



## Description

The Cadet 3 is a tongue-operated (or key-operated) safety interlock switch designed to fit at the leading edge of sliding, hinged or lift-off guards. With its dual entry slots and rotatable head, the versatile Cadet 3 can offer up to eight different actuator entry options. The unique compact housing (90.5 x 31 x 30.4 mm (3.56 x 1.22 x 1.19 in)) has industry standard DIN 50047 fixing centers for ease of mounting.

Operation of the switch is achieved through the insertion of a specially-profiled stainless-steel key that is permanently mounted to the guard door. A semi-flexible key allows the Cadet 3 to be used on small-radius doors (60 mm or 2.36 in).

Available with a variety of contact configurations, the Cadet 3 is sealed to IP67. A blanking plug is supplied for the unused key entry.

## Features

- Compact size
- Ideal for small, lightweight guards
- Contacts, 2 N.C. + 1 N.O. or 3 N.C.
- Sealed to IP67
- Eight possible actuator entry points, easy to install
- Industry standard fixing centres to DIN 50047
- G D 2 style available for demanding applications

## Specifications

Safety Ratings				
Standards	EN 954-1, ISO 13849-1, IEC /EN 60204-1, NFPA 79, EN 1088, ISO 14119, IEC / EN 60947-5-1, ANSI B 11.19, AS 4024.1			
Safety Classification	Cat. 1 Device per EN 954-1 Dual-channel interlocks suitable for Cat. 3 or 4 systems			
Functional Safety Data *	B10d: > 2 x 10 <sup>6</sup> operations at min. load PFH <sub>D</sub> : > 3 x10 <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 SIL 2 or SIL 3 systems (according to IEC 62061) depending on application characteristics			
Note: For up-to-date information, visit <a href="http://www.ab.com/Safety/">http://www.ab.com/Safety/</a>				
Certifications	CE marked for all applicable directives, cULus, TÜV, and CCC			
Outputs				
Safety Contacts * Direct Opening Action	2 N.C.	3 N.C.		
Auxiliary Contacts	1 N.O.	None		
Thermal Current I <sub>th</sub>	10 A			
Rated Insulation Voltage	(U <sub>i</sub> ) 500V			
Switching Current @ Voltage, Min.	5 mA @ 5V DC			
Utilization Category				
A 600/AC-15	(U <sub>e</sub> ) 600V	500V	240V	120V
	(I <sub>e</sub> ) 1.2 A	1.4 A	3.0 A	6.0 A
N 600/DC-13	(U <sub>e</sub> ) 600V	500V	250V	125V
	(I <sub>e</sub> ) 0.4 A	0.55 A	1.1 A	2.2 A
Operating Characteristics				
Break Contact Force, Min.	15 N (3.37 lb)			
Actuation Speed, Max.	160 mm (6.299 in) per sec			
Actuation Frequency, Max.	2 cycle per sec.			
Operating Radius, Min	150 mm (5.905 in) (60 mm (2.36 in) with G D 2 kit)			
Operating Life @ 100 mA load	1 x 10 <sup>6</sup> operations			
Environmental				
Enclosure Type Rating	IP 67			
Operating Temperature—C (F)	-20... + 80° (-4... +176°)			
Physical Characteristics				
Housing Material	UL approved glass-filled PBT			
Actuator Material	Stainless Steel			
Weight—g (lbs)	80 (0.176)			
Color	Red			

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

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

\* The safety contacts are described as normally closed (N.C.) i.e., with the guard closed, actuator in place (where relevant) and the machine able to be started.

## Product Selection

Contact			Actuator Type	Cat. No.			
Safety	Auxiliary	Action		M16Conduit		Connector§	
				M16	1/2inch NPT Adaptor	Connect to Distribution Box 6-Pin Micro (M12)	Connect to ArmorBlock Guard I/O 5-Pin Micro (M12)*
3 N.C.	—	—	F lat	440K -C 21096	440K -C 21048	440K -C 21090	440K -C 2NNFPS
			90°	440K -C 21097	440K -C 21057	440K -C 21091	—
			G D 2 Metal Alignment Guide with Semi-F lex Actuator	—	440K -C 21062	440K -C 21092	440K -C 2NNAPS
			—	440K -C 21070	—	—	—
2 N.C.	1 N.O.	BBM	F lat	440K -C 21098	440K -C 21050	440K -C 21054	—
			90°	440K -C 21061	440K -C 21058	440K -C 21067	—
			G D 2 Metal alignment guide with semi-flex actuator	—	440K -C 21074	440K -C 21088	—
			—	440K -C 21055	—	—	—
		MBB	F lat	440K -C 21052	440K -C 21093	440K -C 21060	—
			90°	440K -C 21065	440K -C 21094	440K -C 21068	—
			G D 2 Metal Alignment Guide with Semi-F lex Actuator	—	440K -C 21095	440K -C 21089	—
			—	440K -C 21080	—	—	—

§ For connector ratings see page 3-9.

\* With a 5-pin micro (M12) connector, not all contacts are connected. See *Typical Wiring Diagram* on page 3-17 for wiring details.

## Recommended Logic Interfaces

Description	Safety Outputs	Auxiliary Outputs	Terminals	Reset Type	Power Supply	Cat. Page No.	Cat. No.
<b>Single-Function Safety Relays</b>							
MSR127RP	3 N.O.	1 N.C.	Removable (\$crew)	Monitored Manual	24V AC/DC	5-24	440R-N23135
MSR127TP	3 N.O.	1 N.C.	Removable (\$crew)	Auto./Manual	24V AC/DC	5-24	440R-N23132
MSR126T	2 N.O.	None	Fixed	Auto./Manual	24V AC/DC	5-22	440R-N23117
MSR30RT	2 N.O. Solid State	1 N.O. Solid State	Removable	Auto./Manual or Monitored Manual	24V DC	5-16	440R-N23198
<b>Modular Safety Relays</b>							
MSR210P Base 2 N.C. only	2 N.O.	1 N.C. and 2 PNP Solid State	Removable	Auto./Manual or Monitored Manual	24V DC from the base unit	5-74	440R-H23176
MSR220P Input Module	—	—	Removable	—	24V DC	5-78	440R-H23178
MSR310P Base	MSR300 Series Output Modules	3 PNP Solid State	Removable	Auto./Manual Monitored Manual	24V DC	5-94	440R-W23219
MSR320P Input Module	—	2 PNP Solid State	Removable	—	24V DC from the base unit	5-98	440R-W23218

**Note:** For additional Safety Relays connectivity, see the Safety Relays section (page 5-8) of this catalog.

For additional Safety I/O and Safety PLC connectivity, see the Programmable Safety System section (page 5-107) of this catalog.

For application and wiring diagrams, see the Safety Applications section (page 10-1) of this catalog.

## Connection Systems






Description	6-Pin Micro (M12)	5-Pin Micro (M12)
Cordset	889R-F6ECA-*	—
Patchcord	889R-F6ECRM-*	889R-F5ECRM-*
Distribution Box	898R-P68MT-A5	—
Shorting Plug	898R-P61MU-RM	—
T-Port	NA	—

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

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

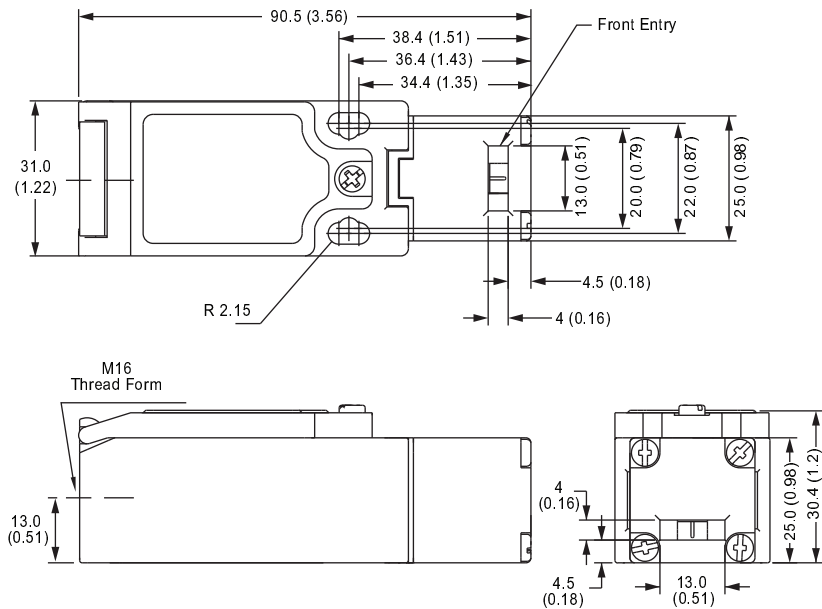
**Note:** For additional information, see the Safety Connection System section (page 7-1) of this catalog.

Accessories

Description		Dimensions	Cat. No.
	Flat Actuator, Not to be used with Metal Alignment Guide	3-52	440K-A21014
	90° Actuator, Not to be used with Metal Alignment Guide	3-52	440K-A21006
	Metal Alignment Guide with Semi-Flexible Actuator	3-52	440K-A21030
	Replacement Cover	3-54	440A-A21115
	Dust Cover	3-54	440K-A17182

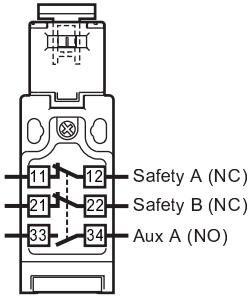
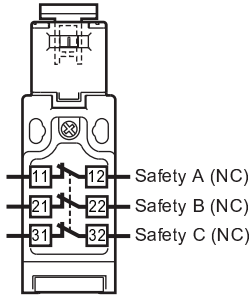
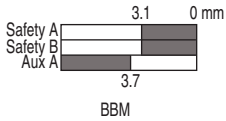
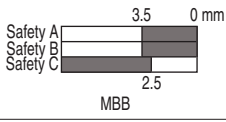

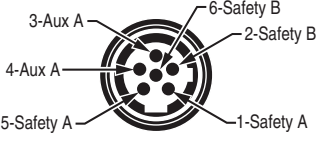
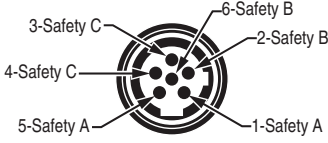
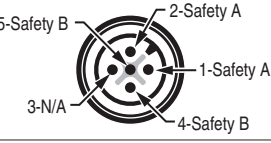
Approximate Dimensions—mm (inches)

Dimensions are not intended to be used for installation purposes.



**Note:** 2D, 3D and electrical drawings are available on [www.ab.com](http://www.ab.com).

## Typical Wiring Diagrams

Description		2 N.C. & 1 N.O.	3 N.C.
Contact Configuration			
Contact Action		  □ Open ■ Closed	
6-Pin Micro (M12)			
5-Pin Micro (M12)		—	
Cordset 889R-F6ECA-*	Red/White	Safety A	Safety A
	Red/Black		
	Red	Safety B	Safety B
	Red/Blue		
	Green	Aux A	Safety C
	Red/Yellow		

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