

# M series

## Miniature resistive joysticks

Distinctive features and specifications



- World's #1 selling joystick for CCTV applications
- Potentiometric sensing
- One, two or three axis
- Low profile design with 17 handle options
- RoHS

| MECHANICAL (FOR X AND Y AXIS)  |
|--|
| <ul style="list-style-type: none"> <li>• Break Out Force: 0.7N (0.16lbf)</li> <li>• Operating Force: 1.3N (0.29lbf)</li> <li>• Maximum Applied Force: 100N (22.48lbf)</li> <li>• Mechanical Angle of Movement: 56°</li> <li>• Expected Life: See potentiometer options</li> <li>• Mass/weight: Varies</li> <li>• Package Size (mm) (L x W x H) or (Dia x H): Varies</li> <li>• Lever Action (Centering): Spring or Friction</li> </ul> |

| MECHANICAL (FOR Z AXIS)   |
|---|
| <ul style="list-style-type: none"> <li>• Break Out Torque: 0.022N·m (0.19lbf-in)</li> <li>• Operating Torque: 0.040N·m (0.35lbf-in)</li> <li>• Maximum Allowable Torque: 0.049N·m (0.43lbf-in)</li> <li>• Mechanical Angle: 90°</li> <li>• Handle Action: Spring</li> </ul> |

| ENVIRONMENTAL  |
|--|
| <ul style="list-style-type: none"> <li>• Operating Temperature: -25°C to 70°C (-13°F to 158°F)</li> <li>• Storage Temperature: -40°C to 70°C (-40°F to 158°F)</li> </ul> |

| POTENTIOMETER OPTIONS |                    |                    |                    |
|-----------------------|--------------------|--------------------|--------------------|
| Potentiometer         | P                  | M                  | R                  |
| Electrical Element    | Conductive Plastic | Conductive Plastic | Conductive Plastic |
| Track Resistance      | 5K                 | 5K                 | 5K                 |
| Linearity             | ±1.0%              | ±5.0%              | ±1.0%              |
| Track Operating Angle | 220°               | 56°                | 50°                |
| CRV                   | ±1.5%              | ±1.5%              | ±1.0%              |
| Power Dissipation     | 0.25W@40°C         | 0.5W@70°C          | 1W                 |
| Rotational Life       | 1,000,000          | 1,000,000          | 10,000,000         |

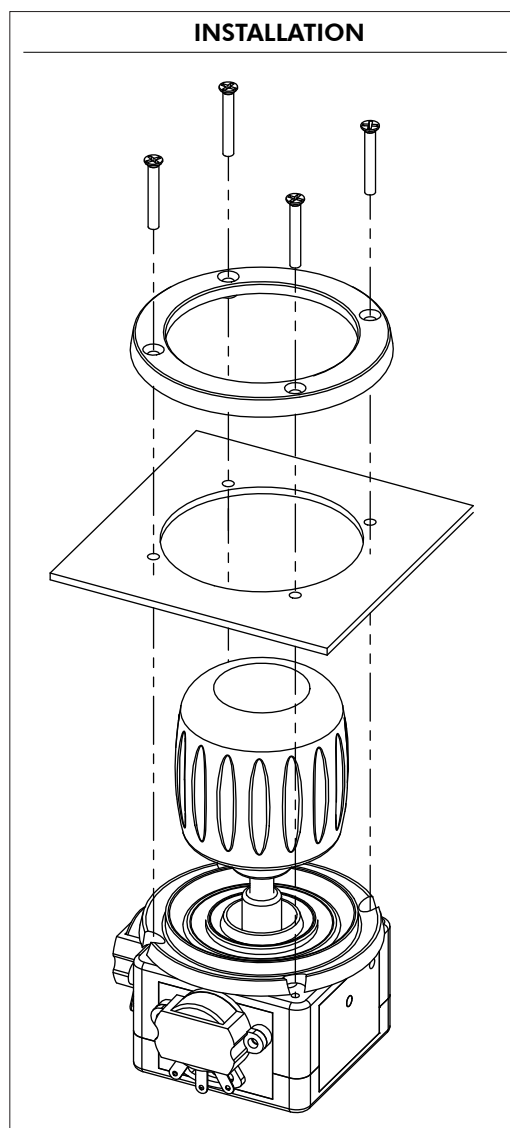
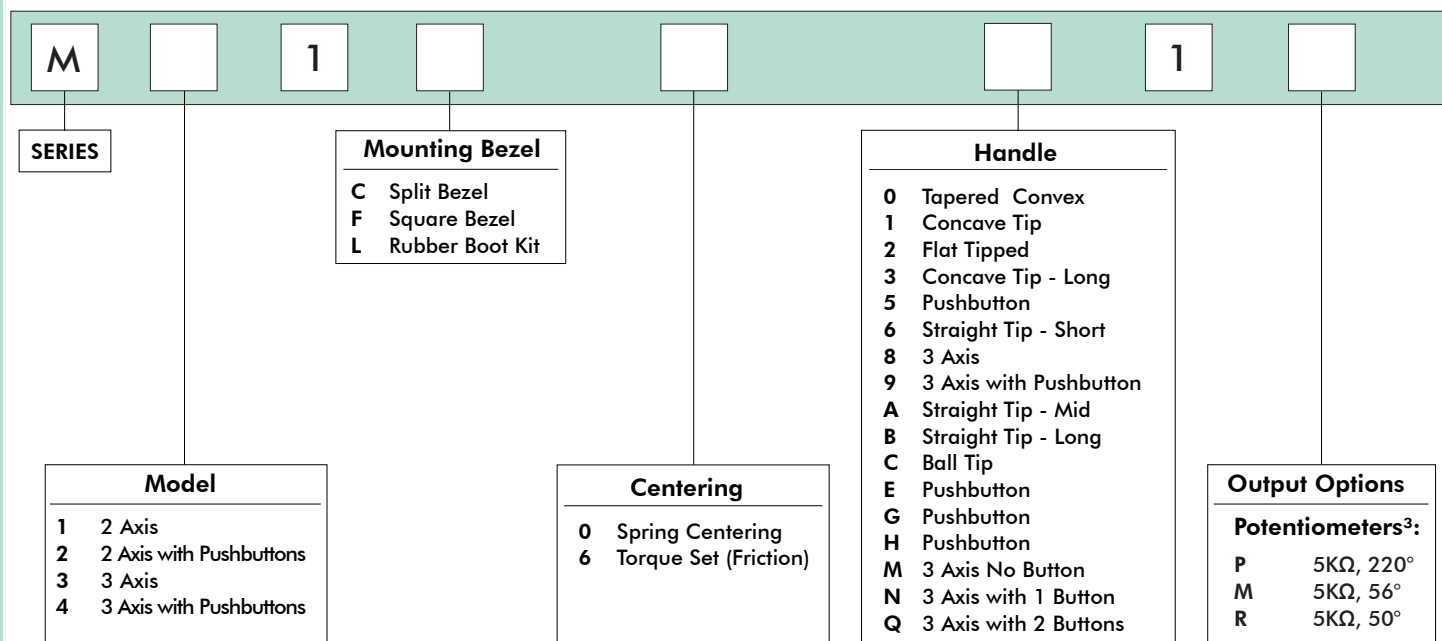
| CENTERING OPTIONS  |
|--|
| <ul style="list-style-type: none"> <li>• <b>SPRING CENTERING:</b> The joystick returns to center when the handle is released.</li> <li>• <b>TORQUE SET:</b> Torque set provides absolute positioning with uniform friction applied to "X" and "Y" axis.</li> </ul> |

NOTES: – All values are nominal.  
 – Specifications are subject to the joystick configuration.  
 Contact Technical Support for the performance of your specific configuration.  
 – The M Series is intended for internal applications.

# M series

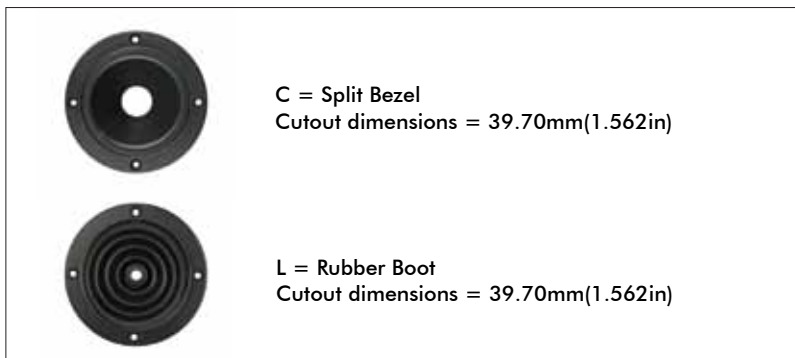
## Miniature resistive joysticks

### Overview

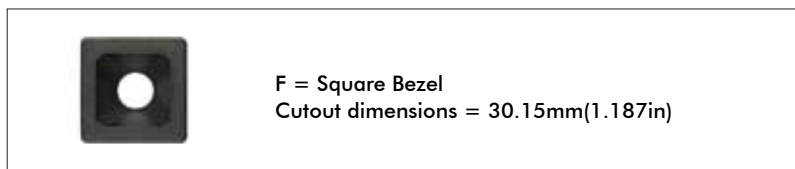


**NOTES:**

1. Front Mounting Bezels (FM)



2. Rear mounting bezels (RM)



3. Potentiometer specifications are located on the previous page.



Mounting accessories.

Standard hardware includes:

C= Ring, cup, and 4 black Phl screws 2-56x1/2in

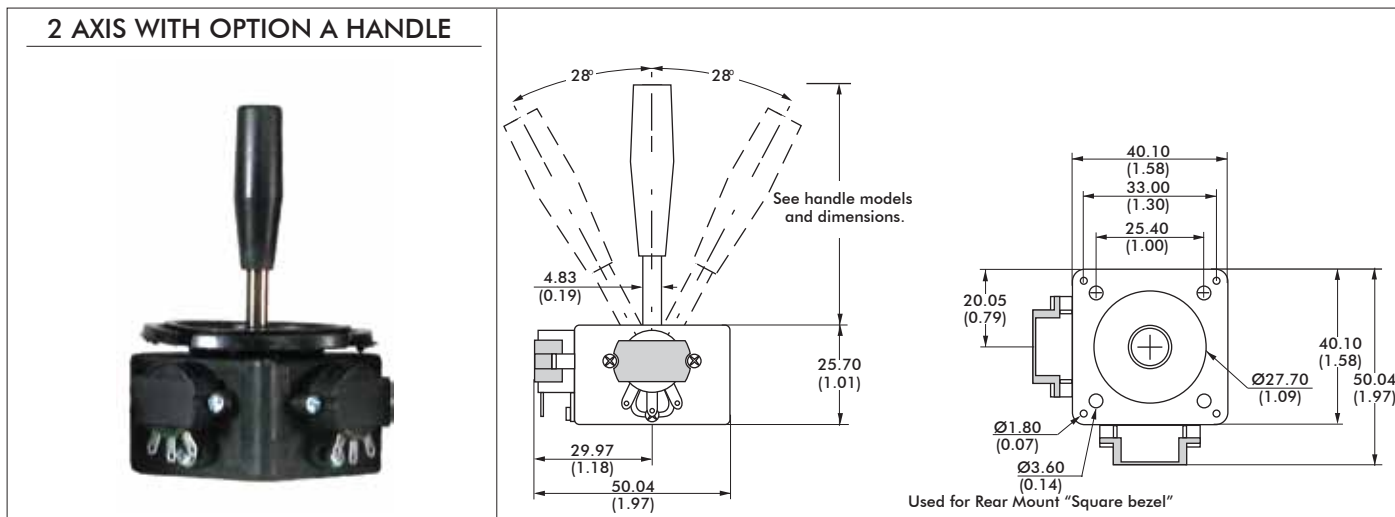
L= Ring and 4 black Phl screws 2-56x1/2in

F= Square bezel, 4 screws 2-56x1/2in Phl, and 4 screws 2-56x1/4in Phl

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## Miniature resistive joysticks

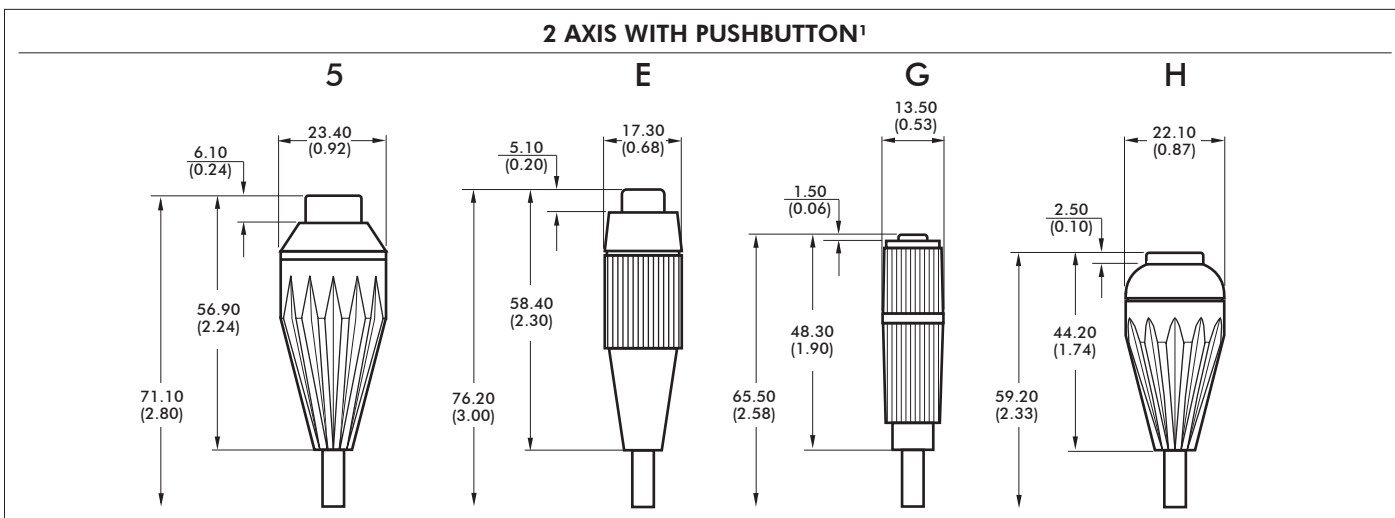
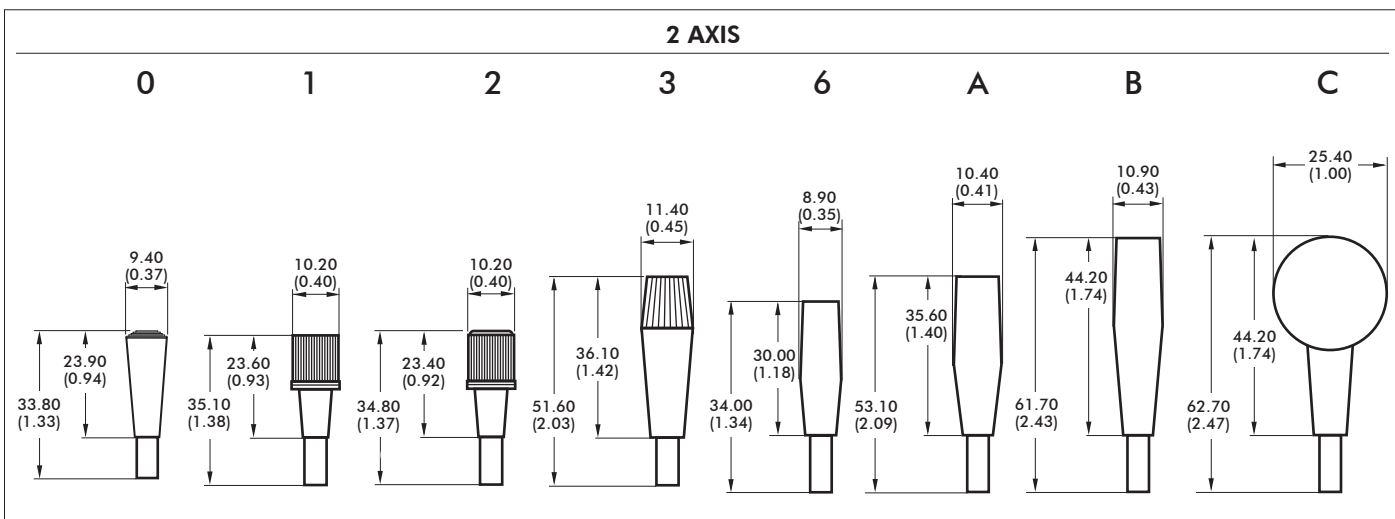
Overview



**NOTES:**

- Mechanical dimensions represent a joystick with the largest potentiometer option.
- Potentiometer size will vary according to selected option.

**HANDLES**



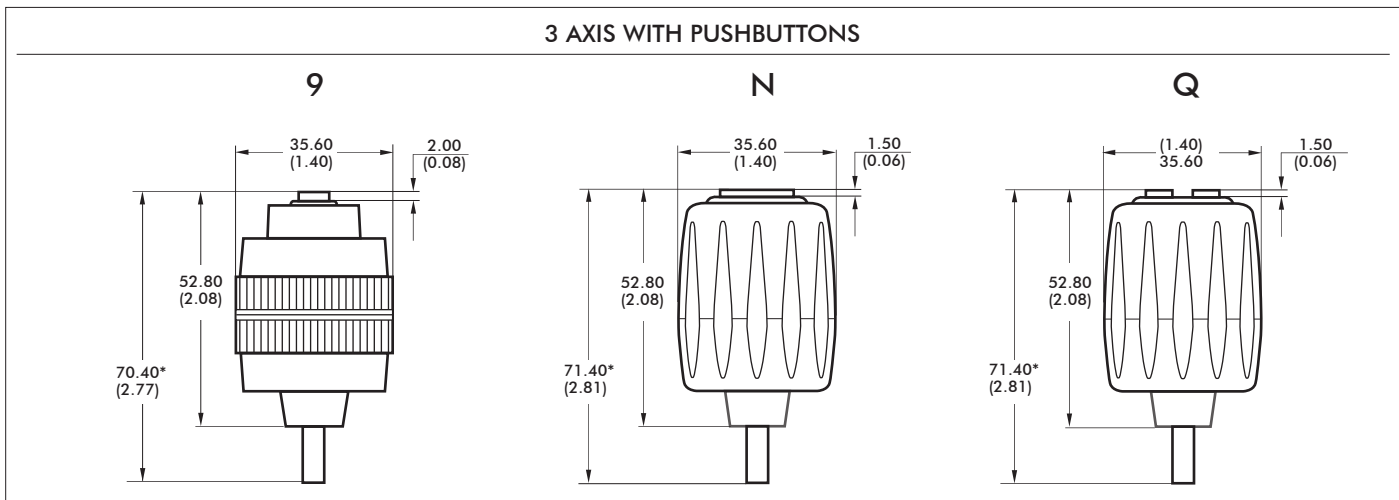
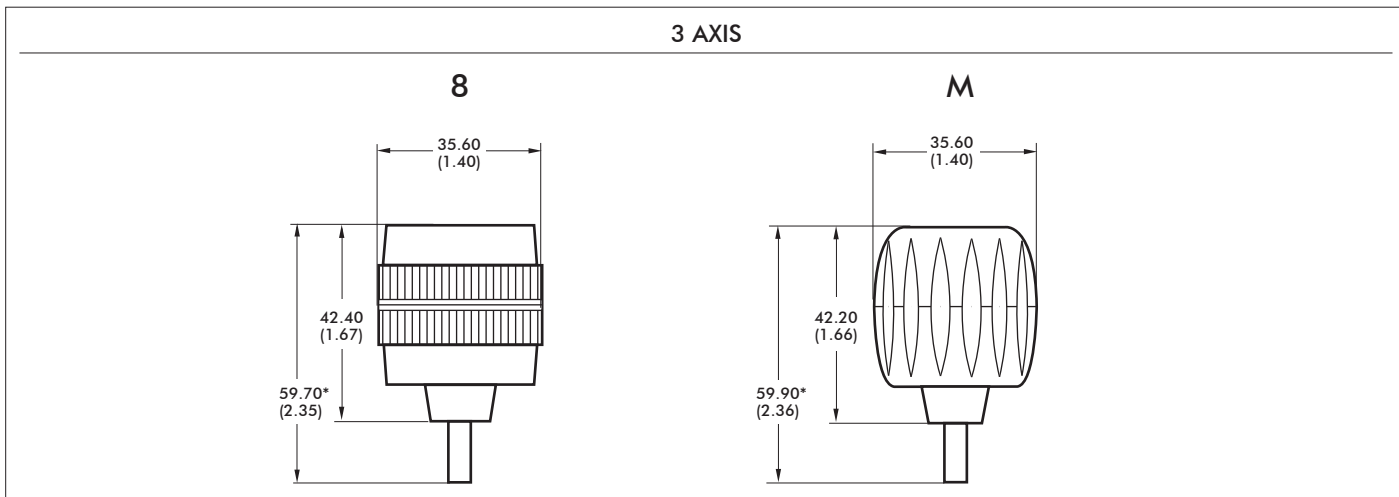
**NOTES:**

- Pushbuttons are not sealed. Joysticks are intended for internal applications only.
- Dimensions are in mm/(inch).

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## Miniature resistive joysticks

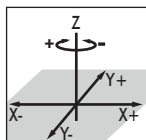
### Overview



**NOTES:**

- 1. Dimensions are in mm/(inch).
- 2. Pushbuttons are not sealed. Joysticks are intended for internal applications only.

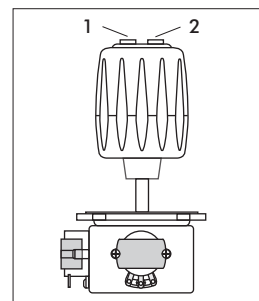
3. Axis orientation:



- 4. Wiring information:
  - Cables are provided for pushbuttons and the Z axis.
  - Cables are not supplied for the potentiometers (axis X and Y).

| DEFAULT WIRE COLOR CODE*  |               |     |
|---|---------------|-----|
| COLOR   | FUNCTION      | AWG |
| <b>2 OR 3 AXIS JOYSTICK WITH 1 PUSHBUTTON - OPTIONS 5,E,G,H,9,N</b> |               |     |
| ORANGE  | Switch 1      | 28  |
| ORANGE  | Switch Common |     |
| <b>3 AXIS JOYSTICK WITH 2 PUSHBUTTONS - Option Q**</b>              |               |     |
| ORANGE  | Switch 1      | 28  |
| BROWN   | Switch 2      |     |
| GREEN   | Switch Common |     |
| <b>Z AXIS IN A 3 AXIS JOYSTICK - OPTIONS 8,9,M,N,Q</b>              |               |     |
| RED   | Supply        | 28  |
| WHITE   | Signal        |     |
| BLUE  | Return        |     |

- NOTES:** \* Wires for the Z axis and for the pushbuttons are 292mm (11.5in) and stripped.  
 \*\* Handle "Q" pushbuttons are shown in the following drawing:



APEM 操纵杆型号:

M31C081P; M31C08MP; M31F081P; M31F08MP; M31L081P; M31L08MP;  
M31C081M; M31C08MM; M31F081M; M31F08MM; M31L081M; M31L08MM;  
M31C081R; M31C08MR; M31F081R; M31F08MR; M31L081R; M31L08MR;

M41C091P; M41C0A1P; M41CON1P; M41C0Q1P;  
M41L091P; M41LOA1P; M41LON1P; M41LOQ1P;  
M41F091P; M41C0A1P; M41FON1P; M41FOQ1P;

M41C091M; M41C0A1M; M41CON1M; M41C0Q1M;  
M41L091M; M41LOA1M; M41LON1M; M41LOQ1M;  
M41F091M; M41C0A1M; M41FON1M; M41FOQ1M;

M41C091R; M41C0A1R; M41CON1R; M41C0Q1R;  
M41L091R; M41LOA1R; M41LON1R; M41LOQ1R;  
M41F091R; M41FOA1R; M41FON1R; M41FOQ1R;

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