SMA

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SMA 51

User Manual

Version 6.xx

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NOTICE TO THE USER

From time to time, files and/or file names will be changed or updated. Therefore, we can not guarantee that all files named or mentioned will actually be found on the data media. The data media supplied contains a ‘README’ file which contains any changes since the last update of this manual and/or other important information. It is strongly advisable to consult the ‘README’ file prior to using the program.

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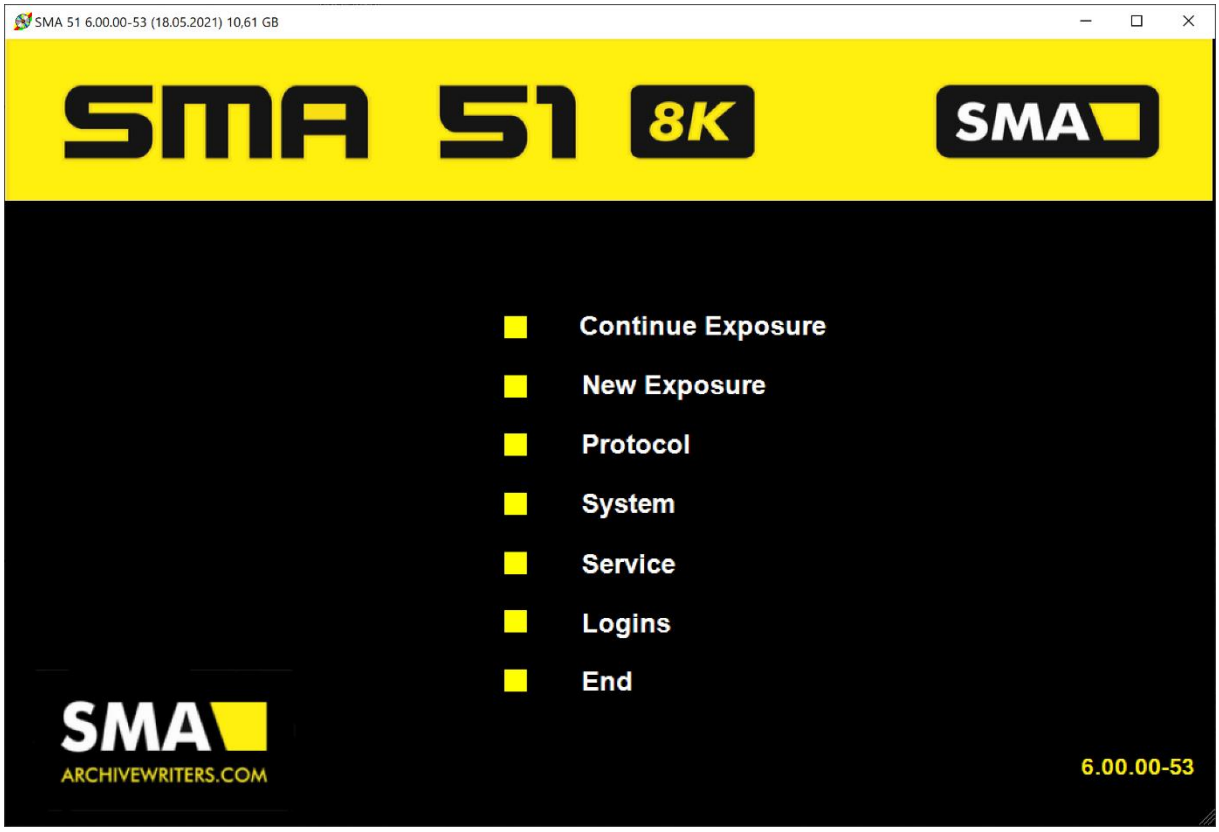
Table of Contents

1. Main menu

After launching the SMA 51 application software, the main menu of the software is displayed.

This main menu is subdivided in:

- Continue Exposure
- New Exposure
- Protocol
- System
- Service
- Login



2. Exposure of Documents

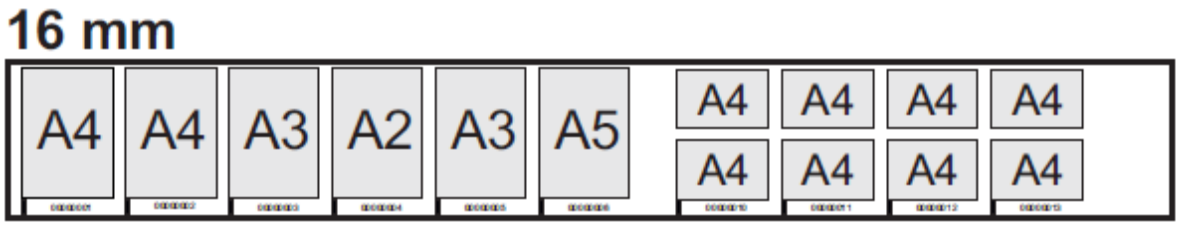
2.1 Camera Heads

The SMA 51 system currently supports up to four camera heads

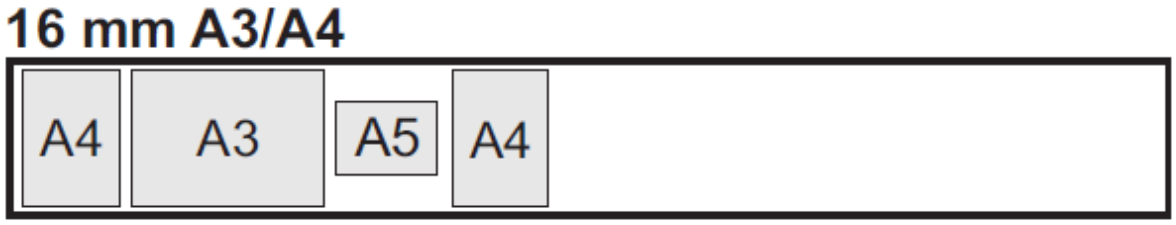
- 16 mm Portrait
- 16 mm A3/A4
- 35 mm Landscape
- 35 mm Portrait

With this heads you are able to run the following templates. All of them are programmed already and ready for the filming:

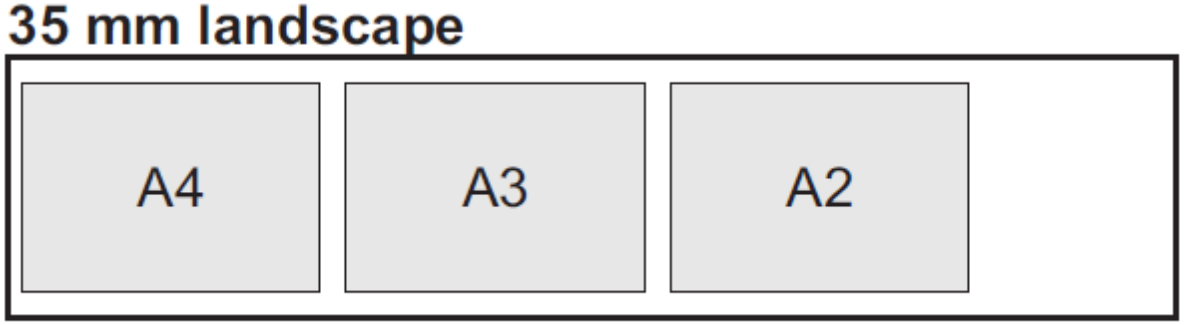
1. 16 mm, the documents (usually A4s) are exposed in the portrait format



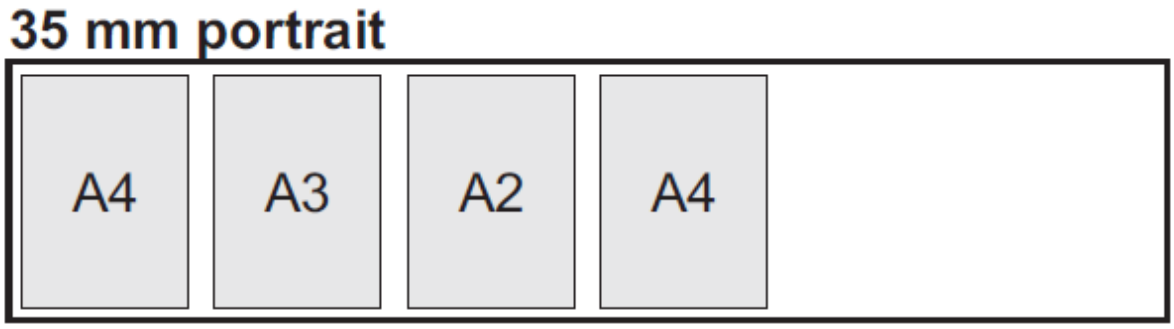
2. 16 mm A3/A4, A3s and bigger documents (can be chosen) are exposed landscape in the full frame, smaller documents are shown in their original size.



3. 35 mm landscape, the documents (usually A3s) are exposed in the landscape format.



4. 35 mm portrait, layout is the same as the 16mm head. That camera head usually is used to expose DIN A3 documents on a 35mm film in Portrait alignment.



When beginning the exposure of documents you have two choices:

- You might want to continue an earlier started job, that means you want to work with the same document source as last time.
- You want to place a new job or choose a new document source

2.2 Continue the Exposure

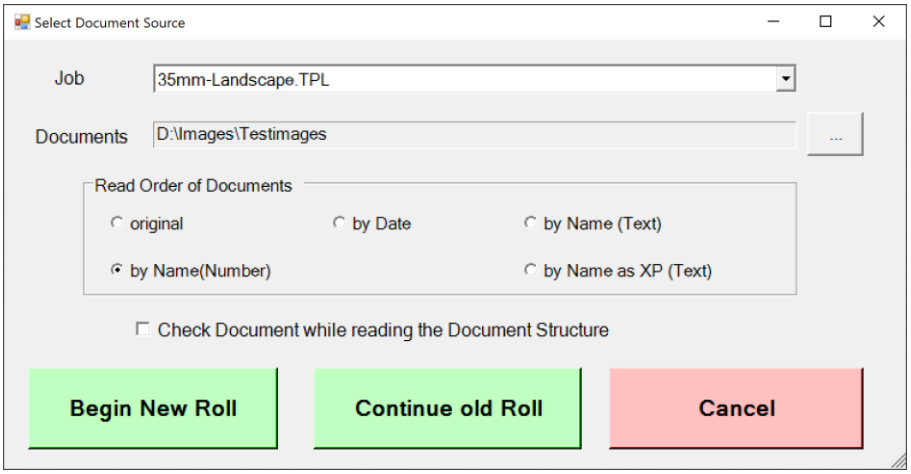
To ‚Continue the Exposure‘ means to work with the same job as last time. The term ‚job‘ refers here to the used camera head and document source (path to image files).

If you want to work with a different head or you want to choose a different folder as document source is obligatory to select ‘New Exposure’.

2.3 New Exposure

The ‘New Exposure’ is used to either expose with a new camera head or to expose a new document source.

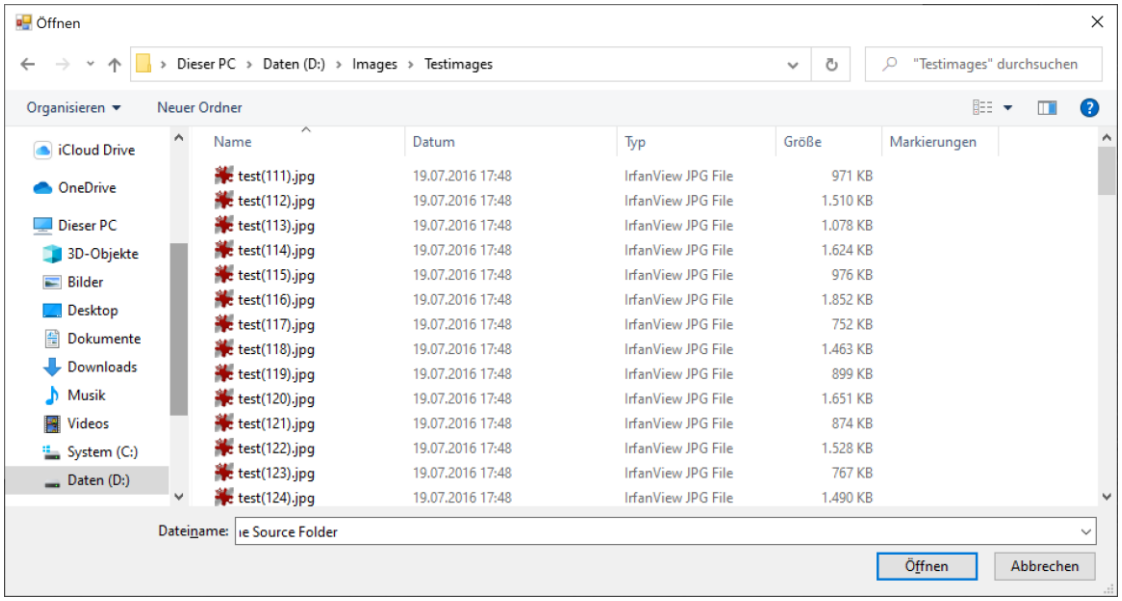
You are first asked for the desired camera head and the source folder from where the documents have to be loaded from.



2.3.1 Source Folder Selection

You can set the source folder by clicking the following button:

You then can select the folder from which the documents are exposed then.



The new job might require to use a new film-roll or it can be exposed onto an existing one. Ensure to choose the right button (“Begin New Roll” or “Continue Old Roll”). If a new roll is to be used, you will be later asked to insert one.

2.3.2 Defining the read order of the documents

There are five options for the read order:

a. original

The documents are filmed in the same order as they have been saved on the medium.

b. by date

The modification dates of the files determine the film order.

c. by Name (Text)

The sort order of the file names determines the order the documents are filmed. The sorting is lexically done. Upper and lower case characters are not distinguished. The digits ‘0’-‘9’ are in front of the letters.

Sample:

0.TIF
01.TIF
2.TIF
20.TIF
209.TIF
9.TIF
a.TIF
aB.TIF
B.TIF

The above file names are sorted lexically.

As you can see were the file names representing numerical values not sorted according their numerical values, e.g. the file 209.TIF will be filmed ahead of the file 9.TIF. If the documents need to be filmed according the numerical file names you have to use a the numerical sort order.

d. by Name (Number)

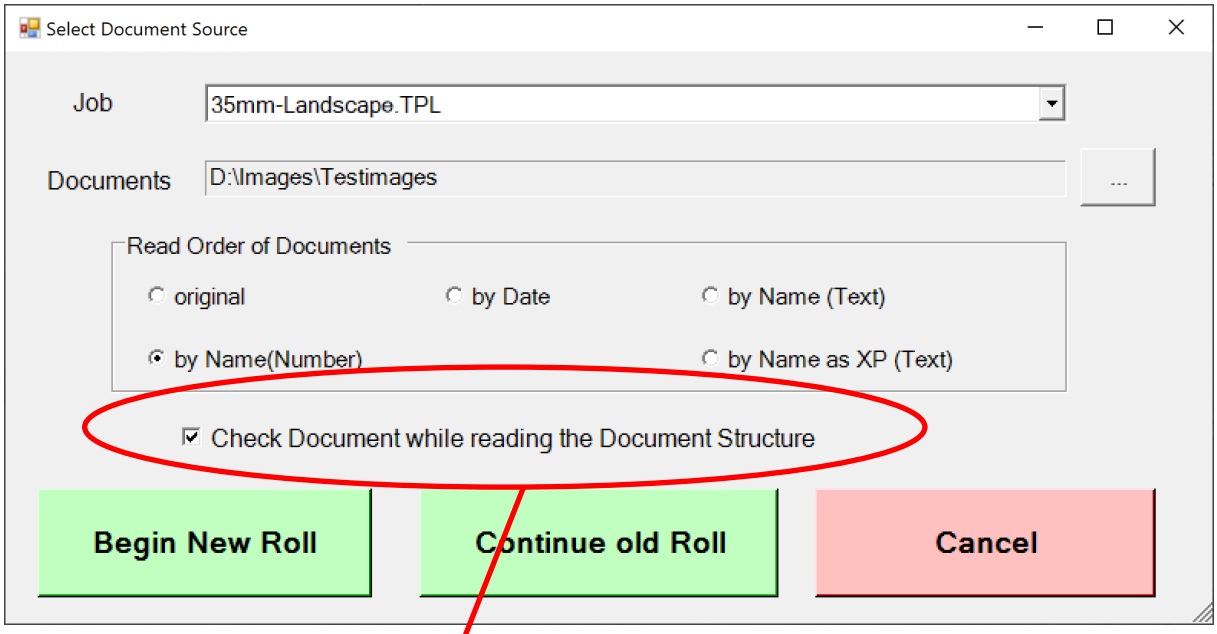
The documents are sorted according their numerical file names and filmed then.

200.TIF will be filmed after 9.TIF.

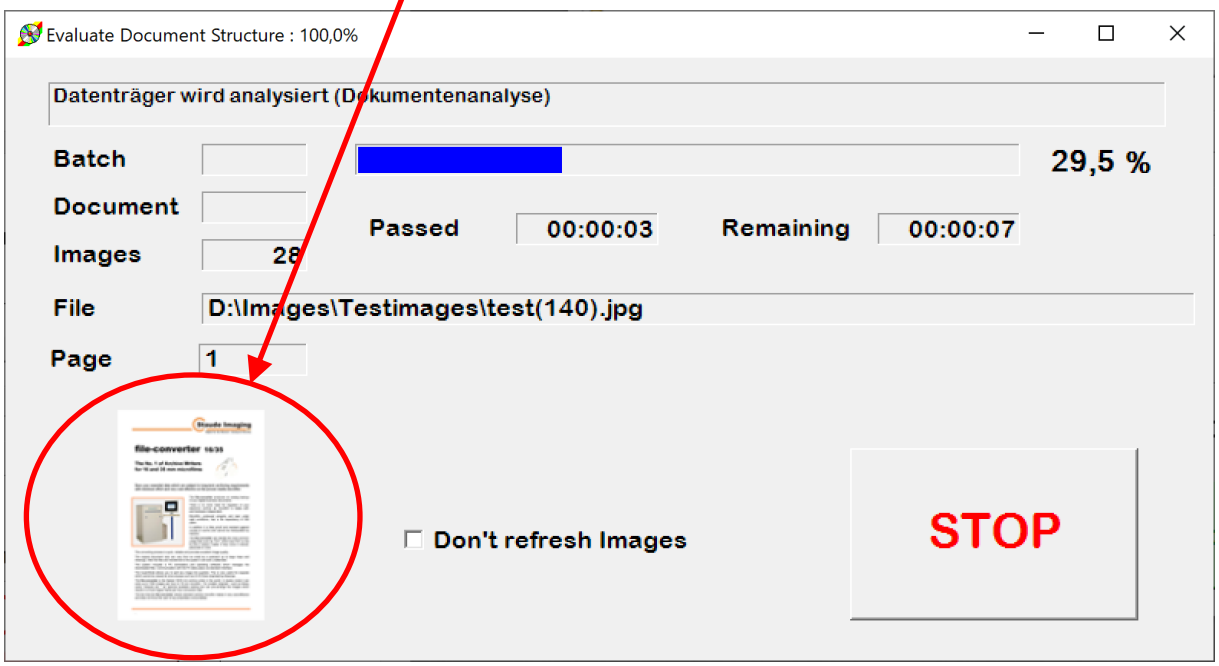
e. by Name like XP (Text)

The documents are sorted like shown in Windows XP.

2.3.3 Check Document while reading the document structure



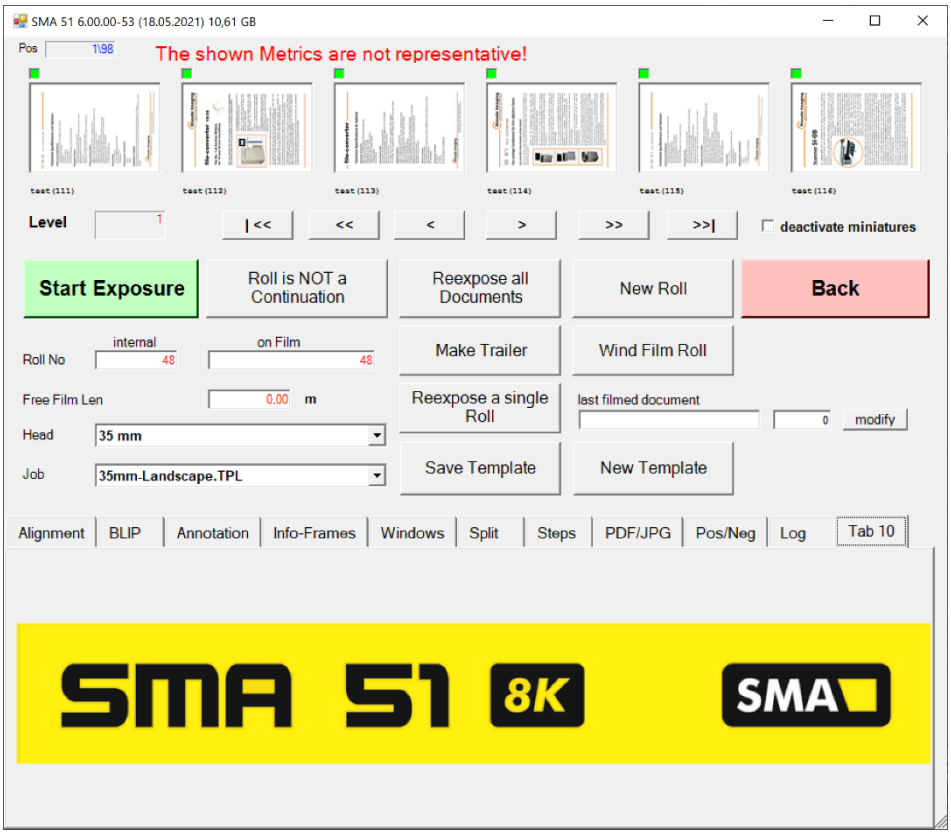
If this box is checked all documents will be opened for testing.



An error log will be appearing on the screen if the program is not able to open one or more images. So you can easily check your document for errors.

Please notice that it will take a long time to check all the documents. Therefore you should do it once and uncheck the check box the next time.

3. Film Preview

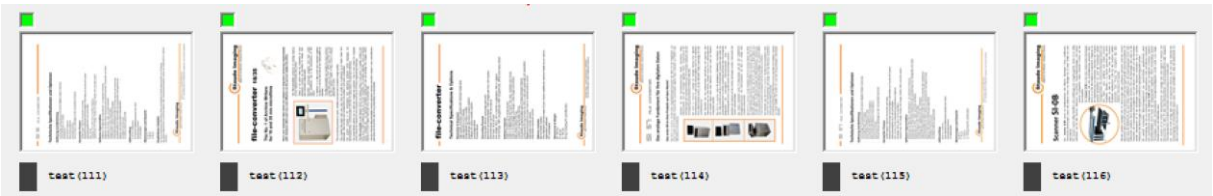


The Preview Index 

in the first line denotes the current position of the displayed documents (actually pages). Here 98 pages are available for exposure. The 98 pages can be 98 separate documents (like JPEGs) or composed from several (or a single) multi page document (TIFF or PDF).

Note:
You will get information about the film length, spacing, number of film rolls and the allocation of the last roll if you move with your mouse inside this field.

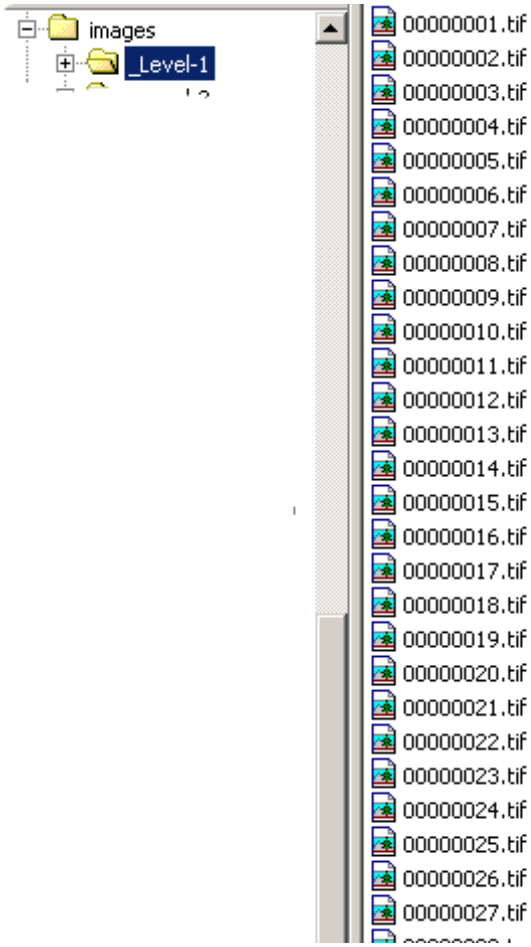
3.1 The Film Preview Bar



Displays an extract of the film to be created. Here a landscape format, normally used for 35 mm films, is shown. Those frames marked with a green rectangle  will actually be exposed. Those with a white rectangle have been exposed in an earlier run. In this sample blips (the black boxes) and annotations (the texts beside the boxes) are used. Those elements are important for structuring the film (eg. for a film reader) and for better page retrieval.

3.2 The Level Information

Informs the user on the depth of the found document structure. The SMA 51 supports levels from 1 to 3. Level 1 is a flat file structure:



All pages reside in a single directory. The pages themselves are contained in single page documents (e.g. TIFF or JPEG). If the files in the above sample are multi-page TIFFs we would have a level 2 structure. That means the set of images is grouped into separate documents consisting of one or more pages.

A Level 3 structure (e.g. folders containing documents containing pages) is obtained by either:

- a two level directory structure with multi-page TIFFs (or PDFs) or
- a 3 level directory structure with single page files

The level of the structure has influence on the used blip if the usage of blips is activated. Which blip is used for a page depends on its position in the document or folder. Assuming a 3 level structure:

- the biggest blip is used for the first page in a new folder
- the middle sized blip is used for the first page of a new document if its not a new folder also
- the smallest blip is used for all other pages

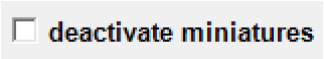
3.3 The Navigation Bar

Navigates through the frames. From left to right the meaning of the buttons is the following:

- jump to first page
- jump to previous document
- jump to previous page
- jump to next page
- jump to next document
- jump to last page

3.4 Deactivate Miniatures

For large images it may be necessary to deactivate the display of image miniatures.

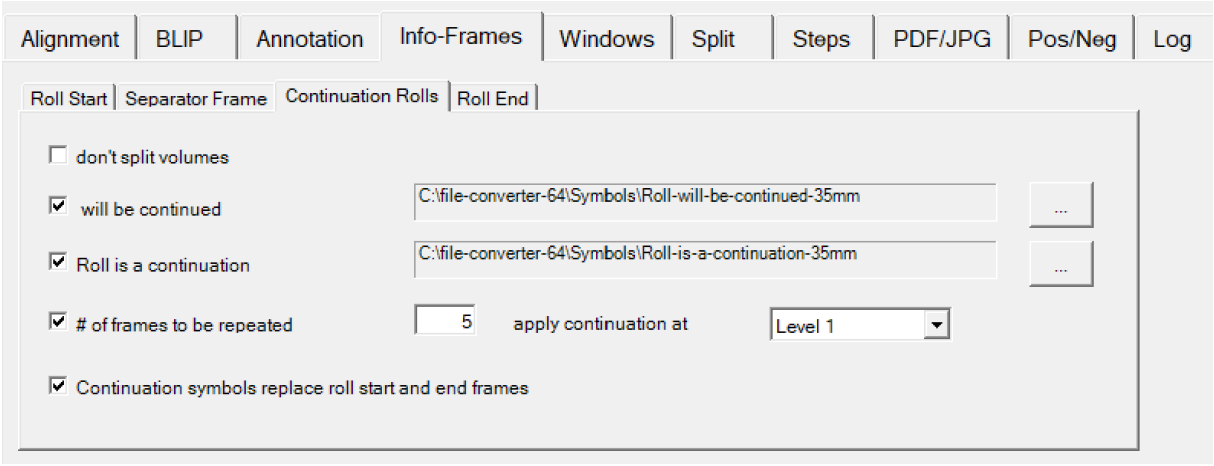


3.5 Expose

Start the filming of your documents by pressing this button.

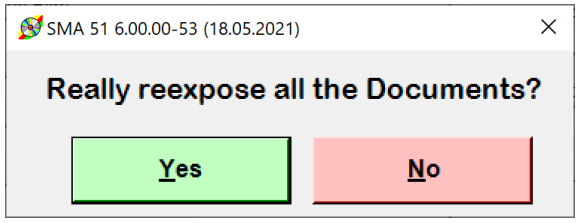
3.6 Roll is a Continuation

Press this button to toggle between “roll is a continuation” and “roll is not a continuation”. If this roll is a continuation roll the adjustments in the section → Info Frame → Continuation Rolls are used. Find more information in the chapter → Info Frames.



3.7 Reexpose all Documents

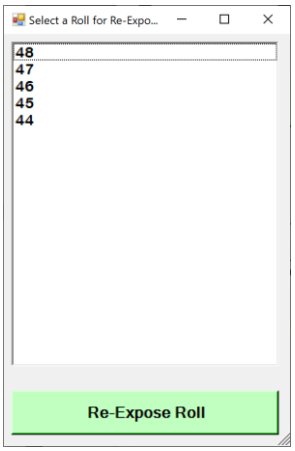
Use this button to define the entire document set as to be re-exposed. This might be necessary if a film rolled wasn’t properly developed.



3.8 Make Trailer

Inserts a trailer in the current used film roll. The trailer length is defined in the system menu.

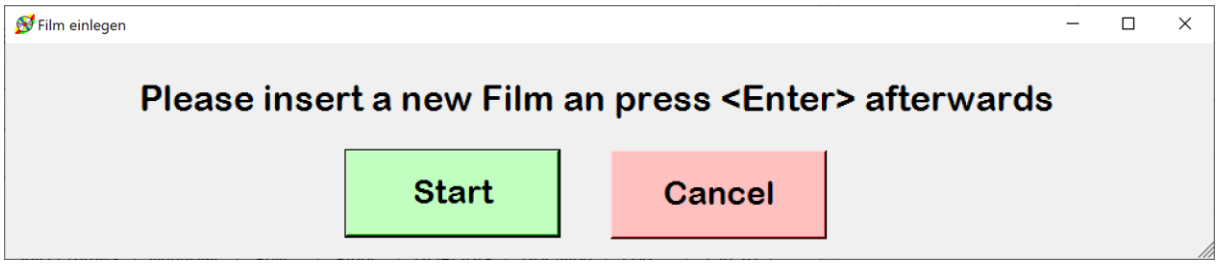
3.9 Reexpose a single roll



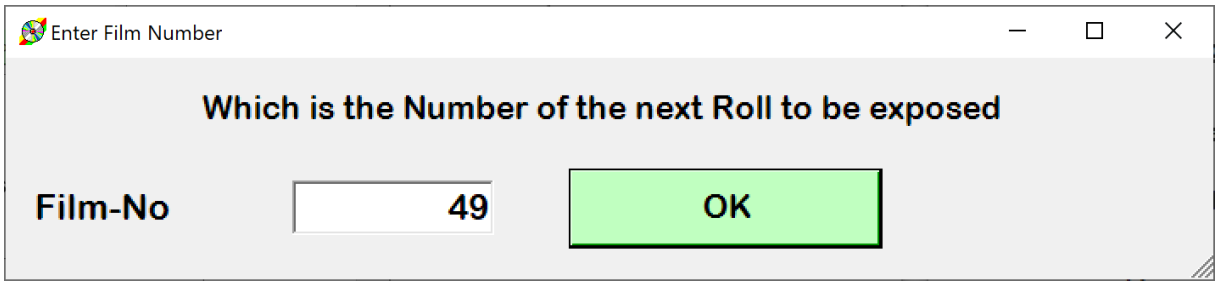
In case of repeating a filmed roll click this button and choose the roll number. After click onto Reexpose Roll press Expose to film this roll again.

3.10 New Roll

Announces the insertion of a new film roll. After the exposure process is started, the system waits for the new roll.



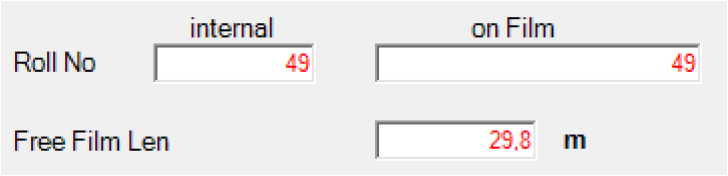
When the new roll was placed in the camera head, the new roll number is prompted. The number is increased automatically by the system, so that a modification is usually not necessary. However it might be useful in the case of an existing roll has to be re-exposed.



3.11 Wind Film Roll

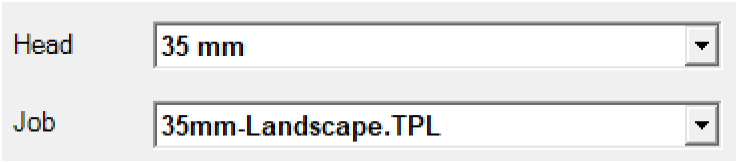
Winds the remaining film on the taken spool.

3.12 Current Film Roll Info



Shows the current roll number of the film in the chosen camera head and the remaining free film length.

3.13 Camera Head and Template



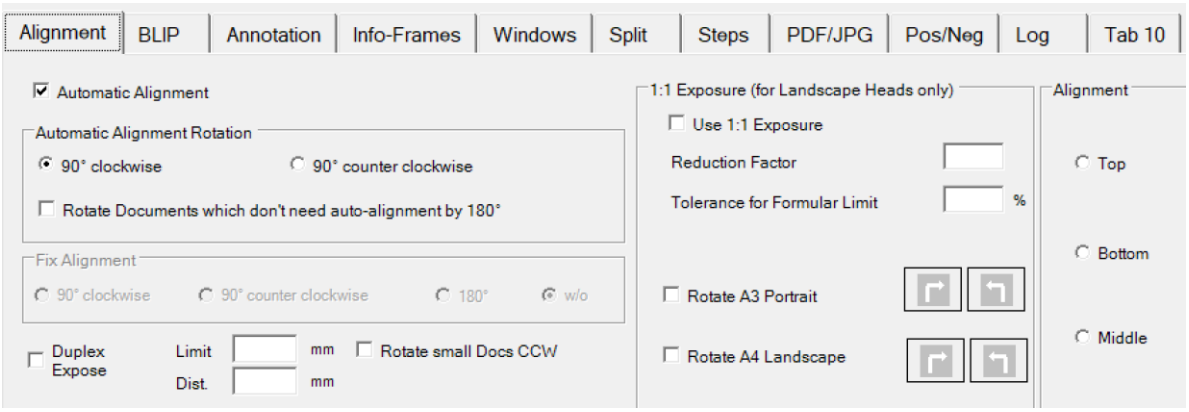
The template contains all information used to define the layout for the current job. The camera head which is used for the template can be selected in the upper combo box.

To save the current configuration as a new template press the <New Template> button. Afterwards the new template name and the used camera head have to be set.

3.14 Template Description

This chapter describes all the settings which can be made in the template tab.

3.14.1 Alignment



Adjusts the orientation of the displayed images. Normally <Automatic Alignment> should always be checked. It rotates the images, if necessary, so that they fit optimally onto the frame. If the images have to be rotated the direction can be selected.

When choosing 1:1 Exposure the behavior is different. Large images are exposed on the full frame. Smaller documents are exposed in their original size on the film. The reduction factor defines the ratio with which the documents are reduced onto the film. Together with the 'Monitor Height On Film' parameter of the camera head the reduction ratio basically defines which document sizes are exposed on the full frame and which are exposed in their original size. Please note that the 1:1 Exposure is for landscape heads only.

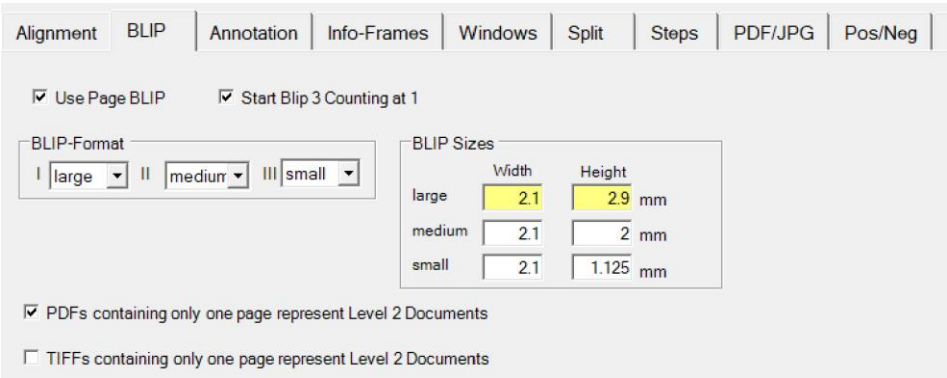
The parameter ‚Tolerance for format limit' defines which 'undersized' documents still will be exposed using the full screen size (i.e. the defined image window) and therefore on the full frame.

A value of 5% using the 16mm head (therefore using DIN A4 documents in portrait orientation) means, that all documents having a length of 282,15mm or more, still will be exposed on the full frame. Documents with shorter sides will be scaled down on the screen so that they don't use the full frame anymore.

The shorter side of the document has no meaning in that calculation.

The Duplex Exposure activates the two sides in one frame filming. Both sides (front and back of a document) are packed into one frame. The limit in mm (e.g. 305) defines the highest value of the long side which is handle as an A4. The distance defines the gap between both images. By activating this function the job must be stored and the program restarted. Make sure you have a folder named Temp on drive D:

3.14.2 Blip Layout



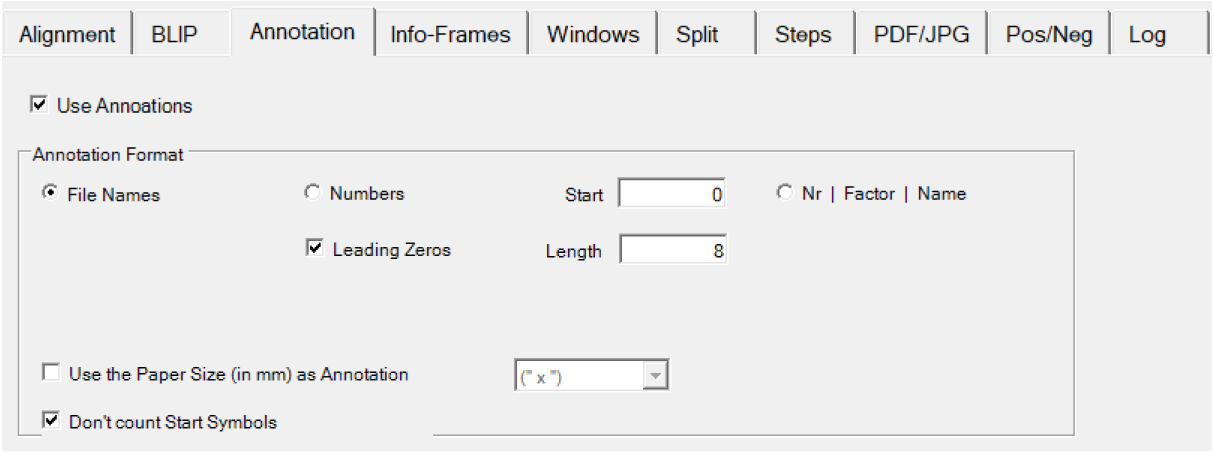
Defines the sizes of the blips for the corresponding level of the image/page. Important to know is, that when using a level 2 structure only Blips II and III are in effect. If it is a level-1 structure, only blip III is in effect.

So for a level-2 structure in the above sample the document blip is medium and the page blip is small.

The sizes of the different blip types are set in mm. The highlighted large blip is used in the test function of the <Windows> tab.

<PDFs and TIFFs containing only one page represent Level 2 Documents> each PDF or TIFF file with only one page is treated like the first page of a multipage PDF or multipage TIFF and gets a Level 2 blip.

3.14.3. Annotation



An annotation is an additional textual information under the image. Usually the annotations are placed beneath the images, though that might be changed in the windows tab.

You can chose between filenames and numbers as annotations.

If <Use the Papersize (in mm) as Annotation> the original size of an image is added to the annotation, e.g. ‘00000001 – 297mm x 210mm’ would be used as annotation for an A4 size document.

In addition the document (paper) size can be used in the annotation. Possible measurements are mm, cm and Inch (Zoll). The document size is printed behind the base annotation (number or filename) in parenthesis. Sample : 0000001.TIF (297mm x 210mm)

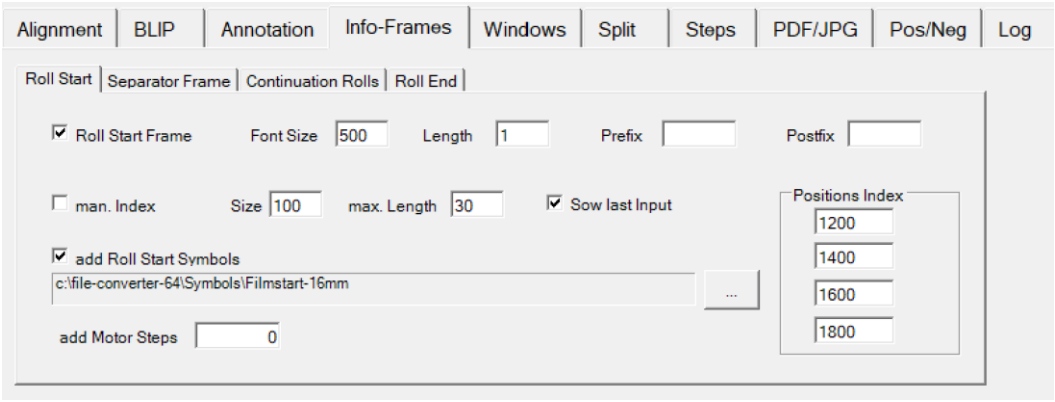
<Nr I Faktor I Name> means to print a continious number, the reduction factor and the file name in one line.

Don’t count Start Symbols → The counter starts at the first real document.

3.14.4 Info Frames

Info Frames are frames on the film which don't carry an image but are used for structuring the film or placing addition information.

Roll Start Frame



- ➔ Roll Start Frame is the very first frame of a film roll and contains the roll number. To increase the distance to the next frame use the field
  → add. motor steps
- ➔ manual Index contains up to four lines of text and appears after displaying the roll start frame. The user can choose the size, the length and the position and these parameters should fit to the image size.
- ➔ add Roll Start Symbols. The system will use the additional images in the specified folder to displaying at the beginning of each job.

Note: Single page JPG- and TIF-files only.

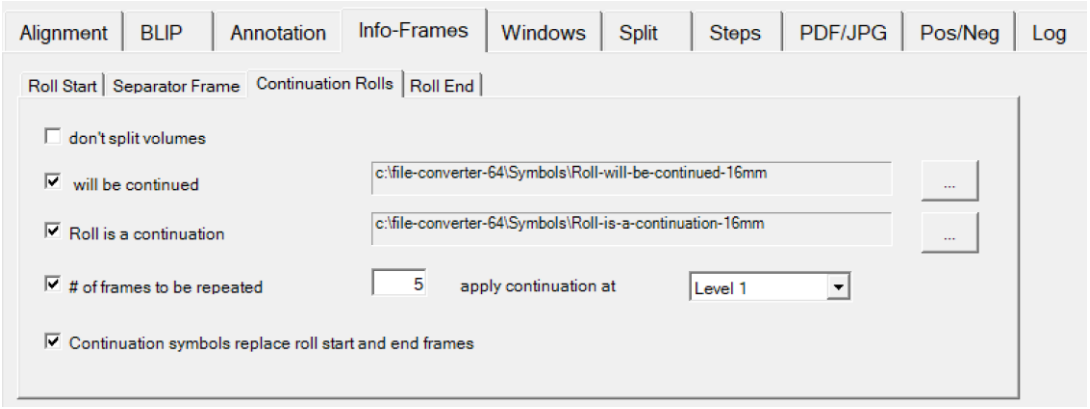
Separator Frame

Separator Frames are used to separate documents from each other. A document is:

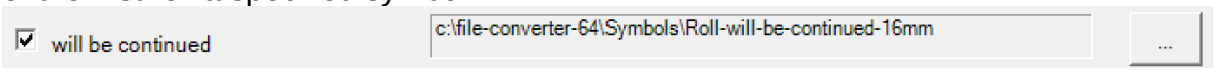
- a multiple page TIFF file or
- a multiple page PDF file or
- a sub-folder in the chosen image path containing single page files only

A Separator Frame carries a big cross. You can enable to expose a frame number for a Separator Frame also.

Continuation Rolls

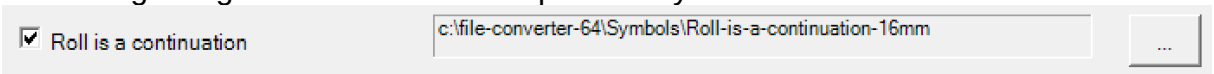


If a job requires more than one roll we speak about continuous filming. So at the end of the first roll a specified symbol

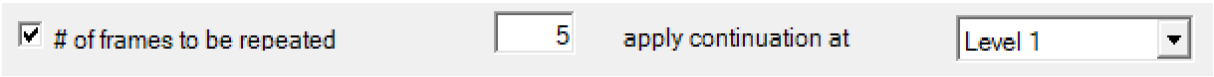


will be filmed on the last frame.

At the beginning of the second roll a specified symbol



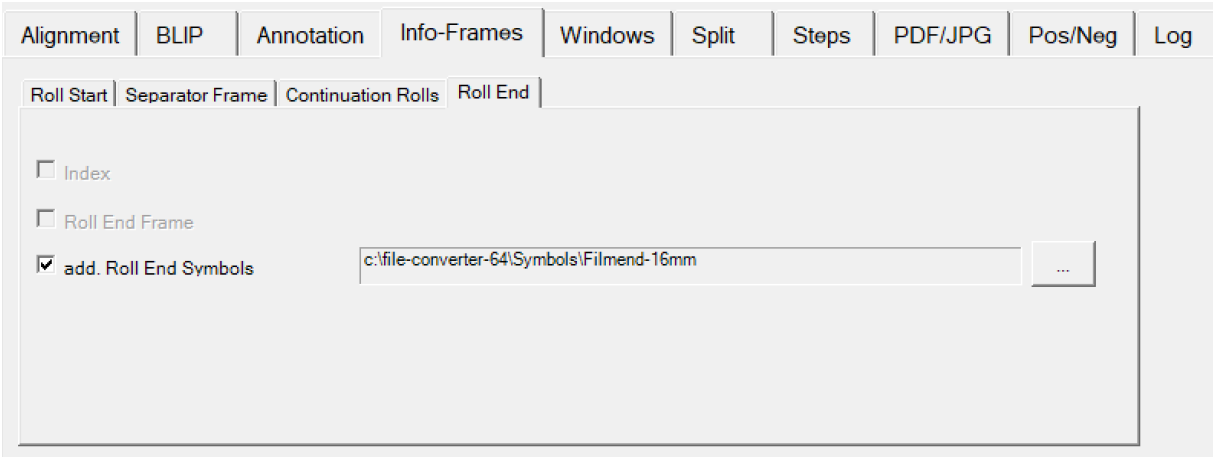
will be filmed on the second frame after the roll start frame and afterwards the last 5 (or the number you type in the field # of frames to be repeated) from the previous roll will be filmed



before the system continue with the next images.

If you do not want to split volumes (e.g. books) you can activate the following check box.

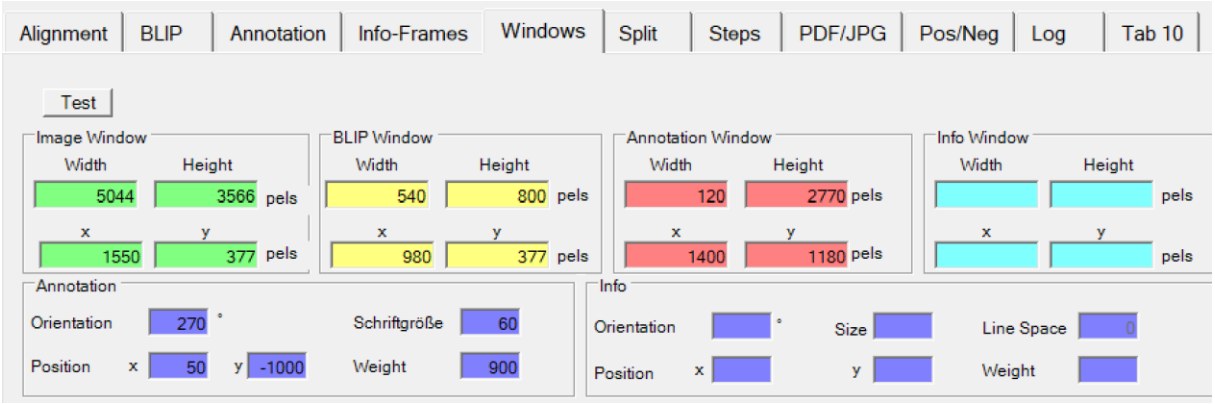
Roll End Frame



The Roll End Frames are the last frames of a film roll. The system will use all frames in the specified folder. Note: Single page JPG- and TIF-files only.

3.14.5 Windows

The <Windows> Tab controls which areas of the filming monitor show the document and which the blip and annotation information.



For the image exposure the exposure monitor is divided into three areas:

- The Image Window and
- The Blip-Window
- The Anno Windows

The parameters for all three windows are highlighted in green, yellow and red respectively as shown above. A test button draws the corresponding Windows on the Exposure-Monitor. **Note**: Of course these windows aren't visible during the real exposure process. They just demonstrate the used parts of the exposure monitor.

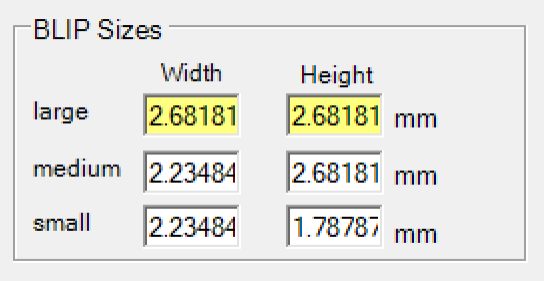
You use this button to verify your settings. Therefore you need to remove the front lid of the SMA 51. Be aware that the monitor is turned on.

Sample for 35mm Portrait Exposure (that means the camera is aligned horizontally to the exposure monitor)

Pressing the test button will display the following on the exposure monitor. The green area is the Image Window and the yellow area is the Blip Window. Each image will be displayed inside the shown Image Window and the Blip a well as the Annotation will be displayed inside the Blip Window.

All three windows shouldn't intersect. If they do, it can happen that the Blip or the Annotation is written across the image.

Please note that for the test function the size of the large Blip is used. If you want to get a preview of the medium or the small Blip you have to enter their dimensions in the fields for the large Blip. Don’t forget to reset the values for the large Blip afterwards.

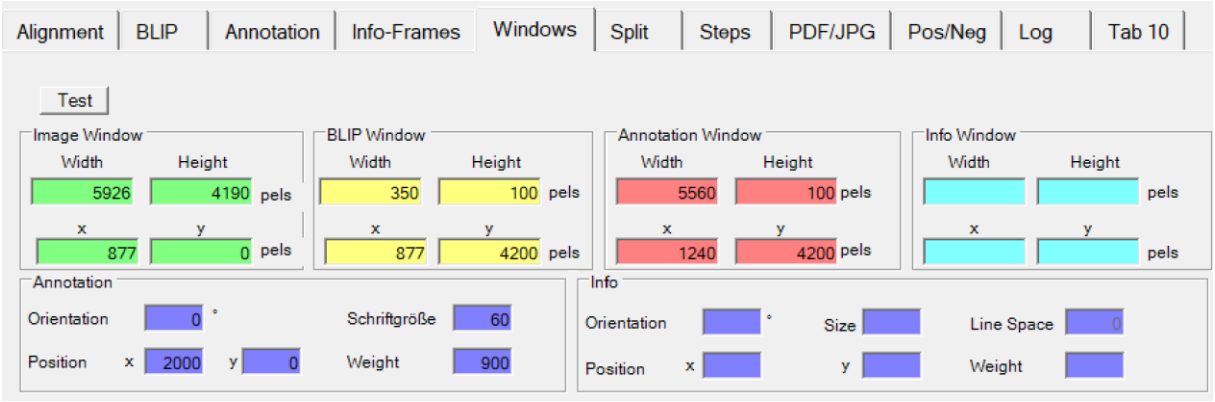


The Image Window in the shown sample uses the exposure monitor with a height of 3960 pixels and a width of 5600 pixels. The Image Window is centered on the monitor (x=1040, y=180).

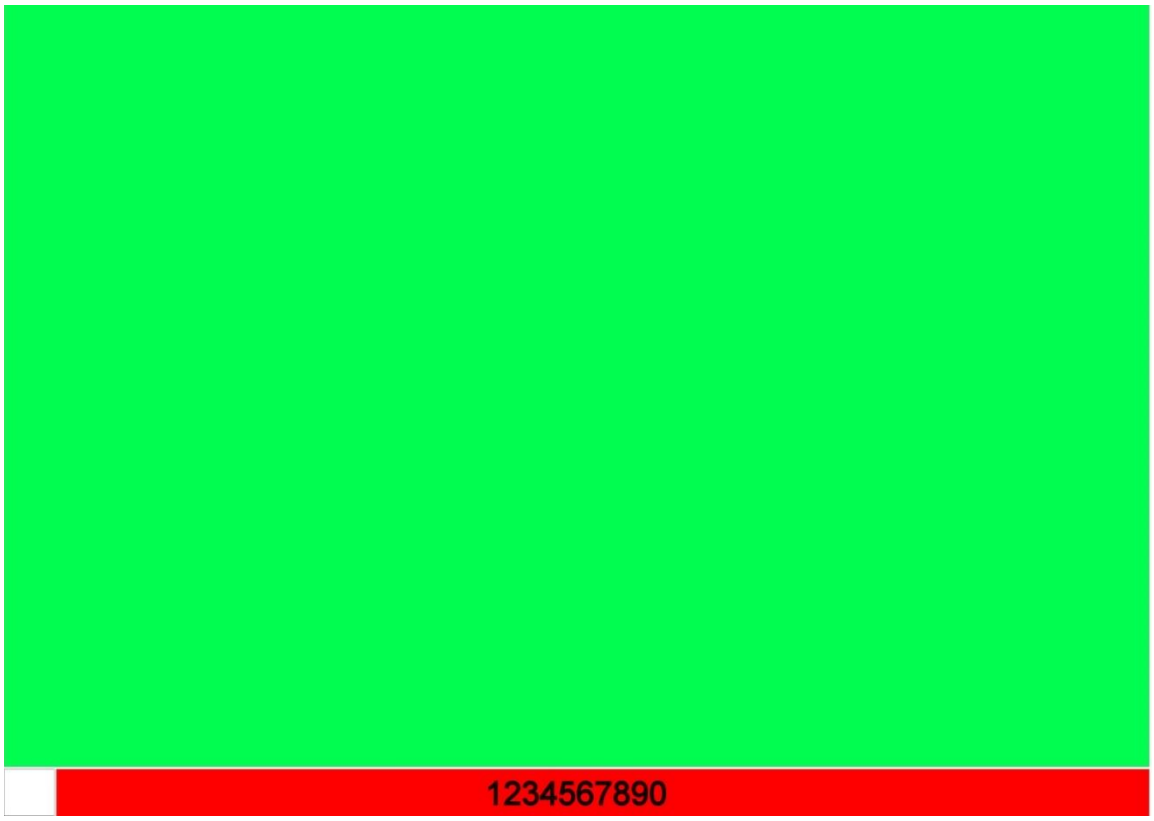
The Blip Window and the Annotation Window are placed on the left of the Image Window resulting in that the Blip and the Annotation are drawn under the image on the film.

The Annotation Orientation 270 forces the annotation to be written from top to bottom. (x,y) defines the position inside the Blip-Window. Font Size and Weight define the style of the font for the annotation. A weight of 1000 means bold.

Sample for Landscape Exposure, that means the camera head is aligned horizontally to the exposure monitor



Please note that the font orientation was changed to 0 to get the normal text orientation. Blip width and height are switched, so if you want a bigger blip, you now have to change the width value.



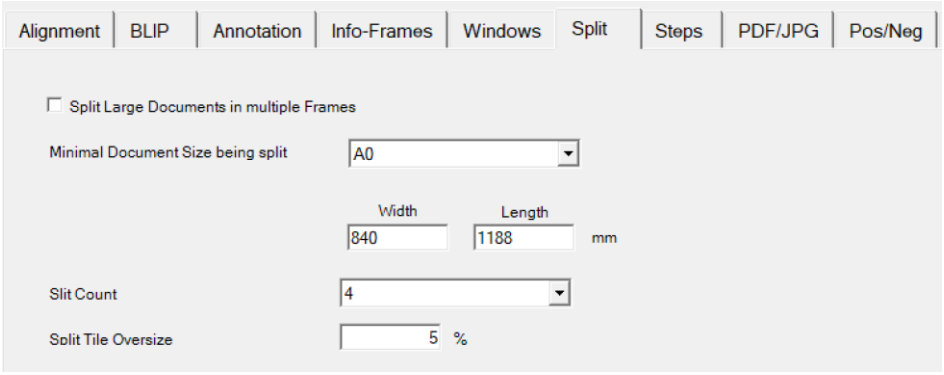
(Sample of a lengthwise test)

The Blip-Window is now beneath the Image Window (and not on the left of the Image Window as in the crosswise exposure sample).

3.14.6 Split

The Split Function of the SMA 16 allows to expose very large and very detailed images which actually are too big to be exposed in a single step.

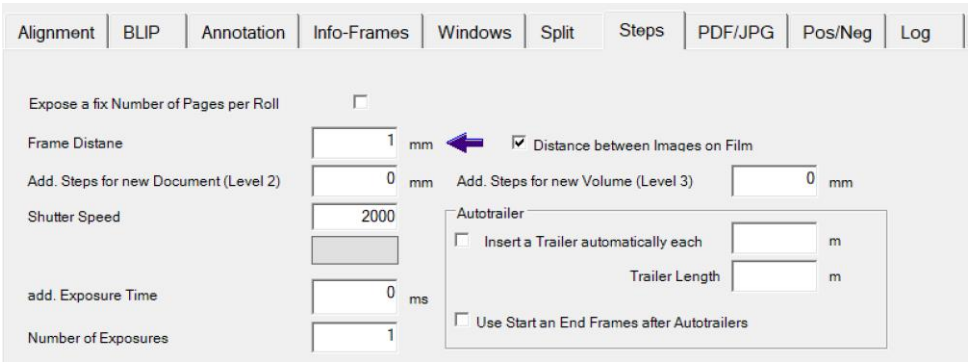
Those documents can be splitted in either 4 or even 9 parts during the exposure process.



When 4 splits are selected, each document which exceeds a certain size will be exposed onto 5 (!) frames. The first frame carries the whole document, the 4 following frames carry parts of the document. The Split Tile Oversize parameter adjusts the size of the cut tiles of the original document. So a document isn't exactly split into 4 disjunct parts but in 4 slightly overlapping parts which make the restore of the whole document easier. How much those parts overlap is defined by this factor. Appropriate values are from 5 to 10%.

The split function is protected, if you are interested in using it, please contact us.

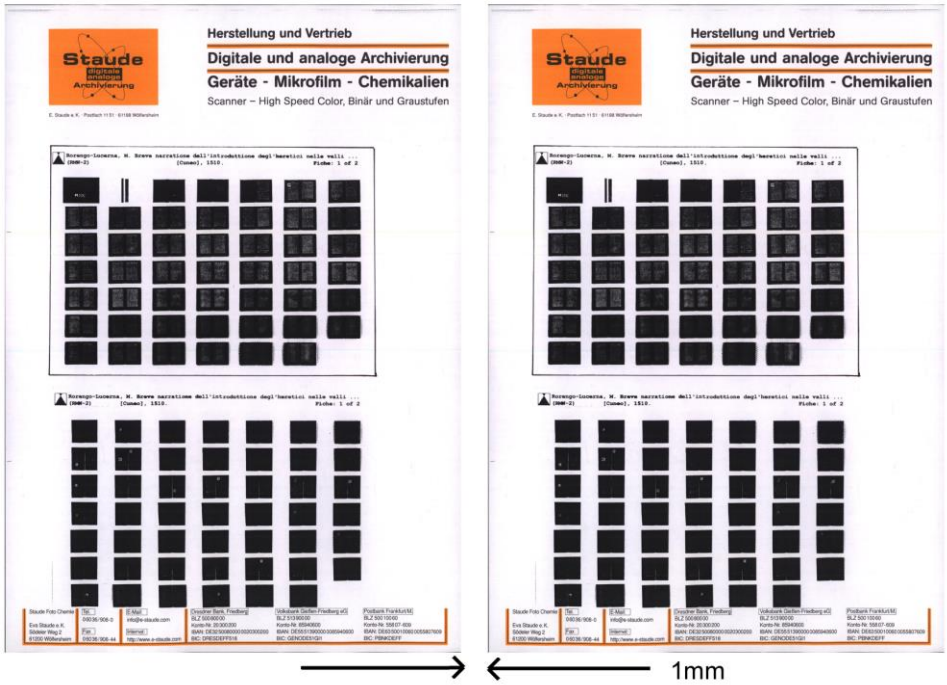
3.14.7 Steps



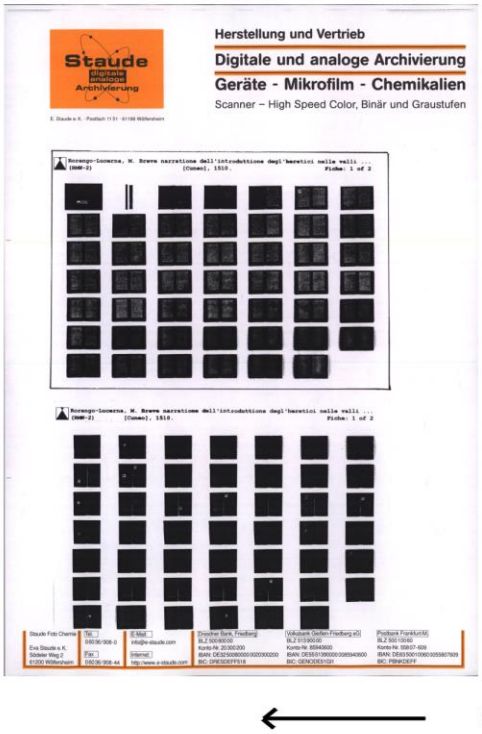
The frame distance either defines:

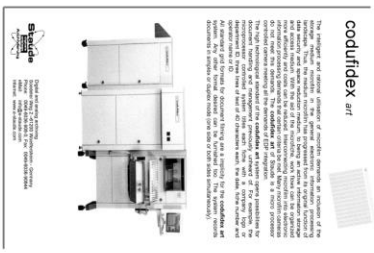
- the distance of the centers of two image frames on the film
  or
- the distance between two images (border to border) on the film

If the checkbox <Distance between Images on Film> is set, then the 2nd option is active. With the shown settings the images on the film are 1mm apart indepently of their size. (With 1:1 Exposure documents may be exposed differently). If the box isn't selected, the given value denotes the distance between the image centers.



If <Distance between Images on Film> all images on the film have the same distance regardless of the size of the different images. The size of the images might differ especially if the option 1:1 Exposure is set in the <Alignment> tab of the template. If the box is not set, the distance between the images may vary (see below).





<Shutter Speed> defines the speed the of the expose shutter.
Valid values are from 4000 – 1200.
Attention: Higher values result in lower speed and darker Images

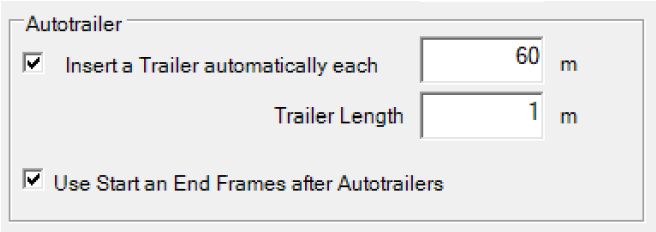
<add. Expose Time> The achieve higher expose time an additional expose time may be defined. If it is 0 the shutter will just move continuously across the aperture. If it is different from 0, then the shutter will stop when fully opened and pause the specified delay.

<Number of Exposures> defines how many turns the shutter will do. 1=half turn, 2=full turn, 3=a full and a half turn and so on.
Higher values result in more turns and darker images.

In accordance with the COM standard make sure that the density range on each frame is between 1.4 and 1.7 (white images with black characters).

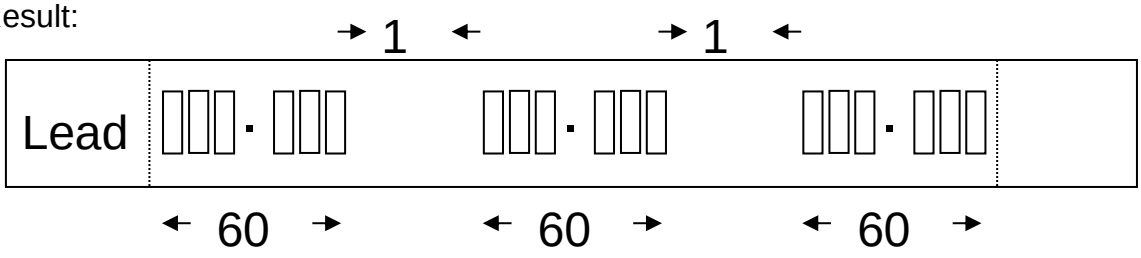
Use of Auto Trailers

An auto trailer is an unexposed part of the film roll, which is inserted automatically during the exposure to enable the cutting of the film at that location. Large film rolls (like 300m rolls) can be so be cut down to 60m rolls.



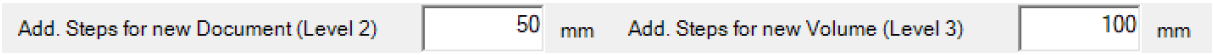
The above picture shows the settings necessary to divide a film roll into 60m segments.

Result:



After an auto trailer has been inserted automatically the film number is increased.

Add. Steps for new Document (Level 2)
Add. Steps for new Volume (Level 3)



- An additional step can be inserted after finishing a document (multipage-TIFF, multipage-PDF) or a volume. The lengths can be individual defined.

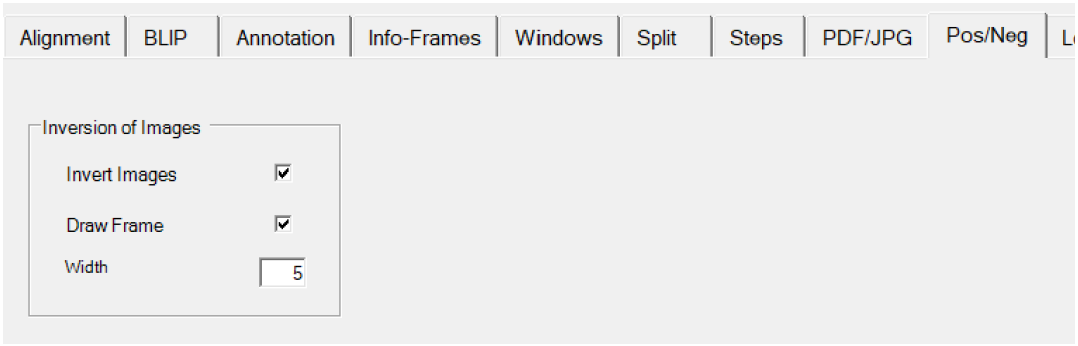
3.14.8 PDF

When working with PDFs the chosen resolution is used for the bitmap rendering of the PDF pages. Higher values result in higher image quality but lower speed. Values from 200 – 300 are commonly used.

Enable faster Processing of large Documents → Starts a parallel process to increase the processing speed.

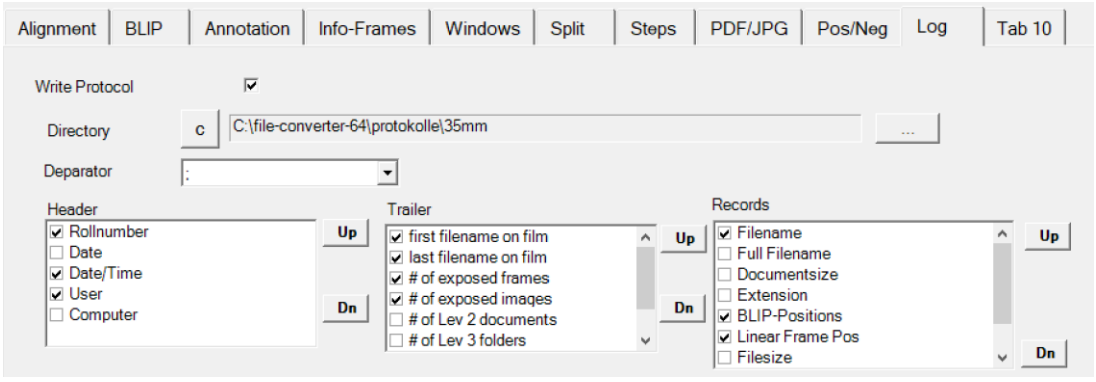
3.14.9 Pos/Neg

You can produce positive films by forcing the program to invert all displayed documents. When working with positive films it is normally useful to draw a frame around the document on the film to see the document borders. The frame thickness (Width) can also be selected.



3.14.10 Log-Files

The log-files basically are index files, which are created during the exposure process.



For each film roll one index file is created. The index file contains a header which is composed out of the following possible entries:

- Roll number
- Either the date or the date and time.
- User
- Computer (Station name)

After the header the actual index entries are following, which consist of one record (row) per filmed document.

Such a record is made of the following possible entries:

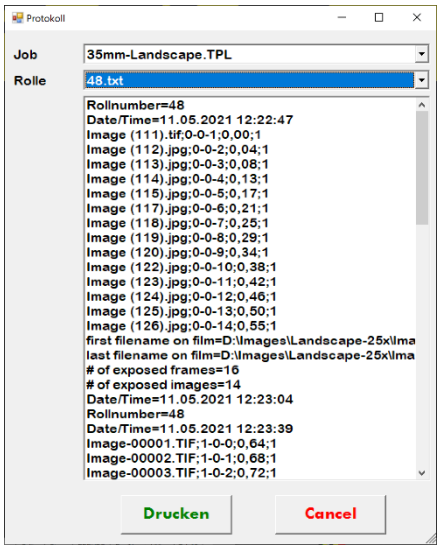
- File name
- Document size (in Inch)
- File name extension (eg PDF)
- Blip-Level (eg 3-2-1)
- Linear Frame-Position (in mm)
- Filesize (in Bytes)
- Modification date
- Page number (using multipage TIFF or PDF files)

Inside the record the different entries are separated using the chosen delimiter. Using the Up- und Dn- buttons the order of the entries can be modified.

4. The Protocols

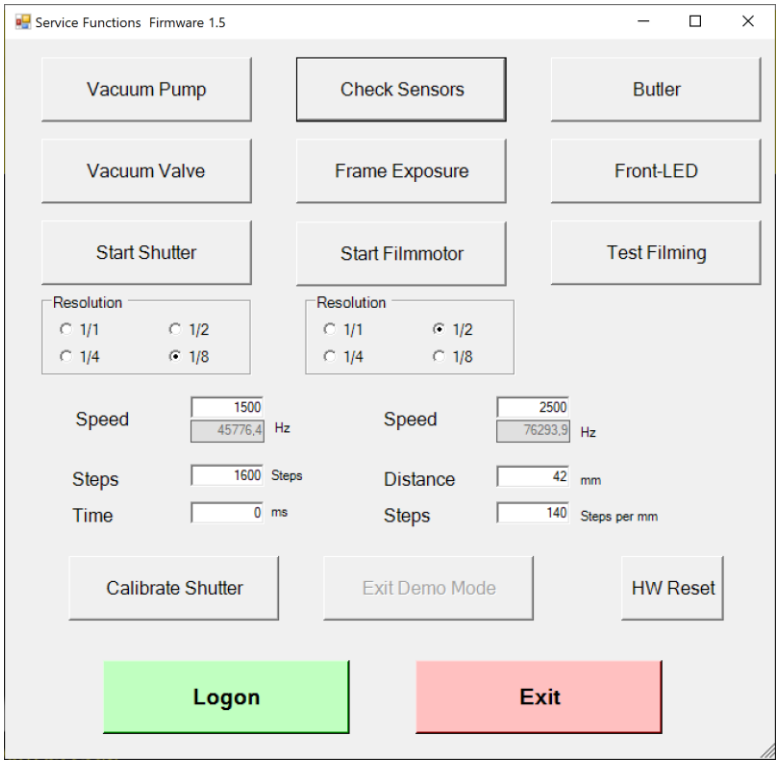
During the exposure for each film roll a protocol is created listing the names and the number of pages being filmed. You can select a film roll using the upper combo box. An editor is started when pressing <Print>. The protocol can then be printed out of the editor.

The lower box shows the contents of the protocol. The first column is the file name, the second the frame position on the film where this document starts and the last column is the number of pages of the document.



5. Service

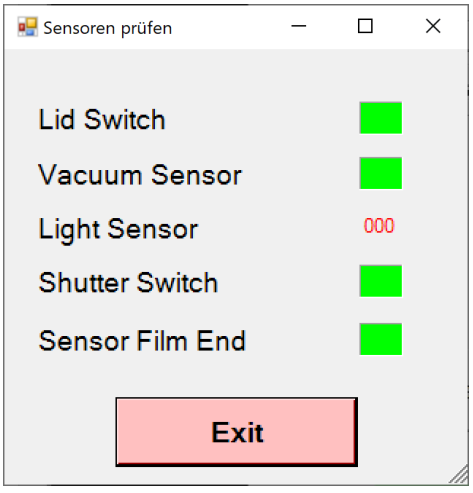
The service part of the SMA software will be mainly used by service technicians. However it might be sometimes necessary to check several functions of the system in the case of problems do occur.



The following functions are supported:

- Start and Stop Vacuum Pump
- Open and close the Vacuum Valve
- Start the Shutter for Exposure
- Calibrate the Shutter
- Start the Film Roll Motor

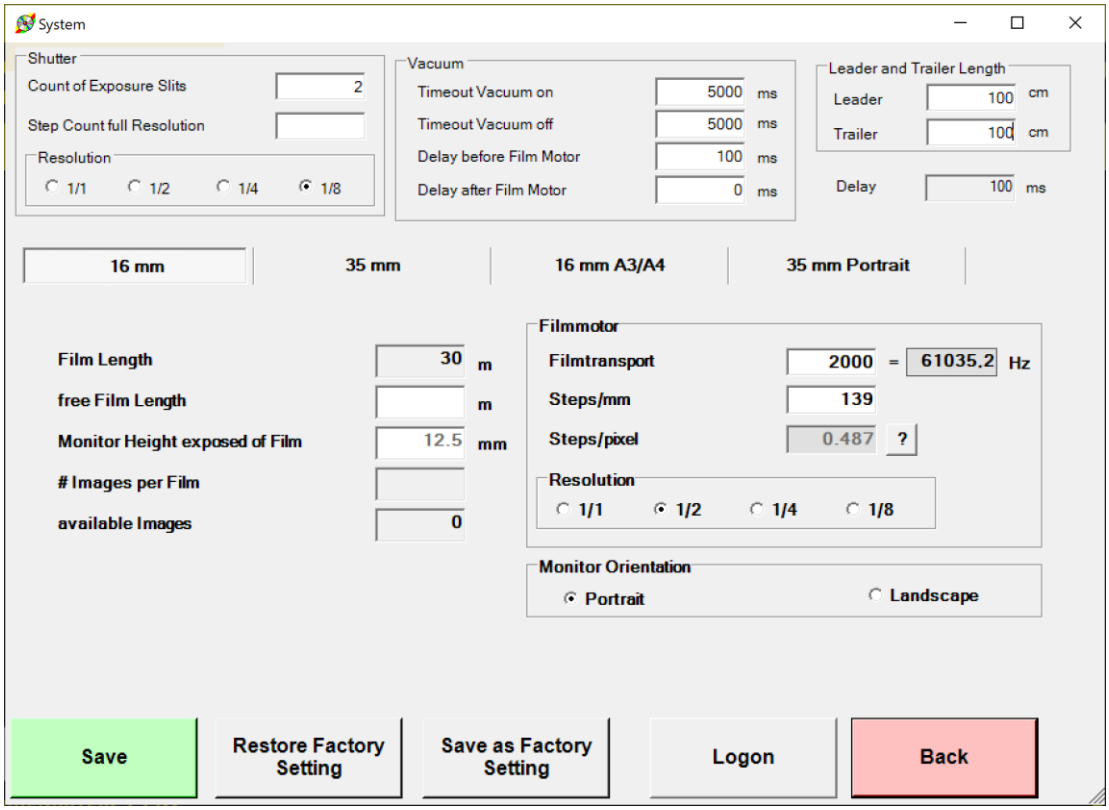
- Displaying the states of the Sensors



6. The System Menu

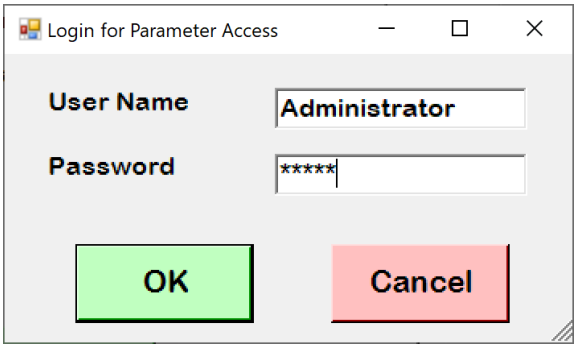
The System Menu contains all parameters relevant for the correct film exposure. Never make any changes here unless you are very familiar with the settings. It is strongly recommended to copy the parameters before any changes are being made.

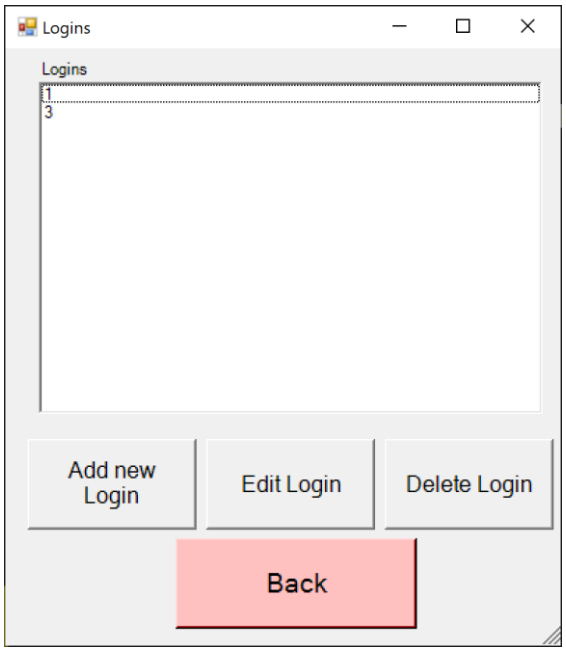
(Either make a print screen or simply copy the docufile.ini file.)



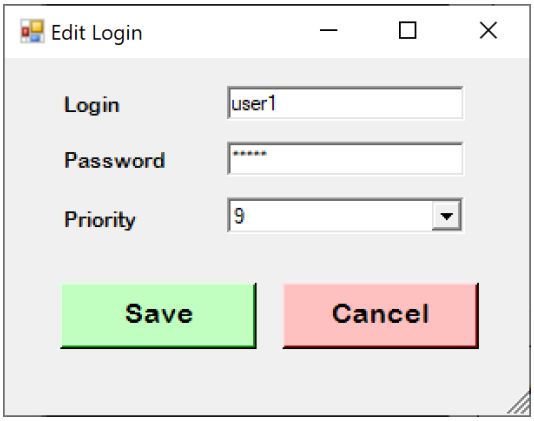
6.1 Login

When the system menu is entered for the first time nearly all settings are locked. Only the reader and trailer lengths can be modified. Any changement of the other parameters requires their activation using the <Logon> button.

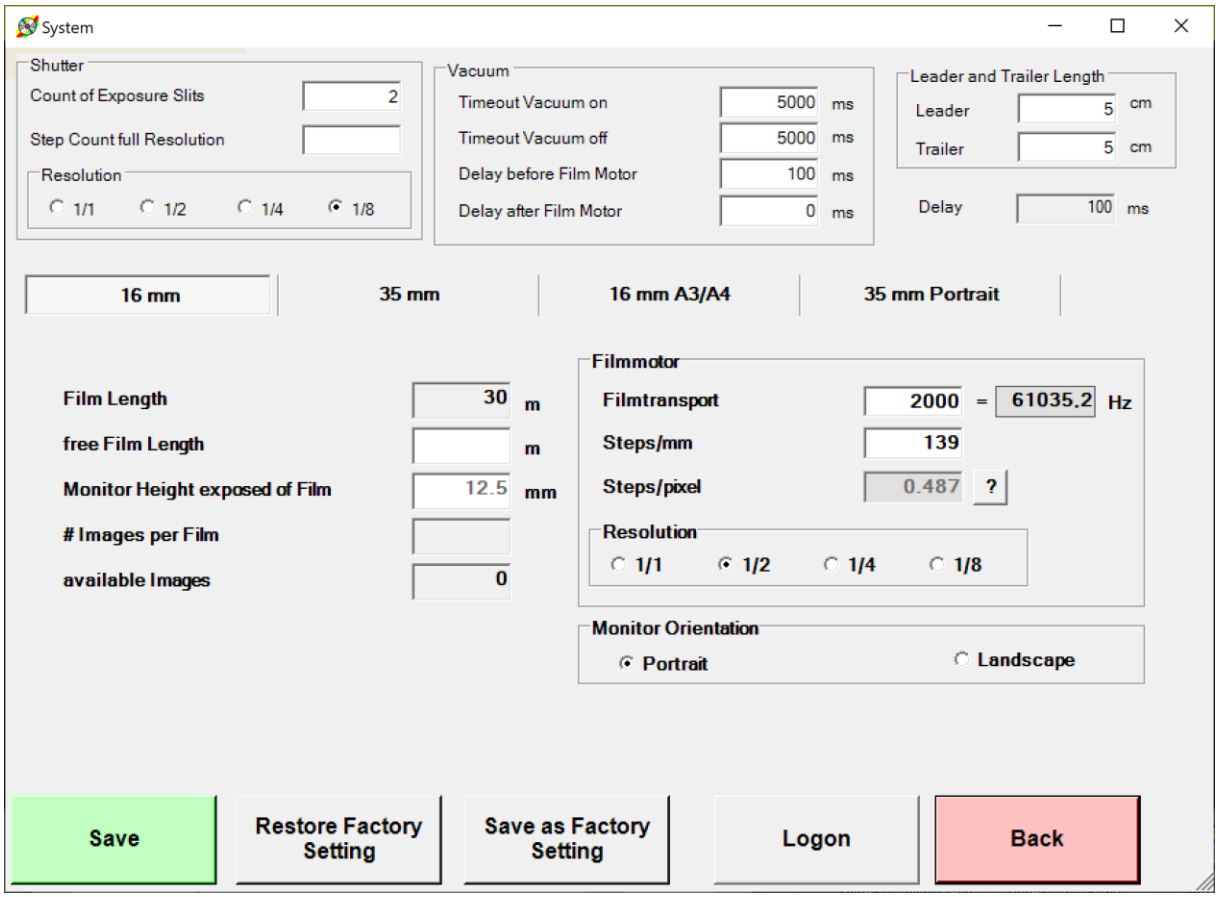




After the logon, the parameters are unlocked depending on the priority level of the user. See the table below for the necessary priority levels.



- Leader and Trailer Length	1
- Film Length	2
- Vacuum Settings	4
- Delay	4
- Shutter Settings	5
- Load Factory Settings	5
- Monitor Orientation	6
- Film Motor Settings	6
- Monitor Height on Film	6
- Overwrite Factory Settings	9

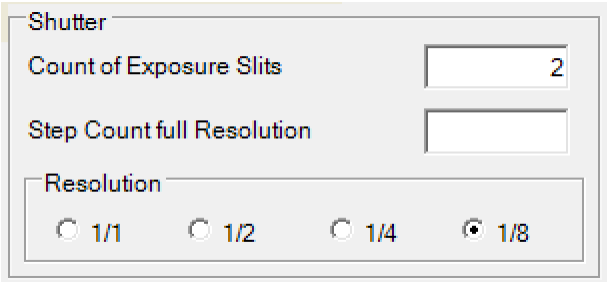


The parameter are separated into 4 major groups:

- Shutter
- Vacuum
- Film Leader and Trailer
- Camera Head Settings

Each group will be described in detail now:

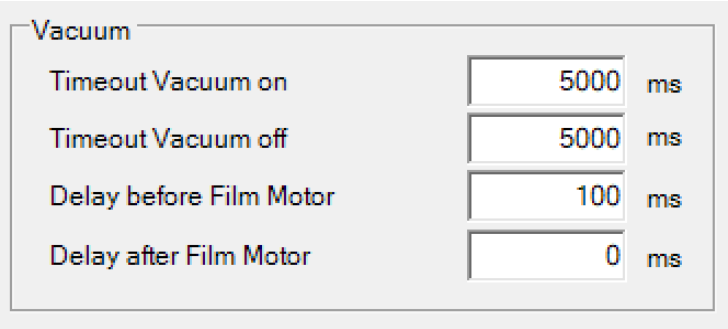
6.2 Shutter



These settings are hardware dependent and should never be changed.

- <Count of Exposure Slits> defines the number of slits in the shutter. Normally a shutter has 4 slits but systems with only 2 slits also do exist
- <Step Count full Resolution> defines the steps up to a full shutter turn
- <Resolution> defines a motor parameter. Must be 1/8

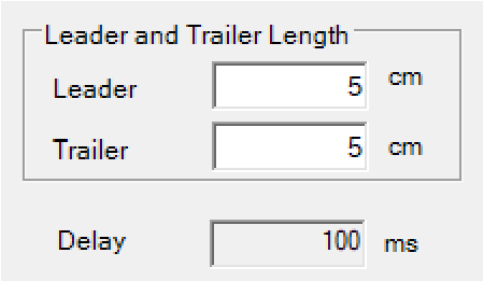
6.3 Vacuum



These settings are hardware dependent and should never be changed.

- <Timeout Vacuum on> defines the delay between a vacuum was requested until an error occurs when the vacuum couldn't be detected
- <Timeout Vacuum off>: same for clearing the vacuum
- <Delay before Film Motor>: waiting time before the film motor starts after exposing
- <Delay after Film Motor>: waiting time after the film motor stops

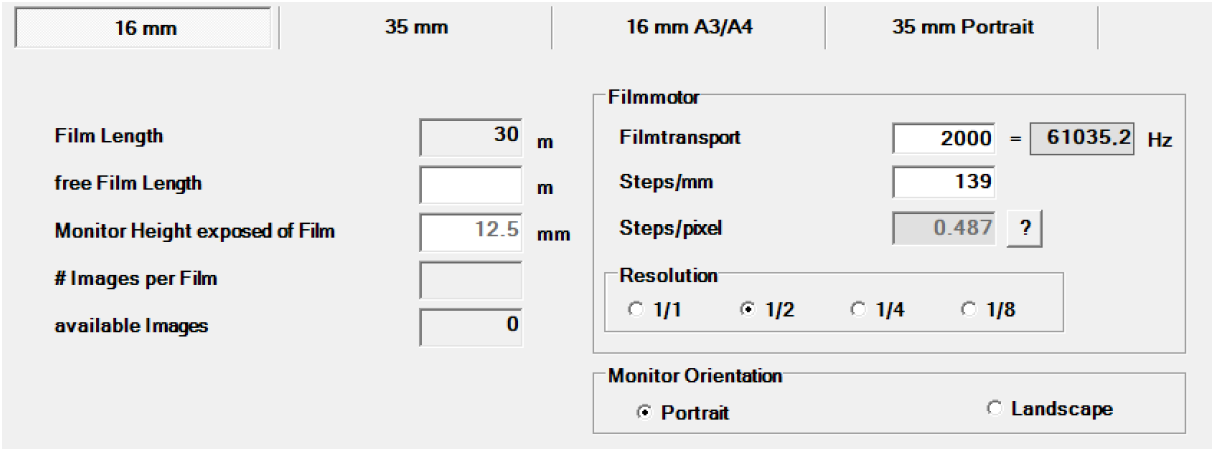
6.4 Leader, Trailer Length and Delay



Defines the leader (beginning empty/unexposed part of a film roll) and the trailer (ending empty/unexposed part of a film roll) in cm. Normally those are in the range from 100-200 cm depending on the used developer system.

Delay: This value describes the delay between showing an image and opening the shutter. Increase the value by density variation within an image. Do not use values below 100.

6.5 Camera Head Settings



<Film Length> defines the length of the used film rolls. That is normally either 30 or 66m.

<Monitor Height exposed on Film> very essential parameter, never modify it unless you know exactly the consequences. The parameter is used to transform all parameter from mm on the film into monitor coordinates. Besides this it is used for the 1:1 Exposure function.

<Filmtransport> defines the maximum speed of the film transport motor.
During all film transports the system will automatically use the optimal speed (e.g. a trailer or leader will transport much faster than a frame to frame transport).
Nevertheless: In no case the here defined maximum speed will be exceeded.

<Steps per mm> defines the number of step the film motor has to pass to fully advance the film by one mm.

<Steps/pixel> This parameter converts the displayed width of an image (e.g., 1600 pixels) into number of steps. This is necessary when filming at a fixed image distance (for example, 1 mm).

<Resolution and Monitor Orientation> are system parameter and should never be changed.