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.
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WIRING DIAGRAM

<table>
<thead>
<tr>
<th>DEFAULT WIRE COLOR CODE *</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>COLOR</td>
<td>FUNCTION</td>
</tr>
<tr>
<td>2 OR 3 AXIS JOYSTICK WITH 1 PUSHBUTTON: OPTIONS 5, E, G, H, N</td>
<td></td>
</tr>
<tr>
<td>Orange</td>
<td>Orange</td>
</tr>
<tr>
<td>3 AXIS JOYSTICK WITH 2 PUSHBUTTONS: OPTION Q**</td>
<td></td>
</tr>
<tr>
<td>Orange</td>
<td>Brown</td>
</tr>
<tr>
<td>Green</td>
<td>Switch 2</td>
</tr>
<tr>
<td>Z AXIS IN A 3 AXIS JOYSTICK: OPTION B, M, Q</td>
<td></td>
</tr>
<tr>
<td>Red</td>
<td>White</td>
</tr>
<tr>
<td>Blue</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

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

MOUNTING

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 Phl screws 2-56x 1/2 in
L=Ring and 4 black Phl screws 2-56x 1/2 in
F=Square bezel, 4 screws 2-56x1/2 in Phl and 4 screws 2-56x 1/2 in Phl

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>0.25W@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>
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### 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 handles
- 2: 2 Axis handles with pushbuttons
- 3: 3 Axis
- 4: 3 Axis with pushbuttons

**CENTERING**

- 0: Spring Centering
- 6: Torque Set (Friction)

**HANDLE**

Model 1: 2 axis handles
- 0: Tapered Convex
- 1: Concave Tip
- 2: Flat Tip
- 3: Concave Tip - long
- 6: Straight tip - short
- A: Straight tip - mid
- B: Straight tip - long
- C: Ball tip

Model 2: 2 axis handles with pushbuttons
- 5: Pushbutton
- E: Pushbutton
- G: Pushbutton
- H: Pushbutton

Model 3: Three axis
- 8: 3 axis
- M: 3 axis

Model 4: Three axis with pushbuttons
- 9: 3 axis with 1 pushbutton
- N: 3 axis with 1 pushbutton
- Q: 3 axis with 2 pushbuttons

**MOUNTING BEZEL**

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

**OUTPUT OPTIONS POTENTIOMETERS**

- P: 5kΩ, 220°
- R: 5kΩ, 50°
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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 AXIS

TWO AXIS WITH PUSHBUTTONS
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THREE AXIS

B

35.60 (1.40)

42.40 (1.67)

59.70* (2.35)

M

35.60 (1.40)

42.20 (1.66)

59.90* (2.36)

THREE AXIS WITH PUSHBUTTONS

G

35.60 (1.40)

70.40* (2.77)

52.80 (2.08)

N

35.60 (1.40)

71.40* (2.81)

52.80 (2.08)

Q

35.60 (1.40)

71.40* (2.81)

52.80 (2.08)