EXHIBIT 3.04

4. Tablette de données graphiques selon l'une quelconque des revendications précédentes, dans laquelle la coordonnée z est calculée à partir de la somme des courants distincts mesurés dans chacun des conducteurs (14, 15, 21, 22).

5. Tablette de données graphiques selon l'une quelconque des revendications 1 à 3, comprenant en outre:

un cinquième conducteur (30) connecté au matériau conducteur (11); et

des moyens de détection électriques (45) agencés pour mesurer directement, au premier temps d'échantillonnage, le courant total circulant entre la couche résistante et le matériau conducteur, fournissant de ce fait une mesure à partir de laquelle la coordonnée z peut être calculée.

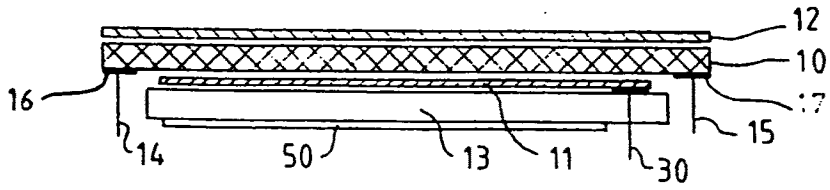


FIG. 1a

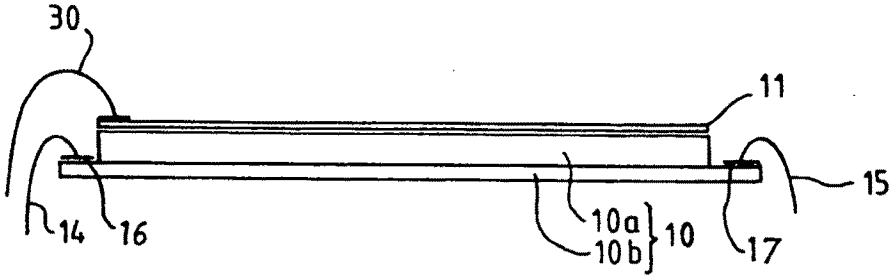


FIG. 1b

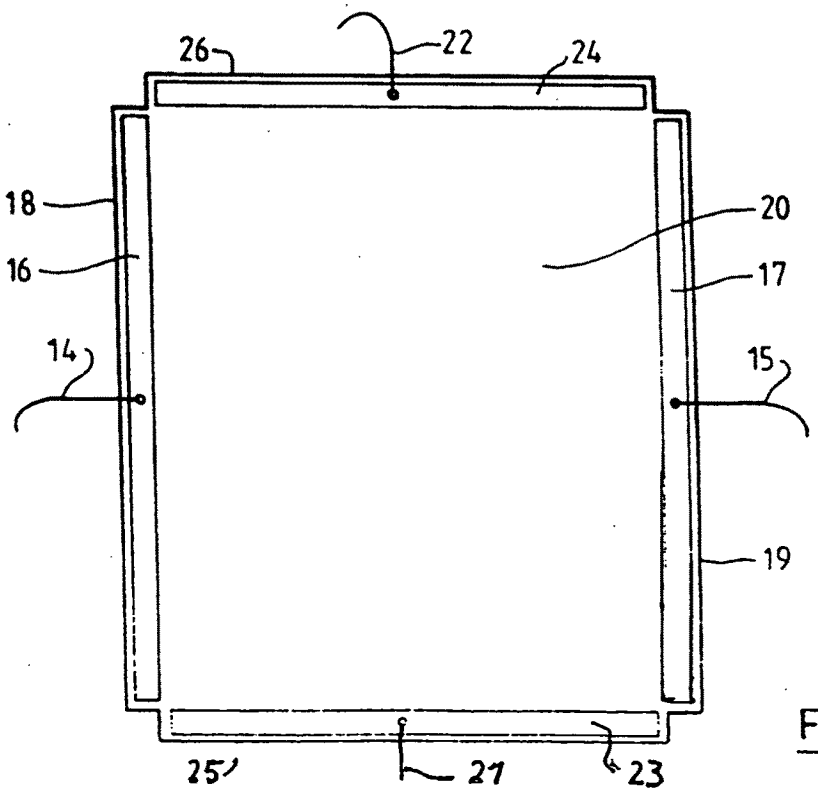


FIG 2

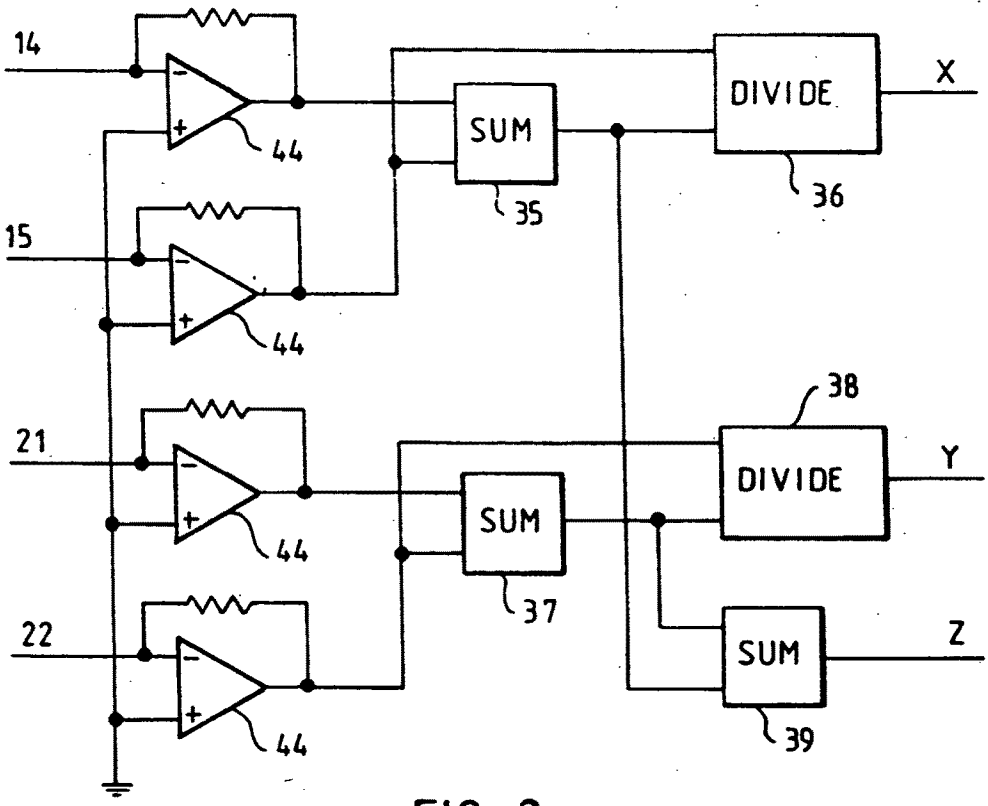


FIG. 3a

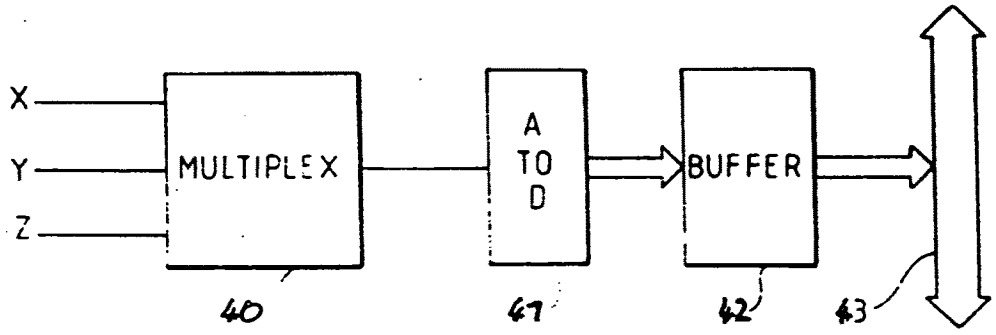
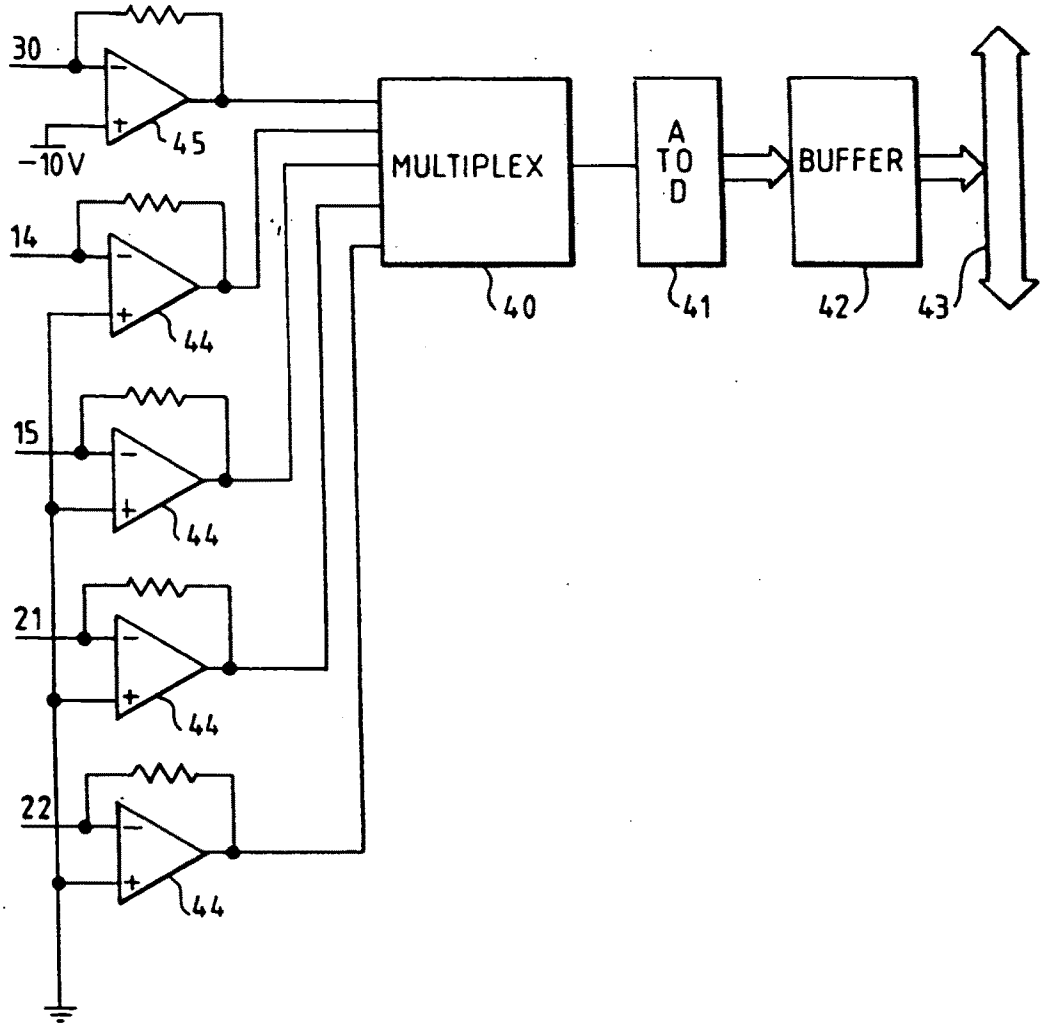


FIG. 3b


30
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MULTIPLEX
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FIG 4

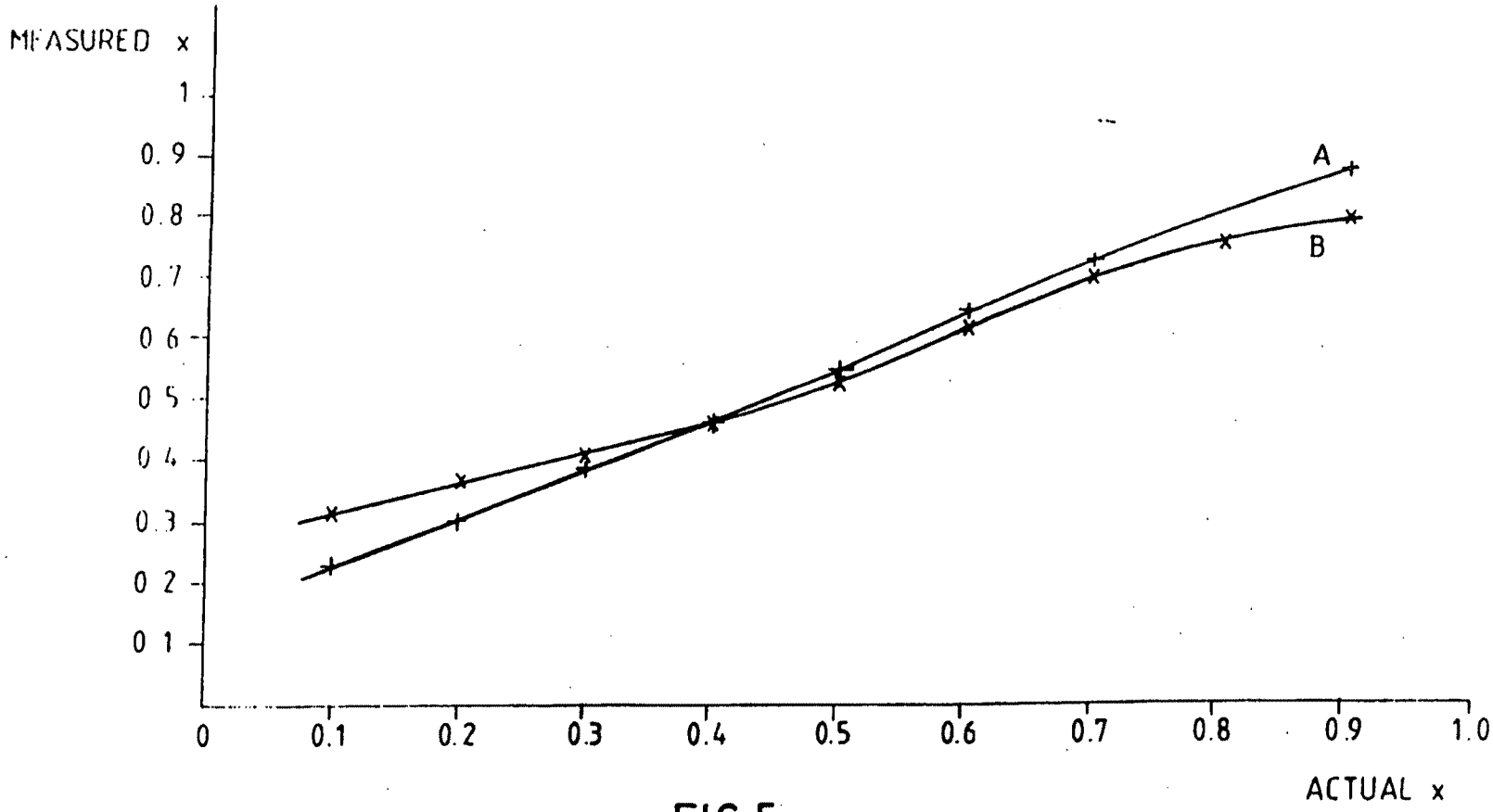


FIG.5

EP 0 288 692 B1

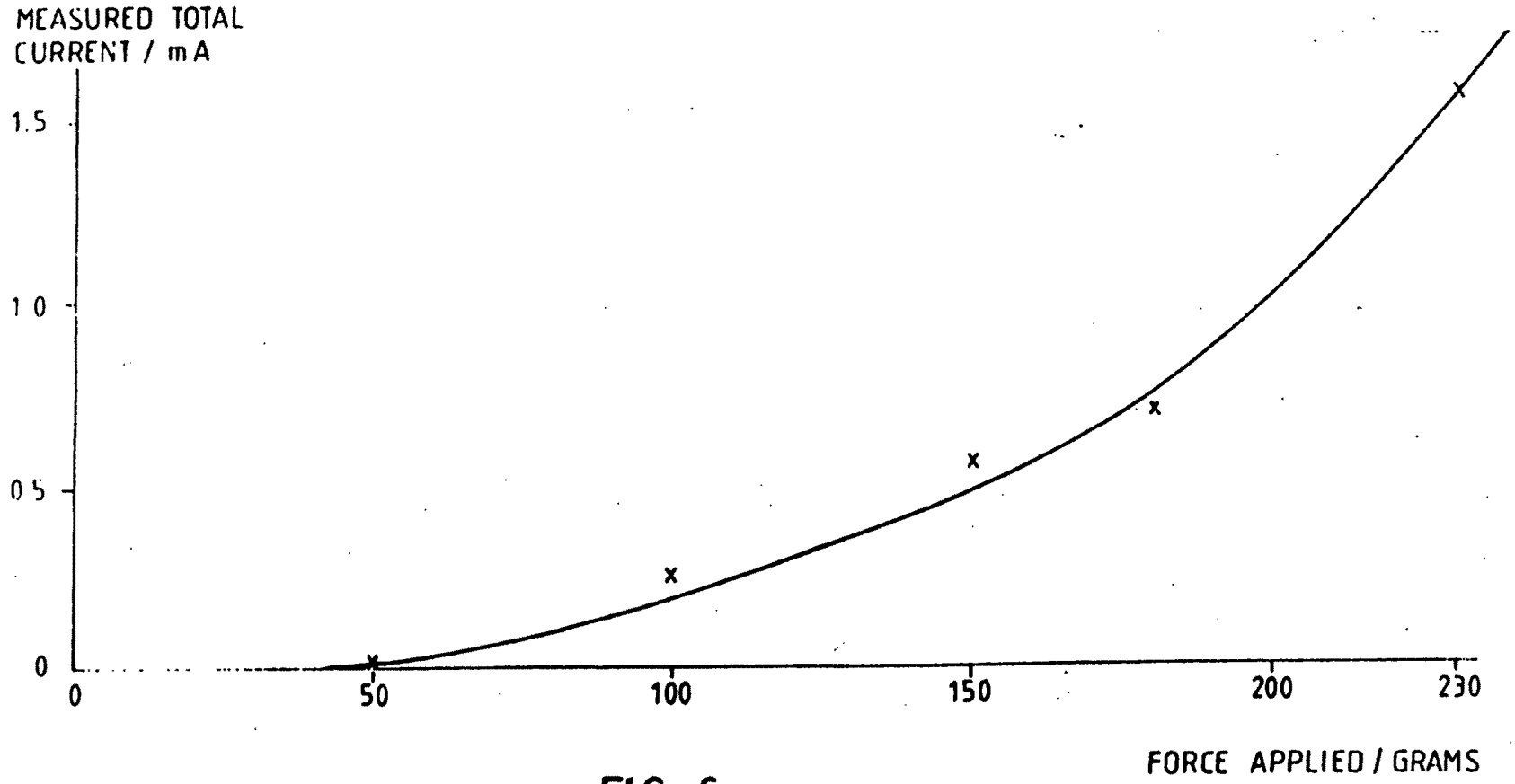
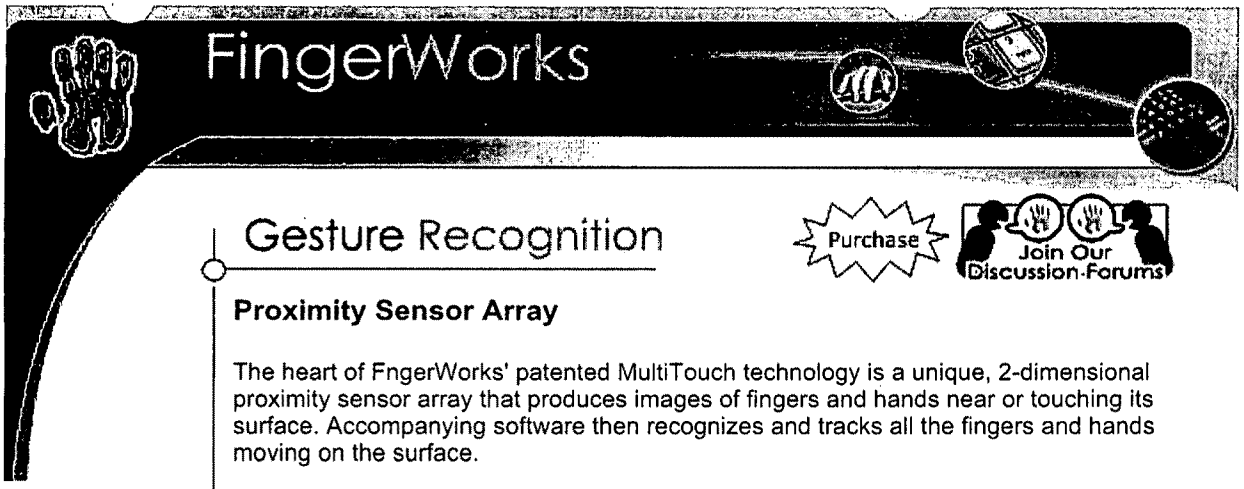


FIG. 6

EP 0 288 692 B1



Gesture Recognition

Purchase

Join Our Discussion Forums

Proximity Sensor Array

The heart of FngerWorks' patented MultiTouch technology is a unique, 2-dimensional proximity sensor array that produces images of fingers and hands near or touching its surface. Accompanying software then recognizes and tracks all the fingers and hands moving on the surface.

Traditional touchpad and touchscreen sensing technologies, in comparison, can only track motions of a single finger, and become confused if more than one finger ever touches. This means these old technologies don't let the fingers work together as a whole hand, as the fingers naturally do with all other handheld tools. Also, traditional touchpads don't spread the workload evenly amongst the fingers the way MultiTouch does, to avoid repetitive stress on one finger.

FingerWorks products include a low-power on-board microprocessor whose first job is to collect and process image data from the MultiTouch sensing surface. It then recognizes, tracks, and interprets finger and hand motion, ultimately generating mouse or key sequences for the host computer's USB port. All FingerWorks products emulate standard USB keyboard & USB mouse, so they simply plug & play on Windows, Mac OS, Linux, and newer Unix operating systems.

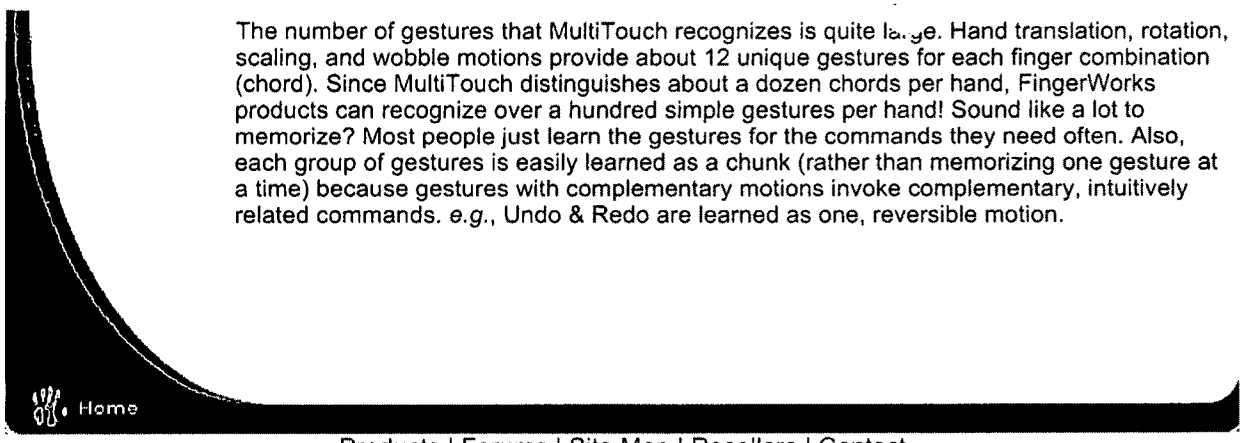
Rich Gesture Capability

MultiTouch technology used as a computer input device provides many new capabilities and benefits. It gives the computer user much more control of graphical and text objects while providing the same functionality of the keyboard and mouse. MultiTouch also eliminates the need to reach for a mouse by providing an interface that enables normal typing and mouse operations over its entire surface. Pointing, gestures, and keys are always available right under the fingers, minimizing wasteful hand motion:

- Touching 1 finger at a time is recognized as a keystroke command.
- Simultaneously dropping two fingertips on the surface initiates pointing.
- Simultaneous thumb and fingertip motions become gesture commands.

MultiTouch can receive and interpret input anywhere on its surface. Operations like copy, cut, paste, save, open, close, scroll, zoom, pan and a host of other multi-key commands are all done with simple, easy-to-repeat, and easy-to-learn gestures.

The number of gestures that MultiTouch recognizes is quite large. Hand translation, rotation, scaling, and wobble motions provide about 12 unique gestures for each finger combination (chord). Since MultiTouch distinguishes about a dozen chords per hand, FingerWorks products can recognize over a hundred simple gestures per hand! Sound like a lot to memorize? Most people just learn the gestures for the commands they need often. Also, each group of gestures is easily learned as a chunk (rather than memorizing one gesture at a time) because gestures with complementary motions invoke complementary, intuitively related commands. *e.g.*, Undo & Redo are learned as one, reversible motion.



Products | Forums | Site Map | Resellers | Contact

Comparing Touch Technologies

We offer touchscreen products with several of the most widely used touchscreen technologies. Each type of screen has unique characteristics that can make it a better choice for certain applications. Follow the links below for information on the different touch technologies that we offer and recommend. Please contact us if you have any questions or would like assistance selecting a touch technology for your application.

4-Wire Resistive Touchscreens
4-Wire Resistive touchscreen technology is used in the touch add-ons that we offer for PC monitors and notebooks. It is a reliable and affordable technology that is widely used by individuals and in less demanding workplace applications. It is pressure sensitive so it responds to any input device, including finger, gloved hand, or pen stylus. Follow this link for more information.

5-Wire Resistive Touchscreens
We offer 5-Wire Resistive touchscreen technology with the CRT and LCD touch monitors that we offer. It is a durable and accurate technology that is widely used in demanding workplace applications such as point-of-sale systems, industrial controls, and medical systems. It is pressure sensitive so it responds to any input device, including finger, gloved hand, or pen stylus. Follow this link for more information.

Capacitive Touchscreens
We offer Capacitive touchscreen technology with the CRT and LCD touch monitors that we offer. It is a durable technology that is used in a wide range of applications including point-of-sale systems, industrial controls, and public information kiosks. It has a higher clarity than Resistive technology, but it only responds to finger contact and will not work with a gloved hand or pen stylus. Follow this link for more information.

PenTouch Capacitive Touchscreens
We offer PenTouch Capacitive touchscreen technology with the CRT and LCD touch monitors that we offer. This screen combines durable Capacitive technology with a tethered pen stylus. The screen can be set to respond to finger input only, pen input only, or both. The pen stylus is a good choice for signature capture, on-screen annotations, or for applications requiring precise input. Follow this link for more information.

Surface Acoustic Wave Touchscreens
We offer Surface Acoustice Wave touchscreen technology with the CRT and LCD touch monitors that we offer. It is a very durable screen that is widely used in applications such as computer based training and information kiosk displays. The SAW screen is a good choice for applications where image clarity is important, but it may not perform well in extremely dirty or dusty environments. Responds to finger or soft rubber tipped stylus. Follow this link for more information.

Near Field Imaging Touchscreens
We offer Near Field Imaging touchscreen technology as one of the custom LCD touch monitor solutions that we can provide. It is an extremely durable screen that is suited for use in industrial control systems and other harsh environments. The NFI type screen is not affected by most surface contaminants or scratches. Responds to finger or gloved hand. Follow this link for more

information.

Infrared Touchscreens
We offer Infrared touchscreen technology with the Plasma display solutions that we offer. This is the only type of touch technology that we have available for large displays such as 42-inch Plasma screens. It is a durable technology that offers high image clarity. Responds to any input device or stylus. Follow this link for more information.

July 25, 2006

Cirque's original GlidePoint® touchpads put computer control at your fingertip. Navigate, scroll, zoom, access files and enter data all with just a light tough of the finger. It's easy, it's comfortable, and installation is a snap.

What's more, GlidePoint® is resistant to environmental damage. From accidental spills to malicious acts of vandalism, GlidePoint® products will continue to function-guaranteed.

Cirque has been at the forefront of capacitive touchpad development for over a decade. Trust our original GlidePoint® technology for on-screen cursor navigation. Create new products with Cirque's circular, linear, and custom capacitive sensors.

Click anywhere you see the glider logo to learn more about these unique touch-input systems.

Highlights

Cirque Introduces Smart Cat PRO®
Our best deskop touchpad is now available with four hotlink zones. Open files, execute programs, browse and more at the touch of a finger.

Contact Us

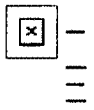
Personal Help.
Cirque's friendly team is still here to point you in the right direction. Call 800-454-3375 or email us.

Desktop touchpads	OEM Modules	Custom applications
Plug-and-play touchpads replace desktop/laptop mice	A series of modules provide developers with	Innovation and simplicity meet to give OEMs the option of touch input

and trackballs for comfortable, easy computer control.

simple, reliable solutions for industrial/ commercial products.

for a wide array of applications - circular and linear touch-pads for embedded solutions.



Technology — Products — Sales — Support — Company — Documents — Software — Home

How do touchscreen monitors know where you're touching?

Touchscreen monitors have become more and more commonplace as their price has steadily dropped over the past decade. There are three basic systems that are used to recognize a person's touch:

- Resistive
- Capacitive
- Surface acoustic wave

The **resistive system** consists of a normal glass panel that is covered with a conductive and a resistive **metallic** layer. These two layers are held apart by spacers, and a scratch-resistant layer is placed on top of the whole setup. An electrical current runs through the two layers while the monitor is operational. When a user touches the screen, the two layers make contact in that exact spot. The change in the electrical field is noted and the coordinates of the point of contact are calculated by the computer. Once the coordinates are known, a special driver translates the touch into something that the operating system can understand, much as a computer mouse driver translates a mouse's movements into a click or a drag.

In the **capacitive system**, a layer that **stores electrical charge** is placed on the glass panel of the monitor. When a user touches the monitor with his or her finger, some of the charge is transferred to the user, so the charge on the capacitive layer decreases. This decrease is measured in **circuits** located at each corner of the monitor. The computer calculates, from the relative differences in charge at each corner, exactly where the touch event took place and then relays that information to the touchscreen driver software. One advantage that the capacitive system has over the resistive system is that it transmits almost 90 percent of the light from the monitor, whereas the resistive system only transmits about 75 percent. This gives the capacitive system a much clearer picture than the resistive system.

On the monitor of a **surface acoustic wave system**, two **transducers** (one receiving and

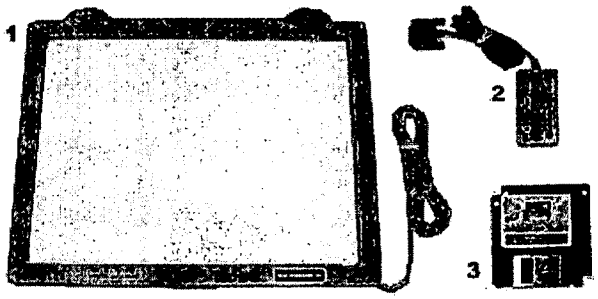
one sending) are placed along the x and y axes of the monitor's glass plate. Also placed on the glass are **reflectors** -- they reflect an electrical signal sent from one transducer to the other. The receiving transducer is able to tell if the wave has been disturbed by a touch event at any instant, and can locate it accordingly. The wave setup has no metallic layers on the screen, allowing for 100-percent light throughput and perfect image clarity. This makes the surface acoustic wave system best for displaying detailed graphics (both other systems have significant degradation in clarity).

Another area in which the systems differ is in which **stimuli** will register as a touch event. A resistive system registers a touch as long as the two layers make contact, which means that it doesn't matter if you touch it with your finger or a rubber ball. A capacitive system, on the other hand, must have a conductive input, usually your finger, in order to register a touch. The surface acoustic wave system works much like the resistive system, allowing a touch with almost any object -- except hard and small objects like a pen tip.

As far as price, the resistive system is the cheapest; its clarity is the lowest of the three, and its layers can be damaged by sharp objects. The surface acoustic wave setup is usually the most expensive.

How Does a Touchscreen Work?

A basic touchscreen has three main components: a touch sensor, a controller, and a software driver. The touchscreen is an input device, so it needs to be combined with a display and a PC or other device to make a complete touch input system.



1. Touch Sensor

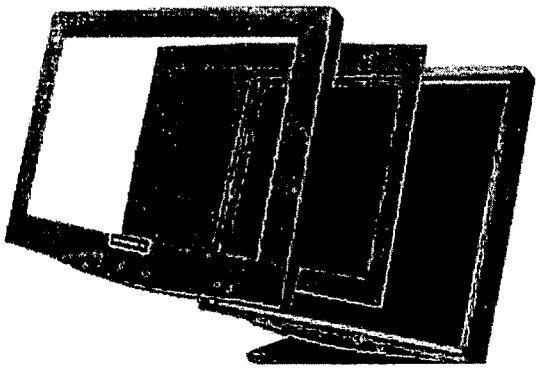
A touch screen sensor is a clear glass panel with a touch responsive surface. The touch sensor/panel is placed over a display screen so that the responsive area of the panel covers the viewable area of the video screen. There are several different touch sensor technologies on the market today, each using a different method to detect touch input. The sensor generally has an electrical current or signal going through it and touching the screen causes a voltage or signal change. This voltage change is used to determine the location of the touch to the screen.

2. Controller

The controller is a small PC card that connects between the touch sensor and the PC. It takes information from the touch sensor and translates it into information that PC can understand. The controller is usually installed inside the monitor for integrated monitors or it is housed in a plastic case for external touch add-ons/overlays. The controller determines what type of interface/connection you will need on the PC. Integrated touch monitors will have an extra cable connection on the back for the touchscreen. Controllers are available that can connect to a Serial/COM port (PC) or to a USB port (PC or Macintosh). Specialized controllers are also available that work with DVD players and other devices.

3. Software Driver

The driver is a software update for the PC system that allows the touchscreen and computer to work together. It tells the computer's operating system how to interpret the touch event information that is sent from the controller. Most touch screen drivers today are a mouse-emulation type driver. This makes touching the screen the same as clicking your mouse at the same location on the screen. This allows the touchscreen to work with existing software and allows new applications to be developed without the need for touchscreen specific programming. Some equipment such as thin client terminals, DVD players, and specialized computer systems either do not use software drivers or they have their own built-in touch screen driver.



Touchscreens Add-ons and Integrated Touchscreen Monitors

We offer two main types of touchscreen products, touchscreen add-ons and integrated touchscreen monitors. Touchscreen add-ons are touchscreen panels that hang over an existing computer monitor. Integrated touchscreen monitors are computer displays that have the touchscreen built-in. Both product types work in the same way, basically as an input device like a mouse or trackpad.

Touchscreens As Input Device

All of the touchscreens that we offer basically work like a mouse. Once the software driver for the touchscreen is installed, the touchscreen emulates mouse functions. Touching the screen is basically the same as clicking your mouse at the same point at the screen. When you touch the touchscreen, the mouse cursor will move to that point and make a mouse click. You can tap the screen twice to perform a double-click, and you can also drag your finger across the touchscreen to

perform drag-and-drop. The touchscreens will normally emulate left mouse clicks. Through software, you can also switch the touchscreen to perform right mouse clicks instead.

FingerWorks

Inventor and Developer of MultiTouch Technology

Cool Products | Customer Support | MultiTouch Technology | News & Events | Company

Product Overview

Shopping Cart

iGesture Products for Everyone (learn in minutes)

iGesture Pad

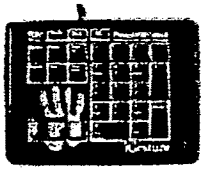
BUY

$ 159

The iGesture Pad doubles as an advanced mouse and gesture command center. Mouse gestures include Point, *Click*, *Right-Click*, *Drag*, *Scroll*, *Back/Forward* and *Zoom*. Command gestures include *Cut*, *Copy*, *Paste*, *Undo*, *Open*, *Save*, *Exit*, and many more! Anyone can learn the basic hand gestures in a few minutes! Slips easily into your travel bag as the perfect external USB pointer for your laptop! Works with Windows, Mac, and Linux PCs thru USB.

---

iGesture NumPad



BUY

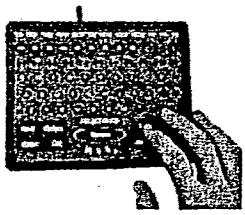
$ 189

The iGesture NumPad adds a 31-key numeric keypad to the basic iGesture Pad. Great for those who do a lot of pointing and number input, or need a programmable keypad with hand gestures. Works with Windows, Mac, and Linux PCs thru USB port.

Reviews: PCWorld MeetTheGeek TechTV HowStuffWorks Read user's comments

---

iGesture Mini Keyboard



BUY

$ 219

Want to save desk space? Need a small keyboard that's easy to clean? The Mini is a complete ZeroForce computer interface that provides a keyboard, mouse, and gesture input all in the same small package. The iGesture Mini Keyboard is great for applications where two-handed touch typing is not the norm. The Mini can be mounted on a wall or just about anywhere for easy access. Works thru USB port with Macs, PCs, Linux, and Suns.
Read user's comments

Gel Pad Accessory

BUY

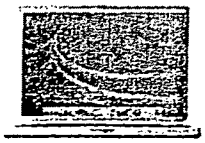
$ 8

1/2" thick ergonomic gel pad matches iGesture surface thickness to keep your wrist straight while using iGesture Products. Or get a pair for use with a TouchStream LP flat on your desk.

Contains soft, high-quality Royal-Medica gel in durable, black Lycra shell.

TouchStream Products for Power Users (not for the novice)

TouchStream MacNTouch

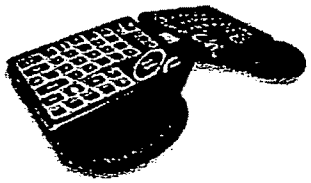


BUY

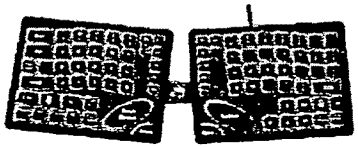
$ 259

Attention PowerBook Owners! This TouchStream has all the functions that the LP has and installs in your PowerBook to give you a ZeroForce TouchStream Keyboard with integrated mouse and gesture input. Replace your existing mechanical keyboard with the TouchStream Mac*N*Touch for a totally new and rewarding experience.

TouchStream LP



BUY $ 339



The most powerful and effective computer interface that money can buy! Say good-bye to the mechanical keyboard and its mouse companion. Enter the TouchStream where Zero-Force touch-typing, pointing, and gesturing combine to give you unparalleled control of applications and graphics. Two-handed gesture set includes text formatting and Photoshop commands, plus game mode! Perfect for the power user, web designer, writer, and computer professional.

The TouchStream LP ZeroForce keyboard is removable from its frame and can be folded into a small package for traveling. You can also place the LP over your notebook's keyboard and instantly transform your laptop into a mobile TouchStream. Works with Mac, Windows, or Linux PC thru USB port. Available with International, US Qwerty, or Dvorak keyboard layouts.

Reviews: Extreme Tech MeetTheGeek
Read user's comments

BUY **Extra Frame for TouchStream LP**

$40

This tented support frame is identical to the one that comes with the TouchStream LP. TouchStream users who transport their LP between work and home find it convenient to keep a frame at each place.

Home

iGesture Pad

BUY Shopping Cart

- Technical Details
- User's Guide
- Gesture Guide
- FAQs

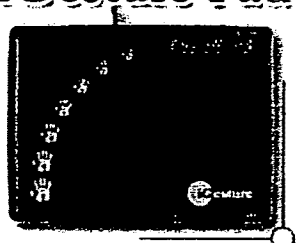
The iGesture Pad is an ultra-thin, large-area, super-duper touchpad that is both mouse and powerful multi-finger gesture command center.

Largest Touchpad Available, Plus MultiTouch!

Mouse operations like point, click, drag, scroll, and zoom can mix seamlessly with multi-finger hand gestures in the same overlapping area of the iGesture's surface. The large surface provides pointing range and precision equivalent to a mouse, unlike those tiny one-finger touchpads! And on the iGesture Pad, drag and double-click are done with simple 3- fingertip slides, not a tricky tap-drag sequence!

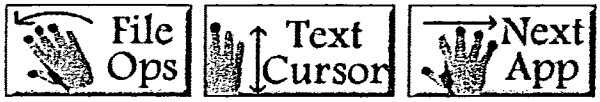
Price: $ 159

iGesture Pad



Dozens of Powerful, Programmable Gestures

The gestures give you unprecedented text editing power and control of graphical objects, and they work equally well with either hand. Anyone can learn the basic hand gestures in a few minutes! Since gestures on the pointing surface emulate most keyboard shortcuts, you won't need to reach back to the keyboard nearly so often! All gestures are fully customizable with the MyGesture Editor.

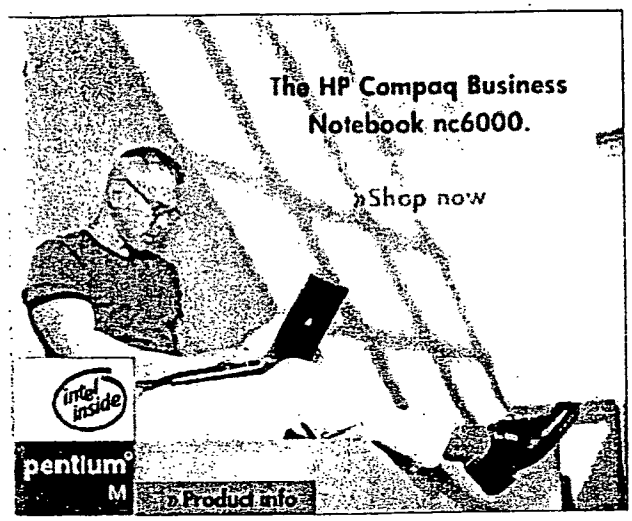


XWinder: The Future of Window Manipulation

Portability with no-hassle USB Plug and Play

The iGesture Pad is highly portable. Slips easily into your travel bag as the perfect external USB mouse/gesture interface for your laptop. Bored at your board meetings? The iGesture Pad is a perfectly silent mouse for stealthy web surfing.

Plugs and plays with Macs, Windows, and Linux.



FingerWorks

Welcome to FingerWorks

Important note!

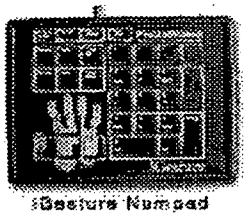
FingerWorks has ceased operations as a business.

If you are experiencing any issues with your FingerWorks product you have the following options:

- This website will continue to serve as a self-help resource for FAQ's, troubleshooting guides and software downloads.
- For service claims please visit the customer support section of this website.

iGesture Pad

FingerWorks products are no longer available for resale, and no further updates to software drivers will be developed.



iGesture Numpad

Thanks to all the customers who bought and used FingerWorks products. We appreciate your patronage, and hope that you continue to enjoy your FingerWorks product.

Customer Support:

User Guides and Tutorials

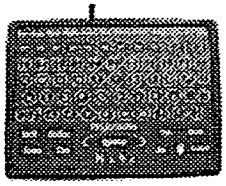
Discussion Forums (read-only)

Downloads and Multitouch Utilities

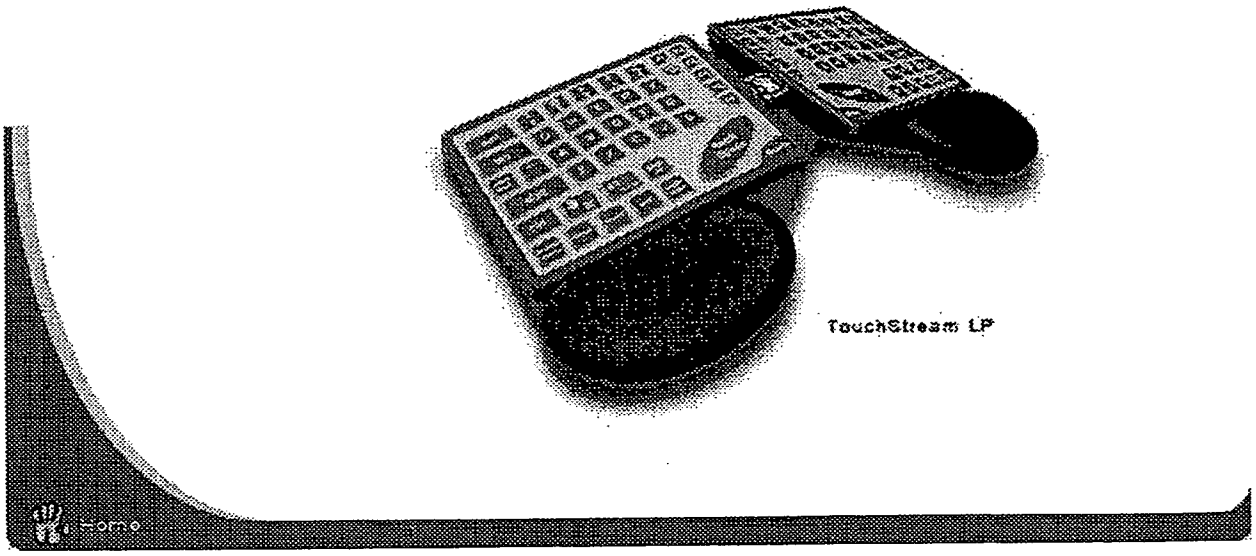
Frequently Asked Questions

Troubleshooting Guide

Support Request Form



TouchStream Mini



Infrared Touchscreens

We offer Infrared touchscreen technology with the Plasma display solutions that we offer. This is the only type of touch technology that we have available for large displays such as Plasma screens. It is a durable technology that offers high image clarity. Responds to any input device or stylus. Please contact us for more information.

TouchScreens.com is owned and operated by Mass Multimedia, Inc. Call: 1-800-348-8610 E-mail: info@touchscreens.com

FingerWorks

Mouse Emulation

Gesture Guide - Click on image or title to view animated gesture operation.

Point - Touch & move any two adjacent fingers - 158K

Click - Tap any two adjacent fingers - 150K

Double Click - Tap three adjacent fingers *once* - 92K

Right Click - Tap thumb, middle & ring fingers - 66K - Shown at right.

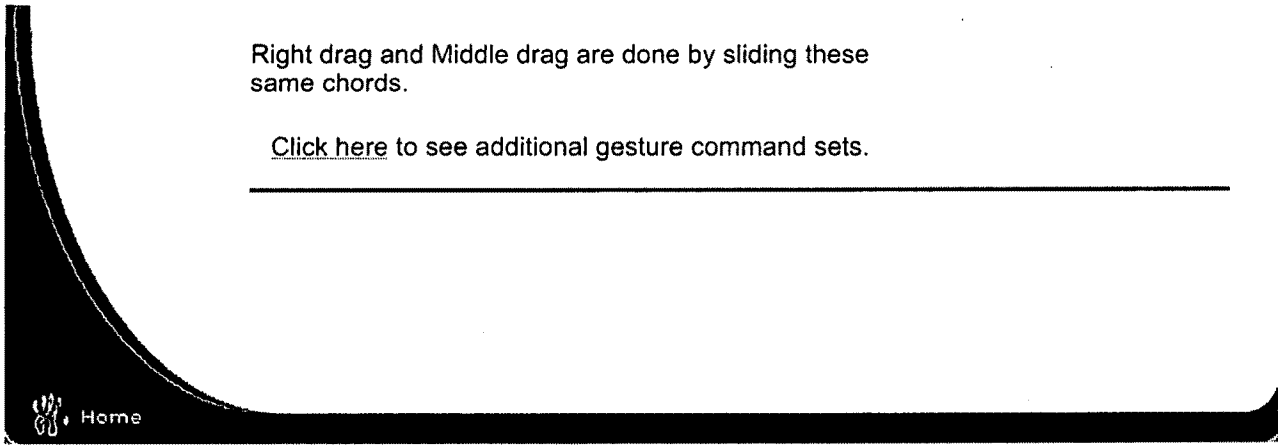
Drag/Select - Touch & move three fingers - 138K

Scroll - Touch & slide up/down four fingers. "Roll" the fingers for fine scrolling. - 161K

If 3-Button Mouse Emulation is turned on, then middle and right click work as follows:

Middle Click (3-button mode)- Tap thumb, index & middle fingertips

Right Click (3-button mode)- *Spread hand* then tap thumb, ring & pinky fingers



Right drag and Middle drag are done by sliding these same chords.

Click here to see additional gesture command sets.

search

OPERA software

SIMPLY THE BEST INTERNET EXPERIENCE

Mouse Gestures in Opera

Opera's amazing mouse gestures lets you do frequently performed browse operations with small, quick mouse movements. Some operations can be done with several different gestures. Try them both and see which one you like better.

Navigation gestures

These gestures help you to navigate faster.

Previous page in history

Hold right button and move mouse left
or.. hold right button and click left button

Next page in history

Hold right button and move mouse right
or.. hold left button then click right button

Go to home page

Double-click in empty window

Window gestures

1. Click and hold right mouse button
2. Move the mouse in the indicated directions
3. Release the right mouse button

Open new document

Move down

Reload

Move up and down

Restore or maximize window

Move up then right

Minimize

Move down then left

Duplicate window

Move down then up

Close document

Move down then right, or move right-left-right

Link gestures

1. Point your mouse to a link
2. Click and hold right mouse button
3. Move the mouse in the indicated directions
4. Release the right mouse button

Open link in a new window in the foreground

Move down

Open link in a new window in the background

Move down then up

Wheel gestures

Scroll up and down

Roll the wheel back and forth

Jump from one window to the next

Hold right mouse button and roll wheel

Zoom in and out

Hold `Ctrl` key down and roll wheel

Move back and forth in page history

Hold Shift key down and roll wheel

Panning

Click wheel then move mouse

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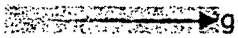
Friday May 21st 2004

Mouse Gestures

rapid execution of common browser commands with mouse movements



What are mouse gestures?

Mouse movements in combination with a click-hold and optionally a modifier that execute some browser functions. You press mouse button, draw a gesture, and release mouse button (you can choose which button to use in advanced preferences). This gesture is recognized and appropriate action is triggered.
For details, visit our Supported Gestures page.

Configurations

Mouse only configuration

The default configuration is with the left mouse and no modifier key. This command set overlaps with the text selection methods. The unaesthetic highlighting feedback aside, it is possible for both functions to coexist. By pausing at the end of a text selection the mouse gesture will be cancelled. Gestures have by default a minimum size of 15 pixels. Pause before canceling gesture and minimal gesture size is configurable.

*nix Configuration

If you've got a middle mouse button, use it!

Other Configuration

To use the drag over link features, a modifier or non-left-mouse click setting is required. (Draging over link with left mouse button is used for drag-and-drop functions, you can for example drag a link to your personal toolbar.) These settings have the additional benefit of eliminating selection feedback and reduces interference with text selection. You can also choose more then one modifier key if you prefer.

Details on adding your own gestures, or disabling current gestures, can be found in this technote.

About

Mouse gestures were first implemented in a browser in Opera. The idea traces back to the 70s with the notion of pie menus.

Andy Edmonds put the original XPI toolbar package together after hearing a reference to the need for this in Mozilla and discovering that Pavol Vaskovic had done all the hard work in building the event listener and configuration utility. See bug 76537. For more on mouse gestures in other applications, see this Eazel thread or recent rambling /. on this implementation. Gestures have also gotten lots of use via their inclusion in the game Black and White and in popular 3d modeling programs like Maya.

For operating system level gestures, see the commercial Windows Sensiva or open source Linux libStroke implementations.

The package also owes a debt to David Isley whose UserAgent Toolbar formed the inspiration for a quick way to get gestures into mozilla. Numerous others have contributed to the individual gesture implementations including Exotrip and the resources at bookmarklets.com, squarefree.

FingerWorks

MultiTouch Overview

MultiTouch technology comprises hardware and software elements for sensing, tracking, and interpreting the motion of multiple hands and multiple fingers on a touch imaging surface.

As a computer interface, MultiTouch is used to enable regular typing, mouse, and gesture input in the same overlapping area of a single surface. MultiTouch can also accept hand written input using a stylus or a fingertip. With MultiTouch, all of the important input modes with the exception of voice (i.e., handwriting, typing, mouse, gesture, force, and attitude) are satisfied with a single sensing surface.

The MultiTouch sensor array is deposited on a flexible or rigid surface that can be made in arbitrary shape, size, and thickness. It has the potential to be manufactured on thin and flexible plastic substrates using extremely low cost methods such as web and roll processing.

- MultiTouch Slide Show
- MultiTouch FAQs

This is image data captured using a low resolution MultiTouch Surface (area: 180 x 400 sq mm). Image frames are generated between 50 and 200 times per second.

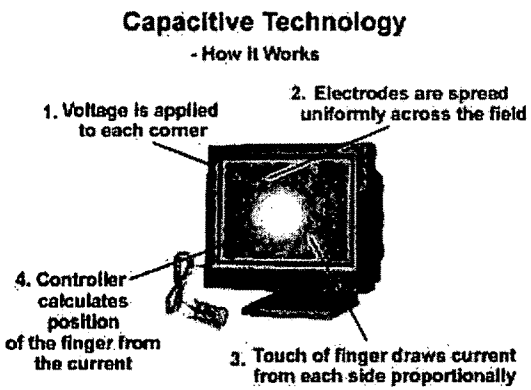
Home

Near Field Imaging Touchscreens

We offer Near Field Imaging touchscreen technology as one of the custom LCD touch monitor solutions that we can provide. It is an extremely durable screen that is suited for use in industrial control systems and other harsh environments. This rugged screen type is not affected by most surface contaminants, scratches, or vibration. Responds to finger or gloved hand. Please contact us for more information.

TouchScreens.com is owned and operated by Mass Multimedia, Inc. Call: 1-800-348-8610 E-mail: info@touchscreens.com

PenTouch Capacitive Touchscreens



The PenTouch Capacitive screen is a durable Capacitive type touchscreen with an attached pen stylus. The PenTouch screen can be set to respond to finger input only, pen input only, or both. A capacitive touch screen consists of a glass panel with a capacitive (charge storing) material coating its surface. Circuits located at corners of the screen measure the capacitance of a person touching the overlay. Frequency changes are measured to determine the X and Y coordinates of the touch event.

Capacitive type touch screens are very durable, and have a high clarity. They are used in a wide range of applications, from restaurant and POS use to industrial controls and information kiosks.

Advantages

- High touch resolution
- High image clarity
- Not affected by dirt, grease, moisture.
- Attached pen stylus for precise input

Disadvantages

- Must be touched by finger or attached pen stylus, will not work with any non-conductive input

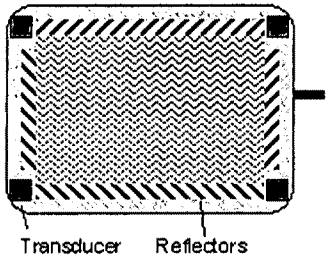
Touchscreen Specifications

Touch Type:	3M PenTouch Capacitive
Cable Interface:	PC Serial/COM Port (9-pin) or USB Port
Touch Resolution:	1024 x 1024
Activation Force:	less than 3 ounces
Light Transmission:	88% at 550 nm wavelength (visible light spectrum)
Durability Test:	100,000,000 plus touches at one point
Temperature:	Operating: -15°C to 50°C Storage: -50°C to 85°C
Humidity:	Operating: 90% RH at max 40°C, non-condensing
Chemical Resistance:	The active area of the touchscreen is resistant to all chemicals that do not affect glass, such as: Acetone, Toluene, Methyl ethyl ketone, Isopropyl alcohol, Methyl alcohol, Ethyl acetate, Ammonia-based glass cleaners, Gasoline, Kerosene, Vinegar
Regulations:	UL, CE, TUV, FCC-B

Soı e Drivers: Windows XP, 2000, NT, ME, 98, 95, 3.1, DOS, Macintosh OS, Linux .x (3rd Party)

TouchScreens.com

Surface Acoustic Wave Touchscreens



Surface Acoustic Wave technology is one of the most advanced touch screen types. It is based on sending acoustic waves across a clear glass panel with a series of transducers and reflectors. When a finger touches the screen, the waves are absorbed, causing a touch event to be detected at that point.

Because the panel is all glass there are no layers that can be worn, giving this technology the highest durability factor and also the highest clarity. This technology is recommended for public information kiosks, computer based training, or other high traffic indoor environments.

Advantages

- High touch resolution
- Highest image clarity
- All glass panel, no coatings or layers that can wear out or damage

Disadvantages

- Must be touched by finger, gloved hand, or soft-tip stylus. Something hard like a pen won't work
- Not completely sealable, can be affected by large amounts of dirt, dust, and / or water in the environment.

Touchscreen Specifications

Touch Type:	Elo IntelliTouch Surface Acoustic Wave
Cable Interface:	PC Serial/COM Port or USB Port
Touch Resolution:	4096 x 4096
Activation Force:	less than 3 ounces
Light Transmission:	90%
Expected Life:	50 million touches at one point
Temperature:	Operating: -20°C to 50°C Storage: -40°C to 71°C
Humidity:	Operating: 90% RH at max 40°C, non-condensing
Chemical Resistance:	The active area of the touchscreen is resistant to all chemicals that do not affect glass, such as: Acetone, Toluene, Methyl ethyl ketone, Isopropyl alcohol, Methyl alcohol, Ethyl acetate, Ammonia-based glass cleaners, Gasoline, Kerosene, Vinegar
Regulations:	UL, CE, TUV, FCC-B
Software Drivers:	Windows XP, 2000, NT, ME, 98, 95, 3.1, DOS, Macintosh OS, Linux, Unix (3rd Party)

Sensiva

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Symbol Commander™
Smart move.

Award-winning, patented Symbol Commander™ software makes the use of your PC, laptop, Tablet PC, and Pocket PC much easier and much faster. It recognizes your handwriting with unparalled performance and executes commands in a snap. Just by using your mouse, pen, or touchpad, simply draw symbols to execute actions instantly.

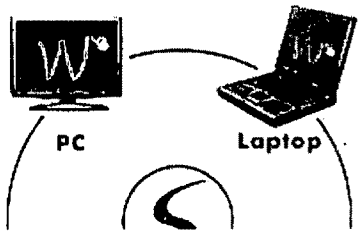
Easier, faster.

Sensiva
Symbol Commander

Hotkeys, menus, sub-sub-sub- menus... Drawing a symbol is faster, easier, and intuitive. Want to launch a word processor? Draw a 'W'. Need help? Draw a '?'. And so on. If you know how to write, then you know how to use your device: PC, laptop, or Pocket PC alike. Symbol Commander's handwriting recognition system is one of the best in the market, so you don't even have to write or draw well. You can have a terrible handwriting, it still works. Could it be simpler?

With a single stroke, you can perform the following easier and a lot faster:

- Start an application
- Execute a command such as copy, paste, save...
- Go to a website
- Navigate through web pages
- Insert pre-defined text
- And more!



Unified, simplified devices.

Symbol Commander works the same on PC, laptop, Tablet PC, and Pocket PC. This means that you don't need to learn how to use different systems anymore.

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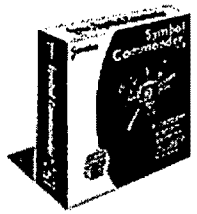

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Symbol Commander™ for Pocket PC: US$39.95
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Press Releases

Toshiba and Sensiva to provide Tablet PC users with award-winning gesture recognition technology

SOTEC licenses Sensiva's award-winning gesture recognition technology for Tablet PC

What the press says

"This is the future for surfing and application computing... For us this is the best software of the year" -- TuDogs more reviews

What customers say

"This is a superb program, and I also found myself

Symbol Commander makes it universally simple. It's easier to draw a simple symbol than to remember and hit hotkeys.

using it automatically." -- Bryan, USA more testimonials

Who uses it

SONY CASIO NEC Synaptics MGLogic WACOM

more...

Screenshots
Click here

Check out also
Symbol Commander™ Professional Edition

Customizable at will.

Everyone is different. Don't like to draw an 'M' for mail, and prefer an 'e' for email? Go ahead and change it. We provide dozens of predefined symbols. Symbol Commander offers the ultimate environment to fill your needs.

Availability and system requirements

- **Symbol Commander for Windows**
  Operating system: Microsoft Windows 98, ME, NT4, 2000, XP
  Languages: English, Japanese, French, German
  Pointing device: any Windows-compatible pointing device such as mouse, pen, touchpad.

- **Symbol Commander for Pocket PC**
  Operating system: Microsoft Pocket PC 2002
  Language: English
  Pointing device: pen

FingerWorks

Tips For Typing

HEALTH WARNING: If you experience symptoms such as persistent or recurring discomfort, pain, throbbing, aching, tingling, numbness, burning sensations or stiffness in your hands, arms, shoulders, neck, or other parts of your body when using a computer, DO NOT IGNORE THESE WARNING SIGNS! PROMPTLY CONSULT YOUR DOCTOR OR PHYSICAL THERAPIST. Ask them for guidance BEFORE trying any new input devices! Remember that pain is likely to increase during the first few days of trying a new device because your body tends to tense up as it is learning new motions and postures. You may also be more susceptible to further injury during this learning period. For this reason, your doctor will probably tell you to restrict use of new devices to short periods of a few minutes a day for the first few days or weeks while your body adjusts!

- **General Typing:**
  Tap each key's symbol lightly but crisply with one finger at a time. Do NOT bang on the keys. Try using the minimum force possible.

- **Hand Resting:**
  To rest a hand without activating keys, drop ALL FIVE fingers SIMULTANEOUSLY anywhere on the surface.

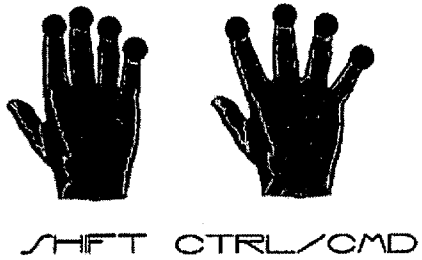
- **Hunt & Peck Typing:**
  Tap each key's symbol lightly but crisply with one finger at a time, taking care not to accidentally tap unintended keys. (It may be easiest to float your hands above the surface while typing, but rest them during pauses).

- **Typematic:**
  To activate 'typematic' or auto-repeat, lift all fingers of a hand off the surface, then touch and hold one finger on the desired symbol. Once that key starts repeating, you can drop the other fingers back onto the surface. To stop typematic, lift any finger off the surface.

- **Modifier Chords (Shifting):**
  Reaching for the *Shift* keys can be even more awkward on a touch surface than on a normal keyboard. Therefore we invented a much more comfortable, zero-reach alternative called *Modifier Chords* that you'll probably want to learn:
  - When ready to capitalize a letter, just drop and hold 4 fingertips from one hand (excluding the thumb). This is the *Shift chord.*

- Type the letter to be capitalized with the opp..ite hand.
  - OR:
- Lift one of the 4 fingertips from the *Shift* chord and use it to tap the letter (while the others stay on surface).
- Lift all 4 of the fingertips off home row. This turns off *Shift*.

The timing is really the same as a regular *Shift* keys. You're just holding 4 fingertips down instead of reaching with your pinky. Modifier chords are also just as flexible as modifier keys:

- Spreading the 4 fingertips wide as you drop them on the surface activates the *Ctrl* chord, which works similarly. On Macs this will be the *Open Apple/Cmd* modifier.
- 

- To type whole words uppercase with a single *Shift* chord, just make sure at least 1 of the 4 fingertips remains on the surface as you type desired letters. (Lift one or two of the 4 fingertips at a time to reach for keys, and leave them down as they drop on target keys).
- *Shift*-click can be done with modifier chords by holding the *Shift* chord with one hand and tapping 2 fingertips with the other hand.
  - OR: *Shift*-click within one hand by dropping 4 fingertips, then lifting and tapping 2 of the 4 simultaneously.
- Be careful not to roll the 4 fingertips as the *Shift* chord begins or you will get scrolling instead.
- When you want to rest a hand, make sure to drop all 5 fingers simultaneously. Resting just 4 fingers may be interpreted as a *Shift* chord.
- Regular modifier keys are still needed for multi-modifier hotkeys like Ctrl-Alt-Delete. Make sure the fingers come down on the Ctrl and Alt keys one at a time--if they strike simultaneously they could be misinterpreted as a two-finger click.

Relax and rest frequently.

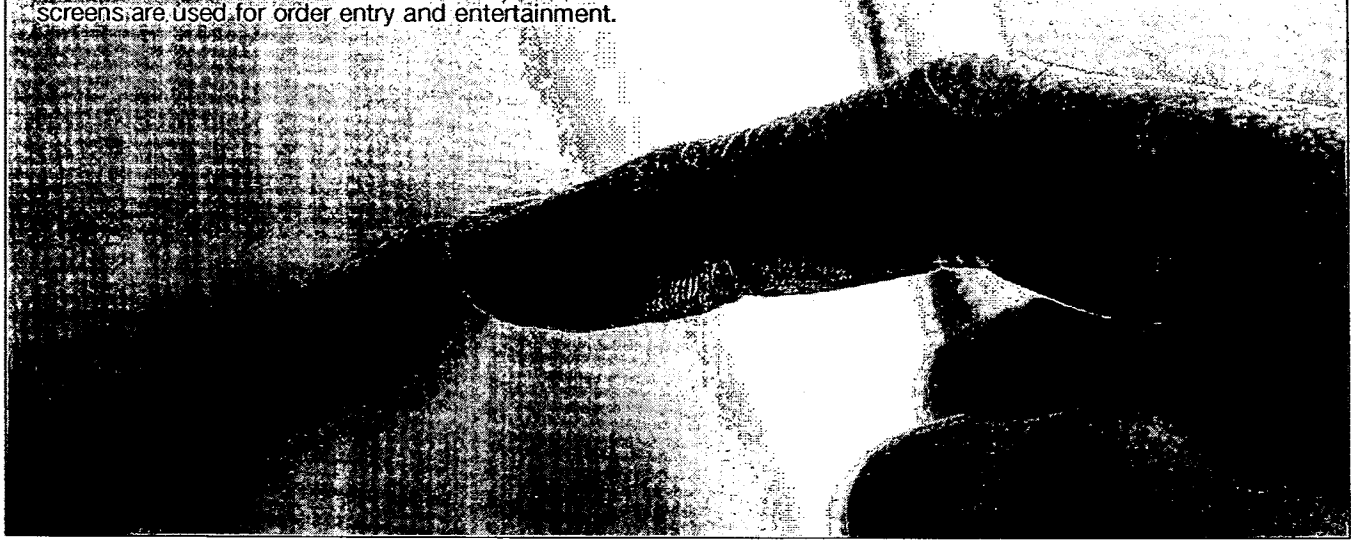
Home

TOUCH TECHNOLOGIES *Overview*

Touch is everywhere

Touch screens are fast becoming the preferred interface between users and their personal, professional, and public access technology. The intuitiveness of touch screens combined with the space-savings, ease-of-use, and extreme durability over keyboards are just a few reasons why touch is so popular. In restaurants, bars, and casinos, touch screens are used for order entry and entertainment.

In industrial environments like assembly lines and factories, touch screens are simplifying process automation. In museums, hotel lobbies, and shopping malls touch-enabled kiosks provide easy access to information. And for children involved in educational training, touch is an instinctive way to interact with computers.



There are several types of touch screen technologies offered by various worldwide manufacturers. Each technology has its own set of characteristics and depending on your touch application, these differences may be viewed as benefits or disadvantages.

Consider the following questions. The answers to these questions will help you begin to understand your touch needs.

Activation
What type of touch activation do you need – finger only, gloved finger, or stylus input.

Options
Do you need touch buttons, drag and drop, or signature capture?

Image Clarity
Is optical clarity the most important requirement?

Space
Do you need a compact screen size?

Sealability
Will your touch screen be exposed to liquids, chemicals, or fluxtuating weather extremes.

Cost
What are your cost requirements?

Reliability
Will the touch screen have to stand up to dust, grease, or shock vibrations.

Durability
Will your touch screen be exposed to harsh environments?
Will it need to be impact resistance?

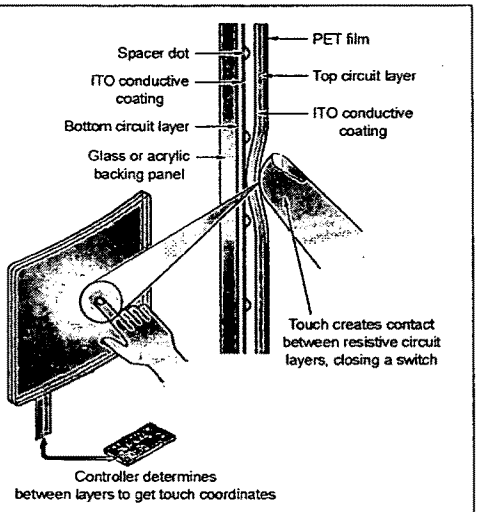
Vandal Resistant
Will the touch screen be in an unattended public environment and subject to abuse?

Power
Do you have specific power requirements or constraints?

TOUCH TECHNOLOGIES *Overview*

Most touch solutions have a touch screen attached to a video display unit. The touch screen works with a controller and a software device driver to sense a touch, determine its location, and transmit the information to the computer's operating system. Touch solutions primarily use one of five technologies, each with characteristics that make it best suited for specific applications.

RESISTIVE



Resistive technology is versatile and economical for applications such as food service and retail point-of-sale, industrial process control and instrumentation, portable and handheld products, and communication devices.

Resistive touch screens have a flexible top layer and a rigid bottom layer separated by insulating dots, with the inside surface of each layer coated with a transparent conductive coating. Voltage applied to the layers produces a gradient across each layer. Pressing the flexible top sheet creates electrical contact between the resistive layers, essentially closing a switch in the circuit.

Advantages
- Value solution
- Activated by any stylus
- High touch point resolution
- Low power requirements

Disadvantages
- Reduced optical clarity
- Polyester surface can be damaged

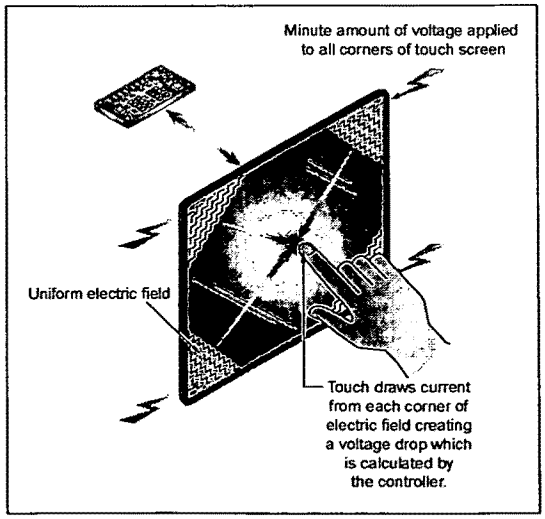
CAPACITIVE

Capacitive technology offers durability, reliability, and optical clarity. Popular applications include gaming machines, ATM installations, kiosks, industrial equipment, and point-of-sale.

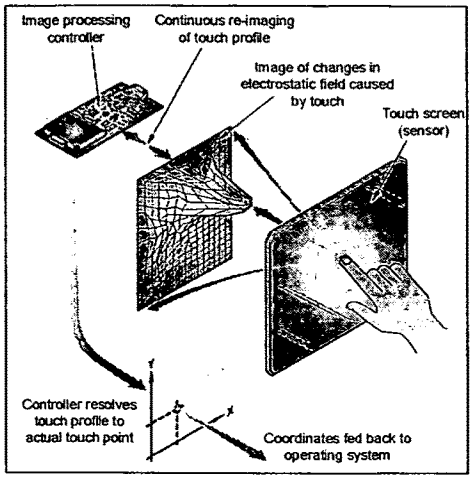
Advantages
- Extremely durable
- Very accurate
- Good optical clarity
- Good resolution

Disadvantages
- Requires bare finger or capacitive stylus
- Severe scratch can affect operation within the damaged area

Capacitive touch screens are curved or flat glass substrates coated with a transparent metal oxide. A voltage is applied to the corners of the overlay creating a minute uniform electric field. A bare finger draws current from each corner of the electric field, creating a voltage drop that is measured to determine touch location.



NEAR FIELD IMAGING™



Near Field Imaging, a projected capacitive technology, is extremely rugged, yet sensitive to touch, making it perfect for harsh industrial environments and unsupervised kiosks.

Near Field Imaging (NFI) touch screens consist of two laminated glass sheets with a patterned coating of transparent metal oxide between. An AC signal is applied to the patterned conductive coating, creating an electrostatic field on the surface of the screen. When a finger – gloved or ungloved – or other conductive stylus comes into contact with the sensor, the electrostatic field is disturbed.

Advantages
- Good optical clarity
- Extremely durable – scratch and debris resistant glass front
- Operates with fingers, gloves or or conductive stylus
- Accurate – even under harsh conditions

Disadvantages
- Slightly less touch resolution

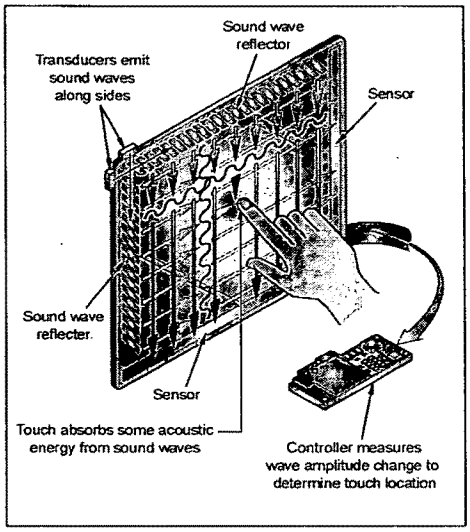
ACOUSTIC WAVE

Because of its high optical clarity and accuracy, acoustic wave technology is typically used in kiosk applications.

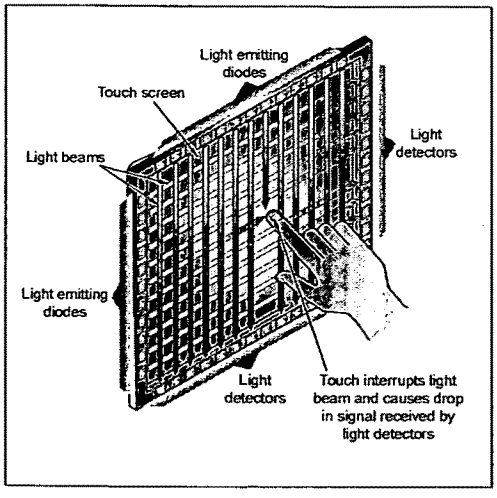
Advantages
- Good optical clarity
- Z-axis capability
- Durable glass front

Disadvantages
- Requires finger or sound absorbing stylus
- Difficult to industrialize
- Signal affected by surface liquids or other contaminants

Acoustic wave touch screens use transducers mounted at the edge of a glass overlay to emit ultrasonic sound waves along two sides. These waves are reflected across the surface of the glass and received by sensors. A finger or other soft tipped stylus absorbs some of the acoustic energy and the controller measures the amplitude change of the wave to determine touch location.



INFRARED



Infrared touch screens are primarily used for large displays, banking machines, and in military applications.

Infrared touch screens are based on light-beam interruption technology. Instead of an overlay on the surface, a frame surrounds the display. The frame has light sources, or light emitting diodes (LEDs) on one side and light detectors on the opposite side, creating an optical grid across the screen. When an object touches the screen, the invisible light beam is interrupted, causing a drop in the signal received by the photosensors.

Advantages
- 100% light transmission (not an overlay)
- Accurate

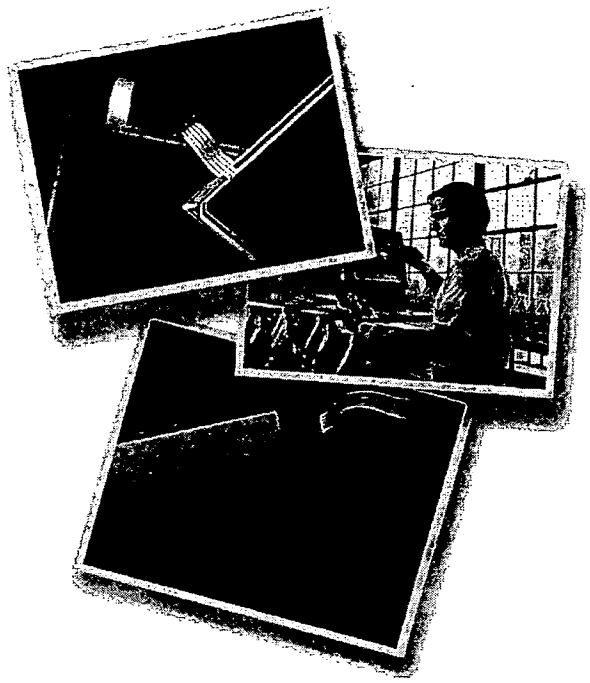
Disadvantages
- Costly
- Low reliability (MTBF for diodes)
- Parallax problems
- Accidental activation
- Low touch resolution
- No protection for display surface

3M TOUCH SOLUTIONS

Now that you've thought about the touch requirements and limitations of your application, and the advantages and disadvantages of each technology, give us your most challenging touch application and we'll give you a solution.

MicroTouch™ Touch Screens

Your satisfaction is our success. Purchase off-the-shelf components for quick and easy touch product development or work with our engineers to create custom solutions. You can choose from our capactive product line, known for exceptional clarity and durability, with ClearTek™ capacitive for public-use applications, and Near Field Imaging™ projected capacitive for those extremely harsh touch environments. For resistive solutions, we'll assist you in choosing from FG and PL constructions, using 4-, 5-, or 8-wire designs to help you get the best resistive product for your application.



3M

3M Touch Systems
3M Optical Systems Division
300 Griffin Brook Park Drive
Methuen, MA 01844
U.S.A.

www.3Mtouch.com

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Technology

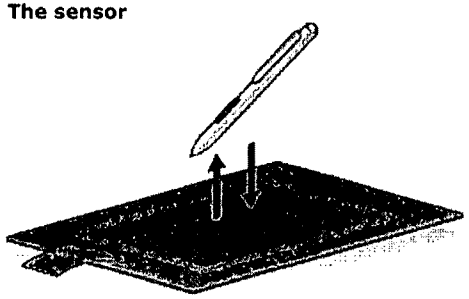
WACOM patented its EMR (Electro-Magnetic Resonance) send and position sensing technology over 14 years ago. We also call it the Electro-Magnetic Send and Receive method, as we will explain below. WACOM has recently invested in re-branding it's EMR Send and Receive method and renamed it Penabled®. Penabled® by WACOM is the new technology brand for our novel EMR technology, and it is identical in terms of the core technology we have being using over the last decade and a half.

How it's made

A component-less printed circuit board where the copper tracks provide a multitude of over-lapping antenna coils in both the x and y directions. The p.c.b. is manufactured from glass epoxy or PET film. Underneath the sensor is a magnetic reflector used to enhance and shield the magnetic field. The sensor is placed underneath and penetrates the display. Hence there is no transmission loss of the display, and also since the sensor is embedded behind the display it is not prone to damage.

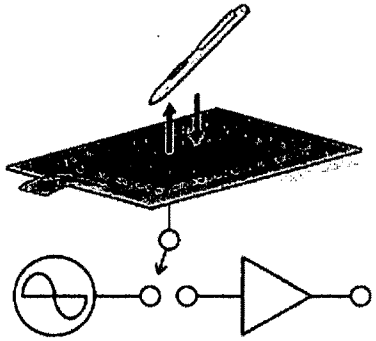
How it works

The sensor



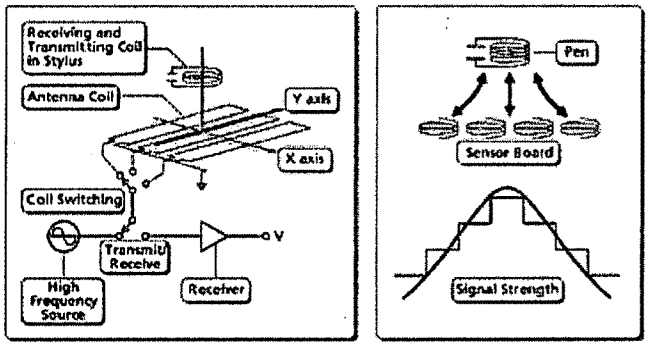
Each antenna coil is energized in turn. This generates a close coupled field in the h-domain at a very low energy level (< -25dbuA) and resonant frequency.

The pen



This energy couples with a tank circuit which is located in the pen. The pen is battery-less. It is the simplest type of EMR pen, and contains just an inductor & capacitor in its simplest embodiment. The inductance and capacitance values of the tank circuit are selected to match the resonant frequency of the antenna coil.

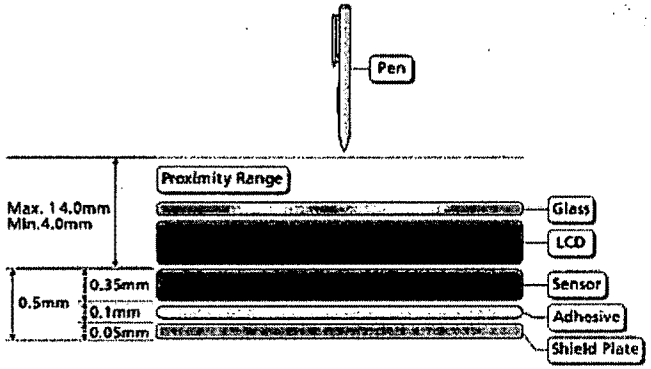
Getting the position



The coupled energy resonates with the tank circuit and reflects back towards the sensor board by forming a shaped h-domain field at the tip of the pen.

As this happens the same antenna coil is switched to receive this reflected energy and provide an analogue signal. This process is repeated in rapid succession with all antenna coils.

All of this analogue data is then collected and converted into digital signals that can be post-processed to give x, y and z position information.

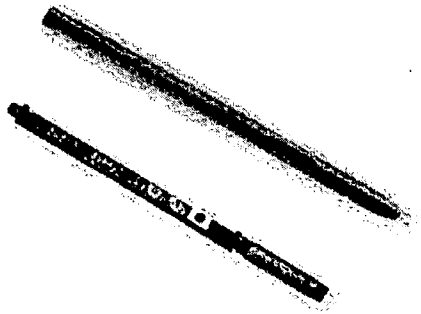


The pen has to be a maximum of 14mm from the sensor surface for it to be acquired. The sensor can track the pen in 3 dimensions as it hovers above it. The sensor only detects a "pen down" signal when pressure is applied to the pen tip.

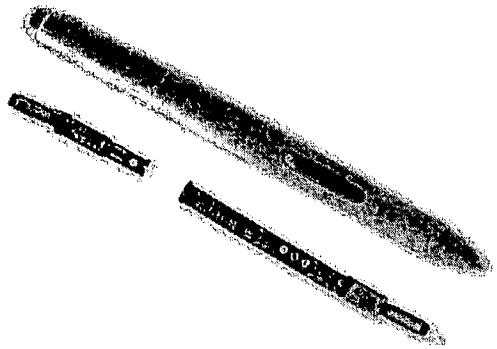
Additional data

Pressure

Depending on the technology in the pen we can also provide varying levels of pressure up to 1024. There are two main systems we employ. One uses a change in the phase angle part of the inductance at the pen tip. The other uses the same philosophy but on the capacitance part.



The MP-200-00 or "Slim Pen" above, uses inductive change and gives up to 256 levels of pressure. By using this method the pen diameter can be as thin as 5 mm.

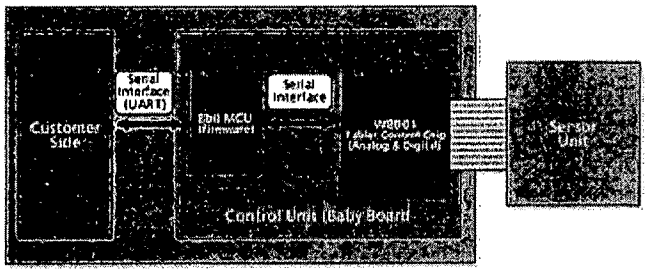


The UP-813E uses capacitive change by virtue of another proprietary WACOM component, the "C-Switch". This allows up to 1024 levels of pressure.

Other functions
Also by having a switch in the pen to alter slightly the resonance frequency, you can detect additional tools such as a side-switch or eraser.

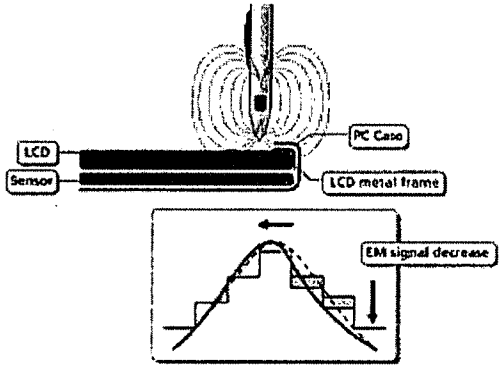
Another unique feature of our EMR technology is the ability to detect pen tilt up to 50 degrees in any direction.

Wher does the data go?

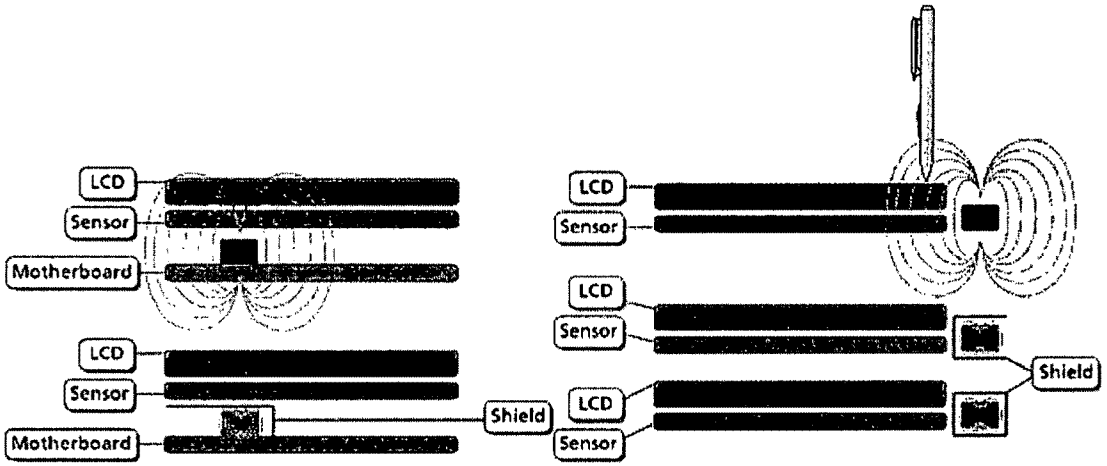


Once the raw data is gathered from the sensor board by our custom W8001 ASIC, it is relayed to a standard 8-bit MCU which calculates x, y, z, pressure, and tilt data.

We also perform error correction calculations to counteract distortions in the electromagnetic field caused by external influences.



Distortions can occur especially at the edge of the sensor when combined with an LCD, because many LCD's have metal frames around them.



Also inductive components, such as switching transformers used in backlights and DC-DC convertors.

This corrected data is then transferred to the host microprocessor through either an asynchronous serial interface (e.g. UART) or a synchronous serial interface (e.g. SSI, SPI, I2C). This data can then be read by the pen driver resident in the host OS.

Penabled WACOM

Watershed Algorithm

Author: Christopher Mei (christopher.mei at sophia.inria.fr)

History: 2003/12/15 : First version

Requires: ImageJ 1.31p or later, which adds the ability to package plugins in JAR files

Source: Contained in Watershed_Algorithm.jar, which can be opened using a ZIP utility

Installation: Download Watershed_Algorithm.jar to the plugins folder, or subfolder, restart ImageJ, and there will be a new *Plugins/Filters/Watershed Algorithm...* command.

See Also: Watershed plugin by Daniel Sage
Process/Binary/Watershed command

Description: This algorithm is an implementation of the watershed immersion algorithm written by Vincent and Soille (1991).

```
@Article{Vincent/Soille:1991,
    author =        "Lee Vincent and Pierre Soille",
    year =          "1991",
    keywords =      "IMAGE-PROC SKELETON SEGMENTATION GIS",
    institution =   "Harvard/Paris+Louvain",
    title =         "Watersheds in digital spaces: An efficient algorithm
                     based on immersion simulations",
    journal =       "IEEE PAMI, 1991",
    volume =        "13",
    number =        "6",
    pages =         "583--598",
    annote =        "Watershed lines (e.g. the continental divide) mark the
                    boundaries of catchment regions in a topographical map.
                    The height of a point on this map can have a direct
                    correlation to its pixel intensity. WIth this analogy,
                    the morphological operations of closing (or opening)
                    can be understood as smoothing the ridges (or filling
                    in the valleys). Develops a new algorithm for obtaining
                    the watershed lines in a graph, and then uses this in
                    developing a new segmentation approach based on the
                    {"}depth of immersion{"}.",
}
```

A review of Watershed algorithms can be found at : http://www.cs.rug.nl/~roe/publications/parwshed.pdf

```
@Article{RoeMei00,
    author =        "Roerdink and Meijster",
    title =         "The Watershed Transform: Definitions, Algorithms and
                     Parallelization Strategies",
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volume =        "41",
publisher =     "IOS Press",
year =          "2000",
}
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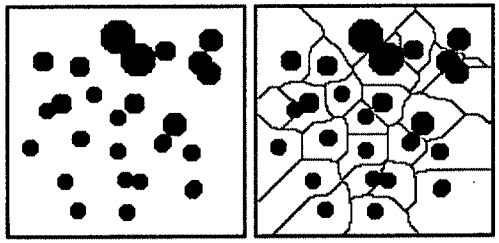


The image on the left represents the type of result obtained from the thresholding of classical images where Watershed segmentation is efficient. This could be a picture of coffee beans, blood cells, sand ...
The segmentation on the right was obtained with the following operations : invert image (*Edit/Invert*), calculate the distance transform (*Process/Binary/Distance Map*), invert result, apply Watershed.

|**Plugins** | **Home** |

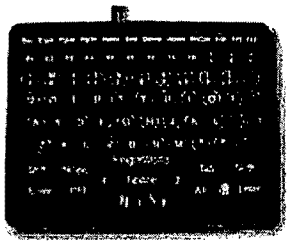
FingerWorks

Application Control

Show Desktop - Touch **spread** thumb & three fingers. Slide left.

Exit Application - Touch & rotate CW **spread** thumb & three fingers

Application Switch - ***Spread hand*** then touch three fingers & thumb and slide left or right. Slide *crisply* to advance just one window, or *gradually* to scroll through whole list.



Mini

Home

FingerWorks

Editing Gestures

Editing - Click on action to view animated gesture operation.

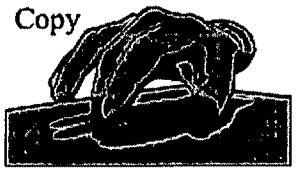
Cut - Touch & pinch thumb & middle finger. *Combine with Shift for Append Cut in some apps.*

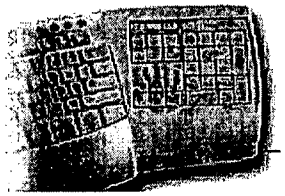
Copy - Tap thumb & middle finger - Shown at right

Paste - Touch & expand thumb & middle finger. *Combine with Shift for Paste Special... in some apps.*

Undo/Redo - Touch & slide thumb & middle finger up/down. Slide *quickly & crisply* to undo just one step, or *gradually* for multiple steps.

Tab/BackTab - Touch & slide thumb & middle finger right/left. Slide *quickly & crisply* for just one tab, or *gradually* for repetitive tabs.





Click here to see additional gesture command sets.

Home

FingerWorks

File Op Gestures

File Operations - Click on action to view animated gesture operation.

Open - Touch & rotate CCW thumb & three fingers

Close - Touch & rotate CW thumb & three fingers

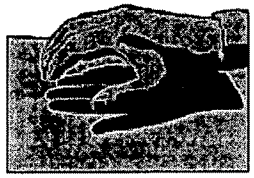
Save - Touch & contract thumb & three fingers. *Combine with Shift for Save As... in some apps.*

New - Touch & expand thumb & three inner fingers

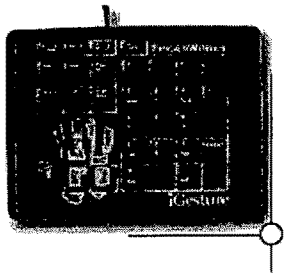
Print - ***Pre-spread your hand***, then touch & further expand thumb & three outer fingers

Next File - Touch and slide thumb & three fingertips to the left (only works in some editors).

Prev File - Touch and slide thumb & three fingertips to the right (only works in some editors).



iGesture NumPad



FingerWorks

Text Cursor

Text Manipulation - Click on action to view animated gesture operation.

Arrows - Touch & slide any finger to move text cursor. *Also use to scroll thru command history at cmd prompt!*

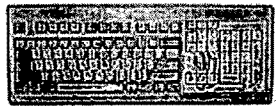
Text Select - Touch & slide up/down three **spread** fingers

Tab/Back Tab - Touch thumb & middle finger and slide left/right. *Also navigates between fields in dialog boxes and spreadsheets!*

Home/End - Touch four **spread** fingers & slide left/right. *Lets you quickly jump to beginning or end of line, combine with Ctrl for beginning/end of document.*

PgUp/PgDn - Touch four **spread** fingers & slide up/down.

Put it all together for a quick way to cut several whole lines:



- **ARROWS** slide any finger to get to first line:

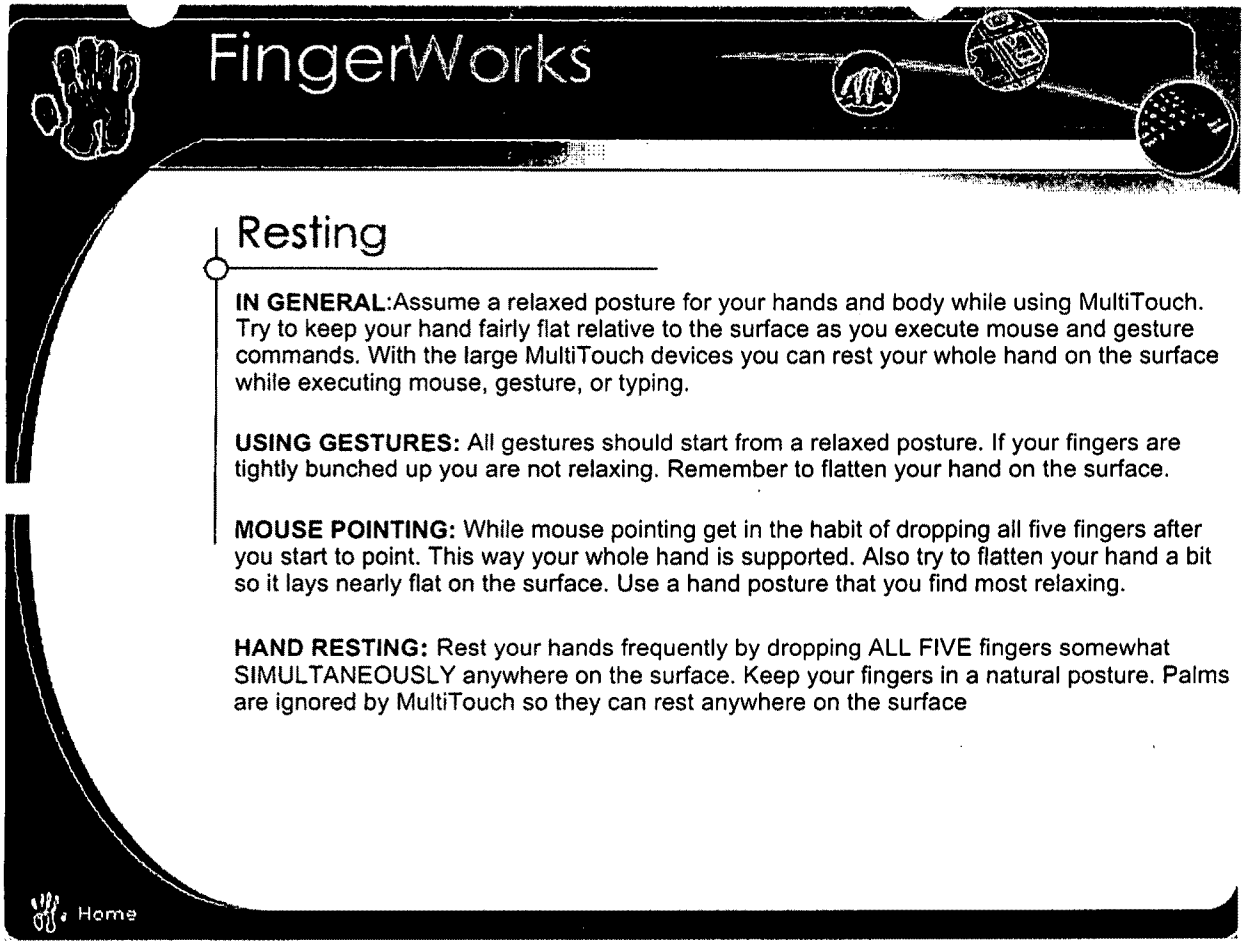
- **HOME** to get to the beginning of the line:

line: 

- **SELECT** by sliding down to last line: 
- **CUT** with thumb-fingertip pinch: 

How fast can YOU do it?

Home



FingerWorks

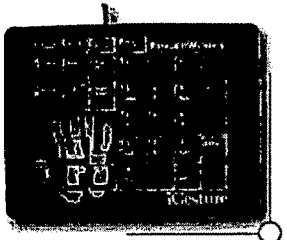
iGesture

Technical Details

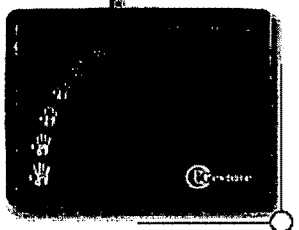
- System Requirements
- MultiTouch active area: 6.25 inches by 5 inches
- Dimensions: 0.31 x 7.1 x 5.5 inches
- Interface: USB (standard keyboard and mouse)
- Power: 150 mA
- Gesture set: Full single hand (left or right, auto detect)
- Standard number pad and text cursor control keys
- Drivers: Standard mouse and keyboard
- Warranty: 1 year

User's Guide
Gesture Guide
FAQs

iGesture NumPad



iGesture Pad



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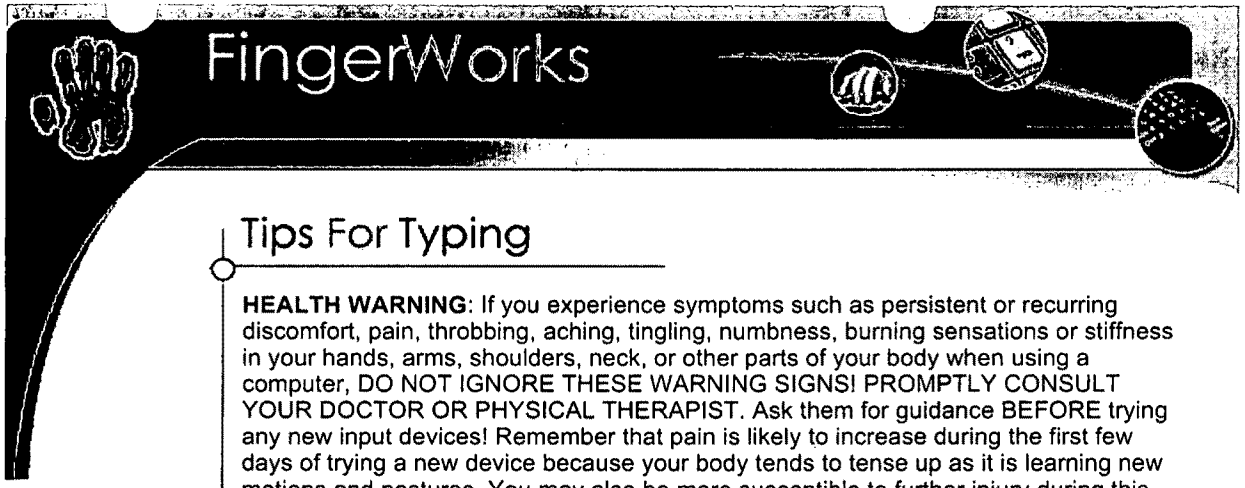


Tips For Typing

HEALTH WARNING: If you experience symptoms such as persistent or recurring discomfort, pain, throbbing, aching, tingling, numbness, burning sensations or stiffness in your hands, arms, shoulders, neck, or other parts of your body when using a computer, DO NOT IGNORE THESE WARNING SIGNS! PROMPTLY CONSULT YOUR DOCTOR OR PHYSICAL THERAPIST. Ask them for guidance BEFORE trying any new input devices! Remember that pain is likely to increase during the first few days of trying a new device because your body tends to tense up as it is learning new motions and postures. You may also be more susceptible to further injury during this learning period. For this reason, your doctor will probably tell you to restrict use of new devices to short periods of a few minutes a day for the first few days or weeks while your body adjusts!

- **General Typing:**
  Tap each key's symbol lightly but crisply with one finger at a time. Do NOT bang on the keys. Try using the minimum force possible.

- **Hand Resting:**
  To rest a hand without activating keys, drop ALL FIVE fingers SIMULTANEOUSLY anywhere on the surface.

- **Hunt & Peck Typing:**
  Tap each key's symbol lightly but crisply with one finger at a time, taking care not to accidentally tap unintended keys. (It may be easiest to float your hands above the surface while typing, but rest them during pauses).

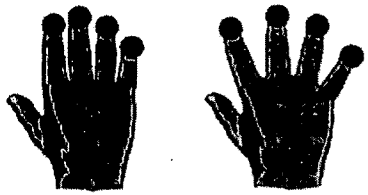
- **Typematic:**
  To activate 'typematic' or auto-repeat, lift all fingers of a hand off the surface, then touch and hold one finger on the desired symbol. Once that key starts repeating, you can drop the other fingers back onto the surface. To stop typematic, lift any finger off the surface.

- **Modifier Chords (Shifting):**
  Reaching for the *Shift* keys can be even more awkward on a touch surface than on a normal keyboard. Therefore we invented a much more comfortable, zero-reach alternative called *Modifier Chords* that you'll probably want to learn:
  - When ready to capitalize a letter, just drop and hold 4 fingertips from one hand (excluding the thumb). This is the *Shift chord*.

- Type the letter to be capitalized with the opp[illegible]e hand.
  - OR:
- Lift one of the 4 fingertips from the *Shift* chord and use it to tap the letter (while the others stay on surface).
- Lift all 4 of the fingertips off home row. This turns off *Shift*.

The timing is really the same as a regular *Shift* keys. You're just holding 4 fingertips down instead of reaching with your pinky. Modifier chords are also just as flexible as modifier keys:

- Spreading the 4 fingertips wide as you drop them on the surface activates the *Ctrl* chord, which works similarly. On Macs this will be the *Open Apple/Cmd* modifier.
-



- To type whole words uppercase with a single *Shift* chord, just make sure at least 1 of the 4 fingertips remains on the surface as you type desired letters. (Lift one or two of the 4 fingertips at a time to reach for keys, and leave them down as they drop on target keys).
- *Shift*-click can be done with modifier chords by holding the *Shift* chord with one hand and tapping 2 fingertips with the other hand.
  - OR: *Shift*-click within one hand by dropping 4 fingertips, then lifting and tapping 2 of the 4 simultaneously.
- Be careful not to roll the 4 fingertips as the *Shift* chord begins or you will get scrolling instead.
- When you want to rest a hand, make sure to drop all 5 fingers simultaneously. Resting just 4 fingers may be interpreted as a *Shift* chord.
- Regular modifier keys are still needed for multi-modifier hotkeys like Ctrl-Alt-Delete. Make sure the fingers come down on the Ctrl and Alt keys one at a time--if they strike simultaneously they could be misinterpreted as a two-finger click.

Relax and rest frequently.

Home

FingerWorks

Inventor and Developer of MultiTouch Technology

iGesture Pad

BUY Shopping Cart

- Technical Details
- User's Guide
- Gesture Guide
- FAQs

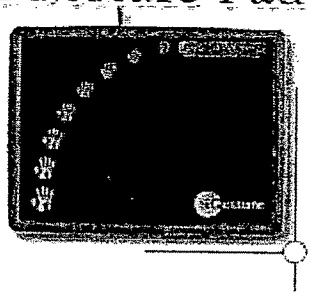
The iGesture Pad is an ultra-thin, large-area, super-duper touchpad that is both mouse and powerful multi-finger gesture command center.

Largest Touchpad Available, Plus MultiTouch!

Mouse operations like point, click, drag, scroll, and zoom can mix seamlessly with multi-finger hand gestures in the same overlapping area of the iGesture's surface. The large surface provides pointing range and precision equivalent to a mouse, unlike those tiny one-finger touchpads! And on the iGesture Pad, drag and double-click are done with simple 3- fingertip slides, not a tricky tap-drag sequence!

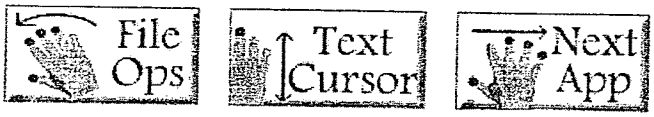
Price: $ 159

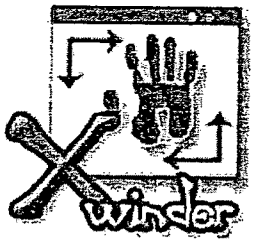
iGesture Pad



Dozens of Powerful, Programmable Gestures

The gestures give you unprecedented text editing power and control of graphical objects, and they work equally well with either hand. Anyone can learn the basic hand gestures in a few minutes! Since gestures on the pointing surface emulate most keyboard shortcuts, you won't need to reach back to the keyboard nearly so often! All gestures are fully customizable with the MyGesture Editor.





XWinder: The Future of Window Manipulation

Portability with no-hassle USB Plug and Play

The iGesture Pad is highly portable. Slips easily into your travel bag as the perfect external USB mouse/