



- Output: PS/2, USB & Quadrature
- Sealing to IP68
- Industrial grade

25 MM LASER TRACKBALL

Utilizing the latest and most advanced laser tracking technology, the X25 Series laser high specification, contact-less device, ideal for the most demanding of cursor control applications.

The laser tracking engine provides accurate cursor motion at all speeds, combining the benefits of solid-state sensing (no moving parts except the ball) with the aesthetics, functionality and performance associated with the Cursor Controls product range.

The design incorporates a removable top ring as standard to allow for easy cleaning, decontamination, sterilisation and maintenance - ensuring continued optimum performance and operation under the harshest of conditions.

The X25 series trackballs are available with a variety of electrical outputs, tracking force options, and sealing capabilities up to IP68.

The trackball has been designed to be back of panel mounted as part of OEM keyboards and consoles.

MAIN FEATURES

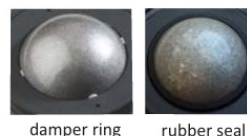
- Sealing to IP68
- Solid state sensing technology laser tracking engine (Generation II)
- Smooth operation in rugged environments
- Various ball colours available
- Vx3™ integrated zoom feature for scroll wheel functionality

CONNECTIVITY & CUSTOMIZABILITY

- Outputs: Quadrature, USB & PS/2
- Custom connector options possible
- Applications:
 - Medical systems
 - Marine systems
 - Custom keyboard applications
 - Industrial consoles
 - OEM custom solution available

ORDER INFO

Output	Damper ring	Rubber seal
Quadrature	X25-70021D-K	X25-70022D-K
PS/2 & USB	X25-76021D-K	X25-76022D-K



damper ring

rubber seal

Please add corresponding output cable to the X25 trackball module

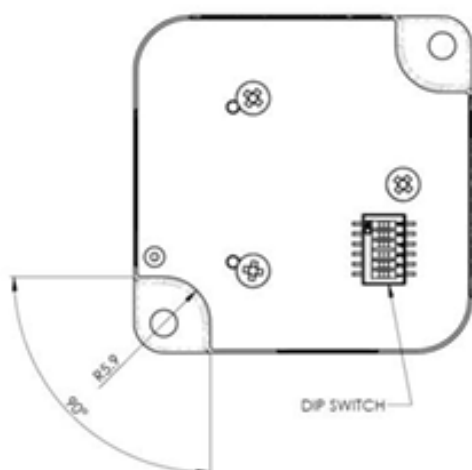
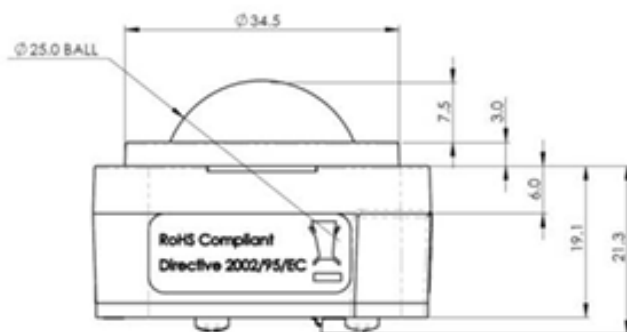
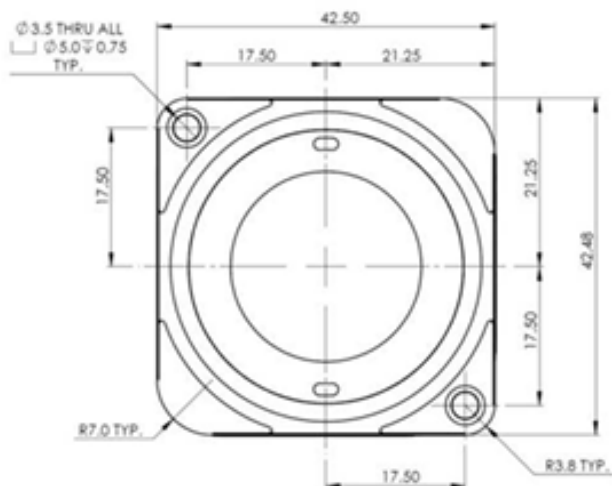
Part number	Leads / Adapters	Description
OC5006160	Output cable USB	1,6 m shielded cable with USB type A plug
OC6006160	Output cable PS/2	1,6 m shielded cable with 6 pin mini DIN plug
IC040035	Switch Input	4 way JST style - bare wires, 35 cm long
IC060635	Interconnection	Interconnection cable, 35 cm long

OPTINAL EXTRAS

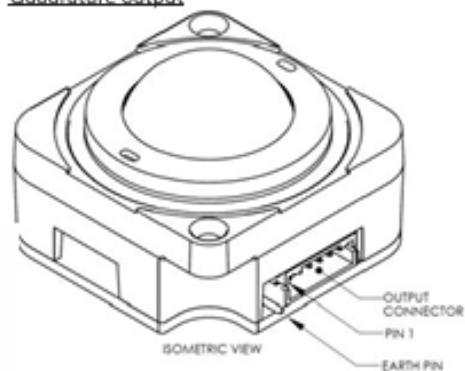
- Optional ball colours (MOQ applies)
- Customer Specific Colour Matching (MOQ applies)
- Custom lead Assemblies

Contact your local distributor for further details on product variants and custom specifications.

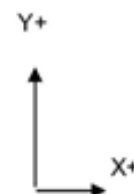
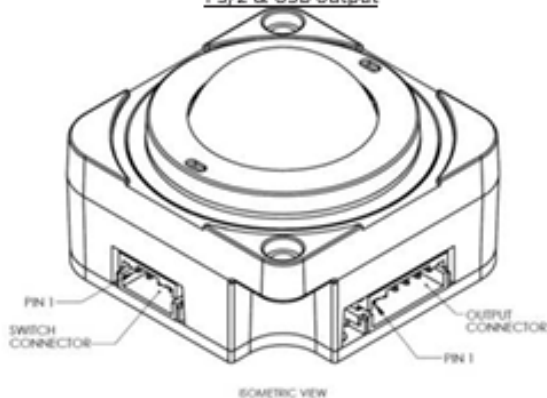
DIMENSIONAL DRAWING



Quadrature output



PS/2 & USB output



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

The company reserves the right to alter without prior knowledge the specification or design of any standard product or service.

GENERAL TECHNICAL SPECIFICATIONS

MECHANICAL

Weight	40 grams
Ball size	Ø25mm (0.98")
Ball material	PROX resin
Tracking force options	20 grams nominal – damper ring 20-50 grams – silicone rubber seal
Ball load	100N (10Kg) maximum downward pressure for 2 minutes @20°C
Resolvable ball speed	30 IPS (inches per second)
Resolvable ball speed	40 IPS (inches per second) - quadrature trackball
Mounting position	All angles
Tracking engine	Laser navigation technology (Generation II) - solid state sensing
Housing Material / colour	PC / ABS / Black
Sealing material	PTFE – damper ring option Polyurethane – rubber seal option
Sealing gasket	Cellular silicone

ELECTRICAL

Protocol	USB / PS2 / Quadrature (Minimum of 4KHz sampling rate required)
Supply voltage	4.4V to 5.25V D.C.
Supply current USB/PS2	23mA typical, 25mA maximum
Supply current quadrature	12mA typical, 20mA maximum
Resolution USB / PS2	650 counts per ball revolution @ 1 IPS (inches per second) +/- 10% 1300 counts per ball revolution @ 5 IPS (inches per second) +/- 10%
Resolution quadrature	650 counts per ball revolution +/- 10% @ 1 inch-per-second (linear tracking mode)
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 (e.g. PHR-6)
Laser safety class	Embedded class 1 laser safety, IEC 60825-1
Mating switch connector	4 Way JST connector, part no: PH, CR or KR types (e.g. PHR-4)
Switch Inputs (USB, PS/2)	3 switches: le , middle, right. Connec on through 4-way JST, right-angled header, part no: S4B-PH-SM3-TB

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% non-condensing (IEC 60068-2-78)
Vibration USB / PS2	5g, 10-500Hz, 1 octave/min, 10 sweep cycles (IEC 60068-2-6)
Vibration Quadrature	2g, 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)
Non-operating shock	50g/11ms, ½ sine, 3 shocks in +ve and -ve direction, all 3 axes (IEC 60068-2-27)
Mechanical lifetime	1 million ball revolutions
MTBF USB / PS2	In excess of 80,000 hours (MIL-STD-217F)
MTBF Quadrature	In excess of 250,000 hrs @ 25°C, Ground, Benign (MIL-HDBK-217F2)
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 A (USB / PS2) and class B (Quadrature)
Sealing capability	IP68 (BS EN 60529)*

*When mounted in an IP68 enclosure

ELECTRICAL COMPATIBILITY

The X25 Series trackball has been tested for compatibility with the following operating systems;

Windows 95, Windows 98, Windows 2000, Windows ME, Windows NT4, Windows XP, Windows Vista, Redhat Linux, Sun Sparc.
Fully compliant with USB 1.1 framework (chapter 9) and HID specifications.

CONNECTION DETAILS QUADRATURE OUTPUT

Output Connector: P1

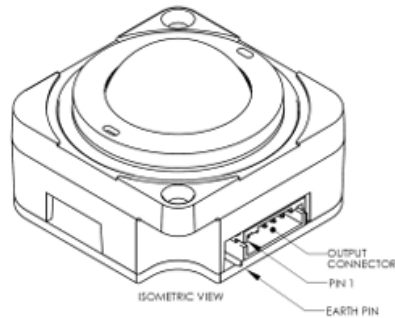
Description: 16 Way JST, right-angled header.

Manufacturer: JST (or equivalent)

Part No: S6B-PH-SM3-TB

Mating connector: PH, CR or KR types (e.g. PHR-6)

Pin number	Quadrature
1	X1
2	X2
3	Vcc
4	Y1
5	Y2
6	GND



CONNECTION DETAILS PS/2 - USB OUTPUT

Output Connector: P1

Description: 6 Way JST, right-angled header.

Manufacturer: JST (or equivalent)

Part No: S6B-PH-SM4-TB

Mating connector: PH, CR or KR types (e.g. PHR-6)

Pin number	USB/PS/2
1	EARTH
2	Pin to be left floating (unconnected)
3	5V D.C
4	PS/2 Data, D-
5	PS/2 Clock, D+
6	0V

Switch input Connector: P2

Description: 4-way JST, right-angled header.

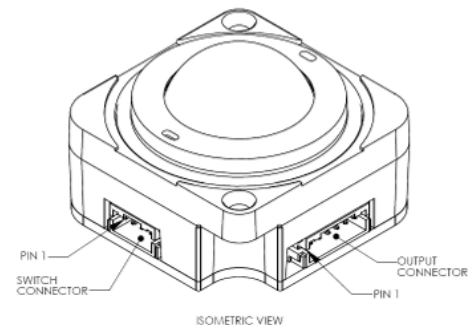
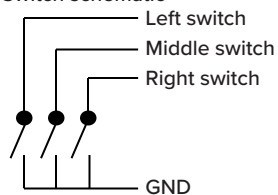
Manufacturer: JST (or equivalent)

Part No: S4B-PH-SM4-TB

Mating connector: PH, CR or KR types (e.g. PHR-4)

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

Switch schematic



OPTIONAL LEAD ASSEMBLIES

Standard Lead assemblies for connection to the X25 unit are available. Other lead assemblies can also be supplied to customer specifications.

Part number	Leads / Adapters	Description
OC5006160	Output cable USB	1,6 m shielded cable with USB type A plug
OC6006160	Output cable PS/2	1,6 m shielded cable with 6 pin mini DIN plug
IC040035	Switch Input	4 way JST style - bare wires, 35 cm long
IC060635	Interconnection	Interconnection cable, 35 cm long

CONFIGURATION

The X25 trackball provides features that may be selected using the DIP switch located on the printed circuit board. This table details the assigned function of each switch.

DIP switch functions quadrature trackballs

DIP 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	Factory Setting	Switch must be set in the OFF position	
4	Factory Setting	Switch must be set in the OFF position	
5	Factory Setting	Switch must be set in the OFF position	
6	Factory Setting	Switch must be set in the OFF position	

Factory default setting: All DIP switches OFF

DIP Switch Functions PS/2 - USB Trackballs

DIP 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	Factory Setting	N/A	N/A
4	N/A	N/A	N/A

Factory default setting: All DIP switches OFF

Orientation

The orientation function allows the user to mount the X25 trackball device in one of four positions (see figure. 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 output connector is denoted by the red arrow. The Tracker ball orientation can be selected to accommodate customer requirements for connector location and wiring.

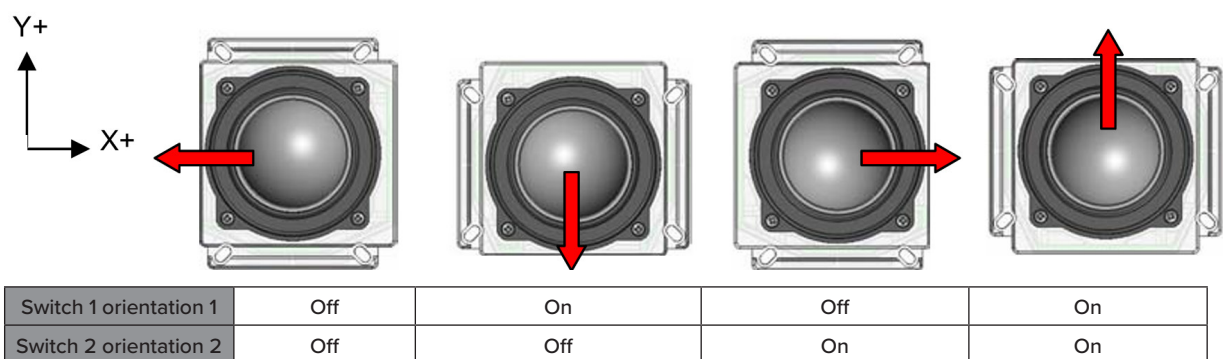


Figure.1 Mounting orientations