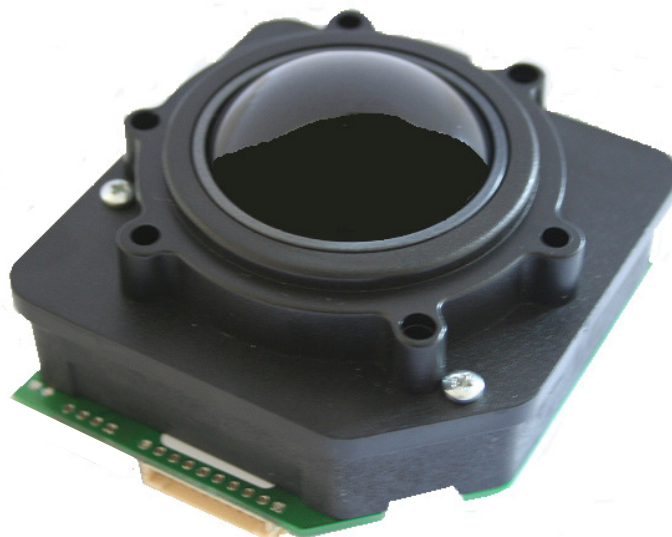

P50 Series - Panel Mount Trackball, Quadrature Output, Sealed/Non-Sealed

**1. DESCRIPTION**

The P50 Series mechanical trackballs are high specification modules available with a variety of electrical outputs and sealing options up to IP65.

This popular unit provides a smooth running solution for general control applications where precise cursor control is required at all times.

Manufactured using high grade stainless steel and plastic components, and incorporating the latest format of floating sealing technology, the P50 Trackball will provide many years of reliable cursor control for industrial, medical and keyboard applications.

The P50 Series trackballs have been designed to be back of panel mounted as part of OEM keyboards and consoles.

2. FEATURES

- Sealing up to IP65 (BS EN 60529)
- Output: TTL Quadrature
- Smooth operation in rugged environments
- Various top plate configurations providing sealing and tracking force options
- High grade stainless steel shaft and bearings
- Custom connector options
- Various ball colours
- Backlit ball options

3. APPLICATIONS

- Control systems
- Medical systems
- Marine systems
- Navigation systems
- Sound and lighting desks
- Industrial consoles
- OEM custom solutions available

4. SPECIFICATIONS

4.1 Mechanical

Weight	270 grams (phenolic/polyester ball)
	700 grams (stainless steel ball)
Ball	Ø50.8mm (2"), phenolic/polyester or AISI 440 stainless steel
Tracking force	10 grams – unsealed (IP40)
	50-80 grams – sealed (IP65)
Mounting position	Horizontal to 30° (non-sealed)
	Horizontal to 70° (IP65 sealed)
Ball load	200N (20Kg) maximum downward pressure for 2 minutes @ 20 °C
Tracking engine	Dual channel photo-interrupters
Chassis material	Glass filled ABS
Top plate material	PC/ABS
Sealing material	PTFE composite (qualified @ 25 °C static)

4.2 Electrical

Output	TTL Quadrature
Supply voltage	4.4V to 5.25V D.C.
Supply current	10mA typical, 15mA maximum
Resolution	620 counts per ball revolution (155 pulses per ball revolution)
Output connector	10 Way, right-angled JST header, part no: S10B-PH-SM3-TB
Mating output connector	10 Way JST connector, part no: PH, CR or KR types (e.g. PHR-10)

4.3 Environmental

Operating temperature	0°C to +55°C (IEC 60068-2-1, IEC60068-2-2)
Storage temperature	-40°C to + 85 °C (IEC 60068-2-1, IEC60068-2-2)
Operating humidity	93% RH @ 40 °C, non-condensing (IEC 60068-2-78)
Storage humidity	10%-95% RH, non-condensing (IEC 60068-2-78)
Vibration	5g, 10-500Hz, 1 octave/min, 10 sweep cycles (IEC 60068-2-6)
Operating Shock	15g/11ms, ½ sine, 3 shocks in +ve and –ve direction, all 3 axes (IEC 60068-2-27)
Mechanical lifetime	1 million ball revolutions
Impact	10 Joules (with anti vandal kit fitted)
MTBF	in excess of 80,000 hours (MIL-STD-217F)
ESD	15kV air-discharge and 8kV contact discharge (IEC 61000-4-2)
EMC	Radiated immunity - limits according to level 3 of IEC 61000-4-3
	Radiated emissions to EN55022 class B
Sealing capability	Up to IP65 (BS EN 60529)

5. CONNECTION DETAILS

Connection is made to the trackball by means of a single JST connector (or equivalent). Table 1 highlights the connection details. Custom connections are available (please contact your local sales office for further details).

5.1 Output Connector: P1

Description: 10 way, 2mm pitch, right-angled connector

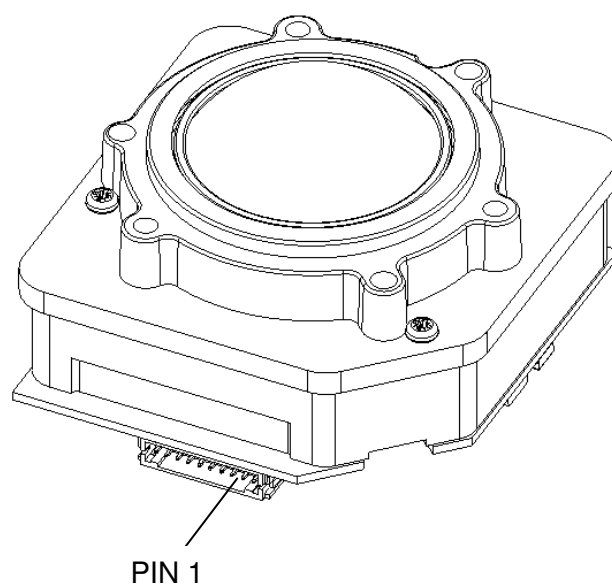
Manufacturer: JST (or equivalent)

Part No: S10B-PH-SM3-TB

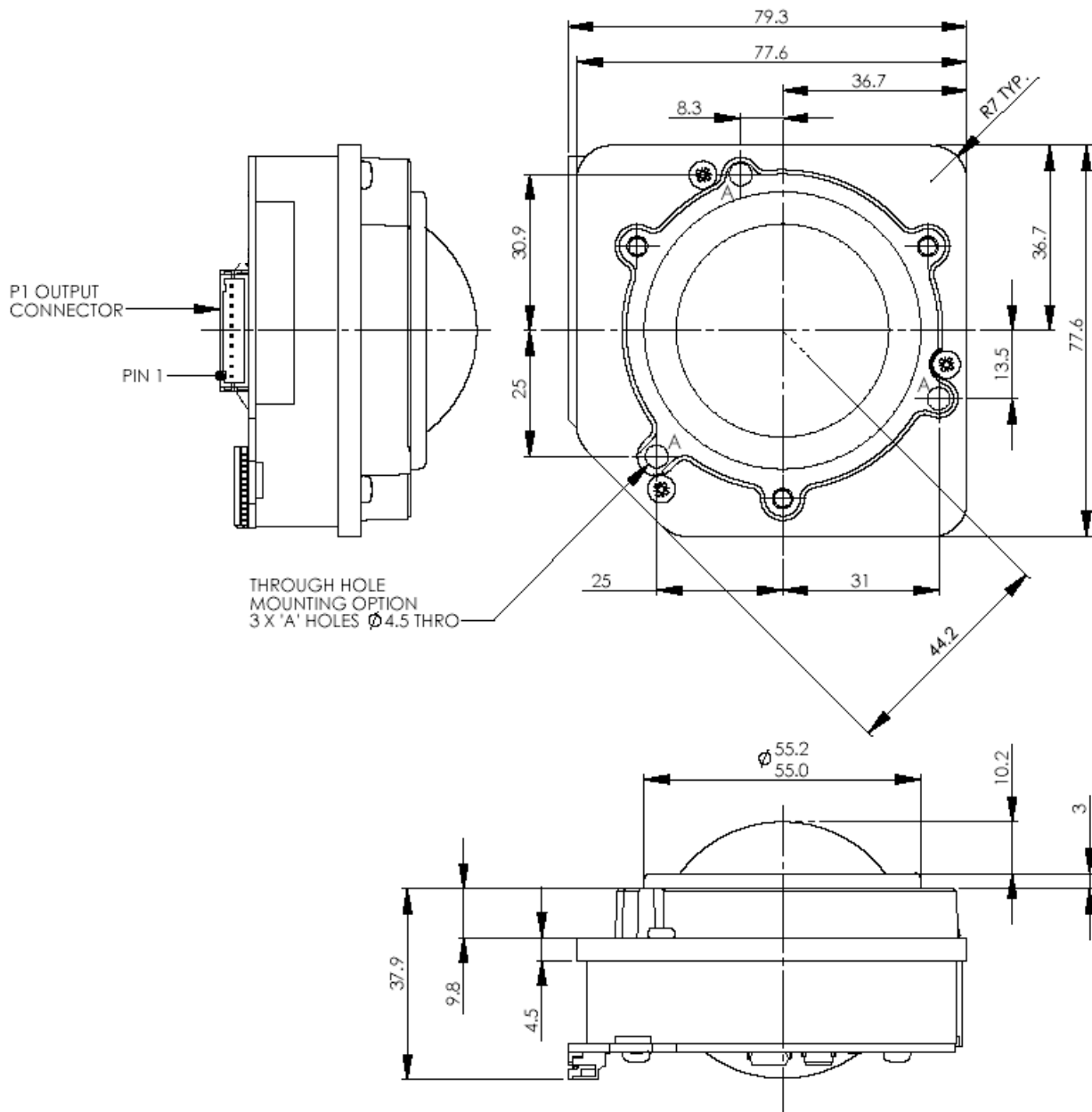
Mating connector: PH, CR or KR types

Pin Number	TTL Quadrature
1*	X1
2	X2
3	Y1
4	Y2
5	EARTH
6	-
7	5V D.C
8	-
9	-
10	0V

Table 1 Output connections



6. DIMENSION DRAWING



Dimensional drawing specifies factory default orientation.

All dimensions are in mm unless otherwise stated.

Tolerances $\pm 0.2\text{mm}$ unless otherwise stated

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

7. PRODUCT ORDERING CODE SYSTEM

Please construct your standard product ordering code by selecting the numbers and letters to suit your specification:

P	50	-	X	0	0	2	X	X
Product range P = Panel Series	Ball size (Nominal mm)							
Sealing capabilities 1 = No seal – IP40 2= Scraper seal – IP51 5 = Sealed - IP65								
Electrical output 0 =TTL Quadrature								
Integrated switches 0 = No external Switches								
Mounting option 2 = Mount to back of panel								
Top plate, Body style 3 = Moulded top and chassis, black, sealed 4 = Moulded top and chassis, black, non-sealed								
Ball colour 1 = Brown* 7 = Ivory* 2 = Red* 8 = Grey/SS316* 3 = Orange* 9 = Customer specific 4 = Yellow* D = Metallic grey 5 = Green* F = Metallic red 6 = Blue* G = White RAL9002								

*Non standard colour – MOQ and lead-time may apply
For further options on ball colours please contact your local sales representative

7.1 Ordering Example

P50-500230: Panel 50mm, IP65, Quadrature Output, no switches, mount to back of panel, black top and chassis (sealed), black ball

P50-10024D: Panel 50mm, IP40, Quadrature Output, no switches, mount to back of panel, black top and chassis (non-sealed), metallic grey ball

8. DOCUMENT HISTORY

Issue	Date	Author	Remarks
A	03.03.11	N.S	Document released – NP 615

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.