

Installation and Operating Instructions

Bulletin 440P Small Metal Safety Position Switches with 5-Pin Male Micro (M12) Connectors

IMPORTANT: SAVE THESE INSTRUCTIONS FOR FUTURE USE.

This publication does not include all specifications, dimensions, or any special installation considerations.
Refer to the product catalog pages for additional information.



ATTENTION: To avoid electrical shock and unintended operation of equipment, disconnect all power to the limit switch and the controlled equipment before proceeding with any repair or adjustment of the limit switch.

General Data

- Safety contacts: 1 N.C.
- Auxiliary contacts: 1 N.O.
- Enclosure rating:
 - Type 1
 - IP65
- Rugged die cast housing
- 15 cm (6 in.) pigtail with 5-pin male micro (M12) QD
- Compact profile for access limited installation

Principles, Standards, and Implementation

Before installation in a safety application, a risk assessment should be performed to determine whether the specifications of this device are suitable for foreseeable operational and environmental characteristics of the machine which is to be controlled. Only the normally closed set of contacts are considered safety contacts. When applying these limit switches in a safety system application, all applicable standards for application should be followed. Operating specifications must be followed and actuator must be displaced beyond the point where Direct Opening Action occurs. These devices are not to be used to directly control a motor.

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 limit switch suitable for Cat. 3 or 4 systems
Certifications	cULus Listed, TÜV and CE Marked for all applicable directives

IMPORTANT: Installation of Allen-Bradley Guardmaster products should be in accordance with local and/or national codes. Servicing energized industrial control equipment can be hazardous if not in accordance to recommended safety procedures.

Outputs

Safety Contacts	1 N.C. snap acting
Auxiliary Contacts	1 N.O. snap acting
Thermal Current (I_{th})	3 A
Rated Insulation Voltage (U_i)	300V AC
Short Circuit Protection	3 A max. fast acting fuse IEC 269 type gG or equivalent

Connector Ratings

Maximum for 5-Pin Male Micro (M12) ①

AC	DC
60V, 3 A	60V, 3 A

Operating Characteristics

Actuation Speed, Max.	250 mm/s
Actuation Speed, Min.	100 mm/min
Actuation Frequency, Max.	6000 ops/hr
Mechanical Life	1 x 10 ⁷ operations at room temperature

Environmental

Enclosure Type Rating	Type 1, IP65
Operating Temperature [C (F)]	2...70 ° (35.6...158 °)
Pollution Degree ②	3

Physical Characteristics

Housing Material	Die cast alloy
Actuator Material	Various polymers and metals
Mounting	2 x M4, any position
Vibration	IEC 68-2-6 (10...55 Hz, 0.35 mm amplitude)
Shock	IEC 68-2-7 (30 Gn 3 pulses per axis)
Connection	15 cm (6 in.) 5/22 AWG UL AWM 2464 pigtail with 5-pin male M12 QD
Enclosure Color	Red body/black head

①



WARNING: For safe operation, the M12 female connector of the connecting cable must be rated 60V 3 A or higher per standard EN61984.

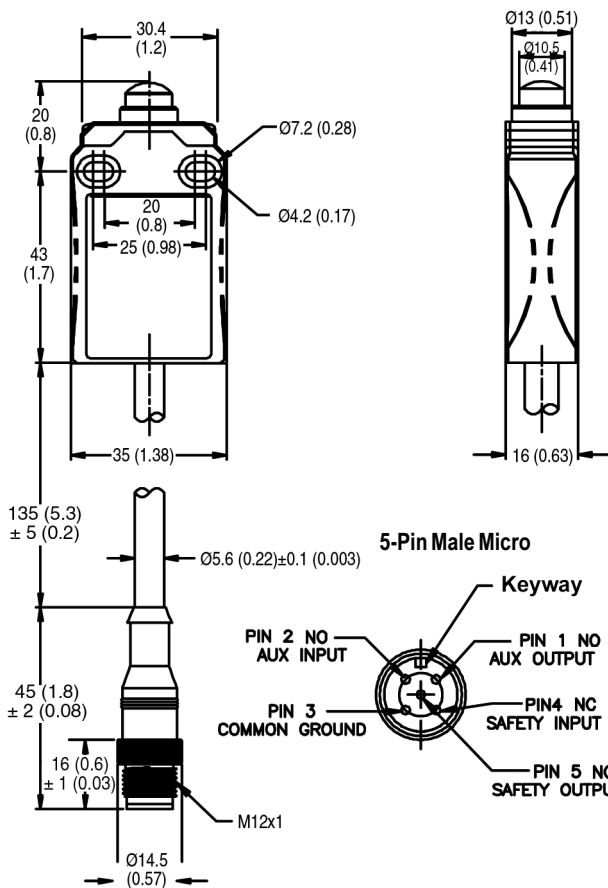
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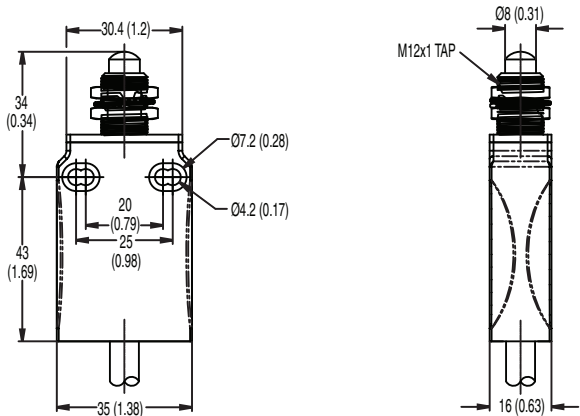
ATTENTION: The M12 female connector of the connecting cable must have a minimum sealing of IP65 to maintain a pollution degree 3 rating.

Mounting Dimensions [mm (in.)]

Nonpanel Mount



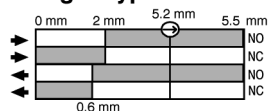
Panel Mount



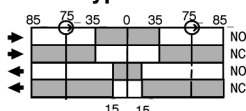
Contact Opening Characteristics

- Open ■ Closed
- Positive Opening Point

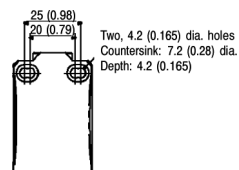
Plunger Type



Lever Type



Countersink Hole



- Panel mount clearance hole = 13 mm (0.51 in.) max.



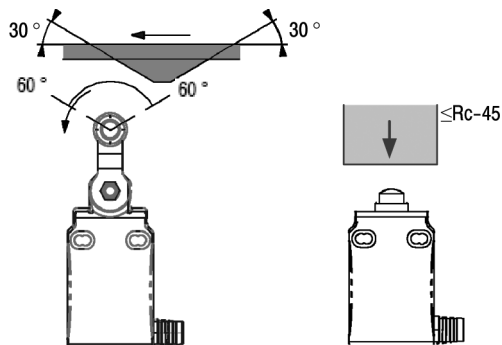
ATTENTION: Under no circumstances must the switch be actuated beyond the mechanical travel specified. Serious damage to the device and property could result.

Maintenance

These devices require little maintenance, but routine visual inspection is recommended to keep foreign debris from collecting on the exterior actuators and rollers. Removing the operator head is not recommended as loose internal components may be lost or improperly re-installed.

Actuation Guidelines

The method of actuation and over travel has significant influence on the service life of the limit switch. To maximize the service life, it is recommended to provide an actuator with a 30° pressure angle and a surface hardness of Rc-45 max.



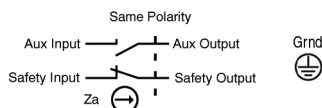
Lever Positioning

Some rotary switches are supplied with levers that are mechanically coupled to the actuating shaft. The lever may be removed and re-installed for cam tracking adjustment. See table below for torque recommendations.

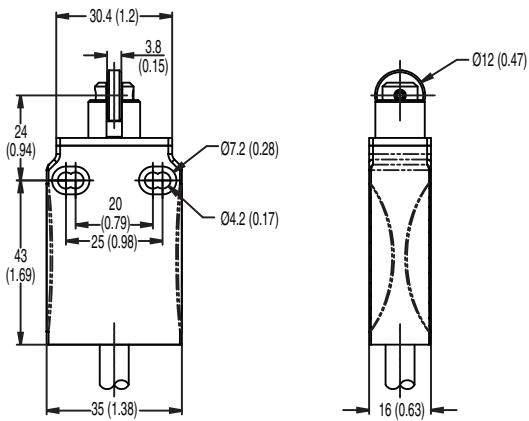
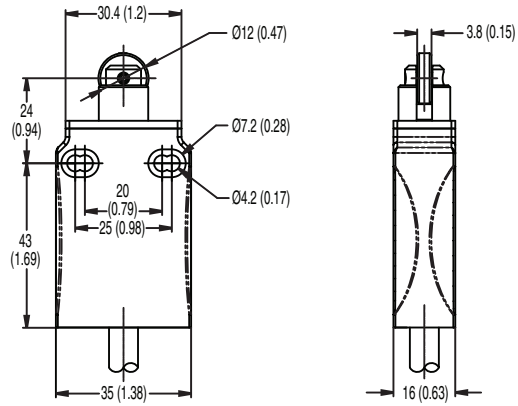
Torque Specifications

Location	Torque
3.5 mm Operator Head Phillips Screws	0.8 N•m (7.1 lb•in)
Short and Wide Roller Lever Arm 8 mm Hex Nut	1.0 N•m (8.85 lb•in)
Adjustable Lever Arm 4 mm Allen Head Screw	1.8...2.8 N•m (15.93...24.78 lb•in)
Adjustable Lever Arm Collar 3 mm Allen Head Screw	3.2 N•m (28.32 lb•in)
12 mm Panel Mount Nut	1.5 N•m (13.28 lb•in)

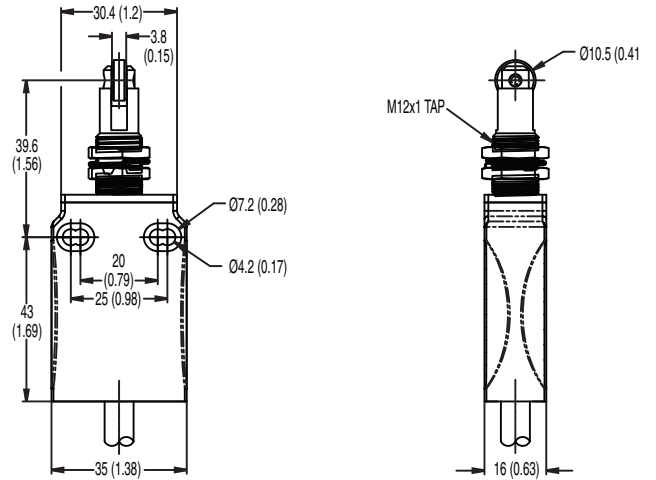
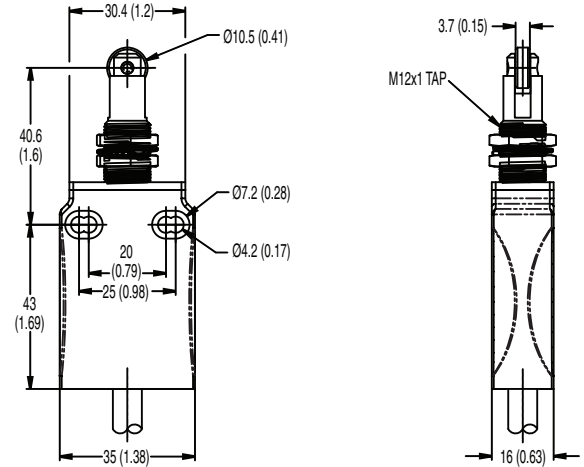
Wiring Diagram



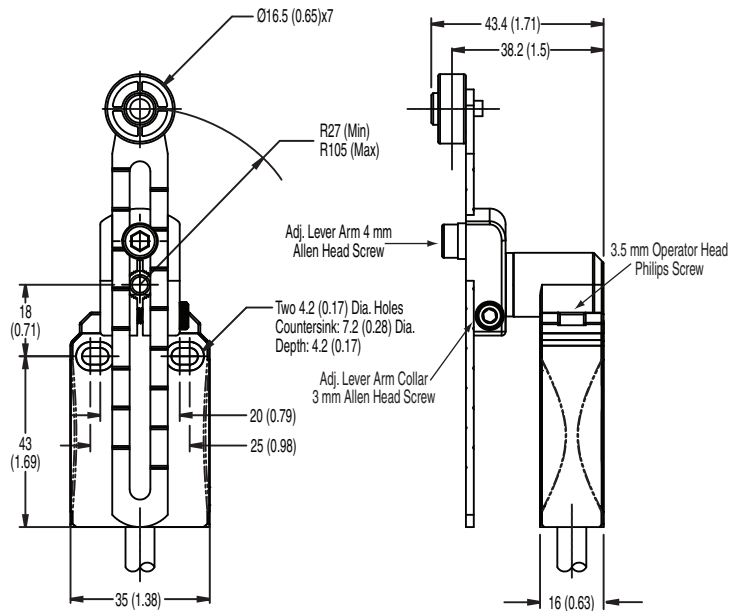
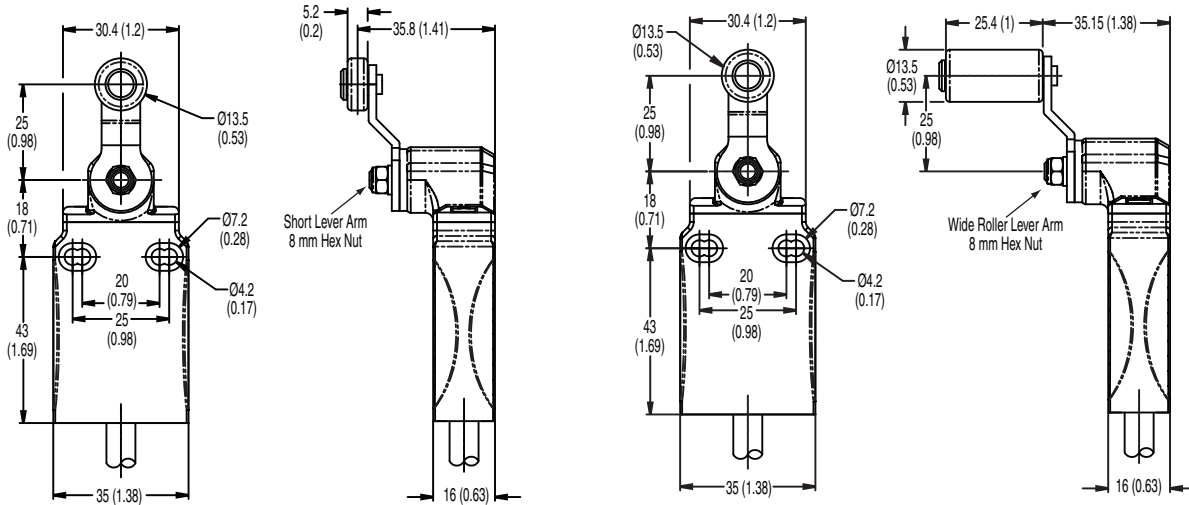
Mounting Dimensions [mm (in.)]
Nonpanel Mount



Panel Mount



Note: Lever arm versions are nonpanel mount only.



ATTENTION: Operator heads with adjustable actuators should **NOT** be used for safety applications.

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