

UNITED ELECTRIC

Model 24, Differential Pressure Switch

Brass or Polysulfone®, Adjustable Ranges 1 to 45 PSID

DESCRIPTION

The 24 Series differential pressure and vacuum switches offer a unique blend of compact size, excellent performance, environmental protection and attractive price. Available with brass or polysulfone® pressure connections, the Model 24 will stand up in your most corrosive applications. The precision snap-acting switch and sensitive diaphragms combine to provide a narrow deadband and repeatability of approximately $\pm 1\%$ of range span. The convenient, externally accessible adjustment screw is multi-turn to provide easy set point adjustability. The force-balanced design gives the Model 24 excellent vibration resistance.



The Model 24 was designed to be a compact, cost-effective differential pressure switch for applications such as proof-of-flow, filter monitoring, etc. It depends on two opposing diaphragms to sense pressure on the "High" and "Low" pressure outputs of a system. The resulting pressure differential is transmitted through a linkage to a snap-action electrical switch, providing an output when a pre-set difference is exceeded. This set point can be easily modified while under pressure via an external adjusting screw. This adjustment "pre-loads" the actuation mechanism, which results in excellent vibration-resistance. Straight pressure and vacuum versions, with a single diaphragm, are also available.

SPECIFICATIONS

GENERAL

Storage Temperature: -20 ° to 180 °F (-29 ° to 82 °C)
 Ambient Temperature: 30 ° to 160 °F (-1 ° to 71 °C). Set point typically shifts less than $\pm 0.6\%$ of range for a 50 °F (28 °C) ambient temperature change; consult factory for special ratings
 Max Media Temperature: 200 °F (93 °C) at 100 psi working pressure
 Shock: Set point repeats after 15G, 10 millisecond duration.
 Vibration: Set point repeats after 2.5 G, 5-500 Hz.
 Enclosure Classification: Complies with enclosure type 4 requirements with optional water tight conduit connector. Reinforced polyester body, stainless steel cover with gasket.
 Set Point Repeatability: Typically $\pm 1\%$ of full scale range
 Switch Output: SPDT precision snap-acting design with mechanical contact life of 10 million cycles. Actual life depends on electrical load and cycle frequency

Electrical Rating: Rated to 5 A resistive and 5 A inductive (75%PF) at 125 VAC and 250 VAC, 1/4 HP; 5 A resistive and 3 A inductive at 30 VDC and 0.5 A resistive and 0.25 inductive at 125 VDC. Gold flash over silver contacts for minimum loads of 5 mA at 6 VDC, 2 mA at 12 VDC and 1 mA at 24 VDC Weight: 6.5 oz.

Electrical Connection: 7/8" hole for optional 1/2" NPT conduit connector. Terminal block with screw terminals. Max wire size 16 AWG

Pressure Connection: Models 013-014: 1/4" NPT (female) brass; models 011-012, : 1/4" NPS (female) FDA compliant* Udel® polysulfone, non-tapered to minimize connection stress with 1/4" NPT (male) fittings - max torque is 2-ft.lbs.

Mounting & Installation: Surface mount with two screws through clearance holes, or mount by pressure connections



U.S. & Canada
 UL Listed, cUL Certified
 Pressure: UL 508; CSA C22.2 No.14, File #E42272



Europe
 Low Voltage Directive (LVD) 2006/95/ECUEC
 Compliant to LVD- The Low Voltage Directive does not apply to products for use in hazardous locations

Udel® is a registered trademark of Solvay Advanced Polymers* The U.S. Food & Drug Administration (FDA) has approved polysulfone resins as compliant with the specifications of the FDA 21CFR177.1655 for repeated use and selected single use in contact with food under conditions of use as specified in the citation.

Table 1

| Model | Adjustable Range | | Typical Deadband | | *Max Working Pressure | | **Proof Pressure | |
|--|------------------|----------------|------------------|------|-----------------------|-----|------------------|-----|
| | psid | bar | psid | bar | psi | bar | psi | bar |
| Polyurethane (polyether) diaphragm, ethylene propylene O-Ring, 1/4" NPS (female) (mechanical) polysulfone® pressure connection | | | | | | | | |
| 011 | 1 to 10 | 70 mbar to 0.7 | 0.75 | 0.05 | 150 | 10 | 150 | 10 |
| 012 | 4 to 45 | 0.3 to 3.0 | 1.0 | 0.07 | 150 | 10 | 150 | 10 |
| Polyurethane (polyether) diaphragm, ethylene propylene O-Ring, 1/4" NPT (female) brass pressure connection | | | | | | | | |
| 013 | 1 to 10 | 70 mbar to 0.7 | 0.75 | 0.05 | 150 | 10 | 150 | 10 |
| 014 | 4 to 45 | 0.3 to 3.0 | 1.0 | 0.07 | 150 | 10 | 150 | 10 |

* Working Pressure: The pressure range within which two opposing sensors can be safely operated and still maintain set point adjustability provided the difference in pressure between them does not exceed the designated adjustable range.

**Proof Pressure: The maximum pressure to which a pressure sensor may be occasionally subjected, which causes no permanent damage. The unit may require calibration (e.g. start-up testing)

DIMENSIONS INCHES (MM)

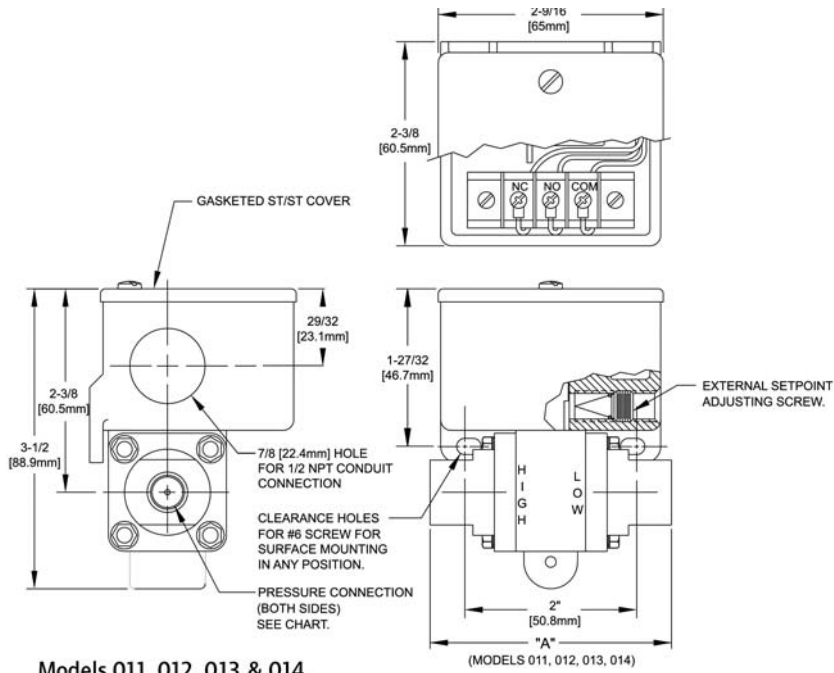


Table 2

| Model | Dimension A inches (mm) | Pressure Connection |
|----------|-------------------------|--------------------------|
| 011, 012 | 2.75 (69.9) | 1/4" NPS (F) Polysulfone |
| 013, 014 | 3.13 (79.5) | 1/4" NPT (F) Brass |

ORDERING INFORMATION

SPECIFY ABC (FROM TABLE BELOW)

EXAMPLE: 24012

| A Type | B Model (See Table 1) | C Options |
|---------------|---|---|
| 24= 24 Series | 011=011 012=012 013=013 014= 014 | --= None M020= Red status light, 115VAC only. Specify whether light turns on or off with increasing or decreasing pressure M201= Factory set switch; specify increasing or decreasing and set point M262= Buna-N diaphragm M540= Viton® construction (deadbands & low end of range may increase slightly). Wetted parts include Viton® diaphragm and/or O-Ring plus standard connection material. M900= M900= Water tight conduit fitting; converts 7/8" hole to 1/2" NPT fitting; must specify for compliance to NEMA 4 |

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