**Series MB2000**

**General Specifications**

**Electrical Capacity (Resistive Load)**
- **Power Level (silver):** 6A @ 125V AC & 3A @ 250V AC or 3A @ 30V DC
- **Logic Level (gold):** 0.4VA maximum @ 28V AC/DC maximum (Applicable Range 0.1mA ~ 0.1A @ 20mV ~ 28V)
- **Logic/Power Level (gold over silver):** Combines silver & gold ratings

Note: Find additional explanation dual rating & operating range in Supplement section.

**Other Ratings**
- **Contact Resistance:** 10 milliohms maximum for silver; 20 milliohms maximum for gold
- **Insulation Resistance:** 1,000 megaohms minimum @ 500V DC
- **Dielectric Strength:** 1,000V AC minimum between contacts for 1 minute minimum; 1,500V AC minimum between contacts & case for 1 minute minimum
- **Mechanical Life:** 50,000 operations minimum for splashproof models; 100,000 for all other models
- **Electrical Life:** 25,000 operations minimum for silver; 50,000 operations minimum for gold
- **Nominal Operating Force:** Momentary Action: 1-pole 9.32N; 2-pole 16.18N; 4-pole 25.54N; Alternate Action: 1-pole 4.41N; 2-pole 7.06N; 4-pole 11.77N
- **Contact Timing:** Slow make, slow break
- **Plunger Travel:** Screw-on Cap (Mom.) 0.028" (0.71mm) 0.110" (2.80mm) 0.125" (3.19mm)
- **Pretravel:** 0.043" (1.09mm)
- **Overtravel:** 0.043" (1.10mm) 0.050" (1.26mm)
- **Total Travel:** 0.071" (1.80mm) 0.153" (3.90mm) 0.175" (4.45mm)

**Materials & Finishes**
- **Plunger:** Brass w/nickel plating; polyacetal w/B1 bushing
- **Frame:** Stainless steel
- **Movable Contactor:** Phosphor bronze with silver or gold plating
- **Movable Contacts:** Silver alloy (code W); copper with gold plating (code G); or silver alloy with gold plating (code A)
- **Stationary Contacts:** Silver with silver plating (code W); copper or brass with gold plating (code G); or silver with gold plating (code A)
- **Terminals:** Copper or brass with silver plating; copper or brass with gold plating

**Environmental Data**
- **Operating Temp Range:** –30°C through +85°C (& –22°F through +185°F)
- **Humidity:** 90 ~ 95% humidity for 96 hours @ 40°C (104°F)
- **Vibration:** 10 ~ 55Hz with peak-to-peak amplitude of 1.5mm traversing the frequency range & returning in 1 minute; 3 right angled directions for 2 hours
- **Shock:** 50G (490m/s²) acceleration (tested in 6 right angled directions, with 5 shocks in each direction)
- **Sealing:** B3 & D3 bushing options equivalent to IP67

**Installation**
- **Mounting Torque:** 1.5Nm (13.0 lb•in) for double nut; 0.7Nm (6.0 lb•in) for single nut
- **Cap Installation Force:** 80.0N (18.0 lbf) maximum downward force on actuator
- **Soldering Time & Temp:** Wave Soldering (PC version): See Profile A in Supplement section.
- **Manual Soldering:** See Profile A in Supplement section.
- **Process Seal:** These devices are not process sealed. Hand clean locally using alcohol based solution.

**Standards & Certifications**
- **Flammability Standards:** UL94V-0 case
- **UL:** File No. E44145 - Recognized only when ordered with marking on switch.
  Add "/U" or "/CUL" before dash in part number to order UL recognized switch.
  All models recognized at 6A @ 125V AC or 3A @ 250V AC or 0.4VA max. @ 28V DC max.
- **CSA:** File No. 023535_0_000 - Certified only when ordered with marking on switch.
  Add "/C" before dash in part number to order CSA certified switch.
  All models certified at 6A @ 125V AC or 3A @ 250V AC or 0.4VA max. @ 28V max.
Distinctive Characteristics

Guide interlocked with actuator block prevents window locking and maintains correct plunger alignment to assure contact stability.

Employs an over-center actuator mechanism, which diminishes sparking and increases operating life in AC circuits.

High torque bushing construction prevents rotation or separation from frame during installation.

Splashproof option (D3 and B3 bushing codes) features an o-ring within the bushing and one under the face nut to protect from splashed, sprayed, or spilled liquids.

High insulating barriers, formed in the molded diallyl phthalate case, increase isolation of circuits in multipole devices.

Prominent external insulating barriers increase insulation resistance and dielectric strength.

Epoxy sealed terminals prevent entry of solder flux and other contaminants.

Clinching of the frame to the case well above the base and terminals provides 1,500V dielectric strength.
**Series MB2000**

**Bushing Mount Miniature Pushbuttons**

**TYPICAL SWITCH ORDERING EXAMPLE**

**Poles & Circuits**

- **MB2011** SPDT ON (ON)
- **MB2065** SPDT ON ON
- **MB2061** DPDT ON (ON)
- **MB2085** DPDT ON ON
- **MB2181** 4PDT ON (ON)
- **MB2185** 4PDT ON ON

( ) = Momentary

**Plunger Types**

- **S** Plunger for Screw-on Caps
- **L** Plunger for Snap-on Caps

**Contact Materials & Ratings**

- **W** Silver
  - Rated 6A @ 125V AC
  - & 3A @ 250V AC

- **G** Gold
  - Rated 0.4VA max @ 28V AC/DC max

- **A** Gold over Silver
  - Rated 6A @ 125V AC
  - & 0.4VA max @ 28V AC/DC max

**Bushings**

- **S1** .335” (8.5mm) Threaded with Keyway
- **S2** .335” (8.5mm) Smooth with Keyway
- **S4** .335” (8.5mm) Metric Threaded with Keyway
- **D1** .335” (8.5mm) Threaded with D-Flat
- **D3** .335” (8.5mm) Threaded Splashproof without Keyway

**Caps**

- **B** .315” (8.0mm) Diameter Cap
- **C** .394” (10.0mm) Diameter Cap

**Cap Colors**

- **A** Black
- **B** White
- **C** Red
- **E** Yellow
- **F** Green
- **G** Blue
- **H** Gray

**Terminals**

- **01** Solder Lug
- **02** Quick Connect
- **03** .250” (6.35mm) Straight PC
- **05** .425” (10.8mm) Wirewrap
- **06** .750” (19.05mm) Wirewrap
- **07** .964” (24.5mm) Wirewrap
- **08** 1.062” (27.0mm) Wirewrap

**IMPORTANT:**

Switches are supplied without UL, cULus & CSA marking unless specified. UL, cULus & CSA recognized only when ordered with marking on the switch. Specific models, ratings, & ordering instructions are noted on the General Specifications page.

**DESCRIPTION FOR TYPICAL ORDERING EXAMPLE**

**MB2011SS1W01-CA**

- Black .394” (10.0mm) Diameter Cap
- Plunger for Screw-on Caps
- .335” (8.5mm) Threaded Bushing with Keyway
- Silver Contacts with 6-Amp Rating
- Solder Lug Terminals

**Series MB2000**

**Bushing Mount Miniature Pushbuttons**

**Indicators**

- Accessory
- Supplement
- Tactiles
- Rockers
- Programmers
- Illuminated PB
- Slides
- Rockers
- Slides
- Touch

**www.nkkswitches.com**

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### POLES & CIRCUITS

<table>
<thead>
<tr>
<th>Pole</th>
<th>Model</th>
<th>Normal</th>
<th>Down</th>
<th>Connected Terminals</th>
<th>Normal</th>
<th>Down</th>
<th>Connected Terminals</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP</td>
<td>MB2011</td>
<td>ON</td>
<td>(ON)</td>
<td>2-3</td>
<td>2-1</td>
<td>SPDT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MB2065</td>
<td>ON</td>
<td>ON</td>
<td></td>
<td></td>
<td></td>
<td>Note: Terminal numbers are not actually on the switch.</td>
</tr>
<tr>
<td>DP</td>
<td>MB2061</td>
<td>ON</td>
<td>(ON)</td>
<td>2-3 5-6</td>
<td>2-1 5-4</td>
<td>DPDT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MB2085</td>
<td>ON</td>
<td>ON</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4P</td>
<td>MB2181</td>
<td>ON</td>
<td>(ON)</td>
<td>2-3 5-6 8-9 11-12</td>
<td>2-1 5-4</td>
<td>4PDT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MB2185</td>
<td>ON</td>
<td>ON</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### PLUNGER TYPES

On alternate action models, after transferring circuit, the plunger returns to its original position and does not latch down.

**S**

Plunger for Screw-on Caps

- Momentary Plunger Length
- Momentary Cap Location
- Alternate Plunger Length
- Alternate Cap Location

**L**

Plunger for Snap-on Caps

-Momentary & Alternate Plunger Length
-Momentary & Alternate Cap Location
Series MB2000
Bushing Mount Miniature Pushbuttons

BUSHINGS

<table>
<thead>
<tr>
<th>S1</th>
<th>.335&quot; (8.5mm) Threaded with Keyway</th>
</tr>
</thead>
<tbody>
<tr>
<td>S2</td>
<td>.335&quot; (8.5mm) Smooth with Keyway</td>
</tr>
<tr>
<td>S4</td>
<td>.335&quot; (8.5mm) Metric Threaded with Keyway</td>
</tr>
</tbody>
</table>

Maximum Panel Thickness with Standard Hardware: .154" (3.9mm)

<table>
<thead>
<tr>
<th>D1</th>
<th>.335&quot; (8.5mm) Threaded with D Flat</th>
</tr>
</thead>
<tbody>
<tr>
<td>D3</td>
<td>.335&quot; (8.5mm) Threaded Splashproof without Keyway</td>
</tr>
</tbody>
</table>

Maximum Panel Thickness with Standard Hardware: .154" (3.9mm)

Panel Cutouts

For S1, S2, or S4 Bushing with Keyway

For S1 or S4 Bushing with Optional Locking Ring

For D1 Bushing with D Flat

For D3 Bushing without Keyway

Standard hardware for bushings S1, S4, & D1 includes 2 hex nuts & 1 lockwasher; D3 bushing has 1 hex nut & 1 o-ring. Standard & optional hardware are illustrated following the Typical Switch Dimension drawings.

CONTACT MATERIALS & RATINGS

<table>
<thead>
<tr>
<th>W</th>
<th>Silver over Silver</th>
<th>Power Level</th>
<th>6A @ 125V AC &amp; 3A @ 250V AC</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td>Gold over Brass or Copper</td>
<td>Logic Level</td>
<td>0.4VA maximum @ 28V AC/DC maximum</td>
</tr>
</tbody>
</table>

Note: Complete explanation of operating range in Supplement section.

| A  | Gold over Silver | Power Level or Logic Level | 6A @ 125V AC & 3A @ 250V AC or 0.4VA maximum @ 28V AC/DC maximum |

Note: This dual rated option is suitable when two or more identical switches are used in logic and in power circuits within the same application. See Supplement section for complete explanation of dual rating and operating range.
Bushing Mount Miniature Pushbuttons

Series MB2000

TERMINALS

01 Solder Lug

02 .062" (1.57mm) Wide Quick Connect

03 .250" (6.35mm) Straight PC

05 .425" (10.8mm) Wirewrap or Extended PC

06 .750" (19.05mm) Wirewrap or Extended PC

07 .964" (24.5mm) Wirewrap or Extended PC

08 1.062" (27.0mm) Wirewrap or Extended PC

CAPS & CAP COLORS

B AT413 .315” (8.0mm) Diameter Screw-on Cap

AT443 .315” (8.0mm) Diameter Snap-on Cap

C AT407 .394” (10.0mm) Diameter Screw-on Cap

AT442 .394” (10.0mm) Diameter Snap-on Cap

For use with Plunger Code S

For use with Plunger Code L

For use with Plunger Code S

For use with Plunger Code L

Cap Material: PBT

Cap Material: Polycarbonate

Cap Material: PBT

Cap Material: Polycarbonate

Finish: Glossy

Finish: Glossy

Finish: Glossy

Finish: Glossy

Cap Colors Available: A Black B White C Red E Yellow F Green G Blue H Gray

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Series MB2000

Bushing Mount Miniature Pushbuttons

**TYPICAL SWITCH DIMENSIONS**

Solder Lug

Single Pole

<table>
<thead>
<tr>
<th>Keyway</th>
<th>1/4-40 Thd</th>
<th>(1.1) x (2.0) Typ</th>
<th>(0.8) Typ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keyway</td>
<td>0.043 x 0.079</td>
<td>0.043 x 0.079</td>
<td>0.043 x 0.079</td>
</tr>
<tr>
<td>(0.8) Typ</td>
<td>0.031</td>
<td>0.031</td>
<td>0.031</td>
</tr>
<tr>
<td>(4.5)</td>
<td>0.177</td>
<td>0.177</td>
<td>0.177</td>
</tr>
<tr>
<td>(2.3)</td>
<td>0.091</td>
<td>0.091</td>
<td>0.091</td>
</tr>
<tr>
<td>(1.1) x (2.0) Typ</td>
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<tr>
<td>(2.3)</td>
<td>0.091</td>
<td>0.091</td>
<td>0.091</td>
</tr>
</tbody>
</table>

Solder Lug

Double Pole

<table>
<thead>
<tr>
<th>Keyway</th>
<th>1/4-40 Thd</th>
<th>(1.1) x (2.0) Typ</th>
<th>(0.8) Typ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keyway</td>
<td>0.043 x 0.079</td>
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<tr>
<td>(1.1) x (2.0) Typ</td>
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<tr>
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<tr>
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<td>0.091</td>
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<tr>
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<td>(2.3)</td>
<td>0.091</td>
<td>0.091</td>
<td>0.091</td>
</tr>
</tbody>
</table>

Solder Lug

Four Pole

<table>
<thead>
<tr>
<th>Keyway</th>
<th>1/4-40 Thd</th>
<th>(1.1) x (2.0) Typ</th>
<th>(0.8) Typ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keyway</td>
<td>0.043 x 0.079</td>
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<td>0.043 x 0.079</td>
</tr>
<tr>
<td>(0.8) Typ</td>
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<tr>
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<td>0.177</td>
<td>0.177</td>
</tr>
<tr>
<td>(2.3)</td>
<td>0.091</td>
<td>0.091</td>
<td>0.091</td>
</tr>
<tr>
<td>(1.1) x (2.0) Typ</td>
<td>0.043 x 0.079</td>
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<tr>
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</tr>
<tr>
<td>(0.8) Typ</td>
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<tr>
<td>(2.3)</td>
<td>0.091</td>
<td>0.091</td>
<td>0.091</td>
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</tbody>
</table>

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## HARDWARE

### Standard Hardware

<table>
<thead>
<tr>
<th>AT513H for Inch</th>
<th>AT513M for Metric Hexagon Nut</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 included with each switch</td>
<td>(1 with splashproof models)</td>
</tr>
<tr>
<td>Material: Brass with Nickel plating</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AT509</th>
<th>Lockwasher</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 included with each switch</td>
<td>(not with splashproof models)</td>
</tr>
<tr>
<td>Material: Steel with Nickel plating</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AT516</th>
<th>O-ring for Splashproof Bushing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 included with each splashproof model</td>
<td></td>
</tr>
<tr>
<td>Material: Nitrile butadiene rubber</td>
<td></td>
</tr>
</tbody>
</table>

### Optional Hardware

<table>
<thead>
<tr>
<th>AT507H for Inch</th>
<th>AT507M for Metric Locking Ring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material: Steel with Zinc/Chromate</td>
<td></td>
</tr>
</tbody>
</table>

### Optional Mounting Collars/Conical Nuts

<table>
<thead>
<tr>
<th>AT512H for Inch</th>
<th>AT512M for Metric Conical Nut</th>
</tr>
</thead>
<tbody>
<tr>
<td>Used with .315” (8.0mm) Diameter Cap (cap code B)</td>
<td></td>
</tr>
<tr>
<td>Material: Brass with chrome plating</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AT512CH for Inch</th>
<th>AT512CM for Metric Conical Nut</th>
</tr>
</thead>
<tbody>
<tr>
<td>Used with .394” (10.0mm) Diameter Cap (cap code C)</td>
<td></td>
</tr>
<tr>
<td>Material: Brass with chrome plating</td>
<td></td>
</tr>
</tbody>
</table>

### Optional Splashproof Boots for S Plunger

<table>
<thead>
<tr>
<th>AT4041H for Inch</th>
<th>AT4041M for Metric Boot for Momentary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material: Silicone rubber</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AT4042H for Inch</th>
<th>AT4042M for Metric Boot for Alternate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material: Silicone rubber</td>
<td></td>
</tr>
</tbody>
</table>

### Dimension A = Cap Height

- .091” (2.3mm) for Momentary with Plunger Code S
- .157” (4.0mm) for Alternate with Plunger Code S
- .142” (3.6mm) for Momentary & Alternate with Plunger Code L

Optional Conical Nuts fit with all 8.5mm bushing options except the D3 & S2 bushings.

**Operating Life 100,000**

Boots for momentary devices are accompanied by a threaded adaptor which extends the length of the plunger.

**Operating Life 30,000**

Downloads from Arrow.com.
Series MB2000
Bracket PC Mount Miniature Pushbuttons

TYPICAL SWITCH ORDERING EXAMPLE

<table>
<thead>
<tr>
<th>MB 2011</th>
<th>S</th>
<th>S2</th>
<th>G</th>
<th>13</th>
<th>C</th>
<th>A</th>
</tr>
</thead>
</table>

**Poles & Circuits**

| 2011 | SPDT | ON | (ON) |
| 2065 | SPDT | ON | ON |
| 2061 | DPDT | ON | (ON) |
| 2085 | DPDT | ON | ON |
| 2181 | 4PDT | ON | (ON) |
| 2185 | 4PDT | ON | ON |

( ) = Momentary

4-pole not for use with right angle terminals

**Contact Materials & Ratings**

<table>
<thead>
<tr>
<th>W</th>
<th>Silver</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td>Gold</td>
</tr>
<tr>
<td>A</td>
<td>Gold over Silver</td>
</tr>
</tbody>
</table>

- Rated 6A @ 125V AC & 3A @ 250V AC
- Rated 0.4VA max @ 28V AC/DC max

**Caps**

| B | .315” (8.0mm) Diameter |
| C | .394” (10.0mm) Diameter |

**Cap Colors**

- A Black
- B White
- C Red
- E Yellow
- F Green
- G Blue
- H Gray

**Bushings**

| S2 | .335” (8.5mm) Smooth with Keyway |
| S1 | .335” (8.5mm) Threaded with Keyway |
| A2 | .200” (5.08mm) Smooth with Keyway |

Only Available in Part Numbers MB2011SA2G31 & MB2011SA2W31

**Terminals**

| 13 | .250” (6.35mm) Straight PC with Bracket |
| 40 | .150” (3.81mm) Vertical PC |
| 45 | .100” (2.54mm) Vertical PC |
| 30 | Right Angle PC with .646” (16.4mm) Support to Terminals Available in 1- & 2-pole only |
| 31 | Right Angle PC with .500” (12.7mm) Support to Terminals Available in 1-pole only |

**IMPORTANT:**

Switches are supplied without UL, cULus & CSA marking unless specified. UL, cULus & CSA recognized only when ordered with marking on the switch. Specific models, ratings, & ordering instructions are noted on the General Specifications page.

**DESCRIPTION FOR TYPICAL ORDERING EXAMPLE**

MB2011SS2G13-CA

- Black .394” (10.0mm) Diameter Cap
- .335” (8.5mm) Smooth Bushing with Keyway
- Gold Contacts with 0.4VA Rating
- SPDT ON-(ON) Circuit
- .250” (6.35mm) Straight PC Terminals with Bracket

www.nkkswitches.com

Downloaded from Arrow.com.
Bracket PC Mount Miniature Pushbuttons

POLES & CIRCUITS

<table>
<thead>
<tr>
<th>Pole</th>
<th>Model</th>
<th>Normal</th>
<th>Down</th>
<th>Connected Terminals</th>
<th>Normal</th>
<th>Down</th>
<th>Throw &amp; Switch Schematics</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP</td>
<td>MB2011</td>
<td>ON</td>
<td>(ON)</td>
<td>2-3  2-1</td>
<td>2-3  2-1</td>
<td>SPDT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MB2065</td>
<td>ON</td>
<td>ON</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DP</td>
<td>MB2061</td>
<td>ON</td>
<td>(ON)</td>
<td>2-3  5-6</td>
<td>2-1  5-4</td>
<td>DPDT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MB2085</td>
<td>ON</td>
<td>ON</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4P</td>
<td>MB2181</td>
<td>ON</td>
<td>(ON)</td>
<td>2-3  5-6  8-9  11-12</td>
<td>2-1  5-4  8-7  11-10</td>
<td>4PDT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MB2185</td>
<td>ON</td>
<td>ON</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Terminal numbers are not actually on the switch.

PLUNGER TYPE

On alternate action models, after transferring circuit, the plunger returns to its original position and does not latch down.

S
Plunger for Screw-on Caps

Momentary Plunger Length

Momentary Cap Location

Alternate Plunger Length

Alternate Cap Location

BUSHINGS

S2 .335” (8.5mm) Smooth with Keyway

S1 .335” (8.5mm) Threaded with Keyway

A2 .200” (5.08mm) Smooth with Keyway

Standard hardware: 2 hex nuts (AT513H) & 1 lockwasher (AT509)
Optional hardware: Locking ring (AT507)
Only available in part numbers MB2011SA2W31 & MB2011SA2G31

Panel Cutouts

For S2, S1, or A2 Bushing with Keyway

With Optional Locking Ring

Maximum Panel Thickness with Standard Hardware: .154” (3.9mm)
Series MB2000 Bracket PC Mount Miniature Pushbuttons

CONTACT MATERIALS & RATINGS

<table>
<thead>
<tr>
<th>Material</th>
<th>Power Level</th>
<th>Logic Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silver over Silver</td>
<td>6A @ 125V AC &amp; 3A @ 250V AC</td>
<td>0.4VA maximum @ 28V AC/DC maximum</td>
</tr>
<tr>
<td>Gold over Brass or Copper</td>
<td>6A @ 125V AC &amp; 3A @ 250V AC</td>
<td>0.4VA maximum @ 28V AC/DC maximum</td>
</tr>
</tbody>
</table>

Note: This dual rated option is suitable when two or more identical switches are used in logic and in power circuits within the same application. See Supplement section for complete explanation of dual rating and operating range.

TERMINALS

- **13** .250” (6.35mm) Straight PC with Bracket
- **40** .150” (3.81mm) Vertical PC
- **45** .100” (2.54mm) Vertical PC
- **30** Right Angle PC with .646” (16.4mm) Support to Terminal
- **31** Right Angle PC with .500” (12.7mm) Support to Terminal

Only Available in 1 & 2 Pole

Note: Full dimensioned drawings appear on the following pages.

CAPS & CAP COLORS

- **B** AT413 .315” (8.0mm) Diameter Screw-on Cap
  - Cap Material: PBT Finish: Glossy
- **C** AT407 .394” (10.0mm) Diameter Screw-on Cap
  - Cap Material: PBT Finish: Glossy

Cap Colors Available: A Black  B White  C Red  E Yellow  F Green  G Blue  H Gray

Note: Complete explanation of operating range in Supplement section.
Series MB2000

Bracket PC Mount Miniature Pushbuttons

TYPICAL SWITCH DIMENSIONS

**Single Pole**

**Straight PC with Bracket**

**Double Pole**

**Straight PC with Bracket**

**Four Pole**

**Straight PC with Bracket**

---

**MB2011SS2G13-CA**

**MB2061SS2G13-CA**

**MB2181SS2G13-CA**

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TYPICAL SWITCH DIMENSIONS

.150” (3.81mm) Vertical PC

Single Pole

Double Pole

Four Pole

MB2011SS2G40-CA

MB2061SS2G40-CA

MB2181SS2G40-CA
Series MB2000
Bracket PC Mount Miniature Pushbuttons

TYPICAL SWITCH DIMENSIONS

Right Angle PC

Keyway

Single Pole

COM

MB2011SS2G30-CA

Right Angle PC

Keyway

Double Pole

COM

MB2061SS2G30-CA

Right Angle PC
with .500" (12.7mm) Support to Terminal

Keyway

Single Pole

COM

MB2011SA2G31-CA
TYPICAL SWITCH ORDERING EXAMPLE

**MB 2011 S B1 W 01 — D A**

### Poles & Circuits
- **2011**: SPDT, ON-(ON)
- **2065**: SPDT, ON, ON
- **2061**: DPDT, ON, ON
- **2085**: DPDT, ON, ON
- **2181**: 4PDT, ON, ON
- **2185**: 4PDT, ON, ON
  - ( ) = Momentary

### Plunger Type
- **S**: Plunger for Screw-on Caps

### Bushings
- **B1**: .472” (12.0mm) Threaded with Keyway
- **B3**: .472” (12.0mm) Threaded w/Splashproof

### Contact Materials & Ratings
- **W**: Silver Rated 6A @ 125V AC & 3A @ 250V AC
- **G**: Gold Rated 0.4VA max @ 28V AC/DC max

### Terminals
- **01**: Solder Lug
- **02**: Quick Connect
- **03**: .250” (6.35mm) Straight PC
- **05**: .425” (10.8mm) Wirewrap
- **06**: .750” (19.05mm) Wirewrap
- **07**: .964” (24.5mm) Wirewrap
- **08**: 1.062” (27.0mm) Wirewrap

### Caps
- **B**: .315” (8.0mm) Diameter
- **C**: .394” (10.0mm) Diameter
- **D**: .520” (13.2mm) Diameter
- **E**: .748” (19.0mm) Diameter

### Cap Colors
- **A**: Black
- **B**: White
- **C**: Red
- **D**: Amber
- **E**: Yellow
- **F**: Green
- **G**: Blue
- **H**: Gray
  - * Not available with cap code E

### IMPORTANT:
Switches are supplied without UL, cULus & CSA marking unless specified.
UL, cULus & CSA recognized only when ordered with marking on the switch.
Specific models, ratings, & ordering instructions are noted on the General Specifications page.

**DESCRIPTION FOR TYPICAL ORDERING EXAMPLE**

**MB2011SB1W01-DA**

- **Black .520” (13.2mm) Diameter Cap**
- **Plunger for Screw-on Caps**
- **.472” (12.0mm) Diameter Threaded Bushing with Keyway**
- **Silver Contacts with 6-Amp Rating**
- **SPDT ON-(ON) Circuit**
- **Solder Lug Terminals**
**Series MB2000**

**Large Bushing Miniature Pushbuttons**

### POLES & CIRCUITS

<table>
<thead>
<tr>
<th>Pole</th>
<th>Model</th>
<th>Normal Keyway</th>
<th>Down Keyway</th>
<th>Connected Terminals</th>
<th>Throw &amp; Switch Schematics</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP</td>
<td>MB2011</td>
<td>ON</td>
<td>(ON)</td>
<td>2-3</td>
<td>SPDT</td>
</tr>
<tr>
<td></td>
<td>MB2065</td>
<td>ON</td>
<td>ON</td>
<td>2-1</td>
<td></td>
</tr>
<tr>
<td>DP</td>
<td>MB2061</td>
<td>ON</td>
<td>(ON)</td>
<td>2-3 5-6</td>
<td>DPDT</td>
</tr>
<tr>
<td></td>
<td>MB2085</td>
<td>ON</td>
<td>ON</td>
<td>2-1 5-4</td>
<td></td>
</tr>
<tr>
<td>4P</td>
<td>MB2181</td>
<td>ON</td>
<td>(ON)</td>
<td>2-3 5-6 8-9 11-12</td>
<td>4PDT</td>
</tr>
<tr>
<td></td>
<td>MB2185</td>
<td>ON</td>
<td>ON</td>
<td>2-1 5-4 8-7 11-10</td>
<td></td>
</tr>
</tbody>
</table>

Note: Terminal numbers are not actually on the switch.

### PLUGGER TYPE

- **B** Plunger for Screw-on Caps
- **S** Plunger is plastic for B1 bushing.
- **B** Plunger is metal for B3 bushing.
- **S** On alternate action models, after transferring circuit, the plunger returns to its original position, and does not latch down.

### BUSHINGS

- **B1** .472" (12.0mm) Diameter Threaded with Keyway
- **B3** .472" (12.0mm) Diameter Threaded Splashproof

### CONTACT MATERIALS & RATINGS

- **W** Silver over Silver | Power Level | 6A @ 125V AC & 3A @ 250V AC
- **G** Gold over Brass or Copper | Logic Level | 0.4VA maximum @ 28V AC/DC maximum

Note: Complete explanation of operating range in Supplement section.

---

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Large Bushing Miniature Pushbuttons

**SERIES MB2000**

**TERMINALS**

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Footprint 1</th>
<th>Footprint 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Solder Lug</td>
<td></td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>.062” (1.57mm) Wide Quick Connect</td>
<td></td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>.250” (6.35mm) Straight PC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>.425” (10.8mm) Wirewrap or Extended PC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>.750” (19.05mm) Wirewrap or Extended PC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>07</td>
<td>.964” (24.5mm) Wirewrap or Extended PC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>08</td>
<td>1.062” (27.0mm) Wirewrap or Extended PC</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CAPS & CAP COLORS**

<table>
<thead>
<tr>
<th>No.</th>
<th>Cap Color</th>
<th>Material</th>
<th>Finish</th>
<th>Colors Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>AT078</td>
<td>Polystyrene</td>
<td>Glossy</td>
<td>A B C E F G H</td>
</tr>
<tr>
<td>C</td>
<td>AT079</td>
<td>Polystyrene</td>
<td>Glossy</td>
<td>A B C E F G H</td>
</tr>
<tr>
<td>D</td>
<td>AT414</td>
<td>PBT</td>
<td>Glossy</td>
<td>A B C D E F G H</td>
</tr>
<tr>
<td>E</td>
<td>AT412</td>
<td>Polystyrene</td>
<td>Glossy</td>
<td>A B C F</td>
</tr>
</tbody>
</table>

**TERMINALS**

- **TERMINALS**
  - Solder Lug
  - .062” (1.57mm) Wide Quick Connect
  - .250” (6.35mm) Straight PC
  - .425” (10.8mm) Wirewrap or Extended PC
  - .750” (19.05mm) Wirewrap or Extended PC
  - .964” (24.5mm) Wirewrap or Extended PC
  - 1.062” (27.0mm) Wirewrap or Extended PC

**CAPS & CAP COLORS**

- **AT078** (8.0mm) Diameter Screw-on Cap
  - Material: Polystyrene
  - Finish: Glossy
  - Colors Available: A B C E F G H

- **AT079** (10.0mm) Diameter Screw-on Cap
  - Material: Polystyrene
  - Finish: Glossy
  - Colors Available: A B C E F G H

- **AT414** (13.2mm) Diameter Screw-on Cap
  - Material: PBT
  - Finish: Glossy
  - Colors Available: A B C D E F G H

- **AT412** (19.0mm) Diameter Screw-on Cap
  - Material: Polystyrene
  - Finish: Glossy
  - Colors Available: A B C F

**DIMENSIONS**

<table>
<thead>
<tr>
<th>Material</th>
<th>Finish</th>
<th>Colors Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polystyrene</td>
<td>Glossy</td>
<td>A B C E F G H</td>
</tr>
<tr>
<td>PBT</td>
<td>Glossy</td>
<td>A B C D E F G H</td>
</tr>
<tr>
<td>Polystyrene</td>
<td>Glossy</td>
<td>A B C F</td>
</tr>
</tbody>
</table>
HARDWARE

Standard Hardware for B1 Bushing

AT503M
Hex Face Nut
Material: Brass with Chrome plating

AT508
Lockwasher
Material: Steel with Zinc/Chromate

AT527M
Hex Nut
Material: Steel with Nickel plating

AT506M
Locking Ring
Material: Steel with Zinc/Chromate

Standard Hardware for B3 Bushing

AT503M
Hex Face Nut
Material: Brass with Chrome plating

AT401P
O-ring
Material: Nitrile butadiene rubber

Optional Splashproof Boot for B1 Bushing

AT4043
Splashproof Boot
Material: Silicone Rubber
Operating Life: 10,000 for momentary
30,000 for alternate action

When using a splashproof boot, no cap is required.
The MB2000 pushbutton series offers flexibility to accommodate a variety of applications. Using a basic large bushing model, different accessories can be assembled onto the switch to achieve the mounting variations shown on the following two pages.

These switches have:
- 12mm diameter threaded bushing with keyway
- Silver contacts
- 6-Amp rating
- Solder lug terminals

Other 12mm bushing options can be used; see details in preceding Large Bushing Ordering tables.

**CUSTOM ASSEMBLY ORDERING EXAMPLE**

The MB2000 pushbutton series offers flexibility to accommodate a variety of applications. Using a basic large bushing model, different accessories can be assembled onto the switch to achieve the mounting variations shown on the following two pages.

These switches have:
- 12mm diameter threaded bushing with keyway
- Silver contacts
- 6-Amp rating
- Solder lug terminals

Other 12mm bushing options can be used; see details in preceding Large Bushing Ordering tables.
**Large Bushing Miniature Pushbuttons**  
**Series MB2000**

### MOUNTER SHAPES FOR SHROUDS

| 4 | AT455 Round                  |
|   | Material: Polycarbonate     |
|   | Colors: A B H               |

| 5 | AT453 Rectangular           |
|   | Material: Polycarbonate     |
|   | Colors: A B H               |

### CAPS & CAP COLORS FOR SHROUDS

<table>
<thead>
<tr>
<th>AT454 Round Insert Cap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material: Polycarbonate</td>
</tr>
<tr>
<td>Colors: A B C F G H</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AT452 Rectangular Insert Cap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material: Polycarbonate</td>
</tr>
<tr>
<td>Colors: A B C F G H</td>
</tr>
</tbody>
</table>

**AT080 Screw Adaptor for Insert Caps**

Material: Brass

### Color Codes:

<table>
<thead>
<tr>
<th>A Black</th>
<th>B White</th>
<th>C Red</th>
<th>F Green</th>
<th>G Blue</th>
<th>H Gray</th>
</tr>
</thead>
</table>
Series MB2000
Large Bushing Miniature Pushbuttons

CUSTOM ASSEMBLY WITH ROUND SHROUD

CUSTOM ASSEMBLY WITH RECTANGULAR SHROUD

Effective Panel Thickness: .217” (5.5mm) maximum