Jargon Buster

In this document we've gathered together many of the technical terms you will see elsewhere on the Pretorian Technologies website. Just click on the first letter of the word you'd like to look up and the document will link you to the relevant section.

If you don't see an explanation for the term you're looking for, please contact us at pretorian@pretorianuk.com.

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

A

ATE
Automatic Test Equipment. This is used to thoroughly test the Trackballs before they are shipped to the customer. Automation ensures that the results are consistent and that nothing is missed during the testing process. The output from the ATE is a Data Log, a printed set of results which is sent with each unit shipped.

B

Backlight
This is used to illuminate the ball in low-light applications such as air traffic control and recording studios. A frosted, translucent ball is used, allowing the backlight colour to be changed.

Button Latch
A useful feature which allows the button to be held in the pressed condition even when the button itself has been released. Typically used to drag objects or icons around the desktop, leaving you hand free to move the ball. Cancelled by pressing any button.

C

Cold Boot
This means that the host computer is switched on afresh, using the main switch on the computer cabinet.

D

DIP Switch
A small switch on the circuit board, usually in banks of 4 or 8. Used on the Trackball to configure various features and settings.

Draglock
Draglock is a feature which latches the Left Button whenever the middle button is pressed momentarily. The Left Button remains 'momentary action', allowing the user to choose whether the left button is latched or momentary. Cancelled by pressing any button.

Data Log
A printed log of all the tests performed on a particular product before shipment. This log is printed by the ATE as it performs its tests.

H
Hot-Plug
This is where a peripheral such as a pointing device is plugged into its associated port on the host computer whilst the computer power is still on. Some protocols are resilient to hot-plugging whilst others are not.

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I

IPxy

A system of classifying a product's degree of protection against ingress of water and dust. Typically used in European countries. The x is a numeral signifying the protection against water ingress and the y defines the degree of protection against dust ingress.

M

Mouse Systems Protocol

Mouse Systems protocol is a serial (RS232) data transfer protocol between a pointing device and host computer via the COM port. Still supported by older operating systems but not recommended for new designs.

Microsoft Protocol

Microsoft protocol is a serial (RS232) data transfer protocol between a pointing device and host computer via the COM port. Still supported by most operating systems. Useful where long cable lengths are required.

N

NEMA

The NEMA standard is a means for classifying the degree of protection against ingress of liquids and particles. Typically used in the Americas, this standard also allows a degree of protection against corrosion to be defined.

Orientation

A facility whereby the body of the trackball can be oriented in any one of the four quadrants. Typically used to allow the connector position to be selected to suit the wiring harness arrangement. The correct orientation of

the electrical output is then selected using a pair of DIP Switches.

P

PS/2 Protocol

A medium speed protocol allowing pointing device and keyboard data to be communicated to the host computer. Used predominantly on PC based computers, but also available on a few high-end workstations. Note that the keyboard and pointing device ports are not interchangeable. Many computer manufacturers now colour-code the connectors to avoid confusion (purple = keyboard, green = pointing device). Uses a six-pin mini-DIN connector.

Protocol

A protocol is an agreed form of communication between two electronic systems. In the case of a pointing device, this means a sequence of data passed between the two units which is understood by both. All protocols use digital data exchange- data being transferred in 'packets'. Modern pointing device protocols include USB, PS/2, Microsoft serial, Mouse Systems serial and Sun.

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Phase Angle

This term defines the difference in time between two adjacent edges of a phase quadrature waveform, normalised into angular notation. If one complete cycle of a pulse train is defined as 360° then the phase angle between any two adjacent edges should ideally be 90°. Figure 1 shows this diagrammatically.
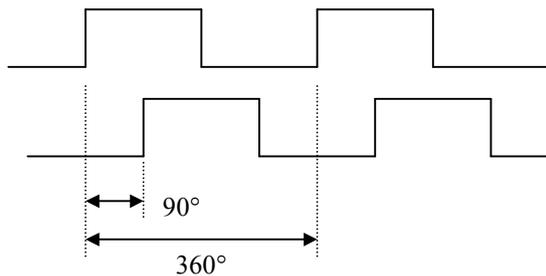

Figure 1: Phase Angle definition

Piezo Buzzer

This is a high-efficiency buzzer device which emits an audible tone at a selected frequency. These are used in Pretorian trackballs to alert the user when a button is latched or de-latched.

PanelPro

This is a Pretorian Technologies trade name for its range of panel mount Trackballs which use conventional shaft and bearing technology.

Phase Quadrature

This is the raw digital output from the shaft encoders of the trackball. It consists of two identical pulse trains, one being transposed by a quarter of one cycle (hence the name Quadrature). Note that the Trackball always produces these signals, even when its ultimate output to the host computer is a protocol. Figure 2 shows a typical phase quadrature waveform for forward and reverse rotation of the ball.
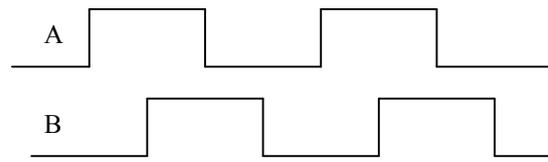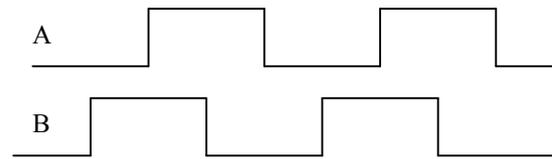

Figure 2a: Forward rotation

Figure 2b: Reverse rotation

Note that waveform A leads B for forward rotation, whereas for reverse rotation B leads A. This allows the interpreting system (e.g. a microprocessor) to determine direction. The frequency of the pulse train determines the rate of rotation of the ball for each axis. Some Trackballs are used in phase quadrature form- the interpreting system being provided by the equipment manufacturer. Most however, have the interpreting microprocessor built-in.

Q

Quadrature
See Phase Quadrature

R

RS232
This is a low-speed connection format, allowing peripherals such as pointing devices to be connected to the computer. The voltage levels are higher than normal- typically ±9V, allowing this communication medium to be used over longer distances than USB or PS/2. Consequently, protocols which use this means of communication (Mouse Systems and Microsoft) are still used in some applications.
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Resolution

This defines the number of pixels by which the cursor moves for a certain movement of the ball. Typically defined in terms of dots per inch (dpi) for a mouse, this figure is meaningless for a Trackball which is usually quoted in terms of counts per ball revolution (cpr) or pulses per revolution (ppr). The cpr is four times greater than the ppr figure. In simple terms, this gives a figure of merit to show how far the cursor moves for one revolution of the ball. As computer monitor resolutions progressively increase, the requirement for high resolution pointing devices increases. Pretorian Technologies Trackballs contain a useful feature which gives a high resolution but when the ball is being moved very slowly the resolution is automatically reduced to give precise cursor positioning.

S

Seal

This is the means by which the ball opening is protected against ingress of foreign particles and liquids. It is designed to minimise the chance of ingress whilst also minimising the drag on the ball.

Serial

See RS232

Sun Protocol

The protocol used to send pointing device data to Sun Microsystems workstations. Identical to Mouse Systems protocol, but transmitted at 0V and 5V only (i.e. not at RS232 transmission voltages). Sun Microsystems have now moved over to the USB protocol so Sun protocol is required for legacy support only.

Schmitt Trigger

This is a means for ensuring that a pulse train such as phase quadrature has clean edges which contain no switching noise or excessive risetimes. All Pretorian Technologies Trackballs use Schmitt triggers to ensure that the waveforms are clean.

T

Tracking Force

This term defines the amount of force required to rotate the ball and in doing so overcome the friction in the bearings, the drag presented by the seal etc. The force is measured tangential to the surface of the ball with the body of the Trackball horizontal. Note that higher IP (NEMA) ratings usually have higher tracking forces.

U

USB Protocol

The most recent pointing device protocol, although actually used for almost all computer peripherals. There are currently three subsets of the USB protocol defined: Low Speed, Full Speed and High Speed. Because pointing devices and keyboards involve little data transfer (by comparison with, say a video device) they use the Low Speed subset. The philosophy of the USB architecture is to allow the peripheral to dictate what is required of the device driver in the host computer- a process known as enumeration. This process makes the USB protocol extremely versatile and future-proof. Consequently, this is the protocol of choice and is likely to usurp all other protocols in time.

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W

Wheel-Axis
See Z-Axis

Warm Boot
This means that the host computer is re-booted without turning off the power. On PC based systems this is typically performed by pressing Cntrl-Alt-Del or by selecting Shutdown/ Restart from the Start menu.

Z

Z-Axis
The Z-axis, commonly referred to as the 'wheel' is a means for effecting three-dimensional control using a pointing device. In CAD systems the wheel may be used to move in the third (Z) axis, whereas in more commonplace applications such as Microsoft Office, Explorer etc, it is variously used to pan, scroll or zoom.

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