

Instruction Manual



Roundshot Metric – version June 2017

Software release:

Roundshot Metric version 2.18 (April 2017)



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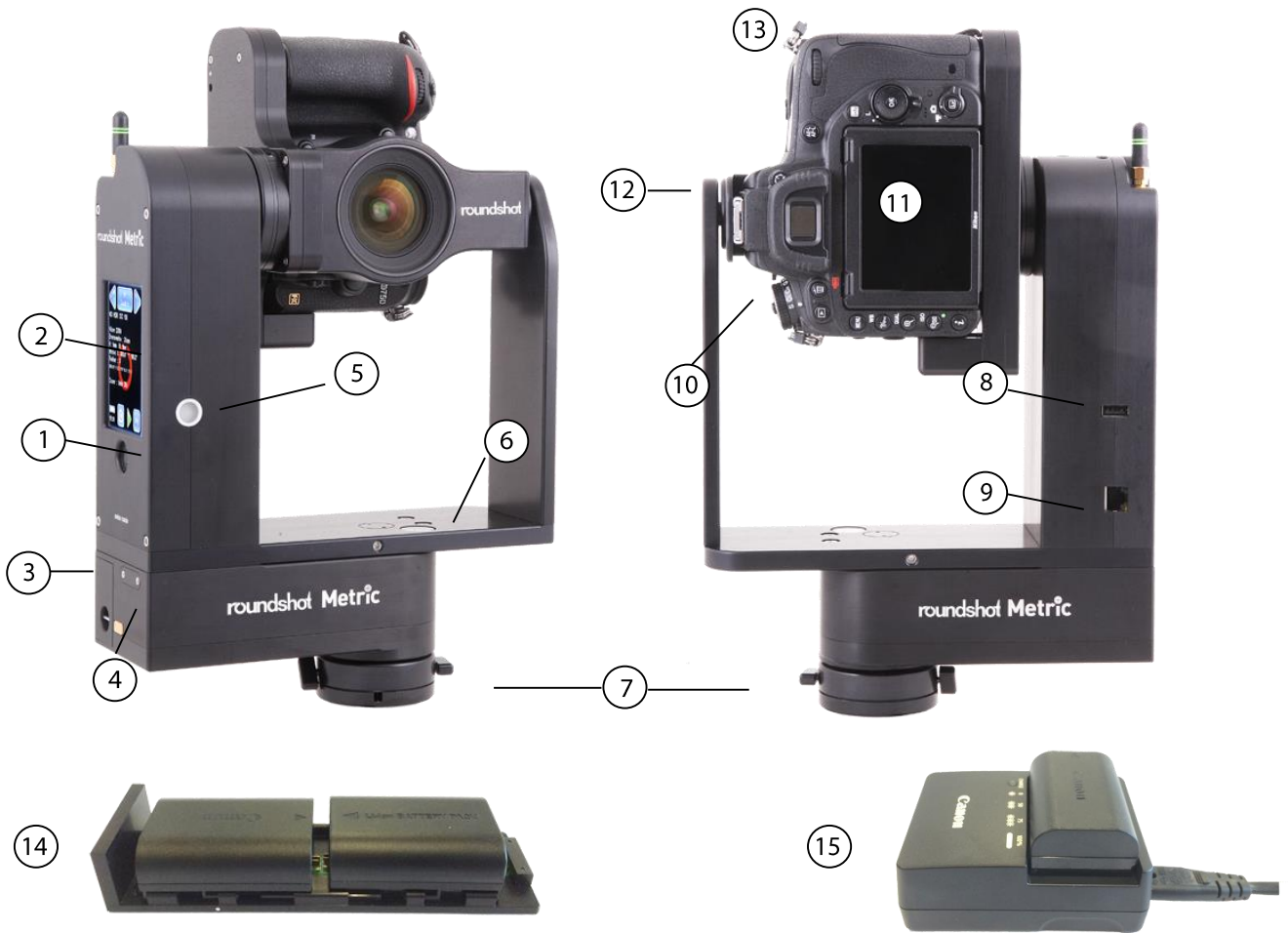
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1. System Set-Up

1.1 Roundshot Metric - overview



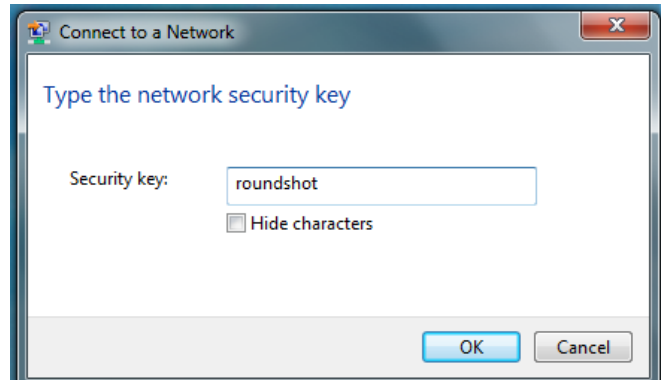
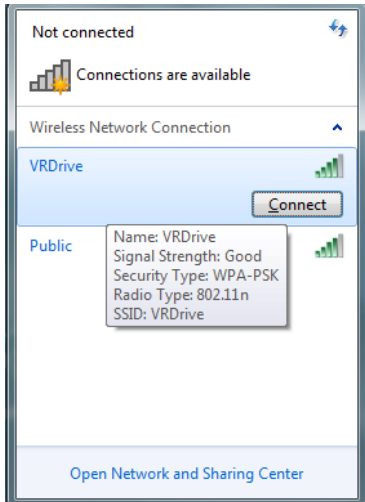
Roundshot Metric components

- | | |
|--------------------------|--|
| ① on/off button | ⑩ Digital camera |
| ② touch screen interface | ⑪ Digital camera screen |
| ③ battery case | ⑫ Viewfinder |
| ④ battery case lock | ⑬ Digital camera controls – please refer to separate user manual |
| ⑤ light meter | ⑭ 2 LP-E6 camera batteries on slider |
| ⑥ spirit level | ⑮ battery charger LC-E6E for LP-E6 |
| ⑦ 360° quick lock | |
| ⑧ USB socket | |
| ⑨ ethernet socket | |

1.2 Remote controlling the Roundshot Metric with wifi devices

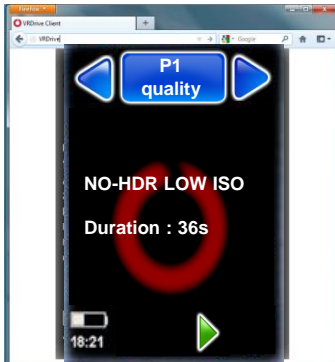
It is possible to remote control the Roundshot Metric with any computer or smart phone equipped with wifi.

The first step is to connect the computer or smart phone to the **Roundshot Metric** wireless network and type the following password: **roundshot**



Then open any web browser and type in the URL : **http://192.168.169.15**.

The browser window will now show the screen content of the Roundshot Metric. All functionalities are identical with the ones displayed on the touch screen.



Summary of default IPs:

Router:	192.168.169.2
Roundshot Metric:	192.168.169.15
Browser:	192.168.169.15



The default IPs can be changed, for example to adapt them to a different network. To do this, access the router software by opening a browser window with the IP 192.168.169.2 and change the IP range in the router. Adapt the IPs in the Roundshot Metric and in the Browser window.

1.3 Checklist: setting up the digital camera

Your Roundshot Metric is delivered with the following **camera parameters** already correctly set. **Please make sure not to change these** as otherwise the capture or processing of images may not work properly.



Always use **manual exposure**. With automatic exposure the Roundshot Metric can no longer set up the exposure values (exposure speed, f-stop, ISO/ASA).



Always use **manual focusing**. To prevent any focus variation, the lens is covered with a calibration ring.



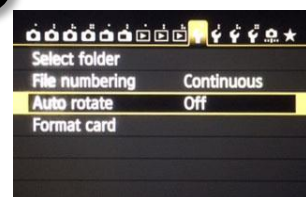
Use a **fast storage card** with enough capacity.



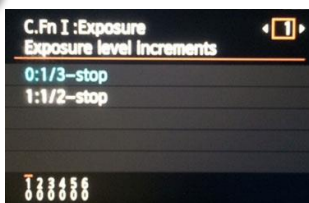
Set the **white balance to a fixed value**. When setting the white balance to “auto”, every image will have a different tone, making the stitching of the sphere problematic.



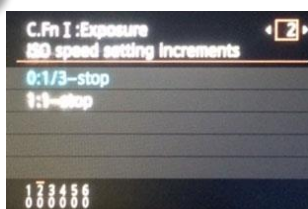
Choose **image quality JPEG L fine or raw format**.



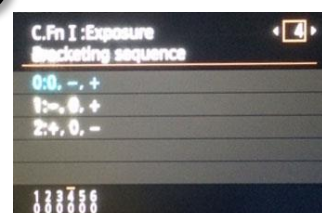
Turn the **“Auto rotate”** feature to **“off”**. When automatically rotating the images the stitching will not perform correctly.



Set the **exposure increments to 1/3 steps**. When selecting 1/2 steps the Roundshot Metric can no longer set up the correct exposures for HDR bracketing.



Set the **ISO speed setting increments to 1/3 steps**. When selecting 1/1 steps the Roundshot Metric can no longer set up the correct exposures for HDR bracketing.



Turn off any exposure bracketing sequence. The Roundshot Metric creates its own bracketing sequence by controlling the camera exposures, f-stop and ISO.

2. Roundshot Metric Workflow

2.1 Workflow overview



Typical time requirements

- 1-2 minutes for start-up
- Few seconds per new location depending on light situation

Depends on

- type of program (normal or HDR)
- level of bracketing
- choice of ISO/ASA
- pausing/resuming

Typical capture time (fast exposure speeds):

- No HDR: 50 seconds
- HDR with 3 brackets: 2 minutes 25 seconds
- HDR with 5 brackets: 3 minutes 45 seconds
- HDR with 7 brackets: 5 minutes 05 seconds

- Depends on reading speed of memory card (USB 2.0 or 3.0), with high speed card 70 MB/sec.
- 20 seconds for copying (reading + writing) 1 GB of data

- No HDR: approximately 3 minutes
- HDR 3 brackets: } approximately 4-5 minutes
- HDR 5 brackets: }
- HDR 7 brackets: }

- When arranging the scene well and pausing/resuming to avoid movement no post production necessary

Optional post production in Photoshop:

- White balance
- Specific tone-mapping of 32-bit HDR into 8- or 16-bit RGB image
- Colour adjustments (especially for tone-mapped HDR panoramas)

2.1.1 Setting up the hardware



Tripod

Place the Roundshot Metric on top of a heavy-duty, solid tripod. Avoid using any additional levelling equipment. Most professional tripods come with a large 3/8" thread.



Levelling

Adjust the tripod with its legs so that the spirit on the Roundshot Metric is perfectly level.



Turn Roundshot Metric on

Turn on the Metric device by pressing the "on" button. The camera will now swing into horizontal position pointing forward.



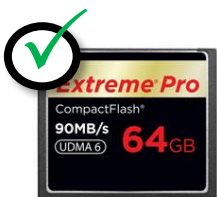
Starting position + light meter

Open the 360° quick lock and turn the Metric into its starting position. When doing this, point the light meter into an area with average light intensity. Avoid turning the light meter directly into the sun or into the dark as otherwise the resulting panorama will be either under- or overexposed.

Important: When pressing the "start" button on the touch screen make sure not to cover the light meter with your fingers.

Connect wifi remote control (optional)

Connect a device (smart phone or computer) for remote control by enabling the wifi network (VR Drive) and by opening a browser window with the following IP: 192.168.169.15. It is also possible to connect the Roundshot Metric by ethernet cable to a computer.



Check camera settings + empty memory card

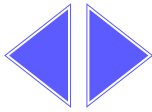
Make sure that all camera parameters are correctly set according to the check-list provided in section 1.3. Delete the images stored on the memory card to make space for new projects.



2.1.2 Image capture

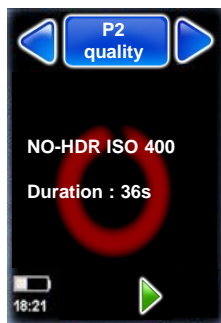
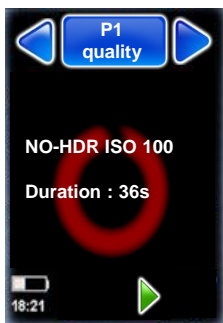
The Roundshot Metric is shipped with **8 standard programs**:

- P1 no HDR ISO 100
- P2 no HDR ISO 400
- P3 HDR-3 ISO 100
- P4 HDR-3 ISO 400
- P5 HDR-5 ISO 100
- P6 HDR-5 ISO 400
- P7 HDR-7 ISO 100
- P8 HDR-7 ISO 400



Select the arrows right/left to change programs

Features of “no HDR” programs



- Releases one image per position
- Provides the images for a standard 8-bit panorama
- Option “ISO 400” for faster capture in lower-light conditions



- 15 positions
- 15 images



50 seconds

For all programs the exposure is read by the **Roundshot Metric light meter** and set via **USB control** on the camera. The USB connection is also used to **release the images**, for **release control** and for **writing capture information** into image metadata.

To guarantee large and consistent depth of field the **aperture (f-stop)** of the camera is always **fixed to f=11**.

The indicated **program durations are estimates** and depend on available light. The above examples are correct for daylight conditions (fast exposure speeds). When shooting indoors image capture may take longer – depending on choice of ISO/ASA.



Capturing the images with low ISO/ASA provides better quality images (less noise). This is a benefit when using the spheres for 3D measurement applications. For 3D measurement projects please always use ISO/ASA=100 (P1, P3, P5 or P7 only).

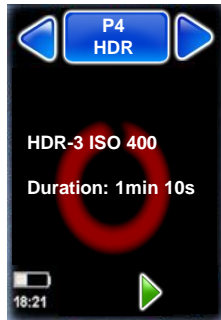
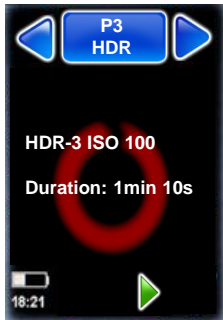


We can provide special programs for image capture at higher ISOs. However, the spheres created with such high ISO values will not be suitable for 3D applications. Please contact us by email to obtain these programs and follow the instructions for importing the programs provided in this instruction manual.

2.1.2 Image capture (continued)



Features of HDR programs



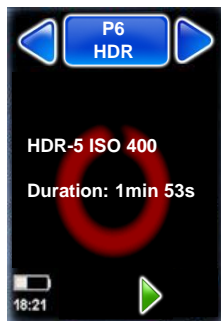
- Releases **three images** per position with 2-stop difference in exposure (bracketing) between images
- Enables 32-bit HDR panoramas allowing better visibility of features
- Option “ISO 400” for faster capture in lower-light conditions



- 15 positions
- 45 images



2 minutes 25 seconds



- Releases **five images** per position with 2-stop difference in exposure (bracketing) between images
- Enables 32-bit HDR panoramas allowing better visibility of features
- Option “ISO 400” for faster capture in low-light conditions



- 15 positions
- 75 images



3 minutes 45 seconds



- Releases **seven images** per position with 2-stop difference in exposure (bracketing) between images
- Enables 32-bit HDR panoramas allowing better visibility of features
- Option “high ISO” for faster capture in low-light conditions (1600 instead of 200)



- 15 positions
- 105 images



5 minutes 05 seconds



Capturing the images with low ISO/ASA provides better quality images (less noise). This is a benefit when using the spheres for 3D measurement applications. For 3D measurement projects please always use ISO/ASA=100 (P1, P3, P5 or P7 only).



We can provide special programs for image capture at higher ISOs. However, the spheres created with such high ISO values will not be suitable for 3D applications. Please contact us by email to obtain these programs and follow the instructions for importing the programs provided in this instruction manual.



2.1.2 Image capture (continued)

Import additional (custom) programs

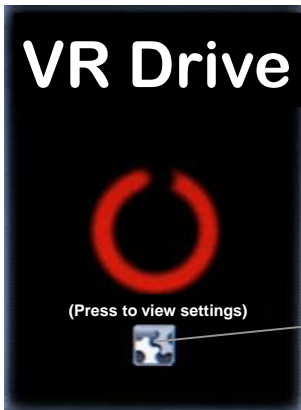
If you require additional programs with different settings, please contact us so we can provide those programs to you. You can then import the programs and add them to the list of available programs:



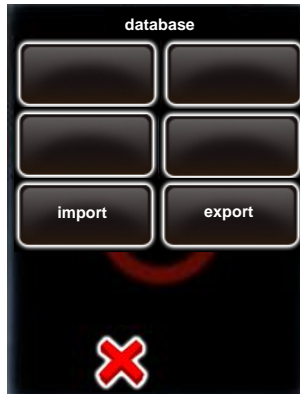
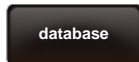
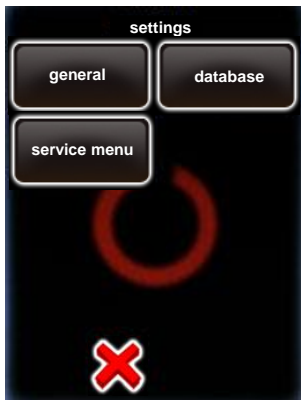
Important: Due to driver incompatibilities, not all USB data sticks can be used for updating the Roundshot Metric.

For security, we supply a Roundshot USB data stick (capacity: 2 GB) with your Roundshot Metric device.

1. Copy the programs received by email on the Roundshot USB key
2. Insert the USB key into the Roundshot Metric USB port
3. Restart the Metric device and quickly press on the “gear” symbol when the unit restarts:



4. Press database/import/append

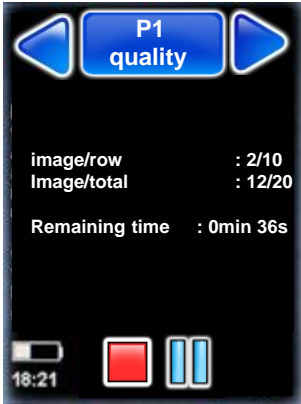


The new programs are added at the end of the existing programs with new program IDs.



2.1.2 Image capture (continued)

Select the desired program and press “start”



While the Roundshot Metric is running, the touch screen display shows the **progress of image taking**:

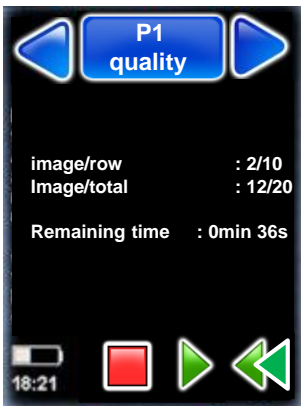
- Image / row – shows the current row and image
- Image / total – counts the completed images vs. total
- Remaining time – gives an estimate of time remaining



Stop the program any time by pressing the “**stop**” button. The Metric device will return to its initial position.



Pause the program any time by pressing the “**pause**” button. The Roundshot Metric will pause at its current position.



Once the program is **paused**, it is possible to

- Completely stop the image sequence by pressing “**stop**”
- Resuming the image sequence by pressing “**start**”
- Returning to any image and by pressing “**back**” and resuming by pressing “**play**”

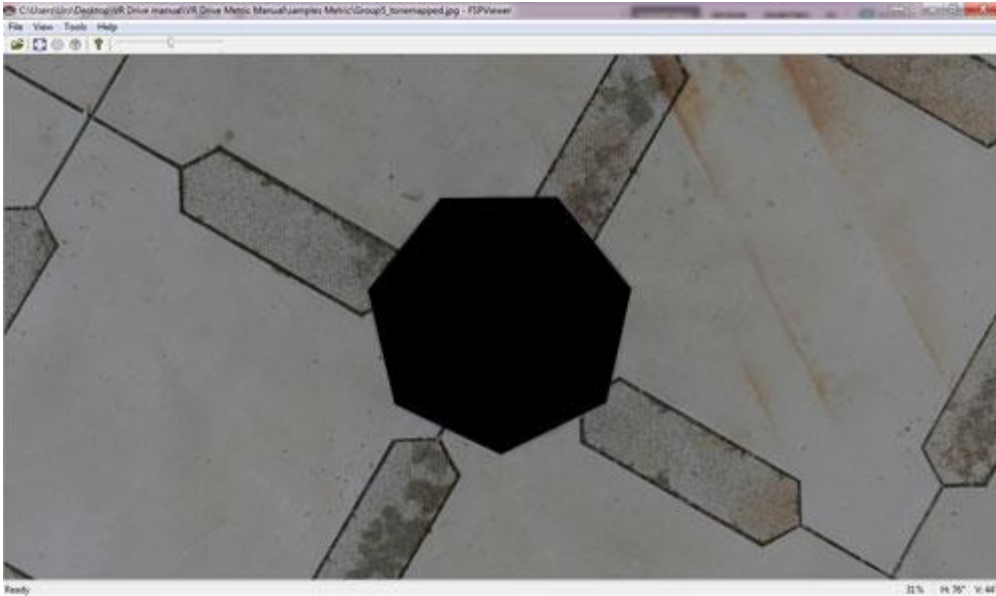


Pause and resume a program in case there is movement in the scene close to the camera. Moving objects or individuals in the scene will lead to ghosting effects in the HDR mixing. A clean panorama reduces the need for post-production.

2.1.2 Image capture (continued)

The images are distributed in such a way that the area of the tripod will be covered with a black mask in the final panorama.

Not capturing the nadir has the benefit of speed: less images need to be captured, making the capture process more efficient.



2.1.3 Image transfer

Remove the memory card from the camera.

Create a new folder called “input” on your computer, **introduce the memory card in a card reader and start transferring the images.**



Important:

Do not transfer the images using the wifi transfer feature of the camera. The camera-internal wifi relies on USB and may interfere with the Roundshot Metric USB control.

2.1.4 Roundshot Image Bundler

After few hours of work with the Roundshot Metric the memory card of your camera will contain a large number of images belonging to different programs.

The **Roundshot Image Bundler** is a dedicated software able to group all images taken with the Metric device by project. This is a great help to **reduce the image sorting time and to avoid image grouping errors**. It is also able to detect projects with redundant images (pause + redo) or incomplete panorama sets (missing images).

Additionally, there is no need to export programs out of the Roundshot Metric. The camera position and direction is directly embedded in the images. The image bundler is able to generate **the correct XML file for every set of images**.

The Roundshot Image Bundler is available for both Windows (64bit) and Mac (64bit) operating systems. You can download the installer from our “club” web page:

http://www.roundshot.com/xml_1/internet/en/application/d169/f155.cfm



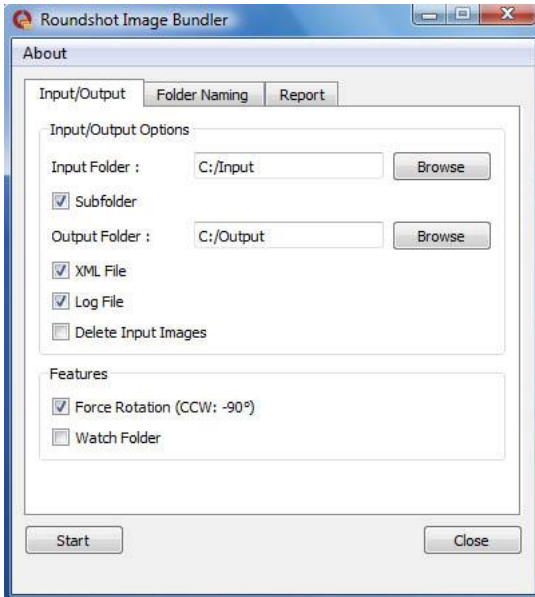
To use the image Bundler, the Metric device needs to write camera position and direction in every image metadata. It is therefore necessary to connect the Metric and the camera with a USB cable.

It is also necessary to activate the “**Write identification**” tool in the USB settings as shown below:



2.1.4 Roundshot Image Bundler (continued)

To use the image bundler, install the software corresponding to your operating system (Windows or Mac) and follow the tutorial below:



Start the Roundshot Image Bundler and set the following parameters:

- **Input folder:** location of the images to be sorted
 - **Subfolder:** activate this option to include all images located in subfolders of “input”
 - **Output folder:** location where the software will save the sorted images
 - **XML file:** if active the Papywizard XML file is generated for every set of images and stored in the same folder
 - **Log file:** if active a log file summarising the image grouping process is generated for every set of images and stored in the same folder. This file shows if there is any missing or redundant images
-
- **Delete input images:** if active the images in the input folder will be moved to the output folder. This option allows faster grouping and low memory usage.
 - **Force rotation (CCW:-90°):** when active all images will be rotated 90° CCW to compensate for the camera orientation.
 - **Watch folder:** when active the image bundler will continuously search for images to be sorted in the input folder. Any new copied image will be automatically sorted until the stop button is pressed or the software is closed.



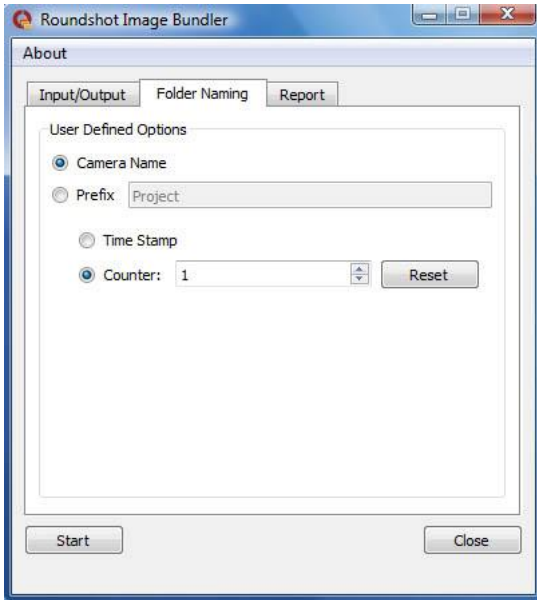
Most cameras are not able to define the correct camera orientation at the nadir and zenith. It is therefore recommended to deactivate any automatic image rotation on the camera. Then use the **Force rotation** function to rotate all image 90°CCW.



When the **watch folder** option is active it is not possible to keep the images in the input folder. This folder is used as “hot folder” and any incoming new image will be sorted and moved to the output folder.

2.1.4 Roundshot Image Bundler (continued)

Before starting the image grouping process, it is possible to define the following folder naming options:



Every folder name is composed by 2 elements.

The first element can be either the **camera name** or a user defined **prefix**.

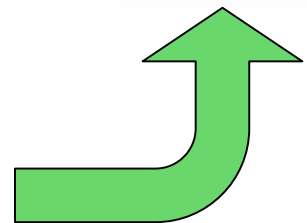
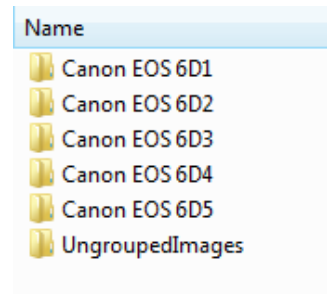
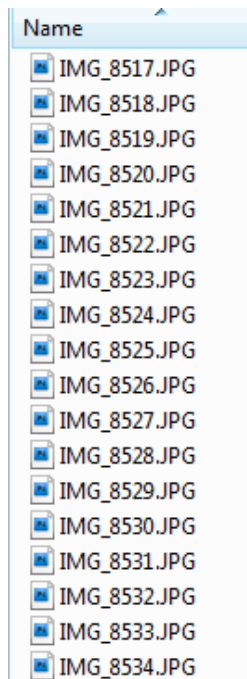
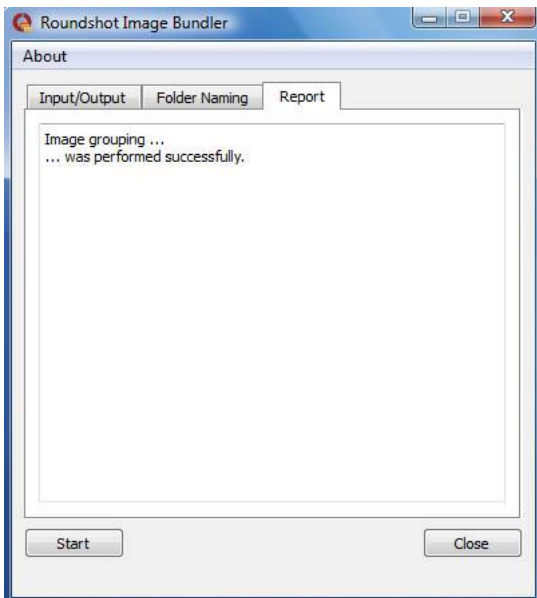
The second element can either be the **project timestamp** or a simple **counter**.

It is possible to reset the counter when needed.

Once all parameters are set, press **Start**. The image grouping will start automatically and a short report is generated in the **Report** tab.

An example of image grouping is shown below. **Every folder contains 1 set of images as well as the Papywizard XML file.**

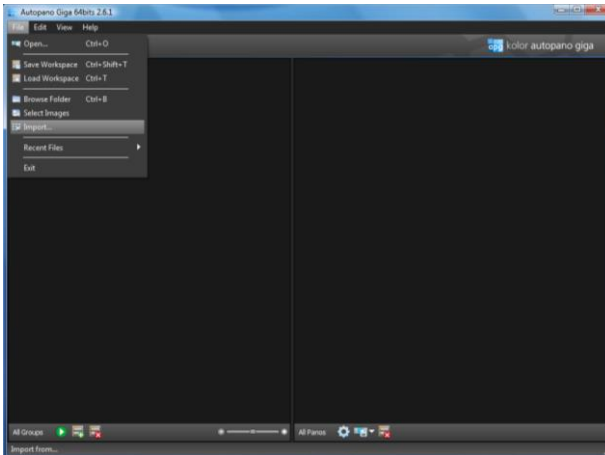
The **“UngroupedImages”** folder contains all images that could not be grouped (for example images taken manually with your camera without Roundshot Metric).



2.1.5 Stitching workflow

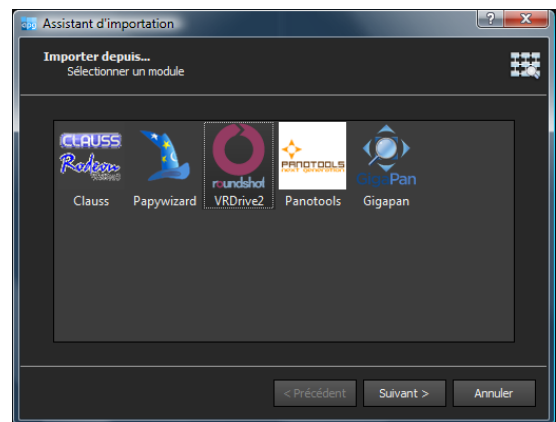
The images can be stitched using any stitching software. As the Roundshot Metric can export xml files defining the position of every image in “Papywizard” format, we recommend using software compatible with “Papywizard”. Here are two examples:

AutoPano + AutoPano Giga (Kolor)



Go to **File/Import** and load the xml file from your computer into the AutoPano software.

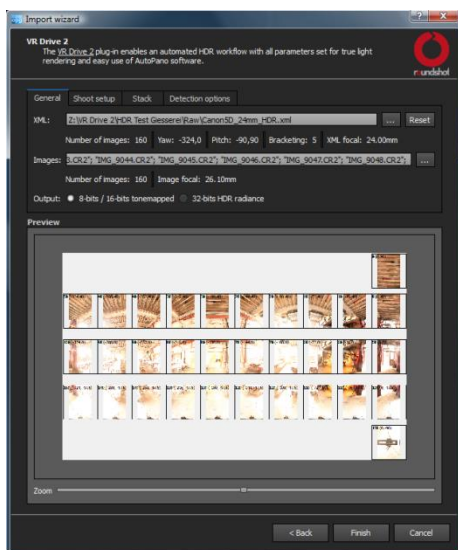
Use the **Roundshot VR Drive 2** plugin.



After selecting the **path of the xml file**, select the **path for loading the images**.

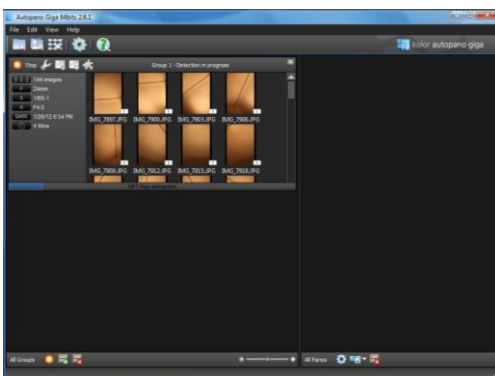
The software now allocates the image sequence to their **exact position** in the panorama.

A **preview** is displayed.



After clicking “**finish**” the import Wizard is complete and the **automatic feature detection** is started.

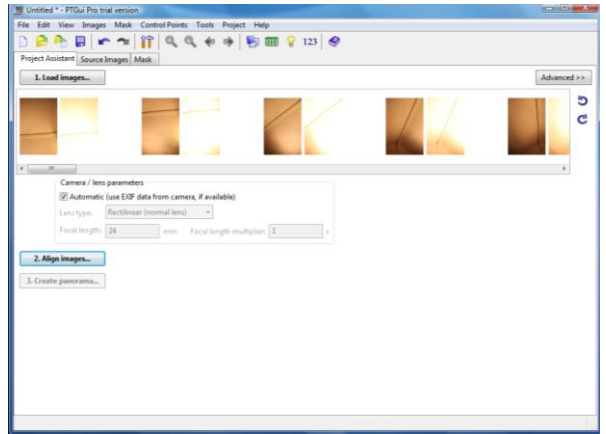
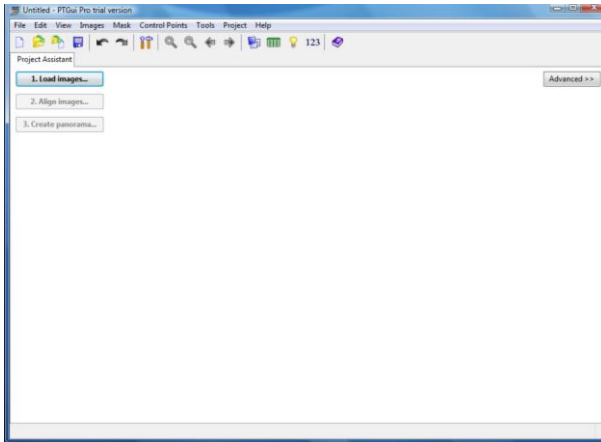
Continue with the **stitching workflow** until final rendering of the panorama.



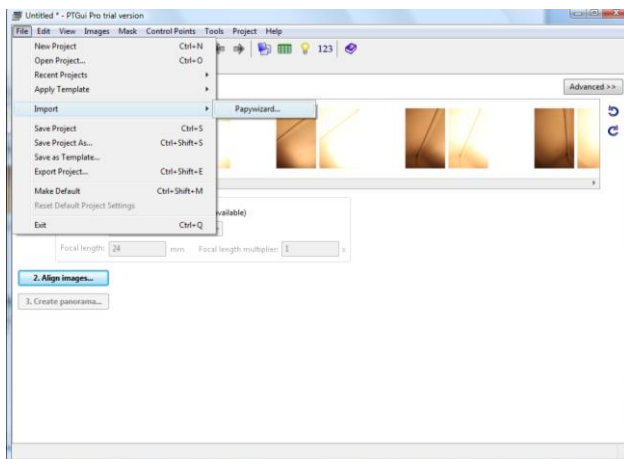
The xml file significantly enhances consistency and efficiency for the stitching of the final panorama.

2.1.5 Stitching workflow (continued)

PTGUI

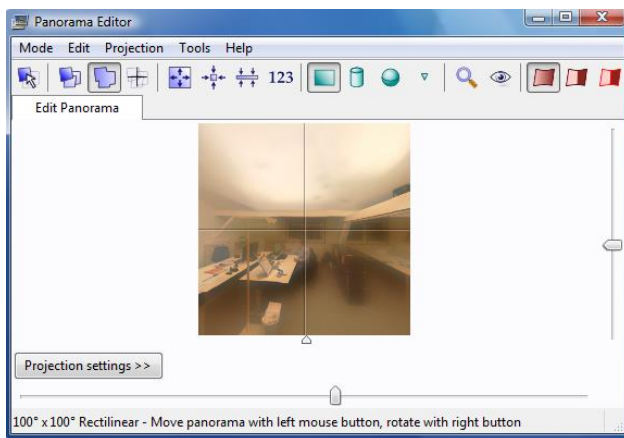


As a first step **load your images** into the PTGUI software.



Then go to **File/Import/Papywizard** and allocate the matching **xml** file to the images.

The software now allocates the image sequence to their **exact positions** in the panorama.



A **preview** is displayed.

Continue with the **stitching workflow** until final rendering of the panorama.



The xml file significantly enhances consistency and efficiency for the stitching of the final panorama.

2.1.5 Stitching workflow (continued)

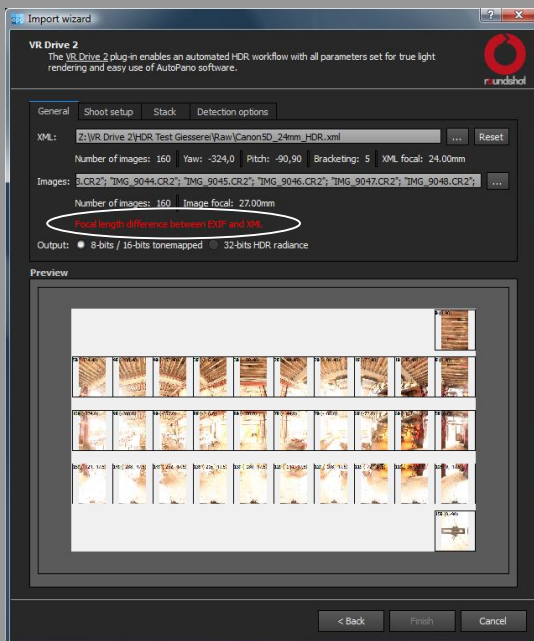


With the xml file and the AutoPano Giga VR Drive plug-in, the stitching process is very straightforward. All parameters should lead to correct stitching by default.

The only remaining task is the optimization of the final panoramic image and special parameters editing.

However, two main errors might appear during this process. These errors are due to differences between xml file and metadata or due to metadata problems. These panoramas can nevertheless be stitched following these recommendations:

Focal length mismatch:



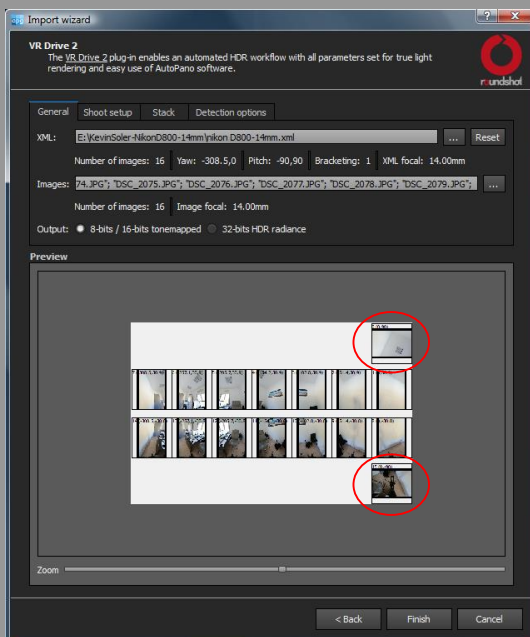
In the import wizard, after loading the images and the xml file, the following error message might be displayed: “Focal length difference between EXIF and XML”.

This might lead to stitching errors.

It is however possible to stitch the images correctly by opening the tab “Shoot setup”, and select the focal length used during the shooting.

To avoid this problem, please make sure to enter the correct focal length and camera in the Roundshot Metric before starting a program.

Zenith/nadir image orientation:



In the import wizard, after loading the images and the xml file, the nadir and the zenith images might appear with a different orientation compared to all other images (in the preview panel).

This error is due to wrong orientation tag written by some cameras at nadir or zenith positions (For example with the Nikon D800).

To solve this problem it is necessary to edit the orientation metadata of these 2 images using an external software like “Photome”. You can write the same value as for the other images.

After saving this new tag import the images again and proceed with stitching.

2.1.5 Stitching workflow (continued)

When generating a full spherical panorama, it is possible to see the tripod and the Roundshot Metric motor in the nadir. These 2 elements are fixed and cannot be removed by anti-ghosting software.

On top of that and depending on the software used for stitching, additional elements might be visible such as connection cables or the Metric L-bracket. These elements are moving with the camera and therefore will appear as transparent objects (ghosts) in the image.

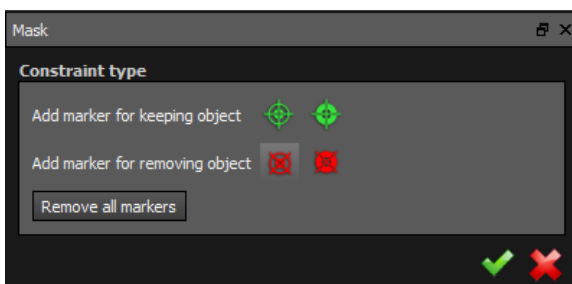
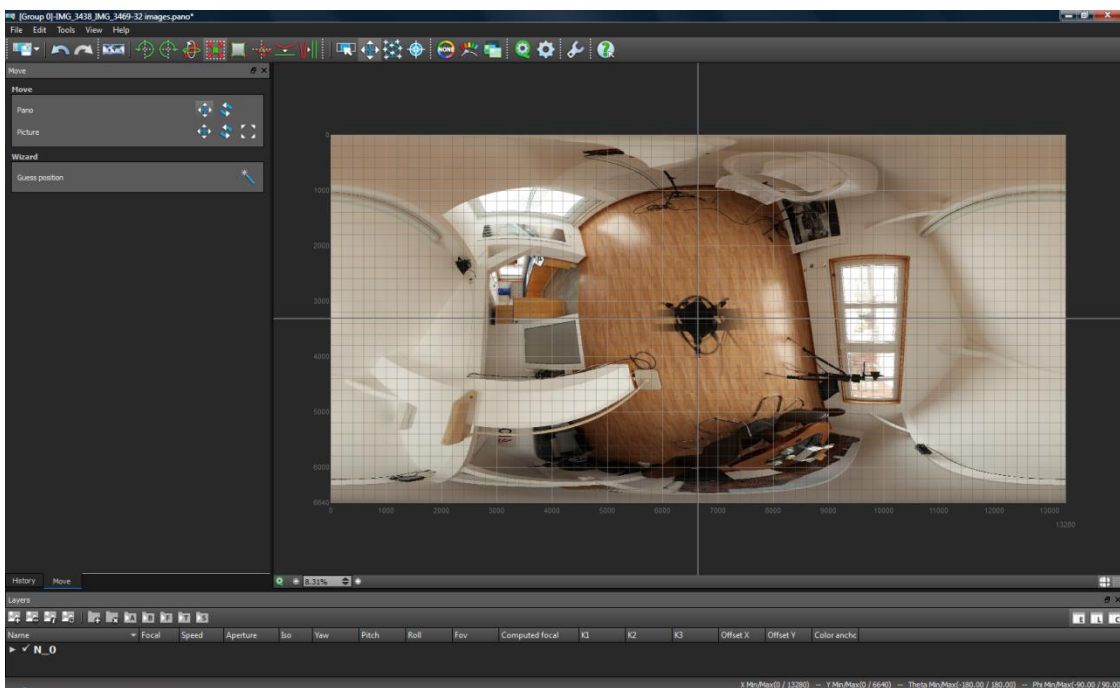
In this section we explain two methods for masking and cleaning the nadir of your panorama.

Removing moving elements using Autopano

After generating the panoramic image, open the **Edit panorama** menu.

Move the nadir of the panorama to the centre using the move tool.

We can now see here all elements described above (tripod, x-motor, cables, L-bracket)



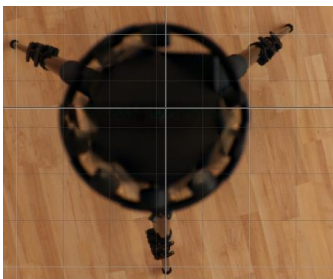
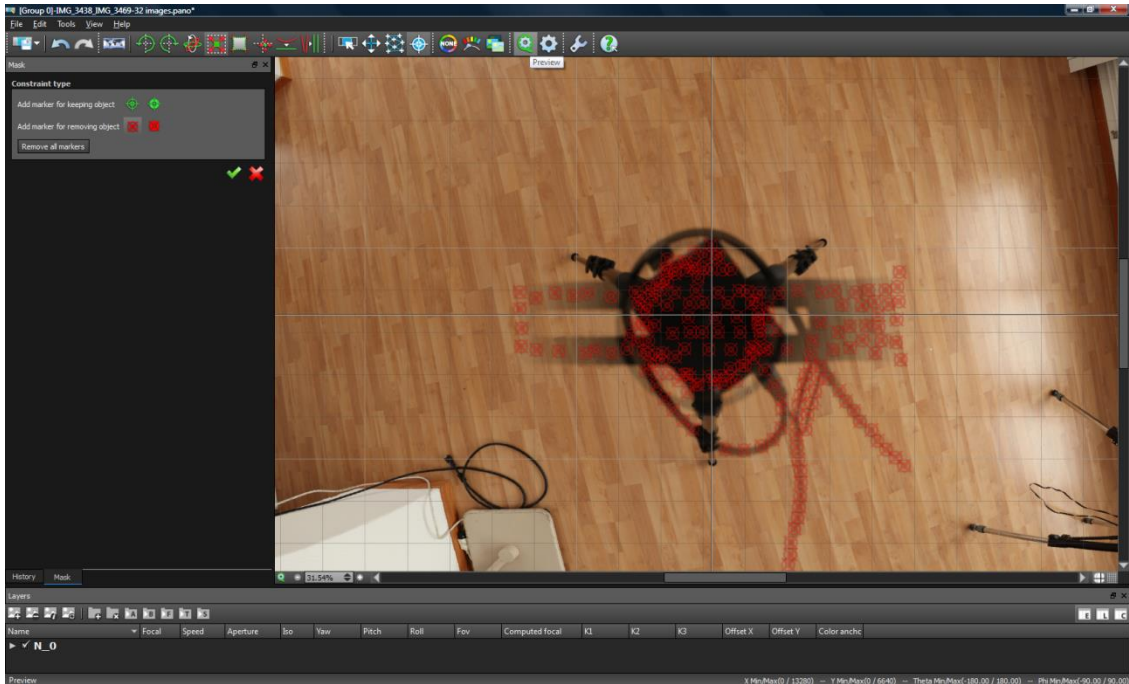
Use the **Mask tool** to select all elements to be removed from the final panorama.

It is possible to use the **“single image”** selection or the **“entire stack”** selection when working with HDR images

2.1.5 Stitching workflow (continued)

As you can see in the following example, all moving elements in the nadir area are selected with the red selection tool. The tripod is not selected as it is fixed and cannot be removed using this tool.

The selection must be done on all images of this layer.



Once the selection is done, click on preview to see the final result.

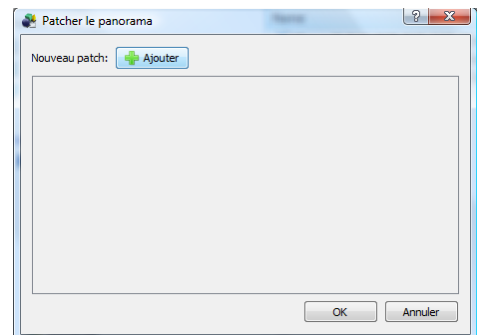
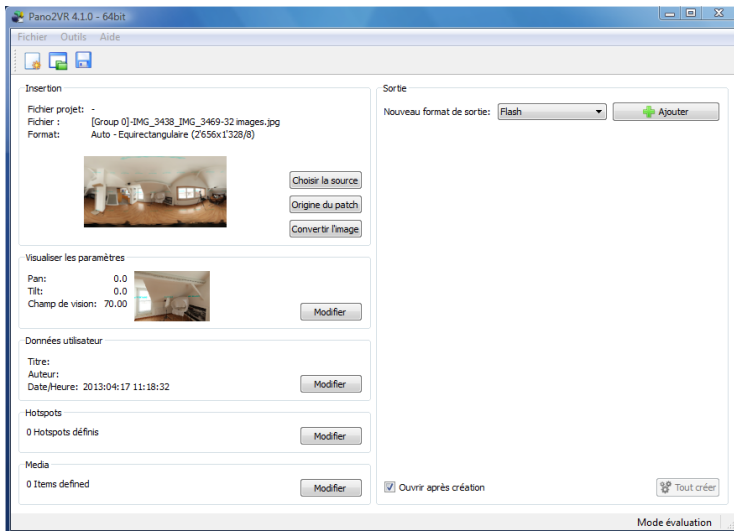
As you can see all moving elements were removed. Only fixed elements remains (tripod, x-motor)

2.1.5 Stitching workflow (continued)

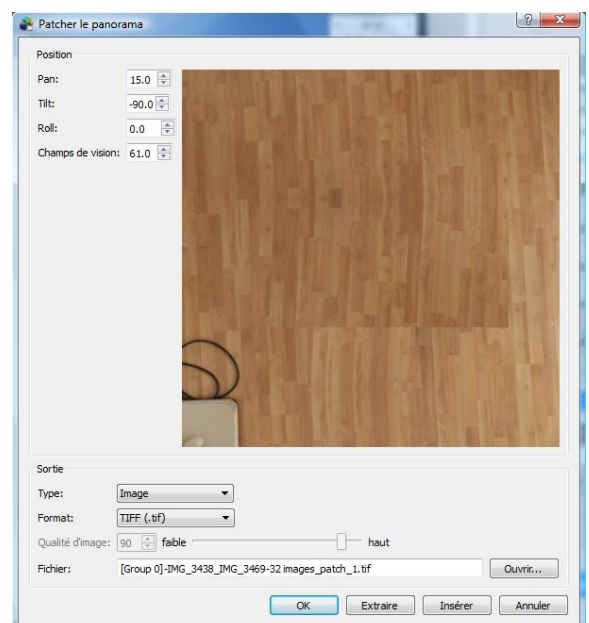
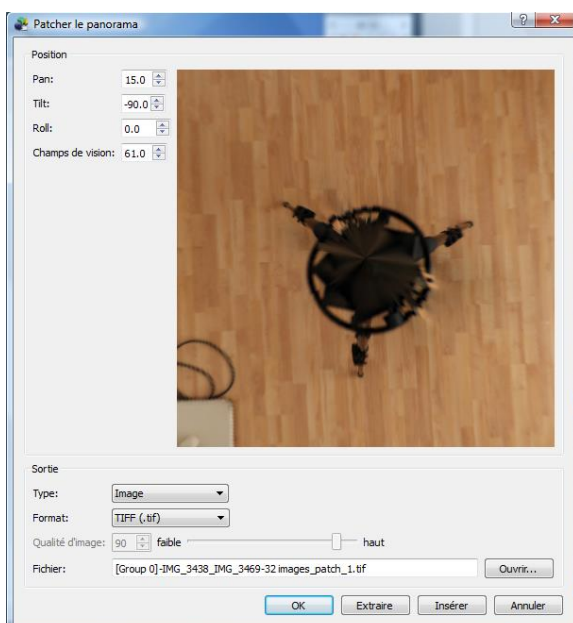
Removing the remaining fixed elements with pano2VR

If it is necessary to remove also the tripod and the x-motor from the image and get a perfectly clean nadir, it is possible to patch it with a modified image using the software Pano2VR as follows.

Open **Pano2VR** and load the panoramic image in tiff or jpeg. Then click on **Patch Input** to add a new patch to the nadir area. Click on **add**.



A new window with a spherical viewer will be opened. Pan tilt the image until you can see only the area necessary for nadir editing. Then click on **extract**. The visible image is then saved on the disk. Open this image and edit it in Photoshop (or similar) then load the patch by clicking on **insert**. The image is now corrected and can be exported again into a tiff file.



3. Specific hardware settings

3.1 Accessing the Roundshot Metric settings menu

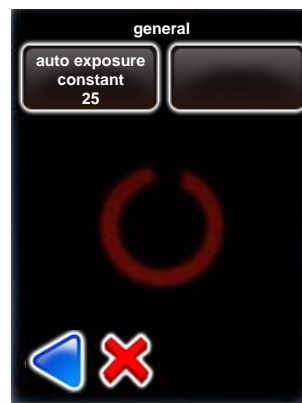
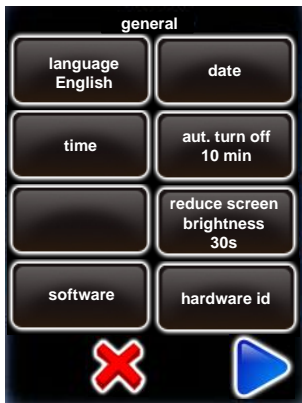
Restart the Roundshot Metric and quickly press on the “gear” symbol when the unit restarts:



press database/import/append



The following general settings are available:



3. Settings menu

3.2 Import or export Roundshot Metric programs

In settings/general it is possible to import or export Metric programs:



To import or export programs, please use the roundshot USB key provided with the Metric.


The “service menu” is reserved for factory service only.

Restart the Roundshot Metric to exit the settings menu.



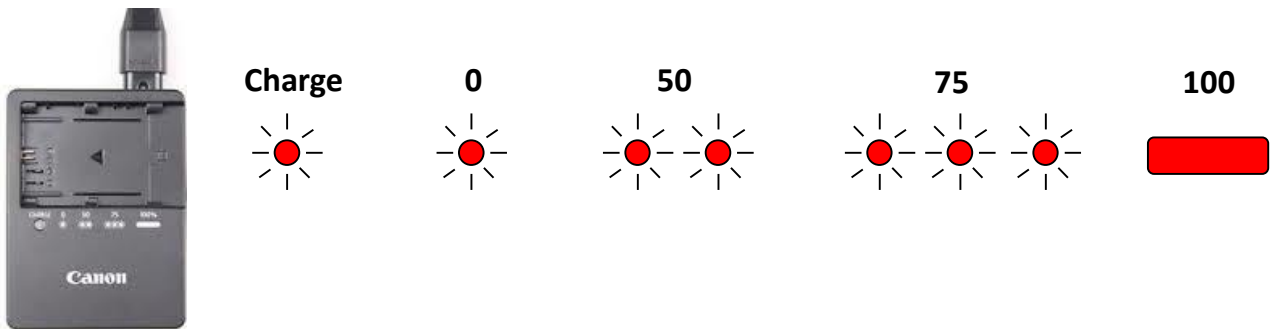
4. Maintenance & Warranty

4.1 Recharging the Roundshot Metric

The Metric device and the connected camera are both powered by **2 rechargeable Li-Ion batteries**. The battery status is indicated permanently on the display. 

Open the **battery case lock** and **pull the battery case out of the Roundshot Metric hardware**. Place the battery in the **universal speed charger** supplied with the Roundshot Metric. Connect the charger to a power source (110-220V).

The normal recharge time is **2 hours per battery** (red blinking LED). As soon as the charging process is complete, the LED changes to constant red.



4.2 Transport & storage

When transporting the Roundshot Metric from one location to the next, turn it off and place it in the explorer case. When turning the unit off, the camera will swing into its parking position looking straight up (+90°).



If the Roundshot Metric is not used for a longer period of time, store it in the explorer case and keep it dry and cool.

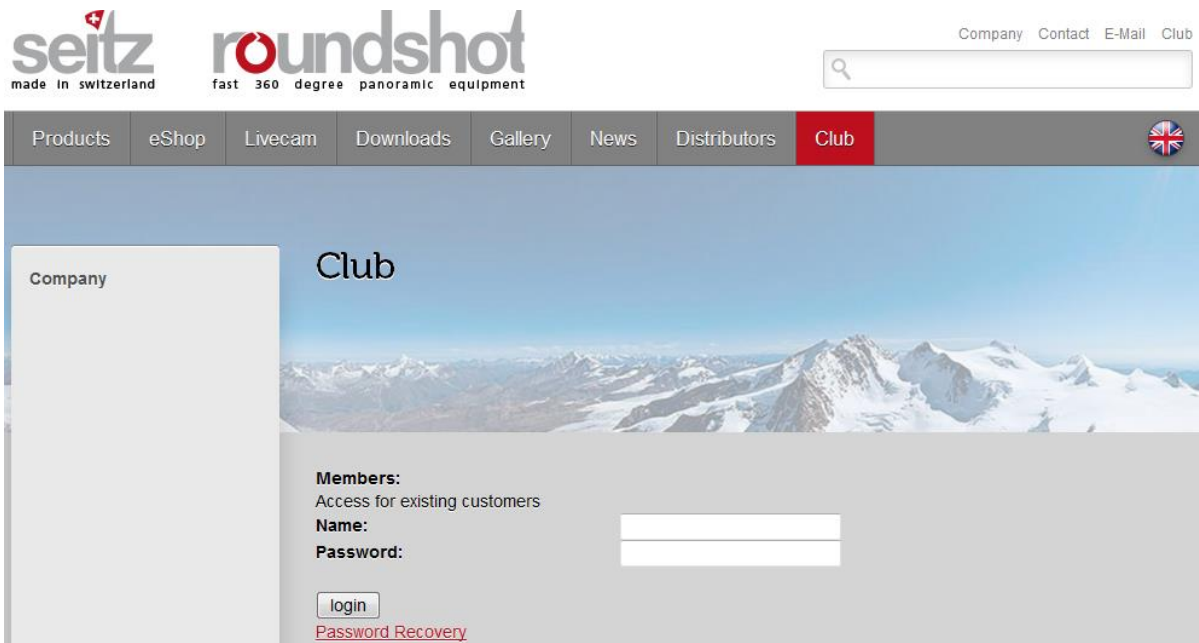
4.3 International Warranty

Your Roundshot Metric is covered by the international 2-year Seitz warranty. The warranty is linked to the hardware ID (serial number) and is stored in our database.

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

We invite you to register your product with us. Registering your product has several advantages:

- Access to the latest Roundshot Metric software downloads and instruction manuals
- Email software update alerts + release notes
- Direct technical assistance in case of a problem



The screenshot shows the 'Club' registration page on the Roundshot website. At the top, there is a navigation bar with links for 'Products', 'eShop', 'Livecam', 'Downloads', 'Gallery', 'News', 'Distributors', and 'Club' (which is highlighted in red). A search bar is located on the right side of the navigation bar. Below the navigation bar, the page features a large background image of a snowy mountain range. On the left side, there is a 'Company' sidebar. The main content area is titled 'Club' and contains a login form with the following fields: 'Name:' and 'Password:'. Below the password field is a 'login' button and a link for 'Password Recovery'.

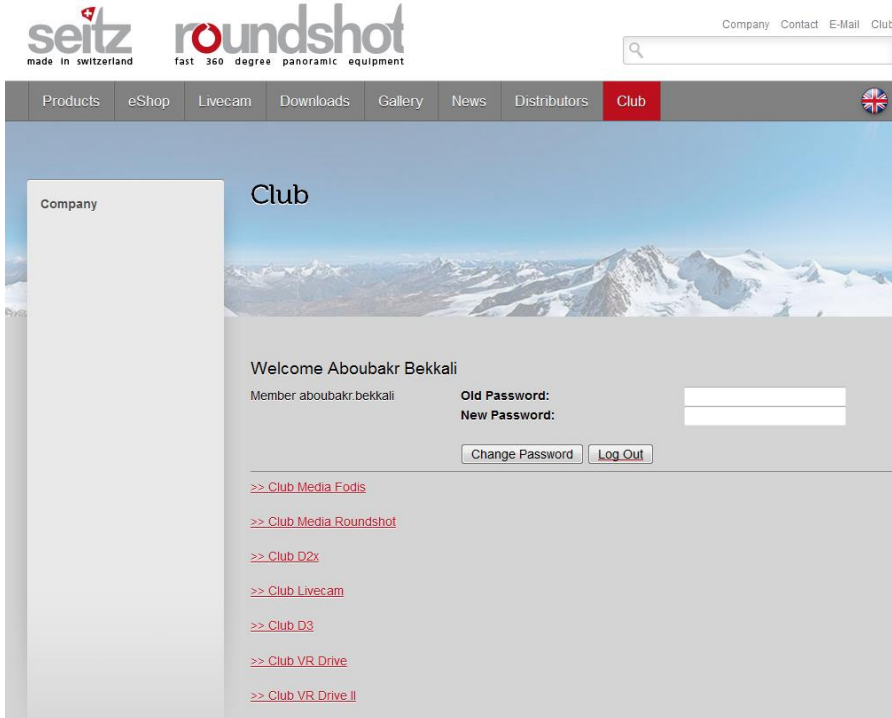
Registering your product is a simple 2-step process:

- 1 Send us an email to club@roundshot.com indicating the hardware ID of your Metric device as well as where you bought the equipment.
- 2 We will activate your membership and confirm your “Club” registration by email.

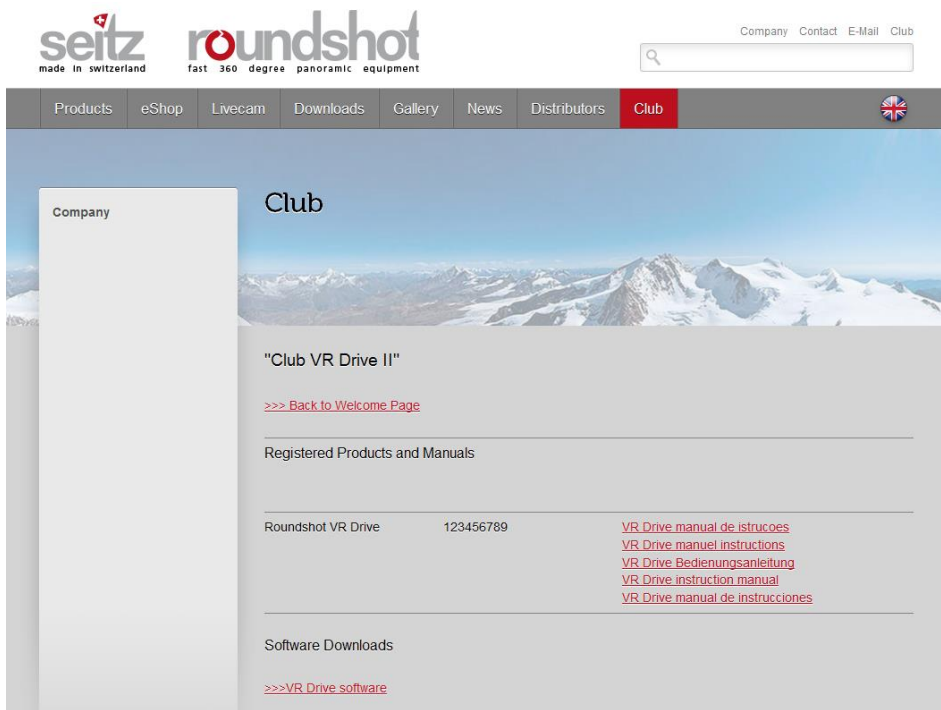
4.4 Software update Roundshot Metric: “Club VR Drive”

Connect to the “Club” website at www.roundshot.com.

Please change your password on your first visit.



The “Club VR Drive” contains your registered product(s), the **latest instruction manuals** as well as the **up-to-date Metric software for download**.

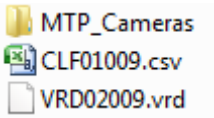


4.4 Software update Roundshot Metric: “Club VR Drive” (continued)

Download the latest software from the “Club VR Drive” website.

Important: unzip the zipped folder.

The software download consists of one directory and two files:



The directory **MTP_Cameras** includes the parameters required for USB communication between Roundshot Metric and camera.

The .vrd file contains the **Roundshot Metric software**. This software will also be updated to include new features and enhanced usability.

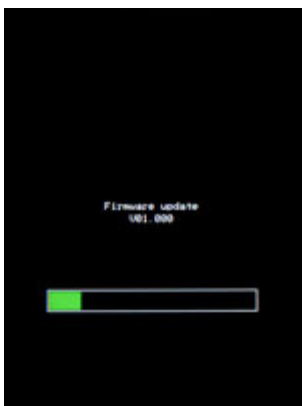
Load the directory and the two files on the USB data stick provided with the Roundshot Metric.



Important: Due to driver incompatibilities, not all USB data sticks can be used for updating the Roundshot Metric.

For security, we supply a Roundshot USB data stick (capacity: 2 GB) with your Metric device.

We recommend that you use the original (and tested) Roundshot USB stick and keep it with your Roundshot Metric at all times.



Turn the Roundshot Metric off by pressing the on/off button during several seconds. The screen will go black.

Insert the Roundshot USB key into the USB drive.



Start up the Roundshot Metric by pressing the on/off button during several seconds until the green Firmware Update progress bar appears.

4.4 Software update Roundshot Metric: “Club Roundshot Metric” (continued)

On/off button



Press several seconds

Keep the Roundshot Metric on/off button **pressed**.

Keep it pressed.

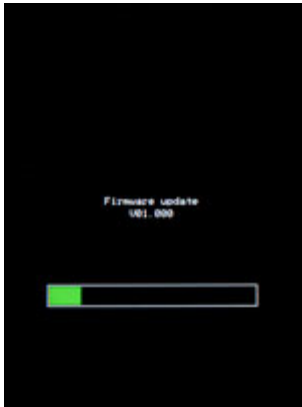
Keep it pressed until the green Firmware update progress bar is displayed:



4.4 Software update Roundshot Metric: “Club Roundshot Metric” (continued)

The Roundshot Metric will now load the new software from the USB key.

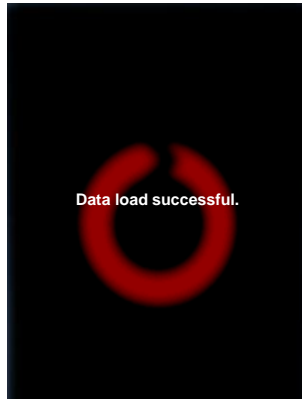
This is confirmed with the status: “**Firmware update / v xx.xxx**”.



- Please wait until the camera database is fully loaded before unplugging the USB key
- Removing the USB before may lead to an incompatibility between Roundshot Metric software and camera database

Once the software update is complete, the Roundshot Metric will also **update the camera database** if the update file is also loaded on the USB key.

This process is confirmed with the message “**camera data are being loaded**”.



As soon as the camera database upload is finished, the Roundshot Metric will go into normal **start-up mode**.

This is confirmed with the **start-up screen**.

The software updates are now complete.

All previous programs and settings remain intact.

It is now safe to remove the USB stick.



4.5 Return of equipment / recycling

Your Roundshot 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 Roundshot 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 Roundshot Metric!

5. Technical Data



FOVEX Metric

Camera compatibility	Nikon D750
Lens	Nikkor 20mm lens
Resolution	231 million pixels (10,752 x 21,504 pixels)
Min. time for image capture	without bracketing (15 images): 50 seconds with HDR bracketing (3x15 images): 2 minute 25 seconds
Min. time for stitching	without bracketing (15 images): 3 minutes with HDR bracketing (3x15 images): 4-5 minutes
Exposure control	automatic by integrated Roundshot light meter + FOVEX Metric capture software
Wifi remote control	built in wifi router for transfer of Roundshot Metric screen contents to smart phones or computer devices
Image transfer	images stored in flash card in camera
Weight	3.7 kg (Roundshot Metric with Nikon D750, lens and batteries)
Dimensions	width: 205 mm, height: 270 mm, depth: 160 mm
Power supply	2x battery pack LP-E6 for both Roundshot Metric and Nikon camera both connected inside Roundshot Metric to supply camera and Roundshot Metric
Battery autonomy	several hours
Battery charger	battery charger LCE-6E
Modes	quality, HDR
Language support	English, German, French, Italian, Spanish, Portuguese, Chinese, Japanese, Russian
Software features	simplified (locked) software interface for easy control can be unlocked to access full Roundshot software interface

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June 2017



Impressum

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June 2017

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fast 360 degree panoramic equipment