

P-SERIES Temperature Switches

Switches for -60 through 510°F with Adjustable Set Points and Fixed or Adjustable Deadband

Features:

- Set point repeatability, $\pm 1^{\circ}\text{F}$ ($1/2^{\circ}\text{C}$).
- All wiring terminals, adjustments and visual scales are accessible from the front of the switch.
- Choice of open frame type, general purpose, or watertight enclosure.
- Choice of fixed, limited adjustable or full-range adjustable deadband.
- Choice of single or two-stage units.
- Compact size.
- Mounts in any position.
- Rugged and vibration resistant.
- Visual adjustment scales in $^{\circ}\text{F}$ and $^{\circ}\text{C}$.
- Direct mount (local) or capillary and bulb (remote) sensors.
- Temperature transducers available with copper or 316 SS wetted material.
- Withstands high overrange temperatures.
- Mix and match switch and transducer components for increased stock flexibility or to change pressure ranges in field.

General Description:

ASCO P-Series temperature switches consist of an open frame or enclosure protected switch unit and a transducer unit. They can be ordered separately for customer stocking and/or field assembly or as a complete factory-assembled unit.

Switch

P-Series temperature switch units incorporate the unique ASCO TRI-POINT alternating fulcrum balance plate to control the operation of one or more electrical snap-action switches. The electrical snap-action switch together with the adjusting mechanism is a fully-tested, self-contained subassembly.

Transducer

The temperature transducer unit uses a vapor pressure principle where the internal pressure within the unit is generated by the vapor pressure of a chemical within a sealed system. Temperature transducers are available in two constructions, a direct mount or capillary and bulb construction. The direct mount unit includes a 1/2" NPT connection for direct mounting to the process. The capillary and bulb construction allows remote mounting from the process. The transducer unit (like the switch unit) is a fully-tested, self-contained subassembly.



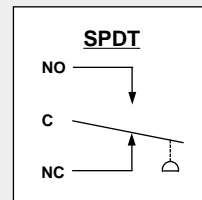
Standard Electrical Ratings

PA, PB, PC ① Series

15 Amp Res., 125 VAC
10 Amp Res., 250 VAC
1/8 HP, 125 VAC
1/4 HP, 250 VAC
1/2 Amp Res., 125 VDC
1/4 Amp Res., 250 VDC

PG ① Series

15 Amp Res., 125 VAC
10 Amp Res., 250 VAC
1/8 HP, 125 VAC
1/4 HP, 250 VAC



① PC and PG Series not UL listed or CSA approved, PC Series rated 10 Amp Res., 125/250 VAC; 1/3 HP 125/250 VAC.

Standard Temperature Ratings

Ambient: -4°F (-20°C) to 122°F (50°C)

Fluid: See specification table on page 26 for rated overrange temperature.

Operation

Temperature sensed by the bulb creates an internal pressure within the transducer. This pressure is then converted into movement of the piston. This piston movement is then used to control the operation of the electrical snap-action switch in the switch unit.

Options (See pages 34-35)

Enclosures

ASCO TRI-POINT switches are available in either a general purpose or watertight enclosure, in addition to open frame construction. These enclosed units are made in accordance with NEMA and UL standards. These standards define the protection level an enclosure gives and the tests it must pass to meet a particular design.

General Purpose – Type 1. These enclosures are designed for indoor use to protect personnel from accidental contact with the equipment. P-Series general purpose enclosures are painted, zinc-coated

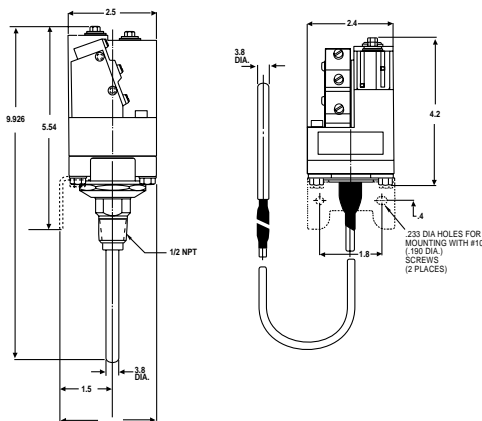
steel and have a 7/8" diameter hole at the top for electrical entry.

Watertight – Type 4. Watertight and dust-tight enclosures are intended for use indoors and outdoors to protect the enclosed equipment against splashing or falling water, windblown dust and water, hose directed water, and severe external condensation. P-Series watertight switch enclosures are epoxy-painted, zinc-coated steel with a 1/2" conduit hub in the side of the lower housing for electrical entry. (For optional 316 SS watertight enclosure see page 29.)

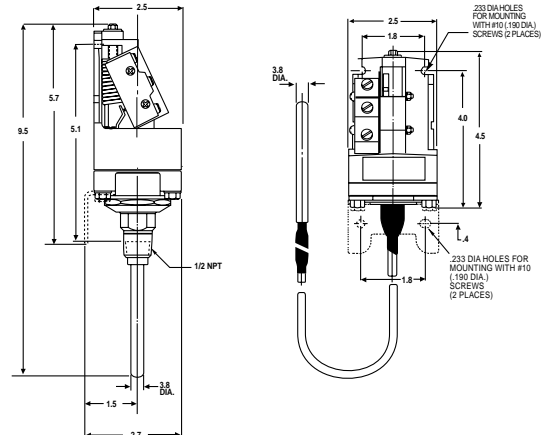
Dimensions (inches)

P-Series Temperature (Mounting brackets optional)

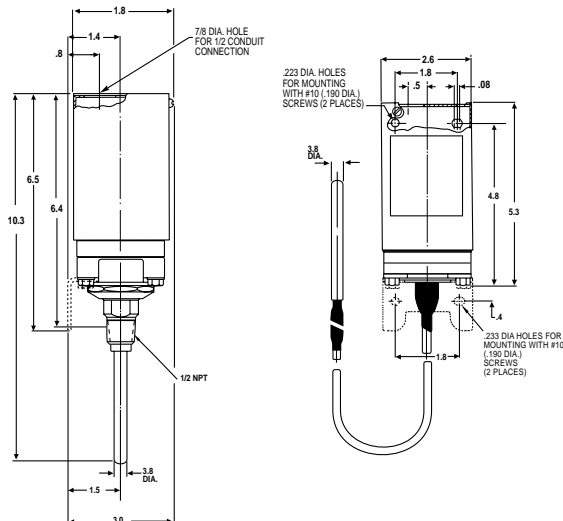
Open Frame PA and PC Switch Units with Transducer Unit Types RD-RV



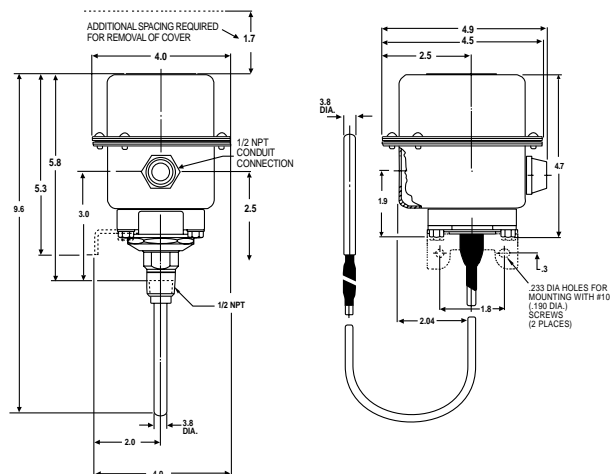
Open Frame PB and PG Switch Units with Transducer Unit



Type 1 General Purpose Switch Unit with Transducer Unit



Type 4 Watertight Switch Unit with Transducer Unit



How to Order

Factory assembled – Simply order the switch and transducer unit by catalog number joined by a slash (/), e.g., PA16A/KA10A1.

Field assembled – Simply order the switch and transducer units separately by individual catalog number, e.g., one PA16A and one KA10A1.

Options – Add appropriate suffix for desired option or accessory (see pages 34-35).

Important Note: The third digit of each of the catalog numbers must be identical, e.g., PA 1 6A and KA 1 0A1.

PA, PB, or PC unit below

PC Switch Unit

Two-Stage Fixed Deadband units consist of two separate snap-action switches, each with an independently adjustable set point and non-adjustable reset point. The difference between the set and reset points of each switch is the deadband listed below; the minimum difference between the set points of the two switches is the separation.



Open Frame

Two-Stage Fixed Deadband

Fixed Deadband At Mid-Range (°F)	Separation	Open Frame Catalog No.	General Purpose Catalog No.	Watertight Enclosure Catalog No.
	Maximum Full Scale			
	Minimum At Mid-Range (°F)			
7	9	PC16A	PC10A	PC11B
7	9	PC16A	PC10A	PC11B
7	11	PC16A	PC10A	PC11B
7	12	PC16A	PC10A	PC11B
7	10	PC16A	PC10A	PC11B
7	12	PC16A	PC10A	PC11B
9	15	PC16A	PC10A	PC11B
9	16	PC16A	PC10A	PC11B

Select transducer unit below



Direct Mount
1/2" NPT



Capillary
and Bulb

Transducer Unit

The **temperature transducer** works on the vapor principle where the internal pressure within the system is generated by the vapor pressure of a chemical within a sealed system. The temperature sensed by the bulb is related uniquely to an internal pressure within the system. The pressure acts on a diaphragm/piston to create the force output from the transducer into the switch unit. Temperature transducers are available in two constructions. The direct mount (local) unit includes a 1/2" NPT connection for direct application to the process. The capillary and bulb-type construction allows for remote mounting from the process.

Temperature Transducer Units

Direct Mount		6' Capillary and Bulb		12' Capillary and Bulb	
Copper	316 SS	Copper	316 SS	Copper	316 SS
Catalog No.	Catalog No.	Catalog No.	Catalog No.	Catalog No.	Catalog No.
KB10A1	KB10A4	KB11A1	KB11A4	KB11A1D	KB11A4D
KD10A1	KD10A4	KD11A1	KD11A4	KD11A1D	KD11A4D
KF10A1	KF10A4	KF11A1	KF11A4	KF11A1D	KF11A4D
KJ10A1	KJ10A4	KJ11A1	KJ11A4	KJ11A1D	KJ11A4D
KL10A1	KL10A4	KL11A1	KL11A4	KL11A1D	KL11A4D
---	---	KN11A1	KN11A4	KN11A1D	KN11A4D
---	---	KT11A1	KT11A4	KT11A1D	KT11A4D
---	---	KU11A1	KU11A4	KU11A1D	KU11A4D

All switch units and transducer units above are in stock for immediate delivery.

P-SERIES Temperature Switches

How to Select and Order

ASCO P-Series switches consist of two components, the switch unit and the transducer unit.

How to Select

1. Select the adjustable operating range based on desired actuation temperature.
2. Check that rated overrange temperature is sufficient.
3. Read across and select the desired P-Series switch unit with the proper enclosure.
4. Continue across and select a matching transducer unit.

How to Order

Factory assembled – Simply order the switch and transducer unit by catalog number joined by a slash (/), e.g., PG16A/KA10A1.

Field assembled – Simply order the switch and transducer units separately by individual catalog number, e.g., one PG16A and one KA10A1.

Options – Add appropriate suffix for desired option (see pages 34-35).

Important Note: The third digit of each of the catalog numbers must be identical, e.g., PG 1 6A and KA 1 0A1.

Select P-Series switch unit and transducer unit below

PG Switch Unit

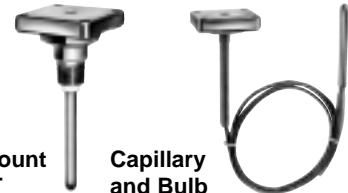
Limited Adjustable Deadband units have an adjustable set point and use a special snap-action switch that varies the deadband within the limits listed below.



Open Frame

Transducer Unit

The **temperature transducer** works on the vapor principle where the internal pressure within the system is generated by the vapor pressure of a chemical within a sealed system. The temperature sensed by the bulb is related uniquely to an internal pressure within the system. The pressure acts on a diaphragm/piston to create the force output from the transducer into the switch unit.



Direct Mount
1/2" NPT

Capillary
and Bulb

Specifications

Adjustable Operating Range (°F)	Rated Overrange Temperature (°F)		
	Direct Mount	Capillary	
		Copper	SS
-30 - 60	250	250	250
0 - 90	260	300	300
50 - 160	260	350	350
100 - 220	260	400	450
160 - 260	260	500	500
225 - 340	---	550	600
300 - 450	---	550	700
350 - 510	---	550	800

Limited Adjustable Deadband

Adjustable Deadband	Open Frame	General Purpose	Watertight Enclosure
Maximum Full Scale			
Minimum At Mid-Range (°F) ①	Catalog No.	Catalog No.	Catalog No.
6 - 12	PG16A	PG10A	PG11B
6 - 12	PG16A	PG10A	PG11B
6 - 12	PG16A	PG10A	PG11B
6 - 12	PG16A	PG10A	PG11B
6 - 12	PG16A	PG10A	PG11B
6 - 12	PG16A	PG10A	PG11B
6 - 12	PG16A	PG10A	PG11B
6 - 12	PG16A	PG10A	PG11B

Temperature Transducer Units

Direct Mount		6' Capillary and Bulb		12' Capillary and Bulb	
Copper	316 SS	Copper	316 SS	Copper	316 SS
Catalog No.	Catalog No.	Catalog No.	Catalog No.	Catalog No.	Catalog No.
KB10A1	KB10A4	KB11A1	KB11A4	KB11A1D	KB11A4D
KD10A1	KD10A4	KD11A1	KD11A4	KD11A1D	KD11A4D
KF10A1	KF10A4	KF11A1	KF11A4	KF11A1D	KF11A4D
KJ10A1	KJ10A4	KJ11A1	KJ11A4	KJ11A1D	KJ11A4D
KL10A1	KL10A4	KL11A1	KL11A4	KL11A1D	KL11A4D
---	---	KN11A1	KN11A4	KN11A1D	KN11A4D
---	---	KT11A1	KT11A4	KT11A1D	KT11A4D
---	---	KU11A1	KU11A4	KU11A1D	KU11A4D

°C = (°F - 32) x 5/9

All switch units and transducer units above are in stock for immediate delivery.

① Values shown are nominal.