

CH
Products

an APEM Group Company

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 top selling 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

SERIES

MOUNTING BEZEL

C Split Bezel (FM¹)

F Square Bezel (RM²)

L Rubber Boot Kit (FM)

Q³ Square Bezel Snap-on (FM)

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

Potentiometers 4:

P 5KΩ, 220°

F 5KΩ, 220°

M 5KΩ, 56°

R 5KΩ, 50°

N 10KΩ, 56°

C 10KΩ, 270°

INSTALLATION

NOTES

1. Front Mounting Bezels (FM)

C = Split Bezel
Cutout dimensions = 39.70mm/1.562in

L = Rubber boot
Cutout dimensions = 39.70mm/1.562in

2. Rear mounting bezels (RM)

F = Square Bezel
Cutout dimensions = 330.15mm/1.187in

Q = Square Bezel Snap-on
Cutout dimensions = 31.75mm/1.250in

3. The "Q" bezel is used only with desktop housings.

4. Potentiometer specifications located on following 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
Q = snap-on bezel, ring, and 4 screws 2-56x1/2in

Note: The company reserves the right to change specifications without notice. The graphs are provided for representational purposes only.

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SPECIFICATIONS

MECHANICAL (FOR X, Y AXES)

Break Out Force	–	0.029Nm*
Operating Force	–	0.041Nm*
Maximum Applied Force	–	0.062Nm*
Mechanical Angle of Movement	–	56° (28° from center)
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 HANDLE ROTATIONAL TORQUE)

Break Out Force (Nm)	–	0.022Nm
Operating Force (Nm)	–	0.040Nm
Maximum Allowable Force (Nm)	–	0.049Nm
Mechanical Angle	–	±45°
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	N	C
Electrical Element	Conductive Plastic	Conductive Plastic	Conductive Plastic	Conductive Plastic	Conductive Plastic
Track Resistance	5K	5K	5K	10K	10K
Linearity	±1.0%	±5.0%	±1.0%	±5.0%	±5.0%
Track Operating Angle	220°	56°	50°	56°	270°
CRV	±1.5%	±1.5%	±1.0%	±1.5%	±1.5%
Power Dissipation	0.25W @ 40°C	0.5W @ 70°C	1W	0.5W @ 70°C	0.5W @ 70°C
Rotational Life	1,000,000	1,000,000	10,000,000	1,000,000	1,000,000

CENTERING OPTIONS

- **SPRING CENTERING**

The joystick returns to design center “neutral” when the handle is released.

- **TORQUE SET**

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

Notes:

- 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.

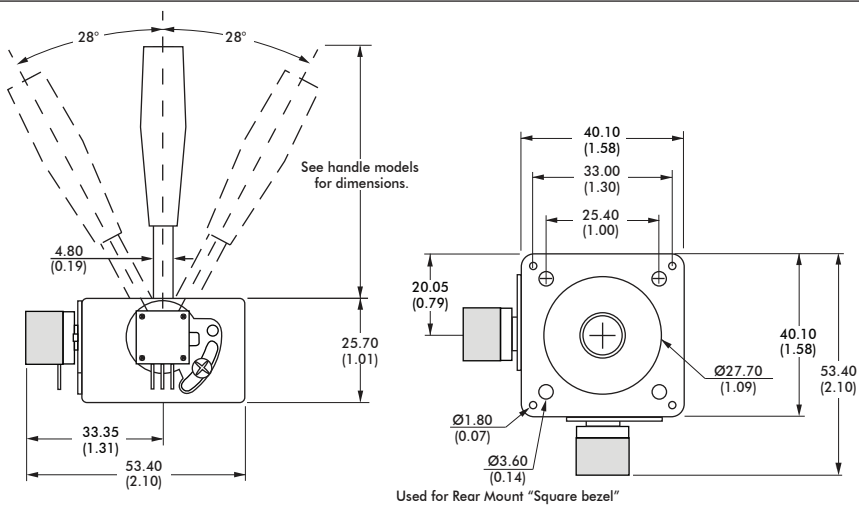
* other forces are available upon request

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DIMENSIONAL DRAWINGS

2 AXES WITH OPTION B 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

OPTION 0

OPTION 1

OPTION 2

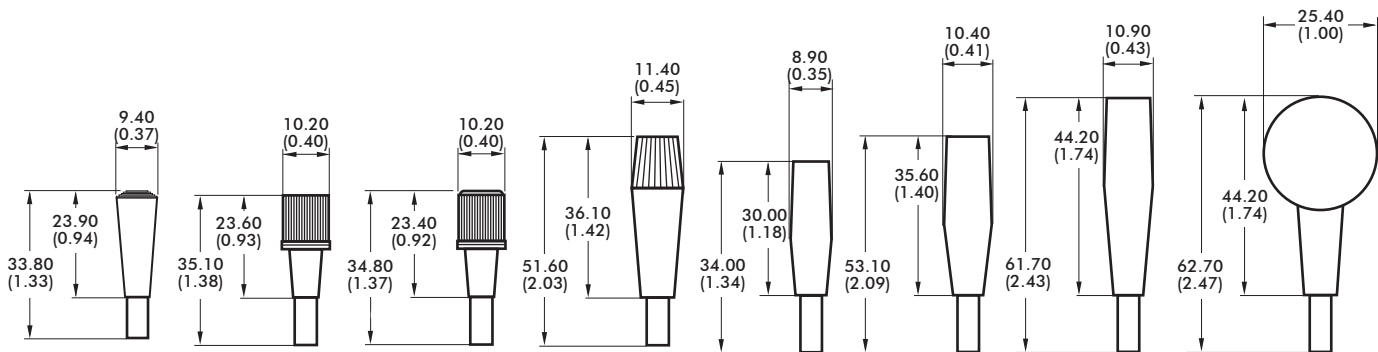
OPTION 3

OPTION 6

OPTION A

OPTION B

OPTION C



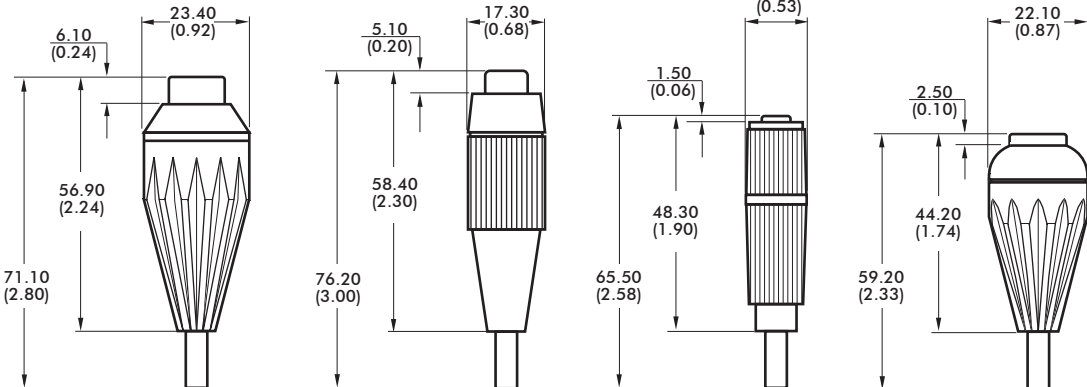
2 AXES WITH PUSHBUTTON¹

OPTION 5

OPTION E

OPTION G

OPTION H



NOTES:

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

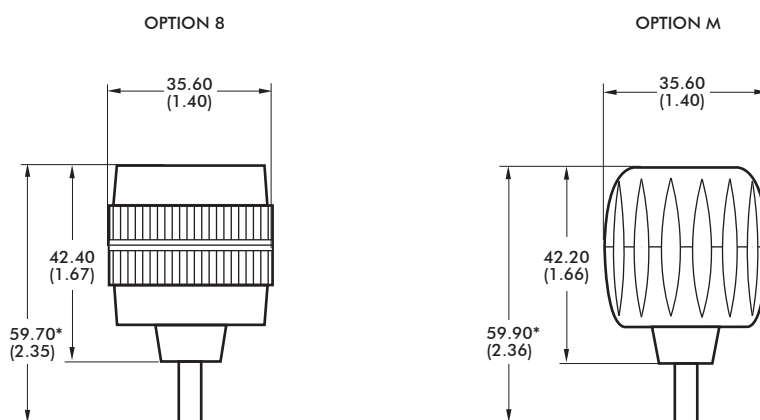
Note: The company reserves the right to change specifications without notice. The graphs are provided for representational purposes only.

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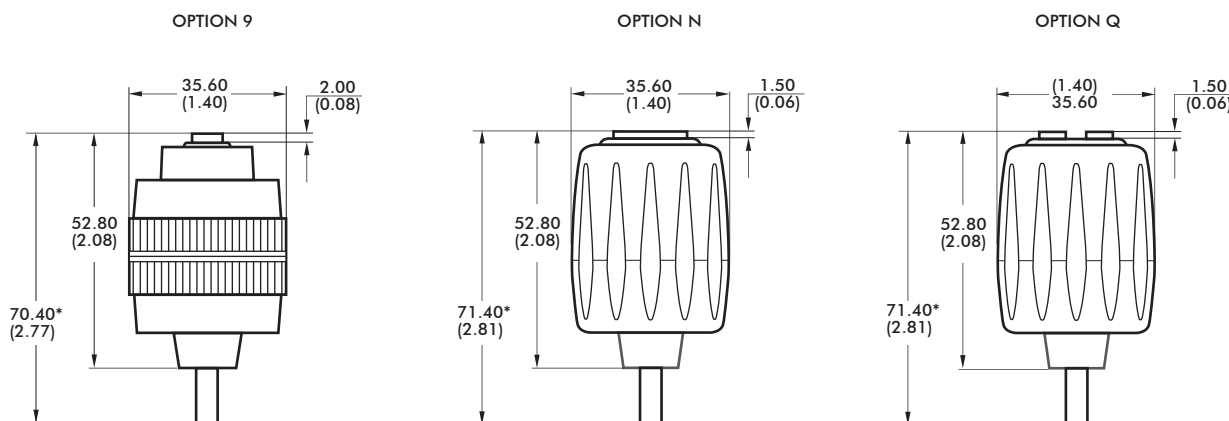
Miniature resistive joysticks

DIMENSIONAL DRAWINGS - continued

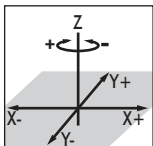
3 AXES



3 AXES WITH PUSHBUTTONS



NOTES:

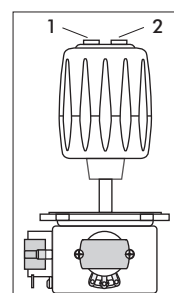
1. Dimensions are in mm/(inch)
2. Pushbuttons are not sealed. Joysticks are intended for internal applications only.
3. Axes orientation:
 
4. Wiring information: -Cables are not supplied for the potentiometers (axes X and Y).
-Cables are provided for pushbuttons and the Z axis.

DEFAULT WIRE COLOR CODE*

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

NOTES:

- * Pushbuttons wires are 292mm (11.5in) and stripped. Z axis wires are 292mm (11.5in) and stripped.
- ** Handle "Q" pushbuttons are shown in the following drawing:



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