

Instruction Manual



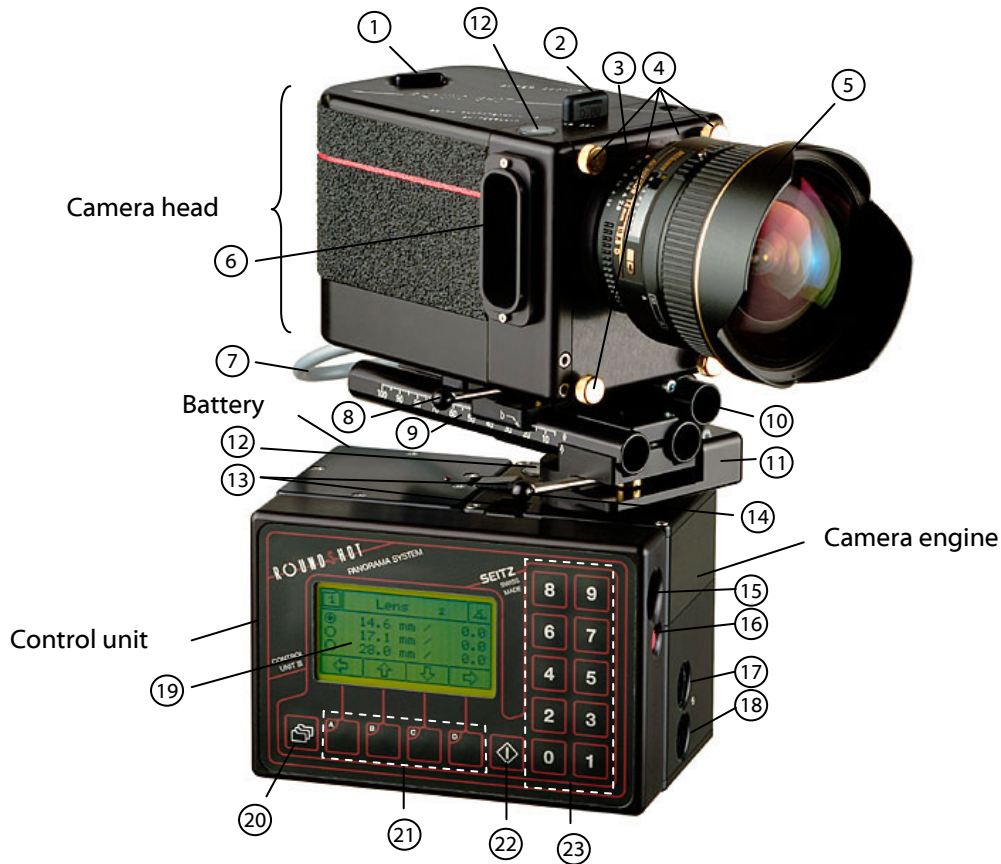
Super 220 VR – „simple skin“

CONTENTS

	Page
1. System overview	
1.1 Camera system Roundshot Super 220 VR	2
1.2 Accessories Roundshot Super 220 VR	4
1.3 Functioning of the camera	6
2. First steps ("simple skin")	
2.1 Turn the camera on	7
2.2 Load film	8
2.3 Enter image parameter	10
2.4 Prepare exposure and release with automatic light meter and variation control	19
2.5 Prepare exposure and release with automatic light meter without variation control	24
2.6 Prepare exposure and release without automatic light meter and without variation control	27
2.7 Film wind to end	30
2.8 Exit „simple skin“ mode	30
2.9 Turn the camera off	30
3. Tips & resources	
3.1 Film length and number of panoramas per film	31
3.2 Tips and resources	32
3.3 Return of equipment / recycling	33
3.3 Error messages and problem resolution	34
4. Technical data	35
Appendix	36
A.1 Lens testing	
A.2 Lens lists	

1. System overview

1.1 Camera system Roundshot Super 220 VR



- | | |
|--|--|
| ① Cover release | ⑮ Data plug (out) for control unit (8-plugs) |
| ② Slit element | ⑯ On button |
| ③ Lens mount | ⑰ Power charge entry (4-plugs) |
| ④ Lens mount screws | ⑱ Data plug (in) for control unit (8-plugs) |
| ⑤ Lens | ⑲ Display |
| ⑥ SLR-viewfinder with tinted glass | ⑳ Menu button |
| ⑦ Connection cable camera head to engine and camera head to control unit | ㉑ Control buttons A, B, C and D |
| ⑧ Optical bench lock | ㉒ Start/stop button |
| ⑨ Optical bench | ㉓ Number keys |
| ⑩ Light meter | |
| ⑪ Connection plate with socket | |
| ⑫ Water bubble indicator | |
| ⑬ Snap locks for control elements (control unit and battery) | |
| ⑭ Snap lock optical bench to engine | |

1.2 Accessories Roundshot Super 220 VR

Accessories

Application/use



Slit elements

Different slit elements for maximum sharpness at different focal lengths:

- 0.4 mm for turntable applications
- 0.8 mm for focal lengths up to 50 mm
- 1.6 mm for focal lengths > 50 mm



Pantilt head

Allows flexible tilting of the camera head of up to +/- 13° to shift the horizon and individual image selection. Suitable for lenses with focal length > 80 mm



Compendium

Slit plate attached to the lens to reduce interfering light rays. Its length can be variably adjusted. For better control of the image the compendium can be easily detached and reattached



Turntable set

Practical accessory for precise object photography (object-movie mode) and for the scanning of cylindrical objects (turntable mode)



Long optical bench

Allows optimum positioning of the camera head for long focal lengths (nodal point)



SLR viewfinder with split screen

Bright viewfinder for easy determination of the image section and sharpness



Viewfinder magnifying glass

Magnifying glass to increase the image view (sharpness control)

Accessories

Application/use



Stereo holder

Allows professional use of Super 220 VR as stereo (3D) panorama camera



NiMh battery 12V 4.5A

Half as heavy as previous battery but at least as powerful. Ideal for expeditions, for which each gram weighs heavily



NiMh battery 12V 9.0A

Does not leave you powerless even in most extreme conditions. Its operation time is 3 times higher than for the standard battery. An absolute must for those photographers that work often in nature far away from a power source



Universal power charger for NiMh battery

New power charger for the new powerful NiMh batteries



Connection cable 2 m

For external control of the camera (detaching of control unit)



Connection cable 6 m

For external control of the camera (detaching of control unit)

1.3 Functioning of the camera

The camera consists of two major elements: the camera head with the lens and the engine with the control unit. The camera head rotates during exposure around its axis while the engine with the control unit remains fixed. When starting the exposure, the release opens a small vertical exposure slit (29). The light that enters through the lens (5) and exposure slit (29) is projected on the cylindrical film plane (28). Simultaneously, the film transport system is activated which transports the film continuously from the film holder for non-exposed film (24) to the film holder for exposed film (26). The selected exposure speed drives the turning speed of the camera of the film transport.



- ②④ Film holder for non-exposed film
- ②⑤ Film (120/220) non-exposed
- ②⑥ Film holder for exposed film
- ②⑦ Film (120/220) exposed
- ②⑧ Film plane and film transport drum
- ②⑨ Exposure slit

2. First steps and „simple skin“

In this chapter we explain how to use the „simple skin“ menu. With this menu the most important camera settings and parameter can be edited using graphical symbols. For further technical instructions please consult the instruction manual version 3.0 for the Roundshot Super 220 VR.

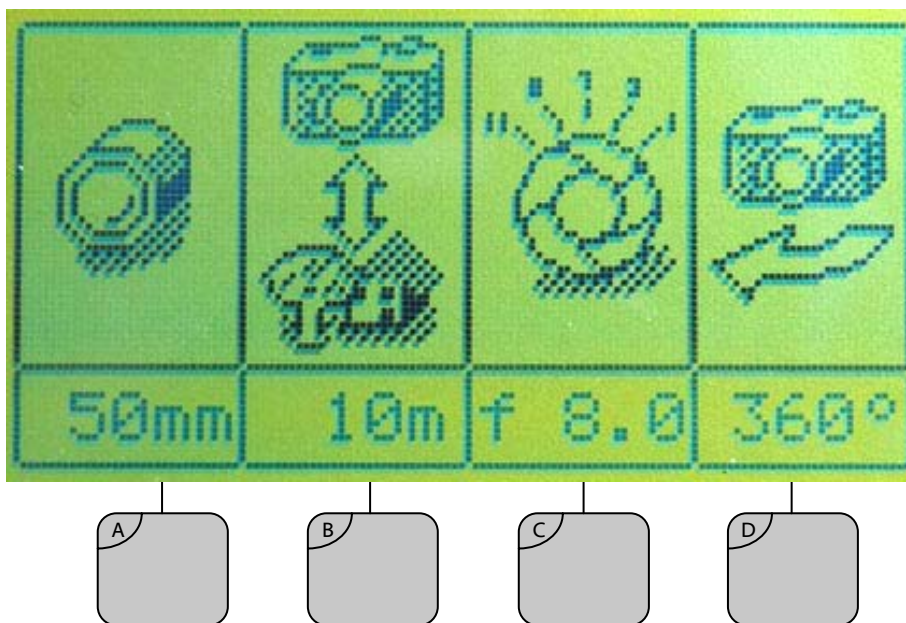
2.1 Turn the camera on

Set up the Super camera with connected control unit, battery and camera engine, attached camera head and desired lens (5) / lens mount (3). Optionally, the control unit can be detached for better convenience and connected with a 2 m or 6 m cable (optional accessory).

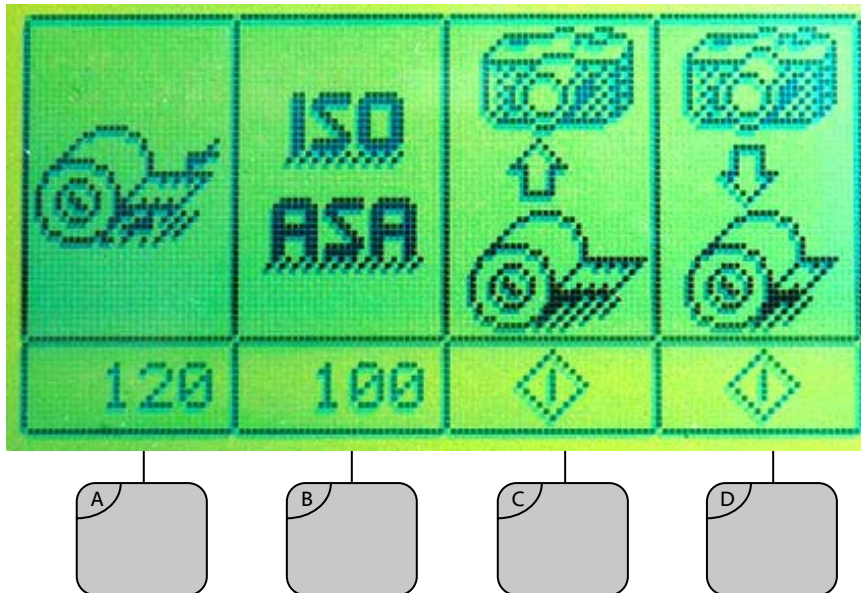
Press the „ON“ button (16).

Without further entry the display automatically shuts off after 10 seconds. This happens to avoid possible unwanted activation of the camera (for example during transport). As soon as a first entry has been detected, the stand-by time of the display is increased to 2 minutes.

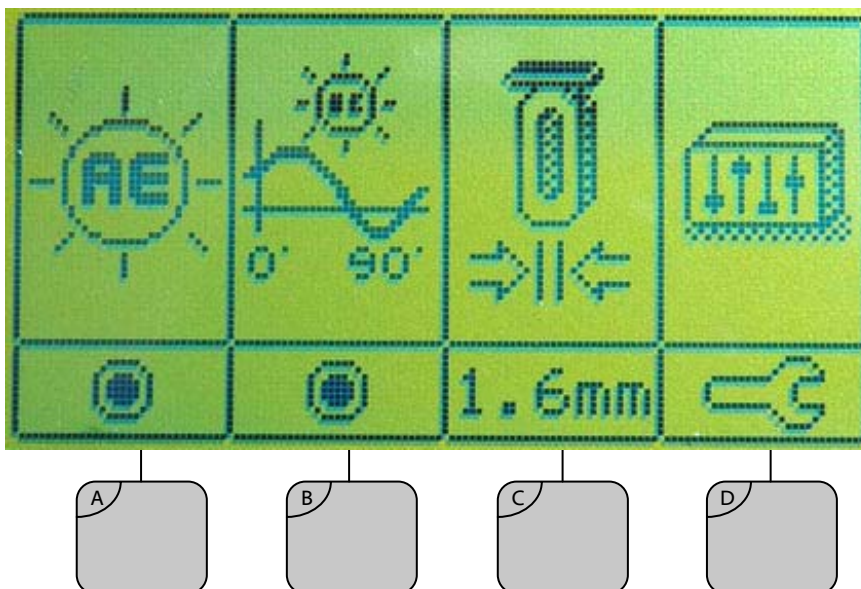
The default factory settings are set to the „simple skin“ menu. You can now see the following menu with 4 graphical symbols:



By pressing the menu button (20) you get to the second part of the menu with another 4 graphical symbols:



By pressing the menu button (20) you get to the third part of the menu with another 4 graphical symbols:



Press the menu button (20) again. This brings you back to the first part of the menu.

2.2 Load film

2.2.1 Load film in the camera

Open the cover release (1) and take off the cover.

Attach an empty film spool in the film holder for exposed film (26). Attach a new, non-exposed film in the film holder for non-exposed film (24).



Place the non-exposed film with the sensitive part outwards on the film plane (28) and turn the transport drum (28) until the beginning of the film reaches the film holder for exposed film (26).



Attach the beginning of the film on the spool. Turn the spool for exposed film so that the film is wound up firmly. For 220 film turn the film further, until the „START“ mark of the film aligns with the mark (dash) on the camera. For 120 film wind on 2 more turns.

Put the cover back on and close the cover release (1) again.

2.2.2 Activate the film in the software

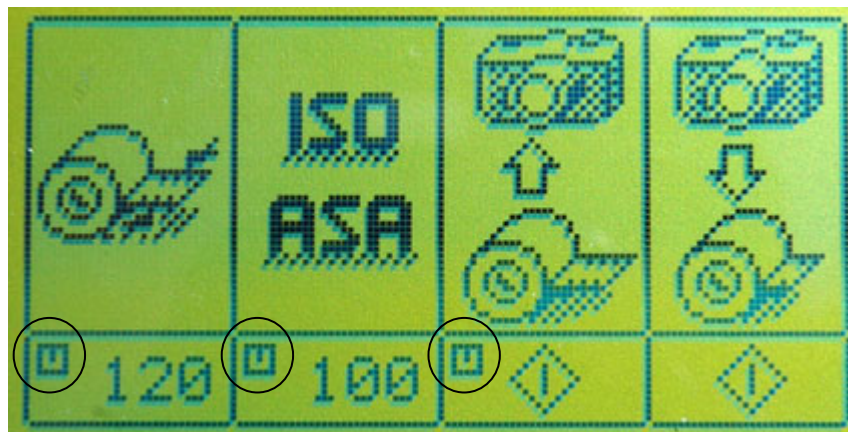
Navigate to the second part of the software by pressing the menu button (20).



As a first step enter the film length (120 or 220). By pressing button „A” you can select pre-programmed film lengths (120 or 220).

Enter now the film sensitivity (ISO/ASA). By pressing button „B” you can select pre-programmed film sensitivities (from 6 to 6400). Press „B” and „1” simultaneously to scroll down in the list.

Once the entries are correct, press „C” and the film is automatically transported to the exact starting position.



Once the functions for film length, film sensitivity and film start are activated, they remain blocked until completion of the film for security reasons.

The film is now loaded and ready.

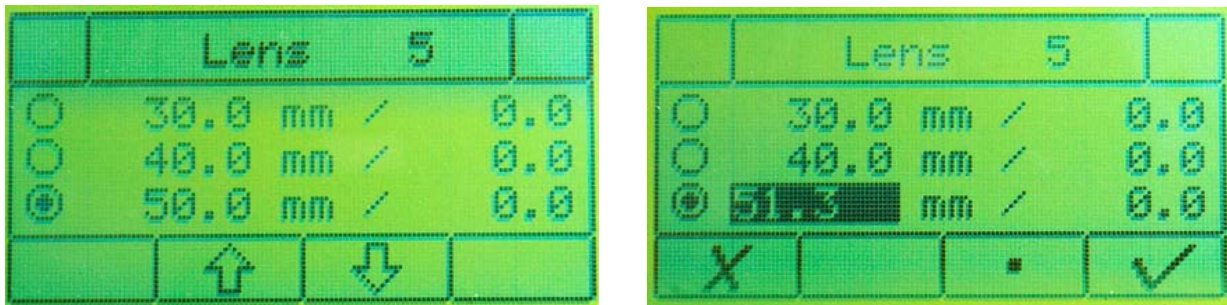
2.3 Enter image parameter

Navigate to the first part of the software by pressing the menu button (20).

2.3.1 Enter focal length

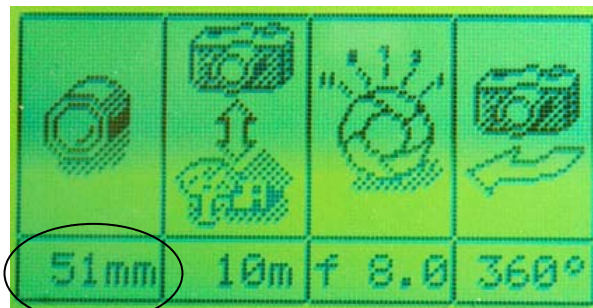
As a first step enter the focal length of the attached lens. A short pressing of button „A“ allows you to select pre-programmed focal lengths from a list (35mm, 50mm, 80mm, 90mm etc.). Press „A“ and „1“ simultaneously to scroll down in the list.

A longer pressing of button „A“ (1 second) makes it possible to edit the list of pre-programmed focal lengths.



This list contains 20 data points. To enter your own, specific focal length (for example 50.3mm) select a pre-programmed focal length with the arrows up („B“) and down („C“) (lens 1..20) and overwrite its value using the number keys. Set the point with button „C“ and confirm with button „D“. Leave the second value at zero and confirm with button „D“.

Back to the main menu with the menu button (20). Your specific entry now appears below the graphical symbol of the focal length.



2.3.2 Enter distance values

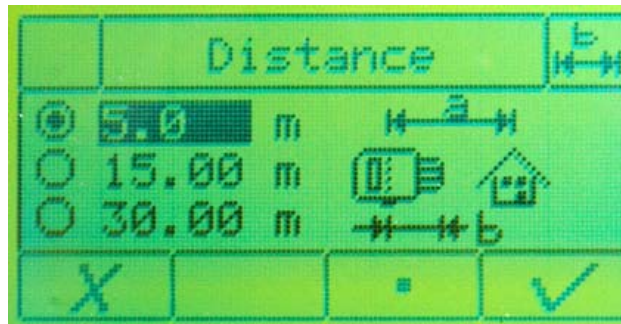
The distance values are important to determine optimum depth of field. A short pressing of button „B” allows you to enter the distance between the object to be photographed and the film plane (27). The list of pre-programmed values contains 5m, 10m, 15m, 20m and infinity. Press „B” and „1” simultaneously to scroll down in the list.

A longer pressing of button „B” (1 second) makes it possible to edit the list of pre-programmed distance values and to determine the correct nodal point.



On a first screen appears the indication of the b-value. This corresponds to the optimum nodal point that can be reached by sliding the camera head along the optical bench (9). The b-value is dependent on the selected focal length and distance setting.

By pressing button „D” a list of pre-programmed distance values (a-value) appears.



Select a pre-programmed value using arrows up („B”) and down („C”) and overwrite the value using the number keys with your own specific value. Set the point with button „C” and confirm with button „D”. This setting has to correspond with the distance setting on the lens.

The following procedure is recommended:

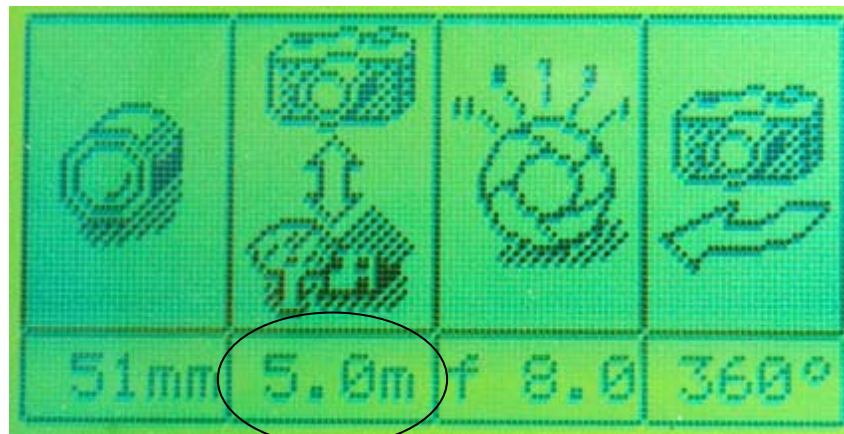
- Set the sharpness using the SLR viewfinder
- Read the distance set on the lens and enter the same value in the software

Once your selection is final, press button „D“ (arrow to the right) again and the new b-value (in mm) now appears on the display.



Release the optical bench lock (8) and position the camera head along the optical bench (9) on the optimum nodal point (b-value). Close the optical bench lock again.

Back to the main menu with the menu button (20). Your specific entry now appears below the graphical symbol of the distance setting.



2.3.3 Enter apertures

The presetting of apertures is important when using the automatic light meter. When doing this make sure that the effective aperture on the lens corresponds with the entry in the software.

A short pressing of button „C“ allows you to enter the desired aperture. The list of pre-programmed values contains:

f=1.0, 1.4, 2.0, 2.8, 3.5, 4.0, 5.6, 8.0, 11, 16, 22, 32, 64, 128 and 256

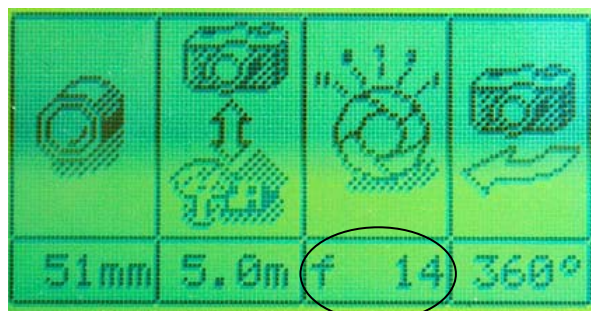
Press „C“ and „1“ simultaneously to scroll down in the list.

A longer pressing of button „C“ (1 second) makes it possible to edit a list of pre-programmed apertures.



A list of pre-programmed apertures appears. Select a pre-programmed value with arrows up „B“ and down „C“ and overwrite the value using the number keys with your own specific value. Set the point with button „C“ and confirm with button „D“.

Back to the main menu with the menu button (20). Your specific entry now appears below the graphical symbol of the aperture setting.



2.3.4 Enter the degree of panorama

To determine the horizontal image angle you can now enter the degree of the panorama.

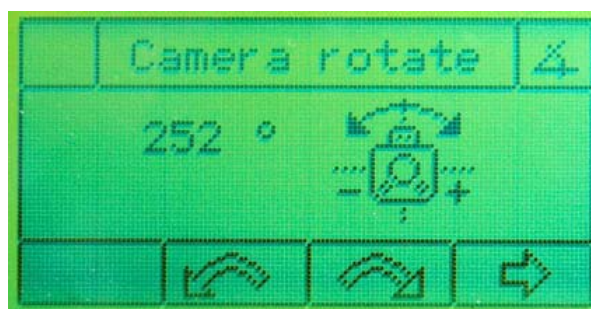
A short pressing of button „D” allows you to enter the desired degree of panorama. The list of pre-programmed angles contains 90°, 180°, 270°, 360° und 450°. Press „D” and „1” simultaneously to scroll down in the list.

A longer pressing of button „D” (1 second) makes it possible to edit a list of pre-programmed degrees.



On a first screen appears the option for camera pre-rotation („camera rotate”). You can move the camera head from its starting position by using arrows left („B”) and right („C”). This allows you to determine the precise horizontal image angle in 1° increments, which can, for example, be valuable for group pictures. Once you have determined the image angle, move the camera head back to the starting position and continue with button „D”.

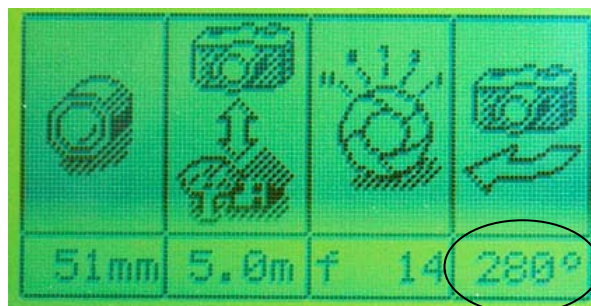
It is also possible to turn the camera head by hand to determine the horizontal image angle.





Now a list of pre-programmed image angles appears. Select a pre-programmed value with buttons up („B“) or („C“) and overwrite this value with the number keys with your own specific value. Set the point with button „C“ and confirm with button „D“. To get back to the camera pre-rotation press button „D“.

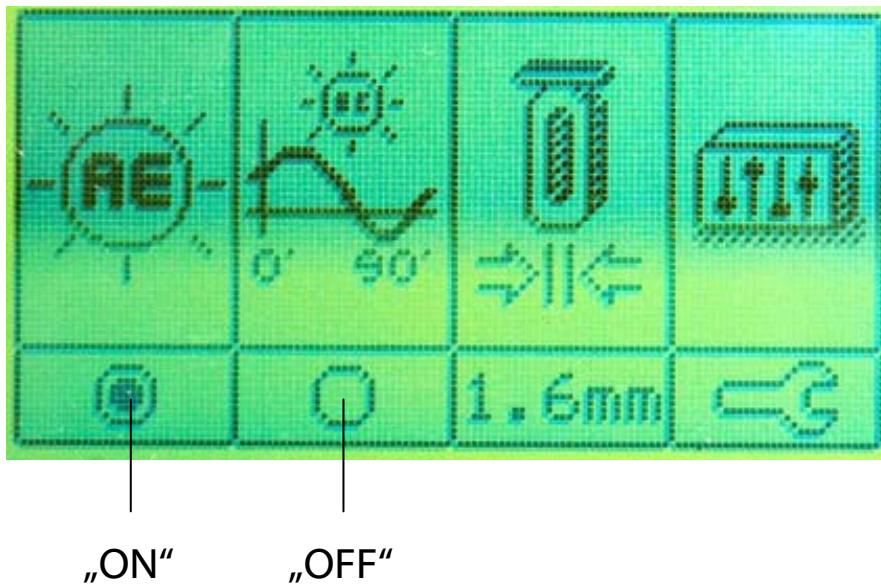
Back to the main menu with the menu button (20). Your specific entry now appears below the graphical symbol of the degree of panorama. In case this value blinks this means that there is not enough film available for the selected focal length and degree of panorama or that the film has not yet been loaded.



2.3.5 Activate/deactivate the automatic light meter and variation control

Navigate in the software by pressing the menu button (20) twice to get to the third part of the menu.

By pressing button „A“ you can activate and deactivate the automatic light meter. A full circle below the graphical symbol for light meter means „ON“, an empty circle „OFF“.



By pressing button „B“ you can activate and deactivate the variation control. A full circle below the graphical symbol for light meter means „ON“, an empty circle „OFF“.

The selection „variation control ON“ means that the camera performs a specific exposure for each gradient of the image for which a light value has been measured. To do this, the camera turns faster in areas with more light and slower in areas with less light.

More about the use of variation control in chapter 2.4.6.

By pressing button „C“ you can select the appropriate slit element (0.4 mm, 0.8 mm and 1.6 mm).

By pressing button „D“ you can leave the “simple skin” menu. The procedure for this is explained in chapter 2.8.

For optimum results (best possible detail of a panorama image) we recommend the following use of light meter and variation control:

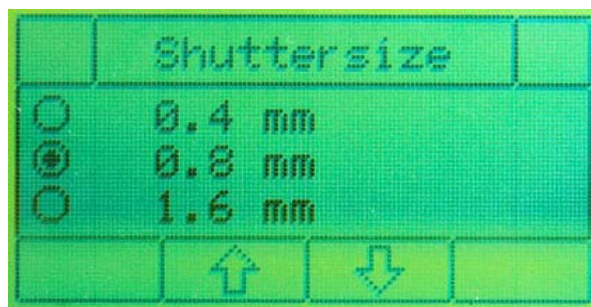
		Light meter	
		ON	OFF
Variation control	ON	<p style="text-align: right;">Chapter 2.4</p> <p style="text-align: center;">✓ ✓</p> <ul style="list-style-type: none"> • Especially for interior shots with significant differences in light • For outdoor shots only when smoothening the variation curve* 	<p style="text-align: center;">(✓)</p> <ul style="list-style-type: none"> • Manual creation of a variation curve (graphical editing); use limited
	OFF	<p style="text-align: right;">Chapter 2.5</p> <p style="text-align: center;">✓ ✓</p> <ul style="list-style-type: none"> • For outdoor shots for which there are uniform light conditions and for which the direct sunlight shall not be corrected 	<p style="text-align: right;">Chapter 2.6</p> <p style="text-align: center;">✓</p> <ul style="list-style-type: none"> • Fully manual operation for special effects • Manual light reading

* Without smoothening of the variation curve very dark shadows in the area of direct sunlight or for bright areas like lamps or windows

2.3.6 Select slit elements

Depending on the selected focal length a different slit element is used. The slit element is important for optimum sharpness, depth of field and contrast.

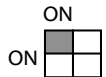
- 0.4 mm for turntable applications
- 0.8 mm for focal lengths up to 50 mm
- 1.6 mm for focal lengths > 50 mm



Back to the main menu with the menu button (20).

The Super camera is now ready for the preparation and release of the panorama.

2.4 Prepare and release the panorama using automatic light meter and using variation control



The following steps explain how to operate the Roundshot Super camera with activated light meter and activated variation control.

2.4.1 Scanning

Once the film is loaded and the image parameters are entered the pressing of the start/stop button (22) starts the scanning of the selected image angle. The scan can be stopped prematurely by pressing button „A“ (symbol X).

When the scan is complete the camera head moves back to the starting position and the display shows the following values:



- Film use
- Film supply
- Battery status
- Aperture
- Exposure speed
- Length of exposure
- Aperture correction
- Variation curve
- Length (in mm) of the film required for the panorama (depending on focal length and degree of panorama)
- Length (in m) of the available film before taking the image
- Availability of battery in % of maximum charge
- Selected aperture
- Resulting exposure speed
- Length in hours (:), minutes (') and seconds ('')
- Correction of aperture upwards and downwards
- Display of the results of the light reading

This preview of image parameter makes it possible to make corrections before taking the image. Critical values are displayed by a blinking symbol.

2.4.2 Film supply critical

If the length of the required film is greater than the available film supply the film symbol blinks and the following corrections are possible:

- *Reducing the image angle*
Press the menu button (20) and reduce the image angle using button „D“; start a second scan by pressing the start/stop button (22)
- *Load new film*
Press the menu button (20) 2 times to get to the second part of the menu with the film functions; press button „D“ to wind up the remaining film; proceed according to the instructions given in chapter 2.2 („load film“); start a second scan by pressing the start/stop button (22)
- *Use a lens with a shorter focal length*
Attach a lens with a shorter focal length; adjust the correct aperture on the lens; enter the data for focal length; read the new b-value (for nodal point correction) and reposition the camera head on the optical bench; start a second scan by pressing the start/stop button (22)

Without correction the camera will expose the entire remaining film and then wind it up to the end.

2.4.3 Battery status critical

If the battery charge drops beneath the required level, the battery symbol blinks and the following corrections are possible:

- *Exchange the battery*
Remove the battery by opening the snap lock (13) and replace it with a second battery with enough charge. Start the camera again; start a second scan by pressing the start-/stop button (22)
- *Load the attached battery using the universal speed charger*
Connect the universal speed charger with the power charge entry (17) and a power source

2.4.4 Exposure speed critical

If the film sensitivity, aperture and light values translate into an exposure speed that is too low (too fast rotation), the symbol for exposure speed blinks and the following corrections are possible:

- *Opening of the aperture*
Reduce the aperture by pressing button „B“ (-) until the resulting exposure speed stops blinking
- *Correction of exposure speed by editing the variation curve*
See chapter 2.4.6

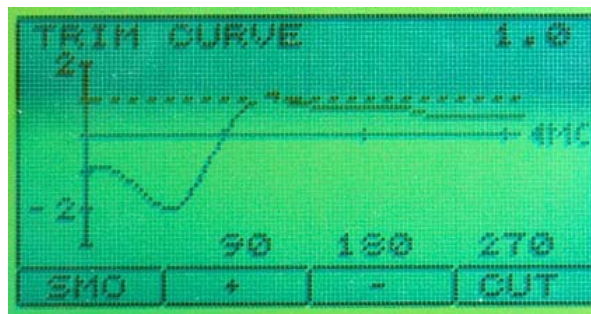
2.4.5 Correction of aperture

If the resulting exposure speed is too high (e.g., for moving objects/scenery), apertures can be reduced variably by pressing button „B“ (-) (opening of aperture), which effectively reduces the exposure speeds (faster speeds).

If the selected apertures are too low (no optimum depth of field), apertures can be increased variably by pressing button „A“ (+) (closing of aperture), which effectively increases the exposure speeds (slower speeds).

2.4.6 Correction of exposure speeds by editing the variation curve

By pressing button „C“ the variation curve is indicated. This curve displays the results of the light reading for each degree of the panorama.



The curve shows the following values:

- X-Axis: Gradient (degree) of the panorama from 0° up to the selected angle (for example 360°)
Y-Axis: 0: Average of the light reading (in stops)
+2: over-exposure (in stops)
-2: under-exposure (in stops)

The scaling of the graph is specific for the parameters of each image.

Editing of the entire variation curve

This function allows it to edit the values for the entire curve, depending on the desired effect.

- SMO: Pressing button „A“ smoothens the curve
+: Pressing button „B“ moves the „cut“ line (----) upwards
-: Pressing button „C“ moves the „cut“ line (----) downwards
Cut: Pressing button „D“ cuts the extreme values of the variation curve
- if „cut“ line above the average (0): all positive extreme values
- if „cut“ line beneath the average (0): all negative extreme values

The exact position of the cut curve (in +/- aperatures) is displayed in the upper right corner of the display.

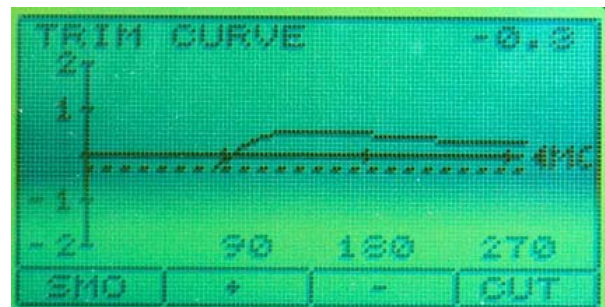
If there are very strong differences in light, for example in the area of direct sunlight or for a strong lamp, the camera tries to balance the lighting by accelerating in these bright areas. This can lead to unnatural appearance, i.e., too much darkness around the bright areas.

However, for interior shots the variation control allows to increase the information content of the image significantly thanks to variable exposure speeds.

Smoothing the curve



Cutting of extreme values



A smoothed curve or extreme points that are cut off cannot be reversed; a new scan is required.

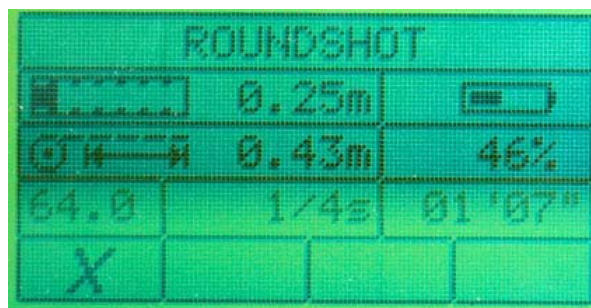
2.4.7 Starting the exposure

By pressing the start/stop button (22) you start the exposure.

You can interrupt the exposure at any time by pressing button „A“ (symbol X) or by a second pressing of the start/stop button (22).

The camera moves at a variable rotation speed in function of the defined variation curve.

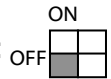
During the exposure the display for film supply and for the remaining exposure time change continuously:



Once the exposure is complete the parameter display appears again with refreshed parameters.

The camera is now ready for the preparation of the next panorama, for winding up the film (2.7) or for shutting down (2.8).

2.5 Prepare and release the panorama using automatic light meter but without variation control



The following steps explain how to operate the Roundshot Super camera with activated light meter and deactivated variation control.

2.5.1 Scanning

Once the film is loaded and the image parameters are entered the pressing of the start/stop button (22) starts the scanning of the selected image angle. The scan can be stopped prematurely by pressing button „A“ (symbol X).

When the scan is complete the camera head moves back to the starting position and the display shows the following values just like for 2.4.1:



- Film use
- Film supply
- Battery status
- Aperture
- Exposure speed
- Length of exposure
- Aperture correction
- Variation curve
- Length (in mm) of the film required for the panorama (depending on focal length and degree of panorama)
- Length (in m) of the available film before taking the image
- Availability of battery in % of maximum charge
- Selected aperture
- Resulting exposure speed
- Length in hours (:), minutes (') and seconds ('')
- Correction of aperture upwards and downwards
- Display of the results of the light reading

This preview of image parameter makes it possible to make corrections before taking the image. Critical values are displayed by a blinking symbol.

2.5.2 Film supply critical

If the length of the required film is greater than the available film supply the film symbol blinks and the following corrections are possible:

- *Reducing the image angle*
Press the menu button (20) and reduce the image angle using button „D“; start a second scan by pressing the start/stop button (22)
- *Load new film*
Press the menu button (20) 2 times to get to the second part of the menu with the film functions; press button „D“ to wind up the remaining film; proceed according to the instructions given in chapter 2.2 („load film“); start a second scan by pressing the start/stop button (22)
- *Use a lens with a shorter focal length*
Attach a lens with a shorter focal length; adjust the correct aperture on the lens; enter the data for focal length; read the new b-value (for nodal point correction) and reposition the camera head on the optical bench; start a second scan by pressing the start/stop button (22)

Without correction the camera will expose the entire remaining film and then wind it up to the end.

2.5.3 Battery status critical

If the battery charge drops beneath the required level, the battery symbol blinks and the following corrections are possible:

- *Exchange the battery*
Remove the battery by opening the snap lock (13) and replace it with a second battery with enough charge. Start the camera again; start a second scan by pressing the start-/stop button (22)
- *Load the attached battery using the universal speed charger*
Connect the universal speed charger with the power charge entry (17) and a power source

2.5.4 Exposure speed critical

If the film sensitivity, aperture and light values translate into an exposure speed that is too low (too fast rotation), the symbol for exposure speed blinks and the following corrections are possible:

- *Opening of the aperture*
Reduce the aperture by pressing button „B“ (-) until the resulting exposure speed stops blinking

2.5.5 Correction of aperture

If the resulting exposure speed is too high (e.g., for moving objects/scenery), apertures can be reduced variably by pressing button „B“ (-) (opening of aperture), which effectively reduces the exposure speeds (faster speeds).

If the selected apertures are too low (no optimum depth of field), apertures can be increased variably by pressing button „A“ (+) (closing of aperture), which effectively increases the exposure speeds (slower speeds).

2.5.6 Correction of exposure speeds by editing the variation curve

The function of the variation curve is indicated in the display and is accessible / editable. However, for the exposure the camera ignores the values of the variation curve and operates at a constant exposure speed. This corresponds to the average exposure value.

2.5.7 Starting the exposure

By pressing the start/stop button (22) you start the exposure.

You can interrupt the exposure at any time by pressing button „A“ (symbol X) or by a second pressing of the start/stop button (22).

The camera moves at a variable rotation speed in function of the defined variation curve.

During the exposure the display for film supply and for the remaining exposure time change continuously:

Once the exposure is complete the parameter display appears again with refreshed parameters.

The camera is now ready for the preparation of the next panorama, for winding up the film (2.7) or for shutting down (2.8).

2.6 Prepare and release the panorama without automatic light meter but without variation control (manually)



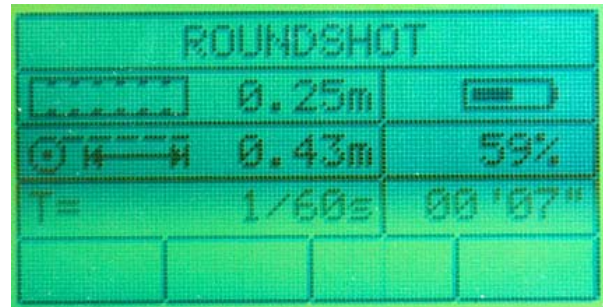
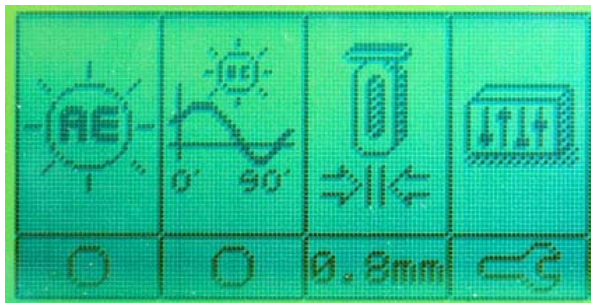
2.6.1 Manual setting of aperture and exposure speed

The following steps explain how to operate the Roundshot Super camera with deactivated light meter and deactivated variation control.

In this operation mode there is no scan. The light reading is done manually with an external light meter. The averages for aperture and exposure speed are entered manually in the software:

Apertures:
on the lens

Exposure speed:
Navigate to the first part of the software by pressing the menu button (20).
A short pressing of button „C“ allows you to select the desired exposure speed from a list.



- Film use
- Film supply
- Battery status
- Aperture
- Exposure speed
- Length of exposure
- Aperture correction
- Variation curve
- Length (in mm) of the film required for the panorama (depending on focal length and degree of panorama)
- Length (in m) of the available film before taking the image
- Availability of battery in % of maximum charge
- Selected aperture
- Resulting exposure speed
- Length in hours (:), minutes (') and seconds ('')
- Correction of aperture upwards and downwards
- Display of the results of the light reading

This preview of image parameter makes it possible to make corrections before taking the image. Critical values are displayed by a blinking symbol.

2.6.2 Film supply critical

If the length of the required film is greater than the available film supply the film symbol blinks and the following corrections are possible:

- *Reducing the image angle*
Press the menu button (20) and reduce the image angle using button „D“; start a second scan by pressing the start/stop button (22)
- *Load new film*
Press the menu button (20) 2 times to get to the second part of the menu with the film functions; press button „D“ to wind up the remaining film; proceed according to the instructions given in chapter 2.2 („load film“); start a second scan by pressing the start/stop button (22)
- *Use a lens with a shorter focal length*
Attach a lens with a shorter focal length; adjust the correct aperture on the lens; enter the data for focal length; read the new b-value (for nodal point correction) and reposition the camera head on the optical bench; start a second scan by pressing the start/stop button (22)

Without correction the camera will expose the entire remaining film and then wind it up to the end.

2.6.3 Battery status critical

If the battery charge drops beneath the required level, the battery symbol blinks and the following corrections are possible:

- *Exchange the battery*
Remove the battery by opening the snap lock (13) and replace it with a second battery with enough charge. Start the camera again; start a second scan by pressing the start-/stop button (22)
- *Load the attached battery using the universal speed charger*
Connect the universal speed charger with the power charge entry (17) and a power source

2.6.4 Exposure speed critical

If the film sensitivity, aperture and light values translate into an exposure speed that is too low (too fast rotation), the symbol for exposure speed blinks and the following corrections are possible:

- *Opening of the aperture*
Reduce the aperture by pressing button „B“ (-) until the resulting exposure speed stops blinking

2.6.5 Correction of aperture

If the resulting exposure speed is too high (e.g., for moving objects/scenery), apertures can be reduced variably by pressing button „B“ (-) (opening of aperture), which effectively reduces the exposure speeds (faster speeds).

If the selected apertures are too low (no optimum depth of field), apertures can be increased variably by pressing button „A“ (+) (closing of aperture), which effectively increases the exposure speeds (slower speeds).

2.6.6 Starting the exposure

By pressing the start/stop button (22) you start the exposure.

You can interrupt the exposure at any time by pressing button „A“ (symbol X) or by a second pressing of the start/stop button (22).

The camera moves at a variable rotation speed in function of the defined variation curve.

During the exposure the display for film supply and for the remaining exposure time change continuously:

Once the exposure is complete the parameter display appears again with refreshed parameters.

The camera is now ready for the preparation of the next panorama, for winding up the film (2.7) or for shutting down (2.8).

2.7 Film wind to end

If the end of the film is reached, the film is automatically wound up.

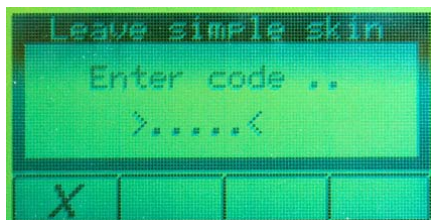
If there is film remaining in the camera, press the menu button (20) 3 x to get to the third part of the menu with the film functions.



Press button „D“ to wind up the remaining film.

2.8 Exit „simple skin“ mode

Navigate in the „simple skin“ software by pressing the menu button (20) to get to the third part of the menu.



By pressing button „D“ you are prompted for a code.

Enter code: 31415
(first 5 digits of π –Greek „Pi“)

With that you leave the „simple skin“ mode and get to the first menu of the „full skin“ mode. This menu is explained in detail in the separate Super Instruction Manual (version 3.0).

2.9 Turn camera off

When no entry is detected, the camera turns off automatically after 2 minutes.

To deactivate the camera directly, detach the control unit from the battery and the camera engine by opening the snap locks (13) or, when operating the control unit with connection cable (optional accessory), detaching the cable.

3. Tips & resources

3.1 Film length and possible panoramas per film

The possible number of panoramas per film with the Roundshot Super 220 VR are given in the following table. We suggest that you use a bigger image angle than necessary so that you can determine the ideal image later (for example 405° for a 360° image).

$$\text{Film length (mm)} = \text{Focal length} \times 2 \times \pi / 360 \times \text{degree of panorama}$$

Focal length	Degree of panorama (°)										
	90	135	180	225	270	315	360	405	450	495	540
12	19	28	38	47	57	66	75	85	94	104	113
20	31	47	63	79	94	110	126	141	157	173	188
24	38	57	75	94	113	132	151	170	188	207	226
28	44	66	88	110	132	154	176	198	220	242	264
35	55	82	110	137	165	192	220	247	275	302	330
40	63	94	126	157	188	220	251	283	314	346	377
45	71	106	141	177	212	247	283	318	353	389	424
50	79	118	157	196	236	275	314	353	393	432	471
55	86	130	173	216	259	302	346	389	432	475	518
60	94	141	188	236	283	330	377	424	471	518	565
80	126	188	251	314	377	440	503	565	628	691	754
85	134	200	267	334	401	467	534	601	668	734	801
100	157	236	314	393	471	550	628	707	785	864	942
105	165	247	330	412	495	577	660	742	825	907	990
110	173	259	346	432	518	605	691	778	864	950	1,037
120	188	283	377	471	565	660	754	848	942	1,037	1,131
135	212	318	424	530	636	742	848	954	1,060	1,166	1,272
150	236	353	471	589	707	825	942	1,060	1,178	1,296	1,414
200	314	471	628	785	942	1,100	1,257	1,414	1,571	1,728	1,885
250	393	589	785	982	1,178	1,374	1,571	1,767	1,963	2,160	2,356

Available film length (in mm)

120 medium format	780
220 medium format	1,560

Number of panoramas per film

Example: 28mm lens

Film	Degree of panorama (°)										
	90	135	180	225	270	315	360	405	450	495	540
120 film	17.7	11.8	8.9	7.1	5.9	5.1	4.4	3.9	3.5	3.2	3.0
220 film	35.5	23.6	17.7	14.2	11.8	10.1	8.9	7.9	7.1	6.4	5.9

3.2 Maintenance and tips

Maintenance

Like all optical devices the Roundshot Super 220 camera needs regular maintenance. All parts, with the exception of mirror, viewfinder glass and cotton parts, can be cleaned with a soft cloth that has been slightly wet with spiritus. Particularly the transport rubbers of the drum need to be grease-free. Special care should be given to the cleaning of the slit. Even smallest dirt and dust particles in the slit can create horizontal lines on the image. Use a sticky scotch tape to remove particles or ventilate the slit with pressured air. The smaller the slit element the more significant the effect of small particles. In the same way the cotton parts can be cleaned. Mirror and viewfinder glass can be cleaned with cotton ear sticks.

Tripod

Please use a stable tripod, ideally one without ball head. Use no adaptors (1/4).

Battery

The battery can receive a wrong signal, creating a memory effect. That is why the battery should always be used to the very end and not be recharged too frequently. Discharge the battery from time to time using the discharge function. This way the battery remains fully operational. At 20° outdoor temperature, and short exposure speeds one battery load can handle up to 50 films.

Sensitive contacts

The sensitive contacts on the camera engine (for battery and control unit) need to be protected at all times. In case they bend or break off they can be easily changed from the outside. For temporary bridging connection cable for the control unit can be used. The contacts on the battery have 3 connections.

More tips and resources on our website www.roundshot.ch

We wish you plenty of fun and success with your Roundshot Super camera!

3.3 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
Hauptstr. 14
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 Super 220 VR!

3.4 Error messages and problem resolution

Film end	If the film has reached the end, the message „film end“ is displayed. After approximately 2 seconds the film is automatically wound up.
No Film	The speed of the winding spool is continuously monitored during the exposure. When turning to fast the film is badly attached or there is no film in the camera. The message „no film“ appears. Load film or reattach the film firmly.
Film Jam	If the winding spool does not turn or turns too slowly, the message „film jam“ appears. Open the cover and check if the film is properly loaded.
Time too fast	Too fast exposure times are indicated with a blinking „T“. When starting the exposure despite the error, the message „Time too fast“ appears. Reduce the exposure time until the blinking „T“ disappears.
Wind module	This error message appears when the cable connection to the camera head is missing.
No cable connection Grp: 3 Err:130	Detach the battery or the control unit from the power source, check the cable connections and restart.
Object too close	If the distance value is too small, the „a“ and „b“ symbols start blinking. When starting the camera now, the error message „object too close“ appears. This error is displayed by a blinking f/a symbol on the first menu page.
Range	The entered values are either too high or too low.
Film too short	Not enough film for the exposure. The camera can be started nevertheless. Press start again. The camera turns until the film end is reached and then winds up the film.
Display shuts off	After starting the display turns off immediately. The battery load is too low. Change the battery or recharge.
Horizontal lines „phone wires“	Horizontal lines or „phone wires“ can appear on the film if the slit element is not clean. Remove the slit element and clean it.

4. Technical Data

Film format	120/220 medium format
Lenses	Variable from 13mm to 1,000mm
Lens mounts	Exchangeable lens mounts for small and medium format lenses
Lens brands	Nikon, Leica R, Contax, Canon FD, Hasselblad, Rollei, Pentax 67, Mamiya 645 and Zenza Bronica; more on demand
Shift	Depending on lens mount; maximum 48mm total
Maximum vertical angle / height	115° (vertical)
Image length for 360°	Depending on focal length; minimum 82mm, maximum 1,600mm
360° shots per film	Depending on focal length and film type
Viewfinder	SLR with tinted glass
Distance	Infinite to macro
Slit	0.4mm, 0.8mm or 1.6mm, exchangeable
Light meter	Integrated
Fastest scan for 360°	2 seconds
Multiple exposure (bracketing)	Multiple exposure of 3 or 5 shots (selection of apertures)
Dimensions (L x W x H)	99 x 152 x 255mm
Weight	5.1 kg
Control	With selection buttons and LCD of control unit
Display	LCD for all functions
Functions	Automatic light meter, variation (exposure correction), distance, manual shutter speeds, multiple exposures (bracketing), battery status, mode (turntable, linear, QTVR, movie, stereo), parameter menu
Shutter speeds	1/250 to 250 seconds
Degree of panorama	Selectable in increments of 1° from 1° to infinity
Exposure correction	Before the shot, manual or automatic
Timer	Delay Timer (variable speed) Interval Timer (release of multiple shots with the timer)
Power supply	NiCd battery 12V 3.5A
Film transport	automatic
Power charger	Universal speed charger 110-240V
Calibration	2 water bubble indicators
Standard accessories	Power charger, NiCd battery
Possible additional accessories	2nd camera head, software release 4.0, slit elements, pantilt head, compendium, turntable set, long optical bench, SLR with tinted glass (viewfinder), stereo holder, NiMh Akku 12V 4.5A, NiMh Akku 12V 9.0A, universal speed charger for Ni-Mh battery, connecting cable 2m, connecting cable 6m

Appendix

A.1 Lens testing

For the calculation of the exact turning speed of both motors it is very important to enter the precise focal length of the lens. If this value is not correct, the images can be distorted and the image quality is lessened.

On the following pages we have listed the focal lengths and effective focal lengths for a variety of standard lenses.

These values are approximate only and can deviate depending on the series and year of manufacture of the lens.

There are two ways to determine the exact value for a lens:

- A. You have the lenses that you would like to use with the Roundshot Super camera measured for a level of precision of 1/10 mm (for example: 35.3 mm)

- B. Make a few test images
For this, your eye is the standard. Use the following test procedure:
 1. Attach the lens
 2. Turn camera on
 3. Select panorama mode
 4. Enter shuttertime manually
 5. Turn variation off
 6. Attach the camera on a very stable tripod or on a firm surface
 7. Place test tables (measurement stars or samples with deep detail) in the image field of the camera
 8. Focus on these tables with the lens and enter the distance value in the software
 9. Enter an exposure speed between ½ second to 1/30 seconds and adjust the aperture
 10. The test image does not have to be 360°. 90° to 180° are sufficient
 11. If you want to use a 18mm lens for instance, read the effective focal length in the list (A2) that we have determined. In the case of the 18mm lens 18.3mm
 12. Set the f-value in the software to 18.1mm
 13. Note this value on the test table
 14. Start the exposure. Make sure that the exposure is not influenced by wind or other external influences
 15. Modify the f-value in the software now to 18.2. Note this value again on the table (for identification of the images)
 16. Start again a new exposure
 17. Repeat this procedure at least another 3 times and increase the f-value each time by 1/10 mm
 18. After film development compare the images and select the best result
 19. Enter the f-value of the best image in the software
 20. Determine the optimum f-values of other lenses in the same way

A.2 Lens lists

A.2.1 Nikon: Nikkor

Lens	Focal length mm	Minimum aperture f	Effective focal length "f" mm	Distance film plane $h = H - H'$ mm
Nikkor	13	5,6	13.3	0.0
Nikkor	15	3,5	15.4	0.0
Nikkor	18	3,5	18.1	0.0
Nikkor	20	2,8	20.3	0.0
Nikkor	24	2,0	24.5	0.0
Nikkor	24	2,8	24.6	0.0
Nikkor	28	2,0	28.4	0.0
Nikkor	28	2,8	28.7	0.0
PC Nikkor	28	3,5	28.6	0.0
Nikkor	35	1,4	35.8	0.0
Nikkor	35	2,0	35.7	0.0
Nikkor	35	2,8	35.4	0.0
PC Nikkor	35	2,8	36.4	0.0
Nikkor	50	1,2	51.6	0.0
Nikkor	50	1,4	51.6	0.0
Nikkor	50	1,8	51.5	0.0
Micro-Nikkor	55	2,8	55.0	0.0
Noct Nikkor	58	1,2	57.9	0.0
Nikkor	85	1,4	84.9	0.0
Nikkor	85	2,0	85.0	0.0
Nikkor	105	1,8	104.9	0.0
Nikkor	105	2,5	105.0	0.0
Micro-Nikkor	105	2,8	105.4	0.0
Micro-Nikkor UV	105	2,8	105.1	0.0
Nikkor	135	2,0	135.1	0.0
Nikkor	135	2,8	135.1	0.0
Nikkor	135	3,5	135.1	0.0
Nikkor	180	2,8	180.2	0.0
Nikkor IF ED	200	2,0	199.4	0.0
Nikkor	200	4,0	199.5	0.0
Micro-Nikkor UV	200	4,0	201.5	0.0
Nikkor	300	4,5	299.9	0.0
Nikkor	400	2,8	400.2	0.0
Nikkor	400	3,5	400.1	0.0
Nikkor	400	5,6	400.1	0.0
Nikkor	500	4,0	495.5	0.0
Reflex Nikkor	500	8,0	520.0	0.0
Nikkor	600	4,0	602.0	0.0
Nikkor	600	5,6	601.0	0.0
Nikkor	800	5,6	801.5	0.0
Reflex Nikkor	1000	11,0	999.7	0.0

A.2.2 Nikon: AF Nikkor

Lens	Focal length mm	Minimum aperture f	Effective focal length "f" mm	Distance film plane h = H - H' mm
AF Nikkor D	18	2,8	18.5	0.0
AF Nikkor D	20	2,8	20.4	0.0
AF Nikkor D	24	2,8	24.2	0.0
AF Nikkor D	28	1,4	28.5	0.0
AF Nikkor D	28	2,8	28.8	0.0
AF Nikkor	35	2,0	35.9	0.0
AF Nikkor	50	1,4	51.6	0.0
AF Nikkor	50	1,8	51.6	0.0
AF Micro Nikkor D	60	2,8	60.1	0.0
AF Nikkor	85	1,8	84.8	0.0
AF DC Nikkor D	105	2,0	103.4	0.0
AF Nikkor D	105	2,8	105.3	0.0
AF DC Nikkor	135	2,0	134.6	0.0
AF Nikkor ED	180	2,8	180.0	0.0
AF Micro Nikkor D	200	4,0	201.3	0.0
AF Nikkor ED	300	2,8	299.8	0.0
AF I Nikkor ED	300	2,8	299.8	0.0
AF Nikkor ED	300	4,0	299.4	0.0

A.2.3 Leica

Lens	Focal length mm	Minimum aperture f	Effective focal length "f" mm	Distance film plane $h = H - H'$ mm
Super Elmarit R	15	3,5	15.4	0.0
Elmarit R	19	2,8	19.4	0.0
Super Angulon	21	4,0	21.7	0.0
Elmarit R	24	2,8	24.3	0.0
Elmarit R	28	2,8	28.5	0.0
Super Angulon Shift	28	2,0	29.2	0.0
Summilux R	35	1,4	36.0	0.0
Summicron R	35	1,8	35.2	0.0
Elmarit R	35	2,8	35.2	0.0
PA Curtagon R	35	1,8	35.2	0.0
Summilux R	50	2,0	52.4	0.0
Summicron R	50	2,8	52.3	0.0
Macro Elmarit R	60	2,0	61.4	0.0
Summilux R	80	2,8	80.0	0.0
Summicron R	90	4,0	89.9	0.0
Elmarit R	90	2,8	91.0	0.0
Apo Macro Elmarit R	100	2,8	100.2	0.0
Macro Elmarit R	100	4,0	100.1	0.0
Elmarit R	135	2,8	135.1	0.0
Elmarit R	180	2,8	179.6	0.0
Apo Telyt R	180	3,4	181.7	0.0
Elmarit R	180	4,0	179.7	0.0
Tolyt R	250	2,8	251.8	0.0
Telyt R	280	2,8	279.2	0.0

A.2.4 Contax-Zeiss

Lens	Focal length mm	Minimum aperture f	Effective focal length "f" mm	Distance film plane $h = H - H'$ mm
Distagon T	15	3,5	15.4	0.0
Distagon T	18	4,0	18.6	0.0
Distagon T	21	2,8	21.0	0.0
Distagon T	25	2,8	25.9	0.0
Distagon T	28	2,8	28.5	0.0
Distagon T	35	1,4	36.5	0.0
Distagon T	35	2,8	35.9	0.0
PC Distagon T	35	2,8	35.2	0.0
Tessar T	45	2,8	46.5	0.0
Planar T	50	1,4	51.8	0.0
Planar T	50	1,7	51.9	0.0
Makro Planar T	60	2,8	61.7	0.0
Planar T	85	1,4	84.8	0.0
Planar T	100	2,0	99.9	0.0
Makro Planar T	100	2,8	100.0	0.0
Sonnar T	135	2,8	134.1	0.0
Sonnar T	180	2,8	178.1	0.0
Aposonnar T	200	2,0	199.9	0.0
Tele Apotessar T	300	2,8	300.6	0.0
Tele Tessar T	300	4,0	300.0	0.0
Mirotar T	500	4,5	504.5	0.0
Mirotar T	500	8,0	500.0	0.0
Mirotar T	1,000	5,6	1,020.6	0.0

A.2.5 Sigma

Lens	Focal length mm	Minimum aperture f	Effective focal length "f" mm	Distance film plane $h = H - H'$ mm
AF / MF	14	3,5	14.5	0.0
AF	18	3,5	18.6	0.0
	14	2,8	14.5	0.0

A.2.6 Zeiss Hasselblad

Lens	Focal length	Minimum aperture	Effective focal length	Distance film plane
	mm	f	"f" mm	h = H - H' mm
Distagon	40	4,0	40.9	0.0
Distagon	50	2,8	51.7	0.0
Distagon	50	4,0	52.0	0.0
Distagon	60	3,5	60.2	0.0
Planar	80	2,8	80.5	0.0
Planar	100	3,5	100.3	0.0
UV Sonnar	105	4,3	107.5	0.0
Planar	110	2,0	110.8	0.0
Makro Planar	120	4,0	120.9	0.0
Makro Planar	135	5,6	137.1	0.0
Sonnar	150	2,8	151.1	0.0
Sonnar	150	4,0	151.2	0.0
Sonnar	180	4,0	179.4	0.0
Tele Tessar	250	4,0	246.3	0.0
Sonnar	250	5,6	248.4	0.0
Sonnar Superachromat	250	5,6	248.7	0.0
Tele Tessar	350	4,0	350.3	0.0
Tele Tessar	350	5,6	341.2	0.0
Tele Apotessar	500	8,0	499.3	0.0

A.2.8 Pentax 67

Lens	Focal length mm	Minimum aperture f	Effective focal length "f" mm	Distance film plane $h = H - H'$ mm
Pentax 67	45	4,0	46.2	0.0
Pentax 67	55	4,0	56.0	0.0
Pentax 67	75	4,5		0.0
Pentax 67 Shift	75	4,5		0.0
Pentax 67	90	2,8		0.0
Pentax 67	105	2,4	105.0	0.0
Pentax 67 Soft	120	3,5		0.0
Pentax 67 Macro	135	4,0		0.0
Pentax 67	165	2,8		0.0
Pentax 67 LS	165	4,0		0.0
Pentax 67	200	4,0	199.9	0.0
Pentax 67	300	4,0		0.0
Pentax 67 M	400	4,0		0.0
Pentax 67	500	5,6		0.0
Pentax 67	600	4,0		0.0
Pentax 67 M	800	6,7		0.0
Takumar 67	800	4,0		0.0
Relfex 67 Takumar	1,000	8,0		0.0

A.2.9 Rollei 3000 (KB)

Lens	Focal length mm	Minimum aperture f	Effective focal length "f" mm	Distance film plane h = H - H' mm
Distagon HFT	15	3,5	15.4	0.0
F-Distagon	16	2,8	15.8	0.0
Distagon T	18	4,0	18.6	0.0
Ro	20	2,8	20.5	0.0
VLP	21	4,0	21.6	0.0
Distagon T	25	2,8	25.9	0.0
Distagon HFT	28	2,8	28.8	0.0
VLP	28	2,8	28.0	0.0
Distagon HFT	35	1,4	36.5	0.0
Angulon	35	2,8	35.5	0.0
Rolleinar	35	2,8	35.0	0.0
Sonnar	40	2,8		0.0
Samsung	50	1,4	51.5	0.0
Planar	50	1,4	50.9	0.0
Planar neu	50	1,4	51.8	0.0
Planar	50	1,8	51.8	0.0
SL-Xenon	50	1,8	51.6 - 52.9	0.0
Rolleinar MC	55	1,4	54.7	0.0
S-Planar	60	2,8	61.7	0.0
Planar HFT	85	1,4	84.8	0.0
Sonnar	85	2,8	84.9	0.0
VLP	85	2,8	86.1	0.0
VLP	105	2,8	105.0	0.0
Rolleinar	135	2,8	134.9	0.0
Sonnar	135	2,8	135.0	0.0
Tele-Tessar	135	4,0	132.6	0.0
Tele-Tessar	200	3,5	194.0	0.0
Tele-Tessar	200	4,0	193.7	0.0
Tele-Tessar	300	4,0	300.0	0.0
Mirotar	500	4,5	504.5	0.0
PC-Curtagon	35	4,0	35.2	0.0

A.2.10 Mamiya 645

Lens	Focal length mm	Minimum aperture f	Effective focal length "f" mm	Distance film plane h = H - H' mm
Mamiya C	24	4,0	24.0	0.0
Mamiya C	35	3,5	35.8	0.0
Mamiya C	45	2,8	46.0	0.0
Mamiya Shift C	50	4,0	51.0	0.0
Mamiya C	55	2,8	55.5	0.0
Mamiya C	80	1,9	80.0	0.0
Mamiya C	80	2,8	80.1	0.0
Mamiya Macro C	80	4,0	80.1	0.0
Mamiya Macro A	120	4,0	117.0	0.0
Mamiya A	150	2,8	147.3	0.0
Mamiya C	150	3,5	145.9	0.0
Mamiya A	200	2,8	195.3	0.0
Mamiya C	210	4,0	210.3	0.0
Mamiya A	300	2,8	292.4	0.0
Mamiya C	300	5,6	299.7	0.0
Mamiya A	500	4,5	493.7	0.0
Mamiya C	500	5,6	500.0	0.0