M series

Proportional resistive fingertip controllers • potentiometer technology

**DISTINCTIVE FEATURES**

- One, two or three axis
- Analog output
- Low profile mounting depth
- Friction centering option
- Low profile design with multiple handle options

**ENVIRONMENTAL SPECIFICATIONS**

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

**MECHANICAL SPECIFICATIONS (X & Y AXIS)**

- Operating Force: 1.3 N (0.29 lbf)
- Maximum Vertical Load: 100 N (22.5 lbf)
- Maximum Horizontal Load: 100 N (22.5 lbf)
- Mechanical Angle of Movement: 56°
- Expected Life: See potentiometer options
- Mass/weight: Varies
- Lever Action (centering): Spring or friction

**MECHANICAL SPECIFICATIONS (Z AXIS)**

- Operating Torque: 0.040 Nm (0.35 lbf in)
- Break out Torque: 0.022 Nm (0.19 lbf in)
- Maximum Allowable Torque: 0.049 Nm (0.43 lbf in)
- Mechanical Angle of Movement: 90°
- Lever Action (centering): Spring

**MATERIALS**

- Body: Nylon
- Actuator: Nylon

The company reserves the right to change specifications without notice.
M series

Proportional resistive fingertip controllers • potentiometer technology

WIRING DIAGRAM

<table>
<thead>
<tr>
<th>DEFAULT WIRE COLOR CODE *</th>
<th>COLOR</th>
<th>FUNCTION</th>
<th>AWG</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 OR 3 AXIS JOYSTICK WITH 1 PUSHBUTTON: OPTIONS S, E, G, H, N</td>
<td>Orange</td>
<td>Switch 1</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>Orange</td>
<td>Switch Common</td>
<td></td>
</tr>
<tr>
<td>3 AXIS JOYSTICK WITH 2 PUSHBUTTONS: OPTION Q**</td>
<td>Orange</td>
<td>Switch 1</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>Brown</td>
<td>Switch 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Green</td>
<td>Switch Common</td>
<td></td>
</tr>
<tr>
<td>Z AXIS IN A 3 AXIS JOYSTICK: OPTION B, M, N, Q</td>
<td>Red</td>
<td>Supply</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>White</td>
<td>Signal</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Blue</td>
<td>Return</td>
<td></td>
</tr>
</tbody>
</table>

* Wires for the Z axis and the pushbuttons are 292 mm (11.5 in) and stripped
** Handle Q pushbuttons are shown in the following drawing

OUTPUTS

POTENTIOMETER OPTIONS

<table>
<thead>
<tr>
<th>POTENTIOMETER</th>
<th>P</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical Element</td>
<td>CONDUCTIVE PLASTIC</td>
<td></td>
</tr>
<tr>
<td>Track Resistance</td>
<td>5K</td>
<td></td>
</tr>
<tr>
<td>Linearity</td>
<td>±1.0%</td>
<td>±1.0%</td>
</tr>
<tr>
<td>Track Operating Angle</td>
<td>220°</td>
<td>50°</td>
</tr>
<tr>
<td>CRV</td>
<td>±1.5%</td>
<td>±1.0%</td>
</tr>
<tr>
<td>Power Dissipation</td>
<td>0.25 W @ 40°C</td>
<td>1 W</td>
</tr>
<tr>
<td>Rotational Life</td>
<td>1,000,000</td>
<td>10,000,000</td>
</tr>
</tbody>
</table>

MOUNTING

INSTALLATION

FRONT MOUNTING BEZEL (FM)

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

L = Rubber Boot
Cutout dimensions = 39.70 mm (1.562 in)

REAR MOUNTING BEZEL (RM)

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

MOUNTING ACCESSORIES
Standard hardware includes:
C=Ring, cup and 4 black Phi screws 2-56x 1/2 in
L=Ring and 4 black Phi screws 2-56x 1/2 in
F=Square bezel, 4 screws 2-56x1/2 in Phi and 4 screws 2-56x 1/2 in Phi
M series
Proportional resistive fingertip controllers • potentiometer technology

BUILD YOUR PART NUMBER

SERIES
1 2 Axis
2 2 Axis with pushbuttons
3 3 Axis
4 3 Axis with pushbuttons

MODEL
1 2 Axis
2 2 Axis with pushbuttons
3 3 Axis
4 3 Axis with pushbuttons

CENTERING
0 Spring Centering
6 Torque Set (Friction)

HANDLE
0 Tapered Convex
1 Concave Tip
2 Flat Tip
3 Concave Tip - Long
5 Pushbutton
6 Straight Tip - Short
8 3 Axis
9 3 Axis with pushbutton
A Straight Tip - Mid
B Straight Tip - Long
E Pushbutton
G Pushbutton
H Pushbutton
M 3 Axis / No Pushbutton
N 3 Axis with 1 Pushbutton
Q 3 Axis with 2 Pushbuttons

OUTPUT OPTIONS POTENTIOMETERS
P 5kΩ, 220°
R 5kΩ, 50°

MOUNTING BEZEL
C Split Bezel
F Square Bezel
L Rubber Boot Kit
**M series**

Proportional resistive fingertip controllers • potentiometer technology

**2 AXIS - OPTION A HANDLE**

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

### HANDLE OPTIONS

#### TWO AXISS

<table>
<thead>
<tr>
<th>Number</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>A</td>
</tr>
<tr>
<td>1</td>
<td>B</td>
</tr>
<tr>
<td>2</td>
<td>C</td>
</tr>
<tr>
<td>3</td>
<td>A</td>
</tr>
<tr>
<td>6</td>
<td>B</td>
</tr>
<tr>
<td>02</td>
<td>C</td>
</tr>
</tbody>
</table>

#### TWO AXIS WITH PUSHBUTTONS

<table>
<thead>
<tr>
<th>Number</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>E</td>
</tr>
<tr>
<td>10</td>
<td>G</td>
</tr>
<tr>
<td>20</td>
<td>H</td>
</tr>
</tbody>
</table>
M series

Proportional resistive fingertip controllers • potentiometer technology

THREE AXIS

THREE AXIS WITH PUSHBUTTONS