

MICRO SWITCH™

Premium Large Snap-Action BZ/BA/BM/BE & 6AS Series

Snap-Action Switches & Accessories



DESCRIPTION

Accurate, reliable, and repeatable, MICRO SWITCH™ BZ/BA/BM/BE Series feature wide operating characteristics and enhanced life. These premium, large snap-action switches offer precision operation and sensitive differential travel.

Utilizing state-of-the-art manufacturing processes and quality controls, Honeywell has engineered premium, large snap-action switches that meet all international agency requirements. Some models have military qualifications.

FEATURES

- Accepted world-wide with international agency approvals
- Various operating force and differential travel options
- Momentary or maintained contact action
- Watertight IP64 option
- Enhanced mechanical life up to 20,000,000 cycles
- Elongated mounting hole for easier, more accurate mounting
- Current rating ranges from 15 A to 25 A
- Choice of actuation, termination and operating characteristics
- Gold contacts available
- Precision operation – sensitive differential travel from 0,005 mm to 0,008 mm
- Internal flat spring design for improved performance and contact wiping ability
- High temperature options to 204 °C [400 °F]
- UL508 ratings offered
- Military standard construction – listings available with MIL-S-8805 qualification

MICRO SWITCH™ BZ/BA/BM/BE Series are often used for precision on/off applications, as well as end of limit, presence/absence, and manual operator interface functions.

Their engineering design meets most applications needs. Configuration options with BM, BA and BE switches give a broader range of operating and interface characteristics.


The MICRO SWITCH™ 6AS Series consists of two large premium BZ/BA/BM/BE snap-action switches ganged together and actuated by a single actuator. Field adjustable operating point is an option for one or both switches.

POTENTIAL APPLICATIONS

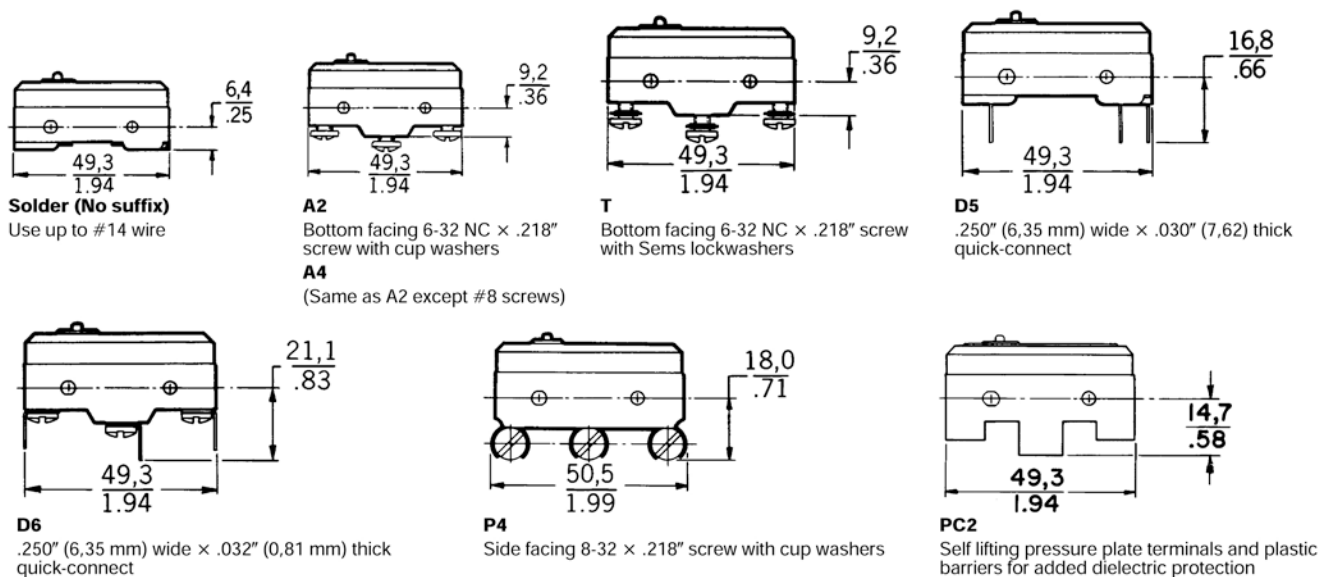
- Building controls and fire suppression systems
- Communication systems
- Door latching mechanisms
- Elevators/lifts
- Foot pedals
- HVAC
- Industrial kitchen equipment
- Irrigation systems
- Machine tools
- Manually operated devices
- Medical/dental equipment
- Semi-trailer trucks
- Surtran
- Test instruments
- Timing devices
- Valves

MICRO SWITCH™ Premium Large Snap-Action BZ/BA/BM/BE Series

SPECIFICATIONS

| |  |  |  |  |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| SERIES | BZ | BA | BM | BE |
| Potential applications | brake assemblies, building controls (sprinkler systems), communication systems, door latches, elevators/lifts, foot pedals, HVAC, industrial kitchen equipment, irrigation systems, timing devices, and valve positioning, | | | |
| Ampere rating | 15 A | 20 A | 22 A | 25 A |
| Circuitry | SPDT | | | |
| Operating force | 1.0 oz to 28 oz | | | |
| Termination | quick connect, solder, screw | | | |
| Actuator | pin plunger, overtravel plunger, straight, roller, flexible leaf roller, flexible leaf | | | |
| Voltage | 115 Vac, 125 Vac, 250 Vac | | | |
| Agency approvals | UL, CSA, ENEC, CE (varies by specific model) | | | |
| Operating temperature | -55 °C to 85 °C [-67 °F to 185 °F] | | | |
| Contacts | silver, silver cadmium oxide | | | |
| Housing | general purpose phenolic (options for IP64 watertight version) | | | |
| Sealing | Environment sealing option available | | | |
| Dielectric strength | 2000 V between each terminal and ground | | | |
| Contact resistance | 15 mOhm max. | | | |
| Insulation resistance | 100 mOhm min. | | | |
| Vibration | 1,5 mm peak-to-peak amplitude, frequency 10 Hz to 55 Hz, for two continuous hours | | | |
| Expected mechanical life | up to 20,000,000 cycles at 95% survival | | | |
| Expected electrical service life | 100K operations at full load | | | |
| Rated frequency | 45 Hz to 65 Hz | | | |

AVAILABLE TERMINALS



Snap-Action Switches & Accessories

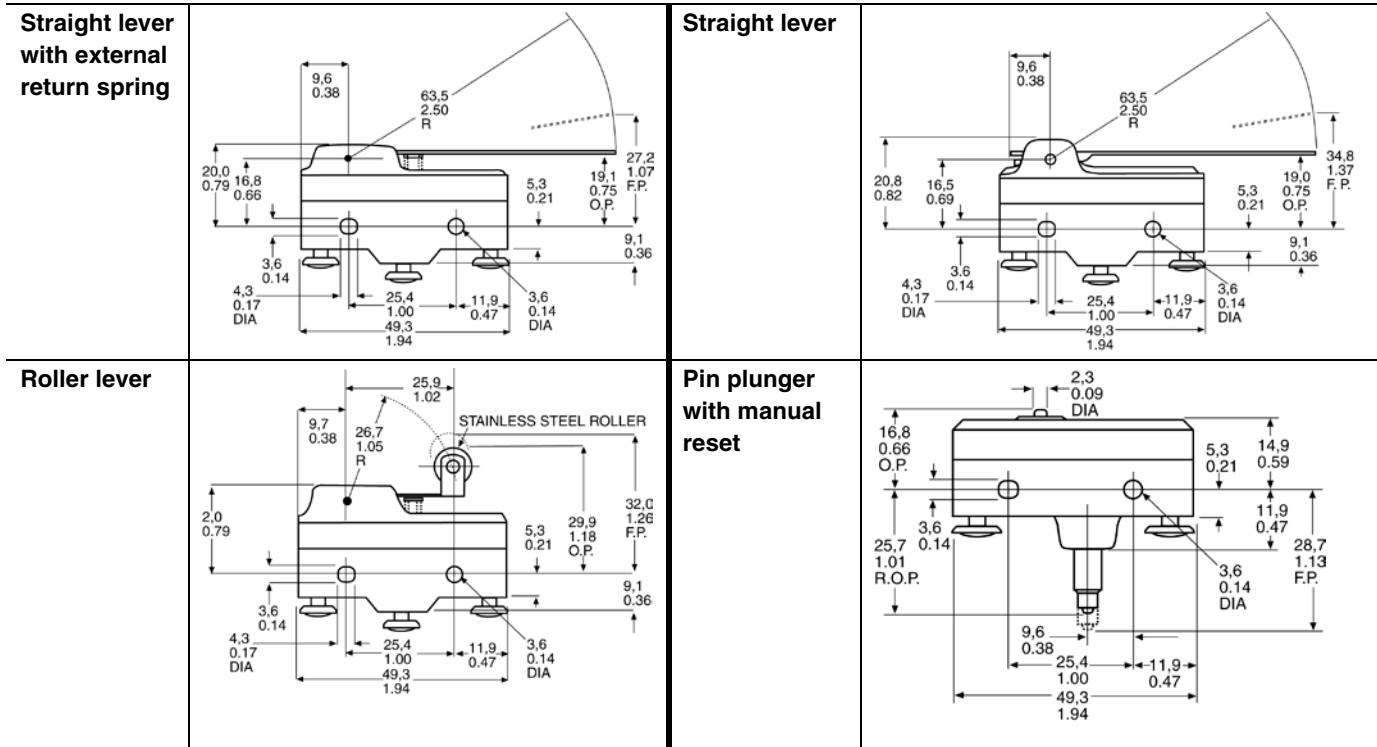
STANDARD LEVER OPTIONS & DIMENSIONS mm/in

All products shown with screw terminals. See page 2 for available terminal options.

| Lever | Dimensions | Lever | Dimensions |
|-----------------------------------------|------------|-----------------------------------------|------------|
| Pin plunger | | Pin plunger | |
| Overtravel plunger | | Overtravel plunger | |
| Bushing mount overtravel plunger | | Bushing mount overtravel plunger | |
| Flexible leaf actuator | | Flexible leaf actuator | |

MICRO SWITCH™ Premium Large Snap-Action BZ/BA/BM/BE Series

STANDARD LEVER OPTIONS & DIMENSIONS mm/in



6AS SERIES – PREMIUM LARGE SNAP-ACTION TANDEM SWITCH ASSEMBLY



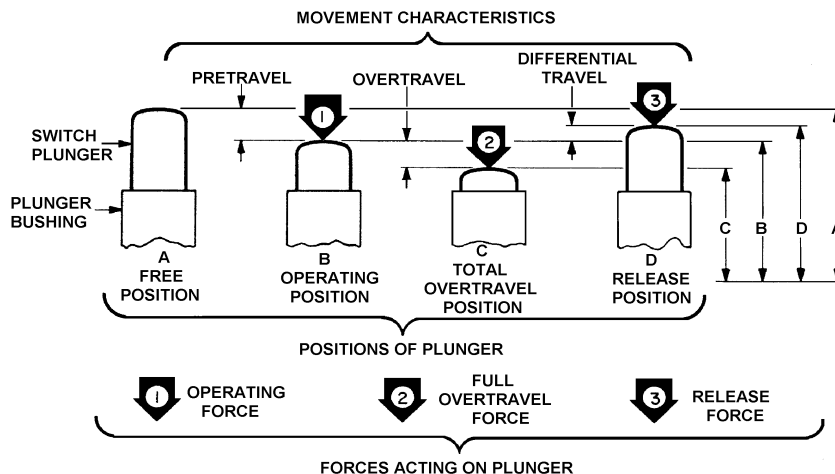
The MICRO SWITCH™ 6AS Series consists of two large premium BZ/BA/BM/BE snap-action switches ganged together and actuated by a single actuator. Operating characteristics are dependent upon the type of individual switches and actuators chosen. Field adjustable operating point on one or both basic switches.

Solder, A2, and T-type terminations available, along with straight, roller, and leaf levers. Mounting holes accept pins or screws of 3,53 mm [0.139 in] diameter.

Often used for boiler controls or anywhere two circuits need to be controlled by one actuator.

Snap-Action Switches & Accessories

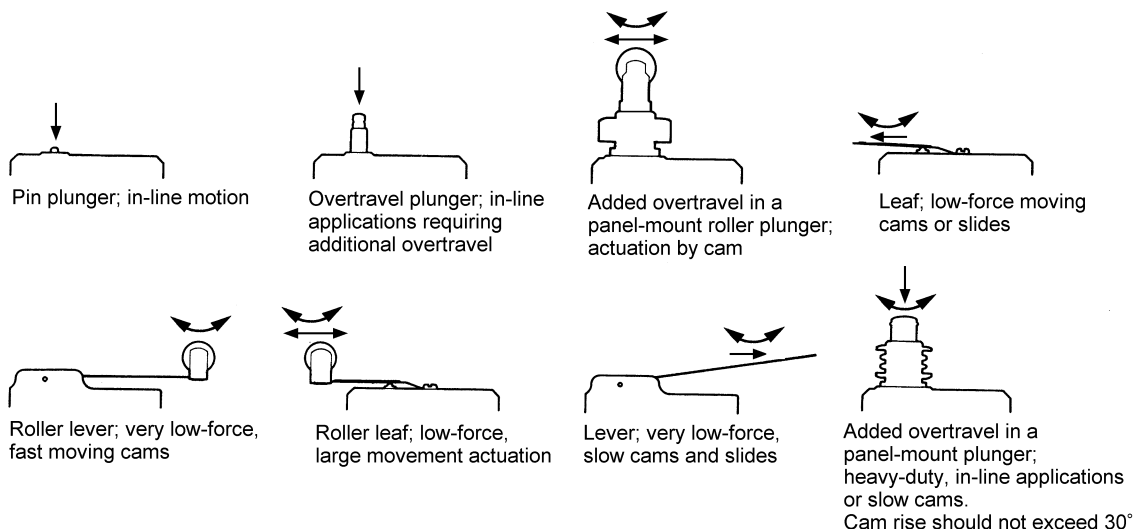
OPERATING CHARACTERISTICS



| | |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Differential Travel-DT | Plunger or actuator travel from point where contacts “snap-over” to point where they “snap-back.” |
| Free Position-FP | Position of switch plunger or actuator when no external force is applied. |
| Full Overtravel Force | Force required to attain full overtravel of actuator. |
| Operating Position-OP | Position of switch plunger or actuator at which point contacts snap from normal to operated position. With flexible or adjustable actuators, the operating position is measured from the end of the lever or its maximum length. Location of operating position measurement shown on mounting dimension drawings. |
| Operating Force-OF | Amount of force applied to switch plunger or actuator to cause the contact “snap-over.” Note in the case of adjustable actuators, the force is measured from the maximum length position of the lever. |
| Overtravel-OT | Plunger or actuator travel safely available beyond operating position. |
| Pretravel-PT | Distance or angle traveled in moving plunger or actuator from free position to operating position. |
| Release Force-RF | Amount of force still applied to switch plunger or actuator at the moment contacts snap from operated position to non-operated position. |
| Total Travel | Distance from actuator free position to overtravel limit position. |

ACTUATORS

BA, BE, BM, and BZ standard snap-action switches use the actuators described:



MICRO SWITCH™ Premium Large Snap-Action BZ/BA/BM/BE Series

LARGE PREMIUM SWITCH SERIES NOMENCLATURE TREE (not all configurations available)

| | | | | | | | |
|---------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|
| B | Z- | 2 | R | W | 82255- | A2 | S |
| Type & Contact | Switch type | Break distance (nominal) | Construction | Integral actuator | Misc. Variations (Numbers or Letters) | Terminal type | Snap spring mat'l (material) |
| B Series Premium Basics SPDT substitute W Series for SPNC circuitry substitute Y Series for SPND circuitry | Z 15 A capacity, pin plunger 23.3 (0.917) from mounting hole A 20 A capacity, pin plunger 19 (0.750) from mounting hole M 22 A capacity, pin plunger 23.8 (0.941) from mounting hole E 25 A capacity, pin plunger 25.4 (1.00) from mounting hole | 1 0.25 mm (0.01 in) 2 0.50 mm (0.02 in) 3 0.91 mm (0.036 in) 4 1.14 mm (0.045 in) (MT-4R only) 5 1.27 mm (0.050 in) Type A switches only 7 1.78 mm (0.07 in) Type Z switches only 0.15 mm (0.006 in) | R Moving contact rivet construction A Shorting bar circuitry Type Z switches only S Shorting bar circuitry Type A switches only K Resilient type N.C. contacts G Make-before-break switches Y Split contact switches Type Z switches only | B Low overtravel plunger, Type A & E D Low overtravel plunger, Type Z DS Sealed low overtravel plunger, Type Z only L Lead actuator Type A & Z only N High overtravel plunger/sealed boot Q High overtravel plunger, Type A & Z S Medium overtravel plunger, Type Z only V Rigid lever Type A & E only W Rigid or resilient lever, Type Z only M Reverse actuating lever QW Omnidirectional "wobble" lever Standard pin plunger | 0 Below other number—military construction 1 Threaded bushing, panel mount Q-plunger 2 Variation of design 4 On W-lever, light force var. (no spring) 5 Used with other 5s, denotes sealed conis. 67 On Q plunger, repac. for die-cast switches 7 Variation of design, other than Q plungers 8 With W-levers, rigid type lever (ext. W80) 8 With Q-plunger, roller plunger inline to axis 9 With L-lead actuators, flat lead 72 Gold contacts 722 | A2 Bottom facing #6 screws & cupwashers A4 Bottom facing #8 screws & cupwashers A22 A2 type without screws & cupwashers A41 A4 type without screws & cupwashers A46 A4 type #8 screws and lock washers D1 80° OC used with flat base w/o subts D5 45° OC used with flat base D6 90° OC used with A2 (step) base P1 (left) side facing #8 screw w/ cupwasher solder lug base P2 Same as P1, except facing right P4 (left) side facing #8 screw w/ cupwasher integral construction P5 Same as P4, except facing right T Bottom facing #6 screws/lockwashers Solder lug or no terminal hardware | S Snap spring mat'l Stainless steel snap spring |

NOTES
 * Min. distance between separated mating contacts in fully open position (nominal values).
 ** Some versions have lower electrical ratings.
 *** Except BZ-H31 and BZ-RZ switches.

Snap-Action Switches & Accessories

LARGE SNAP-ACTION SWITCH ACCESSORIES

Brackets



| | 8MA1 | 8MA2 | 17MA1-B |
|------------------|-------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| Description | Adjustable mounting bracket with adjustment slot on left | Adjustable mounting bracket with adjustment slot on right | Conversion mounting bracket |
| Housing material | Steel | Steel | Corrosion-resistant metal |
| Measurements | 60,2 mm W x 21,3 mm H x 7,4 mm D [2.37 in W x 0.84 in H x 0.29 in D] | | 66,8 mm W x 19,0 mm D [2.63 in W x 0.75 in D] |
| Features | sturdy plated steel construction; fast, easy screwdriver adjustment; can be used with all standard basic switches | | converts standard basic switches from side to top mount; corrosion resistant; snaps into switch mounting holes without tools |

Die-cast zinc enclosures



| | 3PA1 | 3PA28 | 3PA2 |
|------------------|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Description | mounted from either side through 3,55 mm [0.140 in] dia. holes on 25,4 mm [1.0 in] centers | mounted from either side through 3,55 mm [0.140 in] dia. holes on 25,4 mm [1.0 in] centers. 1/2-14 NPSM internal thread conduit hub | switch secured in enclosure; two 4,37 mm [0.172 in] dia. holes in flange accept #8 screws for mounting on 41,3 mm [1.625 in] centers |
| Housing material | die-cast zinc enclosure (side mount) | die-cast zinc enclosure (side mount) | die-cast zinc enclosure (flange mount) |
| Measurements | 74,8 mm W x 42,9 mm H x 25,4 mm D [2.95 in W x 1.69 in H x 1.00 in D] | 74,8 mm W x 42,9 mm H x 25,4 mm D [2.95 in W x 1.69 in H x 1.00 in D] | 74,8 mm W x 42,9 mm H x 25,4 mm D [2.95 in W x 1.69 in H x 1.00 in D] |
| Features | protects the switch from physical abuse and personnel from contact with exposed terminals | | |

Plastic thermal enclosures



| | 5PA1 | 5PA2 | 5PA3 |
|------------------|--------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| Description | Plastic terminal enclosure used with solder terminal switches | Plastic terminal enclosure use with screw terminal switches | Plastic terminal enclosure used with either solder or screw terminal switches with auxiliary actuators assembled |
| Housing material | plastic | plastic | plastic |
| Measurements | 52,8 mm W x 16,1 mm H [2.08 in W x 0.64 in H] | 52,8 mm W x 20,2 mm H x 21,0 mm D [2.08 in W x 0.80 in H x 0.83 in D] | 52,8 mm W x 20,2 mm H x 21,0 mm D [2.08 in W x 0.80 in H x 0.83 in D] |
| Features | easy to use; screw and solder terminal versions; protect personnel from contact with exposed terminals | | |

WARNING

PERSONAL INJURY

DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

Failure to comply with these instructions could result in death or serious injury.

WARNING

MISUSE OF DOCUMENTATION

- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- Complete installation, operation, and maintenance information is provided in the instructions supplied with each product.

Failure to comply with these instructions could result in death or serious injury.

WARRANTY/REMEDY

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items it finds defective. **The foregoing is buyer's sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.**

While we provide application assistance personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application.

Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use.

SALES AND SERVICE

Honeywell serves its customers through a worldwide network of sales offices, representatives and distributors. For application assistance, current specifications, pricing or name of the nearest Authorized Distributor, contact your local sales office or:

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