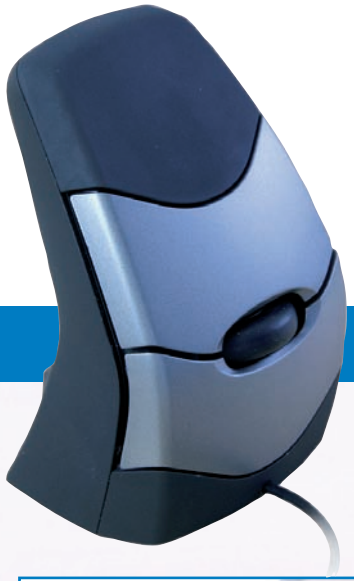

DXT Precision Mouse

KINESIS
COMPUTER ERGONOMICS

Neutral posture

Left-handed

Right-handed

- **Ergonomic:** relaxed, neutral wrist and hand position
- **Productive:** precision grip for accurate navigation
- **Unique:** instantly switches between right-handed and left-handed use
- **Universal design:** suitable for both larger and smaller hands
- **Convenience:** easy to use, recognisable pen grip
- **Mobile:** worlds most compact ergonomic mouse

Scientific findings:

Using a mouse to navigate the cursor and activate icons is a precision task that demands a high degree of accuracy.

Adopting the precision grip (Napier, 1956) where index finger and thumb work closely together (not by moving the whole arm from the shoulder, as many so called ergonomic mouse designs) allows efficient accurate cursor control.

Specifications:

Dimensions: 2.2 x 1.7 x 3.2 inches
Weight: 3.5oz
Connection: USB
Cable length: 2.25′ with a 5′ USB extension cable as standard.
Laser: Cyons laser navigation provides high speed tracking with low power consumption.
Selectable cursor of 400, 800 & 1600 DPI.
High Quality Omron D2FC-F-7N Micro-switch.




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1-800-454-6374 (US only) or 425-402-8100 Fax: 425-402-8181
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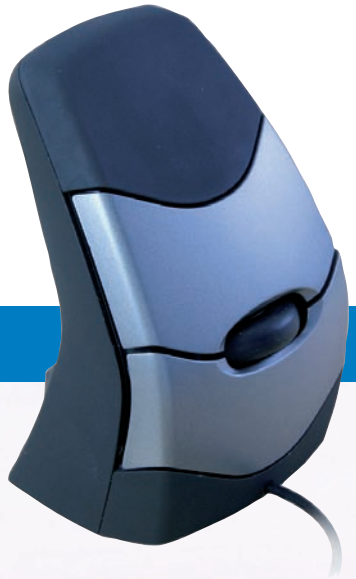

DXT Precision Mouse

Ergonomic background

Why it works

Using a mouse to navigate the cursor and activate icons is a precision task that demands a high degree of accuracy. Scientific research shows that designing pointing devices is best accomplished by basing the concept on the design of the human body, since this results in the most efficient and accurate moving of the cursor.

The importance of precision

To create an ergonomic input device with the highest degree of performance, the design for such a device should consider the differences between the limb segments in terms of their form, function, and performance.

The work of Zhai (Zhai, Milgram, Buxton, 1996) has shown that effectively designed pointing devices that rely on all parts of the human upper limb working in synergy, with each limb segment performing the functions it does best, can indeed outperform devices that inappropriately depend on a particular limb segment for their entire operation. The stylus-type input devices in which the thumb and index finger work in unison are thus most likely to yield high performance (Balakrishnan, MacKenzie, 1997).

The small muscles and joints in the fingers have greater information processing abilities for movement and sensation than other body parts. The larger muscle groups that operate the elbow and shoulder are adapted for power and a larger range of movement. The smaller muscle groups that operate the fingers and thumb have greater agility.

Adopting the precision grip (Napier, 1956) where index finger and thumb work closely together (not by moving the whole arm from the shoulder as many, so called ergonomic mouse designs) allows efficient, accurate cursor control.

Less effort

A mouse that supports the hand and wrist in a neutral posture results in less muscle tension. The neutral posture of hand and wrist when using the mouse can be attained by:

- having the wrist adopt a functional position (slightly extended or bent slightly backwards);
- having the lower arm in a neutral position (rotated inward at about 30 degrees);
- flexing the fingers somewhat with the thumb positioned in opposition to the fingers; the degree to which the finger joints are flexed increases somewhat from the index to the little finger; in this position, finger flexion occurs with the least amount of effort and muscle tension in the hand is balanced.

The two major ergonomic elements - precision and neutral posture - were combined in designing the ergonomic shape of the DXT Precision Mouse.

The DXT Precision Mouse promotes a neutral (more vertical) wrist posture while allowing the hand to operate using the precision grip. In addition to this major ergonomic evolution of the mouse, the DXT Precision Mouse provides two other advantages:

- its ergonomic shape easily fits hands of any size;
- it is the first ergonomic mouse that can be instantly adapted for use between the right and left hands.

Literature

- Napier, JR., The prehensile movements of the human hand, J. Bone Joint Surg., 38B: p. 902-913, 1956.
- Balakrishnan, R.I., MacKenzie, S., Performance Differences in the Fingers, Wrist, and Forearm in Computer Input Control, Published in Proceedings of 1997 ACM Conference on Human Factors in Computing Systems, p. 303-310.
- Zhai, S., Milgram, P., Buxton, W., The influence of muscle groups on performance of multiple degree-offreedom input, Proceedings of the CHI 96 Conference on Human Factors in Computing Systems, New York, 1996, p. 308-315.

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