

APEM

M series

Miniature resistive joysticks



The M Series miniature joystick is a low profile potentiometric controller providing precision multi-axes finger-positioning control. Available with up to three axes and two pushbuttons, the M Series joystick is ideal for applications requiring a compact low operating force controller. Featuring 17 ergonomically designed handles, typical applications include CCTV, robotics, electric wheelchairs, and measurement systems. The M Series is the de facto standard industrial joystick for the CCTV professional.



KEY FEATURES

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



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OPTION SELECTION

M		1				1	
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SERIES

MOUNTING BEZEL

- C Split Bezel
- F Square Bezel
- L Rubber Boot Kit

MODEL

- 1 2 Axes
- 2 2 Axes with Pushbuttons
- 3 3 Axes
- 4 3 Axes with Pushbuttons

CENTERING

- 0 Spring Centering
- 6 Torque Set (Friction)

HANDLE

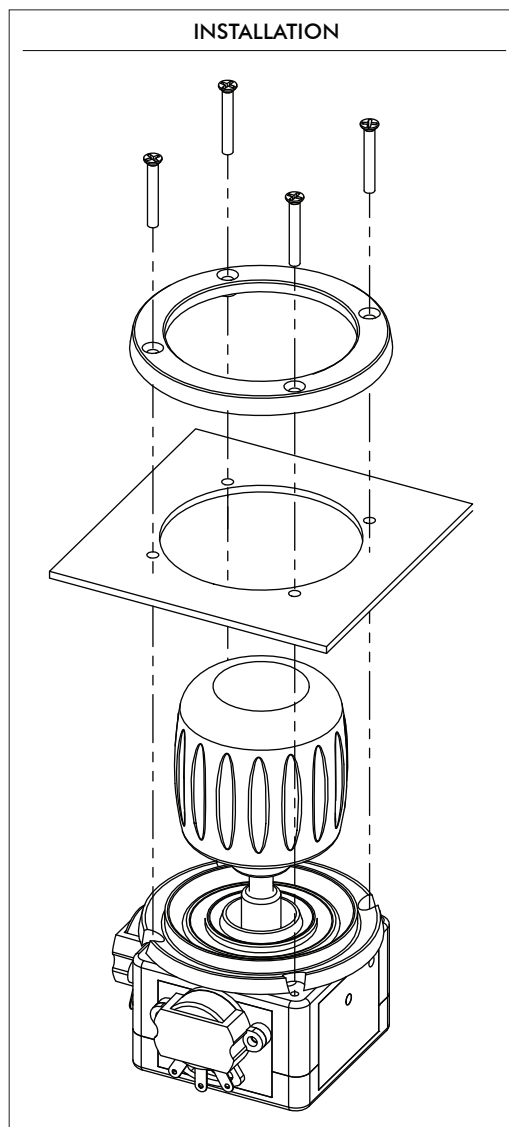
- 0 Tapered Convex
- 1 Concave Tip
- 2 Flat Tipped
- 3 Concave Tip - Long
- 5 Pushbutton
- 6 Straight Tip - Short
- 8 3 Axes
- 9 3 Axes with Pushbutton
- A Straight Tip - Mid
- B Straight Tip - Long
- C Ball Tip
- E Pushbutton
- G Pushbutton
- H Pushbutton
- M 3 Axes No Button
- N 3 Axes with 1 Button
- Q 3 Axes with 2 Buttons

OUTPUT OPTIONS

Potentiometers³ :

- P 5K Ω , 220°
- M 5K Ω , 56°
- R 5K Ω , 50°

INSTALLATION



NOTES

1. Front Mounting Bezels (FM)



C = Split Bezel
Cutout dimensions = 39.70mm(1.562in)



L = Rubber Boot
Cutout dimensions = 39.70mm(1.1.562in)

2. Rear mounting bezels (RM)



F = Square Bezel
Cutout dimensions = 30.15mm(1.187in)

3. Potentiometer specifications are located on the next page.



Mounting accessories. Standard hardware includes:

- C = Ring, cup, and 4 black screws 2-56x1/2in
- L = Ring and 4 black screws 2-56x1/2in
- F = Square bezel, 4 screws 2-56x1/2in, and 4 screws 2-56x1/4in

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SPECIFICATIONS

MECHANICAL (FOR X AND Y AXES)

Break Out Force	–	0.7N (0.16lbf)
Operating Force	–	1.3N (0.29lbf)
Maximum Applied Force	–	100N (22.48lbf)
Mechanical Angle of Movement	–	56°
Expected Life	–	See potentiometer options
Mass/weight	–	Varies
Package Size (mm) (L x W x H) or (Dia x H)	–	Varies
Lever Action (Centering)	–	Spring or Friction

MECHANICAL (FOR Z AXIS)

Break Out Torque	–	0.022N·m (0.19lbf·in)
Operating Torque	–	0.040N·m (0.35lbf·in)
Maximum Allowable Torque	–	0.049N·m (0.43lbf·in)
Mechanical Angle	–	90°
Handle Action	–	Spring

ENVIRONMENTAL

Operating Temperature	–	-25°C to 70°C (-13°F to 158°F)
Storage Temperature	–	-40°C to 70°C (-40°F to 158°F)

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

- **SPRING CENTERING**

The joystick returns to center when the handle is released.

- **TORQUE SET**

Torque set provides absolute positioning with uniform friction applied to "X" and "Y" axes.

NOTES:

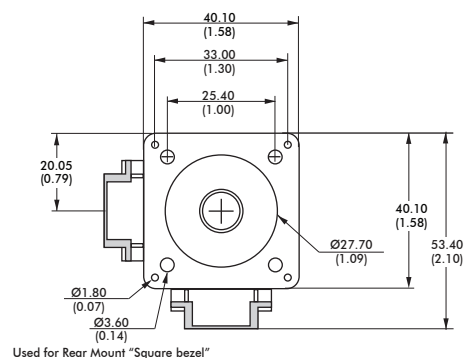
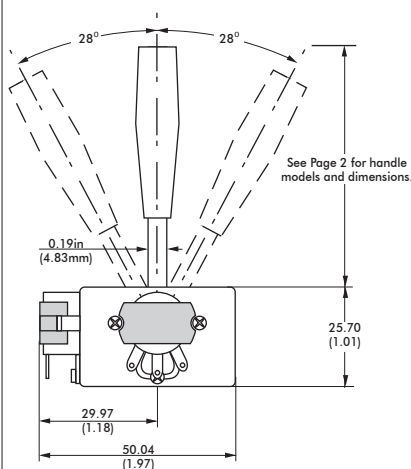
- All values are nominal
- Specifications are subject to the joystick configuration. Contact Technical Support for the performance of your specific configuration
- The M Series is intended for internal applications

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DIMENSIONAL DRAWINGS

2 AXES WITH OPTION A HANDLE



NOTES:

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

HANDLES

2 AXES

0

1

2

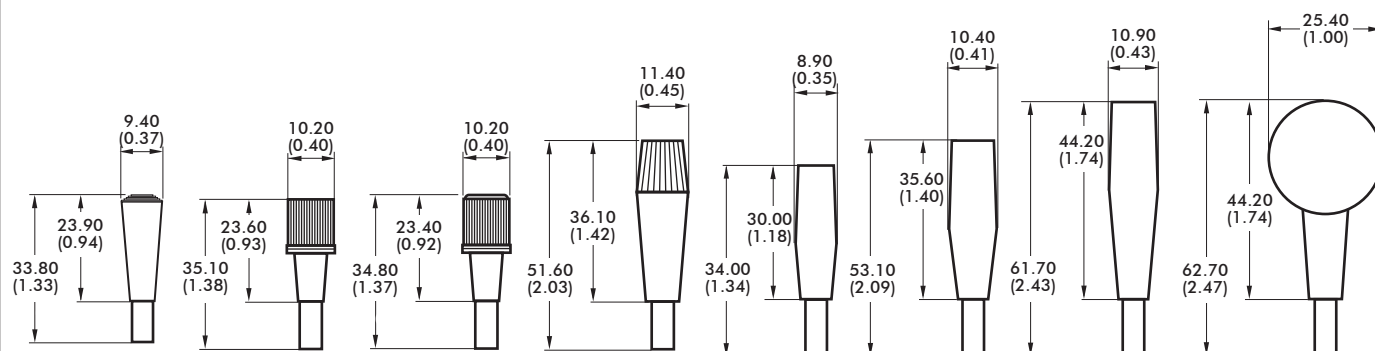
3

6

A

B

C



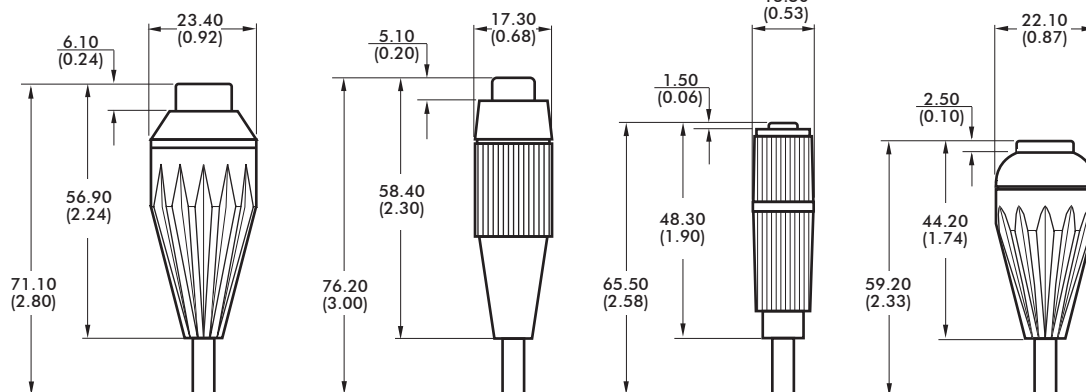
2 AXES WITH PUSHBUTTON¹

5

E

G

H



NOTES:

1. Pushbuttons are not sealed. Joysticks are intended for internal applications only.

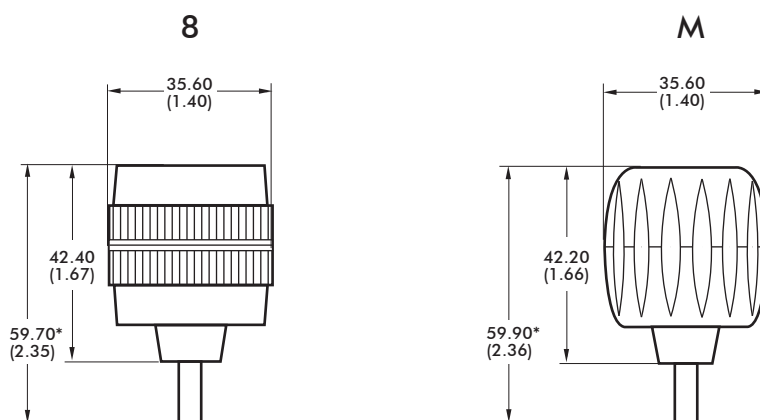
Note: The company reserves the right to change specifications without notice.

M series

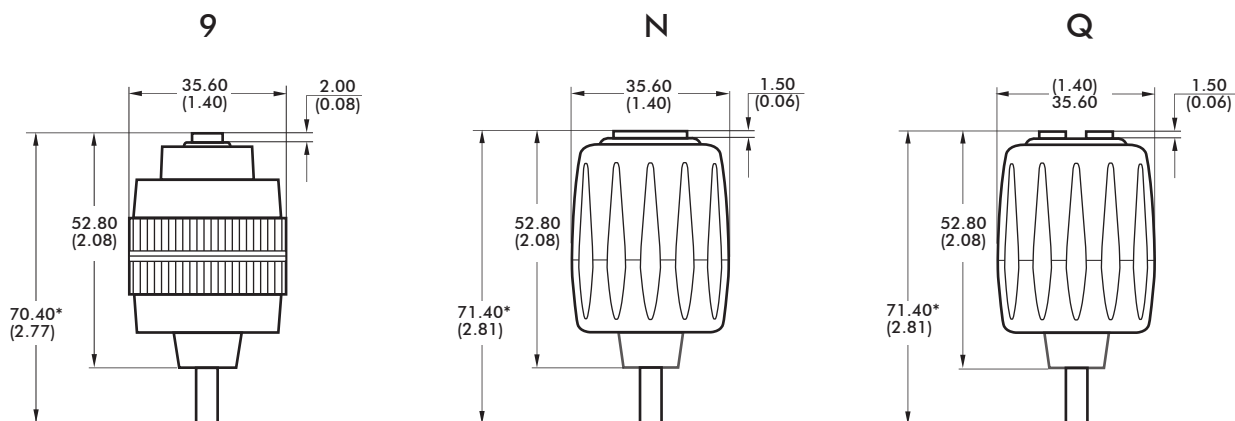
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DIMENSIONAL DRAWINGS - continued

3 AXES



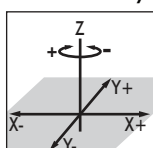
3 AXES WITH PUSHBUTTONS



NOTES:

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

3. Axes orientation:



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

DEFAULT WIRE COLOR CODE*

DEFINITION OF WIRE COLOR CODE		
COLOR	FUNCTION	AWG
2 OR 3 AXES JOYSTICK WITH 1 PUSHBUTTON - OPTIONS 5,E,G,H,9,N		
ORANGE	Switch 1	28
ORANGE	Switch Common	
3 AXES JOYSTICK WITH 2 PUSHBUTTONS - Option Q**		
ORANGE	Switch 1	28
BROWN	Switch 2	
GREEN	Switch Common	
Z AXIS IN A 3 AXES JOYSTICK - OPTIONS 8,9,M,N,Q		
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:

