TS2 Series
Mini joystick

Features
- Smallest joystick
- 2 axis thumb controller
- Contactless hall effect technology
- Standard IP67 above panel
- Four actuator options

Applications
- Large hand grip joysticks
- Industrial remote controllers
- Armrest control panels

Description
The TS2 is the smallest 2-axis industrial joystick in the world and its operation principle is based on hall effect technology. Due to its very compact size and threaded mounting body, it can be easily mounted in small remote controllers, armrest control panels, and large cobra joysticks. The TS2 joystick comes with an elastomer actuator and standard IP67 above panel protection. Based on many years of experience, this joystick packs fantastic quality in a very small package.

Specification

<table>
<thead>
<tr>
<th>MECHANICAL (X &amp; Y AXIS)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Angle Of Movement</td>
<td>30° (15° Each Direction)</td>
</tr>
<tr>
<td>Expected Cycle Life</td>
<td>2.5 Million</td>
</tr>
<tr>
<td>Centering</td>
<td>Spring Return</td>
</tr>
<tr>
<td>Max. Vertical Load</td>
<td>220N (50 lbF)</td>
</tr>
<tr>
<td>Max. Horizontal Load</td>
<td>65N (15 lbF)*</td>
</tr>
</tbody>
</table>

* Measured 12.7mm (0.50") Above Panel Surface

<table>
<thead>
<tr>
<th>ELECTRICAL</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensor Type</td>
<td>Hall Effect</td>
</tr>
<tr>
<td>Resolution</td>
<td>12 Bit</td>
</tr>
<tr>
<td>Supply Voltage</td>
<td>5VDC ± 0.01VDC</td>
</tr>
<tr>
<td>Output Voltage</td>
<td>See Options</td>
</tr>
<tr>
<td>Center Voltage</td>
<td>± 100MV</td>
</tr>
<tr>
<td>Overvoltage Max.</td>
<td>20VDC</td>
</tr>
<tr>
<td>Reverse Polarity Max.</td>
<td>-10VDC</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ENVIRONMENTAL</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature</td>
<td>-40°C to 85°C (-40°F to 185°F)</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-40°C to 85°C (-40°F to 185°F)</td>
</tr>
<tr>
<td>IP Sealing Above Flange</td>
<td>IP67</td>
</tr>
<tr>
<td>EMC Immunity Level</td>
<td>EN61000-4-3 *Compliance To 30A/m</td>
</tr>
<tr>
<td>EMC Emissions Level</td>
<td>EN61000-6-3</td>
</tr>
<tr>
<td>ESD Immunity Level</td>
<td>EN61000-4-2 *Compliance To ±15kV/±8kV</td>
</tr>
<tr>
<td>Vibration Testing</td>
<td>Per SAE J1455 Section 4.9 &amp; MIL-STD-810G 514.6</td>
</tr>
<tr>
<td>Mechanical Shock</td>
<td>Per SAE J1455 Section 4.10 &amp; MIL-STD-202G</td>
</tr>
</tbody>
</table>
**Specification**

**JST Connector (Analog)**

<table>
<thead>
<tr>
<th>PIN #</th>
<th>Wire Color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Red</td>
<td>Power (+5V)</td>
</tr>
<tr>
<td>2</td>
<td>Yellow</td>
<td>Y Axis Sensor</td>
</tr>
<tr>
<td>3</td>
<td>Blue</td>
<td>X Axis Sensor</td>
</tr>
<tr>
<td>4</td>
<td>Black</td>
<td>Ground</td>
</tr>
</tbody>
</table>

**Materials**

- Housing: Mineral & Glass Filled Nylon
- Boot/Actuator: Silicone

**IP Rating:** IP67 (Above Panel, All Configurations)

**IP2 Series Specifications**

**Electrical**

- Supply Voltage: 5VDC ± 0.01VDC
- Resolution: 12 Bit
- Sensor Type: Hall Effect

**Mechanical (X & Y Axes)**

- Measured 0.50” Above Panel Surface

- Max. Horizontal Load: 15lbF (4 Black Ground)
- Max. Vertical Load: 50lbF (3 Blue X Axis Sensor)
- Centering Spring Return: 2 Yellow Y Axis Sensor

- Angle of Movement: 30° (15° Each Direction)

**Environmental**

- Storage Temperature: -40°F to 185°F
- Boot/Actuator: Silicone

**Product Configuration Guide**

**TS2 Series**

- Limiter Option:
  - S: Square (☐)
  - R: Round (○)
  - Y: Y Limiter (|)
  - G: Guided Feel (☐/+)

- Output Option:
  - 0V-5V
  - 0.5V to 4.5V
  - 0.25V to 4.75V
  - 1V to 4V

- Actuator Color:
  - BK: Black
  - GY: Grey

- Actuator Option:
  - 1: Castle Cap, Elastomer
  - 2: Round, Convex, Elastomer
  - 3: Single Axis Y, Elastomer
  - 4: Round, Concave, Elastomer
  - 5: Convex, Narrow, Elastomer
  - H6: Hard Plastic Castle

- Mounting Option:
  - T: 1/2”-20 Threaded Housing

- Termination:
  - C: .049” (1.25mm) JST Connector *
  - W: 24AWG Pigtail, 14” Length
  - Z: 28AWG Pigtail, 14” Length

*Note: Connectorized Version (Termination Option “C”) Supplied with JST Connector & 35cm (14”) (28AWG) Mating Wire Harness*
Micro 2 Axis Thumbstick (Scale 2:1)

Dimensions in millimeters (inches)

CASTLE

ROUND, CONVEX

ROUND, CONCAVE

SINGLE AXIS, Y

NARROW, CONVEX, ELASTOMER

CASTLE, HARD PLASTIC

The information provided herein is to the best of our knowledge true and accurate, it is provided for guidance only. All specifications are subject to change without prior notification.

Althen Controls – Your expert partner for customized joystick controllers, footpedals, and position feedback sensors.

Althen stands for high quality solutions, flexibility in customization, and is known for its long experience.

Please visit our website althencontrols.com
or contact us by email at info@althencontrols.com