

Cadet™ 3

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-radii 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. and 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
- GD2 style available for demanding applications

Specifications

Safety Ratings					
Standards	EN954-1, ISO13849-1, IEC/EN60204-1, NFPA79, EN1088, ISO14119, IEC/ EN60947-5-1, ANSI B11.19, AS4024.1				
Safety Classification	Cat. 1 device per EN 954-1 dual channel interlocks suitable for Cat. 3 or 4 systems				
Functional Safety Data * Note: For up-to-date information, visit http://www.ab.com/safety	B10d: > 2 x 10 ⁶ operations at min. load PFH ₀ : > 3 x10 ⁻⁷ MTTFd: > 385 years Dual channel interlock may be suitable for performance levels Pl _e or Pl _d (according to ISO 13849-1:2006) and for use in SIL2 or SIL3 systems (according to IEC 62061) depending on application characteristics				
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 _{th}	10 A				
Rated Insulation Voltage	(Ui) 500V				
Switching Current @ Voltage, Min.	3 mA @ 18V DC				
Utilization Category					
A600/AC-15	(Ue)	600V	500V	240V	120V
	(Ie)	1.2 A	1.4 A	3.0 A	6.0 A
DC-13	(Ue)	24V			
	(Ie)	2 A			
Operating Characteristics					
Break Contact Force, Min.	15 N (3.37 lbf)				
Actuation Speed, Max.	160 mm (6.29 in.)/s				
Actuation Frequency, Max.	2 cycles/s				
Operating Radius, Min	150 mm (5.90 in.) [60 mm (2.36 in.) with GD2 kit]				
Mechanical Life	1,000,000 operations				
Environmental					
Enclosure Type Rating	IP67				
Operating Temperature [C (F)]	-20...+ 80° (-4...+176°)				
Physical Characteristics					
Housing Material	UL Approved glass-filled PBT				
Actuator Material	Stainless Steel				
Weight [g (lb)]	80 (0.176)				
Color	Red				

* 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

‡ 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		M16 Conduit		Connector♣	
				M16	1/2 inch NPT Adaptor	Connect to Distribution Box 6-Pin Micro (M12)	Connect to ArmorBlock Guard I/O 5-Pin Micro (M12)Δ
3 N.C.	—	—	Flat	440K-C21096	440K-C21048	440K-C21090	440K-C2NNFPS
			90°	440K-C21097	440K-C21057	440K-C21091	—
			GD2 Metal alignment guide w/semi-flex actuator	—	440K-C21062	440K-C21092	440K-C2NNAPS
			—	440K-C21070	—	—	—
2 N.C.	1 N.O.	BBM	Flat	440K-C21098	440K-C21050	440K-C21054	—
			90°	440K-C21061	440K-C21058	440K-C21067	—
			GD2 metal alignment guide w/semi-flexible actuator	—	440K-C21074	440K-C21088	—
			—	440K-C21055	—	—	—
		MBB	Flat	440K-C21052	440K-C21093	440K-C21060	—
			90°	440K-C21065	440K-C21094	440K-C21068	—
			GD2 Metal alignment guide w/semi-flex actuator	—	440K-C21095	440K-C21089	—
			—	440K-C21080	—	—	—

♣ For connector ratings see Typical Wiring Diagrams.

Δ With a 5-pin micro (M12) connector, not all contacts are connected. See Typical Wiring Diagrams for wiring details.

Recommended Logic Interfaces

Description	Safety Outputs	Auxiliary Outputs	Terminals	Reset Type	Power Supply	Cat. Page No.	Cat. No.
Single-Function Safety Relays							
MSR127RP	3 N.O.	1 N.C.	Removable (Screw)	Monitored Manual	24V AC/DC	MSR127RP/TP	440R-N23135
MSR127TP	3 N.O.	1 N.C.	Removable (Screw)	Auto./Manual	24V AC/DC	MSR127RP/TP	440R-N23132
MSR126T	2 N.O.	None	Fixed	Auto./Manual	24V AC/DC	MSR126R/T	440R-N23117
MSR30RT	2 N.O. Solid State	1 N.O. Solid State	Removable	Auto./Manual or Monitored Manual	24V DC	MSR30RT/RTP	440R-N23198
Modular Safety Relays							
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	MSR210P	440R-H23176
MSR220P Input Module	—	—	Removable	—	24V DC	MSR220P	440R-H23178
MSR310P Base	MSR300 Series Output Modules	3 PNP Solid State	Removable	Auto./Manual Monitored Manual	24V DC	MSR310P	440R-W23219
MSR320P Input Module	—	2 PNP Solid State	Removable	—	24V DC from the base unit	MSR320P	440R-W23218

Note: For additional Safety Relays connectivity, see Safety Relays.

For additional Safety I/O and Safety PLC connectivity, see Programmable Safety Solutions.

For application and wiring diagrams, see Safety Applications and Wiring Diagrams.

Connection Systems

Description	6-Pin Micro (M12)	5-Pin Micro (M12)
Cordset	889R-F6ECA-*	—
Patchcord	889R-F6ECRM-‡	889D-F5ACDM-*
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.

§ Replace symbol with 4 or 8 for number of ports.

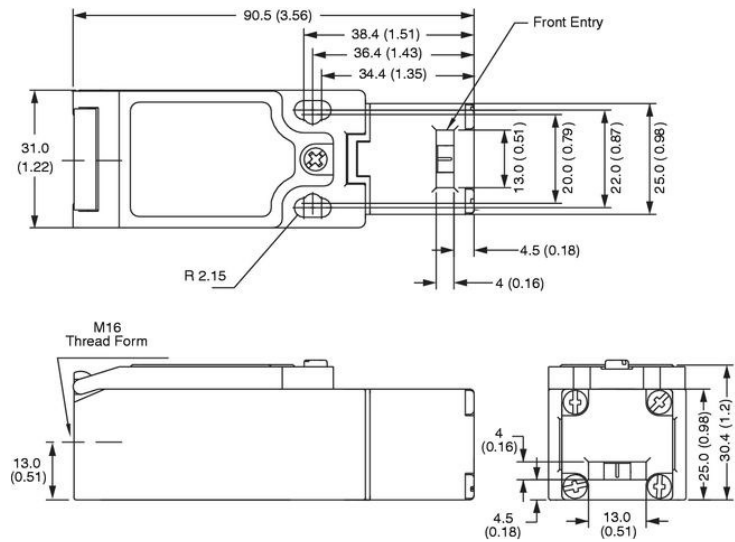
Note: For additional information, see Safety Connection Systems.

Accessories

Description	Dimensions	Cat. No.
 Flat actuator, not to be used with metal alignment guide	Actuators* (continued)	440K-A21014
 90° actuator, not to be used with metal alignment guide		440K-A21006
 Metal alignment guide with semi-flexible actuator		440K-A21030
 Replacement Cover	—	440A-A21115
 Dust Cover	—	440K-A17182

Approximate Dimensions

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



Note: 2D, 3D and electrical drawings are available on 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.