General Specifications

Electrical Capacity (Resistive Load)

Power Level (silver): 1A @ 125/250V AC or 1A @ 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
Insulation Resistance: 1,000 megohms minimum @ 500V DC
Dielectric Strength: For Silver: 1,000V AC minimum between contacts for 1 minute minimum & 1,500V AC minimum between contacts & case for 1 minute minimum;
For Gold: 750V AC minimum between contacts for 1 minute minimum & 1,500V AC minimum between contacts & case for 1 minute minimum
Mechanical Life: 100,000 operations minimum
Electrical Life: 50,000 operations minimum for silver; 100,000 operations minimum for gold
Nominal Operating Force: Single pole 0.98 ~ 2.45N for maintained & 0.98 ~ 1.96N for momentary;
Double pole 1.47 ~ 3.43N for maintained & 1.47 ~ 2.94N for momentary
Contact Timing: Nonshorting (break-before-make)
Travel: Pretravel .087" (2.2mm); Overtravel .031" (0.8mm); Total Travel .118" (3.0mm)

Materials & Finishes

Housing: Polyamide (UL94V-0)
Movable Contactor: Silver for power circuit; copper with gold plating for logic level circuit
Stationary Contacts: Silver for power circuit; copper with gold plating for logic level circuit
Housing Base: Polyamide (UL94V-0)
Terminal Base: Polyester
Common Terminals: Phosphor bronze with silver flash plating for power circuit;
Phosphor bronze with gold flash plating for logic level circuit
End Terminals: Brass with silver flash plating for power circuit;
Brass with gold flash plating for logic level circuit
Lamp Terminals: Phosphor bronze with nickel flash plating

Environmental Data

Operating Temperature Range: –25°C through +50°C (–13°F through +122°F) for Illuminated
–25°C through +70°C (–13°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^2) acceleration (tested in 6 right angled directions, with 3 shocks in each direction)

Installation

Mounting Torque: 0.78Nm (6.9 lb•in) maximum
Cap Installation Force: 4.51N (1.0 lbf) maximum downward force on cap
Soldering Time & Temperature: Manual Soldering: See Profile A in Supplement section.

Standards & Certifications

Flammability Standards: UL94V-0 housing & housing base
UL: **File No. E44145 - Recognized only when ordered with marking on switch.**
Add "/U" or "/CUL" before first dash in part number to order UL recognized switch.
Single & double pole models recognized at 1A @ 125/250V AC, 1A @ 30V DC, & 0.4VA @ 28V DC.
CSA: **File No. 023535_0_000 - Certified only when ordered with marking on switch.**
Add "/C" before first dash in part number to order CSA certified switch.
Single & double pole models recognized at 1A @ 125/250V AC, 1A @ 30V DC, & 0.4VA @ 28V DC.

Distinctive Characteristics

Bright illumination with numerous color variations. Spot illumination available. Square, rectangular, and round shaped caps.

Front panel relamping.

Choice of bright or super bright LEDs in red, amber, green, white, and blue.

Latchdown feature gives indication of circuit status. Audible and tactile feedback with smooth and responsive operation.

Snap-action mechanism for long life.

Stainless steel frame on snap-in models has a specially designed projection, which prevents rotation and correctly orients switch in panel.

12mm body diameter.

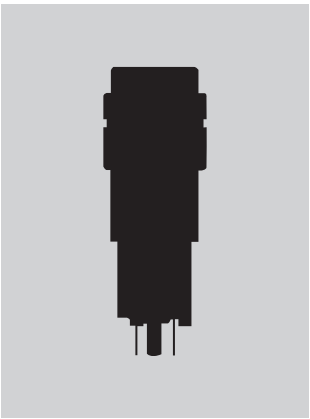
Molded-in terminals lock out flux, dust, and other contaminants.

8mm panel thickness capability. Rear panel bushing or snap-in mounting.

Optional PCB adaptors in straight and right angle types.

Matching indicators available.

Actual Size



TYPICAL SWITCH

KB [1] [5] [C] [K] [W01] [ ]

Poles

1	SPDT
2	DPDT

Circuits

5	ON	(ON)
( ) = Momentary		
6	ON	ON
Alternate Action with Latchdown		

Shapes

Bushing Mounting	
S	Square
C	Round
R	Rectangular
Snap-in Mounting	
K	Square
M	Round
N	Rectangular

Housing

K	Black only

Contacts & Terminals

W01	Silver Contacts and Solder Lug Terminals 1A @ 125/250V AC
G01	Gold Contacts and Solder Lug Terminals 0.4VA @ 28V AC/DC

Barrier Type

No Code	No Barrier
B	With Barrier

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

KB15CKW01-12-FF

12-volt Incandescent Lamp
Round with Bushing Mounting
SPDT ON-(ON) Circuit
Solid Cap with Green Lens and Green Filter
Black Housing
Silver Contacts and Solder Lug Terminals; Rated 1A @ 125/250V AC

ORDERING EXAMPLE

— 12 — FF

Lamps

Incandescent Lamp Used with Solid Cap	
05	5-volt
12	12-volt
No Code	Nonilluminated

Incandescent or Neon Used with Insert Cap	
05	5-volt
12	12-volt
01	110-volt Neon
No Code	Nonilluminated

Bright LED Used with Cap for LED			
Colors		**Resistor**	
5C	Red	**No Code**	No Resistor
5D	Amber	**05**	5-volt
5F	Green	**12**	12-volt
		24	24-volt

Super Bright LED Used with Cap for LED	
6B	White
6F	Green
6G	Blue

Cap Types & Colors

Solid Cap: Lens/Filter Colors			
A	Black/None (Nonilluminated Only. Available in Square and Round Only.)		
BB	White/White	**FB**	Green/White
CB	Red/White	**FF**	Green/Green
CC	Red/Red	**GB**	Blue/White
EB	Yellow/White	**GG**	Blue/Blue

Insert Cap: Lens/Filter Colors	
JB	Clear/White
JC	Clear/Red
JE	Clear/Yellow
*** JF**	Clear/Green
***JG**	Clear/Blue
* JF & JG not suitable with neon.	

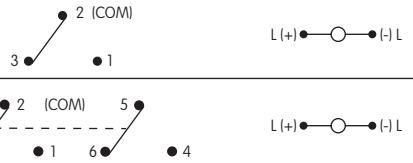
LED Cap: Lens/Diffuser Colors	
AB	Square Spot Illuminated Black Cap/White Window
JB	Clear/White
JC	Clear/Red
JD	Clear/Amber
JF	Clear/Green

LED Cap: Lens/Diffuser Colors	
JB	Clear/White

POLES & CIRCUITS

Pole	Model	Plunger Position ( ) = Momentary: Normal	Down	Connected Terminals: Normal	Down	Throw & Switch/Lamp Schematics
SP	**KB15** ***KB16**	ON ON	(ON) ON	2-3	2-1	SPDT
DP	**KB25** ***KB26**	ON ON	(ON) ON	2-3 5-6	2-1 5-4	DPDT

Notes: Switch is marked with "+" and "–". Lamp circuit is isolated and requires external power source.

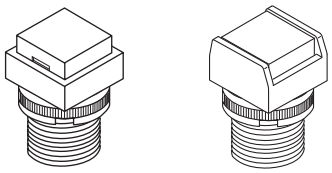


* When in latchdown position for the alternate circuit, cap position is .055" (1.4mm) above the built-in bezel.

MOUNTING TYPES & SHAPES

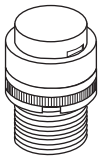
Bushing Mounting

S **.551" (14.0mm) Square**

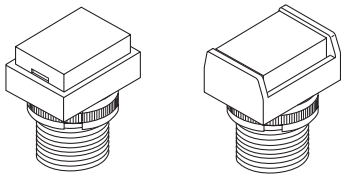


No barrier With barrier

C **.551" (14.0mm) Round**



R **.551" x .728" (14.0mm x 18.5mm) Rectangular**

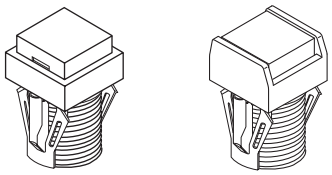


No barrier With barrier

Bezel or barrier is an integral part of the switch body. One mounting nut AT057 supplied with each switch.

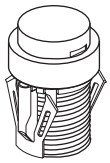
Snap-in Mounting

K **.551" (14.0mm) Square**

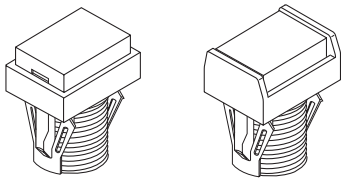


No barrier With barrier

M **.551" (14.0mm) Round**



N **.551" x .728" (14.0mm x 18.5mm) Rectangular**



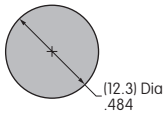
No barrier With barrier

Bezel or barrier is an integral part of the switch body.

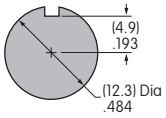
Panel Cutouts

Bushing Mounting

Without Keyway



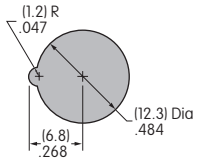
Panel Thickness:
.020" ~ .315"
(0.5 ~ 8.0mm)



With Keyway

Snap-in Mounting

Panel Thickness:
.039" ~ .138"
(1.0 ~ 3.5mm)



Panel thicknesses, when using optional accessories, are shown with the accessories at the end of this KB section.

HOUSING

K **Housing available in black only.** Bezel or barrier is an integral part of the switch body.

CONTACT MATERIALS, RATINGS & TERMINALS

W **Silver Contacts**

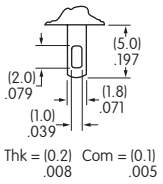
Power Level
1A @ 125V AC & 250V AC

G **Gold Contacts**

Logic Level
0.4VA maximum @ 28V AC/DC

Complete explanation of operating range in Supplement section.

01 **Solder Lug**

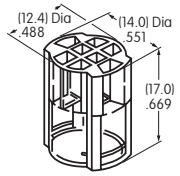


AT055 Crossover Guard

A partitioned plastic guard is supplied with each switch to provide insulation between terminals.

Installation steps:

1. Identify wire-to-terminal connections.
2. Thread wires through the guard.
3. Solder the connections.
4. Push the guard fully onto the switch body.



BARRIER TYPE

No Code **No Barrier**
Built-in bezel

B **With Barrier**
Built-in barrier only available for Square and Rectangular

LAMP 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 the bottom of the switch.
If the source voltage exceeds the rated voltage, a ballast resistor is required.
The resistor value can be calculated by using the formula in the Supplement section.
Ambient Temperature Range for lamps below: −25°C ~ +50°C.

Incandescent & Neon Lamps

AT611 Incandescent
AT615 Neon


T-1 Bi-pin

		05	**12**	**01**
Voltage	V	5V AC	12V AC	110V AC
Current	I	115mA	60mA	1.5mA
Endurance	Hours	7,000 average		10,000

Recommended Resistors for Neon:
33K ohms for 110V AC;
100K ohms for 220V AC

No Code **No Lamp**

Bright LED with Resistor

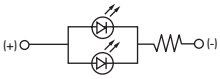
AT634

LEDs are colored in OFF state.

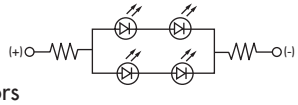
T-1¼ Bi-pin

Color Codes:	Red **5C**	Amber **5D**	Green **5F**	Resistor Codes **05**	**12**	**24**
Maximum Forward Current			I_{FM}	—	—	—
Typical Forward Current			I_F	25mA	20mA	10mA
Forward Voltage			V_F	5V	12V	24V
Maximum Reverse Voltage			V_{RM}	4V	8V	16V
Current Reduction Rate Above 25°C			ΔI_F	—	—	—

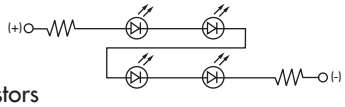
AT634
5-volt
2-element
with 1 Resistor



AT634
12-volt
4-element
with 2 Resistors



AT634
24-volt
4-element
with 2 Resistors



LAMP COLORS & SPECIFICATIONS

Bright LED without Resistor

AT635

LEDs are colored in OFF state.

T-1½ Bi-pin

Color Codes		Red 5C	Amber 5D	Green 5F	No Code: No Resistor
					Red / Amber / Green
Maximum Forward Current	I_{FM}	30mA	30mA	30mA	
Typical Forward Current	I_F	20mA	20mA	20mA	
Forward Voltage	V_F	1.9V	2.0V	2.1V	
Maximum Reverse Voltage	V_{RM}	5V	5V	5V	
Current Reduction Rate Above 25°C	ΔI_F	0.42mA/°C			
Ambient Temperature Range		−25° ~ +50°C			

Super Bright Single Element LED

AT625G Blue

AT631B White

AT632F Green

T-1 Bi-pin

ATTENTION ELECTROSTATIC SENSITIVE DEVICES

Color		6B White	6F Green	6G Blue
Maximum Forward Current	I_{FM}	30mA	30mA	30mA
Typical Forward Current	I_F	20mA	20mA	20mA
Forward Voltage	V_F	3.3V	3.3V	3.3V
Maximum Reverse Voltage	V_{RM}	7V	7V	7V
Current Reduction Rate Above 25°C	ΔI_F	0.40mA/°C	0.40mA/°C	0.40mA/°C
Ambient Temperature Range		−25° ~ +50°C		

CAP TYPES & COLOR COMBINATIONS

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

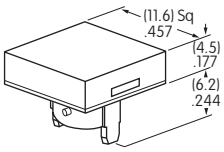
Solid Cap for Incandescent Lamp & Nonilluminated

Lens/Filter Colors Available:

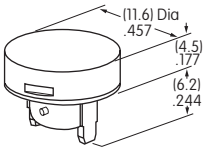
A Nonilluminated Only; Square & Round Only

BB **FB** **CB** **FF** **CC** **GB** **EB** **GG**

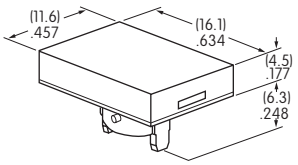
AT485 Square



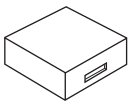
AT486 Round



AT4021 Rectangular



Material: Polycarbonate Finish: Glossy



Translucent Colored Lens

Translucent Colored Filter

Lamp AT611

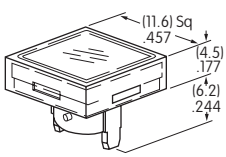
Insert Cap for Incandescent or Neon Lamp & Nonilluminated

Lens/Filter Colors Available:

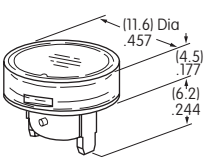
JB **JF** **JC** **JG** **JE**

JF and JG not suitable with neon lamp.

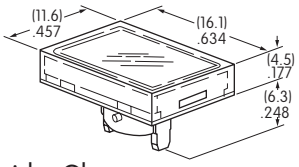
AT487 Square



AT488 Round



AT4022 Rectangular



Material: Polycarbonate Finish: Glossy

Transparent Clear Lens

Translucent Colored Filter

Lamp AT611

Lamp AT615

CAP TYPES & COLOR COMBINATIONS

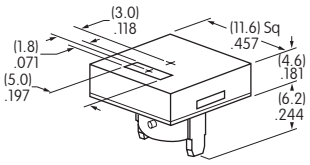
Color Codes: **A** Black **B** White **C** Red **D** Amber **E** Yellow **F** Green **G** Blue **J** Clear

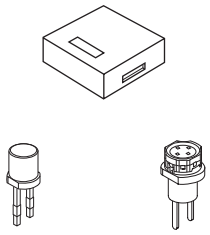
Spot Illuminated Cap for Bright LED without Resistor or with Resistor

Cap/Window Colors Available:

AB **Opaque Black Cap with Translucent White Window for Spot Illumination**

AT4051
Square





Material: Polycarbonate Finish: Matte

Bright LED AT635 Bright LED AT634

Cap for Bright LED without Resistor or LED with Resistor

Lens/Diffuser Colors Available: (AT4133, 4132, 4134 white diffusers; AT4158, 4160, 4159 colored diffusers)

JB **AT4133** **AT4132** **AT4134**

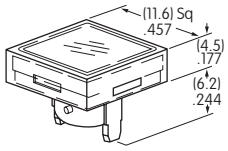
Square **Round** **Rectangular**

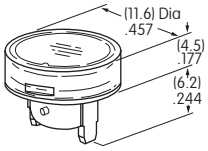
Transparent Clear Lens

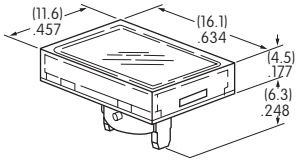
JC **AT4158** **AT4160** **AT4159**

JD

JF







Translucent Diffuser

Material: Polycarbonate Finish: Glossy

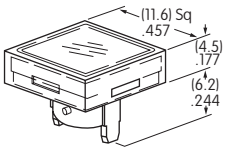
Bright LED AT635 Bright LED AT634

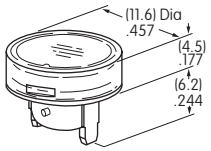
Cap for Super Bright LED

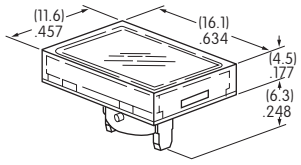
Lens/Diffuser Colors Available:

JB **AT4133** **Square** **AT4132** **Round** **AT4134** **Rectangular**

Translucent Clear Lens







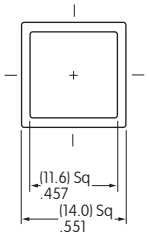
Translucent White Diffuser

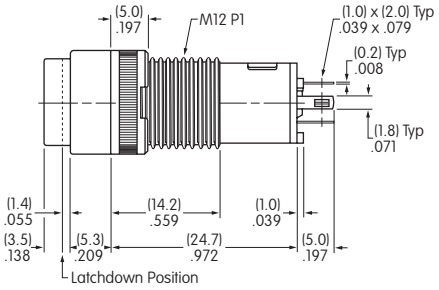
Material: Polycarbonate Finish: Glossy

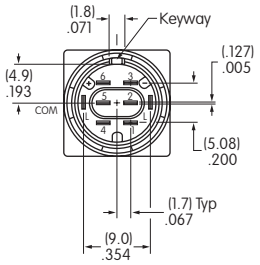
Super Bright LEDs AT625 AT631 AT632

TYPICAL SWITCH DIMENSIONS

Square • Bushing Mount — Single & Double Pole



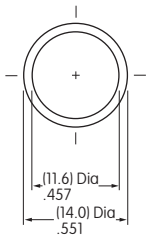


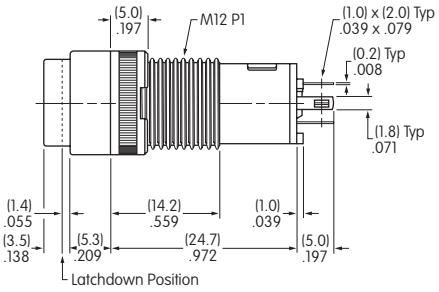


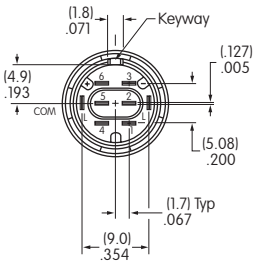
KB15SKW01-05-GG

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

Round • Bushing Mount — Single & Double Pole



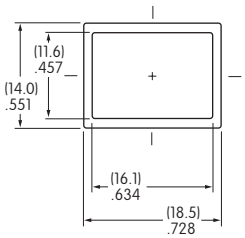


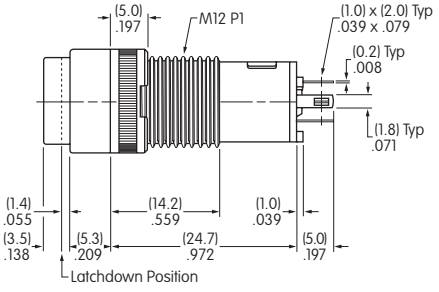


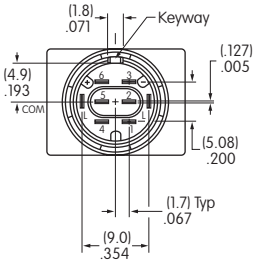
KB25CKW01-05-GG

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

Rectangular • Bushing Mount — Single & Double Pole





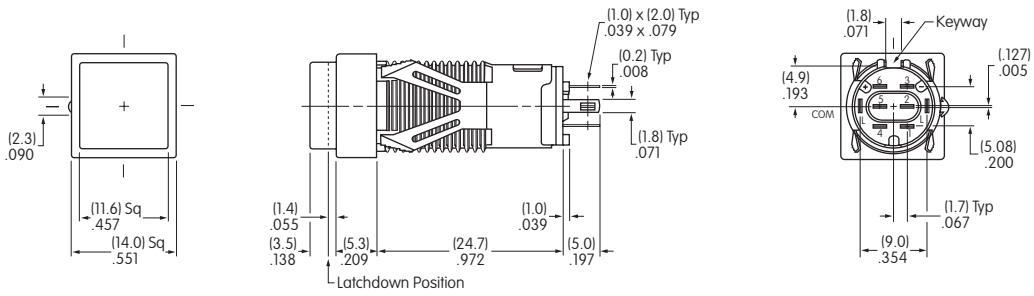


KB15RKW01-05-GG

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

TYPICAL SWITCH DIMENSIONS

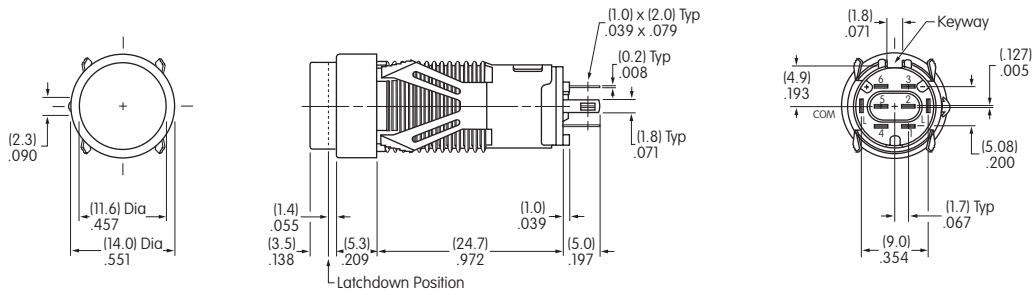
Single & Double Pole — Square • Snap-in Mount



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

KB16KKW01-05-CB

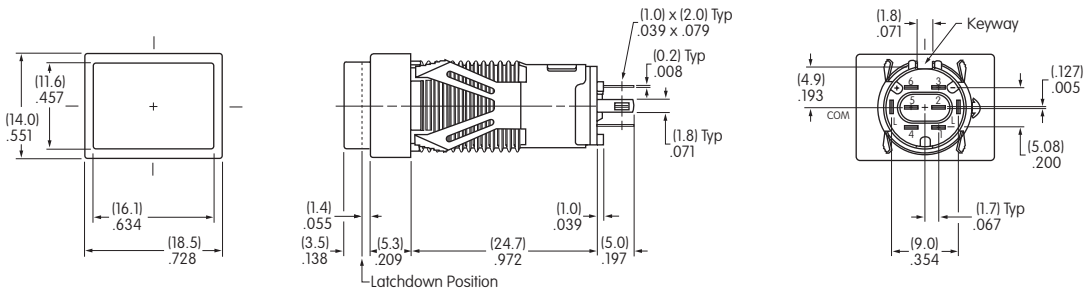
Single & Double Pole — Round • Snap-in Mount



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

KB26MKW01-05-CB

Single & Double Pole — Rectangular • Snap-in Mount

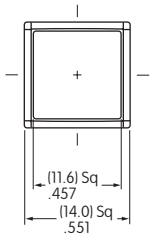


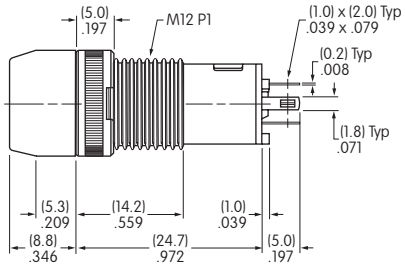
Single pole models do not have terminals 4, 5, & 6.

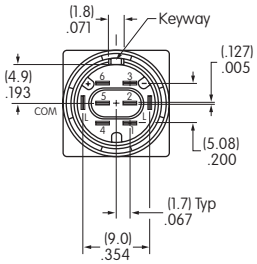
KB16NKW01-05-CB

TYPICAL SWITCH DIMENSIONS

Square • Barrier • Bushing Mount — Single & Double Pole



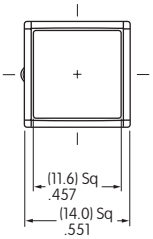


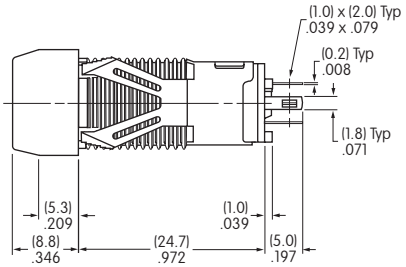


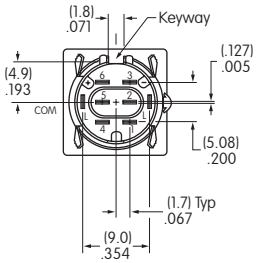
KB15SKW01B-6G-JB

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

Square • Barrier • Snap-in Mount — Single & Double Pole



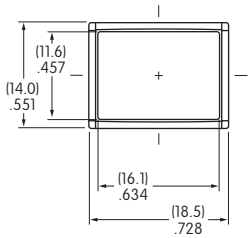


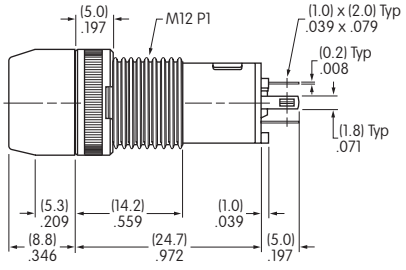


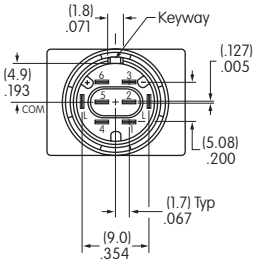
KB15KKW01B-5C-JC

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

Rectangular • Barrier • Bushing Mount — Single & Double Pole



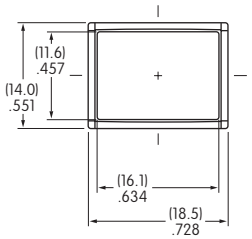


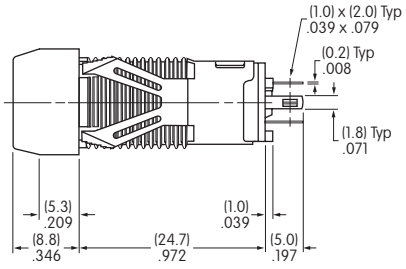


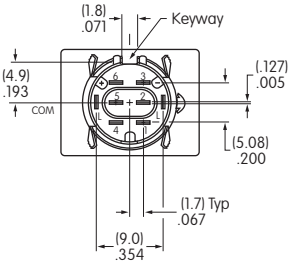
KB15RKW01B-5F-JF

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

Rectangular • Barrier • Snap-in Mount — Single & Double Pole







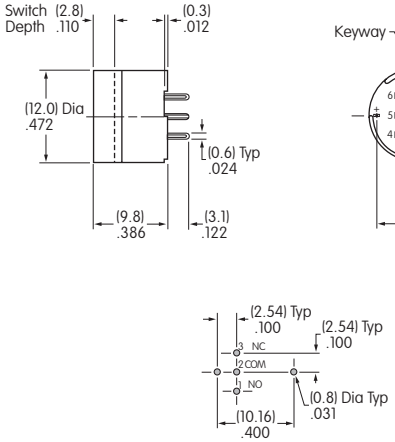
KB15NKW01B-5D-JD

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

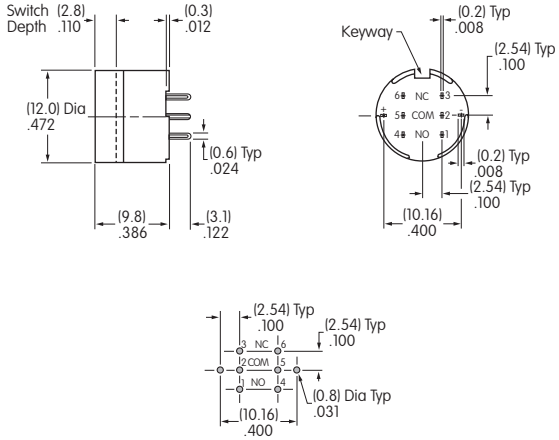
OPTIONAL ACCESSORIES

PCB Adaptors

AT701
Single Pole
Straight PC
Terminals



AT702
Double Pole
Straight PC
Terminals

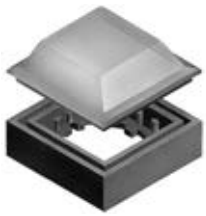


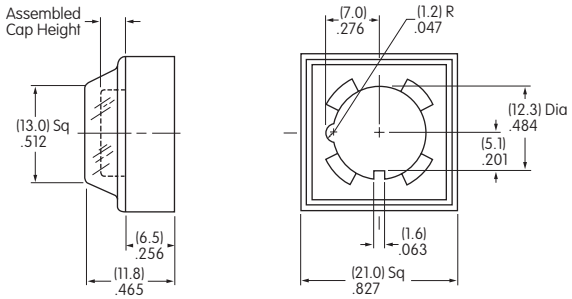
Material: Glass fiber reinforced polyamide Note: Order adaptors separately

Dust Covers

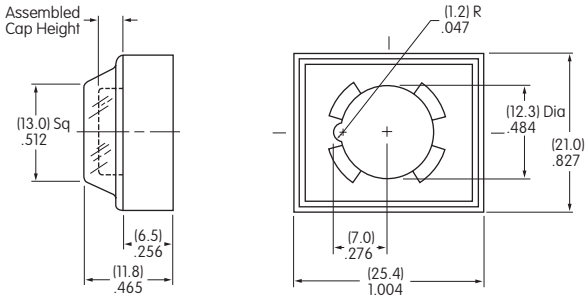
Panel Thickness Range: .020 ~ .268" (0.5 ~ 6.8mm) for Bushing Mounting; .020 ~ .079" (0.5 ~ 2.0mm) for Snap-in Mounting
Dust Covers reduce the depth of switch behind panel by .047" (1.2mm).

AT495
For Square & Round
(not for Barrier type)





AT4025
For Rectangular
(not for Barrier type)



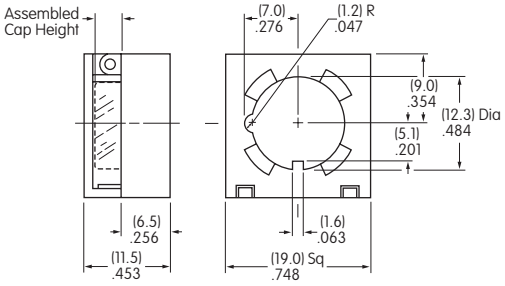
Material: Lid: PVC PVC loses pliability below 0°C (32°F). Base: Polyamide

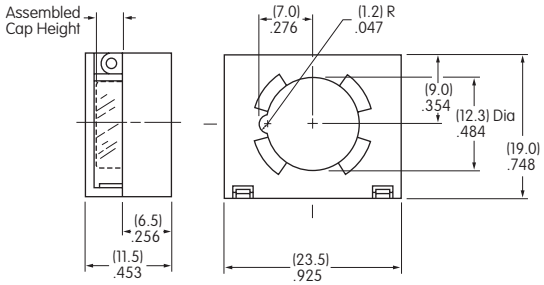
OPTIONAL ACCESSORIES

Protective Guards

AT494
For Square & Round
(not for Barrier type)

AT4024
For Rectangular
(not for Barrier type)





Panel Thickness Range:

.020″ ~ .268″
(0.5 ~ 6.8mm)
for Bushing Mounting

.020″ ~ .091″
(0.5 ~ 2.3mm)
for Snap-in Mounting

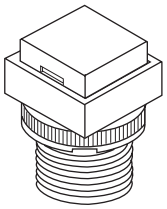
Protective Guards reduce the depth of switch behind panel by .047″ (1.2mm).

Material: Cover: Polycarbonate Base: Polyamide

ASSEMBLY INSTRUCTIONS

Cap Removal & Installation

For alternate action models cap must be in UP position for cap removal. Indentations on opposite sides of the cap provide an easy way to lift the cap out of the holder, using either the finger nails, or cap extractor AT109.



LED Polarity & Orientation in Lamp Socket

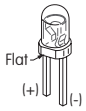
Super Bright LEDs AT625, AT631, & AT632 are electrostatic sensitive.

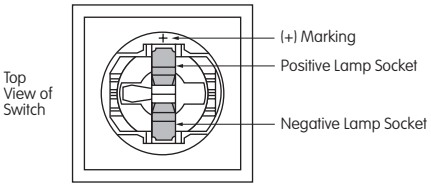
ATTENTION
ELECTROSTATIC SENSITIVE DEVICES

LED AT635

LED AT634

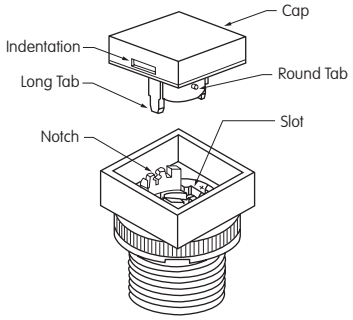
LEDs AT625 AT631 AT632





Cap Replacement

Note that the cap has a pair of round tabs and a pair of long tabs which should be used for correctly replacing the cap in its holder. Using the long tabs as guides, slide the cap with the long tabs moving into the slots on opposite sides of the cap holder. Then, the round tabs will snap into notches on the other two sides of the holder.



AT108 Socket Wrench for Bushing Mounting

Overtightening the mounting nut may damage the switch housing.

AT109 Cap Extractor

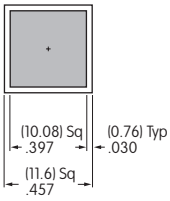
AT111 Lamping Tool

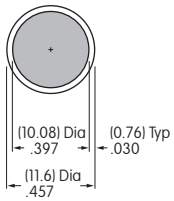
LEGENDS

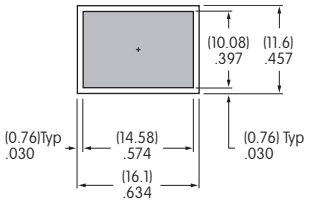
NKK Switches can provide custom legends for caps. Contact factory for more information.

Suggested Printable Area for KB Lens

Recommended Methods: Screen Print or Pad Print on Lens.
Epoxy based ink is recommended.

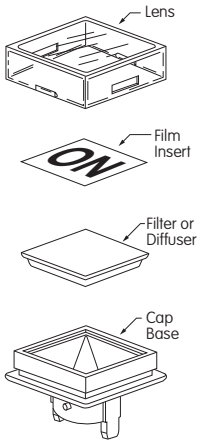






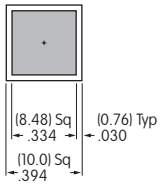
Shaded areas are printable areas.

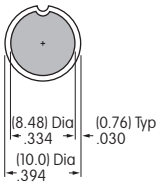
Suggested Printable Area for Film Insert

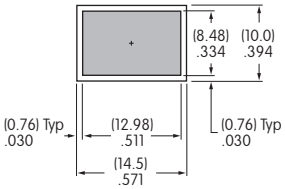


Recommended Print Method: Laser Print

Film Insert: Clear Polyester, 4 mil max. thickness







Shaded areas are printable areas.