Instruction Manual

Seitz 6x17 Digital with Seitz D3 / D3-2500 Digital Scan Back

Software release: *4.07 (May 2017)*

Please note throughout the document that "Seitz D3 digital scan back" applies equally to the "Seitz D3 2500 digital scan back". Differences between the two versions are mentioned wherever relevant and necessary.

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1. System Overview

1.1 Seitz 6x17 Digital

①	Camera body	⑨	Hand grips	⑰	Loading gate	
②	Lens	⑩	Release + on button	⑱	Digital scan back	
③	Lens tube	⑪	Tripod mount	⑲	Power cable/connector	
④	Lens adaptor*	⑫	Attachment for neck strap	⑳	Ethernet cable/connector	
⑤	Lens brackets	⑬	Ethernet socket	㉑	Battery + battery charger socket	
⑥	Viewfinder	⑭	Power socket			
⑦	Viewfinder release	⑮	Loading gate brackets			
⑧	Shift wheel	⑯	Brackets to attach compact computer			

* For Linhof 617 and Fuji 617 lenses

1.2 Other compatible cameras

The Seitz D3 Digital Scan Back can be removed from the Seitz 6x17 Digital and attached to other camera bodies. At the moment of release of this manual it can be used with:

Roundshot D3

The D3 software detects the attached camera and adapts its software parameters automatically (for example, the image format).

1.3 Computer / tablet PC

The camera is controlled by a connected computer (tablet PC) which also serves to visualise and store the images. For best convenience we recommend using a tablet PC with touch screen, for example a Motion Tablet PC:

It is also possible to use the camera with other computers. Important factors when selecting a suitable computer are:
- Speed of operating system (32-bit or 64-bit) – ideally 64-bit machines
- speed of the processing unit (dual core, quad core)
- available RAM,
- Gigabit Ethernet (for fast image transfer)
- size and speed of the hard disks (preferrably fast SSD drives for fast image saving)

Currently the following operating systems can be used (both 32-bit and 64-bit):

- Windows XP
- Windows VISTA
- Windows 7

With Intel processors only:
- Mac OS 10.5
- Mac OS 10.6

1.4 Accessories

Tablet PCs and accessories:

Motion J3400

Mobile Keyboard for Motion J3400

Battery charger

Power supply (mains adaptor)

Laptop holder to attach on a tripod

NiMh battery 12V 4.5A

USB GPS device: GlobalSat BU-353 USB

Front glass cover for the
Seitz D3 digital scan back

1.4 Accessories (continued)

Power plugs for different countries:

Continental Europe

United Kingdom
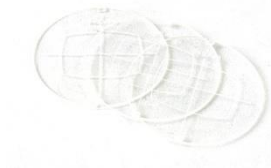
North America (USA,
Canada, Mexico) & Japan

Australia & New Zealand

Viewfinder:

Viewfinder masks:
(interchangeable for different lenses)

2. How To Get Started

2.1 Step 1: Get the camera ready

Camera body

Lens / lens adaptor

Viewfinder and
viewfinder masks
(exchangeable)

Digital scan back

Loading gate

Battery

2.1 Step 1: Get the camera ready (continued)

The Seitz 6x17 Digital camera is delivered fully assembled. When disassembled it can be reassembled in the following way:

1 Slide the holder for the digital scan back to the middle of the camera body

2 Connect the ethernet and power cables that are inside the camera body with the digital scan back

3 Insert the digital scan back into the Seitz 6x17 Digital camera body and attach it with the lever

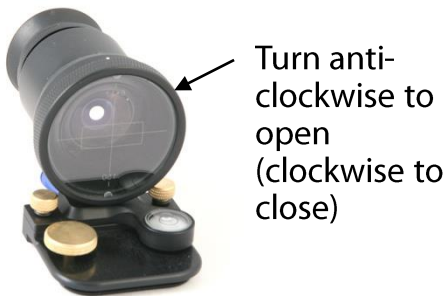**4** Attach the loading gate and close it with the loading gate brackets

2.1 Step 1: Get the camera ready (continued)

(5) Attach the lens and close the lens brackets firmly

(6) Place the correct viewfinder mask within the viewfinder

Turn anti-clockwise to open (clockwise to close)

(7) Attach the viewfinder on the camera

2.1 Step 1: Get the camera ready (continued)

8 Insert the battery to the camera body

9 Place the camera on a solid tripod. The Seitz 6x17 Digital camera comes with a large (3/8") thread. For smaller tripods (1/4" thread) can be inserted into the camera bottom plate.

10 Connect the 3m ethernet cable* by inserting it in the ethernet socket on the camera and the computer**:

*   The ethernet cable can be of any distance
** It is also possible to operate the camera in a network

2.2 Step 2: Get the computer ready

2.2.1 With tablet PC (supplied with camera)

For cameras supplied with a tablet PC the Seitz Roundshot D3 software is already installed on the tablet PC and the network configuration is complete.

Start the tablet PC by pushing the on/off button on the right side of the computer. The start-up takes approximately one minute:

„on/off" button

The tablet PC is operated with the supplied digital pen via touch screen. To activate the „right mouse click" press the button and hold:

„right mouse click"
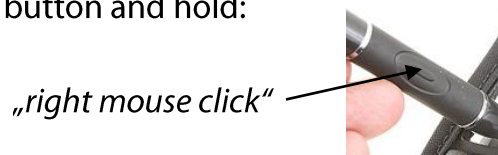
When the computer has been idle and goes to standby, it can be reactivated by pushing the on/off button.

If a password for the tablet PC has been set and the tablet PC is already part of a domain, the logon screen will appear.

electronic keyboard Windows 7
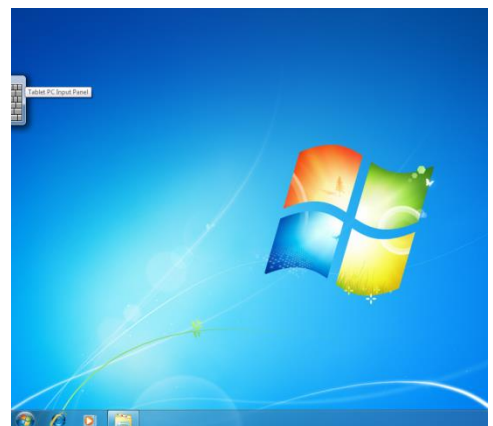
Activate the electronic keyboard by sliding the digital pen over the left margin of the screen..

2.2 Step 2: Get the computer ready

2.2.2 With all other computers

For all other computers download the latest software version from the „Club D3" website (www.roundshot.ch) and load the Seitz Roundshot D3 installer program (exe) on your computer. For more information on how to access the „Club D3" website please refer to section 6.4.

Important: Make sure to install the software using an account which has **administrator rights**.

SeitzRoundshot-4.0-windows-installer.exe

Double click the icon. The program set-up will start automatically and the software will be installed in the following directory: *C:\Program Files\Seitz\Digital3*

The program directory contains two folders:
• HMI (Human Machine Interface)
• PDS (D3 Imaging Server)

The „Human Machine Interface" represents the graphical user interface by which the camera is controlled and the images are displayed. The „D3 Imaging Server" handles all image data.

Create the following shortcuts on your desktop:

Seitz Roundshot — Starts the Seitz Roundshot D3 software

images — Shortcut to the Digital3 images folder
(to C:\Program Files\Seitz\Digital3\PDS\images)

2.2 Step 2: Get the computer ready

## 2.2.2 With other computers (continued)

Deactivate User Account Control for Windows VISTA and Windows 7

Windows VISTA has an additional security layer built in which prompts the user before execution of an application. To run the Seitz Roundshot D3 software this additional security layer needs to be turned off. Open control panel, select user account, select "Turn user account control on or off", deselect the "Use user account control":

deselect
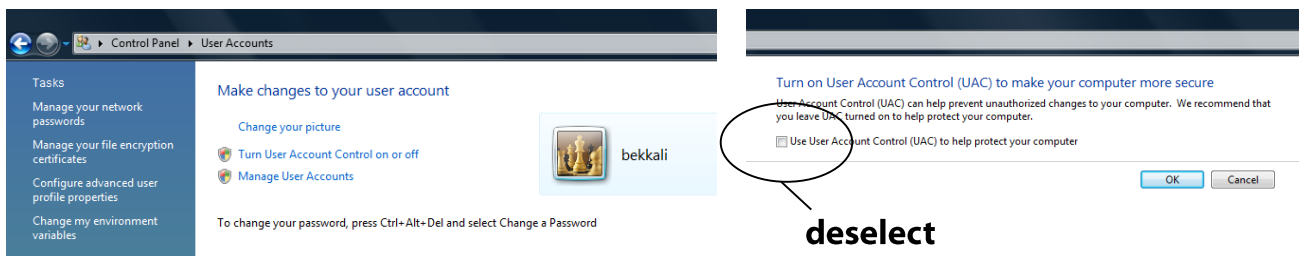
Set up gigabit ethernet controller for maximum speed (Windows XP , VISTA or 7)

By default the gigabit ethernet controller card in Windows XP or VISTA is set to maximum battery saving. To connect to the camera quickly and to allow a maximum transfer speed it is necessary to change the battery speed and link detection speed. Open the device manager, right mouse-click on properties of the gigabit ethernet controller, select tab "Advanced":
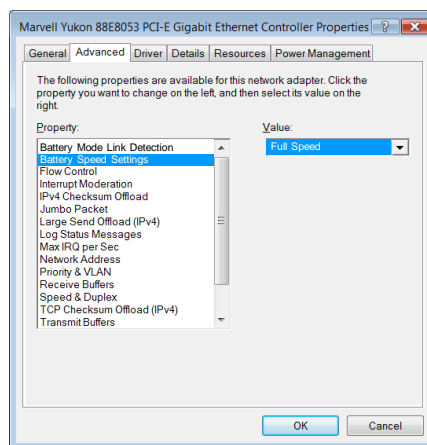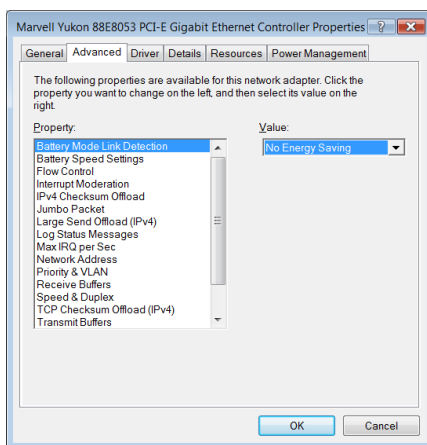
Turn off all non-essential computer functions and adjust screen brightness

Functions such as **WLAN** and **bluetooth** are not essential for image-taking and should therefore be turned off. This can be done most easily in the computer BIOS when starting up the computer (for tablet PCs right mouse click, select "BIOS"). The screen settings for a Motion tablet PC can be set using the Motion dashboard (click button on the right of the screen).

2.2 Step 2: Get the computer ready (continued)

2.2.2 With all other computers (continued)

Start the Seitz D3 software by double-clicking the shortcut on the desktop:

The software opens directly in the **"Shoot"** menu:

Shoot menu   **Parameter menu**

The **"Shoot"** menu is used for operating the camera, image taking, displaying previews, and saving. It also allows quick access to most frequent image capture parameters such as lens (favourite lens list), exposure time, white balancing mode or ISO/ASA. Camera status information such as connection or battery level and image data such as histogram or size is indicated in the information tab.

The **"Parameter"** menu contains camera, software and image workflow advanced parameters. It is structured into different tabs for better accessibility. 9 tabs are available:
• Colour: raw conversion parameters
• Save: the output file options
• Lens: manufacturer lens list and special lenses
• Camera parameters: camera adjustment parameters
• External device: allows to connect and control external devices (GPS, Compass)
• Scheduler: programming of camera tasks
• HDR: mixing of DNG files into 32bit ".exr" files
• Custom: interface options
• Info: camera software and firmware information and a service menu

To open or close the **"Parameter"** menu press:

2.2 Step 2: Get the computer ready (continued)

Press the „power on" button on the camera to start the camera connection process. The network connection icon shows the ongoing process. A network pop-up confirms that the connection is established.

The green LED (previously continuous green) now starts to blink. The connection is confirmed in the D3 software by the **„Camera ready"** message which appears in the lower right hand corner of the software. At the same time a small pop-up window showing camera information as IP address will appear in the lower right hand corner of the software:
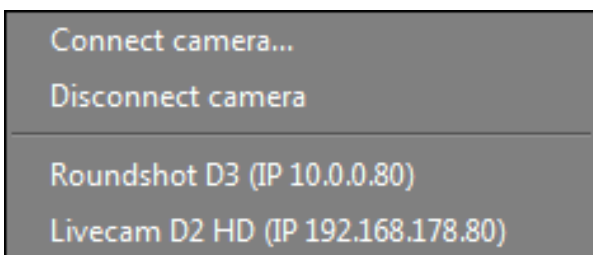
Connected Camera:
MAC MAC 00:50:c2:5e:31:ab
IP 10.0.0.80
Version V3.22b-V1.8
Temperature 32°

If the camera connection cannot be established automatically the **"Camera not connected"** message appears in the lower left hand corner of the software:

Camera not connected

In the **"shoot"** menu click right on the camera connection icon:

Connect camera...
Disconnect camera

Roundshot D3 (IP 10.0.0.80)
Livecam D2 HD (IP 192.168.178.80)

The software searches in the network for **available cameras** and displays them in a list (with their IP addresses).

Click on the camera name to start the connection.

If the camera cannot be connected it is possible to **establish the connection** by clicking on

Establish the camera connection by confirming with **"OK"**.

2.2 Step 2: Get the computer ready (continued)

If the camera cannot be detected, open the **network properties** and check the settings. It is important that the network uses an IP in the **same range** (but not identical) as the IP of the camera (digital scan back) and that both are located in the **same subnet**:
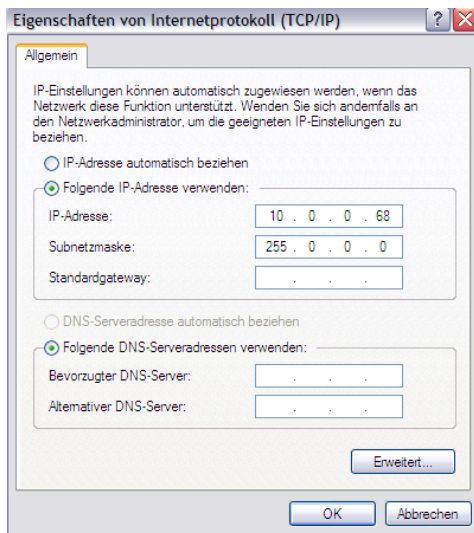
Open network connections of your computer.
Open LAN connection.
Choose „internet protocol TCP/IP" and „properties".
Choose „fixed IP" and enter the following IP address: 10.0.0.68
Subnet mask: 255.0.0.0

If you would still like to connect to internet while working with the camera, then set the same standard gateway network IP as your network (for example **192.168.178.xx**), the same subnet (for example 255.255.255.0) and the same DNS server (for example **192.168.178.1**). Ask your system operator for assistance.

It is also possible to change the camera IP to bring it into a desired range (for example: 192.168.178.xx). It is important that the computer TCP/IP properties has the same IP range than the camera (for example: 192.168.178.10). Open the external device tab (see section 3.2.5 for more details), select the camera and change its IP address :
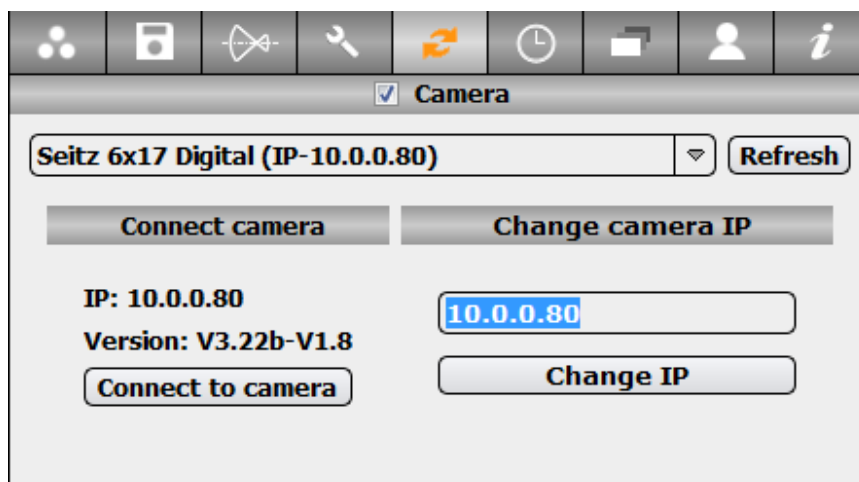
2.2 Step 2: Get the computer ready (continued)

The Seitz 6x17 Digital is now ready for image taking.

2.3 Step 3: Select shoot settings

The next step consists in defining the parameters for image taking. Here is an example of possible settings for a first image:

Select the desired shoot parameters: lens, exposure time, focusing distance, angle, TDI stages and ISO/ASA.

If the desired lens is not in the list press the parameter button and select the values in the **"Parameter/lens"** menu. For more detailed information on image parameters and software functions please consult section 3.2 "Parameter menu".

Press ▶ to start a scan.

2.4 Step 4: Adjust your settings

Lens	Seitz 90mm Schneid⏷	Format	6x17 ⏷	WB	Automatic ⏷
Exposure	1/31 ⏷	TDI	1x ⏷	Exp. Corr.	◀ 0.00 x ▷
Dist.	Infinity ⏷	ISO/ASA	100 ⏷	Timer	0

Adjust the settings. For example, change the image angle, the exposure speed or the sensitivity of image capture (TDI Stages, ISO/ASA).

Fine control the exposure time using the exposure correction slider. It is also possible to change the white balancing mode from automatic to presets or manual modes .

Create another scan.

Focus with the focusing assistant, don't forget to adjust the distance setting In the software (Optional for the 6x17 camera).

Zoom to check the sharpness.

Repeat these steps until the image is perfect.

2.5 Step 5: Save the image

Save the image and transfer the image on your computer for post-processing.

Once the image has been saved the icon turns green.

3. Seitz Roundshot D3 Software

3.1 Shoot menu

The **„Shoot "** menu allows to operate the camera (start and stop, focus, rescan), zoom into the preview, apply white balancing to the image and save the panorama.

Press the **„Start"** button to start the image taking process:

The preview shows the image as it is built up by the scan. The ongoing scan is indicated by the message **„Image taking in progress"** on the lower right hand side of the computer screen:
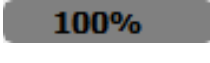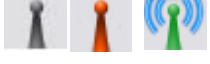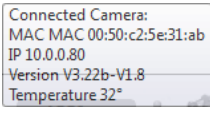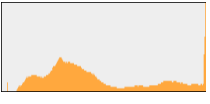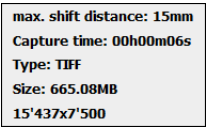
Once the scan is fully transferred to the computer RAM, the **„Camera ready"** message and the **image histogram** appear:

The **„Shoot"** menu is controlled using the following buttons and graphical elements:

Start		Progress bar
Stop	**100%**	
Resume after pause		GPS status symbol
Focusing Assistant		Camera connection tool
Zoom	Connected Camera: MAC MAC 00:50:c2:5e:31:ab IP 10.0.0.80 Version V3.22b-V1.8 Temperature 32°	Camera connection displayed on „mouse over"
Fit on screen		Battery status
White balancing pipette		Image histogram
Save button (not yet saved)	max. shift distance: 15mm Capture time: 00h00m06s Type: TIFF Size: 665.08MB 15'437x7'500	Scan info (max shift distance, capture time, file format, file size, image pixel size)
Save button (already saved)		
Profile Load/save		
Parameter menu open/close		

Once the scan and preview are complete, additional post-processing steps can be performed on the image such as:

- White balance (automatic, choose in picture or presets)
- Histogram stretching (if active in parameter menu)
- Black adjust (for longer exposures when a black value interpolation is required)

The ongoing rendering process is shown on the lower right corner of the window.

These post-processing steps can be launched automatically right after the scan (for example: Automatic white balance) or some post-processing parameters can be changed and then be applied to an existing scan (for example: „Choose in picture" white balance, new contrast values).

These **post-processing options** are explained in more detail below.

> For image-taking we recommend to focus on framing the image (angle), exposure and on sharpness and saving the image as a raw file (dng). All other adjustments such as white balance, histogram stretching, HSL etc. can be done conveniently on a calibrated screen at home / in the studio. Please refer to chapter 5 for detailed explanations on the ideal workflow (post production).

3.1.1 Shoot settings

The „**Shoot Settings" list** allows to select and modify those parameters which are most often used during image taking:

Lens	Seitz 90mm Schneid⏷	Format	6x17 ⏷	WB	Automatic ⏷
Exposure	1/31 ⏷	TDI	1x ⏷	Exp. Corr.	◀ 0.00 x ▷
Dist.	Infinity ⏷	ISO/ASA	100 ⏷	Timer	[slider] 0

Lens: select the correct lens from the lens list. This list contains the "favourite lenses". If a lens is not available, open the lens tab in the parameter menu to access a full lens list. You can also create your own lens if necessary (refer to section 3.2.3).

Format: defines the image angle. It is possible to take pictures 1x1 to 6x17.

White balance: select the white balancing mode. The "Automatic" white balancing will apply different adjustments for every light situation. It is also possible to select a predefined light condition as "Tungsten" or "Day light". Finally there is the option to choose a grey point on the image using the white balance pipette tool.

Distance: select the same focusing distance as defined on the lens. The exact distance setting is required by the software to adjust the effective focal length. Setting the distance correctly enhances sharpness.

> „Automatic white balance" sets the white point according to predefined assumptions. This settings works well for most situations. In situations with special light conditions select „choose in picture" or one of the light presets (tungsten, fluorescent, direct sun, cloudy).

3.1.1 Shoot settings (continued)

Lens	Seitz 90mm Schneid	▽	Format	6x17	▽	WB	Automatic	▽
Exposure	1/31	▽	TDI	1x	▽	Exp. Corr.	◀ 0.00 x	▷
Dist.	Infinity	▽	ISO/ASA	100	▽	Timer	▬▬	0

Exposure: select the image exposure mode. Several automatic modes are available in addition to fixed exposure speeds:

- **Automatic (spot):** the sensor reads the light at the current position (or at a defined measure angle). This "spot" reading is used for the entire scan.

- **Automatic (prescan):** the camera first completes a prescan to measure the actual light conditions for the chosen image angle and applies the resulting average exposure for the final (second) scan

- **Automatic (variation):** the camera adjust the rotation speed for every scan line. With the parameter 1 to 100 the degree of speed adjustment can be set (1 for weak, 100 for maximum adjustment)

- **Automatic (variation with prescan):** the camera will create a prescan for light measuring and then a second scan for exposure. During the second scan the camera adjusts the rotation speed for every scan line. With the parameter 1 to 100 the degree of speed adjustment can be set (1 for weak, 100 for maximum adjustment)

> 💡 When working with automatic exposure we recommend using the prescan option as this allows the most accurate exposure control.

> 💡 To freeze motion, use a fast exposure speed. This is achieved by using a smaller area of the sensor, for example TDI 5x or 10x (minimum exposure speed 1/400 and 1/200 sec). The fastest exposure speed is reached with TDI 1x (1/2'000 sec).
>
> Depending on the available light, setting a higher ISO/ASA value or opening of the aperture may be required (for example, from f=16 to f=8).

3.1.1 Shoot settings (continued)

TDI: select the TDI level. A higher TDI means that a larger surface of the sensor is used for the scan. More pixels will be exposed simultaneously with higher TDI, making the entire scan process faster. Using higher TDI can be an advantage when working under low-light conditions (indoor).

ISO/ASA: select the ISO/ASA level to be used. Increasing the ISO level will increase the sensor sensitivity but also noise level. It is recommended to use the lowest ISO level possible for better image quality

Exp. Corr.: the exposure correction is used to fine tune the exposure speed. It is possible to select sub-f-stop adjustment for perfect image exposition

Timer: defines the delay time before starting the scan

The exposure speed is dependent on the selected sensitivity (TDI Stages). When changing TDI Stages the exposure speeds will be changed accordingly. For more information on exposure speeds please refer to section 4 „How to".

To capture static or almost static scenes where a fast exposure speed is not important, close the aperture (for example, from f=8 to f=16). This will increase sharpness and depth of field.
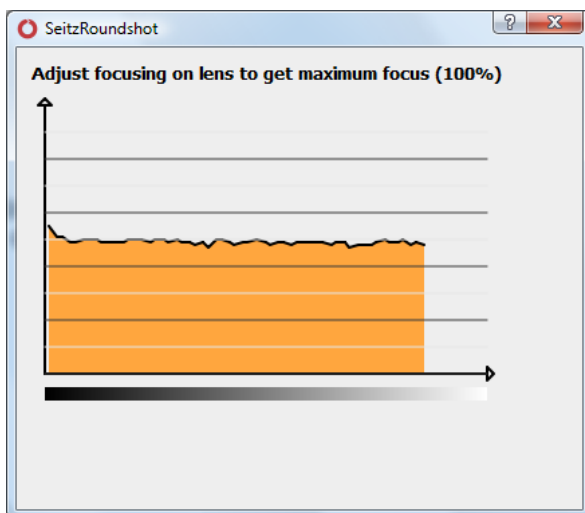
3.1.2 Focusing Assistant

Press the button **„Focusing Assistant"** and the focusing cross appears:

Place the focusing cross on the spot where the camera should focus.

The „Focus" window shows the contrast metering (orange surface) for the selected focusing spot.

Adjust the focusing on the lens until the contrast metering shows the highest possible value.

Close the „Focusing Assistant" window to stop the focussing assistant tool.

The Focusing Assistant is an additional help for the photographer to obtain the best sharpness. Set the approximate distance on the lens first and then use the Focusing Assistant to fine-tune sharpness. Choose a bright point in the preview image with structure and good contrast. Avoid uniform surfaces (such as a white wall, etc.).

3.1.3 Zoom

Press the button **„Zoom"** and the zoom rectangle appears:
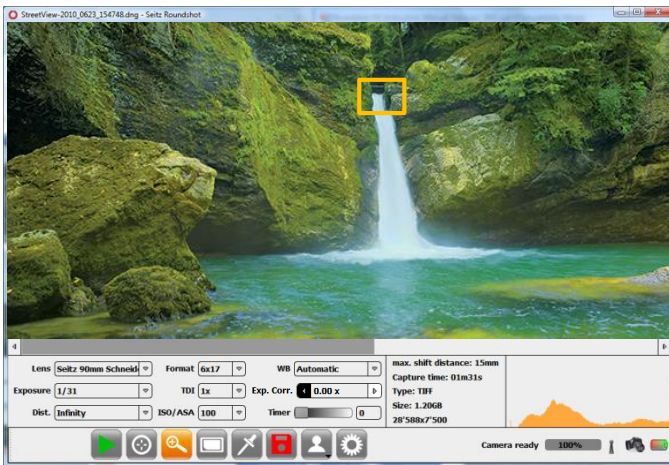
Place the rectangle on the area to magnify.
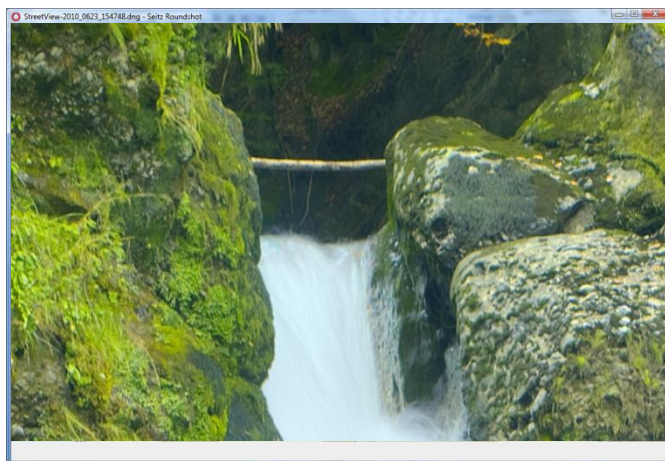
The zoom window opens showing a 100% magnification* of the selected area.

Other zoom levels can be selected in „Parameter menu / custom tab". 100% is the default zoom factor

Press anywhere on the image to close the „Zoom" window.

3.1.4 Fit on screen

Press the button **„fit on screen"** to display the panorama in its full width:

Press again the button **„fit on screen"** to go back to original view

3.1.5 White balancing pipette

Press the button **„White balancing pipette"** and the pipette cursor appears on the image:
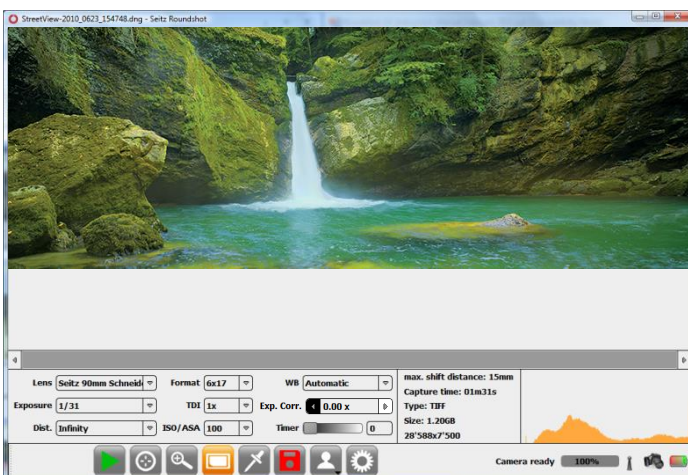

Click on a neutral grey area of the image.

Standard grey cards can be included in the image to select a perfect white balance.

Please note that using the white balancing pipette will change the white balancing mode. Do not use this tool when selecting the automatic or preset modes.
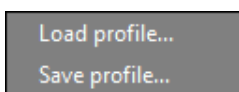
Press again the button **„White balancing pipette"** to close the choose in picture white balancing mode

3.1.6 Profile load/save

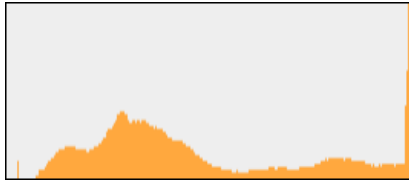Press the button **„Profile"** and the following menu appears:

Select **"Save profile"** to store a profile containing all current shoot and image processing parameters.

Select **"Load profile"** to load previously saved profiles.
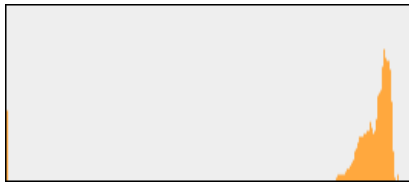
3.1.7 Histogram

The **„Histogram"** is displayed with the image and shows the distribution of light from the very dark to the very light parts (in DNs) of the image.

The „Histogram" is an important tool to determine the quality of the exposure. When the image is **perfectly exposed**, the histogram shows an evenly distributed light frequency with no cropping of light at the borders like pictured above.

When the image is **underexposed**, the histogram values are situated on the left of the graph, i.e. most of the light frequency is distributed in low DN levels. Create a longer exposure or open the aperture.

When the image is **overexposed**, the histogram values are situated on the right of the graph, i.e. most of the light frequency is distributed in high DN levels. Create a faster exposure or close the aperture.

When the exposure of the image is **cropped**, the histogram becomes very flat. This happens when some extreme values are located below the minimum (0) or above the maximum (255). Adjust the exposure speed or the aperture until the cropping disappears.

The x-axis of the graph shows the light levels (in DNs) and the y-axis the frequency of these light levels in the image. It groups the DNs in classes (for example, 0-100 DN, 101-200 DN, 201-300 DN…, 15'901 – 16'000 DN) and then plots the frequency of these classes (how many times these light levels are observed in the image) on the y-axis to show the statistical distribution.

Underexposing the image is less problematic than overexposing it. An underexposed image (for example by 1 f-stop) can quite easily be brightened or tone-mapped in post-production (with often better dynamic range), whereas darkening an overexposed image does not lead to the same results (information in bright areas is cropped).

3.1.8 Start / Stop

When no image taking, image optimisation or saving process is ongoing, the **„Start"** button is active. Press it to start a new scan.

When an image taking, image optimisation or saving process is ongoing, the **„Stop"** button is active. Press it to stop the ongoing process.

When the option „pause after prescan" is active, the camera stops after making a prescan and the button **„resume after pause"** is active. Press it to start the image scan with the exposure time computed by the prescan.

3.1.10 Save

When the software has an existing RAW image in memory and no image taking, image optimisation or saving process is ongoing, the red **„Save"** button is active. Press it to save the image. The selected optimisation and saving settings are applied.

Once the image is saved, the icon turns green.

The time for image saving depends first of all on the speed of the hard disk and secondly on the chosen image parameters.

To reduce the saving time:
• Select the required image format and resolution before taking the image (for example 3x3 instead of 1x1)
• Save the image as a .dng file; do the post-processing on the image later*
• Use „sharpening", „noise removal" and "colour noise removal" only to a moderate extent; especially „noise removal" increases the required saving time significantly

3.2 Parameter menu

Press [icon] to navigate to the **"Parameter"** menu.

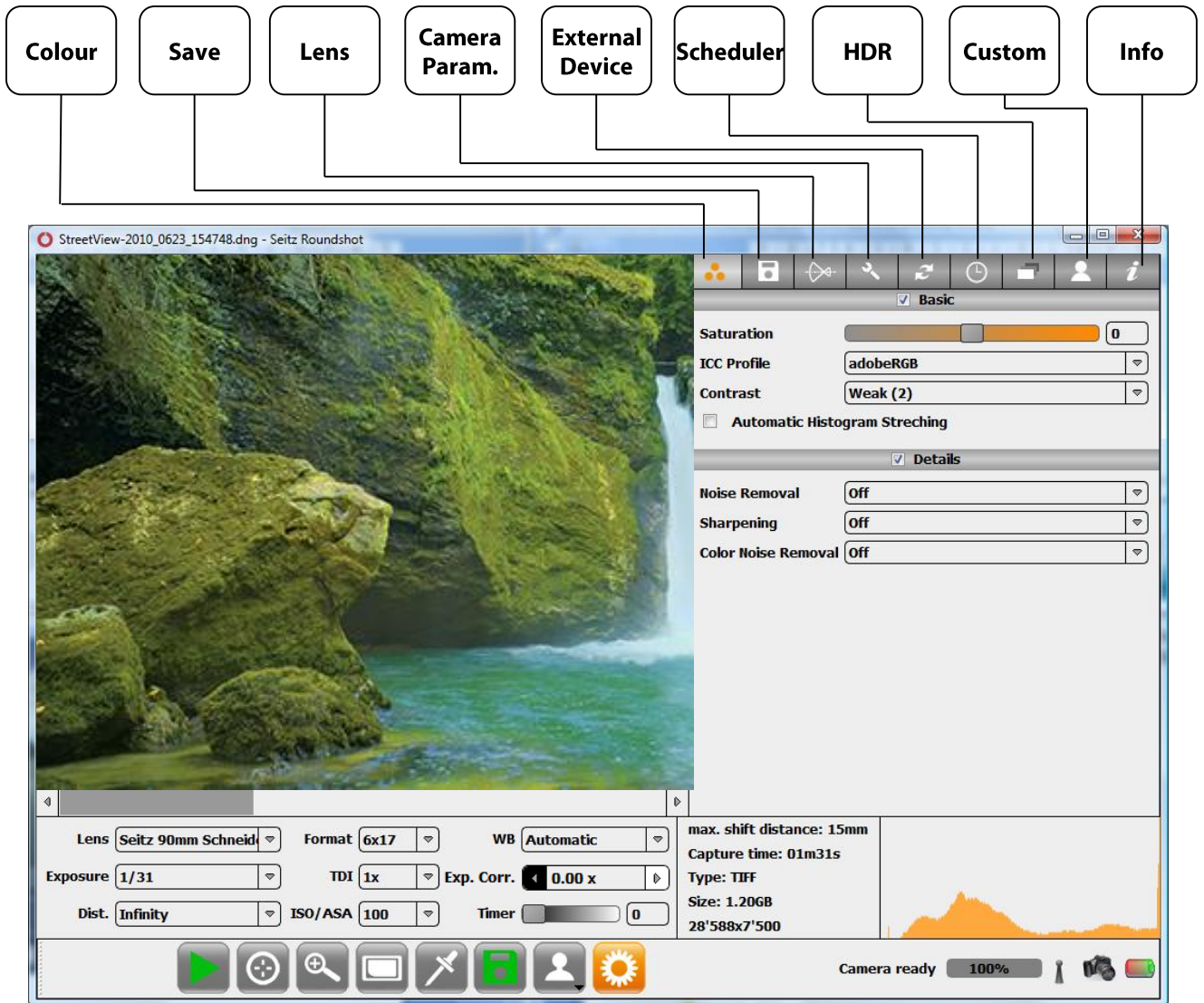The **„Parameter"** menu allows to set all parameters for image taking, processing and storage. It is structured in nine tabs as described below:

| Colour | Save | Lens | Camera Param. | External Device | Scheduler | HDR | Custom | Info |

StreetView-2010_0623_154748.dng - Seitz Roundshot

☑ Basic

Saturation   0
ICC Profile   adobeRGB
Contrast   Weak (2)
☐ Automatic Histogram Streching

☑ Details

Noise Removal   Off
Sharpening   Off
Color Noise Removal   Off

Lens   Seitz 90mm Schneid   Format   6x17   WB   Automatic
Exposure   1/31   TDI   1x   Exp. Corr.   ◄ 0.00 x ►
Dist.   Infinity   ISO/ASA   100   Timer   0

max. shift distance: 15mm
Capture time: 01m31s
Type: TIFF
Size: 1.20GB
28'588x7'500

Camera ready   100%

Press [icon] again to close the **"Parameter"** menu.

3.2.1 Colour

Press the „Colour" button in the „Parameter" menu to activate the **„Colour"** tab:

All settings in this tab are applied on the raw image when it is converted into RGB only (for image preview and when saving the image as .tiff or .jpg). When saving a panorama as a raw image, only the white balancing values are saved with the .dng file, all other "Colour" and "Optimisation" options are not saved.
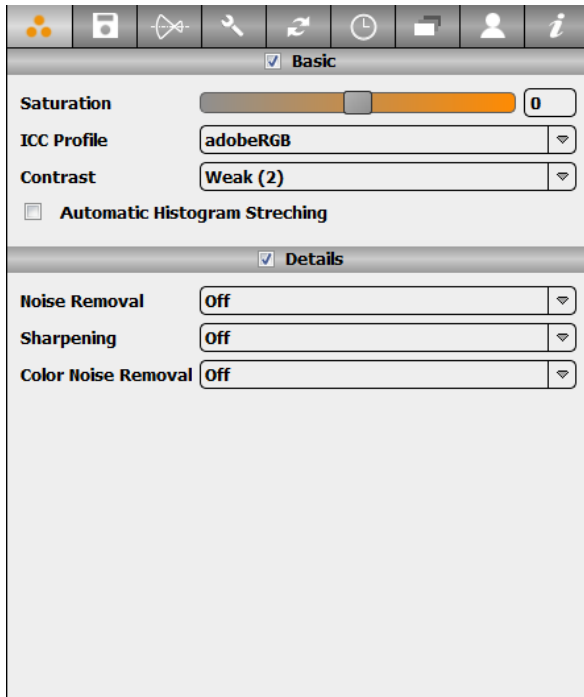
The tab contains the following options:

Saturation: define the saturation level of the image. "0" means no image modification

ICC profile: defines the output colour space of the saved image. sRGB, adobeRGB...

Contrast: tone-mapping, stretching of middle tones and compression of high tones

Automatic histogram stretching: adjusts the lightness (in DN) from zero to the minimum and from 2^{16} to the maximum values observed in the image. The tool is limited to 1f-stop

Noise removal: applies a noise reduction filter to the image

Sharpening: applies an unsharp mask filter to the image to create better transitions from dark to bright pixels

Colour noise removal: applies a noise reduction filter on the high frequency parts of the image reducing the colour noise

AdobeRGB is the larger colour space, so the colours will saturate more quickly in sRGB. For output requiring fine detail (such as fine-art printing) it is therefore recommendable to work in AdobeRGB.

Use only a moderate amount of sharpening or noise removal. A moderate use of sharpening and noise removal can increase the overall image quality. Please note that once the image is saved as a tiff or jpg, these modifications are permanent and cannot be reversed for the saved image. We recommend to save the image as a dng (raw) file whenever possible and to apply the optimisation only in post-production.

3.2.2 Save

Press the „Save" button in the „Parameter" menu to activate the **„Save"** tab:

This tab contains the following options:

Format: sets the output file format. DNG, JPEG or TIFF

Bit depth: defines the colour bit depth for TIFF files

Compression: sets the level and type of compression of the output file

Resolution: defines the final resolution of the image. DNG format is only compatible with 1x1 and 3x3 resolutions

Fast binning mode: allows faster image data transfer from camera to PC. However, this options might decrease image quality

Folder: define the location of the save files. The standard location is: C:\Program Files\Seitz\Digital3\PDS\images

Saving mode: choose between "automatic", "save as" and "confirm" saving modes. If automatic or confirm modes are selected it is necessary to select the file naming option

• **Time stamp:** write the timestamp in the image name (yyyy-MM-ddThh-mm-ss)
• **Number:** write a number in the image name (1, 2, 3, ...). It is possible to reset the image numbering to restart from 1
• **Prefix:** add a defined prefix before the timestamp or the number

When changing resolution parameters the previous scan will be lost and the preview will disappear. A new scan of the scene is then necessary. This is required because the data transfer is optimised for a specific resolution.

Saving the image as a **DNG file** has the advantage of significantly smaller file sizes (33% of TIFF). Also, making the demosaicing (colour conversion into RGB) and optimisations as a second step is beneficial as the original image data is left unchanged and can always be accessed later.

3.2.3 Lens

Press the „Colour" button in the „Parameter" menu to activate the **„Colour"** tab:

The lens tab contains the database of all lenses that can be used with the camera. It is possible to add or remove a lens from the favourite lens list or edit properties. It is also possible to create a new lens as described below:

The tab is divided into three sections:
Brand, Lens, Parameters

Brand: contains a list of all lens brands stored in the data base

• **New:** click on **"New"** to create a new brand
• **Delete:** click on **"Delete"** to delete existing brands. Please note that factory lens brands are not removable.
• **Select:** click on any brand to display all the corresponding lenses in the next field

Lens: contains all lenses of the selected brand

• Click on **"New"** to create a new lens
• Click on **"Delete"** to delete existing lenses.
  Please note that factory lenses are not removable.
• **Favourite:** activate or deactivate the checkbox on the left side of any lens to add or remove the lens from the favourite lens list
• **Select:** click on any lens to display all its attributes in the next field (name, focal length...). The attributes of factory calibrated lenses cannot be edited.

Parameters: contains all the selected lens attributes (name, focal length...). It is possible to edit these attributes. Please refer to next page for detailed explanation of every attribute.

3.2.4 Camera parameters

Press the „Camera parameter" button in the „Parameter" menu to activate the **„Camera parameter "** tab:

All settings in this menu controls the camera operation mode. Any change will be applied starting from the next scan.

The tab contains the following options:

Pause after prescan: after making a prescan, the camera stops at starting position. When the button resume after pause is pressed the image scan is done directly using the previous exposure measurement

Variation with manual exposure: after taking an image using a fixed exposure time, it is possible to edit an exposure correction curve overlayed on the image. The image exposure time will vary within a single image according to the defined curve
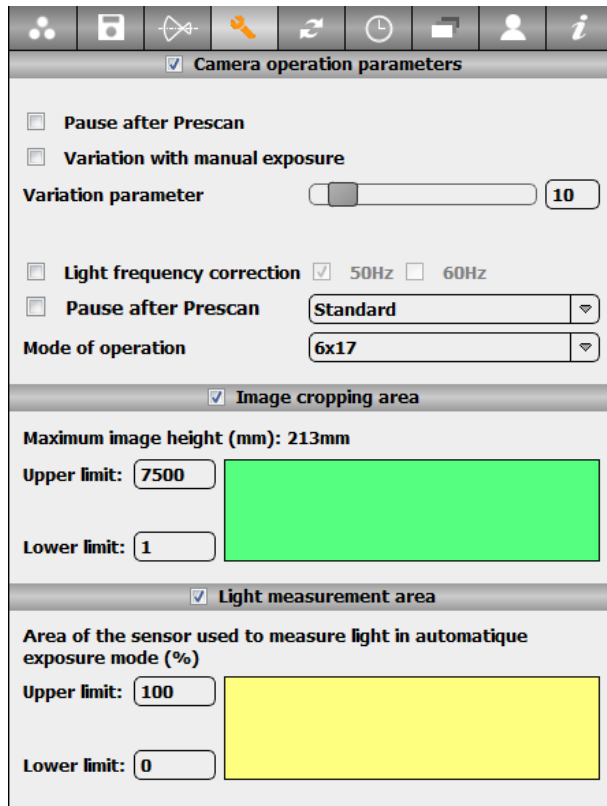
Variation parameter: defines how fast the exposure correction can be done. A small value gives a smooth adjustment, a strong value gives a sharp adjustment.

Light frequency correction: Compensates for indoor light frequencies (50Hz for Europe/ 60Hz for US). With fluorescent lighting and without correction the image will contain darker and lighter vertical stripes at fast scanning speeds

Environmental settings: Choose between standard and cold condition. The cold condition gives more power to the motor avoiding it to block in a low-temperature environment, but it consumes more battery

Mode of operation: it is possible to use the digital back in other modes of operation like linear scanner.

3.2.4 Camera parameters (continued)

Image cropping area: The image can be cropped vertically by indicating an **upper or lower limit** (in pixels). For full resolution: 1 to 7'500. The green area in the rectangle shows the scan area

Light measurement area: defines the vertical area of the sensor used for light measurement in automatic exposure modes

> When the final output format and media (print vs. web) are not yet final, use the full image format (vertical / horizontal). On the other hand, if the final output format and media are already final, it may be beneficial to reduce the format, thus minimising the amount of data and reducing the processing and saving time of the image.

> The Roundshot D3 2500 (with Seitz D3 2500 digital scan back) uses the same digital sensor like the full D3 version. It is always possible to upgrade the smaller model to the full D3 version.

3.2.5 External device

Press the „External device" button in the „Parameter" menu to activate the **„External device"** tab:

This menu controls the connection of the software to any external device including the camera. The external devices that can be connected to the camera are GPS and compass.
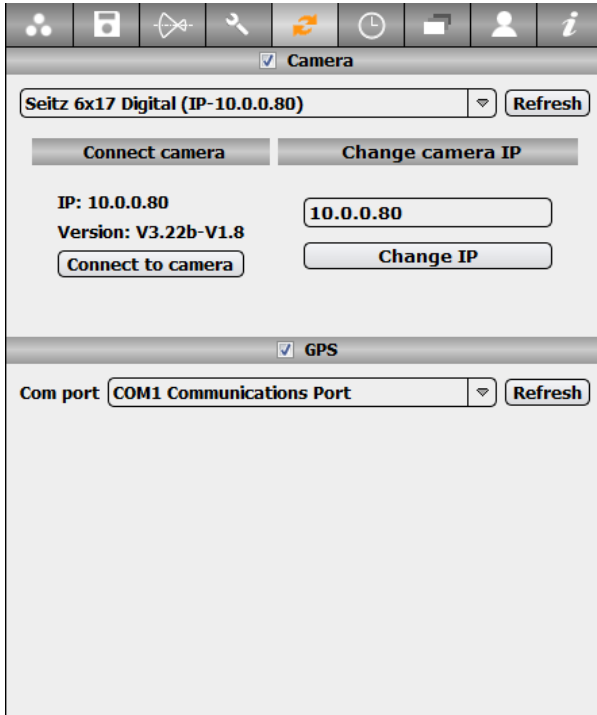
The tab contains the following options:

Camera: open the drop-down list to see all the cameras present in the network:

- **Refresh:** click on **"Refresh"** to refresh the camera list when connecting a new camera
- **Connect to camera:** after selecting the camera click on **"Connect to camera".** The message "camera ready" should appear in the message area (bottom right)
- **Change IP:** change the camera IP address by clicking on **"Change IP".** After refreshing the camera list it the new IP will be displayed in the camera list.

If the camera cannot be detected, open the **network properties** and check the settings. It is important that the network uses a fixed IP in the **same range** (but not identical) as the IP of the camera (digital scan back) and that both are located in the **same subnet**:
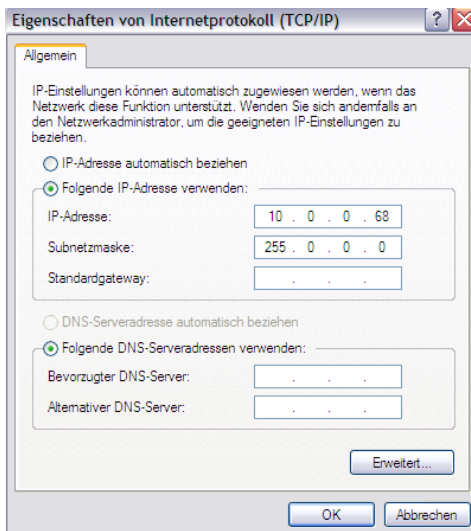
Open network connections of your computer. Open LAN connection. Choose „internet protocol TCP/IP" and „properties". Choose „fixed IP" and enter the following IP address: 10.0.0.68 Subnet mask: 255.0.0.0

If you would like to connect to internet while working with the camera, then set the same standard gateway network IP as your network (i.e.**192.168.178.xx**), the same subnet (for example 255.255.255.0) and the same DNS server (for example **192.168.178.1**). Ask your system operator for assistance. Then change the camera IP adress according to the subnet mask (for example **192.168.178.yy**)

3.2.5 External device (continued)
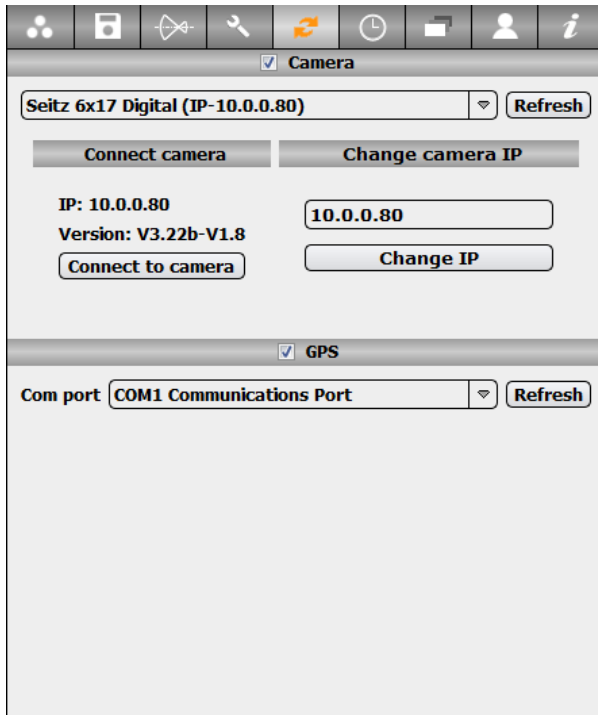
GPS com port: select the communication port used by the external GPS device. When an active GPS is connected the GPS location is written automatically in the images metadata. 3 symbols show the GPS device Status (bottom right of the main window):

No GPS device connected to the selected com port

GPS device detected but no position aquired

GPS device detected and GPS location acquired

When connecting a GPS device after starting the computer click on **"Refresh"** button to see this new device in the GPS list

> If the GPS option is active while no GPS device is connected, the settings will be ignored. The camera will discard the defined parameters.

3.2.6 Scheduler

Press the „Scheduler" button in the „Parameter" menu to activate the **„Scheduler"** tab:

This menu allows to program automatic image-taking with predefined parameters. For example, the "Scheduler" can be used to create a time-lapse over a day.

The tab contains the following options:

Scheduler settings: Select the start type for scheduler to use (manual/automatic).

By pressing "start" the Scheduler can be started.

Please refer to section 4.7 for a more detailed explanation on the scheduler.

Job list: define the image sequence to be done

- **Photo rhythm job:** creates a photo job that will be repeated in a fixed interval
- **Photo continuous job:** creates a photo job that will be continuously repeated until the Scheduler is stopped
- **Service job:** allows to activate external postproduction scripts at defined intervals
- **Delete/move up/move down:** allow to manage the jobs and their sequence. The first job in the list is done first followed by the second in the list.

Job parameters: define the parameters of the selected job in the list including job name, start and end times, intervals between jobs or repetition and delays for photo continuous jobs.

Assign a profile for the job to be applied for every image in **"Parameter file"**. It is also possible to automatically start post-processing scripts after image taking.

Local GPS position: define the GPS position of the camera manually. This will allow to use sunset / sunrise or nautical twilights as start/end time.

If a GPS Device is connected to the computer it is also possible to load the GPS location by clicking on "**Acquire from GPS"**

3.2.7 HDR

Press the „HDR" button in the „Parameter" menu to activate the **„HDR"** tab:

This menu is specific for HDR photography, it allows the automatic capture of bracketed images with defined aperture steps. It is also possible here to merge dng images into 32bit EXR files using the HDR mixer.
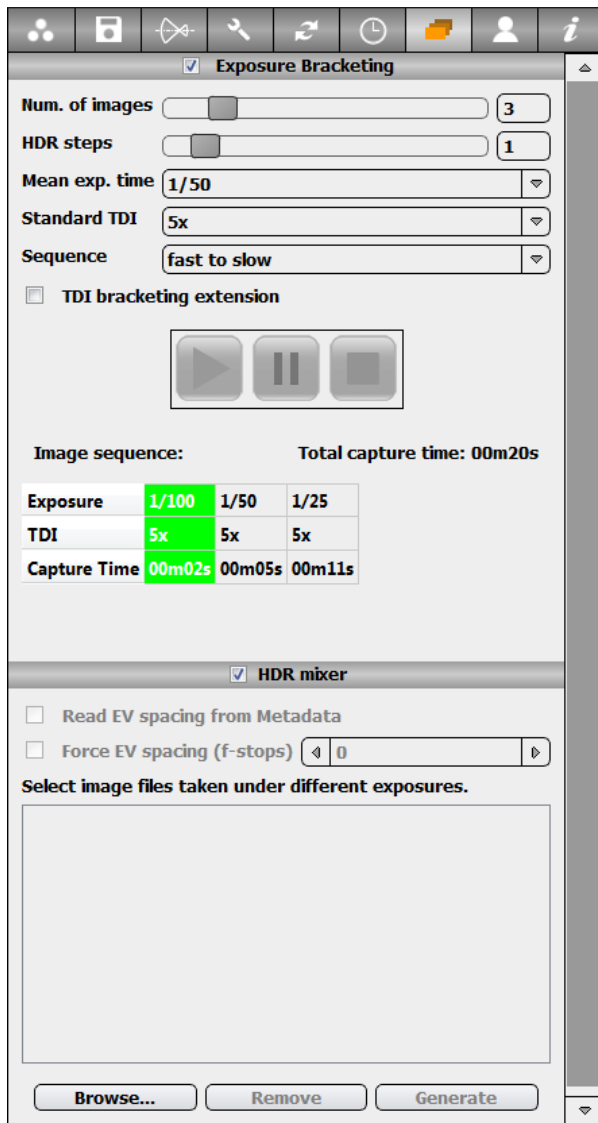
**Exposure bracketing:** defines the bracketing parameters to generate the image sequence:

- **Number of images:** defines the number of images in the sequence.

- **HDR steps:** defines the exposure difference in f-stops between 2 consecutive images.

- **Mean Exp. Time:** defines the exposure time for the median image. It can be manually selected or automatically computed with automatic exposure modes.

- **Standard TDI:** defines the user reference TDI for the sequence. If the range of scanning speeds is sufficient, this TDI will be used for all images.

- **Sequence:** from fast to slow images or from slow to fast.

- **TDI bracketing extension:** when active some images might be taken with different TDIs if the sequence reaches the limits of the scanning speed range.

Based on all parameters an **image sequence** is generated automatically and displayed in a **table**. The capture time of every image and the total capture times are also displayed. Processing and saving times are not included in this calculation.

Then it is possible **to start the image sequence** by clicking on **the play button in this menu.** Please note that the main play button will only initiate a single image with the active parameters.

When a sequence is started it is possible to make a **pause**. This will cancel the image taken currently and by clicking it again it will restart the sequence from this image. To terminate a sequence completely, press **stop.**

3.2.7 HDR (continued)
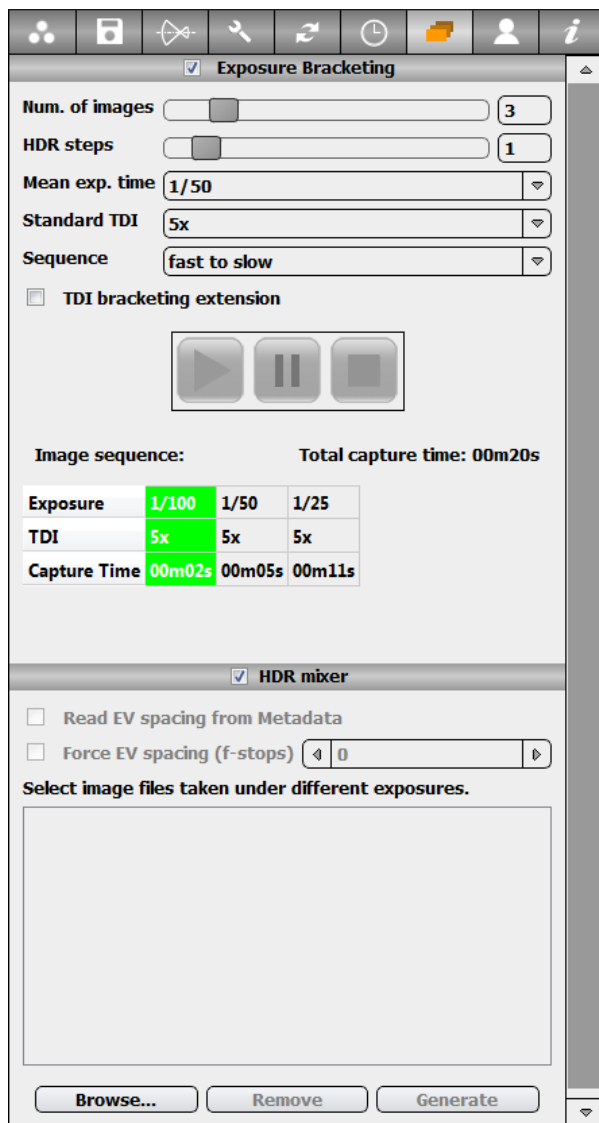
HDR mixer: this function merges differently exposed images of the same scene into a single 32bit EXR file. The input files must be in DNG format.

Press **"Browse"** and select a set of differently exposed images of the same scene.

All the parameters necessary for generating the HDR file are stored in the image metadata (except for aperture - see hint below).

Click **"Generate".** The mixing of images into the 32-bit HDR file takes a few minutes, depending on image size and number of images. The progress of the mixing process is indicated by a percentage progress bar.

The **32bit EXR file** is saved according to the selected image saving path.

When using the exposure bracketing sequence the images are saved automatically, no matter the selected saving mode. The images are saved in the defined folder applying the selected naming options.

Avoid changing the lens aperture from image to image because:
- The camera can move slightly creating a misalignment between images
- The depth of field changes between images
- The aperture information is not written in the metadata and has to be corrected manually. This can be done by readjusting the exposure time in a metadata editor like PhotoMe.

3.2.8 Custom

Press the „Custom" button in the „Parameter" menu to activate the **„Custom"** tab:

This menu allows to select the interface preferences, to acquire photographer data, and to edit the distance and format lists.
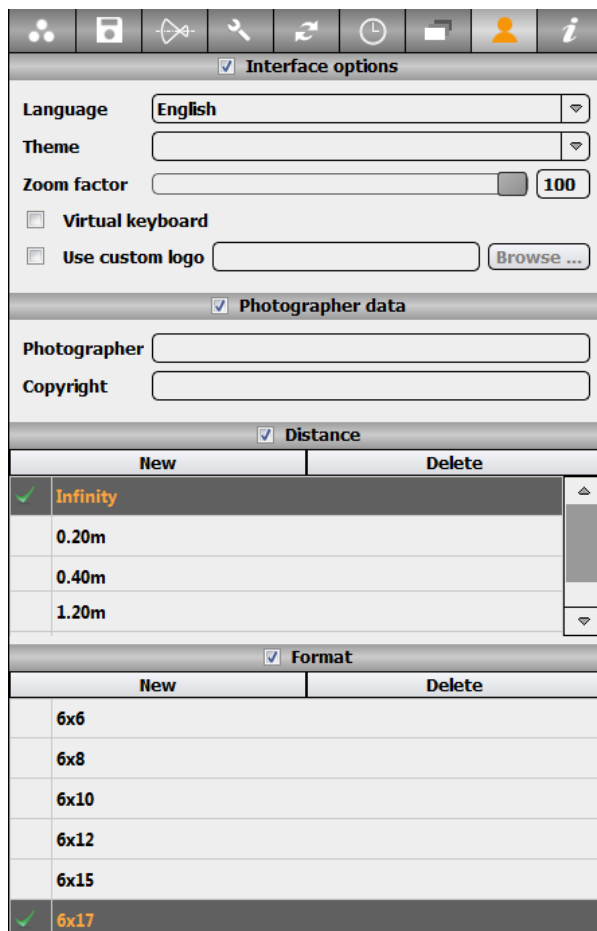
The tab contains the following options:

Language: select the interface language. The available languages are:

- English   - Español
- Deutsch   - Simplified Chinese
- Français   - Standard Japanese
- Italiano

Theme: select the interface skin by changing the theme. This function will be active in a next software release

Zoom factor: define the image zoom factor when using the zoom tool. By default the zoom factor is 100%

Virtual keyboard: activate this option to access the software internal keyboard. This keyboard will appear each time an editable field will be selected

Use custom logo: customize the background of the shoot menu with a custom logo. Browse the corresponding jpeg or png file and restart the software

Photographer: enter the photographer's name or signature. This information will be stored in all image metadata and is not editable

Copyright: enter the photographers copyright to identify all the images

Distance: contains focusing distance list that is accessible from the shoot menu. Click on **"New"** or **"Delete"** to add or remove elements to this list. By double clicking on any item it is also possible to edit its value

Format: contains image angles list that is accessible from the shoot menu. Click on **"New"** or **"Delete"** to add or remove elements to this list. By double clicking on any item it is also possible to edit its value from 1° to 999°
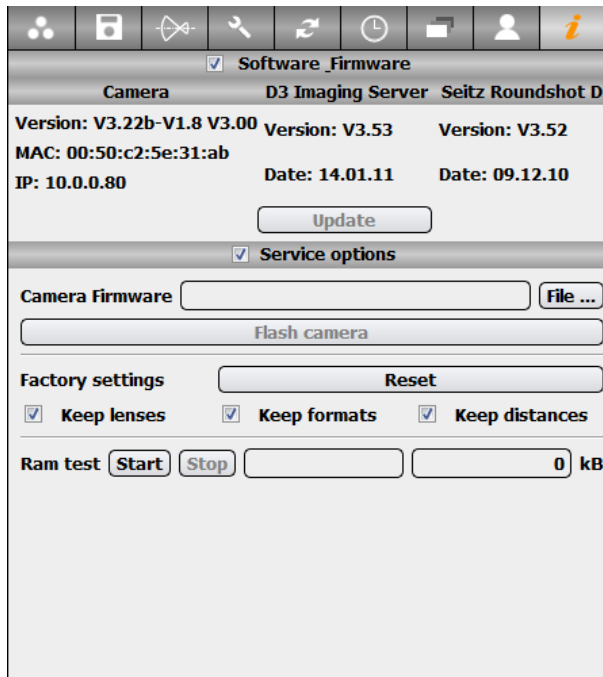
3.2.9 Info

Press the „Info" button in the „Parameter" menu to activate the **„Info"** tab:

This menu allows to see the versions of capture software and camera firmware. By opening the service menu field it is also possible to change advanced settings as defined below.

The tab contains the following options:

Software & firmware field: the currently installed software and firmware versions are indicated in the list:

- Camera (flash file software within the Seitz D3 digital scan back)
- D3 Imaging Server
- Seitz Roundshot D3 (this software)

Service menu: activate the service menu and enter the following password **31415**. This menu contains sensitive tools that should only be used with precaution. Please follow the indications in the software and in this instruction manual carefully.

Camera firmware: this function allows to update the firmware installed in the camera. After installing a new software, connect to the camera and make sure the battery is fully charged. Then browse the new flash file "xxx.d3flash" and click on flash camera. Bay default the camera flash files are located in :
C:\Program Files\Seitz\Digital3\PDS\flash\flashfiles

Factory settings: by selecting "Reset" to factory settings all parameters of the software will be restored to default values. It is possible to do so by keeping lenses, formats and distances.

RAM test: please do not use this tool unless asked to do so by the Seitz team. This tool checks if the RAM of the digital back works correctly.

> The camera firmware is always included in the software installer. If the capture software and camera firmware are incompatible, the installer will automatically ask for a firmware update .

> Please note that a password is required to open the service menu. The password is : **31415** (the first 5 digits of ∏)

4. Tips & resources

Contrary to traditional digital cameras, the Seitz 6x17 Digital does not acquire the image by a „oneshot" exposure. The image is created by a fast TDI scan. The techniques involved for this technology are different from traditional digital photography. Setting the image parameters correctly will have a visible impact on image quality.

This is why we have summarised the most important tips & resources in this section. When applied closely these tips will allow enhanced image quality (better sharpness, better exposure, limited noise and limited artefacts). Further techniques (for example shift) allow to exploit the full potential of this high resolution camera.

4.1 … obtain the best sharpness

There are several factors at work that influence the sharpness of the image:

Parameters enhancing sharpness

Lens settings (focus, aperture)
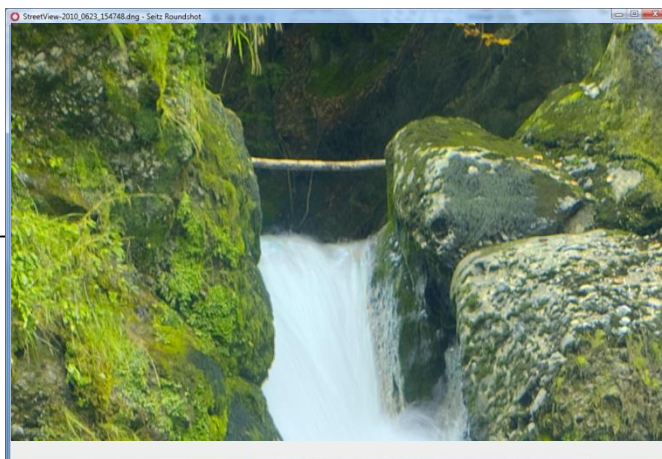
Exposure: TDI Stages

4.1 … obtain the best sharpness (continued)

Lens settings (focus, aperture)

Focus on the lens manually and with the Focusing Assistant
Set the approximate distance on the lens first and then use the Focusing Assistant to fine-tune sharpness. Repeat this process once all other sharpness enhancements (lens data, rotation point, distance setting, exposure: TDI Stages) are complete.

Set the aperture
Similar to other digital cameras the optimum sharpness is achieved at an intermediary f-stop (such as f=16/22).

Exposure: TDI Stages

**Select less TDI Stages for wide-angle lenses**
When using wide-angle lenses the angles at the edge become extreme, so there is a loss in sharpness in these areas of the image. Reducing TDI Stages allows a better alignment and increased edge sharpness for these lenses.

4.2 … control the exposure

The exposure is influenced by four factors:
• TDI Stages
• ISO/ASA
• Exposure speed
• Aperture

4.2.1 Using TDI Stages to control the exposure

Simultaneous exposure of the sensor's surface with simultaneous read-out (TDI)

TDI Stages
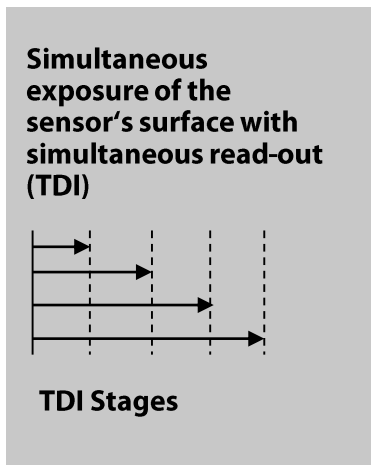
Instead of exposing just one vertical line, the Seitz D3 Digital Scan Back exposes various vertical lines at the same time which are read out continuously with TDI technology. In other words, a surface – rather than just a line – is exposed. This is how the fast capture speed is possible.

The readout speed of the sensor is synchronised with the scanning speed of the camera head to allow perfect positioning and sharpness of the image.

The larger the scan area (the more TDI stages), the more sensitive is the scan and the faster is the image capture.

One important benefit of creating additional sensitivity by using TDI stages is that there is no additional noise.

The available TDI Stages are:
1x, 2.5x, 5x, 10x, 20x

4.2.2 Using ISO/ASA to control the exposure

Just as for traditional digital cameras the Seitz D3 Digital Scan Back can also create additional sensitivity by using gain. Increasing the gain factor amplifies the signal. This type of sensitivity is expressed in ISO/ASA values. Increasing gain, however, leads to additional noise.
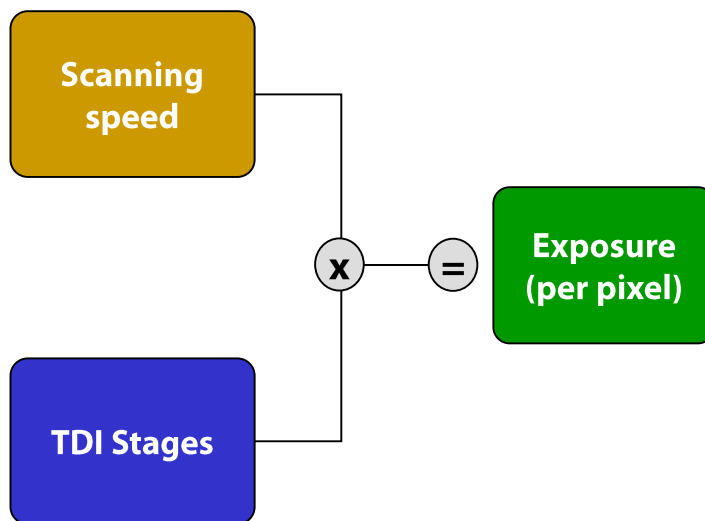
The available ISO/ASA values are 100, 200, 300, 400, 600 and 800.

4.2 … control the exposure (continued)

4.2.3 Using the exposure speed to control the exposure

Contrary to „one-shot" photography, where the exposure is defined by the time between opening and closing of the shutter, the Seitz D3 Digital Scan Back creates the exposure by scanning*. The read-out of data (pixels) is continuous. Hence, the exposure is defined by the time the area of the sensor is exposed for one point in space.

For example, when using 10 vertical lines (10 TDI stages) for the scan, one pixel is exposed 10 x at a 10 x faster exposure speed (underexposed). The sum of the 10 exposures then gives the final pixel exposure. This is how a 10 x faster image capture can be achieved compared to scanning with just one line.

```
┌──────────────┐
│   Scanning   │
│    speed     │──────┐
└──────────────┘      │     ┌──────────────┐
                 (x)─(=)    │   Exposure    │
┌──────────────┐      │     │  (per pixel)  │
│              │      │     └──────────────┘
│  TDI Stages  │──────┘
└──────────────┘
```

The more sensitivity is used (by using TDI stages), the longer is the equivalent exposure. In other words, when increasing TDI stages for equal lighting conditions, the photographer needs to close the aperture accordingly, otherwise the image will be overexposed.

4.2 … control the exposure (continued)

4.2.3 Using the exposure speed to control the exposure

The minimum exposure speed is dependent on TDI Stages:

TDI Stages	Minimum exposure speed (seconds)	
1x	0.0005	1 / 2'000
2.5x	0.0013	1 / 800
5x	0.0025	1 / 400
10x	0.0050	1 / 200
20x	0.0100	1 / 100

In certain situations full sensitivity – so full TDI Stages – are required and the minimum exposure speed is less relevant. In other situations, for example in action photography (sports or moving landscapes), it is important to work with a faster exposure speed. This is achieved by reducing TDI Stages.

4.2.4 Using the aperture to control the exposure

As for any camera the exposure of the Seitz 6x17camera can be controlled by opening or closing the aperture. This is done manually on the lens. For best results in sharpness and depth of field we recommend an intermediate f-stop such as f=16 or f=22.
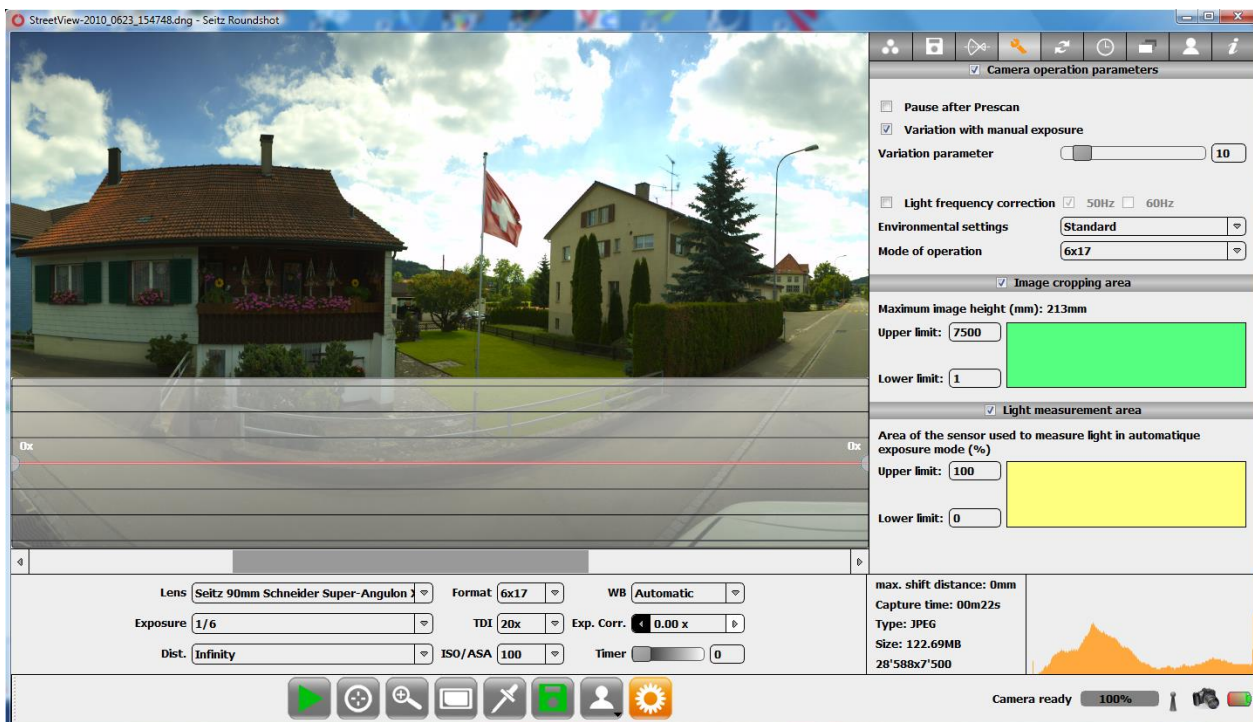
4.3 ... use variation with manual exposure

The "variation with manual exposure" tool allows to manually define an exposure correction curve based on image content. This tool is very useful in difficult light conditions, especially for indoor/outdoor group photography.

Step 1: Activate the option "variation with manual exposure" in the camera parameters tab

Step 2: Select the desired "variation parameter". A large variation parameter value is used for sharp light changes. A small value is used in case of smooth light changes

Step 3: Take an image using a fixed exposure time. At the end of the scan, a flat red curve will be overlayed on the image as shown below. A flat curve corresponds to no exposure correction.

💡 It is recommended to choose an exposure time corresponding to the average light condition of the panorama. This will help to design the exposure correction curve more accurately.

💡 When using the "variation with manual exposure tool" the 3 fastest exposure times are not available. This is due to the limitation of the motor acceleration. This limit prevents sharp light transition to be visible on the images.

4.3 ... use variation with manual exposure (continued)

Step 4: According to image content the exposure correction curve can be designed. Add as many intermediate point as necessary by just clicking on the corresponding location on the curve.
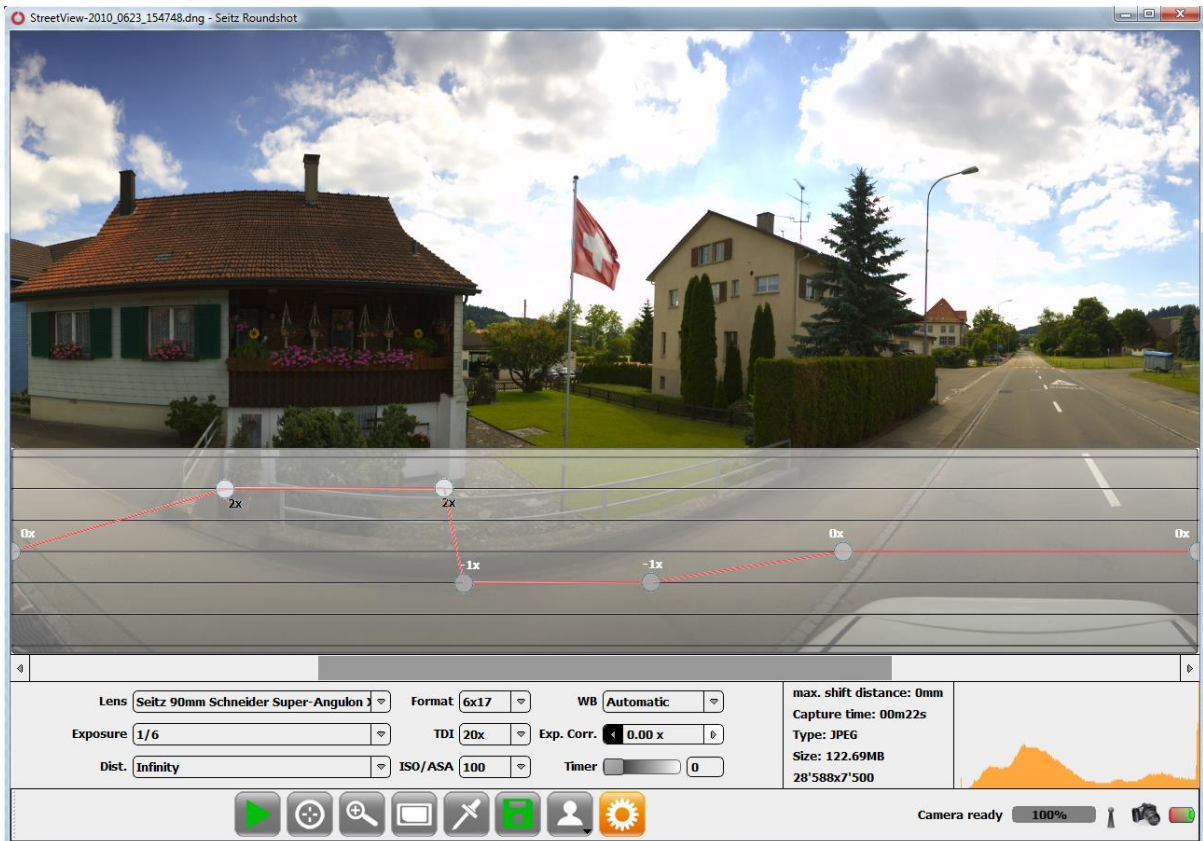
In this example, the exposure correction curve is done as follow:
- section 1: smooth transition from the initial exposure time to 2 f-stops brighter
- section 2: stable exposure time at +2 f-stops
- section 3: sharp transition From +2 to -1 f-stop the resulting image will be darker
- section 4: ...

Step 5: When the exposure correction curve is designed, take a second picture to see the result. If the image is still not perfect it is possible to fine tune the curve by moving every point individually.

When changing image angle, lens or any parameter affecting the image format, the correction curve will be reset to flat. It is then necessary to design a new correction curve.

4.4 … compute the capture time

Capture time is the amount of time required to complete the scan for a given image format and capture speed (set by the exposure speed). It is calculated by multiplying the read-out speed per pixel by the number of horizontal pixels in the image:

```
                    ┌──────────────┐                    ┌──────────────┐
                    │ Image        │                    │              │
            (x)─────│ Format       │─────(=)────────────│  Capture     │
             │      │ (21,250 px)  │                    │  time        │
             │      └──────────────┘                    └──────────────┘
      ┌──────────────┐
      │  Capture     │
      │  speed       │
      └──────────────┘
```
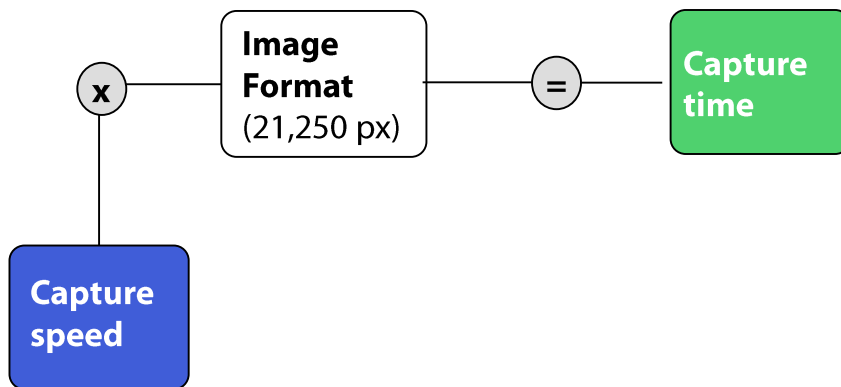
For the fastest capture speed the resulting minimal capture time is **1 second**.

4.5 … minimise noise at image capture

To minimise noise it is recommendable to use a higher amount of TDI Stages and a faster exposure. Using a higher number of TDI Stages averages the black level noise and leads to an overall better noise behaviour. A faster exposure allows faster integration times (TDI sensor) which minimises the creation of noise.

When using extreme wide-angle (fisheye) lenses it is recommendable to select less TDI Stages as for these lenses less TDI Stages allows better sharpness.

ISO/ASA (gain) amplifies the output signal and multiplies the noise in the image. Therefore it is recommendable to select a low ISO/ASA setting.

4.6 … shift

The lens of the Seitz 6x17 Digital can be shifted up or down by +/- 15mm.

Shifting the back can be beneficial to:
• Select a different vertical image aspect without having to change the camera's position
• Create two consecutive scans, one at the lower border (-15mm) and one at the top border (+15mm), and merge the two images into one panorama with higher vertical resolution (60mm + 30mm = 90mm or 7,500 + 3,750 = 11,250 pixels)*
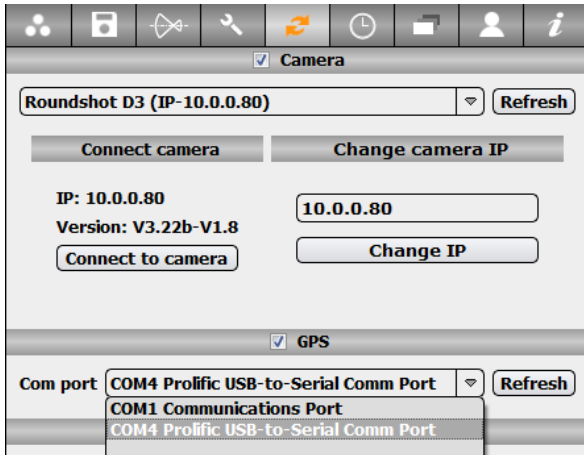
To shift turn the shift wheel to slide the lens up or down.
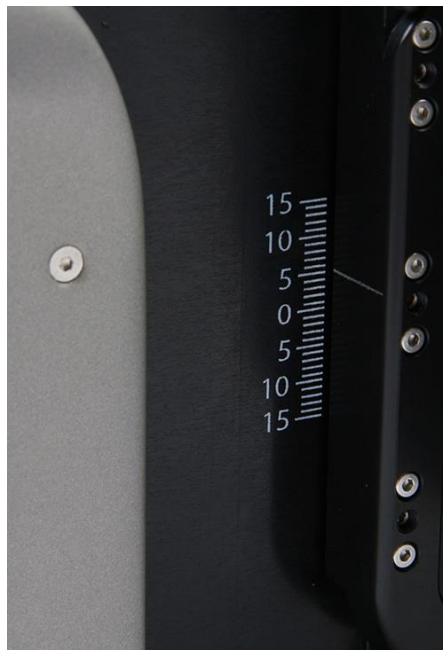
* Due to the geometrical shift in the images this is only possible for a scene at a large distance

4.7 … use a USB GPS device

Press [gear icon] to navigate to the **"Parameter"** menu.

Open **"External device"** tab.

The comport box contains a list of all activated com port on your computer

When no GPS device is connected, the **"Com port list"** window remains empty.

Install the USB driver for your GPS device (for example: *GlobalSat BU-353*) on your computer first. Then connect it via the USB port. The detection of the GPS device may take 3-4 minutes.

In this situation the GPS status symbol which is indicated on the lower right of the computer screen appears in grey (no connection) and the LED of the GPS device is off.
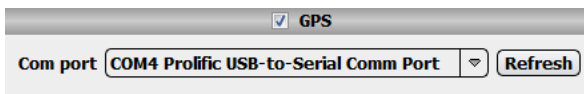
Once the USB GPS device is recognised by the computer and the USB driver loaded, the Com port list will be updated and will show the GPS device (in this example COM4). Click on **"Refresh"** to update the GPS device list

The GPS status symbol and the LED of the GPS device will change to red. As soon as a satellite signal is received, the GPS status symbol will turn to green and the LED of the GPS device will be red and blinking.
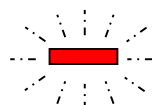
GPS status symbol
(located on lower right of computer screen)
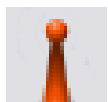
LED of GPS device
(GlobalSat BU-353)

No connection to GPS USB device

GPS device connected to computer, searching for satellite signal

GPS device connected to computer and satellite signal received

4.7 ... use a USB GPS device (continued)

```
GPS-Device (COM6)
  Date/Time: 2008:04:30 10:28:39
  Latitude: N 47deg 33´ 0.3"
  Longitude: E 8deg 59´ 15.426"
  Altitude: 585.4m
  GPS Quality: GPS sps mode
  GPS Mode: 3D/Automatic
  Number of Sat's in Use: 8
```

When the GPS device is connected to the computer and the satellite signal is received, a yellow **GPS information tag** is displayed next to the green GPS status symbol.

Example: GPS data for Lustdorf / Switzerland

Once the GPS device is connected it automatically feeds the latitude and longitude of the current camera position into the software. This data is then written to the metadata / EXIF when saving a new image.

Make sure when unplugging and replugging the USB GPS device to always use the same USB port. If not reload the USB driver for the new port.

GPS devices use a uniform date/time standard which is always Greenwich time (GMT) regardless of the time zone of the actual position. Therefore the date/time of the GPS device may differ from the actual date/time.

GPS data (latitude, longitude...) are saved with the image and can be accessed by viewing the metadata.

The GPS position is written in the image metadata only if the GPS status symbol is green. It is possible that even if the GPS device is connected the GPS status symbol remains red. In this case the GPS device is not able to fix a location and no GPS data will be saved in the image metadata.

4.8 … program the scheduler

The scheduler is often used to create a time-lapse over a defined period with the Roundshot D3.

Before programming the scheduler, make sure to create one or more **profiles** as presented in section 3.1.7. with the image parameters to be used for the time-lapse.
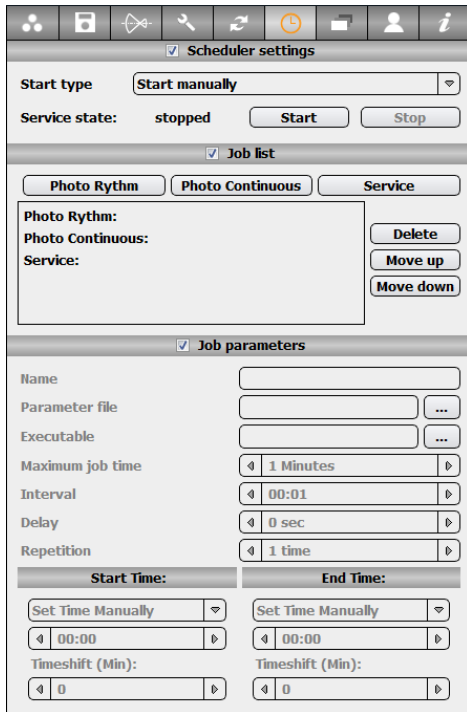
In the "Parameter" menu**.** Select the Scheduler tab

In the **"Job list"** section different jobs (or tasks) can be defined:

• Photo Rhythm Job
• Photo Continuous Job
• Service Job (not used for Roundshot D3 cameras)

In the **"Job parameters"** section the selected job parameters can be defined:

• Name	• Start / end time
• Parameter file	• Interval
• Executable	• Repetition (continuous job only)
• Maximum job time	• Delay (continuous job only)
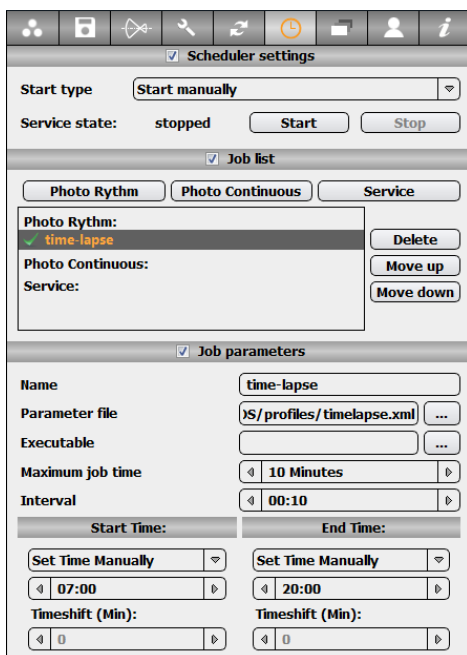
For example define a **"Photo Rhythm Job"** to take an image at constant time intervals.

Click on **"Photo Rhythm Job"** to define a new job.

• Change its **name**. (ex: time-lapse)
• Define the **profile** that will be used for image parameters. (ex: timelapse.xml)
• Define the **interval** of image taking (in hours : minutes). (ex: 10min)
• Define the **start time** and **end time**. In this example the images will be taken from 7:00 to 20:00

4.8 … program the scheduler (continued)
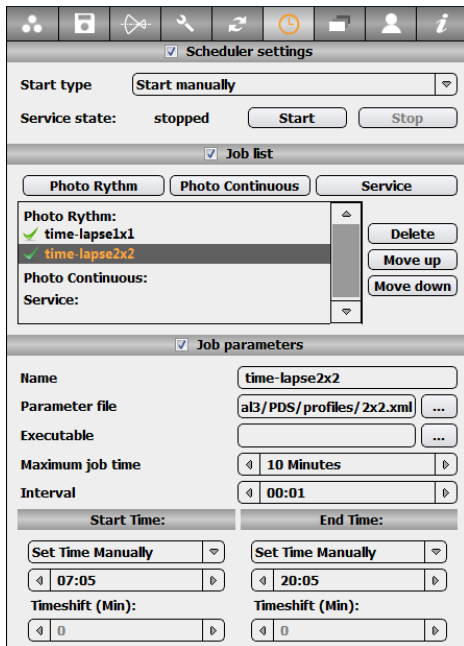
It is possible to **create as many jobs as necessary** if different parameters are to be used.

For example it is possible to create 2 sequences one in full resolution and one in 2x2 resolution.

In this example the start time of the second job is shifted by 5 minutes to avoid job conflicts. In case of conflict the job at the top of the list will be started
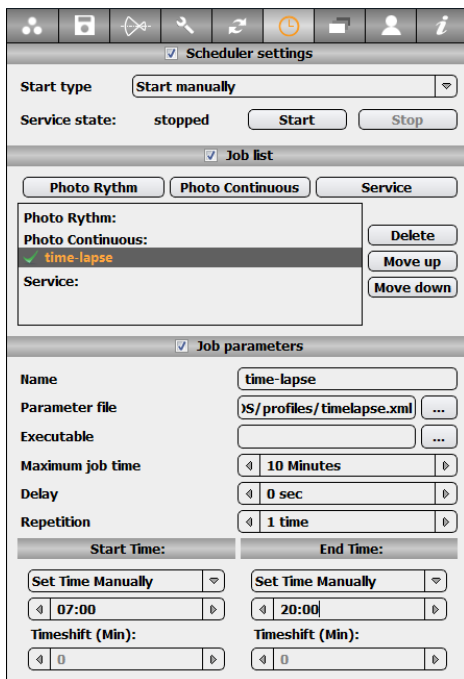
If the project has to contain as many images as possible, then the best choice is to create **"Photo Continuous Job"** as presented in this example.

In this case, as soon as the previous image is saved, the next image will be launched without delay.

Click on **"Photo Continuous Job"**,edit the job name and select the profile.

Define the **start time** and **end time** (in hours : minutes). There is no interval because the image taking is continuous.

Enter **repetition** defining the number of times this job is to be repeated in case of multiple jobs. Finally define a **delay** between the jobs.

4.8 … program the scheduler (continued)

For all types of jobs, the **start/end times** can be generated **automatically** according to the **GPS location** of the camera.

Enter the local GPS coordinates and select sunrise/sunset for example. The effective start/end times will change automatically according to the location throughout the season. This is useful to create projects over a longer time frame (for example a year).

Once the Jobs are programmed correctly, it is necessary to start the scheduler.

In the **scheduler settings** section, the following **start-up options** can be selected:

- **Start Manually** (default): this option is recommended for testing when the Scheduler should not be launched automatically (for example when closing the software)

- **Start Automatically with software**: this option allows the scheduler to start as soon as the Roundshot software is started

- **Start Automatically with operating system**: this option allows the scheduler to start as soon as the computer is restarted. This is used for Livecam applications.
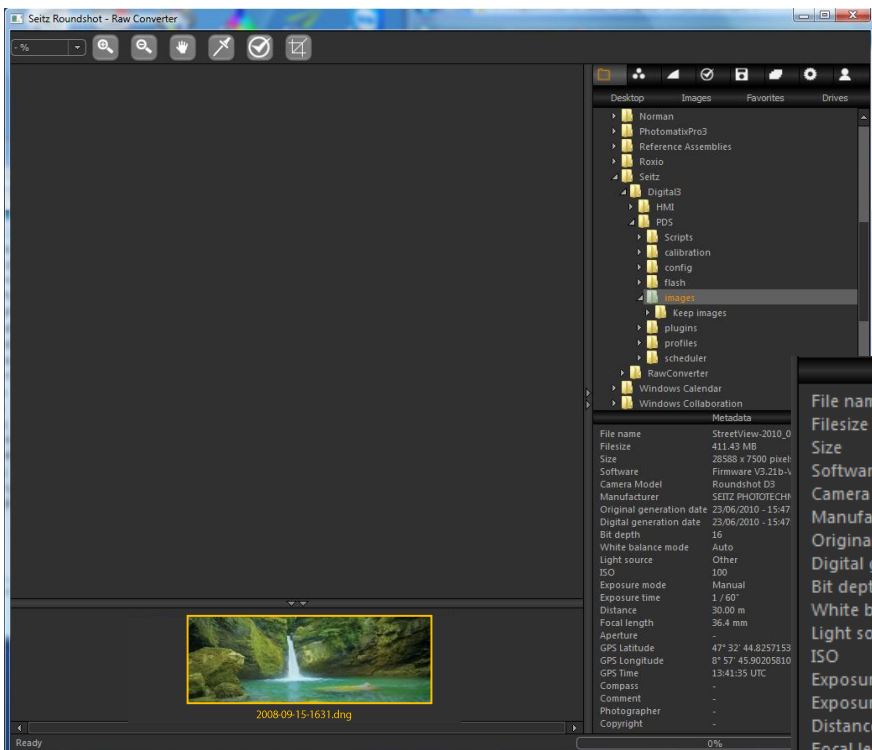
4.9 … read + edit metadata

Metadata or **EXIF** are camera and image parameters which are embedded in the image. They help in the post-processing of the files and assist the photographer in retrieving essential image information later in the process (for example, lens, exposure speed, ISO/ASA).

The metadata can be loaded in the following software:

• Seitz Raw Converter
• PhotoMe
• Adobe Bridge + camera raw
• Adobe Lightroom
• Adobe Photoshop

4.9.1 Seitz Raw Converter

Seitz raw converter is a software specially implemented for the DNG files generated by the Seitz D3 scan back. It is possible to brows e these files and by a simple click see all necessary metadata in the lower right filed as show in the example below

4.9 … read + edit metadata

4.9.2 PhotoMe

PhotoMe is a dedicated software to display, analyse and edit metadata. Load a DNG, TIFF or JPG file into the software to display image and camera data. It is also possible to edit most Metadata information, especially to add the lens aperture information. This is useful for HDR set of images generated by changing lens aperture manually.

Camera	
Field	**Content**
Exposure time	1/6"
ISO speed rating	100/21°
Date and time of original data generation	2008-05-21 15:14:46
Date and time of digital data generation	2008-05-21 15:15:31
Shutter speed	2.58 Tv (1/6")
Subject distance	10 m
Light source	Other Light Source
Lens focal length	81 mm
Exposure mode	Manual exposure
White balance	Auto

4.9 … read + edit metadata (continued)

4.9.3 Adobe Bridge + camera raw

Adobe Bridge displays all image files within a folder as thumbnails and is a seemless addition to post-processing software (camera raw). Click on the thumbnail image of the image file to display the metadata (file properties, camera data, settings for camera raw, etc.):
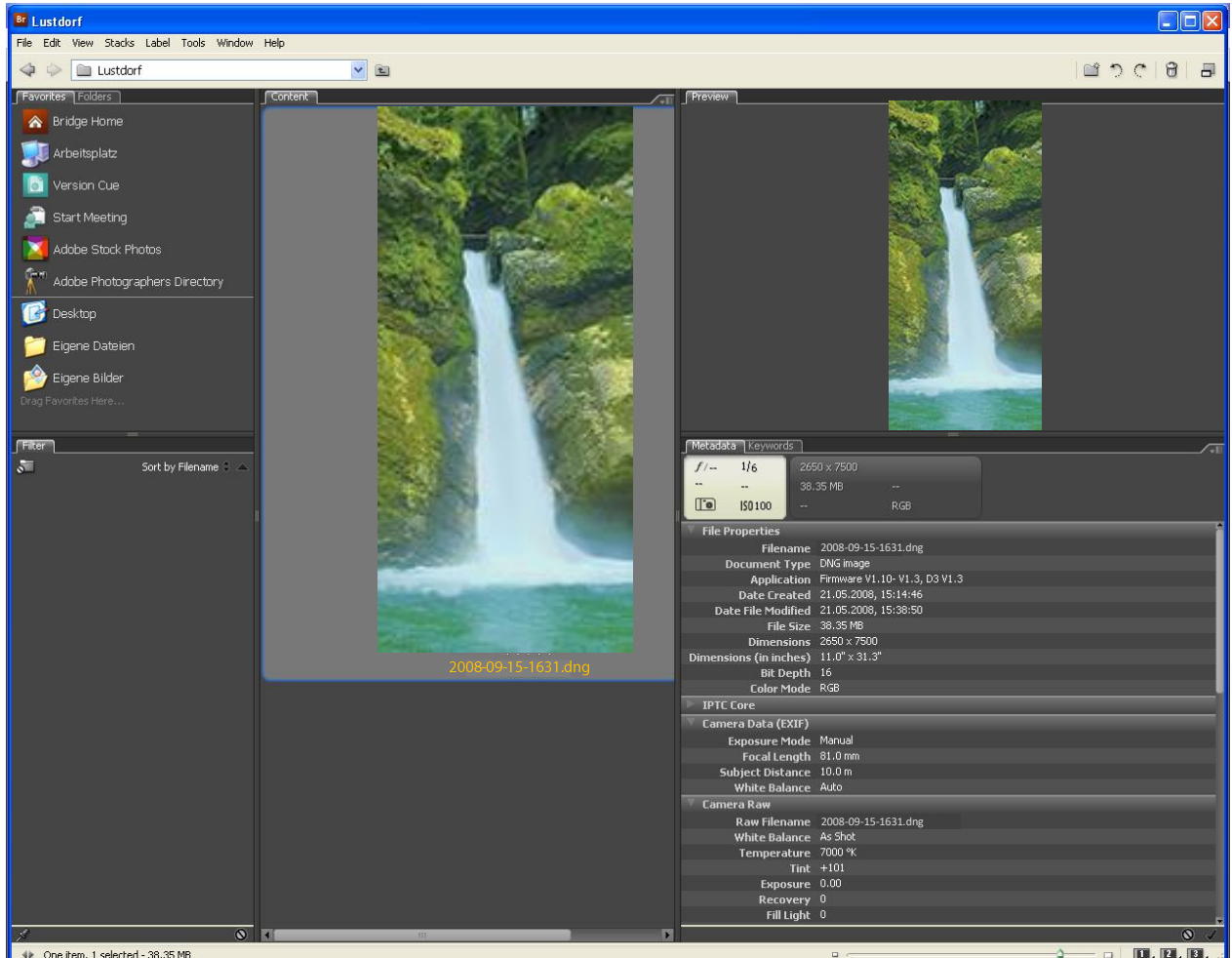
When double-clicking an image it is opened in camera raw.
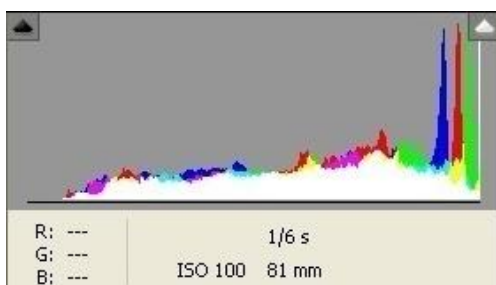
Camera raw shows only metadata for exposure speed, ISO/ASA and focal length.

For a complete list of metadata please refer to PhotoMe or Adobe Bridge.

4.9 … read + edit metadata (continued)

4.9.4 Adobe Lightroom

Contrary to camera raw where a full list of metadata is displayed in Bridge, Lightroom has all metadata integrated. Click on **„Metadata"** to display the full list:
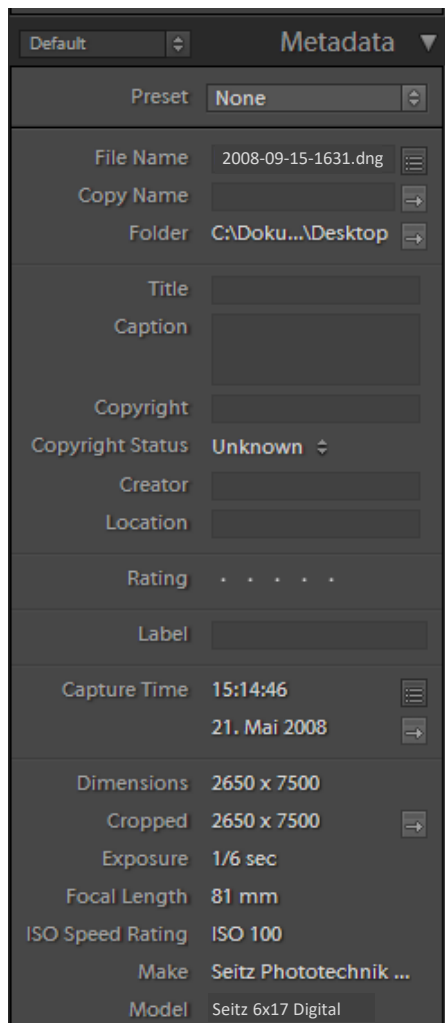
For a full list of metadata please refer to PhotoMe or Adobe Bridge.

4.9 … read + edit metadata (continued)

4.9.5 Photoshop

In Photoshop the metadata can be accessed by selecting **"File/File Info"** or by pressing **ALT+CTRL+SHIFT+I**:

For a full list of metadata please refer to PhotoMe or Adobe Bridge.

5. Workflow

5.1 Introduction

The Seitz 6x17 Digital is a very versatile camera system and can be used for a large variety of different applications. For each of these applications different end products are created, which in turn influences the choice of workflow. Therefore we recommend thinking through the ideal workflow before starting to use the camera in the field. There are two main workflows:
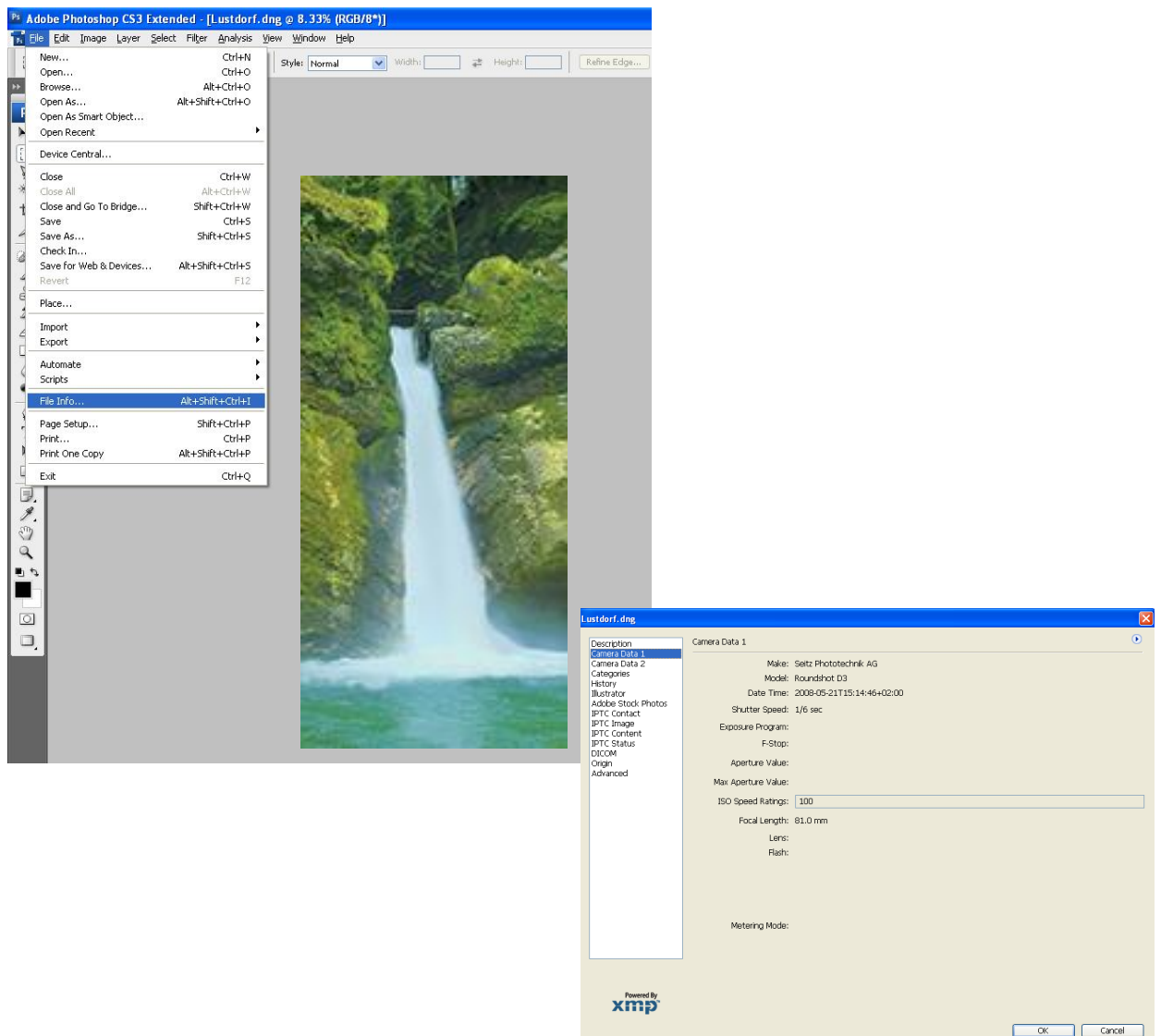
RAW workflow

Image capture + preview

Optimisation* + rescan

Optional white balancing**

Saving DNG file

Raw conversion + post production
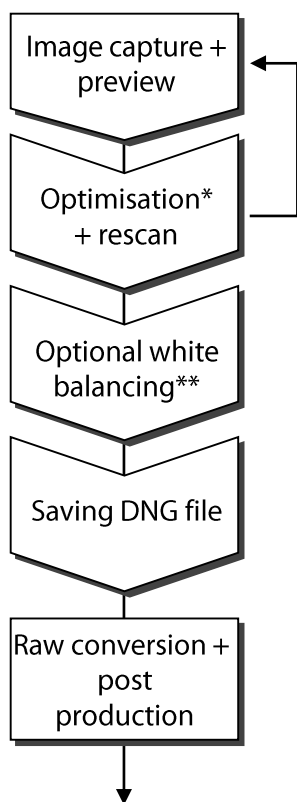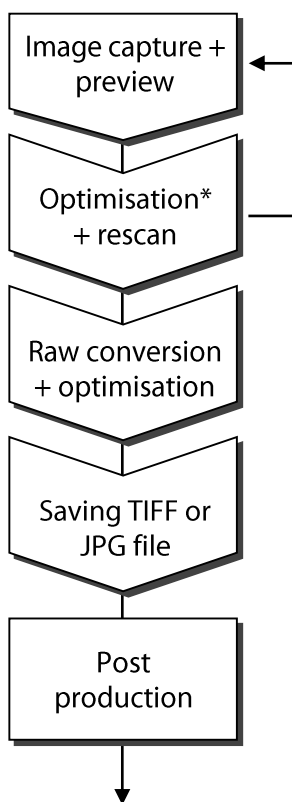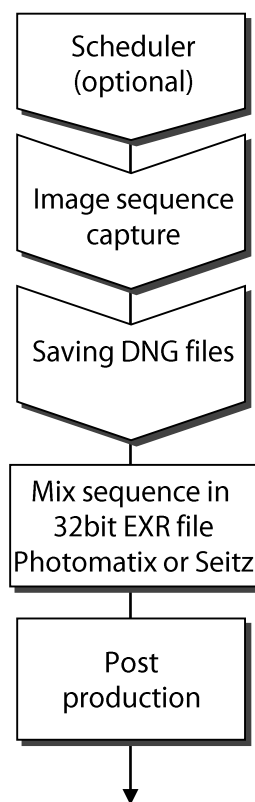
Ideal for fine-art photography with the objective to achieve highest quality standards in resolution + image quality

RGB workflow

Image capture + preview

Optimisation* + rescan

Raw conversion + optimisation

Saving TIFF or JPG file

Post production

Ideal for applications where speed and minimal post production are important

HDR workflow

Scheduler (optional)

Image sequence capture

Saving DNG files

Mix sequence in 32bit EXR file Photomatix or Seitz

Post production

Ideal for HDR 32bit image generation where mixing pure raw data is important to get accurate light measurement

> 💡 When working with large image files we recommend using 64-bit operating systems with 64-bit imaging software as this significantly increases processing speed.

* By changing setttings such as exposure speed, aperture, TDI Stages, focusing, ISO/ASA, etc.
** All other optimisations are not stored with the raw (dng) file (such as histogram stretching, tone-mapping, etc.)

5.2 RAW workflow: Seitz raw converter

Focus on the following points to obtain the highest possible image quality:

- **Framing:** It is recommended to capture an image containing slightly more field of view than necessary to have higher flexibility in framing
- **Exposure:** Make sure to obtain a perfect histogram. This ensures that the exposure is precise and no additional post-processing (and loss of quality) is required.
- **Sharpness:** Work with focusing and aperture to obtain the best possible definition. Of course sharpness can be enhanced in post-production, but the better the original image, the more natural the final image will be.

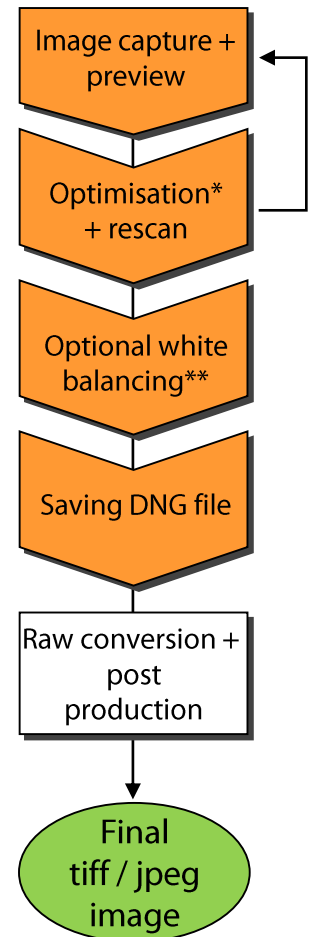**Raw saving:** Save the image in raw format DNG. Any other format will contain an already converted image with non-reversible operations reducing the adjustment possibilities. **All other parameters can be readjusted later during the raw conversion with no risk of data loss**, including white balance, tone mapping etc.

Image capture + preview

Optimisation* + rescan

Optional white balancing**

Saving DNG file

Raw conversion + post production

Final tiff / jpeg image

There are currently 3 software solutions for raw conversion + post production on the images:
- Seitz raw converter
- Adobe camera raw (+ Photoshop)
- Adobe Lightroom (+ Photoshop)

Both camera raw and Lightroom use the same base technology for their raw conversion (linear interpolation), while the Seitz Roundshot D3 software and Seitz raw converter uses conversion algorithms which are specifically designed for the Seitz D3 digital scan back sensor. This is why the **Seitz raw converter allows best image quality.**

Open the dng file with the desired application. The raw image will be converted automatically into an RGB image preview using a given demosaïcing method. All colour management options (such as white balance, HSL), tonemapping and filtering (for example to reduce colour noise) are applied simultaneously on the raw image. The image can then be further processed in Photoshop.

5.2 RAW workflow: Seitz raw converter (continued)

The **Seitz raw converter** gives best results for the raw conversion. **We therefore recommend to convert the dng raw file in the Seitz raw converter** (including white balance, tone mapping, colour noise removal). As a next step open the image in Adobe Photoshop for additional retouching (for example for sharpening).

**Raw conversion in
Seitz raw converter**

**Raw conversion in
Other software**

Diagonal lines are smooth (straight) lines after raw conversion in the Seitz software. When converting the image in other software it is possible that staircase artefacts appear.

* The Seitz D3 digital scan back has a non-Bayer pattern and the Seitz Roundshot D3 raw conversion applies a sensor-specific algorithm.
  Other raw converters apply a linear interpolation (no sensor-specific algorithm).
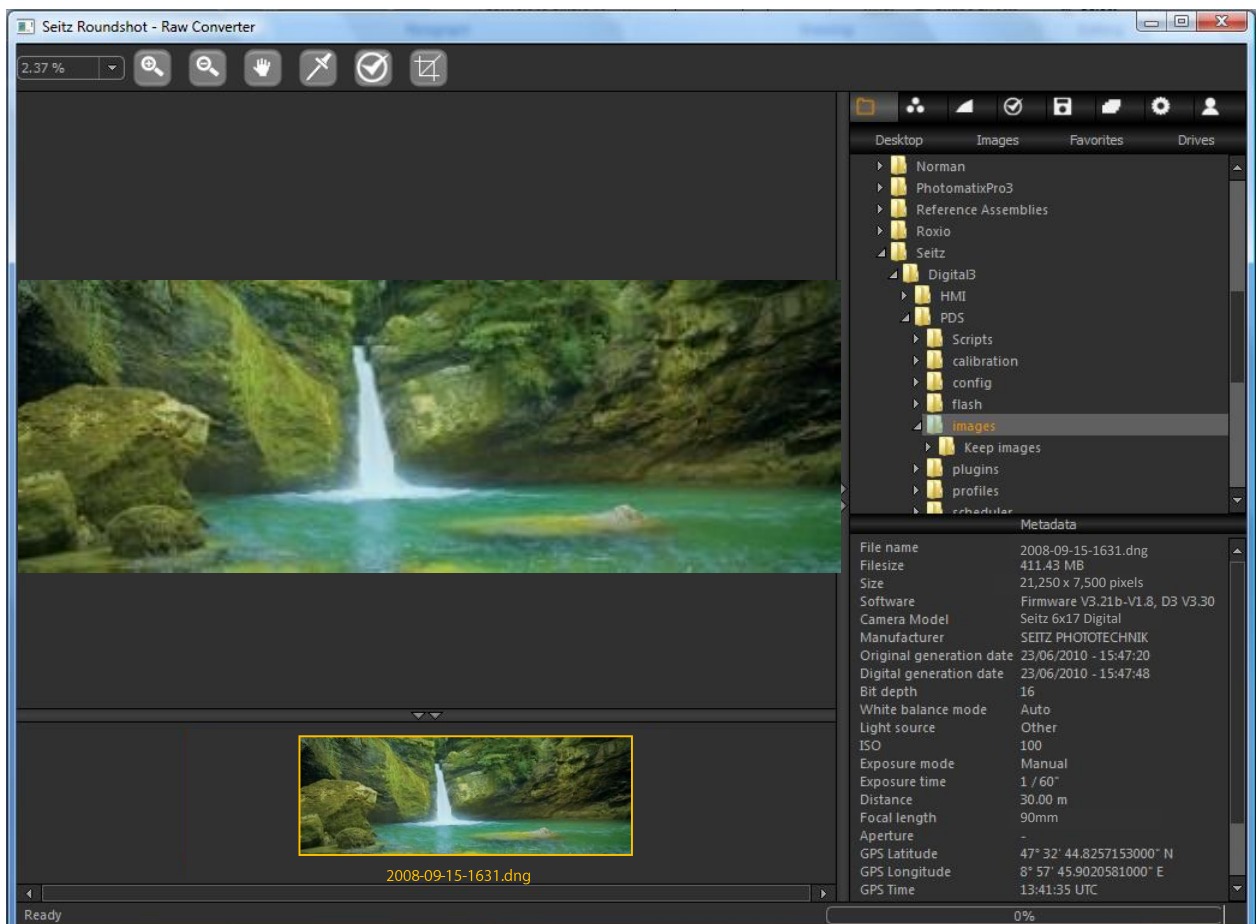
5.2 RAW workflow: Seitz raw converter (continued)

The Seitz Raw converter is divided into 4 fields for an optimised usability and image conversion workflow:

Tool bar: located on the top of the window, the tool bar is used for direct image editing and image navigation

Thumbnail: Located on the bottom part of the window, the thumbnail field displays the thumbnails of all DNG images located in the current folder. It is useful for image selection and loading. It is possible to minimise this field when the image is loaded.

Preview: located in the centre of the window, the preview filed contains the image preview. It is possible to navigate and zoom up to 200% in the image.

Parameter menu: located on the right side of the window, the parameter menu contains all the raw conversion parameters to be applied on the image. It is structured into 8 tabs following the logical raw conversion workflow (Image browsing, colour adjustment, tone mapping ...)

5.2 RAW workflow: Seitz raw converter (continued)

Browsing

After Opening the Seitz raw conversion software the first step is to browse and open the desired file:

Open the correct folder: use the browsing tree on the right side of the window to open the folder containing the dng images

Image selection: the thumbnails of all the dng images of the folder will be displayed. By clicking one time on every image, the corresponding metadata are displayed on the bottom right field.

Load image: when the image is selected double click on the thumbnail and the image will be loaded

Image preview: the image preview is then displayed on the centre field and the colour tab is automatically open in the parameter menu
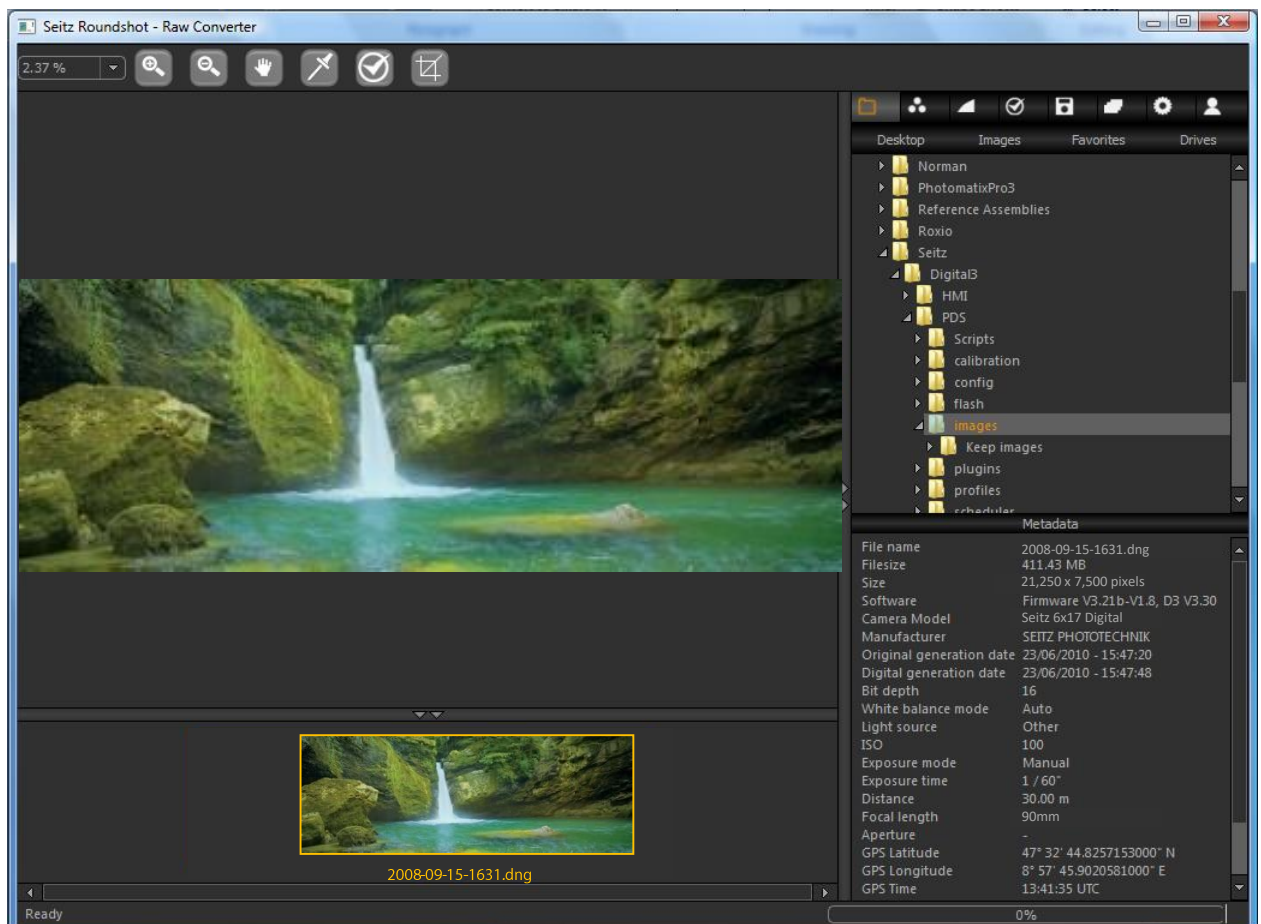
5.2 RAW workflow: Seitz raw converter (continued)

Image navigation and basic editing

Using the **"Tool bar"** it is possible to navigate in the image and to apply some basic editing commands:

Zoom in/out: Also possible with "X + mouse click" for zoom in or "C + mouse click" for zoom out

**Navigation hand:** Slides the image in the viewer. Also possible with "Space + mouse slide"

Choose in picture white balance: Select a point within a grey region of the image for specific white balancing

Details window tool: Creates a preview of the image at 100% with all details filters applied (sharpening, noise removal ...)
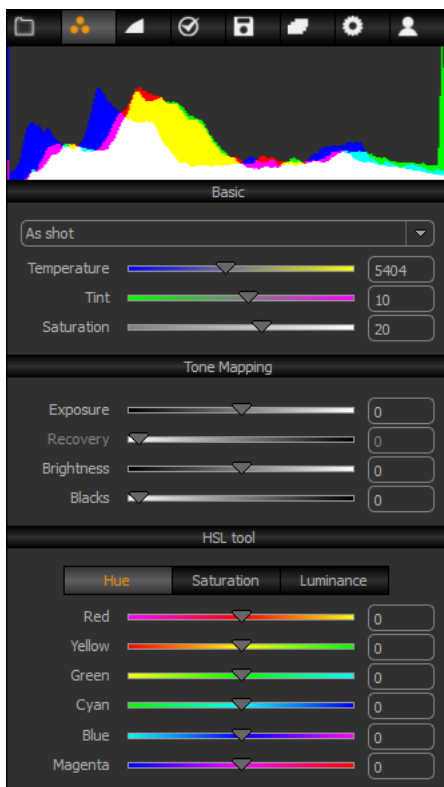
Cropping tool: Defines the part of the image to be exported. The raw image itself is never cropped
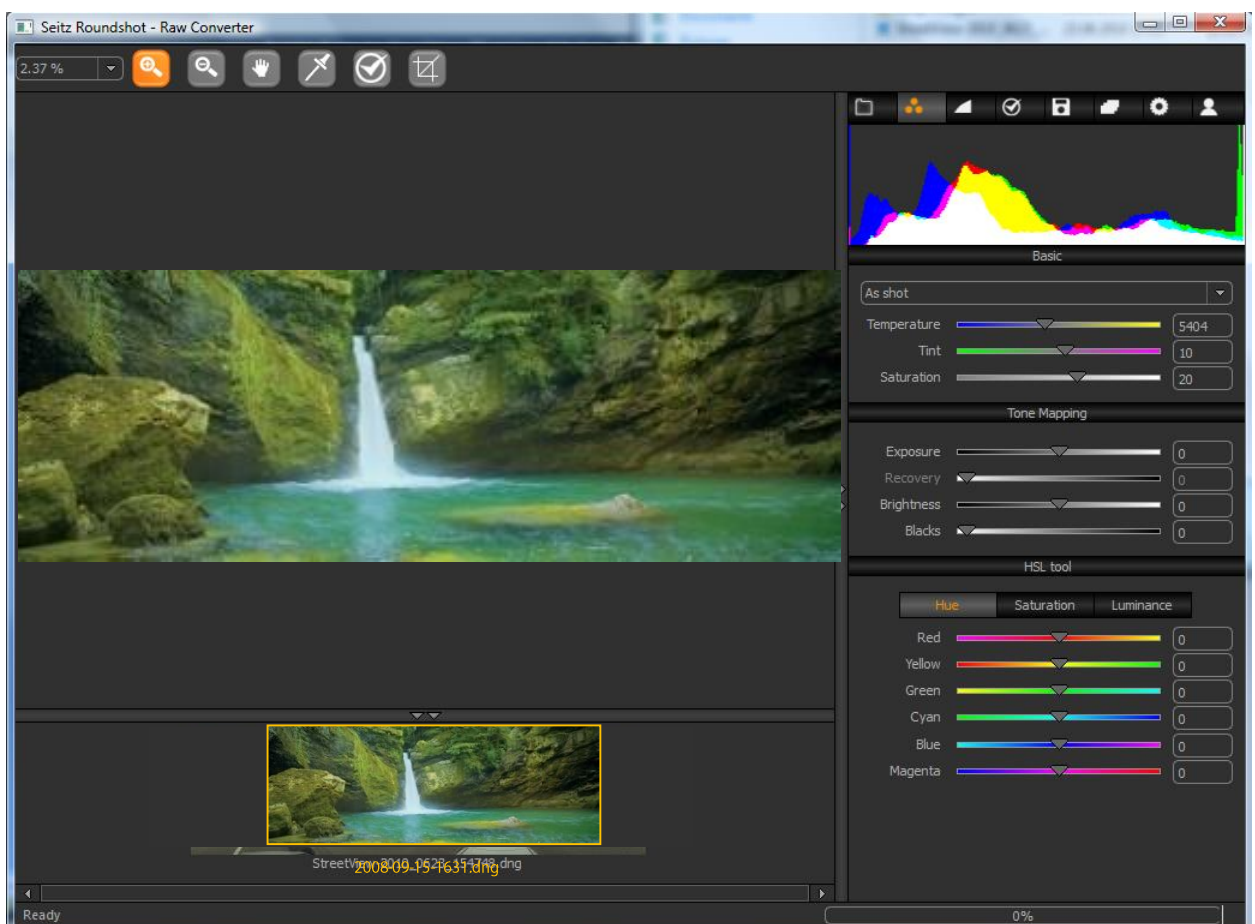
5.2 RAW workflow: Seitz raw converter (continued)

Colour

The **Colour adjustment** is the first step in the raw conversion workflow. It contains all the basic colour adjustment parameters and some basic tone mapping tools:

Basic: white balance

Select one of the white balancing options in the list. It is recommended to use either "**choose in picture**" and point on a grey area in the image, or "**Automatic**". This will give a starting point for the subsequent fine tuning of colours. The white balanced version of the image is displayed directly in the preview.

Use the other **"basic"** colour management tools to fine tune the image white balance:
- **Temperature:** makes the image appear warmer or cooler
- **Tint:** compensates a potential greenish or magenta colour cast
- **Saturation:** increases or decreases the overall colour saturation without reducing the dynamic range of the image

Tone mapping - for adjusting the image histogram:

- **Exposure:** applies a linear gain on the image. This tool can lead to dynamic range clipping if used heavily
- **Brightness:** applies a non linear tone mapping on the image. The image will be brighter or darker without any dynamic range clipping
- **Black:** crops the lower part of the image dynamic range. Can be useful if low light levels contain no useful information

HSL*: use the **"HSL"** tool to selectively adjust colours. It is possible to select and adjust each of the six proposed colours: Red, Yellow, Green, Cyan, Blue, Magenta. The adjustment can be done in three ways:

- **Hue:** Fades the colour toward neighboring colours in the HSL colour space
- **Saturation:** increases or decreases the saturation of the selected colour only.
- **Luminance:** increases or decreases the luminance of the selected colour only

* Hue, saturation, luminance

5.2 RAW workflow: Seitz raw converter (continued)

Tone mapping

After colour adjustments the tone mapping tab offers some advanced tone mapping tools:
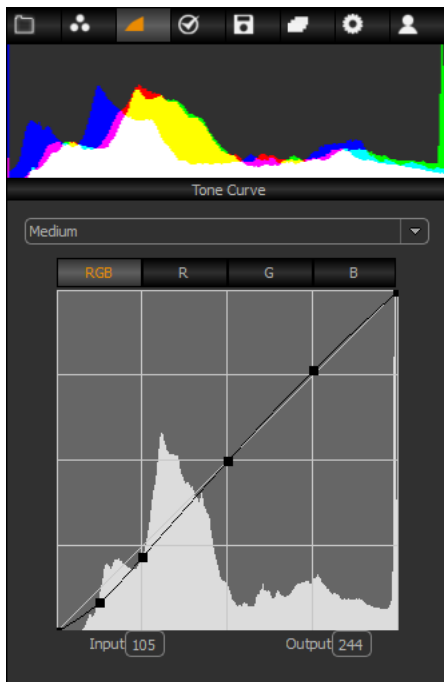
RGB tone mapping

With RGB tone mapping it is possible to apply a **global tone mapping** on the image without affecting the colour settings.

It is recommended to use first one of the **preset tone mapping** curves provided. These tone mapping curves are S-shaped and allow to control the global **image contrast**.

In a second step it is possible to fine tune the tone mapping by adjusting the **tone curve** directly on the graph. It is possible to move the existing reference points or to create some new ones (black squares on the curve)
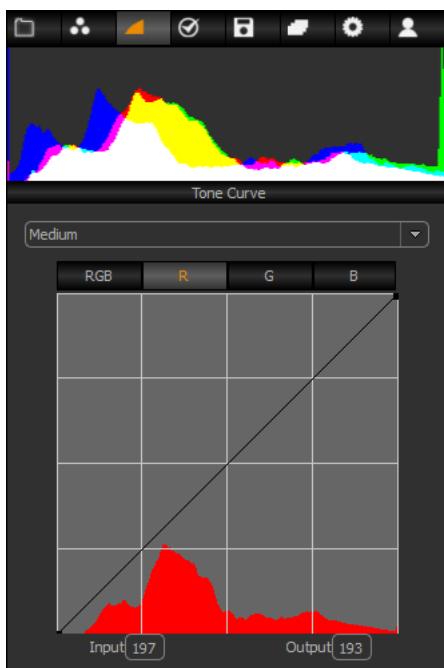
Selective colour tone mapping

It is also possible to apply different tone mapping curves for each primary colour (red, green and blue)

The default curve is linear and can be adjusted by creating intermediate points in the graph.

Please note that this tool should not be used heavily. A major difference between the R, G and B tone mapping will affect the image white balancing.

5.2 RAW workflow: Seitz raw converter (continued)

Details enhancement

After Image global adjustments (colour, tone, histogram...) the details enhancement tab offers some tools to remove image artefacts or to increase image quality. These tools are only applied on the converted tiff or jpeg image and are visible in the dedicated preview located in this tab:
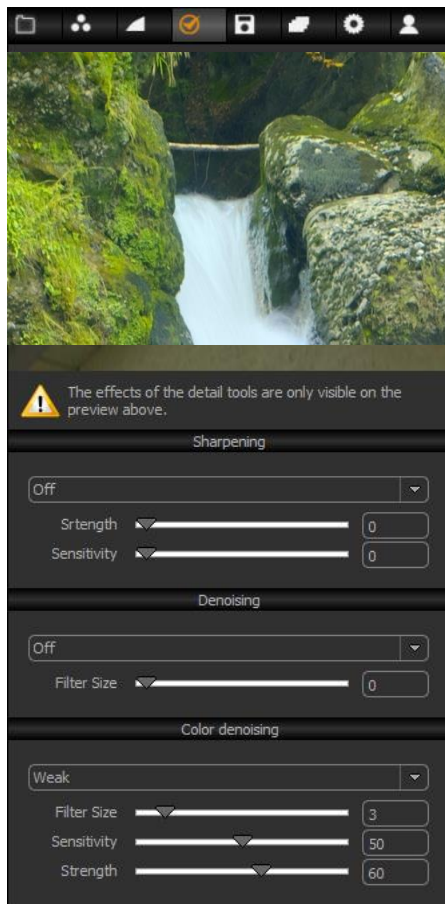
Click the "**details button"** in the toolbar and the details tab will open automatically

In the main image preview, select the area of interest by clicking directly on the image. A 100% zoom on the selected region is displayed in the details tab.

Important: Please note that all the detail tools are not applied on the main preview even when zooming at 100%. For optimisation and speed matters, their effect in only visible in the details tab preview.

Sharpening: this tool allows to enhance the image sharpness by applying an unsharp-mask filter on the image. It is possible to use presets (weak, medium, strong) or to adjust the following 2 parameters manually:
• **Strength:** defines the sharpening level applied on the detected edges
• **Sensitivity:** defines the sensitivity of the tool to detect edges. The higher sensitivity the more edges will be detected

Denoising: this tool applies a median filtering on the entire image. The degree of denoising can be selected by the changing the filter size. Avoid using too much denoising as this will reduce sharpness.

Colour denoising: this tool applies a specially designed algorithm for colour noise reduction. It is recommended to use presets first. In a second step it is possible to fine tune the parameters depending on the image content:
• **Filter size:** defines the size of the local area affected by this filter
• **Sensitivity:** defines how sensitive the tool will be to wrong colours. The higher the value the more wrong colours will be detected on the image
• **Strength:** defines how strongly the wrong colours will be affected by the filter

5.2 RAW workflow: Seitz raw converter (continued)

Details enhancement
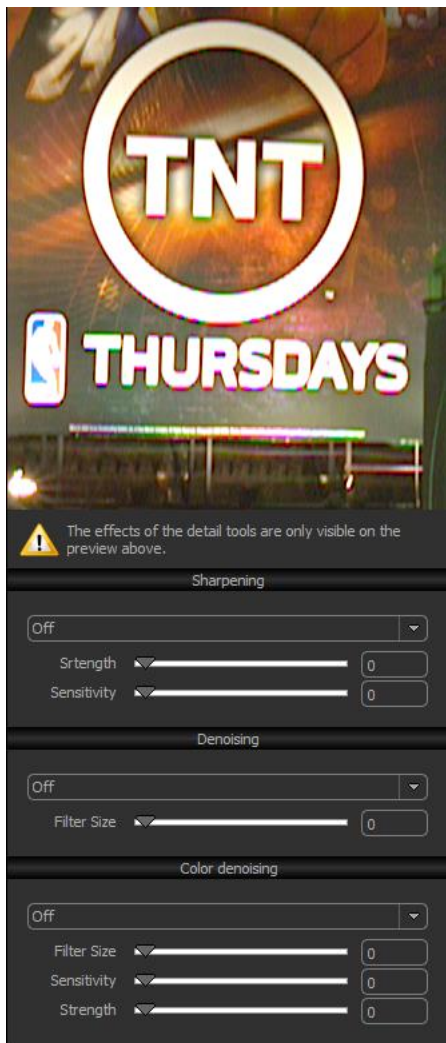
Colour denoising example
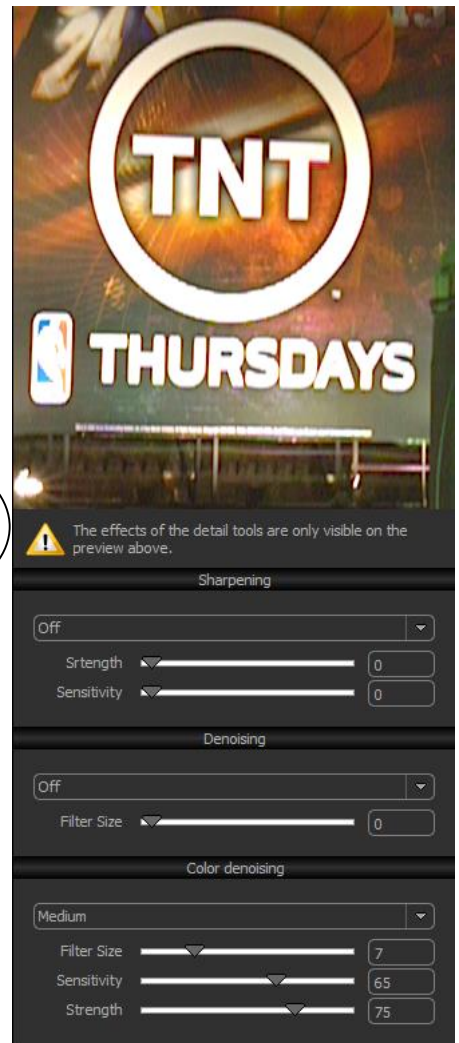
For all the details enhancement tools it is strongly recommended to use the lowest presets (weak) for best results. When using high presets new artefacts might appear: heavy denoising can generate blurred images, strong sharpening may generate noise and high colour noise removal levels may desaturate colours.

Colour noise occurs when fine details in the image cannot be resolved by the sensor or for high frequency areas (passage from dark to very bright) on a sharp edge.

Add some saturation (Master saturation) when using the colour noise filter as otherwise the image may lose some colour.

5.2 RAW workflow: Seitz raw converter (continued)

Save

Once the image is optimised and all image adjustment parameters are set, the next step is to export the image in Tiff or JPEG formats. Open the "**Save tab**" and select the image export parameters as described below:
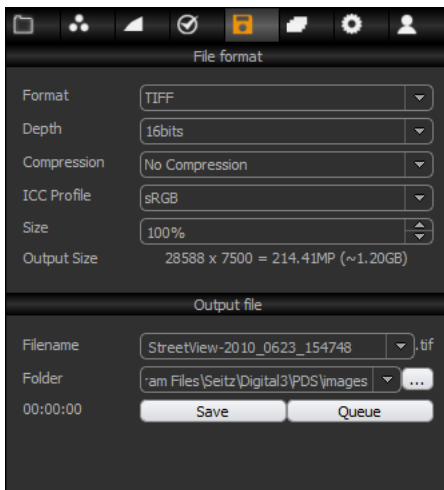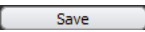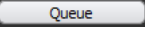

File format: this menu contains all raw conversion parameters:

- **Format:** select between Tiff for highest image quality or JPEG for smaller file size
- **Depth:** when selecting Tiff it is possible to choose between 16bit or 8bit colour depth. JPEG is limited to 8bit
- **Compression:** for both formats it is possible to use compression to reduce the output file size. However, for JPEG this can lead to loss of quality

- **ICC profile:** select the output colour space of the final image. It is possible to choose between **sRGB**, optimized for web applications, or **AdobeRGB** and **ProPhotoRGB,** which allow higher colour precision for fine art work
- **Size:** depending on the final application the image is not needed in full resolution. It is therefore possible to reduce the output image size and processing time.
- **Output size:** depending on the selected reduction size, this field displays the expected output image number of pixels and file size on disk

Output file: This menu contains the file name and location options as described below:

- **File name :** by default the original file name is used with the new output file extension. It is possible to change this name by editing this field
- **Folder:** the default output file location is the location of the original DNG file. It is possible to change this by editing this field or browsing the new location using the button on the right side

Press [Save] to Export the image directly. During the processing the Seitz raw converter will not be available for other tasks.

Press [Queue] to add the image export to a waiting list. The software is immediately available for the next image conversion. Once all images are ready, open the "**batch process tab**" and process all the images. Please refer to next section.

5.2 RAW workflow: Seitz raw converter (continued)

Batch process

The **"Batch process tab"** allows setting up batch processing, i.e. applying raw conversion to several images one after the other using profiles. It is possible to add files to the waiting list from the Save tab or add the files directly using saved profiles:
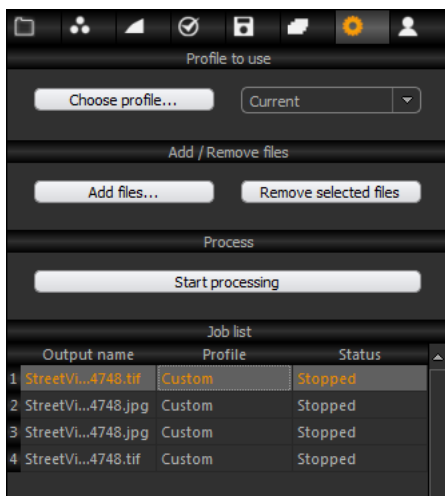
Job list: the job list contains all the files waiting to be processed and their corresponding profiles. The files sent to this list via the saving tab uses a custom profile.

Start processing: press on start processing to process the job list. during this process the software will not allow any other operation

Remove files: it is also possible to remove some jobs from the list. Select the jobs and then click on

Add files: if some profiles are already saved, it is possible to apply them on images directly from this tab.
- **Choose Profile**: first it is necessary to select the profiles in the "Profile to use section". Browse the profile using the button
- **Add file:** press on the button   and browse the image to be processed. A new job will be created in the job list and will be processed when clicking on

5.3 RGB workflow

With the RGB workflow image capture and RGB conversion are done in one step in the Seitz Roundshot D3 capture software. This workflow is ideal for applications where speed and limited post production are important.
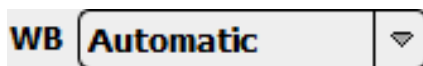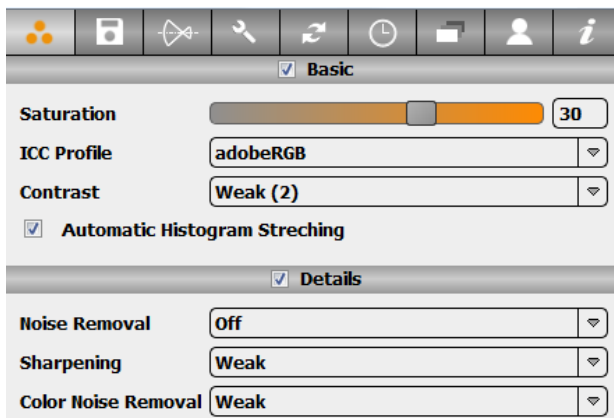
5.3.1 Full resolution RGB workflow

Once the image is captured and displayed in the preview window, complete the following post-production steps:

• **White balancing**
• **Saturation**
• **Tone mapping**
• **Optional: sharpening/noise removal**

Example: the example below show one set of parameters optimized for the RGB workflow.

White balancing

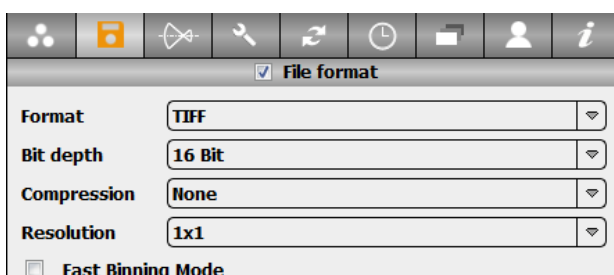**Saturation**

Tone mapping
(contrast + histogram stretching)

Optional details enhancement:
(noise removal + Sharpening + Colour noise removal

Output file format

Resolution

💡 Please note that the detail enhancement options such as noise reduction, sharpness and colour noise removal increase the saving time.

5.3 RGB workflow (continued)

5.3.2 Reduced resolution RGB workflow (fast RGB workflow)

For projects which require a fast image taking/processing/saving rhythm at reduced resolution the **fast RGB workflow** is ideal. This is achieved by selecting an **automatic exposure** (spot, prescan or variation) a **reduced resolution** (option **"fast"**) and selecting **"auto save"**:

"Automatic (prescan)" is more accurate, but is more time-consuming than **"Automatic (spot)"**, as it requires a 360° turn of the camera head for light metering. **"Automatic (variation)"** change the exposure time within the image.

There are seven resolution options:

- **1x1:** 7'500 pixels vertical resolution)
- **2x2:** 3'750 pixels vertical resolution)
- **3x3:** 2'500 pixels vertical resolution)
- **4x4:** 1'875 pixels vertical resolution)
- **6x6:** 1'250 pixels vertical resolution)
- **9x9:** 833 pixels vertical resolution)
- **12 x 12:** 625 pixels vertical resolution)

„Fast" compresses the image already in the digital scan back, making the image transfer significantly faster. However, this fast compression method allows less quality than when compressing after image transfer (option "Quality").

Auto Save saves the image directly after image taking without pressing the „save" button. It names the file automatically.

Set all other parameters to the desired value (format, distance, TDI Stages, ISO/ASA, File type TIFF or JPG).

> Selecting "automatic (spot)", "6x6/fast" and "Auto save" allows to scan, transfer and save a 1'250 x 5'000 pixel panorama in less than 10 sec.

> The resulting TIFF or JPG files cannot be reopened by the Seitz Roundshot D3 software or other raw converters. Additional post-processing needs to be done entirely in Photoshop.

5.4 HDR workflow

5.4.1 HDR overview

The graph bellow contains an overview of the different possible techniques when speaking about HDR photography. However only the **multiple HDR** solution, mixing differently exposed images can lead to a **32bit HDR** file with extreme dynamic range.
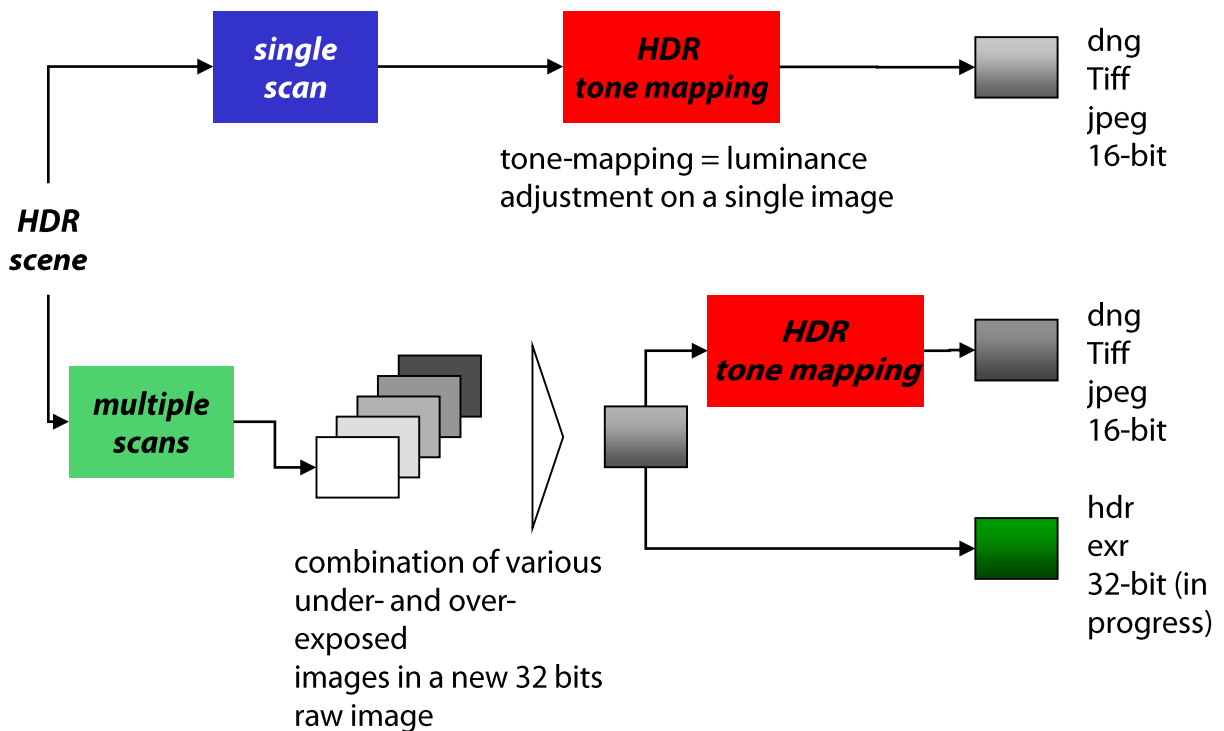
	Single HDR	Multiple HDR
Image capture	• One image	• Several images
Rendering process	• Tone-mapping of the raw image	• Combination of under-/over-exposed images into one HDR image (raw), tone-mapping of the raw image (optional)
Photography	• Action photography possible (moving scenes)	• Only still photography possible (no moving scenes)
Noise	• Amplification of noise	• No additional noise
Dynamic range	• 11 f-stops (1:2600)	• A multiple of 11 f-stops
Colour depth	• 16-bit	• 16-bit or 32-bit
File formats	• dng, tiff, or jpg	• dng, tiff, jpg, hdr or exr

5.4 HDR workflow

5.4.2 Image capture

There are two possible **workflows**:

	Resolution	
	1x1	**3x3**
Quality	Exp	Exp
Speed	TDI/Exp	TDI/Exp

Quality: this workflow is designed for the highest image quality possible. From an image to the other **only the exposure time** is changed to adjust the image brightness.

Speed: This workflow is designed to minimise the overall time for capturing the images. It is possible to change **exposure time and TDI** from image to image. The pixel registration between images may contain some artefacts generating a small blur.

	Bracketing	TDI	Exposure speed	scanning time	
"Quality"	1	2.5x	1/800s	<1 s	46s*
	2	2.5x	1/100s	5 s	
	3	2.5x	1/13s	40 s	
"Speed"	1	2.5x	1/800s	<1 s	7s*
	2	20x	1/100s	<1 s	
	3	20x	1/13s	5 s	

> Please note that in the "speed example" the 2 first images will be taken with the fastest scanning time. However as the TDI stages are different, the exposure time is changed.

In all cases it is very important to **save the images in DNG**. DNG files contains raw data allowing the mixing software to accurately mix the images and render a precise exposure for each pixel.

There are two options for **resolution**:
- **1x1** allows to get the highest image resolution. However, **Photomatix is not able to read these files**. Therefore it will be necessary to first convert them into tiff and then load them in Photomatix . The other option is to use the Seitz Raw Converter for mixing the images. However, there are no ghost removal and alignment tools in this software.
- **3x3** uses images with reduced resolution. The files can be processed without modification with either **Photomatix (recommended) or the Seitz Roundshot** software.

* Capture time only (without transfer / saving time)

5.4 HDR workflow (continued)

5.4.2 Image capture (continued)

Step 1: Take a test image to determine exposure

Example:

Exp1=1/800s
Exp2=1/100
Exp3=1/13s

Either take an image with medium exposure and optimise the histogram or create a fast exposure and reduce the light source (sun) to the minimum. This will determine the base for bracketing.

Step 2: Set the white balance

There are 2 possible options for white balance:
• **"choose in picture"** – for point white balance
• **"presets"** (direct sunlight, shade, tungsten, fluorescent)

The above white balance options will keep the coefficient values exactly the same for every panorama. "Choose in picture" is the most visual or intuitive tool.

There is always the possibility to readjust the white balance afterwards. However, the fastest and most accurate workflow is to have a uniform white balance from the beginning.

Do not use "automatic white balance" as this will create different colour temperatures and hues for every image. As a consequence, the HDR mixing will lead to artefacts.

5.4 HDR workflow (continued)

5.4.2 Image capture (continued)

Step 3: Check the "shoot settings"

Lens	Seitz 90mm Schneider Super-Angulon XL ⧩	Format	6x17 ⧩
Exposure	1/13 ⧩	TDI	20x ⧩
Dist.	Infinity ⧩	ISO/ASA	100 ⧩

For example with a 90mm Schneider Super-Angulon XL lens:

- 90mm Schneider Super-Angulon XL lens
- 6x17
- Distance equal to focusing on lens
- Exposure speed and TDI according to bracketing table
- **ISO set to 100** as higher ISO does not allow better information for 32-bit
- **White balance: "choose in picture" or "presets"**
- Contrast, sharpening & noise removal will be set automatically to default when saving DNG
- **Auto histogram stretching: off**
- **File type: DNG**
- **Saving options: automatic**

5.4 HDR workflow (continued)

5.4.2 Image capture (continued)
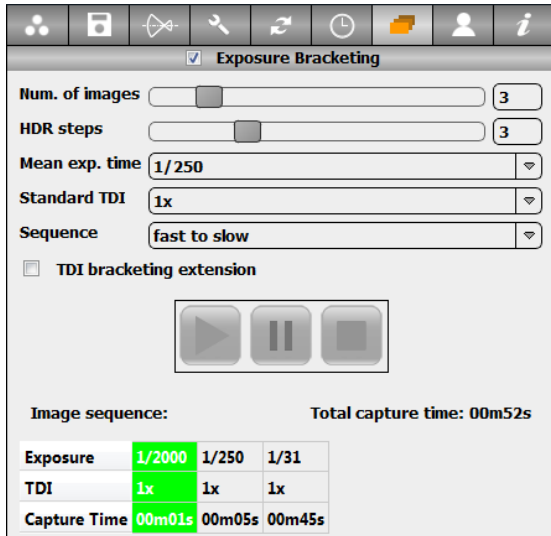
Step 4: Program HDR Image sequence

Open the HDR menu and set the desired **number of images** and **HDR steps**. In this example we take 3 images with each time 3 f-stops difference.

Define the **mean exposure time** and standard **TDI**. This results in the following sequence
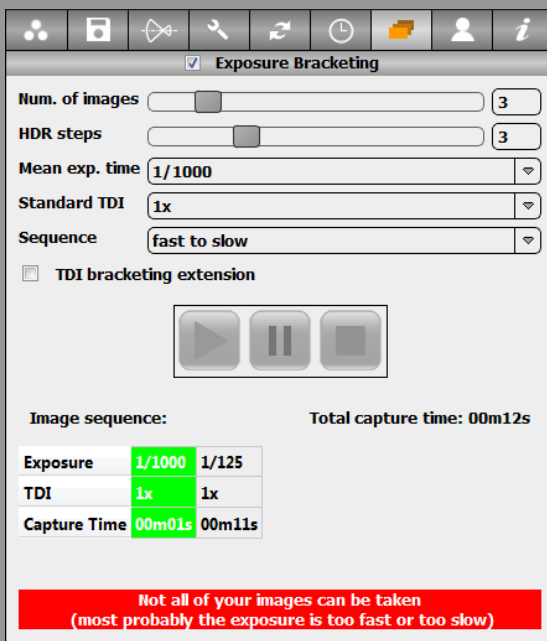
Exp1=1/2000s; TDI=1x
Exp2=1/250s; TDI=1x
Exp3=1/31s; TDI=1x

Press the **„Start"** button to initiate the image sequence

If the scanning speed range is not sufficient to generate an image sequence corresponding to the defined parameters, the image sequence is cropped to the maximum possible and a warning will be displayed.

In this case it is possible to:

• Change the mean exposure time

• Activate the TDI Bracketing extension

• Reduce either the number of images or the HDR steps

5.4 HDR workflow (continued)

5.4.3 32bit HDR generation: image mixing

Photomatix

This software is recommended for 32bit EXR generation. It is able to read 3x3 dng files or unlimited size tiffs. It also contains very useful tools especially for outdoor images:

- **Align source images -** in case any external factor (wind, vibration on floor) moved the camera from its position during image capture
- **Reduce chromatic aberration** at the edge of objects or buildings
- **Attempt to remove ghosting artefacts -** in case of non static scenes either for background or object movement
- **Process images by stripe** allowing the processing of very big tiff files
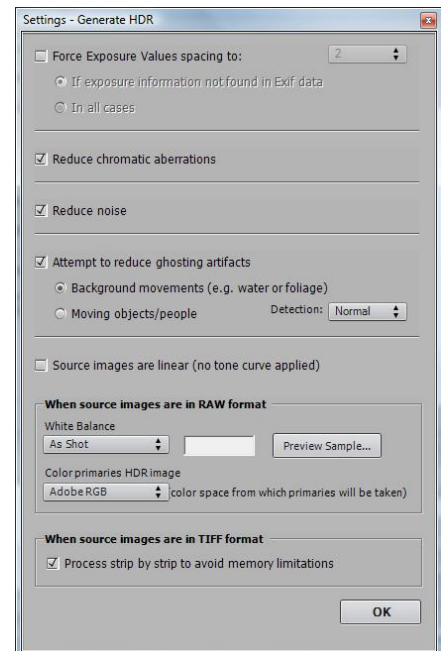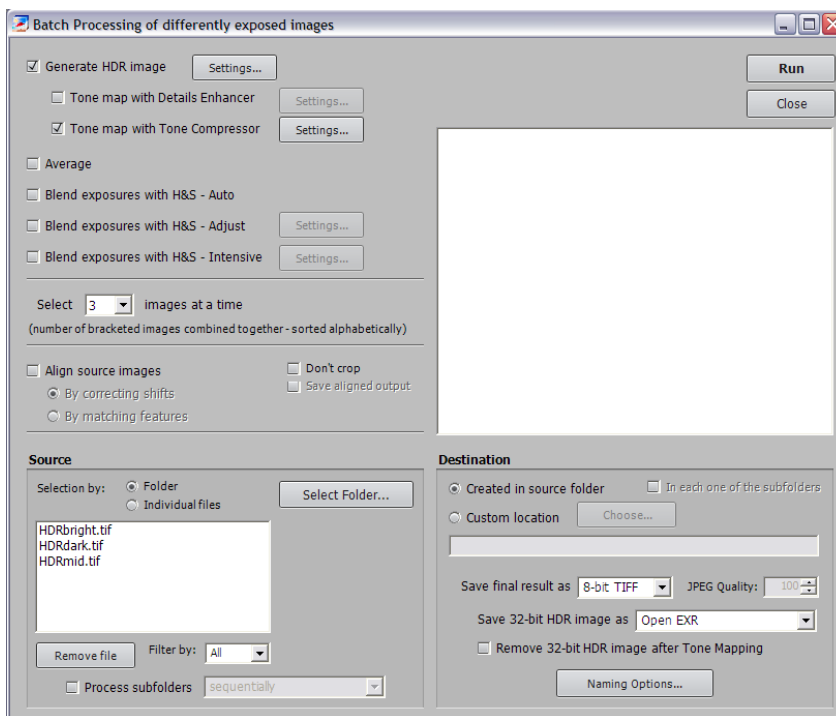
When using 1x1 image resolution, it is not possible to load the raw files directly into Photomatix. In this case it is necessary to first process the images in the Seitz Roundshot software and then load the tiff files in Photomatix.

Please note that in this case, all conversion options must be turned off and the **S-curve needs to be set to 1.** The less processing the image contains, the higher 32bit image quality is generated.
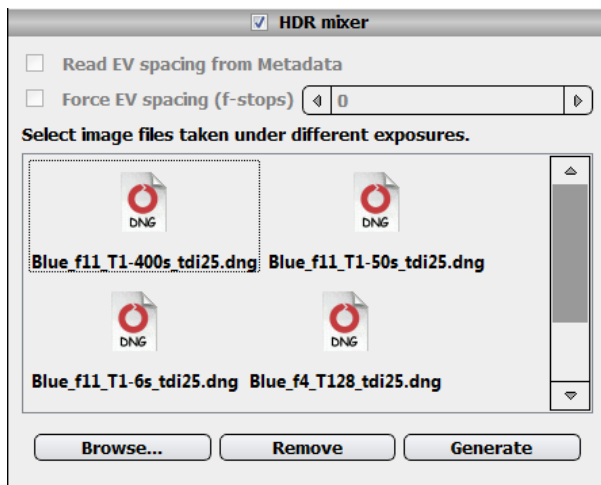
5.4 HDR workflow (continued)

5.4.3 32bit HDR generation: image mixing (continued)

Seitz Roundshot software

Press the „HDR" button in the „Parameter" menu to activate the **„HDR"** tab:

This menu allows to merge differently exposed images of the same scene into a single 32bit EXR file. The input files must be in DNG format.

Press **"Browse"** and select a set of differently exposed images of the same scene.

All the parameters necessary for the HDR generation are stored in the image metadata (except for aperture. see hint below).

Click **"Generate".** The mixing of the 32-bit HDR image takes a few minutes, depending on image size and number of images. The progress of the mixing process is indicated by a percentage progress bar.

A **32bit EXR file** is saved according to the selected image saving path.

The Seitz Roundshot HDR mixing tool is able to process all dng file resolutions. However it does not contain any ghost removal or image alignment tools.

Therefore it is recommended to use this tool only for static scenes (mainly indoors). For the outdoor scenes please use Photomatix or other HDR mixing tools (Photoshop for example).

Avoid changing the lens aperture from one image to image because:
- The camera can move slightly creating a misalignment between images
- The depth of field changes between images
- The aperture information is not written in the metadata and has to be corrected manually. This can be done by readjusting the exposure time in a metadata editor like PhotoMe.
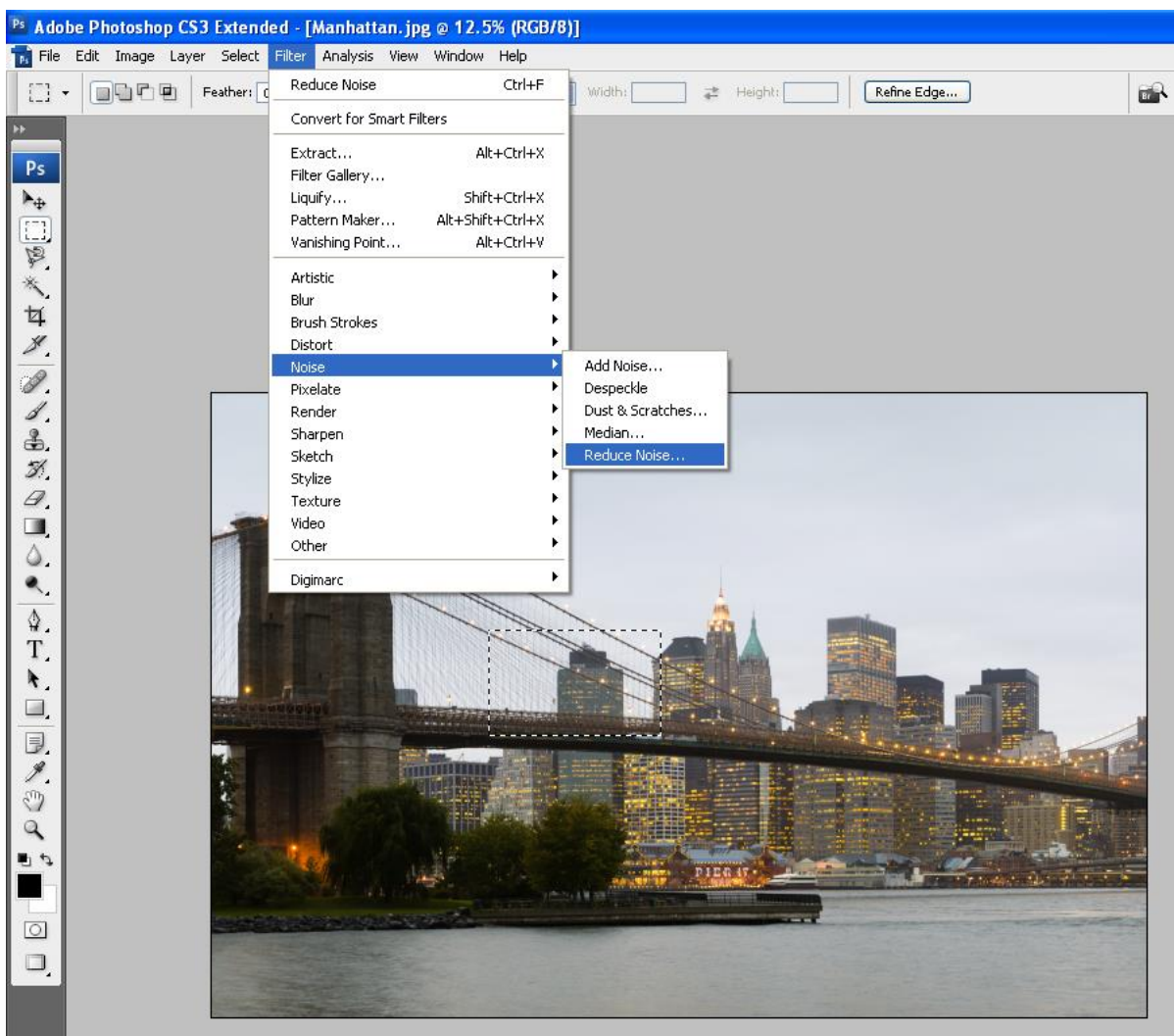
5.5 Additional post production in Photoshop

Colour noise

For details in the image that have a very high frequency it is possible that colour artefacts occur. These artefacts are created because the resolution (frequency response) of the lens is higher than that of the digital scan back or when photographing fine structures (moiré). For example, Schneider and Rodenstock medium format lenses often have a resolution (in line pairs per mm) which is higher than that of the D3 sensor.

These colour artefacts can be eliminated in the Seitz Roundshot software using the "Colour noise reduction" tool. However some parts of the image might still suffer from this artefact. In the case it is possible to select only these areas and apply a stronger colour noise reduction in Photoshop using the filter **"Reduce noise".**

This method has two main advantages. It allows to get an image free from any colour noise artefact. Also, because of its selection possibilities, the parts non affected by the colour noise will remain unchanged i.e. no loss of quality.
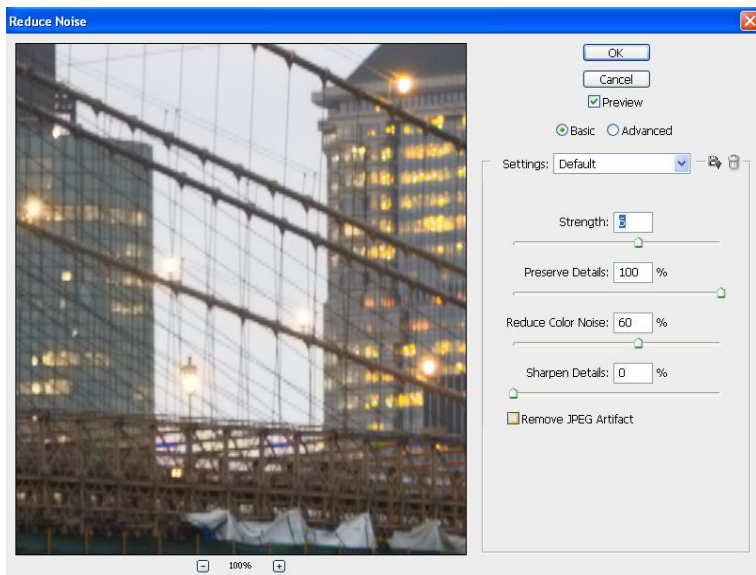
5.5 Additional post production in Photoshop (continued)

Colour noise
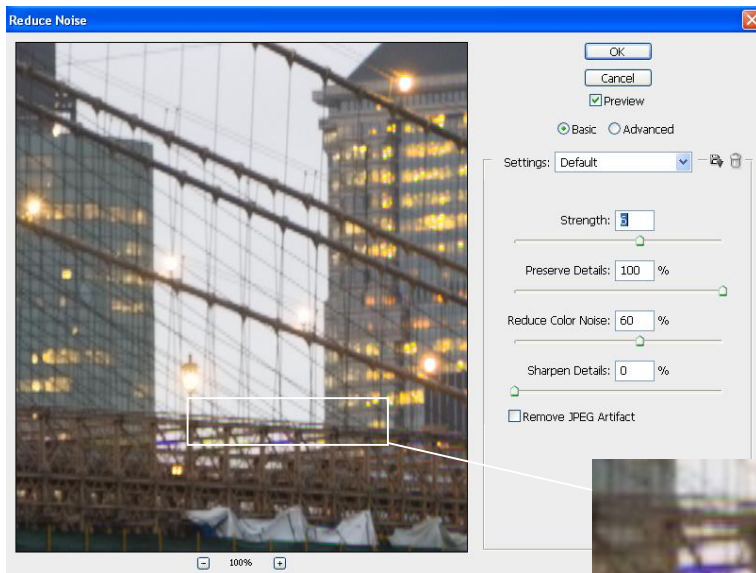
Colour artefacts (false colours/rainbow) on fine structures or high frequency areas.

💡 Select medium parameters (strength 6, reduce colour noise. 60%) to avoid "halo effect" / unsharpness.

💡 As this filter requires significant calculations work with a 64-bit machine/software or on selected areas of the image only.

5.5 Additional post production in Photoshop (continued)

Sharpening

When all filtering, tone-mapping and histogram adjustments are done it may be beneficial to sharpen the image. A new sharpening algorithm which works well is **„Smart Sharpen":**
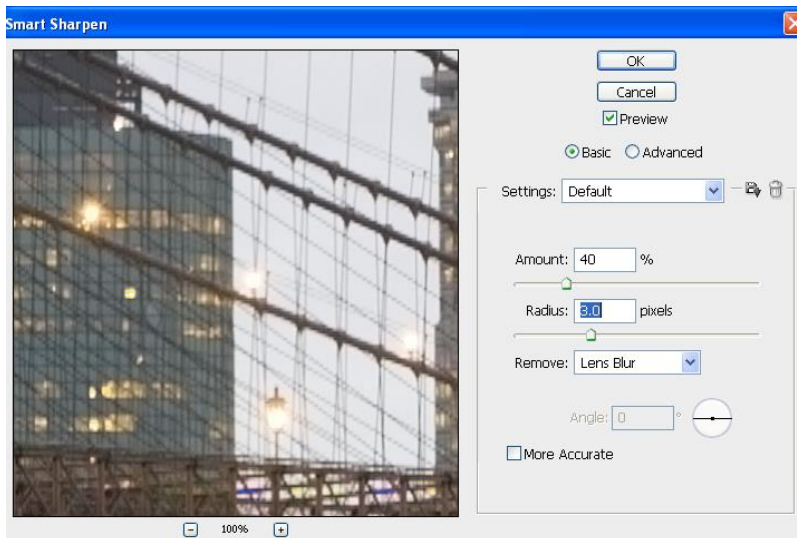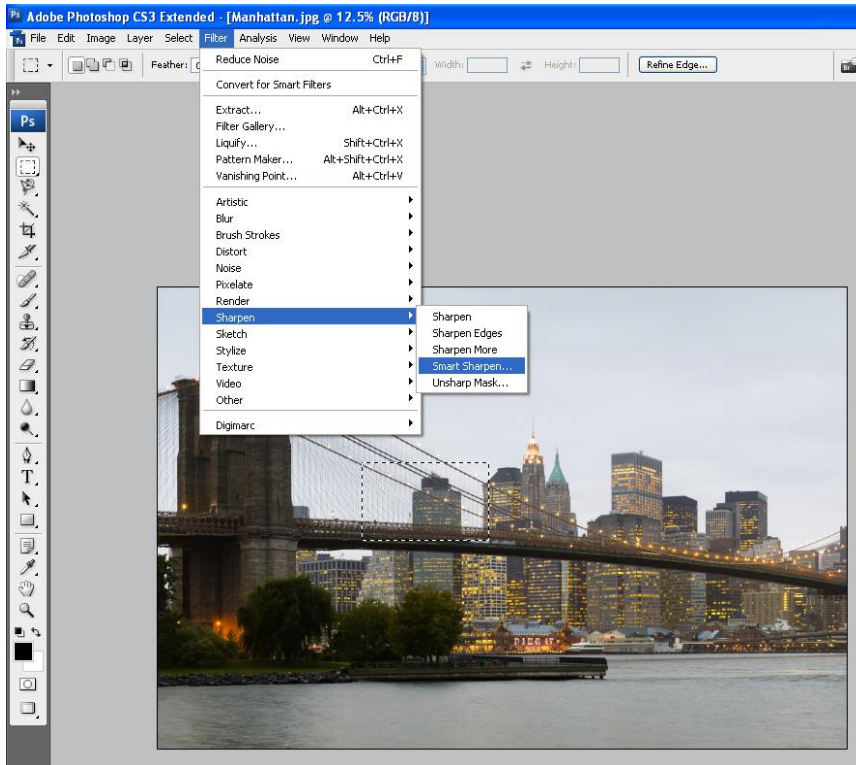
6. Maintenance

## 6.1 Power supply: AC power adaptor and battery charger

The Seitz 6x17 camera can be operated either with the battery or by connecting the camera to a permanent power supply.

Battery:

Power supply:

Power socket

interchangeable
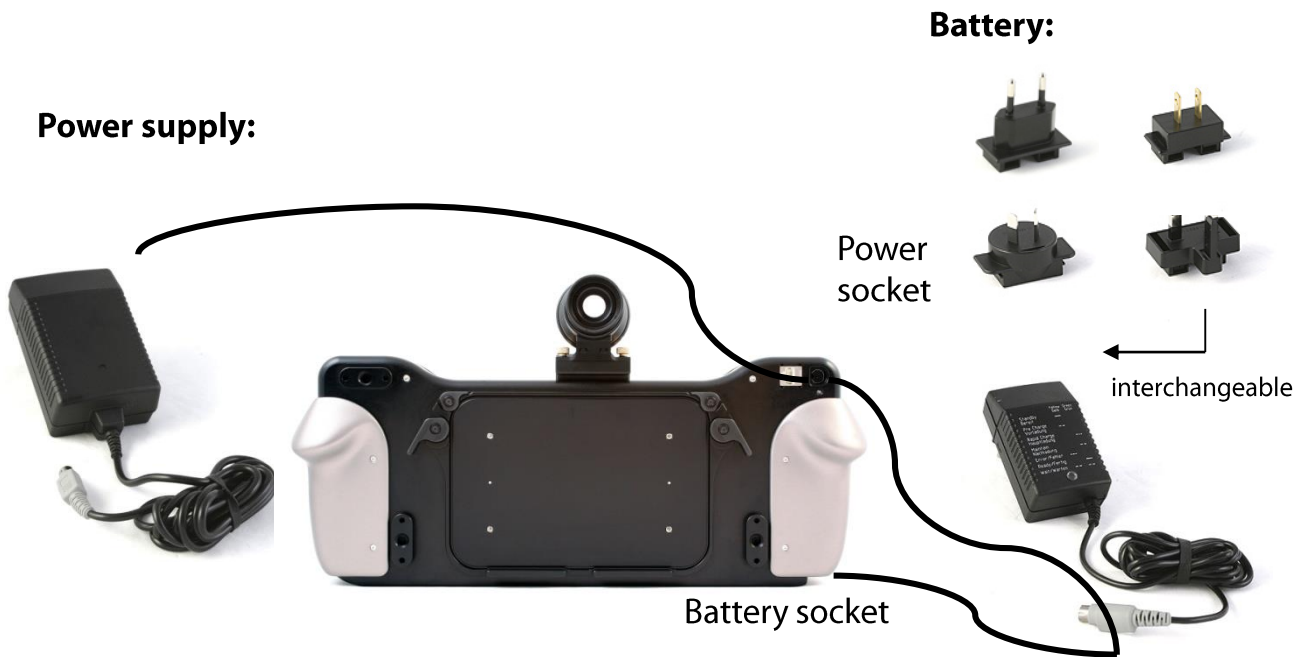
Battery socket

Important: make sure that the power supply is not plugged into the battery socket as a malfunction may occur.

A single charge of the NiMh 12V 4.5A battery usually last for **5-6 hours of operation**. The camera has a built-in power save feature and shuts down all non essential camera functions when idle.

Charging the 12V 4.5A battery
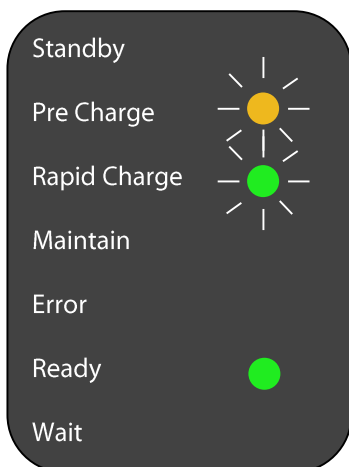
Standby	
Pre Charge	Start of charging process (about 5 min.)
Rapid Charge	Main charging process (about 4-5 hours)
Maintain	
Error	
Ready	Charge complete
Wait	

about 4-5 hours

6.2 Reset of Seitz D3 digital scan back

In case of a malfunction the Seitz D3 digital scan back can be reset. This may be required if the software (flash file) within the Seitz D3 digital scan back is no longer working properly. It is done in the following way:

Push with a pen or with a screwdriver into the reset pin on the back side of the Seitz D3 digital scan back. Keep it pressed for a few seconds.

This initiates a reset of the software, i.e. the flash file is reset to the original factory file.

After the reset it may be required to flash the camera with the latest flash file. Please follow the instructions in section 3.2.9.

6.3 Camera maintenance

The Seitz 6x17 Digital contains high-tech electronic components. Therefore it is important to handle the camera with care, in particular:

*   Make sure that all brackets (for example: lens brackets) and releases are securely fastened, especially for image taking
*   Do not use the camera in rain or snow without any special weatherproof case
*   Keep the camera in a cool and dry place for storage (ideally in the original case supplied with the camera)
*   Do not expose the camera to excessive heat or cold for extended periods of time
*   Prevent exposure to dust, as an accumulation of dust particles on the digital sensor may impair image quality
*   Make sure not to drop the equipment
*   When unplugging cables pull at the plug not at the cable

Very important:

Do not store the camera below -5° or above 40° C as the ultra-thin optical filters of the camera may be damaged.

This means, for example, not to leave the equipment in the car when temperatures are below 0° C or above 30° C as the temperature swings inside a car may be larger than on the outside.

6.3 Camera maintenance (continued)

Digital sensor and optics

Make sure that no dust accumulates on the digital sensor and that the lenses remain dust and scratch free. The outside protection glass (IR cut filter) can be cleaned using some window cleaner and a soft cotton swab:

Computer

Handle the tablet PC with care. Wipe the screen from time to time with a wet microfibre cleaning cloth. Be sure to download and install regular updates (operating system, Seitz Roundshot D3 capture software, Seitz raw converter).

6.4 „Club D3"

6.4.1 International warranty & product registration

Your Seitz 6x17 Digital camera is covered by the international 2-year Seitz warranty. The warranty is linked to the serial number of the camera directly and is stored in our database.

If there is any malfunction or defect of the equipment we will repair the camera at no cost. The warranty extends to technical defaults that are not caused by inproper use, damage by transportation or other defaults not related to the manufacturing of the camera.

The warranty is void if the camera has not been handled with care (has been dropped) or if it has been stored at below -5° C or above 40° C. Delivered components for which separate warranty agreements are issued (for example for computers) bear the warranty of the manufacturer.

We invite you to register your product with us. Registering your product has several advantages:
- Free access to the latest software downloads and instruction manuals
- Email software update alerts + release notes
- Direct technical assistance in case of a problem
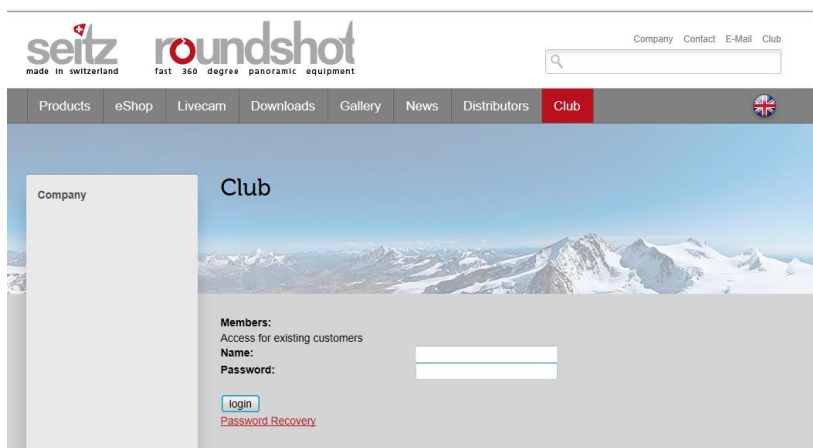
Registering your product is a simple 2-step process:

1   Send us an email to info@roundshot.com indicating the serial numbers of your Seitz D3 digital scan back and camera as well as where you bought the equipment.

2   We will activate your membership and confirm your registration by email.

Then go to the „Club D3" section at www.roundshot.com, log in with your member ID and password and download new software or instruction manuals.

6.4 „Club D3“ (continued)

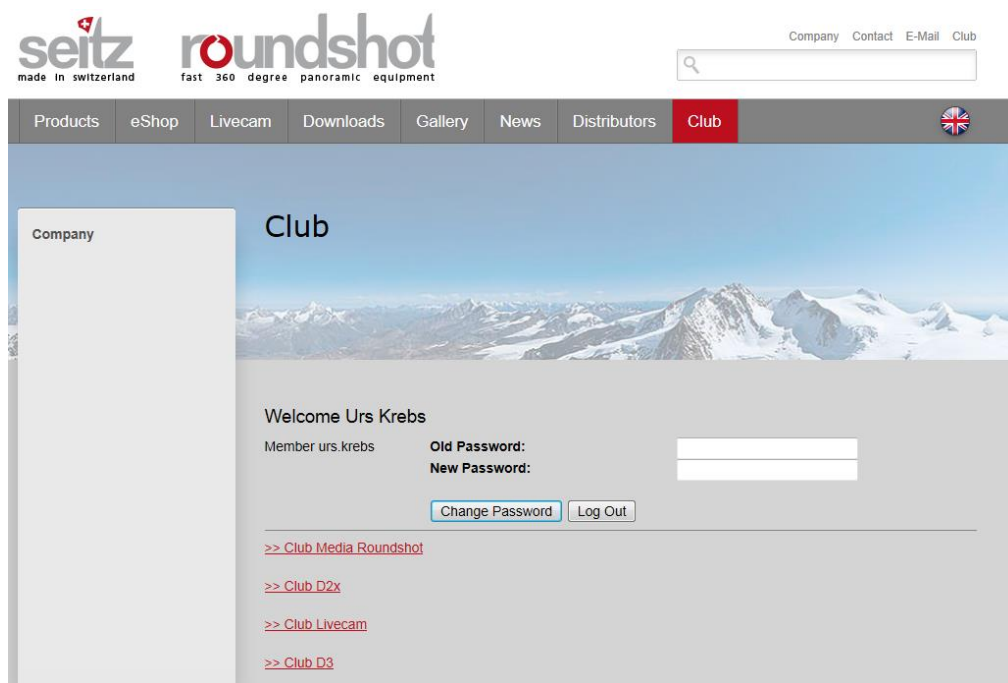## 6.4.2 Software & firmware updates

Sometimes copying programs or flash files on USB sticks can damage them. Therefore we recommend downloading the software directly to your computer from our website.

The Seitz Roundshot D3 software runs on Windows PCs (XP, VISTA, 7) as well as on Mac computers (OS 10.5 and 10.6) with 32-bit or 64-bit Intel processors.

To update the firmware (within Seitz D3 digital scan back) and Seitz Roundshot D3 software proceed as follows:

- Set the LAN connection properties to: detect IP and DNS server address automatically
- Connect to the www.roundshot.ch website and enter „Club“
- Download the latest software directly to your computer
- Make sure that the active account has Administrator rights (otherwise restart the computer and log on)
- Unzip the new installation exe file to your desktop, launch the installation file
- Choose your favorite language and follow the instructions
- Set the LAN connection properties again to: 10.0.0.20, 255.0.0.0 (or your personal settings)
- Connect to the camera

Connect to the "Club" website at www.roundshot.com
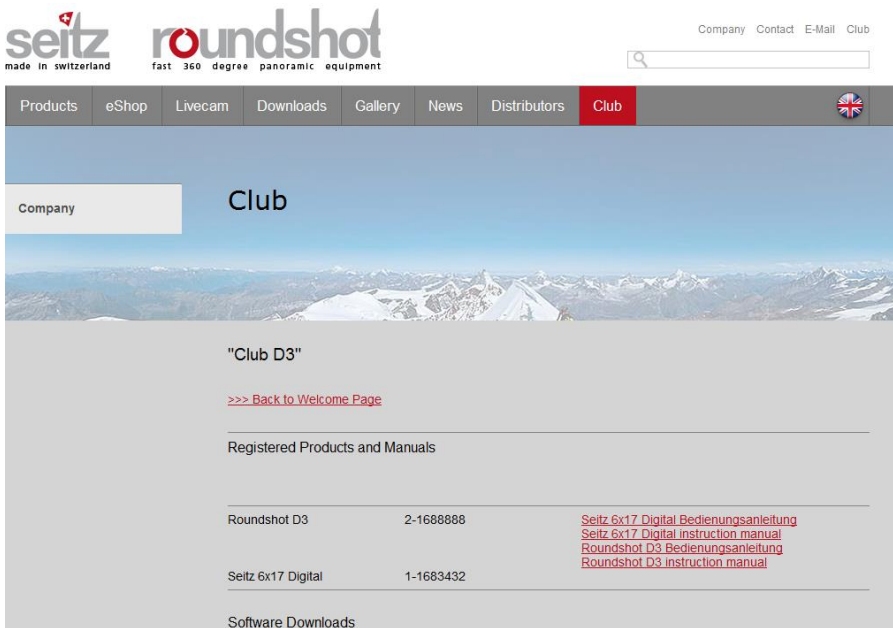Please change your password on your first visit.

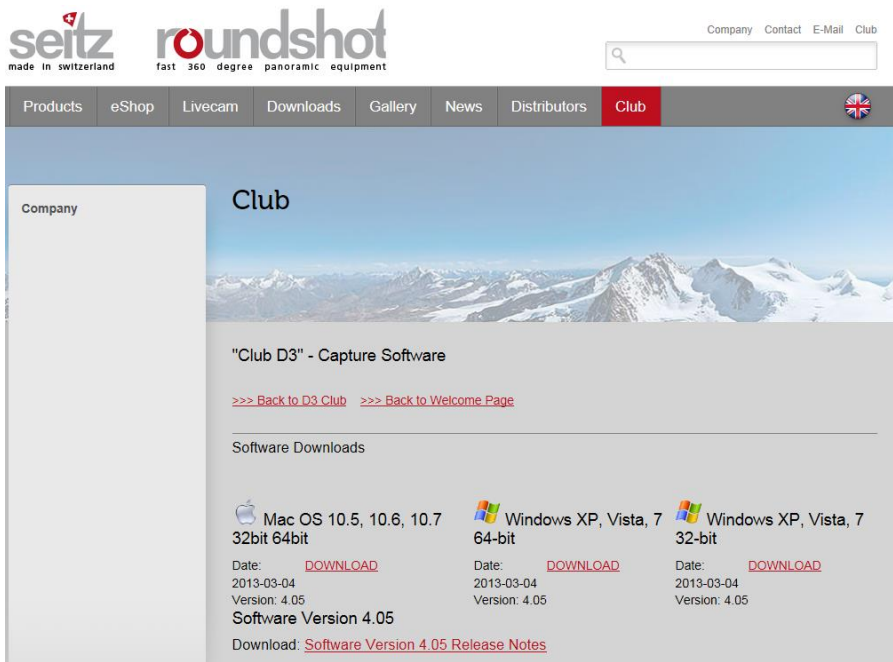## 6.4 „Club D3 " (continued)

6.4.2 Software & firmware updates (continued)

In the **"Club D3"** your registered products are displayed and the latest **instruction manuals** are available for download.

In **"Software Downloads"** both the most up-to-date version of the **Seitz raw converter software** and the **Seitz Roundshot D3 capture software** are available for download.

6.5 Return of equipment / recycling

Your Seitz product and the accessories are produced from highest quality materials and parts and will provide you continued pleasure. Should you nevertheless want to dispose of your Seitz equipment one day, it should not be placed in normal waste. The correct disposal of your old equipment is a contribution to preventing possible negative causes for the environment.

For optimum recycling we kindly ask you to return us your camera (with accessories) to the following address:

Seitz Phototechnik AG
Environment & Recycling Department
Frauenfelderstrasse 26
8512 Lustdorf / Switzerland

This return shipment to the manufacturer is **free of charge**. The service is available **worldwide**.

Please contact us to arrange the return shipment and prepare the materials for the delivery. Your camera and accessories will be picked up by our courier service and will be recycled in our factory.

We wish you continued success and fun with your Seitz 6x17 Digital!

7. Technical data

Seitz D3 digital scan back

Manufacturer	DALSA Corporation exclusive for Seitz
Type	TDI
Stages	Multiple for sensitivity control
Vertical resolution	
- Seitz D3	7,500 pixels (60mm)
- Seitz D3-2500	2,500 pixels (60mm)
Pixel size	8 x 8 µ
Dynamic range	11 f-stops
Anti-Blooming	> 1,000x

Technical changes reserved

7. Technical data (continued)

Seitz 6x17 Digital

Manufacturer	Seitz Phototechnik AG
Lenses - on Seitz lens board - on adaptor	Large format lenses by Seitz/Schneider Linhof 617 or Fuji 617 large format lenses
Focal lengths	from 90mm to 250mm, 150mm macro option
Shift	+/- 15mm shift of lens directly on camera body
Image size - Seitz 6x17 Digital - Seitz 6x17 Digital 2500	7,500 x 21,250 pixels (60mm x 170mm) 2,500 x 7,083 pixels
Total resolution - Seitz 6x17 Digital - Seitz 6x17 Digital 2500	160 million pixels 18 million pixels
File sizes at 6x17 - Seitz 6x17 Digital - Seitz 6x17 Digital 2500	raw (16-bit): 307 MB, tiff (48-bit): 922 MB raw (16-bit): 102 MB, tiff (48-bit): 307 MB
Time for 6x17 scan	1 second at full resolution
Exposure range	from 1/2000 sec. to 10 seconds
Exposure control	automatic or manual exposure
Sensitivity control	by selection of TDI stages (1x, 2.5x, 5x, 10x, 20x) or by ISO/ASA (100, 200, 400, 800)
File formats	raw (dng), tiff, jpeg
Camera body* - dimensions - weight	width: 465mm, height: 175mm, depth: 95mm 4.5 kg (camera 3.3 kg, Seitz D3 digital scan back: 0.6 kg, battery 0.6 kg)
Capture software	Seitz Roundshot D3 capture software installed on 64-bit Mac or Windows computer
Ideal capture computer	Motion J3500 tablet PC with gigabit ethernet, fast SSD disks, back-lit LED screen for outdoor viewability - dimensions: 323 x 231 x 23mm (13 x 9" x 1") - weight: 1.8 kg
Raw conversion software	Seitz Roundshot raw converter, Adobe camera raw/Photoshop, Lightroom, installed on 64-bit Mac or Windows computer
Image transfer	gigabit ethernet
Power supply (camera)	12V 4.5A NiMh battery
Battery charger	110-220V universal charger - plugs provided for EU, North America, UK, Australia, Asia
Language support	English, German, French, Italian, Spanish, Chinese, Japanese

Technical changes reserved

Impressum