

# General Specifications

## Electrical Capacity (Resistive Load)

**Power Level (silver):** 5A @ 125/250V AC or 5A @ 30V DC  
**Logic Level (gold):** 0.4VA maximum @ 28V AC/DC maximum  
 (Applicable Range 0.1mA ~ 0.1A @ 20mV ~ 28V)  
 Note: Find additional explanation of operating range in Supplement section.

## Other Ratings

**Contact Resistance:** 50 milliohms maximum for silver; 100 milliohms maximum for gold  
**Insulation Resistance:** 200 megohms 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:** 1,000,000 operations minimum for momentary;  
 200,000 operations minimum for alternate action  
**Electrical Life:** 10,000 operations minimum for silver;  
 100,000 operations minimum for silver with resistive load of 3A @ 125V AC  
 200,000 operations minimum for gold  
**Nominal Operating Force:** Single Pole: 1.9N for Square & 1.9N for Rectangular  
 Double Pole: 2.55N for Square & 3.1N for Rectangular  
**Contact Timing:** Break before make  
**Travel:** Pretravel .067" (1.7mm); Overtravel .024" (0.6mm); Total Travel .091" (2.3mm)

## Materials & Finishes

**Housing/Bezel:** Glass fiber reinforced polyamide (UL94V-0)  
**Snap-in Frame:** Stainless steel  
**Movable Contactor:** Phosphor bronze  
**Movable Contacts:** Silver alloy or copper with gold plating  
**Stationary Contacts:** Silver alloy or copper with gold plating  
**Switch Terminals:** Phosphor bronze with silver or gold plating  
**Lamp Terminals:** Brass with silver plating  
**Base:** Glass fiber reinforced liquid crystal polymer (UL94V-0)

## Environmental Data

**Operating Temperature Range:** -25°C through +50°C (-13°F through +122°F) for Illuminated  
 -20°C through +70°C (-4°F through +158°F) for Nonilluminated  
**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/s<sup>2</sup>) acceleration (tested in 6 right angled directions, with 5 shocks in each direction)

## Installation

**Cap Installation Force:** 7.55N (1.70 lbf) maximum downward force on cap  
**Soldering Time & Temp:** Wave Soldering (PC version): See Profile A in Supplement section.  
 Manual Soldering: See Profile A in Supplement section.  
**Cleaning:** These devices are not process sealed. Hand clean locally using alcohol based solution.

## Standards & Certifications

**Flammability Standards:** UL94V-0 housing/bezel & base  
**UL:** File No. E44145  
 All single & double pole models recognized at 5A @ 125/250V AC or 0.014A @ 28V DC.  
 Add "/U" to end of part number to order UL mark on switch.  
 Add "/CUL" to end of part number to order cULus mark on switch.  
 UL recognized only when ordered switch body with cap assembled.  
**CSA:** CSA File No. 023535\_0\_000  
 All single & double pole models certified at 5A @ 125/250V AC or 5A @ 30V DC or  
 0.4VA maximum @ 28V AC/DC maximum.  
 Add "/C" to end of part number to order CSA mark on switch.

# Distinctive Characteristics

Bright or super bright LEDs (an integral part of the switch) of red, amber, green, blue, or white, in full face or spot illumination plus square or rectangular models.

Combination of PCB mountability and short body allows use in compact applications.

Small behind panel dimension for snap-in mounting in tight spaces.

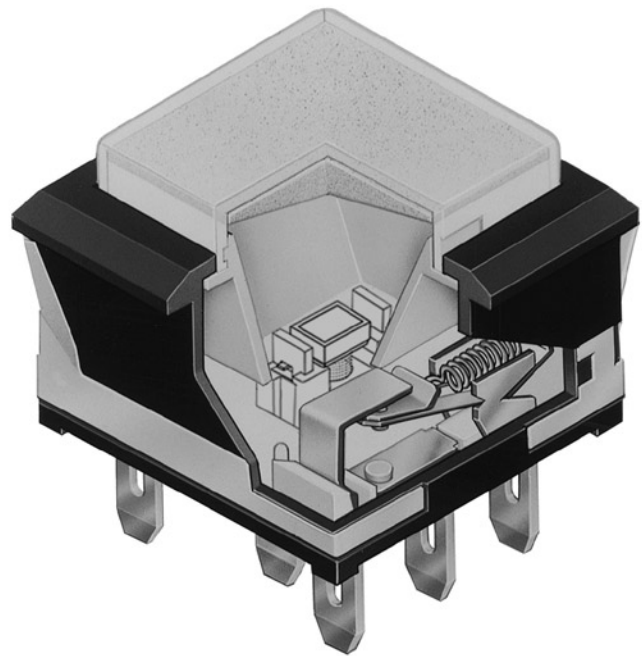
Snap-acting contact mechanism provides sensitive actuation with audible feedback; quick-make, quick-break characteristic limits arcing and prolongs electrical life.

Latchdown mechanism, independent of switching mechanism, gives visible and tactile indication of circuit status.

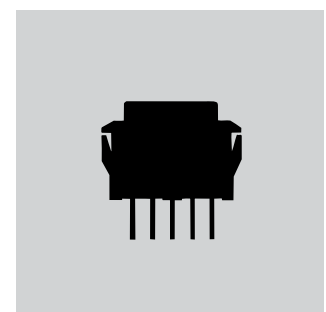
Terminals are epoxy sealed to lock out flux, solvents, and other contaminants.

Momentary and alternate action circuits available in the same space-saving body size.

Matching indicators available.



Actual Size



## TYPICAL SWITCH ORDERING EXAMPLE

**UB** **1** **5** **SK** **G** **03** **5C** — **CC**

| Poles |      |
|-------|------|
| 1     | SPDT |
| 2     | DPDT |

| Mounting Types                       |                                |
|--------------------------------------|--------------------------------|
| PCB Mounting                         |                                |
| SK                                   | Square                         |
| RK                                   | Rectangular                    |
| * Snap-in Mounting                   |                                |
| KK                                   | Square                         |
| NK                                   | Rectangular                    |
| NBK                                  | Rectangular with Side Barriers |
| * Standard with Solder Lug terminals |                                |

| Circuits                        |         |
|---------------------------------|---------|
| 5                               | ON (ON) |
| ( ) = Momentary                 |         |
| 6                               | ON ON   |
| Alternate Action with Latchdown |         |

| Contacts & Ratings |                                      |
|--------------------|--------------------------------------|
| W                  | Silver Rated 5A @ 125/250V AC        |
| G                  | Gold Rated 0.4VA max @ 28V AC/DC max |

| Terminals |                                    |
|-----------|------------------------------------|
| 01        | Solder Lug* (for Snap-in Mounting) |
| 03        | Straight PC                        |

| LEDs       |       |
|------------|-------|
| Bright LED |       |
| 5C         | Red   |
| 5D         | Amber |
| 5F         | Green |

| Cap Types & Colors                       |                                                                   |     |             |
|------------------------------------------|-------------------------------------------------------------------|-----|-------------|
| Full Face Illuminated Cap for Bright LED |                                                                   |     |             |
| Lens/Diffuser Colors                     |                                                                   |     |             |
| CB                                       | Red/White                                                         | FF  | Green/Green |
| CC                                       | Red/Red                                                           | *FJ | Green/Clear |
| *CJ                                      | Red/Clear                                                         | JB  | Clear/White |
| DB                                       | Amber/White                                                       | JC  | Clear/Red   |
| DD                                       | Amber/Amber                                                       | JD  | Clear/Amber |
| *DJ                                      | Amber/Clear                                                       | JF  | Clear/Green |
| FB                                       | Green/White                                                       | *JJ | Clear/Clear |
| AB                                       | Square & Rectangular Spot Illuminated Black Cap with White Window |     |             |
| * Not available with Rectangular cap     |                                                                   |     |             |

| Super Bright LED           |       |
|----------------------------|-------|
| 6B                         | White |
| 6F                         | Green |
| 6G                         | Blue  |
| Available with Square only |       |

| Full Face Illuminated Cap for Super Bright LED |                                              |
|------------------------------------------------|----------------------------------------------|
| JB                                             | Clear Lens/White Diffuser                    |
| AB                                             | Spot Illuminated Black Cap with White Window |
| For Square only; see cap detail page           |                                              |

| Nonilluminated |                |
|----------------|----------------|
| N              | Nonilluminated |

| Nonilluminated Cap Colors |       |   |        |
|---------------------------|-------|---|--------|
| A                         | Black | E | Yellow |
| B                         | White | F | Green  |
| C                         | Red   | G | Blue   |

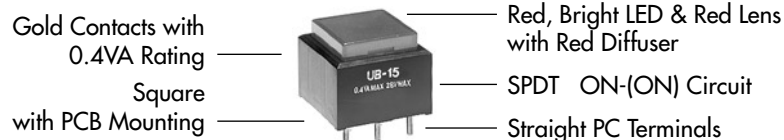
\* Wire harness & cable assemblies offered only in Americas

**IMPORTANT:**

Switches are supplied without UL, cULus, & CSA markings unless specified. Specific models & ratings noted on General Specifications page.

## DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

UB15SKG035C-CC



| POLES & CIRCUITS |               |                                     |            |                     |         |                                                                                                                    |
|------------------|---------------|-------------------------------------|------------|---------------------|---------|--------------------------------------------------------------------------------------------------------------------|
|                  |               | Plunger Position<br>( ) = Momentary |            | Connected Terminals |         | Throw & Switch/Lamp Schematics                                                                                     |
| Pole             | Model         | Normal                              | Down       | Normal              | Down    | Notes: Switch is marked with NC, NO, COM, L+ & L-. Lamp circuit is isolated and requires an external power source. |
| SP               | UB15<br>*UB16 | ON<br>ON                            | (ON)<br>ON | 1-3                 | 1-2     |                                                                                                                    |
| DP               | UB25<br>*UB26 | ON<br>ON                            | (ON)<br>ON | 1-3 4-6             | 1-2 4-5 | SPDT<br>DPDT                                                                                                       |

\* When in latched position for the alternate circuit, cap position is .039" (1.0mm) above the housing.

MOUNTING TYPES & SHAPES

PCB Mounting

**SK** Square

Single Pole Double Pole

**RK** Rectangular

Single Pole Double Pole

Snap-in Mounting (Solder Lug)

**KK** Square with Built-in Bezel

**NK** Rectangular with Built-in Bezel

**NBK** Rectangular with Built-in Side Barriers

Panel Thickness: .039 ~ .126" (1.0 ~ 3.2mm)

CONTACT MATERIALS & RATINGS

**W** Silver Contacts

Power Level

5A @ 125V AC & 250V AC

**G** Gold Contacts

Logic Level

0.4VA maximum @ 28V AC/DC maximum

Complete explanation of operating range in Supplement section.

TERMINALS

**01** Solder Lug

**03** Straight PC

Thk = (0.5) .020

### LED COLORS & SPECIFICATIONS

The electrical specifications shown are determined at a basic temperature of 25°C. LED circuit is isolated and requires external power source. Polarity marks are on bottom of switch. If the source voltage exceeds the rated voltage, a ballast resistor is required. Resistor value can be calculated by using the formula in the Supplement section. LED is an integral part of switch and not available separately.

| Super Bright LEDs are Electrostatic Sensitive                                           |              |  <b>ATTENTION</b><br>ELECTROSTATIC<br>SENSITIVE DEVICES |               | Bright        |               |               | Super Bright  |       |  | Unit |
|-----------------------------------------------------------------------------------------|--------------|------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------------|---------------|---------------|---------------|-------|--|------|
|                                                                                         |              | <div>5C</div>                                                                                                                            | <div>5D</div> | <div>5F</div> | <div>6B</div> | <div>6F</div> | <div>6G</div> |       |  |      |
|  Color |              | Red                                                                                                                                      | Amber         | Green         | White         | Green         | Blue          |       |  |      |
| Forward Peak Current                                                                    | $I_{FM}$     | 30                                                                                                                                       | 30            | 25            | 30            | 30            | 30            | mA    |  |      |
| Continuous Forward Current                                                              | $I_F$        | 20                                                                                                                                       | 20            | 20            | 20            | 20            | 20            | mA    |  |      |
| Forward Voltage                                                                         | $V_F$        | 1.85                                                                                                                                     | 2.0           | 2.1           | 3.2           | 3.2           | 3.2           | V     |  |      |
| Reverse Peak Voltage                                                                    | $V_{RM}$     | 5                                                                                                                                        | 5             | 5             | 5             | 5             | 5             | V     |  |      |
| Current Reduction Rate Above 25°C                                                       | $\Delta I_F$ | 0.40                                                                                                                                     | 0.42          | 0.46          | 0.40          | 0.40          | .040          | mA/°C |  |      |
| Ambient Temperature Range                                                               |              | -25° ~ +50°C                                                                                                                             |               |               | -25° ~ +50°C  |               |               |       |  |      |

**N** No Lamp

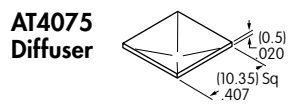
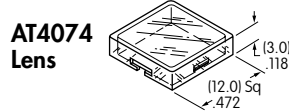
### CAP TYPES & COLOR COMBINATIONS

#### Full Face Illuminated Cap for Bright LED

##### Lens/Diffuser

##### Colors Available for Square Cap:

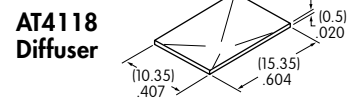
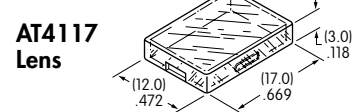
|    |    |    |    |
|----|----|----|----|
| CB | DD | FJ | JF |
| CC | DJ | JB | JJ |
| CJ | FB | JC |    |
| DB | FF | JD |    |



##### Lens/Diffuser

##### Colors Available for Rectangular Cap:

|    |    |    |
|----|----|----|
| CB | FB | JD |
| CC | FF | JF |
| DB | JB |    |
| DD | JC |    |



Lens & Diffuser Material: Polycarbonate

Lens Finish: Glossy

Diffuser Finish: Textured

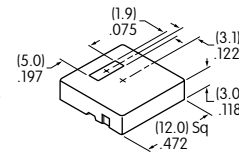
#### Spot Illuminated Caps for Bright & Super Bright LEDs

##### Cap/Window Colors Available:

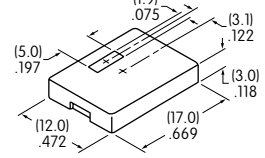
**AB** Black Cap with Translucent White Window for LED Display

Material: Polycarbonate Finish: Matte

AT4119 Square for Bright and Super Bright LED



AT4120 Rectangular for Bright LED



#### Full Face Illuminated Cap for Super Bright LED

##### Lens/Diffuser

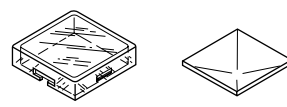
##### Colors Available for Square Cap:

**JB** AT4074 Lens & AT4075 Diffuser (Dimensions above)

Lens & Diffuser Material: Polycarbonate

Lens Finish: Glossy

Diffuser Finish: Textured



Rectangular lens & diffuser are not available for combining with super bright LED.

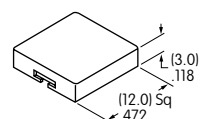
#### Opaque Caps for Nonilluminated

##### Cap Colors Available:

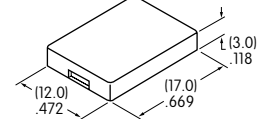
|   |   |   |
|---|---|---|
| A | C | F |
| B | E | G |

Material: Polycarbonate Finish: Glossy

AT4073 Square



AT4116 Rectangular

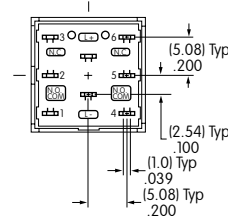
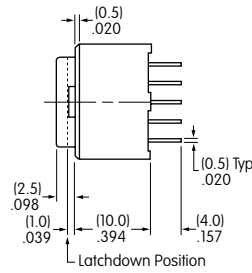
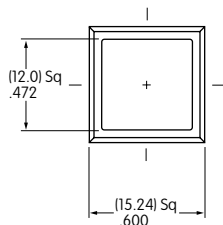


Color Codes: A Black B White C Red D Amber E Yellow F Green G Blue J Clear

## TYPICAL SWITCH DIMENSIONS

### Single & Double Pole

### Square • PCB Mount

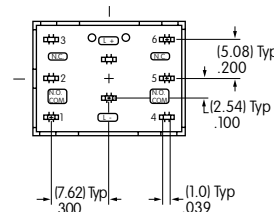
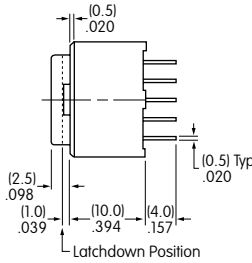
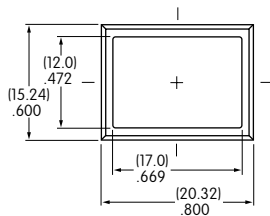


Single pole models do not have terminals 4, 5, & 6.

**UB15SKG035C-CB**

### Single & Double Pole

### Rectangular • PCB Mount

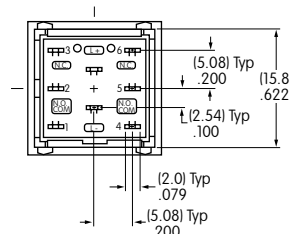
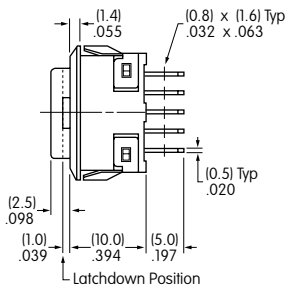
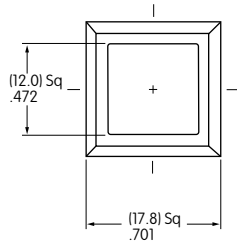


Single pole models do not have terminals 4, 5, & 6.

**UB26RKG035D-DD**

### Single & Double Pole

### Square • Snap-in Mount • Built-in Bezel

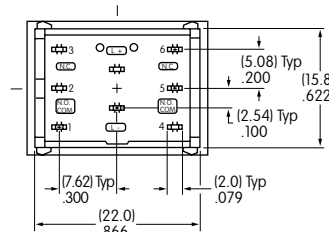
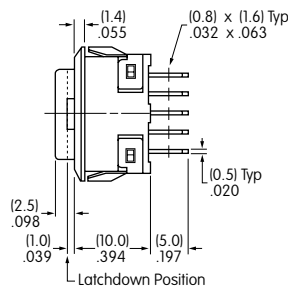
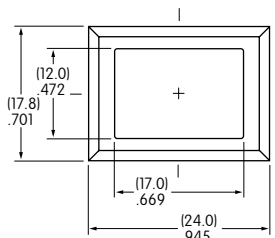


Single pole models do not have terminals 4, 5, & 6.

**UB25KKW015C-CB**

### Single & Double Pole

### Rectangular • Snap-in Mount • Built-in Bezel

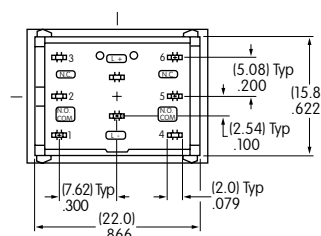
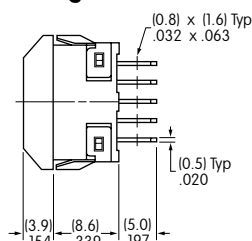
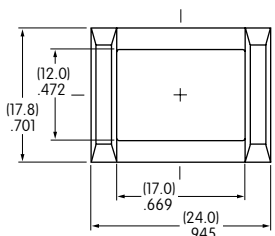


Single pole models do not have terminals 4, 5, & 6.

**UB26NKW015F-FF**

### Single & Double Pole

### Rectangular • Snap-in Mount • Built-in Side Barriers



Single pole models do not have terminals 4, 5, & 6.

**UB25NBKW015F-FB**

### OPTIONAL ACCESSORIES

#### Spring Loaded Protective Guard for Snap-in Mounting of Square PCB Model

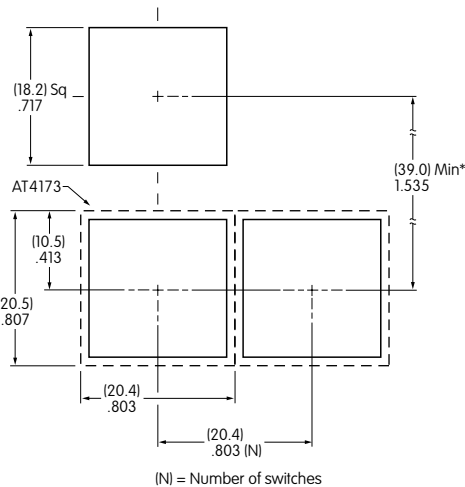
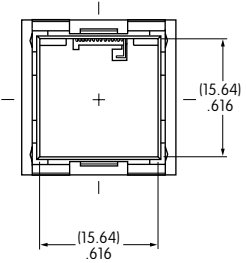
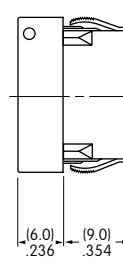
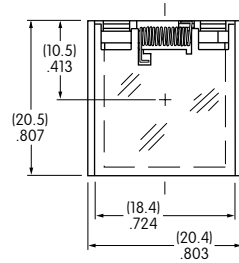
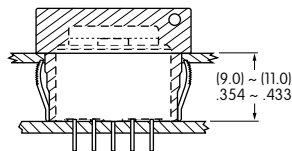
##### AT4173 Square Protective Guard/ Snap-in Frame

Opens 180°  
Closes automatically

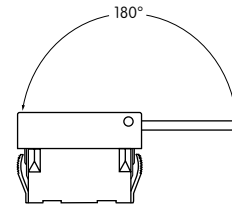
**Materials:**  
Cover: Clear Polycarbonate  
Base: Black Polyamide  
Coil Spring: Stainless Steel

**Recommended  
Panel Thickness:**  
.039" ~ .126"  
(1.0mm ~ 3.2mm)

**Recommended  
Panel-to-PCB Range:**  
.354" ~ .433"  
(9.0mm ~ 11.0mm)

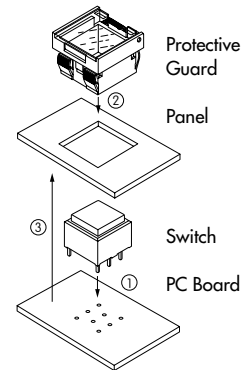


(N) = Number of switches  
\* Minimum dimension allows opening of cover to 180°



##### Installation

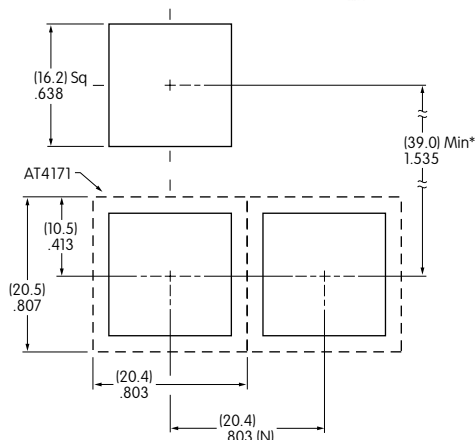
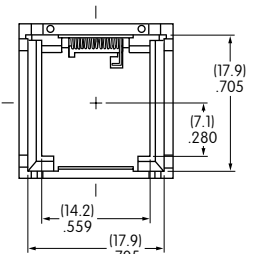
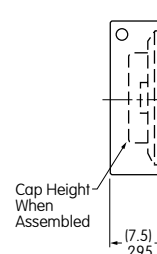
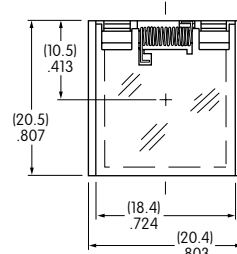
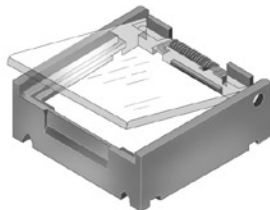
- ① Install switch onto PC board.
- ② Snap protective guard into panel.
- ③ Join the two assemblies.



#### Spring Loaded Protective Guard for Square Snap-in Model

##### AT4171 Square Protective Guard

Opens 180°  
Closes automatically

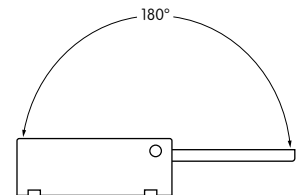


(N) = Number of switches \* Minimum dimension allows opening of cover to 180°

##### Materials:

Cover: Clear Polycarbonate  
Base: Black GFR Polyamide  
Coil Spring: Stainless Steel

**Recommended Panel Thickness:**  
.039" ~ .106" (1.0mm ~ 2.7mm)



## OPTIONAL ACCESSORIES

### Spring Loaded Protective Guard for Snap-in Mounting of Rectangular PCB Model

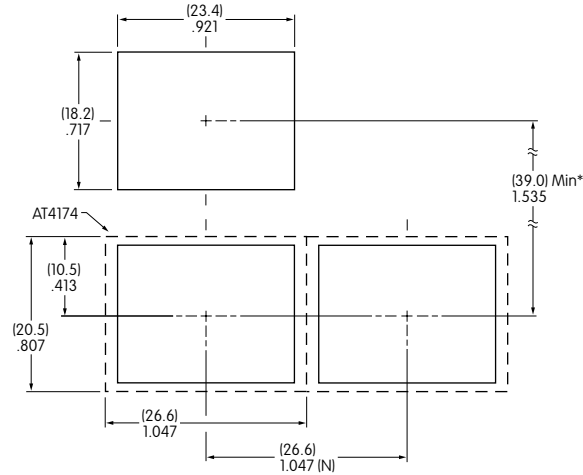
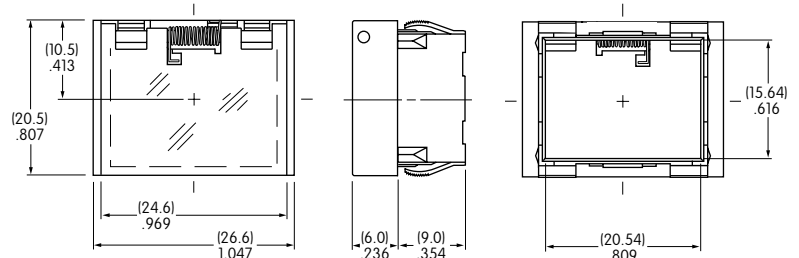
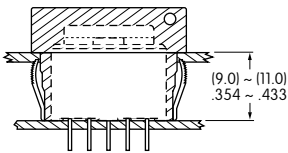
#### AT4174 Rectangular Protective Guard/ Snap-in Frame

Opens 180°  
Closes automatically

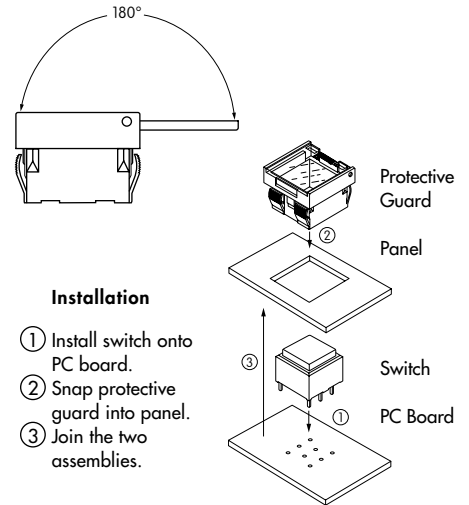
**Materials:**  
Cover: Clear Polycarbonate  
Base: Black Polyamide  
Coil Spring: Stainless Steel

**Recommended  
Panel Thickness:**  
.039" ~ .126"  
(1.0mm ~ 3.2mm)

**Recommended  
Panel-to-PCB Range:**  
.354" ~ .433"  
(9.0mm ~ 11.0mm)



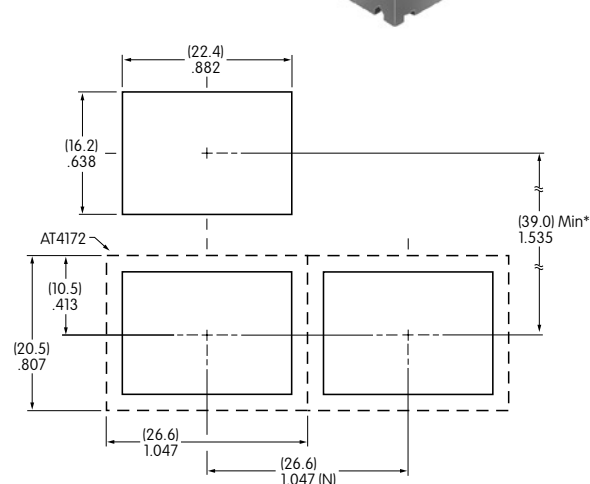
(N) = Number of switches \* Minimum dimension allows opening of cover to 180°



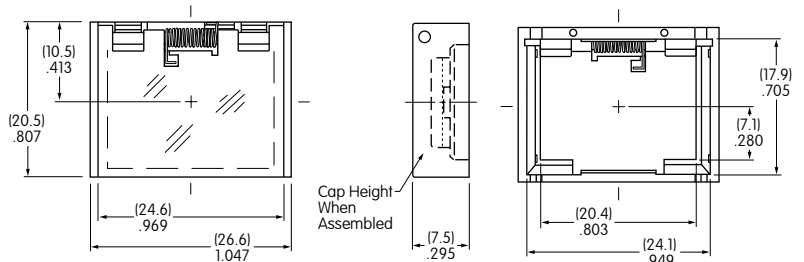
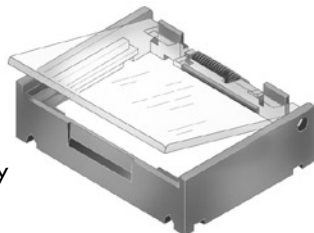
### Spring Loaded Protective Guard for Rectangular Snap-in Model

#### AT4172 Rectangular Protective Guard

Opens 180°  
Closes automatically

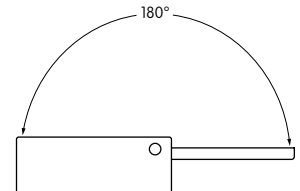


(N) = Number of switches \* Minimum dimension allows opening of cover to 180°



**Materials:**  
Cover: Clear Polycarbonate  
Base: Black GFR Polyamide  
Coil Spring: Stainless Steel

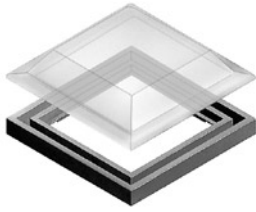
**Recommended Panel Thickness:**  
.039" ~ .106" (1.0mm ~ 2.7mm)



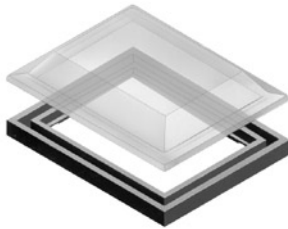
### OPTIONAL ACCESSORIES

#### Dust Covers

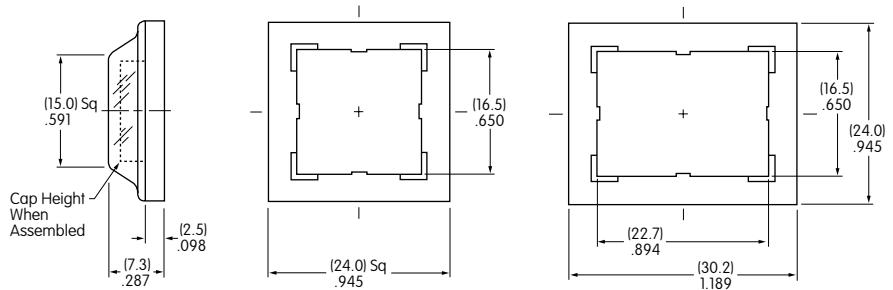
**AT4001**  
**Square**



**AT4011**  
**Rectangular**



Not for use with barrier type models (mounting code NBK)



Materials:  
PVC with polyethylene gasket  
(PVC loses pliability below 0°C (32°F).)

Recommended Panel Thickness: .039" ~ .098" (1.0mm ~ 2.5mm)

### LEGENDS

NKK Switches can provide custom legends for caps. Contact factory for more information.

#### Suggested Printable Area for UB Lens & Film Insert

**Recommended Methods:** Laser Etch on clear lens, Screen Print or Pad Print on lens;

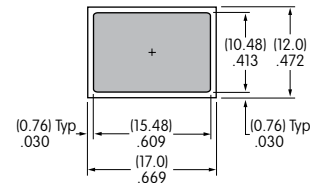
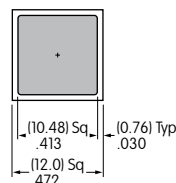
Laser Print on film insert.

**Square Cap**

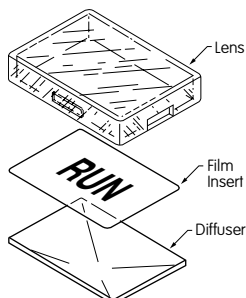
Shaded areas are printable areas.



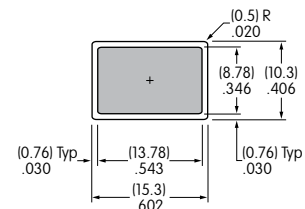
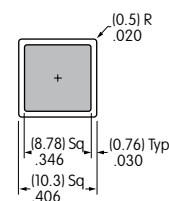
Lens



**Rectangular Cap**



Film Insert



Film Insert: Clear Polyester 4 mil max. thickness

