

PHILIPS

PCA646VC

USB PC Camera

Installation manual



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1

Introduction

Brilliant images and blazing colours. That's what the Philips USB PC Camera PCA646VC gives you. Forget about installing grabber cards and separate power supplies. You don't need them. Power is supplied direct to the camera through the USB cable and the camera returns audio and video straight to your PC!

This booklet describes the quick and easy way to:

- install the camera;
- install the software;
- record your own videos;
- and take your own pictures.

Congratulations on purchasing the Philips USB PC Camera PCA646VC. This new digital camera is the most advanced way of recording high-quality movies or still pictures quickly and easily on your PC or laptop computer. After installation, the new camera can be used for all sorts of applications, such as:

- **Video e-mail:** This new digital camera uses the patented compression technology of the 'Videogram Creator' software. Thanks to this compression algorithm, the video files remain very small so they can be sent via the corporate network or the Internet.
- **Video conferences:** The camera and the driver software are suitable for many popular video conferencing packages, including NetMeeting by Microsoft, VDOPhone and ProShare by Intel.
- **Snapshots and video photos:** Use photos and images in presentations, create postcards, or send them via e-mail or on diskette. Add sound to the snapshots to add a personal message or to explain the picture.
- **Video Capture:** Create your own video presentations, video-mail, product demonstrations, training videos, Internet clips etc.
- **Video editing and special effects:** After recording the video images you want with the Philips USB PC Camera, the images can be easily edited using other programs or devices which support the AVI file format.

Congratulations again on choosing the Philips USB PC Camera. The following sections in this manual give a step-by-step description of the installation process and explain how to use the USB PC Camera.

2

Preparation

This manual describes how to install the hardware and software and how to create your first video recording.

2.1 Contents of the box

Check to see if the following items are in the box:

- the Philips USB PC Camera PCA646VC;
- clover-leaf shaped base to support the camera;
- the CD-ROM containing the Philips installation software, application software package and electronic software manual;
- this installation manual.

2.2 Your first video recording in five easy steps

The fastest way to get results is to perform the following steps:

- ① Unpack the box
- ② Put the CD-ROM in your CD-ROM player, and let the InstallShield Wizard install the driver software and the application software (see Section 3: "Camera and software installation")
- ③ Connect the camera to the USB port (marked with the USB-logo: )
- ④ Start the video application (see Section 4: "The Videogram Creator software")
- ⑤ Have fun!

3

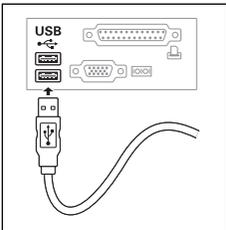
Camera and software installation

3.1 Installing the software for the Philips camera

The Philips USB PC Camera works with any application that uses the Video for Windows format (AVI format). As an example of a powerful video software package, we have included the fully functional 'Videogram Creator' software on the CD-ROM. Please read Section 4 for a brief introduction to the use of this software.

In order to ensure the video and audio performance your camera has been designed for, we have included an InstallShield Wizard on the CD-ROM. Please follow these directions for the camera driver installation exactly, and make sure that you have your Windows 98 CD-ROM at hand.

- ① **Unplug all your USB devices (except USB keyboard or USB mouse) before you start.**
- ② Insert the Philips PCA646VC software CD-ROM into the CD-ROM drive.
- ③ Click "start", then click "run", type: "X:\setup.exe", where X stands for the drive name of your CD-ROM drive.
- ④ Let the InstallShield Wizard guide you through the setup procedure.



- ⑤ When the camera software is installed, the InstallShield Wizard will ask you to connect the camera to the USB port.
- ⑥ Windows98 will automatically detect your camera. When asked for the Windows98 CD-ROM, insert it into the drive and click "OK". Exit the Windows 98 Set-up screen if it appears. After completing the installation of the camera, the InstallShield Wizard will ask you for the Philips PCA646VC software CD-ROM.
- ⑦ To install the video application software, press the 'Applications' button, and follow the instructions on your screen.
- ⑧ After the installation of the Videogram Creator software you will be able to start the camera set-up wizard and test your new camera. Make sure that the correct input audio device is selected ("Philips CIF Digital Camera; Audio (Microphone)"), especially if you have a sound card installed.
- ⑨ You are now ready to start working with your Philips USB Camera. Have fun!

4

The “Videogram Creator” software

The Philips USB PC Camera PCA646VC can be used with many video software applications, for instance the ‘Videogram Creator’ software on the CD-ROM. This application allows you to compress captured video files, embed the Videogram Player inside the file, and play it back on any Windows 3.1x / 95 / 98 or Windows NT system as an .EXE file without having to install the Player on the target system. This is perfect for sending Videograms by e-mail. The compression is so great that a 1-minute Videogram including the Player fits on a standard 3.5”, 1.44 MB diskette.

4.1 Installing the Videogram Creator software

Please see Section 3 for the installation procedure.

Note: You will find an extensive software manual in Adobe Acrobat format on the CD-ROM. Please read this electronic manual for a complete description of the Videogram Creator software. The following short software description is only meant to get you started in the amazing world of PC video applications.

4.2 Using the Videogram Creator software

STEP 1:

Start the ‘Videogram Creator’ software / Preview mode

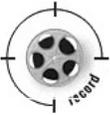


After starting the 'Videogram Creator' software, you will see the 'live' camera image. Move the camera about, adjust the lighting and turn the red lens ring to focus. You will immediately see the effect of this on your screen. Adjust the sound and image settings by clicking on 'Edit' in the menu bar and selecting the 'Video Settings' option. Consult the electronic manual on the CD-ROM for a detailed explanation of all the possible settings.

STEP 2:

Recording video images

- ① Click on the 'Record' icon. A three-second countdown displays on your monitor, then the recording begins.
- ② Click on the left mouse button or the 'Esc' key to stop recording.
- ③ Press the 'Play' button on the Tool Bar under the video window to see what you recorded.



STEP 3:

Sending and/or saving a Videogram

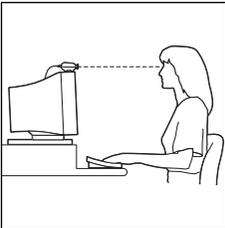
- ① Click on the 'Send' icon and type a name in the dialog box.
- ② Click on the 'Send' button to create the Videogram.
- ③ Click on the 'Send' button again. If the e-mail software is MAPI compatible, a mail window will automatically appear on the screen. Enter the e-mail address of the person to whom you want to send the Videogram and then send the e-mail. Even if your e-mail software is not MAPI compatible you can send a Videogram by first saving the Videogram as a file and then adding this file to the e-mail as an attachment.



What is MAPI and do I need a MAPI compliant e-mail system?

MAPI stands for Messaging Application Programming Interface. This interface allows different applications to interact using e-mail messaging. Microsoft Exchange, Eudora Pro, Pronto 97, and Z-mail Pro are all examples of MAPI Compliant e-mail systems. Netscape, Internet Explorer, Emissary and America Online (AOL) are all examples of non-MAPI-compliant e-mail systems.

- If you have a MAPI-compliant e-mail system, an e-mail window will automatically appear when you are ready to send a Videogram.
- You do not need to have a MAPI-compliant e-mail system in order to send Videograms. You can still send Videograms by first saving the Videogram to a file, and then attaching the saved file to your e-mail message.



Aiming the camera

The position of the camera and the amount of light available are important factors in determining the quality of the video images. Preferably you should position the camera at eye level, less than a metre away from what you want to record. Ensure that as much light as possible is illuminating the object you want to record.

Focusing

Rotate the red ring around the lens to focus the image.

5

Settings

The camera properties (audio and video) can only be changed from within an application.

5.1 Sound properties



Access to the sound properties is dependent on the application software. But usually it will look something like this when you open a 'Sound Settings' option.

The camera microphone can only generate a mono audio signal. Applications may offer you a choice of other audio qualities, but bear in mind that a mono microphone can never create stereo sounds!

Note: The USB microphone of the camera works independently from the sound card. Should you want to use the camera microphone as your sound source for applications, the application might ask you for the 'Recording Device' setting. Select the 'USB Audio Device' from the device list as your input device. Otherwise, your sound card will produce the sounds for the video instead of the camera microphone.

5.2 Camera properties

The Philips USB PC Camera is very user-friendly and can be used intuitively. The video options can be adjusted in the 'Camera Property Pages'. Access to this property page is dependent on the application software. For instance, with one program you would choose 'Options' / 'Video Source' from the menu bar to open the property page.

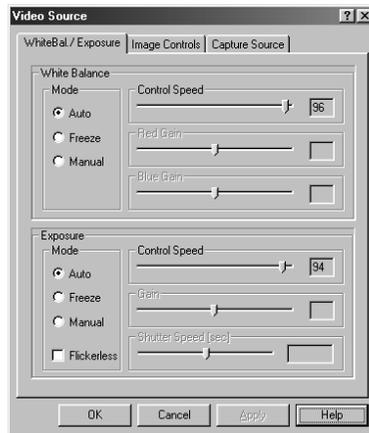
However, in other applications you may have to open the 'Preferences' menu or the 'Video Options' menu.

Access the camera property page (its location in the menus differs per application) and you will see three tabs with user changeable settings. Most applications can show a 'live' video image on your monitor. Always use this option to see the effect of changed settings on your screen.

5.2.1 Camera Property Pages

5.2.1.1 WhiteBalance/Exposure

The first tab is 'WhiteBalance/Exposure'. The upper half of the page controls the White Balance, and the lower half of the page controls the Exposure settings.



White Balance

The white balance setting automatically controls the different colour components in the picture to obtain the most natural colour reproduction.

When the mode setting is in freeze mode, the automatic white balance control is switched off. The actual colour setting remains stable and is not influenced by the internal controls of the camera. Put the white balance in freeze mode when you have a colourful scene and stable lighting conditions.

- To obtain a perfect colour reproduction, act as follows:
- ① Choose auto mode;
 - ② Hold a piece of white paper in front of the camera;
 - ③ After a few seconds, switch from auto to freeze mode.
- Now the colour setting remains constant. When light conditions change it is recommended that you put the white balance mode on auto again.

In auto mode the control speed setting determines the speed of automatic adjustment to changing light conditions. Experiment with this setting until you find one to your liking.

In manual mode you can determine manually the amount of red and blue in the picture. Try a few settings at your leisure, but you will find that the auto setting is best in most cases.

Exposure

The exposure setting determines the amount of light that will fall onto the video sensor chip. In auto exposure mode the camera automatically adjusts the exposure gain and shutter speed. The control speed setting determines the speed of automatic adjustment to changing light conditions. Experiment with this setting to find one you like.

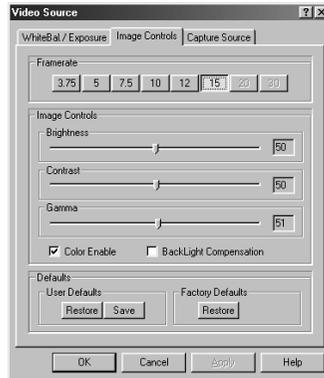
In freeze mode all existing settings are frozen.

In manual mode you can control the gain and shutter speed settings manually. Try a few settings at your leisure. The auto setting will be best in most cases. Both freeze and manual exposure mode disable the controls for contrast and backlight compensation in the next tab (marked Image Controls).

The Flickerless option must only be used under flickering 50 Hz light conditions (like fluorescent or neon lamps) to prevent flickering or strangely coloured video images. If this option is used under normal lighting conditions the video image will tend to be overexposed.

5.2.1.2 Image Controls

The second tab is marked 'Image Controls'. It is divided into the subsections Framerate, Image Controls, and Defaults.



Framerate

The framerate setting determines the number of pictures per second in the video stream.

The set of framerates from which the user may choose depends on the currently selected video format and available bandwidth on the USB bus (the number of devices connected to your USB port and the amount of data they transport). The buttons for invalid framerates will be automatically greyed out and cannot be selected.

Image Controls

Here you will find the slider controls for brightness, contrast, and gamma correction.

Note that both Freeze and Manual Exposure mode settings in the previous tab disable the controls for contrast and backlight compensation. Try a few settings to find one you like.

With the colour enable checkbox, you can switch from colour images to black&white and back.

Turn on the backlight compensation to improve the image quality when you have a scene where the background has a high illumination level (for instance when you sit in front of a window).

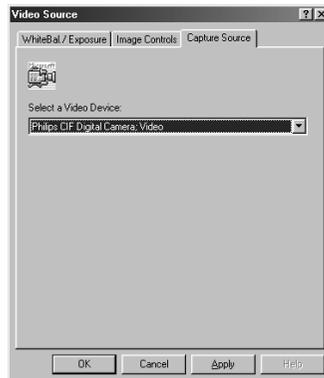
Defaults

If you like a particular setting for one application or light condition, and another setting for a different one, you can use the Restore and Save buttons to save and restore these preferred settings. Should you wish to restore all standard settings, click on the Restore button under Factory Defaults.

5.2.1.3 Capture Source

The third tab is 'Capture Source'.

Usually this setting has only one option when the USB PC Camera is the only video source connected to your computer. However, if more than one video source is connected to your system, then this is where you switch between them.



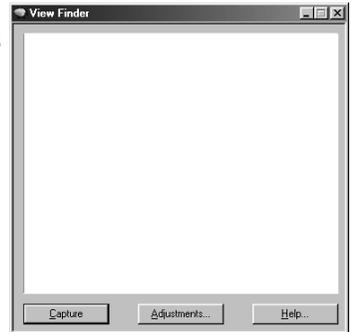
6

TWAIN applications

The Philips PCA646VC USB PC Camera is TWAIN compatible (like most scanners are), so you can use the camera as an input device for application software that uses TWAIN as a data source. (e.g. photo editing software).

6.1 Capturing images from within applications

In TWAIN compatible applications you will see the Philips PC Camera listed as an available TWAIN data source among your other TWAIN sources (e.g. scanners). Just pick the Philips PC Camera as your source to acquire camera pictures directly into your application. Then choose 'Acquire' to launch the camera viewfinder that displays the moving video picture. Click on the 'Capture' option under the viewfinder for capturing a still image.



6.2 Capture settings

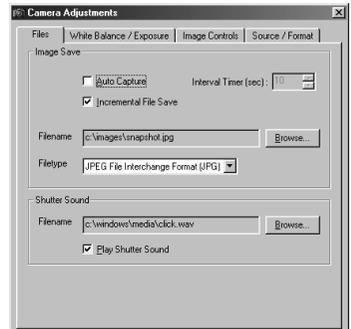
To the right of the 'Capture' button in the View Finder, you will find the 'Adjustments...' button for changing the settings. This adjustments menu contains a first tab marked 'Files', next to three setting tabs that are similar to those of section 5, but differ slightly for the TWAIN interface.

6.2.1 Files tab

The Files tab is divided into two main functions: "Image Save" and "Shutter sound".

Image Save

In the "Image Save" section you can set the Auto Capture function with an appropriate interval time. This function triggers the capturing of images at regular adjustable intervals.



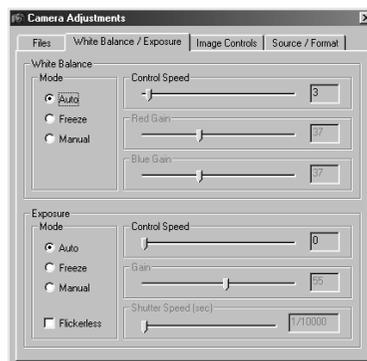
- Leave “Incremental File Save” unchecked if you want to overwrite the previous image when capturing a new one. If you check this box, the picture data is saved under the selected filename but extended with one or more digits. This digit is incremented for each new image so that the previous images will not be overwritten.
- After “Filename” you can type a name for the captured images, or browse until you find a suitable name to use. Use “Filetype” to choose between four supported file formats: JPG, BMP, TIFF or FlashPix.

Shutter sound

- And finally; choose a file name for the shutter sound that should be made while capturing an image. Normally this is a clicking sound that resembles the sound of a photo camera. Uncheck the Play Shutter Sound box to disable the shutter sound.

6.2.2 WhiteBalance/Exposure

The second tab is ‘WhiteBalance/Exposure’. The upper half of the page controls the White Balance and the lower half the Exposure settings.



White Balance

The white balance setting automatically controls the different colour components in the picture to obtain the most natural colour reproduction.

When the mode setting is in freeze mode, the automatic white balance control is switched off. The actual colour setting remains stable and is not influenced by the internal controls of the camera. Put the white balance in freeze mode when you have a colourful scene and stable lighting conditions.

To obtain a perfect colour reproduction, act as follows:

- ① Choose auto mode;
 - ② Hold a piece of white paper in front of the camera;
 - ③ After a few seconds, switch from auto to freeze mode.
- Now the colour setting remains constant. When light conditions change it is recommended that you put the white balance mode on auto again.

In auto mode the control speed setting determines the speed of automatic adjustment to changing light conditions. Experiment with this setting until you find one to your liking.

In manual mode you can determine manually the amount of red and blue in the picture. Try a few settings at your leisure, but you will find that the auto setting is best in most cases.

Exposure

The exposure setting determines the amount of light that will fall onto the video sensor chip. In auto exposure mode the camera automatically adjusts the exposure gain and shutter speed. The control speed setting determines the speed of automatic adjustment to changing light conditions. Experiment with this setting to find one to your liking.

In freeze mode all existing settings are frozen.

In manual mode you can control the gain and shutter speed settings manually. Try a few settings at your leisure. The auto setting will be best in most cases. Both freeze and manual exposure mode disable the controls for contrast and backlight compensation in the next tab (marked Image Controls).

The Flickerless option must only be used under flickering 50 Hz light conditions (like fluorescent or neon lamps) to prevent flickering or strangely coloured video images. If this option is used under normal lighting conditions the video image will tend to be overexposed.

6.2.3 Image Controls

The third tab is marked 'Image Controls'. It is divided into the subsections Image Controls and Defaults.

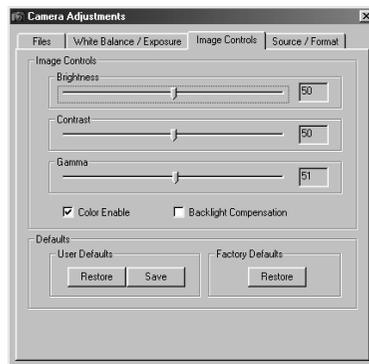


Image Controls

Here you will find the slider controls for brightness, contrast, and gamma correction.

Note that both Freeze and Manual Exposure mode settings in the previous tab disable the controls for contrast and backlight compensation. Try a few settings to find one you like.

With the colour enable checkbox, you can switch from colour images to black&white and back.

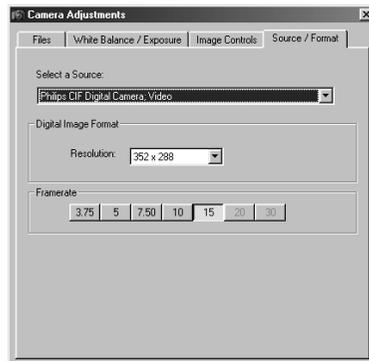
Turn on the backlight compensation to improve the image quality when you have a scene where the background has a high illumination level (for instance when you sit in front of a window).

Defaults

If you like a particular setting for one application or light condition and another setting for a different one, you can use the Restore and Save buttons to save and restore these preferred settings. Should you wish to restore all standard settings, click on the Restore button under Factory Defaults.

6.2.4 Capture Source / Format

The fourth tab is called: 'Source / Format'. It is divided into the subsections 'Select a Source', 'Digital Image Format', and 'Framerate'.



Select a Source

Usually this setting has only one option when the Philips PC Camera is the only video source connected to your computer. However, if more than one video source is connected to your system, then this is where you switch between them.

Digital Image Format

This setting determines the picture size of the 'live' video stream. It also determines the size of the captured still picture.

The larger the 'live' picture size, the more data needs to be processed by your computer. So this may have an effect on the number of available framerates.

Framerate

The framerate setting determines the number of pictures per second in the video stream.

The set of framerates from which the user may choose depends on the currently selected video image format and the available bandwidth on the USB bus (the number of devices connected to your USB port and the amount of data they transport). The buttons for invalid framerates will be automatically greyed out and cannot be selected.

7

Frequently Asked Questions (FAQs)

Q: My system “hangs” during the reboot phase when Windows 98 tries to set up personalized settings for Multimedia.

A: You probably plugged in your camera before running the install procedure. Unplug the camera, restart your computer and start the installation Wizard.

Q: My PC does not start any more when the camera is connected.

A: It is very likely that your BIOS is not compatible with the USB standard. Contact your PC supplier for an updated BIOS.

Q: With additional USB peripherals installed my PC seems to be unstable (blue screens).

A: Check if Phoenix Plugworks is one of your applications. You need to have version 1.1 or higher for proper operation with Windows98.

Q: Where can I find application software for this camera?

A: The Videogram Creator application is included on the CD-ROM. With this application, you can create off-line video-messages and pictures. For Internet video connections, you can use Microsoft's NetMeeting (downloadable from the Internet or available on the Microsoft Windows98 Installation CD-ROM). And for video-conferencing through modem-connections via telephone lines, you may consider using programs like VDOPhone.

Visit the Philips web-site for the latest information on available application software packages for the USB PC Camera, and for information on how to obtain these software packages.

Our URL: www.pcstuff.philips.com

Q: No USB Device: My Windows98 Device Manager reports ‘No USB device’ even though I have a physical USB port.

A: In the Windows 98 Device Manager (My Computer, click on the right mouse-button, Properties, Device Manager tab), no section with the name ‘Universal serial bus controller’ is visible.

Check whether your BIOS enables the USB port by rebooting your computer, then enter your BIOS setup and look for a text such as ‘USB function’.

This should be enabled.

Q: No Video: My application doesn't show any video.

A: There are several reasons for not having video:

1. Check whether the USB PC camera is connected to a USB port
2. Check whether the 'Microsoft WDM Image Capture' is the current capture source. It is possible, in systems with other devices, that this other device is the selected capture source.
3. If more than one USB capture device is connected to the PC, check whether the correct USB capture device is selected.

Q: No 'Microsoft WDM Image Capture': 'Microsoft WDM Image Capture' is not available as image capture source.

A: All USB Image devices do need the 'Microsoft WDM Image Capture' as capture source. Check whether this capture source is enabled. (Start, Settings, Control Panel, MultiMedia, Device tab, Video Capture Devices entry. Double click the 'Microsoft WDM Image Capture' entry. A property page will pop-up. The option 'Use the video capture device' should be selected).

Q: Why does my application crash when I unplug the camera from the USB port?

A: Should you unplug the camera while it is providing an audio stream to an application on your computer, the computer might crash. Always close applications that use audio from the camera microphone before unplugging your Philips USB PC Camera to avoid problems.

Q: Video works, but no audio is recorded: My application doesn't produce any audio.

A: There are several reasons for not having audio:

1. The camera microphone can only produce a mono audio signal. Check whether the application uses this setting. If not, adjust the audio setting to mono.
2. Check whether the USB PC camera microphone is selected as the current recording device (Start, Settings, Control Panel, MultiMedia, Audio tab. In the recording section, the 'CIF Digital camera, Audio (Micr)' should be selected).

Q: No audio (USB timer outside specification).

A: If you cannot hear any audio, and have tried every troubleshooting tip in the user guide and the on-line help to no avail, the USB hardware in your computer may be the cause of the problem. In most cases it will be the USB timer clock that is not stable enough for streaming audio applications.

Q: System lockup: My camera stops responding (black or frozen picture or LED off) for no obvious reason.

A: Switch off the Hardware Accelerator of your video card (click on:My computer, right mouse button/properties/Performance tab/Graphics button,Set "Hardware Acceleration" to "None"). Contact your video display card manufacturer to obtain the latest video card drivers. See the video display card's documentation for more information.

Q: Picture Flicker: My video picture is flickering.

A: This could happen in office environments with 50Hz fluorescent lighting in combination with certain framerates. There are two solutions:

1. Check the 'Flickerless' button. This button is located in the 'WhiteBal./Exposure' property page. This property page is accessible from within the application you are using.
2. Uncheck the 'Flickerless' button. Only the framerates '5', '10' and '20' are flickerless.

Q: I see picture quality distortion at 3.75 frames/second. (USB timer outside specification).

A: When streaming video at a frame rate of 3.75 frames/second, you may experience distortion of the video picture. This is being caused by the USB hardware in your computer. In most cases, it will be the USB timer clock that is not stable enough for streaming video applications. Use a higher frame rate to avoid picture distortions.

Q: 'Unable to draw this data format':The message 'Unable to draw this data format' appears.

A: This can happen when the selected stream format (I420) could not be processed due to a missing codec. Re-install the camera driver software to install the missing codec.

About Videograms

A recorded Videogram sent by e-mail or on diskette can be played on any 486-computer or better, running Windows 3.x/95/98/NT or OS/2. The Videograms can be viewed on almost any computer system (except for the Apple Macintosh). However, due to the large quantity of image data that is passed to the computer by the camera while creating a video recording, higher requirements are placed on the computer recording the images. The system requirements are only a guideline. In general, the better the computer (processor, motherboard, hard disk, RAM, video card), the better the results.

About the camera installation

- Always use the Philips driver CD-ROM to install the proper camera drivers as described below. Do not connect the camera to a USB port before installing the Philips drivers. Should you do this, Windows98 will install its own drivers that might be less compatible with the camera than the Philips drivers. You must have Windows98 running and have the Windows98 CD-ROM at hand.
- Your USB controller should be working correctly. You can check this in the Windows98 Device Manager (Click on the My Computer icon on your desktop, click on Properties with your right mouse-button, then click on the Device Manager tab). A section with the name 'Universal serial bus controller' should be visible. Click on this device and Windows98 will tell you if this part of your computer system is operating correctly.

About USB

You can connect the camera to any USB port on your computer. You do not have to switch off the computer. USB ports are 'hot swappable', meaning you don't have to restart Windows98 every time you connect a new USB device. The USB driver will detect the camera as new hardware. It can be used within a few seconds without restarting the computer.

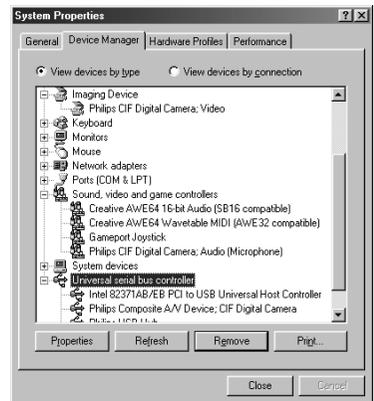
Should you unplug the camera while it is actively providing an audio or video stream to an application on your computer, the computer might crash. To avoid problems, first close all applications that use audio from the camera microphone, or which stream video before unplugging your Philips USB PC Camera.

Driver software check

You can determine if the camera is installed correctly, and if it is being recognized by the operating system by checking the Device Manager menu in System Properties.

- ① Access this menu by clicking with the right mouse button on the icon 'My Computer' in the top left-hand corner on your desktop, then click on Properties. Alternatively, click on Start / Settings / Control Panel, then double-click on System to access this menu.
- ② Click on the Device Manager tab to see the list of installed devices. If the USB PC Camera has been installed correctly and it is plugged into a USB port, you should see the following devices in the list (double-click on the devices to see their specifications):

- Imaging Device
- Philips CIF Digital Camera; Video
- Sound, video and game controllers
- Philips CIF Digital Camera; Audio (Microphone)
- Universal serial bus controller
- Philips Composite A/V Device; CIF Digital Camera



If you unplug the camera from the USB port these devices will disappear from the list (and can therefore no longer be used by any application on your computer until you reconnect the USB camera).

WEB SITE

If you have any other questions or problems, please visit our web site www.pcstuff.philips.com for new or updated information.

8

Technical specifications

Optical

Sensor	1/4" CCD
Pixels	512 (H) x 582 (V)
Illumination	30 - 50000 lux
Integrated lens	3.0mm, F2.8

Resolutions/Performance

Output resolution	Pixels (H x V)	Frame rate [frames/sec]
CIF	352 x 288	Up to 15
SIF	320 x 240	Up to 15
SSIF	240 x 180	Up to 15
QCIF	176 x 144	Up to 30
QSIF	160 x 120	Up to 30
SQCIF	128 x 96	Up to 30
QQCIF	88 x 72	Up to 30
SQSIF	80 x 60	Up to 30

Camera adjustment parameters

Framerate/format, contrast, brightness, backlight compensation, colour on/off, variable gamma, white-balance, exposure control

Interfacing

Cable 2m

Minimum system requirements

Processor	Pentium 166 MHz
RAM	16 MB
OS	Windows98
CD-ROM drive	Required
USB interface	Required
USB speakers or audio card with speakers	

Software

Windows98 drivers
Videogram Creator

Audio

Microphone	Integrated
Output	Digital via USB
Supported audio formats	mono, 8 / 16 / 24 bit, 8 / 11.025 / 12 / 16 / 22.05 / 24 / 32 / 44.1 / 48 kHz

Weight

Approx. 160 gr

Dimensions

100 x 71 x 60.5 (L x W x H)

Ambient temperature

Operating	0 to 45°C
Storage	-25 to 70°C

Power supply

- The power is supplied via the USB-cable
- Compliant with general USB spec for power requirement
- Three modes for power supply:
 1. Suspend (max 500µA)
 2. Default (max 100 mA)
 3. Configured (full operation) (max 500 mA)

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Regulations, Warnings & Maintenance

9.1 FCC compliance

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.**

NOTE: 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 or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to 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 unauthorized modification to this equipment could result in the revocation of the authorization to operate the equipment.

9.2 Warnings & Maintenance

If you observe the following guidelines, you will prevent defects and the camera will operate safely.

- Clean the outside of the camera with a soft cloth.
- Do NOT use cleaning fluids based on alcohol, methylated spirit, ammonia, etc..
- Avoid direct contact between the camera and water.
- If the lens has to be cleaned, use a special lens-cleaning tissue, available at any camera store.
- You can only use the camera indoors.
- Keep the camera free from oil, vapour, steam, moisture, and dust.
- Keep the camera away from a heater, lighting equipment, and direct sunlight.
- Never direct the lens of your camera toward the sun.

Subject to changes without notice.

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