B-Series Switches Temperature Switches

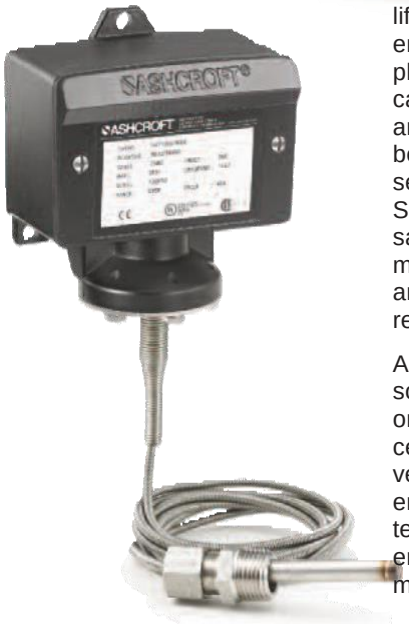
FEATURES

B-Series switches have proven reliable in such harsh environments as:

- ***Offshore oil rigs***
- ***Chemical and petrochemical plants***
- ***Pulp and paper mills***
- ***Steel mills***
- ***Power plants***
- ***Water and sewage treatment plants***

Other corrosive environments

Ashcroft Inc. supplies highly reliable Ashcroft® switches and controls for industrial and process applications. We begin with rock-solid designs, matching the most appropriate technology with the safety and reliability require ments of the applications. The materials of construction are specified to Ashcroft's exacting standards, and product is built to last in the toughest applications. Our modern, responsive manufacturing facility is supported by an extensive network of stocking distributors and factory sales offices located in virtually every part of the world. Special application assistance is always just a telephone call away.



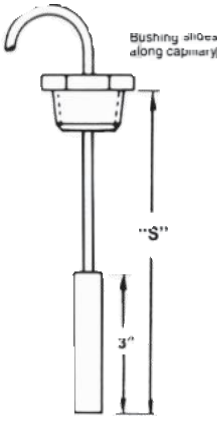
The Ashcroft B-Series switch line is designed to satisfy most switch requirements. Materials of construction have been selected for long life. A wide variety of precision switch elements are available to meet every application requirement, including hermetically sealed contacts for added reliability and safety. The actuators we use have been proven in more than 20 years of service in the world's plants and mills. Special designs are available for fire safety, NACE, limit control and other more stringent requirements. Simplicity and ease of use are stressed to improve reliability of the installation.

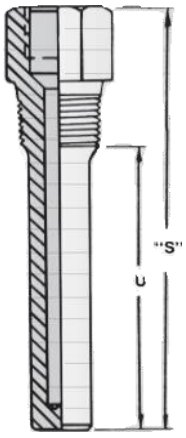
Applications include: pumps, compressors, washers, filters, degreasers, evaporators, recovery systems, food processing, ground support equipment, reverse osmosis systems, heat exchangers, hydraulic systems, lubrication systems, marine equipment, textile machinery, heating and air conditioning equipment.

Thermowells

Thermowells must be used on any application where the stem of the temperature switch may be exposed to pressure, corrosive fluids or high velocity. Additionally, the use of a thermowell permits instrument interchange or calibration check without disturbing or closing down the process. Ashcroft temperature switches have bulb diameter to match 3/8 nominal bore thermowells. The bulbs have a sensitive portion length of 2″ which can be used with 2 ½'' "U" dimensioned thermowells or longer. For maximum accuracy, a thermo- well's "U" dimension should be selected to permit complete immersion of the sensitive portion plus 1″ when measuring the temperature of liquids; an extra 3″ should be allowed when measuring the temperature of gases.

Thermowell bushings should be used with remote mount temperature switches. We recommend the standard 3″ bulb and code 69 Series bushings for use with any thermowell "U" dimension. A split rubber grommet allows easy installation and "S" dimension adjustment.





Temperature Switches

B-Series temperature switches feature a SAMA Class II vapor pressure thermal system. This system provides quick, accurate response to process temperature changes with negligible ambient temperature effects. This is inherent in the design due to the precise relationship that exists between temperature and pressure according to the vapor pressure laws. A wide selection of sensing bulb and armored capillary lengths is avail- able. The vapor pressure system design features small bulb sizes, making installation easy and cost-effective. All models feature ±1.0% percent of span setpoint repeatability with very high overtemperature ratings. These standard designs per- form well in applications where shock and vibration could be a problem and should be used with Ashcroft thermowells for bulb protection and ease of installation and maintenance.

STANDARD TEMPERATURE RANGE SELECTION

Nominal Range[1, 5]		Maximum Tempera-	Approximate Deadband[1] Switch Element[4]				
°F	°C	°F	20, 26, 27	21, 24, 31	50	22	32, 42
–40 to 60	–40 to 16	400	1.0-2.0	3.0-8.0	1.5-5.5	1.4-6.0	8.0-16.0
0 to 100	–20 to 40	400	1.5-3.0	5.0-12.0	2.2-8.5	1.5-7.5	9.0-20.0
75 to 205	20 to 95	400	1.5-3.5	8.0-16.0	2.5-12.0	2.0-9.0	10.0-24.0
150 to 260	65 to 125	400	1.5-3.0	5.0-12.0	2.2-8.5	2.0-9.0	10.0-24.0
235 to 375	110 to 190	500	1.5-3.5	5.0-12.0	2.5-8.5	2.0-9.0	10.0-24.0
350 to 525[3]	175 to 275	700	2.0-4.5	8.0-16.0	3.2-12.0	2.5-10.0	15.0-34.0
500 to 750[2]	260 to 400	900	4.0-8.0	16.0-30.0	7.2-24.0	5.0-23.0	30.0-50.0

NOTES:

1. All deadbands given in °F
2. Available with remote mount thermal systems only
3. Not available with 2 ¾'' stem.
4. Dual switch element multiply single switch element value by 1.6 for approximate deadband.
5. Set and reset points must fall within the adjustable range

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ASHCROFT
Trust the shield.™

B-Series Switches Temperature Switches

B-SERIES TEMPERATURE SWITCH MODEL NUMBER:

To specify the exact switch desired, select entries from appropriate tables as shown in example below.

1	2	3	4	5	6
T4=	20=	T05=	030=	X=NH=	150° to 260°F

1 – ENCLOSURE

T4	Temperature switch, Type 400, watertight enclosure meets NEMA 3, 4, 4X, 13 and IP66 requirements.
T7(1)	Temperature switch, Type 700, explosion-proof enclosure meets Div. 1 & 2, NEMA 7, 9 and IP66 requirements.

2 – SWITCH ELEMENT SELECTION

Order Code	Switch Elements UL/CSA Listed	
20(7)	Narrow deadband ac	15A, 125/250 Vac
21	Ammonia service	5A, 125/250 Vac
22(6)	Hermetically sealed switch, narrow deadband	5A, 125/250 Vac
23	Heavy duty ac	22A, 125/250 Vac
24(1)	General purpose	15A, 125/250/480 Vac, ½A, 125 Vdc ¼A, 250 Vdc; 6A, 30 Vdc
25(2)	Heavy duty dc	10A, 125 Vac or dc, 1/8 HP, 125 Vac or dc
26(7)	Sealed environment proof	15A, 125/250 Vac
27	High temperature 300°F	15A, 125/250 Vac
28(5)	Manual reset trip on in-creas- ing	15A, 125/250 Vac
29(5)	Manual reset trip on de-creas- ing	15A, 125/250 Vac
31	Low level (gold) contacts	1A, 125 Vac
32	Hermetically sealed switch, general purpose	11A, 125/250 Vac 5A, 30 Vdc
42	Hermetically sealed switch, gold contacts	1A, 125 Vac
50	Variable deadband	15A, 125/250 Vac
	UL/CSA Listed Dual (2 SPDT)	
61(7)	Dual narrow deadband	15A, 125/250 Vac
62(7)	Dual sealed environment proof	15A, 125/250 Vac
63	Dual high temp. 300°F	15A, 125/250 Vac
64	Dual general purpose	15A, 125/250/480 Vac ½A, 125 Vdc ¼A, 250 Vdc
65	Dual ammonia service	5A, 125/250 Vac
67(4,6)	Dual hermetically sealed switch, narrow deadband	5A, 125/250 Vac
68(4)	Dual hermetically sealed switch, general purpose	11A, 125/250 Vac 5A, 30 Vdc
70	Dual low level gold contacts	1A, 125 Vac
71(4)	Dual hermetically sealed switch, gold contacts	1A, 125 Vac

3 – THERMAL SYSTEM SELECTION

Direct Mount

Order	System Mate-	Style
TS	3l6 SS	Rigid

Remote Mount

Order Code	Sys- tem Mate	Line Length	Style[9]
T05	316 SS	5′	Capillary with 302 SS Spring Armor
T10	316 SS	10′	
T15	316 SS	15′	
T20	316 SS	20′	
T25	316 SS	25′	

4 – BULB LENGTH SELECTION

Direct Mount

Order Code	"S" Dimension	Minimum Thermowell "U" Dimension
027(8)	2¾″	–
040	4″	2½″
060	6″	4½″
090	9″	7½″
120	12″	10½″
	Remote Mount	
030(9)	3″	2½″

5 – OPTIONS

Use table on page 4

6 – STANDARD TEMPERATURE RANGE SELECTION

Adjustable Range

°F	°C
–40 to 60	–40 to 16
0 to 100	–20 to 40
75 to 205	20 to 95
150 to 260	65 to 125
235 to 375	110 to 190
350 to 525	175 to 275
500 to 750(2)	260 to 400

NOTES:

1. Standard housing epoxy coated aluminum. Use variation code XYW for 316SS housing
2. Available with remote mount thermal systems only.
3. Dual switches are 2 SPDT snap-action switches, not independently adjustable.
4. Wires cannot be terminated inside T400 switch enclosure.
5. Not available with Type 700 enclosure.
6. Estimated dc rating, 2.5A, 28 Vdc (not UL listed).
7. Estimated dc rating, 0.4A, 120 Vdc (not UL listed).
8. Not available on 170 to 270 °C. Consult factory on remote mount for bulb lengths other than 3″.

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B-Series Switches Temperature Switches

OPTIONAL FEATURES AND ACCESSORIES

B – SERIES SWITCH OPTIONS			
		Applicable Switch Series	
		Temperature	
Code	**Description**	**All Ranges**	**Notes**
Case style			
CN	ATEX Directive 94/9/EC / IECEx Rating	•	2
CEN6	Standard connection ¾ NPT female, Ex ia	•	
CEN7	Cable gland M20 for execution Ex is	•	
UL	UL listed, meets Div 1 & 2, NEMA 7 & 9		
Electrical connection			
CEN3	Cable gland M20, Ex d		
BX	½'' Male NPT Bushing	•	
JL	Reducing bushing ¾" NPT f to G ½ female	•	
JM	Reducing bushing ¾" NPT female to M20x1,5 female	•	
KV9	Cable gland EEx d II (Hawke UK) ¾" NPT male	•	
KV42	Cable gland EEx d II PG 13,5	•	
M25	¾" NPT female to M25x1,5 female	•	
Electrical connection options			
K3	Terminal Block (700 Series only)	•	5
JK	Left Conduit Connection	•	4
PM	¾'' Sealed Conduit Connection with 16'' Lead Wires	•	
Approvals			
EAC	EAC Approval according to TR "PLACEHOLDER"	•	2
C8	CSA Approval	•	1
Case options			
CH	Chained Cover		
FP	Fungus Proofing	•	
PK	Pilot Light(s) Top Mounted	•	6
Case material options			
YW	316 Stainless Steel Housing		2
Setpoint options			
FS	Factory Adjusted Setpoint	•	3
Assembly Options			
MO	Mounting, assembled to accessory	•	
TM	2'' Pipe Mounting Bracket	•	
Marking options			
NH	Tagging Stainless Steel	•	
NN	Paper Tag	•	

NOTES:

1. Standard on 400 Series
2. 700 Series only
3. Advice static or working pressure for differential pressure switches.
4. Standard on 700 Series. N/A with DPDT element on 400 Series.
5. Terminal Blocks standard with 700 dual switches.
6. N/A on 700 Series

Ex II 2GD
ExdbIICT6Gb
ExtbIIICT85°CDbIP6X
(Ta=–20°C to +60°C)

Intrinsically safe:
Ex ia IIIC T135°C Da

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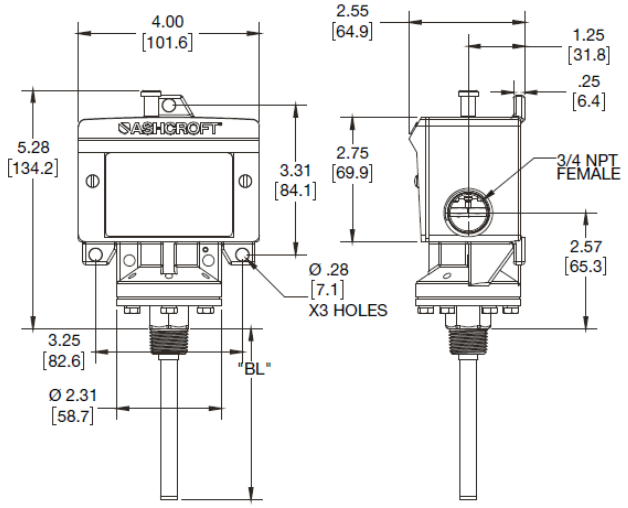
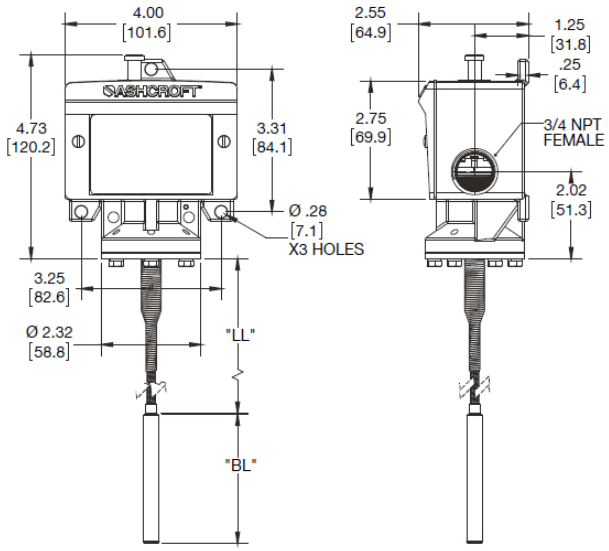
Dimensions – 400 Series

Temperature switch – direct mount

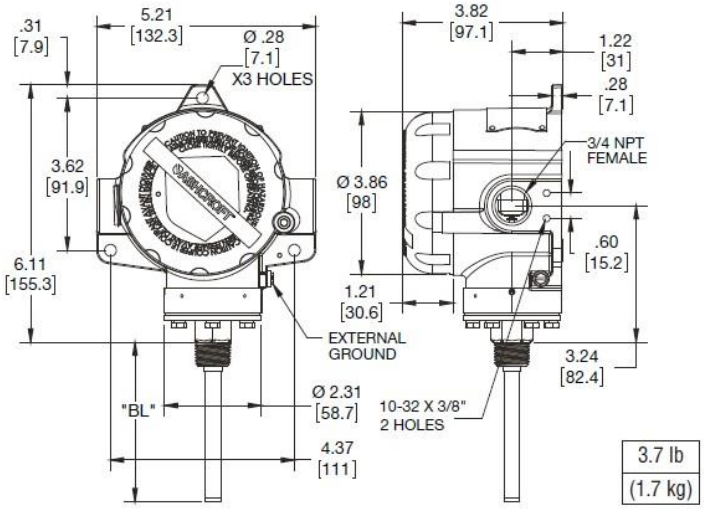


Temperature switch – remote mount



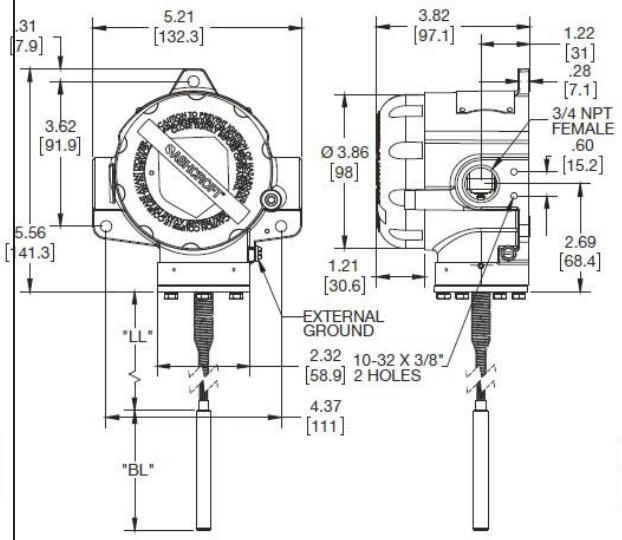
Dimensions – 700 Series

Temperature switch – direct mount



3.7 lb
(1.7 kg)

Temperature switch – remote mount



4.5 lb
(2.0 kg)

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