

Position Interlock Switches

Safety Limit Switches

Small Plastic Senator



Description

The small plastic Senator safety limit switches conform to EN 50047 and have been developed to provide a range of options including metal or plastic cases in various sizes, a choice of snap acting, slow break/make with 2 or 3 contact configurations and a choice of actuator heads.

The Senator range offers the option of rotating the head in 90° increments before installation to allow ease of mounting.

Allen-Bradley/Guardmaster limit switches can be used in other applications other than guard doors, for example on moving machine beds, crane arms, lifts, elevators, etc.

Operation of these limit switches is achieved by the sliding action of the guard or other moving object deflecting the plunger or lever. For safety applications it is important that upon actuation, the guard or other moving objects should not pass completely over the switch and allow the plunger or lever to return to its original position.

Features

- Large selection of actuator heads
- Positive operation, forced disconnection of contacts
- Snap-acting, slow make before break or slow break before make contact blocks
- Contacts 1 N.C. + 1 N.O., 2 N.C. + 1 N.O. 3 N.C., 2 N.C. + 1 N.O.
- Conforms to EN 50047, EN 1088, EN 60947-5-1, EN 292 and EN 60204-1

Applications Types

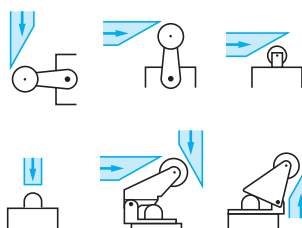


Specifications

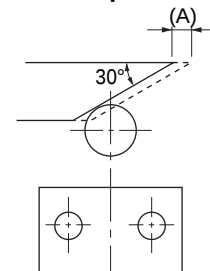
Standards	EN954-1, ISO13849-1, IEC/EN60204-1, NFPA79, EN1088, ISO14119, IEC/EN60947-5-1, ANSI B11.19, AS4024.1
Category	Cat. 1 Device per EN954-1 Dual channel interlocks suitable for Cat. 3 or 4 systems
Approvals	cULus, TUV and CE marked for all applicable directives
Safety Contacts	1 N.C. snap acting, 2 N.C., 3 N.C. or 4 N.C. slow acting
Auxiliary Contacts	1 N.O. (with 2 N.C.)
Designation/Utilization Cat. A600/AC-15 (Ue) (Ie) N600/DC-13 (Ue) (Ie)	600V 500V 240V 120V 1.2A 1.4A 3A 6A 600V 500V 250V 125V 0.4A 0.55A 1.1A 2.2A
Min Current	5V, 5mA, DC
Thermal Current (Ith)	10A
Rated Insulation Voltage	600V AC
Rated Impulse withstand Volt	2500V
Travel for Positive Opening	Various (see Product Selection table)
Max Switching Speed	250mm/s
Min Switching Speed	100mm/min
Max Switching Frequency	6000 operation per hour
Case Material	UL approved glass-filled polybutylene terephthalate
Roller Material	Various polymers
Enclosure Protection	IP 66
Operating Temperature	Min -25°C (-18°F) Max 80°C (+176°F)
Pollution Degree ①	3
Mech. Life Expectancy	1 x 10 ⁷
Conduit Entry	M20 or 1/2in NPT
Fixing	2 x M4
Mounting	Any position
Colour	Red

① Conductive pollution occurs, or dry, non conductive pollution occurs which becomes conductive due to condensation.

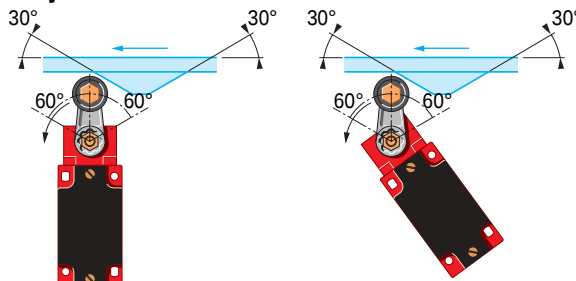
Operating Examples



Cam Displacement



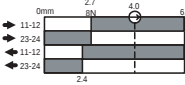
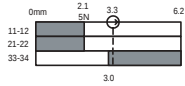
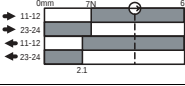
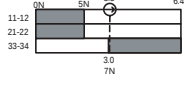
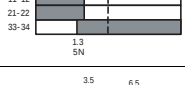
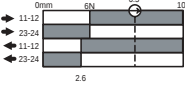
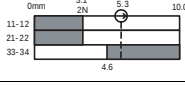
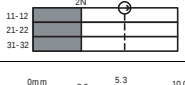
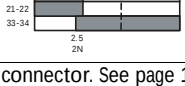
Adjustable Lever Arms



The actuating cam should be profiled at 30° for optimum operation.
(Note: Plunger-type switches operate from a flat profile.)

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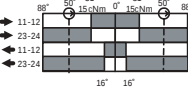
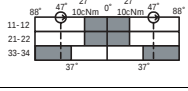
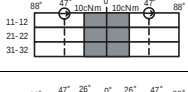
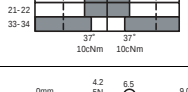
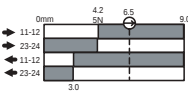
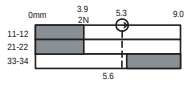
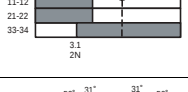
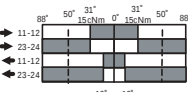
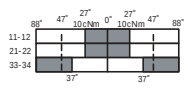
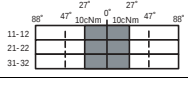
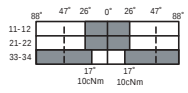
Product Selection

Operator Type	Contact		Contact Type	Typical Force/Torque to Operate	Contact Opening Characteristics □ Open ■ Closed ● Positive Opening Point	Catalogue Number		
	Safety	Aux.				1/2in NPT Conduit	M20 Conduit	Quick Disconnect ①
 Roller Plunger 	1 N.C	1 N.O	Snap Acting	5N		440P-CRPS11E	440P-CRPS11B	440P-CRPS11D4
	2 N.C	1 N.O	BBM	6N		440P-CRPB12E	440P-CRPB12B	440P-CRPB12R6
	3 N.C.	—	—	5N		440P-CRPB03E	440P-CRPB03B	440P-CRPB03R6
	2 N.C	1 N.O	MBB	6N		440P-CRPM12E	440P-CRPM12B	440P-CRPM12R6
 Dome Plunger. 	1 N.C	1 N.O	Snap Acting	5N		440P-CDPS11E	440P-CDPS11B	440P-CDPS11D4
	2 N.C	1 N.O	BBM	6N		440P-CDPB12E	440P-CDPB12B	440P-CDPB12R6
	3 N.C.	—	—	5N		440P-CDPB03E	440P-CDPB03B	440P-CDPB03R6
	2 N.C	1 N.O	MBB	6N		440P-CDPM12E	440P-CDPM12B	440P-CDPM12R6
 Hinge Lever 	1 N.C	1 N.O	Snap Acting	5N		440P-CHLS11E	440P-CHLS11B	440P-CHLS11D4
	2 N.C	1 N.O	BBM	6N		440P-CHLB12E	440P-CHLB12B	440P-CHLB12R6
	3 N.C.	—	—	5N		440P-CHLB03E	440P-CHLB03B	440P-CHLB03R6
	2 N.C	1 N.O	MBB	6N		440P-CHLM12E	440P-CHLM12B	440P-CHLM12R6
Recommended standard cordset, 2m, 4-pin, DC Micro (M12) connector. See page 15-10 for additional lengths.								889D-F4AC-2
Recommended standard cordset, 2m, 6-pin AC Micro connector. See page 15-10 for additional lengths.								889R-F6ACA-2

- ① D4 suffix uses a 4-pin DC Micro (M12) connector.
 R6 suffix uses a 6-pin AC Micro (dual keyway) connector.

Position Interlock Switches
Safety Limit Switches
 Small Plastic Sensor

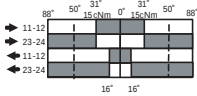
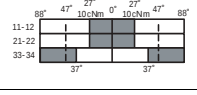
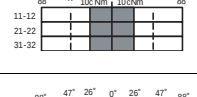
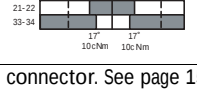
Product Selection (continued)

Operator Type	Contact		Contact Type	Typical Force/Torque to Operate	Contact Opening Characteristics □ Open ■ Closed ● Positive Opening Point	Catalogue Number		
	Safety	Aux.				1/2in NPT Conduit	M20 Conduit	Quick Disconnect ①
 Short Lever 	1 N.C	1 N.O	Snap Acting	0.15Nm		440P-CSLS11E	440P-CSLS11B	440P-CSLS11D4
	2 N.C	1 N.O	BBM	0.14Nm		440P-CSLB12E	440P-CSLB12B	440P-CSLB12R6
	3 N.C.	—	—	0.14Nm		440P-CSLB03E	440P-CSLB03B	440P-CSLB03R6
	2 N.C	1 N.O	MBB	0.14Nm		440P-CSLM12E	440P-CSLM12B	440P-CSLM12R6
 Offset Hinge 	1 N.C	1 N.O	Snap Acting	5N		440P-COHS11E	440P-COHS11B	440P-COHS11D4
	2 N.C	1 N.O	BBM	6N		440P-COHB12E	440P-COHB12B	440P-COHB12R6
	3 N.C.	—	—	5N		440P-COHB03E	440P-COHB03B	440P-COHB03R6
	2 N.C	1 N.O	MBB	6N		440P-COHM12E	440P-COHM12B	440P-COHM12R6
 Adjustable Lever ② 	1 N.C	1 N.O	Snap Acting	0.15Nm		440P-CALS11E	440P-CALS11B	440P-CALS11D4
	2 N.C	1 N.O	BBM	0.14Nm		440P-CALB12E	440P-CALB12B	440P-CALB12R6
	3 N.C.	—	—	0.14Nm		440P-CALB03E	440P-CALB03B	440P-CALB03R6
	2 N.C	1 N.O	MBB	0.14Nm		440P-CALM12E	440P-CALM12B	440P-CALM12R6
Recommended standard cordset, 2m, 4-pin, DC Micro (M12) connector. See page 15-10 for additional lengths.								889D-F4AC-2
Recommended standard cordset, 2m, 6-pin AC Micro connector. See page 15-10 for additional lengths.								889R-F6ACA-2

- ① D4 suffix uses a 4-pin DC Micro (M12) connector.
 R6 suffix uses a 6-pin AC Micro (dual keyway) connector.
 ② Not positive opening

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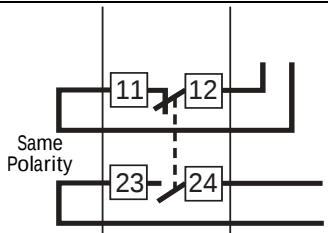
Product Selection (continued)

Operator Type	Contact		Contact Type	Typical Force/ Torque to Operate	Contact Opening Characteristics □ Open ■ Closed ● Positive Opening Point	Catalogue Number		
	Safety	Aux.				1/2in NPT Conduit	M20 Conduit	Quick Disconnect ①
 Rubber Roller ②	1 N.C	1 N.O	Snap Acting	0.15Nm		440P-CRRS11E	440P-CRRS11B	440P-CRRS11D4
	2 N.C	1 N.O	BBM	0.14Nm		440P-CRRB12E	440P-CRRB12B	440P-CRRB12R6
	3 N.C.	—	—	0.14Nm		440P-CRRB03E	440P-CRRB03B	440P-CRRB03R6
	2 N.C	1 N.O	MBB	0.14Nm		440P-CRRM12E	440P-CRRM12B	440P-CRRM12R6
Recommended standard cordset, 2m, 4-pin, DC Micro (M12) connector. See page 15-10 for additional lengths.								889D-F4AC-2
Recommended standard cordset, 2m, 6-pin AC Micro connector. See page 15-10 for additional lengths.								889R-F6ACA-2

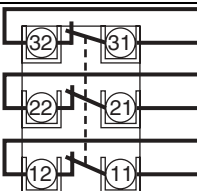
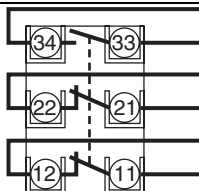
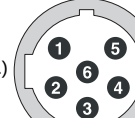
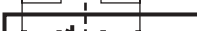
- ① D4 suffix uses a 4-pin DC Micro (M12) connector.
 R6 suffix uses a 6-pin AC Micro (dual keyway) connector.
 ② Not positive opening

Typical Wiring Diagrams ③

Two-Circuit Type D4 4-Pin Micro Connector

Connector Pinout		1 N.C. + 1 N.O.	
		Terminal	Contact
 1 N.O. + 1 N.C.	1	11	N.C.
	3	12	N.C.
	2	23	N.O.
	4	24	N.O.

Three-Circuit Type R6 6-Pin Micro Connector

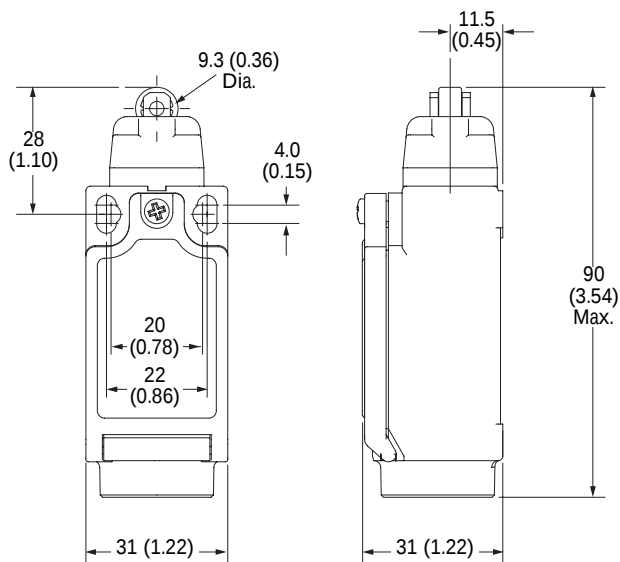
Connector Pinout					2 N.C. + 1 N.O.		3 N.C.	
					Terminal	Contact	Terminal	Contact
		Auxiliary Circuit (N.O.)		1	11		11	
				5	12	N.C.	12	N.C.
		Safety Circuit 2 (N.C.)		2	21		21	
				6	22	N.C.	22	N.C.
		Safety Circuit 1 (N.C.)		3	33	N.O.	31	N.C.
			4	34		32		

- ③ See Product Selection tables for positive opening circuits.

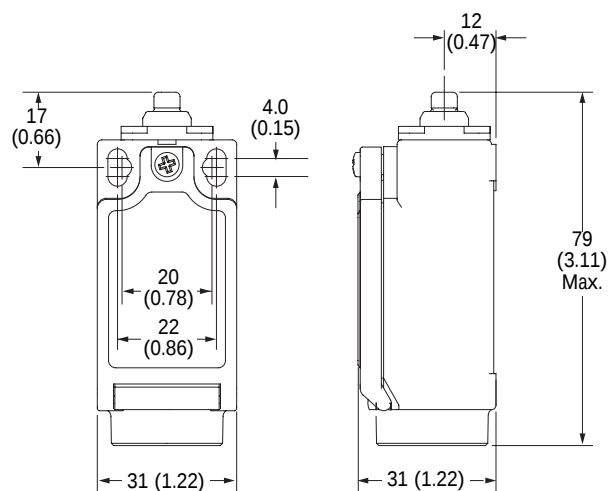
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Approximate Dimensions—mm (inches)

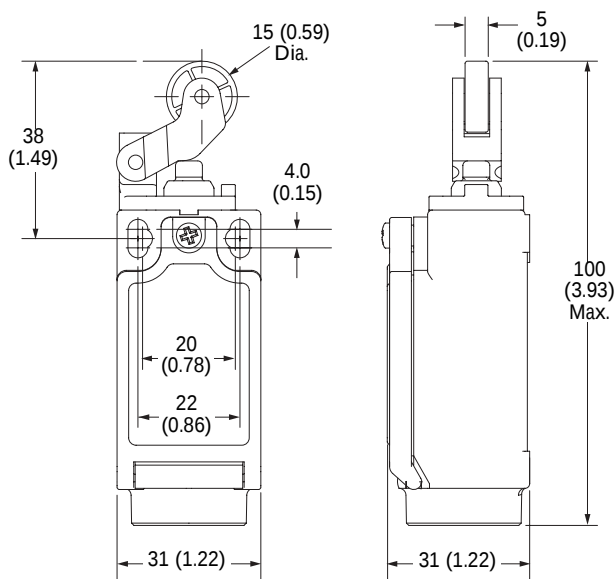
Dimensions are not intended to be used for installation purposes.



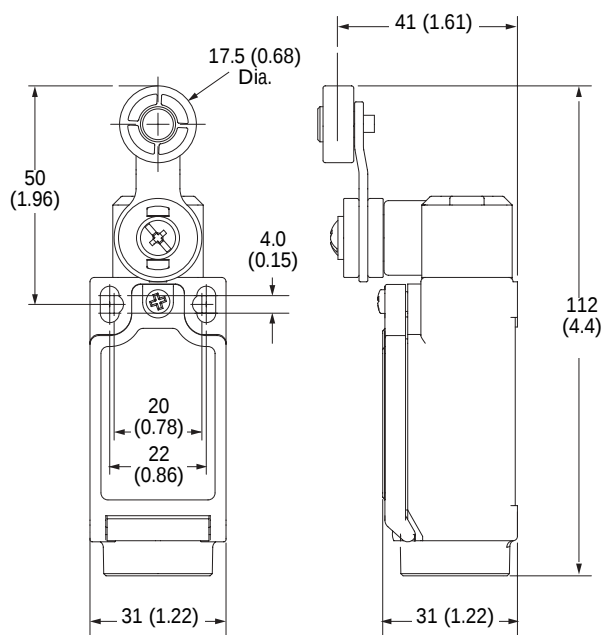
Roller Plunger



Dome Plunger



Hinge Lever

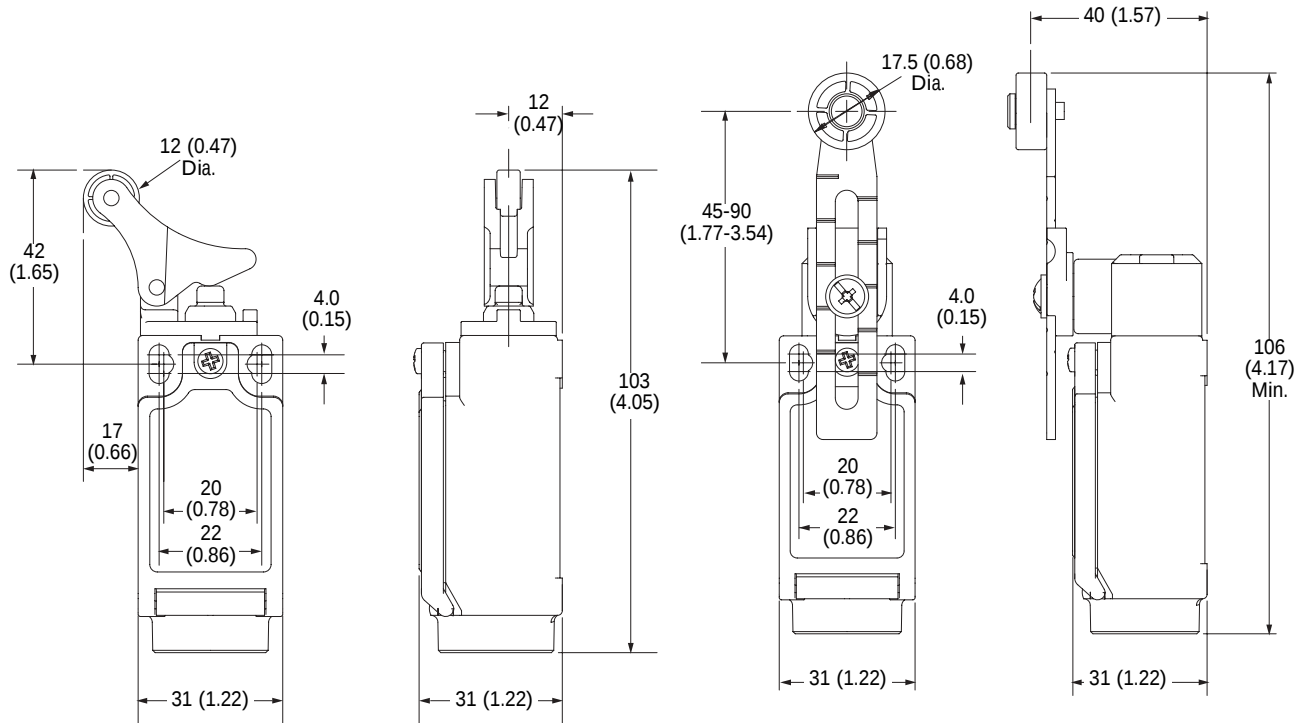


Short Lever

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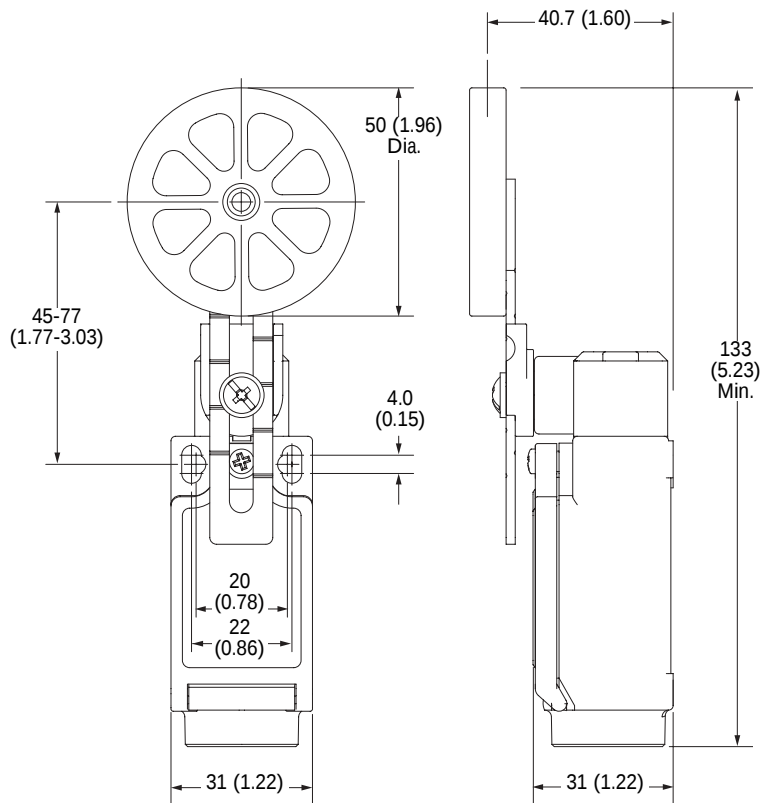
Approximate Dimensions—mm (inches) (continued)

Dimensions are not intended to be used for installation purposes.



Offset Hinge

Adjustable Lever



Rubber Roller