

# Micro-Nits Virtual Electronic White Board User Manual

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## 1. Introduction

1. The Micro-Nits Virtual Electronic White Board is an accurate and fully automated product as the interactive tool during presentation with projected material. It is specially designed for the modern high resolution front projector application of LCD, LCOS or DLP technologies. The whole procedure is arranged that presenter does not need the support of keyboard or mouse during presentation. It is very powerful and efficient equipment for easy setup, information highlighting, word hand writing and pointing. The setup is very easy for both S/W H/W and alignment. Please enjoy this product while you do the presentation or in the training course.

For a complete set up, there are 4 key steps to follow:

1. S/W set up : Chapter 2 installation ( Please do not plug this device before installation)
2. H/W connection: Chapter 2 H/W connection
3. Sensor, Projection, PC connection : Chapter 3 Application
4. Precision alignment: Chapter 3.3 automated alignment

Then the setup is completed and you can enjoy this fantastic technology.

### 1.1 Packing list

There are three major components

- A. Area Sensor with base, Refer to Fig 01.
- B. Wireless handheld Pen, refer to Fig 02.
- C. Installation CD



Figure 01: Sensor base picture

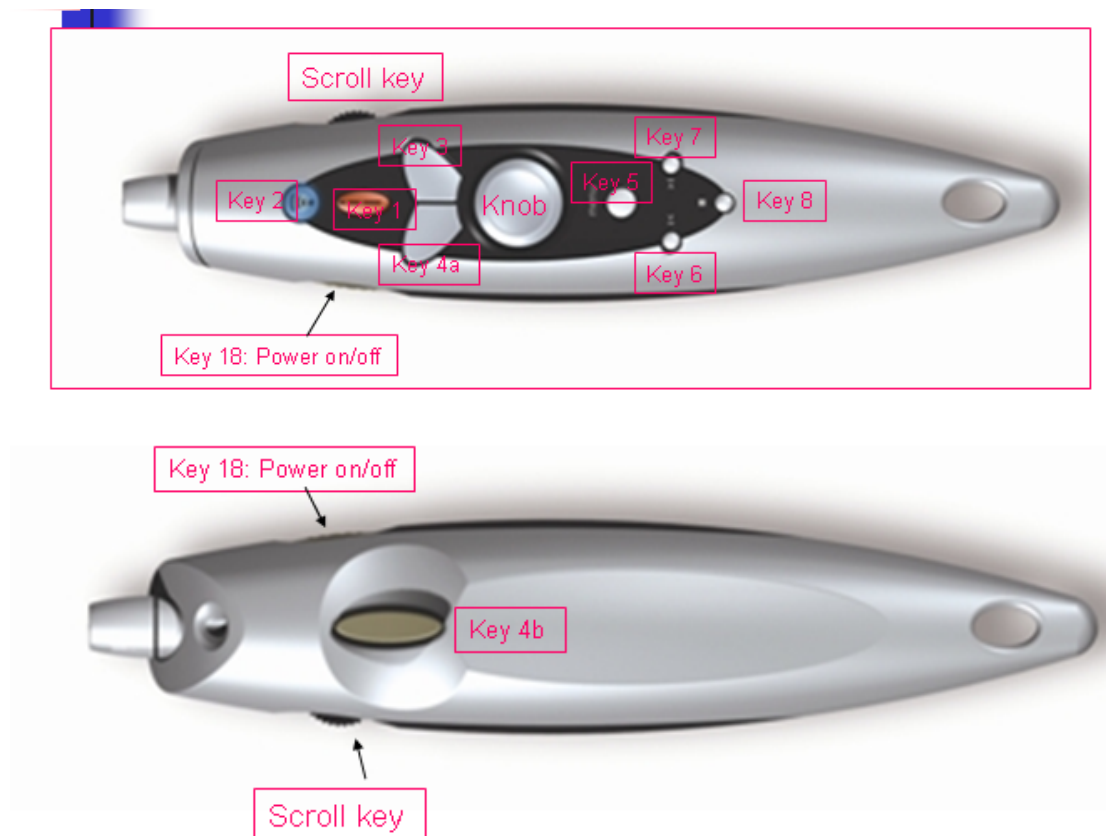


Figure 02: Wireless handheld device picture

## 1.2 Function buttons

Please refer to Fig 02, There are totally 11 buttons for the wireless handheld device to fully function without the access to the key board after the H/W is setup and basic alignment is done.

Tracking Knob	Control Cursor
Key 1:	laser on/off ; for remote input
Key 2:	Radiation on/off; for on screen writing
Key 3:	Mouse Right
Key 4a / Key4b:	Mouse Left
Key 5:	Menu Key
Key 6:	F5 : activate auto-alignment
Key7:	F11: get better preview
Key8:	PrtSC
Combination Key 9:	Ctrl + P ( Key 5 + key 6) : Power point change to pen mode
Combination Key 10:	Ctrl + E ( Key 5 + Key 7) : Power point change to eraser

Combination Key 11:	Ctrl + A ( Key 5 + key8) : Power point change to arrow
key 12:	Scroll up
key 13:	scroll pressed : Enter
key 14:	scroll down
Combination key 15:	Key 5 + scroll pressed ( Channel ID)
Combination key 16:	Key 5 + scroll down: Alt + Tab
Combination Key17:	Key 5 + Scroll up ( Wheel down)
Key 18:	on/off key ;battery power
Signal	
Radiation Green LED	Radiation is on, press again to turn off
Laser Red LED lit	Laser is on, press to turn on, release to turn off
Power key Red blink	RF channel ID pairing
Power key Red lit	Low batter voltage
Power key Green lit	Battery power is on

Table 1: Wireless hand hold device function key list

### 1.3 System Requirements

The user needs a high resolution and bright projector (if projector output is higher than 1500 Lumen, please project to larger screen) and a notebook computer or desktop PC. Due to the high technology used, there are couple requirements on the operation system and limitation to environment.

- A. Operation system: MS Windows 2000 or XP with Direct show installed
- B. Operation CPU: Better than 1.0 GHz, for iPen application.
- C. Operation memory required:  
Better than 200 MB for iPen application.
- D. One USB 2.0 port required
- E. CD ROM reader for s/w installation/or USB disk
- F. Keyboard for Hot Key input
- F. H/D free space for installation and application running: 15 MB
- G. 1.5 V 3A battery x 2 for handheld device
- H. Used indoors

### 1.4 Optimized System Spec

- Projector resolution: better than 800 x 600
  - 1.4.1 Projection image size: 50"~150"
  - 1.4.2 Typical environment automated Alignment time: 3 sec
  - 1.4.3 Tough environment automated alignment time: 10 sec
  - 1.4.4 Optimized alignment accuracy within chess board area: +/- 10 pixel
  - 1.4.5 Optimized alignment repeatability within chess board area: +/- 10 pixel
  - 1.4.6 Full screen full scan area optimized resolution: 2000 x 1500 (Micro-Nits Lab environment with certified projector)
  - 1.4.7 Optimized cursor jittering: +/- 4 pixel (Micro-Nits Lab environment with certified projector)
  - 1.4.8 The testing environment should be on a flat and diffusive screen with perfect keystone corrected projection image in Micro-Nits lab.

## 2 Installation

After you read the first chapter 1 Introduction that you should understand the basic that the iPen can support. Please check that both your computer (either Notebook or desktop PC) and projector fulfill the requirement descriptions listed in Chapter 1.

Do not plug the USB plug into the notebook USB port before the S/W installation.

You have to plug after the s/w is installed

### 2.1 First time installation:

If this is the first time installation on the notebook of PC for presentation, please follow the instruction listed in the paragraph. Please have the installation CD password number and sensor code ready for input during s/w installation.

#### 2.1.1 Installation procedures

Put the CD into CD reader Find the Setup.exe to execute the installation or the CD auto run will execute this setup application.

Follow the instructions shown on the screen to install the application, drivers to the destination disk and folder.

After the s/w installation, plug the iPen USB cable into the notebook USB 2.0 port and wait the notebook to inform you that new unknown devices are connected. The installation wizard notice will show up as Fig 03.

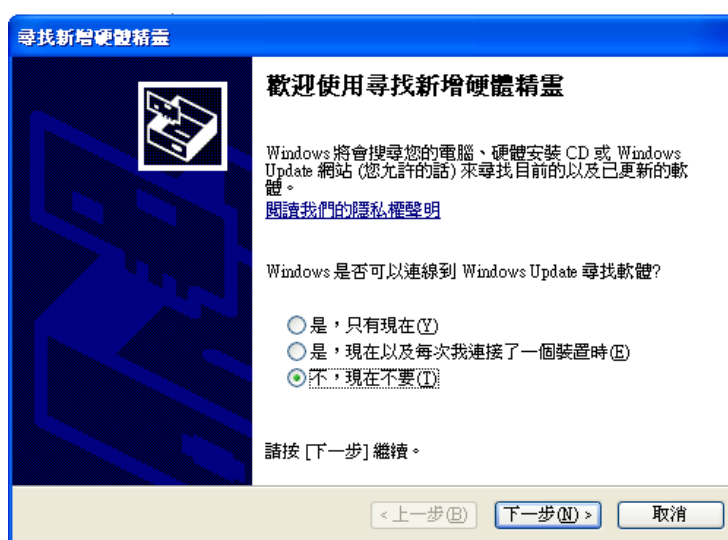


Figure 3. Sensor driver installation request



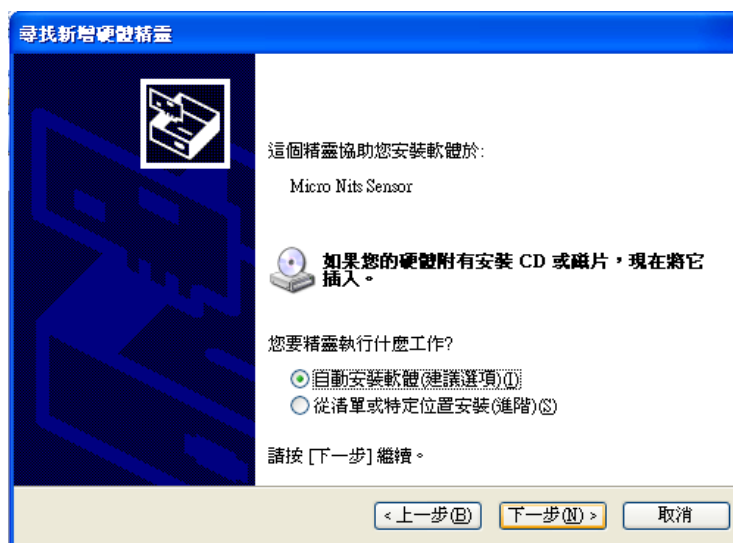


Figure 3.B Sensor driver installation request

The setup action during the installation already installed the necessary information into the right folder, please check the first item for auto driver selection, and let the operation system do the rest for you.

Note: Just in case if this does not work, please check the 2<sup>nd</sup> item of install from the specified directory and click Next button go to next page as shown in Fig 03 C. Select item 2 to inform the system to get driver installation system the right INF file from the installation folder. Using browser button to select the right folder, the default folder is "C:\\Program Files\\iPen\\Driver". Click next for the system to automate the driver installation procedures.

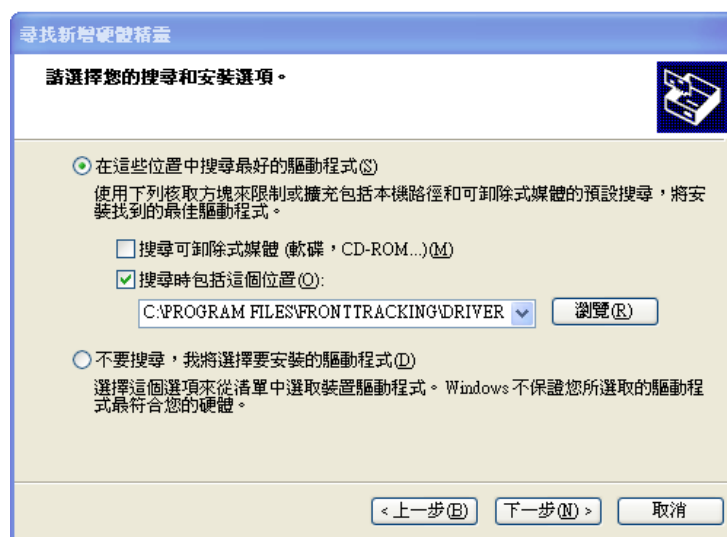


Figure 3.C Sensor driver installation request

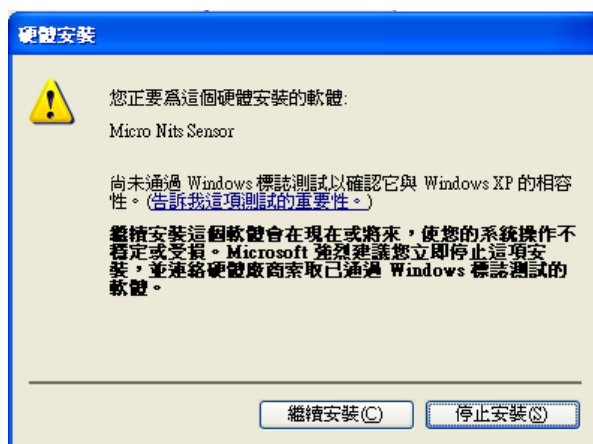
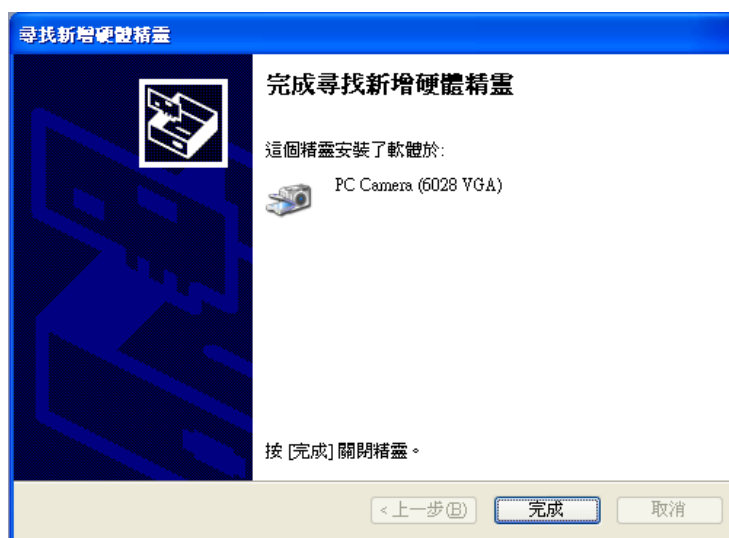


Figure 04. Sensor driver files copied

There will be another message popup as Fig 04. After couple system drivers installed, the Completed message shows up as Fig 09. Then the system is installed complete.



## Figure 05. Sensor driver installation completion

### 2.1.2 Installed components

There are two folders under the installation directory: Application folder and driver folder.

The files in the application folders are:

ViewPen100.exe

uNitsc.DLL

uNits\_core\_codes.und

uNits\_core\_thres.und

uNits\_core\_dsize.und

uNits\_core\_refer.und

uNits\_core\_range.und

### 2.2 H/W re-connection.

The Windows operation system will recognize and register the port that connected with iPen. If the connected port is changed to other port, the operation system will request to re-install the driver again. However, due to the s/w chosen, you might be requested to reboot your notebook or PC after the driver re-installed, this will not happen in most of the cases. The procedure is identical as the procedures described as listed in section 2.1. After the reinstallation, user is able to use the system.

### 2.3 Un-install

It is easy to un-install the files build by the setup program, please just simply click the un-install on the Uninstall Front Tracking, then the program will automatically un-install the folder.

### 3. Application

The H/W setup for Micro-Nits virtual electronic whiteboard is very simple. After the S/W is installed and H/W connected to the PC and

The steps are:

1. User just simply puts the sensor base on the table. With distance about 1.2 times the diagonal size of the projected image. Or user can put the sensor as close as to the projector.
2. The recommended distance:

70吋	> 3 m
100吋	> 4 m
120吋	> 5 m
150吋	> 6 m

Table 2: Optimized operation distance from image screen to sensor

3. Make sure that the sensor base does not block any of the projection image.
4. Make sure the projected image is well key stone corrected to get better alignment effect.
5. The direction is not a concern; however, the sensor should be within 30 degree solid angel from the norm of image plan center.

After the basic setup, user can click on the iPen icon to activate the application, please refer to the following sections to learn more about the meaning of the user interfaces.

In the sections, we will describe:

- 3.1 User Interfaces: introduction to the user interface
- 3.2 Alignment set up: Description for the alignment criteria
- 3.3 Auto mode: description of fully automated mode

#### 3.1 User Interfaces

What you should learn from this section is only using F5 on the keyboard or F5 on the handheld device to activate alignment screen and automate alignment. If during alignment, there are not enough alignment nuts, please press F11 on the key board or on the handheld device to get clear preview effect.

Refer to Fig 6. On the main menu bar, there are three items.

File, Option, Help.

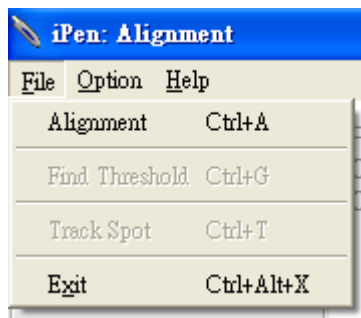


Fig 6. ViewPen application main menu

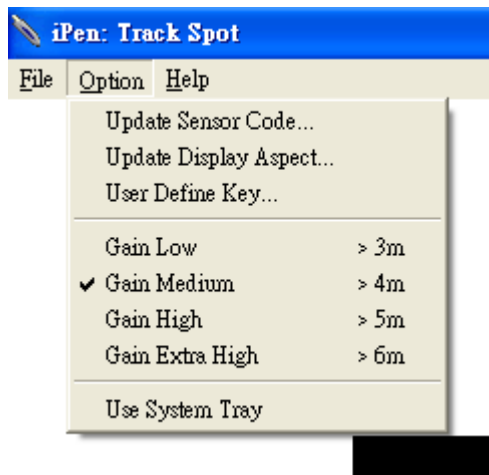
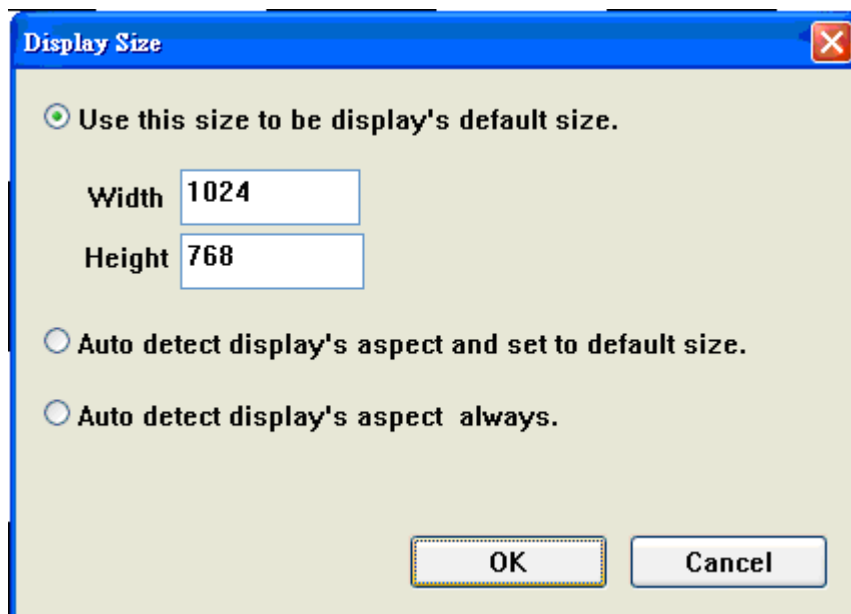


Fig 6.1 Projection Screen aspect ratio selection and setting



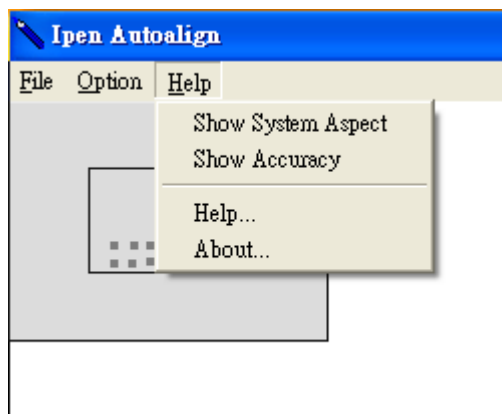


Fig. 7. Option menu and Help menu

3.1.1 In the File menu, as shown in Fig 7, there are two critical items under File menu.

Menu	Hot Key	Description	Purpose	Ref
Auto Align	F5	Show alignment screen & auto align	For user alignment	Fig6
Better Preview	F11	To get better preview alignment nuts shown	Ease to align	Fig 6
Exit	Alt-CTL-X	Close application	Close application	Fig 6

Table 3: Major selection item.

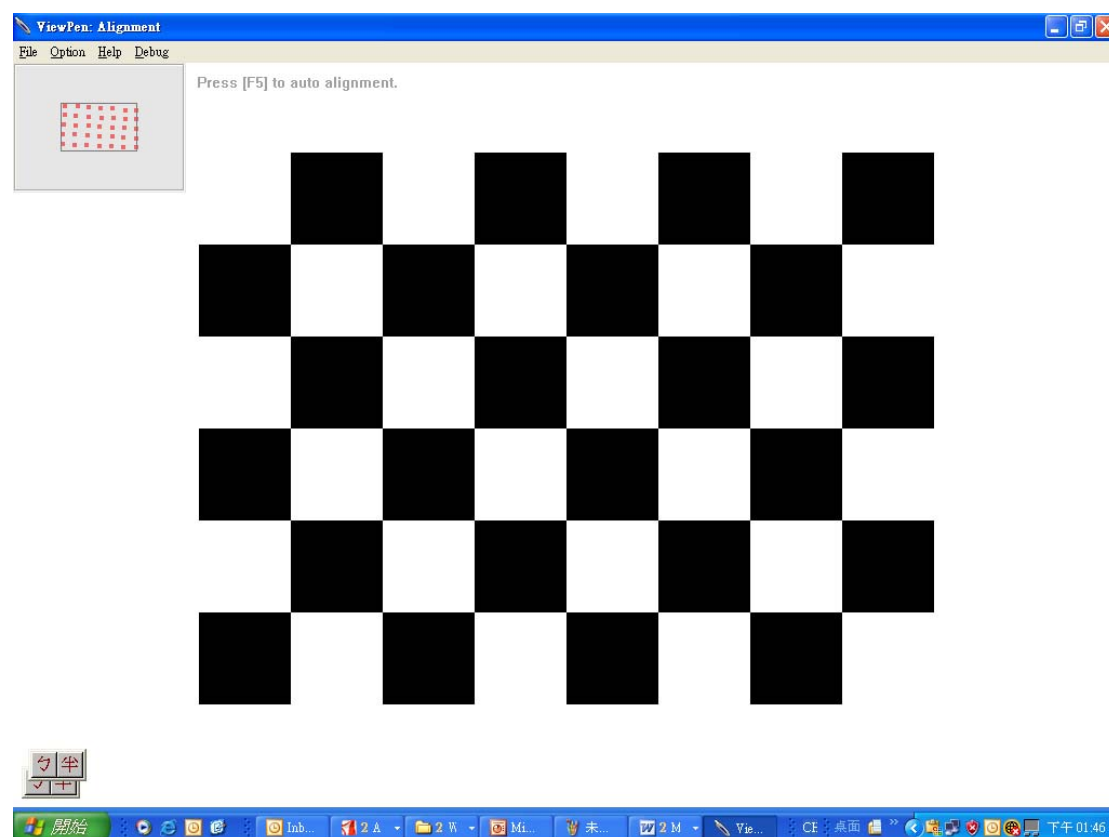


Figure 8: Auto alignment screen

3.1.2 As shown in Fig 6.1. In the Aspect menu, there are three items showing different display screen image aspect ratio, the default is 4:3 or 1024 : 768 or 800 : 600.

If your projector has different aspect ration, please select or input the appropriate one.

In ViewPen application, the smart device can auto detect the screen aspect ratio.

3.1.2.1 You can select to auto detection once and use the detected value as the default setting for next and future alignment.

3.1.2.2 You can also select to use item 3 to make sure the smart device to detect the screen aspect ratio for every alignment.

3.1.2.3 In Fig 6, it shows 4 gain selections:

Gain Low, Gain Medium, Gain High, Gain Extra High.

The default is Gain high, you can always selection a higher one, however, if you feel the background noise incuse impact for the performance, please select next lower gain level.

3.1.2.3, In Fig 6, the last item in Option menu, user can check to select the application icon in the task bar or hide to tray after alignment

3.1.3 In Help menu, there are 4 items.

Help	Description	
Show Sensor Code	Showing Sensor info	Refer to Fig 9
Align Accuracy	Display alignment accuracy	Refer to Fig 10
Help	Press F1 to get help info	Refer to Fig 12
About	Display iPen info	Refer to Fig 13

Table 4: Help menu selection item

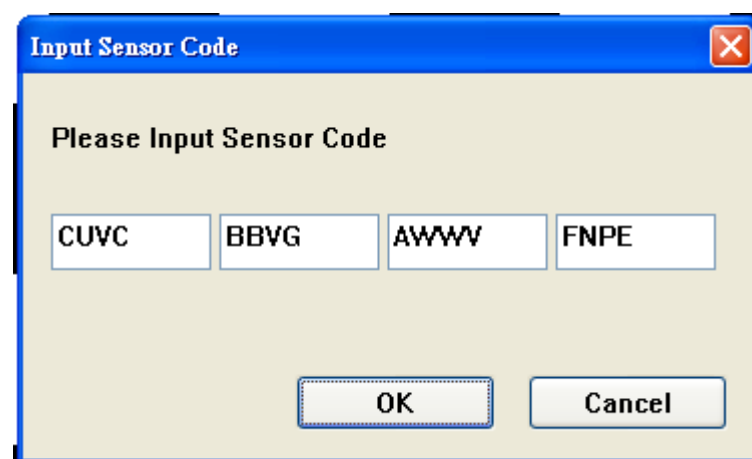


Figure 9: Sensor code

3.1.4 User can select from Option menu, "update sensor code" to correct the accuracy of alignment performance. If user is will to try another set of data. The code is on the label at the bottom of sensor base.

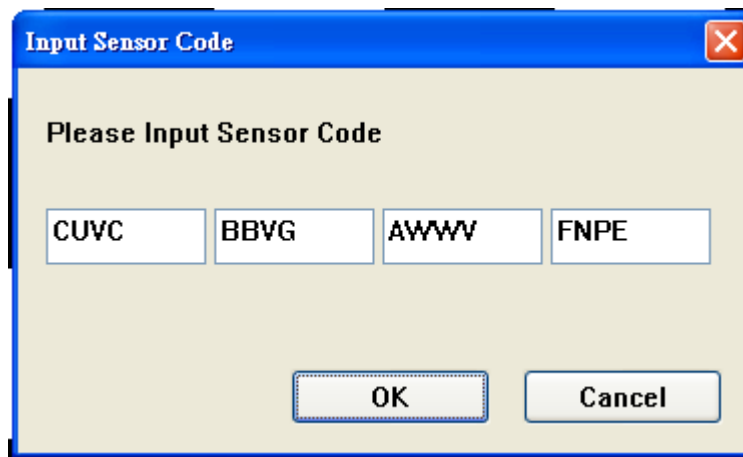


Figure 10: Sensor code input

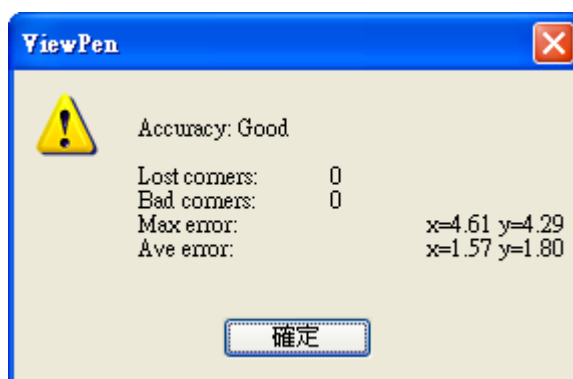


Figure 11: Alignment accuracy information

3.1.5 To make sure the alignment performance, if the average error is too high, the application will ask the user to repeat the alignment step.



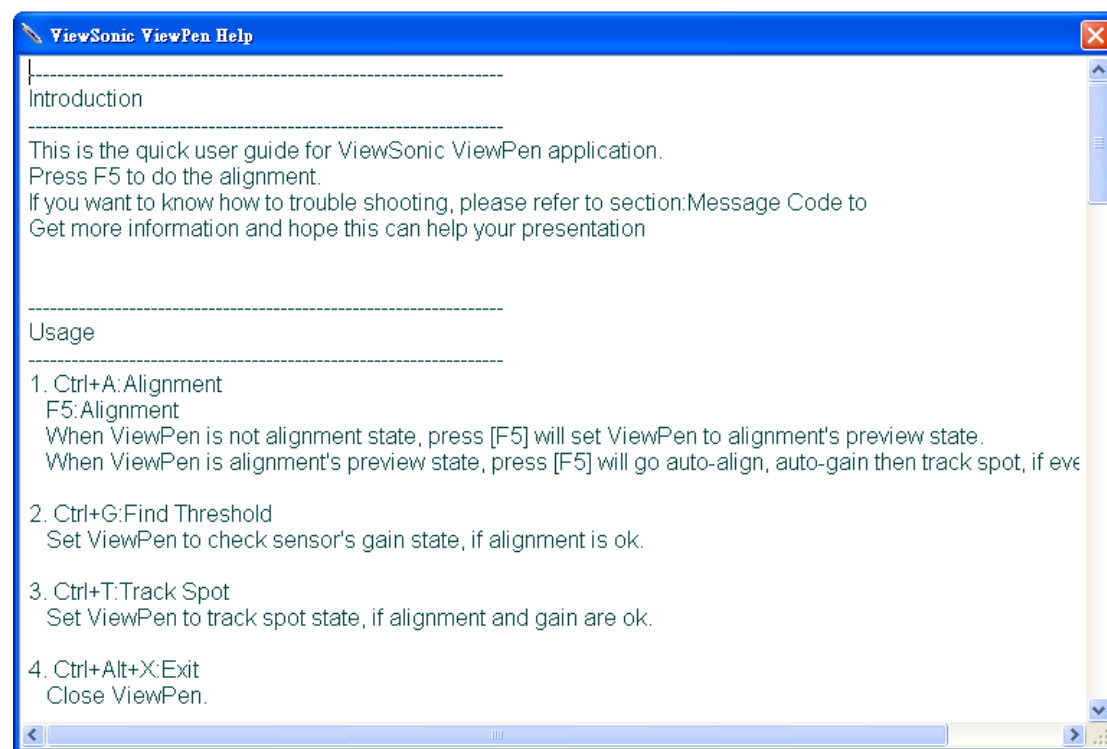


Figure 12: Readme.txt

### 3.2 Auto mode

After **pressing F5** to go to the auto alignment mode as shown in Fig 8. User can see a rectangle on the top left corner on screen and displaying maximum 7 x 5 nuts. Using the Nuts as the targets to do the coarse alignment to make sure the screen image falls within the scanned area, then **press F5** again to automate the align and tracking procedures, everything will be done automatically. After this is successfully done, the application windows will shrink to the task bar and working in the background.

## 4. User Tips

### 4.1 During setup

- 4.1.1 In the auto-alignment mode, there is a preview window on the top left corner of the application window that is used for basic aiming. Sometimes during very tough situation, there is no or less square nuts shown in the preview window. This is still OK to go for auto alignment, or you can press F11 to get clear preview ,since the application is smart enough to correct it, if the scanned area covers the screen image.
- 4.1.2 The aiming does not need to be very accurate or perfect; however, the scanned area should cover the full projection image.
- 4.1.3 During either auto alignment mode or manual mode, please make sure that there are no other icons or balloons show up in the application as shown in Fig 20. These icons might impact on the performance of auto alignment.

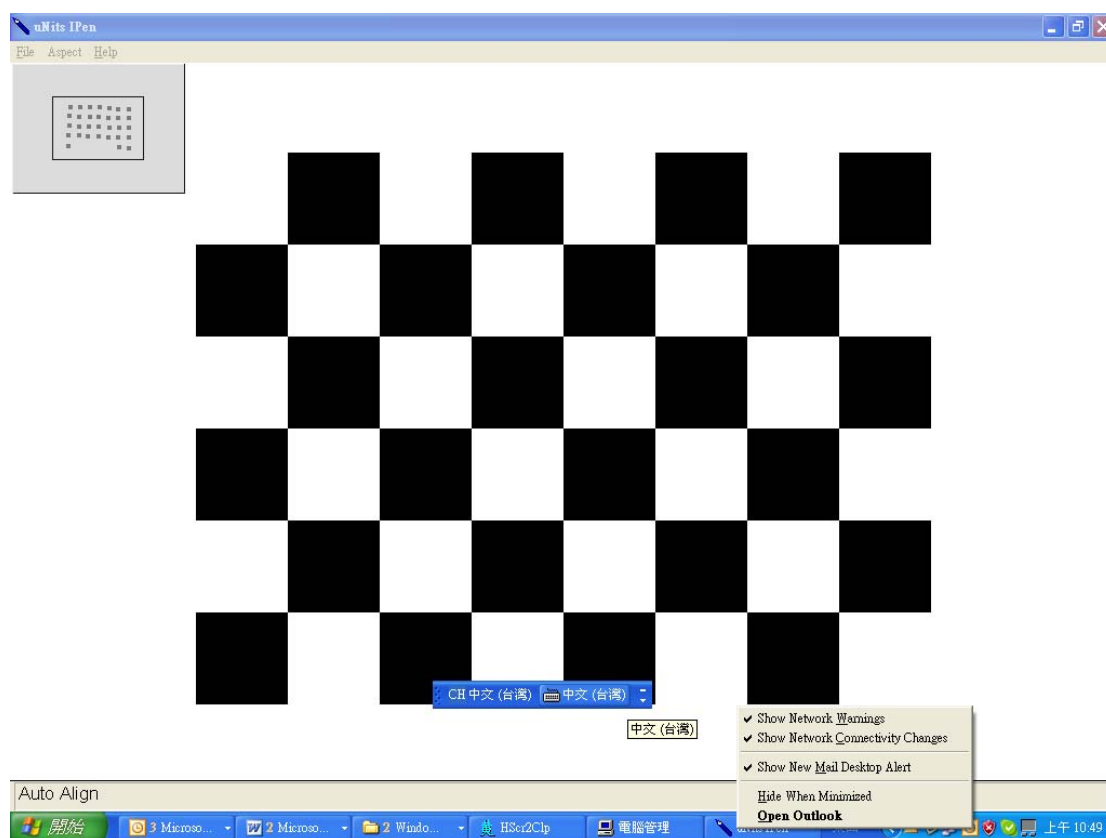


Figure 13: Icons or balloons might impact on alignment performance

## 4.2 During writing and presentation

There are some tips that user needs to pay attention to make the presentation more enjoyable.

- 4.2.1 Do not block any of the projected handwriting image by user hands or body. User can real time watches what he is writing.
- 4.2.2 Leave more room on each side of the screen for presenter, so the presenter does not need to stay inside the image.
- 4.2.3 Some of the control icons or tool bars can move to the lower side of screen image, this can help presenter to have a smooth operation, especially in the very large screen situation.
- 4.2.4 For remote sketch or marking, or icon selection, move the red laser spot to the destination and release the laser button. The cursor will be staying on the icons or item that you want, and then press the Left1 button as clicking on the left button to select the action. To push both laser button and select button at the same time to activate the action, it may be difficult to many users.
- 4.2.5 Due to the mechanical design of the screen touch mechanism, please press the handheld device tip on the image screen down as normal pen.
- 4.2.6 It is convenient to use PowerPoint 2003 for presentation. In the show mode, the hand writing function provide excellent capability for presentation.
- 4.2.7 MS Windows OneNote2003 is also a very good application for i-Pen to work. Please refer to MS OneNote2003 web site to learn more about the performance to check what OneNote can offer to you.
- 4.2.8 The product is designed not to use key board as much as possible, the other way to do input without leaving the screen is to use MS Windows screen keyboard as shown in Fig 14.



Figure 14: Screen key board

- 4.2.9 For most of Asian character input, user can take the advantage of MS Windows XP handwriting recognition as shown in Fig 15.

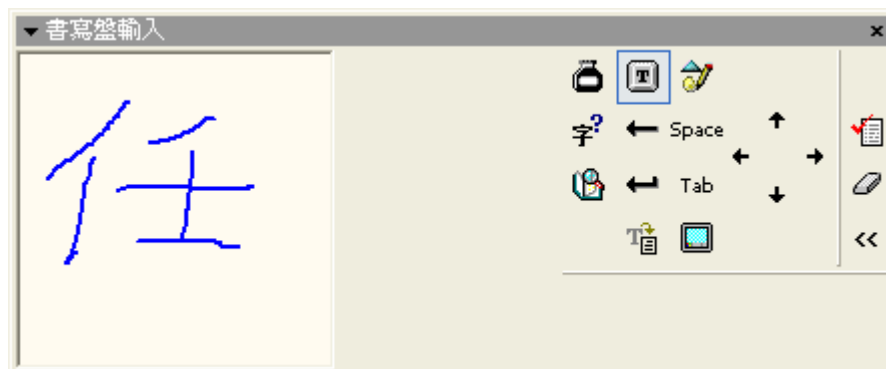


Figure 15: Asian Font hand writing input pad

- 4.2.10 Presenter can also use the English mode for handwriting recognition input mode to replace the function of screen keyboard. This is also a recommended input method
- 4.2.11 To insert important annotation in Word application, you can do with the help of drawing pad provided by Windows operation system, as shown in Fig 16.

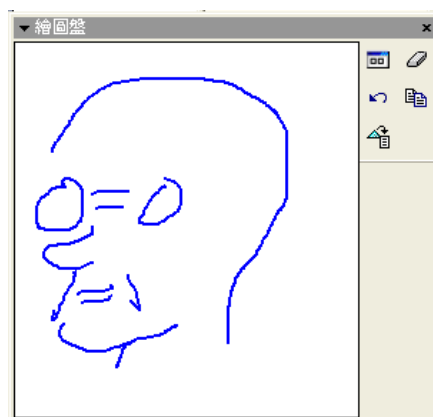


Fig 16. Drawing pad for annotation to any Office 2003 application.

## 5. Trouble Shooting

### 5.1 Is the H/W connection OK?

- 5.1.1 The sensor status of electrical connection to PC can be confirmed by looking at the LED light on the sensor base.
- 5.1.2 Presenter can check the wireless handheld communication to sensor base by click right, left button or push the cursor move button. If it does not respond as what you expect, please check the battery status. You can check the intensity of red laser light spot. Please swap with two good 3A batteries.

### 5.2 Is the S/W installation OK

- 5.2.1 Check the file folders are build with the right files copied in the directory.

### 5.3 Is the alignment OK?

- 5.3.1 If the alignment is done, however, the accuracy is very worse, please check the sensor code is the same as printed on the sensor base.
- 5.3.2 If the alignment is showing bad alignment accuracy, please make sure the projection screen image has the right aspect ratio as shown in application option menu. You can also check in the application Help menu, show system aspect ratio.

### 5.4 No Capture Device?

- 5.4.1 Please check the USB plug is connected and the LED on the sensor is on.
- 5.4.2 Make sure other application is not using this sensor device.

### 5.5 Is your initialized parameter OK?

- 5.5.1 If it is always some trouble to do the automated alignment, please press F11 to get optimized parameter.

### 5.6 What if I do not see the alignment square nuts?

- 5.6.1 Under some very critical environment, it is true that the square nuts can not be seen in the preview window. Please press F11 to get better preview. However, the automation alignment might still be able to match the image perfectly.
- 5.6.2 If the automation alignment does not work, please make sure the sensor is aiming the screen. The screen surface is flat and diffusive and no other stuff inside the area of the image.

## 6. Warranty

### Micro-nits Limited Warranty

Thanks for your purchase of a Micro-Nits Product. We at Micro-Nits seek to maintain the highest quality and workmanship in our products in order to give you, our customer, value for money and a quality product synonymous with the standard provided by Micro-Nits.

Micro-Nits warrants to you, the original end-user purchaser and holder of this warranty, that the retail hardware product herein is free of material defects in materials and workmanship at the date of purchase. In the event that the hardware product proves defective during the first **12 months** of your purchase ("Warranty Period"), then upon provision of your proof of purchase, you are entitled to return the hardware product to us for repair with new or reconditioned parts, or for replacement with a new or refurbished model that is the same or similar to the original (at the discretion of Micro-Nits). This warranty is non-transferable and expressly excludes any product that has not been purchased as new from an authorized Micro-Nits source. Further, this warranty is ONLY applicable in the country or territory where the product was purchased. Micro-Nit disclaims the applicability of all express and implied warranties on the installation software accompanying this product. You are specifically advised to make a backup copy of any software provided with the product.

Micro-Nits further warrants the repaired or replaced product to be free from defects in material and workmanship for a period of ninety (90) days from the date of repair or replacement, or the remainder of the warranty period, whichever is the greater. If Micro-Nits undertakes repair or replacement of the product, Micro-Nits may use new or reconditioned parts, and any returned parts or product from you that have been replaced become the property of Micro-Nits. Please note that the return procedures do not apply to Micro-Nits products that are not sold in Micro-Nits retail packaging or Micro-Nits products that are obtained as a result of the purchase of a non- Micro-Nits product.

To the extent permitted by applicable law, your Warranty does not apply to normal wear and tear; damage or loss of data due to interoperability with current and/or future versions of operating system or other current and/or future software and

hardware; alterations (by persons other than Micro-Nits or its authorized repair agents); damage caused by operator error, or non-compliance with instructions as set out in the user manual or other accompanying documentation; damage caused by acts of nature such as floods, storms, fires, and earthquakes, etc; products evidencing the product's serial number has been tampered with or removed; misuse, neglect, and improper handling; damage caused by undue physical or electrical stress; counterfeit products; damage to or loss of a product during shipment to or from Micro-Nits; damage or loss of data caused by a computer virus, worm, Trojan horse or memory content corruption; failures of the product which result from accident, abuse, misuse (including but not limited to improper installation, connection to incorrect voltages, and power points, or failures caused by products not supplied by Micro-Nits); damage caused by moisture, corrosive environments, high voltage surges, shipping, or abnormal working conditions; damage caused by any batteries or other power source not provided with the product; or any accompanying items not bearing the Micro-Nits serial number provided with the product, or in the case of communications products, the use of the product outside the borders of the country intended for use (as indicated by local telecommunication approval stickers).

In no event will Micro-Nits liability or damages to you, or any other person, ever exceed the purchase price you paid for the product, regardless of the form of the claim.

In addition, Micro-Nits also disclaims any obligation to support products for all operating environments, for example, by ensuring interoperability with all current and/or future versions of software or hardware.

In no event shall Micro-Nits or its licensors be liable for any indirect, incidental, special or consequential damages, or damages for any personal injury, bodily injury (including death) to any person, or for any lost profits, savings data or loss of use arising from or relating to the use of this product, even if Micro-Nits or its licensors have been advised of the possibility of such damages.

**NOTE:** This warranty gives you specific legal rights. You may have other rights, which vary from country to country. Certain limitations in this warranty are not permitted by the jurisdiction of some countries, so some limitations here may not apply to you.

## **Federal Communication Commission Interference Statement**

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 in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, 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 of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and 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.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

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 transmitter must not be co-located or operating in conjunction with any other antenna or transmitter

## **Industry Canada Notice to Users (Industry Canada Statement)**

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.