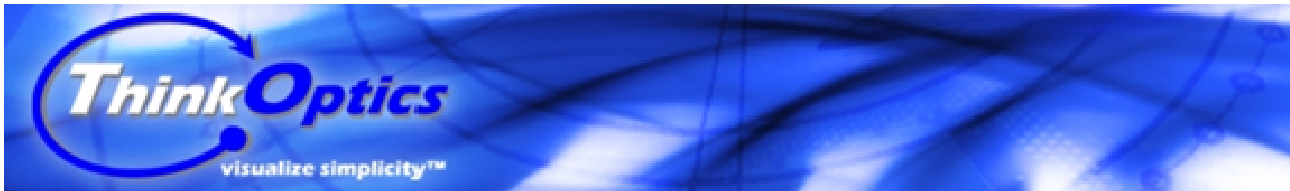


ThinkOptics, Inc.



visualize simplicity™

WavIt™ User Manual



Thank you for purchasing the ThinkOptics WavIt™ Controller!

And thanks for being part of our product launch. We greatly appreciate your support. Any feedback you may have in the course of your use of the WavIt™ would be most welcome, especially regarding ways to improve our product as we move forward and endeavor to provide you with a pleasant and powerful remote control user experience. (Send to support@thinkoptics.com).

RECOMMENDED SYSTEM REQUIREMENTS

1. A Windows XP PC or preferably a Windows Media Center PC.
2. A free USB port
3. A large screen TV hooked up to your PC.

IN THE BOX

You should find

1. A WavIt™ controller
2. A WavIt™ POD with retractable USB cable
3. Installation CD
4. 6ft USB extension cable

OUT OF THE BOX

Install the CD BEFORE you attach the POD. Follow the instruction on the CD and reboot when asked. After rebooting, plug in the WavIt™ POD for the first time and allow Windows to auto-recognize it. You are now ready to play!

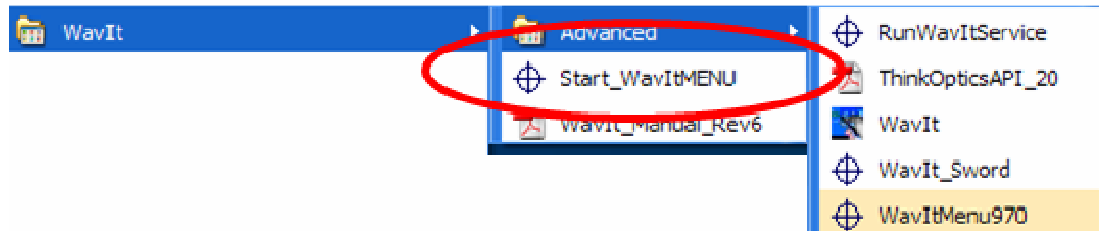
Now place the WavIt POD above or below you TV screen, with the clear bar facing the user.

The first time you turn on the POD you will see it blink 8 times as it searches for a clear RF spectrum to set up communication. When you now press a button on the WavIt™ Controller it will search for the nearest POD, blinking a few times. Once the link has been established the POD will blink at ~30 Hz indicating a solid communication with a

Wavlt Controller. Note that the direct-pointing operating range is **3ft to 25ft**, so don't stand too close to the POD.

THE SOFTWARE

The main application that was installed on your PC is called **Start_WavltMENU** and you can find it under the Start menu:



Click on this to start it. (After your first PC reboot we auto-start the WavltMENU program on every subsequent reboot, unless you disable that feature in the Setting menu of WavltMENU).

[Start_WavltMENU](#) is the main user program. It provides and defines *the programmable* key mappings.

[Wavlt_Manual_Rev6](#) is a pdf document on how to use the Wavlt. Most of this is also contained on the Introduction Walkthrough when you start WavltMENU. We recommend reading this!

[Wavlt \(Advanced\)](#) is the application that runs in the background and communicates with the Wavlt controller. When you run WavltMENU this program will automatically be started as well, unless WavltService is already running.

[Wavlt_Sword \(Advanced\)](#) is a floating 3D sword that shows you the 5 degrees of freedom.

[ThinkOptics_API_19 \(Advanced\)](#) is pdf documentation on how a programmer could easily interface to the Wavlt and create new and unique user experiences, programs, or games.

[RunWavltService \(Advanced\)](#) is program that allows you to start Wavlt.exe up as a Service that always runs in the background, even during reboot. The Service can be started stopped using this program. Note that this currently only works for Windows XP and not Vista. Another way to have Wavlt and/or WavltMENU start automatically on reboot is to place either of them inside of the Startup menu.

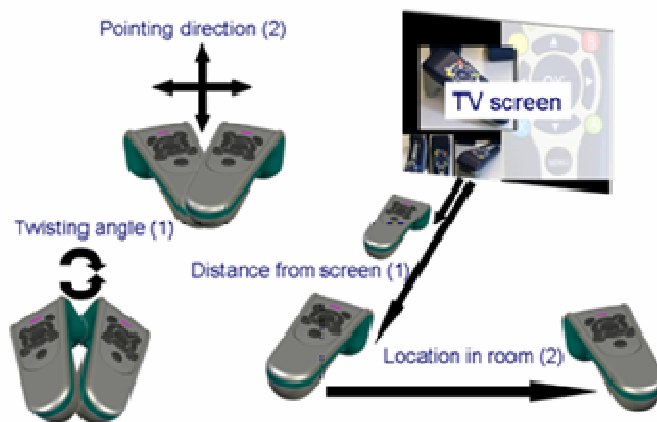
We sincerely hope you enjoy your Wavlt product and experience!

GETTING STARTED

When you start WavItMENU you will see an introduction screen. We recommend reading through this introduction the first time. It will tell you about the ins and outs of the WavIt system and will only take a few minutes.

Learning a bit about your system:

The WavIt system is capable of tracking 5 Degrees of Freedom. This means that it knows



- Exactly where you are pointing to on the TV screen (X, Y)
- The roll angle at which you hold the remote (think of it as a virtual dial)
- Your distance from the screen with millimeter resolution.
- And your lateral location in the room (the azimuth)

Your WavIt™ controller feels a lot like having an invisible laser pointer in your hand – the pointing is *DIRECT* and *ABSOLUTE*. This means there is no drifting over time and no relative motion like a standard mouse or a gyro pointer.

How it all works:

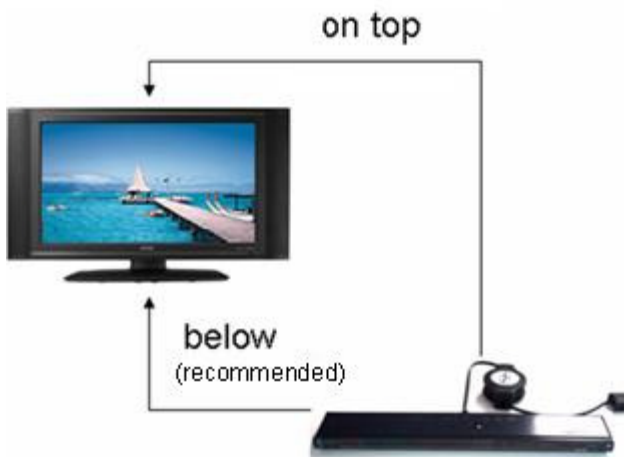


The operation of the WavIt is conceptually very simple.

1. *The POD emits (invisible) IR beams:* These serve as beacons for the controller to lock onto.

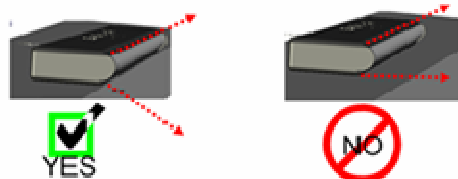
2. *The WavIt Controller tracks:* The “smarts” are in the Controller. An on-board camera and image system filters the image, analyses it in real time and sends its own coordinates via 2.4GHz radio to the POD.

3. *The POD communications with the PC:* It passes information between the POD and the PC.

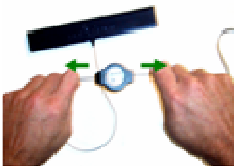


Setting up the POD:

1. Place the POD on TOP of or BELOW the TV screen.
2. Face ROD-side out toward the user
3. Move POD to the edge of the TV ledge.



Note: When retracting the USB cable, be sure to pull on both cable sides, and not just one of them or the mechanism may jam.



THE WAVIT-MENU APPLICATION:

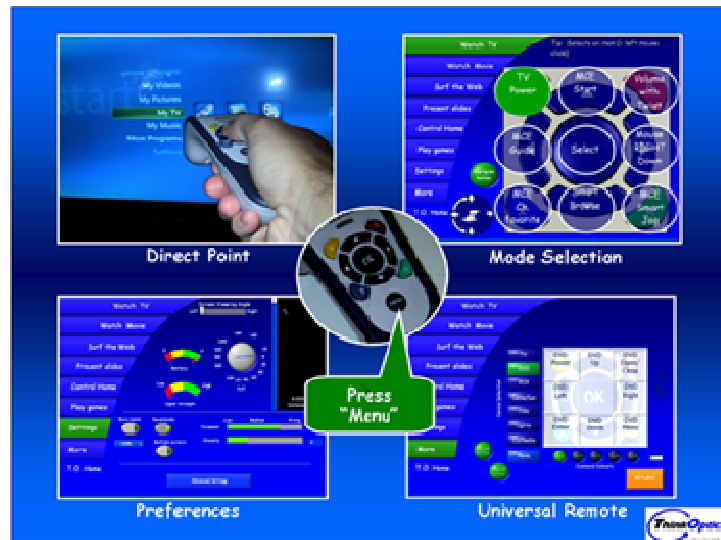
Now what can you do with your WavIt™?

1. You can point to anything on your PC screen and the cursor will follow. *Simply point.* (User studies have shown that your aim is greatly improved if you sit down and rest your hand on your lap or chair armrest, but anything works).

2. You can press the center “OK” button. This is the equivalent to the Left-click on a Mouse.

3. You can always press the Controller’s “Menu” button!!!

This button will toggle a help screen on/off. This screen tells you all you need to know. It will show you what the other button presses do, and it will also allow you to adjust your preferences, such as pointing calibration, or even to reprogram buttons. The MENU button is the cornerstone of the User Interface (UI) and is extremely important. It allows you to immediately get help and look at the virtualized buttons.



*Example: Press the handset’s “Menu” button once to show the Menu screen, and **press it again** to make it disappear.*

4. All other buttons are programmable: We have assigned some default functions to them and arranged them into “Modes”. For example, pressing the “MCE Start” button is equivalent to the MCE “Green Button” and will start up Media Center on an MCE PC.

Button Modes:

Buttons have been collected into 6 different "**Modes**".

1. TV Mode

2. IR Mode

3. Web Mode

4. Present Mode

5. Control Home Mode

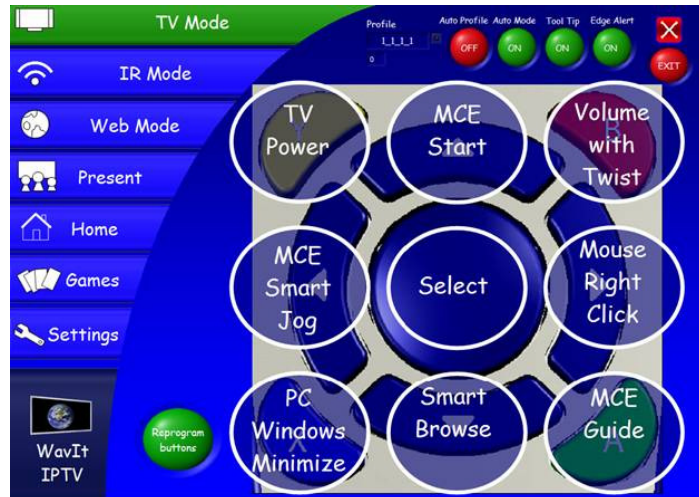
6. Games Mode

"TV mode" will have a different button layout from "Web Mode" or "Present Mode" modes.

When in a **Mode** simply press the equivalent button on the handset to activate its function. *Note: The "Menu" screen does not need to be visible for the buttons to work.*

Short-cut Mode-switch: You can also hold down the menu button for more than 0.5 seconds while twisting the remote to change the Mode.

Auto Mode-switch: If you turn this feature on (as it is by default), the GUI will automatically switch to the appropriate Mode if it recognizes the application that is currently being used.

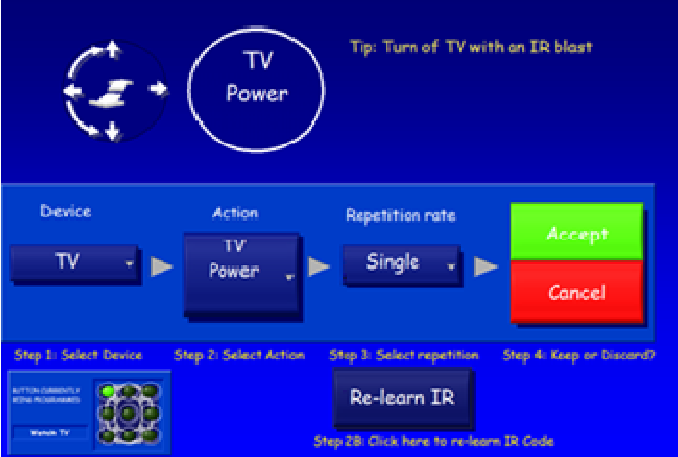


Example: When watching TV in Media Center, the "TV Mode" is automatically selected. If you use a browser, the "Web Mode" automatically becomes active. If you run MS Powerpoint, the WavItMENU switches into "Present Mode". Also, if there is a "Game Mode" that has a name that is recognized as an application, then WavItMENU will switch to that "Game Mode". For example, it will switch automatically to PowerDVD if CyberLinks' PowerDVD is the application in focus.

5. FOCUS, FOCUS! When using the WavIt™ to control applications on your PC, there is one thing you need to remember when pressing your buttons on the Controller – "Focus". The application you are controlling needs to be "in focus". You bring an application into focus simply by clicking anywhere on its Window. In this way you ensure that when you press a button on the WavIt™, the appropriate commands, such as "PC Window Minimize", is sent to that application.

GETTING THE MOST OUT OF YOUR WAVIT:

There are a number of other topics that are important for getting the most value out of your WavIt™.

- 1. Reprogramming the buttons:** Once you become familiar with the WavIt™ you may find that there are certain functions that you would like to create a button short-cut for. For example, it may be that some application you use calls for you to press the “W” key on a keyboard. You can reprogram the WavIt™ buttons very easily. On the main Menu screen press the “Reprogram button” followed by a click on the on-screen button you wish to reprogram. This takes you to this screen.

Every Controller has its own unique profile, so reprogramming one will not affect the profile of another Controller.

When on the reprogramming screen you may choose a desired function for your button by first selecting which “Device” category the function would be in and then selecting the function. There are ~20 different device categories, each of which has from 5 to 150 different functions.

For example: Choosing MCE (for Media Center Edition) for Device, will give you about 100 different functions that could be used to control your MCE, such as Channel Up/Down or View Pictures. The Repetition Rate selection should normally be set to “Single” if you only want the specified function to happen ONCE when the Controller button is pressed. You can change the repetition rate to faster if you want to repeatedly send out that command. This may be useful for the IR Volume up function, for example.

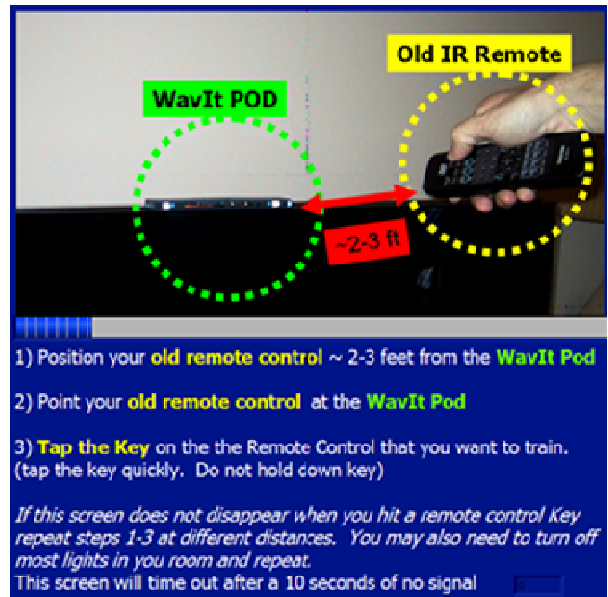
- 2. IR learning:** When you select a “Device” which is IR-capable, an IR-learn button will appear. This will allow you to re-learn the IR-code for that command.

In the WavIt™ system, it is the POD and the PC that learns and stores the IR code library, and not the WavIt Controller. The POD can learn IR codes from standard remote controls.

When you select the “Relearn IR code” button (step 2B) on the Reprogramming screen, you will be shown the IR learning screen. You now have 10 seconds to

point your old remote control at the POD and press the button on your old IR remote that you wish to learn and transfer to your WavIt system.

Note: The IR learning process may take some practice. This is because the strength of IR remotes differ and you may need to adjust your distance from the remote between 2 to 4 ft before you get it right. Furthermore, external light sources may interfere with the learning so dim them as much as possible.



3. IR Blasting: When you press a key that has an IR code associated with it, such as "DVD Power", the POD will send a very powerful IR blast into the room. Reflections from the walls in your room should be sufficient to control any IR device in your room. There is also a jack in the back of the POD that will support standard IR blaster cables.

4. Unique profiles: Every Controller has its own unique ID number and the *WavItMENU* program takes advantage of this. *WavItMENU* creates a unique profile for each Controller. This means that when you reprogram your button layout and IR codes that they remain specific to that handset alone. In this way, you can have different remotes for different people in the family or you can have remotes for left and right handed use, all of which can have their own unique profiles.

5. Multiple users and PODs: Up to 4 WavIt™ controllers can be connected to a single POD. Any more will not be allowed to associate with the POD. To CLEAR the POD's Association Table hold down the button on the POD for 3 to 5 seconds and the POD will blink once confirming the reset.

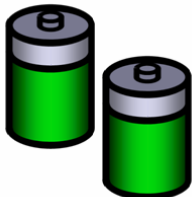
When a Controller starts up for the first time, it searches for the nearest POD. It blinks 8 times during this initial search

Up to 16 PODs can be within the RF range of each other (~100 ft).

When a POD is plugged into a USB port it automatically selects the lowest interference RF channel. It blinks 8 times and is then ready.

When more than one controller is being used, only one cursor is shown on the screen. This is the Windows cursor. When the “OK” button is pressed on a Controller, that Controller immediately takes over control of the Windows cursor. In this way it is easy to [time-share the cursor](#).

To show [more simultaneous cursors](#), the *WavItMENU* does offer the option to turn on multiple cursors. It is found on the Settings screen. This option gives each user a software generated colored dot (Red, Green, Blue, Yellow) that can be moved around on the screen by each unique WavIt™ Controller.



- 6. Battery Life:** In order to give you the best battery life for the WavIt, it is currently designed to go to sleep after 5 seconds of inactivity. After the Controller goes to sleep, press any key to instantly wake it up.

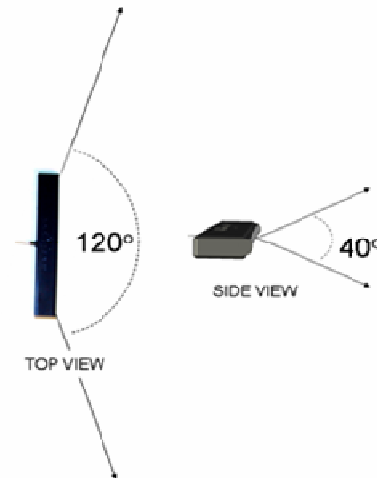
7. Operating range:

- a. [Direct Pointing Range](#): This is the optical range in which the direct pointing will work. This range is approximately 3 ft to 25 ft when the user is located in front of the screen/POD. As the user's view angle increases (moving toward the side of the screen/POD), the minimum and maximum range will decrease.

b. **RF range:** The Controller communicates via a 2.4GHz RF link with the POD. This range is approximately 0 ft to 400 ft*.

*building and wall interference will affect this range.

c. **POD angle:** The POD emits a cone of light with an angle of approximately 120° horizontally and 40° vertically. Staying within this span gives best performance.



8. Pointing Stability: The WavIt controller has a dynamic “anti-shake” function built in. So if you move try to select on-screen objects the stabilization kicks-in and helps stabilize your point. On the other hand, if you want to move fast from one side of the screen to another, the stabilization is dynamically turned off.

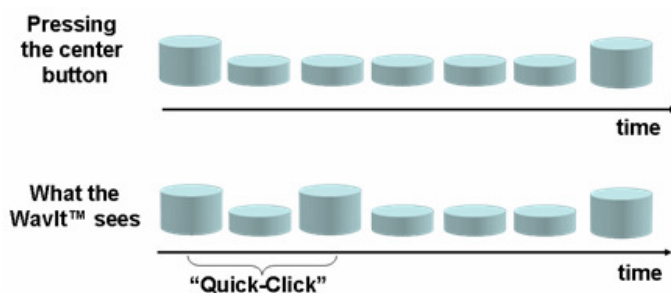
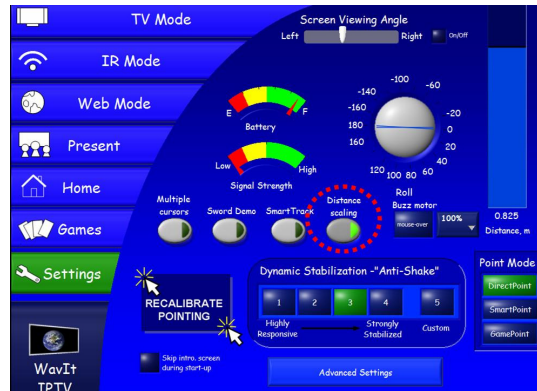
You can adjust the "Anti-shake" settings on the Menu/settings screen. There are 4 presets, where (1) is "Highly Responsive" and (4) is "Strongly stabilized." The default is 3. You can also select custom stabilization (5) from the advanced screen.

9. Pointing Calibration: For the best direct pointing experience, remember to calibrate the pointing to the screen. This ensures that exactly where you point is where the cursor is. This is very similar to the one-time calibration needed for touch screen devices, such as the Nintendo DS or most PDAs.

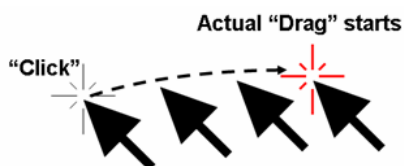


Note: Calibration should only be necessary once during initial setup in your Living room. Go to the "Settings" screen. You will be able to do a direct calibration or to choose from factory default calibrations.

10. Distance Scaling: By default this option is turned on. It ensures that when you move closer to the screen the pointing calibration is adjusted automatically to remain as true to direct pointing as possible. If this is OFF the pointing is “true” only for the distance at which the calibration was done (or the default 10ft).

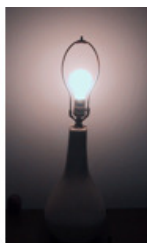
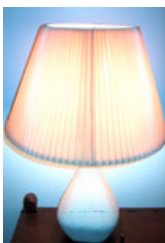


11. Clicking: The center "OK" button is always the left mouse button. By default, all "clicks" are actually preceded by a very short click to prevent Windows from interpreting a click as a "click & drag".



12. Dragging: For intentional dragging, wait a brief moment after clicking before moving. Otherwise the "drag" action will start at a later point in space.

13. Minimize interference: Here are some final tips to be aware of when setting up your system.



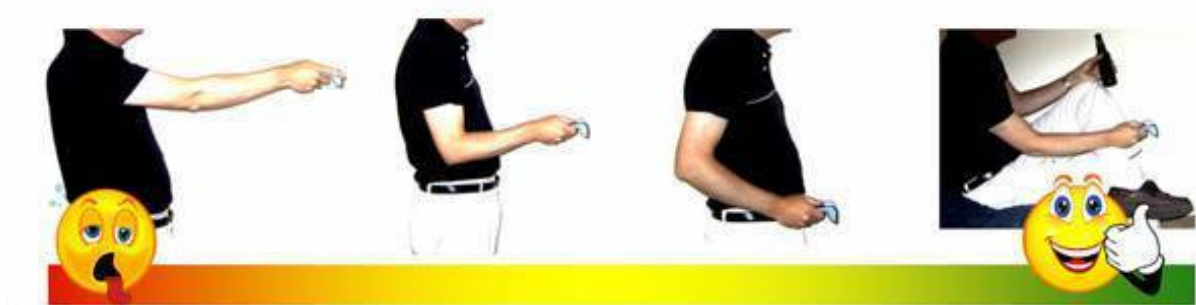
- Avoid placing bright exposed lights next to the TV. Lamps with shades are generally OK.
- The WavIt tracking system relies on infrared (IR) light emitted from the POD to track the Controller's pointing direction, twist angle, and location in the room.

Note: This problem is reduced when the SmartTracking button is activated (as it is by default).

The trade-off of having SmartTrack on is that it takes a fraction of a second longer to initially lock onto the POD.

- Avoid other IR emitters near the POD. This includes very bright reflections from outside windows, or IrDA ports on Laptops keyboards.
NOTE: Normal remote control receivers are NOT a problem, only strong emitters.

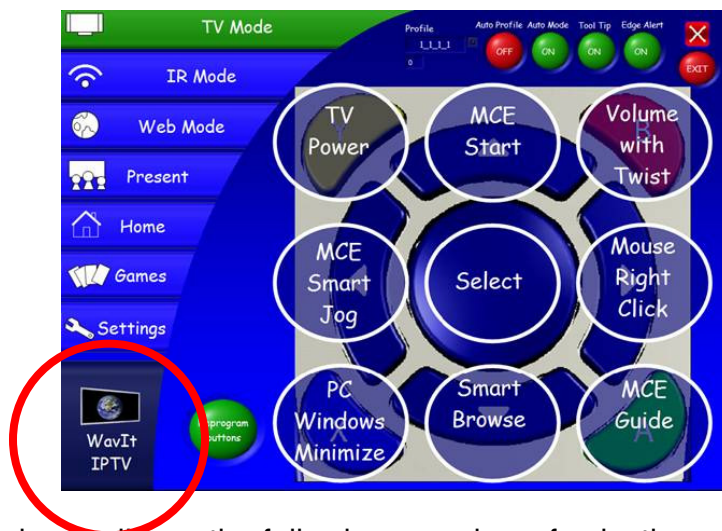
14. Best Pointing Practice: There are many ways to wield the WavIt™ remote, but to avoid fatigue and to great enhance your pointing stability, it is recommended that you rest your elbow or wrist on a surface when you point. When sitting or lying in a sofa, the most natural surface is the arm rest, your leg or the sofa.



FINAL COMMENTS:

Movie watching is clearly still the major entertainment in front of the Living room TV and the WavIt™ Controller and Media Center Computer are a great combination for quickly navigating your content and for easy recording and watching TV shows. However, it is important to realize that there are a lot of other interesting entertainment options available today that can be served up on the same large screen TV. We believe a device like the WavIt™ is the enabler.

To show you, we have added the WavIt_IPTV application to the WavItMENU.

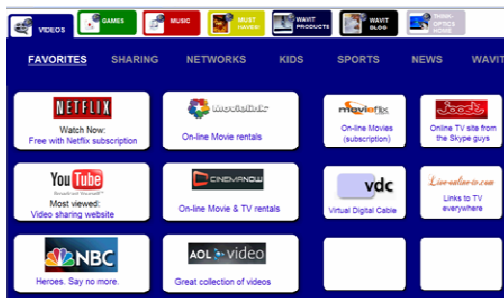


Click here and you will see the following overview of selections.

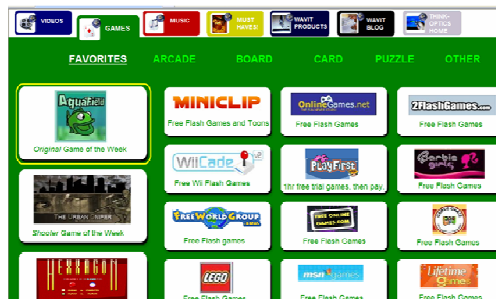


You can now go to your default mail program, start Media Center, or very importantly, you can jump straight to the Wavlt Portal website where we are collecting a large selection of Video-on-Demand sites, games sites, music sites, and more. We want to deliver the wonderful world of the internet directly to your sofa. Now any Windows XP or Vista PC can be turned into a veritable IPTV entertainment hub.

Check out our growing list of Wavlt Channels and website links.



On-line movie sites



On-line free games

Here are just a few examples to all the things you can think about doing in the future:

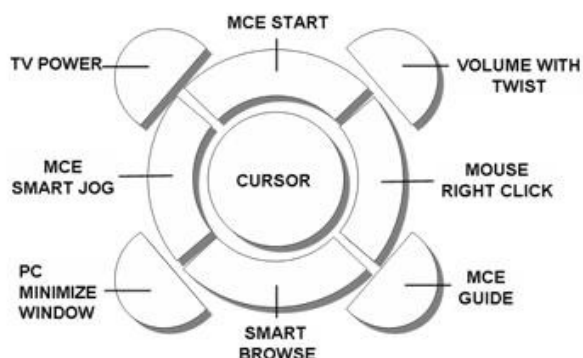
- Show you digital photos to family
- Select and Play MP3 songs from your collection
- Play PC games
 - Play casual games with the whole family (with up to 4 Wavlt units)
 - Play puzzle games

- Play on-line card games
- Play PC board games such as monopoly or scrabble
- Open up the Internet to your Living room
 - Download or view movies (example: YouTube, Google, Netflix, CinemaNow, MovieLink, iTunes etc.)
 - Search the web (with clicks and WavIt on-screen keyboard)
 - Zoom in on pictures
 - Order pizza

The potential is almost limitless. And all this is available from the comfort of your sofa, once you have your WavIt™. Experiment and expand your horizons. Tell us about it. And above all - have fun!

The following show the default key mappings for 3 of the modes.

WATCH TV



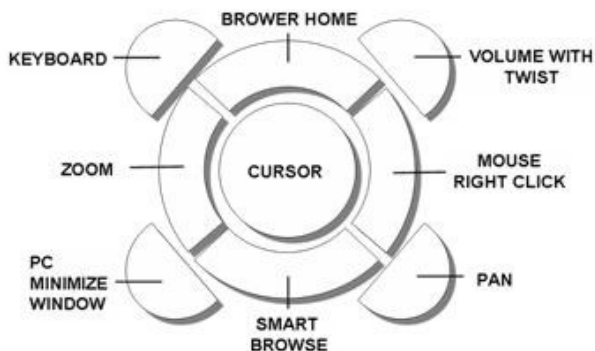
Description:

This mode is ideal for use with Media Center Edition (MCE) from Microsoft. It will allow you to easily start MCE, browse content, select items, adjust the volume and jog through movies.

With Auto-mode "ON" and MCE running, this mode will be auto-selected.

Key Location	Name	Description
	TV Power	Turns on the TV by blasting a pre-learned IR code into the room. (See instructions on IR learning to program an IR code into this button).
	MCE Start	Starts the Media Center (MCE) application. Equivalent to the MCE "Green Button" this also always takes you to the main MCE screen.
	Volume with Twist	Adjust the PC Volume by holding down this button and twisting your remote. It is like turning a virtual dial in the air.
	MCE Smart Jog	Replaces all the standard playback buttons (REW, Skip back, Pause, Play, Skip FWD, FFW) with a single virtual jog dial. Simply hold and twist.
	Cursor	Standard Mouse Left-Click.
	Mouse Right Click	Standard Mouse Right-Click. Inside MCE it will bring up INFO.
	PC Minimize Window	Minimizes any PC window. You do not need to hunt for the "Minimize" icon – simple select window and click this button.
	Smart Browse	Navigate content. Point the remote above/below the screen AND click button to scroll up/down; Left/right of screen = Arrow Left/Right; Twist left for back.
	MCE Guide	Takes you directly to the MCE Electronic Program Guide (EPG). Click once more and select menu sub-categories, such as a "Kids shows", "Sports" etc.

SURF THE WEB



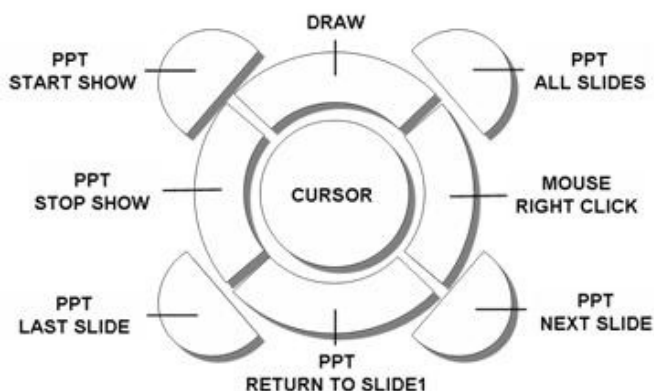
Description:

This mode is great for surfing the web. It will allow you to easily browse web-pages, click on links, zoom in/out, pull up an on-screen keyboard, and pan pages and images. .

With Auto-mode "ON" and *IE7.0* or *Opera* browsers in focus, this mode will be auto-selected.

Key Location	Name	Description
	Keyboard	Toggle this button to show/hide an on-screen keyboard. The keyboard has options for sound & sense (touch) feedback, and for key-hover entry.
	Browser Home	Starts up your default Browser application.
	Volume with Twist	Adjust the PC Volume by holding down this button and twisting you remote. It is like turning a virtual dial in the air.
	Zoom	Hold down and push/pull your remote toward/away from screen to zoom out/in. Zoom works on many applications, incl. IE7, Opera, MS Word, Acrobat.
	Cursor	Standard Mouse Left-Click.
	Mouse Right Click	Standard Mouse Right-Click.
	PC Minimize Window	Minimizes any PC window. You do not need to hunt for the "Minimize" icon – simple select window and click this button.
	Smart Browse	Hold remote at -30 degree and press= Browse back. Hold remote at +30 deg. and press= Browse forward. Point above/below screen and press = Pg Up/Down. Point left/right of screen and press = Left/Right arrow
	Pan	Grab hold of anywhere on the screen and hold button to move screen (i.e. pan) left/right/up/down. This is similar to the popular hand-tool.

PRESENT SLIDES



Description:

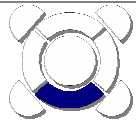
This mode super-charges your PowerPoint (PPT) presentations. You can start/stop PPT shows, and advance slides with simple button presses. You can draw freely and directly click on slide hyperlinks.

With Auto-mode "ON" and PowerPoint in focus, this mode will be auto-selected.

Key Location	Name	Description
	PPT Start Show	Starts a PowerPoint show.
	Draw	Starts a screen-overlay on which you can draw freely. Move hand closer to thicken lines, twist wrist to draw in different colors. Draw circles, squares and stamps. Draw has its own button layout.
	PPT All Slides	Brings up a list of all the slides in your presentation. Great for getting directly to a specific slide.
	PPT Stop Show	Stops a PowerPoint show.
	Cursor	Standard Mouse Left-Click.
	Mouse Right Click	Standard Mouse Right-Click.
	PPT Last Slide	Goes back one slide.
	PPT Return to Slide1	Goes back to the beginning of the show
	PPT Next Slide	Advances one Slide. Note: You do not need to point at the screen for these buttons to work.

The SMART BROWSE button:

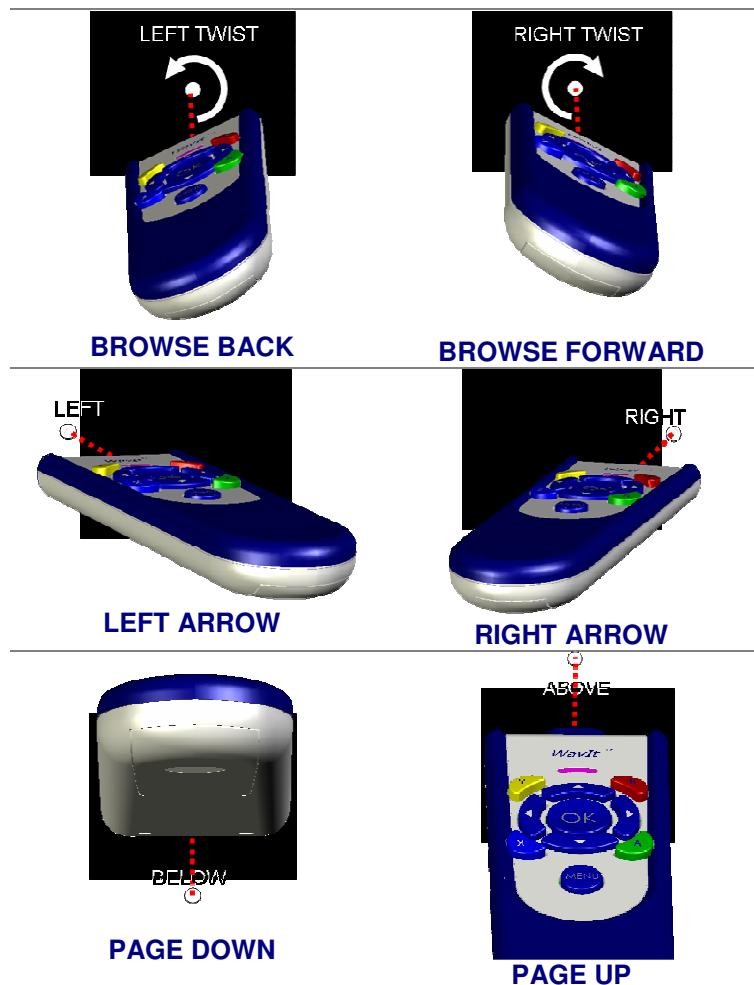
Some buttons offer up more functionality than just a SINGLE CLICK = SINGLE ACTION. For example, in “TV Mode” and “Web Mode” the down arrow key is the SMART BROWSE function.



Smart
Browse

Hold remote at -30 degree and press= Browse back.
Hold remote at +30 deg. and press= Browse forward.
Point above/below screen and press = Pg Up/Down.
Point left/right of screen and press = Left/Right arrow

This means that when you HOLD DOWN this button AND perform one of these actions, you will activate the appropriate function. This is simple gesture control:



Note that you can choose to HOLD DOWN the button and THEN move the Pointer, or you can move the Pointer and THEN HOLD DOWN the button. Also, if you keep the button held down, you will start repeating the function. Example: Hold down button while pointing below the screen will Page Down rapidly.

The SMART JOG button:

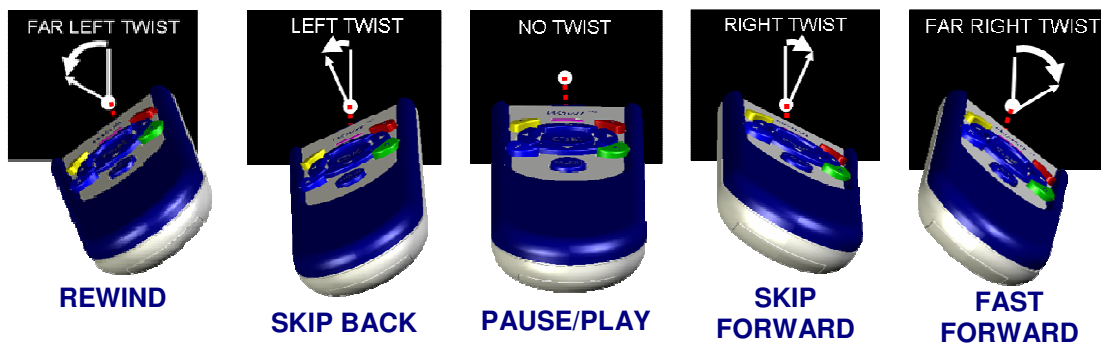
Another example of a button that offers up more functionality in the form of a “Virtual Dial” is the SMART JOG button for MCE. When in “TV Mode” the left-arrow key is the SMART JOG function.



MCE
Smart Jog

Replaces all the standard playback buttons (REW, Skip back, Pause, Play, Skip FWD, FFW) with a single virtual jog dial. Simply hold and twist.

When watching a movie (whether recorded or live) in Media Center, it is possible to *jog* the position of the movie, i.e. to skip forward or back, or pause/play or FFW/REW. This is normally 7 different buttons. With SMART JOG we combined all this into a single button. You can hold down this button and simply twist left or right by varying degrees in order to Forward or Rewind to the place you want to be in the movie. You can also angle the remote first and then tap the button to get a more discrete effect, as shown below:



Note: A similar Smart Jog function has been programmed into the *Cyberlink PowerDVD* mode found under Games Control Mode. If *Automode* is ON then *WavItMENU* will automatically switch to this mode if it detects that *PowerDVD* is the application that has FOCUS.

The WavIt™ Handset and POD have been certified to comply with part 15C of the FCC Rules for Low Power Communication Devices. 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.

WavIt™ Handset & POD **Model #:**
VAV1000-02
VAV1000-03



Tested to Comply with
FCC Standards
FOR HOME OR OFFICE USE