

## Ferrogard 6, 9, 10, 13, and 14 Non-contact Interlock Switches

The Ferrogard 6, 9, 10, 13, and 14 non-contact interlock switches have the following features:

- Non-contact actuation
- High tolerance to misalignment
- High switching current (up to 3 A)
- Two sensing faces
- IP67 (NEMA 6P) Rating
- Slim housings



### Specifications

Attribute	Value	
<b>Safety Ratings</b>		
Standards	ISO13849-1, IEC/EN60204-1, NFPA79, EN1088, AS4024.1	
Safety classification	Cat. 1 Device per ISO13849-1. Dual channel interlocks suitable for Cat. 3 or 4 systems	
Functional safety data <sup>(1)</sup>	B10d: > 2 x 10 <sup>6</sup> operations at min. PFH <sub>p</sub> : > 3 x 10 <sup>-7</sup> MTTFd: > 385 years Dual channel interlock may be suitable for performance levels PLe or PLd (according to ISO 13849-1:2006) and for use in SIL2 or SIL3 systems (according to IEC 62061) depending on application characteristics	
For up-to-date information, visit <a href="https://ab.rockwellautomation.com/safety">https://ab.rockwellautomation.com/safety</a>		
<b>Certifications</b>		
FRS6, FRS9, FRS10	CE Marked for all applicable directives <a href="http://www.rockwellautomation.com/certification/overview.page">www.rockwellautomation.com/certification/overview.page</a>	
FRS13, FRS14	CE Marked for all applicable directives and c-UL-us <a href="http://www.rockwellautomation.com/certification/overview.page">www.rockwellautomation.com/certification/overview.page</a>	
<b>Outputs (Guard Door Closed, Actuator in Place)</b>		
Safety outputs	1 N.C.	1 N.C.
Auxiliary outputs	—	1 N.C.
<b>Operating Characteristics</b>		
Operating distance, make	12 mm (0.47 in.)	
Operating distance, break	23 mm (0.91 in.)	
<b>Environmental</b>		
Enclosure type rating	IP67 (NEMA 6P)	
Operating temperature	-10...+65 °C (+14...+149 °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	
<b>Physical Characteristics</b>		
Housing material	Molded ABS plastic	
Actuator material	Molded ABS plastic	
Weight of Sensor	28 g (0.06 lb)	
Weight of Actuator	70 g (0.15 lb)	
Color	Red	

(1) Usable for ISO 13849-1:2006 and IEC 62061. Data other than B10d is based on:

- Usage rate of 1op/10 mins., 24 hrs/day, 360 days/year, representing 51840 operations per year
- Mission time/proof test interval of 38 years

## Product Selection

Safety Contact Switching Capability	Safety Contacts <sup>(1)</sup>	Auxiliary Contacts <sup>(1)</sup>	Housing Material	Type	Connection	Cat. No.
250V AC, 2 A	1 N.C.	—	Red Molded ABS Plastic	FRS 6	2 m Cable	440N-G02023
					4 m Cable	440N-G02028
					6 m Cable	440N-G02032
					10 m Cable	440N-G02013
					4-pin Micro QD	440N-G02095
24V DC, 1 A				FRS 9	2 m Cable	440N-G02044
					4 m Cable	440N-G02075
					6 m Cable	440N-G02082
					10 m Cable	440N-G02089
					4-pin Micro QD	440N-G02096
110V AC, 3 A	FRS 10	2 m Cable	440N-G02045			
		4 m Cable	440N-G02088			
250V AC, 2 A	1 N.C.	Stainless Steel	FRS 13	2 m Cable	440N-G02154	
				4 m Cable	440N-G02155	
				8-pin Micro QD	440N-G02160	
24V DC, 1 A			FRS 14	2 m Cable	440N-G02156	
				4 m Cable	440N-G02157	
				8-pin Micro QD	440N-G02161	

(1) Contacts are described with the guard door closed, that is, actuator in place.

**Table 24 - Connection Systems**

Description	4-pin Micro (M12)	8-pin Micro (M12)
Cordset	889D-F4AC-x <sup>(1)</sup>	889D-F8AB-x <sup>(1)</sup>
Patchcord	889D-F4ACDM-y <sup>(2)</sup>	889D-F8ABDM-y <sup>(2)</sup>

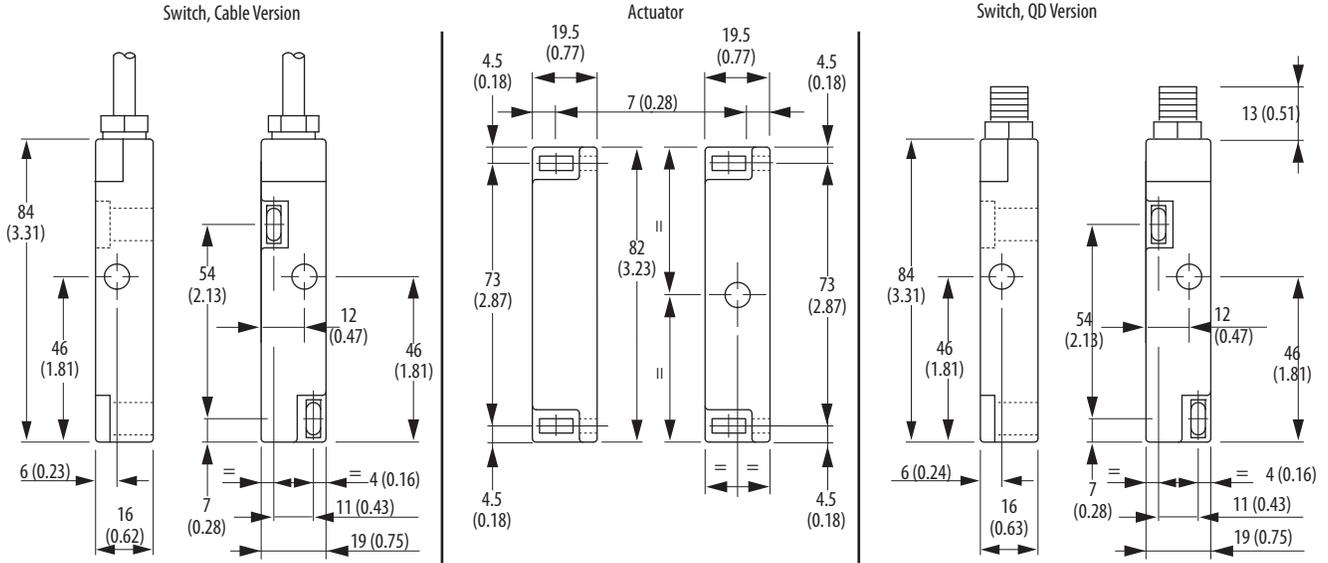
(1) Replace x with 2 (2 m), 5 (5 m), or 10 (10 m) for standard cable lengths.

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

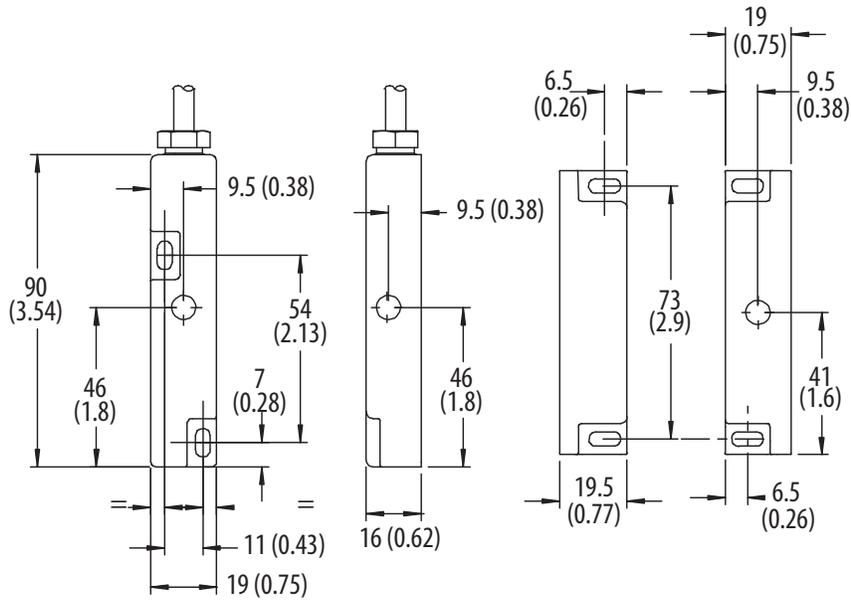
### Approximate Dimensions

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

**Figure 14 - FRS 6, 9, and 10**



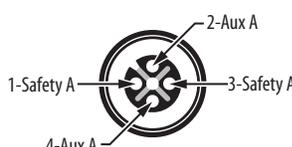
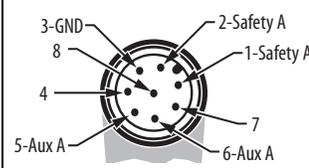
**Figure 15 - FRS 13 and 14**



### Accessories

Description	Cat. No.
FRS 6, 9, 10 Plastic Replacement Actuator	440N-A02025
FRS 13, 14 Stainless Steel Replacement Actuator	440N-A02165

## Typical Wiring Diagrams

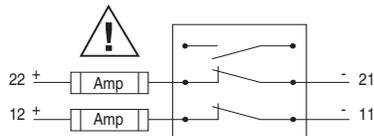
Description		FRS 6, 9 and 10 1 N.C.	FRS 13 and 14 1 N.C. and 1 N.C.
4-pin Micro (M12)			—
8-pin Micro (M12)		—	
Cordset 889D-F4AC-x <sup>(1)</sup>	Brown	Safety A	Safety A
	Blue	—	—
	White	—	Aux A
	Black	—	—
Cordset 889D-F8AB-x <sup>(1)</sup>	White	—	Safety A
	Brown	—	—
	Gray	—	Aux A
	Pink	—	—
Cable Version	Safety A	Brown	Brown
		Blue	Blue
	Aux A	—	Black
		—	Gray

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



**WARNING:** All safety contacts fitted with internal non-resettable fuse and must be fused externally as detailed.

**Table 25 - External Fuse Safety Contacts**

	
FRS 1, 2, 3, 4, 5, 6, 13, 21 AC	AC 1.6 A <sup>(1)</sup> ≤ (F) IEC 60127-2
FRS 9, 14, 2 DC, 20 DC, 21 DC	DC 0.4 A <sup>(2)</sup> ≤ (F) IEC 60127-2
FRS 10	AC 2.5 A <sup>(3)</sup> ≤ (F) IEC 60127-2

(1) Recommended: Bussman BK/GDA-1.6 A

(2) Recommended: Bussman BK/GDA-400 mA

(3) Recommended: Bussman BK/GDA-2.5 A