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DIGITAL STUDIO CAMERA SYSTEM

PhotoPhase

# Digital Camera Back for 4"x5" Large Format Cameras

## User's Guide

Edition 3.0

85280002

PHASE ONE

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**For Your Safety:**

Read this manual carefully before turning on your system.

- If any component of your system becomes wet or damaged, remove power by unplugging the power unit from the wall socket.
- Keep these instructions handy for reference by you or others.
- If you receive a shock while using this equipment, remove power and contact a licensed electrician immediately.
- Follow all instructions and warnings dealing with your system.
- Never try to open any of your PhotoPhase units; electrical shock may result. If your units require service, contact your licensed PhotoPhase dealer.

Warning: Electrical equipment may be hazardous if misused. Always supervise children when electrical equipment is present.



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# Section 1 The PhotoPhase Digital Camera Back

The PhotoPhase digital camera back for large format cameras will enable you to use your usual 4" x 5" large format cameras and lenses to take digital photographs in color. The camera back fits into a standard spring-back film loading mechanism, just like a normal camera back.

## Section 1.1 How it Works

The camera back contains a light sensitive element called a CCD (charge coupled device). This device contains many tiny light sensitive areas, each of which maps to one pixel in the final photograph. A pixel is one picture element or picture cell, and is analogous to the grain size of film stock.

The camera back uses a sensor with three linear CCDs; there is one line for each additive primary color: red, green, and blue (RGB). Each line, or array, is one pixel high and 5000 pixels wide. In the final image, the three RGB lines are digitally mixed to produce a single line of pixels in full color.

Before exposure, called capturing in digital techniques, the image is focussed onto the plane in which the CCD array will travel. At the start of the capture process the array is positioned at the top of the area to be scanned. During capture, the RGB lines are read, the CCD sensor is moved a distance equal to the height of one pixel, and then the next lines are read. This is repeated until the entire image area has been covered. This process is called scanning.

The camera back contains the basic sensory electronics for image capture (the CCD and analog to digital converter). The camera back also contains microprocessors which control the camera back, processes incoming images, and communicate with your computer. The Phase One software, running on the computer, makes it possible for you to calibrate and control the camera back, view your images, and make



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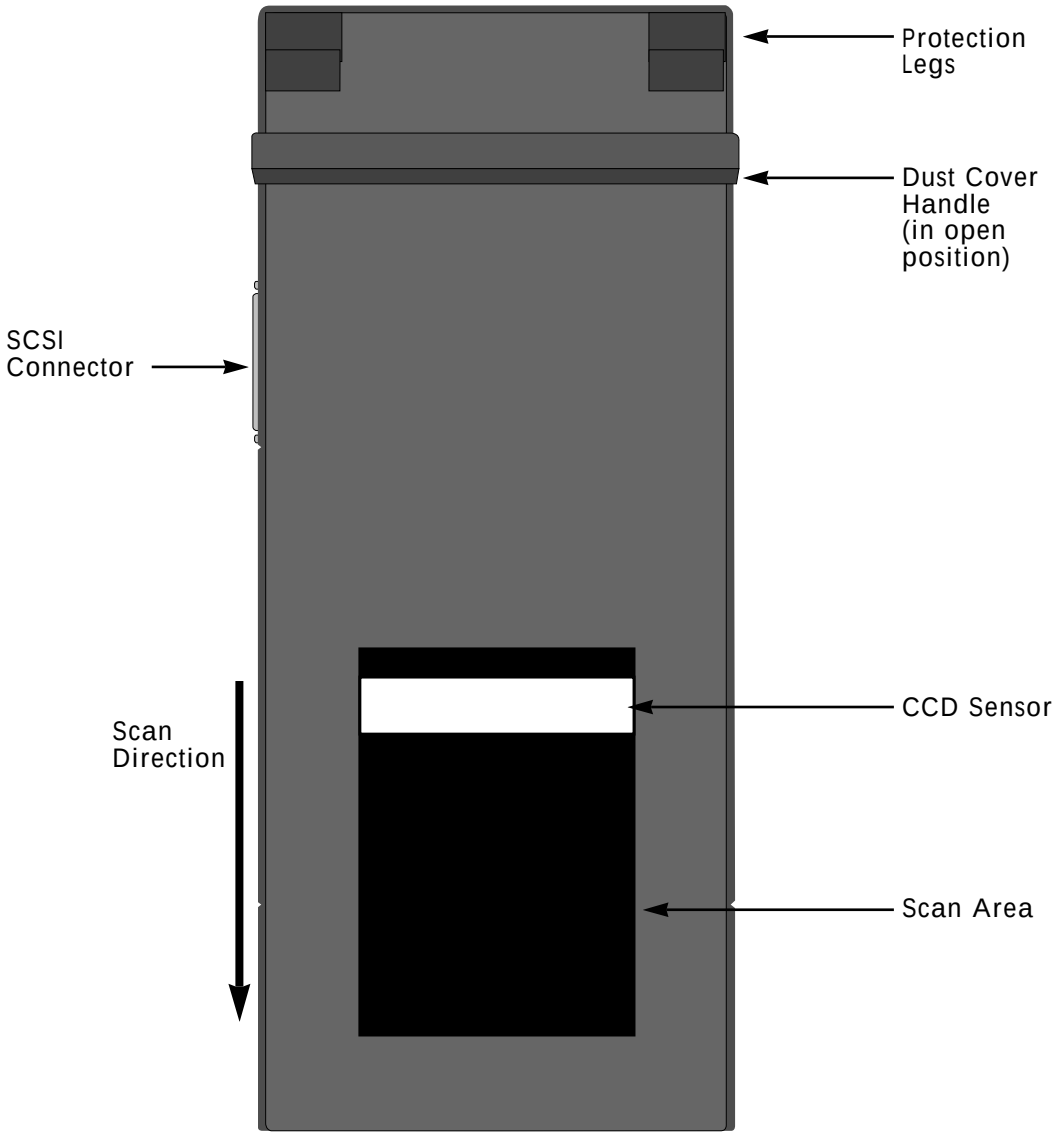



**Fig.1 Back Panel of the PhotoPhase Plus**



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image processing settings to perfect your images. Final images are converted into the TIFF file format, which is readable by nearly every other image processing and desk top publishing program.

## Section 2 Back Panel Description

Referring to Fig.1, the following back panel features can be seen:

- CCD Sensor: This is a linear light sensitive surface. It scans across the entire exposure area to capture the full image.
- Scan Direction: The arrow shows the direction of the CCD sensor's movement during camera back operation. This information is useful when troubleshooting your system.
- SCSI Connector: The camera back communicates with your computer through a SCSI cable connected here.
- Scan Area: The rectangular area on the back panel is the scan area. The CCD sensor moves across this area during scanning.
- Protection Legs: The protection legs help to protect the scan area when the camera back is placed on a horizontal surface.
- Dust Cover: This aluminum cover slides over the scan area. The cover must be slid all the way up to fully expose the scan area before use (as shown). Always store your camera back with the dust cover fully closed to protect the CCD and other internal components.



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**Fig.2 PhotoPhase camera back mounted on a Sinar camera**



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# Section 3 Mounting and Unmounting the Camera Back

The camera back fits to your camera just like a normal camera back. Use the following procedures to mount and unmount the camera back:

## Section 3.1 Mounting the Camera Back

1. Set your film mounting assembly in the portrait or landscape position.
2. Pull back the focusing screen release lever on your camera to make room to slide the camera back into place in front of the screen.
3. Gently slide the camera back into place until it will slide no further.
4. Return your camera's focusing screen release lever to the closed position to hold the camera back in place.
5. Slide the camera back's dust cover all the way up to fully expose the scan area.
6. Be sure to install a Phase One optical filter to reduce infrared light before using the camera back.

See Fig.2 for an example of a PhotoPhase camera back fitted to a large format camera.

## Section 3.2 Unmounting the Camera Back

1. Slide the dust cover all the way down to protect the scan area.
2. Securely grasp the camera back by its rubber grip.
3. Pull back the focusing screen release lever on your camera to make room to slide the camera back away from your camera.
4. Pull the camera back up and away from the camera.



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# Section 4 Care and Cleaning

Your PhotoPhase camera back is a sensitive and high precision instrument. To keep it working properly, treat it carefully as you would any of your other high quality photography equipment, and take special note of the advice given here.

## Section 4.1 Storage and Handling

- Keep the camera back away from sources of moisture. Do not let liquid get in or on the unit.
- Do not touch the CCD sensor or any of the other internal elements.
- Always store your camera back with the dust cover slid all the way down over the scan area, so that the CCD sensor and other internal components are protected from dirt and damage.
- Avoid extreme temperatures.
- Protect the camera back from falls and collisions.

## Section 4.2 Cleaning the camera back case

1. Disconnect the unit from power.
2. Be sure the dust cover is closed.
3. Lightly wipe the case with a clean, soft cloth, dampened with water. Do not allow moisture to get in any of the openings on the back panel or in the connectors.

## Section 4.3 Cleaning the CCD Sensor

You must never touch the CCD sensor with your fingers, nor allow the surface to become dirty, scratched, or damaged in any way.



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However, if you notice that your images contain cyan, magenta, or yellow lines in the direction parallel with the scan movement, then your CCD sensor may be in need of cleaning. In this case, use the following procedure:

1. With your system fully assembled and with the software running, select the Camera ➜ Maintenance ➜ Cleaning Position menu.
2. With an aerosol containing compressed air, spray the CCD sensor surface to remove any abrasive dust. Do not use a high pressure compressed air source. This is likely to damage the CCD beyond repair.
3. Lightly moisten a clean piece of standard lens cleaning paper with some isopropyl alcohol.
4. Rub the CCD sensor surface with the moistened lens cleaning paper. Be careful not to get any alcohol anywhere else inside the camera back. After the alcohol evaporates, inspect the CCD for dust. Repeat if necessary.
5. Use one pump of PhotoPhase anti-static spray (included with your camera back) to lightly moisten a new, clean piece of lens paper. Never spray the fluid directly into your camera back.
6. Gently rub the CCD sensor surface with the moistened lens cleaning paper. The purpose of this step is to apply a very light coating to prevent static electricity from building up on the CCD surface. Do not apply too much of the anti-static solution.
7. When you have finished cleaning the CCD, click on the It's Clean button to return the CCD to its parked position.
8. Always store your camera back with the dust cover slid all the way down over the scan area, so that the CCD sensor and other internal components are protected from dirt and damage.



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# Section 5 Camera Back Specifications

**Fits**
Standard spring-back for all 4"x5" large format cameras

**Exposed Frame**
7 x 10 cm (2.76" x 4")
5000 x 7200 pixels

**Maximum Print Size at 150 lpi**
85 x 121 cm (33" x 48")

**Maximum Print Size at 300 lpi**
42 x 61 cm (17" x 23")

**Accuracy**
12 bits per color

**Max File Size**
103 MB

**Equivalent ASA Rating**
Equivalent ASA of over 800 (including the required infrared filter)

**Data Transfer Rate**
Approximately 30 MB per Minute

**Data Interface**
Connects to the computer via standard SCSI cable

**Output**
24 bits RGB TIFF 6.0



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