

Description

The EIf is a tongue-operated (or key-operated) safety interlock switch designed to fit at the leading edge of sliding, hinged or lift-off guards. The EIf's unique miniature housing (only 75 x 25 x 29 mm) makes it the smallest interlock currently available. It is designed for smaller machines such as printers, copiers and domestic machinery which, until now, have been unable to use safety interlocks due to space restrictions. With its dual entry slots and rotatable head, the versatile EIf can offer up to eight different actuator entry options.

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

The EIf is available with a variety of contact configurations, conduit entry types and connectors. It is sealed to IP 67 (watertight and dustproof). A blanking plug is supplied for the unused key entry.

Features

- Ideal for small, lightweight guards
- The smallest interlock switch available
- Contacts, 2 N.C. or 1 N.O. & 1 N.C.
- Eight possible actuator entry points, easy to install
- Environmental protection: IP 67
- GD2 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 B11.19, 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 ⁶ operations at min. load PFH ₀ : > 3 x 10 ⁻⁷ 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:	F for up-to-date information, visit http://www.ab.com/Safety/				
Certifications	CE marked for all applicable directives, cULus, TÜV, and CCC				
Outputs					
Safety Contacts * Direct Opening Action	1 N.C.	2 N.C.			
Auxiliary Contacts	1 N.O.	None			
Thermal Current I _{th}	5 A (10 A if A600)				
Rated Insulation Voltage	2500V				
Switching Current @ Voltage, Min.	5 mA @ 5V DC				
Utilization Category					
A 600/AC-15	(Ue)	600V	500V	240V	120V
	(Ie)	1.2 A	1.4 A	3.0 A	6.0 A
N 600/DC-13	(Ue)	600V	500V	250V	125V
	(Ie)	0.4 A	0.55 A	1.1 A	2.2 A
Operating Characteristics					
Break Contact Force, Min.	6 N (1.35 lb)				
Actuation Speed, Max.	160 mm (6.29 in) per sec.				
Actuation Frequency, Max.	2 cycle per sec.				
Operating Radius, Min	150 mm (5.90 in); 60 mm (2.36 in) with GD2 kit, min.				
Operating Life @ 100 mA load	1 x 10 ⁶ 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 (oz)	60 (2.11)				
Color	Red				

* Suitable 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.			
				M16 Conduit		Connectors	
Safety	Auxiliary	Action		M16	1/2 inch NPT Adaptor	Connect to Distribution Box 4-Pin Micro (M12)	Connect to ArmorBlock Guard I/O 5-Pin Micro (M12) †
1 N.C.	1 N.O.	BBM	Flat	440K -E 33036	440K -E 33029	440K -E 33074	—
			—	440K -E 33040	440K -E 33030	440K -E 33025	—
			GD 2 Metal alignment guide w/semi-flex actuator	440K -E 33034	440K -E 33031	440K -E 33075	—
			—	440K -E 33014	440K -E 33053	440K -E 33076	—
2 N.C.	—	—	Flat	440K -E 33080	440K -E 33037	440K -E 33077	440K -E 2NNFPS
			90°	440K -E 33041	440K -E 33045	440K -E 33024	—
			GD 2 Metal alignment guide w/semi-flex actuator	—	440K -E 33046	440K -E 33078	440K -E 2NNAPS
			—	440K -E 33047	—	440K -E 33079	—

§ 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 3-13 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 for 2N.C. Contact Switch							
MSR 127RP	3 N.O.	1 N.C.	Removable (Screw)	Monitored Manual	24V AC/DC	5-24	440R-N 23135
MSR 127TP	3 N.O.	1 N.C.	Removable (Screw)	Auto./Manual	24V AC/DC	5-24	440R-N 23132
MSR 30RT	2 N.O. Solid State	1 N.O. Solid State	Removable	Auto./Manual or Monitored Manual	24V DC	5-16	440R-N 23198
Single-Function Safety Relays for 1N.C. & 1N.O. Contact Switch							
MSR 9T	2 N.O.	1 N.C.	Fixed	Auto./Manual	24V AC/DC	5-14	440R-F 23027
MSR 33RT	2 N.O. Solid State	1 N.O.	Removable	Auto. or Monitored Manual	24V DC SELV	5-18	440R-F 23200
Modular Safety Relays							
MSR 210P 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-H 23176
MSR 220P Input Module	—	—	Removable	—	24V DC	5-78	440R-H 23178
MSR 310P Base	MSR 300 Series Output Modules	3 PNP Solid State	Removable	Auto./Manual Monitored Manual	24V DC	5-94	440R-W 23219
MSR 320P Input Module	—	2 PNP Solid State	Removable	—	24V DC from the base unit	5-98	440R-W 23218

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	Connection to Distribution Box 4-Pin Micro (M12)		Connection to ArmorBlock Guard I/O 5-Pin Micro (M12)
	1 N.C. & 1 N.O.	2 N.C.	2 N.C.
Cordset	889D -F 4AC -*	889D -F 4AC -*	—
Patchcord	889D -F 4ACDM -*	889D -F 4ACDM -*	889R -F 5ECRM -*
Distribution Box	898D -P 4†KT -DM4	898D -4†LT -DM4	—
Shorting Plug	898D -41KU -DM	898D -41LU -DM	—
T-Port	898D -43KY -D4	898D -43LY -D4	—







* 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.

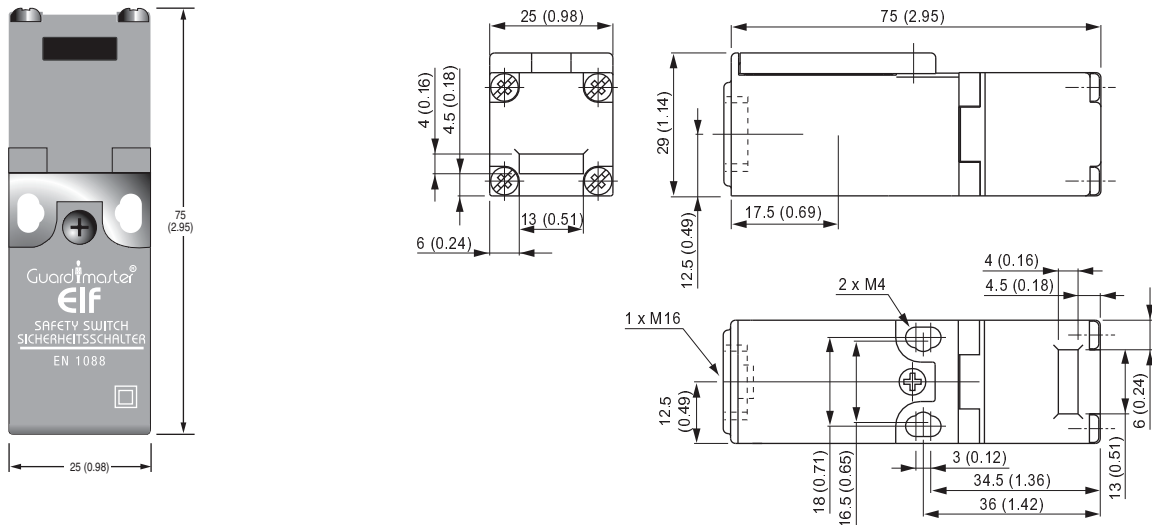
Note: For additional information, see the Safety Connection System section (page 7-1) of this catalog.

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
	Metal Alignment Guide	3-52	440K-A21069
	Replacement C Cover	3-54	440A-A33085
	Dust Cover	3-54	440K-A17182

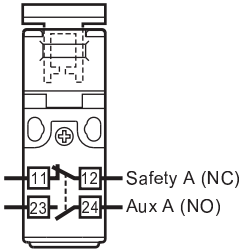
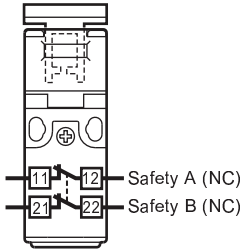
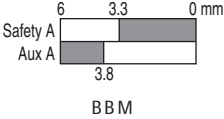
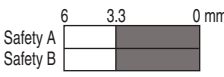
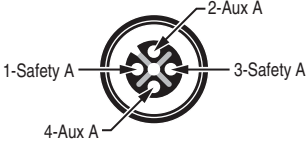
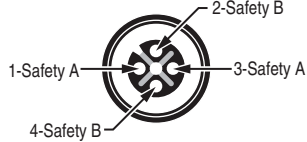
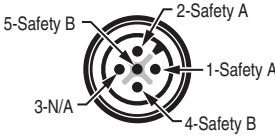
Approximate Dimensions—mm (inches)

Dimensions are not intended to be used for installation purposes.



Note: 2D, 3D and electrical drawings are available on www.ab.com/.

Typical Wiring Diagrams

Description		1 N.C. & 1 N.O.	2 N.C.
Contact Configuration			
Contact Action □ Open ■ Closed			
4-Pin Micro (M12)			
5-Pin Micro (M12) For ArmorBlock Guard I/O		—	
Cordset 889D-F4AC-*	Brown	Safety A	Safety A
	Blue		
	White	Aux A	Safety B
	Black		

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