SiliconFilm

EFS-1: Electronic Film System
User Manual

EFS-1: Electronic Film System - Quick Steps

Take (e)film™

Place (e)film in your SLR, and shoot normally (Page 25)

Remove (e)film™ from your SLR and place it into (e)port™ (Page 15)

Plug (e)port™ into your computer to transfer your images (Page 35)

Computer not available? Plug (e)port™ into (e)box™ and store your images onto memory cards

Going Digital is a snap with EFS-1

Manual Revision 0.95P
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Video Tutorials! The EFS-1 CD ROM includes video clips that explain EFS-1 in a level of detail that can't be expressed in words! Check for video tutorials on the Silicon Film website at www.siliconfilm.com

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Chapter 1 - Introduction

1.1 - Introduction to the EFS-1

1.1.1 Thank you for Purchasing the EFS-1

Congratulations, your EFS-1 is a self contained digital film cartridge that fits into select 35-mm cameras and enables you to use your 35-mm SLR camera to capture digital images without modification to the camera.

When EFS-1 is removed, your camera can again capture images with traditional film. EFS-1 leverages the functionality of your existing of 35-mm camera, lenses and accessories.

EFS-1 includes the (e)film Cartridge, (e)port Carrier, (e)box Storage Module, USB cable, software, batteries, carrying bag, and field-of-view guide.

EFS-1 simplifies the digital experience and limits the number of steps required to provide an enjoyable and successful photographic session. EFS-1 is a unique technological innovation which enables you to bridge the gap between traditional film photography and digital imaging.

EFS-1 is designed to:

* Use existing 35-mm SLR lenses, attachments and camera features for more flexibility and value
* Fit easily into a 35-mm camera's film compartment
* Allow you to switch between conventional film and digital photography to suit shooting requirements
* Shoot and store up to 24 high quality digital pictures
* Be reused thousands of times
* Connect to your computer for viewing, storage, e-mail transmission, or photo editing

We hope you enjoy the EFS-1 and find it to be a rewarding experience.

Yours Truly,

The Silicon Film Team

Note: All images used in this manual were taken using EFS-1

1.1.2 Credits and Notices

Copyrights, Trademarks, and Registrations -

Credits -

The EFS-1 Twain source is a product of Image Software, Inc.
Genuine Fractals™ 2.0LE is a product of the Altamira Group.
Photoshop Elements is a product of Adobe Systems

1.1.3 What’s Required to View The CD Manuals -

The CD ROM has two User Manuals - one covering the EFS-1 hardware, and the second concerning the EFS-1 software. Both read like web pages. They are multimedia-based interactive manuals, rich in detail. They includes much more detail than the printed manual, including product video clips.

To view the CD-ROM manuals, you must have, at minimum, a revision 4 web browser (Netscape 4 or Internet Explorer 4), and RealPlayer®.

1.1.4 How to View the CD-ROM Manuals -

Using your web browser and RealPlayer you may navigate the CD manual just as if it were a web site.

On each page there is a navigation frame. At any time you may go to the table of contents for a more detailed explanation of that subject.

Video Tutorials! The EFS-1 CD ROM includes video clips that explain EFS-1 in a level of detail that can’t be expressed in words! Check for video tutorials on the Silicon Film website at www.siliconfilm.com

You can use the back button on your browser to review prior pages and retrace your steps. You may skip around by clicking on any hyperlink. Throughout the manual hyperlinks are indicated by blue underlined text.

Occasionally you will see technical terms underlined and highlighted in green. Click on any green term to bring up a small glossary information window.

On each page you will find navigation buttons that will take you to the Table of Contents, the next suggested topic, the prior topic, or top of the current page.

To view the primary topics of the manuals in a logical sequence click on the link to "Next Topic”

Note: It will be very helpful to have a display/monitor settings of 800 x 600. The manual will look best if your display settings are 16 bit color, or higher.

1.2 Compatible Cameras

There are slight variations in the interior mechanical dimensions of each SLR camera model. To ensure product quality and the integrity of the EFS-1, popular SLR camera bodies were selected to be fitted with the EFS-1. Each model of the (e)film Cartridge is specifically designed and tested to fit into a specific camera body.

Please note that (e)film Cartridges are not interchangeable. Each (e)film is marked with the camera bodies it is designed to fit, as shown here:

EFS-1 has been designed and tested with:

Nikon -
- F5
- N-90, N90s, F90, F90x

Canon -
- EOS 1, EOS-1n, EOS-1v
  (But not the EOS-1N RS)
- EOS-A2, EOS-A2E
- EOS-3, EOS-5

1.3 What is Included with EFS-1?

EFS-1 includes these items -

1.3.1 (e)film Cartridge
1.3.2 (e)port Carrier
1.3.3 (e)box Storage Module (Optional)
1.3.4 USB Cable
1.3.5 Batteries
1.3.6 Carry Bag
1.3.7 Field-of-View (FOV) Guide
1.3.8 FOV-Screen Tool Kit
1.3.9 CD ROM
1.3.10 Cleaning Kit

The following sections will explain each item and component.

1.3.1 (e)film Cartridge - the "digital film" of EFS-1. (e)film inserts into your camera body as if it were a roll of film. (e)film includes a CMOS imaging sensor, the electronics that capture and digitize images, flash storage memory, and batteries.

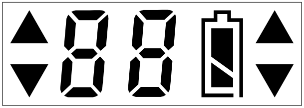
(e)film is designed to fit into selected SLR cameras without any changes or alterations. You may use (e)film and traditional film interchangeably and you may switch between (e)film and traditional film at any time.

(e)film is a precision mechanical device designed to orient the imaging sensor with the aperture and optical path of your SLR.

Handle (e)film with care, touching it by the edges. Avoid touching the imager window.

Key features of (e)film are:

* LCD information display
* Audible Tones
* Battery door (and off switch)
* Activation button
* Power management



LCD display and back light. (e)film features a back-lit liquid crystal display (LCD) with a two-digit numeric display (for image count, battery status, information codes, and mode icons).

The LCD is designed to be visible through the film window of your SLR as well as the window in the (e)port carrier. If you cannot see the (e)film LCD through the window you may open your camera back at any time.

The LCD display works in conjunction with audible tones to provide feedback and information.

The (e)film LCD and/or back-light will turn-on for five seconds after any of the following conditions occur:

* Batteries have been loaded
* The activation button is depressed momentarily
* (e)film is inserted in a camera and the back is closed
* An image has been captured successfully
* An image capture attempt was not successful
* (e)film has been acoustically alerted (no back light)
* (e)film/(e)port has been connected to a host computer
* (e)film/(e)port inserted into (e)box
* (e)film/(e)port removed from (e)box

Exception: When (e)film/(e)port are connected to a computer by USB the back-light will turn-on for 20 - 25 seconds. The (e)film LCD segments will stay on as long as the computer is powered.

Two-Digit Display. Indicates how many images are currently stored in (e)film memory. Each time an image is captured the counter will increment by one, up to a maximum of 24 images.

The display also exhibits error and status codes, if applicable.
“E0” indicates a low battery.
“EF” indicates (e)film memory is full.

Audible Tones. (e)film generates audible signals (tones and beeps) that can be heard outside the camera body. The audible signals provide valuable information about (e)film status and operation. The tones compliment and augment information on the LCD screen.

There are three type of tones: short beep, up chirp, and down chirp. The following events will generate tones:

1. (e)film is inserted in camera and ready to capture images (single beep)
2. (e)film has captured and stored an image and is ready (single up chirp)
3. (e)film failed to capture an image (single down chirp)
4. Batteries are low and need to be replaced soon (single down chirp)
5. (e)film memory is full (three down chirps)
6. (e)film/(e)port are connected to a host computer
7. (e)film did not successfully transfer all images to (e)box
8. (e)film attempted to transfer images to (e)box but (e)box does not have sufficient available memory

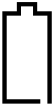
There are many other events which trigger tones. A more detailed explanation of LCD symbology and tonality is contained in the CD ROM User Manual.

Battery Indicator. The LCD includes a battery status indicator.

Batteries are good:

Batteries are near end of life:

Replace batteries:



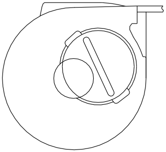
Batteries should last for three months, or 200 images. Please note that cold weather will significantly reduce battery life.

Batteries. (e)film uses two 1/3 N 3 Volt Lithium batteries. The EFS-1 kit includes several 1/3 N batteries, but they are not installed. Insert two batteries into (e)film prior to use.

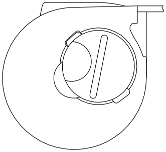
1/3 N batteries are found in drugstores, department stores, hardware stores, and mass merchants. Carry extra battery sets.

Battery Door. Batteries are inserted into the (e)film barrel. To open the battery door use a small coin. The door has three posi-

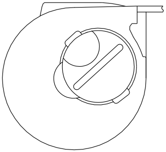
ON Position:
(CCW from unlocked)



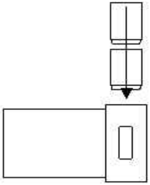
Unlocked/Battery
Removal Position:



OFF Position:
(CW from unlocked)



Battery Orientation. The batteries are inserted into (e)film with the tip inserted first, as shown:



Note: Avoid touching the ends of the batteries. Minor contamination can reduce battery performance considerably.

Battery Disposal. Lithium batteries should be disposed-of in accordance with local environmental ordinance. See Chapter 11.3 for additional detail.

Power Management. (e)film has embedded power management intelligence and is sensitive to the functions of your camera and automatically detects when it should "wake-up" to capture an image. In order to further conserve power and extend battery life, it is highly recommended that you turn the battery door/switch to the OFF position when not in use.

Activation Button. (e)film features a small button that is depressed when the camera back is closed. This activates (e)film's power management functions. When (e)film is removed from your camera, placed in (e)port, and engaged with (e)box you will use this button to activate (e)film and initiate a transfer. The activation button is shown in the figure on page 14.

1.3.2 (e)port Carrier -

(e)port serves multiple purposes:

1. (e)port serves as a safe place to store and carry (e)film
2. (e)port provides the mechanism to transfer images from the (e)film memory to a host computer via USB or PCMCIA interface.

Principal features of (e)port include:

1. A window which allows you to view the (e)film LCD
2. Access to the (e)film activation button
3. Two release buttons that allow you to open the (e)port lid to insert or remove the (e)film
4. A USB connector for connecting a USB cable to your computer. Note that the USB connector has a molded protective cover. Pull back on the cover on the “(e)” side to expose the USB connector.
5. A PCMCIA connector that will fit into any type II or type III PC Card socket on a notebook computer.

Inserting the (e)film into (e)port -

Step 1: Open the (e)port lid by pressing the two release buttons and lifting the lid.

Step 2: Place (e)film into (e)port.

Do not touch or scratch the imager window.

Step 3: Close the lid with a distinctive click. The lid must be securely closed to make a connection to a computer.

1.3.3 (e)box Storage module (optional) -

The optional (e)box allows you to move your images from (e)film to a Compact Flash memory card or microdrive. This is particularly useful if you are away from your computer (perhaps in a studio or field environment) and you need to free (e)film's memory so you can capture more images.

(e)box also serves as a protective docking and storage environment for (e)port. The (e)port/(e)box combination is a compact and secure means to store and transport the primary EFS-1 components.

(e)box is designed to receive the PCMCIA connector of the (e)port as a direct plug-in. Slide (e)port into the (e)box PCMCIA socket. The two devices dock together with a distinctive click. After docking (e)port with (e)box, activate (e)box by pressing the activation button on (e)film. (e)film must be present inside the (e)port for this to occur.

When a (e)film/(e)port together are docked with (e)box and the activation button is pressed, (e)film will generate two up chirps and the (e)film LCD will illuminate. Then, the following sequence is initiated:

1) (e)box will check for the presence of a Compact Flash card or microdrive. If neither are detected, the (e)box LED will flash red for five seconds and power OFF.

2) If CF or microdrive are present, (e)box, interogates (e)film for it's image count.

3) If no images are present on (e)film, the (e)box LED will flash red for five seconds and error code E1 will display on the (e)film LCD. (e)box will then power-off.

4) If images are resident on (e)film, (e)box will compute the amount of memory space required to completely transfer all image data from (e)film to the CF card. (Note that (e)box cannot accommodate partial roll transfers.)

5) If there is inadequate storage capacity the (e)box LED will flash red for five seconds and error code E2 will display on the (e)film LCD. (e)box will then power-off.

6) If adequate storage capacity exists in the (e)box CF memory card the transfer process will begin. All images transfer from (e)film to Compact Flash as a single Vault file. During the transfer process, the (e)film LCD will display a volley of circulating arrows.

7) When all images have been successfully transferred to the CF memory card, (e)box will power off.

The naming convention for Vault files is sequential beginning with efs1-001.vlt

(e)box has a number of noteworthy features:

1. PCMCIA (PC Card) slot to engage (e)port
2. CompactFlash memory slot
3. Release buttons (2)
4. Battery bay
5. Status LEDs
6. Power Management

PCMCIA Socket. (e)box has a PCMCIA type II socket designed to engage (e)port. The socket is similar to those used in PC Card readers and the card sockets found on notebook computers.

CompactFlash Slot. (e)box features a CompactFlash (CF) slot for CF Type 1 and 2 cards, including microdrive. Your images can be transferred from (e)film directly to CF memory using (e)box.

The CF card can subsequently be read directly by a computer using a card reader or PCMCIA adapter card.

It is suggested that you use a 48 MB CF card. Each EFS-1 image file is approximately 2 MB in size. Therefore, 24 images will require 48 MB of space. (You may use a smaller capacity card provided you shoot less than 24 images.)

Compact Flash Compartment. The (e)box CF slot is located behind a small door. Lift the door to open it and expose the CF slot.

Insert a CF card as shown:

Note the CF card eject mechanism.

Battery Bay. (e)box has a compartment for three AA batteries. The use of lithium or rechargeable NiMH AA batteries is suggested. Orient the batteries as shown in this figure.

Release Buttons. To remove (e)port, press the two release buttons.

Power Management Features. (e)box will automatically power-down five seconds after the detection of an error, or immediately after a successful transfer to CF.

(e)box has a natural sleep state and if activated it will go to sleep after five minutes of inactivity. To "wake-up" (e)box you must press the (e)film activation button which is accessible through the (e)port cover. When (e)box returns to a ready state, it will generate a confirmation tone through (e)film and the (e)film LCD will illuminate.

LEDs. (e)box has two status LEDs, one Green and one Red. The LEDs indicate the functional status of the (e)box.

When (e)box is activated the green LED will illuminate. If an error condition exists, the red LED will flash for five seconds.

1.3.4 USB cable -

The EFS-1 includes one standard USB A-B cable that connects to your computer. You may use any standard USB cable.

1.3.5 Batteries -

The EFS-1 kit includes several 1/3 N lithium batteries for (e)film and three AA batteries for (optional) (e)box. The batteries are included with the EFS-1 kit, but they are not installed.

1.3.6 EFS-1 Carrying Bag -

The EFS-1 is supplied with a small carrying bag that is designed around the features of the EFS. It is designed to be attached to a belt or camera strap.

1.3.7 Field-of-View (FOV) Guide -

The EFS-1 kit includes a FOV guide which acts as a visual reference in framing your subjects within the larger visual field-of view of your SLR. This use of this visual guide is optional, but highly recommended. It is a dry-transfer rub-off that is applied to the focusing screen of your camera.

1.3.8 FOV Guide tool kit -

The EFS-1kit includes a set of tools for installing the FOV guide. The tool kit includes a set of specialized tweezers, a dry cleaning cloth, the FOV dry-transfer guide & template, a wet cleaning cloth, and an installation instruction sheet.

Note: It is strongly recommended that you refer to the CD ROM User Manual for installation instructions. There is an FOV Guide installation information for each camera model that includes important information.

1.3.9 CD ROM -

EFS-1 CD ROM includes:

* Full version of the User Manual
* User Interface/TWAIN Data Source and device drivers
* Photoshop Elements
* Genuine Fractals 2.0 LE
* Kodak Print Station

Photoshop is used in conjunction with the EFS twain driver, as a plug-in for image downloading and subsequent image editing.

1.3.10 Cleaning Kit -

EFS-1 includes a cleaning kit for cleaning your focusing screen during FOV template installation and to be used to clean the imager window.

Avoid touching the imager window. Any dust or finger prints on the imager window will appear in your images. The imager window is glass and can be cleaned with the included cleaning kit. The wet cleaning cloths are recommended for cleaning the imager window.

Chapter 2 - EFS-1 Software -

2.1 System Requirements -

To download images from EFS-1 you must use a personal computer. This section identifies the capabilities your computer must have in order to work with the EFS-1.

General requirements apply to all users. Specific requirements vary depending upon how you wish to connect EFS-1 to your computer. There are three methods by which you may download or transfer images from the EFS-1 to your computer: PCMCIA, USB, or CompactFlash card reader.

The CD ROM User manual elaborates upon the information in this section.

Transfer by PCMCIA

Transfer by USB

Transfer by CF Reader

General Requirements for PCs -

Operating System: Windows 98
CPU/processor: Pentium 200 MHz or faster
RAM: 64 MB (128 MB preferred)
CD ROM Drive: 4X (12X preferred)
Video Display Depth: 24 bit
Display Resolution: 800 x 600 (1024 x 768 preferred)
Available Disk Space for Host software: 5 MB
Hard Disk Storage Space for images: 48 MB per roll of 24 images (2MB per raw image)

Additional Requirements -
(Dependent upon connection method)

PCMCIA - PCMCIA Type II or III slot
USB - USB port
CompactFlash - CF reader, or PCMCIA adapter

Suggested optional equipment:

Storage Space for long-term image archival

2.2 Installing EFS UI/TWAIN Data Source -

Insert the CD into your CD drive and it will automatically run and present an installation screen. Follow the instructions on the screen to install the EFS-1 User Interface/TWAIN Data Source. This software is required to operate EFS-1 and it must be installed before connecting EFS-1 devices to your computer.

2.3 Installing Photoshop, Genuine Fractals, & Print Station -

Adobe Photoshop Elements, Altamira Genuine Fractals 2.0 LE, and Kodak Print Station are included on the CD ROM. Insert the CD into your CD drive and it will automatically run and present an installation screen. Follow the instructions on the screen to install the applications. None of theses applications are required to operate EFS-1. However, they are included to enhance the utility of EFS-1.

2.4 EFS-1 Software Manual -

The CD ROM includes a detailed explanation of the User Interface/TWAIN Data Source. This manual explains the many details and features of the EFS-1 software.

Chapter 3 - Inserting (e)film into your SLR

3.1 Inserting the (e)film cartridge into your SLR -

Inserting the (e)film cartridge into your camera is easy, but not immediately obvious:

Step 1: Open your SLR and remove any film. Look for the film rewind spindle in the film cavity of your camera. The rewind spindle will be in either the upper or lower end of the film cavity.

Step 2: Insert the (e)film Cartridge into your the film cavity at an angle. Insert (e)film beginning with the end facing the rewind spindle. The rewind spindle is spring-loaded and it will compress as (e)film in inserted. Handle (e)film by the edges. Avoid touching the image sensor window.

Make sure the (e)film barrel fits inside the film cavity and the imager lies flat over the film plane area and seats securely between the film rails. Close the back cover. It may require slightly more pressure to close your camera back with (e)film installed than with regular film. This is normal.

Close your camera back. (e)film will affirm the insertion with two up chirp tones and the LCD will illuminate for five seconds signifying that (e)film is ready to capture an image.

If two up chirps are not generated, check the LCD to see how many images are currently stored. If (e)film is full "EF" will appear in the display, whereas "E0" will appear if the batteries are low. If no tones are generated and the LCD does not illuminate, remove (e)film and replace or check the batteries.

Note: It is strongly recommended that you refer to the CD ROM User Manual for installation instructions. There is a detailed information for each camera model.

3.2 The FOV screen -

EFS-1 includes a FIeld-of-View template to assist in framing your images. Refer to the CD ROM manual and separate instruction manual.

3.3 Removing (e)film from your camera -

To remove (e)film from your camera, open the camera back and lift (e)film out of the camera beginning with the "flag" (sensor) end. Raise the flag and remove (e)film with a slight rolling motion.

Chapter 4 - Taking a Picture with EFS-1 -

EFS-1 is a unique device which merges digital imaging with traditional photography. Film photography and digital imaging strive to accomplish the same objective using approaches which are technically quite different.

Even though the ultimate objectives are similar, the mechanism by which each method achieves an image are vastly different. Many of the features of your SLR will work with the EFS-1. Some features will work, but take on a slightly different behavior. Other features of a film-based SLR camera have no corollary, or equivalence, in digital imaging.

This section presents a general guideline that discusses those features that work with EFS, those features that are not supported in the digital world of EFS. Specific camera models are covered in more detail on the CD ROM manual.

4.1 Capturing an Image - Basic Operations

In the previous section you learned how to insert the (e)film into your camera. Upon closure of the camera back, (e)film generated two up-chirps, and the LCD illuminated for five seconds to display battery status and image count. After five seconds the power management feature of (e)film turned the LCD off.

What next? You could pop open your camera back to wake up (e)film and then close it again. This is one way to see how many images are stored - in case you have forgotten, or if it has been a while since you used (e)film. This also allows you to see the battery status.

However, to capture an image you need not open your camera back unless you have switched (e)film to its OFF position. If (e)film has been left in the ON position, it is ready to go immediately. (e)film will detect camera operations, power, and be in a ready-state as fast as you can hit the shutter button. (e)film is as ready-to-go as a roll of traditional film.

Simply take aim, frame your subject, focus, and press the shutter. Upon successful capture and storage of an image (e)film will generate a single up-chirp confirmation tone.

It requires just over one-second for (e)film to process and store an image. After successful image processing and storage, the (e)film LCD will illuminate and increment by one. As soon as the up-chirp tone is complete you are ready to capture another image - up to a total of twenty-four (24) images.

If, by chance, the image is not stored successfully (e)film will generate a down-chirp tone.

4.2 Which Camera features which work normally -

Field-of-View. EFS-1 uses the central region of your 35 mm SLR field-of-view. EFS-1 represents the state-of-the-art in microelectronics packaging and digital imaging science. Today's imaging arrays are physically much smaller than a frame of 35-mm film. Imaging arrays in electronic devices are measured in fractions of an inch whereas a frame of 35-mm film measures just under two inches (1.7") diagonally.

Placing an imaging array which is smaller than film results in a digital image that is smaller than that which film would yield as shown in these two examples.

As seen in your viewfinder

EFS-1 Central Image

As seen in
your viewfinder

EFS-1 Central Image

Full Auto Mode. EFS-1 will work with your SLR set to Full Auto Mode. The only concern is that Full Auto may select a focus point at or near the perimeter of the EFS-1 image as discussed in the following paragraph.

Auto-Focus. The auto-focus features of your SLR are not altered or disabled in anyway by EFS-1. Your camera should focus in any mode just as it does with film.

The EFS-1 imager is physically smaller than a frame of 35-mm film and it captures an image in the central region of the field-of-view. Multi-point focusing modes may focus on a point which is near, or beyond, the perimeter of the EFS-1 image area. Therefore, it is suggested that multi-point, and eye-controlled focusing be disabled. Select a centrally weighted focus method.

Auto-Focus Modes. Auto-focus modes are not altered or disabled by EFS-1. Your camera should auto-focus in any mode as it does with film. Predictive or Servo-mode focusing systems may focus on a point which is near, or beyond, the perimeter of the EFS-1 image area. Therefore, it is suggested that any focusing mode that may select a point outside the active image area be disabled.

Eye-Controlled Autofocus (i.e. Canon A2E). Eye-Control autofocus will continue to work normally with EFS-1. It is suggested that you select a focus point within the EFS-1 image area.

Focus Lock. Focus lock will not be affected by EFS-1. In fact, Focus Lock may be a preferred method of focus. Using Focus Lock, you can make sure that you are focused within the central region.

Auto-Exposure and Metering Modes. Auto-exposure and metering modes of your SLR are not altered or disabled. Your camera will determine exposure as it does with film. As with autofocus, keep in mind that the EFS-1 captures images in the central region of the field-of-view. Multi-point or evaluative exposure systems may evaluate exposure at points beyond the perimeter of the EFS-1 image area. Therefore, it is suggested that you select partial metering, or center weighted metering.

Macro Mode. Close-up and macro modes will work with EFS-1 just as always. Keep in mind, of course, that EFS-1 will image the central region.

Zoom. The EFS-1 will work with your zoom lenses. Keep in mind that the EFS-1 has a native "telephoto" effect. Since the EFS-1 images on the central region there is an effective multiplier of approximately 2.85:1. As an example, a 100 mm lens will yield a digital image as if it were taken with a 285 mm lens using film. A 28 mm lens will yield a digital image as if it were taken with an 80 mm lens using film.

Program AE (P) Mode - Canon models. Program AE mode will work with EFS-1, but do not attempt to direct the Eye-Control autofocus (if applicable) to use a focus point outside the EFS-1 active image area.

Camera Battery. The EFS-1 has its own battery power. It draws no power from your SLR battery.

Self Timer. The self-timer function of your SLR is not affected by the presence or use of EFS-1. The self timer function, the numeric countdown timer, and any LED indicators should function normally.

4.3 Camera features not supported -

There are some features of your film-based SLR camera that have no corollary, or definition in the digital domain, using the EFS-1. Many of these are discussed here:

DX coding. The EFS-1 is not DX-coded. Manually set the ISO to 80 or 100. If you set the ISO to greater than 100, the camera shutter will begin to inhibit exposure and effectively underexpose your images.

Mirror Lock. Some SLRs have a mirror lock feature. Do not lock the mirror as this may interfere with the synchronization between the mechanical shutter of your SLR and the electronic shutter of the EFS-1.

Film Loading, Motorized Advance, or Rewind Modes. In the absence of film, any feature or function that relates to film movement will, of course, not be applicable to the EFS-1.

Mid-Roll Rewind. Mid-roll rewind has no physical meaning or corollary while using the EFS-1. The mid-roll rewind button on your SLR will be inactive. Logically speaking, however, (e)film can accomplish the same objective as a mid-roll rewind.

You may switch back and forth between (e)film and regular film. You may remove (e)film between shots. In that sense, (e)film allows unlimited "mid-roll" removals.

Frame Counter. While using EFS-1 the frame counter on your camera should be inactive. EFS-1 has it's own frame counter LCD which is visible through the film window on the back of your SLR. Note that the (e)film LCD will only display for five second intervals. If you cannot see the (e)film LCD open the back of your camera and press the (e)film activation button. Unlike film, there is no risk of exposure to EFS images if you open the back of your camera at any time.

Multiple Exposure. By the very nature of EFS-1 there is no such thing as multiple exposure. Every EFS-1 image creates a new digital image file. However, using an imaging application software, such as Adobe Photoshop, it is possible to combine multiple image files using layering techniques. Refer to the Photoshop help files for additional detail and information of this subject.

Date and Time Stamping. Since there is no film, Date and Time stamping is not applicable.

Chapter 5 - Connecting to your Computer -

5.1 By PCMCIA or USB -

After you have installed the EFS-1 User Interface/TWAIN Data Source software you may transfer your images by inserting (e)film/(e)port into a PCMCIA (PC Card) slot on your computer. Start any TWAIN-aware application and select “EFS-1” as the current Twain 32 device. Then click on “Acquire”, and “Twain 32”. (See CD ROM for more detail as application differ.)

You may use either USB or PCMCIA to download your images. The EFS-1 UI/DS has embedded intelligence to detect which port your are using.

5.2 By CF Reader -

To read Vault files on Compact Flash memory cards that you created using (e)box, insert the CF card in your reader. Start the host application and click on File, unload roll form Vault, and then browse to your CF drive.

Note: You may launch the EFS-1 UI/DS in one of two modes: Stand-alone (shell) mode or TWAIN Data Source mode. The UI/DS may be launched independently, or it may be called from a TWAIN-aware application, such as Adobe Photoshop by using the Acquire sequence as mentioned above.

Chapter 6 - Downloading your Images -

6.1 Downloading Images to your computer -

Once you have established a preferred physical connection between EFS-1 and your computer you are ready to download your images. The download process is common, regardless of connection method. The CD ROM provides detailed explanation of the EFS-1 User Interface/TWAIN Data Source.

6.2 Using the Twain Source with other Applications -

You may use the EFS-1 TWAIN Data Source with Adobe Photoshop or any other TWAIN-aware application software. In each case, the Twain acquisition process will “call” the EFS-1 User Interface. All features and functions of the EFS-1 will be available.

Chapter 7- Frequently Asked Questions -

7.1 Answers to Common Questions and Problems -

Frequently asked questions (FAQs) are included on the CD ROM. FAQs are updated and posted on the Silicon Film website at www.siliconfilm.com

Chapter 8 - EFS-1 Specifications -

8.1 EFS-1 Specifications -

Shutter speed: 1/15 second (minimum) to 1/8000 second (maximum)
Shot-to-shot time: 1 second (1 fps)
ISO Rating: 80 to 100
Storage in (e)film memory: 24 images
File format: Raw digital negatives, DNG format, 2 MB
Life Expectancy: 30,000 “rolls”
(E)film batteries: 1/3N Lithium
Battery life: 3 months/300 images
Other specifications and parameters are on the CD Manual

Chapter 9 - Tips and Techniques -

9.1 Tips and Techniques to get the best pictures

Refer to the CD ROM or the Silicon Film website for tips and techniques to get the best results from EFS-1 in your camera body.

The EFS-1 CD ROM includes images, illustrations, animations, and video clips that explain EFS-1 in a level of detail that can’t be expressed in words!   Check for more information and video tutorials on the Silicon Film website at www.siliconfilm.com

Chapter 10 - Warranty and Registration -

10.1 Regulatory Information -

FCC Notice

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 commercial 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, detectable by turning the equipment in question off and on, the user is encouraged to try to correct the interference by one or more of the following measures. 1) Re-orient, or relocate, the receiving antenna. 2) Increase the distance between the equipment and the receiver. 3) Connect the equipment to an outlet on a different circuit than that which the receiver is connected to. 4) Consult your dealer or an experienced radio/TV technician for help.

10.2 Warranty -

Silicon Film Technologies Inc. - One Year Limited Warranty

Thank you for purchasing the EFS-1 Electronic Film System from Silicon Film Technologies, Inc. Providing fast, trouble-free service is our top priority. You were automatically registered with us at the time of purchase, so we ask you to record the product information below and retain this Warranty and proof of purchase for your records.

Product Serial Number:_____________ Date of Purchase: ________________

Silicon Film Technologies Inc. ("Silicon Film") warrants that the enclosed Silicon Film product and related Silicon Film accessories (individually a "Product" and collectively the "Products") will be free from defects in materials and workmanship under normal use and service for a period of one (1) year from the date of purchase. If any Product proves to be defective within such one-year warranty period, Silicon Film, at its sole discretion, as your exclusive remedy will either: a) replace the defective Product without charge, or b) return the customer's purchase price. Replacement of the defective product will be subject to the following limitations:

1. This warranty extends to the original purchaser only and is not assignable or transferable.
2. This warranty shall not apply to the following:

   A. Any product which has been subject to misuse, abuse, negligence or accident
   B. Defects or damage directly or indirectly caused by the use of unauthorized replacement parts and/or service by unauthorized personnel
   C. Any products not manufactured by Silicon Film and/or not bearing the Silicon Film brand label
   D. Malfunction resulting from the use in cameras other than those which the Silicon Film product was designed
   E. Malfunction resulting from the use of accessories, attachments, parts or devices (including without limitation batteries, AC power adapters, computer cables, and other accessories) with the Silicon Film Product that do not conform to Silicon Film's specifications
   F. Software programs
   G. Batteries

Exchanged product shall carry the balance of outstanding warranty, or ninety (90) days, whichever is greater.

What To Do When Service Is Needed

Visit our website at www.siliconfilm.com and navigate to the Technical Support Section for FAQs and technical assistance. You may call, fax, or email Silicon Film's Technical Support Department to attempt to determine the nature of the problem (hardware or software). In many cases, your problem can be corrected with technical assistance. Refer to the "Contact US" section of the CD ROM or printed user manual.
If Technical Support cannot correct your problem and it is determined that service is required, you will be issued an RMA number and shipping instructions for the exchange and return of your product. Only Technical Support can issue an RMA. Any product returned without an RMA will be returned to sender, or refused for delivery.

In the event your product is defective, you will receive an exchange product from Silicon Film. Silicon Film may use functionally equivalent reconditioned or like-new parts in exchange products.

When returning your product, please include the following:

1) Proof of purchase and purchase date. (Print out your original purchase confirmation e-mail.
2) A detailed written description of the problem
3) Sample digital prints (or files on disk), if available, related to the problem. These may be forwarded via e-mail once you have established contact with Silicon Film.
4) All components delivered in the product package (e.g. (e)film, (e)port, (e)box, cables, CD ROMs, documentation, etc.
5) Use the packaging materials of the exchange product to carefully package your defective product and ship it postage prepaid by and pre-addressed to Silicon Film.
6) Write the RMA number on the outside of the package in large numbers in several places. “RMA # ...”

Out of warranty service may be arranged by contacting customer service.

All warranties implied by law, including any warranty of merchantability or fitness for a particular purpose, shall be of a duration limited to one (1) year from the date of purchase. The warranties herein are expressly in lieu of all other express warranties.

THIS WARRANTY IS THE COMPLETE AND EXCLUSIVE STATEMENT OF WARRANTY WHICH SILICON FILM AGREES TO PROVIDE WITH RESPECT TO THE PRODUCTS, AND IS EXPRESSLY IN LIEU OF ALL OTHER EXPRESS WARRANTIES. IN NO EVENT SHALL SILICON FILM BE LIABLE FOR ANY INDIRECT, INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES OF ANY KIND (INCLUDING WITHOUT LIMITATION LOSS OF PROFITS OR LOSS OF USE), OR TOTAL DAMAGES; WITH RESPECT TO ANY PRODUCT, IN EXCESS OF THAT PRODUCT'S PURCHASE PRICE.

Some states do not allow (a) limitations on how long an implied warranty lasts or (b) the exclusion or limitation of incidental or consequential damages so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

10.3 Return Policy -

There are two return methods: standard and express.

Standard Exchange Method. After you have received an RMA and shipping address from Technical Support you must ship your product freight pre-paid to the repair center. The repair center will inspect your product, determine the cause of the problem, and repair or replace any defective items. (Items that check-out OK will be returned.) The repair center will ship the replacement product by a ground carrier, standard priority.

Express Exchange Method. When you received an RMA from Technical Support you may request Express Exchange by securing the cost of the new product with a credit card. The repair center will immediately ship a new or replacement product by ground carrier, standard priority. You may elect to pay for express shipping in order to expedite delivery. When you receive the replacement product you must ship your defective product to the repair center using the provided packaging freight pre-paid. Upon receipt, the repair center will then inspect your product for defective items and completeness. Any missing Items will be charged to your credit card.

Chapter 11 - Contact US -

11.1 Technical Support -

Technical support is available to assist with product technical questions. The first level of support can assist you with issues related to the EFS-1 and the interface between EFS-1 and you computer. Level 1 technical support is offered for the EFS-1 hardware and User Interface/TWAIN Data Source.

Technical Support will issue an RMA number if it is determined that your product needs repair or replacement.

Technical Support is available (in English) on the Silicon Film website, by email, by fax, and by phone.

By phone - (949)-450-0822   By Fax - (702)-922-9478
By email - efs1support@siliconfilm.com
On the world wide web www.siliconfilm.com/mainsupport.html

If you are connected to the Internet -

From the EFS-1 UI/DS click on the link to Technical Support

11.2 Customer Service -

If your product must be repaired or replaced Technical Support will issue an RMA number and transfer responsibility for your RMA to the Customer Service department. Please note that Customer Service is not prepared to assist you with detailed technical product issues but is responsible for receiving, inspection, and shipping of product.

By phone - (949)-450-0822 By Fax - (702)-922-9527
By email - efs1service@siliconfilm.com
On the world wide web www.siliconfilm.com/mainsupport.html

11.3 Proper Disposal of Lithium Batteries -

Lithium batteries pose an environmental hazard and must be disposed of properly. Please consult your local recycling and waste management authority for proper disposal instructions for lithium batteries.

If you cannot determine the proper disposal method for your area, you may return your exhausted lithium batteries to Silicon Film Customer Service. For mailing instructions, please email: batteries@siliconfilm.com

Caution: Batteries may explode or leak if recharged, disposed of in fire, mixed with batteries of a different type, inserted backwards, or disassembled. Replace all used batteries at the same time. Do not carry batteries loose in your pocket or purse.

11.4 Warranty Registration -

In order to receive Technical Support and extended warranty service please register you product. You may register on-line at www.siliconfilm.com. You may also register by email or fax to Customer Service (see prior page for details).

Include the following information:

Name:

Address:

City:

State or Province:

Zip or postal code:

Country:

email address:

Phone:

Fax:

(e)film model or SKU:

Camera model:

Date of Purchase:

Place of Purchase:

Silicon Film Technologies
Irvine, CA USA

www.siliconfilm.com