



### **System Requirements:**

- Windows®: Pentium 133MHz or higher processor
- Windows 98 Operating System
- Macintosh®: OS 8.6 & G3 processor or greater
- One available USB port
- 32MB memory or higher
- Sound card, microphone, and 28.8 or faster modem for video conferencing applications.

## **Introduction**

This document describes how to install the Extensions for Macintosh and the Video for Windows/Twain drivers for your iSee® USB PC Camera. The driver is a VFW (Video for Windows) installable video capture driver which can be used with standard VFW applications, e.g. VidCap, to capture video and still image data. It is compatible with a wide range of applications that utilize the VFW interface to access image capture devices. This particular camera is an ideal low cost video input device for video telephone applications. The driver comprises a thin 16bit VFW layer with a 32bit core DLL implementing the VFW API functions. This DLL communicates with a USB WDM mini-driver (essentially a DirectShow driver) via a stream class emulator.

## **FCC Regulations**

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 receiver, including interference that may cause undesired operation. This equipment has been tested and found to comply with the limits of 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 or television reception, which can be determined by trying the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
  - Reorient/Relocate the receiving antenna.
  - Increase the separation between the equipment and the receiver.
  - Connect the equipment into an outlet on a circuit that is different from that in which the receiver is connected.

## **Compatibility Status**

The extensions for Macintosh require that you be running at least Macintosh Operating System 8.6 and have a G3 or better CPU. For PC's the driver will only run (be supported) under Windows 98. This driver will not run under Windows 2000 beta2. Upon full release of Windows 2000, driver updates will be made available via the Ariston website. Note: This camera has passed USB-IF compliance testing.

## **Hardware**

### **Focus Wheel**

The center lens area of the camera is its "Focus Wheel". The lens mounted in the focus wheel is designed to finely tune the focus of your camera using very small adjustments. The focus range of the camera is 10mm to infinity. If you find after a few turns of the lens that the focus is still not improved, please try turning the lens in the opposite direction.

### **Swivel Base**

The specially designed swivel base allows for the camera to be tilted up or side to side without moving the base of the camera. No matter where you are the camera can be the eye for your PC.

## Installation

**Windows 98** - Driver installation can be achieved by running the executable installation file located on the CD-ROM or via the Windows 98 new hardware installation process using the .INF file.

When installing from the SET-UP.EXE file please do the following procedure:

1. Do not plug the camera in before running the Set-Up program.
2. Click the "Start" button from your Windows desktop screen (usually lower left hand corner)
3. Select the "Run" option
4. Select the "Browse" option and locate your CD-ROM drive
5. Select "Setup.EXE"
6. After the installation you will need to restart your PC, plug the camera in to the PC during the restart
7. Your camera should be installed properly at this time.

To install the drivers using the .INF file method do the following procedures:

1. Plug the camera into an open USB port
2. The screen menus should appear in the following order:
3. "New Hardware Found"
4. "Building Windows Driver Database"
5. "Windows needs to know the location of the driver for the following devices (USB Camera)"
6. You will now come to the pop up menu asking to specify the driver location, click on the "Browse" button and locate the drive letter that is associated with your CD-ROM drive, click and select.
7. Find the iSee folder on the installation CD-ROM and click the "OK" button
8. The "next" box will become highlighted and you may now click finish.

The installation program detects what version of Windows Operating System that you are using. If your operating system does not meet the needed version requirements (Windows 98) the program will abort the installation procedure. *Note: You will not be able to use the camera unless you upgrade your system to Windows 98.*

*The following driver files are installed on your Windows 98 system:*

VVLUSBWV.INF - INF file for VFW driver  
VVLUSB16.DRV - 16bit VFW interface layer  
VVLUSB32.DLL- Core VFW driver  
VVLSTRM.SYS - Stream class emulator  
VVLUSB.SYS - WDM mini-driver  
VVLCODEC.DLL - 32bit VFW codec for all driver supported YUV FOURCCs  
VVLUSB.DS - 32bit Twain driver  
VVLPRIV.DLL - 32bit Private Interface access DLL  
TWAIN.DLL - Twain system file  
TWAIN\_32.DLL - Twain system file  
TWUNK\_16.DLL - Twain system file  
TWUNK\_32.DLL - Twain system file  
READMEVW.TXT - This README file

### *Successful Windows 98 Installation Verification*

If the driver and software have been installed successfully, your Ariston iSee camera should be recognized by the Windows 98 Operating System. You should be able to verify this in two different locations.

1. Go to "My Computer", choose "Control Panel", choose "System", Choose "Device Manager", choose "Imaging Device" and you will see "USB PC Camera".
2. Go to "My Computer", choose "Control Panel", choose "Multi-Media", choose "Devices", choose "Vide Capture Devices" and you will see "USB PC Camera".

**Macintosh** - Plug USB Camera into an available USB port (DO NOT USE THE KEYBOARD). A message will come up stating that an unknown USB device has been connected and please refer to the manufacturer's software for installation. At this time place the Ariston Technologies CD-ROM into the CD tray. Double click on the iSee installer icon and follow the on screen instructions, after installation is complete you will need to restart your system (the restart is only necessary after the initial installation).

Under Macintosh the following extensions are added to the extensions folder. The extension's folder is located in your system folder on your Hard disk:  
VISION CPiA USB Driver - System Extension

#### *Successful Macintosh Installation Verification*

If the driver and software have been installed successfully, your Ariston iSee-II camera should be recognized by the Macintosh Operating System. You should be able to verify in the following way:  
1. Pull down the "Apple Menu" in the upper left corner of your desktop and choose "System Profiler", then choose "Devices and Volumes" the camera should be listed under the subtitle "USB" and will be shown as USB Camera.

After the installation has successfully taken place on a Macintosh or PC system the system will need to be restarted. The option dialog box will pop up asking if you would like to restart "now" or "Continue" working and restart later. You must restart your system before using your camera or you will encounter camera malfunction errors.

#### *Uninstalling your camera software*

All associated files for your iSee-II camera can be uninstalled by running the installation program and selecting the uninstall option on the command line.

#### **Driver capabilities Windows 98**

- Support for VFW frame and stream capture
- Arbitrary image sizes up to 4CIF with 8 by 4 pixel granularity
- RGB24, RGB16, YV12, I420, UYVY and YUY2 image formats
- A codec for converting the above YUV formats to RGB
- USB bandwidth used by camera can be selected via properties dialog box
- Twain32 support
- A Private Interface for non-VFW API function calls

#### **Driver capabilities Macintosh**

- YUV 422 QuickTime format
- Generates CIF or QCIF
- 24 bit color
- arbitrary scaling
- 16 bits per pixel YUV

#### **Light Impact to the Camera**

Ambient light around the camera might impact the color quality of the captured or viewed image or picture. The following tips will help you get better performance:

1. Do not face the camera directly towards a strong light source.
2. Place the light source behind your camera and face the object being view towards the light source.
3. Make sure that you have sufficient light.

#### **Camera Settings Dialog Box**

##### *Brightness*

Moving this to the right increases the brightness of the image. Note: the brightness setting requires a short time to take effect after the driver starts.

##### *Contrast*

Controls the contrast of the image, moving to right increases the color contrast.

##### *Color*

Controls the color saturation of the image, moving to right increases the color saturation of the image.

##### *Compression Control*

The slider acts as an image quality control. Moving to the right increases image quality, at the expense of image framerate, while moving to the left decreases image quality, but give a higher framerate. If your video conferencing application is slow, try decreasing the image quality (by moving the slider to the left).

### *Optimize for Video Preview*

Use this setting if you are looking at local video or want to capture a video sequence to a file. This setting allows the driver to use a large proportion of the available frame time to capture the best and fastest video possible. This option is not available under Macintosh OS.

### *Optimize for Video Conferencing*

Use this setting if you are using the camera with a videoconferencing application. This compression setting limits the proportion of the available frame time that the driver will use. Thus allowing the videoconferencing application time to perform audio and video compression. This option is not available under Macintosh OS.

### *Restore Defaults*

This restores factory settings for the controls in the Camera Settings dialog and the "Advanced dialog" for Brightness, Contrast, Color and Compression Control are all set to their default value of 50. Compression mode is set to Video Preview; Lighting is set to Automatic; backlit is set off; Pan/Tile is also turned off. The banding filter is enabled for 60Hz Lighting.

## **Advanced Settings Dialog Box**

### *Lighting*

This lets you select for your current lighting condition, and is particularly useful in low lighting conditions. Note - The setting selected will affect the maximum framerate available from the camera as the medium and low settings slow the camera down to improve sensitivity. There is also an "Automatic" setting that selects the most appropriate level. This option is not available under Macintosh OS.

### *Backlit*

This makes the auto exposure controller attempt to correctly expose the center portion of the image, while disregarding bright objects around the periphery of the scene. It works well for "head and shoulders" type scenes. Deselecting this box sets the exposure controller to use a "flat", equally weighted, algorithm. This option is not available under Macintosh OS.

### *Banding Filter*

This option will remove the horizontal banding that sometimes appears in the scenes lit by artificial lighting. This banding is caused by the mains lighting flickering on and off at the mains supply frequency. When the banding filter is selected the "Filter Type" (see below) must be set appropriately. This option is not available under Macintosh OS.

### *Filter Type*

Set this to match the frequency of the main power supply in your country. This is 60Hz in the USA, and 50Hz in the UK. This option is not available under Macintosh OS.

### *Zoom control*

The camera's video driver supports a zoom mode. Enabling this feature allows you to pan and tilt a capture window within the full capture area. The capture area is 352x288. *The driver always starts 'un-zoomed'*. This option is not available under Macintosh OS.

## **Image Format Options**

### *Image Sizes*

	24 Bit RGB	16 Bit RGB	8 Bit RGB	YUV
640 x 480	Yes	-	-	-
352 x 288	Yes	Yes	Yes	Yes
320 x 240	Yes	Yes	Yes	Yes
176 x 144*	Yes*	Yes*	Yes*	Yes*
160 x 120	Yes	Yes	Yes	Yes

\*default image size for the camera

Image sizes other than those tabulated above may be used. However the following restrictions apply:

- Maximum image size is 640 x 480.
- Minimum number of columns is 8, and the minimum number of rows is 4.
- Row size must be a factor of 8 and column size a factor of 4 for image sizes smaller than CIF. If the image size is larger than CIF in either axis the row size must be a factor of 16 and column size a factor of 8.

#### *Image Formats (AKA FourCCs)*

The YUV column refers to the various YUV image formats (also known as four character codes) that the driver supports. These are:

- RGB (24 and 16 bit depth)
- YV12
- I420
- UYVY
- YUY2

#### *Properties Dialog Box*

This dialog shows driver version info and is useful for customer support. It also reports the requested allocated USB bandwidth (see section below on USB transfer modes for more details). Selecting a lower bandwidth setting will lower the framerate but allow improved operation of other USB peripherals. Macintosh users will find this information by clicking the "Get Info" option will highlighting the extensions in the system-preferences folder.

#### *Twain Driver (Win 98)*

The dialogue box features a preview window displaying the current camera image, and has a number of controls for tuning and capturing an image.

#### *Button to set the image size and format.*

The display updates to reflect any new settings. The image is scaled to fit the preview box. This may result in a distorted image being seen. This is purely a feature of the preview windows, and the image will appear correctly when it is displayed by your application.

#### *Snap Shot Button to capture an image from the camera.*

The cameras Snap Shot capture button will capture an image when the button is pressed. One way to use this feature is to do the following. Select the "Start" button in the lower left corner of the Windows screen, next select the "Programs" option, then select "Accessories" and finally select "Imaging", you can press the SnapShot button to capture an image while in the imaging application.

**Note:** Currently the hardware snap-shot button is not functional under the Mac OS. In order to capture pictures in the Mac OS you must use the Snapshot option in the video software package that you are using.

#### *Button to freeze the image.*

A frozen image may be captured any number of times. The image is frozen automatically when the capture button is pressed, and the button text changed to "Resume". Pressing it will restart the video camera display. Note: Some applications only allow the capture of a single image before unloading the Twain driver, if this is the case you won't be able to capture the same image more than once.

This option is available under Macintosh OS by using software to facilitate the freeze frame option.

#### *Button to close the driver.*

The dialog box may disappear after the image has been captured. This is entirely under the control of the application that loaded the driver. If it does disappear, choose Acquire to capture another image. Only RGB24 color is supported. If another format is chosen, the driver warns the user that the format change has been ignored and resets it to RGB24.

This button will not pop up in a Macintosh environment.

#### *Button to set the brightness/contrast/color and compression controls*

This button allows adjustment of the brightness, contrast, and color properties of the camera.

## USB Data Transfer Modes

### *"Isochronous" Video Transfer*

The Ariston USB iSee Camera uses ""Isochronous"" transactions to transfer video data to the PC. An "Isochronous" transaction guarantees bandwidth and latency of the transfer and the recommended transfer mode for streaming multimedia devices (e.g. video and audio).

High speed USB has a bandwidth of 12MBit/s or 1.5MByte/s. The USB bus is framed into 1ms time slots. During each 1ms time slot 1500 bytes can be transferred. An "Isochronous" device can request a maximum of 1023 bytes for data transfer per 1ms time slot. If granted (depending on which other "Isochronous" devices are on the bus) this bandwidth is reserved for the device within each 1ms time slot. Therefore once the camera has reserved bandwidth it is guaranteed to have that bandwidth available within each 1ms time slot even if it does not always use it. Thus if another "Isochronous" device subsequently requests more bandwidth than remains available on the bus it will be rejected.

The only problem with this approach is that if you request too much bandwidth and other "Isochronous" devices are active on the bus then the camera will be unable to supply video. To counteract this problem the camera has 4 bandwidth settings: high bandwidth of 960 bytes/ms, medium bandwidth of 704 bytes/ms, low bandwidth of 448 bytes/ms and zero bandwidth. When no VFW application is using the camera we sit enumerated at our zero bandwidth setting. This allows other "Isochronous" devices to use the bus. (Note: when other "Isochronous" devices are not 'running' they should also request zero bandwidth). When a VFW application starts to use the camera we request our high bandwidth setting. If this is unavailable we try our medium bandwidth setting and then low bandwidth setting etc. (The starting point for requesting bandwidth can be modified via the multimedia properties as high, medium or low).

### Bulk Video Transfer

The alternative approach to transferring video to the PC is to use Bulk transfer. Bulk transfer bandwidth is not guaranteed but allows you to transfer packets of video data of maximum size 64 bytes to the host. If no other devices are attached to the bus the Host controller can schedule multiple Bulk transactions per 1ms frame and video data will be transferred very quickly to the Host. (In fact this can be slightly faster than "Isochronous" transfer because there is no 1023 bytes out of 1500 bytes limit). However the danger is that when "Isochronous" devices are attached to the bus and reserve bandwidth and/or multiple devices are attached then bulk transactions will be scheduled by the Host Controller only as and when there is free bus time. If the bus is very busy this results in video data being trickled through as and when there is time. The resultant latency issues are significant in video transfer.

### Why Graphics Card Drivers Can Upset "Isochronous" USB Data Transfer

The cause of the problem with USB "Isochronous" streaming and certain graphics accelerators is related to the graphics accelerator effectively blocking access to the PCI Bus. USB Controllers need to be serviced regularly in order to function correctly when in ISO mode. This is because the controller must issue an 'IN' token in each 1 millisecond USB frame in order to allow the device to send its data. The definition of the ISO stream is that the camera may send up to x bytes each frame where x is determined by the bandwidth allocated. In the above, the limit is represented by the 12 b's in the first two frames if the camera chooses to send less in the last frame. Note: there was still enough room for it to send its full quota of data before the end of the frame if it had chosen to do so.

When access to the PCI bus is blocked by the card, the host issues the IN token to the controller as normal, however, the token is delayed on the PCI bus until the accelerator has finished. Because the IN token was delayed, the camera started transmitting late. This means that it was still transmitting data at the end of the frame (indicated by \*) this is a USB bus error condition which causes the device to be effectively shut down, all further communications with the device are impossible until it has been unplugged and plugged in again. If the bandwidth allocated to the device were halved, the same delay would not cause an error because the camera would have stopped transmitting before the end of the frame:

The probability of an error occurring is therefore a function of the following:

- Frequency of accelerator induced delays
- Duration of accelerator induced delays
- Bandwidth allocated to camera

In our experience, problem graphics accelerators tend to produce long delays at regular intervals. The consequence of this is that even trivially small "Isochronous" transfers are at risk. If we repeat the previous example with a longer delay even the low bandwidth transfers will die. Since each USB frame is 1 millisecond, there are 1000 opportunities for failure to occur each second... It only takes one delay in the wrong place at the wrong time to trigger this problem.

The only real solution therefore is to reduce the duration and frequency of the delays by reducing the graphics acceleration. The delays can usually be eliminated entirely by disabling graphics acceleration completely. Reducing the bandwidth used by the peripheral may help, but only if the particular Graphic's accelerator in use is causing sufficiently short delays, which is not normally the case.

## **Known Problems Windows**

### *Side Effects of "Isochronous" Transfer Mode*

The camera uses the "Isochronous" transfer mode, which guarantees latency and bandwidth, but not data integrity (see previous section for more details). The resulting data corruption can cause frames to be dropped, which results in occasional pauses in the video.

### *Graphics Card drivers*

Some graphics card drivers can interfere with USB traffic by spending too much time on the PCI bus, this is a documented problem that affects all "Isochronous" USB devices, when the driver encounters the problem the video will pause and become completely white. In most cases you can recover by closing the application and re-plugging the camera, however the best workaround is to lower the graphics hardware acceleration setting.

### *Camera Doesn't Work When Windows Starts With It Plugged In*

On some PC's the camera does not work correctly if Windows starts with it plugged in. You will see a yellow exclamation mark on the camera's entry in Device Manager when this happens. Re-plugging the camera will often clear the problem.

### *Camera Does Not Enumerate (sends no signal) when Plugged In*

Some motherboards (particularly early Elite models) provide questionable USB data signals, which may prevent the camera from enumerating and operating correctly. A camera test applet is available which can detect this problem.

### *How do I get sound with my Video Conferencing*

You must have a sound card installed on your PC to capture sound for video conferencing. Plug a microphone into your sound cards MIC-In or Line-In jack to use this feature. Most Video conferencing packages allow for multiple source inputs for this reason.

### *What Windows 98 software titles are available on the installation CD-ROM*

- **PrivateLine**

*Privateline*® is a windows-based client messaging solution for personal computers. It includes all the services one has come to expect from an Internet e-mail program but much more.

*Privateline* has combined the benefits of a private, secure point-to-point messaging system with traditional e-mail facilities. *Privateline* was designed specifically to address the needs of business professionals and others who presently are excluded from some of the basic functionality available on the "Information Super Highway" because of the lack of security, speed, and convenience.

- **PhotoGenetics**

*PhotoGenetics*® is a software package that applies a dozen global image processing functions at the same time without requiring any experience or effort on your part. A result is immediately produced, and you are simply asked to evaluate the result by comparing the two versions of the image displayed on the screen.

### [Windows 98 software titles continued](#)

- **Adobe Deluxe Small Business Edition**  
*Adobe Photo Deluxe®* not only makes customizing photos quick and easy, it also gives you hundreds of professionally designed templates to drop your photos into. This means marketing your products or services more effectively can begin today. Also included are step by step guides for importing photos directly from digital cameras to make invitations, coupons, cards, banners, and much, much more.
- **Quick Editor for Windows**  
*Quick Editor®* is a QuickTime Video Editor designed to perform common editing operations in the quickest and easiest way. It is a great tool for creating small, nifty movies that you can publish on the web, in a digital family album, and so on...
- **VidCap32.EXE**  
*VidCap32.EXE* is a small application that lets you check the functionality of your camera. By opening this application you will be able to verify that the camera is functioning properly and verify frame capture rates at various screen resolutions.

### **Known Problems Macintosh**

#### [System Freezes after Software Installation](#)

Original iMac owners (Bondi Blue) 233MHz may experience system freeze when plugging the camera into the USB port the system. If this happens, you most likely need to update the firmware on your iMac. You can download the iMac Firmware and run the update this will correct this problem. The firmware update can be found at the following Apple Software Update Page <http://asu.info.apple.com/>

#### [The Camera is not recognized when I plug it in](#)

The camera must be plugged into an open USB port either on the side of the iMac or on a powered attached USB hub. DO NOT plug the camera into one of the keyboard ports.

#### [The Snap Button for picture capture will not work](#)

This option is not available as a hardware function on the Macintosh platform. However, it can be accomplished under most software packages that allow you to view and edit your video input.

#### [I get a Green Video screen when I attempt to view my video](#)

Sometimes when a Macintosh is started it automatically loads any available video drivers. Subsequently when you open a software application to view your video source you will get a green screen. This usually indicates that the system is confused on which video driver is supposed to be used or it is unable to release the previously loaded device extension. You can reset this by simply unplugging your camera and then reconnecting it (back into the same port).

*Note:* If after unplugging the camera and reconnecting it the green screen does not clear and display video make sure that you only have one video device attached to your Macintosh at a time (the Mac OS will only accommodate one video device attached at a time).

#### [How do I get sound with my Video Conferencing](#)

You can use the microphone-input jack on your Macintosh to capture sound for video conferencing. Most Video conferencing packages allow for multiple source inputs for this reason.

#### [Picture quality does not seem very good](#)

The quality of the video picture depends upon the software being used to view or capture the video as well as the speed of the CPU. Try viewing the Video source using another software package.

### [What Macintosh software titles are available on the installation CD-ROM](#)

- **PhotoGenetics**  
*PhotoGenetics®* is a software package that applies a dozen global image processing functions at the same time without requiring any experience or effort on your part. A result is immediately produced, and you are simply asked to evaluate the result by comparing the two versions of the image displayed on the screen.

[Macintosh software titles continued](#)

- **Adobe PhotoDeluxe Version 2.0 for Macintosh**  
*Adobe Photo Deluxe®* the award winning software allows you to modify your photos and share them with family and friends. Simple intuitive guided activities for adding special effects such as replacing backgrounds, removing red eye, create greeting cards, calendars, gift tags and more. Also includes the Easy Photo Organizer so that you may archive your photos in albums for easy access.
- **CU-SeeMe for Macintosh Version 3.12**  
*CU-SeeMe®* is video conferencing software that allows you to share video, audio, text and graphics with people around the world. You can use CU-SeeMe over the internet or any TCP/IP network for real-time person-to-person or group conferencing, broadcasts, and chats.
- **ClearPhone**  
ClearphoneProPPC™ is a user friendly video conferencing program for Mac OS computers using system 8.1 and above. Users can send and receive audio, video, files, graphics, sounds, movies, share documents, and view shared WEB pages in real time via the Internet and local area networks. All data audio and video transmissions are always perfect quality with no data loss as is the case with other similar products.
- **Quick Editor for Macintosh**  
*Quick Editor®* is a QuickTime Video Editor designed to perform common editing operations in the quickest and easiest way. It is a great tool for creating small, nifty movies that you can publish on the web, in a digital family album, and so on...
- **Hack TV**  
*Hack TV®* has two different functions. It allows you to verify the functionality of your Ariston iSee-II camera as well as check the frame capture rate at various resolutions. It also allows for the conversation of a video input source to a different video output source, such as, NTSC to PAL, PAL to SECAM, NTSC to SECA, or whatever combination.

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**Remarks:**

Individual software packages included with the Ariston Technologies iSee-II camera bundle are supported by their respective technical support departments, information for each of these can be obtained from the software manufacturer manual, the manual will be located on the enclosed CD-ROM or on the individual companies website.

All other names are trademarks, registered trademarks, or service marks of their respective companies.

All specifications are subject to change without notice.