

General Specifications

Toggles

Rockers
B

Pushbuttons

Illuminated PB

Programmable

Keylocks

Rotaries

Slides

Tactiles

Tilt

Touch

Indicators

Accessories

Supplement

Electrical Capacity

Power Level: 5A @ 125V AC, 3A @ 250V AC, & 3A @ 30V DC

Other Ratings

Contact Resistance: 10 milliohms maximum
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: 30,000 operations minimum
Electrical Life: 10,000 operations minimum
Nominal Operating Force: 9.94N for rockers & 4.41N for paddles
Angle of Throw: 24° for On-None-(On); 28° for all other circuits

Materials & Finishes

Housing: Stainless steel
Movable Contacts: Silver alloy
Stationary Contacts: Silver
Base: Phenolic resin
Common Terminal: Copper with silver plating
End Terminals: Copper with silver plating
Lamp Terminals: Phosphor bronze with nickel plating

Environmental Data

Operating Temperature Range: -10°C through +50°C (+14°F through +122°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 3 right angled directions, with 3 shocks in each direction)

Installation

Cap Installation Force: 9.80N (2.2 lbf) for rockers;
 19.61N (4.4 lbf) for paddle
Soldering Time & Temperature: Manual Soldering: See Profile A in Supplement section.

Standards & Certifications

UL: File No. E44145
 All models recognized at 5A @ 125V AC & 3A @ 250V AC.
 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.

Distinctive Characteristics

Industry's first miniature snap-in, lighted rocker switch.

Actuators in various styles operate with firm, well-defined movements.

Interlocking actuator prevents switch failure due to jamming or window locking.

Two bezel sizes adapt to varied panel cutouts.

Unique stainless steel retaining clips securely hold switches over a range of panel thicknesses, even when exposed to vibration.

Space conserving front panel mounting with minimum behind panel dimension of .902" (22.9mm).

Durable stainless steel housing prevents corrosion.

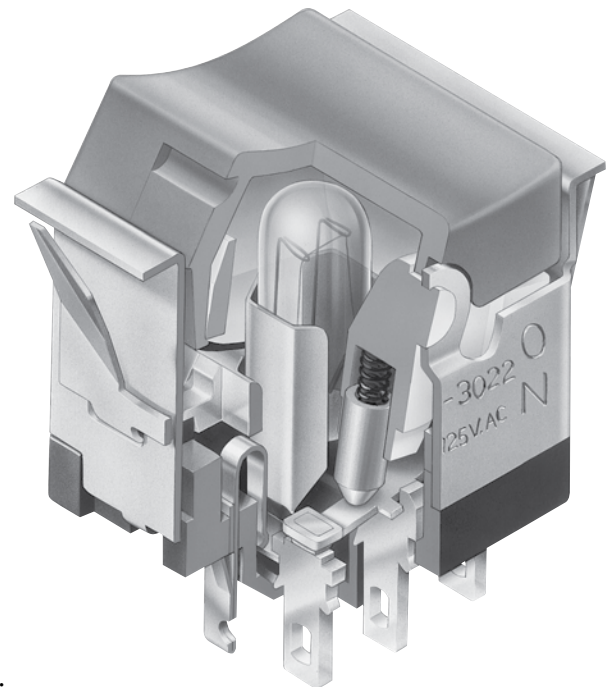
Isolated lamp circuit for incandescent, LED, and neon lamps. Front panel relamping.

Built-in protective cover shields contacts from dust.

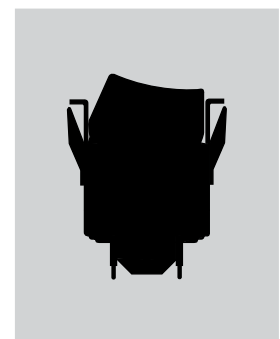
Epoxy sealed solder lug terminals lock out flux, dust, and other contaminants.

Extended lamp terminal for ease of wiring.

Matching indicators available.



Actual Size



- Supplement
- Accessories
- Indicators
- Touch
- Tilt
- Tactiles
- Slides
- Rotaries
- Keylocks
- Programmable
- Illuminated PB
- Pushbuttons
- B** Rockers
- Toggle

TYPICAL SWITCH ORDERING EXAMPLE

MLW30

2

5

12

DC

1A

| Poles | |
|-------|--------------|
| 1 | SPDT |
| 2 | SP3T DPDT |

| Circuits | | | |
|----------|------|------|------|
| 2 | ON | NONE | ON |
| 3 | ON | OFF | ON |
| 5 | ON | NONE | (ON) |
| 8 | (ON) | OFF | (ON) |
| 9 | ON | OFF | (ON) |
| 0 | ON | ON | ON |

() = Momentary

| Lamps | |
|---------------------------|---|
| Incandescent & Neon Lamps | |
| 00 | No Lamp |
| 06 | 6-volt |
| 12 | 12-volt |
| 18 | 18-volt |
| 24 | 24-volt |
| 28 | 28-volt |
| N | 110-volt (not suitable with green & blue) |

| Single Element LED Colors | |
|---------------------------|--------|
| C | Red |
| E | Yellow |
| F | Green |

| Cap Types & Colors | |
|--------------------|--------|
| Rocker | |
| RA | Black |
| RB | White |
| RC | Red |
| RD | Orange |
| RE | Yellow |
| RF | Green |
| RG | Blue |

| Paddle | |
|--------|--------|
| PA | Black |
| PB | White |
| PC | Red |
| PD | Orange |
| PE | Yellow |
| PF | Green |
| PG | Blue |

| Design Rocker | |
|---------------|--------|
| DB | White |
| DC | Red |
| DD | Orange |
| DF | Green |
| DG | Blue |

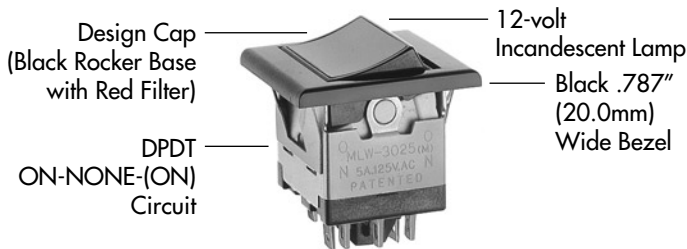
| LED Rocker | |
|------------|--------|
| LB | White |
| LC | Red |
| LE | Yellow |
| LF | Green |

| Sculptured Rocker | |
|-------------------|--------|
| SB | White |
| SC | Red |
| SE | Yellow |
| SF | Green |

| Bezels/Colors | |
|---------------|--------|
| Standard | |
| 1A | Black |
| 1B | White |
| 1C | Red |
| 1D | Orange |
| 1E | Yellow |
| 1F | Green |
| 1G | Blue |
| 1H | Gray |
| Large | |
| 2A | Black |
| 2B | White |
| 2C | Red |
| 2D | Orange |
| 2E | Yellow |
| 2F | Green |
| 2G | Blue |
| 2H | Gray |

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

MLW3025-12-DC-1A



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

Note: Wire harness & cable assemblies offered only in Americas

POLES & CIRCUITS

| Pole | Model | Rocker Position () = Momentary | | | Connected Terminals | | | Throw & Power/Lamp Schematics |
|------|---|------------------------------------|-----------------------------------|----------------------------------|---------------------|--------|---------|---|
| | | Up | Center | Down | Up | Center | Down | |
| SP | MLW3012 MLW3013 MLW3015 MLW3018 MLW3019 | ON ON ON (ON) ON | NONE OFF NONE OFF OFF | ON ON (ON) (ON) (ON) | 2-1 | OPEN | 2-3 | Notes: Terminal numbers are not actually on switch. Lamp circuit is isolated and requires an external power source. SPDT |
| DP | MLW3022 MLW3023 MLW3025 MLW3028 MLW3029 | ON ON ON (ON) ON | NONE OFF NONE OFF OFF | ON ON (ON) (ON) (ON) | 2-1 5-4 | OPEN | 2-3 5-6 | DPDT |

For 3 Throw (3-On)

| Pole | Model | Up | Center | Down | Connected Terminals & Schematics | | | External Connection |
|-----------------------------|---------|----|--------|------|----------------------------------|---------|---------|---|
| SP | MLW3020 | ON | ON | ON | | | | The SP3T model utilizes a double pole base. External connection must be made during field installation. |
| With External Connection | | | | | 2-1 | 2-4 | 2-6 | |
| Without External Connection | | | | | 2-1 5-4 | 2-3 5-4 | 2-3 5-6 | |

TERMINALS

Switch Terminals.

Center terminal is .020" (0.5mm) longer



Lamp Terminals



LAMP CODES & SPECIFICATIONS

Electrical specifications are determined at a basic temperature of 25°C. Lamp circuit is independent of switch operation. For dimension drawings of lamps see Accessories & Hardware section. For neon, if the source voltage is greater than rated voltage, a ballast resistor is required. The ballast resistor calculation and more lamp detail are shown in the Supplement.

Incandescent & Neon Lamps for Solid & Design Caps

| AT602 Incandescent | AT602N Neon | | 06 | 12 | 18 | 24 | 28 | N | |
|--------------------|-------------|--|--|---------------|--------|--------|--------|--------|----------------|
| | | Voltage | V | 6V AC | 12V AC | 18V AC | 24V AC | 28V AC | 110V AC |
| | | Current | I | 80mA | 50mA | 35mA | 25mA | 22mA | 1.5mA |
| | | MSCP | | .159 | .215 | .398 | .215 | .247 | NA |
| | | Endurance | Hours | 2,000 Average | | | | | 15,000 Average |
| | | Ambient Temperature Range | | -10°C ~ +50°C | | | | | -10°C ~ +50°C |
| | | Recommended Resistor for Neon: 33K ohms for 110V AC; 100K ohms for 220V AC | | | | | | | |
| | | 00 | No Lamp Code 00 indicates that no lamp is used. | | | | | | |

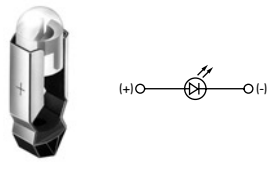


T-1 1/2 Pilot Slide Base

Toggles
Rockers
Pushbuttons
Illuminated PB
Programmable
Keylocks
Rotaries
Slides
Tactiles
Tilt
Touch
Indicators
Accessories
Supplement

LED COLOR CODES & SPECIFICATIONS

Single Element LED

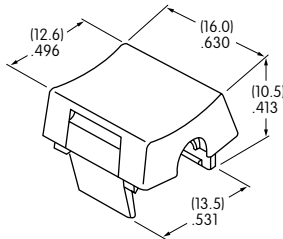
| AT622 LED | Resistor value calculation is shown in the Supplement. | Color | C | E | F |
|--|--|--------------|---------------|-----------|-----------|
| | | | Red | Yellow | Green |
|  <p>T-1¼ Pilot Slide Base</p> | Forward Peak Current | I_{FM} | 30mA | 30mA | 30mA |
| | Continuous Forward Current | I_F | 20mA | 20mA | 20mA |
| | Forward Voltage | V_F | 1.85V | 2.0V | 2.1V |
| | Reverse Peak Voltage | V_{RM} | 5V | 5V | 5V |
| | Current Reduction Rate Above 25°C | ΔI_F | 0.40mA/°C | 0.40mA/°C | 0.40mA/°C |
| | Ambient Temperature Range | | -10°C ~ +50°C | | |

CAP TYPES & COLORS

For Incandescent or Neon Lamps

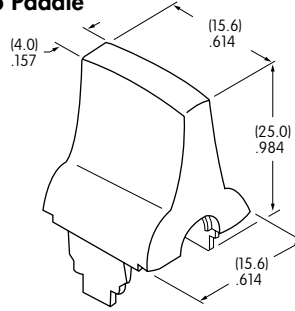
RA AT405 Rocker

- RB RE
- RC RF
- RD RG



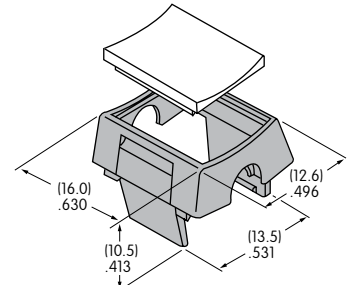
PA AT426 Paddle

- PB PE
- PC PF
- PD PG



DB AT438 Design Rocker

- DC
- DD
- DF
- DG



Material: Translucent Polycarbonate Standard Finish: Glossy
Black Rocker/Paddle not for use with lamp

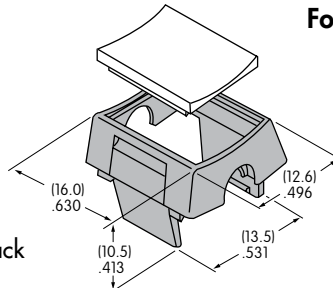
Translucent Colored Filter
Opaque Black Rocker Base

For LED

LB AT4125 LED Rocker

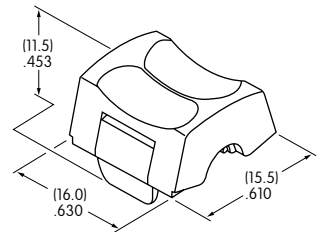
- LC
- LE
- LF

Translucent Colored Diffuser and Opaque Black Rocker Base



SB AT4127 Sculptured Rocker

- SC
- SE
- SF



Material: Translucent Polycarbonate Standard Finish: Glossy

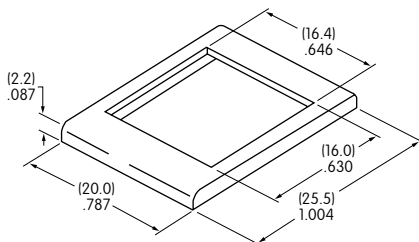
Color Codes:

- A** Black
- B** White
- C** Red
- D** Orange
- E** Yellow
- F** Green
- G** Blue

OPTIONAL BEZELS

AT204 Standard Bezel .787" (20.0mm) Wide

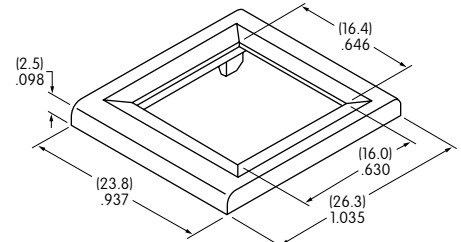
- 1A 1E
- 1B 1F
- 1C 1G
- 1D 1H



Material: Polycarbonate Standard Finish: Glossy

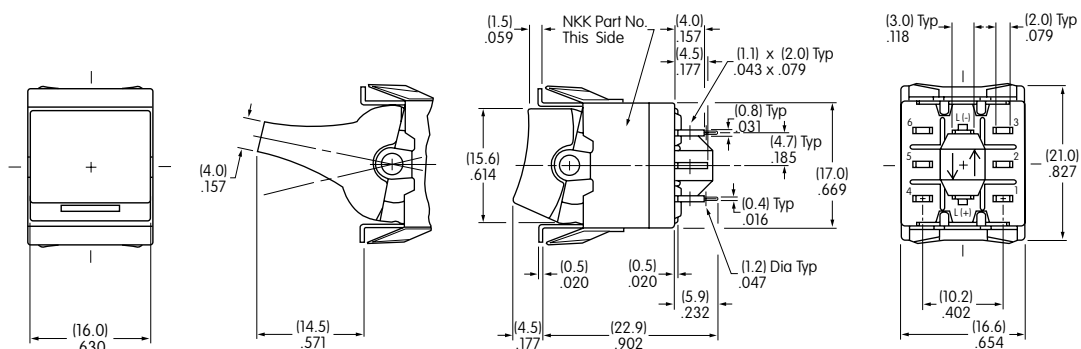
AT9201 Large Bezel .937" (23.8mm) Wide

- 2A 2E
- 2B 2F
- 2C 2G
- 2D 2H



Material: Polycarbonate Standard Finish: Glossy

TYPICAL SWITCH DIMENSIONS



Actuator in UP position

Terminals 4, 5, & 6 are not on single pole models

Without Bezel
Single & Double Pole



MLW3022-12-PC



Actuator in UP position

Terminals 4, 5, & 6 are not on single pole models

Standard Bezel
Single & Double Pole



MLW3022-12-RC-1A



Actuator in UP position

Terminals 4, 5, & 6 are not on single pole models

Large Bezel
Single & Double Pole



MLW3022-12-PC-2A



Actuator in UP position

Terminals 4, 5, & 6 are not on single pole models

Sculptured Cap
Single & Double Pole



MLW3022-C-SC-1A

PANEL CUTOUTS & THICKNESSES



Without Bezel
.039" ~ .157" (1.0mm ~ 4.0mm)



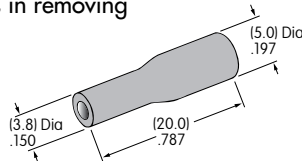
With Standard Bezel AT204
.039" ~ .118" (1.0mm ~ 3.0mm)



With Large Bezel AT9201
.039" ~ .118" (1.0mm ~ 3.0mm)

INSTALLATION & MAINTENANCE

Lamps and LEDs can be changed without removing the switch from the panel. The lamp extractor AT107 assists in removing lamps and LEDs.



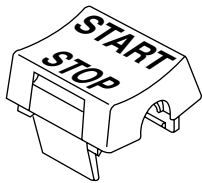
AT107
Lamp Extractor



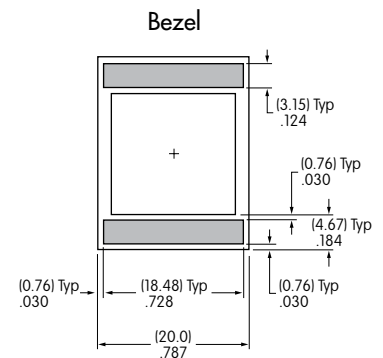
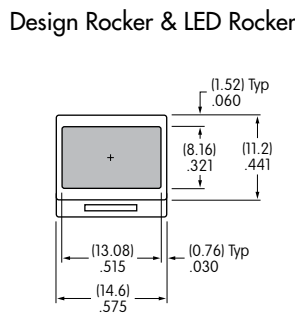
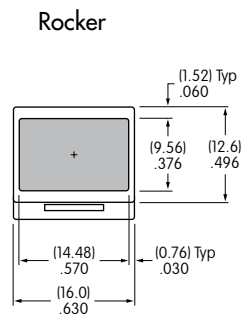
Note: When changing LEDs, match the positive polarity markings on both lamp base and actuator block.

LEGENDS

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



Recommended Print Method:
Pad Print
Epoxy based ink is recommended



Shaded areas are printable areas.