

Super-Fine Detail (SFD): A Primer

Introduction

SFD or Super Fine Detail is a sophisticated exposure bracketing and processing technique that combines the best parts of seven (7) bracketed exposures to deliver the highest quality finished image. Images produced using SFD have fewer issues with blown highlights and shadow noise. SFD can capture up to 6 more stops of light than a single image. Although conceptually similar to High Dynamic Range (HDR), SFD preserves far more detail.

- SFD is an excellent tool where very large prints are to be produced and/or where fine detail is extremely important. It is an especially useful tool for macro photography.
- SFD works with Quattro cameras only - sd Quattro, sd Quattro H and dp Quattro.
- At present, SFD does not handle subject or camera motion, so it is recommended for use only with still subjects, and care should be taken to eliminate camera shake/vibration. We recommend that you review the sections in this document that address improving equipment stability, reducing motion and vibration, and selecting suitable subjects.

Note: This document assumes you have some experience with the Sigma cameras and with the Sigma RAW processor, Sigma Photo Pro (SPP). If you are not experienced with processing Sigma X3F images using SPP, we recommend that you spend some time familiarizing yourself with this product. Also, if you are not familiar with the SD Quattro cameras, we recommend you spend some time with any one of the Quattro cameras shooting RAW before you try SFD.

Getting Started

What you need to know before using SFD – CAMERA

- SFD is turned on and off via the camera menu (2nd CAMERA Menu, SFD Mode). It says on until you turn it off. It captures seven (7) bracketed RAW shots with one press of the shutter button. With the SD Quattro and the SD Quattro H, there is a lag between the 6th and 7th shot due to the buffer being full, so be sure that the 7th shot has been taken before touching the camera/tripod etc. The dp Quattro series have no such lag.
- There is no option in camera to change the number of images in an SFD sequence set.
- SFD is compatible with SPP 6.4 or later. Dp series require SPP 6.5.3 or later.
- SFD defaults to ISO100. There is no option to use any other ISO value.
- SFD produces a file with the extension **X3I** and an approximate size of 350 MB for sd Quattro and 500MB for sd Quattro H. The file has the seven bracketed X3F files integrated and ready for processing. This set of all seven RAW images is called the **Default Sequence Set**.
- The X3I file uses portions of the standard X3F format.
- The X3I file has a single embedded JPEG preview that is taken from one of the X3Fs. The thumbnail image that you see of the X3I is not a composite of the seven shots.

What you need to know before using SFD – SPP

In this document we refer to four windows. The **Main Window** displays X3I and/or X3I thumbs. The **Review Window** is the standard (default) window for processing X3F and X3I RAW files. The **X3I Edit Window** is multi-functional window for custom work and X3F extraction and is discussed in detail later. The **Alternate Review Window** is used for limited-choice processing of X3I only and is discussed later.

There are two options which should be set before starting. They are accessed from the MAIN WINDOW by clicking the **File** tab and selecting **Preferences**. The first, **X3I File Setting**, sets which window opens when you double-click in the MAIN WINDOW on an X3I thumbnail image - the X3I EDIT Window or the REVIEW WINDOW. The second, **Applicable Adjustment Setting (X3I)**, sets processing type (Auto or Default X3I) when you open the X3I file in the REVIEW WINDOW.

- In order to see X3I image files in the MAIN WINDOW (thumbnails), click on the **View** tab and select either: **Display All Formats**, **Display Still Only** or **Display X3I Only**.
- The X3I can be processed in the REVIEW WINDOW and with the same editing options as an X3F file. When the X3I file is first produced, the seven X3Fs have been integrated and the X3I file is ready to be processed using all seven images.
- In the X3I EDIT WINDOW you can process the X3I with its default set (7 images) or review individual X3Fs and build a smaller set. The minimum X3Fs in a **custom sequence set** is three (3). Two different processing windows are available from this window and are detailed below.
- In the X3I EDIT WINDOW you can also export one or all of the embedded X3Fs from the X3I and process them as stand-alone files.
- The X3I file contains an embedded JPEG from one of the X3F files which can be extracted via SPP in the same way a JPEG is extracted from an X3F file. In the MAIN WINDOW, either right-click the thumb or highlight the thumb and select the option from the **File** tab.

X3I files have the following default settings in SPP:

- Detail is set to 0.00 (Smooth).
- NR Chroma and Luminance, 0.00
- Contrast -2.0; Shadow +2.0; Saturation -0.3; Sharpness, -2.0;
- Highlight Control (not to be confused with Tonal Highlight slider) and Overexposure Adjustment are not enabled.
- All other adjustments are set to 0 or left unset.

X3F files have the following default settings:

- Detail 0.50; Highlight Control 1.0 (not to be confused with Tonal Highlight slider).
- NR Chroma, .50 and NR Luminance, .50 (Mid Points)
- All other adjustments are set to 0 or left unset.

- You **CANNOT** edit/change the settings of the embedded X3F files while they are within the X3I file. You can export them and edit them individually. You cannot import an exported X3F back into the X3I file.

Processing Options

Processing from the MAIN WINDOW

Processing options are the same as those for an X3F file except those noted above. Since you are in the default REVIEW WINDOW, there is no way to change the **Sequence Set** in the X3I file from this window. There are four ways to open the REVIEW WINDOW from the MAIN WINDOW.

1. Double-click the thumbnail image. This option must be set in the **Preferences** section of the MAIN WINDOW.
2. Right-click and choose **Review Image Color**.
3. Right-click and choose **Review Image Monochrome**. Color images are converted to Monochrome.
4. Right-click and choose **Open New Review Window**.

Processing from the X3I EDIT Window

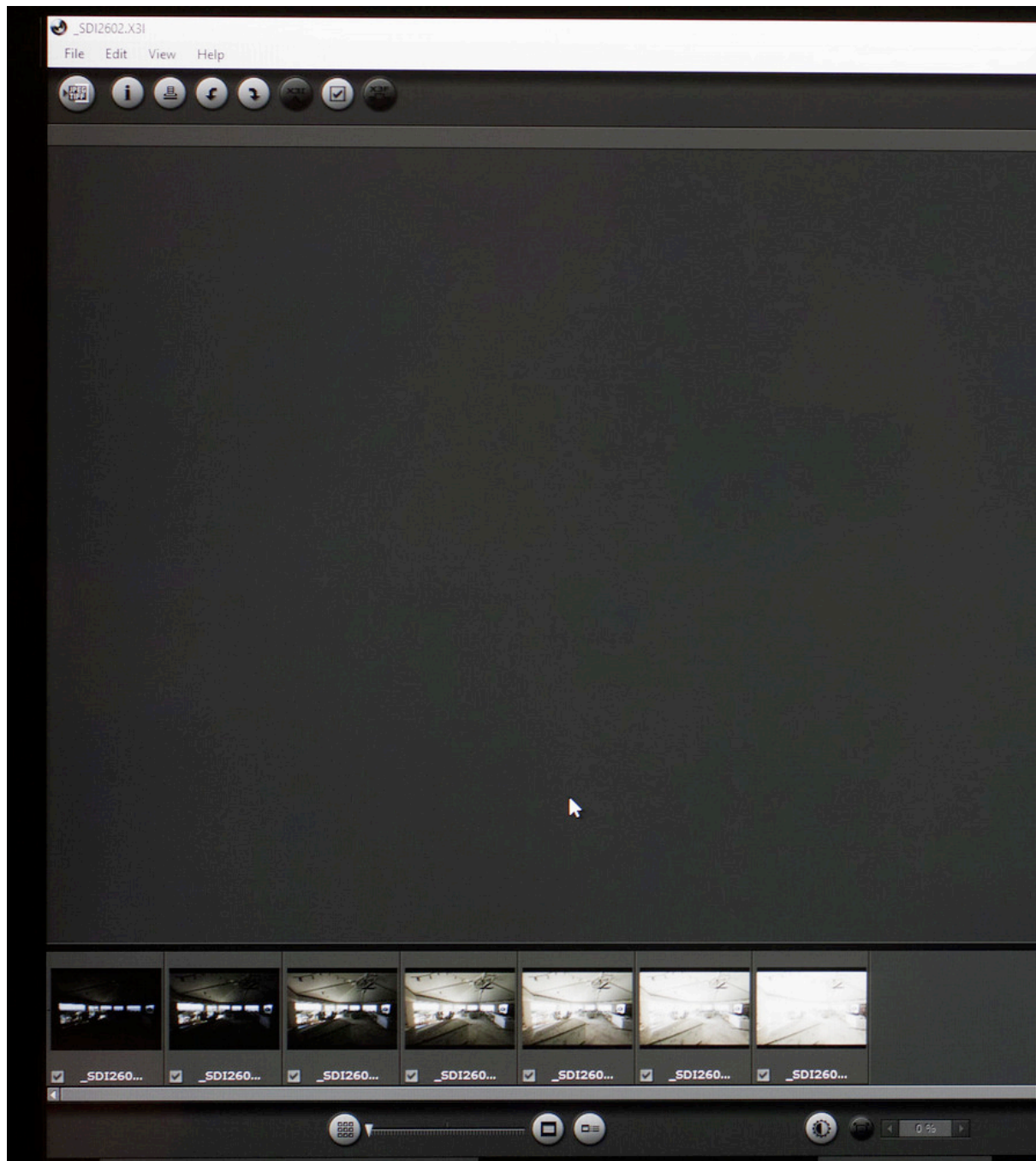
The functions which can be performed from the X3I EDIT WINDOW are:

1. **Review** embedded X3F files - thumbs or larger size. The larger size is especially helpful in selecting which individual X3F files are to be used when creating a custom sequence set. You can also adjust brightness.
2. **Build and integrate** a custom sequence set composed of between 3 and 7 X3Fs.
3. **Process** the X3I file using the default or custom sequence set in the REVIEW WINDOW with full editing options.
4. **Process** the X3I file using the default or custom sequence set in the ALTERNATE REVIEW WINDOW, a smaller window limited to choices of X3F, Auto, or Custom. No individual edits/adjustments can be made.
5. **Extract** one or all X3Fs from the X3I file for individual processing.

Opening the X3I Edit Window:

There are two ways to open an X3I in the X3I EDIT WINDOW from the MAIN WINDOW. The window will open with the seven embedded X3Fs displayed on the bottom as thumbs and numbered from left to right as X3I number with _1 to _7 appended.

1. Right-click on the thumb and select **Open in X3I Edit Window**.
2. Click the thumbnail, click the **File** tab and then select **Open in X3I Edit Window**.



X3I Edit Window upon Opening

Reviewing X3F thumbs

1. Click a thumbnail image to show it in the DISPLAY PANE; the default size is FIT. To return an image to FIT, double-click the image or click the **Fit** icon on the bottom of the screen.

There are three options for magnifying the image and two options for adjusting brightness.

2. Right-click on the image in the DISPLAY PANE for 400%, 200%, **Actual**, and **Fit**.
3. Select the slider under the thumbs and to the right of the **Fit** button for a series from 12.5% to 800%.

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4. Click on the image in the DISPLAYPANE and the image will be magnified. Double-click and the size returns to FIT.
5. You can temporarily change brightness by clicking on the **View** tab and selecting **Adjusting Image Brightness**. This button is a single-action on/off. Overexposed will have brightness reduced; underexposed, increased.
6. You can also click **Brightness** button to the left of the Magnification slider. This button is a single-action on/off. Overexposed will have brightness reduced; underexposed, increased.



X3I Edit Window With Display Pane Magnification

(Right portion cropped out)

Building the Integration File

By default, all seven X3Fs are integrated into the X3I. All seven thumbs have ticked boxes indicating they are integrated or ready to be integrated. The minimum number of X3Fs that must be selected to build and integrate a custom sequence set is three. This is a two-step process.

Choose (by ticking and un-ticking the thumbs). Then integrate either by clicking the **File** tab and selecting **Save Integration Flag Information**; or by clicking on the **X3I Button** at the top of the screen and just to the left of the Check button. If you see the "No Images Selected" message while doing this, ignore it. This message is related to highlighting the X3F images for extraction which will be explained below.

Note: When you build and integrate a custom sequence set, you are not deleting the X3Fs that you have not included. Conceptually you are flagging the ones you want to be used in the processing. The others are just ignored during the processing.

WARNING: If you build a custom sequence set and integrate it, and then decide to go back to default (seven images), you must tick the ones you have un-ticked and re-integrate the seven. Closing and reopening SPP without doing so does not reset the sequence set to default (7 images).

Processing the integrated X3I file in the REVIEW WINDOW

Click the FILE and then select **Review Images**. You will get a warning message if you have not integrated at least three (3) images. If you have not integrated your choices, the message, "Integrate X3F files?" will be displayed. Make sure your ticks are correct and then click **Yes**, even if you have done this already. The X3I EDIT WINDOW is then closed and the REVIEW WINDOW is opened with your X3I file. Editing options are the same as with an X3F file.

Processing the integrated X3I file in the Alternate REVIEW WINDOW

Click the **JPEG TIFF** button at the top left or click the **File** tab and then select **Save Images As**. You will get a warning message if you have not integrated at least three (3) images and you may get the "Integrate X3F files?" message. Make sure your ticks are correct and then click **Yes** even if you have done this already. A window will be displayed above the thumbs with three options. You cannot do any type of editing yourself. Just sit back and wait and enjoy a cup of Java.

- **X3I/X3F** - The associated (saved or default) X3I settings are used. You have a choice of G1, G2, or G3 for color. Default settings are listed in the **Getting Started** section above.
- **Auto** - The settings are computed automatically and applied to the image.
- **Custom** - If you have a custom setting, a drop-down allows you to select it from your list. For information on creating a custom setting refer to the **SPP Help Manual**.



Alternate Review Window

Extracting individual RAW files for processing by SPP or for use with external editor/browser

1. Open the X3I file in the **X3I Edit Window**. Highlight the one(s) you want to extract.

Note: The tick marks are for selecting which X3Fs are used only to build the sequence set.

2. Click the **Edit** tab and choose **Copy the X3F of Selected Frames**. Paste them **CTRL+V/CMD+V** (Windows/Mac) into the window Finder/Explorer window of your choice. You can paste right into the open MAIN WINDOW. You will not see the X3F files unless you have your View options set appropriately. You can also highlight, **CTL+C/CMD+C** and paste **CTL/CMD+V** or highlight and click the **X3F** button (right-most button of top group) and then and then paste **CTL/CMD-V**. The folder you paste into must be open and not just highlighted or back-lit.

For A Better SFD Shot

Equipment and Set-up

SFD at this stage does not handle movement well. It takes the camera about 7 to 8 seconds to take all 7 shots. Part of this time is the lag between the 6th and 7th shot which occurs with the sd Quattro, and sd Quattro H but not with the dp Quattro series. If you have unexpected motion artifacts, you may want to try excluding the last shot when you process the X3I file.

Do not try shooting without some kind of solid support. As good as you may be at hand-holding, you cannot provide a solid support. **Turn off OS as it will not help you.** A solid tripod with a strong head is extremely important. The base support for your tripod is equally important. The firmer and more rigid the ground the better off you will be. Hills are inherently less stable than level ground.

Balancing your system fore and aft is another action that can help reduce shake/vibration. Heavy lenses should have a collar which can be used for balancing and for rotation when shooting vertical or off-axis shots. Since some very heavy lenses do not have collars, an Arca-Swiss type mount with an extra long collar can help with balancing.

Reduce the chance of vibration or shake due to the pressure on the shutter button. Use a 10-second delay and back away from the camera until you are absolutely certain that all shots have been taken.

Subject Selection

- Subjects with high dynamic range — deep shadows and bright/strong highlights will get the greatest benefit from SFD. Its 7 bracketed shots enable it to pull detail out of deep shadow and reduce and recover detail from blown highlights.
- Flat light can also benefit as SFD integrates the best detail from each exposure. The same applies to high-overcast images.
- Avoid any shots with motion. Naturally this includes any types of action/sports shots.
- Clouds can be an issue also as although they may not appear to be moving, very few clouds stay still for very long. This is also true of leaves, branches and people.