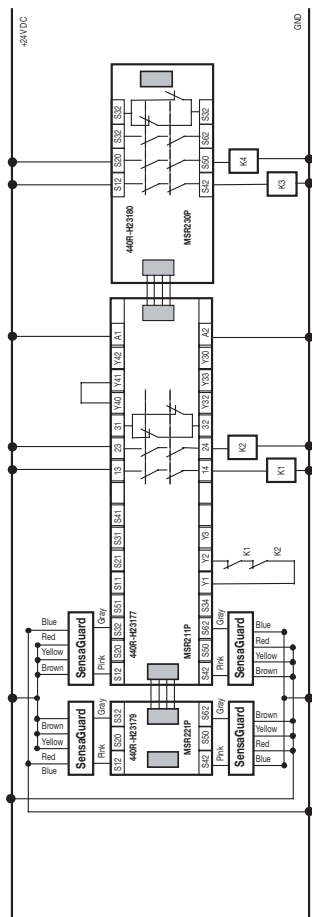
Application Wiring Examples



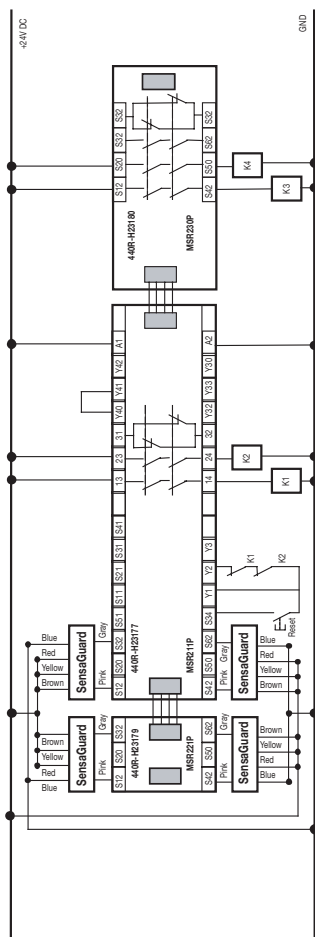
Note: Refer to Technical Specifications for Certification information and ratings.

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Application Wiring Examples



MSR200 series with 4 sensors, automatic reset, driving 100S or 700S safety contactors.



MSR200 series with 4 sensors, manual reset, driving 100S or 700S safety contactors.

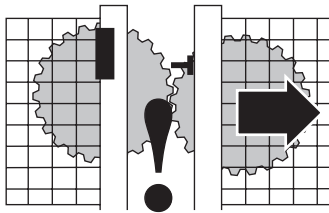
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List of recommended relays

MSR126, MSR127, MSR123, MSR124, MSR131, MSR138, MSR211, MSR121, MSR320, MSR200 Family (Except MSR210), MSR300 Family, 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 week.

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.

CE Declaration of Conformity

This is to declare that the products shown on this document conforms with the Essential Health and Safety Requirements (EHSR's) of the European Machinery Directive (73/23/EEC as amended by 93/68/EEC). These products also conform to EN 60947-5-3, EN 1088, EN292, EN 60204-1 and have Third Party Approval.

For a comprehensive certificate please visit: www.ab.com/safety.



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AUDIN - 8, avenue de la malle - 51370 Saint Brice Courcelles - France
Tel : 03.26.04.20.21 - Fax : 03.26.04.28.20 - Web : <http://www.audin.fr> - Email : info@audin.fr