

Application Note
Using Apple Macintosh computers
with SBIG USB Cameras
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*This note was prepared and contributed by one of our Mac users, [Diego Meozzi](#).
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SBIG has always been the only CCD manufacturer to support Apple Macintosh computers. However, Apple's switch to the Mac OS X operating system, radically different from the previous one, and the change from serial/parallel/SCSI to USB technology forced SBIG to stop the support to Macintosh computers. SBIG ST-X series of cameras is currently supported on PC Windows systems only.

However, even if SBIG does not support USB cameras on Macintosh, that doesn't mean that these cameras cannot be used on Apple computers. We have successfully tested SBIG USB cameras on several Macs using a so-called *software emulator*, that translates between the calls made by non-Mac software and PowerPC instructions.

The only Microsoft Windows emulator available today for Mac OS is [Virtual PC 5.0](#) by Connectix. It can run Windows 95, 98, ME, 2000, XP and Windows NT on any native G3 or G4 Macintosh. This software supports USB, MMX and Sound Blaster 16 audio, drag and drop file copy between Mac and Windows. Virtual PC is a software that emulates another operating system on top of the Mac OS, so it may be quite slow on the oldest Macintosh models. A Mac with a G3 233 MHz processor is the recommended minimum, while the fastest G4s are clearly the best choice.

Virtual PC can turn your Macintosh into a full-fledged PC running Windows. But in order to use the new USB cameras, your computer must also have an USB interface built-in. If your Mac is one of the oldest models, without USB connectors, you have two choices. If it's a PowerBook with a PCMCIA card adapter, you can buy a CardBus to USB adapter, like the [USB Port](#) by ADS Technologies or the [CardBus USB 2](#) card by MacAlly. If you have a Mac with PCI slots for expansion cards, just buy an USB interface PCI card, like the [PCIUSB2](#) by MacAlly or the [USB Port PCI](#), again by ADS. If not bundled with the card, you have to download also the [USB Adapter Card Support 1.4.1](#) software directly from Apple in order to make your Mac recognize the new USB PCI card.

Now that you have your USB-equipped Mac ready, it's time to have a look at the software. On the operating system side, we have successfully tested the USB cameras with Mac OS 9.1 and 9.2.2. So, if you have an older Mac OS, maybe this could be a good reason to upgrade it. Unfortunately, our tests showed some incompatibilities with the most recent Mac operating system. That means that you can't use (yet) SBIG USB cameras with Mac OS X.

The most recent version of Virtual PC software emulator is numbered 5.04. However, we found that on all but the fastest G4s the previous version (4.02) is noticeably - and mysteriously - faster than version 5. So you can achieve the best performance using Virtual PC 4.02 on a Macintosh with OS 9.1 or 9.2.2. Virtual PC usually comes bundled with a file that contains a Microsoft operating system (Windows 95, 98, ME, 2000, XP or NT) ready to use. However, we strongly suggest to make - if possible - an installation of the preferred Windows

operating system from scratch.

From SBIG's ftp site you can download the most recent USB drivers for the ST-X series of cameras, but the **only** drivers that work on a Mac with Virtual PC are the ones bundled with [CCDOPS 5.14](#), which are as follows:

sbigudrv.all	4.22 Build 2	8-23-02
sbigudrv.vxd	08-23-02	8-23-02
sbiguldr.sys	1.0 Build 24	8-23-02
sbigusbe.sys	1.0	12-26-01

In case you are prompted by other programs (like CCDSoft 5.00.70) to update these drivers, **do not update them**, because this will make your Windows-emulated system unusable with the SBIG USB cameras.

You must install every control software you'd like to use ([CCDOPS](#) and [CCDSOft](#) by SBIG or other software solutions like [MaxImDL CCD](#) by Cyanogen) **before** connecting the SBIG ST-X series camera to your USB and Virtual PC-equipped Macintosh. Everything needs to be installed on the Windows "side of the fence", of course. And please remember to avoid overwriting the USB drivers installed by CCDOPS 5.14, which **should be installed first**.

After that, you can finally power on the camera and connect it to your Mac, which will be already running Virtual PC and your favourite Windows flavour. The computer will present you with the *Add New Hardware Wizard*. Then you can follow the instructions of the operating manual of your SBIG USB camera (sections 1.2.2 - 1.2.4). This would happen just on the very first time you will connect the camera to the Macintosh. The LED on the back of the CCD camera will blink for 3-4 seconds, when it will load the firmware, and then the LED will remain lit.

Using CCDOPS 5.14 on a Mac is just like having a PC Windows: first of all you have to select the right type of connection (USB) from *Misc->Graphics/Comm Setup* and then use *Camera->Establish Com Link*. After 8-10 seconds you should see *Link:[ST-10]USB* in the lower right corner of CCDOPS main window. That means that you are (finally!) talking to the CCD camera. You can now control from your Mac every SBIG USB camera function. In case you have to quit Virtual PC and relaunch it a second time without restarting the Mac, please remember to **disconnect the USB cable** from the CCD camera and to **power it down before using the camera again** with Virtual PC.

If you feel that the Virtual PC performance is a bit "sluggish", you may try a software called [VPC Helper](#). It is a shareware program that frees up RAM and processor speed for maximum Virtual PC performance.

Virtual PC performance depends on the processor power and speed: it is slowest on G3s and fastest on G4s with clock speed higher than 500 MHz. But also the download times of a CCD frame from a SBIG USB camera depend on the processor speed. Here is a comparison table:

Power Macintosh G4 MP 800 MHz - Mac OS 9.2.2
VPC 4.02 - ST-10XME Full frame download (average of 10) in 10.15 sec.
VPC 5.04 - ST-10XME Full frame download (average of 10) in 10.55 sec.

Power Macintosh G4 MP 500 MHz - Mac OS 9.2.2
VPC 4.02 - ST-10XME Full frame download (average of 10) in 11.13 sec.
VPC 5.04 - ST-10XME Full frame download (average of 10) in 16.39 sec.
PowerBook G3 266 MHz - Mac OS 9.1
VPC 4.02 - ST-10XME Full frame download (average of 10) in 17.70 sec.
VPC 4.02 and VPC Helper - ST-10XME Full frame download (average of 10) in 17.54 sec.
VPC 5.04 - ST-10XME Full frame download (average of 10) in 18.23 sec.

We will make more tests to see why SBIG USB cameras still don't work on Mac OS X. And we are confident that soon it will be possible to make this happen.

Please remember that SBIG don't support their USB cameras on Apple Macintosh computers. So, this application note should be taken just as a reference.

Tests and text by [Diego Meozzi](#)

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