4D PhotoStation System™

User Manual

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Introducing the 4D PhotoStation System™

The 4D PhotoStation Systems is a complete, all-inclusive system – including both hardware and software – ready for use in visual documentation of critical procedures, status reporting, and tracking of changes over time. The 4D PhotoStation System was designed to include a selection of best-of-breed information technology components, selected for their quality, appropriateness, utility, and functionality in Photo Documentation. The system enables high quality Photo Images to be quickly and easily captured and immediately associated and permanently stored electronically along with your organization's electronic records, or used stand-alone as a replacement for paper-based photo records.

The 4D PhotoStation System eliminates the costs and complexities of digital photography in your organization while increasing photo-imaging revenue opportunities. Photographic documentation is well known in Healthcare for wound care and healing, melanoma, cosmetic procedure before and afters and documenting effects of procedures. Unlike previous systems that required a dedicated photography room and a knowledgeable operator trained in photography, the PhotoStation System can be setup to work in any room. Customizable light settings and with wireless remote access means you can use the

PhotoStation System in many different locations to capture consistent high quality digital images reliably and simply.

The 4D PhotoStation System is the first system to address the Photo Image management and workflow in the practice. The system saves significant hidden labor costs related to using digital camera photography in the clinic, while making revenue-generating procedures like total body photography practical. The 4D PhotoStation is a practical solution that provides improved patient care and a fast payback by eliminating the cost of batteries and memory cards and reducing the costs of staff time in organization and print output. Practically, it also provides an irrefutable legal record of the efficacy of procedures.

What's Included

The 4D PhotoStation brings together industry-leading imaging components into a portable, easy to use, portable photo-imaging system. With this package, you receive:

- The 4D PhotoStation Manager™, Healthcare Edition in either the Essentials or Enhancer Version Photo Documentation software, configured with the add-on Nikon Control Pro software which together give you everything you need to capture, organize, and create reports from your Photo Documentation.

- Dell Notebook Computer with Windows 7 Professional®

- Point-of-Service Mobile Cart that will hold everything

- Nikon D90 Digital Single-Lens Reflex camera outfit

- Micro-Nikkor 60mm Macroscopic Lens

- Professional Camera Positioning Arm

- Special Interface Cabling to permit camera to be operated from the computer

4D PhotoStation Manager Healthcare Edition Software

Your 4D PhotoStation System will be preconfigured with the 4D PhotoStation Manager, Healthcare Edition Essentials Version or the Enhancer Version. With both Versions, the 4D PhotoStation Manager is the brains behind your system, and the primary manner in which you will interact with your PhotoStation System and control your Photo Documentation workflow. The main difference between the Essentials and the Enhancer Versions of the PhotoStation Manager is that with the Enhancer Version, you can markup Photo Images with text and graphical notations, and as well measure lengths and areas of features in the photos.

The 4D PhotoStation System also includes the Nikon Control Pro software. This software is tightly integrated with the PhotoStation Manager to automatically transfer Photo Images you take with the Nikon D90 camera to the appropriate Record folder (e.g. in Healthcare, a single Record stores all information for a single Patient). Working together, the PhotoStation Manager and the Nikon Control Pro help you eliminate the hassles of transferring photos from full memory cards.

This manual includes details on how to use the PhotoStation Manager in conjunction with the Nikon Control Pro software. For details on the 4D PhotoStation Manager software, please refer to your

PhotoStation Manager User Manual to understand how to capture, organize, annotate, measure, and report using Photo Documentation.

Dell Notebook Computer with Windows 7 Professional®

Your 4D PhotoStation Manager system uses a Dell laptop computer to run all software needed to control and implement your Photo Documentation workflow. Typical features of the PhotoStation System computer include:

- Dell Intel Core 2 Duo Core

- Microsoft Windows 7.0® with media, English

- 4.0GB RAM

- 250GB Hard Drive 5400 RPM

- 15.4 inch Wide Screen WXGA LCD (1280x800)

Point-of-Service Mobile Cart

The PhotoStation System is built around a sturdy Point-of-Service (POS) Cart with large lockable wheels, which enable the system to be quickly moved. The cart height can be adjusted between 31.75 inches to 42 inches using the height adjustment lever. The cart is easy to adjust, allowing you to fine tune what the camera captures. A single grounded (3-prong), 120V cable powers the PhotoStation camera and computer. This self-containment means that your PhotoStation can be dedicated to a single location, or moved as needed to different locations at your facility.

NOTE: Both your computer and camera are equipped with internal batteries that allow you to operate the system while unplugged. You will need to separately charge your camera battery from time to time since, unlike your PhotoStation computer, it does not automatically recharge when plugged in.

Nikon D90 12MP Digital Camera with 60mm Nikkor Lens

The PhotoStation includes a Nikon D90 digital single lens reflex (SLR) camera and a Nikon 60mm macro lens, which is connected directly into to a powerful Dell laptop computer running Windows® 7.

Feature of the Nikkor lens include:

- 12.3 Megapixels. Photo Image size 4288x2848

- Image Sensor Format: DX, CMOS Image Sensor. Sensor size: 15.8 x 23.6mm

Feature of the Nikkor 60mm macro lens include:

- Model : Nikon 60MM F/2.8 F mount Macro lens

- Magnification : 1 / 1

- Minimum Focus Range : 8.7 inches

Flexible Positioning

Your PhotoStation camera is mounted on a flexible positioning arm, which can be adjusted to capture regional areas or close-up feature details on any area of your subject, and a quick release mechanism for hand-held photo imaging as needed. A single knob on the camera positioning arm loosens and tightens all the points of adjustment so the camera can quickly be positioned as needed. For hand held shooting, the quick release frees the camera for capture of hard-to-reach locations (feet, top of head), and once complete, enables quick reloading and securing of the camera onto the mount.

Capturing Photo Images With The 4D PhotoStation

Positioning Your Point-of-Service Cart

Your PhotoStation Point-of-Service (POS) Cart is designed to make it easy to set up, move, adjust, and store your PhotoStation System. The POS Cart is a mobile and sturdy platform, which can be adjusted to allow the operator to take pictures of the patient while seated or standing. The height of the POS Cart can be set between 31.75 inches and 42 inches. This range combined with the flexibility of the PhotoStation camera mount arm will allow you to tailor your picture processing workflow to meet your particular clinical needs.

The following diagram shows the key components of your PhotoStation POS Cart.

Figure 1 – Point-of-Service Cart Features

The POS Cart handle and wheels make it easy to move your PhotoStation from one room to another as needed. The wheel locks, located on two adjacent wheels, can be engaged to limit movement of the POS Cart once in position. The wheel locks are set by pressing down on the wheel lock tabs, and released by lifting the tabs up.

The POS Cart height can be adjusted by pressing up on the height lever, located underneath the cart handle. It may be necessary to gently press down on the cart's surface to release the internal mechanism that controls the height.

To raise: While pulling up on the Height Lever, press down briefly with a hand on either side of the POS Cart, and then allow the internal height mechanism to automatically adjust up. Release the Height Lever when the desired level is reached to lock in place.

To lower: Pull up on the Height Lever while pressing down evenly with a hand on either side of the POS Cart until the desired height is reached. Then, release the height lever to lock in place.
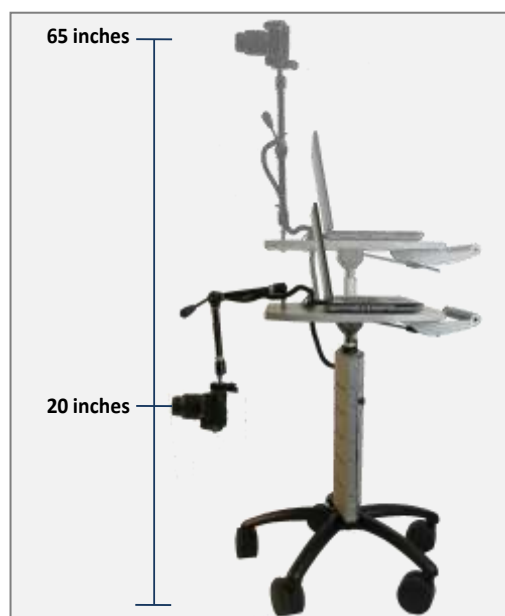

Figure 2 – PhotoStation Vertical Range of Positions

Your POS Cart gives provides a total vertical range of between 20 and 65 inches within which to position your camera. This total range combines the flexibility of the PhotoStation POS Cart height level adjustment with the PhotoStation camera positioning arm adjustment.

Positioning Your Camera

Your PhotoStation offers a wide range of options to position your camera. There are two major ways you can position your 4D PhotoStation camera in order to capture the desired shots. The first way is for you to use the camera positioning arm to shoot a standardized sequence of shots. You can do this by moving the cart and by positioning the arm to get the best view as displayed by the Live View capture window. You can then click the shoot button on the computer screen to take the picture. The second way is for you

to release the camera from the positioning arm, and shoot freehand using the viewfinder of the camera to locate views of interest and pressing the shutter release button on the camera to take the picture.

Each of these camera positioning techniques are detailed here.

Shooting By Using the Camera Positioning Arm

The PhotoStation uses a simple camera positioning arm, which allows you to point the camera in almost any direction that you need in order to capture the patient details required.
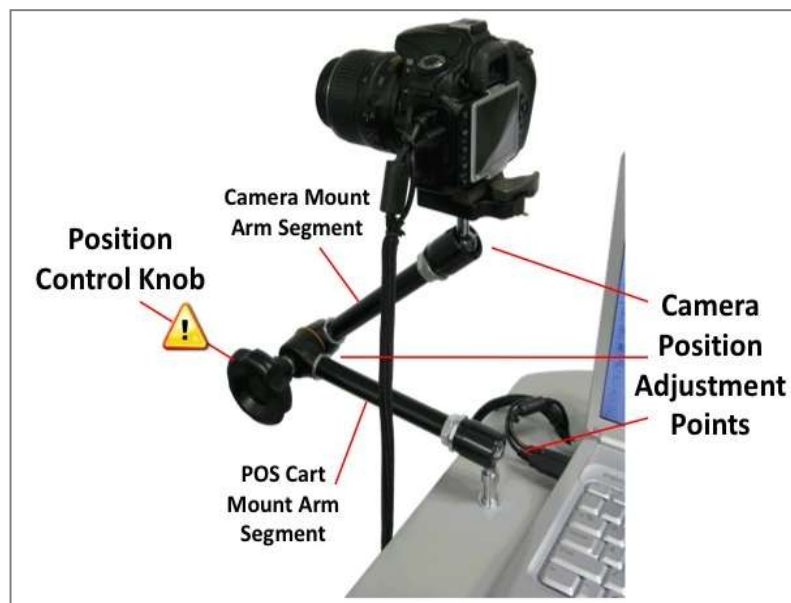

Figure 3 – PhotoStation Camera Positioning Arm

⚠️ **NOTE: NEVER loosen the position control knob without securely holding the camera hand grip, located on the right hand side of the camera.**

The Position Control Knob will loosen all three positioning arm adjustment points at one time. The three camera position adjustment points give you the ability to adjust not only the camera, but also the two positioning arm segments. The upper Camera Mount segment holds the camera, and the lower POS Cart segment attaches to your PhotoStation cart.

The following figure illustrates the steps needed to position your camera:

Figure 4 – PhotoStation Camera Positioning Steps

Repositioning your camera is simple and easy once you become familiar with the way your PhotoStation camera positioning arm works. Key to remember is that the single position control knob loosens or tightens all the adjustment points at once. **NEVER** loosen the position control knob without securely holding the camera hand grip, located on the right hand side of the camera (opposite from side with the cable connections).

⚠️ **It is extremely important to firmly hold the camera before loosening the position control knob.**

To loosen the positioning arm, turn the position control knob to the left (counter-clockwise). Once the knob has been loosened, the camera may be repositioned as needed. In general, as you move the camera to the general position desired the camera positioning arm segments will move in tandem around the three adjustment points.

Keep the following in mind when positioning your camera:

- Each arm segment rotates independently, and the "U" slots must be aligned in order to allow the pivot ball heads to rotate in (see Figure 4, Step 4). Turn the arm to allow the "U" Slot to align as needed.

- Be careful not to allow the camera cables to become twisted or tangled around the positioning arm.

- Once you have positioned the camera, tighten the Position Control Knob by turning it to the right (clockwise) to lock all joints back in place. The Live View feature of the PhotoStation will show you what the camera will captures as positioned, allowing you to make adjustments as needed.

The following diagram shows some of the possible options for positioning your PhotoStation camera.

Figure 5 – Selected PhotoStation Camera Position Options

Over time, you should be able to standardize camera positions to a selected range that covers most of your practice needs. Whether your patient is standing, seated, or recumbent will affect which camera positions make the most sense for your clinical needs. Also, the height of the PhotoStation Point-of-Service Cart will affect camera position. Overall, a minimum number of variables in taking pictures are preferred. A standardized procedure for the PhotoStation operator to position the patient and the PhotoStation system will help to streamline your workflow.

Shooting Free Hand

You can shoot Photo Images free hand with the PhotoStation camera when you need to image hard to reach locations. Shooting free hand given you the maximum flexibility in capturing views, but also requires extra attention to ensure that views over time are captured with consistent positioning to provide a higher quality before-and-after comparisons.

Figure 9 – Operator Shooting Freehand

Shooting free hand requires a high level of care in the handling of the camera. The 4D PhotoStation uses a quick release to dismount the camera from the camera positioning arm. The quick release is easy to use, and with just a little practice will be an intuitive and fast way to mount and dismount your camera for hand held shoot.

To start, make sure your firmly hold the camera with your right hand before touching the Quick Release Lock Pin or the Quick Release Lever.

The picture shows the Quick Release in the locked position with the Lock Pin engaged.

	A close up of the camera Quick Release shows it in the Locked position and the Lock Pin (circled) in the Engaged position. When the Quick Release is in the Locked position and the Lock Pin is in the Engaged position, the camera will be securely mounted in place. This is the standard setting when using the system camera positioning arm for shooting, when moving the system from room to room, or when the system is not in use.
	Prepare to remove the camera. While firmly holding the camera, push the Lock Pin (#1) from the Locked to Unlocked position. At this point, the camera Quick Release is still Locked. To unmount the camera, push the Quick Release Lever to the left (#2).
	Pushing the Quick Release Lever to the left enables the camera to be unmounted from the Quick Release. The picture shows the Quick Release Lever in the Open or Unlocked position. ⚠ The camera can now be dismounted and used for handheld shooting. YOU MUST BE HOLDING THE CAMERA.

To remount the camera, place the front edge of the base at the location indicated by (1).

Push the camera down, as shown in the (2).

The Release Lever will automatically reengage, moving to the right. Reengage the Lock Pin (3) to secure the camera.

Preparing Your Camera To Shoot

When you click the New Date button, the Shoot button will appear which launches the PhotoStation Camera Control program. Click this button, and a new window will appear on your PhotoStation Computer desktop that contains all the features and settings you will need to use to take high quality digital photo documentation with your PhotoStation Camera. The Camera Control program provides an extensive range of features, many of which are not directly needed for your standard Photo Documentation procedures. While on the key features you need to use are documented in this User Manual, you can explore various options available to you (e.g. Time Lapse) with the Camera Control program.
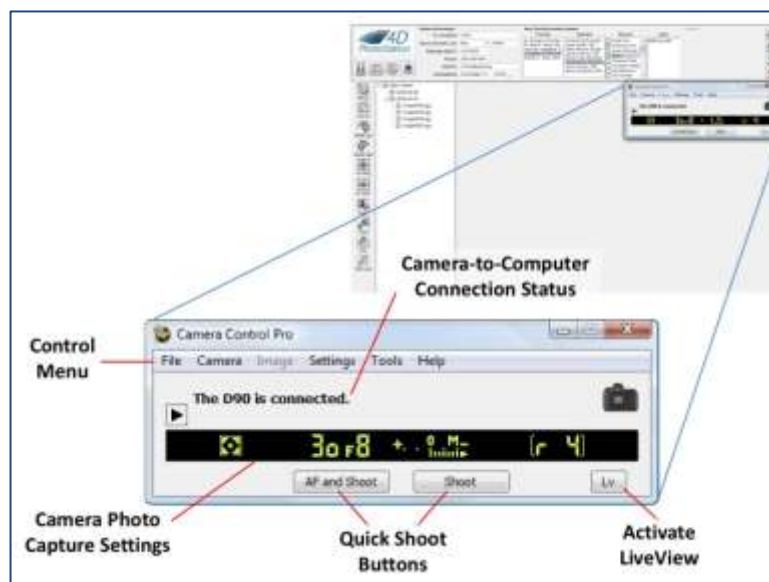

Figure 32 – PhotoStation Camera Control Program

In the previous Figure , the status of the connection between the PhotoStation Camera and PhotoStation Computer is shown, indicating that, "The D90 is connected." This notification means that everything is working as it should in the communications setup between the computer and the camera. If this connection is not working properly, you will see the following:
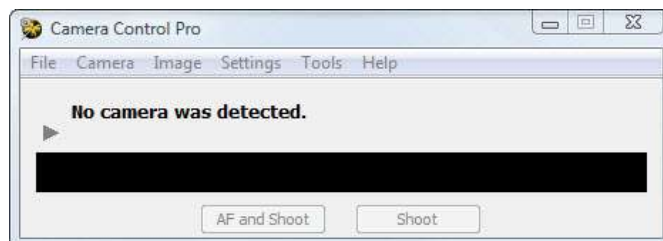

Figure 33 – Camera and Computer Not Connected Properly

If no camera is detected, then:

- Check to make sure the cables connections at the camera are secure.

- Power the camera off then back on using the on-camera switch as shown:
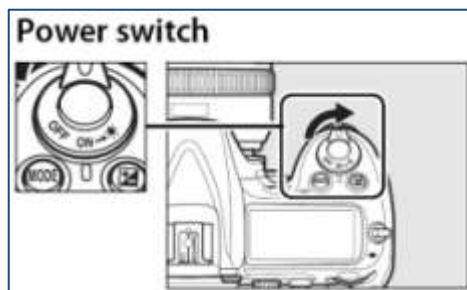
Figure 34 – D90 Power Off / On

- Restart the PhotoStation Camera Control Program by clicking on the "New Patient" button without reentering any of the Patient data entry fields.

Other key features of the Camera Control program are:

- Camera Photo Capture Settings

  The black bar with camera settings shows the current set up of your PhotoStation Camera. Generally speaking, these settings will be for informational purposes only, and will not need to be changed.

- Quick Shoot Buttons

  You can use these buttons to take pictures without Live View, but this option is not recommended because it limits the control you will have over what the camera will capture. If you do use the

Quick Shoot buttons, you can immediate review the pictures that you just captured in PhotoStation Manager.

- Camera Control Settings Files

The PhotoStation is loaded with predefined control settings files. These files are located in the main PhotoStation My Documents folder. The Camera Control Settings files contain the camera exposure, ISO, shutter speed, and white balance default settings established when your PhotoStation system was installed. Depending on your particular clinical configuration of exam rooms, one or more Camera Control Settings files may have been created for you.

Live View

Live View is the feature in PhotoStation Manager that allows you to see a real-time preview of what exactly your PhotoStation Camera is ready to photograph. Live View provides you with an easy way to see how the picture will change based on changes in the position of your POS Cart, or adjustments to the camera positioning arm.

Please note that Live View will not show you how your pictures will actually look once taken. After the photos are transferred from the camera to the PhotoStation computer, you can view them in PhotoStation Manager to check quality and make adjustments as necessary.

Activating Live View

To start Live View, click the Live View button $\boxed{\text{Lv}}$ on the lower right of the Camera Control window. The Live View Window opens as shown in the following figure. To exit the Live View Window, click the "Lv" button again.

Figure 35 – Live View Startup

Live View Running

Once Live View is running, you will view in PhotoStation Manager the actual view captured by your PhotoStation Camera. In addition to displaying the live preview, several buttons become active, including the Auto Focus controls, as well as the "Shoot" and "AF and Shoot" buttons. Use of these Auto Focus Target buttons is described below.
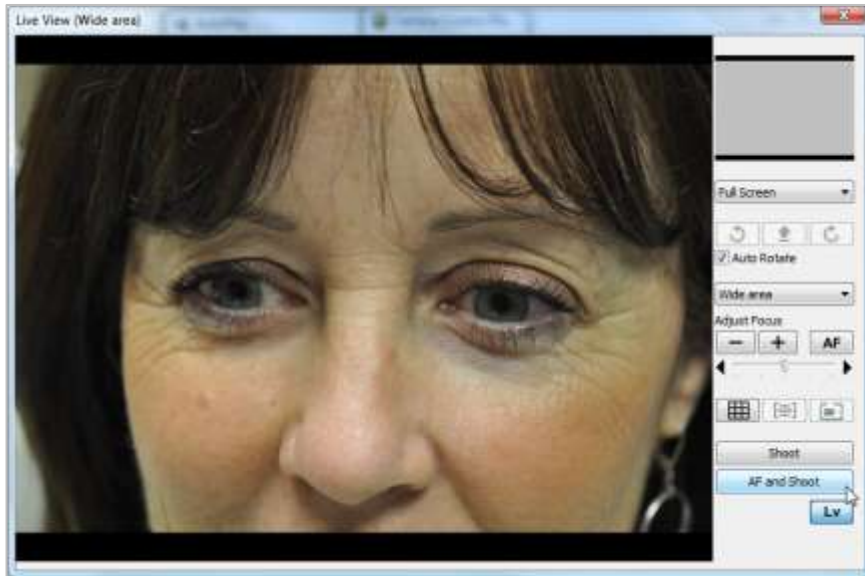

Figure 36 – Live View and Auto Focus Controls

At this point, you will compose (or frame) the picture you want to take. Your PhotoStation provides you with several ways to control the composition of the picture. In general, you can adjust the following:

- Cart Position

  You can make adjustments to the picture composition by either adjusting the POS Cart position and/or adjusting the height. See Positioning Your Point-of-Service Cart, for instructions on how to make these adjustments.

- Camera Position

  See Positioning Your Camera for important details on adjusting the Camera Position Arm. **Always hold the camera securely before loosening** the Position Control Knob, then arrange the camera as needed and re-tighten the knob.

- Lens Focal Length

  The standard PhotoStation system configuration includes a 60mm Nikon macro lens. If your system uses this lens or another variable focal length lens (e.g., zoom lens), you will be able to adjust the field of view being captured by your camera. Adjust focal length as needed for either regional pictures or up close detail feature pictures. Regional shots will require a smaller focal

length, such a 18mm to 30mm. Up close detail shots will require a larger focal length, such as 35mm or greater.

If your system uses a fixed focus lens, such as a 35mm, 50mm, or 60mm lens, then adjustments for composition of the picture must be made through adjustments of POS Cart position and/or the Camera position, as described above.

Sometimes, the Auto Focus will fail. In this case, the following dialog will be displayed:
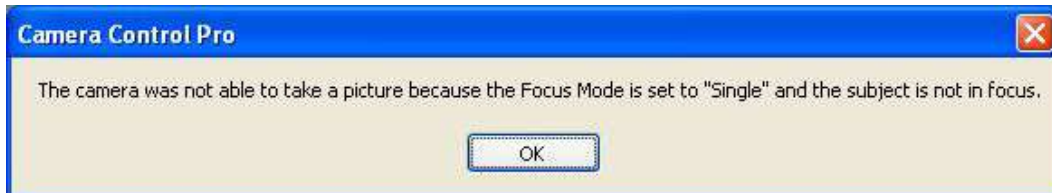

Figure 37 – Out of Focus Dialog

When this message appears you can try several things to get your PhotoStation Camera to successfully Auto Focus.

- Use the Auto Focus Target Adjust buttons (Up, Down, Left, Right) to move the Auto Focus Target red box to a feature that is nearer or further in distance from the current position of the red box. Click the Start AF button again.

- Reposition the Cart a few inches closer or further from the patient. Click the Start AF button again.

- Change the focal length of the lens on your PhotoStation Camera a few millimeters closer in or further out. Click the Start AF button again.

Normally, you will simply need to click "AF and Shoot" (i.e., "Auto Focus and Shoot") button to take a picture of the area captured in the Live View window. However, if you need to make adjustments to the detail focus of the shot, you can use the mouse to select an area of the image to focus on, and then click the Auto-Focus (AF) button, as shown below:
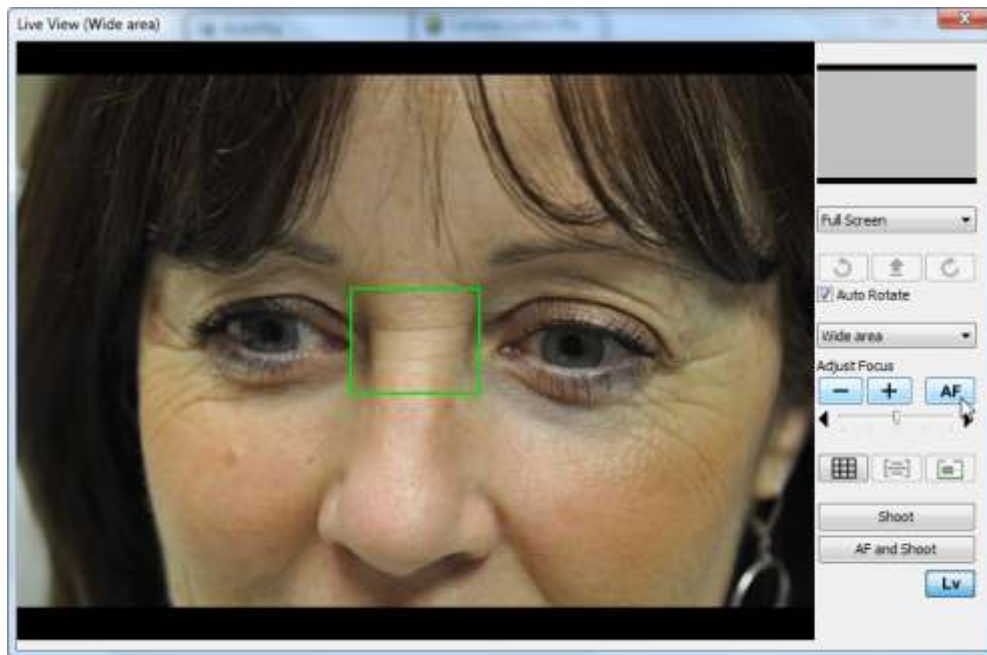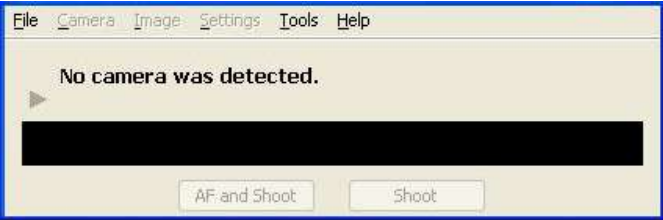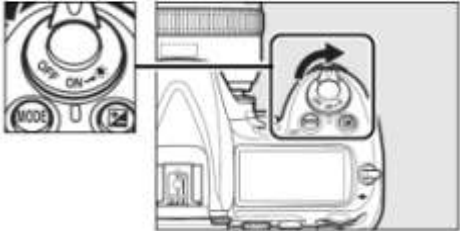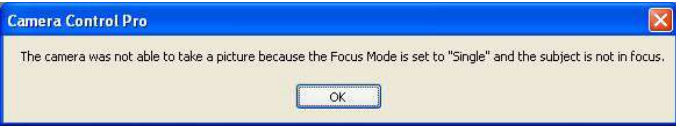
Figure 38 – Live View: Adjust Auto focus Details

Once Auto Focus is successful, you can select the Shoot button. At this point you will hear your PhotoStation Camera click while taking the picture. When the picture is taken, the Live View closes, and a picture upload Status indicator is displayed (see Figure , next page). The upload Status window shows a thumbnail of the picture captured, as well as other information about available disk storage and total number of pictures uploaded since the New Patient button was pressed. Display of the upload Status window indicates the picture was successfully copied onto your PhotoStation.

Figure 39 – Upload Status IndicatorManaging Photo Images
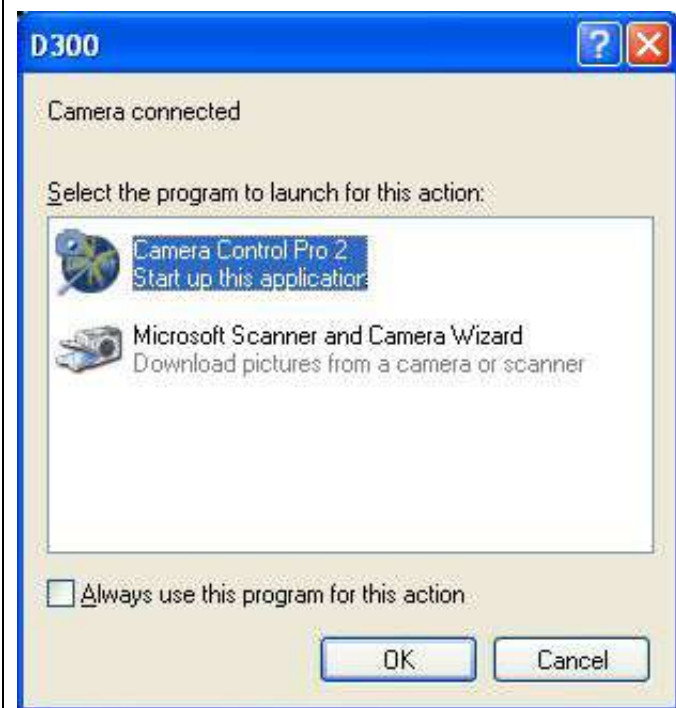
Camera Control Error Messages

Message Display	*Solution*
File Camera Image Settings Tools Help No camera was detected. ▶ AF and Shoot Shoot	Remedy: If no camera is detected, then: • Check to make sure the cables connections at the camera are secure. • Power the camera off then back on using the on-camera switch as shown: **Power switch** • Restart the PhotoStation Camera Control Program by clicking on the "New Patient" button without reentering any of the Patient data entry fields.
Camera Control Pro ✕ The camera was not able to take a picture because the Focus Mode is set to "Single" and the subject is not in focus. OK	The Camera Control Program cannot focus on the area of interest. • Use the Auto Focus Target Adjust buttons (Up, Down, Left, Right) to move the Auto Focus Target red box to a feature that is nearer or further in distance from the current position of the red box. Click on the Start AF button again. • Reposition the Cart a few inches closer or further from the patient. Click on the Start AF button again. • Change the focal length of the lens on your PhotoStation Camera a few millimeters closer in or further out. Click on the Start AF button again.
	Cause: • If the PhotoStation was in Live View mode and there was a break in the power to the PhotoStation, this message will be displayed once you select Camera>Live View (Hand-held) and click on the Start

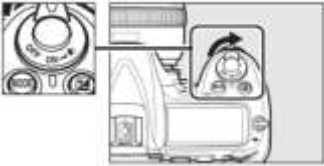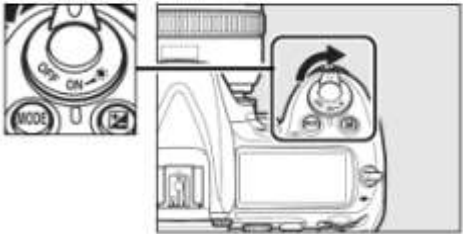|	Live View button.
Camera Control Pro ⚠ The camera was not able to start Live View. [OK]	Remedy • Exit the Live View screen if still open. • Depress the shutter release button on your PhotoStation Camera. The shutter release button is shown in the following Figure. Shutter Release
D300 Camera connected Select the program to launch for this action: 🔶 Camera Control Pro 2 — Start up this application 📷 Microsoft Scanner and Camera Wizard — Download pictures from a camera or scanner ☐ Always use this program for this action [OK] [Cancel]	Cause: • The PhotoStation Camera was powered off and on. • The PhotoStation Camera USB connection was removed then reinserted. Remedy • Click "Cancel". • No other action needed. • NOTE: Other error messages may appear depending on the cause of the USB camera to computer reconnect.

	Cause • A USB cable was disconnected while the Camera Control Program was running. Remedy • Exit the PhotoStation Manager application. • Turn the PhotoStation Camera power off then on again: • Restart the PhotoStation Manager and restart Patient photography workflow.
	Cause • A USB cable was disconnected while the Camera Control Program was running. Remedy • Exit the PhotoStation Manager application. • Turn the PhotoStation Camera power off then on again: • Restart the PhotoStation Manager and restart Patient photography workflow.
	Remedy: • Hard reboot of the complete PhotoStation System. • Turn off Camera • Exit PhotoStation Manager • Shutdown your PhotoStation Computer using Windows® XP Shutdown

	procedure.
	• Restart you PhotoStation Computer
	• Login
	• Restart PhotoStation Manager
None of the above causes the PhotoStation to begin working again.	Remedy:
	• Hard reboot of the complete PhotoStation System.
	• Turn off Camera
	• Exit PhotoStation Manager
	• Shutdown your PhotoStation Computer using Windows® XP Shutdown procedure.
	• Restart you PhotoStation Computer
	• Login and Restart PhotoStation Manager
	• NOTE: If this does not work, call 4D Imaging Systems field service at 865-483-5145 or send an email to support@4d-imaging.com.