

RetroScan 816^{2K} Software Index

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RetroScan 816^{2K} Software Instructions

NOTE Due to modern camera manufacturing methods, it is not uncommon for dead pixels to show up even on new cameras. While the manufacturing industry may consider a handful of dead pixels out of several million to be acceptable, we do not. As such, the RetroScan software has a Pixel Mapping function which allow the user to locate and repair virtually all dead pixels on the scanner's internal camera. This process can be repeated as the camera ages, thereby extending the useful life of the camera. And, since the pixels are fixed during export, you would not need to recapture footage if you find bad pixels in your imagery. Just remap your camera and then re-export your files.

Overview of how the system works:

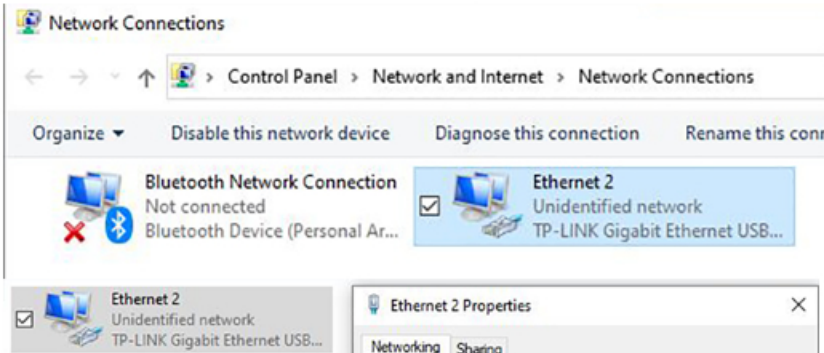
The final resolution of the captured film is 2K but the internal camera is actually 4K. The scanner captures everything to a 2K portion of the unit's 4K camera sensor. This overscan allows the captured frames to be moved up, down, side to side, and in and out digitally, without having to physically move the camera inside the scanner to change cropping or framing of the film being scanned. When capturing with the RetroScan 816^{2K}, you are not scanning to a standard video file. Instead, you are scanning each frame of film to an individual, Photoshop quality, digital still frame numbered sequentially in a folder. This avoids the massive compression often associated with video files. Despite not being a video file, the RetroScan software will play back those numbered stills fast enough to see motion so that you can check your transfers. However, the original capture files are proprietary and can not be imported into any known edit system. As a result, you must use the RetroScan software to export your captures into a file appropriate for your needs. The export function of the software will allow you to output a variety of file types, including .MOV, .AVI and numbered image sequences, all in 2K resolution.

So, from a workflow standpoint, using the RetroScan 816^{2K} unit is a two step process: First you capture all day long without regard to film playback speed or required resolution. Then you set up the RetroScan software at the end of the day to batch process (export) all your captures. The RetroScan software will then export 2K files which can then be imported into your desired edit program. This processing is generally done most efficiently overnight. Most people set up the RetroScan software to export to an external USB drive. The next morning, all the new files will be on that external drive which can then be unplugged and brought over to the desired PC or Mac edit suite. So while we don't support capturing on a Mac, the exported files are Mac compatible.

If you have any questions or problems, feel free to email us at moviestuff@swtexas.net or call us at 512-284-7197. If emailing, please always include a phone number and, if you are international, please also include your country code.

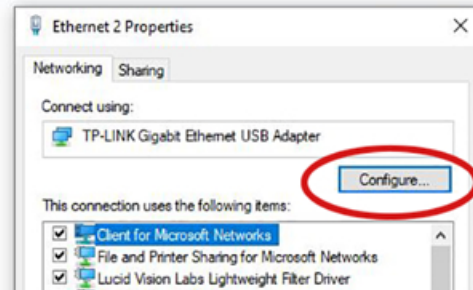
RetroScan 816^{2K} Software Instructions

Ethernet PC Settings

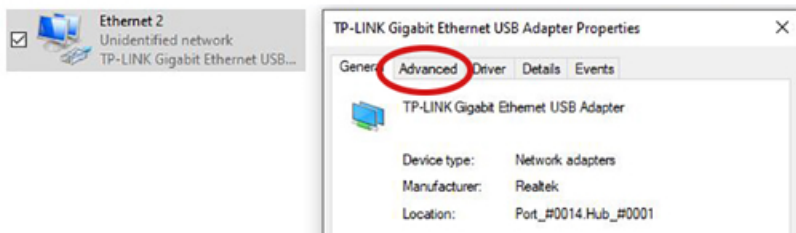


Even though you use the Ethernet to USB-3 adapter, you must make the following adjustments in your PC network card for your PC to “see” the 4K camera inside your scanner. In your control panel, find your network settings and double click on the network connection.

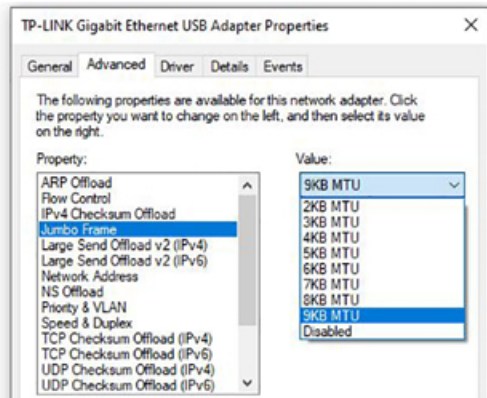
Click on the “Configure” button.



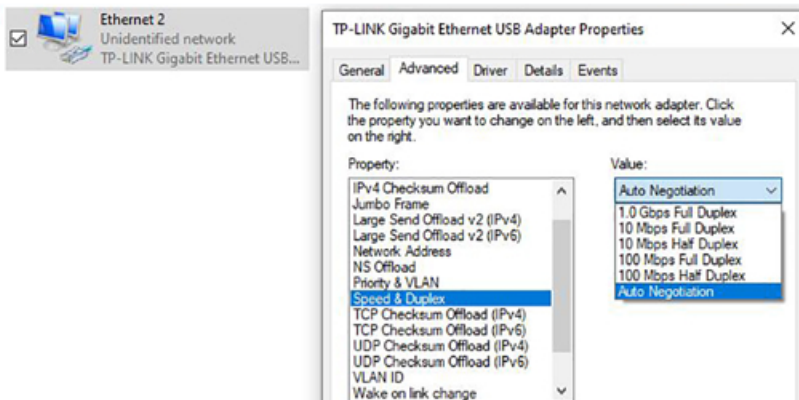
Click on the “Advanced” button.



Under “Jumbo Frame”, change the value to “9KB MTU” or larger.

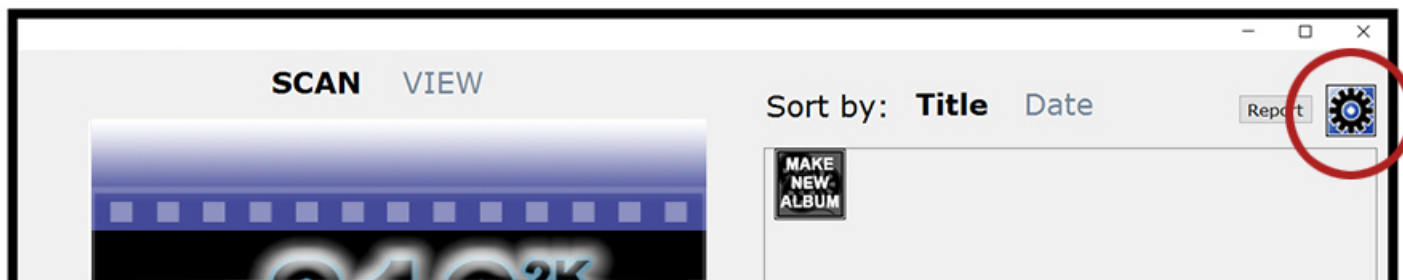


Under “Speed and Duplex”, change the setting to “Auto Negotiation”.



Then click “OK”.

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When you launch RetroScan, click the Settings icon in the upper right hand corner. The following settings box will appear.

SettingsForm

DRIVES

Capture films to drive:
C:\

Export albums and films to drive:
C:\

NOTE: Export drives may also be changed on the albums.

CAPTURE

Grain reduction level
Light Heavy

Auto Exposure
 Capture Uncompressed

Camera Model
4K (2448 x 2048, 4:3)

EXPORT

Movie Output
AVI Compressed (fast)

Image sequence type
JPEG

OK Cancel

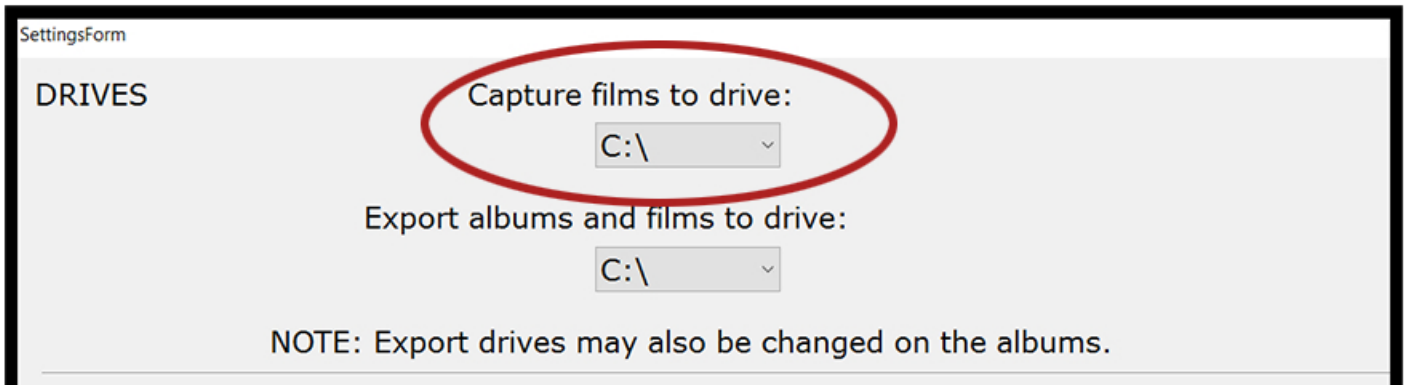
The top section is about what drives you capture and export to. (They can be different)

The center section is about how you capture. (Grain reduction, AutoExposure, etc)

The bottom section is about how you export AFTER capture. (File type, compressino, etc)

Please note that all choices are global and affect all captures and exports.

Drive Selection for Capture and Export



SettingsForm

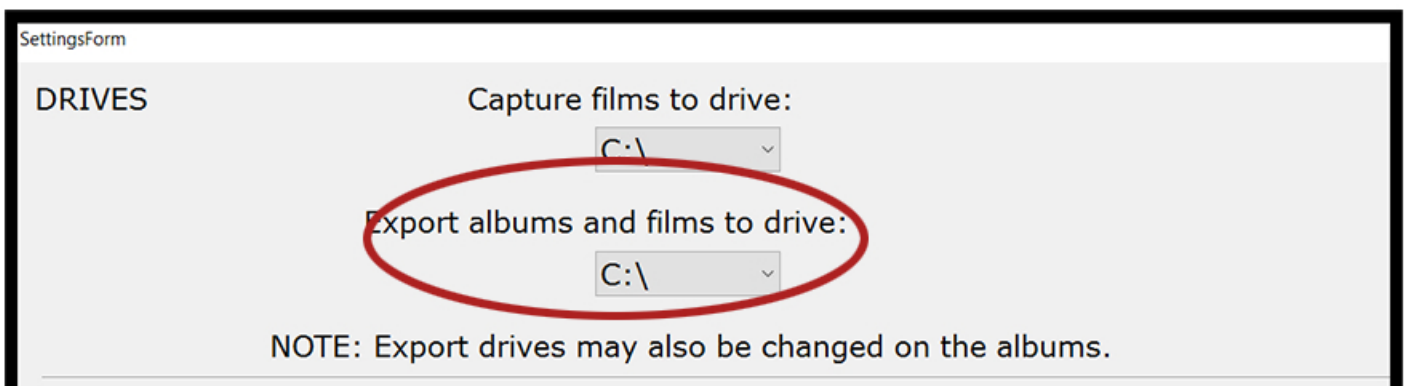
DRIVES

Capture films to drive:
C:\

Export albums and films to drive:
C:\

NOTE: Export drives may also be changed on the albums.

In this section, you select the drive that you wish to capture to. As you are initially capturing 4K files, it is best to have a very fast internal drive that is separate from your system (C) drive. If using a solid state drive, make sure that it has NAND memory or there may be performance issues. If you have room, an old fashion Raid-0 array using two cheap 7200 RPM spin drives will work fine. Some people do capture to external drives but it is not something we recommend nor support.



SettingsForm

DRIVES

Capture films to drive:
C:\

Export albums and films to drive:
C:\

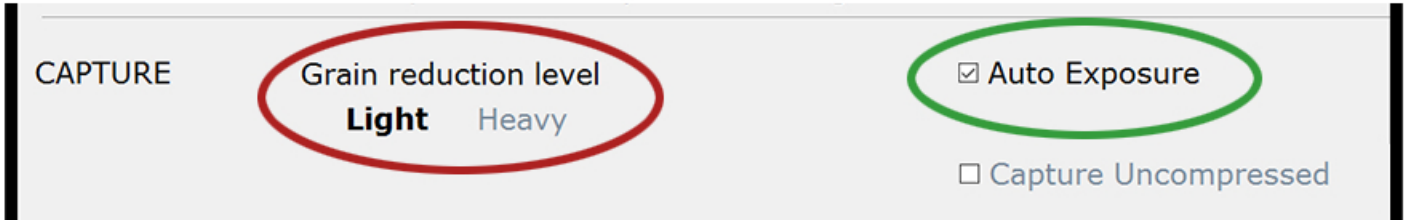
NOTE: Export drives may also be changed on the albums.

You also select the drive that you wish to export files to after capture. They can be the same as the capture drive or they can be different or external drives. Please note that the export destination drives can also be changed on the albums, themselves. You can also export via a network but it is not recommended due to slow render speeds.

NOTE: All files must be exported.

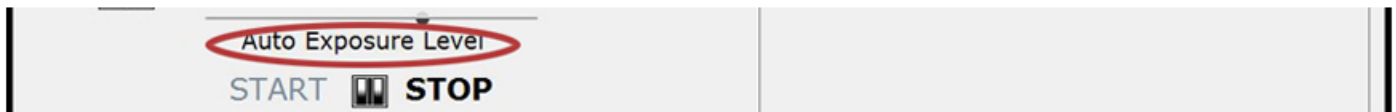
You can not import the original capture files into any edit program.

Capture Settings



In this section, you choose the degree of grain reduction desired. This can be previewed in the set up mode of the capture control panel. Please note: The RetroScan grain reduction is passive. Rather than apply grain reduction processing to the image, RetroScan simply reduces the degree of sharpening applied to each frame. So the higher the grain reduction, the lower the sharpening. Some users will then apply sharpening in post.

Here you activate the RetroScan Auto Exposure function. (The software defaults to Auto Exposure when you first install it.)



On the capture screen, the default starting point for the Auto Exposure level is “0” but can be changed as necessary.



Shadow Detail defaults to “0” but can also be changed to suit the needs of the footage. In general, these settings are a good starting point that will work for Auto Exposure on most home movies with moderate over and under exposure. For radically under exposed or over exposed films, you may have better results using manual exposure.

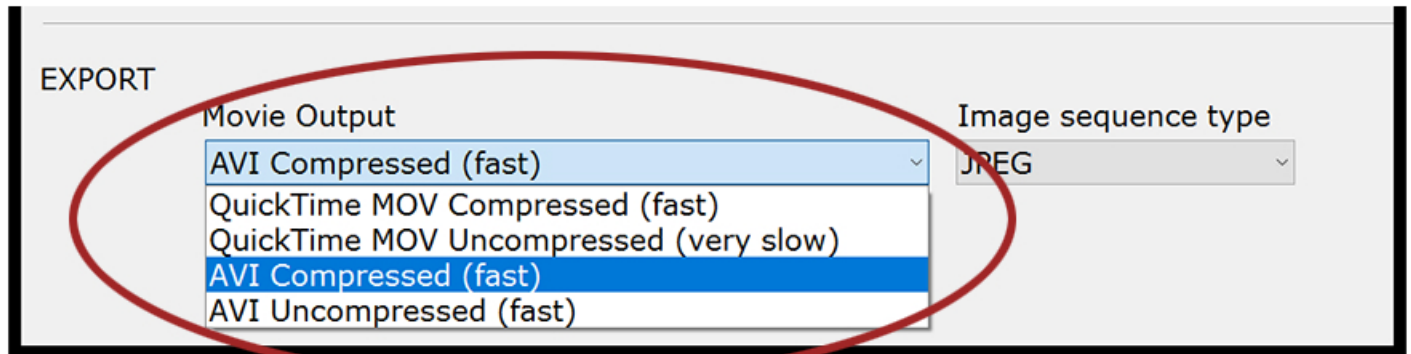


RetroScan can capture in both compressed or uncompressed formats. The default setting is for compressed, where every frame is stored as a hi-resolution JPEG. Checking the box will allow you to capture uncompressed, where each frame is a BMP. Please note that capturing uncompressed requires an increased amount of drive space and speed.

Export Settings

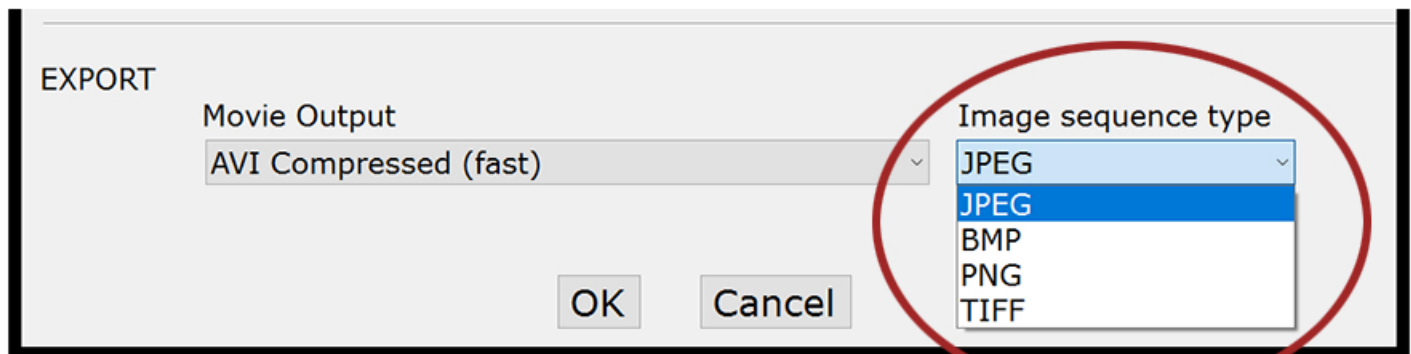
This section applies to EXPORT only. These settings do not affect your captures in any way and can be changed at any time before or after capture. After capture, you can export your files in two different ways. One way is a **MOVIE FILE** and the other is a **NUMBERED IMAGE SEQUENCE**. Please note that Movie Output choices do not affect Image Sequence choices and Image Sequence choices do not affect Movie Output choices. They are two separate files types. Your choices are explained as follows:

MOVIE FILE EXPORT:



You have two types of video files: .MOV or .AVI. The quality of the two is essentially the same. However, some edit programs work better with one or the other. For most projects, exporting as a compressed video file will look fine. For critical projects, you can also export uncompressed. Please note that exporting as a uncompressed .MOV file is very slow, for some reason. Exporting as uncompressed .AVI isn't. Also, unless you have a way to edit uncompressed, it is pointless to capture and export uncompressed.

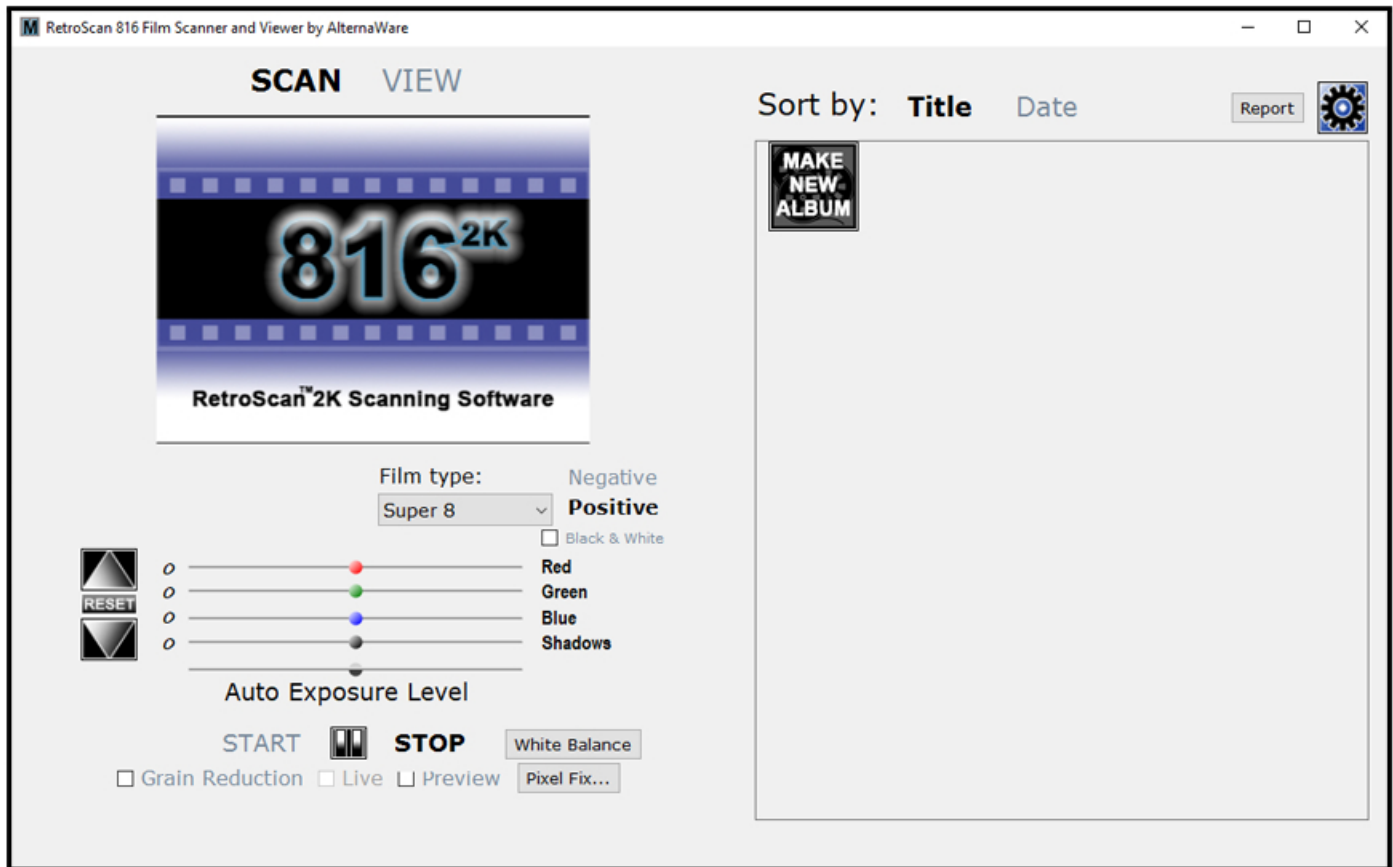
NUMBERED IMAGE SEQUENCE FILE EXPORT:



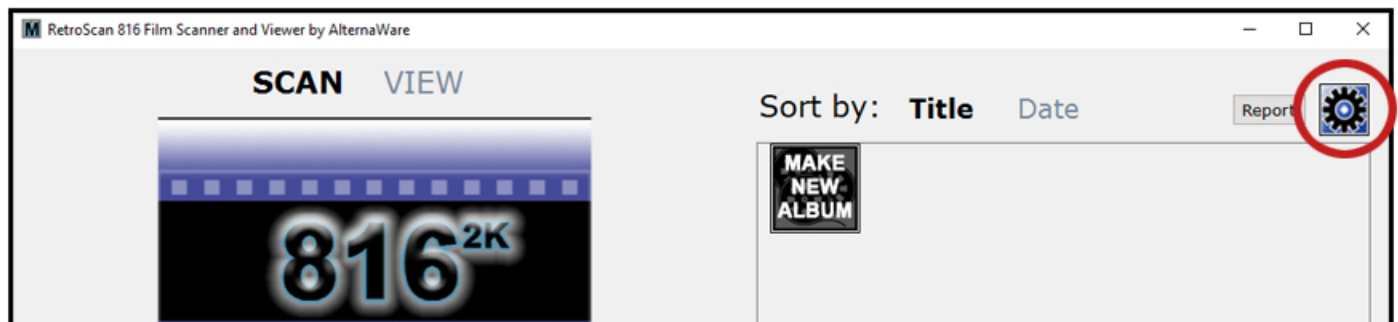
For highest quality, you can export as a numbered image sequence, which puts each frame of film on a separate digital still frame in a folder. A numbered image sequence can be imported into most any computer edit system which will automatically string the separate images together to create a video movie file. From smallest file size to largest, they are JPEG, PNG, BMP and TIF. Most people use JPEG. If capturing uncompressed and you wish to stay uncompressed, then you would need to export PNG, BMP or TIF.

Universal Scan Functions

Once you launch the software, the first screen you will see is this.

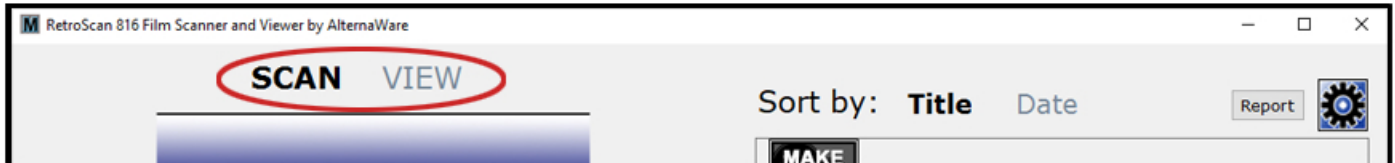


If this is the first launch during installation, it is advised to wait a few minutes for drivers and background processes to complete before attempting to perform your first scan. The default mode of the software is Auto Exposure. This can be changed to Manual Exposure easily via the settings panel of the software.

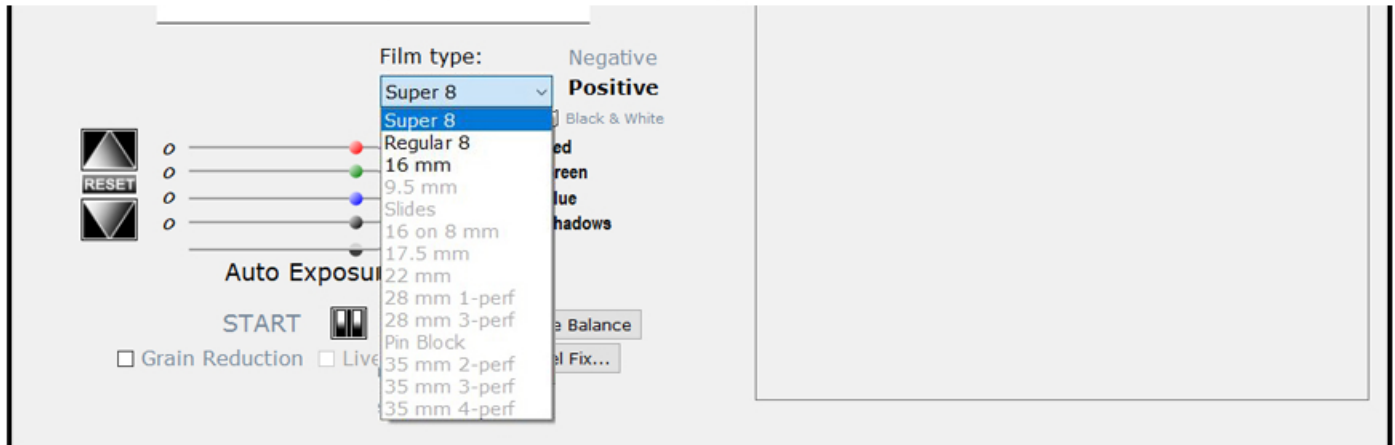


To access settings, just click on the settings icon in the upper right hand corner. It is suggested that you continue reading the following scan functions to familiarize yourself with the various functions before making changes to the software settings.

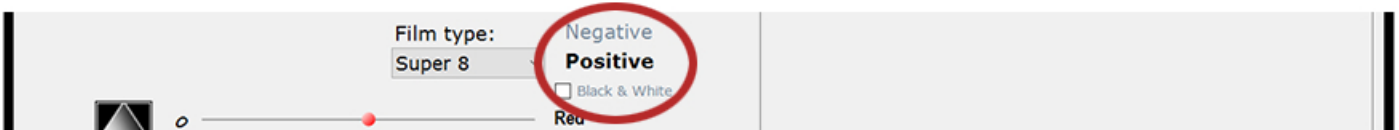
Universal Scan Functions



Here you toggle between the scanning function and the viewing function. "Scan" is selected to transfer your film and contains various image controls and functions. "View" is selected after scanning to watch or export your films into desired formats.



Use this drop down menu to select the format you are transferring (Super 8, Regular 8, 16mm, etc) NOTE: Because this software shares some common code with the Mark-II software, other formats beyond S8, R8 and 16mm will be visible in the drop down menu but should not be selected for correct results. Also, it is important to select the format you are scanning so that the footage counter and export framing will be accurate.

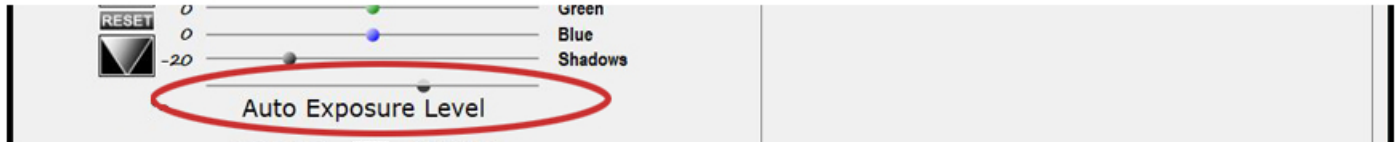


You will find that old home movies are always "Positive", which is the default state for the software. "Negative" should be selected when transferring modern negative. If working with black and white film (positive or negative) you can get true black and white by checking the box for Black and White.

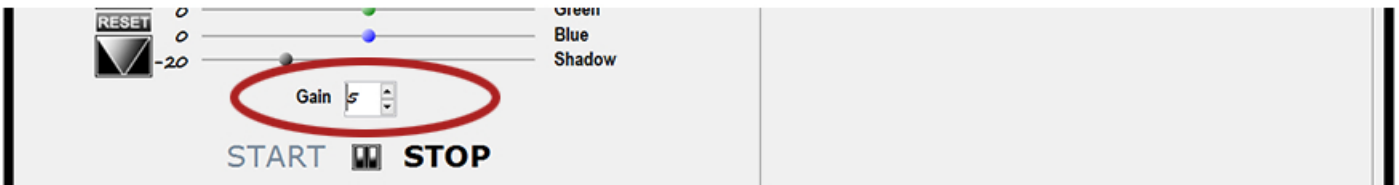


The Red-Green-Blue sliders control the color of your image and can be changed before or during capture. Shadow Detail is preset to 0 for films with normal contrast but can be adjusted at any time to bring out more information in shadow areas if required. The "RESET" button will move all sliders except Auto Exposure to the default position.

RetroScan Scan Functions



As noted previously, the default position of the Auto Exposure slider is “0”. Combined with the default “0” position of the Shadow Detail slider, this should provide bright, snappy transfers of most home movies that vary in exposure from slightly under to slightly over exposed. The Auto Exposure Level can be adjusted as needed to accommodate a wide variety of color or black and white film.



For manual mode, uncheck the “Auto Exposure” box in settings. When in manual exposure mode, all exposure adjustments will be made via the exposure control knob on the scanner. You can adjust the sensitivity of the camera by using the Gain drop down menu. You have conveniently stepped choices of 0, 5, 10 and 15 db. However, smaller increments can be manually typed into the selection box. The higher the gain, the more “noise” may appear in the image, so this function should be used carefully for best picture quality. This gain level will adjust automatically when Auto Exposure is activated.

As an alternative to either manual or auto exposure, you can create what some call a “Flat Scan”. Load decent looking film into the unit and move to a section that has a good range of contrast and exposure. With the software in the manual mode, adjust the Shadow detail and the Exposure knob of the unit so that the sprocket hole isn’t pure white and there are useful details in the shadow areas. The resulting image will be dull and low contrast with muted color. But the frame will contain pretty much all the detail and information so you can let the unit run, knowing that the highlights will not be lost and the shadow detail will be protected. Then, in post, you can either adjust each scene manually to restore contrast or apply your NLE’s auto level filter to bring back the proper color and contrast levels. Try it! You’ll likely find it to be very handy.



The "Start" button will begin your actual capture and the "Stop" button will end your capture. In between "Start" and "Stop" is a Pause symbol "II", which will let you pause the recording. Press the Pause symbol to pause the recording. Press the Pause symbol again to resume recording. **NOTE: You can not go directly from Pause to "Start" or "Stop". Also, Start, Pause and Stop buttons do not control any motor functions.**

RetroScan Scan Functions



PREVIEW can be used to see how your film will look without actually capturing it to your harddrive. This can be used whether the film is stationary or running. Just be aware that, if the film is not running, then the film isn't under tension and the image may not reflect accurate focus. Typically, it is best to adjust focus while the film is running.

LIVE is a function no longer required in this software and is disabled.

GRAIN REDUCTION will make the grain of the film less noticeable by reducing the degree of sharpening applied to each frame. This avoids over-processing of the final image if the user desires to apply sharpening later in post.

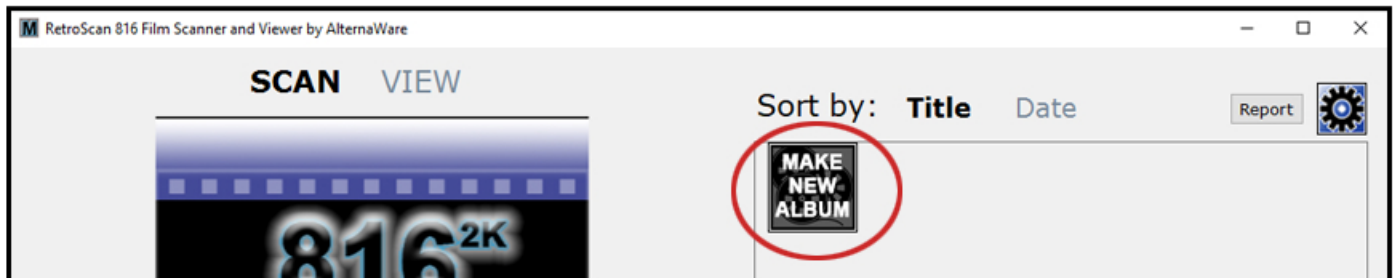
WHITE BALANCE Press the White Balance button to balance the color of the image. If scanning color negative, this will also help to negate the orange masking inherent in all color negative.

PIXEL FIX If your transfers show dead pixels, this is easily remedied by using the pixel fixing functions within the RetroScan software. You will need to create some full sensor 4K footage with no cropping. A short capture will do. Bring that original 4K capture footage into the VIEW window and use the SnapShot button to create a still frame that you know will show dead pixels. You can also bring in a series of frames and the software will cycle through them repeatedly, making the dead pixel stand out from the image. Press the Pixel Fix button on the capture panel and browse to your chosen still frame(s). There will be yellow circles around any pixels that have already been mapped by the software.

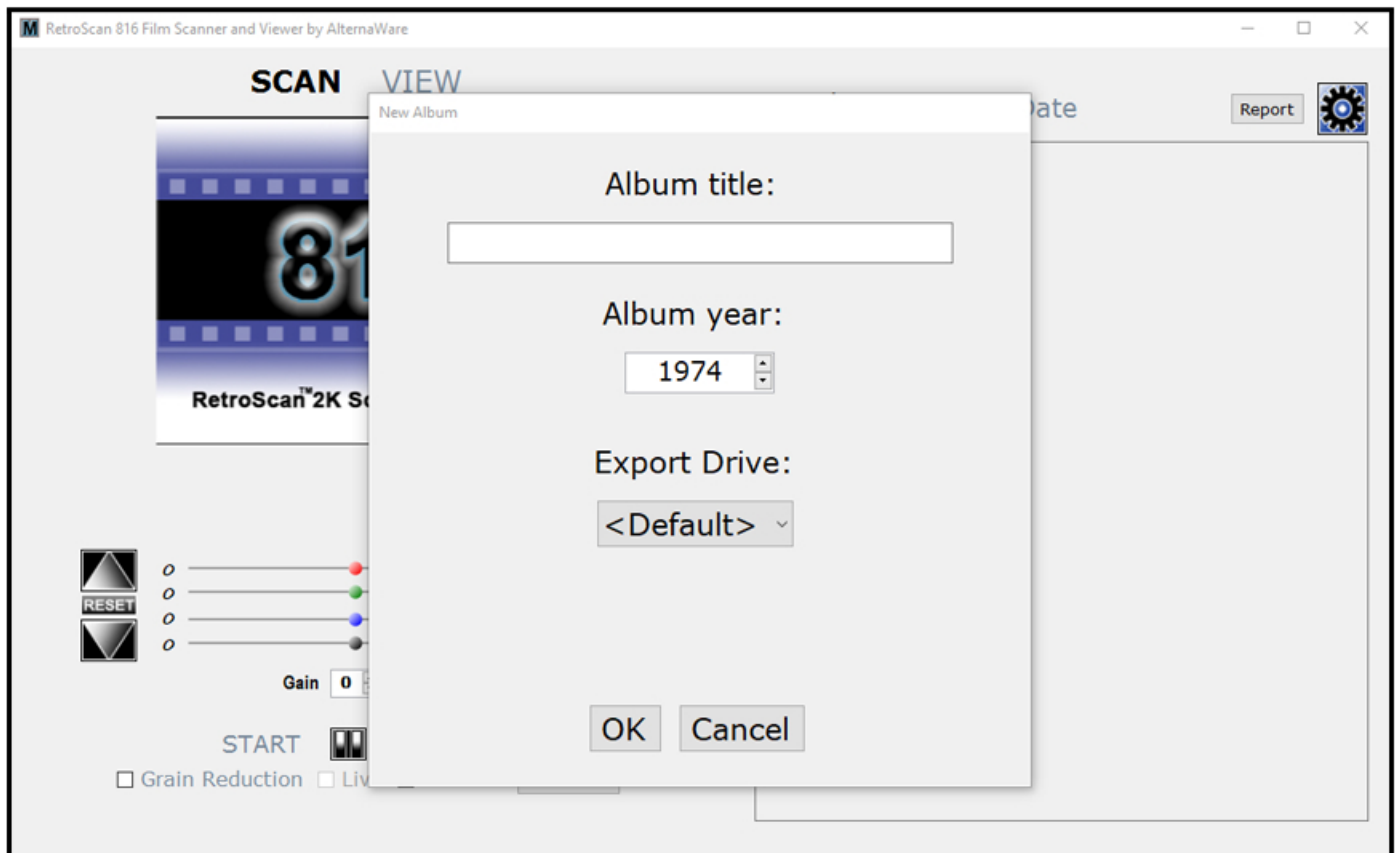
Use the scroll/slide bars to navigate the picture. Use the cross hair cursor to click on any dead pixel. Each pixel you fix will be marked with a tiny red square circled in yellow. If you make a mistake and need to remove a choice, just right click on that pixel. There is a button bottom left that will let you turn the yellow circles on and off to make sure there are actually no dead pixels hiding behind the yellow line work of the circles, themselves. **After you finish, click the "Save" button bottom left and close out the window.**

When you export your footage, all marked pixels will be repaired. All previously marked pixels will stay in the map so you can add indefinitely as more pixels show up over time, if needed. This will extend the useful life of the camera. Also, should dead pixels show up after scanning a week's worth of film, you won't have to re-scan the film! Just click on the dead pixels and re-export the footage.

Capturing Film



Before you can scan any movie, you must first create an album to put it in. Click on “Make a New Album” icon which will pop open a dialog box.

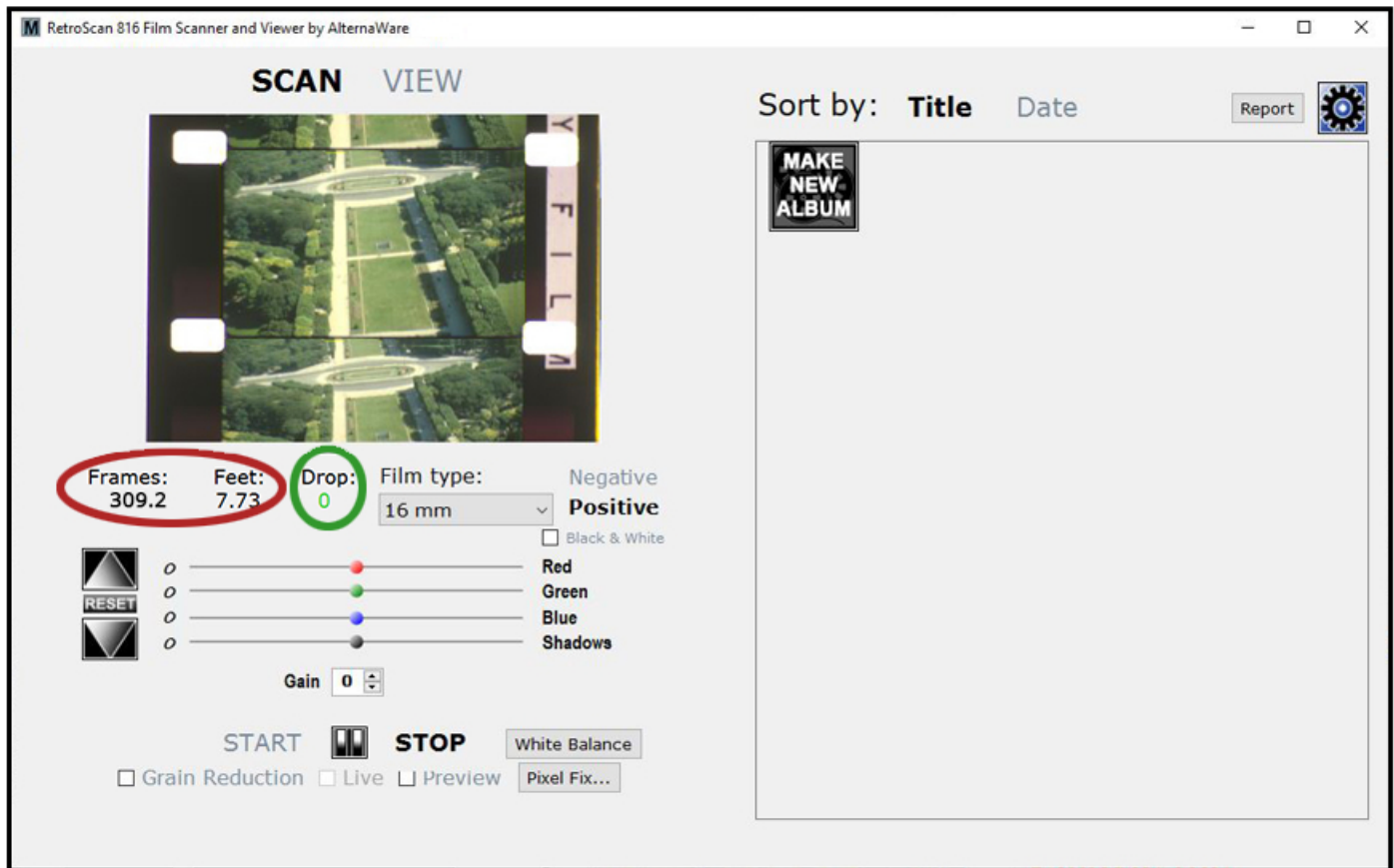


Fill out the necessary fields. The album title will be the prefix for all files created in that album and will number consecutively automatically, starting with "001" but you can also give unique names to each file. The default year is 1974 but can be changed as desired. Album information can be changed later by right clicking on the album. The Export Drive for this album can be selected here. Default is usually "C" but you can designate a different export drive in Settings. Also, you can plug in as many other Export destination drives as you have USB ports and each folder could export to its own drive, if desired. Just make your choice for export drives here or on the export page. Please note that Export Drive choice does not affect your choice for Capture drive, which should ideally be internal.

Capturing Film

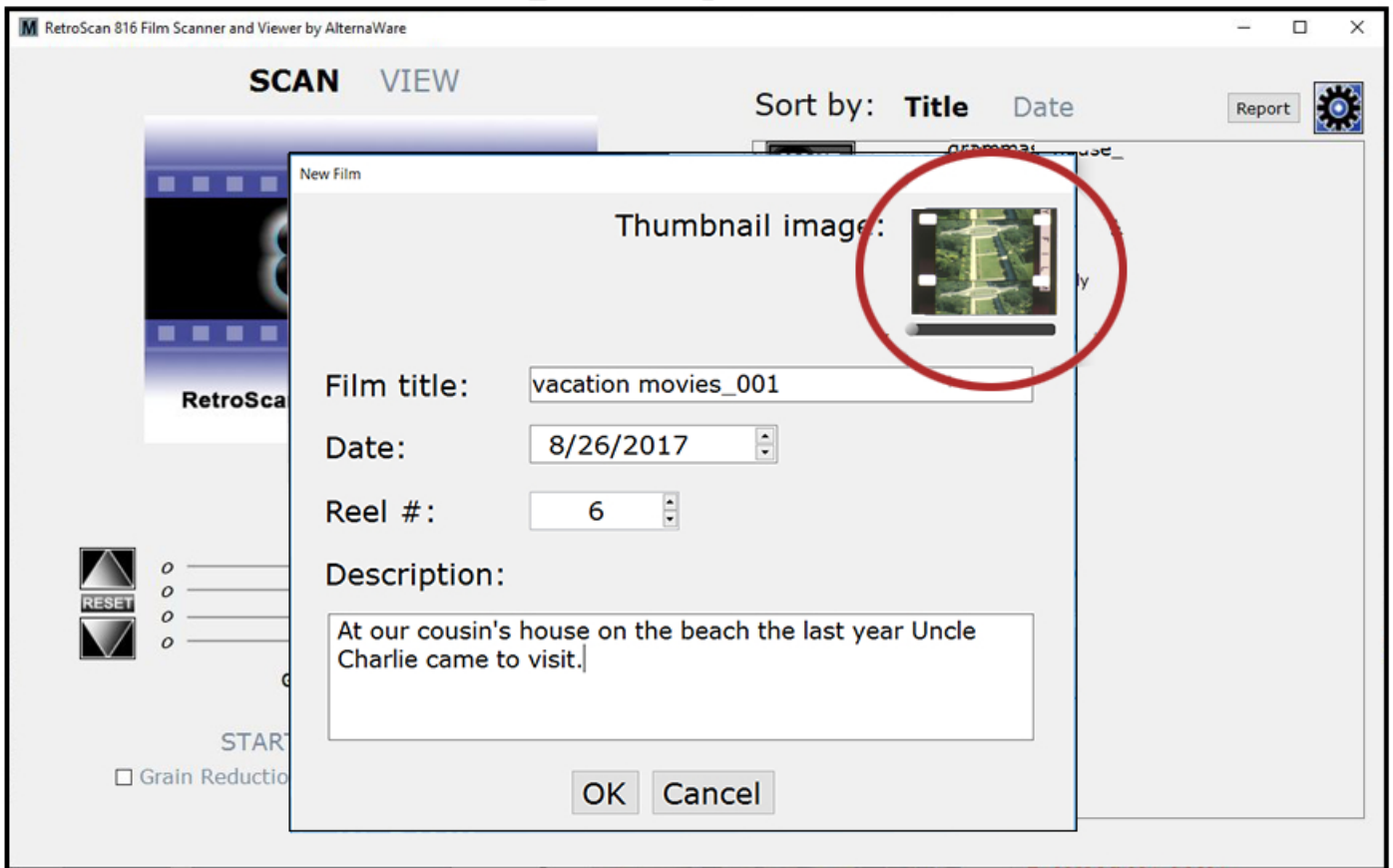
Once you create an album, it will appear to the right of the capture window, along with any other albums created previously.

Double click the desired album and start the scanner running film. Click the PREVIEW box to view the film without actually capturing to your hard drive. You will notice that the capture window shows the entire 4K sensor area of the camera. The film frame will likely be off center and possibly even unlevel. This is normal as final framing and even horizon correction are determined after capture before exporting all your captured film files. All you need worry about during capture is mainly focus and exposure, though color correction and shadow detail can also be adjusted during or before capture.



Once you are satisfied with your preview, uncheck the PREVIEW box, start your film from the beginning, and press START. During capture, you will see **Frames and Feet** displayed. The software will keep track of this data and it can be used later to print out a report showing total footage transferred. **NOTE: If you capture with the wrong format selected in the drop down menu, the footage counter will not be correct. This can not be corrected after capture.** Also, while capturing, the **Drop Frame** display will let you know if your PC has dropped any frames. It should be noted that “dropped frames” only refers to your hard drive not being able to keep up with the capture data rate, such as when capturing uncompressed files on a slower drive. “Dropped frames” does not refer to frames that were missed during capture due to bad splices or the sprocket hole sensor not reading the film correctly.

Capturing Film



When you click "STOP", a pop up window will let you change the name, date, and description. The thumbnail can be changed by using the small scroll bar under the pic.



Once you close the pop up box, the file will take its place in the album. Note that all files in the album can be sorted by clicking on **Title, Date or Reel #**.



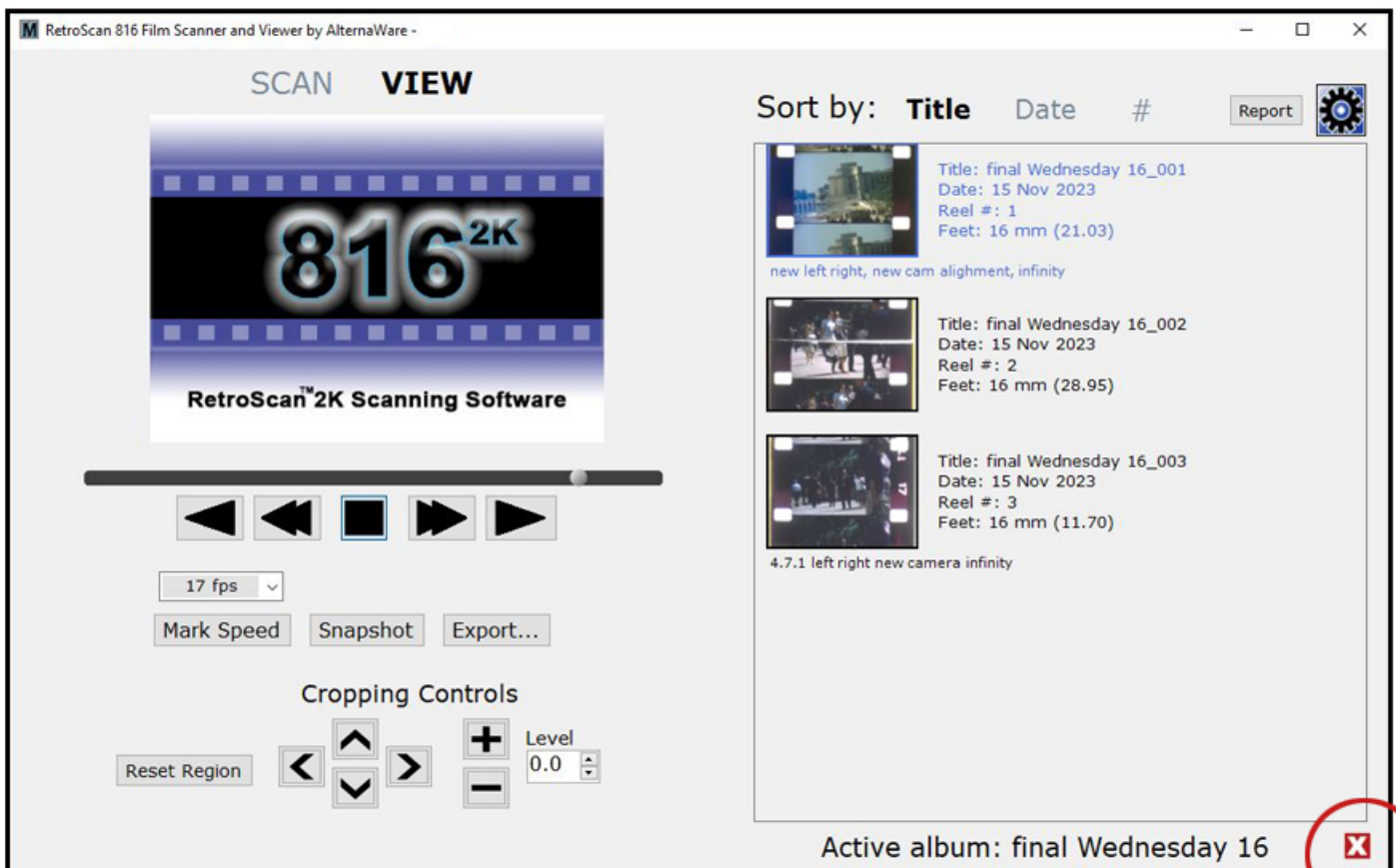
To close that album, **click on the X** in the lower right hand corner. After closing that album, it will show up along with all the other albums, one above the other. Albums can be sorted by clicking on **Title and Date**.

Viewing Capture Files

Click on “VIEW” above the capture window and the screen will change to this:

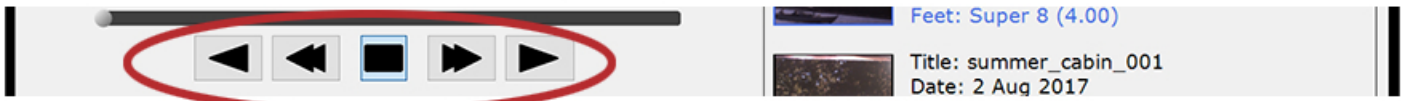


If you then click on any given album, it will open up and change to this:

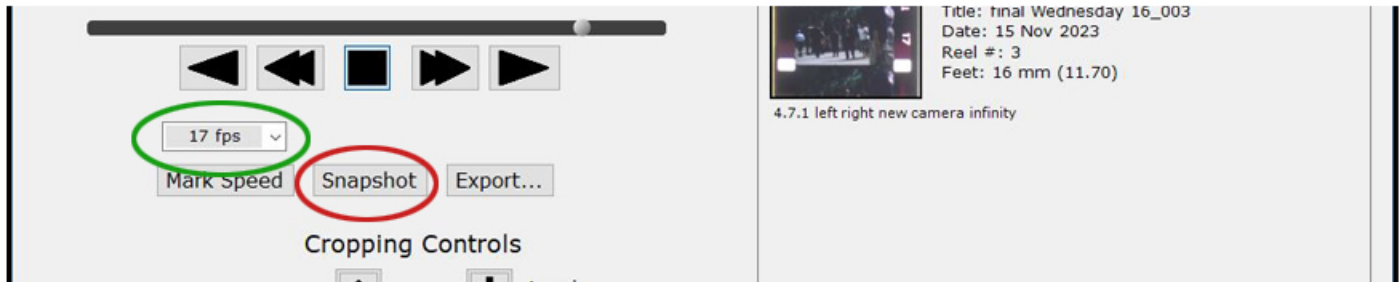


(Remember, close the selected album by clicking on the X in the bottom corner.)

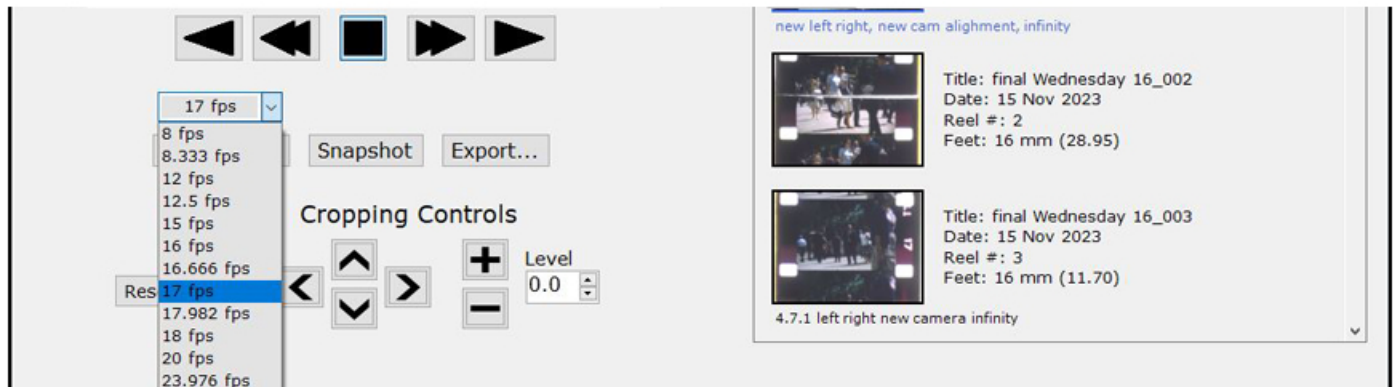
Viewing Captured Files



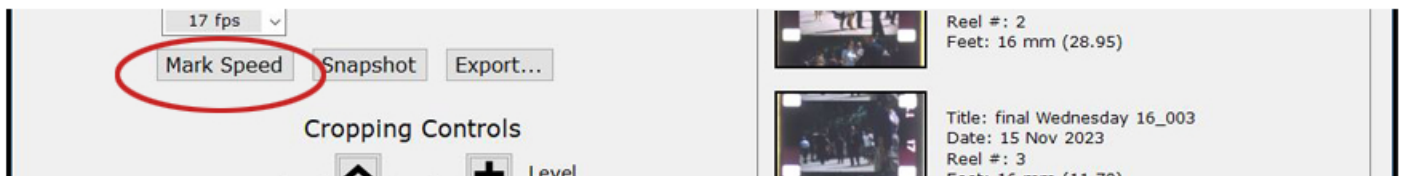
To view a captured file, double click on it and the file will appear in the player window. You can then use the standard play keys for forward, reverse or step frame by frame.



If you see a particular frame that you would like to use for an enlargement or perhaps a DVD or BluRay cover, you can click on the **“Snapshot”** button and the software will output a high resolution still frame which can be found in the Export folder. To see the movie played at a variety of speeds, simply use the **speed drop down menu**.

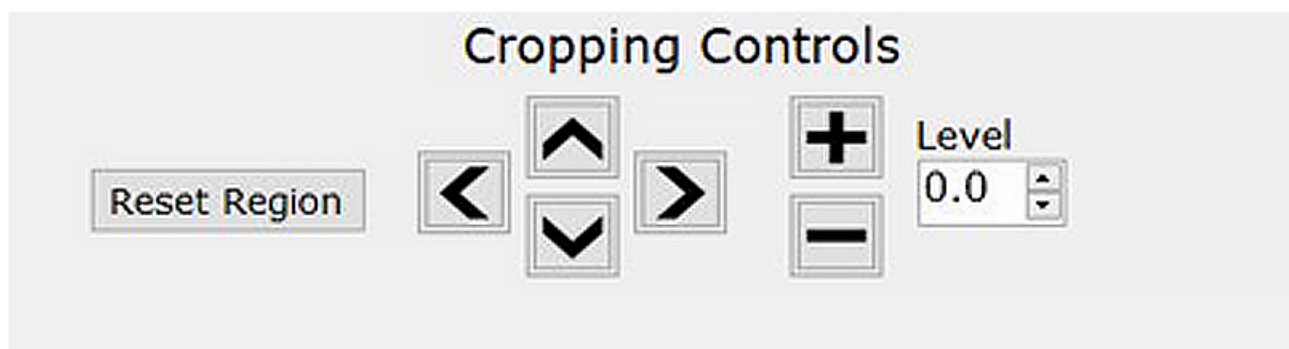
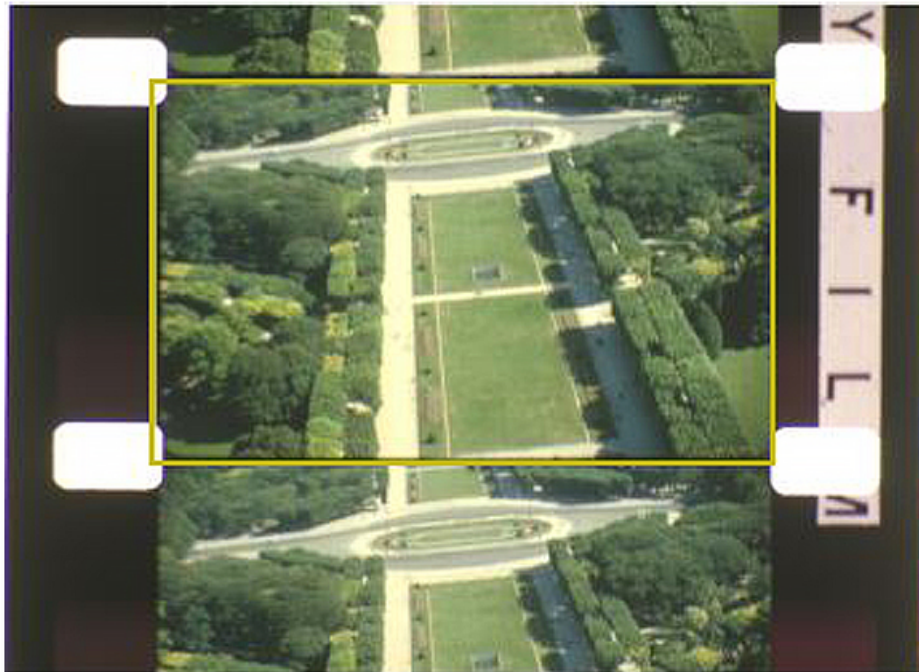


Most R8 was shot at 16fps but some was shot at 18fps. Most S8 film was shot at 18fps but sometimes 24fps. Commercial S8 films are always at 24fps. Silent 16mm film was shot at both 16fps and 18fps. Sound 16mm was shot at 24fps. The default for speed is set to 17fps, which is a convenient “in between” speed for both R8, S8 and 16mm silent films, which represents the majority of what most users will be transferring.



You can assign the speed later on the Export page or you can use the **“Mark Speed”** button to assign the speed to the file here. It can be changed later, if desired.

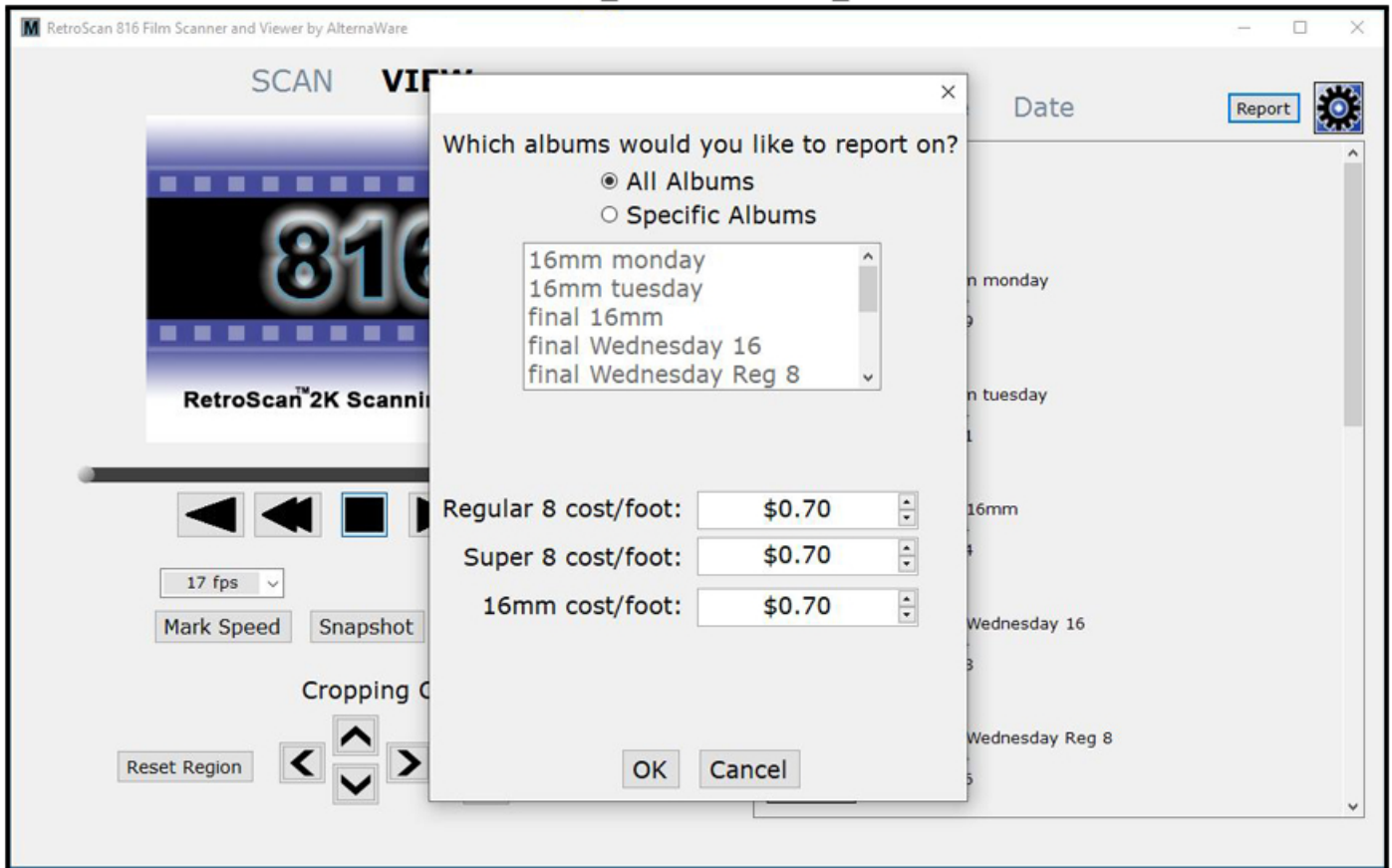
Framing the Film Capture



As noted previously, the 816^{2K} scanner actually scans using a 4K (UHD) camera and captures a 4K (UHD) image that extends well outside the desired film frame. The actual area of the captured image assigned to the target frame is limited to 2K resolution. This 2K region is represented by a yellow rectangle as seen above. On export, that is the area which will be retained from the original captured image as a 16:9 2K frame with black bars to either side. (On the export panel, you also have the option to export the entire 4K (UHD) frame as seen above if cropping in post is preferable.)

To move the rectangle into the required position, you must play the clip and repeatedly click the directional buttons. The < > arrows move the rectangle side to side or up and down. The + and - buttons make the rectangle larger and smaller. Any frameline leveling or horizon correction is altered by using the up/down arrow keys on the level adjustment. The default position of the rectangle can be reclaimed using the “Reset Region” button. Typically, these framing adjustments only need to be done once per film format. However, framing can change from one customer’s batch of home movies to another. As such, it is a good idea to check framing before each export session.

Film Capture Report



Clicking on “**Report**” will pop up a box that lets you assign charge amounts to your transfers. You can then print out a history report that reflects total footage and charges.

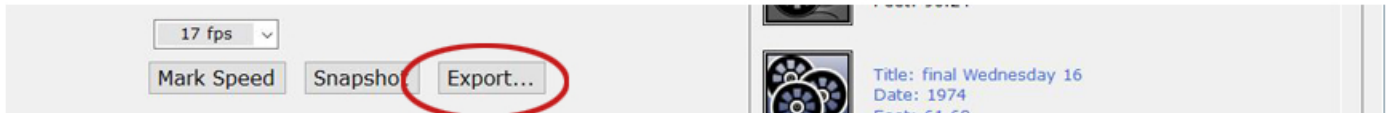
RETROSCAN CAPTURE HISTORY REPORT | Saturday, August 26, 2017 4:34:34 PM

ALBUMS ARE ARRANGED ALPHABETICALLY, FILMS BY REEL NUMBER

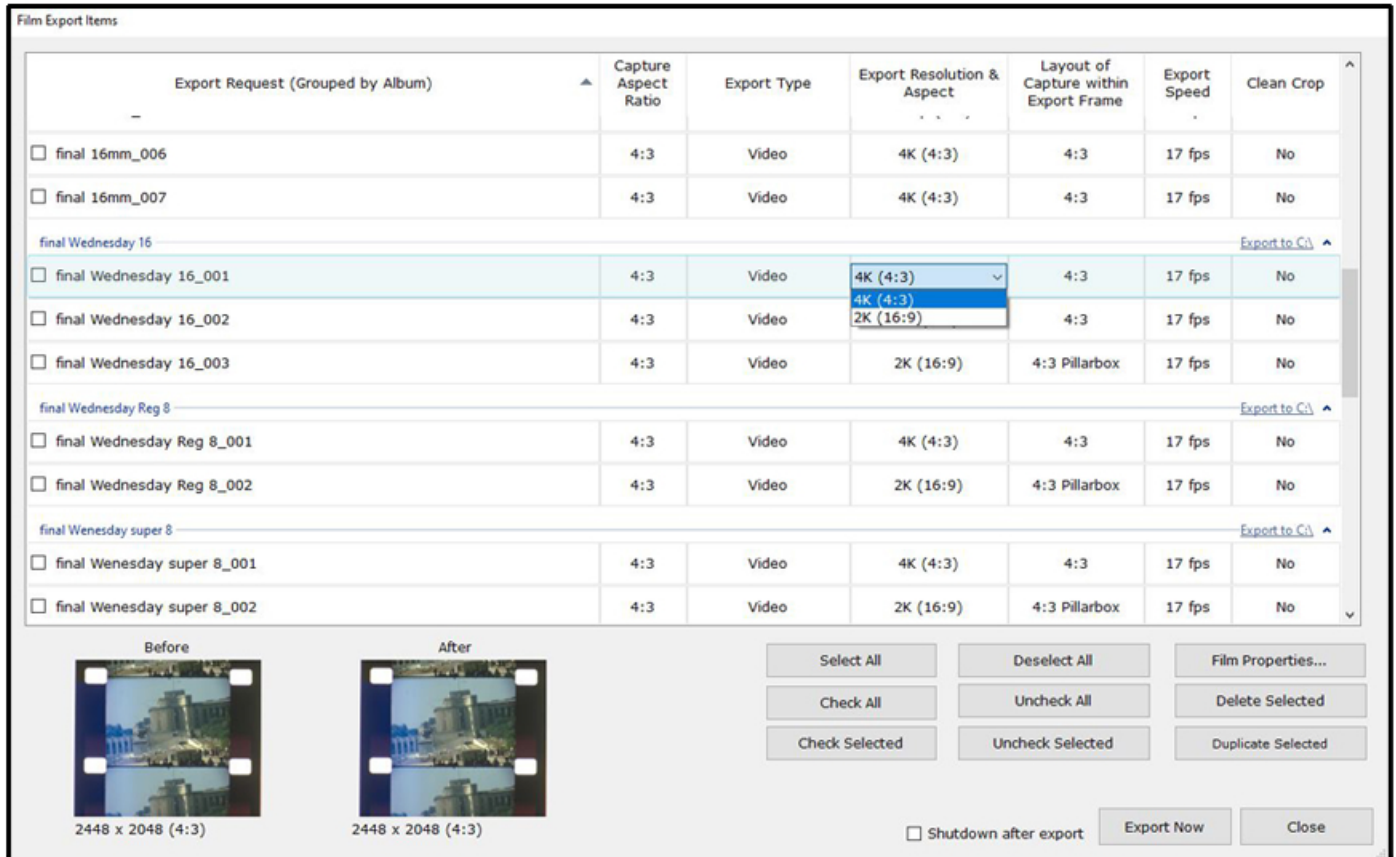
| Film Title | Date | Reel # | Type | Cost/Unit | Units | Cost |
|---------------------------|-----------|--------|---------|-----------|-------------|---------------|
| Album: trip photos | | | | | | |
| summer_trip_slides_001 | 2017-8-24 | 1 | Slides | \$0.70 | 0.65 slides | \$0.46 |
| (No Description Provided) | | | | | | |
| Totals | | | | | 0.65 | \$0.46 |
| Album: vacation movies | | | | | | |
| summer_cabin_001 | 2017-8-2 | 1 | Super 8 | \$0.70 | 7.25 feet | \$5.08 |
| (No Description Provided) | | | | | | |
| sailboat_002 | 2017-8-2 | 2 | Super 8 | \$0.70 | 4.00 feet | \$2.80 |
| (No Description Provided) | | | | | | |
| on_the_lake_003 | 2017-8-2 | 3 | Super 8 | \$0.70 | 4.83 feet | \$3.38 |
| (No Description Provided) | | | | | | |
| marina_004 | 2017-8-2 | 4 | Super 8 | \$0.70 | 2.97 feet | \$2.08 |
| (No Description Provided) | | | | | | |
| grammas_house_005 | 2017-8-2 | 5 | Super 8 | \$0.70 | 6.29 feet | \$4.40 |
| (No Description Provided) | | | | | | |

Close Print

Exporting Captured Files



Click on the Export button and the software will go to this screen.



You have only two choices of resolution on export: A 16:9 2K file with black bars on the left and right or a 4K (UHD) file that reveals the entire captured image including the sprocket holes. You can assign a variety of playback speeds to your AVI or MOV video files using the drop down menu under Export Speed or you can also export as numbered image sequences as JPG, PNG, BMP or TIF under Export Type.

To initiate export, check the boxes to the left of the file or files you wish to process. You can use the “Select All” button to save time. If you don’t wish to process all files, you can also left click the first file of a desired group, hold the shift key, and single left click the last file to highlight that smaller group. Then make your selection from the various command buttons in the bottom right hand corner of the window. Once all desired boxes are checked, press “EXPORT NOW” to begin processing your files. To save wear on your PC, check the “Shutdown after Export” box.

Once export (processing) has completed, your new files will be found in our Export Folder on your hard drive.