

LARGE BASIC SWITCHES

004955

Issue 8

BZ, BA, BM, BE, 6AS Series

DESCRIPTION

Accurate, reliable, and repeatable, Honeywell MICRO SWITCH BZ/BA/BM/BE Premium Series switches are designed and manufactured for a wide variety of applications with over 75 years of experience. The internal flat-spring design is ideal for applications requiring precision switch characteristics and long life. These precision switches are available with differential travel less than 0,0254 mm [0.001 in].

Catalog listings within these Series of switches are available to control a wide range of electrical loads from logic level to power duty switching coupled with a wide variety of integral actuators. A variety of electrical connections are available to match the application requirements. These Series of switches fit the standard 25,4 mm [1.00 in] mounting centers. Select catalog listings are available with a threaded plunger bushing panel mounting. Auxiliary actuators are available to increase the flexibility of the Premium Series switches as well as metal or plastic enclosures where required. These switches can be supplied factory gang-mounted (two switches) with an integral actuator for double pole applications or other circuit applications.

Most of these switch Series have agency certifications for global applications. In addition, select catalog listings are qualified to MIL-PRF-8805 for military applications.

FEATURES

- Switch styles; momentary plunger, manual reset plunger, make-before-break contacts, sequential contacts, double break contacts, split contacts
- Standard package size 49,3 L × 17,5 W × 24,1 H mm [1.94 × 0.69 × 0.93 in]
- Mounts on standard 25,4 mm centers [1.00 in] or threaded plunger bushing
- Wide selection of integral actuators including: pin plunger, roller plunger, overtravel plunger, integral leaf with or without roller, plain lever, roller lever, one-way roller lever
- Fine silver contacts, silver-alloy contacts or gold-alloy contacts
- Electrical connection options; solder terminals, screw terminals or quick-connect terminals
- Optional sealed plunger and cover
- Auxiliary actuators available
- Optional metal or plastic enclosures available where required
- Gang-mount assemblies (tandem assemblies) with single integral lever
- Global certification: UL, CSA, CE, UKCA and ENEC for most catalog listings
- Select switches are qualified to MIL-PRF-8805

DIFFERENTIATION

- Standard temperature range of -55°C to 85°C [-67°F to 185°F], option to 204°C [400°F]
- Current carrying capability of up to 25 A
- Stainless steel snap spring available for demanding environments
- Selection of special circuitries: make-before-break contacts, sequential contacts, double break contacts, single-pulse output



APPLICATIONS

- Building controls and equipment
- Doors and lifts
- Semi-trucks and trailers
- Valves
- Industrial timers
- Communication systems
- Foot switches
- Commercial and industrial food service equipment
- Agriculture irrigation equipment
- Medical instrumentation

VALUE TO CUSTOMERS

- MICRO SWITCH legacy and expertise with over 75 years of engineering and application experience
- Worldwide availability through Honeywell's global network
- Dependable performance; up to 20 million mechanical cycles



PORTFOLIO

In addition to the large basic switches, Honeywell offers V-Basic switches, miniature, miniature watertight, sub-miniature, and special application switches.

Honeywell

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TABLE 1. SPECIFICATIONS

Characteristic	BZ Series	WZ Series	YZ Series	BA Series	WA Series	YA Series	BM Series	BE Series
								
Ampere rating	15 A			20 A			22 A	25 A
Circuitry	SPDT	SPNC	SPNO	SPDT	SPNC	SPNO	SPDT	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	125 Vac, 250 Vac, 125 Vdc, 250 Vdc							
Agency approvals	UL, CSA, ENEC, CE, UKCA (varies by specific model)							
Operating temperature	-55 °C to 85 °C [-67 °F to 185 °F]							
Contacts	silver, silver cadmium oxide, gold alloy							
Housing	general purpose phenolic							
Sealing	Environment sealing option available (options for IP64 sealing)							
Dielectric strength	2000 V between each terminal and ground							
Contact resistance	15 m Ohm max. (initial)							
Insulation resistance	100,000 M Ohm 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 rated load							
Rated frequency	50 Hz/60 Hz							

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ELECTRICAL DATA AND UL CODES

TABLE 2. UL ELECTRICAL RATINGS

Code	Circuitry	Electrical data and UL codes
A	SPDT	15 A, 125, 250, or 480 Vac; 1/8 HP, 125 Vac; 1/4 HP, 250 Vac; 1/2 A, 125 Vdc; 1/4 amp, 250 Vdc; UL Code L96
B	SPDT	5 A, 125, 250, or 480 Vac; 1/2 A, 125 Vdc; 1/4 amp, 250 Vdc; UL Code L35
C	SPDT	10 A, 125, 250, or 480 Vac; UL Code L8
D	SPDT	15 A, 125, 250, or 480 Vac; 1/8 HP, 125 Vac; 1/4 HP, 250 Vac; UL Code L103
E	SPDT	15 A, 125, 250, or 480 Vac; 1/4 HP, 125 Vac; 1/2 HP, 250 Vac; 1/2 A, 125 Vdc; 1/4 amp, 250 Vdc; UL Code L67
F	SPDT	22 A, 125, 250, or 480 Vac; 1/2 HP, 125 Vac, 1 HP, 250 Vac; UL Code L161
G	SPDT	20 A, 125, 250, or 480 Vac; 10 A, 125 Vac "L" (tungsten lamp load); 1 HP, 125 Vac; 2 HP, 250 Vac; 1/2 A, 125 Vdc; 1/4 A, 250 Vdc; UL Code L23
H	SPDT	Motor control - 25 A, 125, 250, or 480 Vac; 1 HP, 125 Vac; 2 HP, 250 Vac; Pilot duty—750 VA, 125, 250, or 277 Vac
I	SPDT	10 A, 125, 250, or 480 Vac; 1/8 HP, 125 Vac; 1/4 HP, 250 Vac; UL Code L95
P	SPDT	1 A, 125 Vac; UL Code L22
T	Two-circuit, double break	Motor Control 15 A, 120, 240, 480, or 600 Vac; 1/2 HP, 120 Vac; 1 HP, 240 Vac; 0.8 amp, 115 Vdc; 0.4 amp, 230 Vdc.
W	SPST	20 A, 125, 250, or 277 Vac; 3/4 HP, 125 Vac; 1/2 HP, 250 Vac; UL Code L178B
X	SPDT	15 A, 125, 250, or 480 Vac; 2 A, 600 Vac; 1/8 HP, 125 Vac; 1/4 HP, 250 Vac; 1/2 amp, 125 Vdc; 1/4 amp, 250 Vdc; UL Code L74

GENERAL SWITCH IDENTIFICATION

The first letter in the catalog listing designates:

B = Single pole, double throw

W = Single pole, normally closed

Y = Single pole, normally open

The second letter in the catalog listing designates:

Z = Standard, 15 A version

M = 22 A version

A = Standard, 20 A version

E = 25 A version

MOUNTING DIMENSIONS

Mounting dimensions are included in this datasheet. They are shown in English and metric equivalents. These dimensions are for reference only. Engineering drawings may be accessed via the Honeywell web site: sps.honeywell.com/ast.

Mounting holes for Types BZ, BM, BA, BE and 6AS switches accept pins or screws of 3,53 mm [0.139 in] diameter.

RECOMMENDED TORQUE

Mounting screws..... 0,39 Nm [3 in-lb]*

Terminal screws..... 0,45 Nm [4 in-lb]

Panel mount bushing . 0,45 Nm to 0,68 Nm [4 in-lb to 6 in-lb]

*Note: Tightening mounting screws above 0,3 Nm [3 in-lb] changes operating characteristics and increases the possibility of cracking the case.

UL/CSA

Honeywell basic switches are Component Recognized by Underwriters' Laboratories, Inc. and certified by Canadian Standards Association. The BA, BZ, and BM line is covered as Special Use Switches to UL Standard 1054; the BE line is covered as an Industrial Product to UL Standard 508. Agency File References are:

- BA Series: UL File E12252, CSA File 4442
- BM Series: UL File E12252, CSA File 4442
- BZ Series: UL File E12252, CSA File 4442
- BE-Series: UL File E22779, CSA File 4442

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O.F. • Operating force
R.F. • Release force
P.T. • Pretravel
O.T. • Overtravel
D.T. • Differential travel
O.P. • Operating position

PIN PLUNGER ORDER GUIDE BY ASCENDING ELECTRICAL CAPABILITY

	Catalog Listing	Recommended For	Electrical Data and UL Codes	O.F. N [oz]	R.F. min. N [oz]	P.T. max. mm [in]	O.T. min. mm [in]	D.T. mm [in]	O.P.*** mm [in]
 BZ/BA type	BZ-2R72-A2**	Applications requiring gold alloy contacts	1 A P	2,5 to 3,61 [9 to 13]	1,11 [4]	0,38 [0.015]	0,13 [0.005]	0,01 to 0,05 [0.0004 to 0.0020]	15,88 [0.625]
	BZ-2R725551-A2	Gold alloy contacts; Dustproof and splash resistant seal	1 A P	2,22 to 4,17 [8 to 15]	1,11 [4]	–	0,13 [0.005]	0,01 to 0,06 [0.0004 to 0.0025]	15,88 [0.625]
	BZ-2R244-A2	Operating in temp. to 204 °C [400 °F] for 100 hours	5 A B	2,5 to 3,61 [9 to 13]	1,11 [4]	0,38 [0.015]	0,13 [0.005]	0,01 to 0,05 [0.0004 to 0.0020]	15,88 [0.625]
	BZ-R21-A2	Lower force	10 A C	1,11 [4]	0,7 [2.5]	0,30 [0.012]	0,13 [0.005]	0,005 to 0,013 [0.0002 to 0.0005]	15,88 [0.625]
	BZ-2R-A2	Most applications SPDT	15 A A	2,5 to 3,61 [9 to 13]	1,11 [4]	0,38 [0.015]	0,13 [0.005]	0,01 to 0,05 [0.0004 to 0.0020]	15,88 [0.625]
	WZ-2R-A2	SPST (normally closed)	15 A A	2,5 to 3,61 [9 to 13]	1,11 [4]	0,38 [0.015]	0,13 [0.005]	0,01 to 0,05 [0.0004 to 0.0020]	15,88 [0.625]
	YZ-2R-A2	SPST (normally open)	15 A A	2,5 to 3,61 [9 to 13]	1,11 [4]	0,38 [0.015]	0,13 [0.005]	0,01 to 0,05 [0.0004 to 0.0020]	15,88 [0.625]
 Sealed type	BZ-R-A2	Less differential travel	15 A D	1,95 to 2,5 [7 to 9]	1,11 [4]	0,30 [0.012]	0,13 [0.005]	0,005 to 0,008 [0.0002 to 0.0003]	15,88 [0.625]
	BZ-R19-A2	Best repeatability	15 A D	1,95 to 3,34 [7 to 12]	1,11 [4]	0,30 [0.012]	0,13 to 0,2 [0.005 to 0.008]	0,005 to 0,02 [0.0002 to 0.0008]	16,26 [0.640]
	BZ-2R24-A2	Operating in temp. to 121 °C [250 °F]	15 A A	2,5 to 3,61 [9 to 13]	1,11 [4]	0,38 [0.015]	0,13 [0.005]	0,01 to 0,05 [0.0004 to 0.0020]	15,88 [0.625]
	BZ-2RT04 (M8805/1-004)	MIL-PRF-8805 application requirements	15 A A	2,5 to 3,61 [9 to 13]	1,67 [6]	0,38 [0.015]	0,13 [0.005]	0,01 to 0,05 [0.0004 to 0.0020]	15,88 [0.625]
	BZ-2R05-A2	Stability under varying humidity	15 A A	2,5 to 3,61 [9 to 13]	1,11 [4]	0,38 [0.015]	0,13 [0.005]	0,01 to 0,05 [0.0004 to 0.0020]	15,88 [0.625]
	BZ-2R5551-A2	Dustproof and splash resistant seal	15 A A	2,5 to 4,17 [9 to 15]	1,11 [4]	–	0,13 [0.005]	0,01 to 0,06 [0.0004 to 0.0025]	15,88 [0.625]
	BZ-2R55-A2-S	Sealed construction; stainless steel internal snapspring	15 A A	2,5 to 4,17 [9 to 15]	1,11 [4]	–	0,13 [0.005]	0,01 to 0,06 [0.0004 to 0.0025]	15,88 [0.625]
 BA/BE type	BA-2R-A2	Up to 20 ampere load	20 A G	3,89 to 6,12 [14 to 22]	2,78 [10]	1,27 [0.050]	0,25 [0.010]	0,05 to 0,19 [0.0020 to 0.0075]	16,26 [0.640]
	BA-2R24-A2	Operating in temp. to 121 °C [250 °F]	20 A G	3,89 to 6,12 [14 to 22]	2,78 [10]	1,27 [0.050]	0,25 [0.010]	0,05 to 0,19 [0.0020 to 0.0075]	16,26 [0.640]
	BM-1R-A2	Up to 22 ampere load	22 A F	1,95 to 2,78 [7 to 10]	1,11 [4]	0,38 [0.015]	0,13 [0.005]	0,013 to 0,025 [0.0005 to 0.0010]	15,88 [0.625]
	BE-2R-A4	Up to 25 ampere load; #8 screw terminals	25 A H	3,89 to 6,12 [14 to 22]	2,78 [10]	1,27 [0.050]	0,25 [0.010]	0,05 to 0,19 [0.0020 to 0.0075]	16,26 [0.640]
 Manual Reset	BZ-RX	Manual reset, solder terminals	15 A E	1,95 to 2,5 [7 to 9] 0,56 to 2,78* [2 to 10]	–	0,30 [0.012] –	0,13 [0.005] 0,38* [0.015]	–	15,88 [0.625]
	WA-1RX-A4	Manual reset SPST-NC; #8 screw terminals	20 A W	5,56 [20] 6,95 [25]*	–	–	0,25 [0.010] –	0,20 [0.008] –	16,26 [0.64] 27,9*[1.10]

* Reset characteristics.

** -A2 is supplied with #6 terminal screws.

*** Except where stated, ±0,38 mm [±0.015 in].

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LARGE PREMIUM SWITCH SERIES NOMENCLATURE TREE (NOT ALL CONFIGURATIONS AVAILABLE)

Type & Contact	Switch type	Break distance (nominal)	Construction	Integral actuator	Misc. Variations (Numbers or Letters)	Terminal type	Snap spring mat'l (variation)
B Series Premium Basics SPDT substitute for SMC circuitry substitute for SMC circuitry substitute for SMC circuitry	Z 15 A capacity**; pin plunger 23.3 [0.917] from mounting hole	1 0.25 mm [0.01 in]	R Moving contact rivet construction	B Low overtravel plunger, Type A & E	0 Before other number= military construction	A2 Bottom facing #6 screws & cupwashers	S Stainless steel snap spring
	A 20 A capacity**; pin plunger 19.0 [0.750] from mounting hole	2 0.50 mm [0.02 in]	A Shorting bar circuitry Type Z switches only	D Low overtravel plunger, Type Z	1 Threaded bushing, panel mount Q-plunger	A4 Bottom facing #8 screws & cupwashers	
	M 22 A capacity; pin plunger 23.3 [0.917] from mounting hole	3 0.91 mm [0.036 in]	S Shorting bar circuitry Type A switches only	DS Sealed low overtravel plunger, Type Z only	2 Variation of design	A22 A2 type without screws & cupwashers	
	E 25 A capacity; pin plunger 19.0 [0.750] from mounting hole	4 1.14 mm [0.045 in] (MT-4R only)	G Make-before-break switches	L Leaf actuator Type A & Z only	4 On W-lever, light force var. (no spring)	A41 A4 type without screws & cupwashers	
		5 1.27 mm [0.050 in] Type A switches only	Y Split contact switches Type Z switches only	N High overtravel plunger/sealed boot	5 Used with other 5s; denotes sealed cons.	A46 A4 type #8 screws and lock washers	
		7 1.78 mm [0.07 in] Type Z switches only		Q High overtravel plunger, Type A & Z	6/7 On Q-plunger, replac. for die-cast switches	D1 89° QC used with flat base w/o slots	
		- 0.15 mm [0.006 in]		S Medium overtravel plunger, Type Z only	7 Variation of design, other than Q plungers	D5 90° QC used with flat base	
NOTES: * Break distance between separated contacts (nominal values) ** Some versions have lower electrical ratings							
				V Rigid lever Type A & E only	8 With W-levers, rigid type lever (ex. W80)	D6 90° QC used with A2 (step) base	
				W Rigid or resilient lever, Type Z only	8 With Q-plunger, roller plunger inline to axis	P1 (left) side facing #8 screw w/ cupwasher solder lug base	
				M Reverse actuating lever	9 With L-leaf actuators, flat leaf	P2 Same as P1, except facing right	
				QW Omnidirectional "wobble" lever	72 Gold contacts	P4 (left) side facing #8 screw w/ cupwasher integral construction	
				- Standard pin plunger	9 On Q-plunger, detach. roller, turned 90°	P5 Same as P4, except facing right	
					22 Short roller lever, V- or W-lever	T Bottom facing #6 screws/lockwashers	
					24 Heat resistant construction 121 °C	- Solder lug or no terminal hardware	
					55 Heavy-duty seal cons. Stain steel snap spring, Special inserts		
					81 On Q-plunger, roller 90° to major axis		
					82 Long W-lever, with roller		
					99 On W-lever, adj. O.P. (usually w/ 8)		
					244 High temp. constr. Diff snap spring Lower elect. rating		
					5551 General use sealed construction		
					822 Short W-lever with roller		
					X Maintained manual reset		