

# General Specifications

## Electrical Capacity (Resistive Load)

|                 |                                                                                                                                                                                                                               |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>For MRX:</b> | 2A @ 125V AC or 1A @ 30V DC                                                                                                                                                                                                   |
| <b>For MRY:</b> | For MRY106G: 0.4VA maximum @ 28V AC/DC maximum<br>(Applicable Range 0.1mA ~ 0.1A @ 20mV ~ 28V)<br>Note: See Supplement Index to find explanation of operating range.<br>For all other MRY models: 3A @ 125V AC or 2A @ 30V DC |
| <b>For MRT:</b> | For MRT22: 10A @ 125V AC or 4A @ 30V DC<br>For MRT23: 5A @ 125V AC or 3A @ 30V DC                                                                                                                                             |

## Other Ratings

|                                   |                                                                                                                        |
|-----------------------------------|------------------------------------------------------------------------------------------------------------------------|
| <b>Contact Resistance:</b>        | 10 milliohms maximum for MRX, MRY, & MRT; 20 milliohms maximum for MRY106G                                             |
| <b>Insulation Resistance:</b>     | 100 megohms minimum @ 500V DC for MRX & MRY<br>200 megohms minimum @ 500V DC for MRT                                   |
| <b>Dielectric Strength:</b>       | 1,000V AC minimum for 1 minute minimum                                                                                 |
| <b>Mechanical Life:</b>           | 15,000 operations minimum                                                                                              |
| <b>Electrical Life:</b>           | 7,500 operations minimum                                                                                               |
| <b>Range of Operating Torque:</b> | 0.03 ~ 0.15Nm for MRX; 0.02 ~ 0.10Nm for MRY; 0.02 ~ 0.05Nm for MRT                                                    |
| <b>Contact Timing:</b>            | Nonshorting (break-before-make)<br>MRX: Self-cleaning, sliding contact; MRY: Rotary contactor dish; MRT: Butt contacts |
| <b>Indexing:</b>                  | 45° for MRX; 60° for MRY; 120° for MRT22; 60° for MRT23                                                                |

## Materials & Finishes

|                                         |                                                                                                                                                             |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Shaft:</b>                           | Brass with nickel plating                                                                                                                                   |
| <b>Stopper Plate:</b>                   | Steel with zinc plating for MRX & MRY                                                                                                                       |
| <b>Bushing/Housing:</b>                 | Brass with nickel plating                                                                                                                                   |
| <b>Movable Contacts:</b>                | Silver alloy for MRX & MRT; copper with silver plating for MRY106;<br>copper with gold plating for MRY106G                                                  |
| <b>End Contacts &amp; Terminals:</b>    | Silver alloy & copper with silver plating for MRX & MRT; silver alloy plus brass with silver plating for MRY106; silver alloy with gold plating for MRY106G |
| <b>Common Contacts &amp; Terminals:</b> | Copper with silver plating for MRX, MRY106 & MRT22; brass with gold plating for MRY106G; brass with silver plating for MRT23                                |
| <b>Base:</b>                            | Phenolic resin                                                                                                                                              |

## Environmental Data

|                                     |                                                                                                                                              |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Operating Temperature Range:</b> | -10°C through +70°C (+14°F through +158°F)                                                                                                   |
| <b>Humidity:</b>                    | 90 ~ 95% humidity for 96 hours @ 40°C (104°F)                                                                                                |
| <b>Vibration:</b>                   | 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 |
| <b>Shock:</b>                       | 50G (490m/s <sup>2</sup> ) acceleration (tested in 3 right angled directions, with 3 shocks in each direction)                               |

## Installation

|                                          |                                                        |
|------------------------------------------|--------------------------------------------------------|
| <b>Mounting Torque:</b>                  | .686Nm (6.08 lb•in)                                    |
| <b>Cap Installation Force:</b>           | 19.6 ~ 29.4N (4.41 ~ 6.61 lbf)                         |
| <b>Soldering Time &amp; Temperature:</b> | Manual Soldering: See Profile A in Supplement section. |

## Standards & Certifications

|            |                                                                                                                                                                                                                                                    |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UL:</b> | <b>File No. E44145 - Recognized only when ordered with marking on switch.</b><br>Add "/U" or "/CUL" before dash in part number to order UL recognized switch.<br>MRT22 models recognized at 10A @ 125V AC; MRT23 models recognized at 5A @ 125V AC |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

# Distinctive Characteristics

Positive detent mechanism for distinct feel and audible feedback.

Metal bushing and housing construction increases durability.

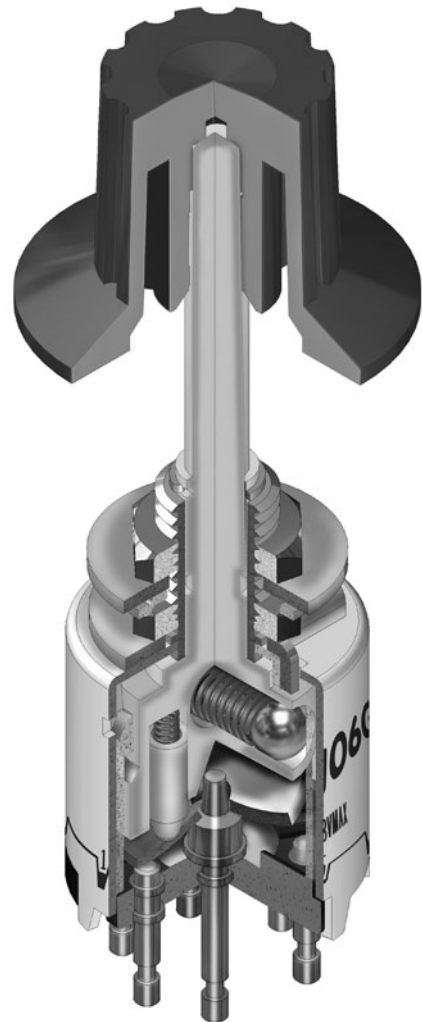
Adjustable stopper plate allows 2-8 position settings.

High contact reliability achieved by the self-cleaning contact mechanism.

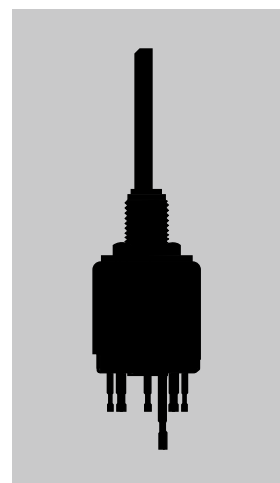
Break-before-make contact timing with various mechanism types: sliding contacts in MRX, contactor dish in MRY, and butt contacts in MRT models.

Terminal types include PC-turret for MRX, turret for MRY, and solder lug for MRT models.

Molded-in PC-turret and turret terminals prevent entry of flux and other contaminants.



Actual Size



### TYPICAL SWITCH ORDERING EXAMPLE

MR

X

108

A



#### Actuators & Terminals

#### Poles & Circuits

#### Knobs

#### Colors

**X** Shaft Actuated with PC-Turret Terminals

|            |                       |
|------------|-----------------------|
| <b>108</b> | SP with 2-8 Positions |
| <b>204</b> | DP with 2-4 Positions |
| <b>402</b> | 4P with 2 Positions   |

|          |                    |
|----------|--------------------|
| <b>A</b> | Plain Black        |
| <b>B</b> | Small Color Tipped |
| <b>C</b> | Large Color Tipped |

#### For Plain Knob

|                |       |
|----------------|-------|
| <b>No Code</b> | Black |
|----------------|-------|

#### For Color Tipped

|          |        |
|----------|--------|
| <b>A</b> | Black  |
| <b>B</b> | White  |
| <b>C</b> | Red    |
| <b>E</b> | Yellow |
| <b>F</b> | Green  |
| <b>G</b> | Blue   |
| <b>H</b> | Gray   |

**Y** Shaft Actuated with Turret Terminals

|             |                                           |
|-------------|-------------------------------------------|
| <b>106</b>  | SP with 2-6 Positions                     |
| <b>106G</b> | SP with 2-6 Positions Gold Contacts 0.4VA |

**T** Shaft Actuated with Solder Lug Terminals \*

|           |                 |
|-----------|-----------------|
| <b>22</b> | DPDT ON-NONE-ON |
| <b>23</b> | DPDT ON-OFF-ON  |

\* Wire harness & cable assemblies offered only in Americas

### DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

MRX108-A

#### IMPORTANT:

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

Shaft Actuated with Plain Black Knob

SP with 2-8 Adjustable Positions

PC-Turret Terminals

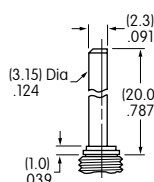
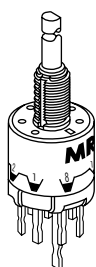


### ACTUATORS & TERMINALS

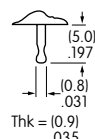
**X** Shaft Actuated with PC-Turret Terminals

**Y** Shaft Actuated with Turret Terminals

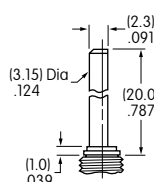
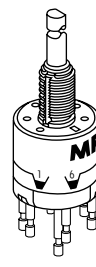
**T** Shaft Actuated with Solder Lug Terminals



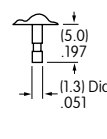
Shaft



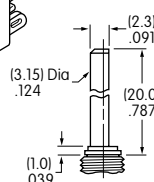
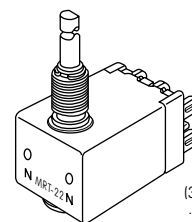
Terminal



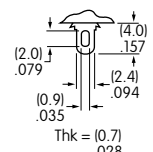
Shaft



Terminal



Shaft



Terminal

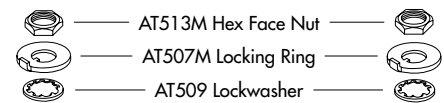
| POLES & CIRCUITS |                   |                     |                     |                              |            |
|------------------|-------------------|---------------------|---------------------|------------------------------|------------|
| Pole             | Model             | Number of Positions | Stopper Settings    | Number of Terminals          | Schematics |
| SP               | MRX108            | 2-8                 | 2, 3, 4, 5, 6, 7, 8 | 1 COM, 8 LOAD                |            |
|                  | MRY106<br>MRY106G | 2-6                 | 2, 3, 4, 5, 6       | 1 COM, 6 LOAD                |            |
| DP               | MRX204            | 2-4                 | 2, 3, 4             | 2 COM, 8 LOAD                |            |
| DPDT             | MRT22             | 2                   | ON-NONE-ON          | 2-3 2-1<br>5-6 5-4           |            |
|                  | MRT23             | 3                   | ON-OFF-ON           | 2-3 OPEN 2-1<br>5-6 OPEN 5-4 |            |
| 4P               | MRX402            | 2                   | 1 & 2               | 4 COM, 8 LOAD                |            |

## POSITION SETTING FOR MRX & MRY MODELS

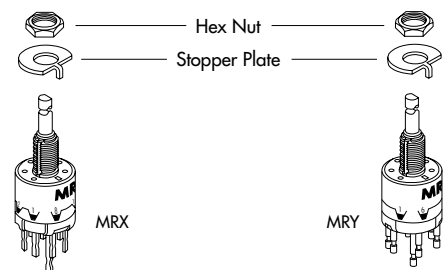
Each switch is supplied with the stopper set for the maximum number of positions allowed for that model. Prior to installation, the desired position setting should be made. Contact factory for continuous rotation.

1. Using the actuator knob, turn the shaft counterclockwise to the extreme left. If the shaft is not turned to this extreme position where the white line on the knob points to the number 1 position shown on the side of the switch, proper setting cannot be achieved.
2. Remove the knob from the shaft and loosen the nut far enough to allow raising the stopper plate for resetting to the desired position.
3. Note the position numbers on the side of the switch; these correspond to the terminal numbers and stopper holes. Insert the stopper in the hole numbered for the maximum desired number of stop settings. Satisfactory switch functioning cannot be assured if the stopper plate is not properly positioned.
4. Tighten the nub (beveled side up) firmly against the stopper plate.

### Mounting Hardware Packaged Loose with Each Switch

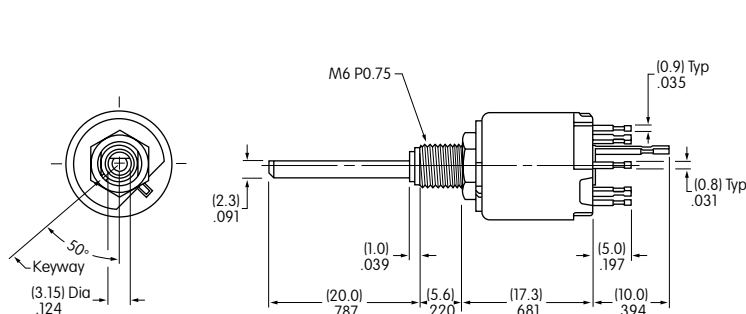


### Factory Assembled:

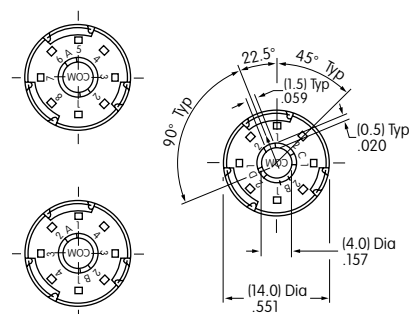


## TYPICAL SWITCH DIMENSIONS

### Single, Double & Four Pole



### MRX • PC-Turret Terminals

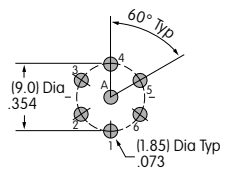
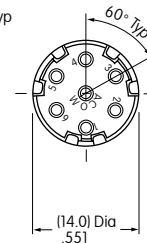
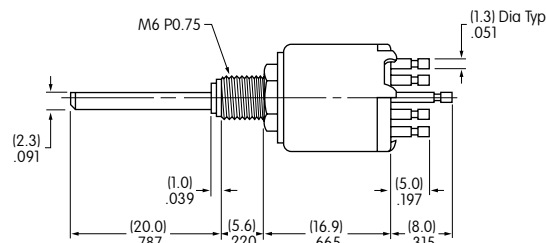
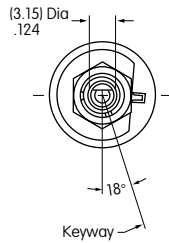


MRX108

### TYPICAL SWITCH DIMENSIONS

#### MRY • Turret Terminals

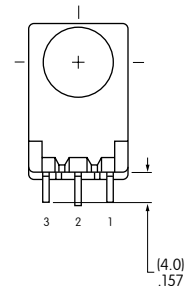
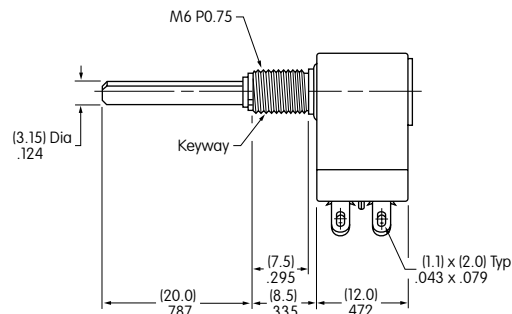
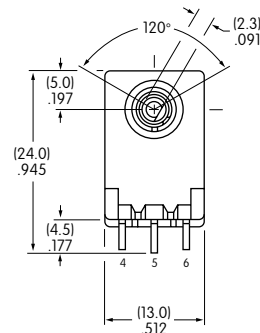
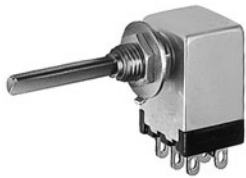
#### Single Pole



MRY106

#### MRT • Solder Lug Terminals

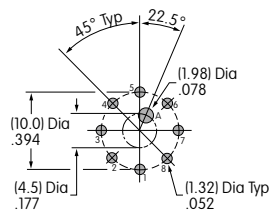
#### Double Pole



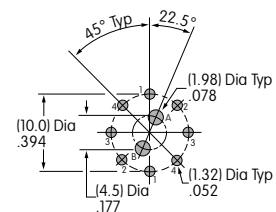
MRT22

### PC FOOTPRINTS FOR MRX SINGLE, DOUBLE, & FOUR POLE

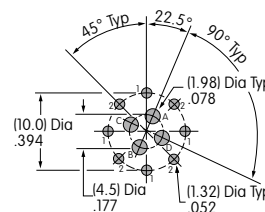
#### Single Pole



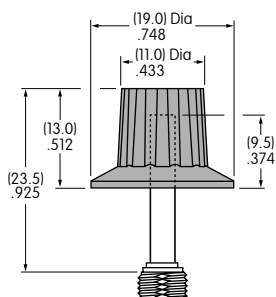
#### Double Pole



#### Four Pole

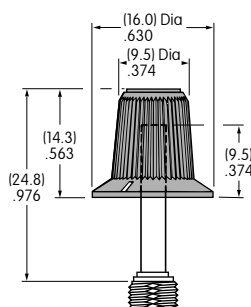


## KNOBS

**A** AT433  
Plain Black


Material: Polyacetal

Color: Black only

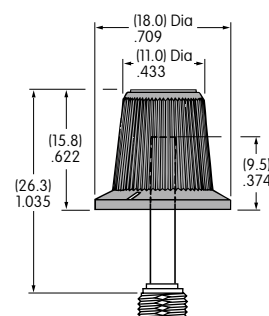
**B** AT4103 Small  
Color Tipped


Base Material: Polyester

Base Color: Black

Polyamide Tip

Colors: A, B, C, E, F, G, H

**C** AT4104 Large  
Color Tipped


Base Material: Polyester

Base Color: Black

Polyamide Tip

Colors: A, B, C, E, F, G, H

Color Codes:



Black



White



Red



Yellow



Green

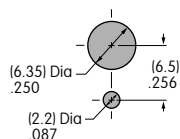
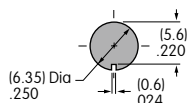


Blue



Gray

## PANEL CUTOUTS &amp; MAXIMUM EFFECTIVE PANEL THICKNESS

Without  
Keyway

With  
Keyway


Maximum Effective Panel Thickness

With Standard Hardware: MRX &amp; MRY .095" (2.4mm); MRT .106" (2.7mm)

Without Locking Ring: MRX &amp; MRY .126" (3.2mm); MRT .138" (3.5mm)

Toggles

Rockers

Pushbuttons

Illuminated PB

Programmable

Keylocks

**G** Rotaries

Slides

Tactiles

Tilt

Touch

Indicators

Accessories

Supplement

## Данный компонент на территории Российской Федерации

**Вы можете приобрести в компании MosChip.**

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

### Офис по работе с юридическими лицами:

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