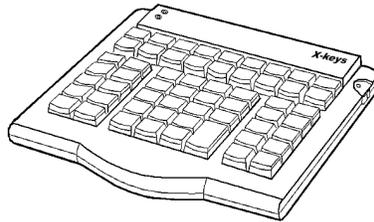
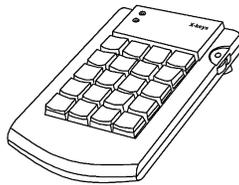


X-keys[®]

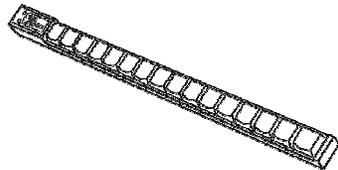
USB Programmable Keyboards by
P.I. Engineering, Inc.



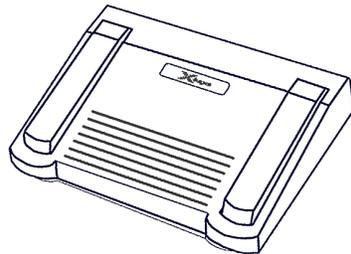
X-keys[®] Pro
(58 keys)



X-keys[®] Desktop
(20 keys)



X-keys[®] Stick
(16 keys)



X-keys[®] Foot Pedal
(3 keys)

Product Manual

P.I. Engineering, Inc.
101 Innovation Parkway
Williamston, Michigan 48895-1663

517•655•5523
FAX 517•655•4926
e-mail: info@ymouse.com
www.xkeys.com

September, 03



"The No Slogan Company"

X-keys USB Programmable Keyboards - Quick Start

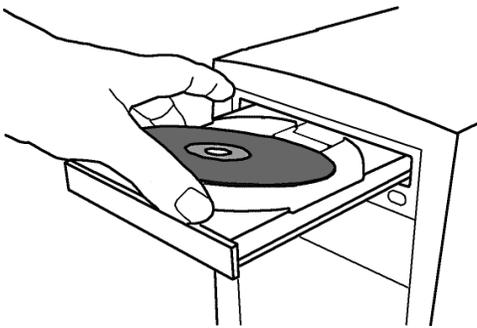
Compatibility:

Programming of an X-keys USB device requires our programming driver which is compatible with Windows 98, Me, 2000, and XP, as well as Macintosh OS 9.x. The USB X-keys will playback keystrokes just like a standard USB keyboard on any system which supports USB connection. This includes the vast majority of Windows based PCs as well as Macintosh and some Unix based systems.

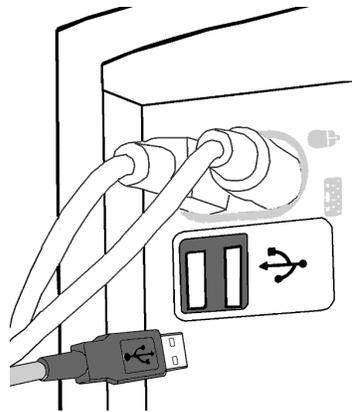
Note: Since the X-keys retains programming in its onboard non-volatile memory, it is possible to program an X-keys on a compatible Windows or Macintosh operating system and use the X-keys on another operating system (like Mac OS-X or Unix). Other restrictions may apply. Contact our technical support department for more information.

How to Install Your USB X-keys Device for Programming:

For Windows Systems:



1. Insert the X-keys CD ROM and run "Xkeyswxp.exe"



2. Plug in X-keys



3. Slide the switch to programming position

4. Windows will recognize new hardware and prompt you through the installation.

5. Installation is now complete.

For Macintosh Systems:

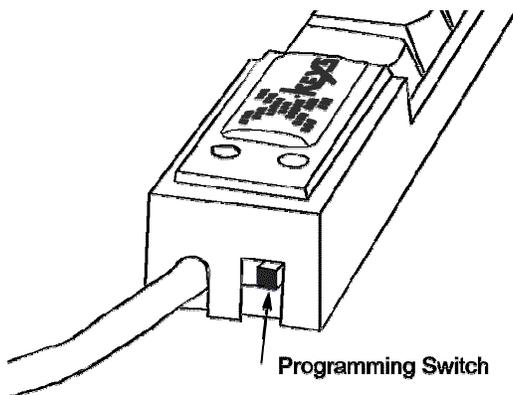
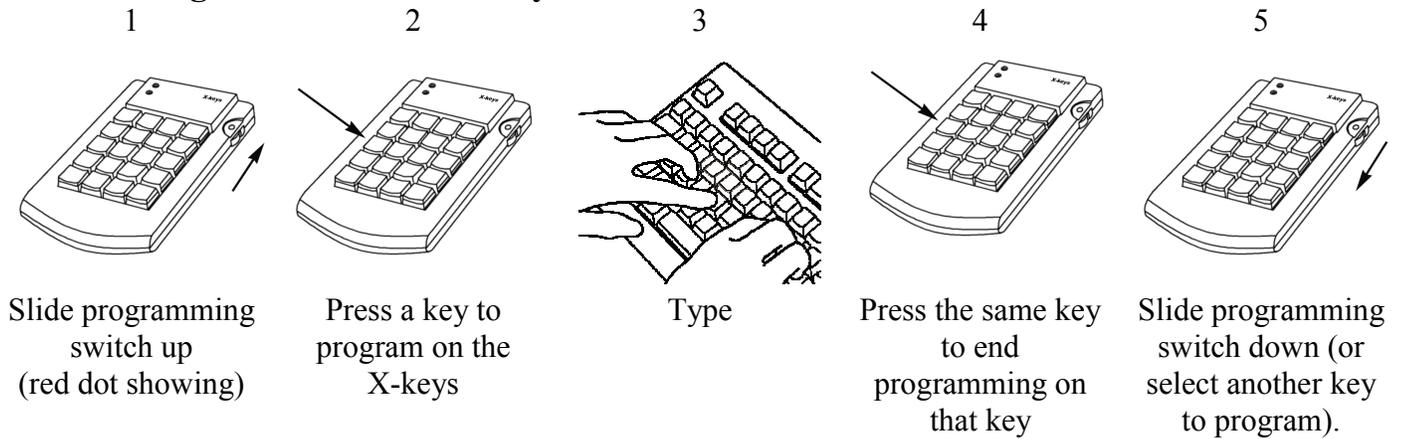
1. Boot your system with OS-9.x
2. Plug in the X-keys
3. Insert the X-keys CD ROM
4. Drag the file "USBxKEY.hqx" to the "Extensions" Folder
5. Installation is now complete.

Should you encounter difficulty installing any of our X-keys products, please contact our technical support department:

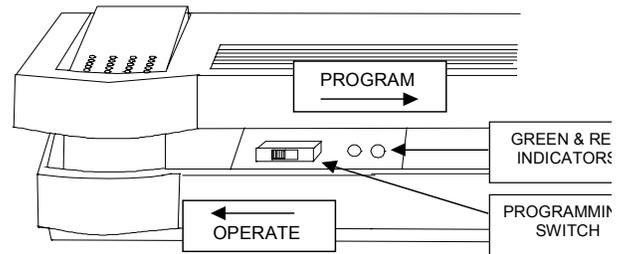
Phone: (517) 655-5523 or (800) 628-3185

E-mail: tech@xkeys.com

How to Program Your USB X-keys Device:



On the X-keys Stick, the programming switch is located on the end nearest the cord. Slide the switch toward the cord for Programming Mode, and away from the cord for Operating Mode.



On the X-keys Foot Pedal, the programming switch is located under the center pedal, about an inch left of center. Use a non-metallic object like a Popsicle stick to slide the switch.

How to Use Your X-keys:

Each key on the X-keys can record a series of keystrokes or key combinations, as they are typed on the keyboard and accurately reproduce the sequence every time the key is hit. From your computer's point of view, playback from the X-keys is the same as rapid typing from the keyboard.

Programming Tips:

The X-keys records the exact sequence of each key pressed and released while it is programming. Since the X-keys does not record the time between keystrokes, you may type slowly and accurately. When typing key combinations, it is very important to get the sequence correct. Just as typing an uppercase C requires that the C key is pressed before the Shift key is released, so does the keyboard shortcut Ctrl + C require the C to be pressed before the Ctrl key is released. If the Ctrl key is released before the C key is pressed, the X-keys will record them as separate keystrokes, and not a key combination.

Reprogramming the Keys:

Reprogramming a key is as simple as reselecting it. Follow the same steps you use for programming.

Identifying the Keys:

The cardstock grid included with your X-keys is provided for hand written legends. The keycaps snap off with a fingernail or small screwdriver. Fit the label under the keycap, and replace it. To print legends on a laser or inkjet printer, go to our web site (www.xkeys.com) for templates formatted for popular applications. The key caps hold a legend 0.575" wide and 0.5" high (14.6mm x 12.7mm).

Horizontal and Vertical Double-keys:

Horizontal and/or vertical double-keys can replace two single keys on the X-keys Pro and/or X-keys Desktop. One of the keys must be erased and the other key programmed BEFORE applying the double key cap. To erase a key, select it for programming, press and release the Esc key three times, and select the key again. To install a double key cap, remove two adjacent keys, with the provided key-puller by positioning the key-puller teeth under the key and pulling straight up on the key cap. Press the double-key in place over the two exposed switch stems.

NOTE: Various assortments of horizontal, vertical and large square replacement keys are available from P.I. Engineering.

Programming a Second Layer:

Each key on the X-keys can have two separate functions, one on the green layer, and another on the red layer. The green and red layer indicators on the X-keys show which layer is active. The green layer is active by default. To use the red layer, you must first program a "layer toggle key" (see "**Single Key Special Programming Features**" below).

Programming Multiple X-keys:

P.I. Engineering offers software which copies data from one X-keys to multiple, identical units. Contact Tech Support for more information. E-mail: tech@ymouse.com or phone: (517)-655-5523.

Special Programming Features:

All special programming features on the X-keys are accessed by the same steps:

1. Slide the programming switch to put the X-keys into programming mode (the layer indicator will blink).
2. Tap the key that you want to program (the layer indicator will double-blink).
3. Press and hold the Esc key.
4. Press and release the associated command key (see table and instructions below).
5. Release the Esc key.
6. Confirm programming on the key (the layer indicator will blink).
7. Slide the programming switch back to the operating position (the layer indicator will glow steadily).

Once you become familiar with the special programming features on the following pages, this list of key commands serves as a useful reference.

Command Symbol Legend

- Ⓚ indicates when to press and hold a key down
- ▼ indicates when to tap a key
- Ⓜ indicates when to release the key.
- ◁ Chevrons indicate the key to be pressed

NOTE: All numbers are on the alphanumeric section of the keyboard (not the number pad).

Single Key Programming Features	
Feature	Associated Keystrokes
Layer-toggle	Ⓚ<Esc> ▼<2> Ⓜ<Esc>
Layer-shift	Ⓚ<Esc> ▼<1> Ⓜ<Esc>
Repeating Key	Ⓚ<Esc> ▼<Left-Shift> Ⓜ<Esc>
Separate Press and Release	Ⓚ<Esc> ▼<Left-Ctrl> Ⓜ<Esc>
Pause	Ⓚ<Esc> ▼<5> Ⓜ<Esc>
Erasing a Key	▼<Esc> ▼<Esc> ▼<Esc>
Entire Keyboard Programming Features	
Slow Transmission Speed	Ⓚ<Esc> ▼<3> Ⓜ<Esc>
Normal Speed	Ⓚ<Esc> ▼<4> Ⓜ<Esc>
Caps Lock/Unlock Memory	Ⓚ<Esc> ▼<8> Ⓜ<Esc>
Caps Lock/Shift Unlock Memory	Ⓚ<Esc> ▼<9> Ⓜ<Esc>
No Caps Lock Memory	Ⓚ<Esc> ▼<7> Ⓜ<Esc>
Resetting the Keyboard	▼<Esc> ▼<Backspace> ▼<Esc> ▼<Esc> ▼<Esc>
Mouse Functions on X-keys Foot Pedal	
Primary (left) mouse click	Ⓚ<Esc> ▼ ▼<1> Ⓜ<Esc>
Secondary (right) mouse click ¹	Ⓚ<Esc> ▼ ▼<2> Ⓜ<Esc>
Scroll up	Ⓚ<Esc> ▼<s> ▼<1> Ⓜ<Esc>
Scroll down	Ⓚ<Esc> ▼<s> ▼<-> ▼<1> Ⓜ<Esc>
Mouse Pointer Right	Ⓚ<Esc> ▼<x> ▼<*> Ⓜ<Esc>
Mouse Pointer Left	Ⓚ<Esc> ▼<x> ▼<-> ▼<*> Ⓜ<Esc>
Mouse Pointer Up	Ⓚ<Esc> ▼<y> ▼<*> Ⓜ<Esc>
Mouse Pointer Down	Ⓚ<Esc> ▼<y> ▼<-> ▼<*> Ⓜ<Esc>
¹ additional mouse buttons: b3, b4, b5 * = number of mickeys	
Backlighting on X-keys Stick	
Backlighting toggle key	Ⓚ<Esc> ▼ Ⓜ<Esc>
Default backlighting on/off	Ⓚ<Esc> ▼<L> Ⓜ<Esc>

Single key Special Programming Features:

All numbers referred to in combination with the Esc key are number keys on the alpha-numeric section of the keyboard (NOT the Num Pad).

Programming a Layer-toggle Key (Esc + 2):

Assigning one key as a layer toggle or layer shift, doubles the capability of the remaining keys. Each key may now have one set of commands programmed on the green layer of the X-keys, and a second set of commands programmed on the red layer. A layer toggle key must be programmed to gain access to the red layer. This key can be changed to a layer shift key when programming on the red layer is finished.

Programming the Second Layer:

After programming a layer-toggle key (see above), change to the second layer by tapping the layer-toggle key (the X-keys must be in operating mode to change layers). The green and red layer indicators on the X-keys will show which layer is active. Select the red layer and switch the X-keys into programming mode. Follow the same procedure used for programming the green layer. Do not reprogram the layer-toggle key or you will not be able to change layers.

Programming a Layer-shift Key (Esc + 1):

A layer-shift key works like the layer toggle key, only it must be held down to access the red layer. If you wish to use the red layer with a shift, rather than a toggle key, reprogram the layer-toggle key as a layer-shift key after programming the red layer.

Programming Repeating keys (Esc + Left Shift):

Keys on the X-keys are not automatically repeating keys, but it's easy to program them to repeat. To make a key a repeating key, use the Esc + Left Shift combination, then enter the key sequence or combination to be repeated.

Programming Separate Press and Release Commands (Esc + Left Ctrl):

The X-keys can generate one command when a key is pressed and another when released. This is particularly useful when a key sequence requires a single key variable or a mouse action to be entered before continuing. To create a key with separate press and release commands, start programming a key with the commands for the "press" of the key, then enter the Esc + Left Ctrl combination, then enter the commands to be sent on the release of the key.

Programming a Pause (Esc+ 5):

Regardless of the speed with which keystrokes are entered when programming the X-keys, the sequence is played back faster than most users can type. Sometimes it may be useful to pause after or between keystrokes so the associated software can register the command. This is particularly useful when the command opens a menu. To add a half-second pause to a key sequence, during programming, enter the Esc + 5 combination where the pause is needed.

NOTE: If all of the keystrokes are too fast, see the topic “**Slow Transmission Speed**” below.

Erasing a Key (Esc Esc Esc):

Reprogramming a key on the X-keys automatically erases the previously saved keystrokes. When using a double keycap, it is necessary to leave one of the keys blank so that the X-keys does not send an extra set of commands when the key is pressed. To erase a key and leave it blank, put the X-keys in programming mode and select a key, press and release the Esc key three times, and confirm programming on the key.

Entire X-keys Special Programming Features

These features affect the entire unit and include changing the transmission speed, changing the Caps Lock memory and erasing the entire unit.

Slow Transmission Speed (Esc + 3):

Some applications or systems have a slower response time and the default X-keys speed is too fast. To slow the rate at which the X-keys sends key commands, program a key with the Esc + 3 combination. The key may be reprogrammed with a key sequence, and the X-keys will retain the slow transmission rate setting.

Normal Transmission Speed (Esc + 4):

Normal Transmission Speed is the default for the X-keys. If you previously programmed Slow Transmission Speed and you want to return the X-keys to Normal Transmission Speed, program a key with the Esc + 4 combination. The key may be reprogrammed with a key sequence, and the X-keys will retain the normal transmission rate setting.

Caps Lock Features

The next three features affect how the X-keys handles the Caps Lock state of the standard keyboard, and are particularly useful if you are recording case sensitive words or commands.

Caps Lock/Unlock Memory (Esc + 8):

If you want the X-keys to ignore the Caps Lock state of the keyboard and play back the letters exactly as they were typed, turn this feature on.

Caps Lock/Shift Unlock Memory (Esc + 9):

If you are working with a keyboard which uses the Shift Key to release the Caps Lock State (French, German, etc.), and you want the X-keys to ignore the Caps Lock state of the keyboard and play back the letters exactly as they were entered, turn this feature on.

No Caps Lock Memory (Esc + 7):

If you want the case of letters coming from the X-keys to be determined by the Caps Lock state of the keyboard, turn Caps Lock Memory off (the default setting for the X-keys).

Resetting the X-keys (Esc Backspace Esc Esc Esc):

To erase the entire X-keys, put the X-keys into Programming mode and tap any key. Type, <Esc> <Backspace> <Esc> <Esc> <Esc> on the standard keyboard. Resetting the X-keys removes all programming from all keys on both layers.

Mouse Functions on the X-keys Foot Pedal:

The USB X-keys Foot Pedal installs and operates as a composite device, both keyboard and mouse. Mouse functions available to the user are:

Button Action ($Esc + Bn$) where n = the mouse button number

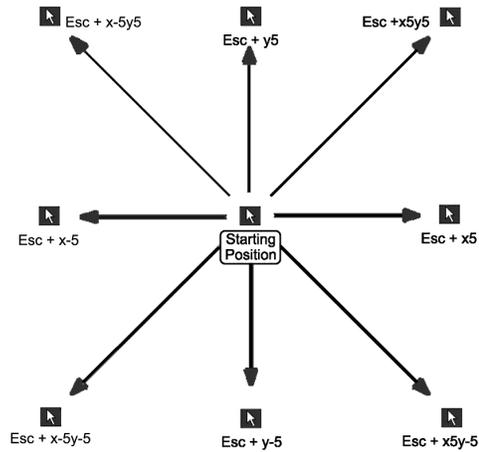
- B1 = Primary (Left)
- B2 = Secondary (Right)
- B3 = Center
- B4 = Button 4
- B5 = Button 5

Scroll Action ($Esc + S1$) ($Esc + S-1$)

- S1 = Scroll Up
- S-1 = Scroll Down

Pointer Movement ($Esc + XnYn$) where

- X = horizontal movement
- Y = vertical movement
- n = distance in mickeys (Up or Right)
- $-n$ = distance in mickeys (Down or Left)



Back-lighting on the X-keys Stick ($Esc + B$) ($Esc + L$):

The LED back-lighting on the X-keys Stick can be controlled by one or both of these settings. To create a key which will toggle the back-lighting on and off, program a key with the $Esc + B$ combination. To turn the back-lighting on when the X-keys Stick is powered up, program a key with the $Esc + L$ combination. To return the Stick to the default setting (back-lighting off), program a key with the $Esc + L$ combination again.

Programming Errors:

If the USB programming driver was not installed, or installed incorrectly, the X-keys will not enter programming mode when the programming switch is thrown, and the red and green layer indicators will blink simultaneously on and off. Unplug the X-keys and run the installation program again selecting the option to remove previous installations, and reinstall the driver.

If the X-keys encounters errors during programming, the red and green layer indicators will blink simultaneously on and off. Turn the programming switch off and back on to reset the X-keys to programming mode.

Errors can occur if:

- a) There is an unreliable cable connection, check all cords for proper connection.
- b) The computer is not operating in a mode to accept the entered commands (for example, pressing <Ctrl>, <Alt> and <Delete> may cause a PC to reboot and the X-keys will not boot-up in programming mode).
- c) Memory in the X-keys is exceeded. The entire X-keys will memorize 800 to 1,000 keystrokes depending on the device and the keystrokes. If you think you have exceeded the memory capacity, contact our tech support department for tips to conserve memory on the X-keys.

Box Contents

- X-keys Pro, X-keys Desktop, X-keys Stick, or X-keys Foot Pedal
- Two vertical double-keys*
- One horizontal double-key*
- One key-puller*
- Instruction manual

Additional Accessories**

- Basic Accessory Pack:
 - ✓ Two vertical double-keys
 - ✓ One horizontal double-key
 - ✓ One key-puller
- Vertical Keys Pack contains 10 vertical double-keys
- Horizontal Keys Pack contains 10 horizontal double-keys
- Single Keys Pack contains 10 single keys
- Square Key Pack contains 4 square keys (one square key replaces 4 single keys)

**Not included with X-keys Foot Pedal*

***Available from P.I. Engineering (visit: xkeys.com)*

How to Find Us

Address: 101 Innovation Parkway
Williamston, MI 48895
U.S.A.

Telephone: 517/655-5523 • 800/628-3185

Fax: 517/655-4926

Web: www.ymouse.com or www.xkeys.com

E-mail: Sales Department > info@ymouse.com
Technical Support > tech@ymouse.com

FCC Declaration of Conformity

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio TV technician for help.

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.



LIMITED WARRANTY

For all *X-keys* products purchased and installed in the United States and Canada, P.I. Engineering warrants that the *X-keys* product will be free from defects in materials and workmanship under normal use and service, and will meet the specifications presented by P.I. Engineering at the time of original purchase, for one year as evidenced by a copy of the purchase receipt. Under this warranty, P.I. Engineering will, at its sole option, repair or replace any *X-keys* product which is defective, provided that you are responsible for (i) the cost of transportation of the product to P.I. Engineering or its designated service facility, and (ii) any loss or damage to the product resulting from such transportation.

Upon discovery of a defect in the product within the Warranty Period, you should notify P.I. Engineering Technical Support via telephone to obtain an RMA (return authorization number) and instructions for shipping the product to a service location designated by P.I. Engineering. You should send the product, shipping charges prepaid, to the designated location, accompanied by the return authorization number, your name, address, and telephone number, proof of purchase, and a description of the defect. P.I. Engineering will pay for return of product(s) to the customer.

P.I. Engineering shall have no responsibility to repair or replace the *X-keys* product if the failure has resulted from accident, abuse, mutilation, misuse, or repair/modification performed by any entity other than P.I. Engineering.

THIS WARRANTY IS EXCLUSIVE OF ALL OTHER WARRANTIES, WHETHER EXPRESSED, IMPLIED, OR STATUTORY. P.I. ENGINEERING DOES NOT WARRANT THIS *X-keys* PRODUCT FOR FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY. P.I. ENGINEERING AND ITS EMPLOYEES SHALL NOT BE HELD LIABLE FOR ANY CONSEQUENTIAL, INDIRECT, OR INCIDENTAL DAMAGES, EVEN IF ADVISED OF THEIR POSSIBILITY, ARISING OUT OF THE USE OR INABILITY TO USE THIS PRODUCT. SOME STATES DO NOT ALLOW FOR THE EXCLUSION OR LIMITATION OF CERTAIN LIABILITIES, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER LEGAL RIGHTS WHICH VARY FROM STATE TO STATE.

In the event that the above limitations are held unenforceable, P.I. Engineering's liability for any damages to you or to any party shall not exceed the purchase price you paid, regardless of the form of any claim.

This limited warranty is valid for and only applies to products purchased and used inside the United States (and its territories) and Canada.

This limited warranty is governed by the laws of the United States of America and the state of Michigan.

X-keys Electronic design: P.I. Engineering, Inc., Williamston, Michigan
X-keys Pro & Desktop industrial design: Rienhold Weiss Design, Chicago, Illinois
Patent # 4964075

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PS/2 is a registered trademark of International Business Machines, Inc. All other trademarks are property of their respective owners.

Products from P.I. Engineering

Visit our web site (www.xkeys.com) for detailed descriptions

Y-mouse[®] Dual Mouse Adapter:

- Use a mouse and a trackball simultaneously on a single port (PS/2 or Serial)
- Great for adding an alternative pointing device to your system

Y-key key[®] Dual Keyboard Adapter:

- Use two keyboards on one computer
- Great for adding an alternative keyboard to your system

Y-mouse[®] Keyboard and Mouse Adapter for USB:

- Convert standard PC (PS/2) keyboards or mice to USB
- Like a mini docking station on your laptop

Y-see two[®] Video Splitter:

- Connect two monitors to a single video port
- Great for presentations to clients or classes

X-keys[®] Pro

- 58 user reprogrammable keys
- Put all of your shortcuts at your fingertips

X-keys[®] Desktop

- 20 user reprogrammable keys
- An efficient companion to your keyboard

X-keys[®] Stick

- 16 user reprogrammable keys
- Add 16 function keys to your keyboard

X-keys[®] Foot Pedal:

- 3 user reprogrammable pedals
- Use your foot to activate keyboard commands or mouse clicks.

X-keys[®] Switch Interface:

- 12 ports for 1/8" mini plugs
- Any external switch can activate keyboard commands

X-keys[®] Controller:

- Precision MDM joystick integrated with 46 programmable keys
- For any application requiring accurate, reliable control

X-keys[®] Editor:

- Jog & Shuttle knob integrated with 46 programmable keys
- Great for non-linear editing applications

Custom/OEM Products:

- Y-mouse & Y-key key boards add dual ports to your OEM system
- X-keys matrix boards create a programmable key matrix for your custom input device

RailDriver

Visit our web site (www.raildriver.com) for detailed descriptions

- Train Cab Controls & Cyclopedias
- Resources for the scale or digital train modeler