

Features

- Designed and approved for use in hazardous locations internationally
- Weatherproof
- Two independently adjustable switches, no tools needed
- Brass pressure connection
- Solid metal enclosure



NOTICE

This document contains important information on the installation and operation of PS40-EX pressure switches. Please read all instructions carefully before beginning installation. A copy of this document is required by NFPA 72 to be maintained on site.



CENELEC DEMKO No. 03, ATEX 0311298X, IECEx UL 18.0005X, EN60079-0:2012+A11:2013, EN60079-1:2007

Installation

The Potter PS40-EX Series Supervisory Pressure Actuated Switches are designed primarily to detect an increase and/or decrease from normal system pressure in automatic fire sprinkler systems located in hazardous locations. Typical applications are: air/nitrogen supervision in dry pipe and pre-action systems, pressure tanks, air supplies, and water supplies. The PS40-EX has two switches. The Low switch is factory set to activate at approximately 30 psi (2,1 BAR) on a decrease in pressure. The High switch is factory set to activate at approximately 50 psi (3,5 BAR) on an increase in pressure. NFPA 72 requires a supervisory signal if the pressure increases or decreases by 10 psi from normal. The PS40 is factory set for a normal air pressure of 40 psi. See section heading Adjustments and Testing if other than factory set point is required.

1. Connect the PS40 to the system side of any shutoff or check valve.
2. Apply teflon tape to the threaded male connection on the device. (Do not use pipe dope)
3. Device should be mounted in the upright position. (Threaded connection down)

WARNING

- Installation must be performed by qualified personnel and in accordance with all national and local codes and ordinances.
- Shock hazard. Disconnect power source before servicing. Serious injury or death could result.
- Read all instructions carefully and understand them before starting installation. Save instructions for future use. Failure to read and understand instructions could result in improper operation of device resulting in serious injury or death.
- Risk of explosion. Not for use in hazardous locations. Serious injury or death could result.

Technical Specifications

Dimensions	152mm Dia. x 178mm H (6" Dia. x 7" H)
Enclosure	Cast aluminum
Pressure Connection	1/2" NPT male brass fitting
Factory Setting	One switch operates on pressure decrease at: 206 kPa/2.1 BAR/30 PSI One switch operates on pressure increase at: 344 kPa/3.5 BAR/50 PSI
Pressure Range	69 kPa/.69 BAR/10 PSI to 1207 kPa/12.07 BAR/175 PSI
Maximum Differential	14 kPa/.14 BAR/2 PSI at 138 kPa/1.38 BAR/20 PSI 34 kPa/.34 BAR/5 PSI at 1207 kPa/12.07 BAR/175 PSI
Maximum System Pressure	2068 kPa/20.68 BAR/300 PSI
Switch Contact Ratings	Two Sets of SPDT (Form C) 15.0 Amps at 125/250 VAC 2.0 Amps at 30 VDC
Conduit Entrance	1/2" NPT female conduit opening To maintain type "d" component protection use an Ex component conduit sealing device.
Environmental Specifications	For use in hazardous locations classified by CENELEC: Ex db IIB T6 Gb Class I: Div 1 Groups B, C, D Class II: Div. 1 Groups E, F, G, Class III: Div. 1
Enclosure Rating	IP66/NEMA 4,9
Temperature Rating	-40°C to 60°C (-40°F to 140°F)
Cover Tamper	Cover incorporates tamper resistant fastener that requires a special key for removal. One key is supplied with each device.
Service Use	NFPA 13, 13D, 13R, 72

Adjustment and Testing

NOTE: Testing the PS40-EX may activate other system connected devices.

The operation of the pressure supervisory switch should be tested upon completion of installation and periodically thereafter in accordance with the applicable local, national and NFPA codes and standards and/or the authority having jurisdiction (manufacturer recommends quarterly or more frequently).

The use of a Potter BVL (see product bulletin 5400799 for details) is recommended to facilitate setting and testing of the PS40-EX pressure switch. When a BVL (bleeder valve) is used, the pressure to the switch can be isolated and bled from the exhaust port on the BVL without affecting the supervisory pressure of the entire system. See Fig. 2.

The operation point of the PS40-EX Pressure Switch can be adjusted to any point between 69 kPA/.69 BAR/10 PSI to 1207 kPA/12.07 BAR/175 PSI by turning the adjustment knob(s) clockwise to raise the actuation point and counter clockwise to lower the actuation point. Each switch may be independently adjusted to actuate at any point across the switch adjustment range. If the pressure needs to be adjusted from the factory settings, adjust the system pressure to the desired trip point. Use an ohmmeter on the appropriate contact (COM and NC for pressure decrease and COM and NO for pressure increase). Adjust the knurled knob until the meter changes state. At that point the switch is set for that particular pressure. Final adjustments should be made with a pressure gauge.

The position of the top of the adjustment knob across to the printed scale on the switch bracket can be used to provide an approximate visual reference of the pressure switch setting.

Special Conditions For Safe Use

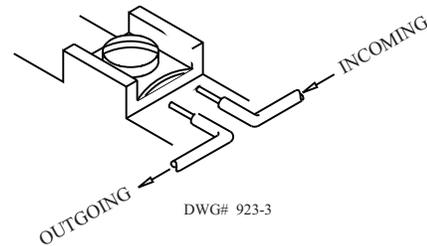
Dimensions of flameproof joints are other than the relevant minimum or maximum specified in Table 2 of EN 60079-1:2007. Pressure switches are marked with an "x" and manufacturer's drawing no. 1350402 detail the dimensions of flameproof joints.

Dry System: Supervisory Signal (Low/High air)

Connect the PS40-EX to the Dry Pipe Valve Trim piping on the system side of any shutoff or check valve in the supervisory Air/Gas Dry Pipe Valve supply line connected to the DPV. A Model BVL bleeder valve as supplied by Potter Electric Signal St. Louis, MO. or equivalent shall be connected between the air line and the device to provide a means of testing the operation of the supervisory switch. (*Low Air Only*) To test the High setting, the system pressure must be increased to operate the switch.

Switch Terminal Connections Clamping Plate Terminal

Fig 1

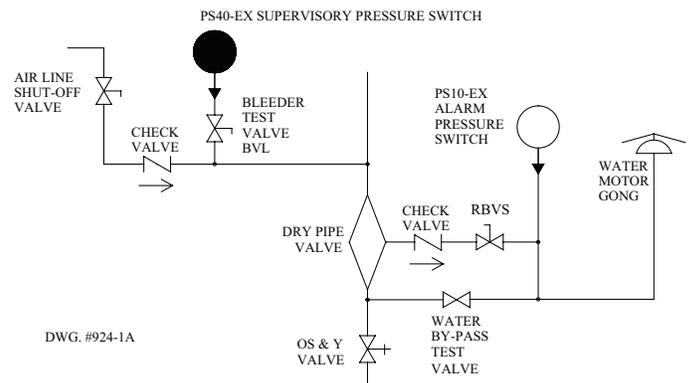


CAUTION

An uninsulated section of a single conductor should not be looped around the terminal and serve as two separate connections. The wire must be severed, thereby providing supervision of the connection in the event that the wire becomes dislodged from under the terminal.

Typical Sprinkler Applications

Fig 2



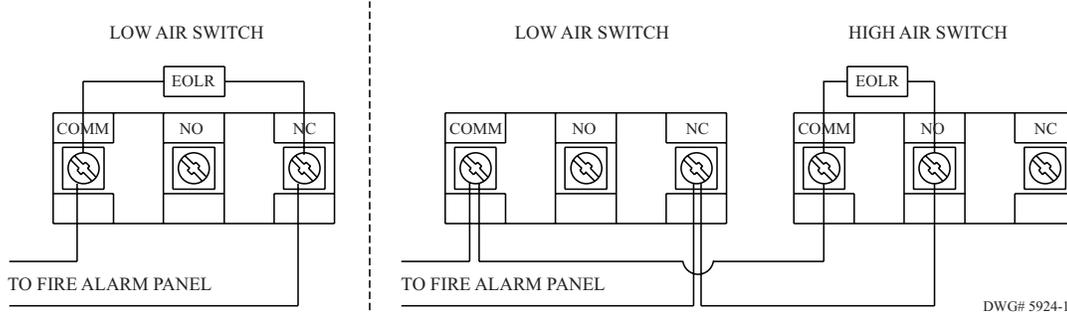
CAUTION

The closing of any shutoff valves between the alarm check valve and the PS10-EX will render the PS10-EX inoperative. To comply with the IBC, IFC, and NFPA-72 any such valve shall be electrically supervised with a supervisory switch such as Potter Model RBVS.

Typical Electrical Connections

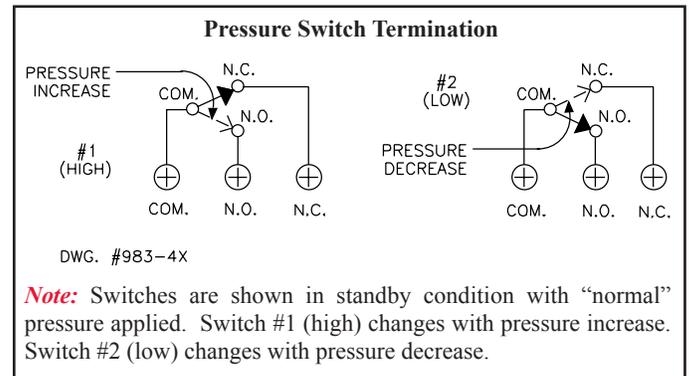
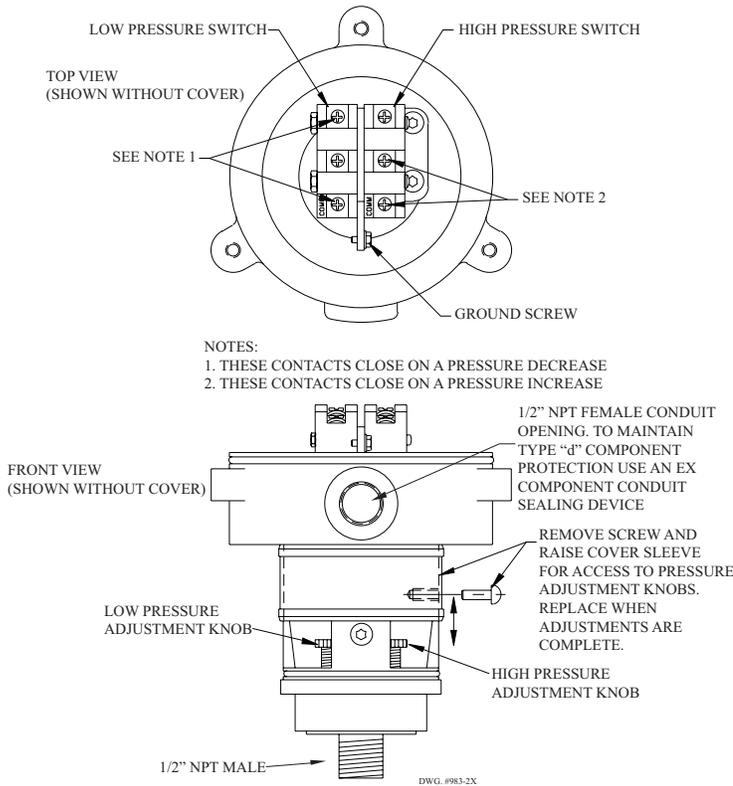
Fig 3

Note: Low and High Air on the Same Zone



Note: High switch changes with pressure increase. Low switch changes with pressure decrease.

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Note: Switches are shown in standby condition with “normal” pressure applied. Switch #1 (high) changes with pressure increase. Switch #2 (low) changes with pressure decrease.

Note: To prevent leakage, apply Teflon tape sealant to male threads only.

Engineer/Architect Specifications Pressure Type Waterflow Switch

UL, CUL Listed/FM, ATEX Approved and CE Marked pressure supervisory switches shall be furnished and installed at the system pressure connection of each dry pipe valve and pre-action system and where indicated on the drawings and plans and as required by applicable local and national codes and standards.

Connection to the system shall be via a 1/2" bleeder valve installed between the pressure supervisory switch and the pressure source to permit testing. Pressure supervisory switches shall be diaphragm type devices consisting of a brass 1/2" NPT male nipple for connection to the sprinkler system, dual non-corrosive pressure chambers and diaphragms, independently adjustable pressure settings, one 1/2" threaded conduit entrance and two Single Pole Double Throw (SPDT) switches.

The device shall be approved for use in hazardous locations classified as EX d IIB T6 Gb, (Class I: Groups B, C, D, Div. 1, Class II: Groups E, F, G, Div. 1, Class III: Div. 1). The enclosure shall be IP66 (NEMA 4 & 9) rated. It shall be possible to install an optional cover tamper switch to detect removal of the enclosure.

Factory settings shall be 207 kPa/2.07 BAR (30PSI) for low pressure and 345 kPa/3.45 BAR (50 PSI) for high pressure. The device shall be listed for pressures up to 2068 kPa/20.68 BAR (300 PSI). The adjustable range shall be 69 kPa/.69 BAR (10 PSI) to 1207 kPa/12.07 BAR (175 PSI) and it shall be possible to change the factory set operating point of the pressure switch without the use of any tools. It shall be possible to change the pressure setting of either switch without affecting the pressure setting of the other switch.

The switch contacts shall be rated at 15A, 125/250VAC and 2A, 30VDC. Pressure supervisory switch shall be model PS40-EX, bleeder valve shall be model BVL manufactured by Potter Electric Signal Company LLC.

Ordering Information

Model	Description	Stock No.
PS40-EX	Pressure Switch with two sets of SPDT contacts	1350402
BVL	Bleeder Valve	1000018
	Hex Key (For cover removal)	5250074
	Hex Key (For pressure adjustment access)	5250073
	Optional Cover Tamper Switch Kit	0090200

CAUTION

- Failure to install properly could damage the switch and cause improper operation resulting in damage to equipment and property.
- To seal threads, apply Teflon tape to male threads only. Using joint compounds or cement can obstruct the pressure port inlet and result in improper device operation and damage to equipment.
- Do not over tighten the device, standard piping practices apply.
- Do not apply any lubricant to any component of the pressure switch.

NOTICE

Pressure Switches have a normal service life of 10-15 years. However, the service life may be significantly reduced by local environmental conditions.

WARNING

When this device is to be installed in an area that is classified as "HAZARDOUS", the person responsible for safety in the area shall be contacted to determine if the tools and operations required for the installation of the device and associated components are permitted in the area. To reduce the risk of ignition of hazardous atmospheres, disconnect supply circuits before opening cover. Keep cover tight while circuits are live.

The mating surfaces of the cover and housing are designed and machined to meet the hazardous location requirements of the applicable listing agencies. These surfaces shall be protected from any damage and shall be clean and free of all foreign matter. No gasket or sealant of any type is allowed on these surfaces. The use of any type of gasket, sealant, or damage to these surfaces will void the hazardous rating of the device and can lead to explosion and death. These surfaces are not repairable and the cover is not replaceable. If any damage has occurred to either surface or a gasket or sealant has been applied to either surface, the entire device must be immediately removed from service and replaced. All foreign matter must be removed. If mating surfaces are damaged, do not place the device in service.

Important: When reinstalling the cover during installation or maintenance, wipe the mating cover and housing surfaces with a soft clean lint free cloth. Carefully inspect the surfaces for any damage or foreign matter. Firmly push the cover on the housing to fully seat the mating surfaces. Initially tighten each of the (3) cover screws evenly to 5 in-lbs (.56 n-m) to ensure that the cover is fully seated. Next, torque each cover screw to a final torque of 50 in-lbs (5.7 n-m). Failure to follow these instructions may result in injury or death.