## General Specifications

### Electrical Capacity (Resistive Load)

<table>
<thead>
<tr>
<th>Power Level (silver)</th>
<th>Logic Level (gold)</th>
<th>Logic/Power Level (gold over silver)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6A @ 125V AC &amp; 3A @ 250V AC</td>
<td>0.4VA maximum @ 28V AC/DC maximum</td>
<td>Combines silver &amp; gold ratings</td>
</tr>
<tr>
<td>4A @ 30V DC for On-None-On; 3A @ 30V DC for all other circuits</td>
<td>(Applicable Range 0.1mA ~ 0.1A @ 20mV ~ 28V)</td>
<td>Note: Find additional explanation of dual rating &amp; operating range in Supplement section.</td>
</tr>
</tbody>
</table>

### Other Ratings

- **Contact Resistance:** 10 milliohms maximum for silver; 20 milliohms maximum for gold
- **Insulation Resistance:** 1,000 megohms minimum @ 500V DC
- **Dielectric Strength:** 1,000V AC minimum between contacts for 1 minute minimum; 1,500V AC minimum between contacts and case for 1 minute minimum
- **Mechanical Life:** 50,000 operations minimum
- **Electrical Life:** 25,000 operations minimum for silver; 50,000 operations minimum for gold; 50,000 operations minimum for silver at 3A @ 125V AC
- **Angle of Throw:** 25°

### Materials & Finishes

- **Actuator Clip & Mounting Frame:** Stainless Steel
- **Body Frame:** Stainless steel
- **Case:** Diallyl phthalate resin (UL94V–0)
- **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; or 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)

### Processing

- **Soldering:** Wave Soldering (PC version) for Gold: See Profile A in Supplement section.
- **Manual Soldering for Gold:** See Profile A in Supplement section.
- **Wave Soldering (PC version) for Silver:** See Profile B in Supplement section.
- **Manual Soldering for Silver:** See Profile B in Supplement section.
- **Note:** Actuator must be in OFF (center) position while soldering.
- **Cleaning:** These devices are not process sealed. Hand clean locally using alcohol based solution.

### Standards & Certifications

- **Flammability Standards:** UL94V–0 for case
  - **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.
  - All models recognized at 6A @ 125V AC, 3A @ 250V AC or 0.4VA maximum @ 28V DC maximum.
- **CSA:** File No. 0235353 _0.000 - Certified only when ordered with marking on switch.
  - Add “/C” before first dash in part number to order CSA certified switch.
  - All models certified at 6A @ 125V AC or 3A @ 250V AC or 0.4VA maximum @ 28V maximum.
Distinctive Characteristics

Three methods of panel mounting: flat frame for flush with face or subpanel, snap-in, and PCB.

High insulating barriers increase isolation of circuits in multipole devices and provide added protection to contact points.

The molded diallyl phthalate case has a UL 94V-0 flammability rating.

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

Prominent external insulating barriers increase insulation resistance and dielectric strength.

Bias guard prevents misalignment of contacts; interlocking of actuator block with rocker and internal guide does not allow transmission of diagonal force on rocker to reach contact mechanism.

Clinching of the frame to the case well above the base and terminals provides 1,500V dielectric strength.
Series M
Flat Frame Mount Miniature Rockers

TYPICAL SWITCH ORDERING EXAMPLE

M20 1 2 TN W 01 D C

Poles
1 SPDT
2 DPDT
3 3PDT
4 4PDT

Mounting Frames
TN .272" (6.9mm) Wide Flat Frame
TY .504" (12.8mm) Wide Flat Frame

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

Circuits
2 ON NONE ON
3 ON OFF ON
5 ON OFF (ON)
8 (ON) OFF (ON)
9 ON OFF (ON)
*4 ON ON ON
*6 (ON) ON (ON)
*7 ON ON (ON)

( ) = Momentary
* 3-ON circuits

Termsinals
01 Solder Lug
03 .250" (6.35mm) Straight PC

Rockers & Paddles
Small Actuators (TN Frame)
D .365" (9.27mm)
E .365" (9.27mm)
F .450" (11.43mm)
G .450" (11.43mm)

Large Actuators (TY Frame)
J .595" (15.11mm)
H .595" (15.11mm)

Rocker & Paddle Colors
A Black
B White
C Red
E Yellow
F Green
G Blue
H Gray

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

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE
M2012TNW01-DC

Red .365" (9.27mm)
Wide Rocker
SPDT
ON-NONE-ON Circuit
Solder Lug Terminals

.S27" (6.9mm) Wide Flat Frame
Silver Contacts with 6-Amp Rating

www.nkkswitches.com
# Series M

## Flat Frame Mount Miniature Rockers

### POLES & CIRCUITS

<table>
<thead>
<tr>
<th>Pole</th>
<th>Model</th>
<th>Down (Center)</th>
<th>Connected Terminals</th>
<th>Throw &amp; Schematics</th>
</tr>
</thead>
<tbody>
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<td>M2012</td>
<td>ON (ON)</td>
<td>ON (ON)</td>
<td>SPDT</td>
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<td>2-1 5-4 8-7 11-10</td>
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</table>

**For 3 Throw (3-On)**

<table>
<thead>
<tr>
<th>Pole</th>
<th>Model</th>
<th>Down (Center)</th>
<th>Connected Terminals &amp; Schematics</th>
<th>Throw &amp; Schematics</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP</td>
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<td>Down (Center) Up</td>
<td>SPDT</td>
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<td>2-1 5-4</td>
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</table>

**The SP3T model utilizes a double pole base.**

<table>
<thead>
<tr>
<th>Pole</th>
<th>Model</th>
<th>Down (Center)</th>
<th>Connected Terminals &amp; Schematics</th>
<th>Throw &amp; Schematics</th>
</tr>
</thead>
<tbody>
<tr>
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<td>2-3 5-4 8-9 11-10</td>
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</tbody>
</table>

**The DP3T model utilizes a four pole base.**

External connection must be made during field installation.

---

External connection must be made during field installation.
Series M

MOUNTING FRAMES

**TN**

.272” (6.9mm) Wide Flat Frame

Mounting hardware kit HK-1, as shown on the following page, must be ordered separately.

Small Actuators & Panel Cutouts for TN Frame (actuator details on the following pages)

AT4148

AT4149

AT4150

AT4151

**TY**

.504” (12.8mm) Wide Flat Frame

Large Actuators & Panel Cutout for TY Frame (actuator details on the following pages)

AT4156

AT4157

Mounting hardware kit HK-2, as shown on the following page, must be ordered separately.
Series M
Flat Frame Mount Miniature Rockers

MOUNTING FRAMES (CONTINUED)

Face Panel Mounting
Flat frame devices may also be mounted to the face panel. Standoffs are used to recess the actuator and achieve an attractive front panel appearance.

Subpanel Mounting
These devices are especially designed for subpanel mounting. When installed on a mounting plate behind the panel, hardware is completely concealed and the front panel retains a clean, attractive appearance.

Optional Hardware Kits
for Subpanel or Face Panel Mounting

<table>
<thead>
<tr>
<th>Frame</th>
<th>Panel Thickness</th>
<th>Standoff Length</th>
<th>Hardware Kit Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>TN Frame</td>
<td>.125&quot; (3.175mm)</td>
<td>.233&quot; (5.918mm)</td>
<td>ATHK-1</td>
</tr>
<tr>
<td>TY Frame</td>
<td>.125&quot; (3.175mm)</td>
<td>.312&quot; (7.925mm)</td>
<td>ATHK-2</td>
</tr>
</tbody>
</table>

Hardware kits include:
2 stainless steel screws, 2 hex nuts, 2 lockwashers, & 2 standoffs

Optional Snap-in Panel Frames
Further details are shown in the previous bracketed PC mount subsection.

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: See Supplement section to find complete explanation of operating range.

A Gold over Silver
Power Level
6A @ 125V AC
or Logic Level
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 to find complete explanation of dual rating and operating range.

TERMINALS

01 Solder Lug

03 .250" (6.35mm)
Straight PC

<table>
<thead>
<tr>
<th>Single Pole</th>
<th>Double Pole</th>
<th>Three Pole</th>
<th>Four Pole</th>
</tr>
</thead>
</table>

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Flat Frame Mount Miniature Rockers

ROCKERS & PADDLES

For TN Frame

D  AT4148 .365” (9.27 mm)
Wide Rocker
Material: Polyamide
Finish: Matte

AT4149 .365” (9.27 mm)
Wide Paddle
Material: Polyamide
Finish: Matte

For TY Frame

F  AT4150 .450” (11.43 mm)
Wide Rocker
Material: Polyamide
Finish: Matte

AT4151 .450” (11.43 mm)
Wide Paddle
Material: Polyamide
Finish: Matte

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

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Series M
Flat Frame Mount Miniature Rockers

TYPICAL SWITCH DIMENSIONS

**TN Frame • Solder Lug**

**Single Pole**

M2012TNW01-DC

**Double Pole**

M2022TNW01-DC

**Three Pole**

M2032TNW01-DC

**Four Pole**

M2042TNW01-DC

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Flat Frame Mount Miniature Rockers

TYPICAL SWITCH DIMENSIONS

Double pole has barrier between terminals.

Three Pole

Four Pole

TY Frame • Solder Lug

B

Rocks

Pushbuttons

Programmable Illuminated PB

Rotaries

Slides

Tactiles

Toggles

Accessories

Indicators

Supplement

www.nkkswitches.com

B89
NKK Switches can provide custom legends for caps. Contact factory for more information.

Suggested Printable Area for Caps

Shaded areas are printable areas.

Recommended Print Method:

- Pad Print
- Epoxy based ink is recommended.