

Non-contact Interlock Switches

Bulletin Number 440N

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SensaGuard Non-contact Interlock Switches

The SensaGuard™ non-contact interlock switches have the following features:

- Category 4, SIL 3 rated switch, TÜV functional safety approved to IEC 61508
- Switches can be connected to a standard safety relay, for example, the MSR126, MSR127, SmartGuard™ and Safety I/O Blocks
- Multiple actuator sizes for large sensing distance
- IP69K environmental rating
- Short-circuit and over-voltage protection
- LED located on the switch for door status and troubleshooting
- Unique coded version
 - Automatic learn process at unit power up
 - During commissioning you have the option to select if the sensor can learn a new actuator up to eight times or lock the unit so it can not learn another actuator
- Integrated latch version
 - Adjustable magnetic latch force 20...60 N
 - Designed for easy mounting on aluminum profile



The SensaGuard non-contact interlock switches offer the following benefits:

- No dedicated controller required
- Cat 4, SIL 3 rating maintained even with multiple units connected in series
- Switches can be connected in series with other devices (light curtain, E-stops, key interlock switches)
- Extended diagnostics for easy troubleshooting
- Large sensing distances
- Tolerance to misalignment
- Multiple sensing directions
- Stainless steel version suitable for use in harsh environments
- Use standard proximity brackets

Specifications

Attribute	Value
Safety Ratings	
Standards	ISO 14119, IEC 60947-5-3, IEC 61508, ISO 13849-1
Safety classification	Type 4 Interlocking Device per ISO 14119 (Unique/High and Standard/Low Coding), PLe cat. 4 per ISO 13849-1
Functional safety data	Visit http://literature.rockwellautomation.com/idc/groups/literature/documents/sr/safety-sr001_-en-e.pdf
Certifications	c-UL-us (UL 508), TÜV Certified, and CE Marked for all applicable directives www.rockwellautomation.com/certification/overview.page
Outputs (Guard Door Closed, Actuator in Place)	
Safety outputs	2 x PNP, 0.2 A, max; Status: ON (+24V DC)
Auxiliary outputs	1 x PNP, 0.2 A max; Status: OFF (0V DC)
Operating Characteristics	
Sensing distance (assure)	
18 mm plastic barrel/18 mm target	15 mm (0.59 in.)
18 mm plastic barrel/30 mm target	25 mm (0.98 in.)
18 mm stainless steel barrel/standard target	10 mm (0.39 in.)
Large rectangular flat pack with standard target	15 mm (0.59 in.)
Misalignment tolerance, min	See Magnetically Coded Non-contact Interlock Switches on page 55
Repeat accuracy	10% of Sensing Range
Output current	200 mA (all outputs), max
Operating voltage	24V DC, +10%/-15%; Class 2
Current consumption	50 mA
Frequency of operating cycle	1 Hz
Response time (off)	54 ms
Environmental	
Enclosure type rating	NEMA 3, 4X, 12, 13, IP69K
Operating temperature	-10...+55 °C (+14...+131 °F)
Relative humidity	5...95%
Shock	IEC 68-2-27, 30 g, 11 ms
Vibration	IEC 68-2-6 10...55 Hz
Radio frequency	IEC 61000-4-3, IEC 61000-4-6
Physical Characteristics	
Housing material	VALOX DR 48
Actuator material	VALOX DR 48
Color	Red

Product Selection

Type	Assured Sensing Distance [mm (in.)]	LED Door Indication/Diagnostic	Margin Indication	Magnetic Hold	Actuator Code Type	Cat. No.		
						Cable		Connector
						3 m	10 m	6 in. Pigtail, 8-pin Micro (M12)
18 mm plastic barrel/ 18 mm actuator	15 (0.59)	Yes	—	—	Standard	440N-Z21S16A	440N-Z21S16B	440N-Z21S16H
					18 mm plastic	440N-Z21U16A	440N-Z21U16B	440N-Z21U16H
18 mm plastic barrel/ 30 mm actuator	25 (0.98)	Yes	—	—	Standard	440N-Z21S26A	440N-Z21S26B	440N-Z21S26H
					30 mm plastic	440N-Z21U26A	440N-Z21U26B	440N-Z21U26H
18 mm stainless steel barrel/ 18 mm actuator	10 (0.39)	Yes	—	—	Standard	440N-Z21S17A	440N-Z21S17B	440N-Z21S17H
					18 mm stainless steel	440N-Z21U17A	440N-Z21U17B	440N-Z21U17H
Plastic rectangular/ rectangular actuator	15 (0.59)	Yes	—	—	Standard	440N-Z21SS2A	440N-Z21SS2B	440N-Z21SS2H
					Unique	440N-Z21US2A	440N-Z21US2B	440N-Z21US2H
			Yes	—	Standard	440N-Z21SS2AN	440N-Z21SS2BN	440N-Z21SS2HN
					Unique	440N-Z21US2AN	440N-Z21US2BN	440N-Z21US2HN
			Yes	Yes (9 N)	Standard	440N-Z21SS2AN9	440N-Z21SS2BN9	440N-Z21SS2HN9
					Unique	440N-Z21US2AN9	440N-Z21US2BN9	440N-Z21US2HN9
Plastic housing with integrated latch	Contact/latched	Yes	—	Adjustable 20...60 N	Standard	440N-Z21SS3PA	440N-Z21SS3PB	440N-Z21SS3PH
					Unique	440N-Z21SU3PA	440N-Z21SU3PB	440N-Z21SU3PH

Table 19 - Connection Systems







Description	Cat. No.
Cordset	889D-F8AB-x ⁽¹⁾
Patchcord	889D-F8ABDM-y ⁽²⁾
Safety Wired T-Port	898D-438Y-D8
Safety Wired Shorting Plug	898D-418U-DM

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

(2) Replace symbol with 1 (1 m), 2 (2 m), 3 (3 m), 5 (5 m), or 10 (10 m) for standard lengths.

Accessories

Description		To Be Used With	Cat. No.
	18 mm plastic actuator (Series A)	Standard coded models only	440N-Z18PT
		Unique coded models only	440N-Z18UPT
	18 mm plastic actuator (Series B)	Standard coded models only	440N-Z18PTB
		Unique coded models only	440N-Z18UPTB
	30 mm plastic actuator (Series A)	Standard coded models only	440N-Z30PT
		Unique coded models only	440N-Z30UPT
	30 mm plastic actuator (Series B)	Standard coded models only	440N-Z30PTB
		Unique coded models only	440N-Z30UPTB
	18 mm stainless steel actuator (Series A)	Standard coded models only	440N-Z18SST
		Unique coded models only	440N-Z18USST
	18 mm stainless steel actuator (Series B)	Standard coded models only	440N-Z18SSTB
		Unique coded models only	440N-Z18USSTB
	Rectangular plastic actuator (Series A)	Standard coded models only	440N-ZPREC
		Unique coded models only	440N-ZUPREC
		Standard coded margin/magnetic hold models only	440N-ZPRECM
		Unique coded margin/magnetic hold models only	440N-ZUPRECM
		Standard coded margin indication models	440N-ZPREC
		Unique coded margin indication models	440N-ZUPRECM
	Rectangular plastic actuator (Series B)	Standard coded models only	440N-ZPRECB
		Unique coded models only	440N-ZUPRECB
		Standard coded margin/magnetic hold models only	440N-ZPRECMB
		Unique coded margin/magnetic hold models only	440N-ZUPRECMCB
		Standard coded margin indication models	440N-ZPRECM1B
		Unique coded margin indication models	440N-ZUPRECM1B

Description		To Be Used With	Cat. No.
	Mounting bracket for tubular proximity sensors—right angle style	18 mm barrel models	871A-BRS18
	Mounting bracket for tubular sensors—clamp style		871A-BP18
	Snap clamp mounting bracket		871A-SCBP18
	18 mm mounting bracket		60-2649
	Mounting plate for vertically hinged doors	Integrated latch version only	440N-AHDB
	Mounting plate for slide and gull wing doors		440N-ASDB
	Mounting bracket for tubular proximity sensors—right angle style	18 mm barrel models	871A-BRS18

Approximate Dimensions

Dimensions are shown in mm (in.). Dimensions are not intended to be used for installation purposes.

Figure 9 - 18 mm Barrel

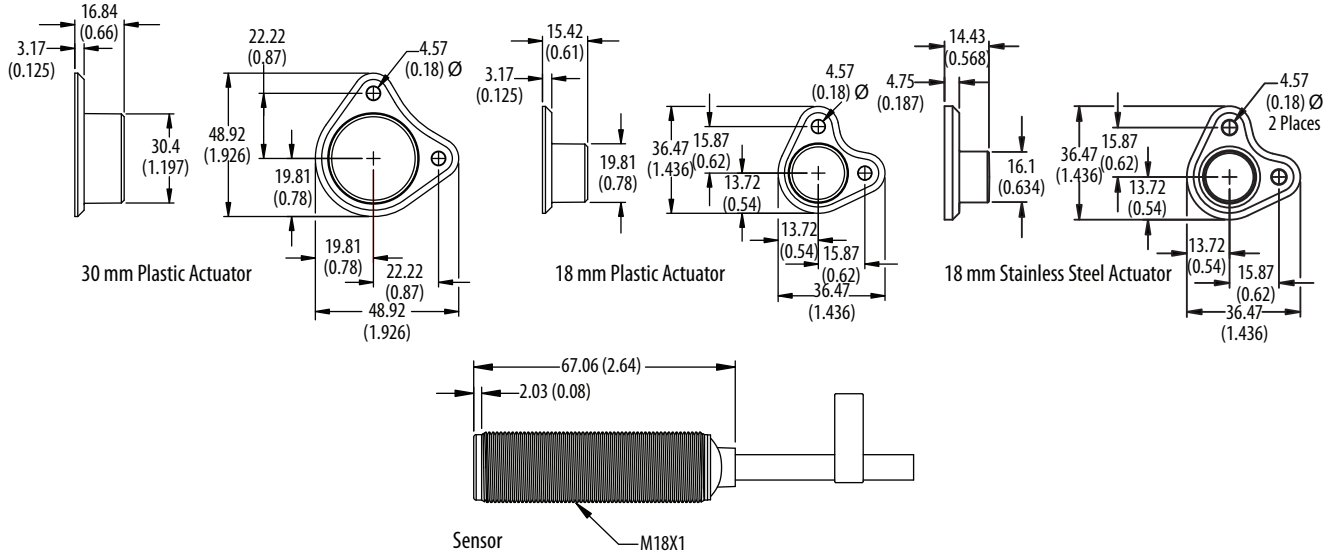


Figure 10 - Large Rectangular Flat Pack

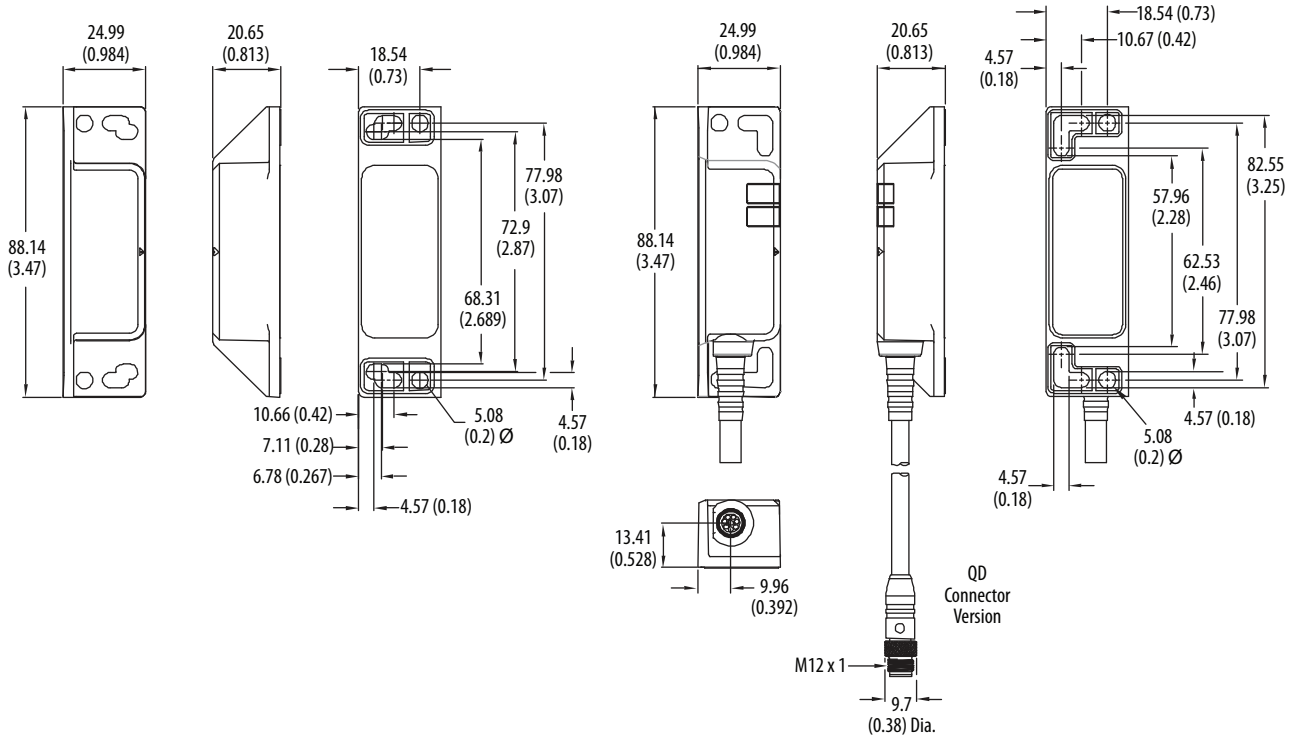


Figure 11 - Integrated Latch

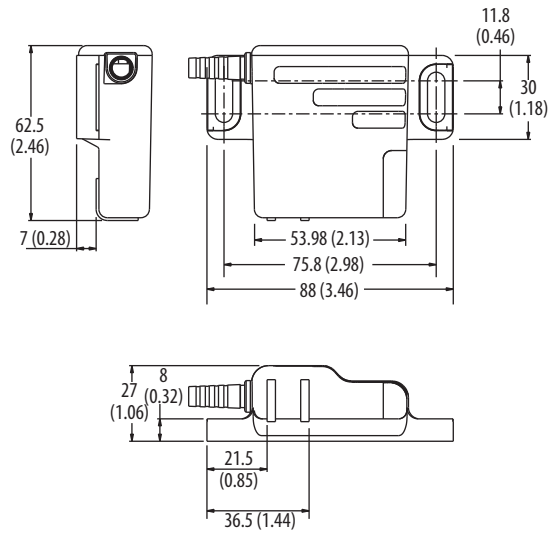


Table 20 - Typical Wiring Diagrams

Description		Plastic	Stainless Steel
8-pin Micro (M12)			
8-pin cordset 889D-F8AB-x or cable version ⁽¹⁾	Gray	Safety A	Safety A
	Red	Safety A+	Safety A+
	Pink	Safety B	Safety B
	Yellow	Safety B+	Safety B+
	White	Aux A	Aux A
	Brown	24V DC +	24V DC +
	Blue	Gnd	Gnd
	Green	—	—

(1) Replace x with 2 (2 m), 5 (5 m), or 10 (10 m) for standard cable lengths.