Table of Contents

Installation Guidelines

Introduction

The following sections detail the system and installation guidelines for using the SPOT Flex camera and version 4.6 of the SPOT software. They are as follows:

- System Requirements
- What is in the Box
- Installing the Software
- Installing the Hardware
- Multiple Camera Installations
- Using SPOT On-line Documentation

System Requirements

The following sections detail the minimum hardware and software requirements needed for the SPOT Flex Firewire camera and associated software. These requirements are valid at the time of your camera purchase and may change with future development of our camera and software products as well as the computers to which they interface. For optimal system suggestions, please consult our website at www.diaginc.com for the timeliest information.

> ✎ *Note: For the most up-to-date suggestions on an optimal computer system configuration, please consult our website at www.diaginc.com*

Equipment Standards - Windows

	Minimum
Processor	Pentium, 400 MHz
Video Card	A card that supports 24 bit, true color at the desired resolution with a refresh rate above 70 Hz.
With some video cards, you might experience system crashes or display problems in live image mode; you might also experience display problems when zooming in on captured images. To correct these problems, lower the Graphics Acceleration setting in Windows, as described in the "Video Card Related Problems" section below.	
RAM	512 Mb
Firewire (IEEE1394a) Port	One available 6 pin (6-4 pin converters available for special order)
Firewire-PCI Adapter Card (optional for desktop)	One available PCI slot
Firewire-PCMCIA Cardbus Adapter (optional for laptop)	One available PCMCIA Cardbus slot

Equipment Standards – Windows (cont.)

	Minimum
Monitor	Any color monitor with at least 800 x 600 pixel resolution at 24 bit RGB, and a refresh rate over 70 Hz.
Operating System	Windows 98SE/2000/ME/XP
	Windows 95, 98, and NT are not supported for the Flex Camera System
Printer	Driver required for reports feature
Web Browser	Internet Explorer 5.0 or greater

Equipment Standards - Mac

	Minimum
Processor	400 MHz G3 PowerPC
Video Memory/ Card	Enough video memory on either the mother board or a plug in video card to display millions of colors at the desired resolution, and with a refresh rate above 70 Hz
RAM	512 Mb
Firewire (IEEE1394a) Port	One available 6 pin (6-4 pin converters available for special order)
Monitor	Any color monitor with at least 800 x 600 pixel resolution at 24 bit RGB, and a refresh rate over 70 Hz.
Operating System	Mac OS10.2.8 or greater
Printer	Driver required for reports feature
Image Editing Software (optional)	The SPOT 3rd Party Interface, which is included with Mac software, is a stand-alone mini-application designed for Mac users who want to use the SPOT camera to capture images, and then edit the images in another imaging application. Some commonly used third party applications include: • Adobe Photoshop • Image Pro Plus • Color It The image editing software used with the SPOT 3rd Party Interface does not need to be TWAIN compliant.

Equipment Standards – General

Additional Hardware and Software	
Coupler	1.0x C mount coupler
Lens	C- Mount lens for 1" format CCD

What is in the Box

In addition to this hardware guide, the shipping box should contain the following items:

- Camera head with a dust cap
- Power supply (with cable to camera)
- Power cord for the power supply
- Spot Software User Guide
- 6 pin to 6 pin Firewire (IEEE 1394a) data cable to connect the camera to the Firewire port on the computer
- One CD-R that contains:
  - The software required to operate the SPOT camera.
  - A PDF (portable document format) version of the software manual, Spot Software User Guide, and the Spot Flex Hardware Manual.
  - The Adobe Acrobat Reader software that is required to read and/or print the user's manual. Refer to "Using SPOT On-line Documentation" below for instructions on installing the Reader on your computer.
- A registration card (you may also register online at www.diaginc.com)
- 2 year limited warranty

Installing the Software

The CD disk provided with your Flex camera contains the SPOT 4.6 PC software, which can be used with Windows 98SE (second edition)/2000/ME/X, and the SPOT 4.5.9 Mac software, which can be used with Mac OS10.2.8 or higher.

> ✎ *Note: In some instances, on older model computer systems, Diagnostic Instruments has found that SPOT users with the* **Windows 2000** *operating system will get a* **No response from camera…** *message when trying to either capture an image or view a live image. This is due to incorrect BIOS settings. For information on correcting this problem, refer to* Appendix D: Selected Error Messages.

Windows Installation

1. Ensure that all other application programs are closed. Windows 2000 and XP users should also ensure that they are logged on with administrator privileges.

2. Insert the disk into your CD drive. The SPOT Setup window will appear, welcoming you to the Install Wizard for SPOT Setup.

3. Click Next to continue. The license agreement will appear. After you read and review the license agreement, check the box to accept the license agreement.

4. Click Next to continue. The installer will then prompt you to choose your preferred type of installation. Choose Complete Setup to install all of the program features. This is the recommended selection for most users. Choose Minimum Setup to install all of the program features but not the example database or sample report. Choose Personalized Setup if you would like to select which program features to install. Make your installation type selection. Click Next to continue.

If you selected Complete or Minimum Setup, follow the steps below to continue the installation:

1. Select the folder where you would like to install the application.

2. Click Next to continue and select the Start Menu group for the application. This will be displayed in the Windows Start Menu after the installation is finished. Select 'Create Desktop Shortcuts' if you would like to have shortcuts on your desktop. Choose to create shortcuts for all users or just yourself by selecting 'All Users' or 'Just Me'.

3. Click Next to continue. The installer will then prepare and finish the installation. A dialogue box will appear that says 'Spot has been installed successfully'. If you have already installed the hardware, and would like to run the Basic mode of the software now, select the checkbox next to 'Run SPOT now' and choose Finish. If you have the hardware installed and would like to run the Advanced mode of the software now, select the checkboxes next to 'Run SPOT now' and 'Advanced Mode', and then select Finish. If you have not yet installed the hardware, de-select 'Run SPOT now', choose Finish, and then proceed to install the hardware as described later in this manual.

If you selected Personalized Setup, follow the steps below to continue the installation:

1. The Select Features dialogue box will come up, prompting you to select the program features you would like installed. This can be done by choosing the hard drive symbol next to each feature. When the hard drive symbol is selected, a hidden menu will appear. To choose to install the feature, select 'Will be installed on local hard drive'. To prevent the feature from being installed, select 'Entire feature will be disabled'.

2. Click Next to continue. Select the folder where you would like to install the application.

3. Click Next to continue and select the Start Menu group for the application. This will be displayed in the Windows Start Menu after the installation is finished. Select 'Create Desktop Shortcuts' if you would like to have shortcuts on your desktop. Choose to create shortcuts for all users or just yourself by selecting 'All Users' or 'Just Me'.

4. Click Next to continue. The installer will then prepare and finish the installation. A dialogue box will appear that says 'Spot has been installed successfully'. If you have already installed the hardware, and would like to run the Basic mode of the software now, select the checkbox next to 'Run SPOT now' and choose Finish. If you have the hardware installed and would like to run the Advanced mode of the software now, select the checkboxes next to 'Run SPOT now' and 'Advanced Mode', and then select Finish. If you have not yet installed the hardware, de-select 'Run SPOT now', choose Finish, and then proceed to install the hardware as described later in this manual.

Video Card Related Problems (Windows)

Diagnostic Instruments has found that when the graphics acceleration is set too high on certain video cards, the SPOT program can crash when using the Live Image feature or the Live Image can be corrupted. If you experience this problem, change the Graphics Acceleration in Windows to a lower setting. Follow these steps:

1. From the **Start** menu button, select **Settings > Control Panel**.

2. Double click on the **Display** icon,

3. Click on the **Settings** tab.

4. Click on the **Advanced** button.

5. Click on the **Performance** tab.

6. Change the **Hardware Acceleration** setting by moving the slider to a lower setting. With some cards, you might have to move the slider to the lowest setting in order for live imaging to work.

7. Click on **Apply**.

8. Click on **OK**.

9. Click on **Close**.

Mac Installation

The CD disk provided with your camera contains the SPOT software, which can be used with Mac OS10.2.8 or higher. ***Ensure that you have an administrator password* BEFORE BEGINNING THE INSTALLATION.**

To install the SPOT software on a Mac, follow the steps listed below.

1. Insert the disk into your CD drive.
2. Double click on the installer icon.
3. Enter the Administrator User Name and Password

4. Click on **Continue**. The Spot Installer window appears.

5. Select the installation location for the program.

6. Click on **Install**. The Installing progress indicator appears.

7. When the installation is complete, you may be notified that the computer will restart.

Installing the Hardware

There are three simple steps to installing the hardware:

- Connect the camera to the microscope

- Connect your camera to the computer using the 6 pin to 6 pin Firewire cable

- Connect the power supply to the camera and to the appropriate electrical supply.

> 🖉 *Note: Although the SPOT software can be installed either before or after installing the camera, Diagnostic Instruments recommends installing the software first.*

♠☼WARNING♠☼

This (the SPOT camera) is a Class A Product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Connecting the Camera to the Microscope

To attach the camera to the microscope, follow these steps:

1. Attach the bottom clamp to the coupler.

2. Screw the Flex camera into the coupler/bottom clamp until it is tight.

3. Insert the camera/coupler/bottom clamp combination into the microscope's photoport or phototube.

4. Tighten the thumbscrew on the microscope's phototube (or the coupler's bottom clamp) to lock the combination to the microscope.

5. Connect the camera to your computer as follows:

   a) Attach one end of the 6 pin Firewire cable to the Firewire port on the computer, and attach the other end to the camera head.

   b) Attach the power supply/cable to the camera head.

   c) Plug one end of the power cord into the power supply and the other end into a surge protector.

Installing Firewire Port Adapter Cards (Optional)

If your computer is not equipped with a Firewire port, you may be able to add one using a Firewire-PCI Adapter Board for a desktop computer or a Firewire-PCMCIA Cardbus adapter for a laptop computer. Please consult your dealer or your computer manufacturer for assistance in selecting the appropriate hardware.

To install the Firewire-PCI Adapter Board or the Firewire-PCMCIA Cardbus adapter, follow the instructions included with the adapter manufacturer's packaging.

Multiple Camera Installations

More than one SPOT camera can be operated from a single computer, provided adequate hardware and Firewire ports are available. Any combination of SPOT cameras can be used.

Some SPOT cameras are Firewire plug and play. Other SPOT cameras utilize a PCI interface and have a different installation procedure. Please refer to the installation procedures in the appropriate user documentation.

Note: Firewire devices can be daisy-chained for connection to a Firewire port. However, the Flex camera, because it only has one Firewire port, must be the last device on the daisy chain of devices. This daisy-chaining approach may slow down the communications between the camera and the computer if other devices are in use. Additionally, the Flex Firewire camera will still require use of the separate power supply.

Using the SPOT On-line Documentation

To use the on-line documentation that accompanies your SPOT camera, you must first install the Acrobat Reader software that is included on the CD. This software enables you to read and/or print the Portable Document Format (PDF) versions of the software and hardware guides that are on your CD.

Specifications

Camera and Filter
Flex Color Mosaic - Color

CCD Information
KAI 4021CM
Imaging Area – 15.16mm x 15.16mm
Active Pixels – 2048 x 2048 (4.19 million)
7.4 μm square pixels
Full well charge capacity – 30,000e

Flex Image Resolution
Live image – 1024 x 1024
Captured image – user-selectable

Bit Depth – Flex
Sampled at 42 bit RGB
Saved file formats: 24 bit, 36 bit, or 48 bit (RGB)

Pixel Readout Rate
Live images – 40 MHz (2 channel x 20 MHz)
Captured images – 20 MHz (1 channel x 20 MHz)

Anti – Blooming Factor
300 times (nominal); 100 times (minimum)

Exposure
Automatic and User-Defined
Range – 0.04 ms – 536 seconds

External Trigger
TTL input

External Shutter Control
TTL level output

Weight
Flex camera head – 1.09 kg, 2.40 lbs.
Power supply – 0.32 kg, 0.70 lbs.

Power Requirements
100 –240 VAC, 47 – 63 Hz

Certifications
CE, FCC, Class A, EN 60950

Minimum Computer Requirements
PC* - Pentium 400 MHz, 512 MB RAM, Firewire (IEEE1394a) interface, Windows 98SE/2000/ME/XP

Mac* – Power PC 400 MHz G3, 512 MB RAM, Firewire (IEEE1394a), Mac OS 10.2.8 or greater

> * (Desktop computers may require an IEEE 1394a to PCI bus interface card. Laptop computers may require a IEEE 1394a to PCMCIA "Cardbus" interface card)

Video card – Support of 24 bit RGB at the desired resolution.

Software Features
- Live image window
- Image capture window
- Pre-defined image types
- Auto exposure
- Auto white balance
- Bias Frame, Thermal Frame and Flatfield correction
- Zoom and pan window
- Image enhancement tools
- Non-destructive Annotation and Calibration mark
- Measurement – length, perimeter area, angle
- Print layout dialog
- On-line help menu
- Macro Scripting
- "Floating" Taskbar
- Image archiving database with export feature
- Report generator
- Sequential image capture and playback
- Correct Color Technology

Image File Formats
TIFF, TIFF-JPEG, JPEG, Bitmap, PICT, AVI (PC, export only), JPEG2000, QuickTime (Mac, export only)

File Size

1-shot and 4-shot modes:	16-shot mode:
24 bit – 12 MB	8 bit - 24 MB
36 bit - 18 MB	12 bit - 36 MB
48 bit – 24 MB	16 bit - 48 MB

Drivers
TWAIN for Windows supported Windows® Operating Systems; AppleEvent for supported Mac® Operating Systems
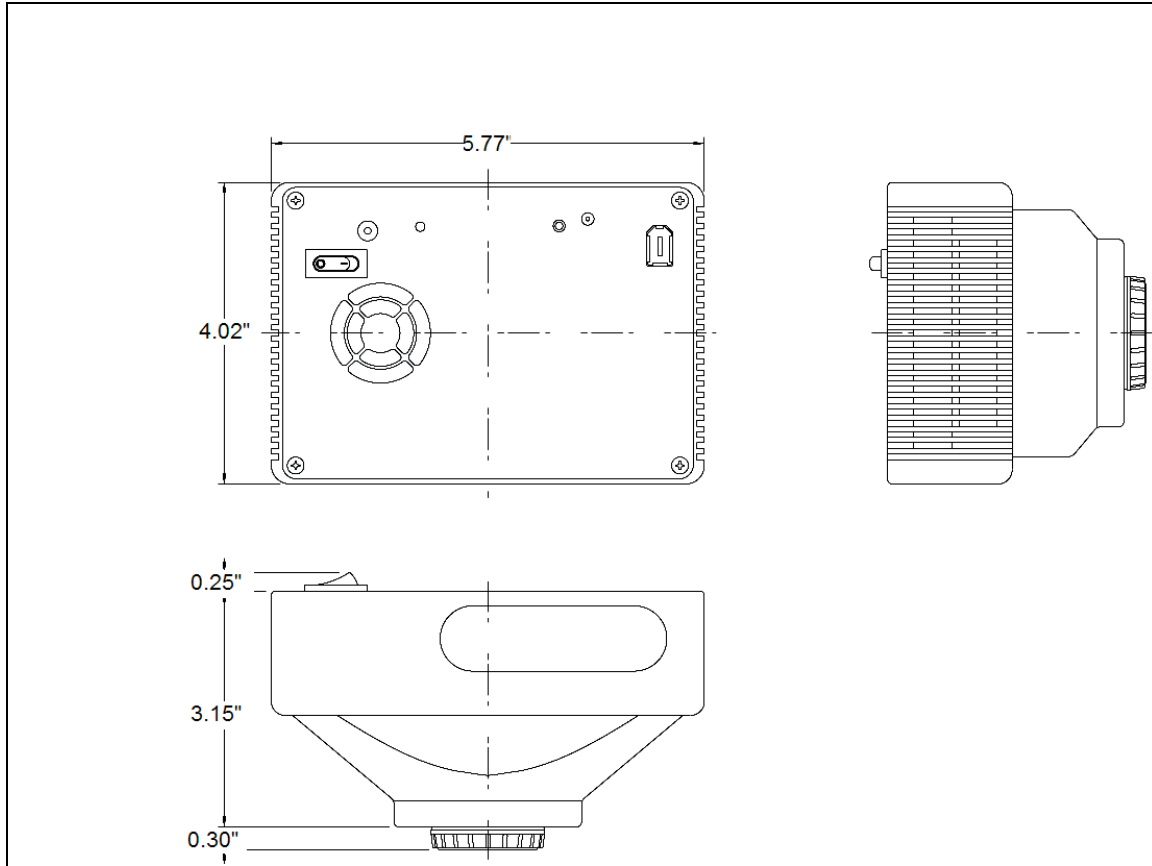
Couplers-
D10XXC (1.0x), available from Diagnostic Instruments
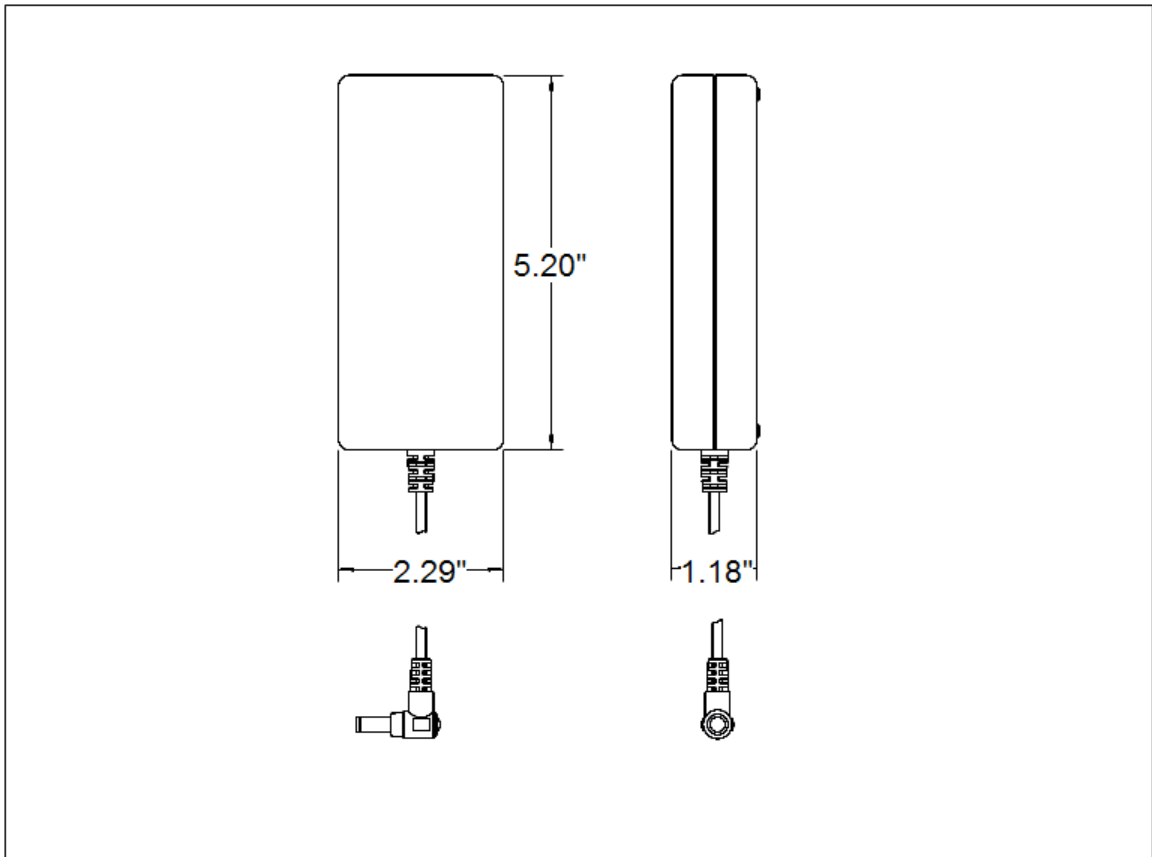
Lens & Mounting
C- Mount lens for 1" format CCD,

Flange to rear lens clearance - 0.46" (11.7 mm) max.

Camera Dimensions

Power Supply Dimensions

FCC "Class A" Product Warning

All SPOT cameras fall into the Class A category of the FCC (Federal Communications Commission) emission standard EN55022/CISPR22. The following is the FCC's standard warning for this type of device:

WARNING:
This is a Class A Product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.