

## P50 Compact Series – Panel Mount, USB & PS/2 Trackball, Removable ball

### DESCRIPTION

The P50 Compact Series are low cost, high specification, professional trackballs for use in demanding environments. High-grade stainless steel shafts and bearings ensure a solid and precise pointer control.

A choice of top plate and chassis configurations are available to provide various options on sealing, backlighting, bezel diameters and installation. The unit has been designed to be back of panel mounted as part of OEM keyboards and consoles.



### FEATURES AND APPLICATIONS

- Optional sealing to IP51
- Outputs: PS/2, USB (auto-select)
- Smooth operation in rugged environments
- Stainless steel shafts and bearings
- Various top plate configurations providing sealing and tracking force options
- Custom connector options
- For use in medical, kiosk and industrial applications
- OEM custom solutions available

### SPECIFICATIONS

#### Mechanical

Weight	~150 grams (5.25 oz)
Ball	Ø50.8 mm (2"), phenolic/polyester
Ball colour	Various - (contact sales for custom requirements)
Tracking force	10 grams nominal continuous – non sealed (IP40) 20-30 grams nominal continuous – sealed (IP51)
Top Plate/Body material	ABS
Mounting position	Horizontal to 30°

#### Electrical

Protocol	PS/2, USB (auto-select)
Supply voltage	5V D.C. ± 5%
Supply current	15mA typical
Resolution	320 pulses per ball revolution (1280 counts per ball revolution)
Output connector	6 Way JST, right-angled header, part no: S6B-PH-SM3-TB
Mating output connector	6 Way JST connector, part no: PH, CR or KR types
Switch Inputs	3 switches: left, middle, and right. Connection through 4-way JST, right-angled header, part no: S4B-PH-SM3-TB.
Mating switch connector	4 Way JST connector, part no: PH, CR or KR types

#### Environmental

Operating temperature	0°C to +50°C (IEC 60068-2-1, IEC60068-2-2)
Storage temperature	-40°C to + 85 °C (IEC 60068-2-1, IEC60068-2-2)
Humidity	30% min, 95% max, non-condensing (IEC 60068-2-78)
Vibration	2g, 10-500Hz, 1 octave/min, 1 hour /axis (IEC 60068-2-6)
Shock	15g/11ms, 3 shocks in +ve and –ve direction, all 3 planes (IEC 60068-2-27)
Lifetime	1 million ball revolutions

## CONNECTION DETAILS

Connection is made to the P50 Trackball by means of two latching JST connectors (or equivalent).

Tables 1 and 2 highlight the connection details. Custom connections are available (please contact your local sales office for further details).

### Output connector: CON1A

Pin Number	USB, PS/2 (Auto select)
1	-
2	-
3	+5V D.C.
4	PS/2 Data, D-
5	PS/2 Clock, D+
6	0V

Description: 6 way, 2mm pitch, right-angled connector

Manufacturer: JST (or equivalent)

Part No: S6B-PH-SM3-TB

Mating connector: PH, CR or KR types

Table 1 Output connections

### Switch input connector: CON2A

Pin Number	Function
1	Left switch
2	Middle switch
3	Right switch
4	0V

Description: 4 way, 2mm pitch, right-angled connector

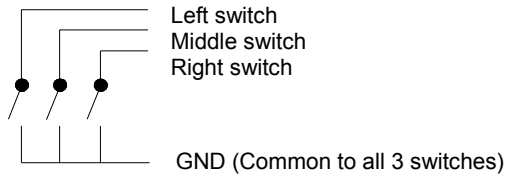
Manufacturer: JST (or equivalent)

Part No: S4B-PH-SM3-TB

Mating connector: PH, CR or KR types

Table 2 Switch connections

### Switch schematic



## TRACKERBALL CONFIGURATION

The USB and PS/2 protocols provide features within the Trackball firmware that can be selected using the DIP switch located on the printed circuit board. Table 3 details the assigned function of each switch.

### USB/PS2 DIP switch functions

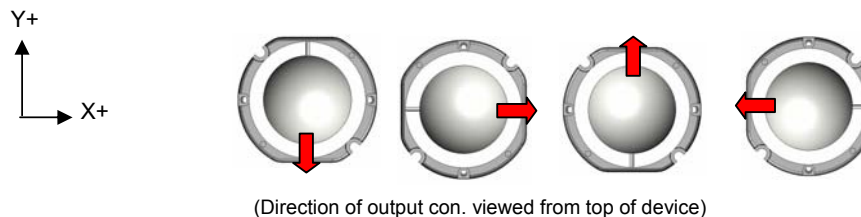
Switch	Function	OFF	ON
1	Orientation 1 Setting	See Figure.1	See Figure.1
2	Orientation 2 Setting	See Figure.1	See Figure.1
3	VX3 - Virtual 3 Axis Function	Feature Disabled	Feature Enabled
4	Tracking Speed	Ballistic Feature	Linear

Factory default setting: DIP switches 1 and 2 ON. All other DIP switches OFF  
The DIP switches can be changed by removing the back plate.

Table. 3 DIP switch functions

### Orientation – Switch 1&2

The orientation function allows the user to mount the P50 device in one of four positions (see fig.1 below). The orientation of the device is determined by the direction in which the output connector is facing (when viewed from the top of Trackerball device). The direction of the arrow determines the direction in which the connectors are facing. The Trackerball orientation can be selected to accommodate customer requirements for connector location and wiring.



Switch 1 (Orientation 1)	ON	OFF	ON	OFF
Switch 2 (Orientation 2)	OFF	ON	ON	OFF

Figure.1 Orientation settings

### VX3 – Switch 3

VX3 is patent protected facility that provides the same 2 modes of functionality as a scroll wheel on a 3-axis mouse.

#### Operation:

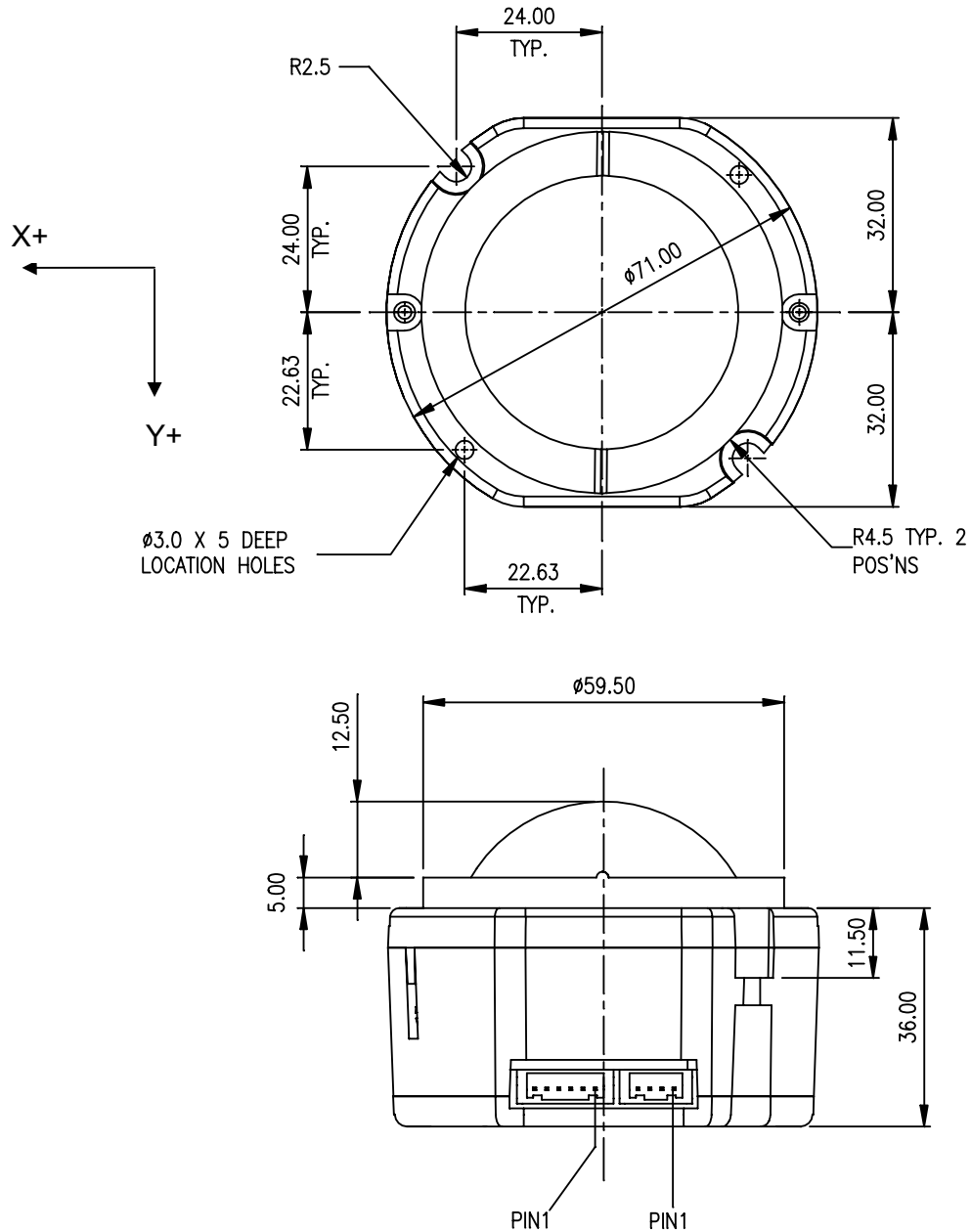
- Press middle button once to latch scroll mode one (e.g. dynamic pan feature);
- Press middle button again to latch scroll mode two (e.g. 3<sup>rd</sup> axis zoom feature);
- Further middle button presses toggles between scroll mode one and scroll mode two;
- Press either left or right buttons to cancel feature and resume normal X-Y operation

### Tracking Mode – Switch 4

**Ballistic Tracking:** Intuitive tracking to provide increased cursor resolution when tracking fast, whilst retaining the original resolution for tracking accurately at slow speeds.

**Linear Tracking:** No tracking algorithm. 320 pulses per ball revolution maintained at all tracking speeds.

**DIMENSION DRAWING**



Dimensional drawing specifies factory default orientation.

All dimensions are in mm unless otherwise stated.

Tolerances  $\pm 0.2$  mm unless otherwise stated

Please note that an IGES model is available on request. Please contact your local sales office for more information.

Product ordering code P50–XXXXXX. Please construct your standard product ordering code by selecting the numbers and letters to suit your specification:

<b>P</b>	<b>50</b>	-	<b>X</b>	<b>X</b>	<b>0</b>	<b>2</b>	<b>X</b>	<b>X</b>
----------	-----------	---	----------	----------	----------	----------	----------	----------

<b>Product range</b> P = Panel	<b>Ball size</b> (Nominal mm)
<b>Sealing capabilities</b> 1 = No Seal (IP40) 2 = Scraper Seal (IP51)	
<b>Electrical output</b> 0 = Quadrature 4 = PS/2 only 5 = USB only 6 = USB/PS2 Auto select 8 = SUN systems	
<b>Integrated switches</b> 0 = No external Switches	
<b>Mounting option</b> 2 = Mount to back of panel	
<b>Top plate, Body style</b> D = RAL 9002 Body, removable ring, white PTFE seal E = RAL 9002 Body, removable ring, no seal F = Black Body, removable ring, grey PTFE seal G = Black Body, removable ring, no seal	
<b>Ball colour</b> 0 = Black      6 = Blue* 1 = Brown*    7 = Ivory* 2 = Red*      8 = Grey/SS316* 3 = Orange*   9 Customer specific 4 = Yellow*   G = RAL 9002 5 = Green*	

\*Non standard colour – MOQ and lead-time may apply

\*\* Please contact sales for mounting and installation details

#### Ordering Example:

**P50-2602DG:** 50mm, scraper seal (IP51), USB/PS/2, no switches, mount to back of panel, RAL 9002 Body, RAL 9002 Ball.

#### OPTIONAL EXTRAS

- Optional ball colours (MOQ applies)
- Customer specific colour matching (MOQ applies)
- Cable assemblies and accessories

*Whilst the information provided herein is to the best of our knowledge true and accurate, it should be used for guidance only and may be subject to change. You are therefore advised to ensure all information provided herein is current and up to date and suitable for your application. Use of Cursor Controls Ltd products in life support systems is only permitted with prior written consent of the Company.*

**DOCUMENT HISTORY**

Revision	Date	Author	Remarks
A	10.04.07	N.S	Datasheet released

*Whilst the information provided herein is to the best of our knowledge true and accurate, it should be used for guidance only and may be subject to change. You are therefore advised to ensure all information provided herein is current and up to date and suitable for your application. Use of Cursor Controls Ltd products in life support systems is only permitted with prior written consent of the Company.*