

ATLAS Corneal Topography System

Model 9000, System Software Version 3.0

Documentation



Content

**User Manual ATLAS Corneal Topography System
Model 9000 and ATLAS Review Software 3.0**

[2660021135270 B]

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**User Manual Supplement:
ATLAS Model 9000**

[2660021136504 A]

2

**Release Notes:
ATLAS Software Version 3.00**

[2660021134283 B]

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Version 3.0 Installation Instructions

[2660021135267 B]

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[2660021142711a]

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**Release Notes:
ATLAS Review-Software, Version 3.0.1**

[2660021142620a]

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ATLAS – HP 6988 Printer Configuration

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Disposal of the product within the EU

[2005-06-27]

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Content

**User Manual ATLAS Corneal Topography System
Model 9000 and ATLAS Review Software 3.0**

[2660021135270 B]

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ATLAS Corneal Topography System

■ Model 9000 Instrument and ATLAS Review Software (System Software Version 3.0)



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Document Applicability

This document applies to the ATLAS 9000 Instrument and Review Software, System Software Version 3.0 or higher, unless superseded.

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(1) Introduction

The ZEISS ATLAS™ Model 9000 Corneal Topography System (ATLAS System) is a diagnostic instrument that measures the curvature of the cornea of the eye, and produces a topographical image. This image can be viewed on a computer and printed in color. The information can be used for contact lens fitting, corneal pathology detection and management, and laser vision correction screening/planning/management.

This chapter includes the following topics:

- [Intended Use](#) and [Indications for Use](#), page 1-1
- [Purpose of This User Manual](#), page 1-2
- [ATLAS Technology](#), page 1-3
- [System Hardware](#), page 1-4
- [External Device Equipment](#), page 1-8
- [Review Software and Instrument Differences](#), page 1-10
- [Instrument Installation](#), page 1-11
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- [ATLAS Instrument Embedded Windows License](#), page 1-13
- [Product Compliance](#), page 1-13
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- [Electromagnetic Compatibility \(EMC\)](#), page 1-15
- [Symbols and Labels](#), page 1-19
- [Instrument Disposition](#), page 1-22
- [Disposal](#), page 1-22
- [Using the Optional Power Table](#), page 1-22

Intended Use

The ZEISS ATLAS Corneal Topography System is intended to measure and analyze the corneal curvature of the eye.

Indications for Use

The ZEISS ATLAS Corneal Topography System is an automated AC-powered videokeratoscope indicated for measuring corneal topography and assisting in corneal evaluation, corneal refractive surgery screening and post-operative monitoring, corneal pathology screening and monitoring, and contact lens selection and fitting.



Note: The ATLAS System instrument and ATLAS Review Software are not intended to be used as the sole diagnostic for disease.

Purpose of This User Manual

Carl Zeiss Meditec designed this User Manual to serve as a training, usage and reference guide. We assume that users are clinicians or technicians with professional training or experience in the use of ophthalmic imaging equipment, and in diagnostic interpretation of the images generated. While we offer training in the use of the ATLAS System, we do not offer instruction in diagnostic interpretation of the images generated. This manual does not attempt to do so.

ATLAS System Instrument User Manual

This User Manual is intended for the operation of the ATLAS System instrument and ATLAS System software.

ATLAS Review Software Manual

This User Manual is also intended for operation of ATLAS Review Software. ATLAS Review Software running on a separate computer is functionally identical to the software running on the ATLAS instrument except for the ability to acquire images.

Please refer to the following ATLAS Review Software sections:

- [Review Software and Instrument Differences](#) on page 1-10.
- [\(D\) Network Configuration Guide](#) for network configuration information.

If you are using ATLAS Review Software on a separate computer you can ignore chapter [\(3\) Acquire Images \(Instrument Only\)](#).

Organization of the Manual



Note: Unless otherwise noted, the functions and instructions described in this manual can be used for both the ATLAS System Instrument and ATLAS Review Software.

This introductory chapter provides a system description, installation and safety information. Chapters [\(2\)](#) through [\(4\)](#) are organized according to the normal sequence of operation of the ATLAS System, that is, image acquisition followed by image analysis. Chapters [\(5\)](#) through [\(8\)](#) cover Parameters, Views, and Displays, followed by data management, backup, and transfer functions in Chapters [\(9\)](#) through [\(11\)](#). Chapters [\(H\)](#), [\(K\)](#), and [\(L\)](#) cover [Routine Maintenance](#), instrument [Specifications](#) and [Legal Notices](#), respectively. Users who wish to use the ATLAS System in a networked environment should see [\(D\) Network Configuration Guide](#).

ATLAS's optional PathFinder™ II software is discussed in [\(A\) PathFinder II Corneal Analysis \(Optional\)](#). The optional MasterFit™ II software is discussed in [\(B\) MasterFit II \(Optional\)](#). The optional DICOM Gateway software is discussed in [\(C\) DICOM Gateway \(Optional\)](#). License Registration for ATLAS Review Software and optional software features are discussed in [\(I\) License Registration](#).

See [\(E\) Network Storage Device Configuration](#) for NAS drive information, and [\(F\) Printer Configuration](#) for printer information. For ATLAS data transfer using optical disks, see [\(G\) Data Transfer Using Optical Disks](#). The manual includes a [Glossary](#) and an [Index](#).

Text Conventions

- This manual means “left-click” when it says, “click,” except where “right-click” is specified.
- Chains of menu items are indicated with the use of the “>” symbol between items. For example, “**File > Exit**” directs you to select **Exit** in the **File** menu.

Access Menu Options

To access the options offered through each menu, click on the menu headings. Then click on an option to select it. Click outside all menu options to make the options disappear.

- Some menus are fields tagged with a down-arrow (drop-down lists). To access these menu options, click on the down-arrow.
- Grayed-out menu options or buttons are not available.

Electronic User Manual Access

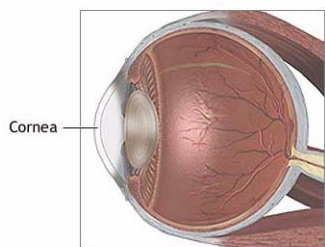
The ATLAS System User Manual in Acrobat PDF format (version 8 or later) is provided with the instrument electronically in four ways:

1. In the ATLAS System application, press the **F1** function key.
2. In the ATLAS System application, select **View User Manual...** on the **Help** menu.
3. On the ATLAS User Manual CD included in the instrument accessory kit. You can view the user manual PDF using the ATLAS System computer or any other computer.
4. On the ATLAS Review CD included in the instrument accessory kit. You can view the user manual PDF using the ATLAS System computer or any other computer.



Note: Once the ATLAS System User Manual is opened, you can switch between the user manual and the ATLAS application by pressing **Alt+Esc** or **Alt+Tab**.

ATLAS Technology



The ATLAS System is a Placido-disk based corneal topography system that projects a series of concentric infrared (950 nm) light rings onto the cornea of the eye. An image of the reflected rings is captured with a digital camera. Using patented Cone of Focus™ technology and an enhanced arc-step algorithm, the ATLAS System analyzes thousands of data points in the image to measure the distances between rings, and their relationships with each other, to reconstruct the corneal surface. The data points are then converted by the software into various views of the cornea. The ATLAS System can display the image of the cornea in a variety of ways, including curvature, elevation, and aberrations. The ATLAS System also has the ability to capture both scotopic (without light) and photopic (with light) pupil images.

During an examination, the patient’s chin is positioned in the chin rest assembly in front of the projection head. The clinician administering the exam aligns the projection head and, using a joystick, focuses on the patient’s eye and activates the system. The user presses the joystick or spacebar to stop data acquisition. The optional SmartCapture™ Image Analysis Technology, found only in the ATLAS Model 9000, automatically acquires images during the alignment process and selects the highest quality image for the user. Corneal

topography exams are stored on the instrument's computer and/or on an archive medium, and can be quantitatively analyzed.

The field of view of the camera system is large enough to capture the limbus boundaries of the eye, thus allowing white-to-white (limbus-to-limbus) measurements, as well as the determination of the geometric center of the eye for better contact lens fitting and eye registration.

System Hardware

With the exception of the keyboard and printer, the ATLAS System integrates all hardware components in a unit, which includes the image acquisition optics, the system computer and flat panel display screen. Carl Zeiss Meditec offers an optional motorized power table (Figure 1-5 and Figure 1-12), which accommodates elevation adjustment to each patient's height. The illustration below (Figure 1-1) labels hardware elements. System specifications are in (K) Specifications.

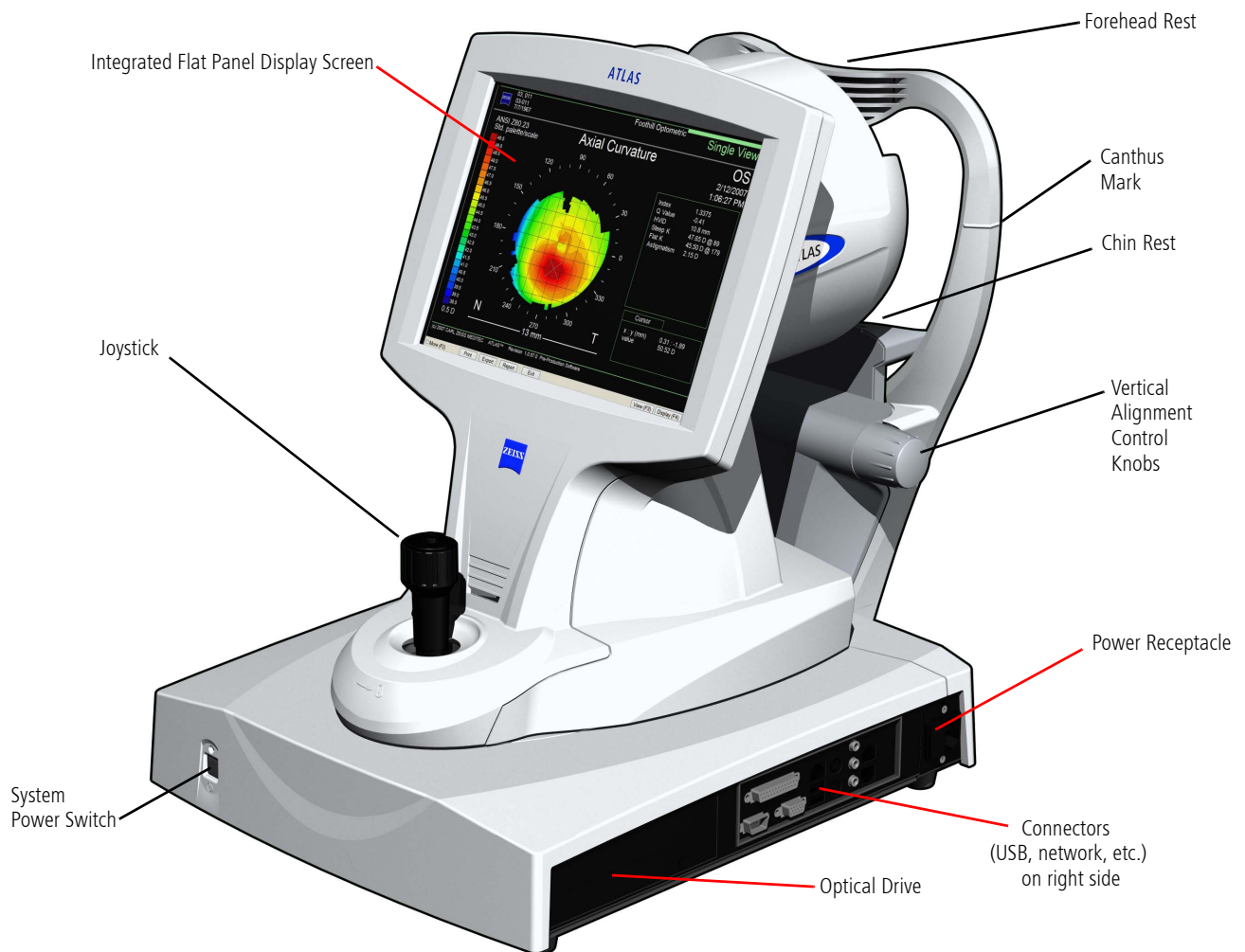


Figure 1-1 ATLAS System Hardware

Projection Head Assembly and Joystick

The projection head houses the illumination source, Placido disk, and video camera that project and capture an image.

The joystick moves the base of the unit from side to side and back and forth for positioning. The base can also be locked in place when you move the unit by turning the joystick counter-clockwise until it clicks and stops.

The joystick is also used to focus the image. The button on top of the joystick (or the spacebar on the keyboard) activates the camera and completes the image acquisition process.

Chin Rest Assembly

The chin rest assembly (Figure 1-2) cradles the patient's chin and forehead during an examination. The chin rest can be adjusted vertically to align the patient's eye with the camera using control knobs on the left and right (see Figure 1-1 and Figure 1-2). You can raise or lower the chin rest to align the canthus (corner of the eye) with the canthus marks on the chin rest assembly. This special dual chin rest minimizes any nose shadow during an exam.

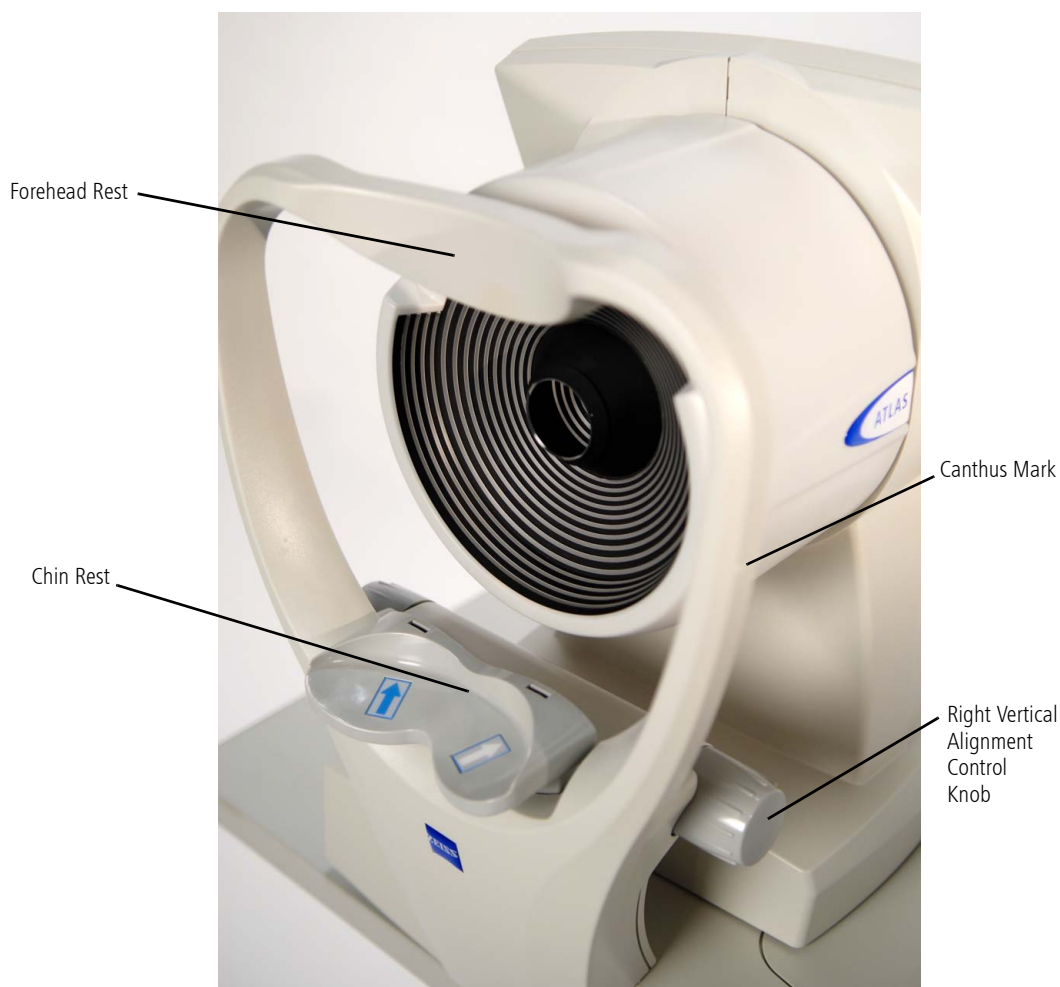


Figure 1-2 Chin Rest Assembly

Introduction

The left chin rest is positioned at an angle for the right eye, and the right chin rest is angled for the left eye.

The chin rest (from the patient's perspective) is labeled with arrows to indicate the chin location, and therefore the head orientation while capturing images for the right (blue arrow) and left (white arrow) eye. The patient should be instructed to place their chin in the appropriate side depending on which eye is being examined. The infrared sensors in the chin rest automatically detect OD/OS.

Keyboard and Touchpad

The keyboard is used to type in information, such as names, birth dates, and examination remarks. Some keys can also be used for other functions, such as activating the camera with the spacebar.

By touching the touchpad (see [Figure 1-3](#)) integrated into the keyboard, a pointer is moved around the screen. Selections are made by quickly tapping and releasing "clicking" the touchpad, or by pressing the left touchpad button. An external USB or PS/2 mouse can also be used.

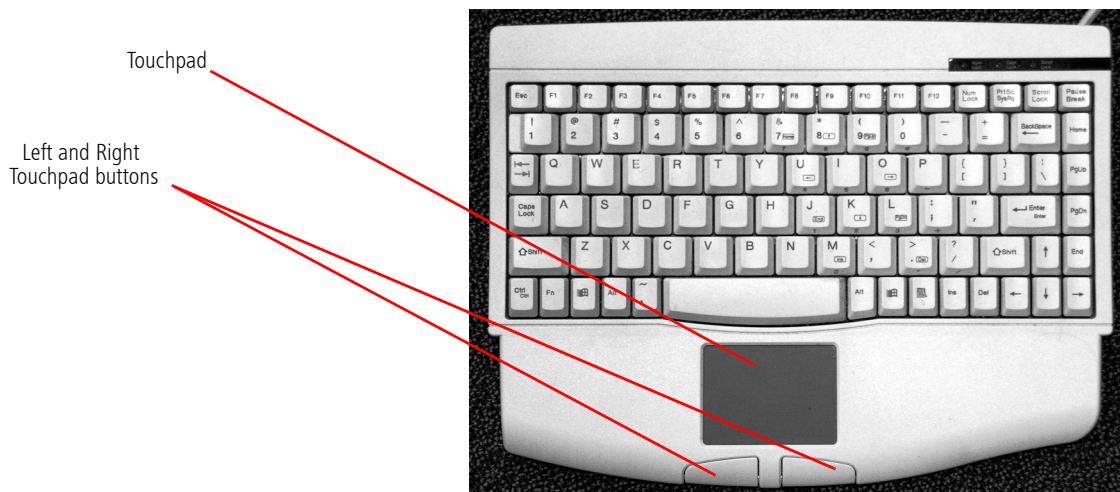


Figure 1-3 Keyboard with Integrated Touchpad and Buttons

Side Connectors

On the right side of the ATLAS are various computer ports as shown below.

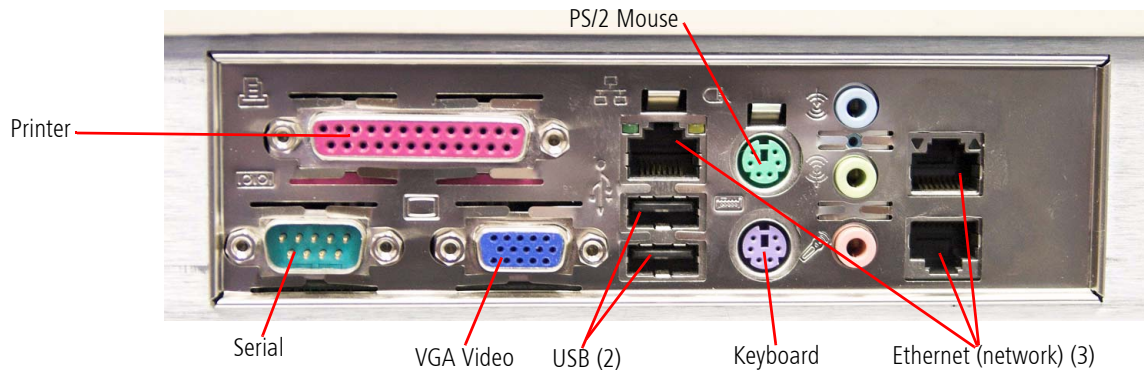


Figure 1-4 Side Connectors

ATLAS Instrument Software

Carl Zeiss Meditec pre-installs all software necessary to operate the ATLAS System instrument. Software updates with installation instructions may be provided on CD or on our website.

Data Storage

Storage of ATLAS exam data is designed to occur in a network environment. We recommend archiving data to a network file server or an network attached storage device (also known as a network hard drive), which operates just as a network file server. For more information, see [\(10\) Archive Management](#) and [\(D\) Network Configuration Guide](#).

For non-networked environments, an external USB hard drive can be used.



Note: An isolation transformer may be required when connecting USB hard drives or printers that are plugged into electrical outlets. See [External Device Equipment](#) on page 1-8.



Figure 1-5 ATLAS System on Optional Power Table (with isolation transformer)

External Device Equipment



WARNING: To maintain patient safety, an isolation transformer is required when connecting externally powered peripheral devices (i.e., printer, USB drive, etc.) within 1.5 meters (4.9 feet) from the patient. In addition, an isolation transformer is required for all externally powered peripheral devices outside this distance unless these devices are (1) connected to the ATLAS using an Unshielded Twisted Pair (UTP) network cable (CZMI recommends using a least a CAT 5 UTP network cable), (2) plugged into a different power outlet than the ATLAS, and (3) qualified by CZM for use with the ATLAS. Failure to observe this warning could result in electrical shock to the patient and/or examiner.



WARNING: To directly connect a printer to the ATLAS System only use a UTP cable. Use of a shielded Ethernet connector will ground the printer through the ATLAS System, which could result in electrical shock to the patient and/or examiner. It could also invalidate the system safety approval.



WARNING: Accessory equipment connected to the analog and digital interfaces must be certified according to the respective IEC standards (e.g., IEC 60950 for data processing equipment and IEC 60601-1 for medical equipment). Furthermore, all configurations shall comply with the system standard IEC 60601-1-1. Any person who connects additional equipment to the signal input part or signal output part configures a medical system, and is therefore responsible for ensuring that the system complies with the requirements of the system standard IEC 60601-1-1. If in doubt, consult the technical service department or your local representative.

NAS Drives

See [\(E\) Network Storage Device Configuration](#) for more information.

Printers

See [\(F\) Printer Configuration](#) for more information.

Isolation Transformer

Any isolation transformer used must be approved for medical use and must have a minimum rating that is sufficient for the device(s) being powered. CZM highly recommends contacting your CZM representative for an isolation transformer that has been formally qualified for the ATLAS.



Note: Technical support is not provided for accessory devices that have not been qualified by CZM.

USB Drives (Flash and Hard Drives)



Do not install any optional software. Drive must be formatted in NTFS format. ATLAS data is compatible only with NTFS.

Using an External Monitor on the ATLAS Instrument

You can connect an external monitor to the VGA Video port of the ATLAS instrument (i.e., for presentations, larger monitor). To set up an external monitor follow these steps:

1. **Right-Click** on the Windows Desktop and select **Properties** from the pop-up menu.
2. The Display Properties dialog opens. Click the Settings tab (Figure 1-6) and enter your preferred settings for the external monitor.

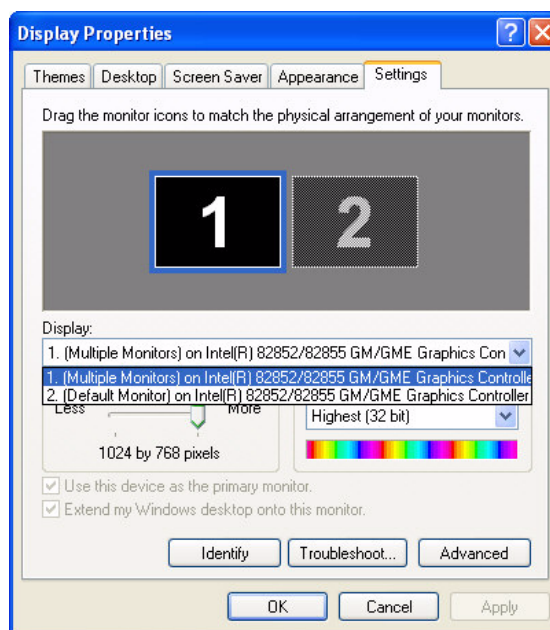
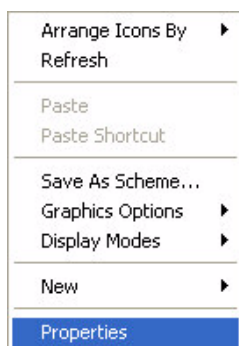


Figure 1-6 Display Properties Tab



Note: ATLAS Review does not support a display resolution of 1024 x 768 with Large size (120 DPI) DPI setting.

Review Software and Instrument Differences

ATLAS Review Software has the following differences compared to the ATLAS instrument:

- **Capture Image** is not shown on the PATIENT SELECTION SCREEN ([Find Existing Patient](#), page 3-2).
- **Always use current Parameter Set for acquisition** option in **Options > Preferences** on General tab is not displayed ([Figure 3-1](#), page 3-2).
- Menu **Tools > Calibration Check...** is not displayed ([Calibration Check](#), page H-4).
- **Exams** dialog on the EDIT PARAMETERS SCREEN only displays the OcuLign® option ([Exams](#), page 8-9).
- **Auto print after acquisition** and **Auto export after acquisition** options in **Printing / DICOM Export Options** dialog on the EDIT PARAMETERS SCREEN are not displayed ([Printing / DICOM Export Options](#), page 8-11).
- **Add New Patient** tab and **File > Add New Patient** are not displayed ([Add New Patient \(Instrument Only\)](#), page 3-3).
- **Importing from Worklists** is not displayed ([Importing from Worklists \(Instrument Only\)](#), page 11-20).
- **Camera Status** and **Instrument Status** indicators on Status Bar are not displayed ([Status Bar Information](#), page 2-13).
- **Instrument** check on System Check during startup is not displayed ([System Check During Start](#), page 2-2).
- PATIENT SELECTION SCREEN is in standard Windows XP window with minimize and maximize buttons.
- ANALYSIS SCREEN is in standard Windows XP window with minimize and maximize buttons, and the Title Bar is displayed.



WARNING: User Changes to Software or Hardware

The ATLAS System is a medical device. The software and hardware have been designed in accordance with U.S., European and other international medical device standards designed to protect clinicians, users and patients from potential harm caused by mechanical, diagnostic or therapeutic failures. **Unauthorized modification of ATLAS software or hardware (including peripherals) can jeopardize the safety of operators and patients, the performance of the instrument, and the integrity of patient data; it also voids the instrument warranty.**

Approved Software

Use of software supplied or approved by Carl Zeiss Meditec for the ATLAS System is authorized. Please refer to the ATLAS System Technical Support section of our website (www.meditec.zeiss.com/atlas) for the current list of approved software.



Note: Carl Zeiss Meditec does not provide technical support for the use of unapproved third party software.

Instrument Installation

The ATLAS System is user-installable without assistance from a Carl Zeiss Meditec service representative, except when used in conjunction with the CRS-Master workstation, which may require a Carl Zeiss Meditec technician.

However, it is recommended that an authorized Carl Zeiss Meditec service representative install the ATLAS System. In consultation with the buyer, Carl Zeiss Meditec schedules one free on-site installation appointment after instrument delivery. System installation and operator training require approximately one-half business day.

If you choose to install the ATLAS System yourself, follow these steps:



CAUTION: To prevent injury or damage to the instrument and yourself, two people should lift the instrument out of the box, bending the knees and keeping the back straight.

1. Open the shipping box by carefully cutting the stripping cords.
2. Remove the top lid of the box and the accessory kit box.
3. Remove the cardboard box sleeve surrounding the instrument.
4. Remove the top foam piece on the instrument.
5. Pull the bottom foam away from the instrument, and lift the instrument out of the bottom foam by grasping firmly on the forehead rest and under the front end of the instrument (under joystick area). Do NOT lift under the chin rest!
6. Set the instrument on a flat, stable surface.
7. Remove the plastic bag from the instrument.
8. Remove the shipping band around the instrument.
9. Remove the keyboard and power cord from the accessory box.



IMPORTANT: Retain the shipping materials (box and packaging) in the event of shipping damage or for return, if necessary, to an authorized Carl Zeiss Meditec service center. To prevent damage, the instrument must be transported in its original shipping package.

10. Plug the approved hospital grade power cord provided with the instrument into the power input receptacle (see [Figure 1-1](#)). Plug the other end of the power cord into a dedicated grounded power outlet.
11. Plug in the keyboard cable into the instrument's purple keyboard port (see [Figure 1-4](#)).

12. Verify ALL connections are fully seated and that the instrument feet are not on top of any cables.
13. Turn on the ATLAS instrument by pressing the system power switch, found on the front of the instrument facing the operator (see [Figure 1-1](#)).
14. To become familiar with the ATLAS System see [\(2\) Operational Overview](#).

Care in Handling

Use extreme care when handling and transporting the ATLAS System shipping boxes and instrument. The instrument contains fragile optics that have been precisely aligned at the factory.

Installation Requirements

- The ATLAS System should operate on a dedicated power outlet. Based on your specification, we configure your ATLAS at the factory to use either 100V, 115V, or 230V line voltage.
- When using the optional power table, the instrument must be powered through the table (see [Power the Instrument Through the Table](#) on page 1-24).
- An isolation transformer is required when connecting peripheral devices (i.e., printer, USB drive, etc.) to the USB port that are plugged into electrical outlets (see [External Device Equipment](#) on page 1-8).

Tips to Avoid Damage



Note: Users are not authorized to dismantle or modify the ATLAS System hardware. To transport the instrument outside the office, you must consult with a Carl Zeiss Meditec service technician. Failure to do so voids all warranties offered with the ATLAS System.

- **Only Carl Zeiss Meditec authorized technicians should disassemble or service this instrument.** In the case of malfunction, error messages or operational problems, call Carl Zeiss Meditec customer service: In the U.S., call 800-341-6968. Outside the U.S., contact your local CZM distributor.
- This instrument has no special measures to protect against harmful ingress of water or other liquids (classified IPX0—ordinary equipment). Do not place containers of liquid on or near the instrument, nor use aerosols on or near it.
 - The optional power table has an IP21 classification, which provides the specified degree of protection against harmful ingress of water. Still, do not place containers of liquid on or near the table where spillage onto the instrument or table could occur, to avoid damage to the instrument or the table.
- In case of emergency related to the instrument, unplug the power cord from the wall outlet and call for service immediately.

- With the exception of the main power fuses and keyboard, there are no user-replaceable parts in the instrument. For the replacement of any component, accessory, or peripheral, except fuses or the keyboard, call Carl Zeiss Meditec customer service: In the U.S., call 800-341-6968. Outside the U.S., contact your local CZM distributor.
- Although this instrument is designed for continuous operation, it should be turned off when not in use for an extended period.
- This instrument operates according to specifications under standard indoor office (fluorescent) lighting conditions, without exposure to any direct sunlight.

ATLAS Instrument Embedded Windows License

Each ATLAS instrument is issued with an embedded Windows[®] XP operating system license located on the bottom of the instrument.

Product Compliance



Complies with 93/42/EEC Medical Device Directive.



Complies with US and Canadian medical electrical system safety requirements.

Complies with ANSI Z80.23-2008, American National Standard for Ophthalmics – Corneal Topography Systems – Standard Terminology, Requirements, Type A.

Complies with ISO 19980:2005, International Standard – Ophthalmic instruments – Corneal Topographers, Type A.

Product Safety

- IEC 60601-1
- UL 60601-1
- CSA C22.2 No. 601.1-M90

This instrument is classified as follows:



- **Class I Equipment** – Protection against electrical shock.
- **Type B** – Degree of protection against electric shock of applied part (chin and forehead rests).
- **Ordinary Equipment (IPX0)**– Degree of protection against ingress of liquids (none).
- **Continuous Operation** – Mode of operation.



WARNING: To prevent electric shock, the instrument must be plugged into an earthed ground outlet. Do not remove or disable the ground pin. Only an authorized Carl Zeiss Meditec service representative may install the instrument.



WARNING: Do not use the printer or the instrument or the optional power table with an extension cord or a power strip (multiple portable socket outlet). For additional safety, do not plug the printer and the instrument (or the optional power table) into the same wall outlet. Failure to observe this warning could result in electrical shock to the patient and/or examiner.



WARNING: Do not open the instrument covers. Opening the instrument covers could expose you to electrical and optical hazards.



WARNING: To maintain patient safety, an isolation transformer is required when connecting externally powered peripheral devices (i.e., printer, USB drive, etc.) within 1.5 meters (4.9 feet) from the patient. In addition, an isolation transformer is required for all externally powered peripheral devices outside this distance unless these devices are (1) connected to the ATLAS using an Unshielded Twisted Pair (UTP) network cable (CZMI recommends using a least a CAT 5 UTP network cable), (2) plugged into a different power outlet than the ATLAS, and (3) qualified by CZM for use with the ATLAS. Failure to observe this warning could result in electrical shock to the patient and/or examiner.



Note: The optional ATLAS Power Table is safe to use within the patient environment when the instrument is powered through it as instructed herein.



WARNING: Do not reconfigure system components on the table, nor add non-system devices or components to the table, nor replace original system components with substitutes not approved by Carl Zeiss Meditec. Such actions could result in failure of the table height adjustment mechanism, instability of the table, tipping and damage to the instrument, and injury to operator and patient.



WARNING: This instrument may cause ignition of flammable gases or vapors. Do NOT use in the presence of flammable anesthetics such as nitrous oxide, or in the presence of pure oxygen.



WARNING: Avoid tipping. Do not use the instrument on an uneven or sloped surface. Also, do not roll the table in deep pile carpet or over objects on the floor such as power cords. Failure to observe these precautions could result in tipping of the instrument and/or table and resulting injury to operator or patient and damage to the instrument.

Electromagnetic Compatibility (EMC)

- EN 60601-1-2



Note: The ATLAS System needs special precautions regarding EMC and needs to be installed and put into service according to the EMC information provided herein.



Note: Portable and mobile RF communications equipment can affect medical electrical equipment.



WARNING: The use of accessories, transducers and cables other than those specified may result in increased emissions or decreased immunity of the equipment.



WARNING: The ATLAS System should not be used adjacent to or stacked with other equipment. If adjacent or stacked use is necessary, the equipment or system should be observed to verify normal operation in the configuration in which it will be used.

Guidance and manufacturer's declaration – electromagnetic emissions

The ATLAS System is intended for use in the electromagnetic environment specified below. The customer or user of the ATLAS System should assure that it is used in such an environment.

Emissions Test	Compliance	Electromagnetic environment - guidance
RF emissions CISPR 11	Group 1	The ATLAS System uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class B	The ATLAS System is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Complies	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Complies	


Guidance and manufacturer's declaration – electromagnetic immunity

The ATLAS System is intended for use in the electromagnetic environment specified below. The customer or user of the ATLAS System should assure that it is used in such an environment.

Immunity Test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance
Electrostatic Discharge (ESD) IEC 61000-4-2	± 6 kV contact ± 8 kV air	± 6 kV contact ± 8 kV air	Floors should be wood, concrete, or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	± 2 kV for power supply lines ± 1 kV for input/output lines	± 2 kV for power supply lines ± 1 kV for input/output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	± 1 kV differential mode ± 2 kV common mode	± 1 kV differential mode ± 2 kV common mode	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions, and voltage variations on power supply input lines. IEC 61000-4-11	<5% U_T (>95% dip in U_T) for 0,5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles <5% U_T (95% dip in U_T) for 5 sec	<5% U_T (>95% dip in U_T) for 0,5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles <5% U_T (95% dip in U_T) for 5 sec	Mains power quality should be that of a typical commercial or hospital environment. If the user of the ATLAS System requires continued operation during power mains interruptions, it is recommended that the ATLAS System be powered from an uninterruptible source.
Note: U_T is the a.c. mains voltage prior to application of the test level.			

Guidance and manufacturer's declaration – electromagnetic immunity

The ATLAS System is intended for use in the electromagnetic environment specified below. The customer or user of the ATLAS System should assure that it is used in such an environment.

Immunity Test	IEC 60601 test level	Compliance level	Electromagnetic environment – guidance
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz	3 V	<p>Portable and mobile RF communications equipment should be used no closer to any part of the ATLAS System, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.</p> <p>Recommended separation distance</p> $d = 1.17\sqrt{P}$ $d = 1.17\sqrt{P} \text{ 80 MHz to 800 MHz}$ $d = 2.33\sqrt{P} \text{ 800 MHz to 2,5 GHz}$
Radiated RF IEC 61000-4-3	3 V/m 80 MHz to 2,5 GHz	3 V/m	<p>where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in metres (m).</p> <p>Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey,^a should be less than the compliance level in each frequency range.^b Interference may occur in the vicinity of equipment marked with the following symbol:</p> <div style="text-align: right;">  </div>

Note 1: At 80 MHz and 800 MHz, the higher frequency applies.

Note 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

^a Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM broadcast, cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the ATLAS System is used exceeds the applicable RF compliance level above, the ATLAS System should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the ATLAS System.

^b Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.

Recommended separation distances between portable and mobile RF communications equipment and the ATLAS System

The ATLAS System is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the ATLAS System can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the ATLAS System as recommended below, according to the maximum output power of the communications equipment.

Rated maximum output power of transmitter W	Separation distance according to frequency of transmitter m		
	150 kHz to 80 MHz	80 MHz to 800 MHz	800 MHz to 2,5 GHz
	$d = 1.17 \sqrt{P}$	$d = 1.17 \sqrt{P}$	$d = 2.33 \sqrt{P}$
0,01	0.117	0.117	0.233
0,1	0.370	0.370	0.737
1	1.170	1.170	2.330
10	3.700	3.700	7.368
100	11.700	11.700	23.300

For transmitters rated at a maximum output power not listed above, the recommended separation distance d in metres (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

Note 1: At 80 MHz and 800 MHz, the higher frequency applies.

Note 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

Symbols and Labels



Caution, consult accompanying documents. Note: There are important operating and maintenance instructions found in the manual.



Presence of electrical shock hazard. Note: Indicates risk of electrical shock due to the presence of uninsulated high voltage inside the instrument. Do not remove the instrument cover or parts.



Fuse



Type B applied parts



Manufacturer



Authorized European Community Representative



Serial number



Catalog number / part number



European Conformity



Model



Patent



Type A

Protective Packing Symbols

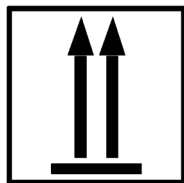
The protective packing symbols specify the handling requirements and the transport and storage conditions.

Handling Requirements

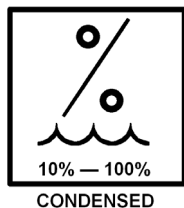
Fragile, Handle with Care



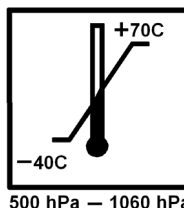
Keep Dry



This end up

Transport and Storage Conditions

Relative Humidity (10% to 100%, including condensation)



Temperature (-40 to +70 deg. C)

Atmospheric Pressure Limits (500 hPa to 1060 hPa)

Product Labels and Serial Number Location

On the right side above the connectors and on the bottom of the instrument is the product label:

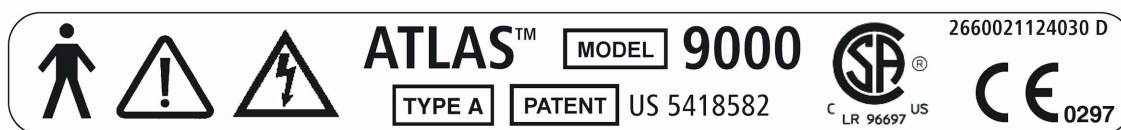


Figure 1-7 Product Label on Exterior, Right Side

On the right side to the left of the connectors is the label showing the serial number:

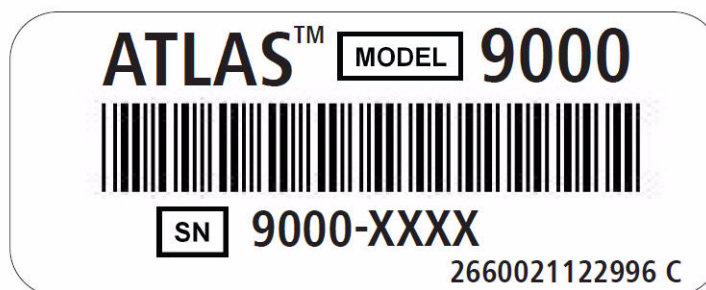


Figure 1-8 Product Label with Blank Serial Number

Another label above the connectors and on the bottom of the instrument identifies the manufacturer and authorized EC representative:



Figure 1-9 Label Identifying Manufacturer and EC Representative

A power and fuse label is to the right of the connectors:

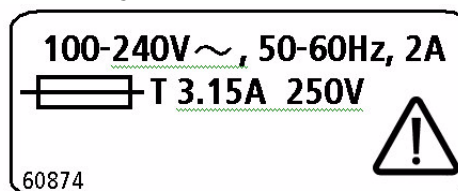


Figure 1-10 Power and Fuse Label

A small Manufactured month and year label is on the bottom of the instrument:



Figure 1-11 Manufactured Month and Year Label

Instrument Disposition

When it comes time to upgrade the ATLAS System, please contact Carl Zeiss Meditec to inquire about trade-in or upgrade values we may offer. Should you not wish to trade in the instrument, please see the Disposal section below.

Disposal

This product contains electronic components. At the end of its lifetime, the product should be disposed of in accordance with the relevant national regulations.

Disposal of the Product within the EU



In accordance with applicable EU guidelines at the time at which the product was brought onto the market, the product specified on the consignment note is not to be disposed of via the domestic waste disposal system or communal waste disposal facilities.

For further information on disposal of this product, please contact your local dealer or the manufacturer or its legal successor company. Please read the latest internet information provided by the manufacturer.

Where the product or its components are resold, the seller must inform the buyer that the product must be disposed of in accordance with the currently applicable national regulations.

Using the Optional Power Table



WARNING: Do not use the optional power table with an extension cord or a power strip (multiple portable socket outlet). For additional safety, do not plug the printer and the power table into the same wall outlet. Failure to observe this warning could result in electrical shock to the patient and/or examiner.



WARNING: When using the optional power table, the instrument must be powered through the table.

Install the Power Table

Place the instrument on the power table so that the monitor faces the operator side. See [Figure 1-5](#) for a photo example.

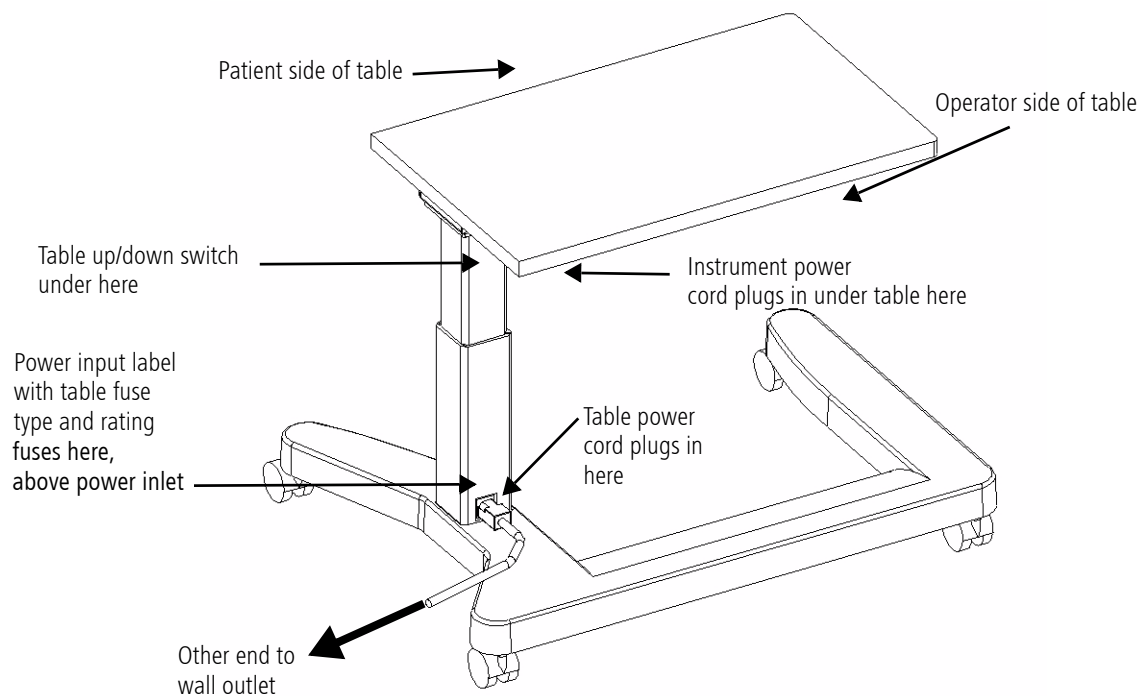


Figure 1-12 Power Table From Above

Power the Instrument Through the Table

The instrument power cord must be plugged into the power table under the left side, as shown in [Figure 1-12](#) and [Figure 1-13](#). The table power cord plugs into the table at its base as indicated in [Figure 1-12](#). The other end must be plugged directly into a dedicated wall power outlet. Do not use a power strip (multiple portable socket outlet) or extension cord.

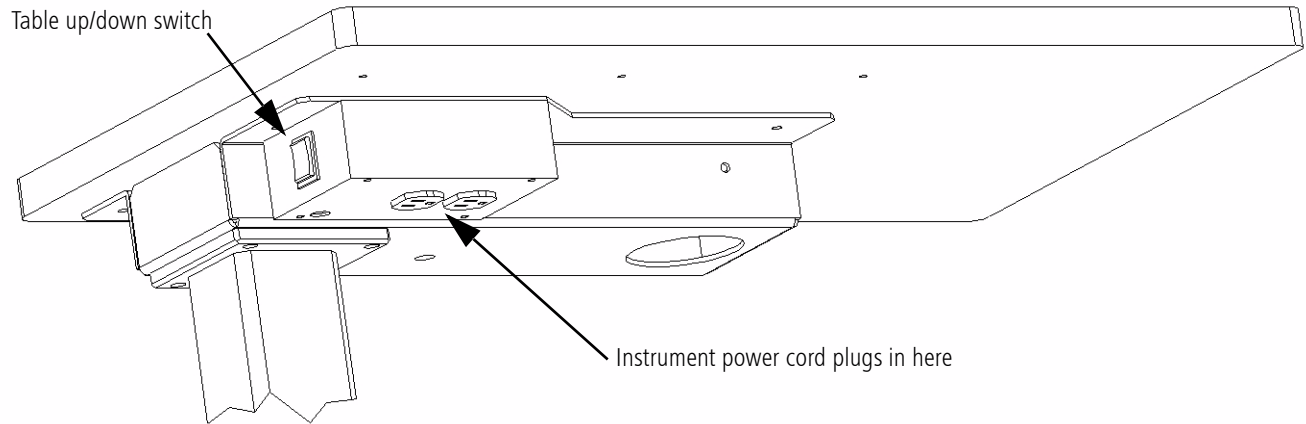


Figure 1-13 Power Table From Below

Operating the Power Table Lift

The up/down switch is on the left side, mounted under the table ([Figure 1-14](#)). To raise the power table, press the up arrow button; to lower it, press the down arrow button.



Figure 1-14 Table Up/Down Switch



Note: Your power table may look different than what is shown in this User Manual.

(2) Operational Overview

Chapter Overview

This chapter provides an overview of how to operate the ATLAS System. It explains basic operations like startup and shutdown, and initial system setup tasks. It introduces common features like the toolbar and menu system. It also provides an overview of the typical workflow and introduces the windows you will use in these contexts. Topics include:

- [System Start and Login](#), page 2-1
 - [System Check During Start](#), page 2-2
 - [User Login](#), page 2-4
 - [Logout Locks the System](#), page 2-5
 - [Change Language](#), page 2-6
- [Initial System Setup](#), page 2-9
 - [The admin User Account](#), page 2-12
 - [Create User Accounts \(admin only\)](#), page 2-9
 - [Archive/Synchronize Preferences](#), page 2-11
 - [Create Institution Name \(admin only\)](#), page 2-12
- [Operational Modes and Windows](#), page 2-12
 - [Sequence of Operation](#), page 2-12
- [Status Bar Information](#), page 2-13
- [Title Bar and Menus](#), page 2-15
- [Analysis Screen Toolbar](#), page 2-18
- [Power Down the System](#), page 2-19

System Start and Login


Starting the ATLAS System Instrument


To activate power, press the system power switch, found on the front of the instrument facing the operator (see [Figure 1-1 ATLAS System Hardware](#) on page 1-4). It takes approximately two minutes to start the ATLAS instrument and load the ATLAS System software.

Starting ATLAS Review Software Running on a PC

To start ATLAS Review Software on a PC, **double-click** the ATLAS Review Software icon (shown on the left) on your computer desktop. Alternatively, you can select **Start > All Programs > Carl Zeiss Meditec > ATLAS Review Software**.



 Note: Only one instance of the ATLAS Review Software can be running at the same time on the same computer. If you have more than one Windows User Account, you must *disable* "Fast User Switching" to ensure a successful database connection. In Windows XP, select **Start > Control Panel > User Accounts > Change the way users log on or off > Uncheck Use Fast User Switching** and select **Apply Options**. In Windows Vista™, select **Start > Run**. Type **gpedit.msc** and select **OK**. Select **Administrative Templates > System > Logon > Hide entry points for Fast User Switching**. Select the **Enable** radio button and select **OK**. Select **Always use Classic logon**. Select the **Enable** radio button and select **OK**.

 Note: It takes approximately 15 to 60 seconds to load the ATLAS Review Software, depending on the speed of your computer.

System Check During Start

ATLAS System software loads automatically and performs a system check before you can log in.

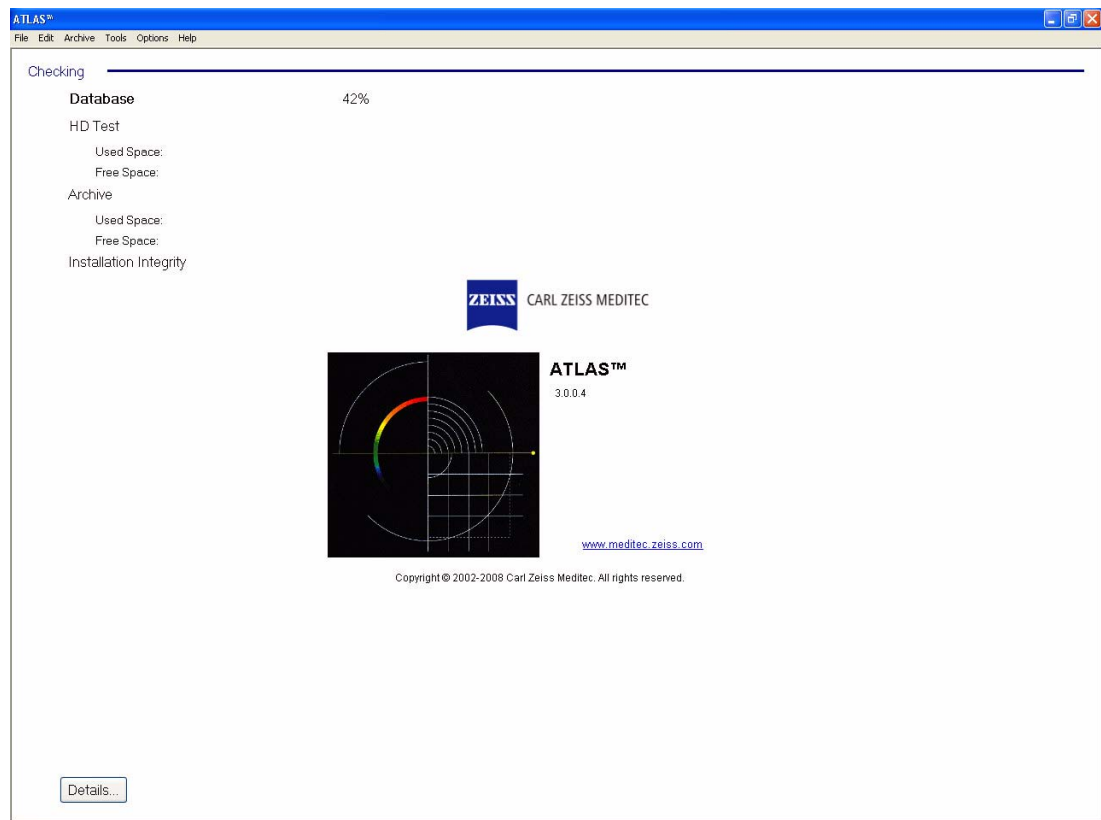


Figure 2-1 System Check at Startup

During system start, ATLAS checks the following items displayed on screen:

- **Database** – Checks accessibility and integrity of the database. If this check fails, you will not be able to log in and use the software.
- **HD (Hard Drive) Test** – Checks accessibility and free space of the hard drive. If free space is critically low, you may be required to clear archived exams before you acquire new images, import, or synchronize.

- **Archive** – Checks accessibility of the current archive location and for adequate free space there to archive new images. You may continue without passing this check, but archiving may not be available. Under the default settings, you will be prompted upon shutdown to archive unarchived exams.
- **Installation Integrity** – Checks that critical system software files are present and have not been altered. If this check fails, you will not be able to log in and use the instrument.
- **Instrument (Instrument only)** – Checks the connectivity of the instrument hardware with the system computer. If this check reports a camera check failure, you will not be able to log in and use the instrument. Other instrument check failures will only stop you from taking new exams.

Overall Pass or Fail: Below this list of items, the overall system check reports Pass or Fail. If the system passes, it will automatically advance to user login. If it fails, the system check will remain on screen. If this occurs, call Carl Zeiss Meditec customer service: In the U.S., call 800-341-6968. Outside the U.S., contact your local CZM distributor. Be prepared to communicate the system check details, which are accessible by clicking the **Details** button.

Possible Interbase Login when starting ATLAS Review Software

When starting ATLAS Review Software, it is possible a **Database Login** dialog ([Figure 2-2](#)) will be displayed during system check if you have installed another application using Interbase 2007 SP3 prior to installing ATLAS Review Software.

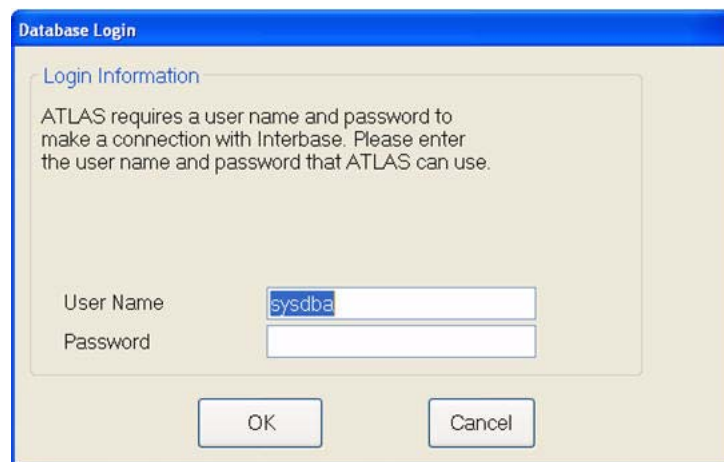


Figure 2-2 Interbase Database Login

ATLAS uses the default Interbase User Name (sysdba) and Password (masterkey), but a previously installed application using Interbase 2007 SP3 may be using a different user name and password. If ATLAS Review Software is installed after the other application, it will not change the Interbase user name and password of the other application. If this is the case and a **Database Login** dialog is displayed, you will need to enter the user name and password from the other previously installed application. Please contact your IT administrator for the user name and password if you do not know it. After entering in the other application's user name and password, ATLAS Review Software will run, and you will not need to enter this information again.

User Login

ATLAS optionally requires users to log in to access the ATLAS System functions. To require user login, select **Require User Identification (Login)** in the **General** tab of the Preferences dialog on the Options Menu (Figure 2-3).

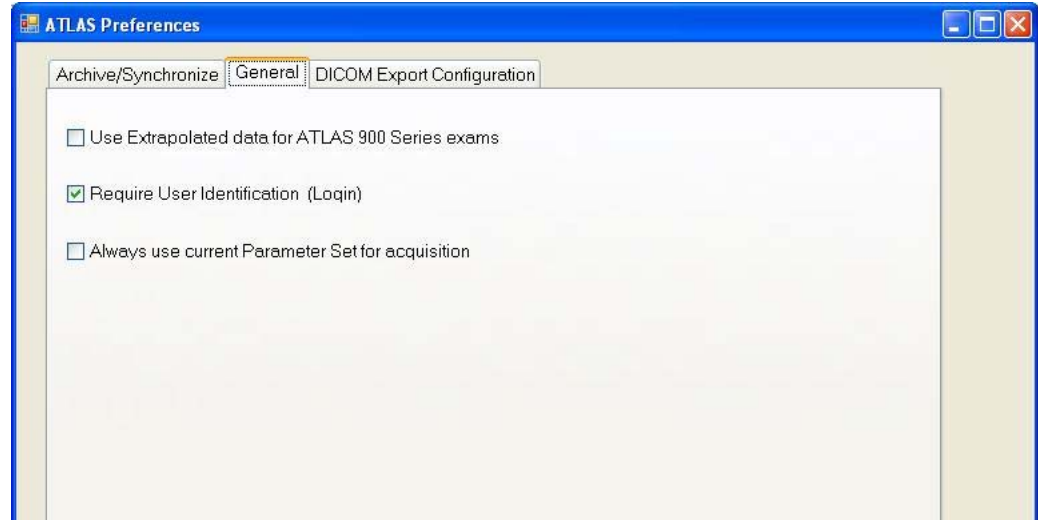


Figure 2-3 Preferences – General Tab

If checked, the User Login dialog appears automatically when the instruments passes the system check upon startup (and each time a user logs out of the system software).

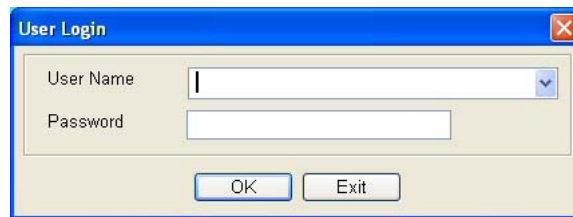


Figure 2-4 User Login Dialog

Select a user name from the drop-down list and enter the corresponding password to access the system software. Note that passwords are case-sensitive.

- At startup of the sample data (and with a new database), a default user name (**ATLAS Operator**, blank password) appears in the drop-down list.



Note: We strongly recommend that you create individual user accounts for each staff member who acquires or analyzes images, and that staff members routinely log out to secure the instrument. (To create user accounts, see [Initial System Setup](#) on page 2-9.)

If you enter an invalid user name or password, a message will prompt you to try again.

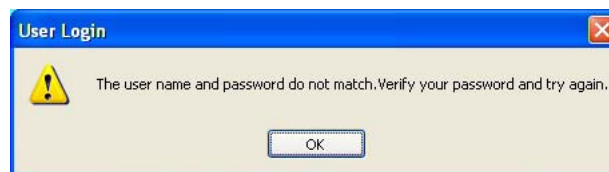


Figure 2-5 Invalid Login—Prompts You To Try Again

Patient Selection Window

When you log in successfully upon system start, the PATIENT SELECTION WINDOW appears with the default Find Existing Patient tab selected as shown in [Figure 2-6](#).

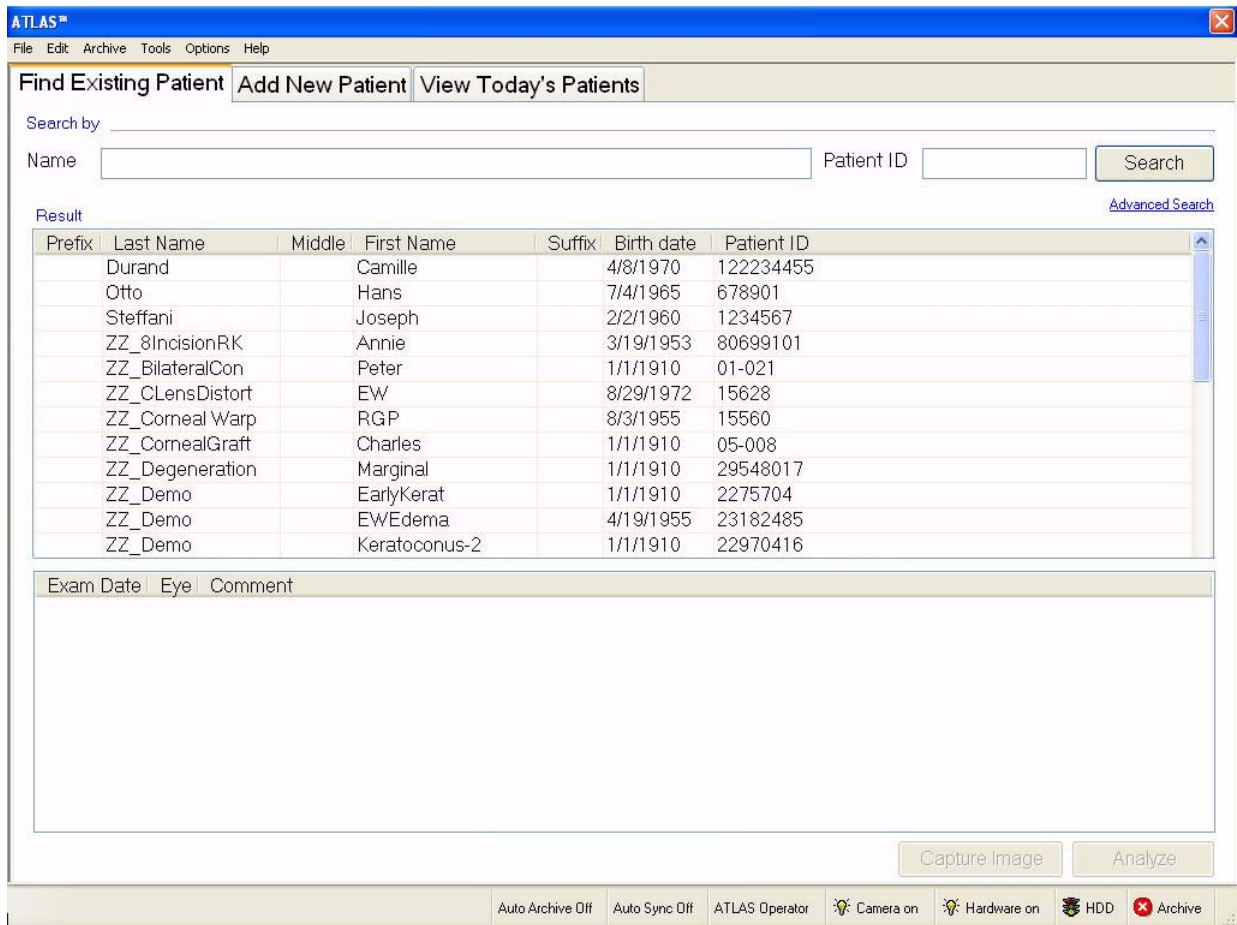


Figure 2-6 ATLAS Instrument Patient Selection Window – Find Existing Patient

See [Identify a Patient](#) on page 3-1 to use the PATIENT SELECTION WINDOW.

Logout Locks the System

To prevent unauthorized access, you can lock the ATLAS System software at any time by selecting **File > Logout**. When you lock the ATLAS System, it reverts to the User Login dialog, enabling you to log in again. Upon successful login, the system always returns to the PATIENT SELECTION WINDOW.

Change Language

To change the language for the ATLAS instrument you need to change the Windows regional (date and time format, number format, etc.) setting and language (operating system text) setting (see [ATLAS Instrument Windows Regional and Language Settings](#) on page 2-6), and the ATLAS application language (ATLAS specific text) (see [ATLAS Language Setting \(admin only\)](#) on page 2-7).

For ATLAS Review, your Windows regional and language settings should already be set to those of your country. You only need to change the ATLAS application language.

ATLAS Instrument Windows Regional and Language Settings

To change Windows XP on the ATLAS instrument to your country's regional and language settings (date and time format, number format, operating system text, etc.), select **Start > Control Panel > Regional and Language Options** to display the Regional and Language Options window ([Figure 2-7](#)).

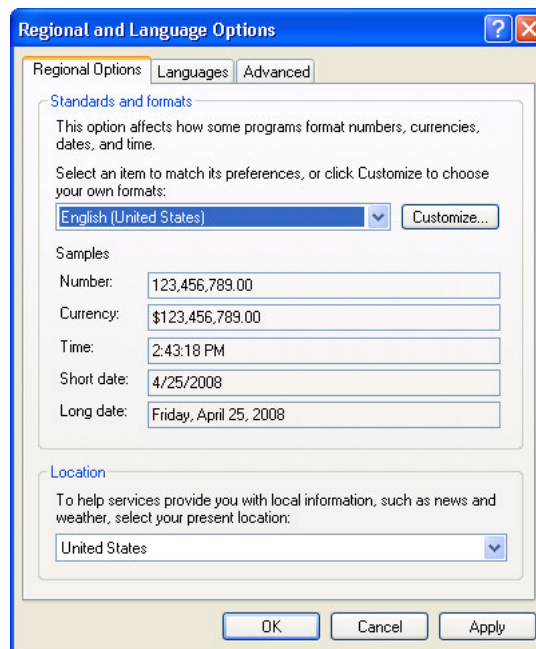


Figure 2-7 Regional and Language Options Window – Regional Options Tab

On the Regional Options tab, select your country from the drop-down menu in the "Standards and formats" section (Figure 2-7).

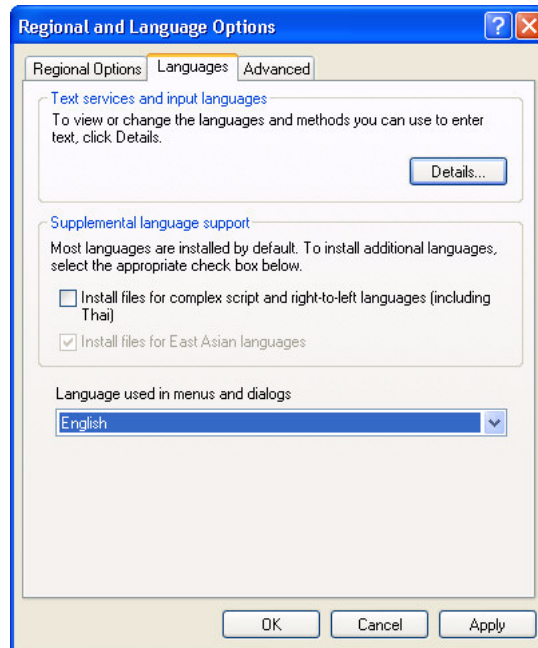


Figure 2-8 Regional and Language Options Window – Languages Tab

On the Languages tab, select your country from the drop-down menu in the "Languages used in menus and dialogs" section (Figure 2-8). Select **OK** to save your settings. A dialog will be displayed informing you that you will need to log off and log on for the settings to take effect. Select **Start > Log Off** to log out of Windows. See [User Login](#) on page 2-4 to log on.

ATLAS Language Setting (admin only)



To access the ATLAS Language function, you must be logged in as the **admin** user (See [The admin User](#) on page 9-1).

The ATLAS Choose Language function changes the language for the ATLAS application text only. For the ATLAS instrument, see [ATLAS Instrument Windows Regional and Language Settings](#) on page 2-6 to change the Windows regional (date and time format, number format, etc.) setting and language (operating system text) setting.

To choose your language, select **Options > Language...** to display the Choose Language dialog (Figure 2-3).

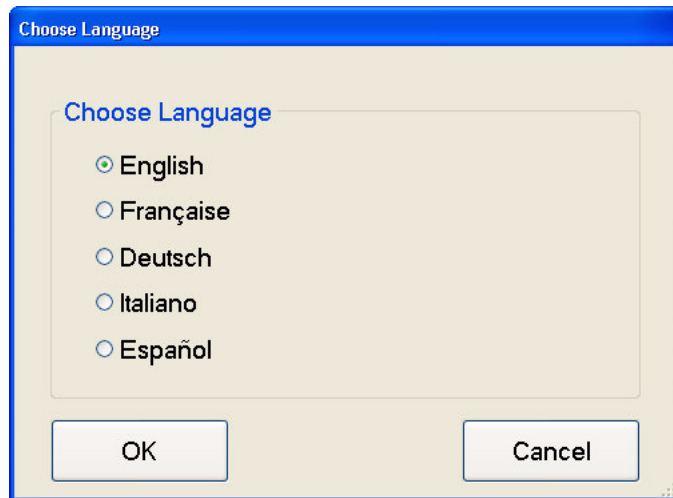


Figure 2-9 Choose Language Dialog

Select your language by clicking on it and then click the **OK** button to change the language, or click the **Cancel** button to keep the current language. If you click **OK**, a message will be displayed telling you that you must exit and restart the ATLAS application for the new language to take effect (Figure 2-10).

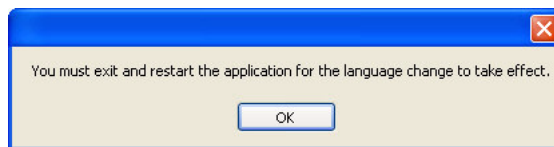


Figure 2-10 Exit and Restart Message

Click the **OK** button, and then exit and restart the ATLAS application to run ATLAS in the new language (see [Power Down Through Software](#) on page 2-19).

Initial System Setup

Upon initial system start, one item requires your attention.

1. Create user accounts (strongly recommended): We also strongly recommend that you create password-protected user accounts to prevent unauthorized access.

Several other initial setup items are optional but also are worthy of consideration, and are explained in this section.

- [The admin User Account](#), below
- [Create User Accounts \(admin only\)](#), page 2-9
- [Archive/Synchronize Preferences](#), page 2-11
- [Create Institution Name \(admin only\)](#), page 2-12

This section explains how to perform both the required and optional initial setup tasks, but to do so requires that we first introduce the special **admin** user account.

The admin User Account

To manage administrative functions, ATLAS dedicates a special user account with the user name **admin**. Only the **admin** user can create and edit the institution name, user accounts and staff (see [The admin User](#) on page 9-1 for details).

The admin account never appears in the drop-down list of user names on the login screen. You must type it in. The **admin** account accepts any password or none. The **admin** user cannot acquire or analyze images.

Create User Accounts (admin only)

At startup of the sample data (and with a new database), a default user name (**ATLAS Operator**, blank password) appears in the drop-down list.

This section explains how to create user accounts.



Note: We strongly recommend that you create individual user accounts for each staff member who acquires or analyzes images, and that staff members routinely log out to secure the instrument. Following these procedures helps prevent unauthorized access to ATLAS data and functions, and enables accurate record-keeping (an operator is saved with each acquired image).

Register (Create) Staff (admin only)

To access the Staff function, you must be logged in as the **admin** user (See [The admin User](#) on page 9-1).

1. Click **Options > Staff...** The Staff Registration dialog appears.
2. In the Staff Registration dialog, click **New**. The New Staff dialog opens.

Figure 2-11 New Staff Dialog

3. Edit the staff registration fields as desired. A staff record must have either a last name or first name or both; other fields are optional.
4. Select **Doctor** or **Operator**, or both. Only a user defined as an operator can log onto the ATLAS System. At exam acquisition, you can specify a doctor and operator used for an exam, and their names will be displayed on Analysis Screen Views and reports.
5. When finished with your changes, click **Save**.
 - To discard the changes before saving, click **Cancel**. A dialog prompts you to confirm your choice.



Note: If the password field is left blank, that user must leave the password field blank to log in. User names are **not** case-sensitive, but passwords **are**.



Note: Once logged in, any user can change his or her own password by selecting **Options > Change My Password...** and completing the Password Change dialog. The admin user may take advantage of this feature by creating new user accounts with a temporary password he provides to the user, and asking the user to change the password.



Note: If a user forgets their password, you can log in as **Admin** and change their password.

Archive/Synchronize Preferences

Select **Options > Preferences...** and then click the Archive/Synchronize tab.

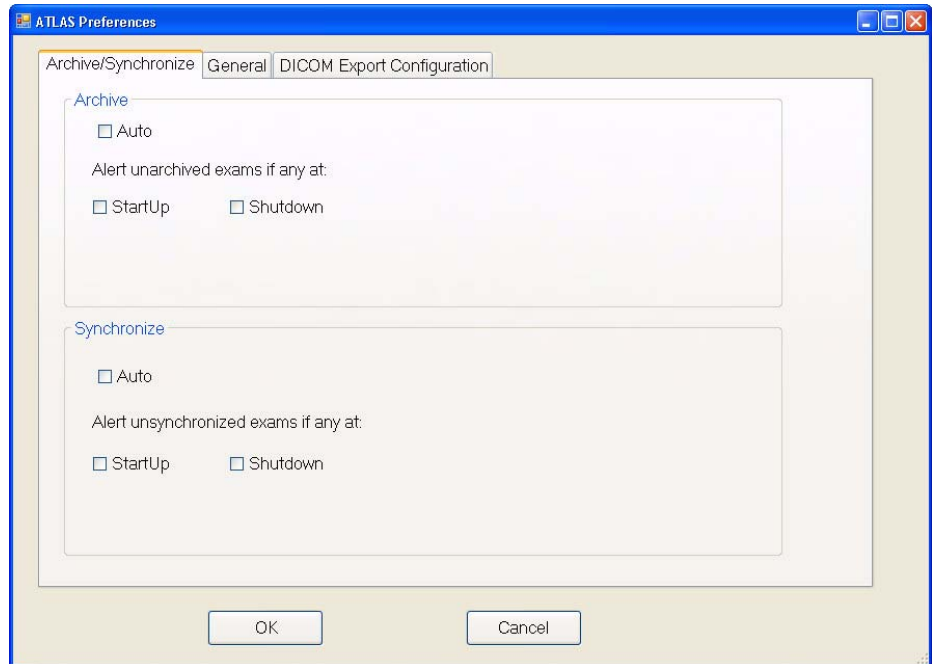


Figure 2-12 Preferences – Archive/Synchronize Tab

To have ATLAS automatically archive new and imported exams, select **Auto** in the Archive section. ATLAS will check every 10 seconds for new completed and imported exams. Once a new or imported exam is detected it will be automatically archived in the background—no progress dialogs will be displayed. You can enable ATLAS to automatically synchronize networked archive databases by selecting **Auto** in the Synchronize section. ATLAS will check every 10 seconds for databases that are not synchronized. Once detected, synchronization will be performed automatically in the background—no progress dialogs will be displayed.

ATLAS also gives you a way to control the automated behavior for archive alerts. It is possible to select one, neither or both **Start up** and **Shutdown**.

See [Preferences: Archive/Synchronize](#) on page 10-5 for information on automatic archiving/synchronization and alerts. You can archive manually at any time by selecting **Archive > Archive Now**. To manually synchronize at any time, select **Archive > Synchronize**.

[Figure 2-12](#) displays the default settings...all options are disabled.

When finished selecting your archive preferences, click **OK** to save your changes and exit, or click **Cancel** to exit without saving.



Note: For network archive locations, the ATLAS System will archive exams only to the current archive location (for more information on the current archive location, see [Set Current Archive](#) on page 10-20). If no current archive is selected, the system will not archive. If an error occurs that prevents a successful archive, the ATLAS System will notify you.

Create Institution Name (admin only)



To access the Institution function, you must be logged in as the **admin** user (See [The admin User](#) on page 9-1).

Use the Institution Edit dialog to customize your system with the name of your institution. The institution name will appear on all analysis printouts.

Follow the steps below to create the institution name:

1. Click **Options > Institution...** The Institution Edit dialog opens.

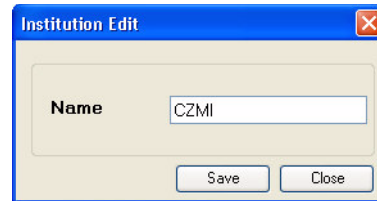


Figure 2-13 Institution Edit Dialog

2. In the Name field, type the name of your institution. The field requires at least one character and accepts up to 64 characters, including spaces—it cannot be empty.

Operational Modes and Windows

ATLAS operates in four modes, three of which are associated with a primary window:

Table 2-1 Operational Modes and Windows

Operational Mode	Primary Associated Window
Patient Selection Mode	Patient Selection Window
Data Management Mode	Menu bar of Patient Selection Window
Exam Acquisition Mode	Exam Acquisition Screen
Analysis Mode	Analysis Screen

Sequence of Operation

The flow chart below illustrates the sequence of operation and the relationship of the operational modes.

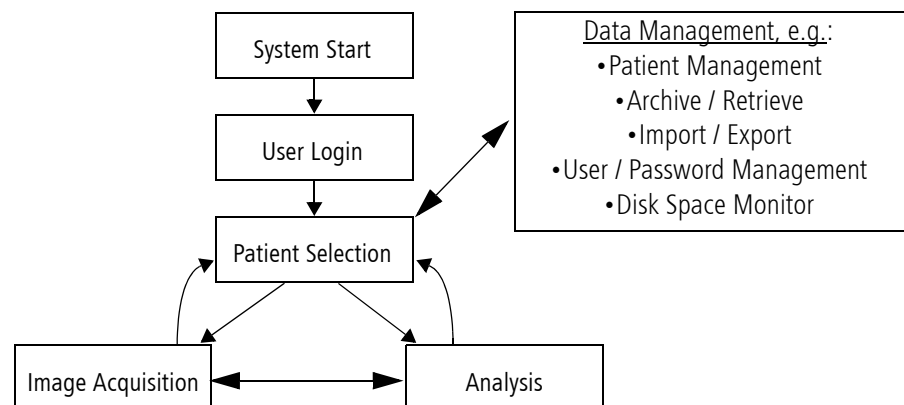


Figure 2-14 Sequence of Operation

Patient selection mode is the default mode when you log in to ATLAS. It is the launch point for the clinical functions of ATLAS: image acquisition and analysis. You must identify a patient before you can either acquire or analyze exam data; and when you finish image acquisition you can go to analysis, or return to patient selection mode. Other windows and dialogs are regularly used within each mode, as a subset of the primary function or as an adjunct, like printing analysis output.

Data management mode operates independently and has no primary window; it operates in various windows, which you access via menu options. Data management functions critical for data preservation, like archive and backup, operate automatically, by default.

This manual will introduce each window and dialog in relevant sections that explain its use.

Status Bar Information

The status bar along the bottom of the screen at lower right presents current status information using text and signal light graphics. The status bar only appears in Patient Selection Mode.

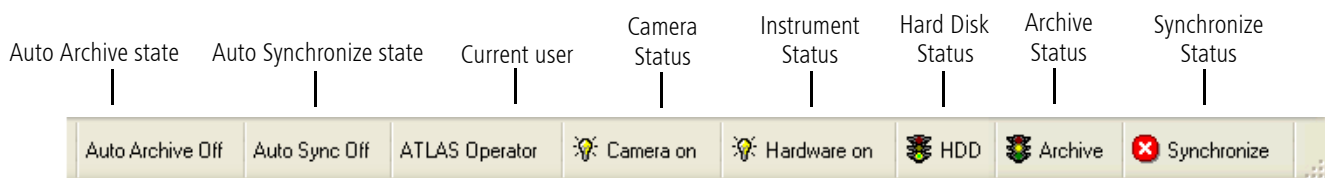


Figure 2-15 Status Bar Information

Auto Archive State

The **Auto Archive (On/Off)** state indicates if Auto Archive is enabled or disabled. When **Auto Archive On** is displayed, Auto Archive is enabled. To enable/disable Auto Archive, select **Options > Preferences > Archive/Synchronize** when in Patient Selection Mode (see [Preferences: Archive/Synchronize](#) on page 10-5).

Auto Synchronize State




The **Auto Sync (On/Off)** state indicates if Auto Synchronize is enabled or disabled. When **Auto Sync On** is displayed, Auto Synchronize is enabled. To enable/disable Auto Synchronize, select **Options > Preferences > Archive/Synchronize** when in Patient Selection Mode (see [Preferences: Archive/Synchronize](#) on page 10-5).

Current User

The name of the current user appears in the status bar to the left of the signal lights in all software modes. See [User Login](#) on page 2-4.




Camera Status Indicator (Instrument Only)

The first signal light on the left indicates whether or not the camera is ready to acquire new images.

-  • The red circle with a white “X” indicates the camera is not available.
-  • **Yellow:** A yellow light indicates the camera is ready to acquire images.
-  • **Off:** A light off means the camera is not ready. A light off indicator results from a system malfunction. If the latter occurs, we suggest you cycle power (power off and then power on the instrument). If the problem persists, contact CZM customer service.




Instrument Status Indicator (Instrument Only)

The second signal light on the left indicates whether or not the instrument hardware is in communication with the system computer, and therefore capable of acquiring new images.

-  • The red circle with a white “X” indicates the instrument is not available.
-  • **Yellow:** A yellow light indicates readiness to acquire images.
-  • **Off:** A light off means you cannot acquire new images. A light off indicator results from a system malfunction. If the latter, we suggest you power down the ATLAS instrument (see [Power Down the System](#) on page 2-19) and then turn it back on. If the problem persists, contact CZM customer service.





Hard Disk Status Indicator

This signal indicates available hard disk space status as follows. Mouse over the indicator for details.

-  • **Green:** More than 500 MB available hard disk space.
-  • **Yellow:** Between 200 MB and 500 MB available hard disk space. When hard disk space is low, you must acknowledge it by clicking **OK** before continuing to the login screen. Also, the system begins to automatically clear archived exam data.
-  • **Red:** Less than 200 MB available hard disk space. When hard disk space is critically low, both capturing and analysis are disabled. You must clear a sufficient amount of hard disk space by clearing archived exams to continue. If there are insufficient archived exams to be cleared, you must first archive exams and then clear them. You cannot clear unarchived exams.

Archive Status Indicator

This archive volume space indicator reports status as shown below. Mouse over the indicator for details.

-  • The red circle with a white “X” indicates that the current archive location is not accessible.
-  • **Green:** More than 1000 MB available network archive disk space.
-  • **Yellow:** Between 200 MB and 1000 MB available network archive disk space. When archive disk space is low, you will be prompted to change the archive location, but you can continue using the same archive location for now.
-  • **Red:** Less than 200 MB available network archive disk space. When the red indicator shows, the software will stop archiving to this location. You must change to a new archive location to re-start archiving.

Synchronize Status Indicator

The Synchronize indicator reports synchronization status in terms of connectivity as shown below. Mouse over the indicator for details.



- The red circle with a white "X" indicates that no synchronization volumes are enabled.



- **Green:** All enabled synchronization volumes are connected.



- **Yellow:** At least one enabled synchronization volume is connected, and at least one enabled synchronization volume is disconnected.



- **Red:** All enabled synchronization volumes are disconnected. When the red indicator shows, you must connect at least one enabled synchronization volume before synchronization can occur.



Note: The Hard Disk / Archive status indicators are refreshed every five minutes. To manually refresh them, select **Tools > Refresh Disk Monitor**.



Note: Each ATLAS exam will take approximately 1.5 mb of hard disk space. If you also take photopic and scotopic images with the exam, the size will be approximately 4 mb.

Title Bar and Menus

Note that the Title bar, menu bar, and menus only appear in Patient Selection Mode on the ATLAS instrument.

Title Bar

The title bar atop the screen contains:

- at left, the ATLAS name
- in the center, the currently selected patient's name (first, last), date of birth, and ID number.
- at right, the close button to exit the system software.
- On ATLAS Review Software only, a Minimize and Maximize window button are also displayed.

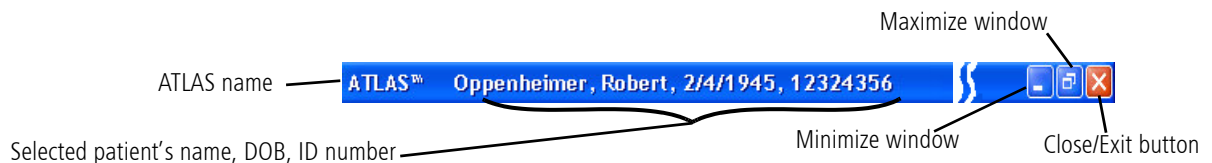


Figure 2-16 Title Bar Information

Menu Bar and Menus

The menu bar appears below the title bar and contains the **File**, **Edit**, **Archive**, **Tools**, **Options** and **Help** menus. Click to select menus and menu items. Note the following general characteristics of the menus.

- **Disabled menu items** appear in gray. They are not available in the current context.
- **Items with "..."** following indicate the menu item launches a dialog giving you further options before the command is executed.

The table below identifies and describes the items in each menu. Note the keyboard shortcuts to the right of applicable menu items.

File Menu

File	Edit	Archive	Tools	Options
Find Existing Patient	Ctrl+F			
View Today's Patients	Ctrl+T			
Add New Patient	Ctrl+N			
Import				▶
Export				▶
Log Out...				
Exit	Alt+F4			

Edit Menu

Edit	Archive	Tools	Option
Edit Patient...			
Delete Patient			
Merge Two Patients...			
Delete Exam			

Archive Menu

Archive	Tools	Options	Help
Archive Management...			
Synchronize Management...			
Archive Now			
Clear Archived Exams			
Synchronize			
Retrieve Archived Exams			

Menu Items	Description
• Find Existing Patient	Displays the Find Existing Patient tab of the PATIENT SELECTION WINDOW.
• View Today's Patients	Displays the View Today's Patients tab of the PATIENT SELECTION WINDOW.
• Add New Patient (Instrument Only)	Displays the Add New Patient tab of the PATIENT SELECTION WINDOW.
• Import >	Imports patient data & exams from the following media: <ul style="list-style-type: none"> • From ATLAS 9000 Series Export Media... • From ATLAS 900 Series...
• Export >	Exports patient data & exams to the following media: <ul style="list-style-type: none"> • To ATLAS 9000 Series Export Media... • To DICOM... • For Research
• Log Out...	Logs out the user, locks the system software, invokes the User Login dialog.
• Exit	Exits the system software.
• Edit Patient...	Opens the selected patient for editing.
• Delete Patient	Deletes the selected patient.
• Merge Two Patients...	Opens the Patient Merge dialog, where you can select two patients to merge.
• Delete Exam	Deletes the selected exam.
• Archive Management...	Opens the Archive Locations dialog, where you can create and manage archives.
• Synchronize Management...	Opens the Archive Locations to Synchronize dialog, where you can add and delete archives for synchronization.
• Archive Now	Initiates archive of all unarchived exams.
• Clear Archived Exams	Clears (deletes) archived exams from the ATLAS System hard drive.
• Synchronize	Manually synchronizes patient and exams between the ATLAS System hard drive and network archive locations.
• Retrieve Archived Exams	Enables you to retrieve data from an archive location.

Tools Menu

Tools	Options	Help
Back Up Configuration Files...		
Restore Configuration Files...		
Refresh Disk Monitor		
Calibration Check...		
Run ATLAS Importer...		
Database Recovery Tool...		

Options Menu

Options	Help
Preferences...	
Language...	
Parameter Set...	
Auto ATLAS 900 Series Importer Setting...	
Change Database...	
Institution...	
Staff...	
Category Registration...	
Change My Password...	

Help Menu

Help
View User Manual... F1
View Licenses...
About...

Menu Items	Description
• Back Up Configuration Files	When logged in as admin , enables you back up ATLAS Configuration Files to an archive location.
• Retrieve Configuration Files	When logged in as admin user, enables you retrieve ATLAS Configuration Files from an archive location.
• Refresh Disk Monitor	Refreshes the Hard Disk / Archive status indicators on the status bar.
• Calibration Check... (Instrument Only)	Runs a calibration check with the test eyes.
• Run ATLAS Importer...	Opens the ATLAS 900 Series Importer dialog where you can select, configure, and import ATLAS 900 Instrument Databases and ATLAS 900 Export Media.
• Database Recovery Tool...	When logged in as admin user, enables you to synchronize from a database archive for database recovery.
• Preferences...	Opens the Preferences dialog, where you can select archive, synchronization, and system preferences.
• Language...	When logged in as admin user, enables you to select the language for the ATLAS software.
• Parameter Set...	Opens the Parameter Set dialog, where you can create, edit, or delete Parameter Sets.
• Auto ATLAS 900 Series Importer Setting...	Allows you to turn on automatic importing of ATLAS 900 data and select the rate of checking.
• Change Database...	When logged in as admin user, enables you to change to another existing database or create a new database.
• Institution...	When logged in as admin user, enables you to customize your ATLAS and reports generated from it by editing the institution name.
• Staff...	When logged in as admin user, enables you to create, edit or delete staff as users.
• Categories Registration...	When logged in as admin user, enables you to create, edit or delete categories, which you can apply to patients and search with.
• Change My Password...	Enables you to change the password for the current user.
• View User Manual... F1	Opens the ATLAS User Manual in PDF format.
• View Licenses...	Displays registered software licenses.
• About...	Displays the About dialog, which provides software version information.

Analysis Screen Toolbar



Figure 2-17 Analysis Screen Toolbar


The Analysis Screen Toolbar is only available on the ANALYSIS SCREEN. Its buttons have the following functions:

Button Name and Function	
	<p>More (F2): Displays additional windows on the ANALYSIS SCREEN which allow you to customize the view of the image, select different exams and views, and edit Parameter Sets. Can be activated by pressing the F2 key on the keyboard. Not available in the Trend Analysis and MasterFit II Displays.</p>
	<p>Print: Selecting Print (or Print > Print current screen) will open a standard Windows Print dialog where you can select print options and print the current Analysis Screen. If you have selected reports on the Printing / DICOM Export Options dialog of the current Parameter Set, selecting Print > Print report will print Reports and Views for the currently selected exam(s).</p>
	<p>Export: Selecting Export (or Export > Export current screen to file) will open a save dialog where you can save the current exam's analysis output screen in various file formats, including BMP, JPG, TIFF, and PDF. If you have enabled DICOM Data Export, selecting Export > Export current screen to DICOM will export the current screen to a DICOM system, while Export > Export report to DICOM will export the same Reports and Views as Print > Print report to a DICOM system.</p>
	<p>Exit: Exits the ANALYSIS SCREEN and takes you back to the PATIENT SELECTION WINDOW where you can select another patient or exit the program.</p>
	<p>Exams: Displays a pop-up list of exams for the patient. Selecting an exam on the list will automatically change the current View on the ANALYSIS SCREEN to the selected exam.</p>
	<p>The View (F3) pop-up menu displays a list of exam Views. Can be activated by pressing the F3 key on the keyboard.</p>

Overview
 Single View
 OD / OS
 2-Difference
 3-Difference
 Trend
 Trend Analysis
 Custom

 PathFinder II
 MasterFit II
 Display (F4) ▾

Button Name and Function

The Display (F4)  pop-up menu displays a list of available Displays. Can be activated by pressing the F4 key on the keyboard.

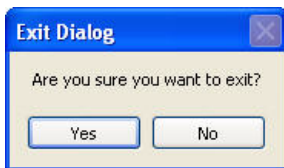
Power Down the System


You can power down the ATLAS System Instrument through either hardware or software. In either case, the system goes through a soft shutdown sequence. You can exit ATLAS Review only through software.



CAUTION: You must power down the operating system safely. Not doing so may damage the hard drive causing it to boot into safe mode, display random errors, or cause the ATLAS application to fail to launch. If the software or operating system is busy, you may have to wait for it to complete.

Power Down Through Software



Click **File > Exit**, or click the  at upper right. An Exit Dialog opens as shown on the left.

Select **Yes** to close the ATLAS application and exit to the Windows operating system. To conclude system shutdown, you must click **Start > Shut Down** or **Turn off your computer**, and then select **Shut Down** or **Turn off**.

If an archive or synchronization alert is set to occur upon shutdown (see [Preferences: Archive/Synchronize](#) on page 10-5), the alert dialog(s) will be displayed before the ATLAS application closes.

Power Down Through Hardware for the ATLAS System Instrument

On the ATLAS System instrument, press the system power switch (see [Figure 1-1](#) on page 1-4). The system will automatically close the ATLAS application and Windows operating system and power down the instrument.

If an archive or synchronization alert is set to occur upon shutdown (see [Preferences: Archive/Synchronize](#) on page 10-5), the alert dialog(s) will **NOT** be displayed before the ATLAS application closes.

(3) Acquire Images (Instrument Only)

Chapter Overview

This chapter explains in detail how to acquire ATLAS images. It covers the following areas:

- [Prepare the Patient](#), page 3-1
- [Identify a Patient](#), page 3-1
- [Image Parameters Screen](#), page 3-5
- [Exam Acquisition Screen](#), page 3-6
- [Exam Preview/Exam Results Screen](#), page 3-9
- [Image Quality](#), page 3-17

Prepare the Patient



Note: The forehead and chin rests should be cleaned between each examination with an alcohol prep swab.

The patient's exam experience with the ATLAS System is normally brief and comfortable. An experienced operator can acquire good images from each eye in a few minutes. An exam usually requires the patient to look inside the imaging aperture for 1-3 minutes at a time for each eye. The instrument acquires most images in just a few seconds. The additional time is required to align the patient's eye before capturing to optimize image quality. Note that the ATLAS System is never to contact the patient's eye.


Identify a Patient

Capturing an image and image analysis are disabled until you identify a patient. Use the PATIENT SELECTION WINDOW to identify (select or add) a patient. After system start and login, the PATIENT SELECTION WINDOW appears by default. (From other modes, select **File > Find Existing Patient** to return to the PATIENT SELECTION WINDOW.) You can identify a patient using any of the three tabs provided. For details on using these tabs to identify a patient, see the indicated sections.

- [Find Existing Patient](#), below
- [Add New Patient \(Instrument Only\)](#), page 3-3
- [View Today's Patients](#), page 3-4

On any of the three tabs, once you identify the patient, click **Capture Image** to initiate a new exam for that patient. The IMAGE PARAMETERS SCREEN appears. Proceed to the [Image Parameters Screen](#) on page 3-5.

Acquire Images (Instrument Only)

 Note: If you have checked **Always use current Parameter Set for acquisition** (Instrument Only) on the General tab of the Preferences dialog (Figure 3-1), then you will go directly to the EXAM ACQUISITION SCREEN using the current Parameter Set, and will not be able to select a Parameter Set. Proceed to the [Exam Acquisition Screen](#) on page 3-6.

Check this to use the current Parameter Set and bypass the IMAGE PARAMETERS SCREEN during image acquisition

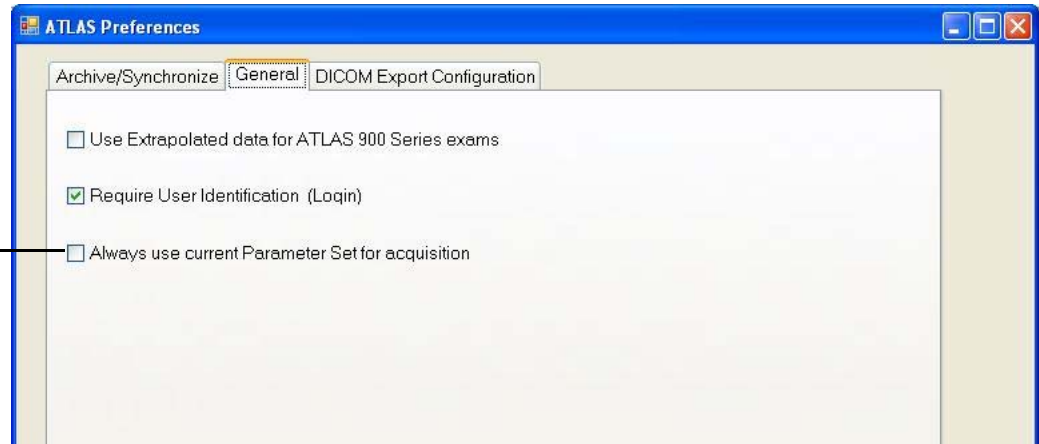


Figure 3-1 Always Use Current Parameter Set for Acquisition (Instrument Only)

Find Existing Patient

On the default Find Existing Patient tab (Figure 3-2), select a patient from the patient list displayed.

Click Capture Image (or double-click the patient) to begin image acquisition

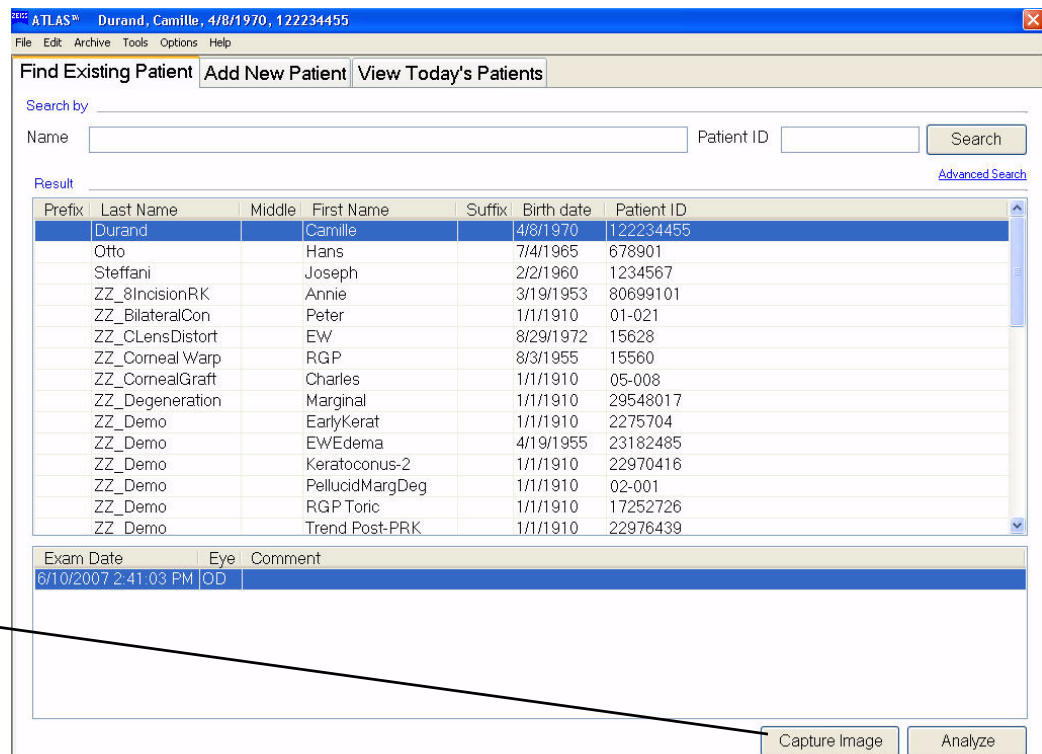


Figure 3-2 Patient Selection Window – Find Existing Patient

To search the patient list:

- To search for patients by **Name** or **Patient ID**, type in the corresponding fields and click **Search**. You can search using partial information, and you can use one or both fields.
- Click **Advanced Search** if you want to search using additional parameters—see [Advanced Search](#) on page 9-6 for details.
- The search returns all patients that match all defined parameters, sorted alphabetically.
- When you search by **Name**, the search applies to last name, first name, middle name, prefix and suffix, and returns all patients that match from the beginning of any of these fields.
- In the **Results** list, you can select only one patient at a time. When you select a patient, the **Capture Image** button becomes active (on the ATLAS instrument only).
If the patient has saved exams, the **Analysis** button also becomes active.

When you click **Capture Image** (or double-click the patient), the **IMAGE PARAMETERS SCREEN** appears. Proceed to the [Image Parameters Screen](#) on page 3-5.



Note: If you have checked **Always use current Parameter Set for acquisition** (Instrument Only) on the **General** tab of the Preferences dialog ([Figure 3-1](#)), then you will go directly to the **EXAM ACQUISITION SCREEN** using the current Parameter Set, and will not be able to select a Parameter Set. Proceed to the [Exam Acquisition Screen](#) on page 3-6.

Add New Patient (Instrument Only)

To add a new patient, click the **Add New Patient** tab ([Figure 3-3](#)) and fill in at least the required fields, which are indicated by the red asterisk (*). Since a Patient ID is required for DICOM-compliant import and export of patient data, if you do not enter a Patient ID, the system will create a unique ID automatically for this patient.

Figure 3-3 Add New Patient Tab of the Patient Selection Window

Acquire Images (Instrument Only)

If you want to select one or more categories for this patient, check the categories from the **Add Categories** list on the right.

When you click **Save**, the new patient information is saved to the database and to the list of today's patients. If data is missing from required fields, you will be prompted to complete these fields before you can save.

When you click **Capture Image**, the **IMAGE PARAMETERS SCREEN** appears. Proceed to the [Image Parameters Screen](#) on page 3-5.



Note: If you have checked **Always use current Parameter Set for acquisition (Instrument Only)** on the **General** tab of the Preferences dialog ([Figure 3-1](#)), then you will go directly to the **EXAM ACQUISITION SCREEN** using the current Parameter Set, and will not be able to select a Parameter Set. Proceed to the [Exam Acquisition Screen](#) on page 3-6.

View Today's Patients

To select a patient from the list of today's patients, select the **View Today's Patients** tab ([Figure 3-4](#)).

Prefix	Last Name	Middle	First Name	Suffix	Birth date	Patient ID
	Delong		Alan		4/6/1987	456789
	Finney		Sarah		8/10/1976	15628
	Steffani		Joe		1/3/1946	1234567

Exam Date	Eye	OcuLign®	Comment

Figure 3-4 View Today's Patients Tab of the Patient Selection Window

How the Today's Patients List is Populated

Today's patients list is populated automatically with new patients added today (manually, imported from ATLAS 9000/ATLAS 900 Series data, or imported by worklist if you have licensed the optional DICOM Gateway software (see [\(C\) DICOM Gateway \(Optional\)](#)), and patients with new exams completed today. The list is sorted alphabetically by last name. If you have licensed DICOM Gateway, select **Refresh Patient List** to refresh the patient list. If you have licensed the optional MasterFit II software (see [\(B\) MasterFit II \(Optional\)](#)), patients with MasterFit II data saved today will also appear in the Today's patients list.

Click to select the desired patient and then click **Capture Image** (or double-click the **patient**). The IMAGE PARAMETERS SCREEN appears. Proceed to the [Image Parameters Screen](#) on page 3-5.



Note: If you have checked **Always use current Parameter Set for acquisition** (Instrument Only) on the General tab of the Preferences dialog ([Figure 3-1](#)), then you will go directly to the EXAM ACQUISITION SCREEN using the current Parameter Set, and will not be able to select a Parameter Set. Proceed to the [Exam Acquisition Screen](#) on page 3-6.

Image Parameters Screen

The IMAGE PARAMETERS SCREEN ([Figure 3-5](#)) allows you to select a Parameter Set for the current image. Details of the Parameter Set are also displayed.

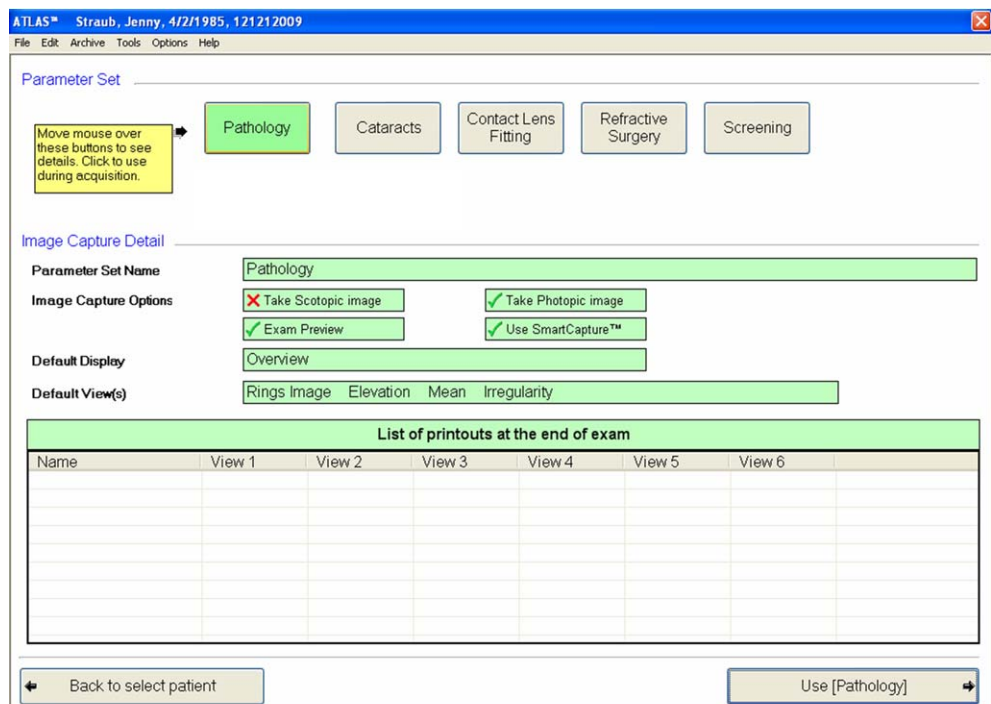


Figure 3-5 Image Parameters Screen

At the top of the screen, move the mouse over the currently defined Parameter Set buttons. As the mouse is over a **Parameter Set** button, details of the Parameter Set are shown below. You can see a list of reports and images that will print out at the end of the exam, Photopic and/or Scotopic image capture options, Exam Preview and Smart Capture options, and the default Display and View(s). See [Editing Parameter Sets](#) on page 8-1 for more information on Parameter Sets.



Note: In a Parameter Set, the Exams dialog on the EDIT PARAMETERS SCREEN allows you to set default exam settings for image acquisition (Instrument Only). You can select whether you capture Photopic and/or Scotopic images, show the Exam Preview Screen, select a default doctor and operator, and other settings. See [Exams](#) on page 8-9 for more information on the Exams dialog.

Acquire Images (Instrument Only)

To acquire the image, click on one of the ten Parameter Set buttons, or click on the **Use [Parameter Set]** button in the lower right to use the currently selected Parameter Set. The EXAM ACQUISITION SCREEN appears. Proceed to the [Exam Acquisition Screen](#) below.

Exam Acquisition Screen

After you select a Parameter Set, the EXAM ACQUISITION SCREEN is displayed ([Figure 3-6](#)).

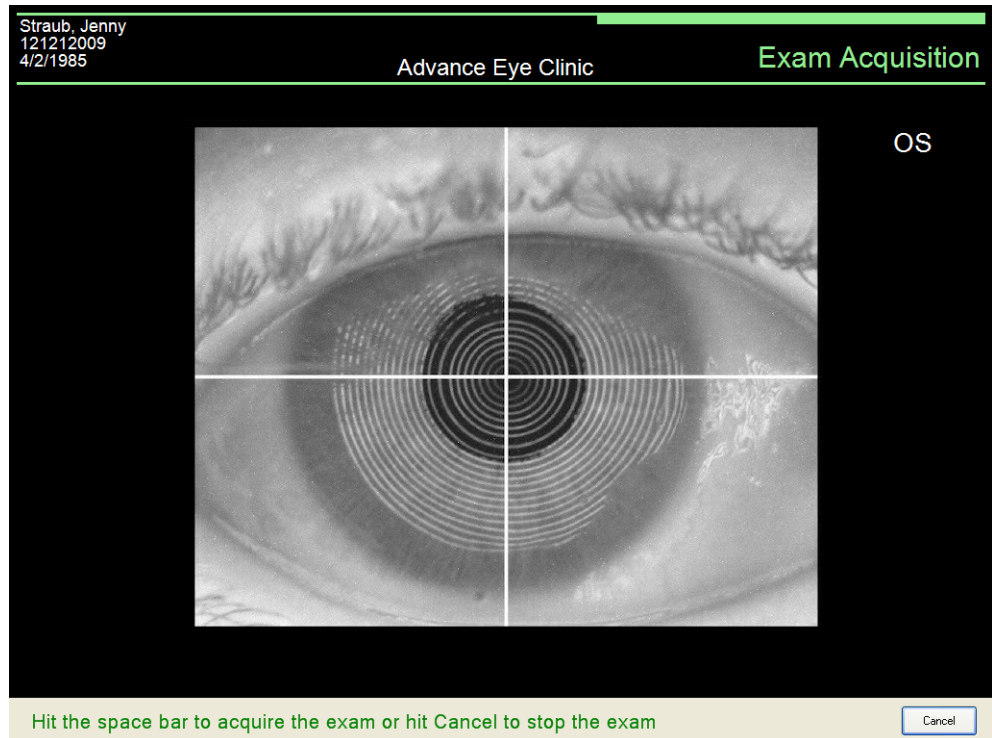


Figure 3-6 Exam Acquisition Screen – Good Focus and Alignment

A live video image of the subject's eye appears with white crosshairs, and white Placido rings over the pupil and iris. Proper alignment is required in three dimensions, X, Y (transverse) and Z (axial). ATLAS provides alignment controls using the joystick and vertical alignment knobs on either side of the chin rest.



Note: If you have not captured the image in 100 seconds, ATLAS stops the live video and displays the message, "Exam time out. Press any key to continue with exam." To continue with the exam, press any key on the keyboard.

Position the Patient

During an examination, the patient places his/her chin on the chinrest and forehead on the forehead rest. The patient looks into the imaging aperture and sees a small orange fixation light against a dark background. When an image is taken, the patient will see a brighter red illumination light flash for a split second. If a photopic image is also taken, then the red illumination light will remain on for a couple seconds. During this time, the patient's pupil constricts to its photopic size.



Canthus Mark

1. Seat the patient facing the projection head. Position the patient's chin on the chinrest. Use the vertical adjustment knobs to move the chin rest up or down to fit the patient. The patient's mouth should be closed and the eyes should be in line with the canthus marks just below the forehead rest. See photo on the left.
2. Make sure the patient's head is aligned properly at approximately 45° angle in the chinrest (aligned with the arrows on the chin rest), with the chin centered in the proper position. The chin should be pressed firmly down in the chinrest. See photo on the left.
3. Be sure the patient's forehead is pressed against the forehead rest. See photo on the left.
4. Ask the patient to look at the orange fixation light and remain as still as possible while you align the projection head.

Align the Projection Head and Focus the Image

Follow these steps to bring the eye into the center of the image and capture the image:

1. Check to see that the joystick is unlocked. The projection head should move forward, backward, and from side to side easily.



Note: Check the lock at the base of the projection head by turning the joystick counter-clockwise to loosen. This lock should be tightened only when the instrument is being moved. During normal operation, leave the lock completely loosened.

2. Position the projection head by moving the base until the live image of the eye appears on the screen. Use the joystick to bring the cornea into view in the display. Push away from you to move eye closer to the imaging aperture. Move the joystick towards you to increase the distance between they eye and imaging aperture.
3. Adjust the height of the instrument by rotating the joystick handle until the rings appear. Rotate clockwise to move the crosshairs up, and counter-clockwise to move the crosshairs down.
4. Center the crosshairs anywhere inside the smallest white ring of the live image.
5. Move the joystick forward and back to focus. The intent is to achieve the clearest image of *all* the rings. See [Figure 3-6](#) for an example of good focus and alignment. If you want to cancel out of image acquisition, press the **Cancel** button.

How to Get the Best Images

- Ask the patient to blink "naturally" (quick blink) just before you capture the image. This causes the tear film to be distributed evenly over the cornea. A "slow" blink usually does not work as well as a "quick" one.
- If the patient has ptosis, have an assistant stand to the side of the instrument and hold the patient's eyelid up, being careful not to block the optical path of the instrument and not to press on the patients eye.
- If the patient has dry eyes and the reflected image appears very faint, or the reflected rings are too broken or irregular to process accurately, you may need to apply non-viscous artificial tears to the patient's eye.
- Ask the patient to open both eyes as wide as possible just before you capture the image.

Acquire Images (Instrument Only)

Figure 3-7 shows an image out of alignment. Note that the crosshairs are not centered inside the smallest white circle.

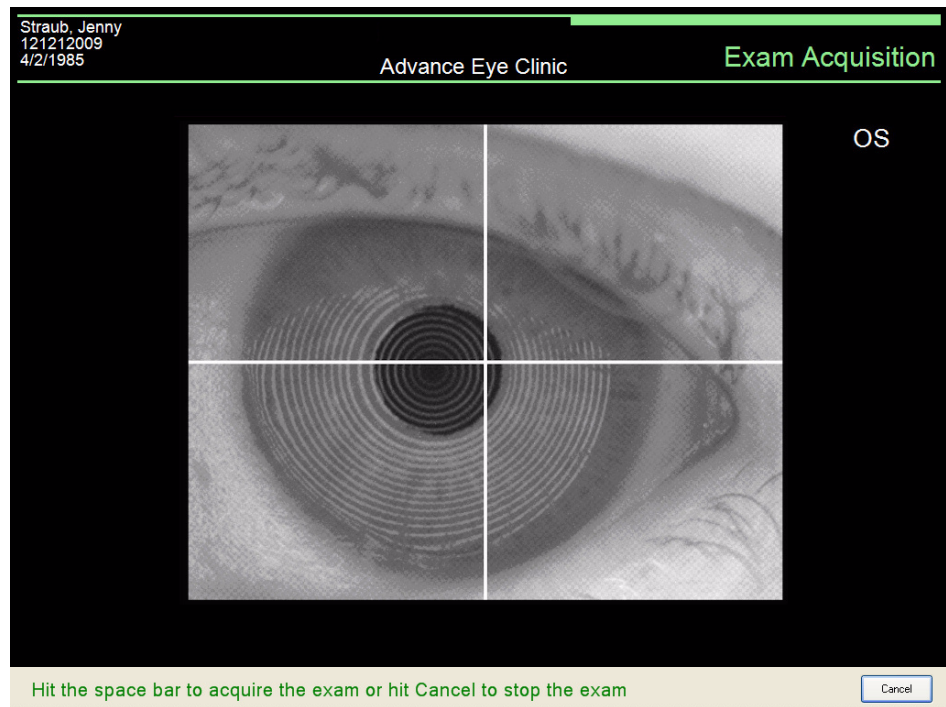


Figure 3-7 Exam Acquisition Screen – Out of Alignment

Figure 3-8 shows an image out of focus and alignment. The image is out focus—all the white rings are not clear. The crosshairs are not centered inside the smallest white circle.

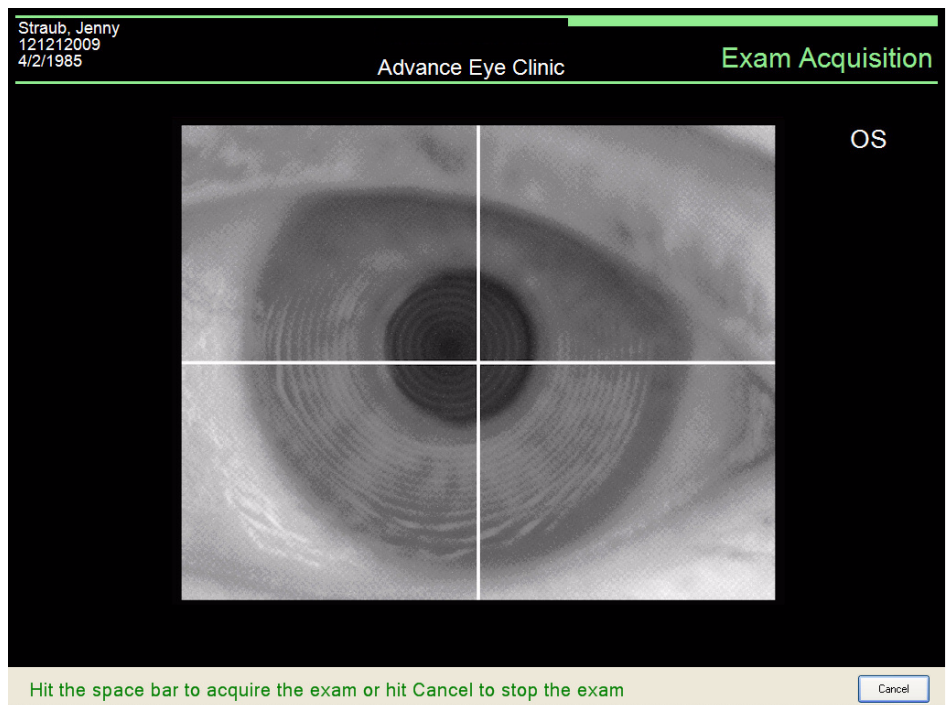


Figure 3-8 Exam Acquisition Screen – Out of Focus and Alignment

Capture the Image

The ATLAS SmartCapture Image Analysis technology captures images at a rate of 15 images per second before you actually press the joystick button/spacebar. When the joystick/spacebar is pressed, the ATLAS System stops collecting images. If the **Use SmartCapture™** option is on (see [Use SmartCapture™ \(Instrument Only\)](#) on page 8-10), SmartCapture analyzes these images and uses the best acceptable image for image processing on the EXAM RESULTS SCREEN (or best four images for the EXAM PREVIEW SCREEN).

When the crosshairs are centered on the live video image and it is in clear focus, ask the patient to blink naturally and then open their eyes wide. Quickly make any minor corrections to the focus. Then press the button on the top of the joystick (or press the spacebar) to capture the image.



Note: If the chin rest sensors were not able to determine which eye was imaged, the software will prompt you to select an eye. This is most often caused by patient movement, or incorrect positioning in the chinrest.

After pressing the joystick button/spacebar, the image(s) is presented on the EXAM RESULTS or EXAM PREVIEW SCREEN, where you can save/edit the image(s) and/or capture an image for another eye. To proceed, see [Exam Preview/Exam Results Screen](#) below.



Note: If Exam Preview is not enabled and the image captured is of Low quality, the software may not be able to process the image. You will be notified to try again, or continue to the EXAM RESULTS SCREEN, saving only the Rings image.

Exam Preview/Exam Results Screen

After you capture an image, the EXAM PREVIEW SCREEN ([Figure 3-9](#)) or EXAM RESULTS SCREEN ([Figure 3-10](#)) will be displayed, depending on the Parameter Set's Exam Preview setting. The EXAM PREVIEW SCREEN ([Figure 3-9](#)) will only be displayed if the current Parameter Set has the **Exam Preview** option checked (see [Exam Preview \(Instrument Only\)](#) on page 8-10). Otherwise, the EXAM RESULTS SCREEN ([Figure 3-10](#)) will be displayed.

Both the EXAM PREVIEW SCREEN and the EXAM RESULTS SCREEN allow you to evaluate image quality, re-capture or save images, acquire additional images, edit pupil and limbus contours, select the doctor and operator for the exam, and add remarks. While the EXAM RESULTS SCREEN displays only the last image (or best image if the **Use SmartCapture™** option is on), the EXAM PREVIEW SCREEN displays the last four images (displayed in chronological order, left to right) in the image frame buffer (or best four images if the **Use SmartCapture™** option is on). On the EXAM PREVIEW SCREEN, you need to click the **Save** button below the image(s), or the checkmark(s) in the **Save** column of the Data Parameters Table, for the image(s) you want to save or view. A green checkmark (✓ Save) indicates the image will be saved or viewed. Click again to display a red X (✗ Save) indicating the image will not be saved or viewed. Unlike the EXAM RESULTS SCREEN, the EXAM PREVIEW SCREEN has a Data Parameters Table, and selectable Views for the images by using the Views menu (see [View Image/Views](#) on page 3-12). The View name is displayed below the images.

Acquire Images (Instrument Only)

Patient Name, ID & Date of Birth { sam, wise
CZMI1154852949
5/5/1976

Image Acquisition Date & Time, Eye (OD or OS) { 4/1/2009 3:30:49 PM OS, 4/1/2009 3:30:55 PM OS, 4/1/2009 3:31:00 PM OS, 4/1/2009 3:31:05 PM OS

Enter exam remarks in this field for the image you are saving.

Click **Save** to display the green checkmark for the image(s) you want to save/view.

Data Parameters Table {

Date Time	Image Quality	PathFinder II Eligible	Eccentricity	Shape Factor	Flat K	Steep K	HVID	Pupil Diameter	Save
4/1/2009 3:30:49 PM	High	Pass	0.61	0.37	42.55 D (7.93 mm) @ 166	43.80 D (7.70 mm) @ 76	12.5	5.0	✓
4/1/2009 3:30:55 PM	High	Pass	0.58	0.34	42.62 D (7.92 mm) @ 175	43.58 D (7.74 mm) @ 85	12.5	5.0	✗
4/1/2009 3:31:00 PM	High	Pass	0.60	0.36	42.62 D (7.92 mm) @ 174	43.59 D (7.74 mm) @ 84	12.5	5.0	✗
4/1/2009 3:31:05 PM	High	Pass	0.58	0.34	42.52 D (7.94 mm) @ 177	43.41 D (7.77 mm) @ 87	12.5	5.0	✗
Mean			0.59	0.35	42.58 D (7.93 mm) @ 173	43.60 D (7.74 mm) @ 83	12.5	5.0	
Std Dev			0.01	0.01	0.05	0.14	0.0	0.0	

Edit Pupil and Limbus button { Edit Pupil and Limbus

View Image { Rings (selected), Photopic Pupil, Scotopic Pupil

Views { Rings Image (selected), Show Rings (checked), Show Pupil, Show Limbus

Doctor { } Operator { } Cancel Acquire Another Done Views

Figure 3-9 Exam Preview Screen – Rings Image

On the EXAM RESULTS SCREEN, a Rings View and a rendered Axial Curvature View along with color scale (Auto Color Scale) is displayed for the captured image.

Patient Name, ID & Date of Birth { Steffani, Joe
12334455
3/3/1966

Eye (OD or OS), Image Acquisition Date & Time { 1/16/2009 3:11:10 PM OD

Exam quality { Exam quality: High

Edit Pupil and Limbus button { Edit Pupil and Limbus

View Image { Rings (selected), Photopic Pupil, Scotopic Pupil

Views { Show Rings (checked), Show Pupil, Show Limbus

Doctor { } Operator { } Remarks { } Cancel Acquire Another Done Views

Figure 3-10 Exam Results Screen – Rings Image



Note: The units (mm or Diopters) for the Views and Data Parameters Table are set in the Views menu for the selected Parameter Set. See Views on page 8-7.

Data Parameters Table (Exam Preview Screen only)

A Data Parameters Table displays the Image Quality and a PathFinder II Eligible field. See [Exam Quality](#) below.

Parameter values for Eccentricity, Shape Factor, Flat and Steep Sim K's, HVID, and Pupil Diameter are shown for each image. The mean and standard deviation values for these parameters are also displayed for the images. See [Data](#) on page 7-7 for more information on these image parameters. A green checkmark (✓) indicates the image will be saved or viewed; a red X (✗) indicates the image will not be saved or viewed.

OcLign®

The word "OcLign®" is displayed if the current Parameter Set has this option selected. See [OcLign®](#) on page 8-9. Also, an "OcLign® OK" or "OcLign® not OK" message will be displayed below the image. If "OcLign® not OK" is displayed, an error code with error description will also be displayed (see [Table 3-1](#) below).

Table 3-1 OcLign® Error Code Descriptions

Limbus coverage too high in photopic image.	Failed to detect scotopic limbus.
Eye not centered in photopic image.	Failed to detect scotopic pupil.
Limbus coverage too high in scotopic image.	No suitable iris structure.
Eye not centered in scotopic image.	OcLign check failed.
Displacement between scotopic and photopic image.	Ring image file not found.
Failed to detect photopic limbus.	Photopic file not found.
Failed to detect photopic pupil.	Missing ring image or photopic image data.

Exam Quality

An exam quality indicator (shown in the bottom left corner of the EXAM RESULTS SCREEN, and in the Data Parameters Table on the EXAM PREVIEW SCREEN) displays **High**, **Medium**, or **Low**. **Medium** is acceptable for image analysis. **Low** is a poor quality image and attempts should be made to acquire or select a better image. If the captured image is of **Low** quality, the text "Unable to display" will be displayed instead of the Axial Curvature View on the EXAM RESULTS SCREEN, and the Axial, Tangential, and Elevation Views of the EXAM PREVIEW SCREEN.



Note: **Low** quality images can be saved but not analyzed with PathFinder II.



Note: If the image cannot be used by PathFinder II, the message "Insufficient data for PathFinder II analysis" will be displayed on the EXAM RESULTS SCREEN, and "FAIL" in the PathFinder II Eligible field on the EXAM PREVIEW SCREEN.

See [Image Quality](#) on page 3-17 for a discussion of image quality problems.

View Image/Views

Rings / Rings Image

On the EXAM PREVIEW SCREEN, select **Rings image** to view the captured Rings image (Figure 3-9). On the EXAM RESULTS SCREEN, select **Rings** to view the captured Rings image (Figure 3-10).

The Rings image shows the captured image with white Placido rings in the background. The detected ring edges are shown with red overlays if **Show Rings** is checked. Uncheck **Show Rings** to turn off the red rings overlay. The pupil contour can be shown with green overlays if **Show Pupil** is checked, and the limbus contour can be shown with green overlays if **Show Limbus** is checked.

On the EXAM PREVIEW SCREEN, the Rings Image default display settings are set in the current Parameter Set's Single View setting (see [Default Views](#) on page 8-5).

Photopic Pupil

Select **Photopic Pupil** (if captured) to view the Photopic Pupil image (with light) (Figure 3-11).

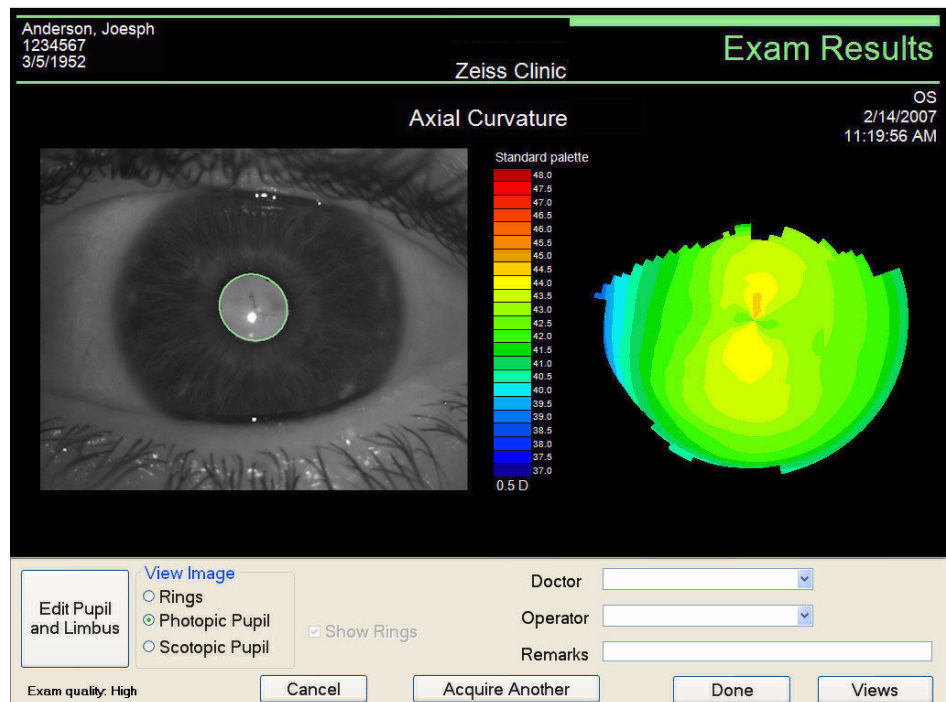


Figure 3-11 Exam Results Screen – Photopic Pupil Image

Scotopic Pupil

Select **Scotopic Pupil** (if captured) to view the Scotopic Pupil image (no light) (Figure 3-12).

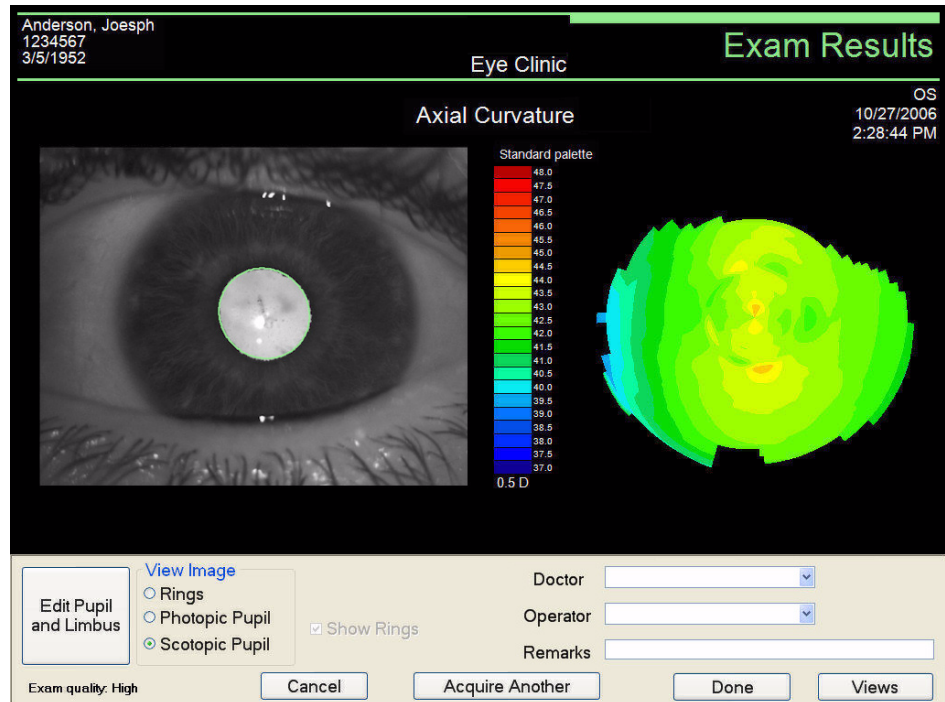


Figure 3-12 Exam Results Screen – Scotopic Pupil Image

Axial / Tangential / Elevation (Exam Preview Screen only)

Select **Axial** to view the captured images with the Axial Curvature View (see [Axial Curvature](#) on page 6-2). Select **Tangential** to view the captured images with the Tangential Curvature View (see [Tangential Curvature](#) on page 6-4). Select **Elevation** to view the captured images with the Elevation View (see [Elevation](#) on page 6-6). The View name is displayed below the images.

The default display settings are set in the current Parameter Set's Single View setting (see [Default Views](#) on page 8-5). The pupil contour can be shown with green overlays if **Show Pupil** is checked, and the limbus contour can be shown with green overlays if **Show Limbus** is checked.

Doctor

The **Doctor** pop-up menu displays a list of previously defined doctors where you can select one to be associated with this exam.

A default doctor's name can be set for the current Parameter Set and will be displayed here. See [Exams](#) on page 8-9.

Once an exam is saved, the doctor's name cannot be changed.

Operator

The **Operator** pop-up menu displays a list of previously defined operators where you can select one to be associated with this exam.

A default operator's name can be set for the current Parameter Set and will be displayed here. See [Exams](#) on page 8-9.

Once an exam is saved, the operator's name cannot be changed.

Remarks

Enter any comments or remarks you want to include with the exam (50 characters max). This text will be displayed in exam images, reports, and in the **Comment** field for the patient's exam on the PATIENT SELECTION WINDOW. **Once an exam is saved, the remarks cannot be changed.**

Cancel

Click **Cancel** to delete the current image on the EXAM RESULTS SCREEN, or images on the EXAM PREVIEW SCREEN (the image(s) will not be saved, even if checked for saving), and return to the EXAM ACQUISITION SCREEN to re-capture an image.

This is recommended in case that the rings were not detected properly due to a pathological condition, or if the image quality is poor due to operator or subject error (see [Image Quality](#) on page 3-17).

Acquire Another

Click **Acquire Another** to return to the EXAM ACQUISITION SCREEN to capture additional images. The current image (or selected images marked for saving) will be saved. On the EXAM PREVIEW SCREEN, you need to click the **Save** button below the image(s) you want to save before you can click **Acquire Another**. A green checkmark (✓) indicates the image will be saved; a red X (✗) indicates the image will not be saved.

Done

Click **Done** to save the acquired image on the EXAM RESULTS SCREEN and return to the PATIENT SELECTION WINDOW. On the EXAM PREVIEW SCREEN, you need to click the **Save** button below the image(s) you want to save before you can click **Done** to save the image(s) and return to the PATIENT SELECTION WINDOW. A green checkmark (✓) indicates the image will be saved; a red X (✗) indicates the image will not be saved.

If you have **Auto print after acquisition** checked in the **Printing / DICOM Export Options** dialog of your current Parameter Set (see [Printing / DICOM Export Options](#) on page 8-11), then the selected reports and Views (in the **Printing / DICOM Export Options** dialog) will be printed for each eye when you select **Done**. If **Auto export after acquisition** is checked, then the selected reports and Views will be exported to a DICOM system automatically at the end of image acquisition (when you click the **Done** button). See [Done](#) on page 3-14. See [Report Options](#) on page 8-12 for selecting Views included in the Reports. See [\(6\) Views](#) for information on Views. See [Exporting Data to DICOM Systems](#) on page 11-25.

If **Auto export after acquisition** is checked, then selected reports will be exported to a DICOM system when you click **Done**.

If **Auto print after acquisition** is checked, then selected reports will print when you click **Done**.

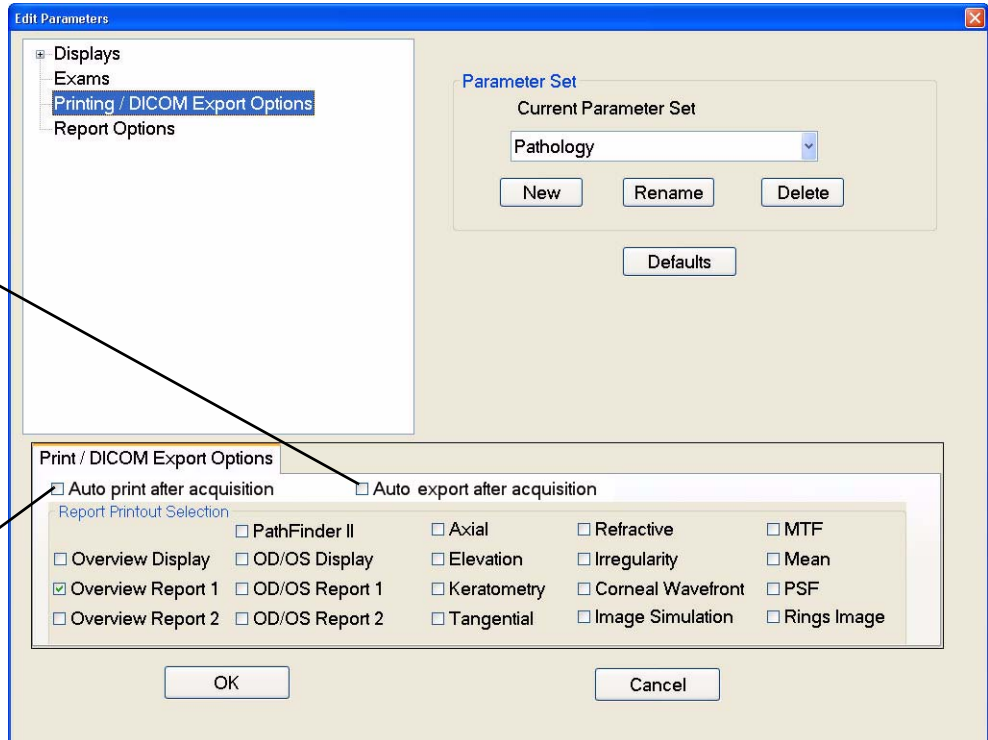


Figure 3-13 Edit Parameters – Printing Options

Note: If multiple exams have been selected or acquired for one eye before you select the **Done** button, only the reports and Views for the last exam will be printed.

Views

Click **Views** to go to the ANALYSIS SCREEN for exam analysis. On the EXAM PREVIEW SCREEN, you need to click the **Save** button below the image(s) you want to view/save before you can click **Views**. A green checkmark (✓) indicates the image will be viewed/saved; a red X (✗) indicates the image will not be viewed/saved. See [\(4\) Image Analysis](#) for more information. When you exit the ANALYSIS SCREEN you will be returned to the EXAM PREVIEW or EXAM RESULTS SCREEN. All selected images that were viewed/saved are now marked with a grey checkmark (☑) indicating that they have been saved.

Click **Acquire Another** to capture additional images.

Edit Pupil and Limbus—Exam Edit Screen



Note: Once an exam is saved, you will not be able to edit the pupil and limbus diameters.

Selecting the **Edit Pupil and Limbus** button will display the EXAM EDIT SCREEN (Figure 3-14). The EXAM EDIT SCREEN allows you to edit the pupil and limbus contours for more accurate diameter measurements.



Figure 3-14 Exam Edit Screen – Pupil Selected

The pupil contour is displayed as a circle overlay. The limbus contour is displayed as two vertical contour arc overlays—an arc on the left and an arc on the right.

On the bottom of the image, the diameters of the pupil and limbus (also known as HVID) are displayed in mm rounded to the nearest 0.1 mm.

Changing the Pupil or Limbus Contours

Select **Pupil** or **Limbus** to edit or delete the pupil or limbus contours, respectively.

Select **Edit** to move or change the size of the selected contour. The selected contour will be green, and the non-selected contour is shown in red in the image display area. Use the movement buttons (Up, Down, Left, Right) or CTRL + arrows keys on the keyboard to move the contours. Use the size buttons (Larger, Smaller) or Page Up/Down keys on the keyboard to change the size of the contour. The selected contour will move or change in size in the image display area as you press a button or key.



Note: The largest pupil diameter allowed is 11.0 mm, and the smallest pupil diameter allowed is 0.5 mm. The largest limbus diameter allowed is 15.0 mm, and the smallest limbus diameter allowed is 10.0 mm.

Select **Delete** to delete the contour.

Select **Normal** to display the original displayed contour determined at image acquisition.

When your finished, click **OK** to save your changes and return to the EXAM RESULTS SCREEN. The Rings Image will reflect your changes. Click **Cancel** to return to the EXAM RESULTS SCREEN without making any changes.

Image Quality

Image quality can be poor due to operator or subject error. Things to look for on the EXAM PREVIEW or EXAM RESULTS SCREEN include:

- Red ring overlay should be consistent with white Placido ring display¹
- Red ring overlay and Placido rings should extend outside Cone of Focus ring (ring #8)
- Color map view should not be distorted by tear film artifact

Example: Dry Eye/Tear Film Artifact

In this example (Figure 3-15) of a typical cornea, there is a tear film artifact. Although the ring overlay is good, there are black spots on the map. This is normally caused by a dry eye. The patient may need to apply drops to the eye.

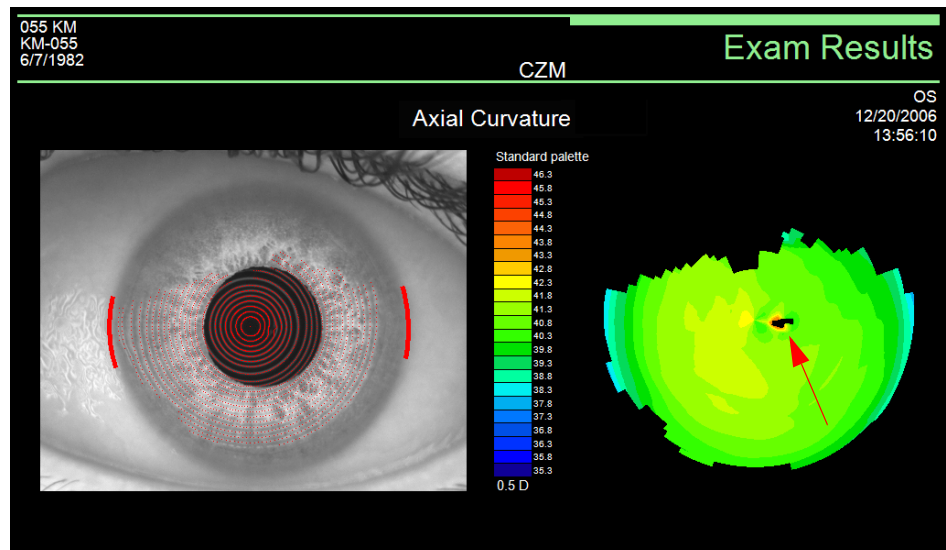


Figure 3-15 Image Quality Problem – Example

1. Due to the projected nature of the patented Cone of Focus, the red ring overlay may not match the corresponding visible ring mire for the Cone of Focus ring.

(4) Image Analysis

Chapter Overview

This chapter discusses the ways you can analyze previously acquired ATLAS images. Topics covered in this chapter include:

- [Analyze Images](#), page 4-1
- [Find an Existing Patient](#), page 4-1
- [View Today's Patients Tab](#), page 4-2
- [Analysis Screen](#), page 4-3
- [Cursor Location Point](#), page 4-4
- [Analysis Screen Toolbar](#), page 4-5
- [Selecting Exams and Views](#), page 4-9
- [Display Options](#), page 4-9

Analyze Images

Use the PATIENT SELECTION WINDOW to identify a patient whose exams you wish to analyze. Analysis is disabled until you identify a patient. A patient must also have completed exams for analysis to be enabled. For analysis purposes, you can identify a patient using two of the three tabs provided.

Find an Existing Patient

On the default Find Existing Patient tab ([Figure 4-1](#)), select a patient from the patient list displayed.

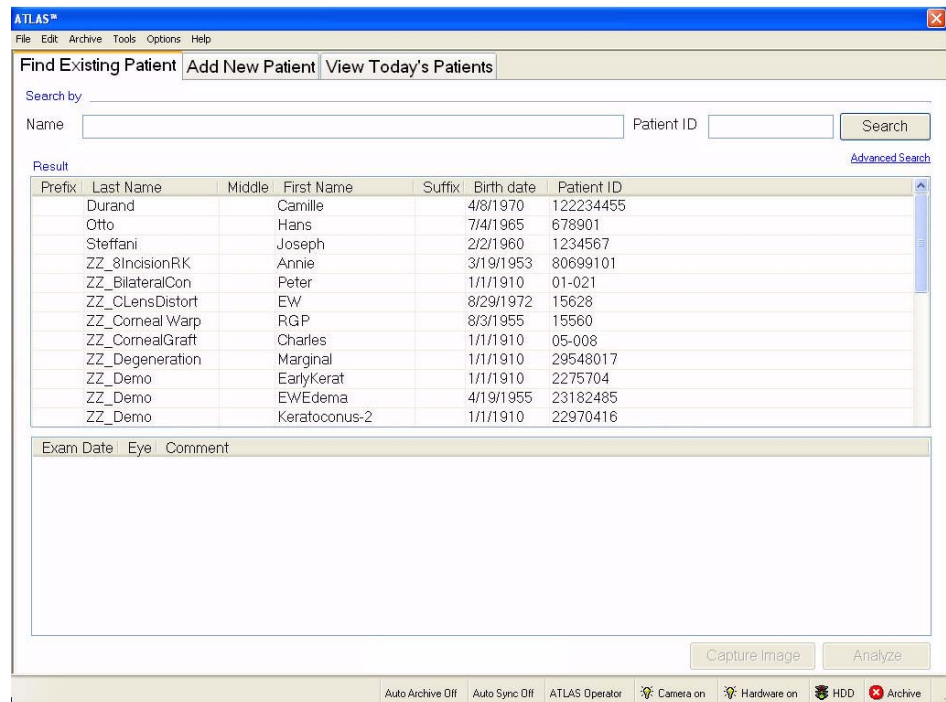


Figure 4-1 Patient Selection Window – Find Existing Patient

Analysis Screen

The ANALYSIS SCREEN (Figure 4-3) enables you to view the captured image in many different ways. Once you have initiated analysis from the PATIENT SELECTION WINDOW, or from the **Views** button on the EXAM RESULTS SCREEN after acquiring a image, the ANALYSIS SCREEN appears.

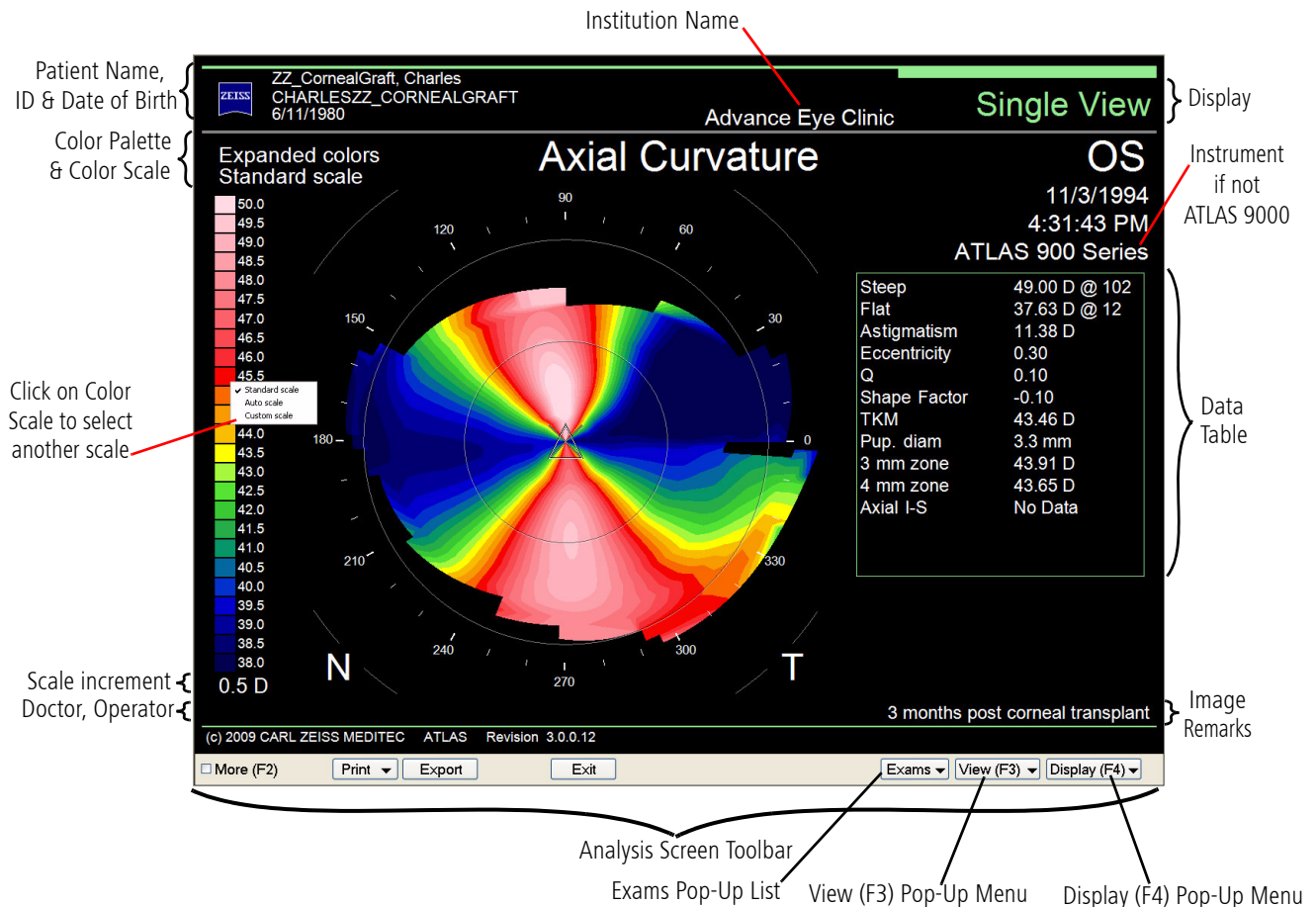


Figure 4-3 Analysis Screen

The colors of the corneal display shown in the middle of the ANALYSIS SCREEN correspond to the values shown on the scale at the left of the screen. Each color represents a different value, in either diopters or millimeters.

For curvature Views, in the Standard Color Palette and Standard Color Scale (ANSI Z80.23), red, orange, and yellow are “hot” colors and show the steeper areas of the cornea. Green is an “intermediate” color. Light and dark blue are “cool” colors and show the flatter areas.



Note: The scale and colors of the screen can be changed with the Color Scale and Color Palette options in the View Editor. You can also click on the Color Scale in the ANALYSIS SCREEN to select another scale.

The ANALYSIS SCREEN can be customized in many ways. You can select from multiple Displays and data Views, all of which can be customized with optional display and parameter settings. The default View is generated based upon the currently active Parameter Set. See [\(8\) Parameter Sets](#) for more information on creating and editing Parameter Sets. The ANALYSIS SCREEN may include:

- The selected patient's name, ID number, and date of birth
- The institution, doctor and operator name
- Remarks entered during image acquisition
- Exam date and time
- Instrument (if not ATLAS 9000)
- OcuLign® Not OK

Cursor Location Point

You can move the mouse pointer arrow to any part of the cornea display and click the left mouse button. The large crosshair on the View denotes the point at which you clicked the mouse button and are located on the corneal display ([Figure 4-4](#)). The Cursor table on the bottom right of the ANALYSIS SCREEN displays the data value at the location point and its distance from the corneal vertex (mm) in both cartesian and polar coordinates. Right-click the mouse button to remove the Cursor table and location point.

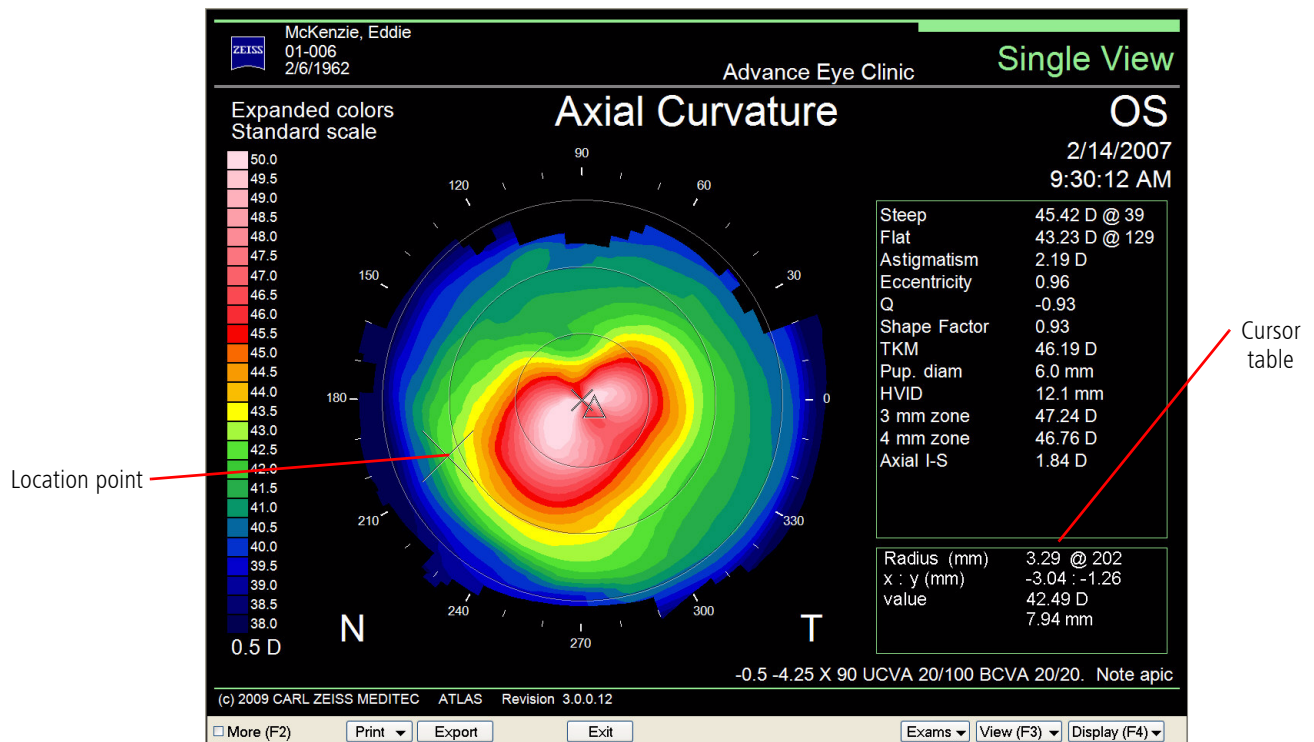


Figure 4-4 Analysis Screen after Mouse Click in Cornea Display



Note: On multi-view Displays, such as Overview, the location point can be set to track at the same location on each View simultaneously or set independently for each View. See **Track Views** on the [Options](#) tab of the ANALYSIS SCREEN (page 4-9).

Analysis Screen Toolbar

The ANALYSIS SCREEN Toolbar (see [Analysis Screen Toolbar](#) on page 2-18) displays the following buttons:

More (F2)

Checking the **More (F2)** checkbox (or pressing the **F2** function key on the keyboard) will display additional windows ([Figure 4-5](#)) which allow you to customize the display, select different exams and alternate views, and edit Parameter Sets. Uncheck or press **F2** again to return the display to the single window view.

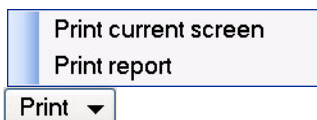
View Editor – See [\(7\) View Editor](#) for more information on the View Editor and its parameters.

Display Options – See [Display Options](#) on page 4-9 for more information on the Display Options window.

Exams/Views – See [Selecting Exams and Views](#) on page 4-9 for more information.



Figure 4-5 Analysis Screen with the More (F2) Button Enabled



Print

Selecting **Print** (or **Print > Print current screen**) will open a standard Windows Print dialog where you can select print options and print the current ANALYSIS SCREEN.

If you have selected reports on the **Printing / DICOM Export Options** dialog of the current Parameter Set, selecting **Print > Print report** will print Reports and Views for the currently selected exam(s). See [Printing / DICOM Export Options](#) on page 8-11 and [Report Options](#) on page 8-12 for selecting the Views and Reports. A standard Windows Print dialog will open where you can select print options and print the report.

Export

Export (or **Export > Export current screen to file**) will open a save dialog where you can save the current exam's analysis output screen in various file formats, including BMP, JPG, TIFF, and PDF.

If you have enabled DICOM Data Export (see [Enable and Configure DICOM Data Export and Worklist Import](#) on page 11-26), selecting **Export > Export current screen to DICOM** will export the current screen to a DICOM system, while **Export > Export report to DICOM** will export the same Reports and Views as **Print > Print report** to a DICOM system. See [Printing / DICOM Export Options](#) on page 8-11 and [Report Options](#) on page 8-12 for selecting the Views and Reports. You can select PDF or TIFF as the image file format. See [Exporting Data to DICOM Systems](#) on page 11-25 for more information.

Exit

Selecting the **Exit** button will exit the ANALYSIS SCREEN and return you to the PATIENT SELECTION WINDOW or the EXAMS RESULTS SCREEN (if you just acquired an image).

Exams List

Selecting the **Exams** button displays a list of exams for the patient, including exam comments. For all Displays except Trend with Time and Trend Analysis, an exams pop-up list will be displayed ([Figure 4-6](#)). This exams list displays the current View with an amber checkbox. Selecting another exam on the list with the mouse will automatically change the current View on the ANALYSIS SCREEN to the selected exam.

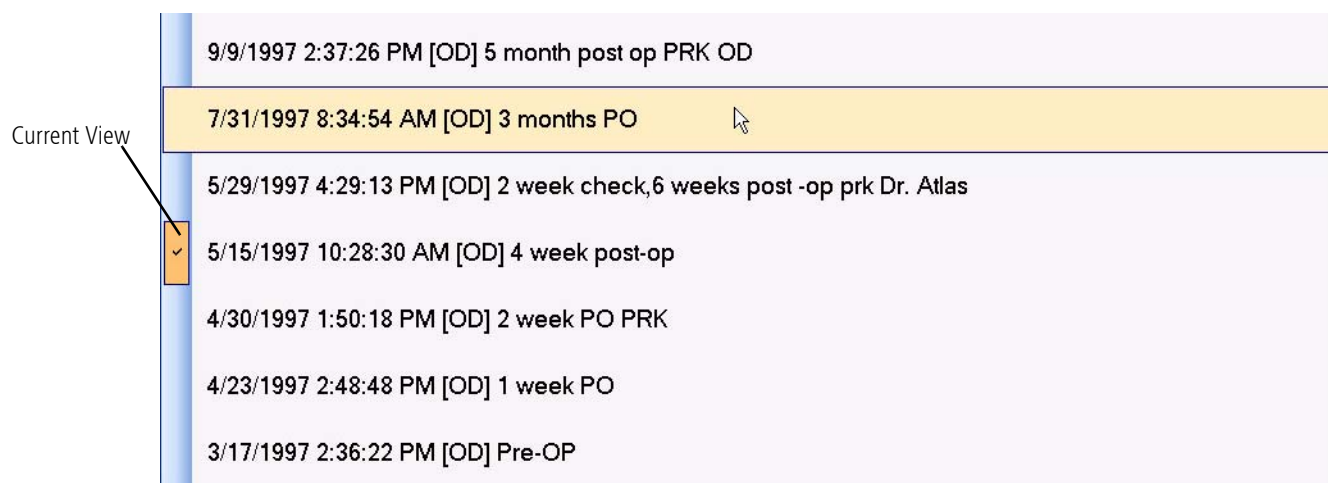


Figure 4-6 Exams Button Pop-Up List

All exams for the patient can be selected. However, for some Displays, the list will show only exams for one eye. Select the **Switch Eye** button on the bottom of the Exams list to display exams for the other eye.

For the Trend with Time and Trend Analysis Displays, a pop-up SELECT EXAM window will be displayed (Figure 4-7) when you select the **Exams** button. This window displays all exams for one eye. You can select up to four exams. Click the checkbox next to an exam to select or deselect it—a green checkmark means it is selected. If all four exams are selected, you must first deselect an exam to select another. Select the **Switch Eye** button to display exams for the other eye.

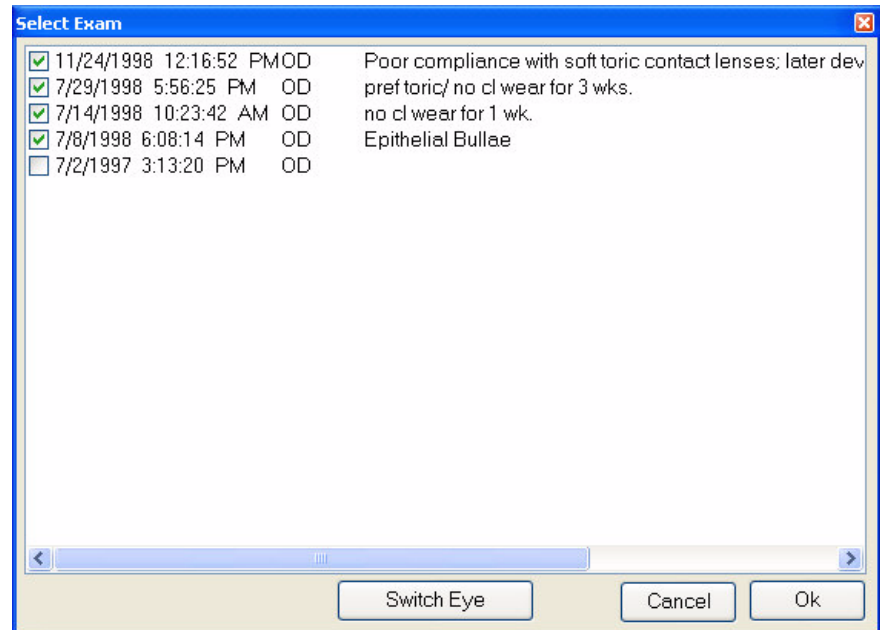


Figure 4-7 Select Exam Pop-Up Window

Select **OK** to close the window with your exam selections, or **Cancel** to keep the previous exam selections.

View (F3) Pop-Up Menu

Clicking the **View (F3)** pop-up menu button (or pressing the **F3** function key on the keyboard) displays a list of Views. See [\(6\) Views](#) for a description of each View.



Display (F4) Pop-Up Menu

Clicking the **Display (F4)** pop-up menu button (or pressing the **F4** function key on the keyboard) displays a list of Displays. Some choices may be unavailable for a selected patient because of a lack of exam data. See [\(5\) Displays](#) for a description of each Display.



Selecting Exams and Views

The EXAMS/VIEWS window allows you to select the exam(s) and View for the ANALYSIS SCREEN display when the **More (F2)** checkbox on the ANALYSIS SCREEN is selected.

Exams

Clicking the **Exams** tab on the EXAMS/VIEWS window allows you to select the exam(s) to include in the current View for the ANALYSIS SCREEN display. Once you click on an exam, you can scroll through the list of exams by using the **Up** and **Down Arrow** keys on the keyboard. The content of the Exam window depends on the current View. See (6) [Views](#) for more information.

You can also click the **Exams** pop-up list button on the ANALYSIS SCREEN to select exams when the **More (F2)** checkbox is not selected (see [Exams List](#) on page 4-6).

Views

Clicking the **Views** tab on the EXAMS/VIEWS window allows you to select the View for the ANALYSIS SCREEN display. See (6) [Views](#) for more information.

Display Options

The DISPLAY OPTIONS window on the ANALYSIS SCREEN controls display options and allows you to select and edit Parameter Sets.



Note: The **More (F2)** checkbox on the ANALYSIS SCREEN must be selected to show the DISPLAY OPTIONS window.

Options

The **Options** tab controls display options on the ANALYSIS SCREEN and allows you to edit and save current parameters, and select and edit Parameter Sets.

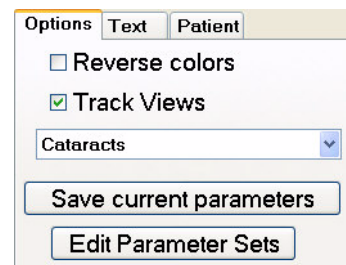


Figure 4-8 Display Options – Options Tab

Reverse colors – Check this button to reverse the colors of the ANALYSIS SCREEN from black to white.

Track Views – Check this button to enable tracking of the location point—location points will be updated simultaneously for each View in a multi-view Display (such as Overview). Uncheck this field so each View can have a different location point. See [Cursor Location Point](#) on page 4-4 for more information.

Parameter Sets buttons – Click the **PARAMETER SET** drop-down menu to select a Parameter Set. It displays the current Parameter Set being used. Click the **Save current parameters**

button to save the current parameters and settings to the current set. Click the **Edit Parameter Sets** button to display the EDIT PARAMETERS SCREEN to change, create, or edit Parameter Sets. See [\(8\) Parameter Sets](#) for more information on Parameter Sets.



Note: When you change Parameter Sets, all settings that have not been saved from the previous Parameter Set will be lost. If you changed the current settings and want to keep them, be sure to click **Save current parameters** (or create a new Parameter Set by clicking **Edit Parameter Sets**) before you select another Parameter Set. Also when you change Parameter Sets, your current Display and View will change to the Parameter Set's default Display and View.

Text

The **Text** tab controls the display of text items on the ANALYSIS SCREEN. See [Display Text](#) on page 8-6 for more information.

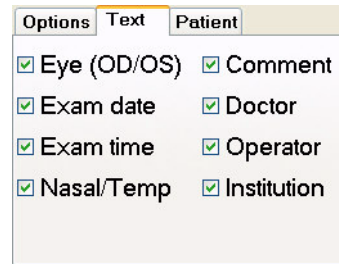


Figure 4-9 Display Options – Text Tab

Patient

The **Patient** tab controls the display of the patient's name, ID, and birthday on the ANALYSIS SCREEN. See [Display Text](#) on page 8-6 for more information.

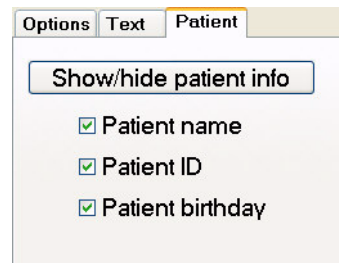


Figure 4-10 Display Options – Patient Tab

(5) Displays

Chapter Overview

The ATLAS Software lets you select different types of displays for the exam data captured by the instrument. You can select a single-image display or compare more than one exam—or more than one view of the same exam or different exams—on the same display.

- [Overview](#), page 5-2
- [Single View](#), page 5-3
- [OD/OS Compare](#), page 5-4
- [2-Difference](#), page 5-6
- [3-Difference](#), page 5-8
- [Trend with Time](#), page 5-10
- [Trend Analysis](#), page 5-12
- [Custom](#), page 5-14
- [PathFinder II \(Optional\)](#), page 5-16
- [MasterFit II \(Optional\)](#), page 5-16

Selecting Views and Exams for Displays

You can select Views and Exams for Displays in two ways (for multi-View Displays, click on a View to select it (a green border indicates the selected View)):

- click the **View (F3)** and **Exams** pop-ups (see [View \(F3\) Pop-Up Menu](#) on page 4-8 and [Exams List](#) on page 4-6).
- click the View(s) or Exams tab on the EXAMS/VIEWS window when **More (F2)** is checked (see [Analysis Screen with the More \(F2\) Button Enabled](#) on page 4-5).



Note: If an image is of **Low** quality, the text **“Unable to display”** will be displayed instead of the exam image for all Views except the Rings Image View. See [Exam Quality](#) on page 3-11.

View Tracking

A location point and crosshair can be set on the corneal image for some Views by left-clicking the mouse. For multi-View Displays, all Views can be set to the same location point by turning on the **Track Views** option. See [Track Views](#) on the [Options](#) tab of the ANALYSIS SCREEN (page 4-9). Turn off tracking so that each View has a different location point. A Cursor table will be displayed showing the value for that location. Right-clicking will remove the crosshair and Cursor table. See [Cursor Location Point](#) on page 4-4.

Display (F4) pop-up menu

The **Display (F4)** pop-up menu (or pressing the **F4** function key on the keyboard) displays a list of Displays. Some choices may be unavailable for a selected patient because of a lack of exam data or licenses. For multi-View Displays, the selected View (a green border indicates the selected View) will be displayed when you select the Single View Display.

[Overview](#)
[Single View](#)
[OD / OS](#)
[2-Difference](#)
[3-Difference](#)
[Trend](#)
[Trend Analysis](#)
[Custom](#)

[PathFinder II](#)
[MasterFit II](#)
[Display \(F4\) ▼](#)

Overview


The Overview Display shows four different Views of the *same exam* for the selected patient.

You can select the exam and Views for the Overview Display in two ways:

1. Select an exam from the **Exams** pop-up list (see [Exams List](#) on page 4-6).
2. Select a View by clicking on it (a green border indicates the selected View).
3. Select a View from the **View (F3)** pop-up (see [View \(F3\) Pop-Up Menu](#) on page 4-8).

or

1. Select the **More (F2)** checkbox to show the EXAMS/VIEWS window.
2. Select the **Exams** tab from the EXAMS/VIEWS window.
3. In the Exams tab window, select the exam you want to view from the list of available exams by clicking on it—the display updates automatically. All exams for the selected patient are shown in the list.
4. Select a View tab (**View 1, View 2, View 3, View 4**) from the EXAMS/VIEWS window by clicking on the tab or clicking on the View in the window. View 1 is displayed at top left, View 2 at top right, View 3 at bottom left, and View 4 at bottom right. A green border indicates the selected View.
5. For each selected View tab (**View 1, View 2, View 3, View 4**), select the View you want in the View tab window from the list by clicking on it—the display updates automatically.

 **Note:** Double-clicking a View on the Overview Display will open that View in Single View Display.

See [Default Views](#) on page 8-5 to set the default Views of the Overview Display for the current Parameter Set. [Figure 5-1](#) shows an Overview Display with View 1 selected (green border).

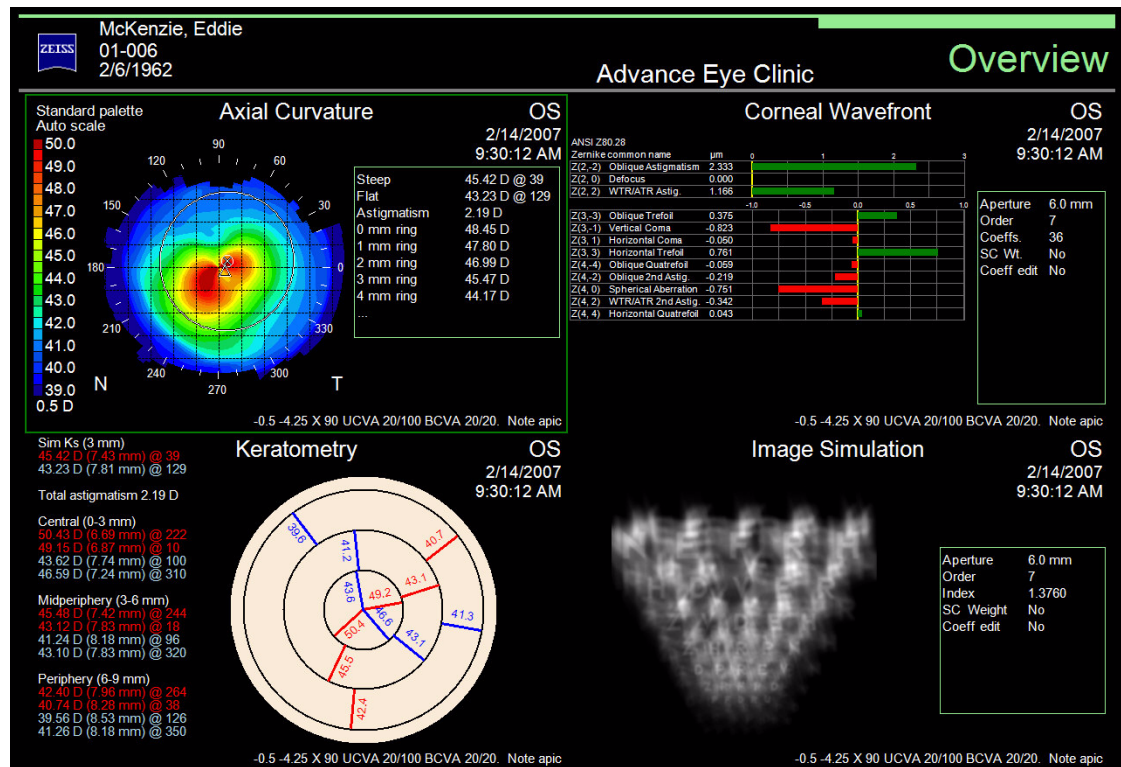


Figure 5-1 Overview Display (View 1 Selected – Green Border)

Single View

The Single View Display shows a single View of a single exam for the selected patient.

You can select the exam and View for the Single View Display in two ways:

1. From the **View (F3)** and **Exams** pop-ups (see [View \(F3\) Pop-Up Menu](#) on page 4-8 and [Exams List](#) on page 4-6).

or

1. Select the **More (F2)** checkbox to show the EXAMS/VIEWS window.
2. Select the **Exams** tab from the EXAMS/VIEWS window.
3. In the Exams tab window, select the exam you want to view from the list of available exams by clicking on it—the display updates automatically. All exams for the selected patient are shown in the list.
4. Select the **Views** tab from the EXAMS/VIEWS window.
5. In the Views tab window, select the View you want from the list by clicking on it—the display updates automatically.

See [Default Views](#) on page 8-5 to set the default View of the Single View Display for the current Parameter Set.

Figure 5-2 shows a Single View Display.

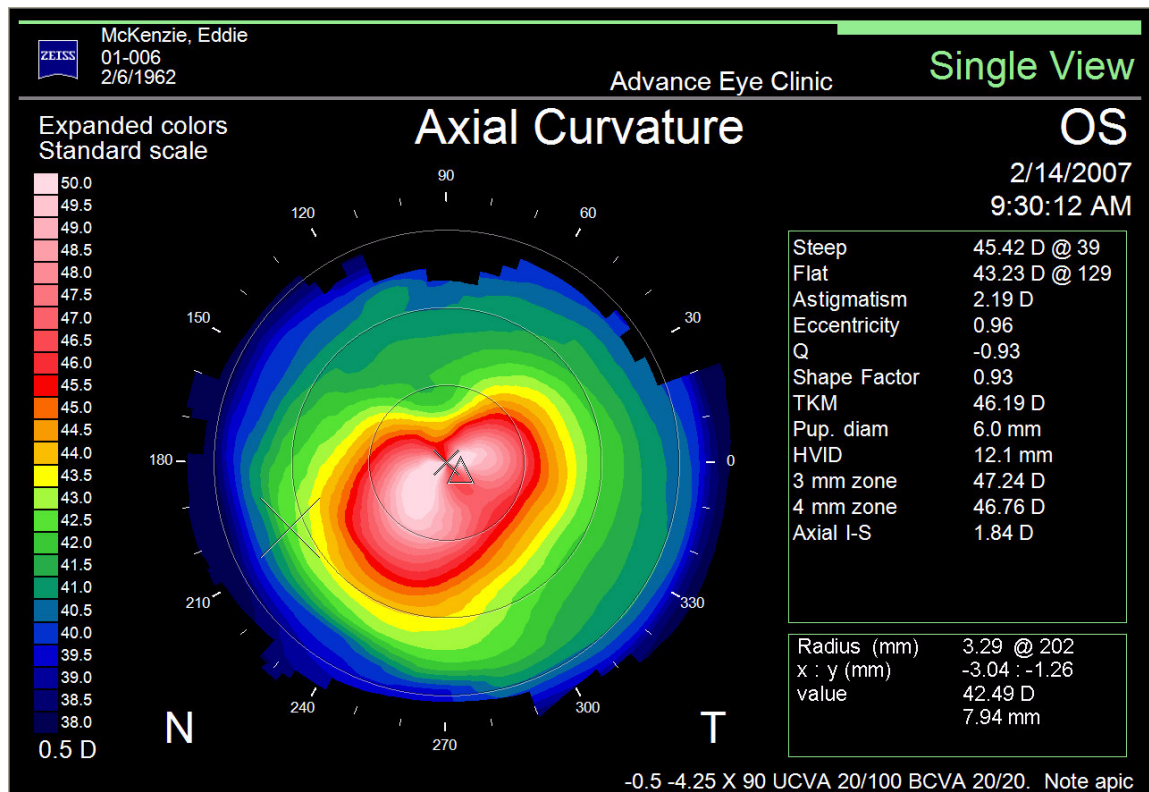


Figure 5-2 Single View Display



Note: For multi-View Displays, the selected View (a green border indicates the selected View) will be displayed when you select the Single View Display.

OD/OS Compare

The OD/OS Compare Display shows two different Views of left and right eye exams for the *same patient* on the same display. Two Views on the left side of the display are for the right eye (OD) exam, and the same Views for the left eye (OS) are on the right side. ATLAS automatically selects the closest other eye (based on exam date).

You can select the exams to include in the OD/OS Compare Display in two ways:

1. Select an OD and OS exam from the **Exams** pop-up list (see [Exams List](#) on page 4-6).

or

1. Select the **More (F2)** checkbox to show the EXAMS/VIEWS window.
2. Select the **Exam** tab from the EXAMS/VIEWS window.
3. In the Choose OS Exam list, select the exam you want to view for the left eye from the list of available exams by clicking on it—the display updates automatically. All OS exams for the selected patient are shown in the list.
4. In the Choose OD Exam list, select the exam you want to view for the right eye from the list of available exams by clicking on it—the display updates automatically. All OD exams for the selected patient are shown in the list.

You can select the Views for the OD/OS Compare Display in two ways:

1. Select the Top or Bottom View by clicking on it (a green border indicates the selected View).
2. Select a View from the **View (F3)** pop-up (see [View \(F3\) Pop-Up Menu](#) on page 4-8).

or

1. Select the **More (F2)** checkbox to show the EXAMS/VIEWS window.
2. Select the **Top View** tab from the EXAMS/VIEWS window to select the View you want for the eyes on the top of the display by clicking in the list—the display updates automatically.
3. Select the **Bottom View** tab from the EXAMS/VIEWS window to select the View you want for the eyes on the bottom of the display by clicking in the list—the display updates automatically.

See [Default Views](#) on page 8-5 to set the default Views of the OD/OS Compare Display for the current Parameter Set.

Figure 5-3 shows an OD/OS Compare Display with the Bottom View selected (green border).

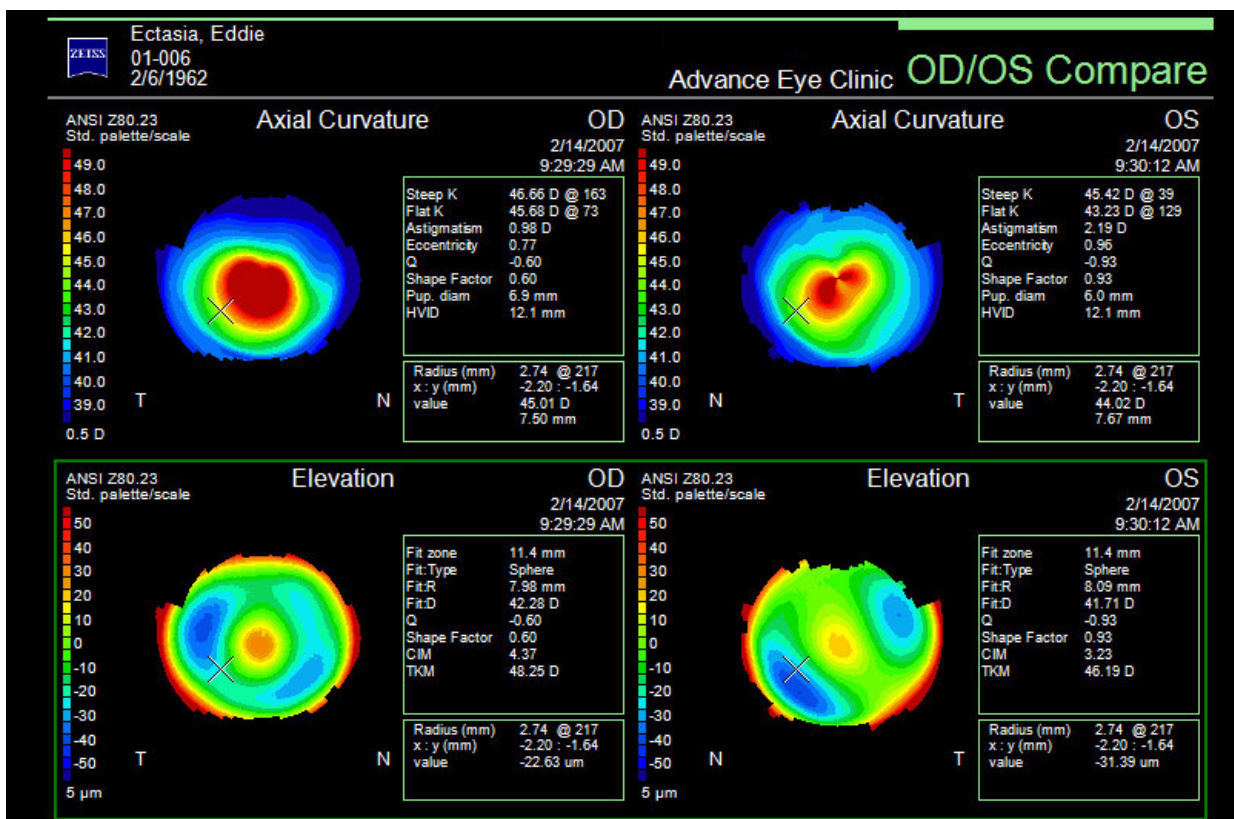


Figure 5-3 OD/OS Compare Display (Bottom View Selected – Green Border)

2-Difference

The 2-Difference Display shows two exams for the same eye and the difference between them. The top exam (Exam 1) is subtracted from the bottom exam (Exam 2).

You can select the exams to include in the 2-Difference Display in two ways:

1. Select an exam by clicking on it (a green border indicates the selected View).
2. Select an exam from the **Exams** pop-up list (see [Exams List](#) on page 4-6).

or

1. Select the **More (F2)** checkbox to show the EXAMS/VIEW window.
2. Select the **Exams** tab from the EXAMS/VIEW window.
3. In the Exams tab window, select the eye you want to display by clicking the **OD** (Right) or **OS** (Left) radio button. All exams for the selected eye are shown in the Exams 1 or 2 lists. Select an exam in both lists by clicking on it.



Note: If you change an exam that would make the Display out of chronological order (latest shown on the bottom), the software will move the exams into chronological order on the Display.

You can select the View for the 2-Difference Display in two ways:

1. Select a View from the **View (F3)** pop-up (see [View \(F3\) Pop-Up Menu](#) on page 4-8).

or

1. Select the **More (F2)** checkbox to show the EXAMS/VIEW window.
2. Select the **View** tab from the EXAMS/VIEW window.
3. In the View tab window, select the View you want from the list by clicking on it—the display updates automatically.

The following Views are available for the 2-Difference Display: Axial, Tangential, Refractive, Mean, and Corneal Wavefront. See [Default Views](#) on page 8-5 to set the default View of the 2-Difference Display for the current Parameter Set.

Figure 5-4 shows a 2-Difference Display with Exam 1 selected (green border). Note that a location point has been clicked on the top exam and the difference value at that location point is displayed on the right.

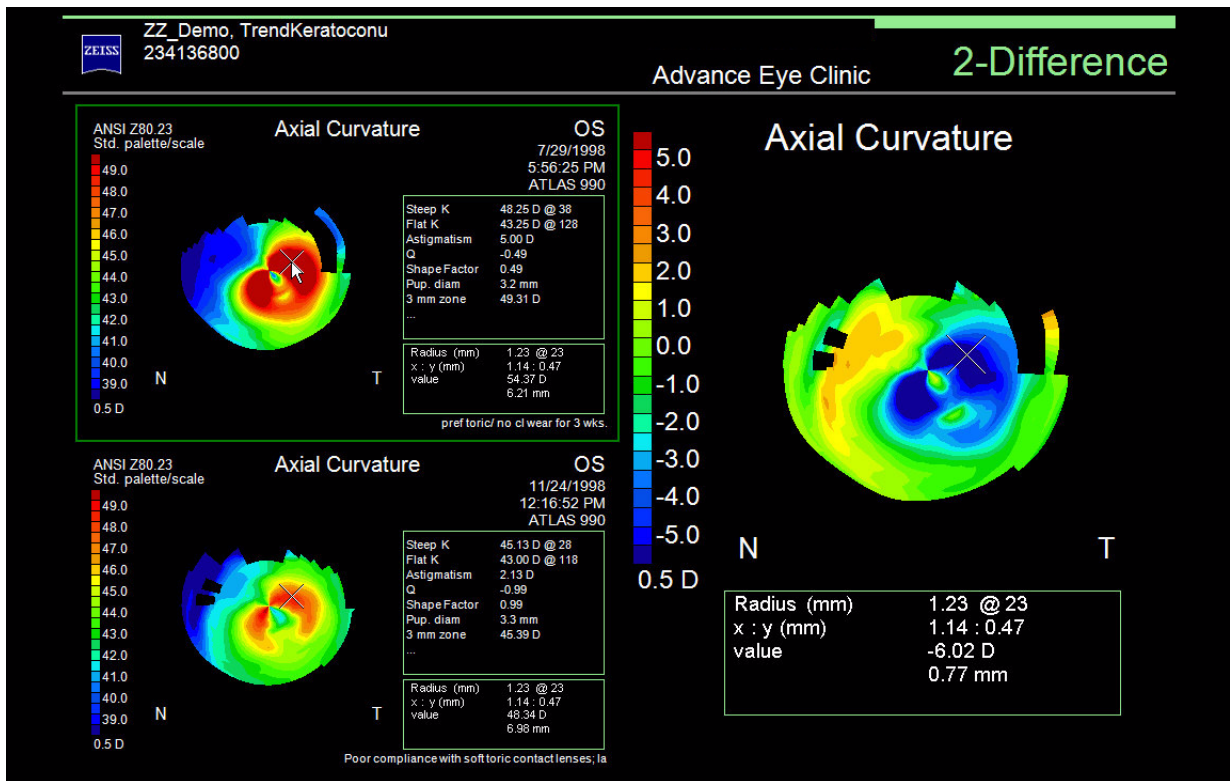


Figure 5-4 2-Difference Display (Exam 1 Selected – Green Border)

- ☞ Note: The difference value calculated may be slightly different than the difference value when calculated on the displayed two decimal value, because the difference value is calculated using a higher number of decimal places, and then rounded.
- ☞ Note: If an image is of **Low** quality, the text "**Unable to display**" will be displayed instead of the exam image and the difference map. See [Exam Quality](#) on page 3-11.

3-Difference

The 3-Difference five-map Display provides information regarding changes between multiple exams; for example, to monitor the surgical and healing changes that take place on the eye after corneal surgery. It is also useful to follow contact lens induced change over time, to determine the effect that the lens is having on the cornea. Three exams for the same eye are selected and two differences are calculated.

Exam 1, Exam 2, and Exam 3 are shown respectively left to right on the top of the display. Exam 1 will be subtracted from Exam 2 and a difference map will be calculated and displayed on the lower left. Exam 2 will be subtracted from Exam 3 and a difference map will be calculated and displayed on the lower right.

You can select the exams to include in the 3-Difference Display in two ways:

1. Select an exam by clicking on it (a green border indicates the selected View).
2. Select an exam from the **Exams** pop-up list (see [Exams List](#) on page 4-6).

or

1. Select the **More (F2)** checkbox to show the EXAMS/VIEW window.
2. Select the **Exams** tab from the EXAMS/VIEW window.
3. In the Exams tab window, select the eye you want to display by clicking the **OD** (Right) or **OS** (Left) radio button. All exams for the selected eye are shown in the three Exams lists. Select an exam in each list by clicking on it.



Note: If you change an exam that would make the Display out of chronological order (left to right), the software will move the exams into chronological order on the Display.

You can select the View for the 3-Difference Display in two ways:

1. Select a View from the **View (F3)** pop-up (see [View \(F3\) Pop-Up Menu](#) on page 4-8).

or

1. Select the **More (F2)** checkbox to show the EXAMS/VIEW window.
2. Select the **View** tab from the EXAMS/VIEW window.
3. In the View tab window, select the View you want from the list by clicking on it—the display updates automatically.

The following Views are available for the 3-Difference Display: Axial, Tangential, Refractive, Mean, and Corneal Wavefront. See [Default Views](#) on page 8-5 to set the default View of the 3-Difference Display for the current Parameter Set.

Figure 5-5 shows a 3-Difference Display with Exam 1 selected (green border). Note that a location point has been clicked on the top exams and the difference values at that location point are displayed on the bottom exams.

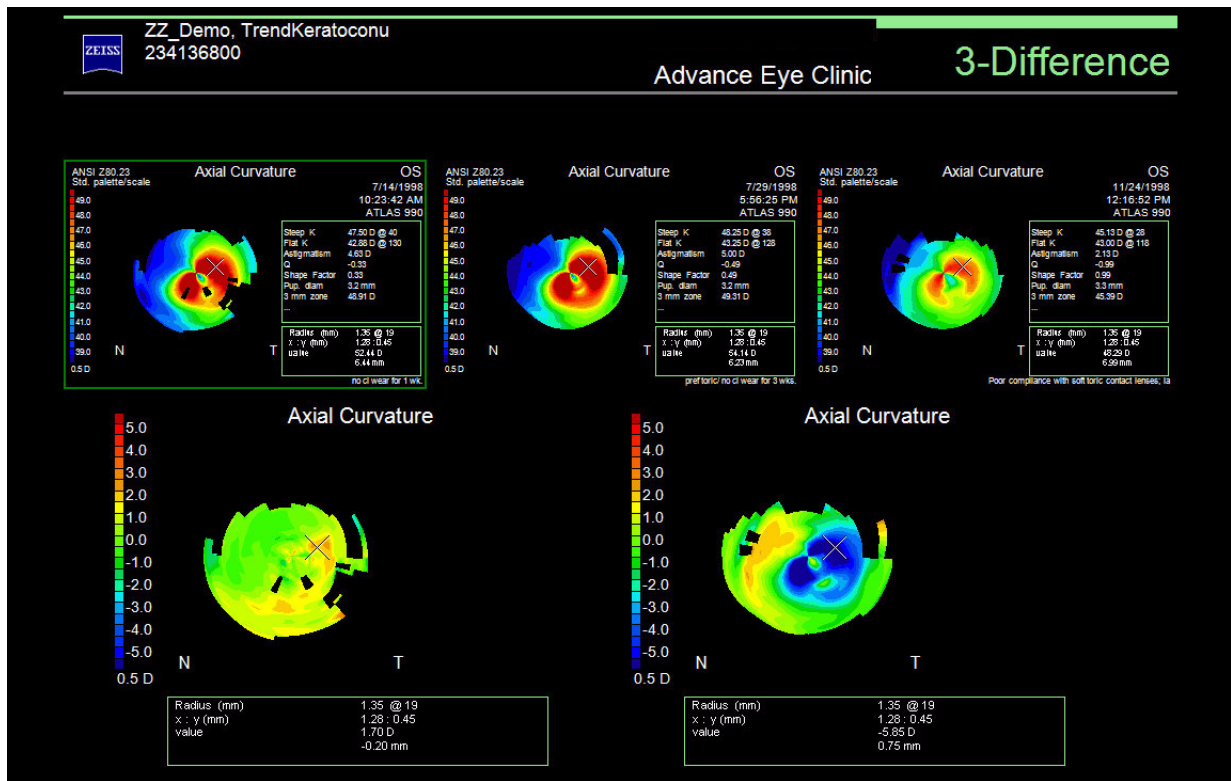


Figure 5-5 3-Difference Display (Exam 1 Selected – Green Border)

- ☞ Note: The difference values calculated may be slightly different than the difference values when calculated on the displayed two decimal values, because the difference values are calculated using a higher number of decimal places, and then rounded.
- ☞ Note: If an image is of **Low** quality, the text "**Unable to display**" will be displayed instead of the exam image and the difference map calculated from it. See [Exam Quality](#) on page 3-11.

Trend with Time

The Trend with Time Display shows the currently active exam and up to three previous exams for the same eye. The exams are always displayed in chronological order (left to right, top to bottom).

You can select the exams to include in the Trend with Time Display in two ways:

1. Select an exam from the **Exams** pop-up SELECT EXAM window (see [Exams List](#) on page 4-6).

or

1. Select the **More (F2)** checkbox to show the EXAMS/VIEW window.
2. Select the **Exams** tab from the EXAMS/VIEW window.
3. In the Exams tab window, select the eye you want to display by clicking the **OD** (Right) or **OS** (Left) radio button. All exams for the selected eye are shown in the Available Exams or Selected Exams list. The Selected Exams list shows exams that are included in the Trend with Time Display. The Available Exams list shows exams that are available, but not currently selected to be included in the Trend with Time Display.
4. To add an exam to the Trend with Time Display, click on an exam in the Available Exams list to move it to the Selected Exams list—the display updates automatically. If the Selected Exams list has 4 exams, you will need to remove an exam from the list before you can add another exam.
5. To remove an exam in the Trend with Time Display, click on an exam in the Selected Exams list to move it to the Available Exams list—the display updates automatically.



Note: If you add or change an exam that would make the Display out of chronological order (left to right, top to bottom), the software will move the exams into chronological order on the Display.

You can select the View for the Trend with Time Display in two ways:

1. Select a View from the **View (F3)** pop-up (see [View \(F3\) Pop-Up Menu](#) on page 4-8).

or

1. Select the **More (F2)** checkbox to show the EXAMS/VIEW window.
2. Select the **View** tab from the EXAMS/VIEW window.
3. In the View tab window, select the View you want from the list by clicking on it—the display updates automatically.

See [Default Views](#) on page 8-5 to set the default View of the Trend with Time Display for the current Parameter Set.

Figure 5-6 shows a Trend with Time Display with View 1 selected (green border).

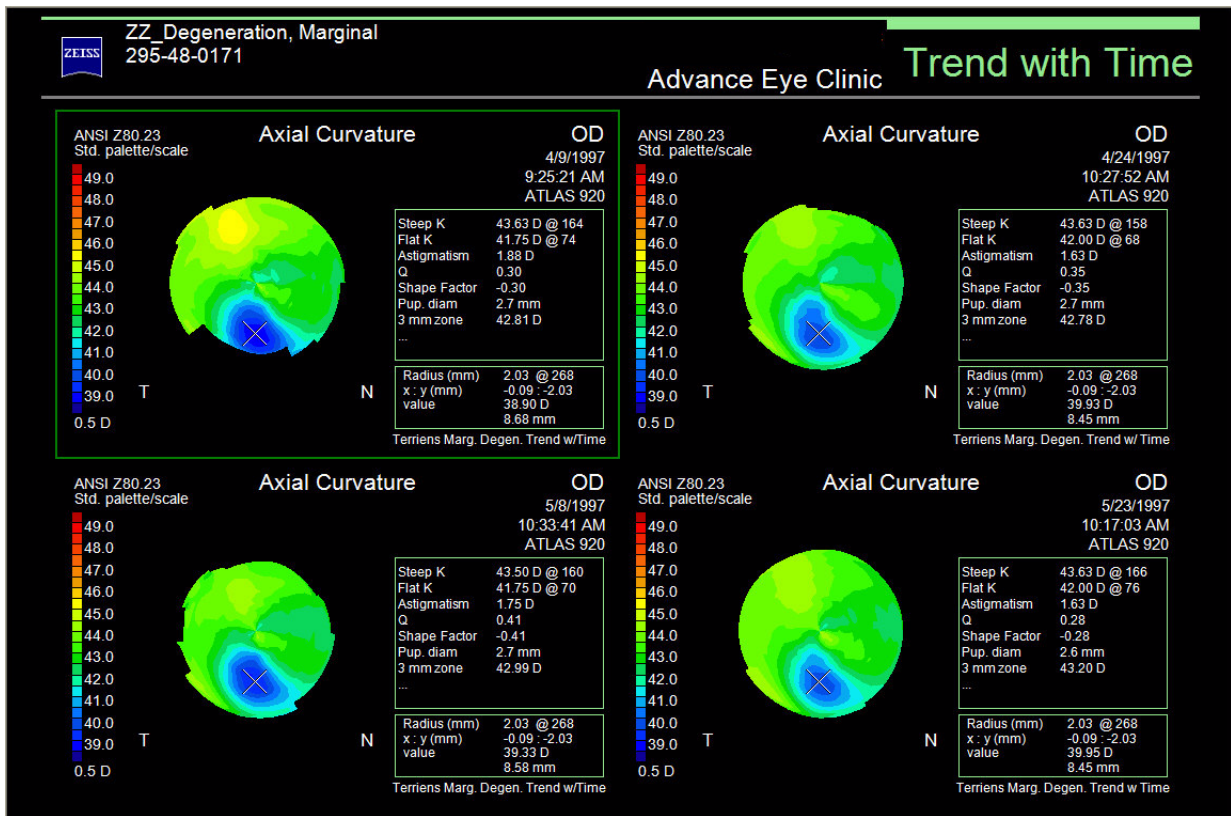


Figure 5-6 Trend with Time Display (View 1 Selected – Green Border)

Trend Analysis

The Trend Analysis Display (Figure 5-7) shows up to four exams for the same eye, along with a table of data analysis parameters. By default, only the current day's exams for the same eye are displayed, if possible. However, you can select any four exams to include in the Trend Analysis Display by selecting them from the Exams pop-up SELECT EXAM window (see Exams List on page 4-6). The exams are always displayed in chronological order (left to right).



Note: If you add or change an exam that would make the Display out of chronological order (left to right, top to bottom), the software will move the exams into chronological order on the Display.

You can select certain Views for the Trend Analysis Display by selecting the View from the View (F3) pop-up (see View (F3) Pop-Up Menu on page 4-8). Only color maps can be viewed. The default display settings are set in the current Parameter Set's Single View setting (see Default Views on page 8-5). The units (mm or Diopters) for the Views are set in the Views menu for the selected Parameter Set. See Views on page 8-7.

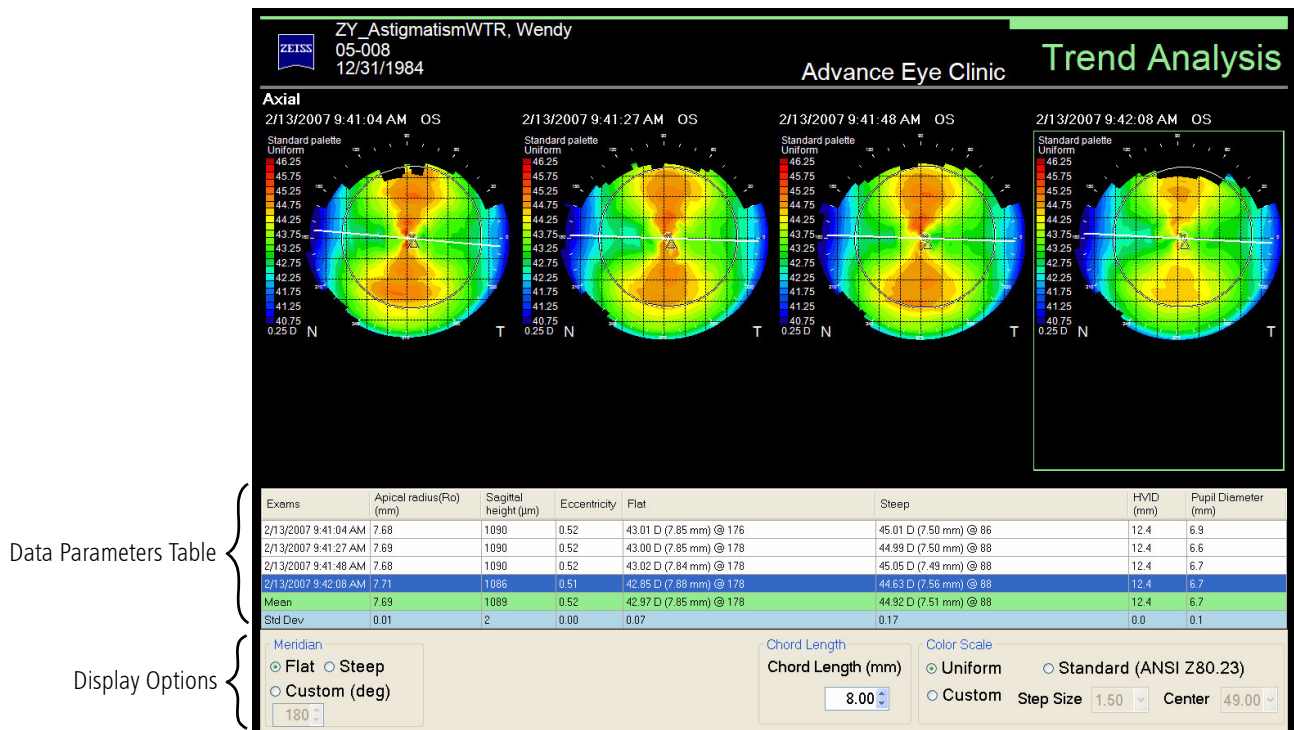


Figure 5-7 Trend Analysis Display

Data Parameters Table

The Trend Analysis Data Parameters Table displays Apical radius (Ro) (along meridian), Sagittal height (along meridian), Eccentricity (along meridian), Flat and Steep Sim K's, HVID, and Pupil Diameter values for each image. The mean and standard deviation values for these parameters are also displayed for the images. See Data on page 7-7 for more information. The blue data line corresponds to the currently selected exam image (green border).

Apical radius (Ro)

Apical radius of curvature, also known as R_0 , or apical curvature, is the radius of curvature of the unique ellipse calculated along a certain meridian (see [Figure 5-8](#)).

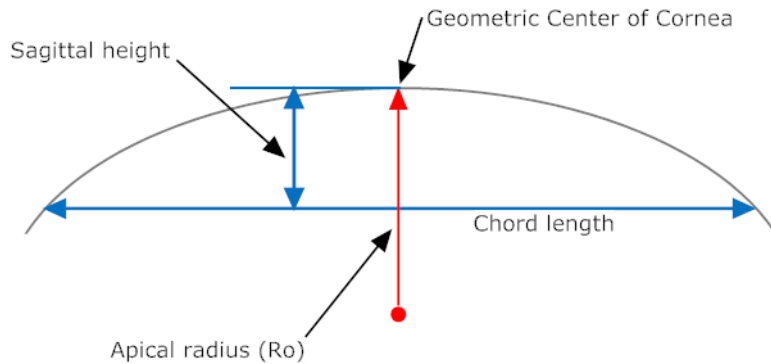


Figure 5-8 Trend Analysis Data Diagram

Sagittal height

The Sagittal height (micrometers) is the height of the cornea measured from the geometric center of the cornea to the specified chord along the selected meridian (see [Figure 5-8](#)).

Display Options**Meridian**

Select a meridian (**Flat**, **Steep**, or **Custom** (0-180 degrees)) for the Data Parameters Table analysis. The default is Flat. The meridian is shown as a white line on each image. Apical radius (R_0), Sagittal height, and Eccentricity values will change for all images.

Chord length

The Chord length is the diameter of the section along which the corneal data is calculated. This can be selected from 2 to HVID in 0.05 mm increments in the drop-down menu (default is 8.0 mm). The smaller the value, the closer to the corneal apex the section is (see [Figure 5-8](#)).

Color Scale

Color Scale parameters for the images can be set here. These are global parameters. If you change any parameter, it will be changed in all other Views that have these parameters after you save the Parameter Set in another Display. See [Color Scale](#) on page 7-5. If your current Color Scale is Auto, it will change to Uniform for all images in the Trend Analysis Display for better comparison (if more than one image, and the View supports it).

Custom

The Custom Display can show four different Views for the selected patient. Any combination of *exams* and Views can be selected. This differs from the Overview Display where all Views are for the *same exam*.

You can select the exams and Views for the Custom Display in two ways:

1. Select a View by clicking on it (a green border indicates the selected View).
2. Select an exam from the **Exams** pop-up list (see [Exams List](#) on page 4-6).
3. Select a View from the **View (F3)** pop-up (see [View \(F3\) Pop-Up Menu](#) on page 4-8).

or

1. Select the **More (F2)** checkbox to show the EXAMS/VIEWS window.
2. Select a View tab (**View 1, View 2, View 3, View 4**) from the EXAMS/VIEWS window by clicking on the tab or clicking on the View in the window. View 1 is displayed at top left, View 2 at top right, View 3 at bottom left, and View 4 at bottom right. A green border indicates the selected View.
3. For each selected View tab (**View 1, View 2, View 3, View 4**), select the View you want in the View tab window from the list by clicking on it—the display updates automatically.
4. Select an Exam tab (**Exam 1, Exam 2, Exam 3, Exam 4**) from the EXAMS/VIEWS window by clicking on the tab. Exam 1 is for View 1, Exam 2 is for View 2, etc.
5. For each selected Exam tab (**Exam 1, Exam 2, Exam 3, Exam 4**) from the EXAMS/VIEWS window, select the exam you want to view from the list of available exams by clicking on it—the display updates automatically. All exams for the selected patient are shown in the list.

See [Default Views](#) on page 8-5 to set the default Views of the Custom Display for the current Parameter Set.

Figure 5-9 shows a Custom Display with View 4 selected (green border).



Figure 5-9 Custom Display (View 4 Selected – Green Border)

PathFinder II (Optional)

PathFinder II is an optional software feature for the ATLAS System designed to assist in identifying abnormal, pathologic, and normal corneas using anterior corneal topography. Please see [\(A\) PathFinder II Corneal Analysis \(Optional\)](#) for a complete discussion of the PathFinder II software.



Note: PathFinder II corneal analysis is only available for ATLAS 9000 exams. PathFinder II will be greyed out and not selectable for ATLAS 900 Series exams.

MasterFit II (Optional)

MasterFit II is an optional software feature for the ATLAS System that incorporates contact lens fitting capabilities. Please see [\(B\) MasterFit II \(Optional\)](#) for a complete discussion of the MasterFit II software.

(6) Views

Chapter Overview

ATLAS supports thirteen different types of Views of the exam image. Views can be customized by using the View Editor on the bottom of the ANALYSIS SCREEN (see [\(7\) View Editor](#)). Default View Editor parameters for each View are set in the current Parameter Set (see [Editing Parameter Sets](#) on page 8-1).

The thirteen Views are described in the following sections of this chapter:

- [Axial Curvature](#), page 6-2
- [Tangential Curvature](#), page 6-4
- [Elevation](#), page 6-6
- [Irregularity](#), page 6-9
- [Rings Image](#), page 6-13
- [Keratometry](#), page 6-16
- [Refractive Power](#), page 6-17
- [Mean Curvature](#), page 6-19
- [Corneal Wavefront](#), page 6-21
- [Image Simulation](#), page 6-24
- [PSF \(Point Spread Function\)](#), page 6-26
- [MTF \(Modulation Transfer Function\)](#), page 6-28
- [PathFinder II \(Optional\)](#), page 6-30

Axial

Tangential
Elevation
Irregularity
Rings Image
Keratometry
Refractive Power
Mean
Corneal Wavefront
Image Simulation
PSF
MTF
PathFinder II
View (F3) ▼

Selecting Views and Exams for Displays

From the ANALYSIS SCREEN you can select Views and Exams in Displays in two ways (for multi-View Displays, click on a View to select it (a green border indicates the selected View)):

- click the **View (F3)** and **Exams** pop-ups (see [View \(F3\) Pop-Up Menu](#) on page 4-8 and [Exams List](#) on page 4-6).
- click the **View** or **Exams** tab on the EXAMS/VIEWS window when the **More (F2)** checkbox is checked (see [Analysis Screen with the More \(F2\) Button Enabled](#) on page 4-5).

For more information on the ANALYSIS SCREEN and selecting a patient, see [Analysis Screen](#) on page 4-3.



Note: If an image is of **Low** quality, the text **“Unable to display”** will be displayed instead of the exam image for all Views except the Rings Image View. See [Exam Quality](#) on page 3-11.

Axial Curvature

The Axial View (Figure 6-2) displays the axial curvature of the cornea as a topographical view, using 23 colors to represent dioptric power or mm radius. The Axial View is a simple way of describing the overall shape of the cornea, and even though the values can be displayed as diopters, the Axial View is actually a calculation of curvature, instead of “true” refractive power, when displayed as diopters (keratometric diopters). The color-coded display visually corresponds to the “flat” and “steep” axes well known to keratometry users.

Axial Views naturally incur more smoothing when measuring the corneal surface towards the periphery, and may not be able to show more subtle changes, as can the Tangential View. Because it shows a “perfect sphere” as flat, the Axial View is unable to take into account the phenomenon known as *spherical aberration*.

The Axial View treats every single data point as if the whole cornea would be a sphere that matches the local slope and position of every data point. The Axial View has been established in the field, but it does not really represent the local curvature. Use the Tangential View for a better representation of true local curvature.

The distance (R) from the point of interest on the corneal surface to the optical axis defines the axial radius of curvature (Figure 6-1).

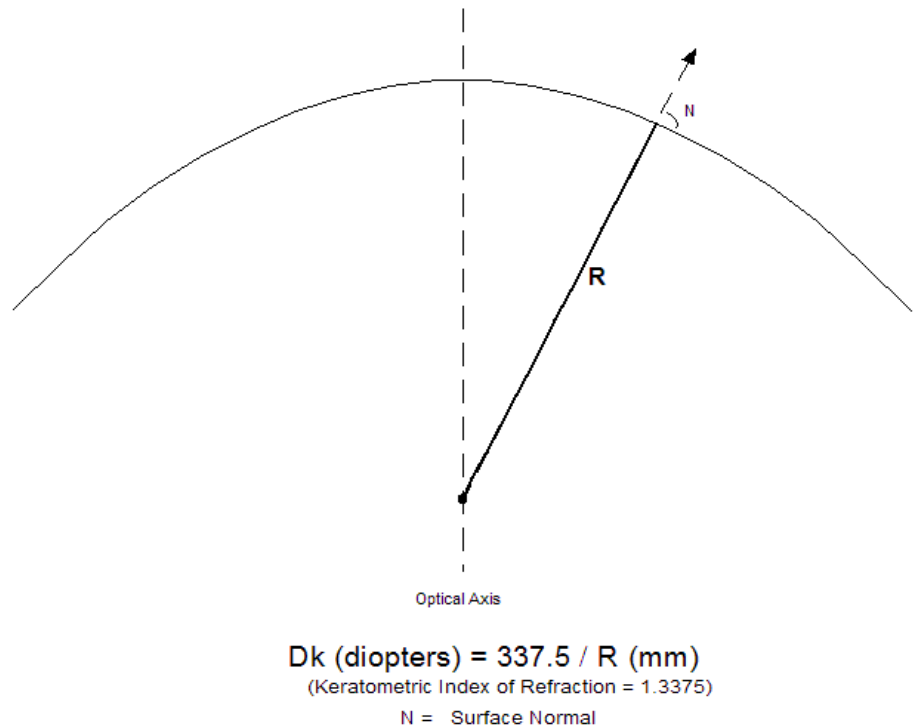


Figure 6-1 Axial Curvature / Power

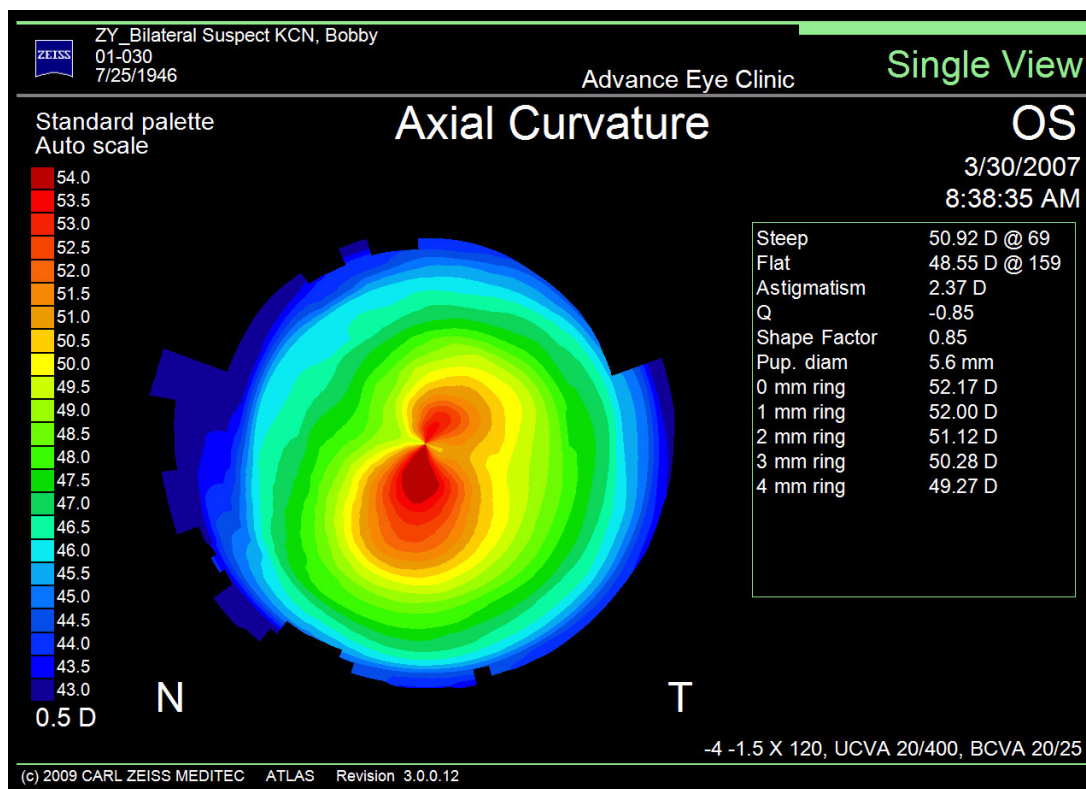


Figure 6-2 Axial View – Color View

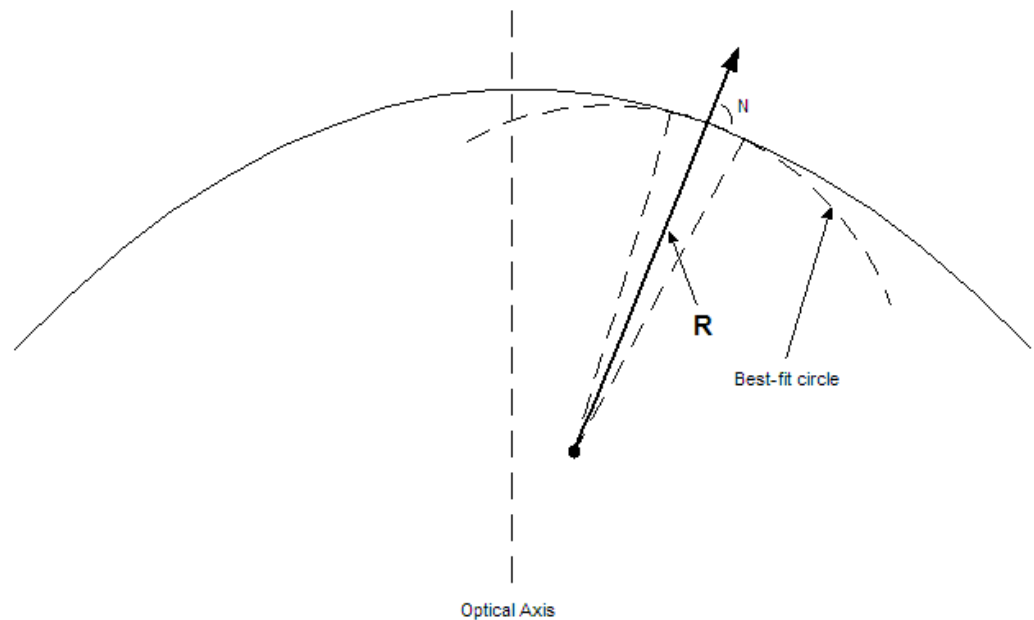
All parameters for the Axial View Editor are discussed in (7) View Editor.

Tangential Curvature

The Tangential View (Figure 6-4) displays the cornea as a topographical view, but bases the calculation on the local curvature of a given meridian, and thus shows more detail than the Axial View.

The Tangential View bases its calculation on a different mathematical approach or algorithm and is also known as instantaneous or local curvature. This algorithm is more accurate at calculating the periphery of the cornea. The Tangential View may also recognize sharp transitions in power more easily, and eliminates the “smoothing” appearance of the topographical view as seen in the axial or sagittal view. This is often useful in following healing trends after surgery or in viewing pathologic eyes. The Tangential View is helpful for locating the size, shape, and position of specific features on the corneal surface, such as the apex of corneal steepening in keratoconus, boundaries of a treatment zone after corneal refraction surgery, pterygia, and corneal scarring.

The Tangential View does not force the center of curvature of the best-fit sphere to lie along the optical axis. The location of the center of curvature for each point is calculated by a best-fit sphere to the local neighborhood at the point of interest on the corneal surface. The distance (R) from the point of interest to the center of the locally best-fit sphere represents the tangential (or instantaneous) curvature (Figure 6-3).



$$Dk \text{ (diopters)} = 337.5 / R \text{ (mm)}$$

(Keratometric Index of Refraction = 1.3375)

N = Surface Normal

Figure 6-3 Tangential Curvature

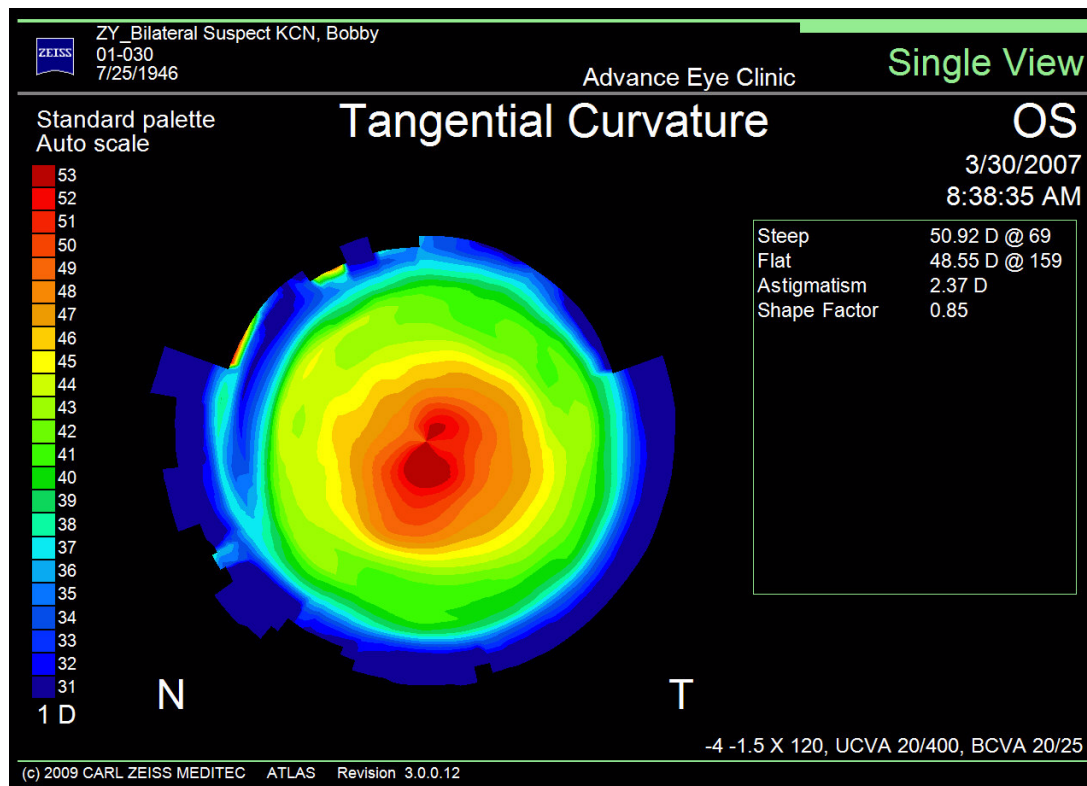


Figure 6-4 Tangential View – Color View

All parameters for the Tangential View Editor are discussed in [\(7\) View Editor](#).

Elevation

The Elevation View (Figure 6-5) displays the difference in height or elevation of the cornea, in micrometers (μm), from a reference sphere. ATLAS then fits, or superimposes, this reference sphere onto the corneal surface, measuring the difference between the reference and the real corneal surface. Elevation is measured as differences in height from the reference sphere as positive and negative micrometers. The reason for this is that the corneal surface can fall above (positive, red color in the Standard Colors) or below (negative, blue color in the Standard Colors) the best-fit reference sphere.

The reference sphere can either be automatically computed or with parameters entered by the user.

It is important to keep in mind that the measurement is in micrometers, not diopters, and that Axial and Elevation Views cannot be directly compared. The value of measuring the corneal surface in micrometers is that small elevations or depressions on the corneal surface created by surgery or pathology can be carefully documented in micrometers of measurement, giving a level of detail not possible using the curvature views.

Because the shape of the normal cornea is aspheric (ellipsoidal) rather than spherical, it is sometimes still hard to single out subtle deviations in elevation maps. Besides the problem of the non-spherical shape of the normal cornea, which makes it difficult to identify subtle pathological variants in the Elevation View, non-pathologic corneal shape changes, like astigmatism, can also wash out subtle shape abnormalities.



Figure 6-5 Elevation View – Color View

The Elevation View can also be viewed as a Surface (Figure 6-6) or Zernike table (Figure 6-7) by selecting those views in the View As... section on the General tab.

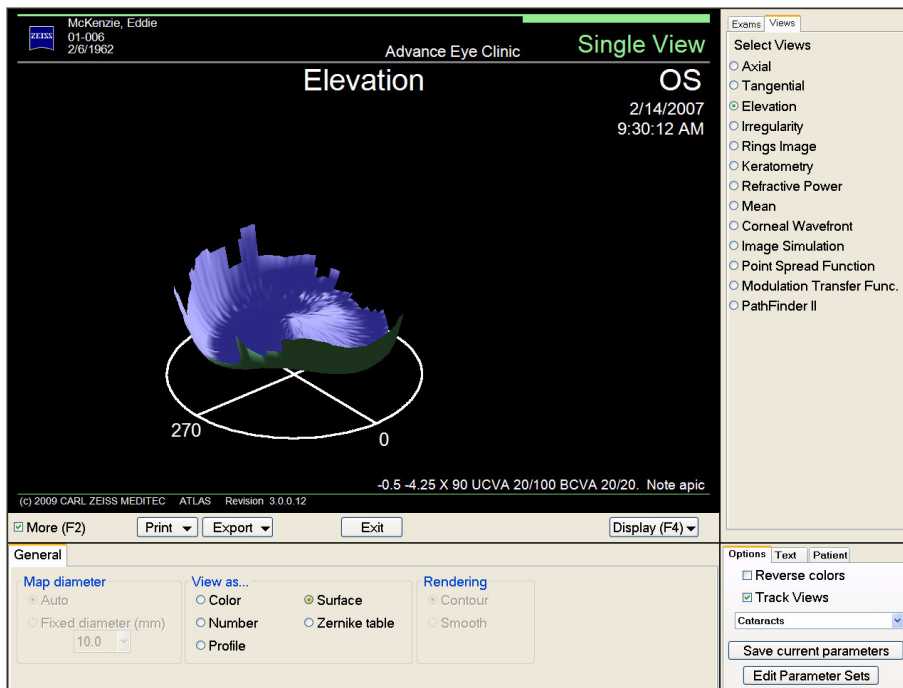


Figure 6-6 Elevation View Editor – Surface View



Figure 6-7 Elevation View Editor – Zernike Table View

The Zernike table view displays the names (up to order 4) and values of the Zernike coefficients, along with horizontal bar graphs of the Zernike coefficients values (note that bars for orders 1 and 2 are graphed on a larger scale than the other order coefficients).

Data

The Data tab on the Elevation View Editor ([Figure 6-8](#)) contains one surface data parameter that can be displayed:

RMS fit

Checking this will display the RMS fit parameter value. The Root Mean Square (RMS) fit value, measured in micrometers, determines how much the actual corneal surface varies from the smooth-fitted spherical surface. The higher the RMS fit value, the higher the variation. RMS fit only uses image data set by the Fit Zone parameter (see below).

The screenshot shows the 'Data' tab of the Elevation View Editor. The 'RMS fit' checkbox is checked. Other parameters include TKM (checked), Sim K's (unchecked), Eccentricity (unchecked), Shape factor (checked), Q (checked), CIM (checked), Pupil diameter (unchecked), and HVID (unchecked). A sub-panel titled 'Averages' is visible, showing radio buttons for 'Ring' (selected) and 'Zone' (unchecked), and checkboxes for various diameters: 0 mm, 1 mm, 2 mm, 3 mm, 4 mm, 5 mm, 6 mm, 7 mm, and 8 mm.

Figure 6-8 Elevation View Editor – Data Tab

Surface Fit

The screenshot shows the 'Surface Fit' tab of the Elevation View Editor. The 'Fit Zone (mm)' is set to 'Automatic'. The 'Reference Sphere Radius (mm)' is also set to 'Automatic', with a 'Radius' field showing '7.8'.

Figure 6-9 Elevation View Editor – Surface Fit Tab

Fit Zone

The Fit Zone defines the diameter of the zone used to fit the sphere to the surface.

Select **Automatic** to let the software determine the Fit Zone (the fit is over all data in the exam). To define a zone, select **Custom** and click on the pop-up menu to select a number (mm diameter of zone, centered on corneal vertex).

Reference Sphere Radius

The Reference Sphere Radius defines the radius of the sphere used to fit the sphere to the surface.

Select **Automatic** to let the software determine the radius (the fit is over all data in the exam). To define the radius, select **Custom** and enter a reference sphere radius in mm in the **Radius** field. Press the **Enter** or **Tab** key to update the display.

Other parameters for the Elevation View Editor are discussed in [\(7\) View Editor](#).

Irregularity

The Irregularity View takes the best-fit surface methodology of the Elevation View further by using non-spherical surfaces as the reference object. The Irregularity View shows the amount of surface irregularity on the cornea—which areas are divots or depressions and which areas are elevations or islands. A best-fit toric ellipsoid surface is subtracted from the corneal elevation data to yield the irregularity that cannot be described by a reference ellipsoid that accounts for the asphericity and toricity of the cornea.

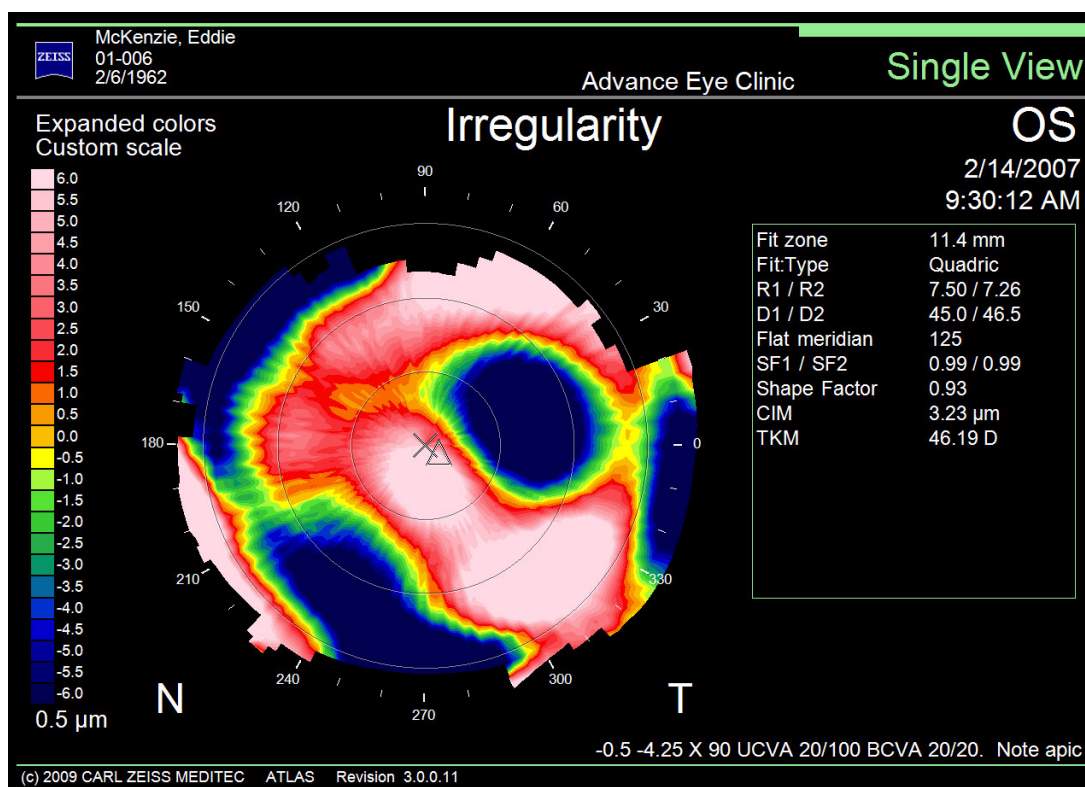


Figure 6-10 Irregularity View – Color View

Use the Irregularity View to show how *different* the cornea is from a *normal* eye. It has been shown that normal eyes can be represented very well by a general ellipsoid¹ (see Figure 6-11) or a mid-order Zernike fit. The Irregularity View shows the elevation difference between the “normal” best-fit ellipsoid surface and the actual measured corneal surface.



Note: A “general ellipsoid” is a sphere that is scaled in x, y, z, moved (translated) anywhere in x, y, z, and rotated arbitrarily along its principal meridians (pitch, yaw, tilt).

1. *Optics of the average normal cornea from general and canonical representations of its surface topography.* J Opt Soc Am A Opt Image Sci Vis. 2006 Feb; 23(2):219-32.

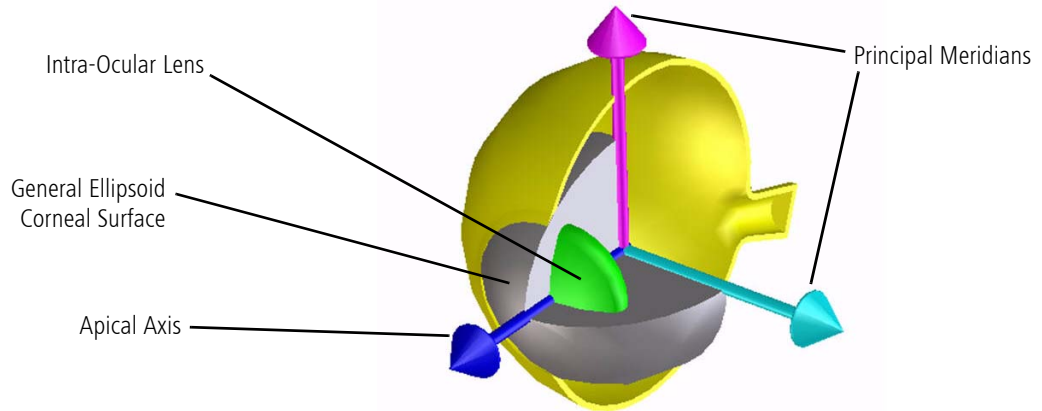


Figure 6-11 3-D Model with General Ellipsoid as Corneal Surface

The Irregularity View can also be viewed as a Surface (Figure 6-6) by selecting it in the View As... section on the General tab.

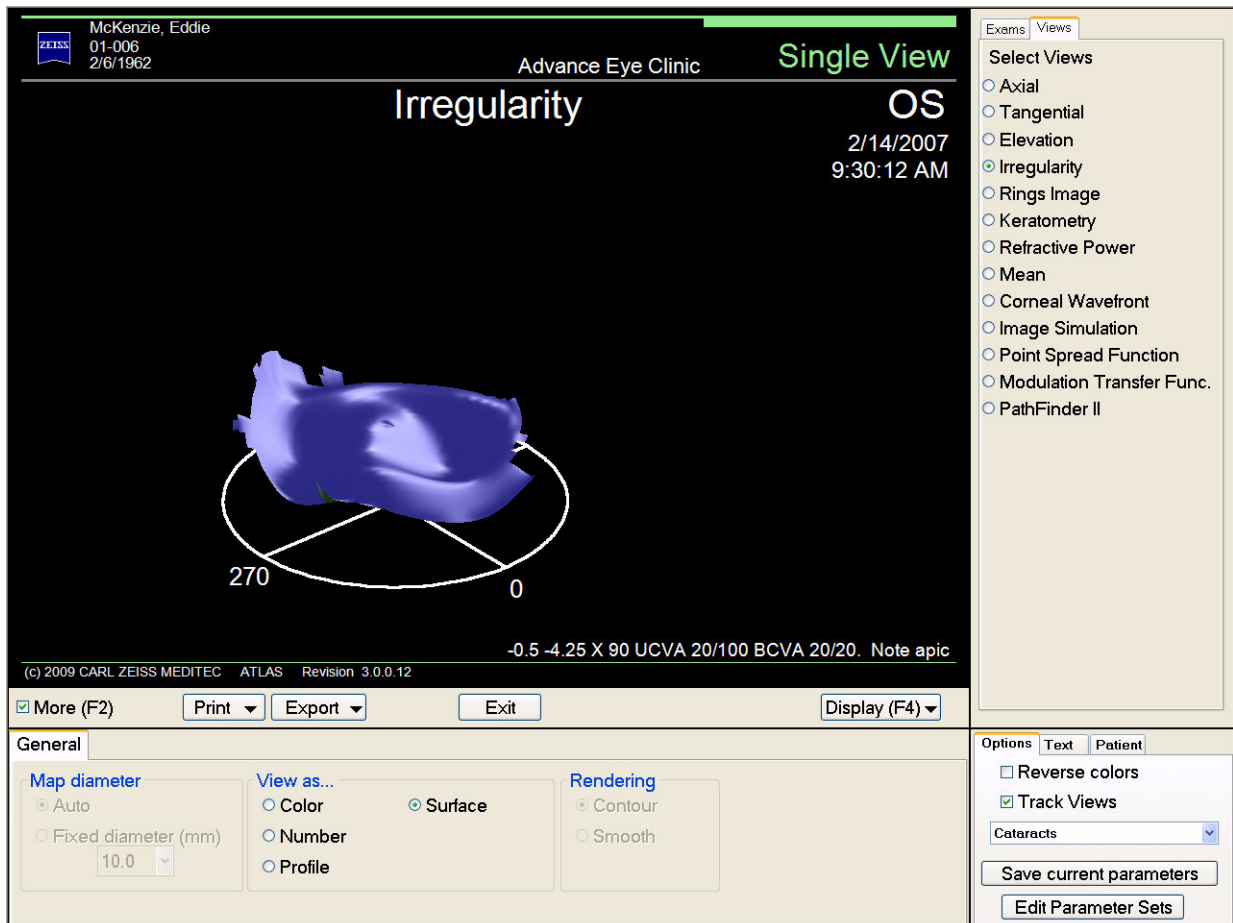


Figure 6-12 Irregularity View Editor – Surface View

Data

The Data tab on the Irregularity View Editor (Figure 6-13) contains one surface data parameter that can be displayed:

RMS fit

Checking this will display the RMS fit parameter value. The Root Mean Square (RMS) fit values, measured in micrometers, determines how much the actual corneal surface varies from the smooth-fitted non-spherical surface. The higher the RMS fit value, the higher the variation. RMS fit only uses image data set by the Surface Fit parameters (see below).

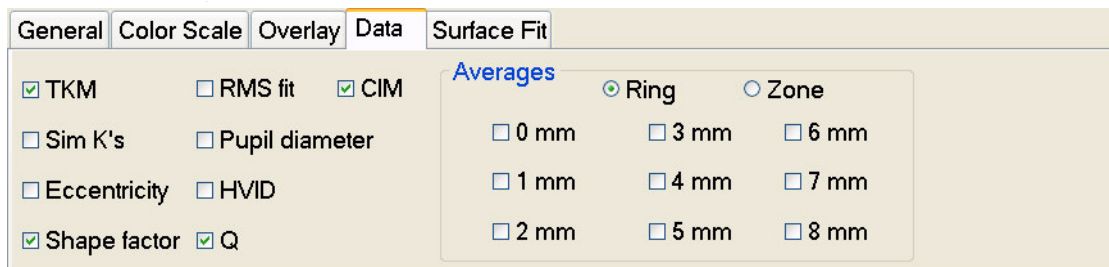


Figure 6-13 Irregularity View Editor – Data Tab

Surface Fit

Surface Fit parameters specify the surface used to compute the difference between it and the elevation data. You can select the reference surface to be a General Ellipsoid (Quadric) or a Zernike polynomial expansion. The reference surface can either be automatically computed or with parameters entered by the user. For the Zernike expansion fit, both number of coefficients (Order) and Fit Zone can be specified by the user. The Zernike coefficients are computed automatically and can be displayed.

The Surface Fit tab displays the parameters shown in Figure 6-14 below.

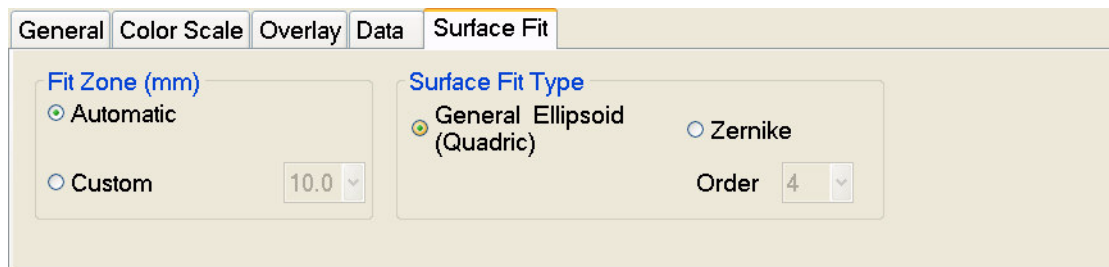


Figure 6-14 View Editor – Surface Fit Tab

Fit Zone

The Fit Zone defines the diameter of the zone used to fit the model to the surface.

Select **Automatic** to let the software determine the Fit Zone (the fit is over all data in the exam). To define a zone select **Custom** and click on the pop-up menu to select a number (mm diameter of zone, centered on the corneal vertex).

Surface Fit Type

The Surface Fit Type selects the surface used in the Irregularity View.

Select **General Ellipsoid (Quadric)** to select this ellipsoid, or **Zernike** for a Zernike polynomial expansion.

If you select **Surface fit** on the **Data** tab for the General Ellipsoid, ellipsoid parameters will be displayed (see [Table 6-1](#) below).

Table 6-1 General Ellipsoid (Quadric) Parameters

Parameter	Description
R1 / R2	Apical radius in mm for principal meridians of ellipsoid
D1 / D2	Apical diopters for principal meridians of ellipsoid
Flat meridian	Angle of the flat principal meridian
SF1 / SF2	Shape Factors at principal meridians of ellipsoid

When selecting Zernike, also select the number of coefficients from the **Order** pop-up menu. If you select **Surface fit** on the **Data** tab for the Zernike Surface Fit Type, the number of coefficients and Order number will be displayed.

All other parameters for the Irregularity View Editor are discussed in [\(7\) View Editor](#).

Rings Image

The Rings Image View (Figure 6-15) or “Photokeratoscopic Image” displays the actual captured image of the eye with the reflected rings. Captured Scotopic (no light, large pupil) and Photopic (with light, small pupil) images may also be displayed if captured.

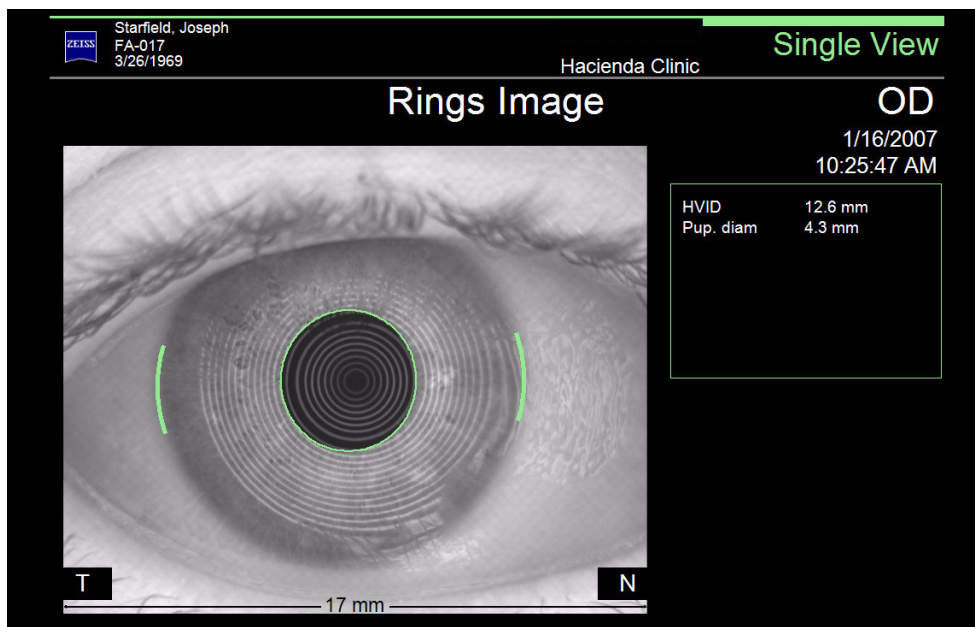


Figure 6-15 Rings Image View – Rings Image

A Scotopic pupil (Figure 6-16) or Photopic pupil (Figure 6-17) image can be displayed by selecting those views in **View As...** on the General tab (Figure 6-18) of the View Editor.



Figure 6-16 Rings View Editor – Scotopic Pupil View

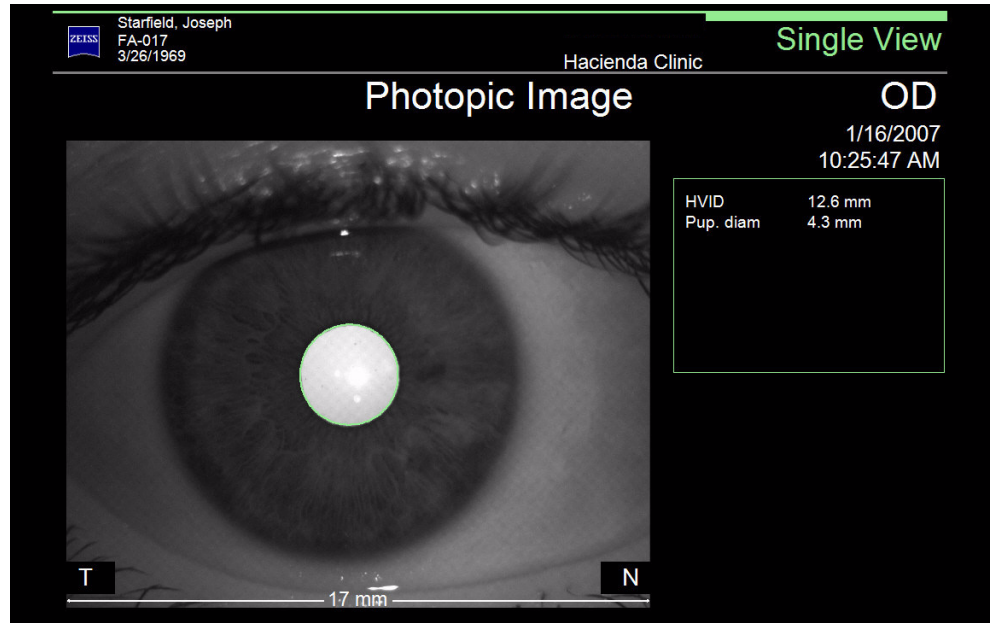


Figure 6-17 Rings View Editor – Photopic Pupil View

The View Editor tabs for the **Rings Image View** are shown below.

General

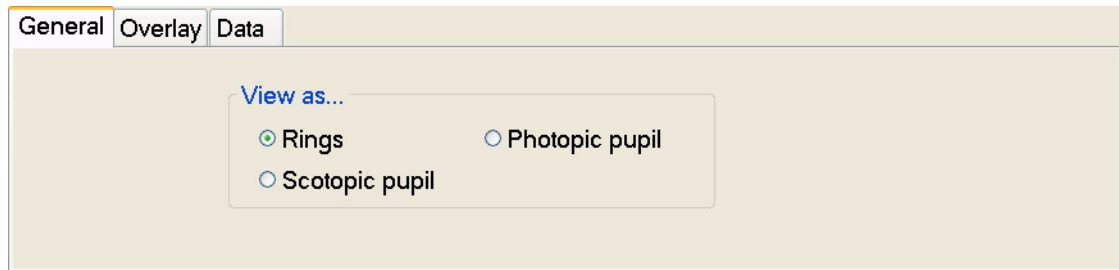


Figure 6-18 Rings Image View Editor – General Tab

In addition to the Rings image, the Rings Image View can also display a Scotopic pupil or Photopic pupil image if you have taken those images at image acquisition. See [Exams](#) on page 8-9 to turn on/off the capture of Scotopic and/or Photopic images for a Parameter Set.

Overlay

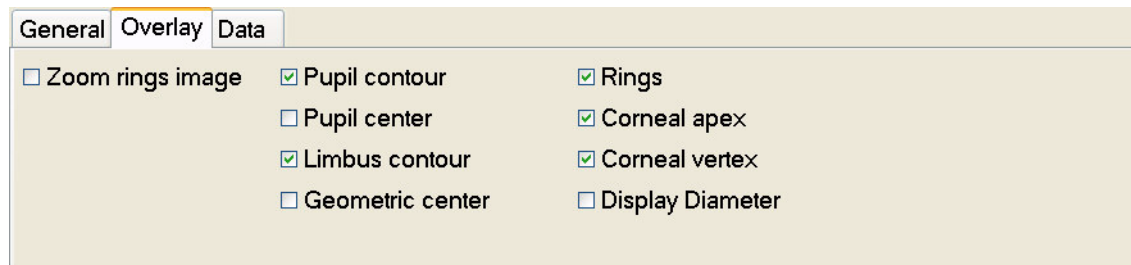


Figure 6-19 Rings Image View Editor – Overlay Tab

Zoom rings image – Check this to display a zoomed in rings image to 10mm. Only available for ATLAS 9000 exam. Does not work for Photopic, Scotopic, or low quality image.

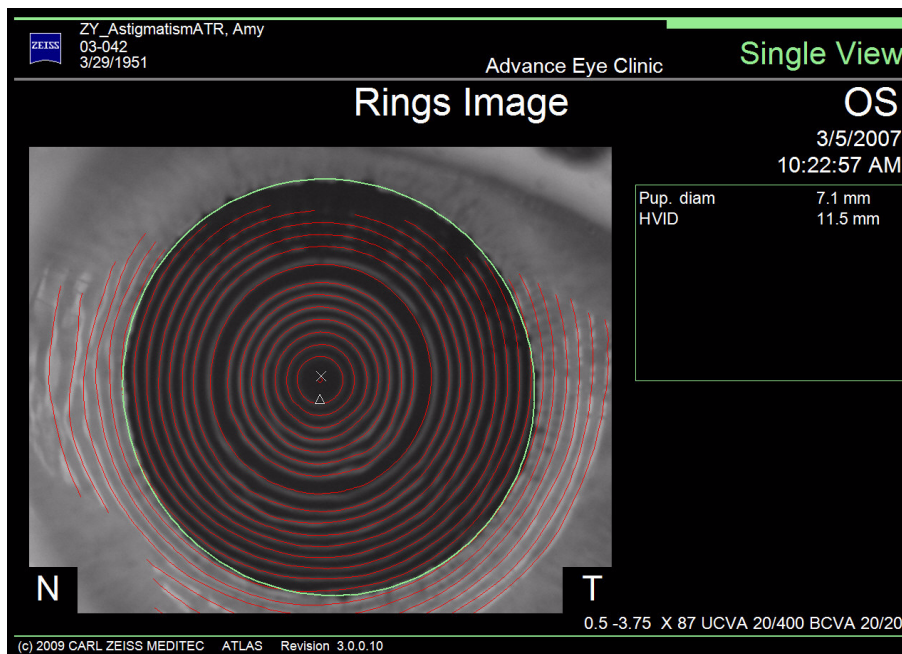


Figure 6-20 Rings Image View – Rings Image (Zoomed In, with Rings)

Limbus contour – Check this to turn on the green display marking the location and size of the limbus contour.

Geometric center – Check this to display a crosshair enclosed by a circle denotes the point on the cornea corresponding to the center of the limbus contour.

Rings – Check this to display the red rings overlay (detected ring edges).

All other Overlay parameters for the Rings View Editor are discussed in [\(7\) View Editor](#). See [Overlay](#) on page 7-6.

Data

General	Overlay	Data
<input checked="" type="checkbox"/> Pupil diameter	<input checked="" type="checkbox"/> HVID	
<input type="checkbox"/> Pupil center offset	<input type="checkbox"/> Geometric center offset	
<input type="checkbox"/> Scotopic pupil diameter		
<input type="checkbox"/> Photopic pupil diameter		

Figure 6-21 Rings Image View Editor – Data Tab

Scotopic pupil diameter – The scotopic pupil diameter in mm can be displayed.

Photopic pupil diameter – The photopic pupil diameter in mm can be displayed.

Geometric center offset – The geometric center offset in mm can be displayed.

Other Data parameters for the Rings View Editor are discussed in [\(7\) View Editor](#). See [Data](#) on page 7-7.

Keratometry

The Keratometry View (Figure 6-22) provides information simulating the data obtained using a Keratometer. This view also provides readings for each semi-meridian in three zones:

- Central (0-3 mm)
- Midperiphery (3-6 mm)
- Periphery (6-9 mm)

The steepest semi-meridians in each zone are displayed in red diopter values; the flattest meridian in blue diopter values.

The data is listed by semi-meridian and zone on the left of the screen. The simulated Keratometer values at the top left of the display are computed in a similar way to the computations performed by Keratometers commonly used to measure the central 3 mm, assuming the principal axes have a 90 degree shift.

Eccentricity values are also displayed for meridians at 0, 10, 15, 25, and 30 degrees.

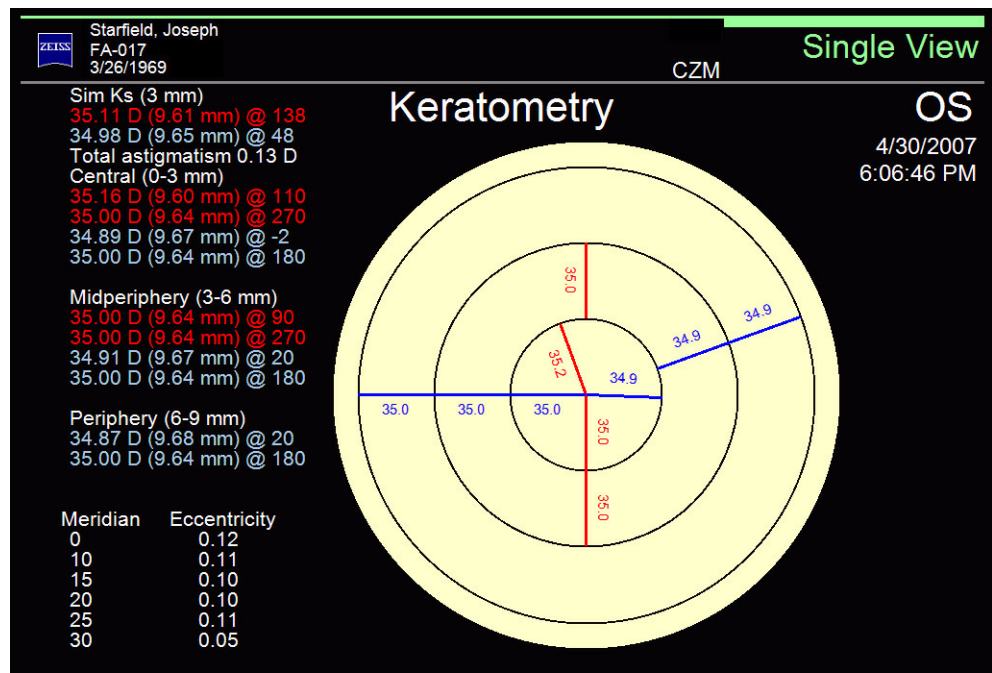


Figure 6-22 Keratometry View

The Keratometry View has only one parameter to edit in the View Editor:

Show Eccentricities – Check this to display the table of meridians and eccentricities.

Refractive Power

The Refractive Power View (Figure 6-24) shows the power of the eye in its refractive state, measured only in diopters. Sometimes called a “Snell’s Law Map”, this view measures the refraction of light rays, using Snell’s Law, as they pass through the corneal surface. Taking into account spherical aberration, the Refractive Power View more closely illustrates how light rays behave as they strike an aspheric surface, such as the human cornea. Figure 6-23 shows an example corneal surface which has increasing refractive power from the center to the periphery, demonstrating spherical aberration. Parallel light rays (A, B, C) striking the corneal surface are refracted. Ray C has the greatest refractive power since it crosses the optical axis at the shortest focal distance, c. Rays B and A have larger focal lengths, respectively, (b and a), and therefore have the least refractive power.

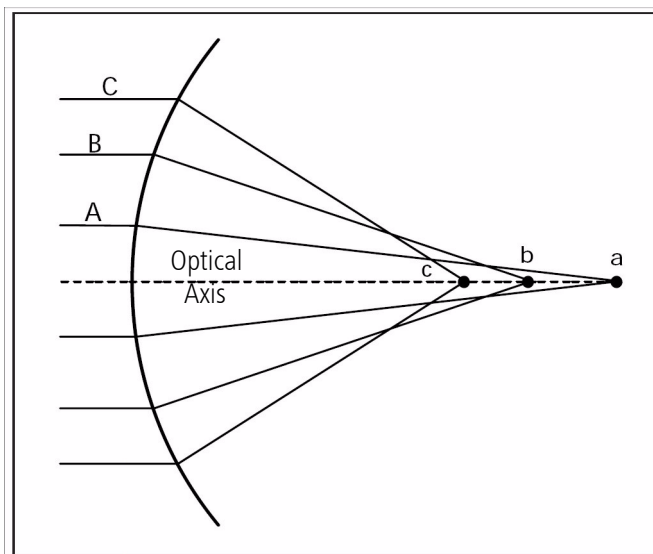


Figure 6-23 Refractive Light Geometry

Refractive Power Views may differ from Axial Views in their readings of power and radius for the same exam. The biggest difference can be seen in the periphery and on eyes that have unusual or abnormal shapes. This is due to the spherical aberration effect that Refractive Power Views take into account.

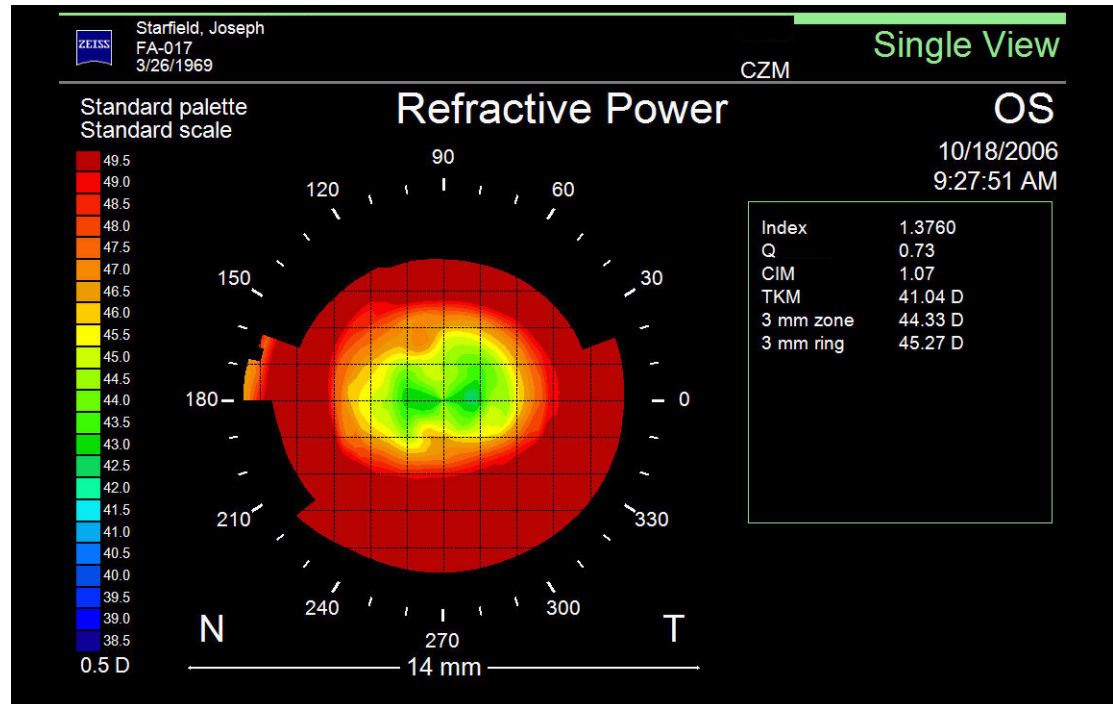


Figure 6-24 Refractive Power View – Color View

All parameters for the Refractive Power View Editor are discussed in [\(7\) View Editor](#).

Mean Curvature

The Mean View (Figure 6-25) is the average curvature of the two principal curvatures for any given point on the cornea. Whereas Axial and Tangential Views are defined along individual meridians (or slices of the cornea), the Mean View contains curvature information along both the radial and azimuthal directions of every single data point. The Mean curvature is the average curvature in all directions around the data point, whereas Axial and Tangential curvature is only along the semi-meridian. As a result, the Mean View suppresses corneal astigmatism and is insensitive to patient fixation. The advantage of the Mean View is that it may better detect subtle shape abnormalities, since it is a more faithful description of three-dimensional shape and has the ability to suppress some non-pathological features (such as corneal astigmatism) while preserving pathological features such as keratoconus.

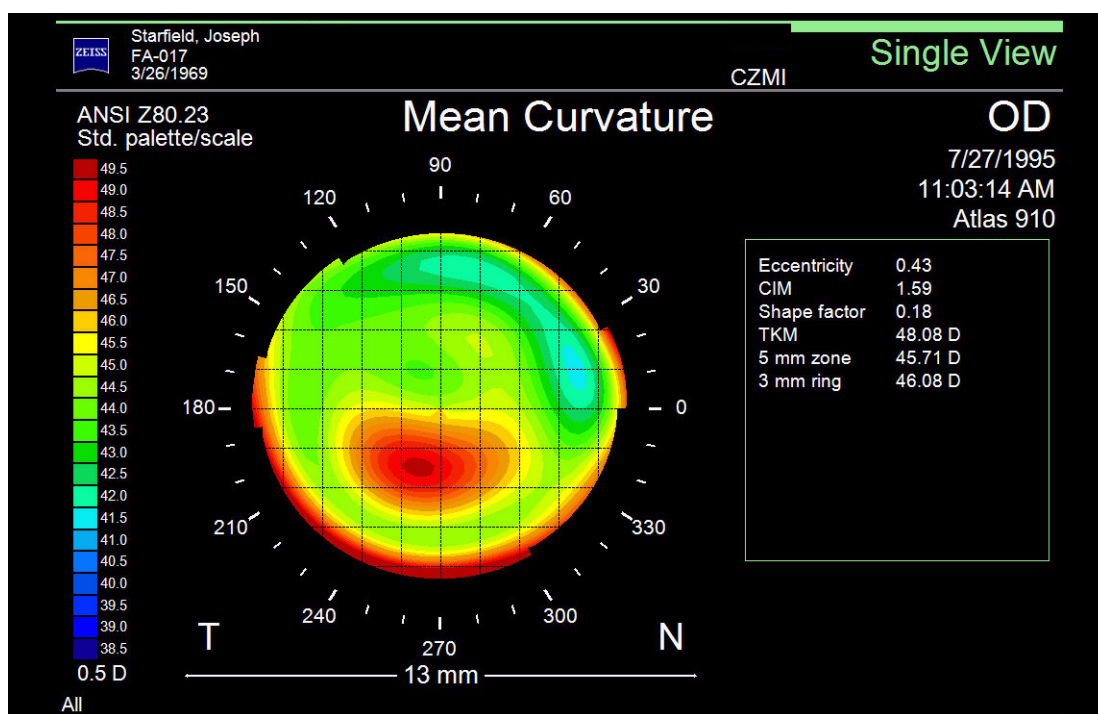


Figure 6-25 Mean View – Color View

Figure 6-26 shows an OD/OS Display comparison of a normal WTR astigmatism patient with an Axial Curvature View on the top and a Mean Curvature View on the bottom. Notice the normal WTR pattern on the Axial Curvature View. However, the Mean Curvature View eliminates the corneal astigmatism from the map through local averaging, which is

independent of a reference axis, unlike the Axial Curvature View, which is meridian specific and whose reference is the vertex, or center of the map.

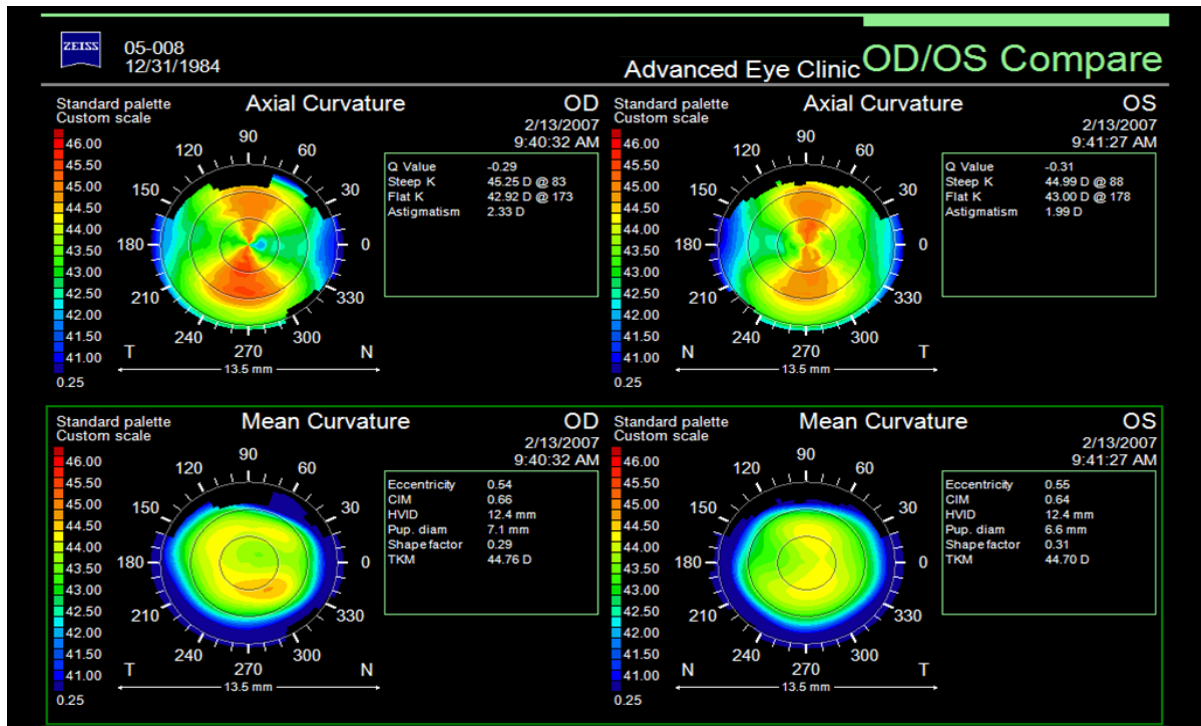


Figure 6-26 OD/OS Comparison of Axial and Mean Curvature Views

Compared to the Axial Curvature View, the Mean Curvature View is not dependent on the location of a central axis, less sensitive to patient fixation, suppresses some non-pathological features (such as corneal astigmatism), and is a more faithful description of a three-dimensional shape.

All parameters for the Mean View Editor are discussed in (7) [View Editor](#).

Corneal Wavefront

The Corneal Wavefront View ([Figure 6-27](#)) displays corneal wavefront aberrations. Corneal wavefront is the part of the total aberrations of the eye contributed by the cornea.

$$\text{Corneal Wavefront (CW)} = \text{Ocular Wavefront (OW)} - \text{Internal Wavefront (IW)}$$

The corneal wavefront is calculated from corneal topography by using an algorithm that incorporates the shape of the cornea using ray tracing technology to trace light rays from the fovea out of the eye. Wavefront aberration is measured as the difference from a plane surface, at the entrance pupil. This optical path difference, the basis of corneal wavefront theories, is the difference between the corneal wavefront and an ideal wavefront.

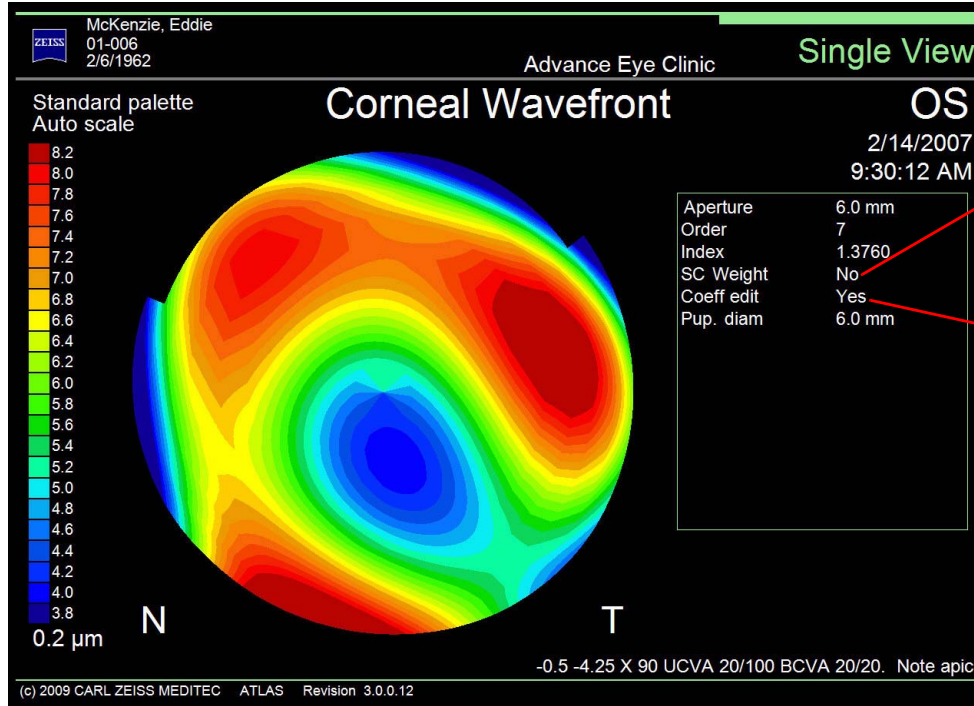
Total aberration of the eye as measured by wavefront aberrometers depend on:

1. Size of pupil – If the pupil opens only 5 mm, then the map generated is only 5 mm.
2. Effect of Accommodation – Introduces another factor into ocular wavefront (i.e the effect of the lens on the wavefront). As the lens changes shape to accommodate, it itself induces aberrations.

Corneal wavefront aberrations are:

1. Relatively stable over time and serial measurements.
2. Can be evaluated for different pupil diameters.
3. Not affected by accommodation.
4. Does not provide any information about the refractive error of the eye (no spectacle lens prescriptions possible!)

You can use the Wavefront View Editor ([Wavefront](#) on page [7-14](#)) to select coefficients to remove. You can also enable or disable the use of a Stiles-Crawford weighting (see [Stiles-Crawford effect](#) on page [7-14](#)) in the calculation of the aberrations.



If you check **Stiles-Crawford effect**, **SC Weight** will display **Yes**.

If any Wavefront coefficients are masked in the View Editor, **Coeff edit** will display **Yes**.

Figure 6-27 Corneal Wavefront View – Color View

The Corneal Wavefront View can also be viewed as a **Surface** (Figure 6-28) or **Zernike table** (Figure 6-29) by selecting those views in **View As...** on the General tab of the View Editor.

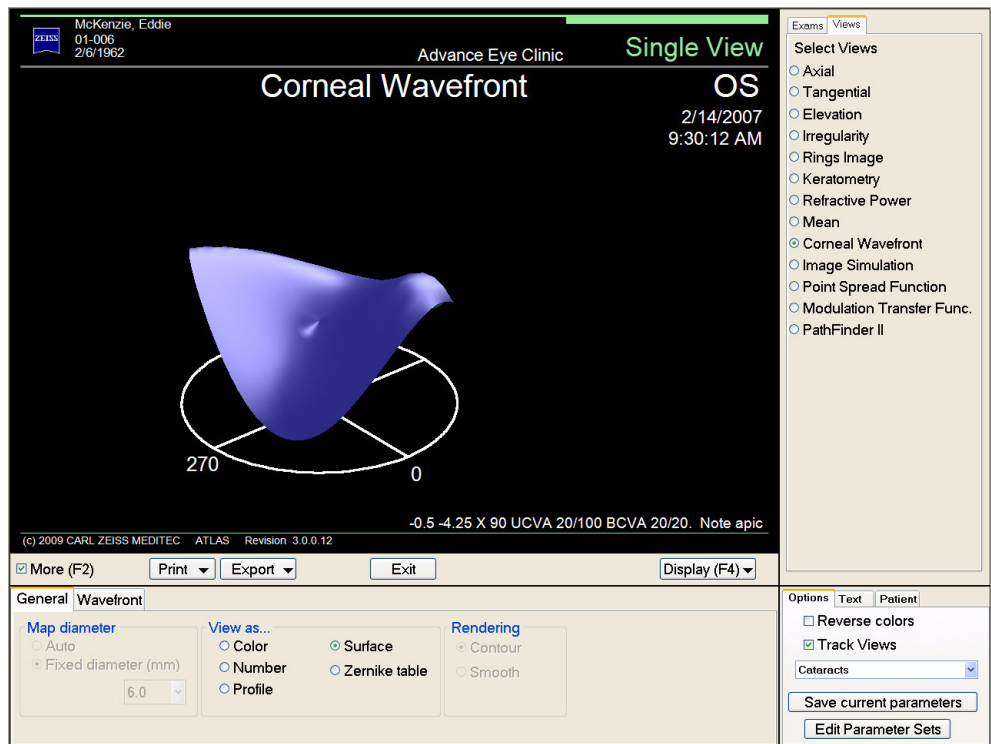


Figure 6-28 Corneal Wavefront View Editor – Surface View



Figure 6-29 Corneal Wavefront View Editor – Zernike Table View

The Zernike table view displays the names (up to order 4) and values of the Zernike coefficients, along with horizontal bar graphs of the Zernike coefficients values (note that bars for orders 1 and 2 are graphed on a larger scale than the other order coefficients).

Other Corneal Wavefront parameters are discussed in (7) View Editor.

Image Simulation

The Image Simulation View displays a corneal focal plane image simulation based upon the corneal PSF (Point Spread Function). Images available for use in the simulation include an “E” image (Figure 6-30), an eye chart (Figure 6-32), and a beach scene image (Figure 6-33).

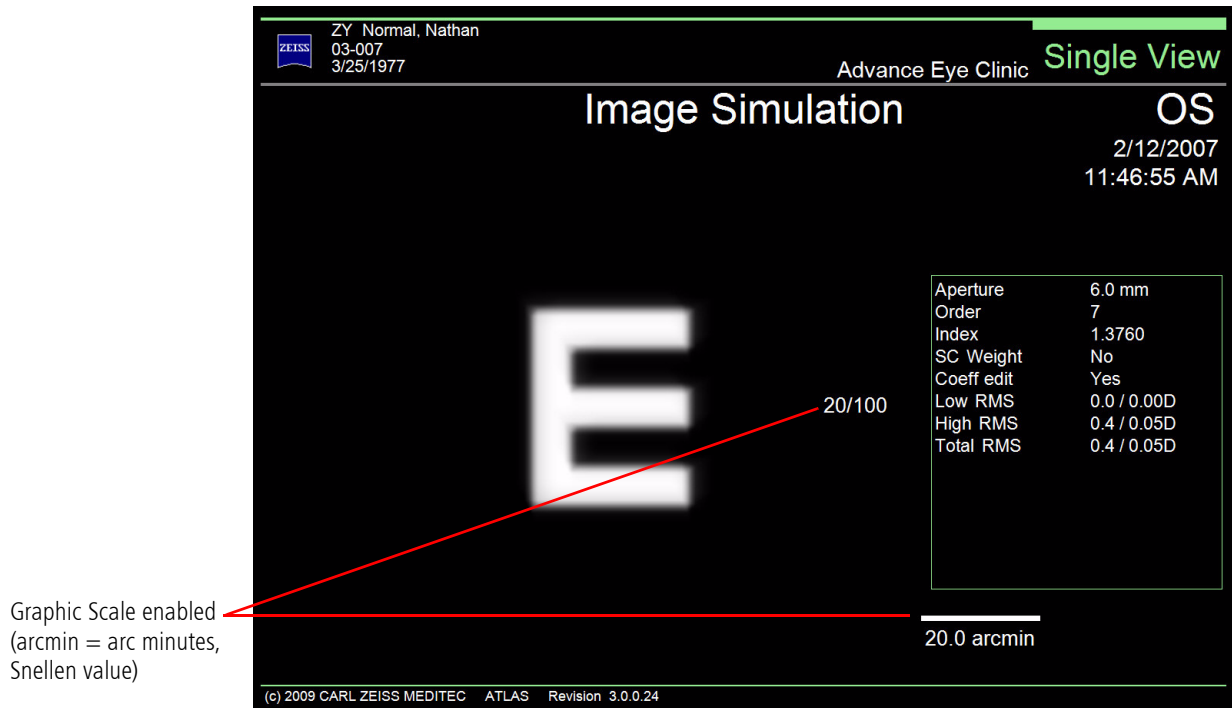


Figure 6-30 Image Simulation View – “E” Image

The View Editor for the Image Simulation View is shown in Figure 6-31 below.

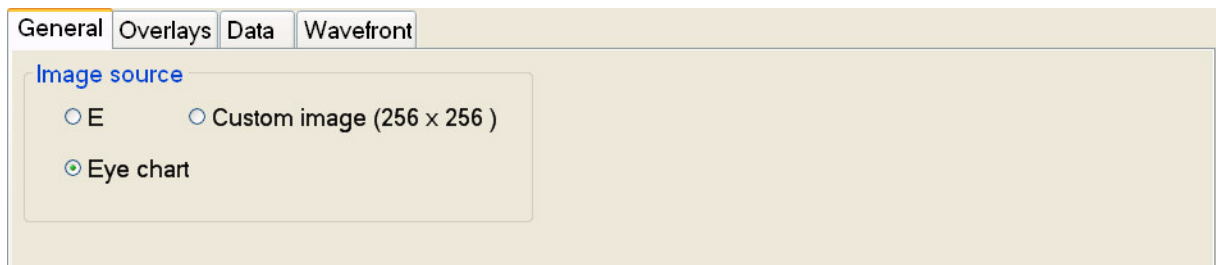


Figure 6-31 Image Simulation View Editor – General Tab

Image source

E – Select this for an “E” image.

Eye Chart – Select this for an eye chart image (Figure 6-32).

Custom image – Select this to use a custom beach scene image (Figure 6-33).

Overlays – Scale graphic

Check this to display a 20.0 arcmin graphic scale and approximate Snellen values (Figure 6-30 and Figure 6-32).

Other parameters for the Image Simulation View Editor are discussed in (7) View Editor.

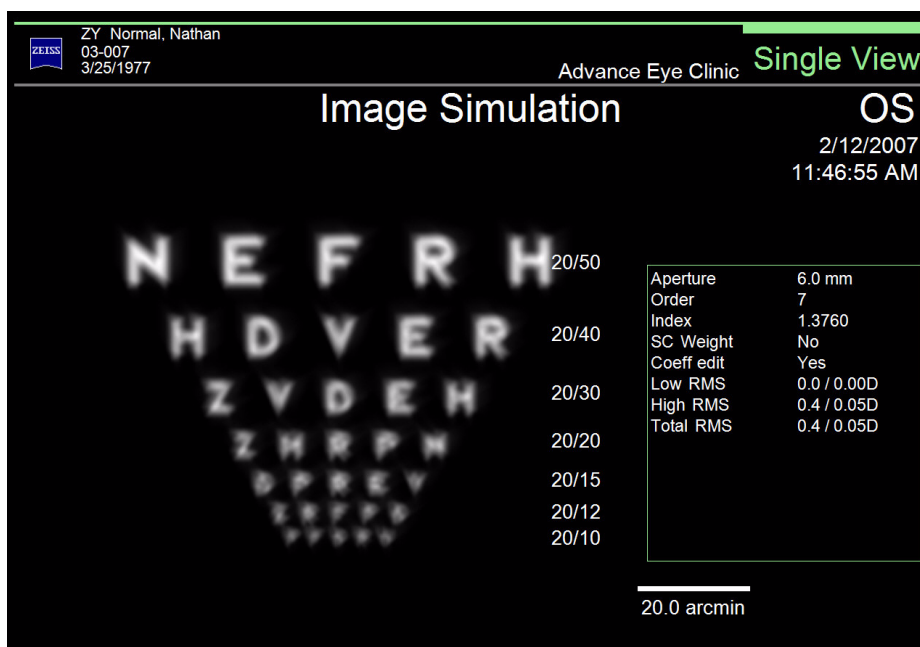


Figure 6-32 Image Simulation View – Eye Chart Image



Figure 6-33 Image Simulation View – Beach Scene Image

PSF (Point Spread Function)

The PSF (Point Spread Function) View is a monochrome display representing the point spread function arising from the Corneal Wavefront. The PSF shows the distribution of light on the focal plane of the anterior cornea, not including the effects of diffraction. The PSF (Point Spread Function) View – Image view is shown in [Figure 6-34](#) below.

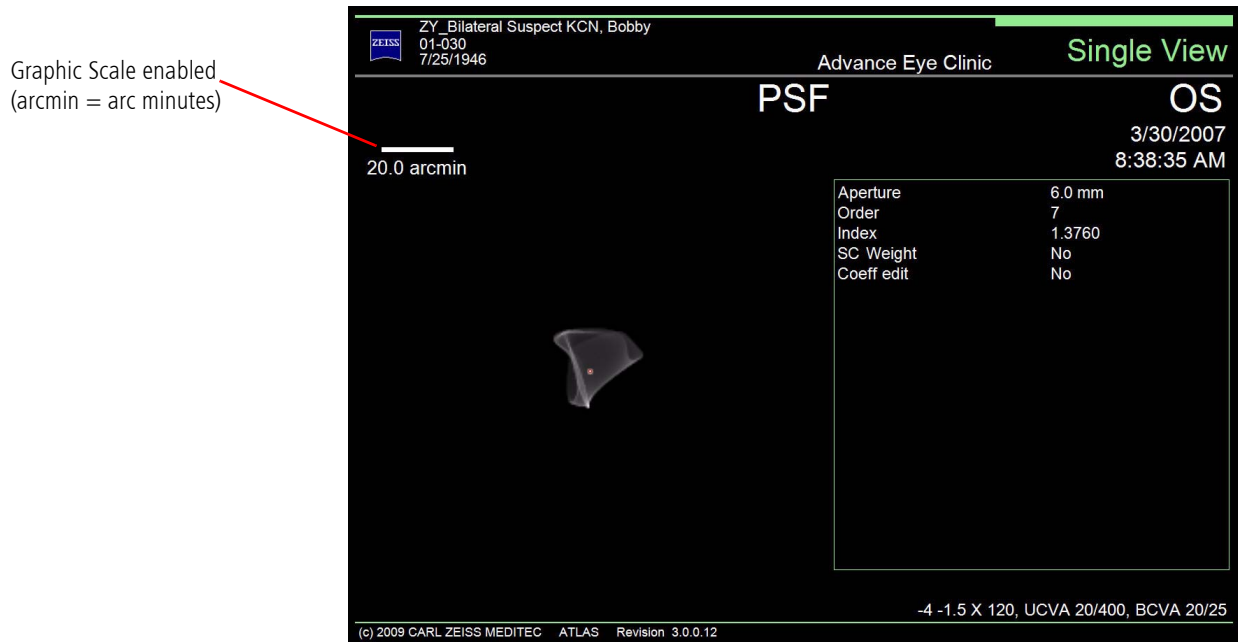


Figure 6-34 PSF View – Image View

The PSF View can also be viewed as a **Surface** ([Figure 6-35](#)) or **Profile** ([Figure 6-36](#)) by selecting those views in the **View As...** section on the **General** tab of the View Editor.

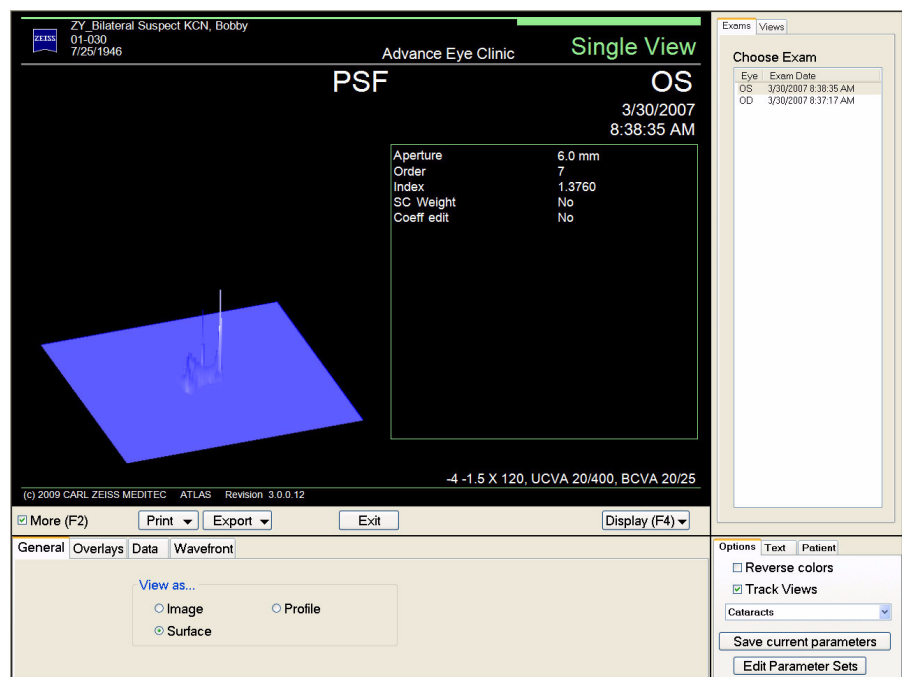


Figure 6-35 PSF View Editor – Surface View

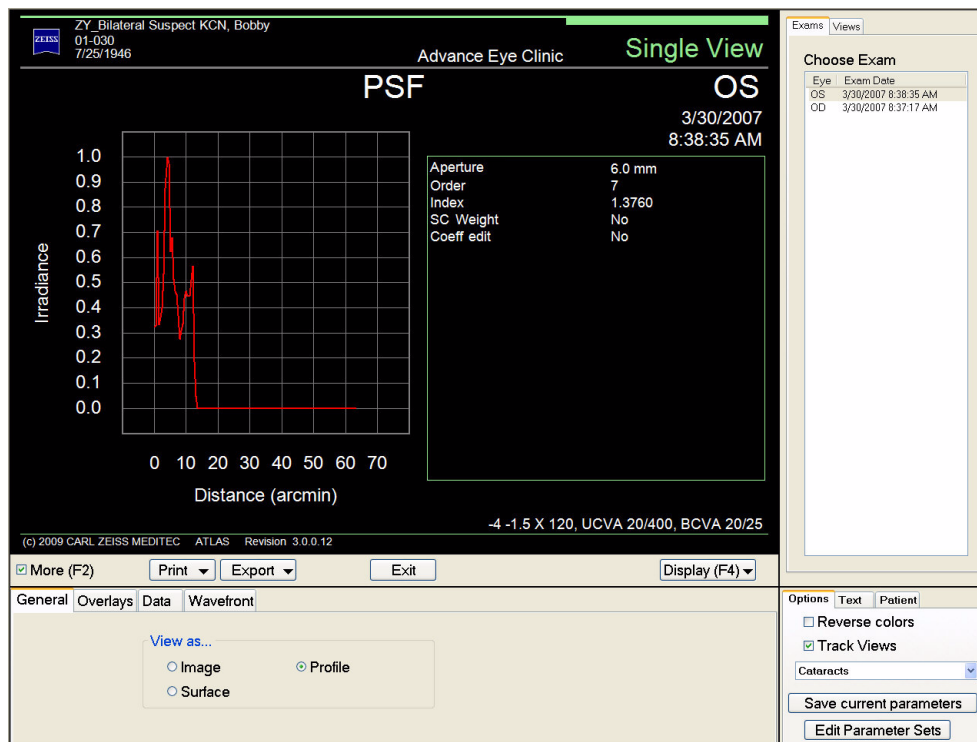


Figure 6-36 PSF View Editor – Profile View

Overlays

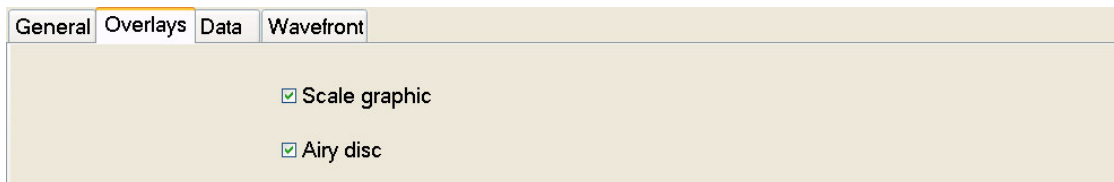


Figure 6-37 PSF View Editor – Overlay Tab

Scale graphic – Check this button to display a 20.0 arcmin graphic scale (Figure 6-34).

Airy Disk – Check this to turn on the display of the Airy disk.

Other parameters for the PSF View Editor are discussed in (7) View Editor.

MTF (Modulation Transfer Function)

The MTF (Modulation Transfer Function) View is a monochrome display representing the modulation transfer function arising from the Corneal Wavefront. The MTF (Modulation Transfer) View – Profile view is shown in [Figure 6-38](#) below.

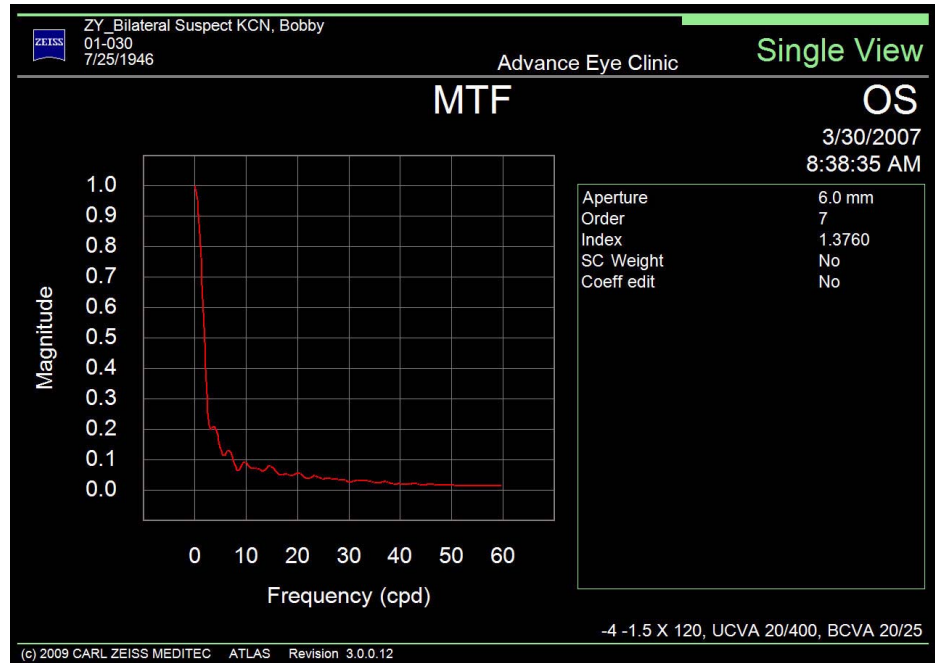


Figure 6-38 MTF (Modulation Transfer) View – Profile View

The MTF View can also be viewed as a **Surface** ([Figure 6-39](#)) or **Image** ([Figure 6-40](#)) by selecting those views in the **View As...** section on the **General** tab of the View Editor.

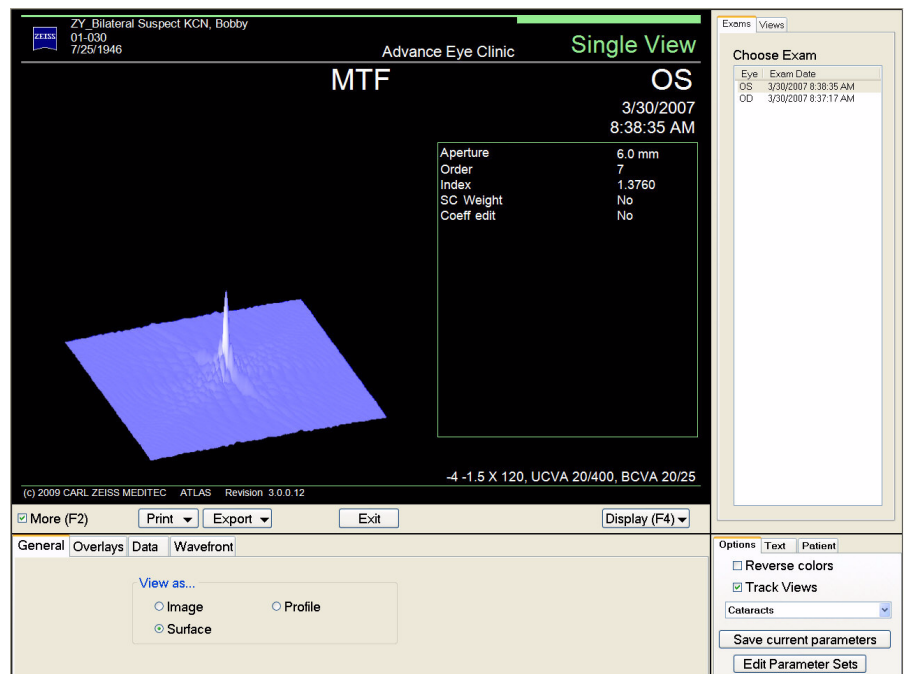


Figure 6-39 MTF View Editor – Surface View

Graphic Scale enabled
(cpd = cycles per degree)

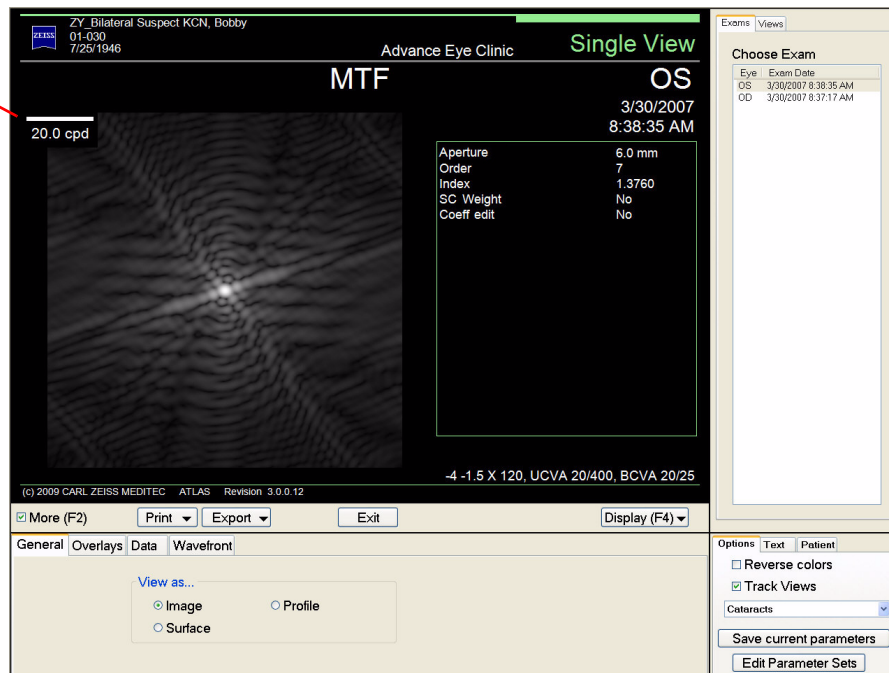


Figure 6-40 MTF View Editor – Image View

Overlays

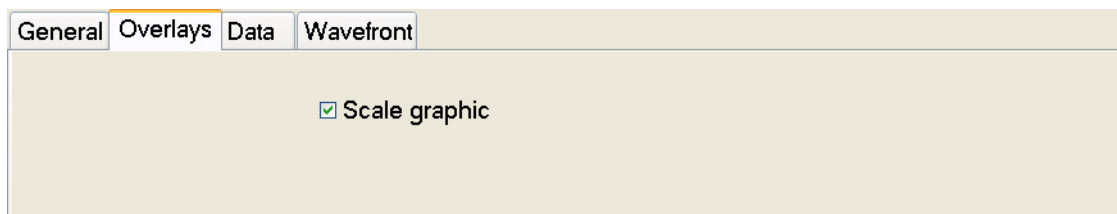


Figure 6-41 MTF View Editor – Overlay Tab

Scale graphic – Check this button to display a 20.0 cpd (cycles per degree) graphic scale (Figure 6-38).

Other parameters for the MTF View Editor are discussed in (7) View Editor.

PathFinder II (Optional)

PathFinder II is an optional software feature for the ATLAS System designed to assist in identifying abnormal, pathologic, and normal corneas using anterior corneal topography. Please see [\(A\) PathFinder II Corneal Analysis \(Optional\)](#) for a complete discussion of the PathFinder II software.

PathFinder II can be selected as a View in Single View and multi-View Displays. Only the Probability View will be displayed for multi-View Displays.



Note: PathFinder II Corneal Analysis is only available for ATLAS 9000 exams. PathFinder II will be greyed out and not selectable for ATLAS 900 Series exams.

(7) View Editor

Chapter Overview

The VIEW EDITOR window on the ANALYSIS SCREEN allows you to edit some parameters of the selected View. Default View Editor parameters for each View are set in the current Parameter Set (see (8) [Parameter Sets](#)).



Note: The **More (F2)** checkbox on the ANALYSIS SCREEN must be selected to show the VIEW EDITOR window. Pressing the **F2** function key in the ANALYSIS SCREEN toggles the **More (F2)** checkbox on and off to allow for easier switching between the View and View parameters. See [Figure 4-5](#) on page 4-5.

View Editor parameters are global for all Views except the following parameters which can be set differently for each View:

- General tab – Map diameter (Auto, Fixed diameter (mm))
- General tab – View as... (Color, Number, Profile)
- Data tab – All parameters

If you change any global parameter in one View, it will be changed in all other Views that have these parameters after you save the Parameter Set.

The View Editor parameters discussed in this chapter are those used by many Views. Some Views have additional View Editor parameters specific to their View. These are discussed separately for each View in (6) [Views](#).

By default, the Color Tab is selected when you enter the View Editor. Each View Editor tab has its own section:

- [General](#), page 7-1
- [Color](#), page 7-5
- [Overlay](#), page 7-6
- [Data](#), page 7-7
- [Wavefront](#), page 7-14

View Editor Tabs

General

The General tab displays the parameters shown in [Figure 7-1](#) below.

General	Color	Overlay	Data
Units <input type="radio"/> mm <input checked="" type="radio"/> Diopters	Map diameter <input checked="" type="radio"/> Auto <input type="radio"/> Fixed diameter (mm) 10.0	View as... <input checked="" type="radio"/> Color <input type="radio"/> Number <input type="radio"/> Profile	Rendering <input checked="" type="radio"/> Contour <input type="radio"/> Smooth

Figure 7-1 View Editor – General Tab

Profile – The Profile view mode (Figure 7-3) graphs data values across two full meridians of the cornea and the difference between them.

In the top portion of the screen, the Profile view plots the curvature of the cornea (diopters or mm) for two meridians along the corneal surface (distance from corneal apex in mm). The initial view plots the steepest (shown in red) and flattest (shown in blue) meridians.

The circle on the right displays a graphical view of the two meridians degree angles, and the numbers below it display the numerical view of the meridians in degrees. Inside the circle the color view of the cornea for the current View is displayed. The red meridian (the red line on the circle and red number) plots the red graph, and the blue meridian (blue line on the circle and blue number) plots the blue graph.

The bottom part of the screen (green graph) plots the difference (diopters or mm) between the two meridians along the corneal surface shown in the top part of the screen.

The grey areas in the center of the two graphs show the pupil area.

To plot other meridians, click on the red or blue arrows and drag up or down to change the meridian degree values. The steep and flat meridians are always 90 degrees apart.

Click the **Reset** button to reset the meridians to the initial steepest (red) and flattest (blue) degrees.

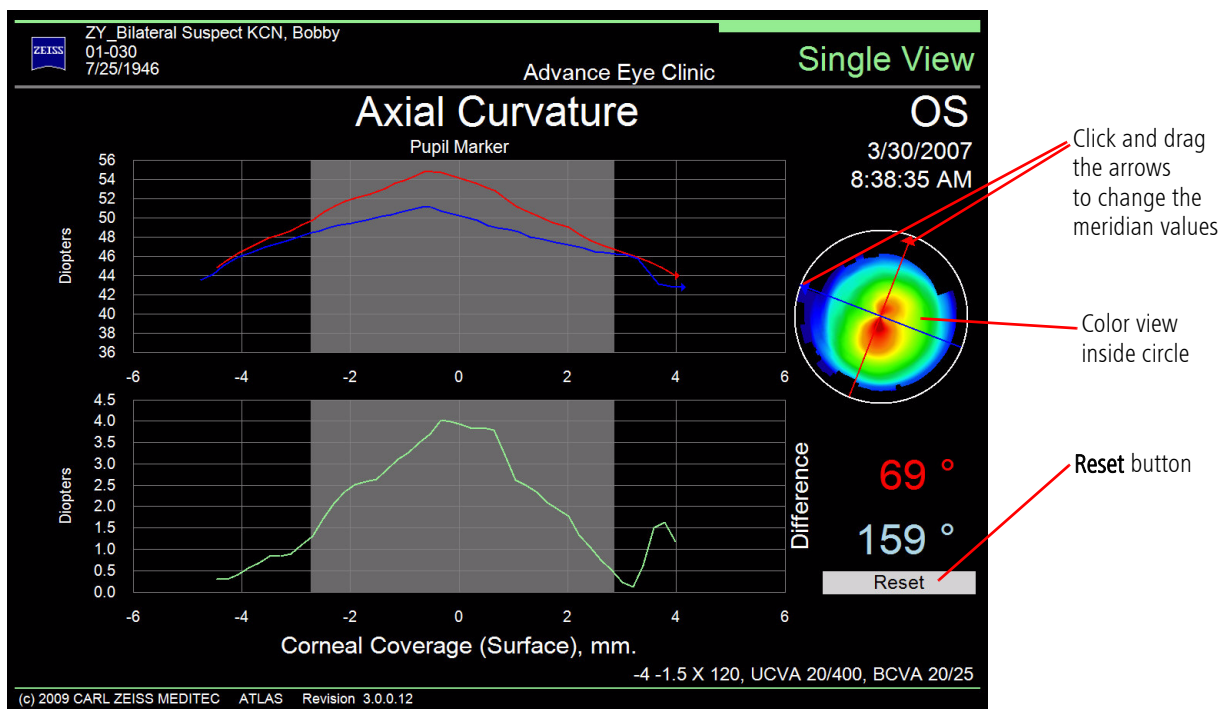


Figure 7-3 Profile View



Note: For Profile views in 2-Difference and 3-Difference Displays, the initial meridians are plotted at 0 and 90 degrees, and the **Reset** button resets **all** Profile view meridians in the display to these initial values.

Rendering

When the Color view is displayed, select **Contour** on the **Rendering** radio button to see contours on the color map (See [Figure 7-4](#)).

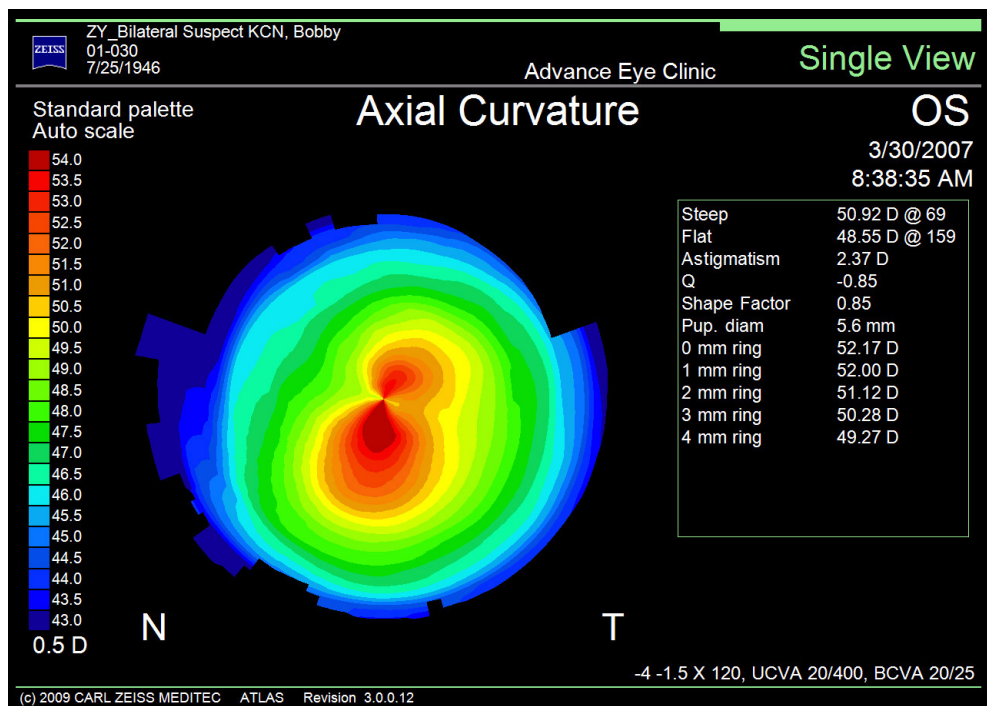


Figure 7-4 Color View with Contour Rendering

When the Color view is displayed, select **Smooth** on the **Rendering** radio button to see a smooth gradation in color on the map (See [Figure 7-5](#)).

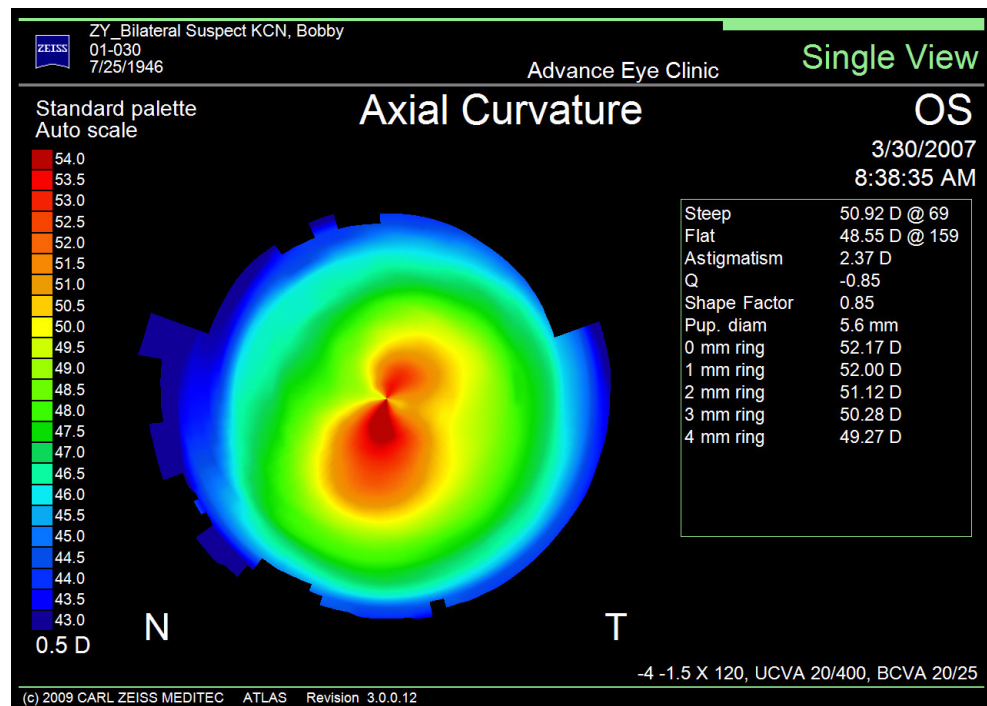


Figure 7-5 Color View with Smooth Rendering

Color

The Color tab (Figure 7-6) allows you to select the Color Scale and Color Palette used in the display.

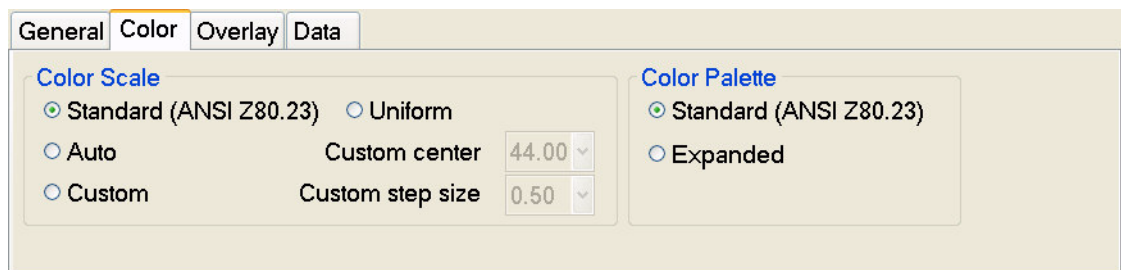


Figure 7-6 View Editor – Color Tab

Color Scale

When you change the scale, the display changes to show the new diopter/mm values. The Color Scale can also be selected by clicking (left or right click) on the scale on the ANALYSIS SCREEN.

Standard (ANSI Z80.23) – A fixed standard center and step size is used as defined by the ANSI Standard for corneal topography (ANSI Z80.23). The Standard scale ranges from 38.5 to 49.5 diopters in 0.50 diopter increments, and 9.1 to 6.9 mm in 0.1 mm increments.

Note: All Color Scale values of 38.5 diopters (9.1 mm) and below are shown in the same blue color, and all values of 49.5 diopters (6.9 mm) and above are shown in the same red color.

Auto – The center and step size is calculated based upon the values in the map. Auto uses the statistical distribution of the readings from the map to set the minimum and maximum values of the scale in diopter increments as small as 0.25 diopters. These values are unique to any given map. Auto typically provides the most detail, but colors cannot be directly compared across exams or patients. Note that the scale range is a minimum of 6 diopters. Thus, on a map where the data varies by less than 6 diopters, the minimum and maximum values on the Auto scale won't match the minimum and maximum values of the map data.

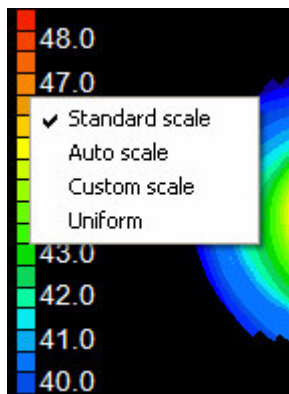
Custom – Custom allows you to specify the center and step size in either diopters or millimeters.

Note: Changing units will change the color map display because Diopter and mm values do not necessarily map to the same color for any Color Scale.

Uniform – All Axial, Tangential, Mean, and Refractive Power Views in a multi-View Display are automatically adjusted to the same Color Scale. Uniform behaves the same as Auto if only one of the above Views is displayed in a multi-View Display.

Color Palette

Color Palettes contain the set of colors used to render a color map or numeric view. The colors of the corneal display correspond to the values shown on the scale at the left of the screen. Each color represents a different value in either diopters or millimeters. Red,



Click to Select Color Scale

orange, and yellow are “hot” colors and show the steeper areas of the cornea. Green is an “intermediate” color. Light and dark blue are “cool” colors and show the flattest areas. You can select from two color palettes:

Standard (ANSI Z80.23) – This is the default palette with 23 color steps, going from red to blue, as defined by the ANSI Standard for corneal topography (ANSI Z80.23).

Expanded – This option sets the display to the Expanded color palette. This palette contains a wider color spectrum with 25 color steps. Instead of red to blue in the Standard color palette, the Expanded color palette goes from white to blue.

Overlay

The Overlay tab (Figure 7-7) on the View Editor allows you to select which data overlays display on the corneal view. A checkmark means the selected data overlay will be displayed.

General	Color	Overlay	Data
<input checked="" type="checkbox"/> Grid (1-mm spacing)	<input type="checkbox"/> Corneal apex	<input type="checkbox"/> Sim K values	
<input type="checkbox"/> Zones	<input type="checkbox"/> Corneal vertex		
<input type="checkbox"/> Pupil contour	<input checked="" type="checkbox"/> Display diameter		
<input type="checkbox"/> Pupil center	<input checked="" type="checkbox"/> Angle overlay		

Figure 7-7 View Editor – Overlay Tab

Grid (1-mm spacing)

Displays a 1-mm square grid on the corneal view.

Zones

Displays up to 3 concentric circles that represent different zones on the cornea: 3, 6, and 9 mm from the center of the pupil.

Pupil contour

The green pupil contour marker locates and determines the size of the pupil.

Pupil center

The smaller crosshair enclosed by a circle denotes the center of the pupil, or “optical center” of the eye.

Corneal apex

The triangle identifies the apex of the cornea defined by the intersection of the axis of the best-fit ellipsoid with the corneal surface.

Corneal vertex

A small white cross indicates the corneal vertex location defined by the intersection of the visual axis with the corneal surface.

Display diameter

Displays the current map diameter in mm at the bottom of the corneal view.

Angle overlay

Displays a 360 degree angle overlay.

Sim K values

Displays a crosshair enclosed in a circle and the Sim K values on the corneal view.

Data

The Data tab (Figure 7-8) on the View Editor allows you to select what data is displayed in the data table (Figure 7-9) to the right of the corneal view on the ANALYSIS SCREEN. A checkmark means the selected data will be displayed. If there are more data values than can fit in the table, you will see an ellipse (...) symbol at the bottom of the data table. Different Views may show different data parameters on the Data tab. In the data table, diopters are displayed with a "D" next to the value, millimeters are displayed as "mm."

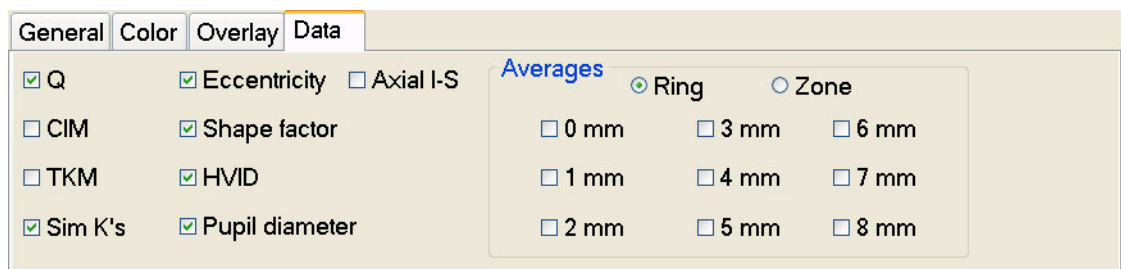


Figure 7-8 View Editor – Data Tab (Axial View)

Steep K	47.47 D @ 171
Flat K	45.46 D @ 81
Astigmatism	2.00 D
Eccentricity	0.71
Q	-0.50
Shape Factor	0.50
Pup. diam	6.9 mm
HVID	11.5 mm
Axial I-S	1.05 D

Figure 7-9 Analysis Screen – Data Table Example (Axial View)

Cornea Shape Measures

Normal corneal shape is aspheric, steeper centrally, and flatter progressively toward the limbus. There are several descriptors to describe corneal aspheric shape. Vision scientists often assume the corneal profile in any meridian to be conic section. A conic section can be fully described using two parameters—the apical radius and the eccentricity (e). The apical zone is the area around the corneal apex where the refractive power variation is little, approximately 4mm in diameter. The eccentricity indicates the departure of the peripheral curvature from the apical radius and so defines the degree of asphericity. There

are other descriptors such as Shape Factor (SF), p-value (p), and Q that also describe a conic section (see Table 7-1 and Table 7-2). A conic section can be a circle, and ellipse, a parabola, or a hyperbola (Figure 7-10). A normal cornea is a prolate conic section. That means that the curvature flattens from the apex to the periphery and $0 < SF < 1$. This is called positive asphericity.

Table 7-1 Conic Sections and the Corresponding Values of SF, p and Q

Conic Section	Shape Factor (SF)	p	Q
Hyperbola	> 1	< 0	< -1
Parabola	1	0	-1
Prolate Ellipse (normal eye)	$0 < SF < 1$	$0 < p < 1$	$-1 < Q < 0$
Circle	0	1	0
Oblate Ellipse	< 0	> 1	> 0

Table 7-2 Corneal Shape Measures Equations

$Q = -SF$ $SF = -Q$ $p = 1 - SF$ $SF = 1 - p$		
$SF \geq 0$ $Q \leq 0$	$e = \sqrt{SF}$ $e = \sqrt{-Q}$	$e^2 = SF$ $e^2 = -Q$
$SF < 0$ $Q > 0$	$e = \sqrt{(-SF)/(1 - SF)}$ $e = \sqrt{(Q)/(1 + Q)}$	$e^2 = (-SF)/(1 - SF)$ $e^2 = (Q)/(1 + Q)$

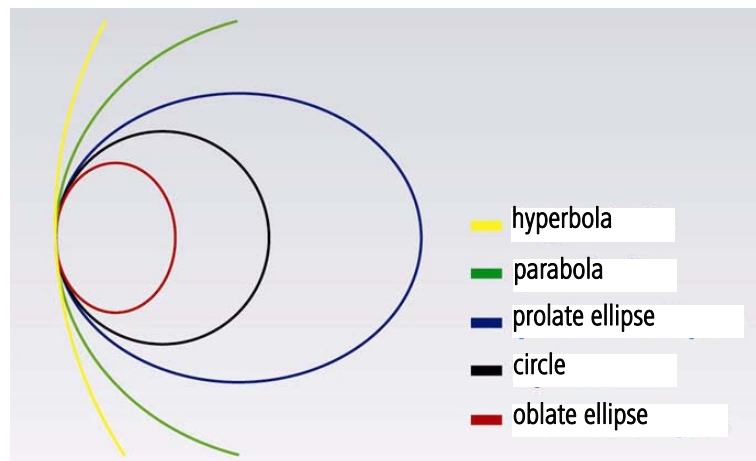


Figure 7-10 Conic Sections

Eccentricity

Eccentricity is a measure determined by the shape of the cornea. The eccentricity indicates the departure of the peripheral curvature from the apical radius and so defines the degree of asphericity.

Shape Factor (SF)

Shape Factor is a measure of the asphericity of the cornea. Shape Factor gives a measure of the flattening or steepening of the cornea along its flattest meridian. In the PathFinder II multi-clinical sample data, the average normal cornea has a Shape Factor of 0.37. The Shape Factor should be used in conjunction with the CIM value to gain the most information about the cornea. Shape Factor can be used to determine whether the cornea is more oval or elliptical shaped.

Shape factors are unique and different from eccentricity in that it is possible to calculate a negative, or oblate shape, as well as a positive, or prolate shape. Negative Shape factors imply an oblate cornea (flatter in the center, steeper in the periphery). Positive Shape factors imply a prolate cornea (steeper in the center, flatter in the periphery).

Shape Factor is useful in contact lens fitting and in identifying unusual or pathological corneal shapes. Shape Factor is based on a best-fit general ellipsoid to the corneal surface. This takes into account the effects of astigmatism, and the tip and tilt of the corneal symmetry axis.

The value of both the CIM and Shape Factor measurements can be seen with serial topography over time. Judging whether these statistical indices are increasing or decreasing over time may indicate a worsening pathology or a healing trend.

The probability distribution of Shape Factor for normal diagnosed eyes in the PathFinder II multi-clinical sample data is shown in [Figure 7-11](#). The multi-clinical sample data set covers 95% of the normal eye population with a 95% confidence. For example, [Figure 7-11](#) shows a 32% probability that the Shape Factor for normal eyes falls between 0.2 and 0.3. The mean value is 0.37 and 90% of the population falls between 0.20 and 0.64. See [Table A-1, "PathFinder II Color-Coded Parameter Classification \(Normal Eyes,](#)

based on Multi-Center Clinical Study),” on page A-2) for Shape Factor range values.

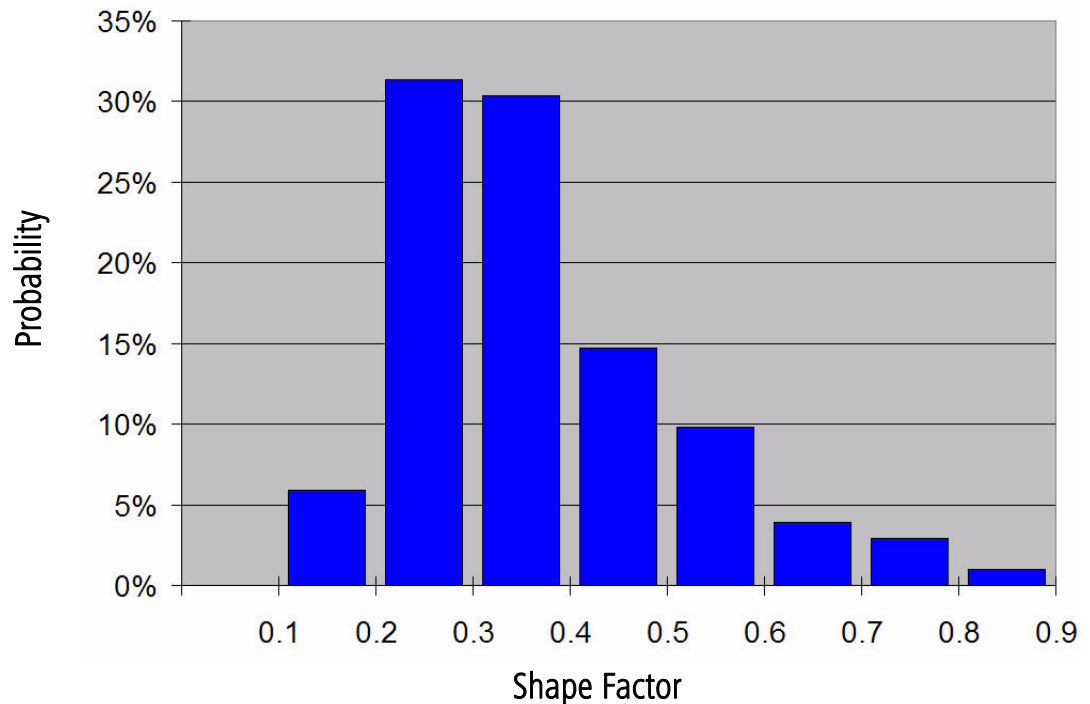


Figure 7-11 Shape Factor Probability Distribution (Normal Eyes, PathFinder II Clinical Study)

Q

Q is a measure of the shape of the cornea. It is defined as the inverse (or negative) of the Shape Factor (see [Shape Factor \(SF\)](#) on page 7-9). Q is an index of asphericity; Q indicates how much the curvature changes upon movement from the center to the periphery of the cornea. A normal cornea is prolate (i.e., becomes flatter toward the periphery). In the PathFinder II multi-clinical sample data, the average value of Q is -0.37 . A prolate surface has negative Q values and positive oblate surface values. Most myopic laser vision corrections change the anterior corneal surface from prolate to oblate.

CIM

CIM (Corneal Irregularity Measurement) is a statistical measurement which uses topographic data from the central area of the cornea and compares it to the best-fit surface found. It determines the regularity or irregularity of the corneal surface used for vision. The CIM measurement determines how much the actual corneal surface varies from a smooth fitted ellipsoidal toric surface as Root Mean Square (RMS) error in micrometers (μm). The fitted surface includes any regular astigmatism which may be present.

The higher the irregularity index, the more uncorrectable or uneven the surface is optically, thereby highlighting irregular astigmatism that often results in visual distortions. CIM uses the thousands of data points within the first fourteen rings of the corneal topography data to determine the difference in “height” or elevation between the patients cornea and the

best matching, perfect model ellipsoidal toric cornea. The area covered by the fourteen rings (approximately 50 degrees) has proven to provide excellent corneal coverage while neglecting the expected “non-normal” transition zone from cornea to limbus. The difference between the perfect model and the actual cornea is measured in micrometers and the standard deviation is taken. This is defined as CIM. Higher CIM values, then, would tend to indicate a worsening pathology such as keratoconus, due to the inherent corneal thinning and “wrinkling” of the corneal surface that the pathology causes. High CIM indices can also be observed in post refractive surgery corneas due to the irregularity that the surgical procedure and subsequent healing process cause. CIM also measures the type of irregular astigmatism which cannot be corrected with spectacle lenses.

CIM normal values range from 0.42 to 4.05 micrometers, and the higher the number becomes, the more abnormal it is. The probability distribution of CIM for normal diagnosed eyes in the PathFinder II multi-clinical sample data is shown in [Figure 7-12](#). The multi-clinical sample data set covers 95% of the normal eye population with a 95% confidence. For example, [Figure 7-12](#) shows a 72% probability that CIM for normal eyes falls between 0.5 and 1.0. The mean value of CIM is 0.91 micrometers and 90% of the population falls between 0.49 and 1.68. See [Table A-1, “PathFinder II Color-Coded Parameter Classification \(Normal Eyes, based on Multi-Center Clinical Study\),” on page A-2](#) for CIM range values.

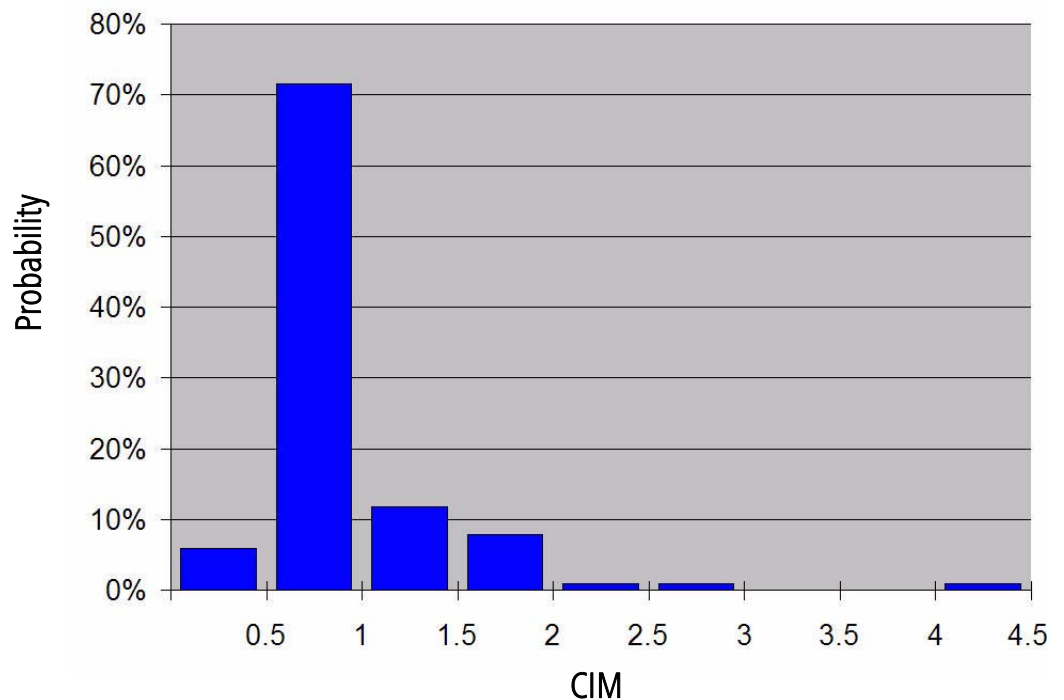


Figure 7-12 Probability Distribution of CIM (Normal Eyes, PathFinder II Clinical Study)

TKM

TKM (Toric Keratometric Mean) is the average corneal curvature at the apex. The apical position is the intersection of the “symmetry axis” of the best-fit ellipsoidal toric with the cornea. Two principal curvatures are calculated at the apex for the flattest and steepest meridian and their mean is determined. This is described as the mean value of the apical curvature.

The probability distribution of TKM for normal diagnosed eyes in the PathFinder II multi-clinical sample data is shown in [Figure 7-13](#). The multi-clinical sample data set covers 95% of the normal eye population with a 95% confidence. For example, [Figure 7-13](#) shows a 28% probability that TKM for normal eyes falls between 44.0 and 45.0 D. The mean value of TKM is 44.68 D and 90% of the population falls between 42.19 and 47.26 D. See [Table A-1, “PathFinder II Color-Coded Parameter Classification \(Normal Eyes, based on Multi-Center Clinical Study\),”](#) on page A-2) for TKM range values.

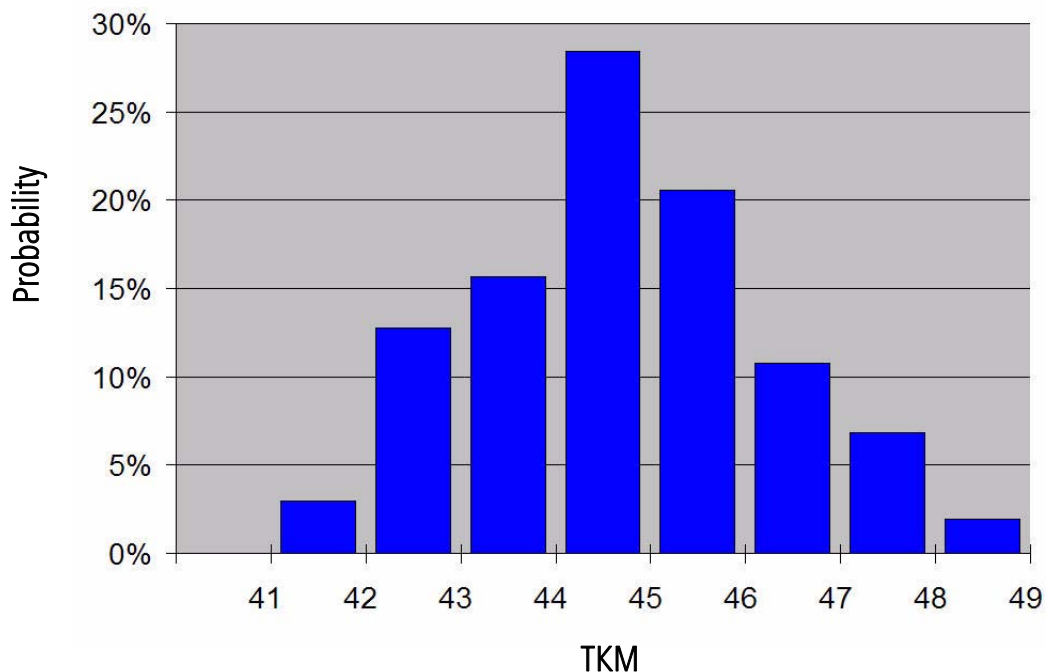


Figure 7-13 Probability Distribution of TKM (Normal Eyes, PathFinder II Clinical Study)

Sim K's

The simulated K readings are a measurement which simulate the readings of a standard Keratometer. These readings may vary slightly from automated or manual Keratometer readings depending on the Placido rings location on the corneal surface.

Astigmatism

Astigmatism is the difference between the Steep and Flat K values displayed as a positive value. Astigmatism is only displayed when Sim K's are displayed.

HVID (ATLAS 9000 data only)

The HVID (Horizontal Visible Iris Diameter) value in mm can be displayed. This is the same as the Horizontal limbus diameter or white-to-white diameter. This is only measured on an ATLAS 9000 instrument.

Pupil diameter

The pupil diameter in mm can be displayed.

Axial I-S (Axial View only)

Axial I-S is a value proposed by Rabinowitz¹, which quantifies inferior-superior dioptric asymmetry. It is calculated by first taking the nearest curvature value 3 mm from the corneal vertex on five Inferior meridians (210, 240, 270, 300, and 330 degrees) and five Superior meridians (30, 60, 90, 120, and 150 degrees). The five Superior curvature values are then averaged and subtracted from the average of the five Inferior values to create the value. A positive Axial I-S value indicates steeper Inferior curvature for the cornea; a negative value indicates steeper Superior curvature.

RMS (Corneal Wavefront, Image Simulation, PSF, and MTF Views only)

The Root Mean Square (RMS) value of the Zernike coefficients determines how much wavefront error the anterior cornea has. The higher the RMS value, the larger the amount of wavefront error. RMS is a quadratic sum of the Zernike coefficients, measured in micrometers, that give the power of the aberrations for the terms that have been summed. For example, higher order RMS is the total of all the higher order aberrations. Total RMS is the overall magnitude of all the eye's refractive errors. RMS only uses image data set by the Zernike Wavefront parameters (see [Wavefront](#) on page 7-14). Low (2nd order aberrations only), High (3rd order aberrations and greater only), and Total (Low + High) RMS values (μm), and their "equivalent defocus" values (diopters only) are displayed, as shown on the left.

Aperture	6.0 mm
Order	7
Index	1.3760
SC Weight	No
Coeff edit	No
Low RMS	3.4 / 0.44D
High RMS	4.4 / 0.56D
Total RMS	5.5 / 0.71D

Equivalent defocus is the amount of defocus needed to produce the same RMS wavefront error produced by one or more higher-order aberrations. The diopters of equivalent defocus depends on the ratio of RMS error to pupil area. One diopter of a higher-order aberration does not have exactly the same visual effect as one diopter of defocus, and one diopter of astigmatism does not have exactly the same effect as one diopter of defocus, but the use of a common metric helps judge their relative importance. Equivalent defocus allows us to compare the order of magnitude of different kinds of aberrations and judge their clinical significance.





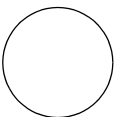
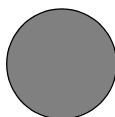
Averages

Select the **Zone** radio button for the average curvature in diopter or millimeter values for up to 8 circular areas or zones on the cornea. All data within the zone is used to calculate the average. Then select any or all of the **mm** buttons from 0 mm to 8 mm (diameter of zone, centered on corneal vertex) for the zone(s) you want values displayed.

1. Rabinowitz, YS. Videokeratographic indices to aid in screening for keratoconus. J Refract Swg 1995; 11:371-379.

Select the **Ring** radio button for the average curvature in diopter or millimeter values for up to 8 circular rings on the cornea. Only data taken along the ring points is used to calculate the average. Then select any or all of the **mm** buttons from 0 mm to 8 mm (diameter of ring, centered on corneal vertex) for the ring(s) you want values displayed.

Table 7-3 Examples of Ring and Zone Averages

Rings	Zones
1 mm 	1 mm 
2 mm 	2 mm 
3 mm 	3 mm 

Wavefront

The **Wavefront** tab is used in the calculation and display of the Corneal Wavefront View, PSF View, MTF View, and Image Simulation View. It displays the parameters shown in [Figure 7-14](#) below.

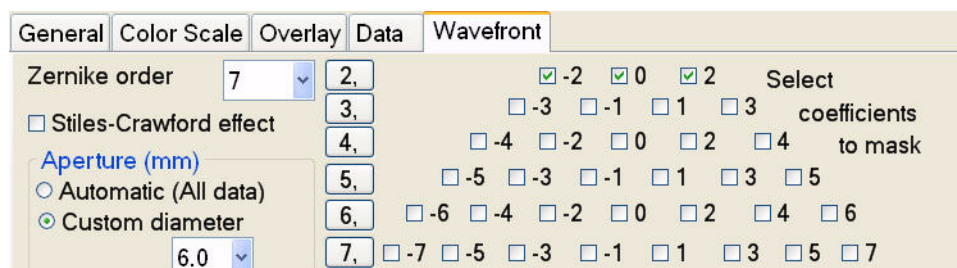


Figure 7-14 View Editor – Wavefront Tab

Stiles-Crawford effect

The Stiles-Crawford weighting compensates for the directional sensitivity of the photo receptors. Click this box to enable (checked) or disable (unchecked) the use of the Stiles-Crawford function weighting in the calculation of the aberrations.

Zernike order (pop-up number)

Enter a Zernike order number (number of coefficients) in the pop-up menu to set the order of the Zernike fit.

Aperture

Aperture sets the maximum diameter or opening (simulated pupil diameter) to use in computing the Corneal Wavefront.

Select **Automatic (All data)** to let the software automatically set the aperture. To manually set the value, select **Custom diameter** and then select the value (mm) in the pop-up menu.

Select coefficients to mask

Each Zernike coefficient represents a specific wavefront error, or optical aberration, and these are used to describe both lower and higher order aberrations of the eye. You can mask off (set to zero) a given Zernike term to see the effect of removing that aberration from the cornea. The software uses the double-index notation method for the Zernike Polynomial functions. The Zernike coefficient is designated by the form:

$$Z(n, m)$$

where n is a positive integer representing the radial index of the function, and m is a signed integer representing the meridional index of the function. See [Table 7-4](#) for a list of common names for the Zernike Polynomial functions.

In the “2,” to “7,” button column (radial index, n), you can mask (or unmask) a Zernike Order number (a row of coefficients) by clicking on a number. In the number pyramid (meridional index, m), you can mask aberration coefficients by clicking in the box next to the number to select it. A row of coefficients (m) align with their row number (n). For example, to mask the Z (5, -1) coefficient, click the “-1” in the “5,” row to select it.

Table 7-4 Common Names of Zernike Polynomial Functions

Zernike Function	Common Name
Z (0,0)	Piston
Z (1, -1)	Vertical tilt
Z (1,1)	Horizontal tilt
Z (2, -2)	Oblique astigmatism
Z (2,0)	Myopic defocus (positive value) Hyperopic defocus (negative value)
Z (2,2)	Against the rule astigmatism (positive value) With the rule astigmatism (negative value)
Z (3, -3)	Oblique trefoil
Z (3, -1)	Vertical coma – superior steeping (positive value) Vertical coma – inferior steeping (negative value)
Z (3, 1)	Horizontal coma
Z (3,3)	Horizontal trefoil
Z (4, -4)	Oblique quatrefoil
Z (4, -2)	Oblique secondary astigmatism
Z (4, 0)	Spherical aberration Positive – pupil periphery more myopic than center Negative – pupil periphery more hyperopic than center
Z (4,2)	With/against the rule secondary astigmatism
Z (4, 4)	Quatrefoil

Table 7-4 Common Names of Zernike Polynomial Functions

Zernike Function	Common Name
$Z(5, -1)$	Secondary vertical coma
$Z(5, 1)$	Secondary horizontal coma

(8) Parameter Sets

Chapter Overview

You can customize exam acquisition, printing preferences, and the way data is displayed using Parameter Sets. ATLAS Software allows you to create up to ten different Parameter Sets for customized exam acquisition, analysis, and reporting options. The following topics are discussed in this chapter:

- [Editing Parameter Sets](#), page 8-1
- [Displays](#), page 8-5
- [Views](#), page 8-7
- [Exams](#), page 8-9
- [Printing / DICOM Export Options](#), page 8-11
- [Report Options](#), page 8-12

Editing Parameter Sets

To create/edit Parameter Sets and to set the current Parameter Set:

- From the PATIENT SELECTION WINDOW: select **Parameter Set...** on the **Options** menu.
- From the ANALYSIS SCREEN, when the **More (F2)** checkbox is selected: select **Edit Parameter Sets** from the **Options** tab in the DISPLAY OPTIONS window (see [Options](#) on page 4-9).

The EDIT PARAMETERS SCREEN ([Figure 8-1](#)) is displayed.

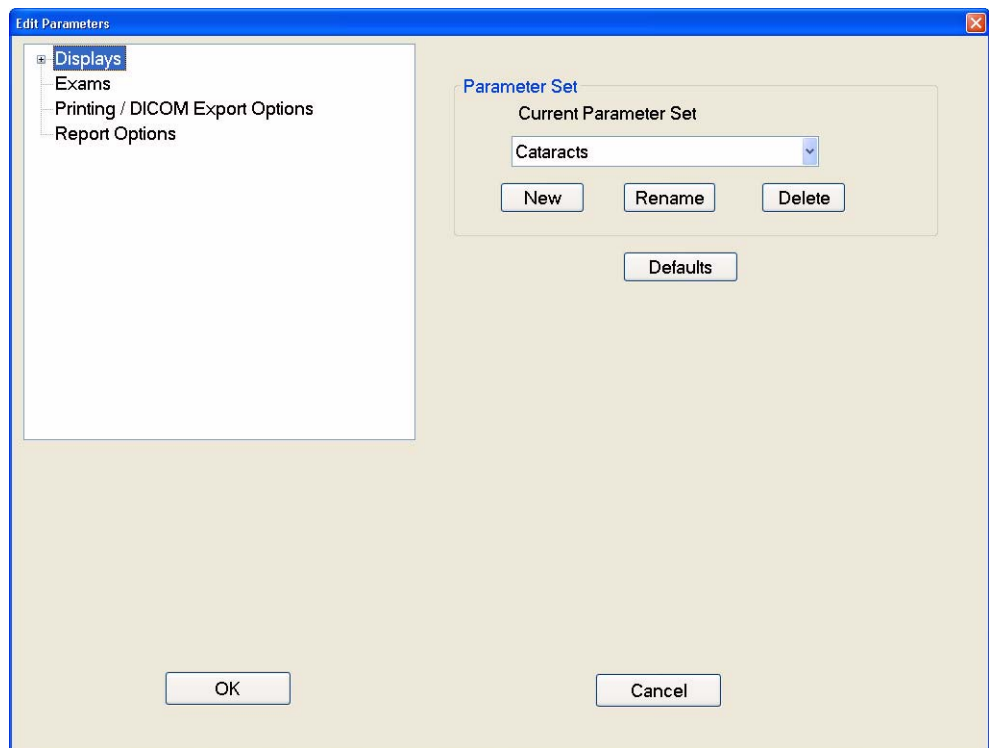


Figure 8-1 Edit Parameters Screen

Parameter Sets

Default Parameter Sets

ATLAS ships with six default parameter sets. [Table 8-1, "Default Parameter Sets,"](#) shows these default parameter sets and some of their parameter settings.

Table 8-1 Default Parameter Sets

	Parameter Sets					
	Pathology	Cataracts	Contact Lens Fitting	Refractive Surgery	Screening	Screening (Expanded)
Capture Scotopic	No	Yes	Yes	Yes	No	No
Capture Photopic	No	Yes	Yes	Yes	No	No
Color Palette	Standard	Standard	Standard	Standard	Standard	Expanded
Color Scale (Curvature)	Standard	Standard	Standard	Standard	Standard	Custom Center: 49.0 D 1.5 D interval (31 to 67 D range)
Default Display	Overview	Overview	Overview	Overview	OD/OS	OD/OS
Overview Views	Rings Axial Tangential Elevation	Axial Keratometry Corneal Wavefront Image Simulation	Axial Keratometry Tangential Image Simulation	Axial Mean Elevation Irregularity	Axial Tangential Mean Image Simulation	Axial Tangential Mean Image Simulation
Single View Data	<u>Axial</u> Sim Ks Eccentricity SF Q - - - Pupil Diam. HVID - - - - -	<u>Axial</u> Sim Ks - SF Q - - - Pupil Diam. - 0 mm ring 1 mm ring 2 mm ring 3 mm ring 4 mm ring	<u>Axial</u> Sim Ks Eccentricity SF - - CIM TKM Pupil Diam. HVID - - - - -	<u>Axial</u> Sim Ks - SF Q Axial I-S - - Pupil Diam. - - - - -	<u>Axial</u> Sim Ks Eccentricity SF Q - - - Pupil Diam. HVID - - - - -	<u>Axial</u> Sim Ks Eccentricity SF Q - - - Pupil Diam. HVID - - - - -
OD/OS Display	Axial Tangential	Axial Keratometry	Axial Keratometry	Axial Mean	Axial Keratometry	Axial Keratometry
Auto Print after Acquisition?	No	Yes	No	Yes	Yes	Yes
Report Printouts	-	Overview Display	-	Overview Display	OD/OS Display	OD/OS Display

Setting the Current Parameter Set

To set the current Parameter Set, click the Current Parameter Set drop-down menu to select the Parameter Set you want to make current, and then click the **OK** button on the bottom of the EDIT PARAMETERS screen. Click **Cancel** to keep the previous setting.

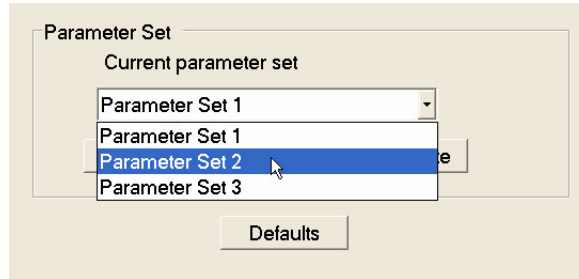


Figure 8-2 Setting the Current Parameter Set



Note: When you change Parameter Sets, all settings that have not been saved from the previous Parameter Set will be lost.

Setting a Parameter Set to Default Settings

To set a Parameter Set to default settings shipped with the software, click in the Current Parameter Set drop-down menu to select the Parameter Set you want to set to default settings. Click the **Defaults** button. An Attention dialog is displayed.

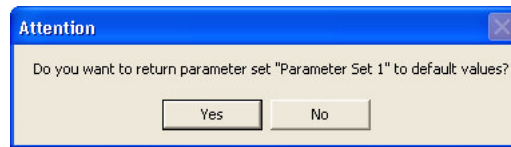


Figure 8-3 Setting a Parameter Set to Default Settings

Click the **Yes** button to set the selected Parameter Set to factory default settings. Click **No** to keep the current setting. Click the **OK** button on the bottom of the EDIT PARAMETERS screen to complete the change.



Note: The **Defaults** button will set new Parameter Sets you have created to the default settings of the Parameter Set it was copied from.



Note: If you have created new Parameter Sets or renamed them in prior versions of ATLAS, you will be prompted to select the Parameter Set to default to.

Creating a New Parameter Set

To create a new Parameter Set, click the **New** button.

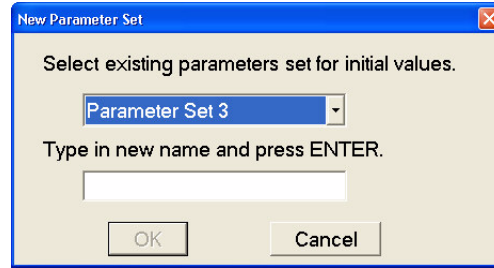


Figure 8-4 Creating a New Parameter Set

Select a Parameter Set in the drop-down menu to set the initial parameter values. Type in a new name for the Parameter Set and then press **Enter** or click the **OK** button. Click the **OK** button on the bottom of the EDIT PARAMETERS screen to save the new set.

Renaming a Parameter Set

To rename a Parameter Set, click in the **Current Parameter Set** drop-down menu to select the Parameter Set you want to rename. Click the **Rename** button.

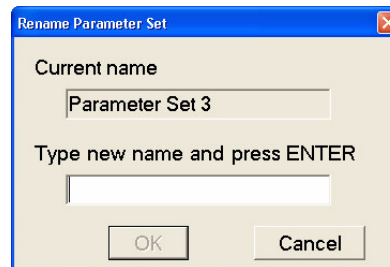


Figure 8-5 Renaming a Parameter Set

Type in a new name for the Parameter Set and then press **Enter** or click the **OK** button. Click the **OK** button on the bottom of the EDIT PARAMETERS screen to save the new name.

Deleting a Parameter Set

To delete a Parameter Set, click in the **Current Parameter Set** drop-down menu to select the Parameter Set you want to delete. Click the **Delete** button. An **Attention** dialog is displayed.

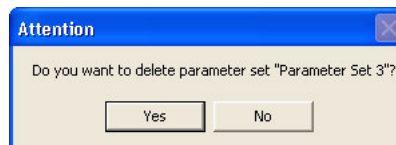


Figure 8-6 Deleting a Parameter Set

Click the **Yes** button to delete the Parameter Set. Click **No** to cancel the deletion. Click the **OK** button on the bottom of the EDIT PARAMETERS screen to complete the change.

Displays

Default Views

The Default Views dialog (Figure 8-7) sets default views for the selected Parameter Set. This function allows you to select the default Display when the ANALYSIS SCREEN is first displayed for a patient. In addition, default Views for the Displays can also be specified. When a Display is selected, the default View set here will be displayed.

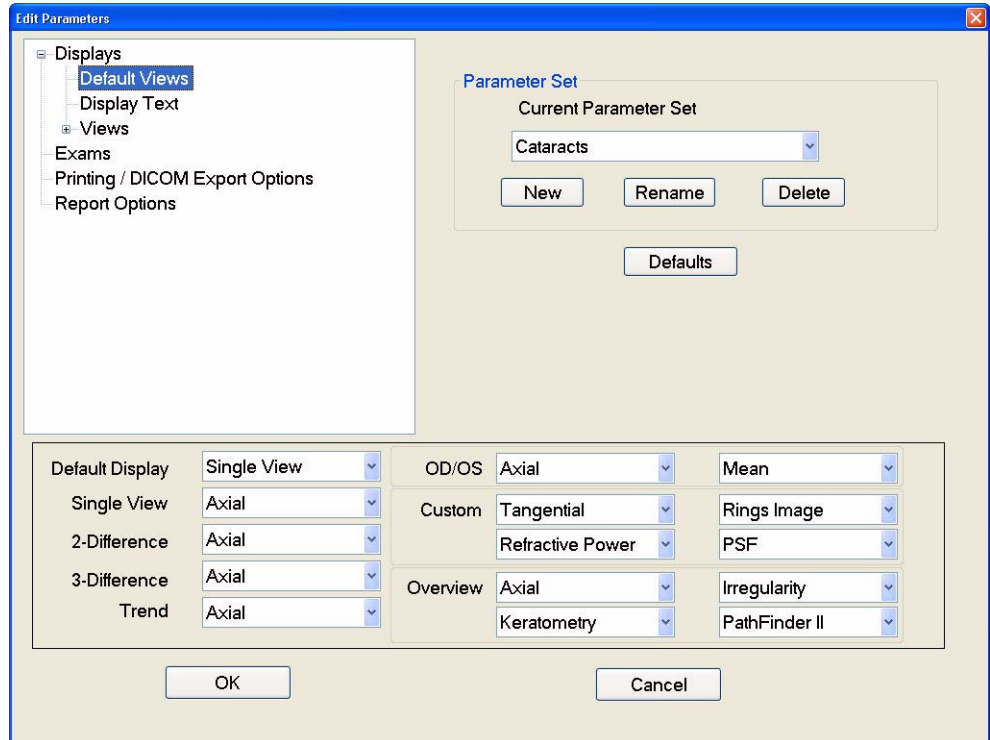


Figure 8-7 Default Views Dialog

The Default display drop-down menu sets the default Display when the ANALYSIS SCREEN is displayed. See (5) Displays for more information on Displays.

All other drop-down menus set the default Views for the Displays shown. Note that OD/OS has 2 default Views to select, Overview has 4 default Views to select, and Custom also has 4 default Views to select. See (6) Views for more information on Views.

Click the **OK** button to save your changes. Click **Cancel** to keep the previous setting.

Display Text

The Display Text dialog (Figure 8-8) allows you to set the default display of text items on the ANALYSIS SCREEN for the selected Parameter Set.

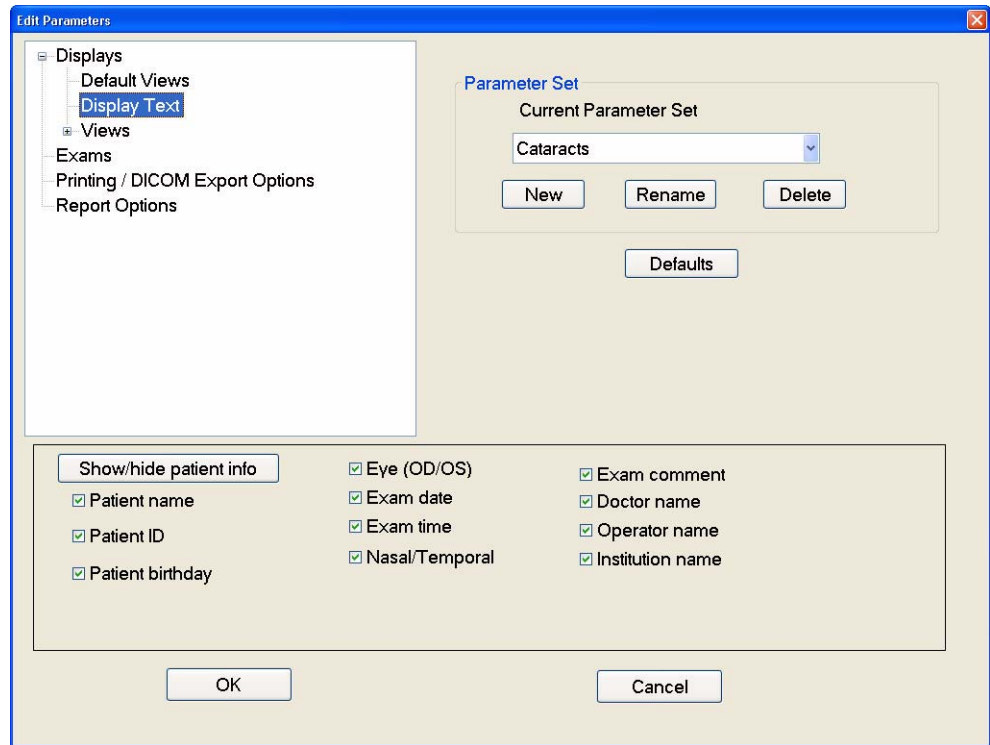


Figure 8-8 Display Text Dialog

The text items checked will be shown on the ANALYSIS SCREEN. Click to uncheck a text item and keep it from being displayed on the ANALYSIS SCREEN. Figure 8-9 shows the location of all Display text items on the ANALYSIS SCREEN.

The **Show/hide patient info** button allows you to easily turn on/off the display of Patient Name, Patient ID, and Patient birthday with one click.

Click the **OK** button to save your changes. Click **Cancel** to keep the previous setting.

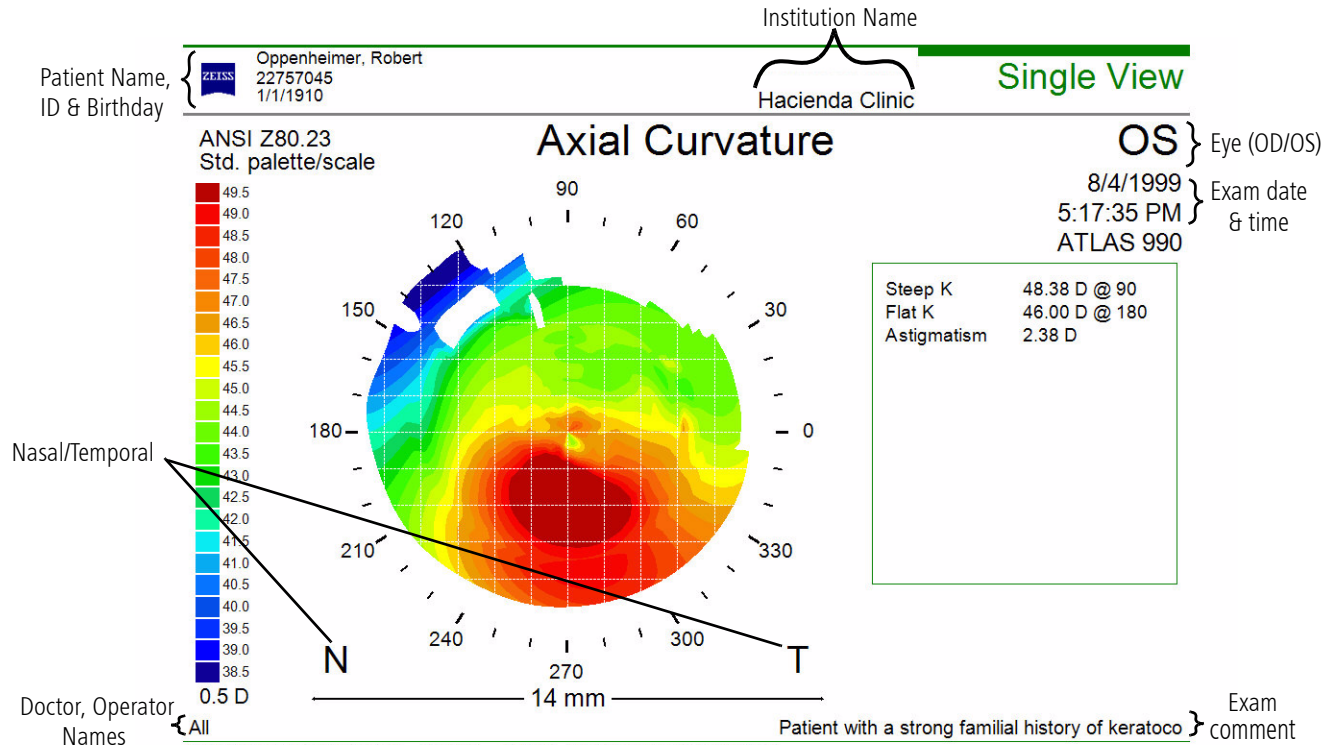


Figure 8-9 Display Text Items Shown on the Analysis Screen

Views

The **Views** menu on the EDIT PARAMETERS SCREEN allows you to set default parameters for all Views for the selected Parameter Set. Selecting a View from the menu, displays the View Editor for that View. See (6) Views for more information on Views. See (7) View Editor for more information on the View Editor’s parameters.

View Editor parameters are global for all Views except the following parameters which can be set differently for each View:

- General tab – Map diameter (Auto, Fixed diameter (mm))
- General tab – View as... (Color, Number, Profile)
- Data tab – All parameters

If you change any global parameter in one View, it will be changed in all other Views that have these parameters after you save the Parameter Set.

For example, [Figure 8-10](#) shows the Axial dialog which allows you to set default View Editor parameters for the Axial View.

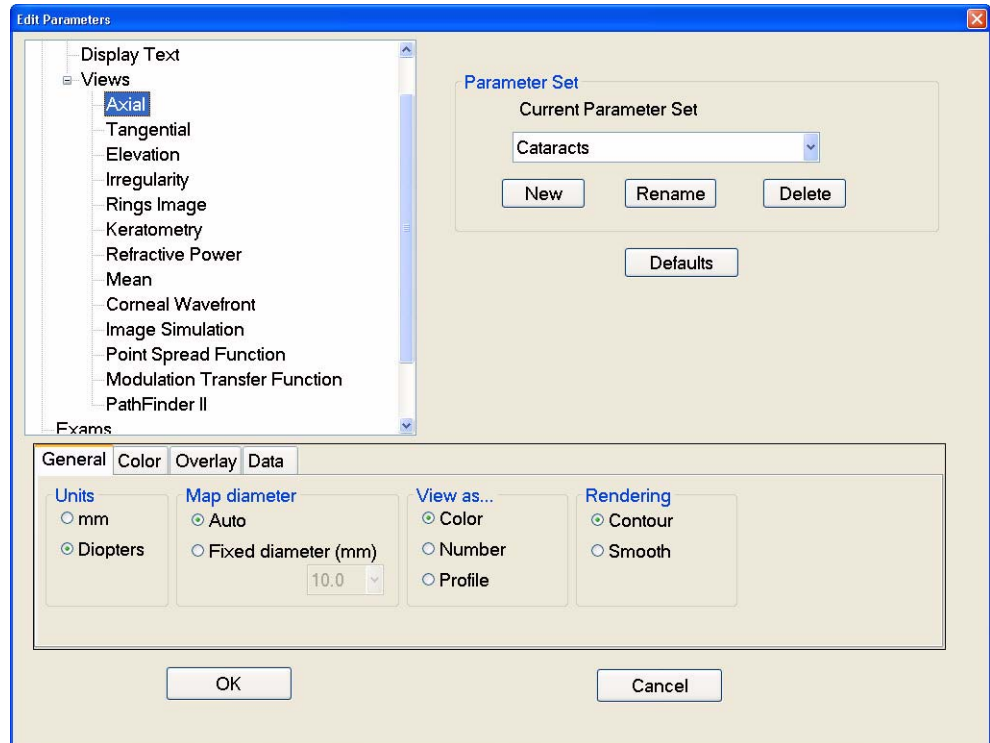


Figure 8-10 Views – Axial Dialog

Click the **OK** button to save your changes. Click **Cancel** to keep the previous setting.

Exams

The **Exams** dialog on the EDIT PARAMETERS SCREEN allows you to set default exam settings for image acquisition. See (3) [Acquire Images \(Instrument Only\)](#) for more information on the image acquisition screens.

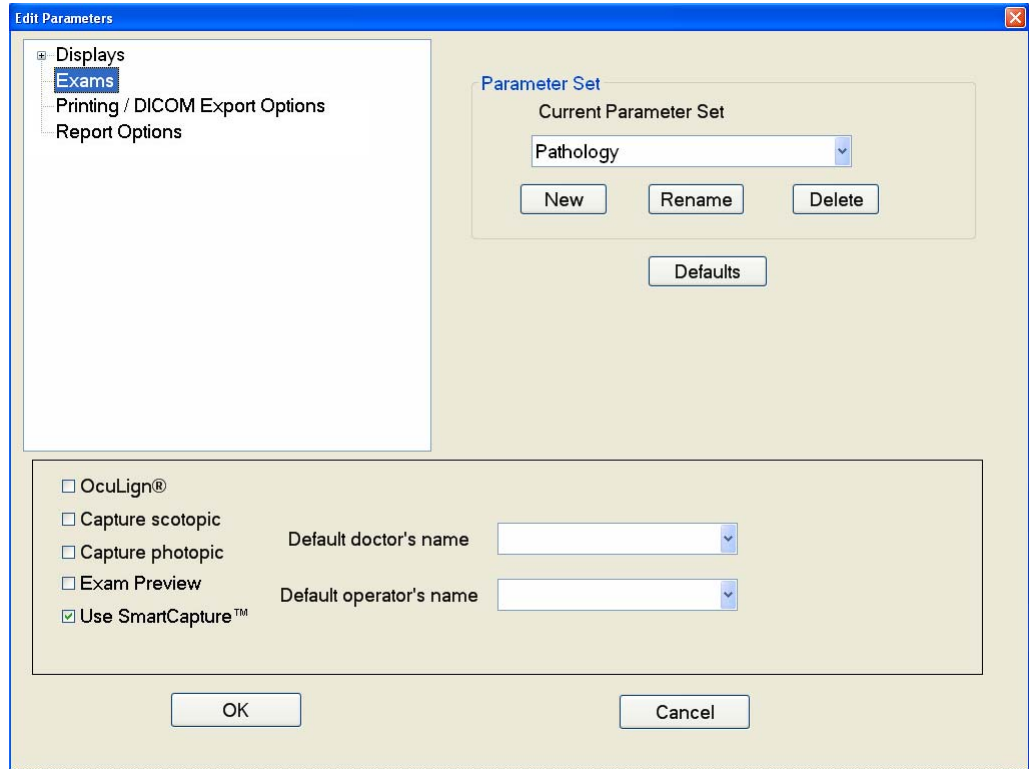


Figure 8-11 Exams Dialog on ATLAS Instrument

OcuLign®

Check this to enable OcuLign® mode. This mode enables capturing an image that is compatible with the Carl Zeiss Meditec CRS-Master Software. This feature is used when capturing the photopic image so you can use the exam for corneal guided ablation with the CRS-Master Software.

When OcuLign® is selected on the ATLAS instrument the version number is also displayed and **Capture photopic** is selected by default—it is greyed out, you cannot deselect it. In addition, you have the option to select the **Photopic delay (sec.)** from a drop-down menu (Figure 8-12).

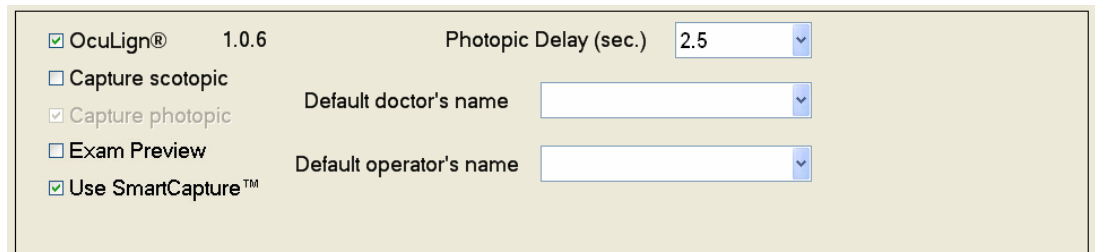


Figure 8-12 OcuLign® Mode Selected on ATLAS Instrument

When OcuLign® mode is enabled, an OcuLign column is displayed in the patient exam list of the Find Existing Patient tab and View Today's Patients tab (Figure 8-13).

Exam Date	Eye	OcuLign®	Comment
10/18/2006 9:27:51 AM	OS		
10/18/2006 9:26:25 AM	OS		
10/18/2006 9:25:33 AM	OD		
10/18/2006 9:24:30 AM	OD		

Figure 8-13 OcuLign® Column in Patient's Exam List

On the ATLAS instrument, if OcuLign® mode is enabled at the time of exam acquisition, the OcuLign® field in the patient's exam list will display "OcuLign® OK" or "OcuLign® not OK" for the exam in terms of iris image quality or obstruction. If "OcuLign® not OK" is displayed, the EXAM PREVIEW or EXAM RESULTS SCREEN at exam acquisition will display an error code (see Table 3-1, "OcuLign® Error Code Descriptions," on page 3-11).

Capture scotopic (Instrument Only)

Check this to capture a scotopic image at image acquisition. This setting will be displayed on the IMAGE PARAMETERS SCREEN. See the [Image Parameters Screen](#) on page 3-5.

Capture photopic (Instrument Only)

Check this to capture a photopic image at image acquisition. This setting will be displayed on the IMAGE PARAMETERS SCREEN. See the [Image Parameters Screen](#) on page 3-5.

Exam Preview (Instrument Only)

Check this to display the EXAM PREVIEW SCREEN after image acquisition (Figure 3-9). The EXAM PREVIEW SCREEN displays the last four images in the image frame buffer (or best four images if the **Use SmartCapture™** option is on), has a Data Parameters Table for each exam, mean and standard deviation values for the four images displayed, and selectable/customizable Views for the images. If not checked, the EXAM RESULTS SCREEN will be displayed (Figure 3-10) which displays only the last image (or best image if the **Use SmartCapture™** option is on). This setting will be displayed on the IMAGE PARAMETERS SCREEN. See the [Image Parameters Screen](#) on page 3-5.

Use SmartCapture™ (Instrument Only)

Check this to enable ATLAS SmartCapture image acquisition mode. SmartCapture Image Analysis Technology automatically acquires images during the alignment process and selects the highest quality image (or images if Exam Preview is enabled). This setting will be displayed on the IMAGE PARAMETERS SCREEN. See the [Image Parameters Screen](#) on page 3-5.

Default doctor's name (Instrument Only)

Select a default doctor from the drop-down menu. This name will appear on the EXAM PREVIEW or EXAM RESULTS SCREEN. See the [Exam Preview/Exam Results Screen](#) on page 3-9.

Default operator's name (Instrument Only)

Select a default operator from the drop-down menu. This name will appear on the EXAM PREVIEW or EXAM RESULTS SCREEN. See the [Exam Preview/Exam Results Screen](#) on page 3-9.

Click the **OK** button to save your changes. Click **Cancel** to keep the previous setting.

Printing / DICOM Export Options

The **Printing /DICOM Export Options** dialog ([Figure 8-14](#)) on the EDIT PARAMETERS SCREEN allows you to select the reports, Displays, and Views printed/exported at the end of image acquisition, and with the **Print/Export** button on the ANALYSIS SCREEN.

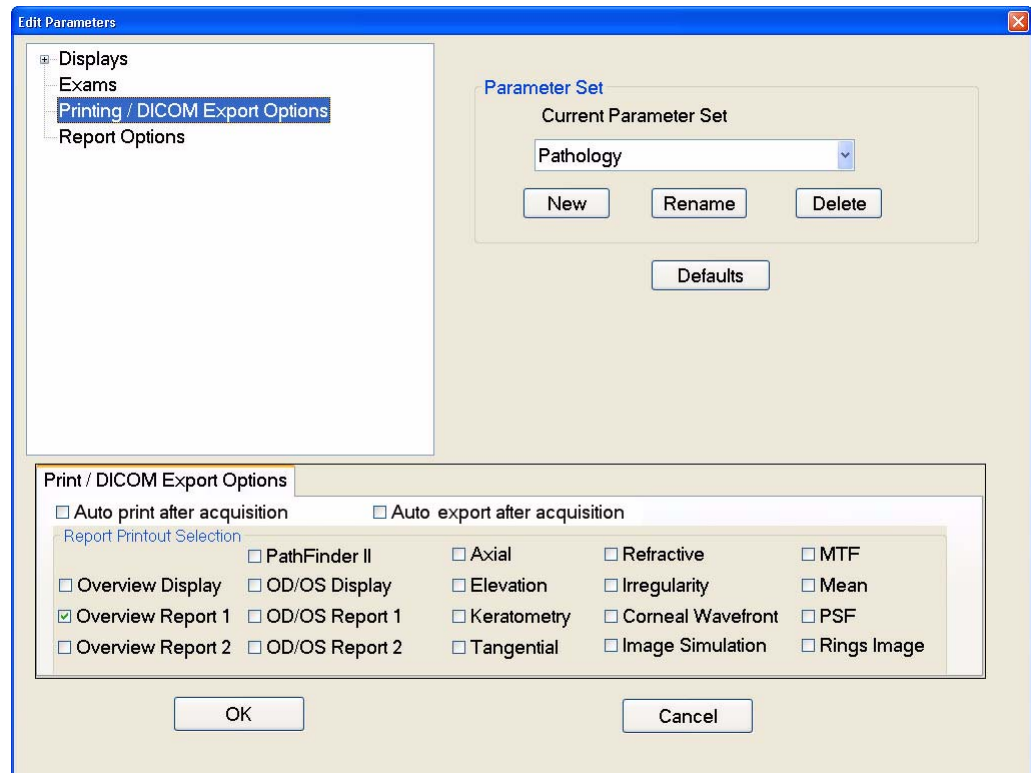




Figure 8-14 Printing / DICOM Export Options Dialog on ATLAS Instrument

In the Report Printout Selection area, select the reports and Views you want printed by clicking on them and displaying a checkmark. Click again to deselect and remove checkmark. See [Report Options](#) on page 8-12 for selecting Views included in the Reports. See [\(6\) Views](#) for information on Views. The selected reports will be printed when you select **Print > Print report** on the ANALYSIS SCREEN. Selecting **Export > Export report to DICOM** will export the selected reports to a DICOM system.

 **Note:** For the OD/OS Display and Reports, the software automatically selects the closest other eye (based on exam date).

If **Auto print after acquisition** is checked (ATLAS instrument only), then the selected reports and Views will be printed automatically at the end of image acquisition (when you click the **Done** button). If **Auto export after acquisition** is checked (ATLAS instrument only), then the selected reports and Views will be exported to a DICOM system automatically at the end of image acquisition (when you click the **Done** button). See [Done](#) on page 3-14. See [Exporting Data to DICOM Systems](#) on page 11-25.

 **Note:** If multiple exams have been selected or acquired for one eye before you select the **Done** button, only the reports and Views for the last exam will be printed.

Click the **OK** button to save your changes. Click **Cancel** to keep the previous setting.

Report Options

The **Report Options** dialog on the EDIT PARAMETERS SCREEN allows you to select the Views included in OVERVIEW REPORTS ([Figure 8-15](#)) and OD/OS REPORTS ([Figure 8-16](#)).

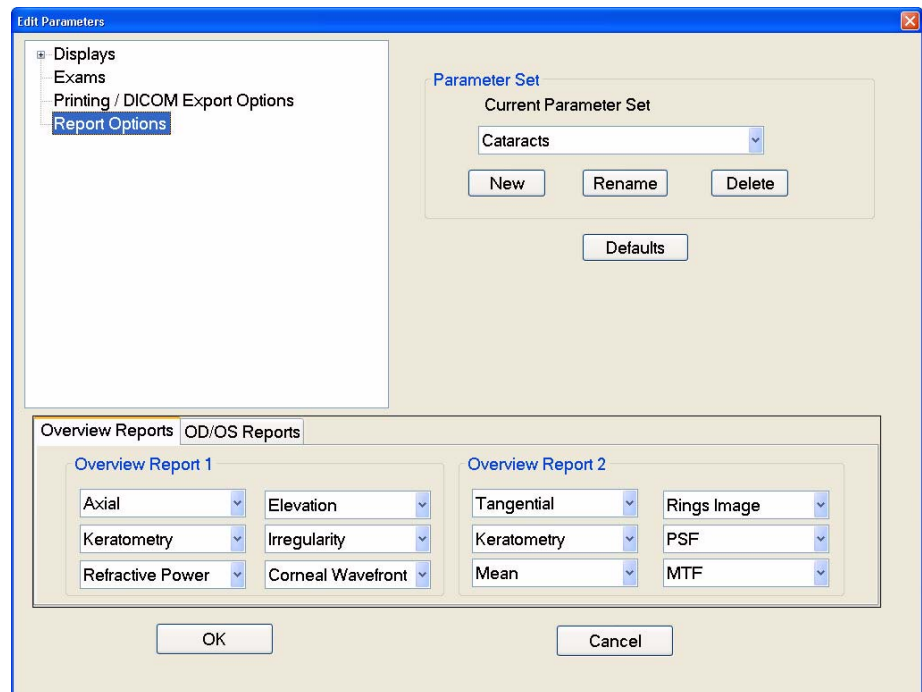


Figure 8-15 Report Options – Overview Reports

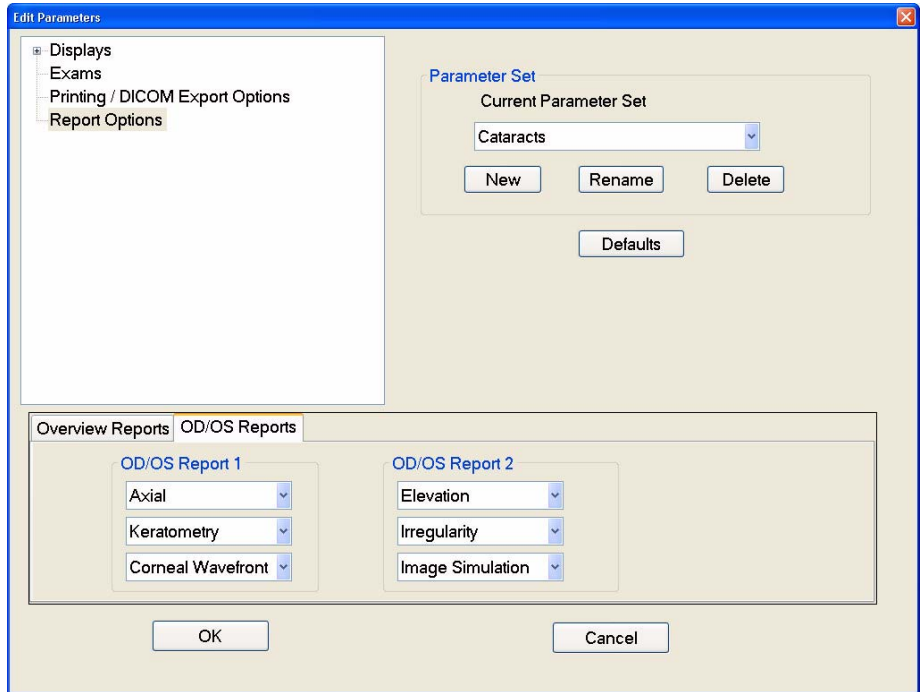


Figure 8-16 Report Options – OD/OS Reports

Six Views are included per Overview report (see [Figure 8-17](#) for an example Overview report), and three Views for each OD/OS report (see [Figure 8-18](#) for an example OD/OS report). Select the Views you want from the drop-down or pop-up menus by clicking on it. See [\(6\) Views](#) for more information.

Parameter Sets

Click the OK button to save your changes. Click **Cancel** to keep the previous setting.

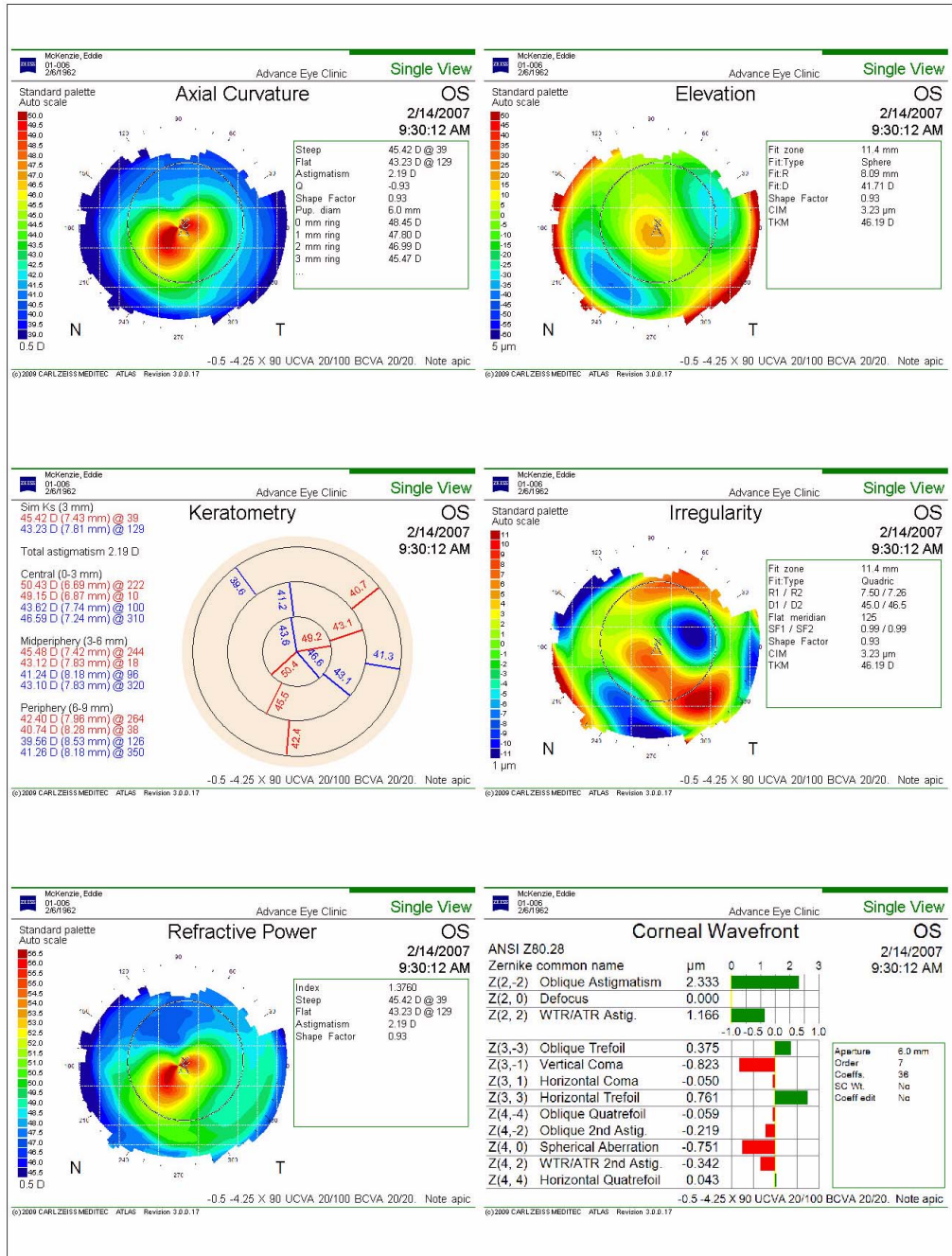
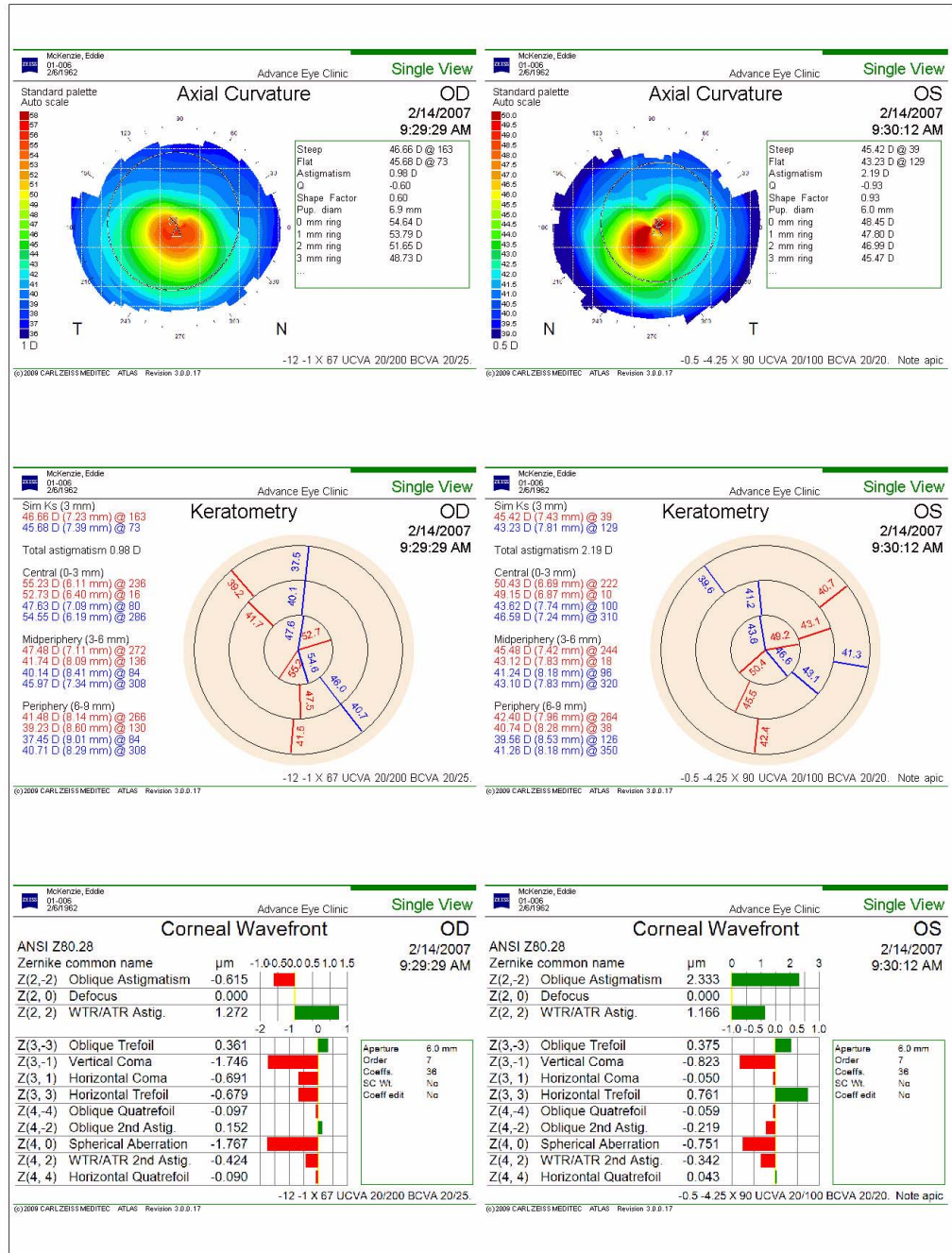


Figure 8-17 Example Overview Report



Monday, April 06, 2009

1 of 1

4:46:16 PM

Figure 8-18 Example OD/OS Report

(9) Data Management

Chapter Overview

This chapter explains how to manage data with the ATLAS System. Topics covered in this chapter include:

- [The admin User](#), page 9-1
 - [Create Institution Name \(admin only\)](#), page 9-2
 - [Staff Registration \(admin only\)](#), page 9-2
- [Patient Search](#), page 9-5
 - [Advanced Search](#), page 9-6
- [Create, Edit and Delete Patients](#), page 9-8
- [Merge Patients](#), page 9-11
- [Categorize Patients](#), page 9-13
- [Change Database / Create New Database \(admin only\)](#), page 9-16
- [Back Up/Restore Configuration Files \(admin only\)](#), page 9-20

This manual treats the archive/retrieve and export/import transfer functions in separate chapters:

- [\(10\) Archive Management](#)
- [\(11\) Export and Import](#)

The admin User

To manage administrative functions, ATLAS dedicates a special user account with the user name **admin**. Only the **admin** user can create and edit the institution name, user accounts and staff.

The admin account never appears in the drop-down list of user names on the login screen. You must type it in. The **admin** account accepts any password or none. The **admin** user cannot acquire or analyze images. When the admin user is logged in, the only available menu functions are:

- File > Log Out
- File > Exit
- Tools > Back Up Configuration Files...
- Tools > Retrieve Configuration Files...
- Tools > Database Recovery Tool...
- Options > Language... (change to another language)
- Options > Change Database...(change to another ATLAS database)
- Options > Institution... (edit institution information)
- Options > Staff... (register or edit staff)
- Options > Category Registration... (create or edit categories)
- Help > View User Manual... F1
- Help > View Licenses...
- Help > About (view software version information)

Only the **admin** user can access the Language, Change Database, Institution, Staff, and Category Registration dialogs on the Options menu. Also, only the **admin** user can access the Back Up/Retrieve Configuration Files dialogs on the Tools menu.

Create Institution Name (admin only)

Use the Institution Edit dialog to customize your system with your institution's name. The institution name will appear on all analysis printouts.

To access the Institution Edit dialog, you must be logged in as the **admin** user.

A default Institution name (**Advance Eye Clinic**) has been created in the sample data. Follow the steps below to customize your system:

1. Click **Options > Institution....** The INSTITUTION EDIT dialog opens.

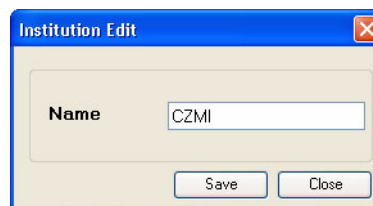


Figure 9-1 Institution Edit Dialog

2. In the **Name** field, type the name of your institution. The field requires at least one character and accepts up to 64 characters, including spaces. The name field cannot be empty.
3. Click **Save** to save your changes and exit the dialog, or click **Close** to exit the dialog without saving.

Staff Registration (admin only)

Using the Staff Registration dialog, the **admin** user can create (register) medical staff and assign a user name and password to users.

User Accounts

ATLAS user accounts offer two types of users, **Operator** and **Doctor**. Only a user defined as an operator can log onto the ATLAS System. At exam acquisition, you can specify a doctor and operator used for an exam, and their names will be displayed on Analysis Screen Views and reports. A user can be defined as both an operator and doctor.

At first-time startup of the sample data (and with a new database), a default user name (**ATLAS Operator**, blank password) appears in the drop-down list.

Register (Create), Edit and Delete Staff

To register, edit or delete staff, use the Staff Registration dialog. To access this dialog, you must be logged in as the **admin** user.

Select **Options > Staff...** The Staff Registration dialog opens.

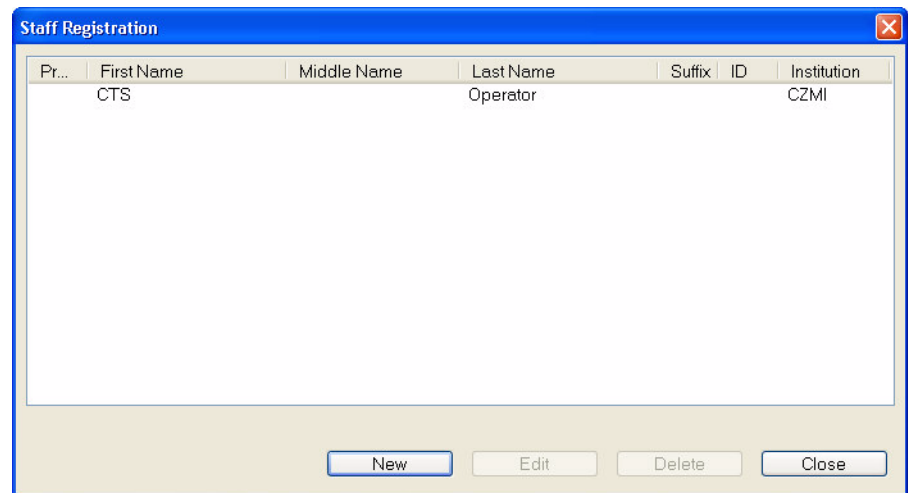


Figure 9-2 Staff Registration Dialog

All registered staff appear in the list, sorted alphabetically by last name. None is selected by default.

Register (Create) Staff

1. In the Staff Registration dialog, click **New**. The New Staff dialog opens.

Figure 9-3 New Staff Dialog

2. Edit the staff registration fields as desired. A staff record must have either a last name or first name or both; other fields are optional.
3. Select **Doctor** or **Operator**, or both.
4. When finished with your changes, click **Save**.
 - To discard the changes before saving, click **Cancel**. A dialog prompts you to confirm your choice.

- ☞ Note: If the password field is left blank, that user must leave the password field blank to log in. User names are **not** case-sensitive, but passwords are.
- ☞ Note: Once logged in, any user can change his or her own password by selecting **Options > Change My Password...** and completing the Password Change dialog. The **admin** user may take advantage of this feature by creating new user accounts with a temporary password he provides to the user, and asking the user to change the password.

Edit Staff

To edit medical staff, follow these steps:

1. In the **Staff Registration** dialog, select a staff record and click **Edit**. The **Staff Edit** dialog opens. It resembles [Figure 9-3](#) above except that the name of the selected staff appears in the title bar. Edit the staff registration fields as desired and then click **Save**. A staff record must have either a **Last Name** or **First Name**; other fields are optional.
 - To discard the changes before saving, click **Cancel**. A dialog prompts you to confirm your choice.

- ☞ **CAUTION:** If you edit a doctor or operator that has been referenced in exams, then your edited changes will be displayed with the exams.

Delete Staff

To delete medical staff, follow these steps:

1. In the **Staff Registration** dialog, select a staff record and click **Delete**. A dialog will ask you to confirm your choice.

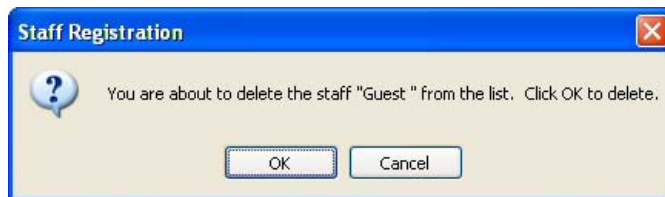


Figure 9-4 Confirm Staff Deletion Dialog

2. Click **OK** to confirm deletion, or click **Cancel** to cancel deletion.

You cannot delete a staff record if there are any references to it in exam data. If you try to delete it, the following dialog appears.



Figure 9-5 Cannot Delete Staff Referenced in Exam Data

Patient Search

Search functionality is incorporated into several dialogs within the ATLAS System software. In each instance, the software provides basic search functionality on the dialog itself and an **Advanced Search** link. With advanced search, you can search using all possible parameters. The advanced search, no matter where initiated, always uses a common dialog (see [Advanced Search](#) on page 9-6). Dialogs that include basic search sometimes provide different sets of search parameters. This section presents basic search using the most common example: the PATIENT SELECTION WINDOW.

Basic Search

1. To search for patients, use the Find Existing Patient tab of the PATIENT SELECTION WINDOW (Figure 9-6), which appears automatically after login.

From other modes, click the **Find Existing Patient** button or select **File > Find Existing Patient** to return to the PATIENT SELECTION WINDOW.

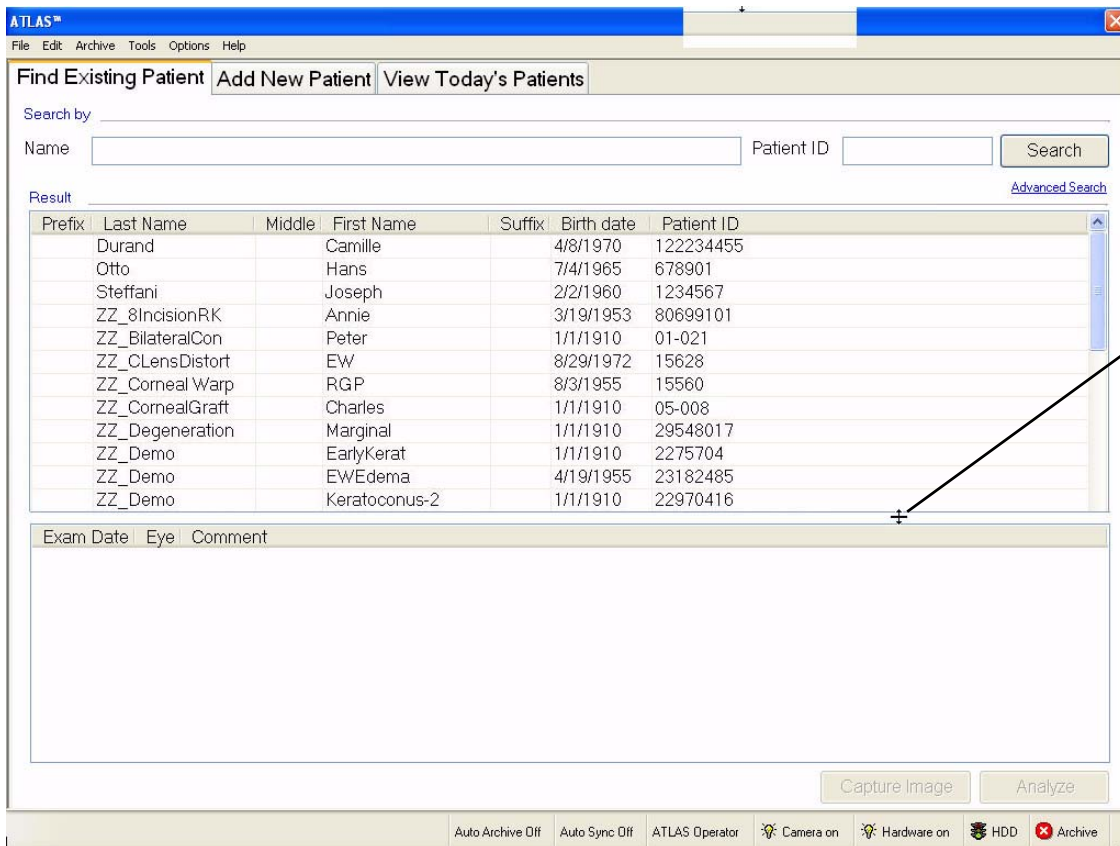


Figure 9-6 Patient Selection Window—Default Tab: Find Existing Patient

- Click **Search** to return all patients in the index database. To search for patients by first or last Name or Patient ID, type in the corresponding fields and click **Search**.
 - You can search using partial information, and you can use one or both fields.
 - Click **Advanced Search** if you want to search using additional parameters—see [Advanced Search](#) on page 9-6 for details.
 - The search returns all patients that match all defined parameters, sorted alphabetically.
 - When you search by **Name**, the search applies to last name, first name, middle name, prefix and suffix, and returns all patients that match any of these fields.
 - In this list, you can select only one patient at a time. When you select a patient, the **Capture Image** button becomes active for an ATLAS instrument. If the patient has saved exams, the **Analyze** button becomes active.

Advanced Search

- Click **Advanced Search** if you want to search for patients using additional parameters. The Advanced Search dialog appears.

Figure 9-7 Advanced Search Dialog

- Using the available fields, enter or select search parameters and click **Search**. Search parameters you type in are not case-sensitive.



Note: If you have licensed the optional MasterFit II software (see **(B) MasterFit II (Optional)**), you can search for patients that have saved MasterFit II data by selecting **MasterFit II Patient Data** in the Exam Protocol drop-down menu.

3. The Search Preview dialog returns all matching patients, sorted alphabetically by last name.

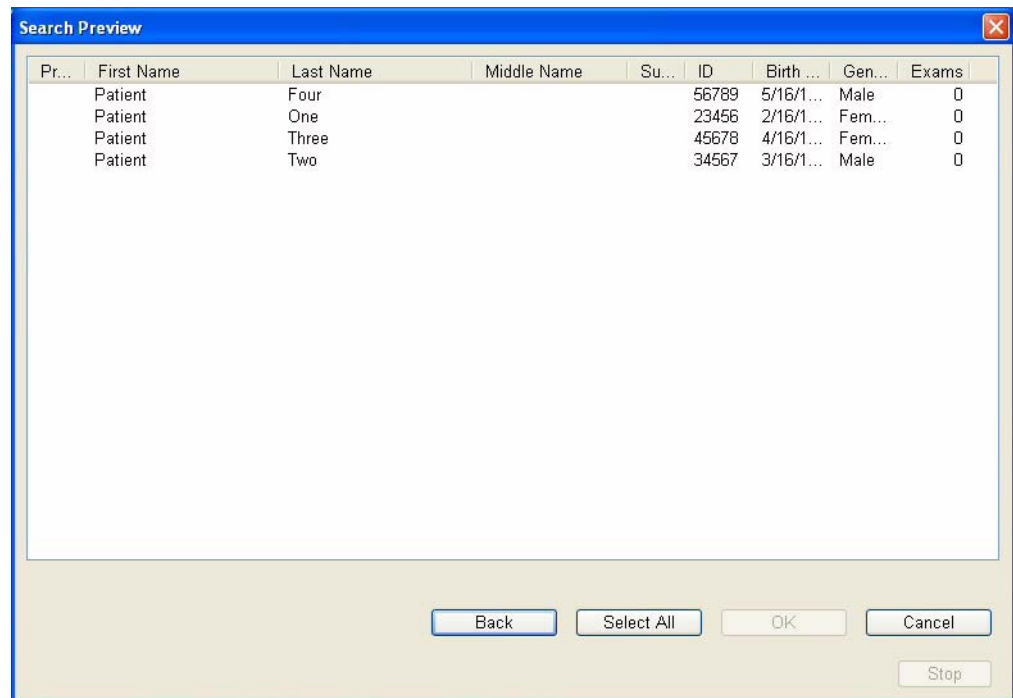


Figure 9-8 Search Preview Dialog



Note: The search returns only the patients that match all search parameters used. If your search does not return all patients desired, you may want to broaden your search by using fewer parameters or partial information. Clicking **Search** without using any parameters returns all patients in the ATLAS System index database.

4. In the Search Preview dialog, select the patients you wish to populate the patient list where your search originated.
 - Click to select one patient; Ctrl-click to select multiple patients; Shift-click on two patients to select all intervening patients; Ctrl-Shift-click to select all intervening patients plus those already selected.
 - Click **Select All** to select all patients in the Search Preview list; the button then toggles to **Deselect All**, in case you wish to start selecting again.
 - Click **Back** to return to the Advanced Search dialog.
 - Click **Cancel** to return to the PATIENT SELECTION WINDOW.
5. After you select patients, click **OK**. The selected patients will appear in the patient list where you started.

Create, Edit and Delete Patients

To manage patients, start in the PATIENT SELECTION WINDOW, which appears automatically after login. From other modes, select **File > Find Existing Patient** or click the **Find Existing Patient** button to return to the PATIENT SELECTION WINDOW.

Add a New Patient (Instrument Only)

To add a new patient, click the **Add New Patient** tab and fill in at least the required fields, which are indicated with red asterisk (*). Since a Patient ID is required for DICOM-compliant import and export of patient data, if you do not enter a Patient ID, the system will create a unique ID automatically for this patient.

The screenshot shows the 'Add New Patient' tab of the Patient Selection Window. The form is titled 'Enter patient information' and contains the following fields:

- Last Name: *
- FirstName: *
- MiddleName:
- Date of Birth: Month(##) Month Day(##) Day Year(####) *
- Gender:
- Patient ID:
- Prefix: Suffix:
- Comments:

On the right side, there is a section titled 'Add Categories' with a list of checkboxes:

- Normal
- Keratoconus
- Suspect Keratoconus
- Pellucid Marginal Degeneration
- Clinical Study
- Soft Contact Lens
- RGP Contact Lens
- Myopic Refractive Surgery
- Hyperopic Refractive Surgery
- Orthokeratology
- Demo Patients
- PKP
- Corneal Distortion
- Cataract
- Astigmatism

At the bottom of the form, there are three buttons: **Save**, **Clear**, and **Capture Image**. A legend at the bottom left states: * Indicates required field.

Figure 9-9 Add New Patient Tab of the Patient Selection Window

- When you click **Save**, the new patient information is saved to the database and to the list of today's patients. If data is missing from required fields, you will be prompted to complete these fields before you can save.
- Click **Clear** to clear the fields and start over, before or after saving. This is useful to add multiple new patients in succession, because when you click **Save**, the patient is saved but the **Add a New Patient** tab remains open.
- When you click **Capture Image (Instrument only)**, ATLAS saves the new patient information and initiates a new exam for that patient. See [Add New Patient \(Instrument Only\)](#) on page 3-3.

Edit Patient...

1. Select a patient from the Find Existing Patients tab or from the View Today's Patients tab of the PATIENT SELECTION WINDOW. (To populate the patient list, see [Patient Search](#) on page 9-5.)
2. Click **Edit > Edit Patient...** (This menu option is available only if you are in patient selection mode and one patient is selected). The Patient Edit dialog appears with the name of the selected patient appearing in the title bar ([Figure 9-10](#)).

Figure 9-10 Patient Edit Dialog

3. Edit the desired fields and click **Update** and then **OK** to save the changes. Click **Cancel** and then **OK** to cancel the changes and return to the PATIENT SELECTION WINDOW.

Obscured Patients

Patient information can be hidden (as for a clinical trial) when exporting ATLAS 9000 Series data. To hide patient information so that they are obscured, see [Patient Identifier Omit Options](#) on page 11-22. If the patient identifying data is obscured, you will not be able to edit patient information.

Add/Remove Categories Tab

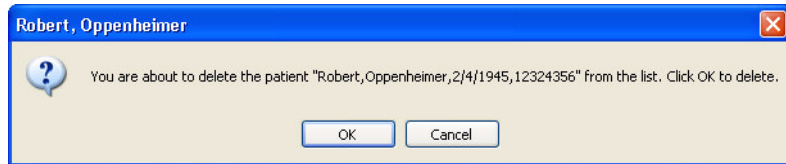
Use this tab to assign categories to and remove them from the patient. For details, see [Add Categories to Patient](#) on page 9-15.

Delete Patient

To delete a patient:

1. Select a patient from the [Find Existing Patient](#) (see page 3-2) tab or from the [View Today's Patients](#) (see page 3-4) tab of the PATIENT SELECTION WINDOW. If necessary, perform a [Patient Search](#) (see page 9-5) to access the desired patient.
2. Click **Edit > Delete Patient**. This option is available only if you are in patient selection mode and have selected one patient.

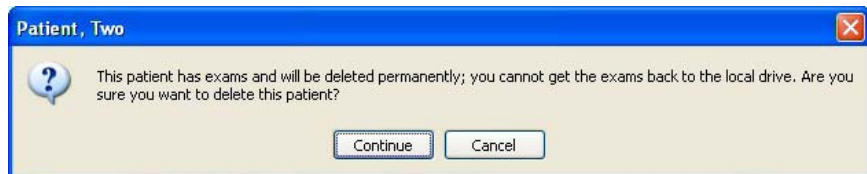
- You can also click the **Delete** button from any tab of the Patient Edit dialog (see [Figure 9-10](#) on page 9-9).
- If the patient has no exam data, the following dialog will be displayed:



- The following notice will appear if you try to delete a patient that has exam data that has not been archived:



When you try to delete a patient that has saved exams that have been archived a dialog prompts you to confirm your choice:



3. Click **Continue** to delete the patient, or click **Cancel** to cancel deletion.

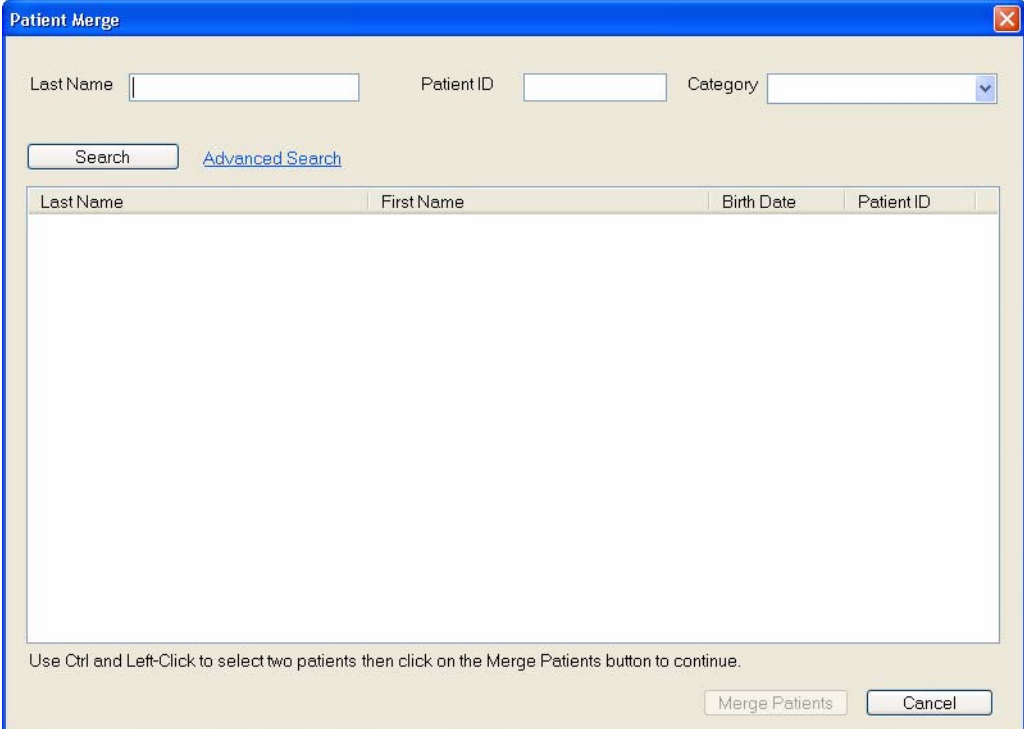


WARNING: Deleting a patient is permanent to the instrument/computer you delete from. However, if you have already archived the patient before deletion, the patient and his/her exams remain on the archive volume, and can be recovered by using the Database Recovery Tool (see [Database Recovery Tool](#) on page 10-25).

Merge Patients

In ATLAS, every patient has a unique **Patient ID** number. It is possible that two or more patients may exist for the same patient because this information was entered differently on separate occasions. To correct such errors, it is possible to merge two patients. To merge two patients, follow these steps:

1. Select **Edit > Merge Two Patients...** The Patient Merge dialog opens.



The screenshot shows the 'Patient Merge' dialog box. At the top, there are three input fields: 'Last Name', 'Patient ID', and 'Category'. Below these fields are two buttons: 'Search' and 'Advanced Search'. A table with four columns is visible: 'Last Name', 'First Name', 'Birth Date', and 'Patient ID'. At the bottom of the dialog, there are two buttons: 'Merge Patients' and 'Cancel'. A note at the bottom of the dialog reads: 'Use Ctrl and Left-Click to select two patients then click on the Merge Patients button to continue.'

Figure 9-11 Patient Merge Dialog

To populate the patient list with the patients you wish to merge, either click **Search** to return all patients, or specify search parameters in the fields provided and then click **Search**. You can also click **Advanced Search** to search with more parameters.



Note: Patients imported with omitted patient identifiers cannot be merged and will not be displayed in the Patient Merge dialog. See [Exporting to ATLAS 9000 Series Media](#) on page 11-21.

1. Select the two patients you wish to merge. You must hold down the **Ctrl** key while clicking (**Ctrl-click**) the second patient. The **Merge Patients** button will not be active unless exactly two patients are selected (Figure 9-12).

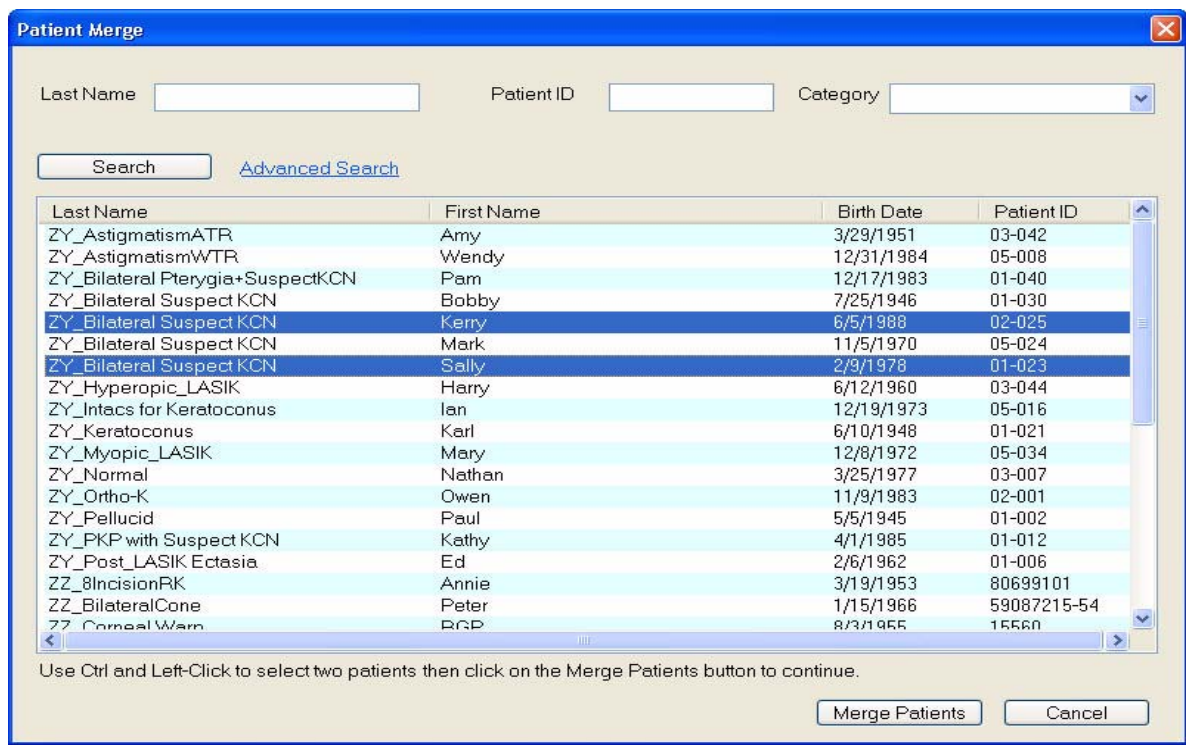


Figure 9-12 Patient Merge – Two Patients Selected



WARNING: Be certain that you select the correct patients to merge. If you have not archived the two patients, then only the merged patient will be available for later archive, and there is no way to separate the combined records of the erroneously merged patients. If you have already archived the two patients, both patients will remain on the archive location, and can be recovered by using the Database Recovery Tool (see [Database Recovery Tool](#) on page 10-25).

2. Click **Merge Patients**. A dialog informs you that after merging, all exams, analyses, and categories from both patient records will belong to the patient record you select.



Figure 9-13 Patient Merge – Warning Dialog

3. A dialog prompts you to select the correct patient, that is, the patient whose information you wish to retain for the newly merged record. Select the desired patient and click **Merge Patients**.

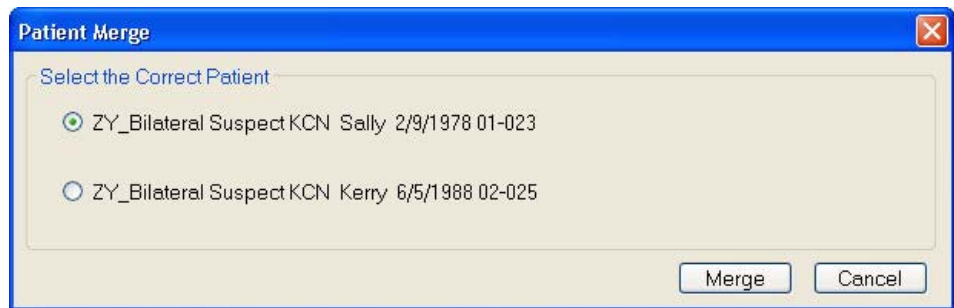


Figure 9-14 Patient Merge – Select the Correct Patient



Note: Note that merging is not reversible if you have not already archived the patients.

4. A dialog prompts you to confirm the merge, as shown below. Click **OK** to proceed with merging.

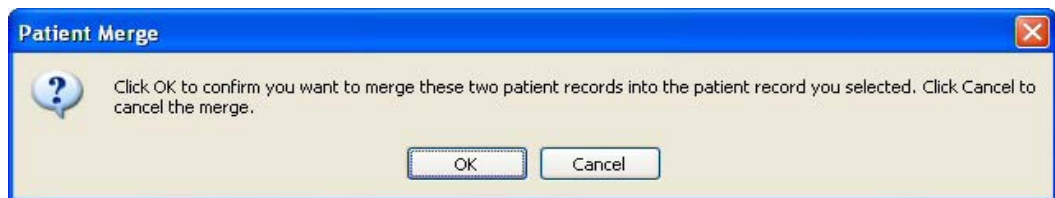



Figure 9-15 Confirm Patient Merge

When complete, you will return to the **Patient Merge** dialog, where you will observe just one record for the patient in the patient list. If you wish to merge additional patients, repeat the steps above. When finished merging, click **Cancel** or  to close the dialog.

Categorize Patients

You can create your own categories and place patients in them. This enables you to search for groups of patients by category. In general, the advantage of the categories function is that it provides you the ability to create groups of your own design for any reason, and to directly control their membership. All other search criteria arise from objective data.

Create, Edit and Delete Categories (admin only)

To create, edit and delete categories, use the **Category Registration** dialog. To access this dialog, you must be logged in as the **admin** user.

To access the Category Registration dialog:

1. Select **Options > Category Registration....** The Category Registration dialog opens.

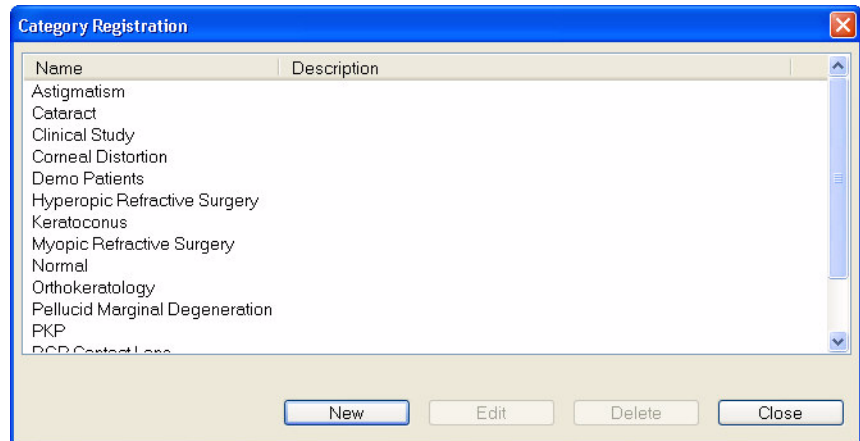


Figure 9-16 Category Registration Dialog

All registered categories appear in the list, sorted alphabetically. None is selected by default.

Create (Register) Categories

1. In the Category Registration dialog, click **New**. The New Category dialog appears.

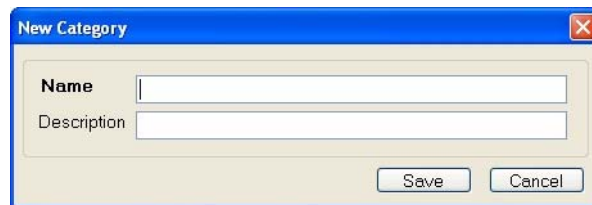


Figure 9-17 New Category Dialog

2. In the **Name** field, type in a name for the new category, up to 64 characters, including spaces. You may enter an optional description.
3. Click **Save**. The new category now will be available to place patients in it.
 - Click **Cancel** at any time to cancel changes and exit the dialog.

Edit Categories



Note: You cannot edit categories created at another institution.

1. In the Category Registration dialog, select a category and click **Edit**. The Category Edit dialog appears ([Figure 9-17](#)).
2. In the **Name** and **Description** fields, edit the category as desired.
3. Click **Save** to save your changes.
 - Click **Cancel** at any time to cancel changes and exit the dialog.

Delete Categories

1. In the Category Registration dialog, select a category and click **Delete**. A dialog will ask you to confirm your choice.
2. Click **OK** to confirm deletion, or click **Cancel** to cancel deletion.



Note: Categories cannot be deleted if they are associated with at least one patient.

Apply Categories to Patients: Add or Remove

You can apply categories to new patients when you add a new patient by selecting a category from the list (see [Figure 9-9](#)). To add or remove categories to patients after adding a patient, follow these steps:

1. Select a patient and click **Edit > Edit Patient....** The Patient Edit dialog appears (see [Figure 9-10](#) on page 9-9). The name of the selected patient appears in the title bar of the dialog.
2. Select the **Add/Remove Categories** tab. Available Categories are displayed on the left and Patient Categories on the right.

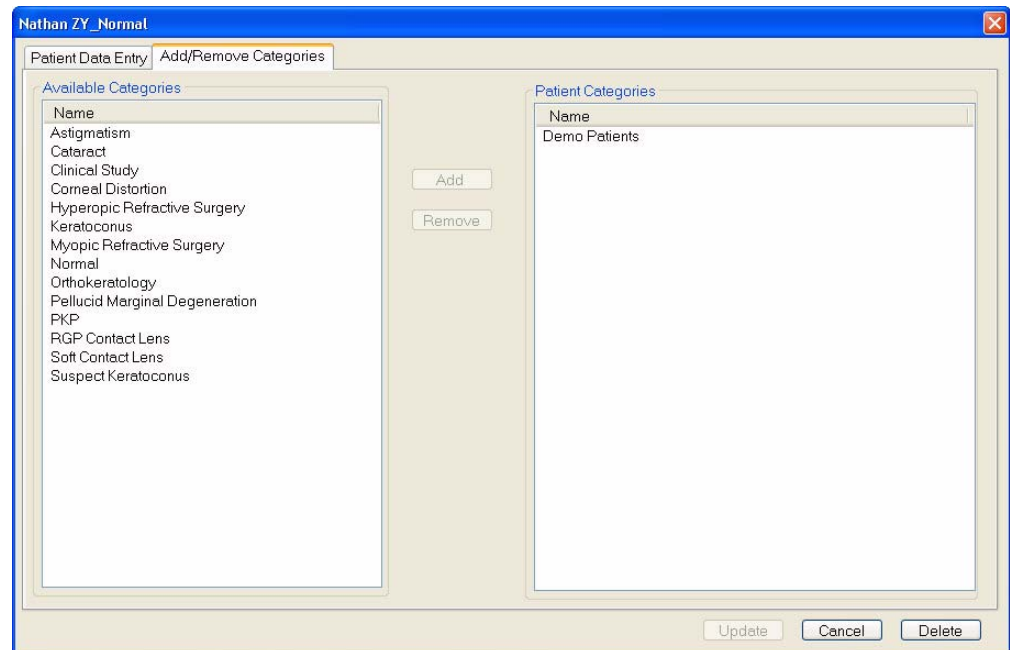


Figure 9-18 Add/Remove Categories Tab of the Patient Edit... Dialog



Note: The **Delete** button applies to the patient itself, not to categories. Click the **Delete** button only if you want to delete the patient. For details, see [Delete Patient](#) on page 9-10.

Add Categories to Patient

1. Select the desired categories to apply to this patient from the Available Categories list on the left. Ctrl-click to select multiple categories.
2. Click **Add** to associate the selected categories with the patient. The selected categories will now appear in the Patient Categories list on the right.






3. Click **Update** and then **OK** to save your changes and close the Patient Edit dialog, or click **Cancel** and then **OK** to exit the dialog without saving.

Remove Categories from Patient

1. From the Patient Categories list on the right, select the desired categories to remove from this patient. Ctrl-click to select multiple categories.
2. Click **Remove** to remove the selected categories from the list of Patient Categories on the right. The newly removed categories will now appear in the list of Available Categories on the left.
3. Click **Update** and then **OK** to save your changes and close the Patient Edit dialog, or click **Cancel** and then **OK** to exit the dialog without saving.

Change Database / Create New Database (admin only)

You can change your current database to a different patient database and create a new blank database at a new location. The new database location must be on your local hard drive or a USB mass storage device.

-  **Note:** To access the Change Database function, you must be logged in as the **admin** user (see [The admin User](#) on page 9-1).
-  **Note:** When you change databases, only the staff of doctors and operators associated with the new database will be available.
-  **Note:** An ATLAS 9000 Version 1.0 database will undergo a conversion upon loading. If any patients exist without a Patient ID, a Patient ID will be created for them using the first and last name (e.g. Patient ID = johnadams).
-  **Note:** ATLAS data is not encrypted. To protect confidentiality of your ATLAS data, the use of disk encryption is recommended and is the responsibility of the user, using third-party encryption software.
-  **Note:** The default sample database that comes with the ATLAS System and ATLAS Review is located at "*C:\Documents and Settings\All Users\Application Data\Carl Zeiss Meditec\ATLAS\Database*" for Windows XP; for Windows Vista the path is "*C:\Program Data\Carl Zeiss Meditec\ATLAS\Database*."

Change Database

To change the database to another database file, follow these steps.

1. Click **Options > Change Database...** The Database Path dialog appears with the Change Database tab selected (Figure 9-19).

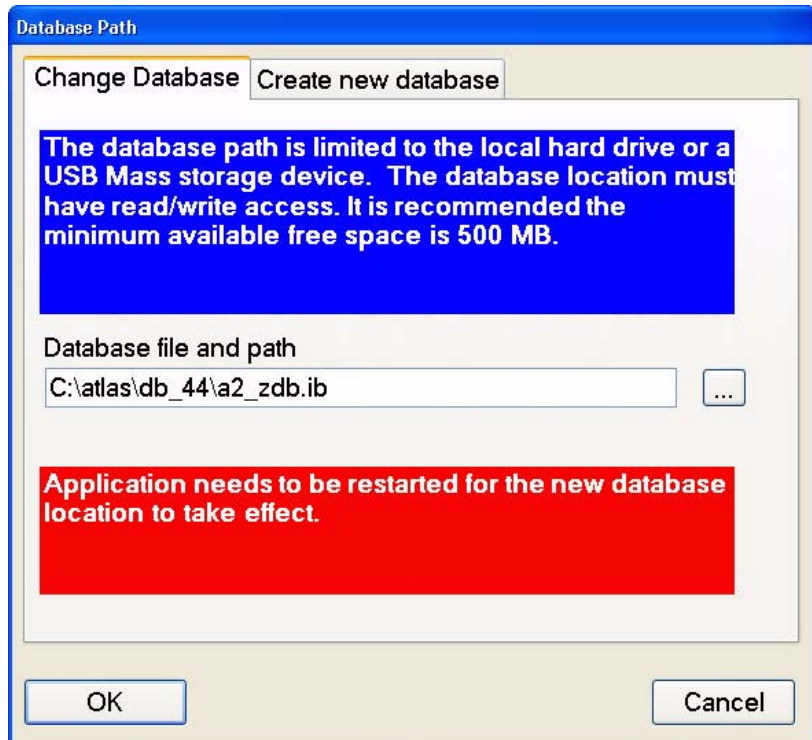


Figure 9-19 Change Database – Change Database Tab

2. In the Database file and path field, you can type in the exact path to the new database file, if you know it, or click the Path button (...) to find and select the new database file.

A Select ATLAS database file dialog (Figure 9-20) appears, enabling you to browse to the new database file.

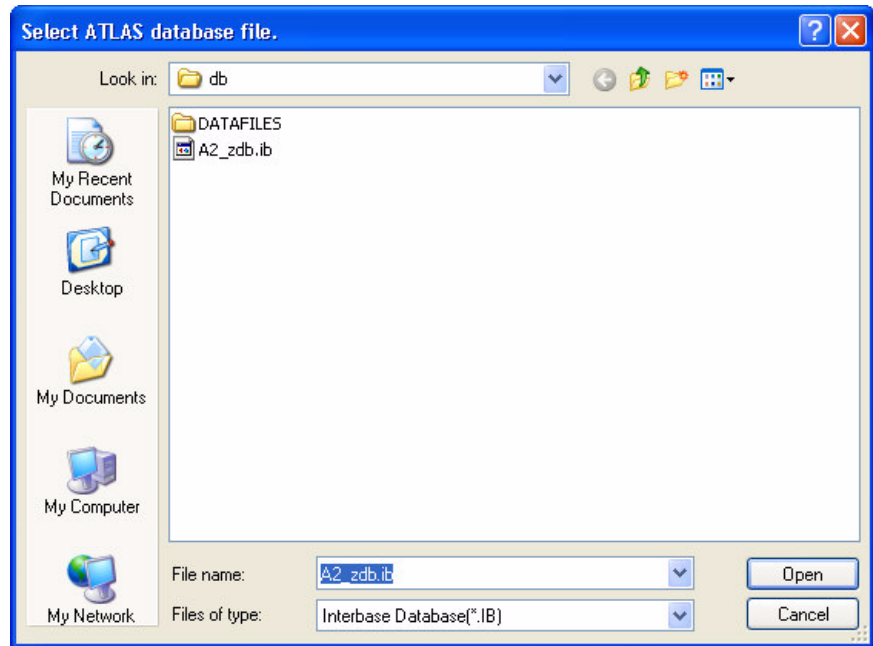


Figure 9-20 Select ATLAS Database File Dialog

3. When you have selected the new database file, click **Open** to enter the path into the Select ATLAS database file dialog box.
4. Click **OK** to change the database file. A Change Database (Figure 9-21) dialog will be displayed.

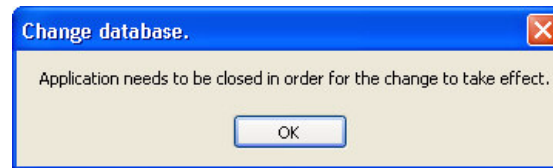


Figure 9-21 Change Database Dialog

5. For the database change to take effect, click **OK** to close the ATLAS application.
6. Restart the ATLAS application to load the new database.

Create New Database

To create a new database file, follow these steps.

1. Click **Options > Change Database...** The Database Path dialog appears with the Change Database tab selected. Click the Create new database tab (Figure 9-22).

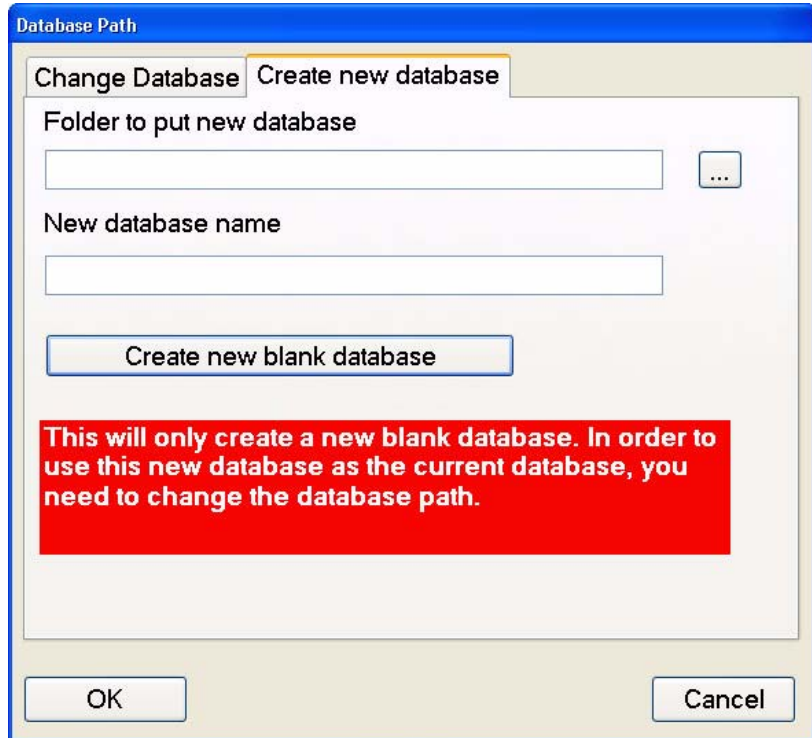


Figure 9-22 Change Database – Create New Database Tab

2. In the Folder to put new database field, you can type in the exact path to the new database folder, if you know it, or click the Path button (...) to find and select (or create) the new database folder. A Browse For Folder dialog (Figure 9-23) appears, enabling you to browse to the new database folder location.



Figure 9-23 Browse For Folder Dialog

3. In the New database name field, type in a name for the new database.
4. Click **Create new blank database** to create the new database. The system notifies you when the new database has been created.
5. In order to use the new database you just created, you need to change to the new database by using the **Change Database** function (see [Change Database](#) on page 9-17) and specify the new database location.



Note: At first-time startup of a new database, the **Institution Edit** dialog will be displayed where you must enter a name for your institution (see [Create Institution Name \(admin only\)](#) on page 9-2). A default user name (**ATLAS Operator**, blank password) will be created for the new database (see [Register \(Create\), Edit and Delete Staff](#) on page 9-2 to create your staff user accounts).

Back Up/Restore Configuration Files (admin only)

ATLAS allows you to back up certain configuration files. This is useful for transferring the current ATLAS configuration to another ATLAS, and as a backup in case of file corruption. The files backed up are the Parameter Sets and preference settings.



Note: To access **Back Up/Restore Configuration**, you must be logged in as the **admin** user (see [The admin User](#) on page 9-1).

Back Up Configuration Files

To back up configuration files to an archived location, follow these steps.

1. Make sure that the back up location is accessible. For network locations, your system must be connected to the network back up location.
2. Click **Tools > Back Up Configuration Files**. The Back Up Configuration Files dialog appears.

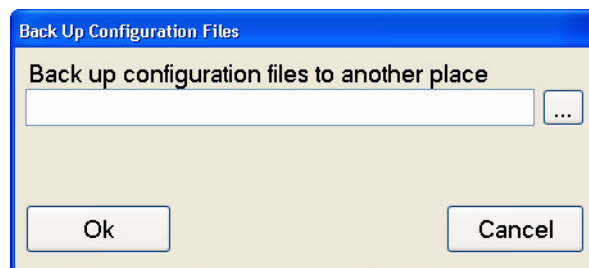


Figure 9-24 Back Up Configuration Files Dialog

3. In the Path field, you can type in the exact path to the back up folder, if you know it, or click the Path button (...) to find and select (or make) the new archive folder. A **Browse for Folder** dialog appears, enabling you to browse anywhere in a local or network path that is accessible.

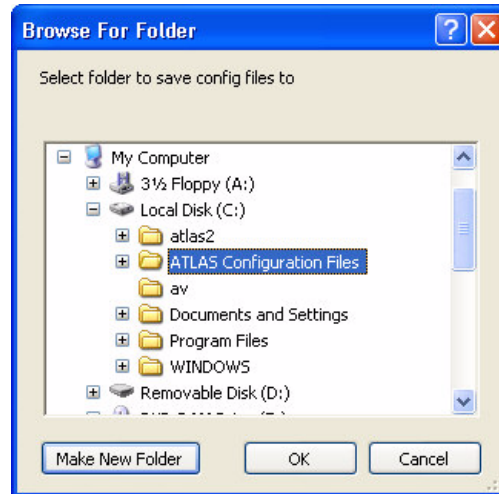
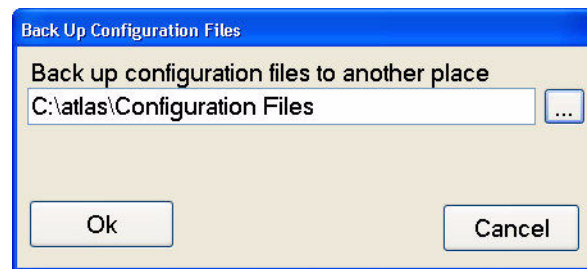


Figure 9-25 Browse for Folder Dialog

- When you have selected or created the new archive folder, click **OK** to enter the path into the **Back Up Configuration Files** dialog box. Click **OK** to proceed with the back up.



- When the back up is complete, the system notifies you.

Restore Configuration Files

To restore configuration files from an archived location, follow these steps.

- Make sure that the restore location is accessible. For network locations, your system must be connected to the network restore location.
- Click **Tools > Restore Configuration Files...** The Restore Configuration Files dialog appears.

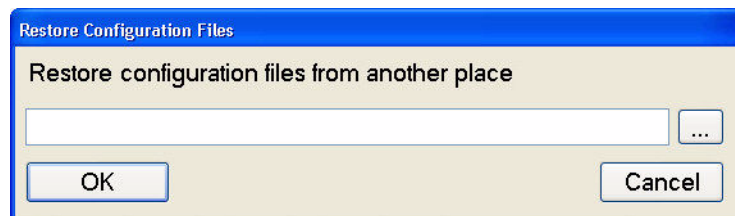


Figure 9-26 The Restore Configuration Files Dialog

3. In the Path field, you can type in the exact path to the restore folder, if you know it, or click the Path button (...) to find the restore folder. A **Browse for Folder** dialog appears, enabling you to browse anywhere in a local or network path that is accessible.



Figure 9-27 Browse for Folder Dialog

4. When you have found the path of the restore folder, click **OK** to enter the path into the Restore Configuration Files dialog box. Click **OK** to proceed. You will receive the following warning:

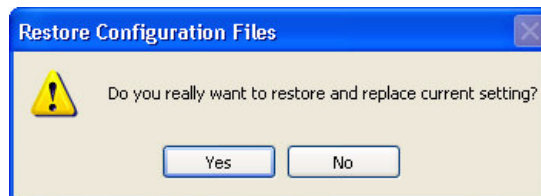


Figure 9-28 Warning on Replacing Current Setting



WARNING: Make sure you have already backed up the current configuration files before you restore another set, since restoring replaces your current setting.

5. Click **Yes** to proceed with the restore, or **No** to cancel.
6. When you click **Yes**, the restore process begins. If the program cannot find any configuration files, a dialog will be displayed. Click **OK** to continue.
7. When the restore is complete, the system notifies you.

(10) Archive Management

Chapter Overview

ATLAS provides the archive function to preserve your exam data, and the retrieve function to access archived exam data, or restore it in case of computer malfunction. This chapter explains how to perform these functions. Topics covered include:

- [The Patient Database](#), below
- [Data Maintenance Requirements](#), page 10-2
- [Clear Exam Data](#), page 10-3
- [Archive/Synchronize Recommendations](#), page 10-4
- [Archive/Synchronize Management](#), page 10-8
- [Manual Archive](#), page 10-21
- [Retrieve Archived Exams](#), page 10-22
- [Database Recovery Tool](#), page 10-25



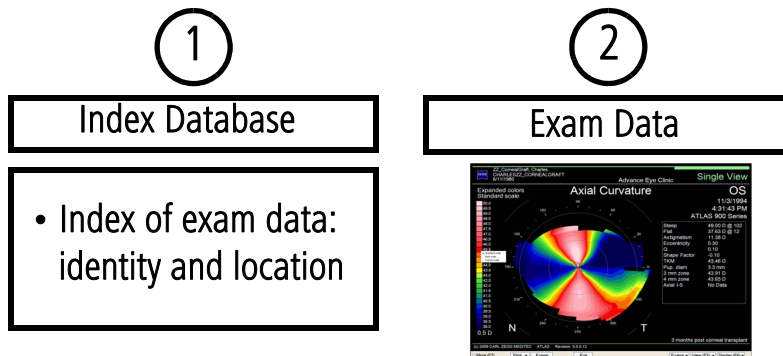
Advisory: We strongly recommend that you archive daily to a network archive location (a network file server or network attached storage device) or to a USB Hard Drive. If you do not archive at all, paper records are the only way to retain patient information in case of system hard drive malfunction.



Note: ATLAS data is not encrypted. To protect confidentiality of your ATLAS data, the use of disk encryption is recommended and is the responsibility of the user, using third-party encryption software.

The Patient Database

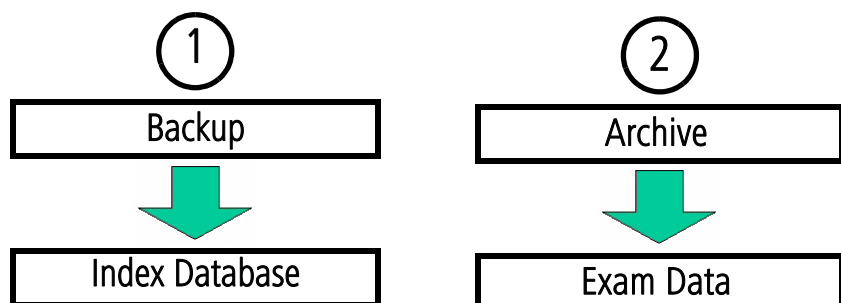
To enable excellent database performance along with long-term data protection, the patient database separates data-intensive exam data from the index database. Thus, the ATLAS patient database contains two kinds of stored data:



1. **The index database** identifies each saved exam and analysis by patient, date and type of image or analysis, and records where its associated bulk exam data can be found—on the local hard drive or which archive location.
2. **Exam data** or bulk data includes the images generated during an examination, along with the associated patient, exam, image and analysis data.

Data Maintenance Requirements

The complete index database always remains on the ATLAS System computer hard drive (unless you delete individual patient data). Exam data, because it includes image files, eventually must be cleared from the system hard drive to make space to save new images. Two actions must occur to protect your data against loss in case of computer malfunction:



1. Backup: Occurs Automatically

Upon startup, the system automatically backs up the index database to the current archive location to protect it from a system malfunction that could render it inaccessible.



Note: A current archive location must be set in order to back up the index database (See [Set Current Archive](#) on page 10-20).

Backup is an important data protection function, but since it is automatic, you need not be concerned with it unless the current archive location is inaccessible. In that case, a dialog will notify you, and the recommended course is to restore access to the current archive location or to change the current archive location. See [Archive/Synchronize Management](#) on page 10-8 for details.


Archive: Automatic or User-Initiated

Archiving of exam data can be set to occur automatically or manually by user intervention. Exam data remains on the instrument hard drive until the hard disk reaches capacity, or until automatically or manually removed. The ATLAS instrument can be set to automatically archive exam data (see [Automatic Archiving](#) on page 10-5) or you can initiate archive manually (see [Manual Archive](#) on page 10-21). The system can also be set to prompt you to archive unarchived exams, either at startup or shutdown, but the user must initiate the archive option when offered (see [Archive Alerts](#) on page 10-6).

By copying exam data to another location, archiving protects data from loss due to system malfunction. But archiving has the secondary purpose of enabling you to clear archived exams and thereby maintain adequate hard disk space to save more images. Because exam data has unique and persistent identifiers that link it to the index database, it can be safely removed from the system hard drive. You can readily access or retrieve archived exam data when the ATLAS System has access to the correct archive location. If the current archive location is inaccessible, a dialog will notify you, and the recommended course is to restore access to the current archive location or to change the current archive location. See [Archive/Synchronize Management](#) on page 10-8 for details.

Clear Exam Data


Data maintenance eventually requires the clearance (deletion) of exam data on the ATLAS System that has previously been archived.

 **Note:** ATLAS never clears unarchived exam data.

Only when the hard drive gets too full must you clear enough hard disk space to allow you to save more exams. With a new instrument, it takes many months up to a few years, depending on its usage rate, before the ATLAS System prompts you to clear archived exams.

Automatic Clearance

When the hard disk status becomes yellow, the system automatically initiates clearance of archived exams upon startup. Also, before synchronizing, retrieving, and importing, the software calculates the size required for the data. If there is not enough free space in the ATLAS hard drive, then the clearing process is automatically started. However, if the amount of archived exams available for clearance is insufficient for the data being imported, or to return the status to green, you will be notified as in [Figure 10-2](#) below. In this case, you must archive exams and then clear again.


 **Note:** If you do not clear archived exams when prompted, eventually the hard disk status will reach red, whereupon capturing and analysis are disabled. At that point, you must archive and clear exam data to restore use of these primary functions.

Manual Clearance

To manually clear archived exams:

While in patient selection mode, select **Archive > Clear Archived Exams** to initiate clearance.

Clearance Behavior

 **Note:** The clearance function, whether automatic or manual, has the same characteristics.

The system searches on the ATLAS hard drive for exams that have been archived. If it finds any, it begins to clear archived data immediately. The Clear Progress dialog reports progress.

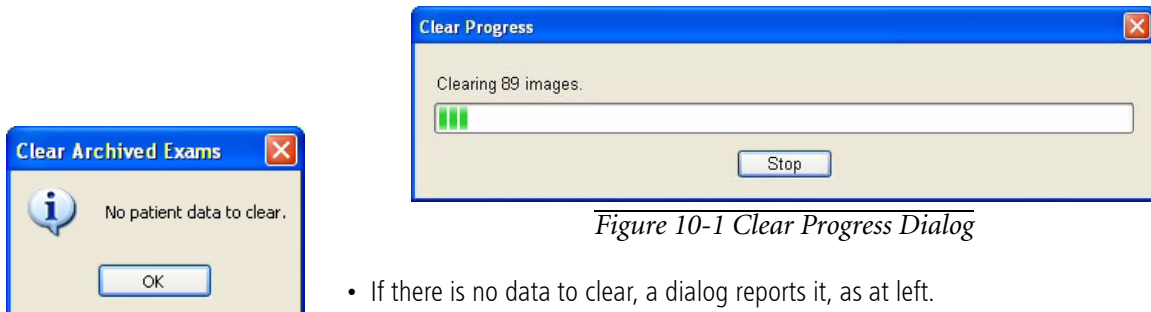


Figure 10-1 Clear Progress Dialog

- If there is no data to clear, a dialog reports it, as at left.

- When clearing completes successfully, a dialog reports it.
- If clearing completes, but insufficient space has been cleared on the hard drive to return the hard drive status to green, the following message appears:

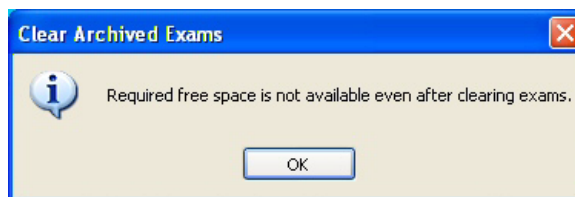


Figure 10-2 Insufficient Data Cleared

If this occurs, you must archive exams to make additional exam data available for clearance from the hard drive, and then clear again.

Which Exams Are Cleared

- The ATLAS System clears only enough exams to forestall the reappearance of the yellow or red Hard Disk Status indicator (see [Hard Disk Status Indicator](#) on page 2-14) for several weeks or months, depending on the acquisition rate of new exams. Once initiated, the clearing target space is 25% above the green/yellow Hard Disk Status indicator border.
- It does not clear exams that have not been archived.
- Archived exams are cleared oldest first, based on the last viewed date.
- Exams acquired, imported or retrieved in the last month are not cleared.
- It does not clear an archived exam if its archive location is disabled (see [Disable an Archive Location](#) on page 10-19).

Archive/Synchronize Recommendations



WARNING: It is the user's responsibility to protect exam data from loss. Unarchived data is at risk of permanent loss in case of computer malfunction. We recommend that you archive daily, as described in this section. The archived data also needs to be backed up regularly.

The ATLAS System makes it possible to archive to a network location, which includes to a network attached storage device (also known as a network hard drive). Once installed, a network attached storage device operates just as a network archive location and offers the same advantages.



Note: For archive to a network file server, configuring the server and the instrument should be attempted only by a network administrator or system administrator. Instructions for network administrators to set up network archive are found in [\(D\) Network Configuration Guide](#). Users are responsible for network setup, backup, and maintenance. Carl Zeiss Meditec Technical Support is limited to testing network connectivity of the ATLAS System. Technical Support cannot troubleshoot or repair problems with network connectivity.

Advantages of Network Archiving

Archiving to a network location offers the following advantages:

- **Protects your high value exam data:** Server hardware and software are engineered for better long-term data security and preservation.
- **Ease of use:** Plug the ATLAS System into your existing office network (or plug a network attached storage device into the instrument), create an archive location, and you are ready to archive with little or no ongoing intervention.

Preferences: Archive/Synchronize

Select **Options > Preferences...** to access the Preferences dialog and then click the Archive/Synchronize tab (Figure 10-3).

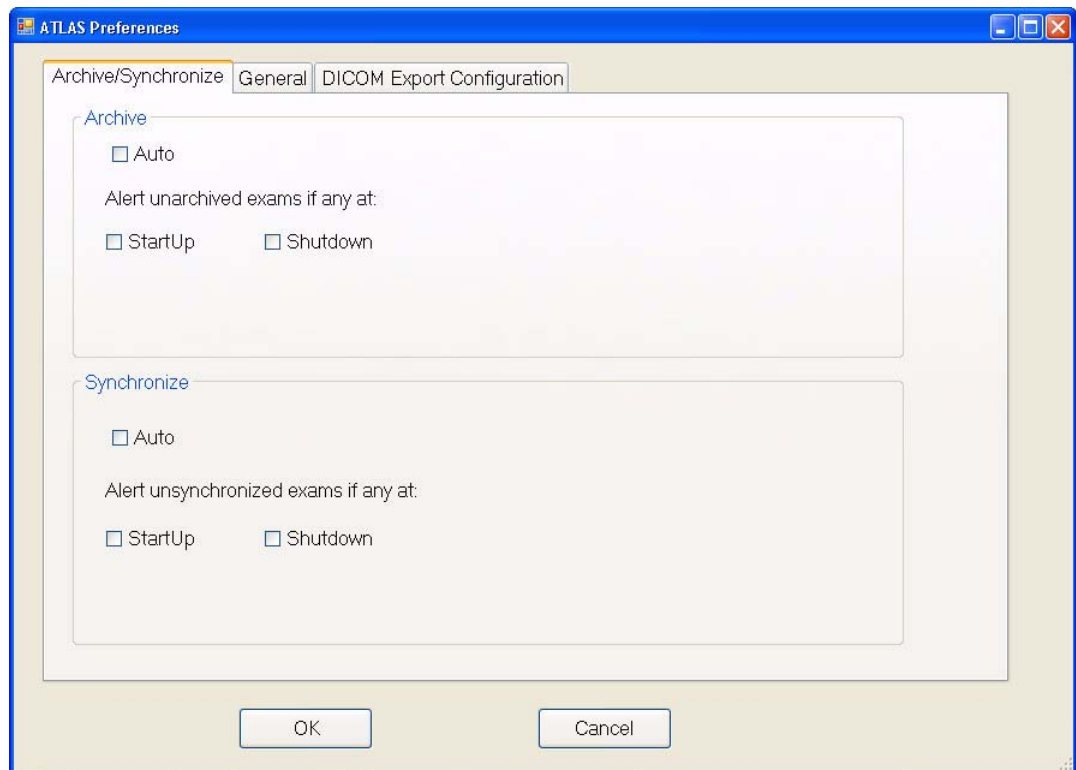





Figure 10-3 Preferences – Archive/Synchronize Tab

The Archive/Synchronize preferences are described below. When finished selecting your preferences, click **OK** to save your changes and exit, or click **Cancel** to exit without saving.

Automatic Archiving

To have ATLAS automatically archive new and imported exams, select **Auto** in the Archive section. ATLAS will check every 10 seconds for new completed and imported exams. Once a new or imported exam is detected it will be automatically archived in the background—no progress dialogs will be displayed. At the end of image acquisition, a new exam is detected once a new completed exam is created—when you select **Done** on the Exam Results screen (see [Done](#) on page 3-14). For imported exams, if auto archiving is on and exams are imported (ATLAS 1 or 2), they will be automatically archived.




-  **IMPORTANT:** The ATLAS System will archive exams only to the current archive location. (For details, see [Set Current Archive](#) on page 10-20.) If no current archive is selected, the system will not automatically archive.
-  **Note:** If you have a large database of unarchived exams, it is recommended to manually archive (Archive > Archive Now) the database first before you turn on automatic archiving. In this case, archiving could take a long time, and manual archiving allows you to see the archive progress.
-  **Note:** Since auto archiving occurs in the background with no progress indicators, it is possible that you may shut down the ATLAS System during the archive progress. If this happens, archiving will stop at shutdown and automatically resume at the next ATLAS System startup.

Archive Alerts

ATLAS gives you a way to control the automated behavior for archive alerts. It is possible to select one, neither or both **Start up** and **Shutdown**. If you select neither option, it is possible for unarchived exams to accumulate without your knowledge because the system will not prompt you to archive. However, when the hard disk status turns yellow, you may have to archive exams in order to then clear enough archived exams to return the status to green. At that time, archiving may take several hours. You must archive if the hard disk status turns red and you cannot clear enough space to enable capturing and analysis.

[Figure 10-3](#) displays the default settings. If **Shutdown** is checked, the system alerts you to the presence of unarchived exams upon shutdown. If any are found, the software acts just like you have selected to archive manually—the Archive Now function will be displayed where you can initiate an archive by selecting the **Archive** button (see [Manual Archive](#) on page 10-21).

You can archive manually at any time by selecting **Archive > Archive Now** (see [Manual Archive](#) on page 10-21).

-  **IMPORTANT:** The ATLAS System will archive exams only to the current archive location. (For details, see [Set Current Archive](#) on page 10-20.) If no current archive is selected, the system will not alert you to unarchived exams.
-  **Note:** The archived data also needs to be backed up regularly. If the archive “dies”, there is no way to retrieve exams that have cleared on the instrument. Also, all exams will link to an archive that is “dead” and still cannot be removed. It is important that you have a multiple back up procedure in place on the archived volumes (RAID, off-site storage, etc.).
-  **IMPORTANT:** The archive’s location hard drive must be formatted in NTFS format. ATLAS data is compatible only with NTFS.

Automatic Synchronization

You can enable ATLAS to automatically synchronize networked archive databases by selecting **Auto** in the Synchronize section. ATLAS will check every 10 seconds for databases that are not synchronized. Once detected, synchronization will be performed automatically in the background—no progress dialogs will be displayed. Only archives listed on the Archive Locations to Synchronize screen (**Archive > Synchronization Management...**) will be synchronized.



Note: Since auto synchronization occurs in the background with no progress indicators, it is possible that you may shut down the ATLAS System during the synchronization progress. If this happens, synchronization will stop at shutdown and automatically resume at the next ATLAS System startup.

Synchronize Alerts

ATLAS gives you a way to control the automated behavior for synchronization alerts. It is possible to select one, neither or both **Start up** and **Shutdown**.

Figure 10-3 displays the default settings. If **Start up** is checked, the system alerts you to the presence unsynchronized exams on startup. If any are found, the software acts just like you have selected to synchronize manually (**Archive > Synchronize**). A dialog appears asking if you are sure you want to synchronize (**Figure 10-4**).

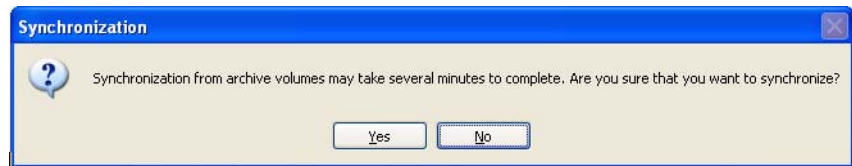


Figure 10-4 Synchronization Dialog

Click **Yes** to proceed, or **No** to not synchronize.

If you proceed with synchronization, a dialog will be displayed showing the progress of the synchronization (**Figure 10-5**). Click **Stop** if you want to cancel. ATLAS notifies you when the synchronization is complete.

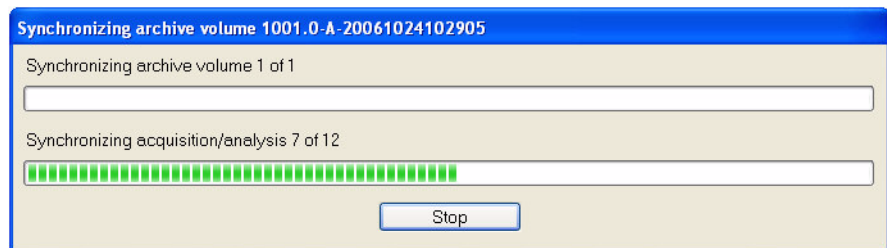


Figure 10-5 Synchronizing Archive Volume Dialog

If you want to be alerted at computer shutdown, select **Shutdown**. You can manually synchronize at any time by selecting **Archive > Synchronize**. See [Synchronizing Databases on ATLAS Instruments/Computers](#) on page 10-11 and [Synchronization](#) on page 10-18.

Archive/Synchronize Management

Archive locations or volumes are directories on a network server, network attached storage device (NAS device), or connected USB hard drive (see [Figure 10-6](#) and [Figure 10-7](#)).

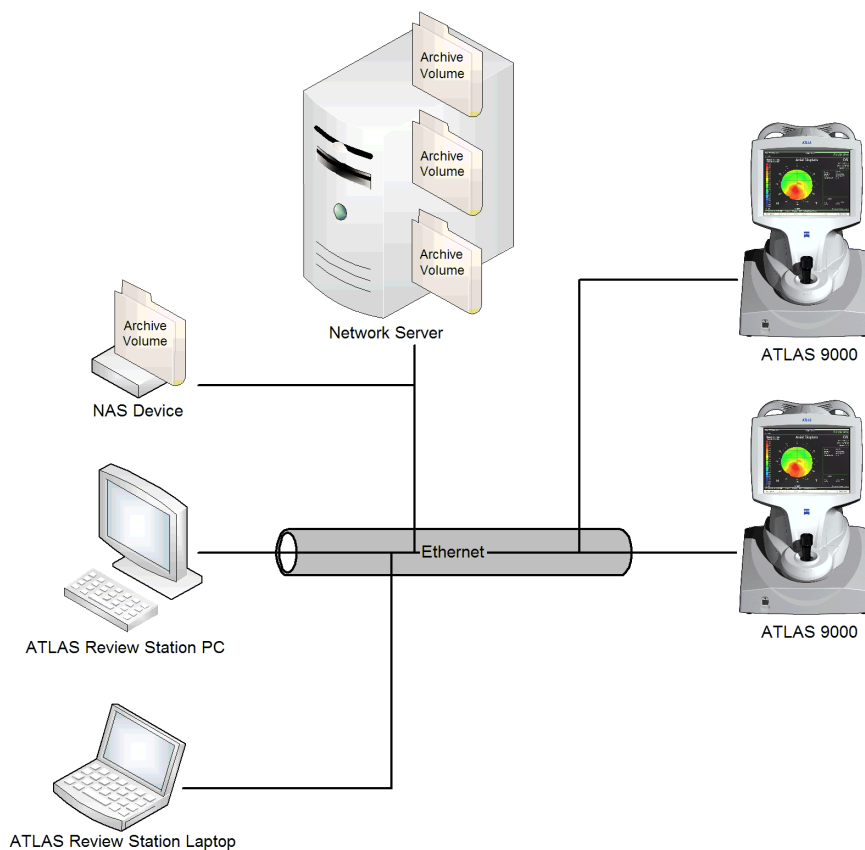


Figure 10-6 Archive Network Diagram

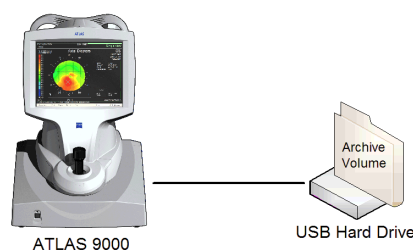


Figure 10-7 USB Hard Drive Archive Diagram

When you create a new archive or add a pre-existing archive, it is registered on your ATLAS System, which can then access the archive location.



Note: “Register” is a useful term that means to add an archive to your system’s list of available archives.

Archive/Synchronize management includes the following functions:

- [Create a New Archive Location](#), page 10-9
- [Synchronizing Databases on ATLAS Instruments/Computers](#), page 10-11
- [Add Network Archive\(s\) for Synchronization](#), p. 10-15
- [Disable/Enable an Archive Location for Synchronization](#), p. 10-16
- [Delete an Archive Location for Synchronization](#), p. 10-17
- [Synchronization](#), page 10-18
- [Edit an Archive Location](#), page 10-19
- [Disable an Archive Location](#), page 10-19
- [Set Current Archive](#), page 10-20
- [Delete Archive Locations](#), page 10-20

To access archive management:

1. While in patient selection mode, click **Archive > Archive Management....** The Archive Locations dialog appears.

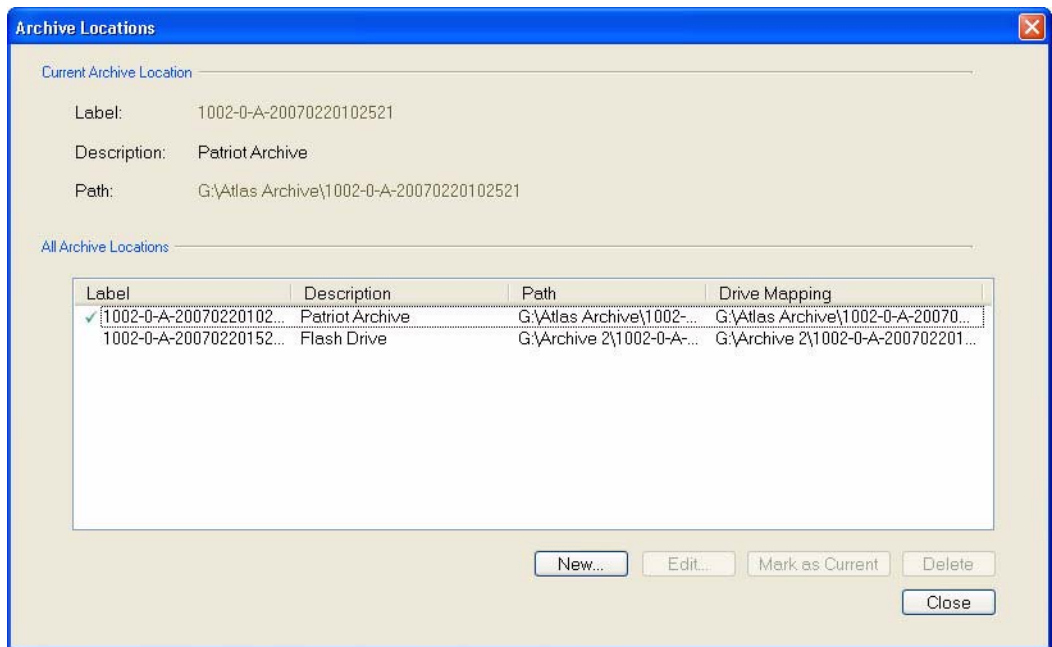



Figure 10-8 Archive Locations Dialog

It shows all archive locations, sorted alphabetically by label. The current archive is indicated on the left with a green checkmark. Any disabled archives will have a gray background.

Create a New Archive Location

 **Note:** To create a new network archive location, an information technology specialist must first configure the network file server and the ATLAS System to communicate. See [\(D\) Network Configuration Guide](#).

 **Note:** You cannot write to an archive created on another ATLAS System.

To create a new archive location:

1. In the Archive Locations dialog, click **New**. The New Archive Location dialog appears.

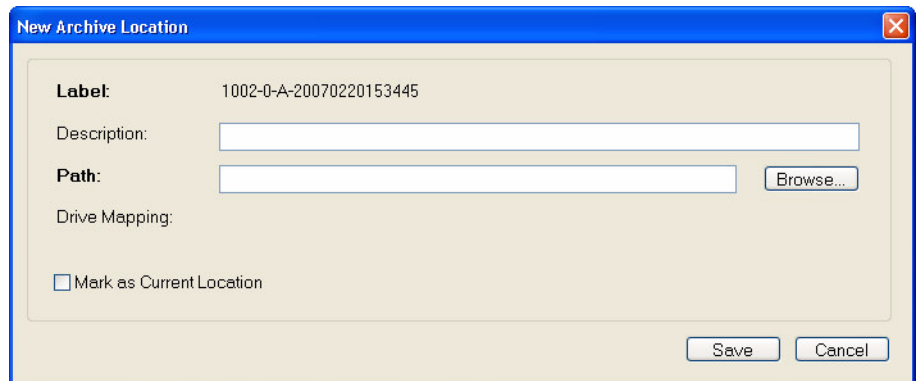


Figure 10-9 New Archive Location Dialog

The **Label** field is generated automatically and will be unique. You cannot edit it. This field is composed of the model number, serial number and archive sequence number.

2. If you wish, you can enter up to about 85 characters in the **Description** field to describe the archive.
3. In the **Path** field, you can type in the exact path, if you know it, but usually users will click **Browse** to find and select (or make) the new archive folder. A **Browse for Folder** dialog appears, enabling you to browse anywhere in a local or network path that is accessible.



Figure 10-10 Browse for Folder Dialog

4. When you have found the path where the new archive will reside, select the desired archive folder, or click **Make New Folder** to create a new archive folder.



Note: The system prevents you from creating an archive volume on the instrument hard drive.

5. When you have selected (or created) the new archive folder, click **OK** to save your selection and return to the **New Archive Location** dialog. The archive path will appear in the **Path** field, and the **Drive Mapping** field will also be completed automatically.
6. If you wish to archive to this archive location, select the **Mark as Current Location** checkbox. You can also select the current archive in the **Archive Locations** dialog.
7. Click **Save** to save your changes, or **Cancel** to cancel changes without saving. When you click **Save**, the archive will appear in the list of Archive Locations.

Synchronizing Databases on ATLAS Instruments/Computers

It is possible to synchronize databases from multiple ATLAS 9000 instruments or Review Stations with each other—either automatically or manually. If archive volumes created on *different* ATLAS instruments exist on the same network file server, any *other* ATLAS 9000 instrument or computer running the ATLAS Review Software can access the images from the archive volumes. This process, called synchronization, ensures that each ATLAS 9000 instrument or Review Station synchronized has the same database after synchronization.

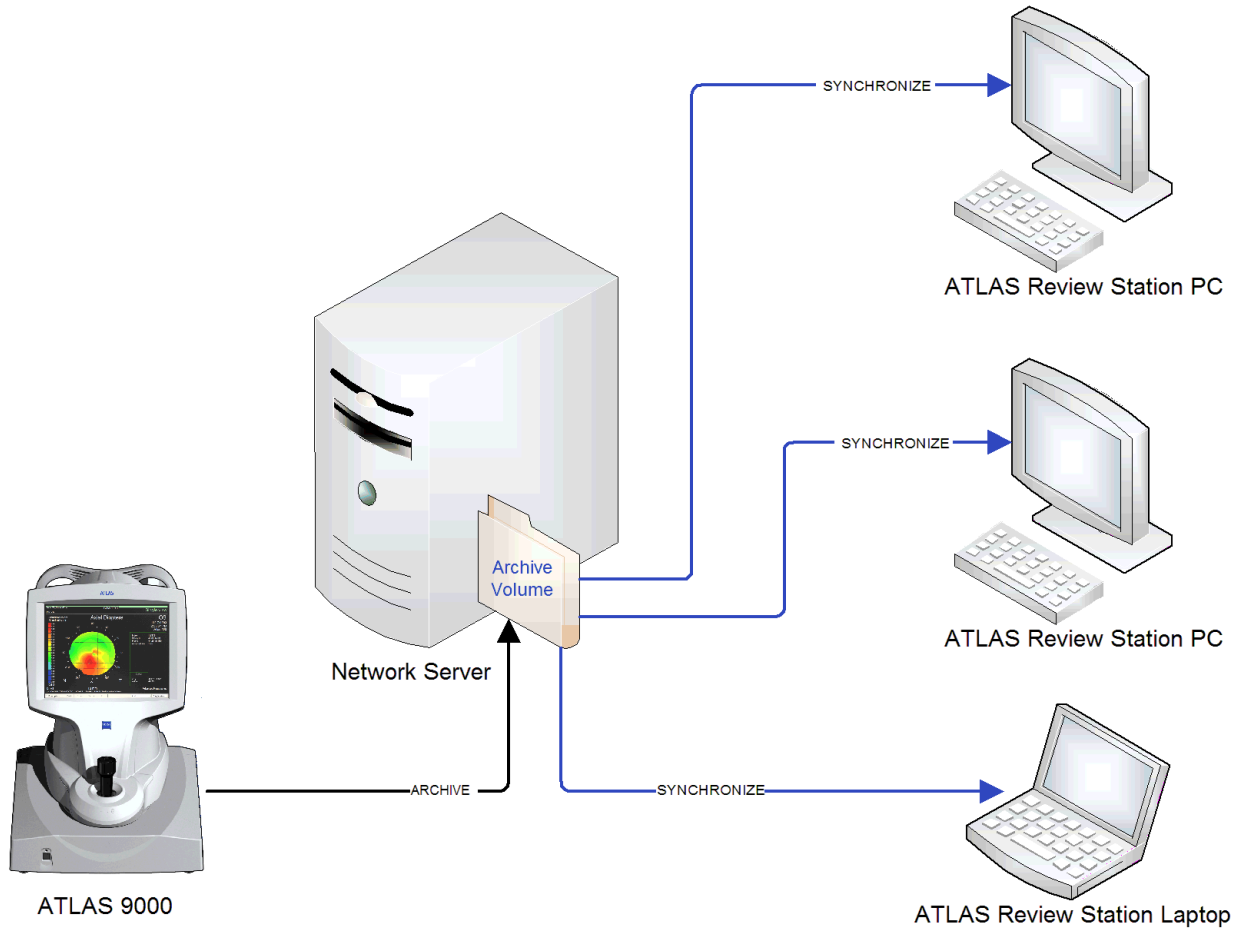


Figure 10-11 Synchronization Diagram for One ATLAS 9000

Synchronization consists of moving data from two or more instruments/computers into separate archive volumes on a network server. Each instrument/computer creates a *separate* archive volume that other instruments/computers cannot write to. This function is known as “archiving.” Once data has been archived for each instrument/computer, it can be read by any *other* instrument/computer during the synchronization process so that each instrument/computer contains the same data as all the others.

Figure 10-11 shows a synchronization diagram for one ATLAS 9000 instrument and three Review Station computers. The ATLAS 9000 creates an archive folder on the Network Server that the Review Stations can synchronize from.

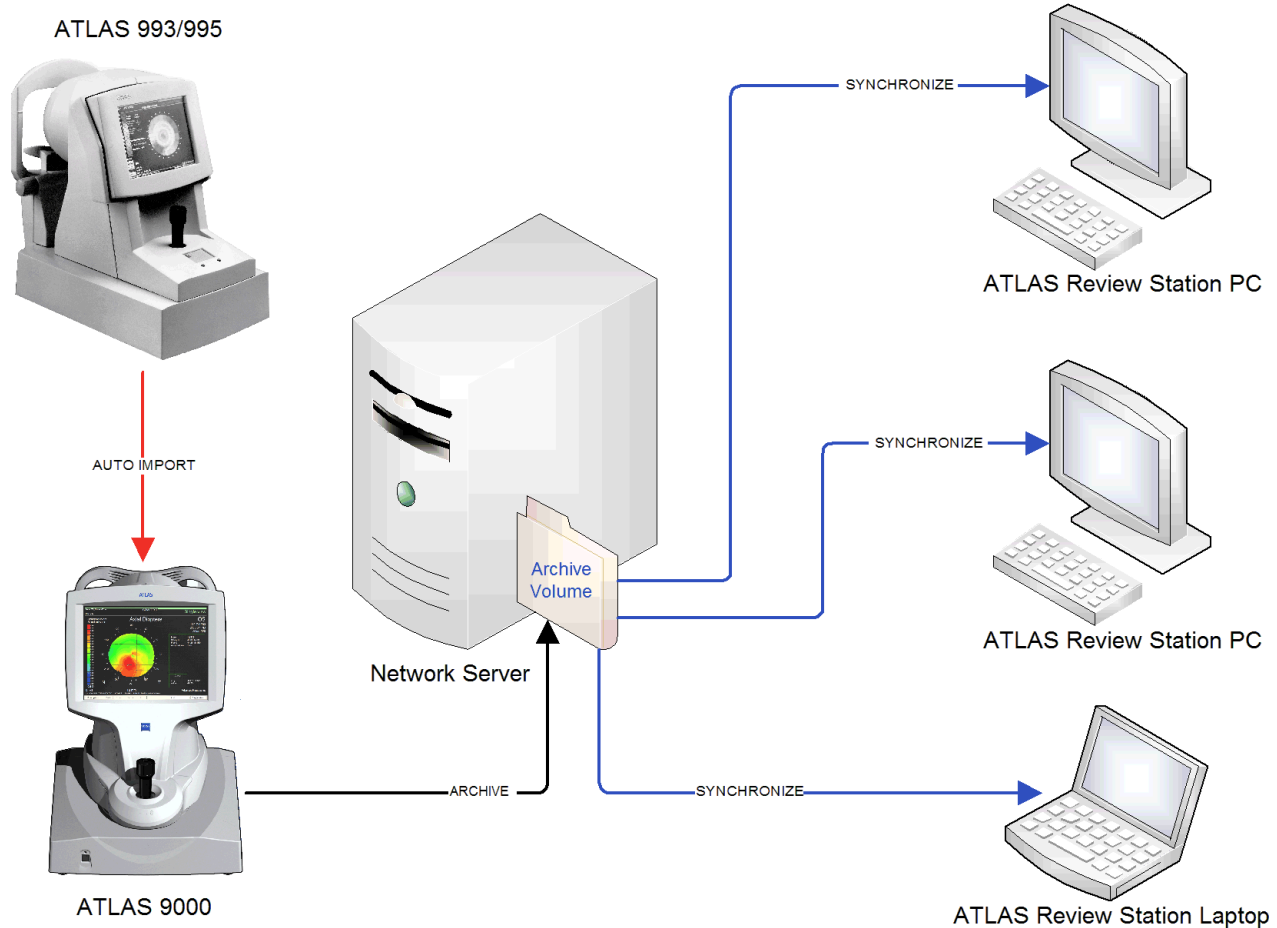


Figure 10-12 Synchronization Diagram for an ATLAS 9000 and ATLAS 993/995

Figure 10-12 shows a synchronization diagram for one ATLAS 9000, one ATLAS 993/995, and three Review Station computers. The ATLAS 9000 is configured to auto import ATLAS 993/995 exams (see [Importing from ATLAS 900 Series Instrument Databases](#) on page 11-5). The ATLAS 9000 creates an archive folder on the Network Server that the Review Stations can synchronize from.

Figure 10-13 shows a synchronization diagram for one ATLAS 993/995, and four Review Station computers. A Review Station is configured to auto import ATLAS 993/995 exams (see [Importing from ATLAS 900 Series Instrument Databases](#) on page 11-5). The Review Station creates an archive folder on the Network Server that the other Review Stations can synchronize from. This is the recommended configuration when you have three or more Review Stations. This will prevent possible file lockup errors when multiple Review Stations try to import exams at approximately the same time. When you have one or two Review Stations you can just auto-import ATLAS 993/995 exams into the Review Stations (see [Figure 11-18](#) on page [Figure 11-18](#)) without synchronization.

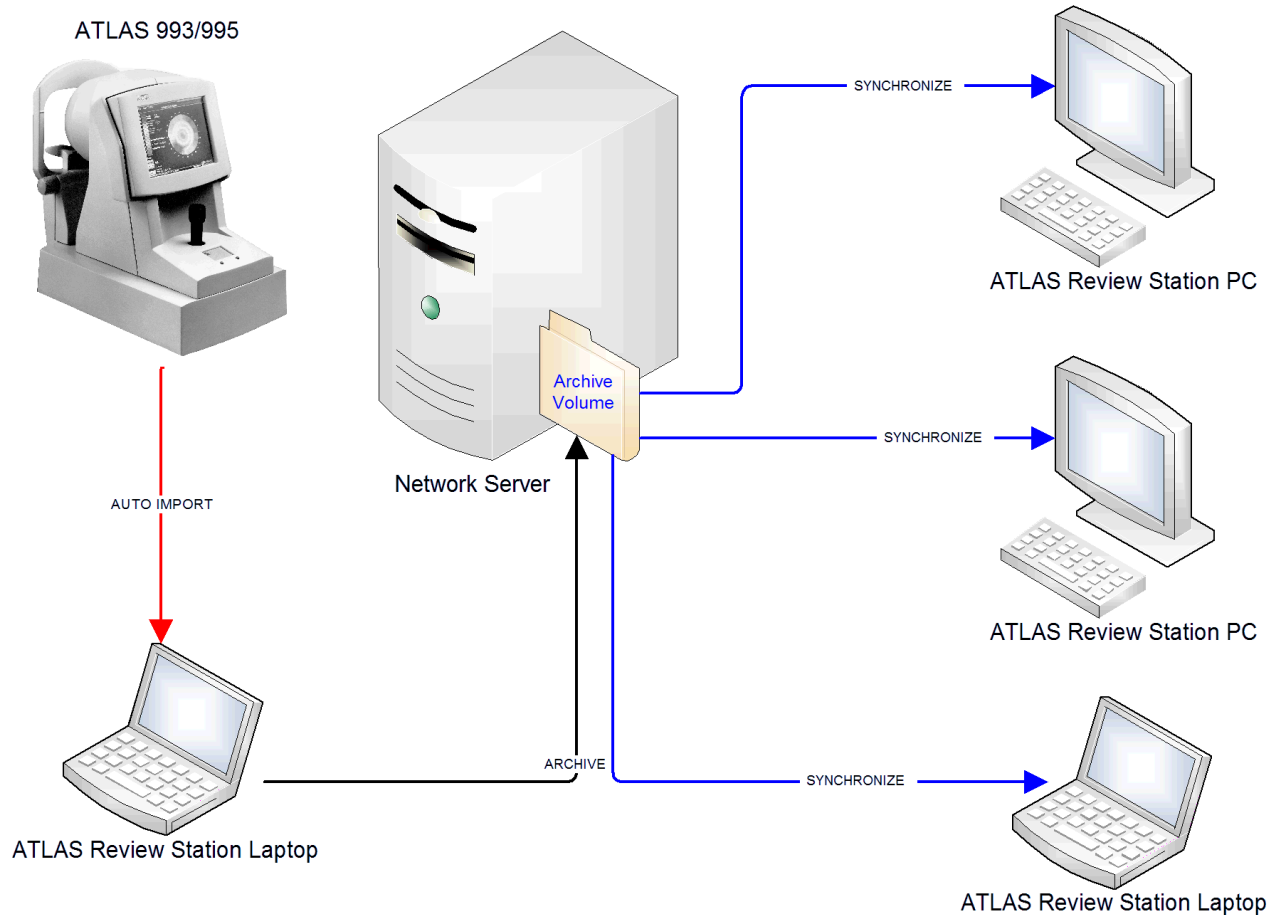


Figure 10-13 Synchronization Diagram for an ATLAS 993/995

Figure 10-14 shows a synchronization diagram for two ATLAS 9000 instruments and three Review Station computers. Each ATLAS 9000 creates its own archive folder on the Network Server that the Review Stations can synchronize from.

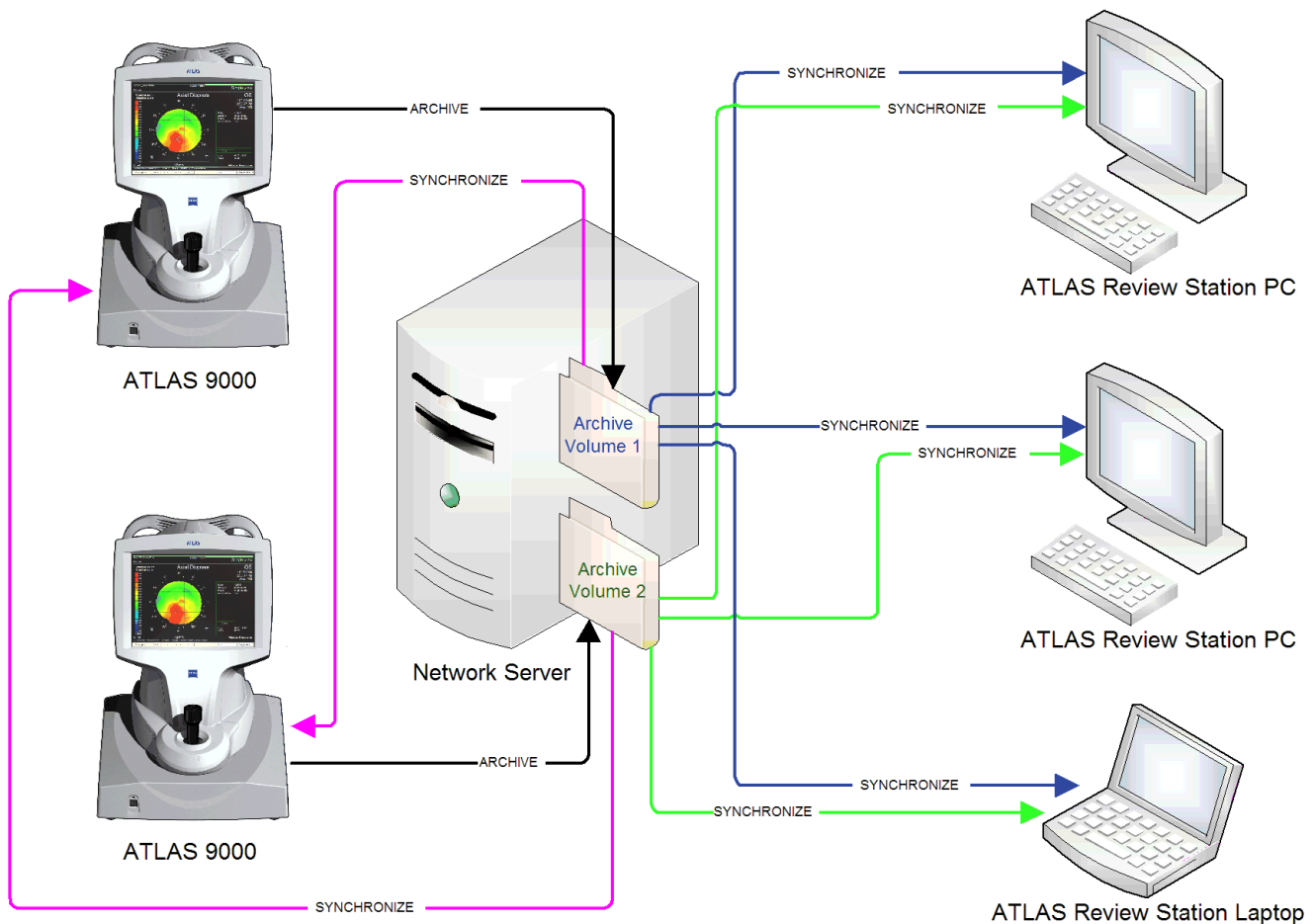


Figure 10-14 Synchronization Diagram for Two ATLAS 9000s

The first archiving that is performed will archive the entire database from an ATLAS instrument hard disk to its archive volume. This should be done for each ATLAS in the network. Subsequent archiving operations will archive *only new data* that has been collected since the last archiving was completed.

Archiving can occur automatically or by manual selection (see [Manual Archive](#) on page 10-21 and [Automatic Archiving](#) on page 10-5), and you can set alerts at start up and shut down (see [Archive Alerts](#) on page 10-6).

Synchronization can be done manually or automatically, and alerts can also be set (see [Automatic Synchronization](#) on page 10-7, [Synchronize Alerts](#) on page 10-7, and [Synchronization](#) on page 10-18).

As an example, a networked office with three ATLAS 9000 instruments and one Review Station PC has exams done on all three instruments in one day—10 patients on ATLAS #1, 12 patients on ATLAS #2, and 8 patients on ATLAS #3. If the three ATLAS 9000 instrument archive volumes are registered on the Review Station PC (see [Add Network Archive\(s\) for Synchronization](#) on page 10-15) and all instruments have been archived at the end of the day, then after the Review Station PC performs synchronization it will have all the new test data from all 30 patients in its database. This allows you to run an exam from any ATLAS 9000 instrument, for instance, and analyze the results on a Review Station PC at a different location in the office.

Add Network Archive(s) for Synchronization

For synchronization to occur, you must first add or register the network archive(s) locations of other instruments to the list on the Archived Locations to Synchronize screen.

To add a new archive location for synchronization:

1. While in patient selection mode, click **Archive > Synchronization Management....** The Archive Locations to Synchronize dialog appears.

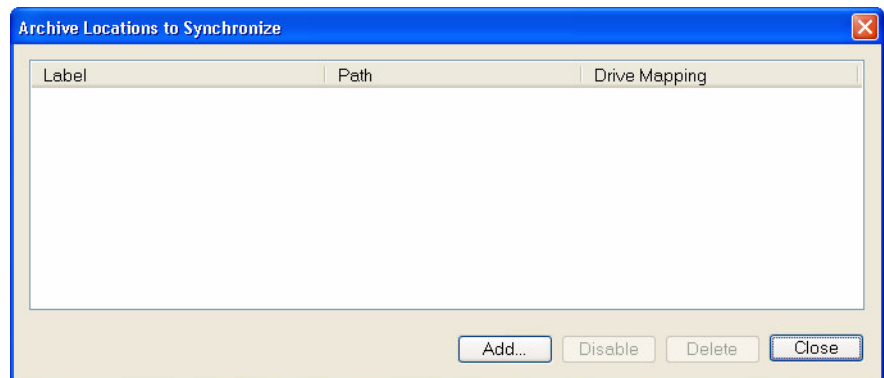


Figure 10-15 Archive Locations to Synchronize Screen

1. Click **Add**. An Open dialog appears ([Figure 10-6](#)).

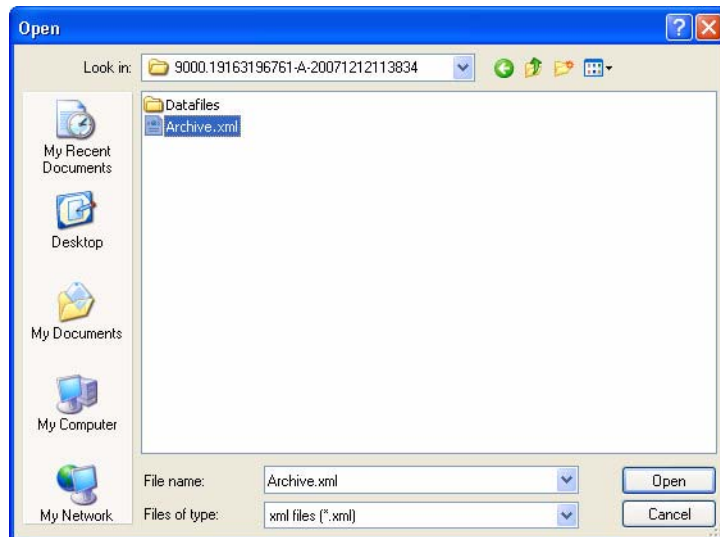


Figure 10-16 Open Archive Locations Dialog

- Only archive volume files (Archive.xml) on the network file server can be selected in the dialog. Find and select the desired archive volume. Click **Open**.
- A dialog will be displayed asking if you want to register (add) the archive volume (Figure 10-17). Select **Yes** to add the archive volume.

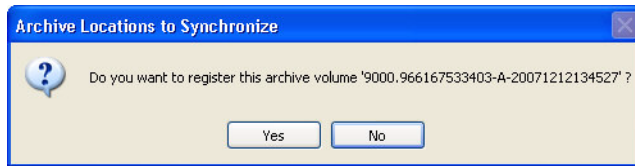


Figure 10-17 Register Archive Volume Dialog

- The newly added network archive volume will be displayed in the Archive Locations to Synchronize screen (Figure 10-18).

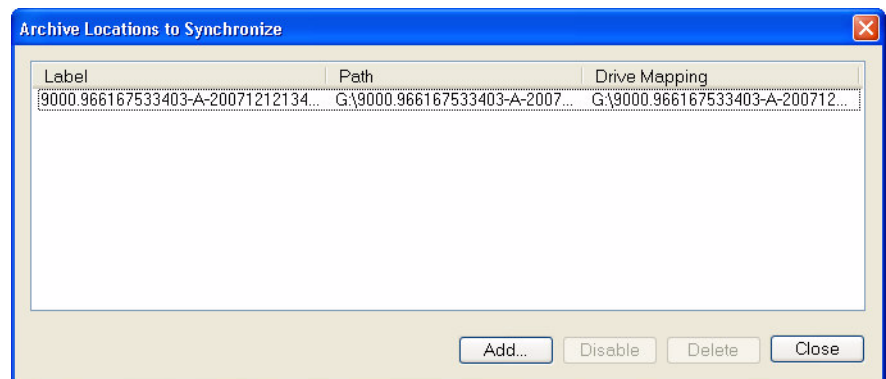


Figure 10-18 Archive Volume on Archive Locations to Synchronize Screen

- The archive location is automatically enabled for synchronization. You can now access image data from the network archive volume you just registered, when you synchronize. See [Synchronization](#) on page 10-18.

Disable/Enable an Archive Location for Synchronization

An archive location is automatically enabled for synchronization when you add it to the Archive Locations to Synchronize list. You can disable an archive location to prevent database synchronization to and from an archive location. To disable/enable an archive location for synchronization:

- While in patient selection mode, click **Archive > Synchronization Management....** The Archive Locations to Synchronize screen appears.

2. Select the desired archive and click the **Disable** or **Enable** button.

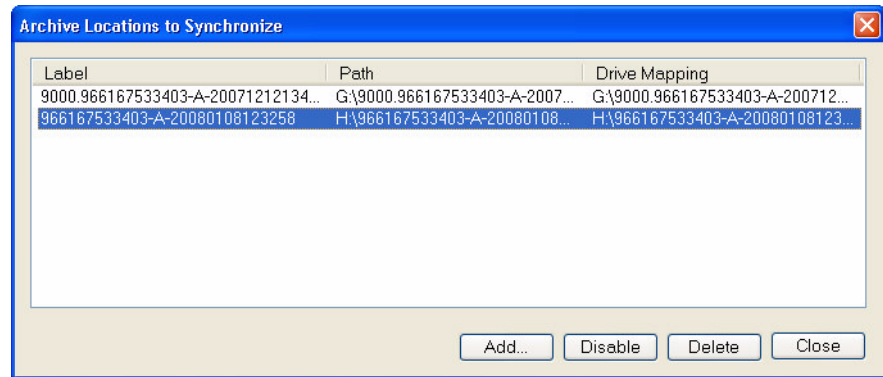


Figure 10-19 Disable Archive Location for Synchronization

3. If you selected the **Disable** button, it will change to an **Enable** button. If you selected the **Enable** button, it will change to a **Disable** button.
4. Click **Close** to exit the Archive Locations to Synchronize screen.

Delete an Archive Location for Synchronization



Note: ATLAS permits deletion of an archive location for synchronization only if you have never synchronized from that archive location, or have deleted all patients that were ever synchronized from that archive location.

To delete an archive location for synchronization:

1. While in patient selection mode, click **Archive > Synchronization Management....** The Archive Locations to Synchronize screen appears.
2. Select the desired archive and click the **Delete** button.

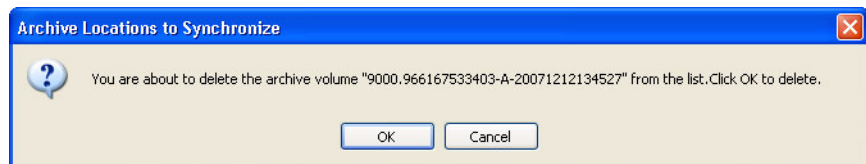


Figure 10-20 Delete Archive Location for Synchronization

3. Click **OK** to confirm deletion, or click **Cancel** to cancel deletion.

Synchronization

Once you have registered the desired network archives on your ATLAS Instrument or ATLAS Review Computer (see [Add Network Archive\(s\) for Synchronization](#) on page 10-15), you can access the images saved in those archives, after you synchronize. The process of synchronization copies patient index data from registered enabled synchronization archive volumes to the local ATLAS database. Synchronization can be done manually or automatically. See [Automatic Synchronization](#) on page 10-7 to set automatic synchronization. To manually synchronize follow the steps below:

1. From the PATIENT SELECTION WINDOW, click **Archive > Synchronize**.
2. A dialog appears asking if you are sure you want to synchronize ([Figure 10-21](#)).

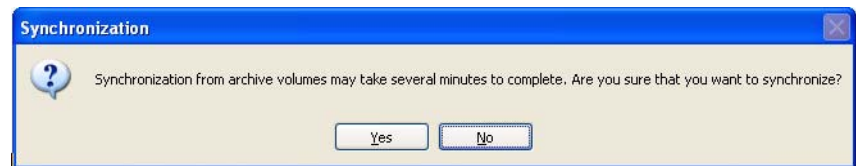


Figure 10-21 Synchronization Dialog

3. Click **Yes** to continue with synchronize, **No** to cancel.
4. A dialog is displayed showing the progress of the synchronization ([Figure 10-22](#)). Click **Stop** if you want to cancel.

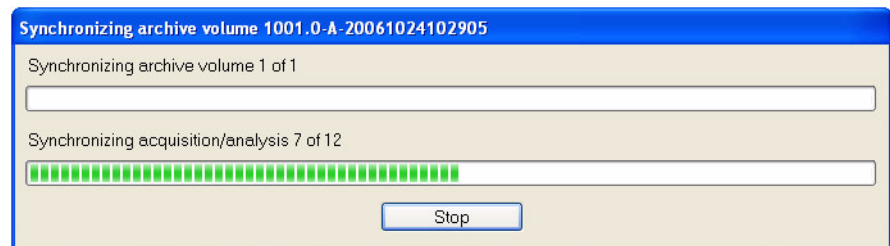


Figure 10-22 Synchronizing Archive Volume Dialog


5. ATLAS notifies you when manual synchronization is complete. All index database references from all registered and available network archives are added to your current system database. You will see the names of new patients appear in the PATIENT SELECTION WINDOW. You can now access their exams as if they were created at your computer, when the source archive is available. To make the exams available for viewing and analysis without further connection to the archive location, use the **Retrieve Archived Exams** (see [Retrieve Archived Exams](#) on page 10-22) function to copy the exams from the archive location to your ATLAS System hard drive.



Note: A patient must have at least one exam to be synchronized.



Note: Synchronization is not allowed to an archive volume created by the same instrument/computer. If your ATLAS instrument hard drive fails and you need to install a new hard drive, you can recover your database by using the Database Recovery Tool (see [Database Recovery Tool](#) on page 10-25).

 **Note:** ATLAS 9000 Version 1.0 data will undergo a conversion upon synchronization. If any patients exist without a Patient ID, a Patient ID will be created for them.

Edit an Archive Location

Among the things you can do while editing an archive location are:

- remove or select the current archive designation
- disable the archive—see the effects of this below
- change the description of an archive
- change the path of archive location

To edit an archive location:

1. In the Archive Locations dialog, select the desired archive and click **Edit**. The Edit Archive Location dialog appears.

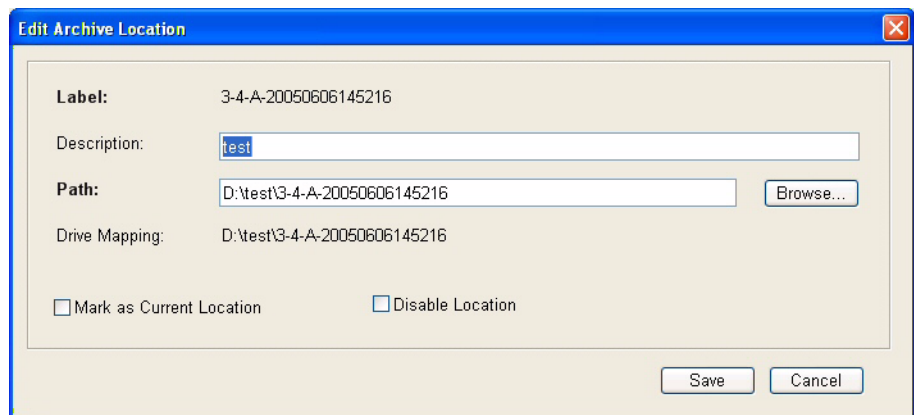


Figure 10-23 Edit Archive Location Dialog


2. Edit the fields as desired. You can select and deselect the checkboxes for **Mark as Current Location** and for **Disable Location**, the functions of which are described below.
3. When you are finished editing, click **Save** to save your changes, or click **Cancel** to cancel changes without saving.

Disable an Archive Location

Disabling an archive location has only one function—it disables or prevents archiving to that archive location during the archive process.

To disable an archive location:

1. In the Archive Locations dialog, select the desired archive and click **Edit**. The Edit Archive Location dialog appears, as in [Figure 10-23](#).
2. Select the **Disable Location** checkbox.
3. Click **Save** to save your changes, or click **Cancel** to cancel changes without saving.

 **Note:** The **Disable Location** checkbox is not available if you are editing the current archive location. It does not appear when you are creating a new archive.

Set Current Archive

The current archive is the one to which new images will be archived (assuming the archive location is accessible), and is marked with a green checkmark to the left of the label.



Note: If no current archive is selected, the system cannot archive the database.

If you wish to change the network archive location to which new images will be archived, follow these instructions:

1. In the **Archive Locations** dialog, click the archive you want to make current and then click **Mark as Current**. The archive selected will be marked as the current archive.
 - You can also select the **Mark as Current Location** checkbox in the **Edit Archive Location** dialog.
2. Click **Close** or the  at upper right to exit the **Archive Locations** dialog.

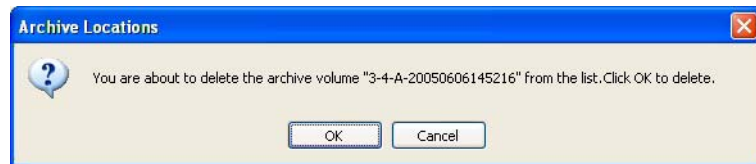
Delete Archive Locations



Note: ATLAS permits deletion of an archive location only if the archive location contains no patient data. Also, you cannot delete the current archive location.

To delete an archive location:


1. In the **Archive Locations** dialog, click on the archive you want and then click **Delete**. A dialog prompts you to confirm your choice.



2. Click **OK** to confirm deletion, or click **Cancel** to cancel deletion.

Move Archive Volume

Follow these steps to move an archive volume to another server or USB hard drive (e.g., when drive becomes full):


1. Find the path of the current archive location by selecting the current archive in the **Archive Locations** dialog, selecting **Edit**, and noting the location in the **Path** field.
2. Launch **Windows Explorer** and copy the current archive folder (location in the **Path** field) to a folder on the new drive (you may want to create a new folder).
3. In the **Archive Locations** dialog, select the current archive and click **Edit**.
4. Click the **Browse** button to find and select the location of the new archive (you need to open the archive folder and select the **Archive.xml** file).
5. Click the **Save** button to save the archive at the new location.
6. Click **Close** or the  at upper right to exit the **Archive Locations** dialog.




Note: If you are just replacing drives so the drive letter and archive folder location name are the same, then you don't need to do anything, since the new archive location is exactly the same as the old location.

Manual Archive

You can archive exam data manually at any time.

 **Note:** It does not affect the instrument or its performance to leave it running overnight while archiving.

 **IMPORTANT:** The ATLAS System will archive exams only to the current archive location. (For details, see [Set Current Archive](#) on page 10-20.) If no current archive is selected, the system will not be able to archive.

1. Select **Archive > Archive Now**. A dialog appears showing the current archive location:

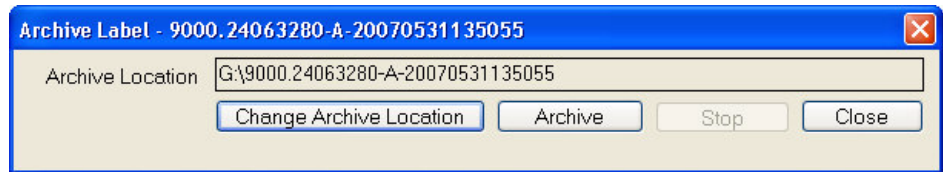


Figure 10-24 Archive Now Function

Select **Change Archive Location** to display the **Archive Locations** dialog and select another archive location. Select **Archive** to begin the archive. Click **Close** to exit the Archive Now function.

2. When you click **Archive**, a dialog is displayed showing the number of patients that have not been archived and asking if you want to archive them:



Figure 10-25 Archiving Dialog

3. When you click **OK**, archiving begins immediately with a progress dialog:

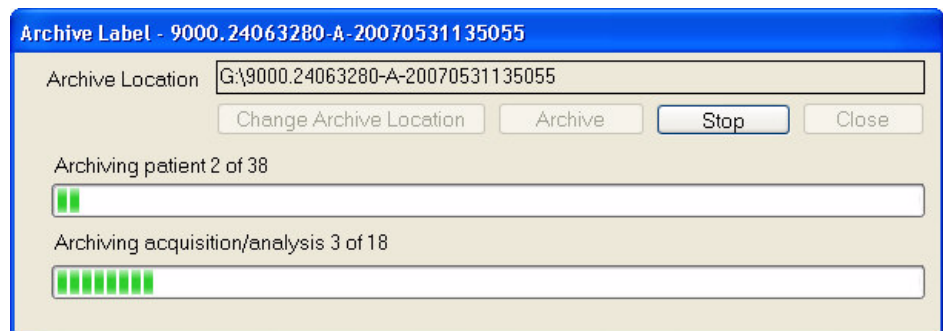


Figure 10-26 Archive Progress Dialog

Archive Behavior

- All unarchived exams will be archived, unless you click **Stop**. If you click **Stop**, archiving will stop after the system completes archiving all data of the current patient. Data already archived will not be erased from the archive location.
- It can take several seconds to several minutes for the ATLAS System to finish writing to the archive location, depending on the number of unarchived exams. When complete, a message reports a successful archive, or if some exams were not archived successfully, a summary dialog reports information about exams not archived successfully.
- The system does not overwrite previously archived data.

Accessing Archived Exams

You can view and analyze any archived image as usual if the system is connected to the necessary archive location. If not, a dialog will inform you that the archive is not accessible, identifying which archive is needed. Establish a connection with the necessary archive to continue.



Note: The system automatically retrieves archived data, if necessary to access the data, for example, when analyzing cleared archive data. After retrieval, the data will be available for clearance again, according to the usual parameters for clearing (see [Which Exams Are Cleared](#) on page 10-4 for details).

Retrieve Archived Exams

To retrieve archived exams is to copy it from an archive location to the ATLAS hard drive, thereby making it available for viewing and analysis without further connection to the archive location.

To retrieve exam data, follow these steps.

1. Make sure that the archive location is accessible. Network archives must be registered on the list of archives, and your system must be connected to the network archive location.

2. While in patient selection mode, click **Archive > Retrieve Archived Exams**. The **Retrieve** dialog appears. Use this dialog to search for and then retrieve the exams you want.

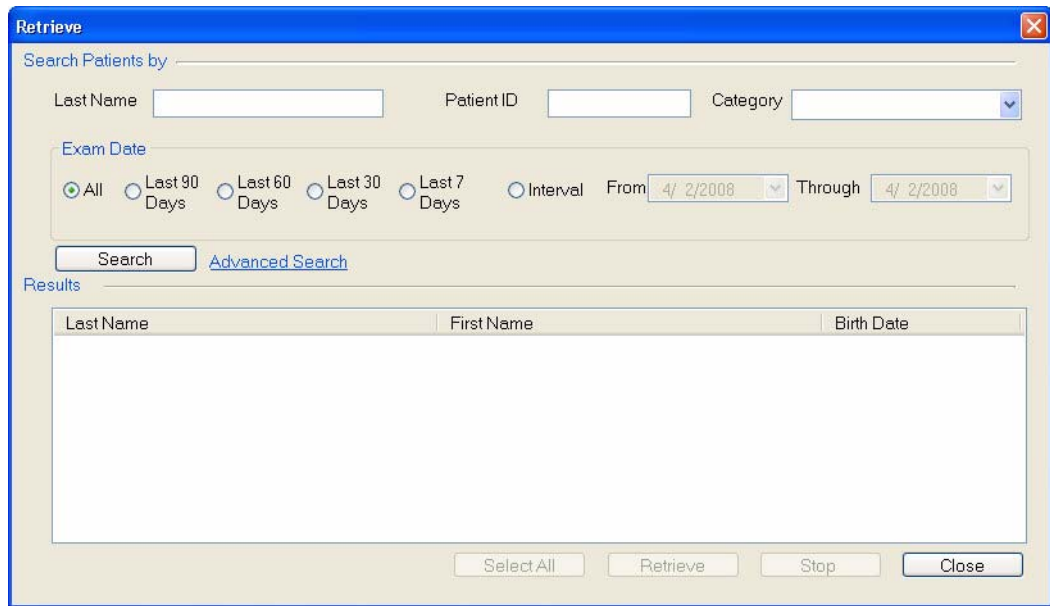
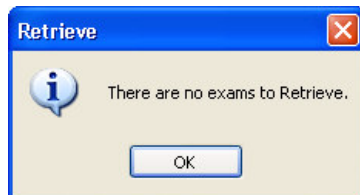


Figure 10-27 The Retrieve Dialog

3. Enter search parameters in the fields provided and click **Search**, or click **Advanced Search** to use additional search parameters (see [Advanced Search](#) on page 9-6 for details). The search returns all matching patients, sorted alphabetically by last name.

- If there are no exams to retrieve, a dialog reports it, as shown at left.



4. Select the desired patients in the **Results** list: Click to select one patient; Ctrl-click to select multiple patients; Shift-click on two patients to select all intervening patients; Ctrl-Shift-click to select all intervening patients plus those already selected; click and drag to the right of the last name to select all adjacent patients. Click **Select All** to select all patients in the **Results** list.

5. When you have made your selections, click **Retrieve** (Figure 10-28).

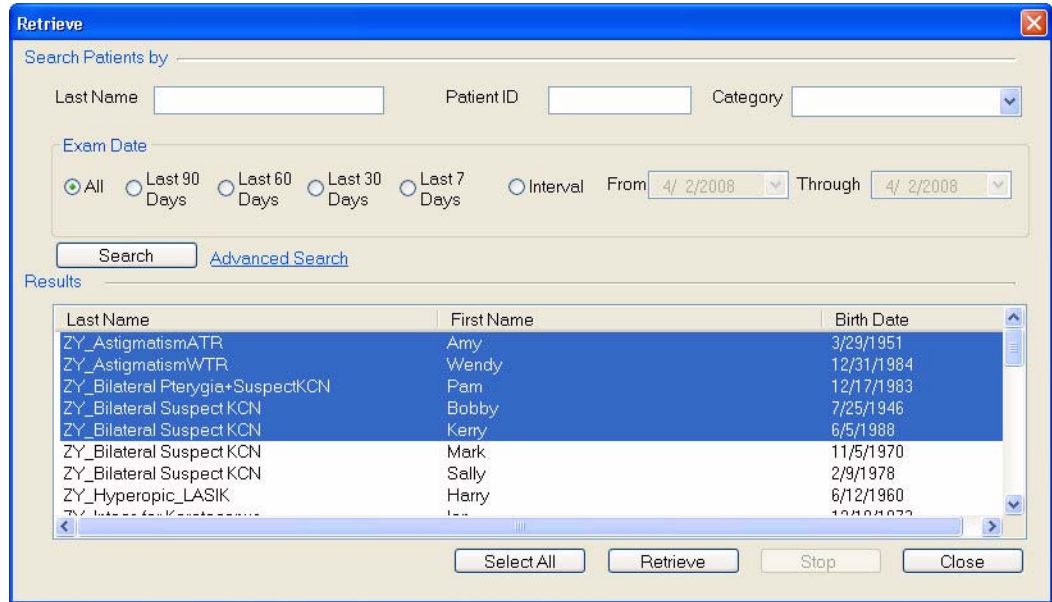


Figure 10-28 The Retrieve Dialog with Selected Patients

6. The software checks in which archive location(s) the matching exams are stored, and starts the retrieval process one archive at a time (Figure 10-29).

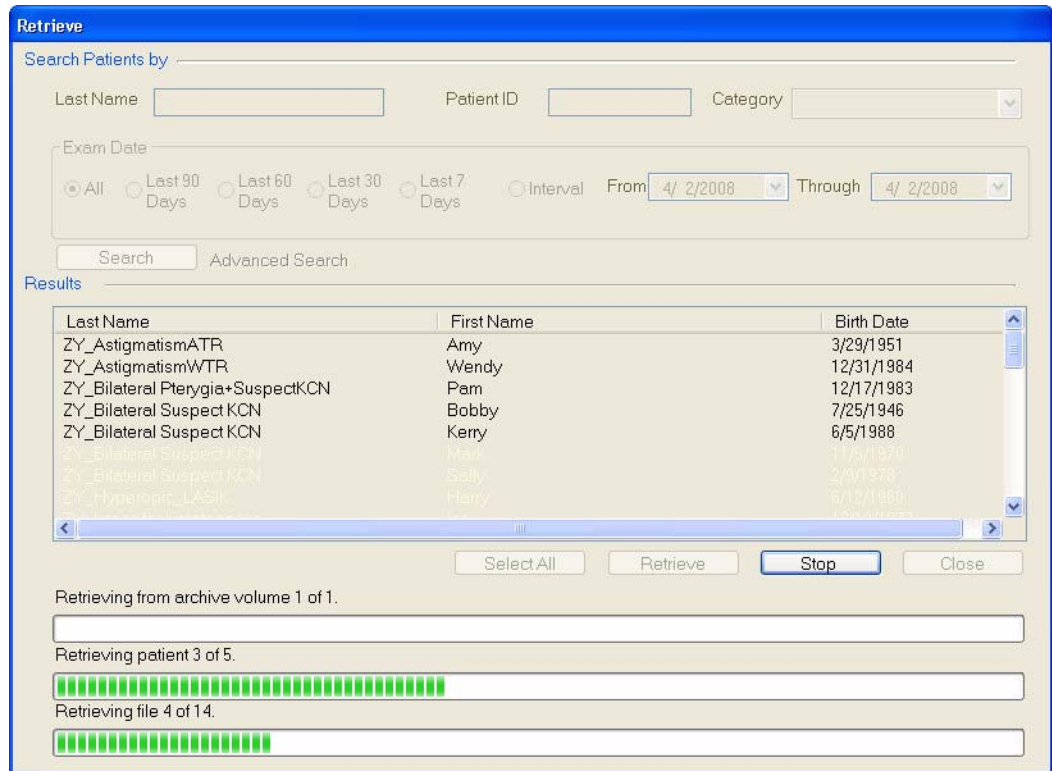


Figure 10-29 Retrieving Exams

7. The dialog box shows the retrieval progress. It can take several seconds to several minutes for the software to finish retrieving the exams to the hard drive, depending on the number of exams.
8. At any time, you can click the **Stop** button to abort the retrieval. The retrieval process will stop after the current whole exam has been retrieved. Already retrieved exams will not be removed. A dialog will then be displayed (Figure 10-30).



Figure 10-30 Stop Retrieval Dialog

Select **OK** to close the dialog and return to the **Retrieve** dialog. Select **Close** to close the **Retrieve** dialog.

- If the hard drive is too full to retrieve all selected exams, the system will initiate clearance of archived exams automatically, making space available before retrieval continues.

9. When a successful retrieval is complete, the system notifies you (Figure 10-31).



Figure 10-31 Successful Retrieval Dialog

Select **OK** to close the dialog and return to the **Retrieve** dialog. Select **Close** to close the **Retrieve** dialog.

- If any exam data is not retrieved, a summary report appears with information about all exams that were not retrieved.

Database Recovery Tool

When logged in as **admin** user, the Database Recovery Tool (**Tools > Database Recovery Tool**) enables you to synchronize from a system's own database archive for database recovery. **The Database Recovery Tool should only be used with assistance from a Carl Zeiss Meditec authorized technical support technician.** Please call Carl Zeiss Meditec customer service for assistance: In the U.S., call 800-341-6968. Outside the U.S., contact your local CZM distributor.

11 Export and Import

Chapter Overview

ATLAS offers the capability of exporting data for viewing and analysis to another ATLAS instrument, a computer running ATLAS Review Software, or to a DICOM system.

ATLAS has the ability to selectively import and export individual and multiple patients using various media. This chapter explains how to export and import ATLAS data and to ensure patient privacy and data integrity. The topics covered in this chapter include:

- [Privacy and Data Integrity Features](#), page 11-1
- [Importing/Exporting Patient Data and Exams](#), page 11-2
- [Importing from ATLAS 9000 Series Export Media](#), page 11-3
- [Importing from ATLAS 900 Series Instrument Databases](#), page 11-5
- [Importing from ATLAS 900 Series Export Media](#), page 11-19
- [Importing from Worklists \(Instrument Only\)](#), page 11-20
- [Exporting to ATLAS 9000 Series Media](#), page 11-21
- [Exporting Data to DICOM Systems](#), page 11-25
- [Exporting for Research](#), page 11-29



Note: ATLAS data is not encrypted. To protect confidentiality of your ATLAS data, the use of disk encryption is recommended and is the responsibility of the user, using third-party encryption software.

Privacy and Data Integrity Features

It is the user's responsibility to observe applicable privacy restrictions and to maintain data integrity. ATLAS incorporates options in its data transfer functions that enable the user to do this.

Patient Privacy

ATLAS gives you the choice to export exam data without information that could identify the patient. When you choose to export data in this way, ATLAS does export the following clinically relevant patient data: gender, assigned patient categories and comments. You have the further option to export a complete date of birth, the month and day of birth only, or no date of birth. The patient name is not exported and neither is the Patient ID. Instead, anonymous patients include a 17 character Unique Patient ID number in the First Name and Patient ID fields, and the originating clinic Institution name in the Last Name field. See [Table 11-2, "Patient Identifier Omit Options"](#).

Data Integrity

Cannot Edit Identifying Information

ATLAS applies a permanent electronic tag to patients that are imported without patient identifying information and treats them as a protected category of data. For these patients, you cannot edit or merge their information. You can analyze, archive and re-export the data. Data that is imported with identifying patient information can be edited without restriction.

Updating ATLAS 9000 Series Imported Patients

For all ATLAS 9000 imported patients, it is possible to import new image data and update patient data.

In the case of patients imported without patient identifying information, the **Patient ID** enables updating of the patient. If during import ATLAS encounters information associated with a **Patient ID** already imported, ATLAS does the following:

- imports all image data (exams) not previously imported, but never deletes nor overwrites any image data already imported;
- updates patient data only if it was created on a later date than the data already imported. This prevents overwriting of newer patient data with older.

Importing/Exporting Patient Data and Exams

The Import/Export options in ATLAS let you export, or copy patient data and exams from the internal ATLAS hard drive to a network hard drive location, USB drive, or optical disk. You can export patient data and exams from the ATLAS System hard drive to ATLAS 9000 Series media format, DICOM systems, and for research in XML or CSV formats.

You can also import, or add, patient data and exams to the ATLAS instrument. You can import patient data to the ATLAS System hard drive from ATLAS 900 Series Instruments (databases) and Export media, and ATLAS 9000 Series Export media. Patient information can also be imported from worklists. Unlike archiving, exporting does not remove the exam data from the ATLAS hard drive. Exporting and importing are used to transfer patient data and exams from one ATLAS instrument (or computer running ATLAS Review Software) to another, or to and from a DICOM system.



Note: When patients are imported, all doctors and operators associated with the patient's imported exams are saved with the exams and can be viewed on the ANALYSIS SCREEN, but they are not imported into the current staff database, and therefore, cannot be modified or deleted. Also, an imported exam's institution name is not imported into the current instrument and is not displayed with the exam. The current institution name will be displayed for all imported exams.

Import

ATLAS provides four different import functions as described below:

Importing from ATLAS 9000 Series Export Media

To import data from ATLAS 9000 Series Export media, follow these steps.

1. Make sure that the import location is accessible. Your system must be connected to the network for network import locations. If you are importing from an optical disk, insert the optical disk containing the export data into its drive.
2. While in patient selection mode, click **File > Import > From ATLAS 9000 Series Export Media....** An Import dialog appears (Figure 11-1).

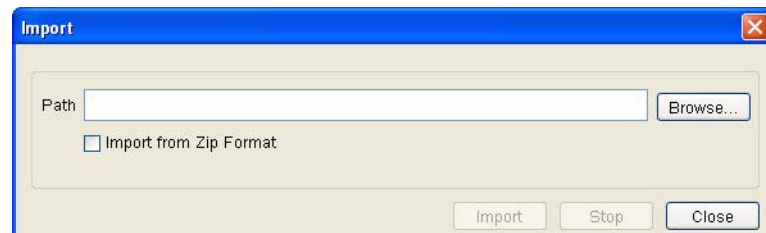


Figure 11-1 Import Dialog

3. If the ATLAS 9000 data has been compressed to a Zip file during export (see [Exporting to ATLAS 9000 Series Media](#) on page 11-21) select **Import from Zip Format**.
4. Click the **Browse** button to find the import folder or Zip file. A **Browse for Folder** dialog appears, enabling you to browse anywhere in a local or network path that is accessible. The **Path** field cannot be empty.
5. When you have selected the import folder or Zip file, click **Import** to begin the import.
6. If you have selected an export Zip file, the export volume will be extracted before importation.



Note: It will take extra time to extract the export volume from the Zip file.



Note: ATLAS 9000 Version 1.0 data will undergo a conversion upon importation. If any patients exist without a Patient ID, a Patient ID will be created for them.



Note: You must import all the exams in the selected import folder or Zip file; you cannot import exams selectively.

7. An **Import** dialog appears asking if you are sure you want to import patient data from this export volume (Figure 11-2). Click **OK** to begin import or **Cancel** to cancel the importation.



Figure 11-2 Import Confirm Dialog

8. A progress dialog appears (Figure 11-3) and importation begins.

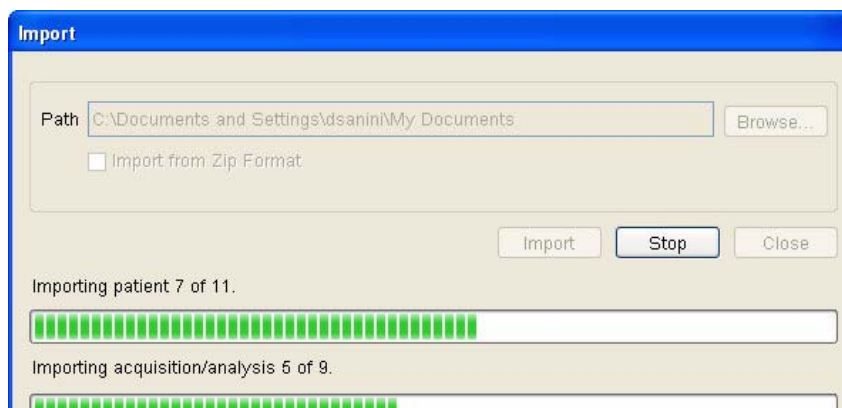


Figure 11-3 Import Progress Dialog

The progress dialog box shows import progress. It can take several seconds to several minutes for the software to finish importing to the hard drive, depending on the number of exams in the export database.

- At any time, you can click the **Stop** button to abort import. The import process will stop after the next whole patient has been imported. Already imported patients will not be removed.

When finished, a dialog notifies you of successful completion, or a summary dialog appears to report information about data that failed to be imported. It reports the number of duplicate exam records that were found and not imported and the number of exams that failed to be imported due to errors.

- The imported records will now be available when you search.

Import Behavior

- Before importing, the system checks for sufficient available space on the system hard drive and if insufficient space is available, initiates clearance of archived exams automatically, making space available before import continues.
- ATLAS displays obscured imported patients in the patient list with the originating institution name as the last name, and a unique Patient ID as the first name and Patient ID. See [Table 11-2, "Patient Identifier Omit Options"](#).
- When exam data is imported, its last modified date and time are changed to the current system date and time. This makes it unavailable for clearance until sufficient time passes.
- Imported data does not overwrite already existing records in the ATLAS database. It associates new exam data based on patient identification.

Importing from ATLAS 900 Series Instrument Databases



WARNING/CAUTION: Initial import of ATLAS 900 series databases could take several hours depending on the size of the database. Do not use the ATLAS 9000/Review Station during that time.

To enable importing of ATLAS 900 series instrument databases you must first:

- Configure your ATLAS instrument for networking and ATLAS file sharing (see [Network Configuration and File Sharing for ATLAS Model 993/995 Instruments](#) on page 11-5).
- Configure import settings with ATLAS 900 Series Importer (see [Configure Import Settings with ATLAS 900 Series Importer](#) on page 11-8).

See [Begin Exam Import](#) on page 11-13 to perform a database import and for details on the importation process. Importing of ATLAS 900 series instrument databases can be done automatically or manually (see [Automatic and Manual Exam Importing](#) on page 11-16).

Network Configuration and File Sharing for ATLAS Model 993/995 Instruments

ATLAS Model 993/995 instruments run on the Windows 98 operating system. The instruments are equipped with a 10/100 Base-T Ethernet adapter and a 10/100 Base-T RJ-45 connector.

The drivers for the Ethernet adapter are preloaded on all new systems. A client for Microsoft Networking is also preloaded. It is the end user's responsibility to setup the required networking clients and protocols for their networking environment. Due to the numerous types of networking setups, it is impossible to create a generic procedure that describes the changes necessary in the Network program. All of the necessary changes should be a simple task for someone familiar with the details of their network environment. The Windows 98 CAB files are preloaded on the instruments' hard drives. Once the necessary networking setups have been completed, ATLAS 993/995 instruments can access and share resources on the network just like any other PC in the network.

You will need your local network administrator person to set up the network (see [Configuration for Export via Preexisting Office Network](#) on page D-6). Make sure the following steps have been completed to set up your ATLAS 993/995 instrument for networking:

1. Exit the MASTERVUE MAIN MENU screen by double-clicking on the word **Main** in green in the top right-hand corner. This will take you to the Windows desktop.
2. Click **Start > Settings > Control Panel**.
3. **Double-click** on Network.

4. To enable file sharing, select **File and Print Sharing...** from the Configuration tab (Figure 11-4).

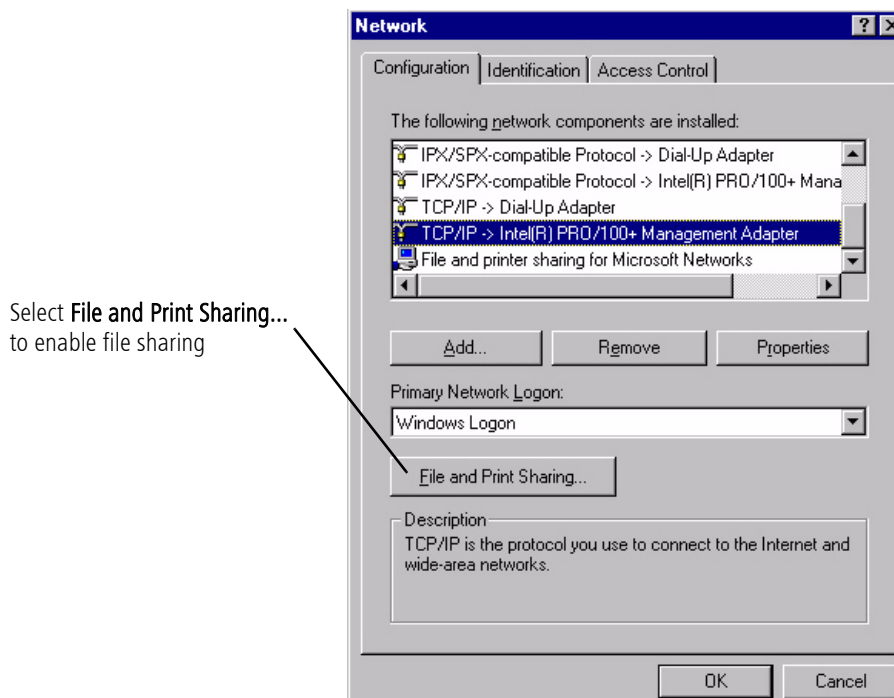


Figure 11-4 Windows 98 Network Control Panel

5. Check **I want to be able to give others access to my files** and then select **OK** (Figure 11-5).



Figure 11-5 File and Print Sharing Dialog

6. Restart your computer at the prompt to turn on file sharing.



Note: You may want to rename your ATLAS 993/995 instrument(s) for easy identification on the network. From the Network control panel, select the Identification tab. In the Computer name field enter a name you can easily identify for the ATLAS instrument.

7. The default exams database resides in the C:\EXAMS directory. Double-Click My Computer, Right-Click on the Exams directory and select **Sharing** (Figure 11-6).

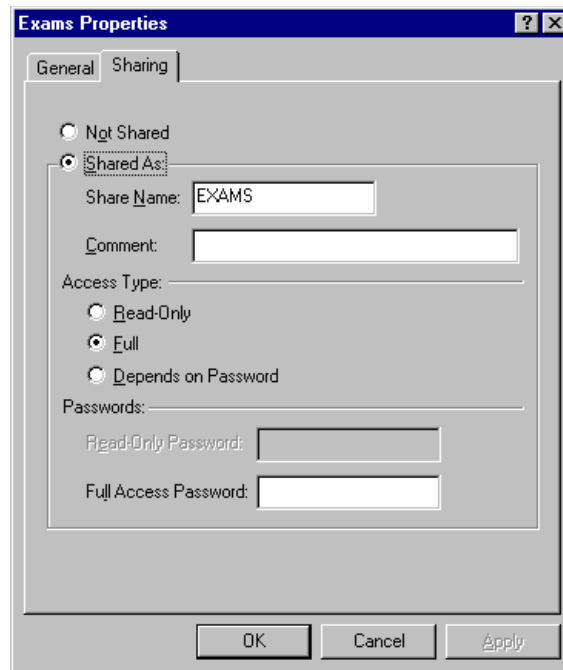


Figure 11-6 Windows 98 Exams Folder Properties

8. Select **Full** as the Access Type.
 9. Click **OK** to save the settings. Your ATLAS 993/995 should now be network accessible for automatic database import using the ATLAS 900 Series Importer.



Note: It is possible to move the default EXAMS directory anywhere in the network as long as a drive letter is mapped on the ATLAS 993/995 to that location. Once the drive letter has been mapped, appropriate changes must also be made to the directory statements in the C:\CTS\CTS.INI file. The CTS.INI file has several path statements (under DATABASEPATH), which direct the system to the default C:\EXAMS directory. If the EXAMS directory and its subdirectories are moved to a new location, those statements must be changed to reflect the new location. If changed, the topographer will no longer save patient tests to the local hard drive.

10. To map a drive letter to an ATLAS 993/995 database on a Review Station see [Map a Drive Letter to a Shared Folder in Windows XP](#) on page D-14, and [Using the Mapped Drive for Import and Export](#) on page D-18. The drive letter will then be available to select for database import using the ATLAS 900 Series Importer.

Configure Import Settings with ATLAS 900 Series Importer

1. While in patient selection mode, click **Tools > Run Atlas Importer** to display the ATLAS 900 Series Importer dialog (Figure 11-7).

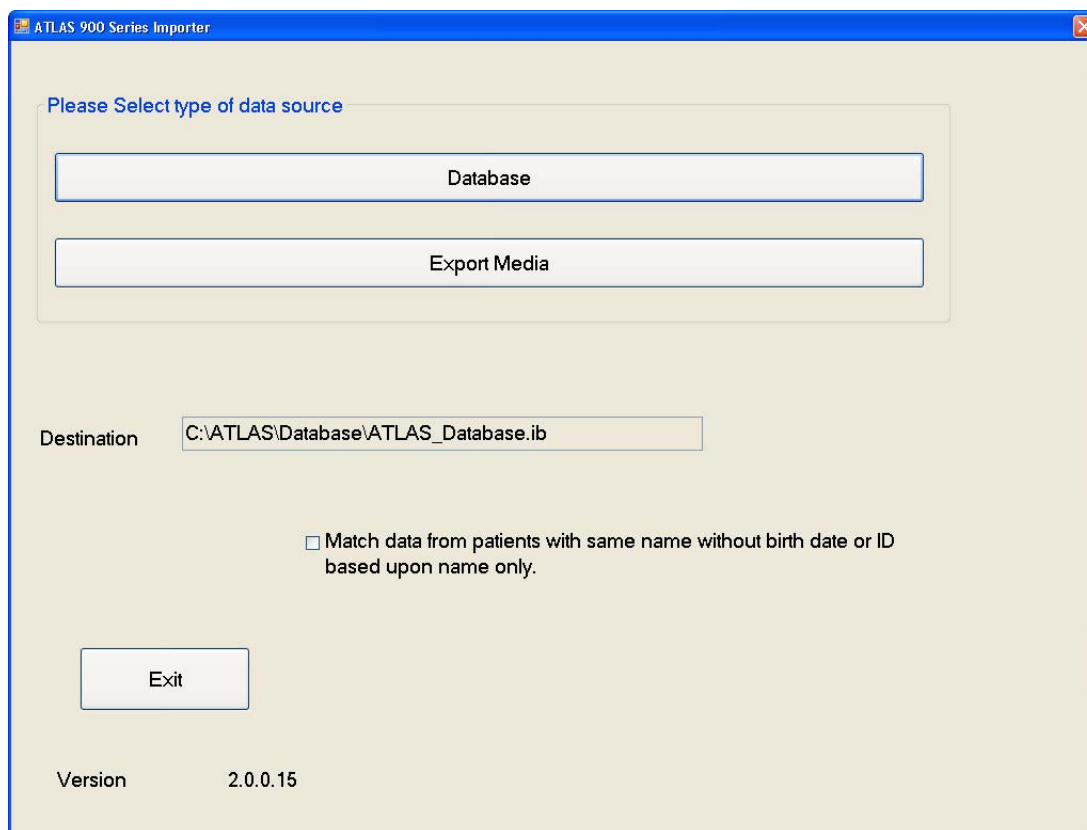


Figure 11-7 ATLAS 900 Series Importer Dialog

The current ATLAS 9000 Series database is selected in the Destination field.

Select the **Match data from patients with same name without birth date or ID based upon name only** checkbox to match patients without ID or birth date as same patient if their names match. If this option is checked, two patients that have identical names, and no other information is available to help identify them (such as ID, birth date), will be considered the same patient and their data will be merged together as a single patient. If not checked, the patient will not be imported and the program will flag this as a "Duplicate patient name" error.

To leave the ATLAS 900 Series Importer click **Exit** to return to the PATIENT SELECTION WINDOW.

2. Click the **Database** button to display the Select ATLAS 900 Series Database dialog (Figure 11-8).

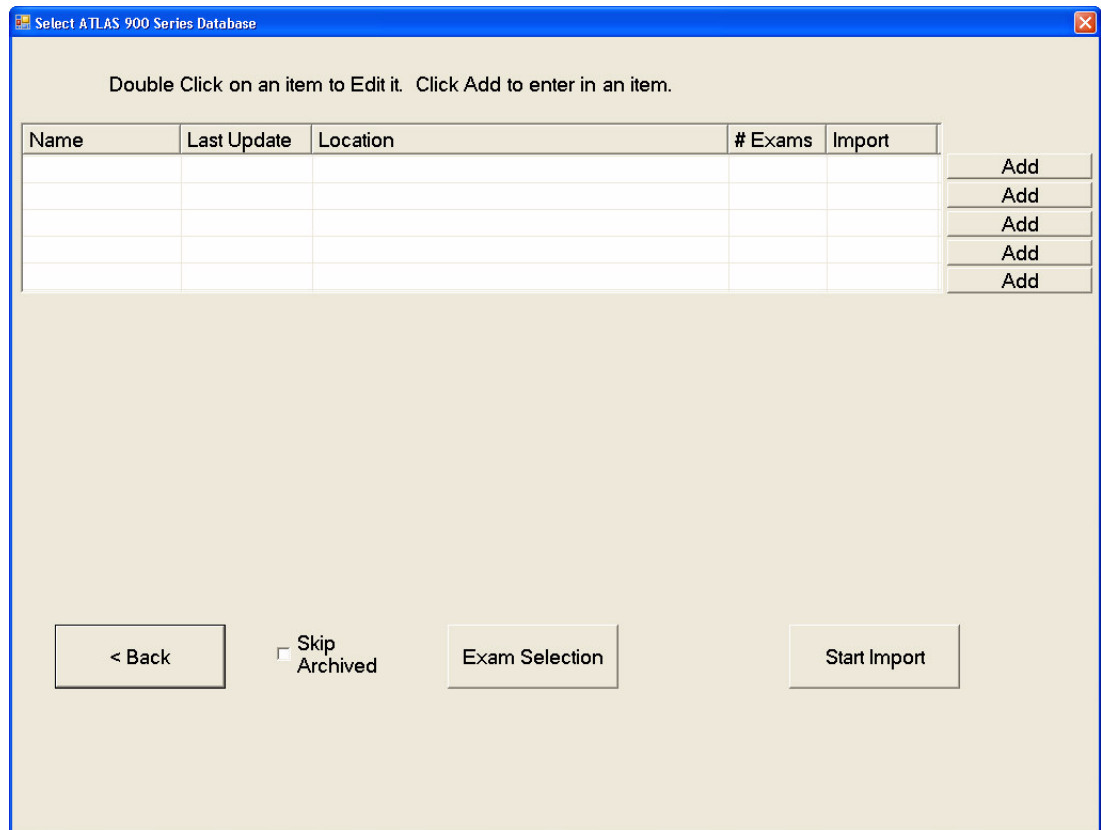
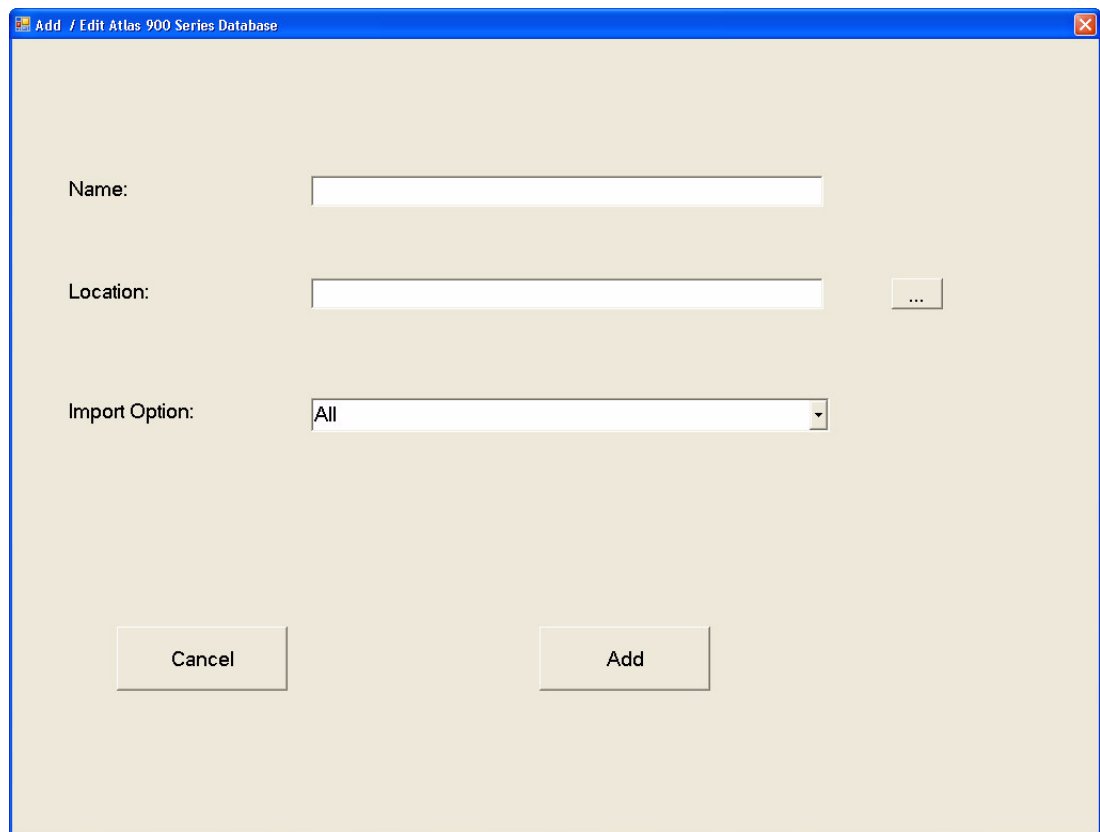


Figure 11-8 Select ATLAS 900 Series Database Dialog

3. You can add up to 5 different ATLAS 900 Series databases. To add an ATLAS 900 Series Instrument database, click an **Add** button to display the Add / Edit ATLAS 900 Series Database dialog (Figure 11-9).



The screenshot shows a dialog box titled "Add / Edit Atlas 900 Series Database". It features three input fields: "Name" with a text box, "Location" with a text box and a browse button "...", and "Import Option" with a dropdown menu set to "All". At the bottom, there are "Cancel" and "Add" buttons.

Figure 11-9 Add / Edit ATLAS 900 Series Database Dialog

4. In the **Name** field, type in a name for the ATLAS 900 Series Instrument.
5. In the **Location** field, you can type in the exact path to the database folder, if you know it, or click the browse (...) button to find and select the folder. A **Choose file with name Corneal.mdb** dialog appears, enabling you to browse anywhere in a local or network path that is accessible. If you mapped an ATLAS 993/995 database folder to a drive letter, you can enter it here.



Note: If you are using a USB flash drive or USB floppy drive to add a database, the USB flash drive or floppy disk must not be write-protected or you will get an error message.

6. In the **Import Option** field, select **All** (for all exams), **None** (for no exams), or **New** (for new exams since last import).
7. Click the **Add** button to add the database. Click **Cancel** to cancel adding the database.

8. After clicking **Add**, the Select ATLAS 900 Series Database dialog will be displayed showing the database you have just added (Figure 11-10). Double-click the database to edit it and return to the Add / Edit ATLAS 900 Series Database dialog. If you want to remove the database, click the **Remove** button. A dialog will appear asking you if you really want to remove the database. Click **Yes** to remove, or **No** to cancel removal.

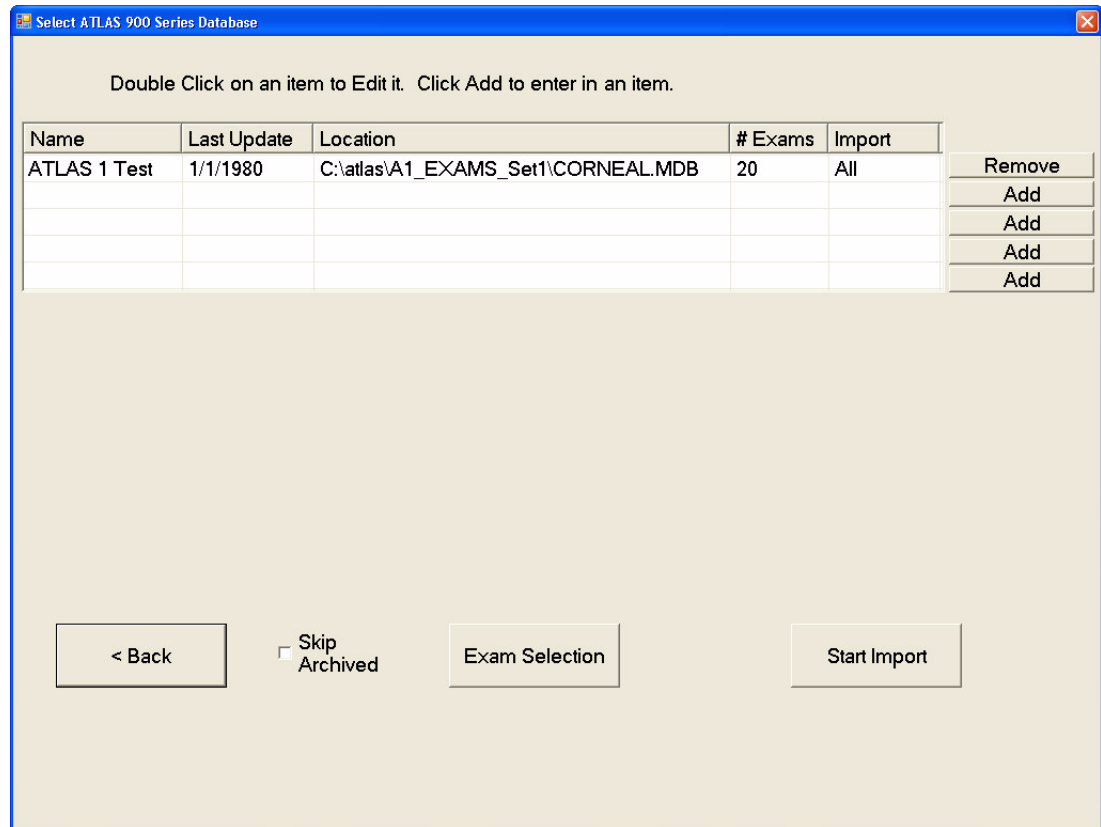


Figure 11-10 Select ATLAS 900 Series Database Dialog with Added Database

9. Check the **Skip Archived** checkbox if you do not want to import previously archived exams. Leave unchecked to import archived exams. This only applies if you begin the import process by clicking **Start Import** on this screen—**auto and manual import will ALWAYS skip all archived exams even if you have enabled the option to skip archived exams here** (see [Automatic and Manual Exam Importing](#) on page 11-16).
10. To import the exams from the ATLAS 900 Series Instrument database now, click **Start Import**. Skip to [Step](#) on page 13.
11. To import the exams later (either automatically or manually), click the **<Back** button to return to the ATLAS 900 Series Importer dialog.



Note: If you have automatic importing turned on (see [Automatic and Manual Exam Importing](#) on page 11-16) and exit the ATLAS 900 Series Importer, exams may be automatically imported depending on your import settings.

12. To select only certain exams to import, click **Exam Selection**. The **Select Exams** dialog (Figure 11-11) will be displayed showing a list of all exams from the database(s).

Initially, all exams are highlighted in light blue and are selected for import. A light blue exam and a checkmark in the exam's **Selected** checkbox means it is selected for import. **Double-click** an exam (or **click** the exams's **Selected** checkbox) to change it to white and make it unselected for import. **Double-click** the same exam again (or **click** the exams's **Selected** checkbox) to make it light blue and selected for import.

The **De-Select All** button will unselect all exams, making it easy to select just a few exams. After clicking the **De-Select All** button, the button will change to a **Select All** button, which when clicked will select all exams, making it easy to unselect just a few exams.

If an exam has been archived, the archive source label is shown in the Archive column; i.e., ARC1-03-07-08.

The number of exams selected for import is shown to the right of the **Selected:** field.

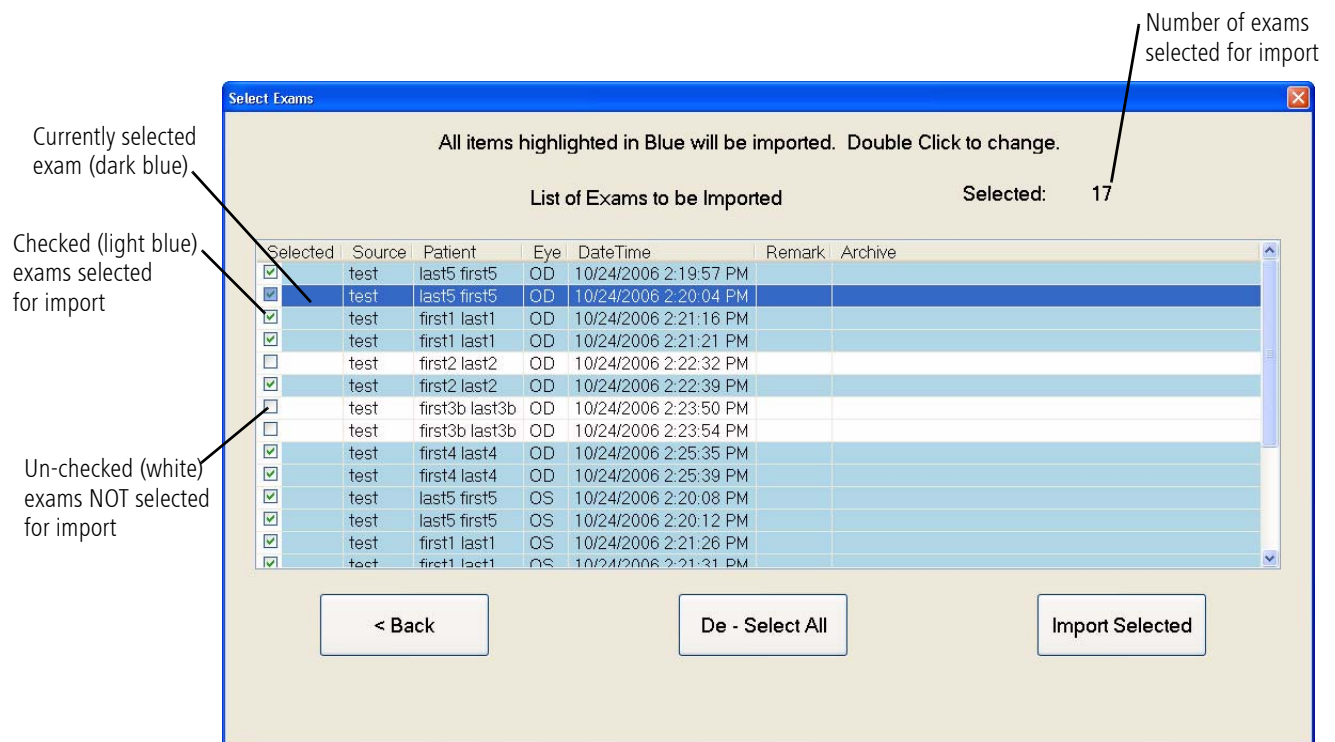


Figure 11-11 Select Exams Dialog

13. To import the selected exams, click the **Import Selected** button. If you click the **< Back** button the selected exams will not be retained and you will be returned to the ATLAS 900 Series Importer dialog.

Begin Exam Import

14. If you clicked the **Import Selected** button or the **Start Import** button, the exam import process begins and the **Import Exam Status** dialog will be displayed (Figure 11-12). The progress bar at the bottom of the screen indicates the importation progress. The dialog also shows the import and export database locations and number of exams selected for import.

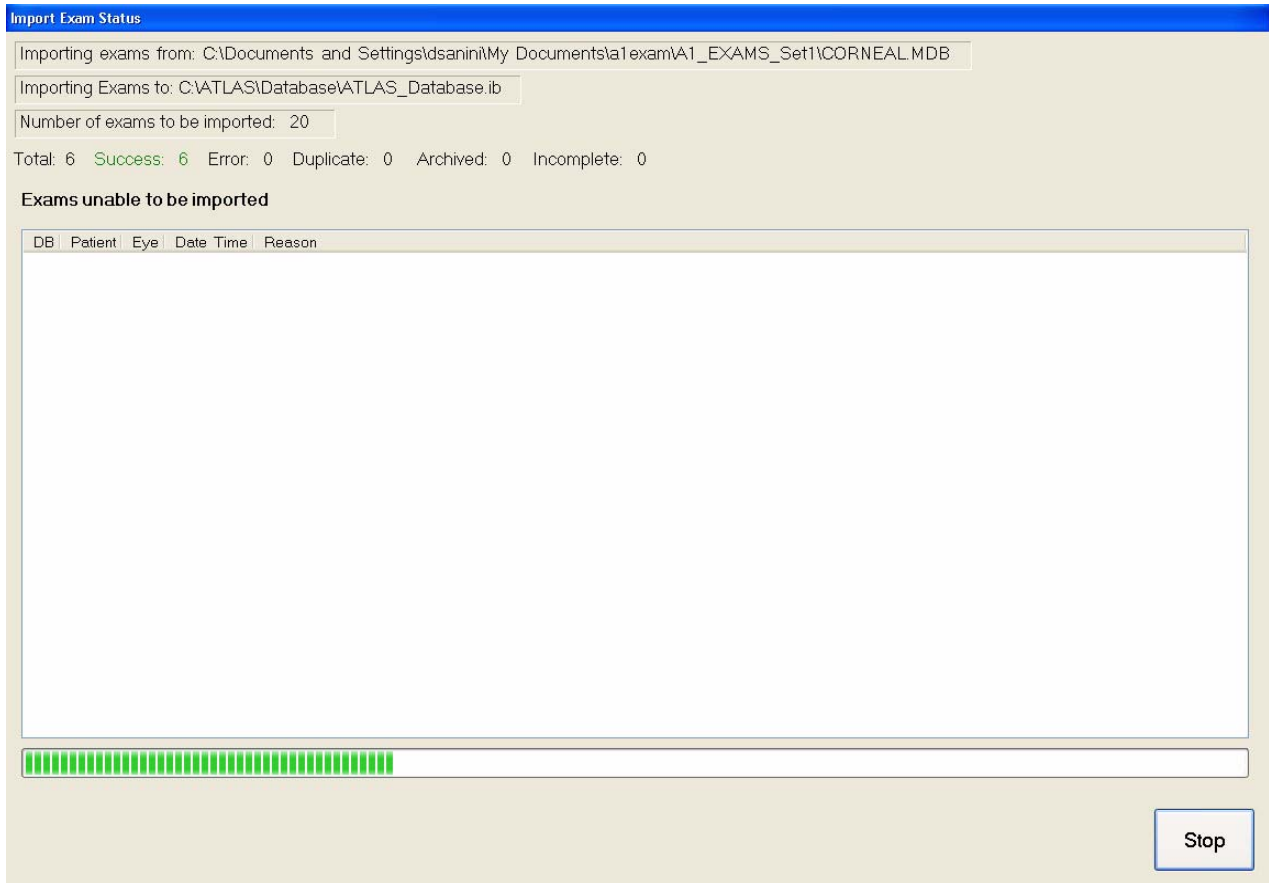


Figure 11-12 Import Exam Status Dialog

A running exam number is also displayed during importation for the following:

- **Total** – Total number of exams imported so far.
- **Success** – Exams successfully imported.
- **Error** – Exams not imported because an error occurred during import.
- **Duplicate** – Exams not imported because they already exist in database. Exams are considered the same if they have same patient, same exam date, and same exam eye.
- **Archived** – Archived exams not imported.
- **Incomplete** – Exams not imported because the Rings image is not found.

See [Table 11-1, "Exam Import Error Codes"](#) on page 11-16 for a complete list of error codes.

If you have left the **Skip Archived** checkbox *unchecked*, and the archive volume is not connected or cannot be found, a **Search Archive** dialog will be displayed during the import process (Figure 11-13).

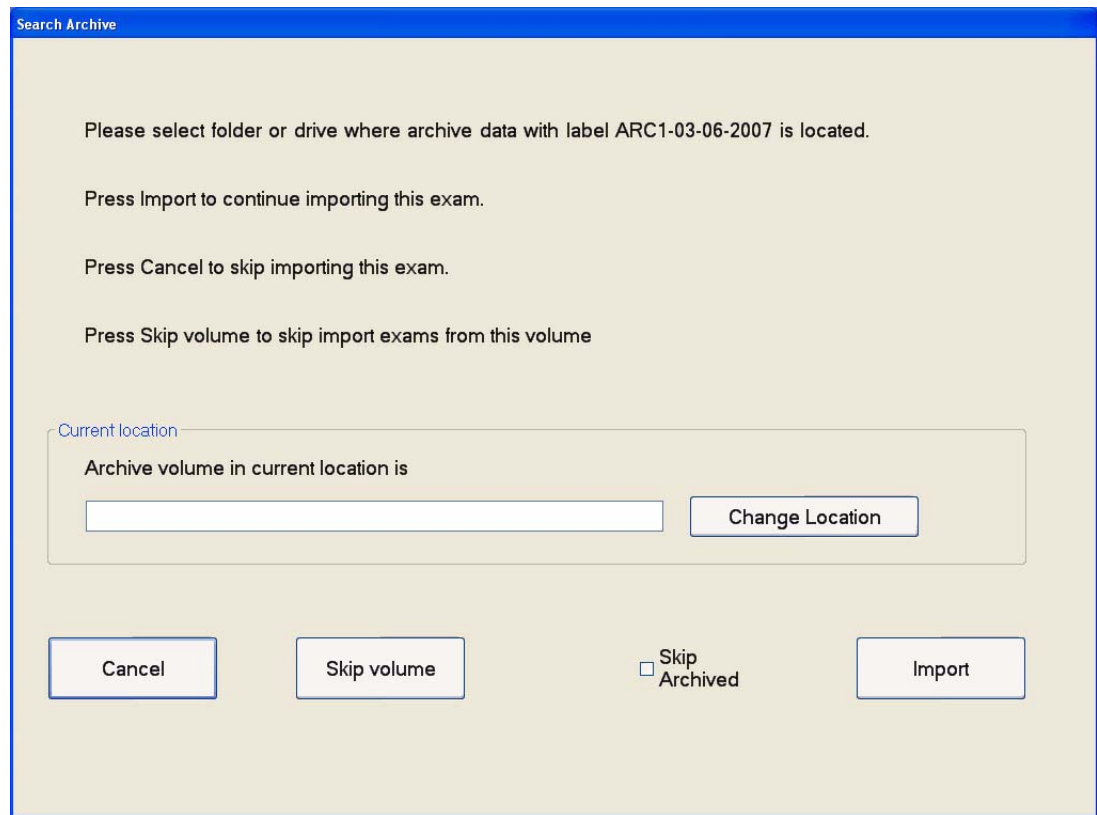




Figure 11-13 Search Archive Dialog

 **Note:** If the archive volume is on an external drive, you will need to connect it and install any software drivers needed.

You can enter the archive location directly, or select the **Change Location** button to display a **Browse for Folder** dialog enabling you to browse anywhere in a local or network path that is accessible where you can select the archive location. Select **Import** to continue with the import, or select **Cancel** to skip importing this exam. Select **Skip volume** to skip all exams from this archive volume. Select the **Skip Archived** checkbox if you do not want to import any archived exams from all archive volumes.

At any time, you can click the **Stop** button to abort import. The import process will stop after the next whole patient has been imported. Already imported patients will not be removed. A dialog will be displayed to confirm stopping the import. Select **Yes** to stop the import or select **No** to continue with import. If you select **Yes**, the **Import Exam Status** dialog will be displayed (Figure 11-14).

 **Note:** The import process will stop if the target's drive has less than 10 MB of free space or an undetermined error occurs.

At the end of exam importation, the Import Exam Status dialog (Figure 11-14) displays the number of exams successfully imported and a list of exams not imported, including the reason they were not imported. See Table 11-1, "Exam Import Error Codes" on page 11-16 for a complete list of error codes.

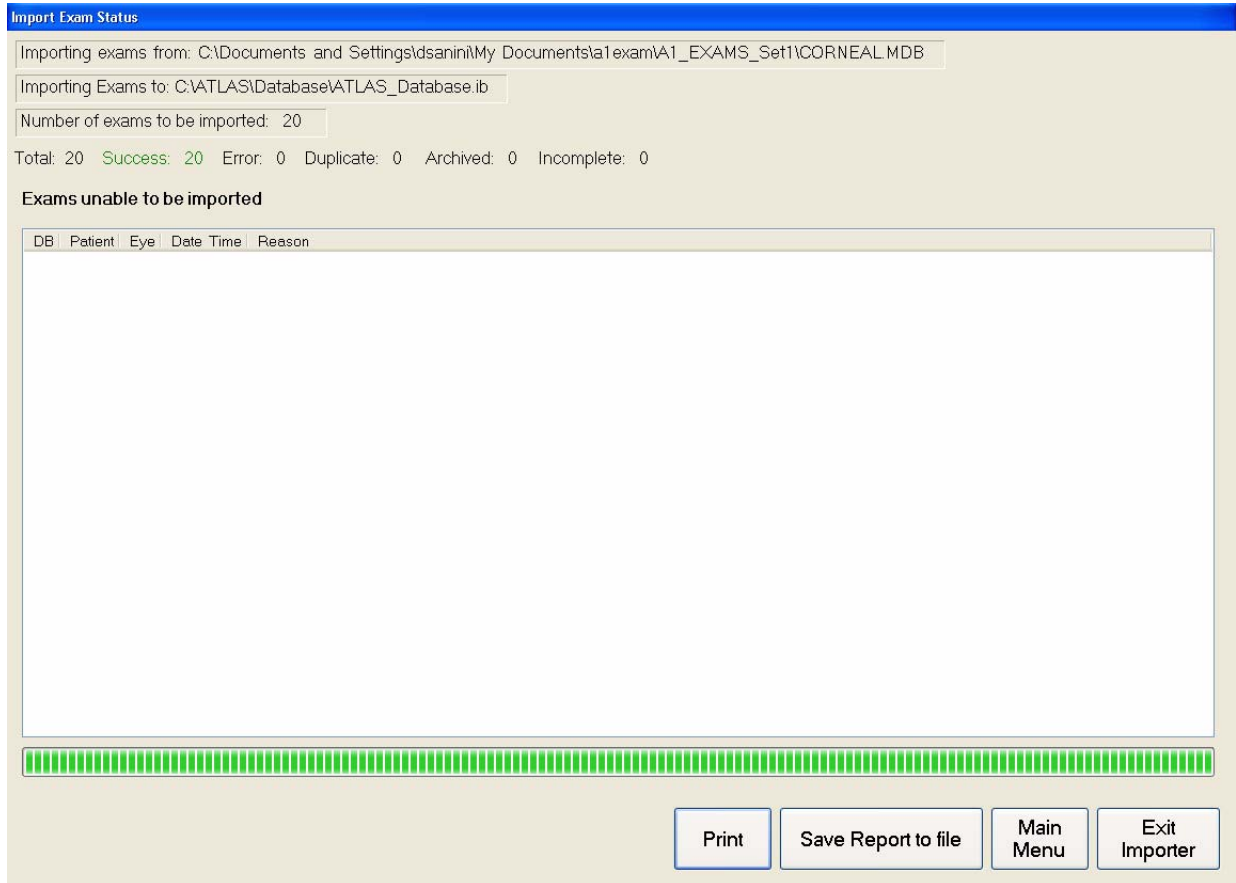


Figure 11-14 Import Exam Status Dialog at End of Importation

15. Click the **Print** button to print a report of exams that were not imported and their Exam Import Error Codes. Click the **Save Report to file** button to save the report as a text file. See Table 11-1, "Exam Import Error Codes" on page 11-16 for a complete list of error codes.
16. Click the **Main Menu** button to return to the ATLAS 900 Series Importer dialog or click the **Exit Importer** button to return to the PATIENT SELECTION window.



Note: A Summary.log text file is created at the end of the import summarizing the import process. An Import.log text file is created at the end of the import containing data source information and a list of exams that have problems associated with the importation process. If there is already a file with the same name in the folder, the existing file will be renamed by adding its creation date to the file name. These log files are located in "C:\Documents and Settings\All Users\Application Data\Carl Zeiss Meditec\ATLAS\Log" for Windows XP; for Windows Vista the path is "C:\Program Data\Carl Zeiss Meditec\ATLAS\Log."

Table 11-1 Exam Import Error Codes

Category	Code	Description	Impact on Import
Incomplete	Rings image is missing	Exam is still imported but Rings image is not found.	Exam imported
Duplicate	Duplicate exam found	Exam already exists in target database.	Exam skipped
Error	Duplicate patient ID found	Failed to save patient because patient in target database already uses the same patient ID.	Exam skipped
Error	Incomplete data found	Imported exam does not have critical data to be imported.	Exam skipped
Error	Duplicate patient name found	Failed to save patient because patient in target database already uses same patient name.	Exam skipped
Error	Error saving patient data	Failed to save patient to target database.	Exam skipped
Error	Patient data file missing	Cannot find MVU file.	Exam skipped
Error	Unable to read patient data file	Problem reading data from MVU file. File may be corrupt or Disk I/O Error.	Exam skipped
Error	Integrity check failed	Exam index data and MVU are mismatch.	Exam skipped
Error	Error saving exam	Cannot save new exam to target database.	Exam skipped
Archived	Archived exam not accessible	Imported exam has been archived and archived media is not accessible during import.	Exam skipped
Archived	Archived exam not selected for import	Imported exam has been archived and operator chose to skip archived exams.	Exam skipped
Error	Unknown error	An error occurs that cannot be determined. This will stop the import process.	Import stopped
Error	Out of disk space	There is not enough disk space in the target drive to continue import. This will stop the import process.	Import stopped



Note: When a patient from an ATLAS 900 series instrument does not have a birth date, the software will assign a fake birth date (1/1/1000) to the patient. This fake birth date will not be shown in patient lists and print outs; however, it will be displayed on the Analysis Screen, the Export to DICOM function, and in Export For Research text files. After import, you should check for patients without a date of birth, and enter a date of birth for them.



Note: When a patient from an ATLAS 900 series instrument does not have a Patient ID, a Patient ID will be created for them using the patient's first and last name (e.g., Patient ID = johnadams). If a patient exists in the database with the same name, the Patient ID will be incremented with a dash. Subsequent patient name conflicts will add another dash.

Automatic and Manual Exam Importing

ATLAS can be set to automatically import exams from ATLAS 900 Series Instrument databases. This feature instructs the software to check for exams performed on 900 series instruments since the last one imported. Once set for automatic import, you can still perform a manual import at any time if you want. Configuration of automatic and manual exam importation is performed in the ATLAS 900 Series Importer (see [Configure Import Settings with ATLAS 900 Series Importer](#) on page 11-8).

To turn on automatic importing:

1. While in patient selection mode, click **Options > Auto ATLAS 900 Series Importer Setting**. The Auto ATLAS 900 Series Importer Setting dialog appears (Figure 11-15).

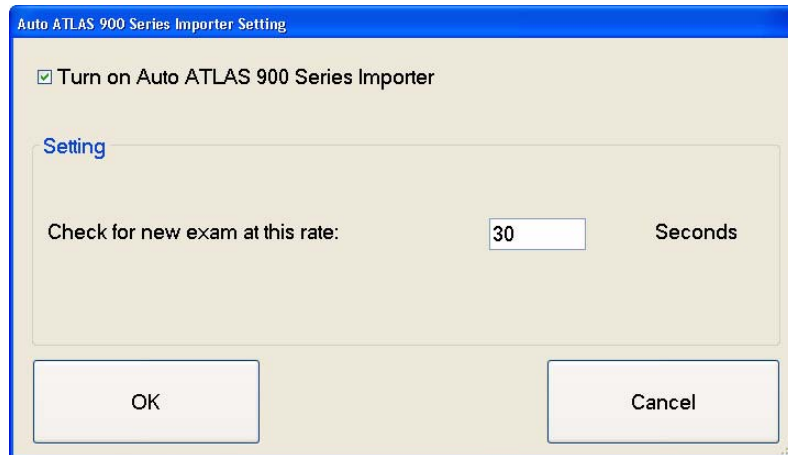


Figure 11-15 Auto 900 Series Importer Setting Dialog

2. Check **Turn on Auto ATLAS 900 Series Importer** to turn on automatic importing. Uncheck to turn off.
3. In the **Setting** field, enter the number of seconds for how often you want the software to check for new exams. Setting this less than 30 seconds could generate file lockup errors when you have more than one Review Station set for automatic import.
4. Click the **OK** button to save your changes. Click **Cancel** to keep the previous setting.
5. When new exams are found they will be automatically imported into your current database. A dialog will be displayed showing the import progress (Figure 11-16).

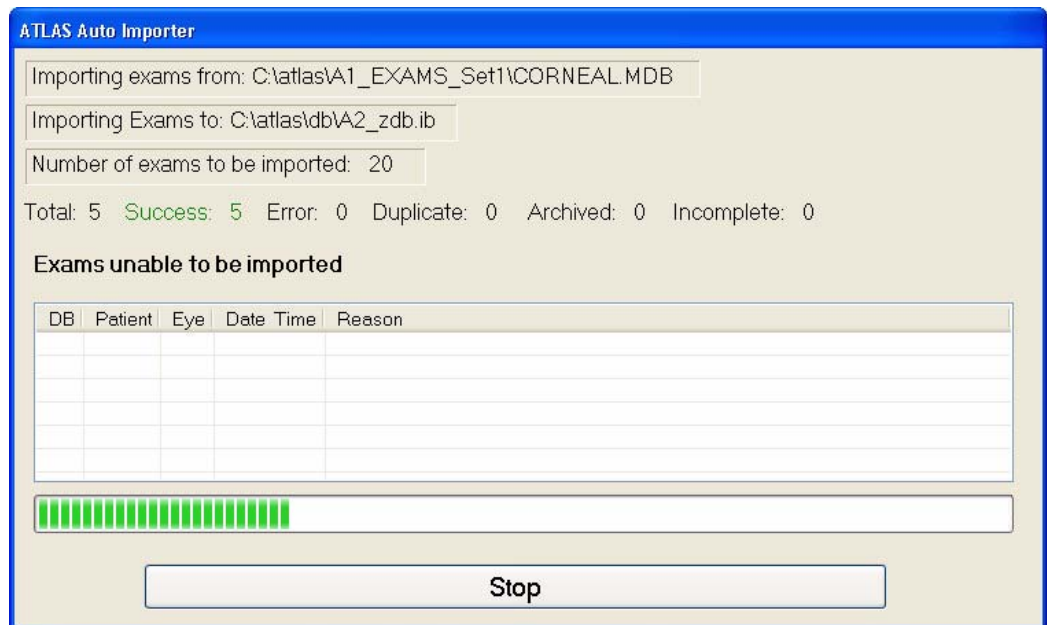


Figure 11-16 ATLAS Auto Importer Dialog

The auto import will create a summary log file at the end of import. You can select the View Today's Patients tab on the PATIENT SELECTION WINDOW to view today's automatically imported patients.

- You can perform a manual import at any time by using the ATLAS 900 Series Importer (see [Begin Exam Import](#) on page 11-13) or selecting **File > Import > From ATLAS 900 Series...** (if already configured the way you want). When selecting **File > Import > From ATLAS 900 Series...** you will see the Atlas Auto Importer dialog ([Figure 11-16](#)) if there are exams to be imported. The manual import will create a summary log file at the end of the import. If there are no exams to be imported you will see a dialog reporting this ([Figure 11-17](#)).

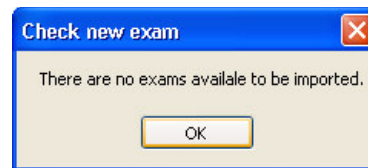


Figure 11-17 Check New Exam Dialog



Note: Auto and manual import will ALWAYS skip all archived exams even if you have enabled the option to skip archived exams (see page 11-11).

[Figure 11-18](#) shows a network diagram for one ATLAS 993/995 and two Review Station computers. The Review Stations are configured to auto import exams from the ATLAS 993/995. Synchronization cannot be performed on an ATLAS 993/995. This is the recommended configuration when you have one or two Review Stations. When you have three or more Review Stations you should auto-import ATLAS 993/995 exams into one of the Review Stations which then archives to a Network Server that the other Review Stations can synchronize from (see [Figure 10-13](#) on page 10-13). This will prevent possible file lockup errors when multiple Review Stations try to import exams at approximately the same time.

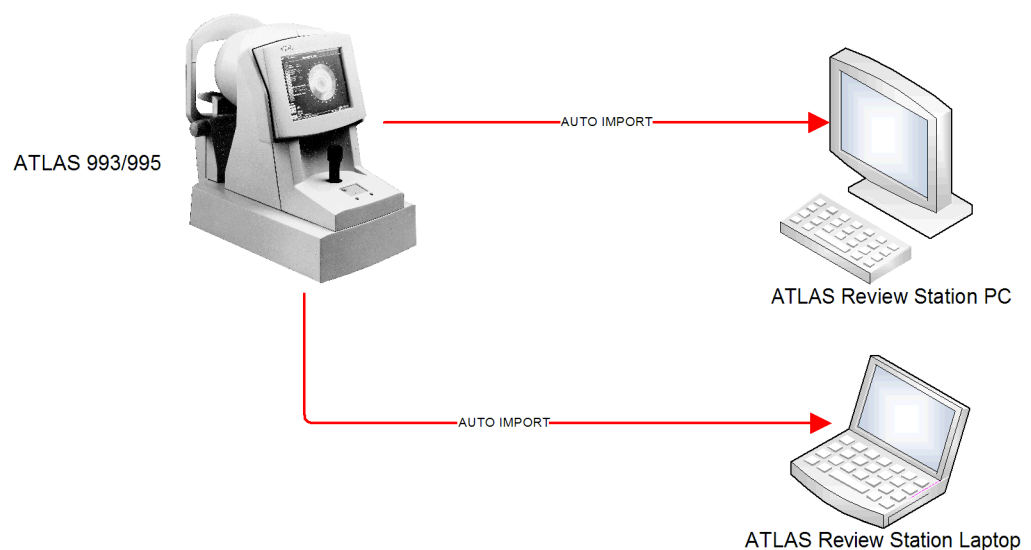


Figure 11-18 Network Diagram for One ATLAS 993/995

Importing from ATLAS 900 Series Export Media

Importing of ATLAS 900 Series Export Media is done with the ATLAS 900 Series Importer as shown in the following steps:

1. While in patient selection mode, click **Tools > Run Atlas Importer...** to display the ATLAS 900 Series Importer dialog (Figure 11-19).

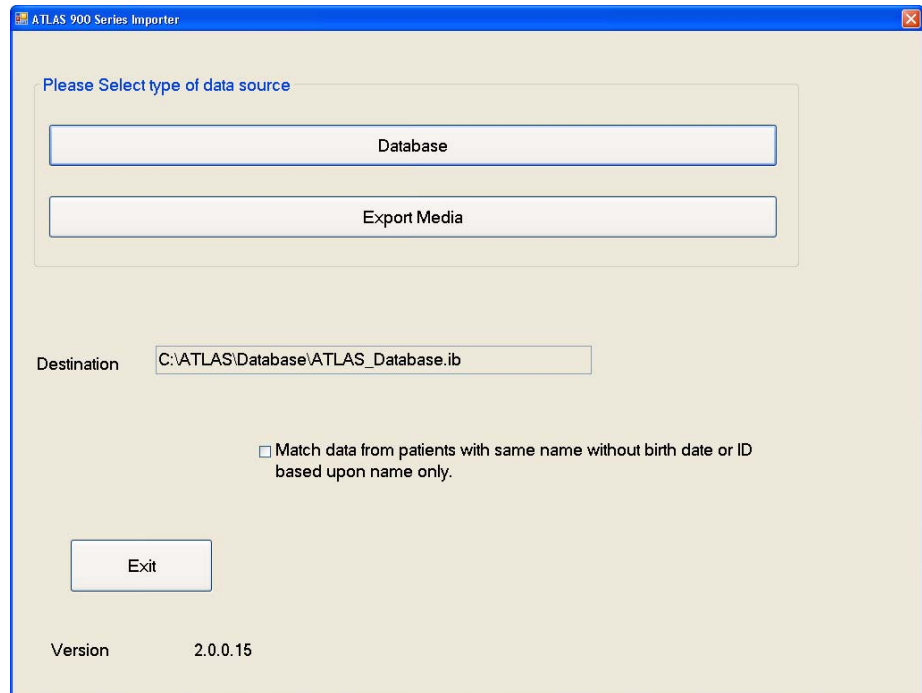


Figure 11-19 ATLAS 900 Series Importer Dialog

The current ATLAS 9000 Series database is selected in the Destination field.

Select the **Match data from patients with same name without birth date or ID based upon name only** checkbox to match patients without ID or birth date as same patient if their names match. If this option is checked, two patients that have identical names, and no other information is available to help identify them (such as ID, birth date), will be considered the same patient and their data will be merged together as a single patient. If not checked, the patient will not be imported and the program will flag this as a "Duplicate patient name found" error.

To leave the ATLAS 900 Series Importer click **Exit** to return to the PATIENT SELECTION window.

2. To import ATLAS 900 Series Export Media, click the **Export Media** button to find and select an ATLAS 900 Series Export Media file with name *Cornealx.mdb*. A **Choose file with name Cornealx.mdb** dialog appears, enabling you to browse anywhere in a local or network path that is accessible.
3. When you open a Cornealx.mdb file the **Select Exams** dialog will be displayed to allow you to select exams from the export file. Go to [Step 12. on page 12 of the Importing from ATLAS 900 Series Instrument Databases](#) steps to complete import of ATLAS 900 Series Export Media.

Use Extrapolated Data for ATLAS 900 Series Exams

After importing ATLAS 900 series exams with ATLAS Importer, either by database or export media, you can choose to view ATLAS 900 series exams with extrapolated data. When this option is turned on, ATLAS tries to fill in missing data by extrapolation. Select **Options > Preferences...** and then click the **General** tab (Figure 11-20).

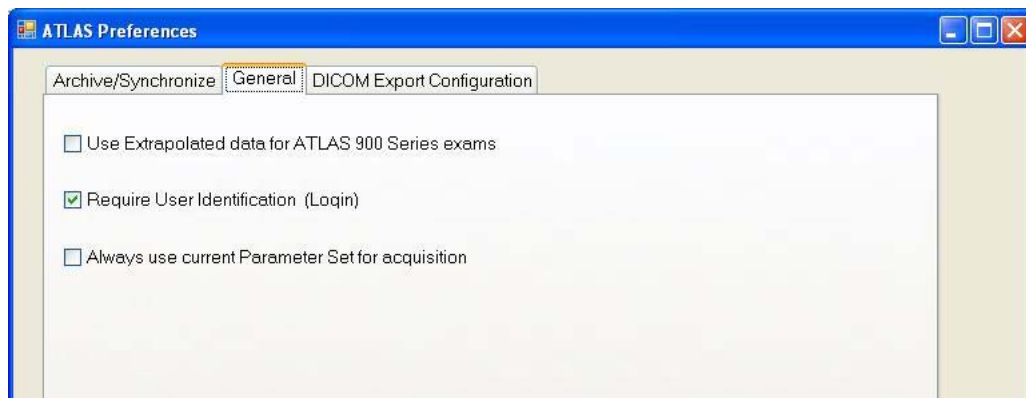




Figure 11-20 Preferences – General Tab

Check **Use Extrapolated data for Atlas 900 Series exams** and then select **OK** if you want to display ATLAS Series 900 exams with extrapolated data.

Importing from Worklists (Instrument Only)

The ATLAS instrument allows you to import patient information (name, date of birth, patient ID, etc.) from an Electronic Medical Records (EMR) system or Patient Management System (PMS) (CZM-XML or DICOM (Digital Imaging and Communications in Medicine) compliant). Obtaining patient information from worklists avoids the need to enter patient information multiple times, and prevents typing mistakes. Once the ATLAS instrument is licensed, enabled and configured, patients scheduled for exams today from a worklist can be viewed on the ATLAS instrument.

-  **Note:** You should check with your EMR/PMS/DICOM vendor to determine the compatibility of their system with the ATLAS System, before purchasing an EMR/PMS/DICOM system.
-  **Note:** Make sure that the DICOM system is accessible. Your system must be connected to the network for network import processes.

Enable and Configure Worklist Import

While in patient selection mode, select **Options > Preferences...** and then click the **DICOM Export Configuration** tab (Figure 11-25) to enable and configure the ATLAS for worklist import. See [Enable and Configure DICOM Data Export and Worklist Import](#) on page 11-26 for more information.

Import Worklists

To import a worklist into the ATLAS instrument, follow this step:

1. While in patient selection mode, select the **View Today's Patients** tab (see [View Today's Patients](#) on page 3-4). Any patients scheduled for today on a worklist are automatically imported into the ATLAS instrument. The patients can be new or existing ATLAS patients. Select **Refresh Patient List** to refresh the patient list.



Note: If any patients exist without a Patient ID on the worklist, a Patient ID will be created for them using the current date and time.

Export

ATLAS provides three different export functions as described below:

Exporting to ATLAS 9000 Series Media


To export data to ATLAS 9000 Series formatted media, follow these steps.


1. While in patient selection mode, click **File > Export > To Atlas 9000 Series Export Media....** The Export Options dialog appears ([Figure 11-21](#)).


Figure 11-21 Export Options Dialog


2. In the **Path** field, you can type in the exact path to the export folder, if you know it, or click the **Browse** button to find and select (or make) the new export folder. A **Browse for Folder** dialog appears, enabling you to browse anywhere in a local or network path that is accessible. You can export data to an optical disk, to any location in a network path, or to a USB hard disk or flash drive. The **Path** field cannot be empty.

3. If you want to export all the selected data into one compressed file using the Zip compression format, check **Export to Zip Format**. The export volume will be compressed into one Zip file inside the export folder. The name of the Zip file will be the Label of the export volume. You do not need to uncompress the Zip file before importing—just select the Zip file for import and all data will be imported (see [Importing from ATLAS 9000 Series Export Media](#) on page 11-3).

 **Note:** ATLAS will incrementally write export data to a location or optical disk that already contains the same export volume name.

 **Note:** We do not recommend export to the system hard drive. If you export to the system hard drive, please be aware that it is possible to fill the hard disk, at which point you will be unable to acquire an exam or analyze.


 **Note:** It is recommended to always create a new folder when exporting Zip files. If you select **Export to Zip Format** and the export folder already contains patients exported to the same folder without using the Zip format, a Zip file will be created that contains the currently selected patients and the previously exported patients. Any existing Zip files in the folder will not be included.

 **Note:** It will take extra time to compress the export volume.

4. Patient information can be hidden (as for a clinical trial). Click the **Omit Patient Identifiers** checkbox if you want to omit any patient identifiers in the resulting exported exams. Select the radio button to one of three possible identifier omit options as described in the table below.

Table 11-2 Patient Identifier Omit Options

Option	Description
Omit Patient Name	This option inserts the Institution name in the patient's Last Name field and a 17 character Unique Patient ID number in the First Name and Patient ID fields (e.g., 20070609081320226, the date and time of patient creation to a thousandth of a second).
Omit Patient Name and day of birth	In addition to above, 1 will be used for day of birth.
Omit Patient Name, day and month of birth	In addition to above, 1 will be used for the birth month. For patient over 80 years old, the birth year will be 80 years in the past from the current year.

 **Note:** You cannot edit or merge patient information for patients imported with omitted patient identifiers.

5. Enter search parameters in the fields provided (Name, Patient ID, Category, Exam Date) and click **Search**, or click **Advanced Search** to use additional search parameters. (See [Advanced Search](#) on page 9-6 for details.) The search returns all matching patients, sorted alphabetically by last name. The search returns patients that match all parameters used. **Clicking Search without using any parameters returns all patients in the ATLAS index database.**

- Select the desired patients in the Results list: **Click** to select one patient; **Ctrl-click** to select multiple patients (Figure 11-22); **Shift-click** on two patients to select all intervening patients; **Ctrl-Shift-click** to select all intervening patients plus those already selected; **click and drag** to the right of the last name to select all adjacent patients. Click **Select All** to select all patients in the Results list.

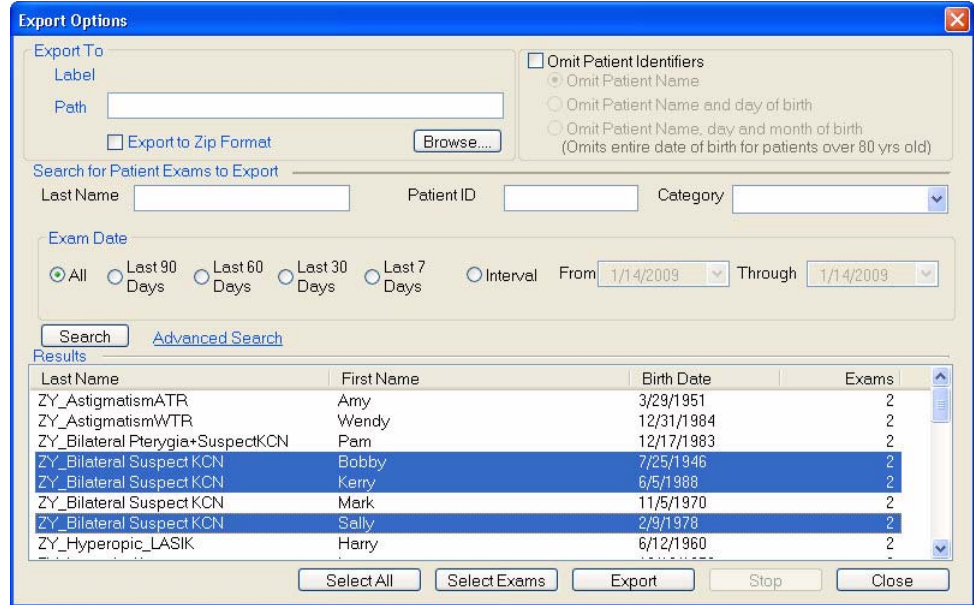


Figure 11-22 Export Options Dialog

- If you want to select only certain exams for a patient, rather than all exams, select the patient or patients, and then select the **Select Exams** button. The **Select Exams** dialog appears. Select the desired exams: **Click** to select one exam; **Ctrl-click** to select multiple exams (Figure 11-23). Click **Select All** to select all exams. Select **OK** when you're done.

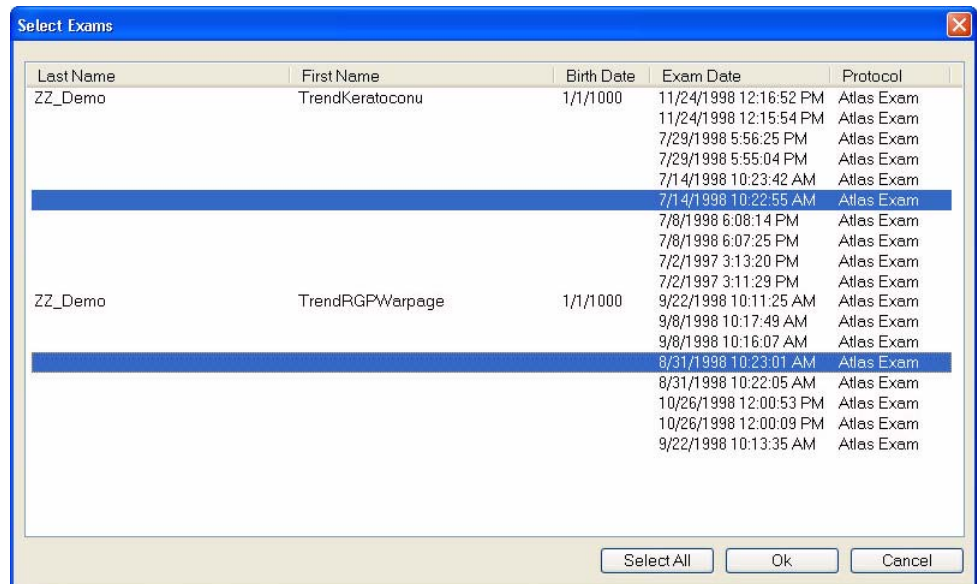


Figure 11-23 Select Exams Dialog

8. When you have made your selections, click **Export** to begin the export process. A Progress dialog appears on the bottom of the Export Options dialog (Figure 11-24).

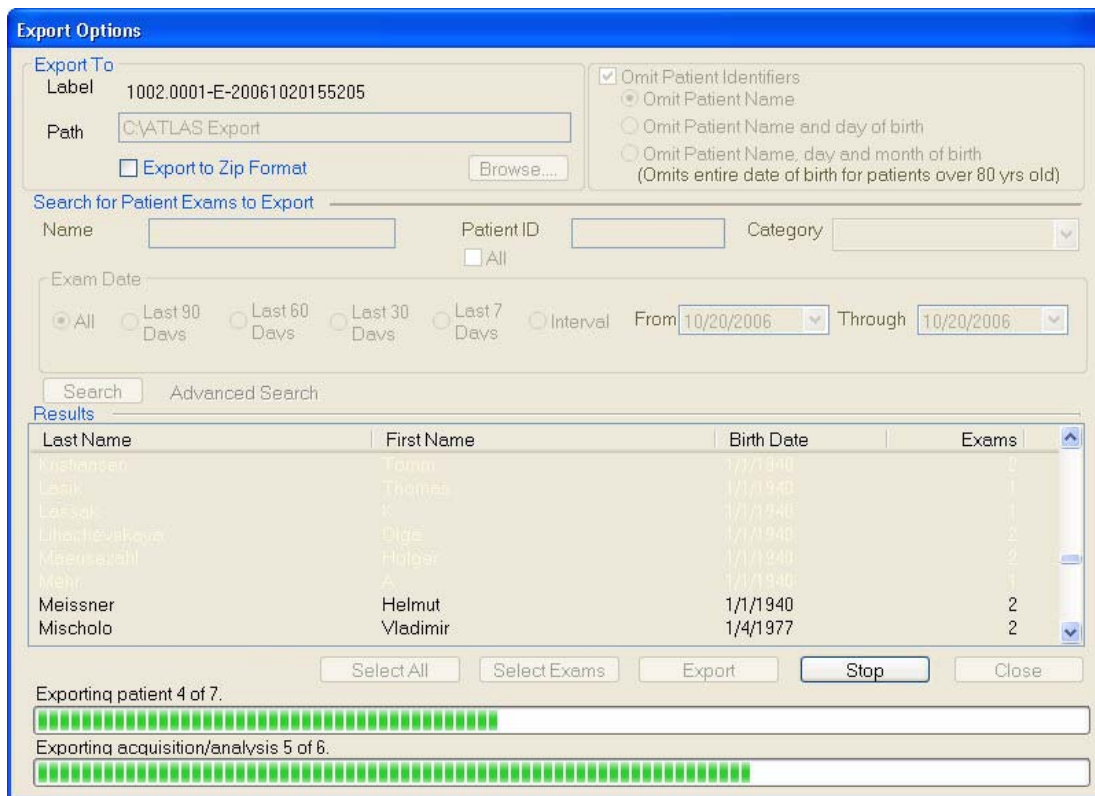


Figure 11-24 Export Options Dialog During Export

- At any time, you can click **Stop** to stop export. If you do, the system completes exporting all data from the same patient being exported when you clicked **Stop**. No data already exported is removed from the export database.

When finished, a dialog notifies you of successful completion, or a summary log appears to report information about data that failed to be exported.

Export Behavior

- Before exporting, the system checks the export destination for sufficient available space and returns an error message if insufficient space is available.
- If exporting to an optical disk, you must re-select patient records for export, choosing patients whose total amount of data does not exceed the capacity of the export destination.
- If exporting to a network path, you must select another network path.
- The system attempts to export cleared archive data.
- If the cleared data is on an available network archive, the data will be exported automatically. If the file server is not connected, you will be prompted to connect with it. If you cannot connect, you can skip it and continue exporting.

- If the cleared data is on a removable drive or flash drive, you will be prompted to insert the archive by its label. If you do not have the required drive, you can skip it and continue exporting. If more than one archive drive is required, you must attend the instrument during export and insert the indicated archive drive(s) when prompted.
- You can export imported patient data. If an imported patient was obscured, it will be re-exported as is, that is, it will retain its original Patient Export ID and institution name.
- If the export options are the same, you can export to the same export database. The system will not overwrite previously exported data. It will supplement previously exported patient records with new exam data. It associates exam data based on patient identification.
 - You cannot export to a network export database created by another ATLAS system.
 - You cannot export to a network path that contains an archive database.
 - The system does not allow concurrent export to the same network path. If another application is currently exporting to the selected path, a dialog will inform you.

Exporting Data to DICOM Systems

ATLAS allows you to export patient information (name, date of birth, patient ID, etc.) and data (exam images, screens, and reports) to a qualified DICOM 3.0 Ophthalmic Compatible Electronic Medical Records (EMR) system, Patient Management System (PMS), or DICOM archive that supports EPDF or Secondary Capture. You can select PDF or TIFF as the image file format.



Note: Before purchasing a DICOM system you should check with your DICOM vendor to determine the compatibility of their system with the ATLAS System.



Note: Make sure that the DICOM system is accessible. Your system must be connected to the network for network export processes.



Note: ATLAS assigns a fake birth date (1/1/1000) to patients imported from an ATLAS 900 series instrument that do not have a birth date. This fake birth date will not be shown in patient lists and print outs; however, it will be displayed on the Analysis Screen, the Export report to DICOM function, and in Export For Research text files. After import, you should check for patients without a date of birth, and enter a date of birth for them. Some DICOM systems require a date of birth, and though the Export report to DICOM function will work, patients without a date of birth (the fake birth date is not a valid date of birth) will not be imported into those DICOM systems that require a date of birth. If you wish to export patients without a date of birth to all DICOM systems, you must first enter a date of birth for them.

After enabling and configuring DICOM Data Export (see [Enable and Configure DICOM Data Export and Worklist Import](#) on page 11-26), a DICOM data export can be performed in four ways:

1. Export report on the Analysis Screen (see [Export Current Screen or Report to DICOM](#) on page 11-27).
2. Export current screen on the Analysis Screen (see [Export Current Screen or Report to DICOM](#) on page 11-27).
3. Export Data for All Exams of Patient(s) (see [Export Data for All Exams of Patient\(s\) to DICOM](#) on page 11-28).
4. Automatic export at end of exam acquisition (see [Printing / DICOM Export Options](#) on page 8-11).

Enable and Configure DICOM Data Export and Worklist Import

To enable and configure the ATLAS for DICOM data export and worklist import, Select **Options > Preferences...** and then click the DICOM Export Configuration tab ([Figure 11-25](#)).

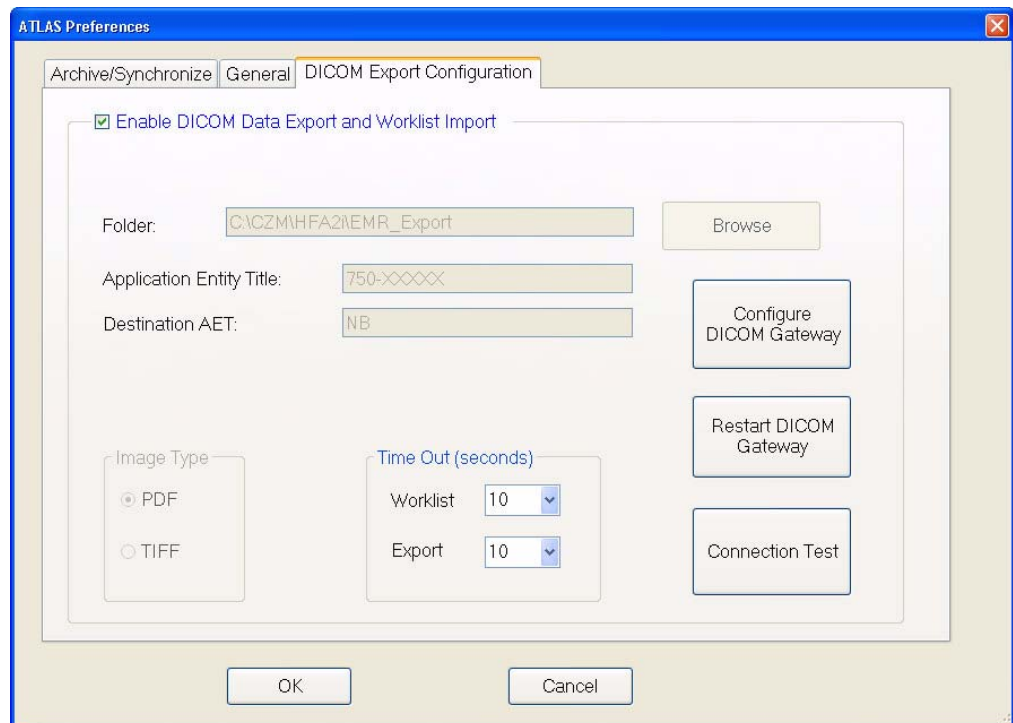


Figure 11-25 Preferences – DICOM Export Configuration Tab

Select the **Enable DICOM Data Export and Worklist Import** button to enable DICOM data export and worklist import. Worklist import functionality is disabled for ATLAS Review.

Time Out (seconds): Select from 1 to 30 seconds for the Worklist import and Data Export time-out. This is the time allowed for the DICOM system to respond to the request before an alert message is displayed (“Server not responding”).

Select **Connection Test** to send a test request to the DICOM system.

DICOM Gateway is an optional software feature that manages the communication between the ATLAS instrument and a DICOM System. The **Configure DICOM Gateway** and **Restart DICOM Gateway** buttons can be used to configure and restart the DICOM Gateway software, respectively (Note: These buttons are not displayed on Windows Vista Review Stations). See [\(C\) DICOM Gateway \(Optional\)](#) for installation and configuration of the DICOM Gateway software.

To use an EMR/PMS system that has been custom configured to use CZM-XML data transfer, fill in the following fields:

Folder: Enter or **Browse** to the shared folder for EMR/PMS data export and worklist import.

Application Entity Title: Enter a unique application name for this ATLAS instrument.

Destination AET: Enter the application name for the EMR/PMS system.

Image Type: Images can be exported in multi-page PDF or TIFF files. Select **PDF** or **TIFF**.

Export Current Screen or Report to DICOM

You can export the current screen (**Export > Export current screen to DICOM**) or selected reports (**Export > Export report to DICOM**) to a DICOM system (see [Export](#) on page 4-6 for more information).

To export report data for a patient to a DICOM system, follow these steps:

1. In patient selection mode, select the patient and the exam you want to export. Select **Analyze** to go to the Analysis mode.
2. On any View or Display, click the **Export** button and select **Export report to DICOM**.

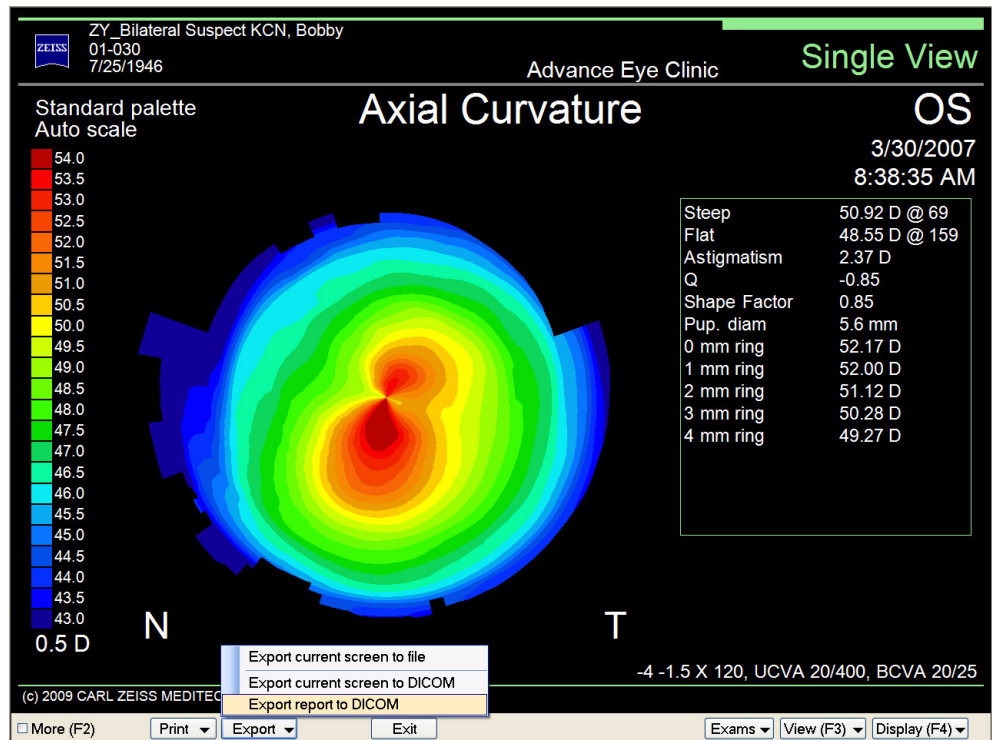


Figure 11-26 Select Export report to DICOM on Export Button

- A DICOM Export Progress dialog will be displayed showing the export progress (Figure 11-27).

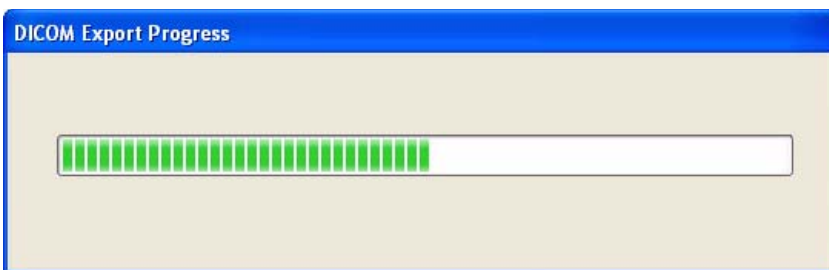


Figure 11-27 DICOM Export Progress Dialog

- After completing the export, the DICOM Export Progress dialog will close.

Export Data for All Exams of Patient(s) to DICOM

To export data from all exams of one or more patients to a DICOM system, follow these steps:

- While in patient selection mode, click **File > Export > To DICOM...**. The Advanced Search dialog appears (Figure 11-28).

Figure 11-28 Advanced Search Dialog

- Search and select one or more patients for export. See [Advanced Search](#) on page 9-6 for information on using the Advanced Search dialog.

3. Select **OK** on the Search Preview screen to begin the export process. A DICOM Export Progress dialog will be displayed showing the export progress (Figure 11-29).

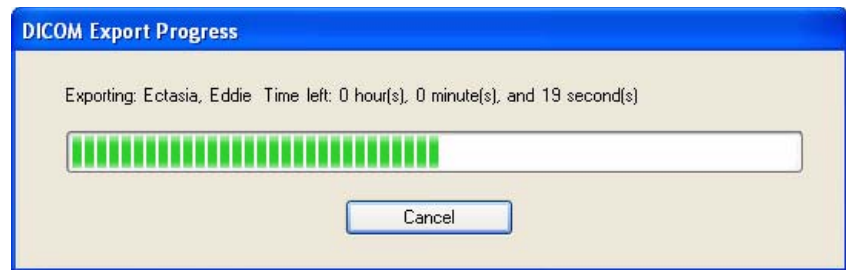


Figure 11-29 DICOM Export Progress Dialog

4. After completing the export, the DICOM Export Progress dialog will close. Select **Cancel** to cancel the export before completion. If you have selected many patients or have many exams for the selected patient(s), it may take some time to complete.

Exporting for Research

To export a single exam in .CSV format for research purposes, follow these steps.

1. While in patient selection mode, select the patient and exam you want to export and click **File > Export > For Research**. The Exam Export Option dialog appears (Figure 11-30).

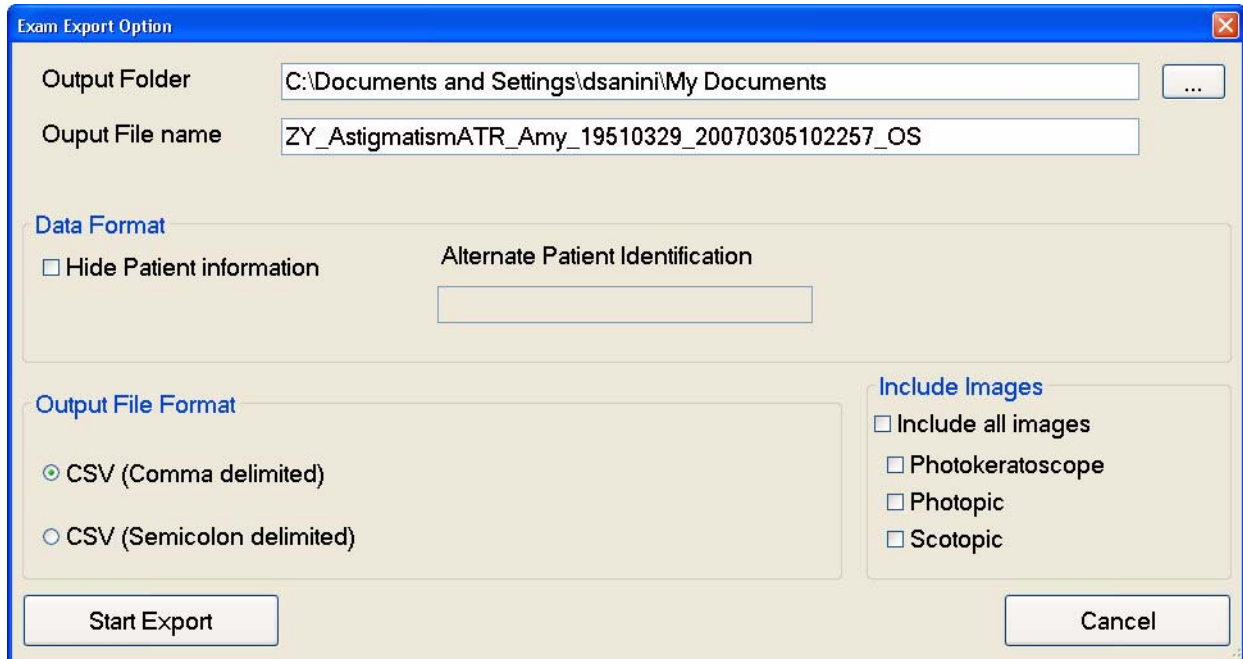


Figure 11-30 Exam Export Option Dialog

2. In the **Output Folder** field, you can type in the exact path to the export folder, if you know it, or click the **Browse** button to find and select (or make) the new export folder. A **Browse for Folder** dialog appears, enabling you to browse anywhere in a local or network path that is accessible.
3. In the **Output File** name field, you can enter a name for the exported file. ATLAS enters in a default file name based on the selected patient.
4. If you want to hide patient information in the exported exams, click the **Hide patient Information** checkbox. If checked, you can also enter a name in the **Alternate Patient Identification** field, other than the default Patient name.
5. Select the file format you want in the **Output File Format** radio button (CSV Comma delimited, or CSV Semicolon delimited)
6. If you want to include images (if available) with the exported exam, select the image(s) you want in the **Include Images** field (Photokeratoscope, Photopic, and Scotopic). Click the **All** checkbox to include all images.
7. Click **Start Export** to begin the export process. The exam is exported to the selected output folder without any notification.

(A) PathFinder II Corneal Analysis (Optional)

Chapter Overview

PathFinder II Corneal Analysis is an optional software feature for the ATLAS System designed to assist with the identification of abnormal, pathologic, and normal corneas using anterior corneal topography. Topics covered in this chapter include:

- [Introduction](#), page [A-1](#)
- [Accessing PathFinder II](#), page [A-3](#)
- [Using PathFinder II](#), page [A-4](#)
- [User-Selectable View](#), page [A-5](#)
- [Probability View](#), page [A-6](#)
- [Parameters View](#), page [A-8](#)
- [Mean Curvature View](#), page [A-10](#)
- [PathFinder II Examples](#), page [A-12](#)



Note: PathFinder II is an optional software feature that is separately licensed. You must activate the software for it to function on your ATLAS. You can register a Trial (30-Day) or Full license. Note that a Trial License is not available for Windows Vista. To activate, go to www.meditec.zeiss.com/register. You may also contact Carl Zeiss Meditec:

In the U.S.: Call Carl Zeiss Meditec at 1-800-341-6968.

Outside the U.S.: Contact your local Carl Zeiss Meditec distributor.

E-mail: z.customersupport@meditec.zeiss.com.

You can activate a Trial or Full license using the procedure that is provided in [\(I\) License Registration](#).



Note: The ATLAS System instrument and ATLAS Review Software are not intended to be used as the sole diagnostic for disease.

Introduction

PathFinder II Corneal Analysis Software is based solely on anterior corneal topography. PathFinder II uses statistical parameters derived from anterior corneal topography for its analysis. PathFinder II analyzes twelve different corneal parameters for a particular exam and compares them to a comprehensive clinical database that contains parameter reference values for the following conditions and pathologies (see [Probability View](#) on page [A-6](#)):

- Normal
- KCN Pattern
- Myopic LVC
- Hyperopic LVC
- Other

PathFinder II Corneal Analysis (Optional)

The clinical data makes it possible to compare findings in an individual patient to expected findings from different populations of individuals with eyes that have various known conditions or pathologies. Using a trained Support Vector Machine (SVM) algorithm, PathFinder II displays the probability (from 0 to 99%) that the corneal topography matches each of the categories established in the PathFinder II clinical study database.

Of the twelve corneal parameters analyzed, three evaluate the irregularity (CIM), mean apical curvature (TKM), and shape of the cornea (Shape Factor) (see [Parameters View](#) on page A-8). The remaining nine parameters are derived from the Mean Curvature View (see [Mean Curvature View](#) on page A-10).

PathFinder II incorporates a Support Vector Machine algorithm that performs classification by constructing multi-dimensional hyperplanes that optimally separate the clinical (or training) data into specific categories using the analyzed parameters. Support Vector Machines (SVM) are considered to be one of the most successful classification algorithms in the data mining field. For each topography exam, the PathFinder II SVM algorithm assigns a percent probability of the exam to match the trained categories.


Each corneal parameter used by PathFinder II is color-coded to indicate the degree to which it matches the values established for the normal population, based on a multi-center clinical study. The multi-clinical sample data set covers 95% of the normal eye population with a 95% confidence. The statistical parameters (CIM, TKM, and Shape Factor) are displayed in bar plot format with color-coding shown in the bar plot itself. The nine other parameters based on the Mean Curvature View are displayed in the Mean Curvature View Data Box and the values themselves are color-coded. The color-coding scheme is implemented as shown in [Table A-1](#) below:

Table A-1 PathFinder II Color-Coded^a Parameter Classification^b (Normal Eyes, based on Multi-Center Clinical Study)

Parameter	Green (Normal)	Yellow (Borderline)	Red (Abnormal)
% of Population	90%	8%	2%
CIM (µm)	0.49 to 1.68	0.43 to 0.48, 1.69 to 3.01	0 to 0.42, 3.02 to 5.33
TKM	42.19 to 47.26 D 8.00 to 7.14 mm	41.21 to 42.18, 47.27 to 48.38 D 8.19 to 8.01, 7.15 to 6.98 mm	38.51 to 41.20, 48.39 to 56.28 D 8.76 to 8.20, 6.97 to 6.00 mm
SF	0.20 to 0.64	0.16 to 0.19, 0.65 to 0.85	-0.79 to 0.15, 0.86 to 0.89
Max Mean Curvature	41.97 to 47.36 D 8.04 to 7.13 mm	41.08 to 41.96, 47.37 to 48.77 D 8.22 to 8.05, 7.14 to 6.92 mm	40.50 to 41.07, 48.78 to 63.65 D 8.33 to 8.23, 6.91 to 5.30 mm
Max Mean Curvature X mm	-1.39 to 1.27	-2.13 to -1.40, 1.28 to 1.73	-3.09 to -2.14, 1.74 to 2.68
Max Mean Curvature Y mm	-2.42 to 0.72	-3.79 to -2.43, 0.73 to 1.18	-3.99 to -3.80, 1.19 to 1.38
Centroid X mm	-0.72 to 0.71	-1.03 to -0.73, 0.72 to 1.00	-1.18 to -1.04, 1.01 to 1.76
Centroid Y mm	-1.24 to 0.31	-1.79 to -1.25, 0.32 to 0.53	-2.98 to -1.79, 0.54 to 0.72
Convexity	0.777 to 0.981	0.600 to 0.778, 0.982	0.411 to 0.599, 0.983 to 1.000
Mean I - S	-0.78 to 1.77 D	-1.28 to -0.79, 1.78 to 2.32 D	-3.14 to -1.29, 2.33 to 9.35 D
Mean IN - ST	-1.00 to 1.20 D	-1.44 to -1.01, 1.21 to 1.67 D	-3.98 to -1.45, 1.68 to 6.52 D
Mean IT - SN	-0.51 to 1.45 D	-1.02 to -0.52, 1.46 to 1.79 D	-2.99 to -1.03, 1.80 to 10.35 D

a. Green represents the “normal range” (between the 5th and 95th percentile of the normal population). Yellow is a transitional or borderline range (between the 1st and 99th percentile), and red is beyond the normal range or abnormal.

b. **Classification Analysis.** Three images were taken for each study eye. The best image determined by the study investigator was used in calculating the reference values for the parameters. Each parameter was tested for normal distribution using the Shapiro-Wilk test. For consistency, all data was transformed using Box-Cox data transformation. The same percentiles were derived for the transformed data based on normal assumptions, and all derived percentiles except Convexity were converted back to the original scale. Due to extreme skewness, the Convexity percentiles were derived using a non-parametric approach based on an empirical distribution.

 **Note:** PathFinder II Corneal Analysis is only available for ATLAS 9000 exams.

Accessing PathFinder II

PathFinder II performs data analysis on a single patient exam. From the ANALYSIS SCREEN, PathFinder II can be accessed three ways:

- Select **PathFinder II** from the **Display (F4) pop-up menu** to access the full PathFinder II software display.
- In the **Single View Display**, select **PathFinder II** from the **View (F3) pop-up menu** to access the full PathFinder II software display.
- Select **PathFinder II** from the **View (F3) pop-up menu** for a selected View (a green border indicates the selected View) in a multi-View Display to display only the Probability View (see [Probability View](#) on page A-6) of PathFinder II.

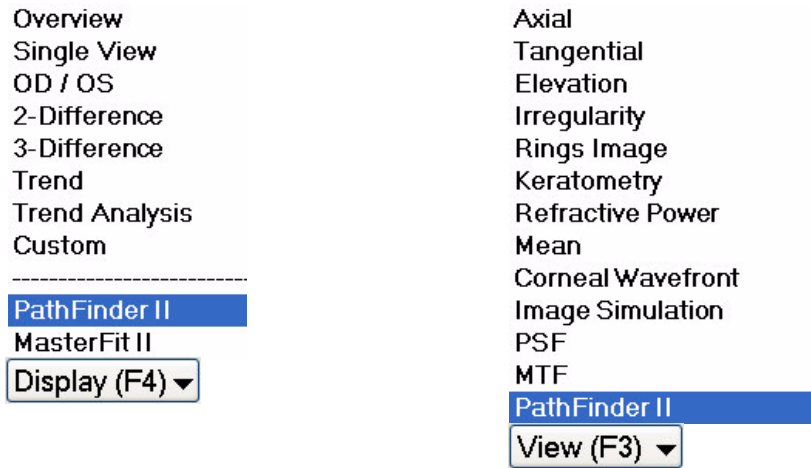




Figure A-1 Display (F4) and View (F3) Pop-Up Menus

For more information on the ANALYSIS SCREEN and selecting a patient, see [Analysis Screen](#) on page 4-3.

 **Note:** PathFinder II Corneal Analysis is only available for ATLAS 9000 exams. PathFinder II will be greyed out and not selectable for ATLAS 900 Series exams.

 **Note:** During image acquisition, if the image acquired cannot be used by PathFinder II, the message “**Insufficient data for PathFinder II analysis**” will be displayed on the EXAMS RESULTS SCREEN (see [Exam Preview/Exam Results Screen](#) on page 3-9).

PathFinder II Corneal Analysis (Optional)

After selecting PathFinder II from the **Display (F4)** pop-up menu, or from the **View (F3)** pop-up menu in the **Single View Display**, the full PathFinder II display will be displayed ([Figure A-2](#)).



Figure A-2 PathFinder II Display

Using PathFinder II

The PathFinder II display shows four Views (see [Figure A-2](#)):

- **Probability View** – displays five categories with blue color bars representing the two highest probabilities. See [Probability View](#) on page [A-6](#).
- **Parameters View** – bar graphs of statistical data parameters (CIM, TKM, Shape Factor). See [Parameters View](#) on page [A-8](#).
- **User-Selectable View** – the default is Axial Curvature View. See [User-Selectable View](#) on page [A-5](#).
- **Mean Curvature View** – a special Mean Curvature View with nine additional parameters. The Mean Curvature View cannot be changed. See [Mean Curvature View](#) on page [A-10](#).



CAUTION: Decisions involving therapeutic and/or surgical procedures should be made only after considering total clinical information, and not on the basis of a single index measurement or analysis.

User-Selectable View

You can select the exam and View for the PathFinder II display in two ways:

1. Select an exam from the **Exams** pop-up list (see [Exams List](#) on page 4-6).
2. Select a View from the **View (F3)** pop-up (see [View \(F3\) Pop-Up Menu](#) on page 4-8).

or

1. Select the **More (F2)** checkbox to show the EXAMS/VIEWS window ([Figure A-3](#)).

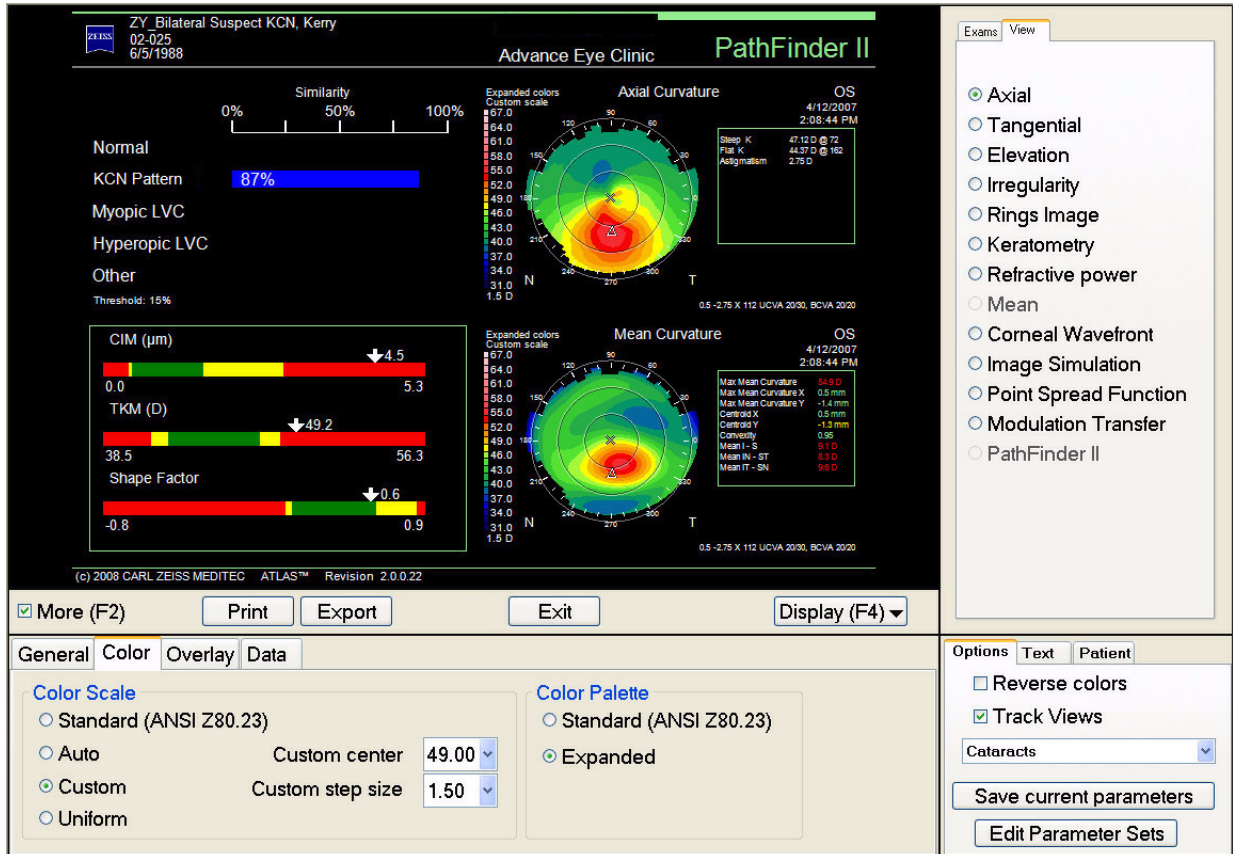


Figure A-3 PathFinder II Screen View Editor

2. Select the **Exams** tab from the EXAMS/VIEWS window.
3. In the Exams tab window, select the exam you want to view from the list of available exams by clicking on it—the display updates automatically. All exams for the selected patient are shown in the list.
4. For the user-selectable View (upper right display), select the **View 1** tab from the EXAMS/VIEW 1 window.
5. In the Views tab window, select a **View** (Mean and PathFinder II Views cannot be selected) by clicking on it—the display updates automatically.
6. The View Editor parameters correspond to the selected View.

Cursor Tracking

A cursor location and cross hair can be set on the User-Selectable and Mean Curvature Views by left-clicking the mouse. Both Views can be set to the same cursor location by turning on the **Track Views** option. See **Track Views** on the **Options** tab of the ANALYSIS SCREEN (page 4-9). A Cursor table will be displayed on each View showing the power value for that location. Right-clicking will remove the cross hair and Cursor table. See **Cursor Location Point** on page 4-4.

Probability View

The Probability View (shown in **Figure A-2**) displays the result of the PathFinder II analysis.

PathFinder II uses an advanced support vector machine (SVM) learning algorithm to classify corneal data into five categories (pathologies or conditions). The two highest categories and their respective probabilities are shown with blue bar graphs. If the second highest probability is less than the user-selectable Category Display Threshold value, then it will not be displayed. The currently selected Category Display Threshold is displayed in the Probability View. To change the threshold value, select the **More (F2)** checkbox to display the View Editor for the Probability View (**Figure A-4**). Select a percentage (5 to 25%) for the Category Display Threshold from the drop-down menu. The PathFinder II display updates automatically.



Figure A-4 Category Display Threshold



Note: If the View Editor for the Axial or Mean Curvature View is displayed when you select the **More (F2)** checkbox, click on the Probability View to display the View Editor for the Probability View.

The five categories established in the PathFinder II multi-center clinical study are defined below:

Normal

The normal cornea is typically aspherical in shape with TKM, CIM, and Shape Factor in the normal range (see **Table A-1, "PathFinder II Color-Coded Parameter Classification (Normal Eyes, based on Multi-Center Clinical Study),"** on page A-2). No abnormal or asymmetric topography patterns, such as inferior steepening, abnormal elevation, or curvature can be seen in the Mean Curvature View. PathFinder II's clinical database for the Normal category includes normal topography corneas with no corneal pathologies, and no history of refractive surgery or other ocular surgery. These corneas were screened with other modalities (e.g., corneal pachymetry) and were determined to be good candidates for laser vision correction. See **Normal Example** on page A-12 for an example of a Normal category result.

KCN Pattern

This PathFinder II clinical database for the KCN Pattern category includes established keratoconus, suspect keratoconus (sub-clinical keratoconus), and pellucid marginal degeneration. Keratoconus is defined as the true pathological condition, which causes thinning and wrinkling of the cornea, along with a cone-like protrusion of the cornea in its later stages. Keratoconus can also produce high regular astigmatism, irregular astigmatism, and inferior steepening topographical patterns. Abnormal corneal findings observed under biomicroscopy to confirm a true keratoconus diagnosis may include but are not limited to: Vogt's striae, Munson's sign, Fleischer's ring, corneal ectasia, stromal thinning, and superficial scars in Descemet's membrane.

Sub-clinical keratoconus (also known as forme fruste keratoconus) is usually distinguishable with the typical inferior steepening topographical pattern, but the cornea does not yet exhibit slit lamp findings typical of keratoconus. The steepening is noticeable on topography but can be well under 50 diopters at the apex of the cone. Often there is history of the disease in the family, or the refractive history is unstable with a measurable increase in both myopia and astigmatism over the past several years. There may also be an inability to wear contact lenses, along with visual symptoms (reduced VA, ghosting, light sensitivity).

Pellucid marginal degeneration is a bilateral, non-inflammatory, peripheral corneal thinning disorder characterized by a peripheral band of thinning of the inferior cornea. The cornea in and adjacent to the thinned area is ectatic. The topographic pattern has a classic butterfly appearance. Slit lamp examination shows a peripheral band of thinning of the inferior cornea from the 4-o'clock position to the 8-o'clock position. This thinning is accompanied by 1-2 mm of normal cornea between the limbus and the area of thinning.

PathFinder II's clinical database for keratoconus includes corneas with the following:

- An irregular cornea determined by distorted keratometry mires, distortion of the retinoscopic, or ophthalmoscopic red reflex (or a combination of these).
- At least one of the following biomicroscopic signs: Vogt's striae, Fleischer's ring of > 2 mm arc, or corneal scarring consistent with keratoconus.

PathFinder II's clinical database for suspect keratoconus includes corneas with one or more of the following:

- Fellow eyes of subjects with established keratoconus on one eye with keratoconus-like topographical changes but with no biomicroscopic signs of keratoconus.
- Fellow eyes of subjects that underwent penetrating keratoplasty or INTACS implantation for keratoconus on one eye with keratoconus-like topographical changes but with no biomicroscopic signs of keratoconus.
- An irregular cornea determined by distorted keratometry mires, distortion of the retinoscopic, or ophthalmoscopic red reflex (or a combination of these).
- An area of inferior or central steepening on corneal topography.
- An area of corneal thinning shown by pachymetry that corresponds to the area of steepening.
- Decreased best-corrected visual acuity.
- History of poor contact lens tolerance.

PathFinder II's clinical database for pellucid marginal degeneration includes corneas with the following:

- Topographic pattern of inferior corneal steepening radiating in from the inferior oblique meridians with an area of flattening down the center of the cornea.
- Inferior peripheral thinning of the cornea.
- Slit lamp finding of peripheral band of thinning with protrusion (“beer belly” contour) of the inferior cornea, typically from the 4-o'clock to the 8 o'clock position, accompanied by 1 to 2 mm of relatively normal cornea between the limbus and the area of thinning.

See [Clinically Diagnosed Keratoconus Example](#) on page A-13, and [Diagnosed Suspect Keratoconus Example](#) on page A-14 for examples of KCN Pattern category results.

Myopic LVC (Laser Vision Correction)

PathFinder II's clinical database for the Myopic LVC category include corneas that have undergone myopic laser vision correction (LASIK, PRK, or LASEK). See [Myopic LASIK Example](#) on page A-16 for an example of a Myopic LVC category result.

Hyperopic LVC (Laser Vision Correction)

PathFinder II's clinical database for the Hyperopic LVC category include corneas that have undergone hyperopic laser vision correction (LASIK, PRK, or LASEK). See [Hyperopic LASIK Example](#) on page A-17 for an example of a Hyperopic LVC category result.

Other


PathFinder II's clinical database for the Other category include corneal conditions (diseases/pathologies/surgeries) that can potentially affect the corneal surface (e.g., postoperative corneal transplant, intra-corneal ring segments, radial keratotomy, post LASIK ectasia, corneal scars, etc.). See [Other Category Example](#) on page A-18 for an example of an Other category result.

Parameters View

The Parameters View (shown in [Figure A-2](#)) displays three specific parameters (CIM, TKM, and Shape Factor) as values on color-coded bar graphs. The values are rounded to the nearest tenth of decimal point. The colors indicate PathFinder II's classification (see [Table A-1, “PathFinder II Color-Coded Parameter Classification \(Normal Eyes, based on Multi-Center Clinical Study\),”](#) on page A-2).

- See [CIM](#) on page 7-10 for a discussion of CIM.
- See [TKM](#) on page 7-12 for a discussion of TKM.
- See [Shape Factor \(SF\)](#) on page 7-9 for a discussion of Shape Factor.

Parameters Information Window

Placing the mouse pointer on any of the color-coded bar graphs of a parameter turns the mouse pointer into an arrow with question mark (). Clicking once with this question mark mouse pointer ([Figure A-5](#)) will open an Information window ([Figure A-6](#)) displaying a normal population probability distribution for the parameter from PathFinder

It's clinical study, and a short explanation of the parameter, including the parameter's 90% range for normal corneas from the PathFinder clinical study. This window remains the same for every patient. It can be used as a reference to the user to show where a particular patient falls in the normal population distribution. It also serves to help educate both the user and patient as to the meaning of the parameter.

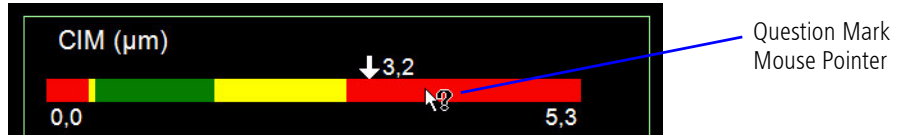


Figure A-5 Question Mark Mouse Pointer

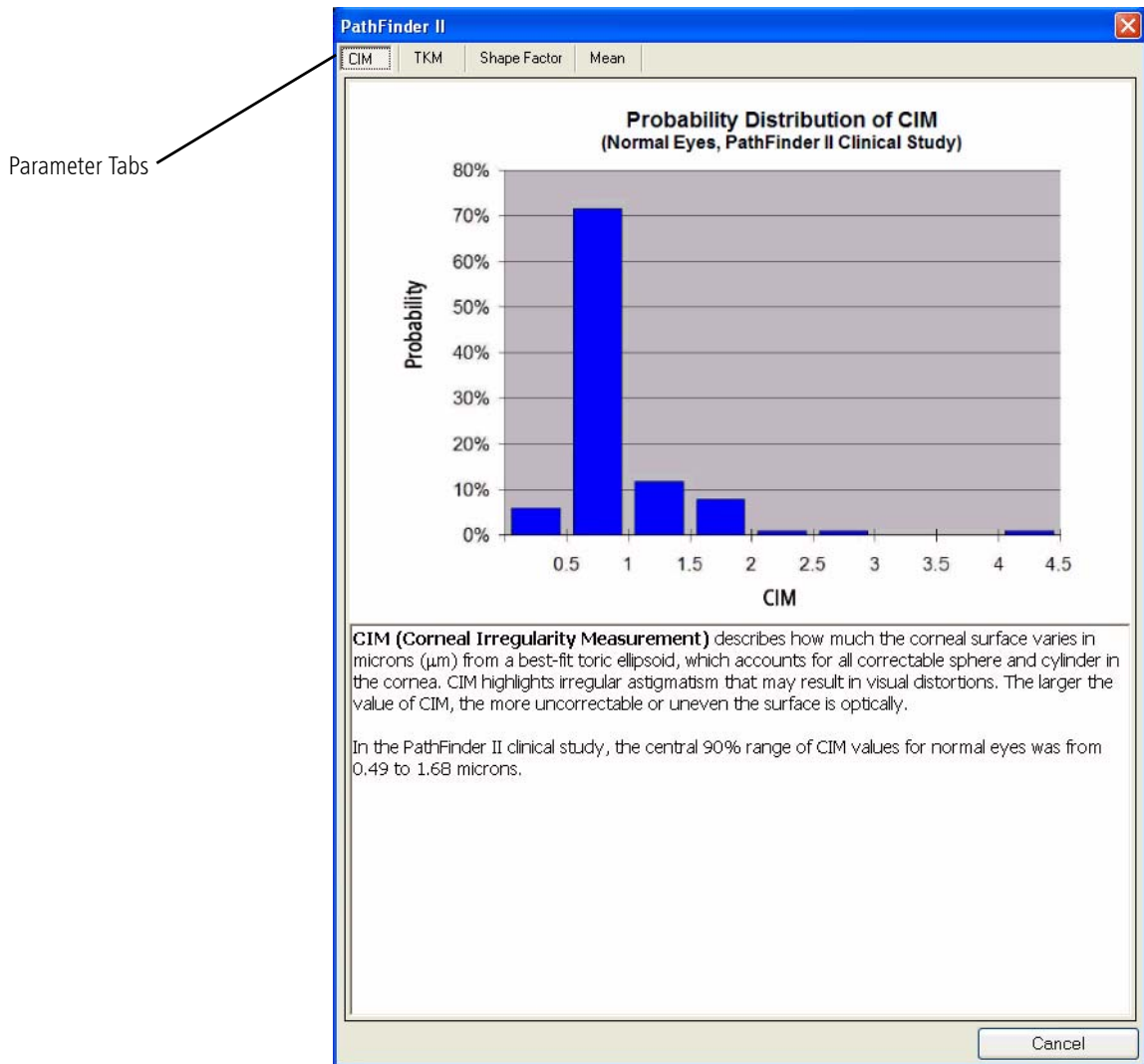



Figure A-6 Parameter Information Window

Once the Parameter Information window is opened, you can click on a parameter tab at the top of the window to select another parameter's information display. A Mean Information window is also included. Click the **Cancel** or Close  button to close the window and return to the PathFinder II Display.

Mean Curvature View

PathFinder II software includes a special Mean Curvature View (shown in [Figure A-2](#)) with nine new parameters. You cannot change the Mean Curvature View to another View. You can change some View Editor parameters when the Mean Curvature View is selected (green border); however, the Data table parameters cannot be changed.

The Mean Curvature View parameter values are color-coded just like the Parameter View bar graphs (see [Table A-1, "PathFinder II Color-Coded Parameter Classification \(Normal Eyes, based on Multi-Center Clinical Study\),"](#) on page A-2).

The Mean Curvature View displays the local average curvature in all directions from every data point on the cornea, independent of a reference axis. The Mean Curvature View finds the local average curvature by finding the maximum and minimum principal curvatures at each point and taking the average. The usefulness is that it removes regular astigmatism, and potentially exposes underlying local changes in curvature, such as pathology like keratoconus. See [Mean Curvature](#) on page 6-19 for more information on the Mean Curvature View.

The nine new parameters derived from the Mean Curvature View are:

Max Mean Curvature

The maximum curvature value of the Mean Curvature View. The search for the maximum excludes potential artifacts at the edges of the Mean Curvature View.

Max Mean Curvature X and Max Curvature Power Y

X and Y coordinates of the maximum mean curvature power value, in mm from the Vertex.

Centroid X and Centroid Y

X and Y coordinates of the center of gravity of the convex hull (see [Convexity](#) below), in mm from the Vertex.

Convexity

Convexity describes the shape of the curvature contour around the highest point in the Mean Curvature View. The range is 0.0 to 1.0. The more "convex" the contour, the higher the value; the less convex, the lower.

Convexity is defined as the ratio of the area of the "convex hull" of the contour line, compared to the area inside the contour. The convex hull can be thought of as a virtual rubber band that gets wrapped around the contour line. Any "concave" section around the contour will lose "touch" to the rubber band/convex hull.

For example, a U-like shape will have a convexity below one, compared to a sphere or ellipse with convexity of 1.0. Normal and keratoconus eyes tend to have high convexity, while post-myopic vision correction, or Ortho-K lenses tend to leave the eye with a lower convexity value.

Mean I-S

Difference between an Inferior (I) and Superior (S) region of mean curvature data (Mean Curvature Inferior minus Superior). See Figure A-7. The average value in the region is taken, where the region in each area is 1.5 mm wide x 1.5 mm high, centered radially 2 mm away from the corneal vertex at 270 and 90 degrees.

Mean IN-ST

Difference between an Inferior-Nasal (IN) and a Superior-Temporal (ST) region of mean curvature data around the Vertex (Mean Curvature Inferior-Nasal minus Superior-Temporal). See Figure A-7. The average value in the region is taken, where the region in each area is 1.5 mm wide x 1.5 mm high, centered radially 2 mm away from the corneal vertex at 225 and 45 degrees.

Mean IT-SN

Difference between an Inferior-Temporal (IT) and a Superior-Nasal (SN) region of mean curvature data around the Vertex (Mean Curvature Inferior-Temporal minus Superior-Nasal). See Figure A-7. The average value in the region is taken, where the region in each area is 1.5 mm wide x 1.5 mm high, centered radially 2 mm away from the corneal vertex at 315 and 135 degrees.

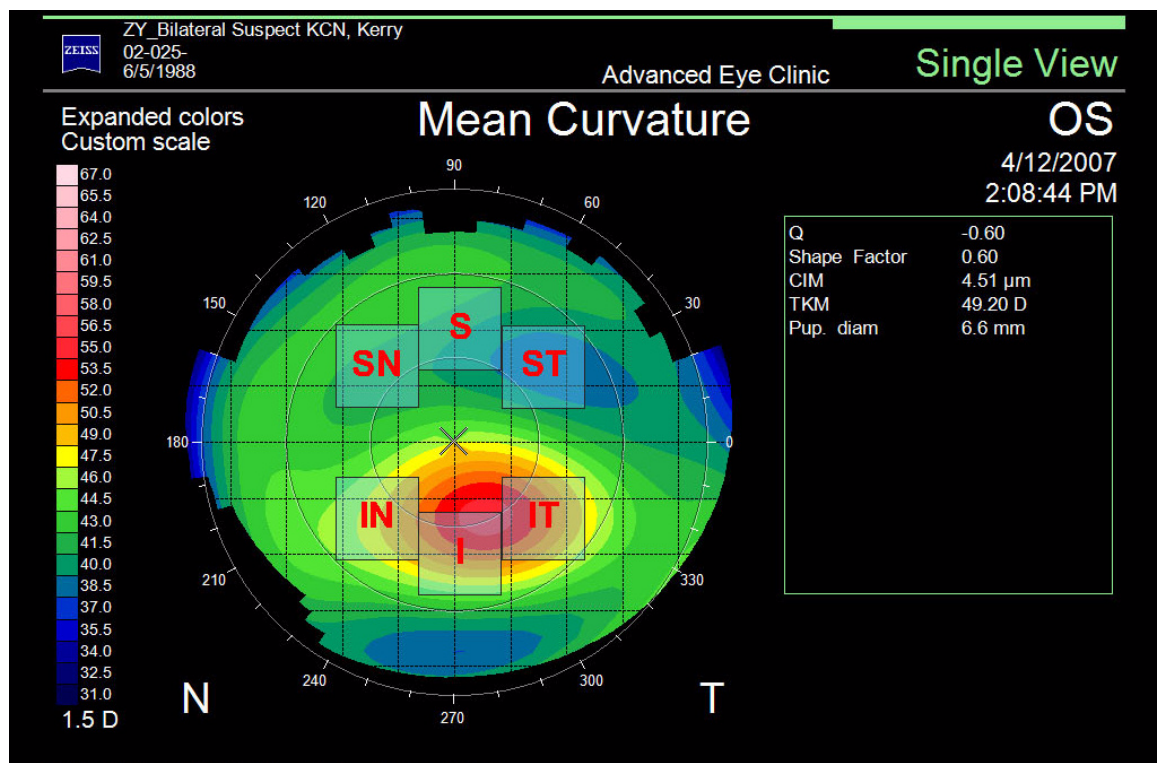



Figure A-7 Mean Curvature Regions for an OS Eye

 Note: A mean value is not calculated if the number of image pixels is less than 5% in a Mean Curvature region used in the calculation of the mean value.

PathFinder II Examples

There are five different Probability View categories that can be displayed when using PathFinder II software (see [Probability View](#) on page A-6). The following examples show these five categories.

Normal Example

Figure A-8 shows a PathFinder II display showing a 83% probability to the Normal category.

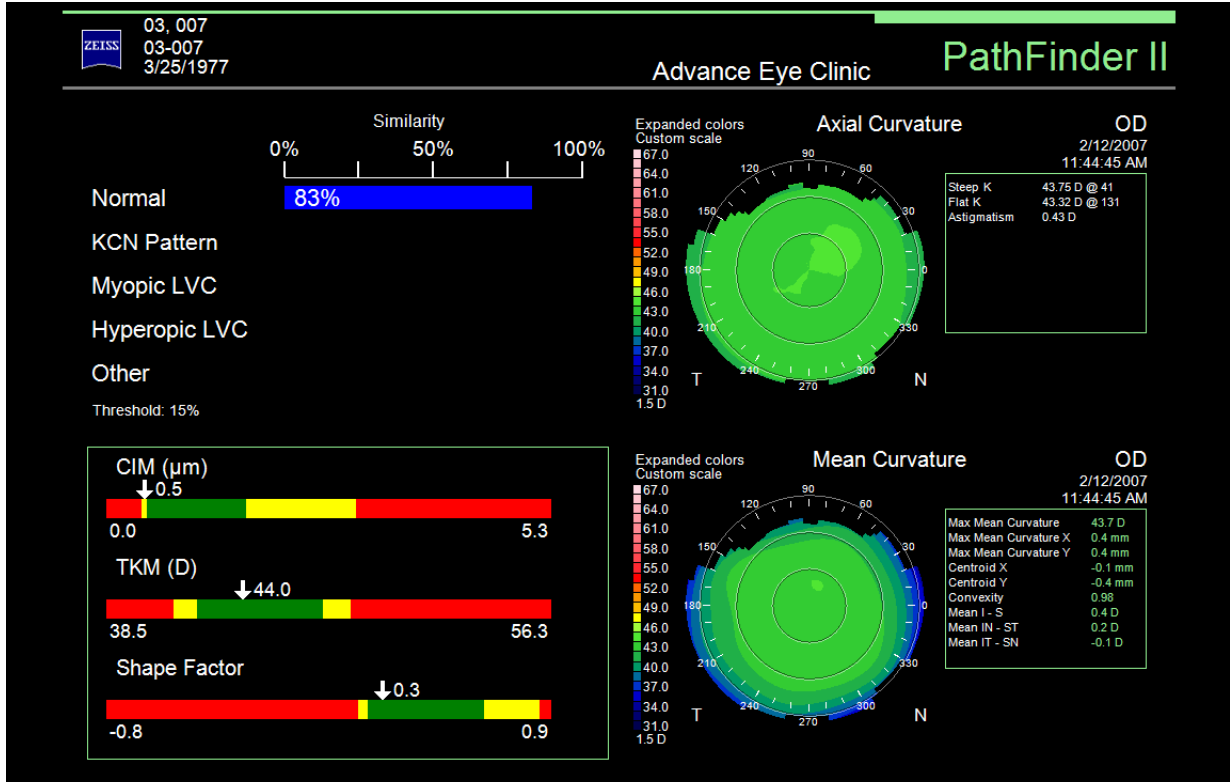


Figure A-8 PathFinder II Normal Category

Clinically Diagnosed Keratoconus Example

Figure A-9 shows a diagnosed Keratoconus patient's PathFinder II display showing a 84% probability to the KCN Pattern category.



Figure A-9 PathFinder II KCN Pattern Category – Diagnosed KCN

Diagnosed Suspect Keratoconus Example

Figure A-10 shows a diagnosed suspect Keratoconus patient's PathFinder II display showing a 90% probability to the KCN Pattern category.



Figure A-10 PathFinder II KCN Pattern Category – Diagnosed Suspect KCN

Irregular Astigmatism/Forme Fruste (2 Category) Example

Figure A-11 shows a PathFinder II display showing a 85% probability to the KCN Pattern category, and a 11% probability to the Other category, with a Threshold of 10%.



Figure A-11 PathFinder II KCN Pattern and Other Category

Myopic LASIK Example

Figure A-12 shows a PathFinder II display showing a 87% probability to the Myopic LVC category.

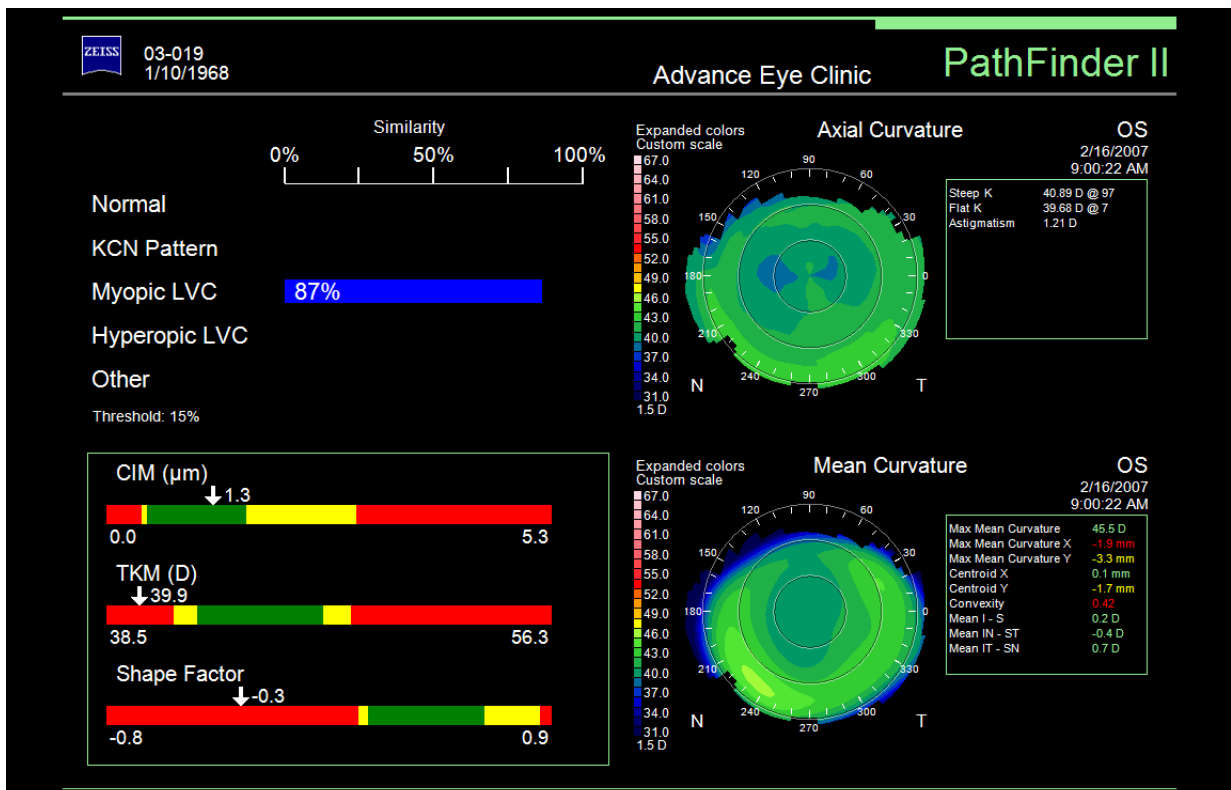


Figure A-12 PathFinder II Myopic Category

Hyperopic LASIK Example

Figure A-13 shows a PathFinder II display showing a 75% probability to the Hyperopic LVC category.

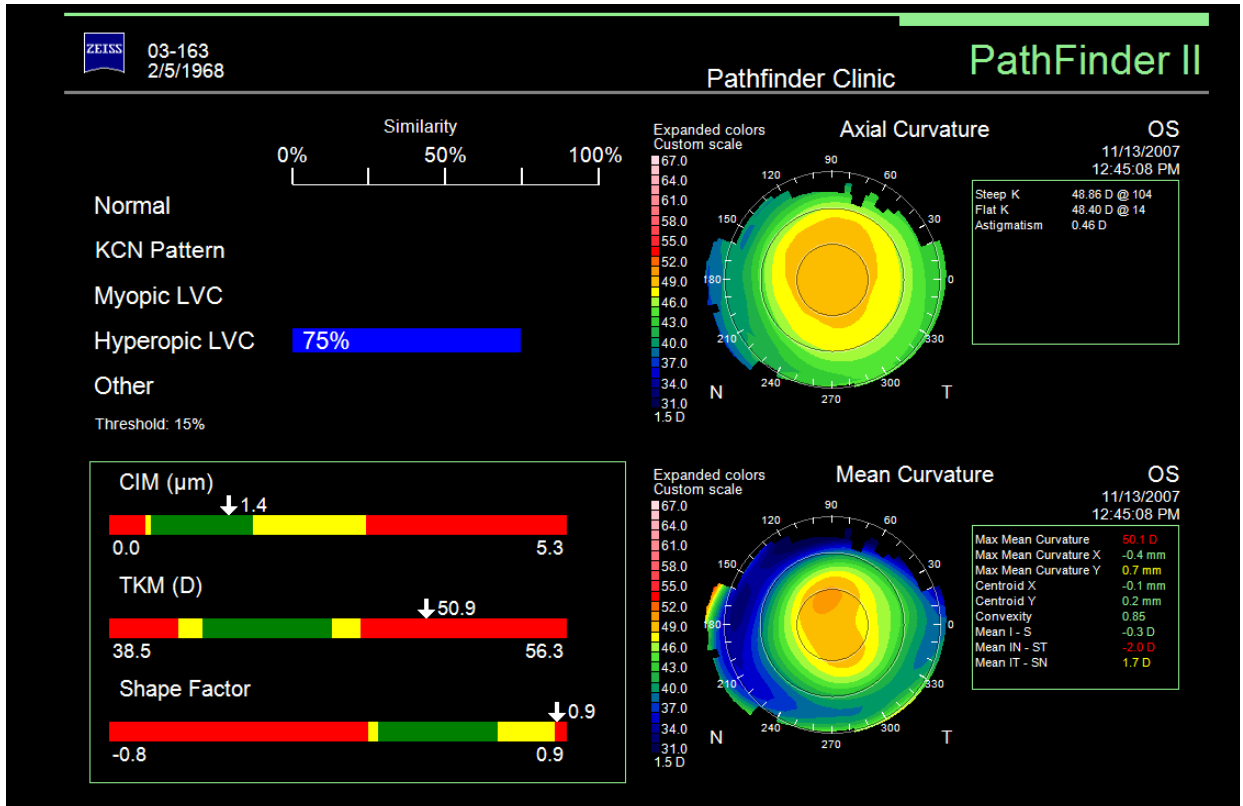


Figure A-13 PathFinder II Hyperopic Category

Other Category Example

Figure A-14 shows a Penetrating Keratoplasty patient's PathFinder II display showing a 95% probability to the Other category.



Figure A-14 PathFinder II Other Category

(B) MasterFit II (Optional)

Chapter Overview

The optional MasterFit II Contact Lens Software enables the user to design gas permeable (GP) contact lenses and to simulate the resulting fluorescein pattern on the cornea. MasterFit II features both topographic or keratometric-based lens fitting methods. Based on customizable fitting preferences, MasterFit II will recommend the most appropriate lens type (including spherical, aspheric, front toric, back toric, and bi-toric designs) and will design a custom lens that best achieves the desired fitting preferences. MasterFit II also features region-specific databases of stock (finished) lenses that may be used as an alternative to creating custom lens designs.

The user may create multiple lens designs per topography exam to simulate the effect of adjusting the available lens parameters on the fluorescein pattern. After finalizing the lens design, the user may print the lens design using the order form templates provided, or the order form may be saved as a PDF and sent by email to the preferred laboratory.

Topics covered in this chapter include:

- [Accessing MasterFit II](#), page B-2
- [Patient Refraction](#), page B-2
- [MasterFit II Display](#), page B-3
- [The Toolbar](#), page B-4
- [Fluorescein Map](#), page B-6
- [Tear Film Thickness Profile Graphs](#), page B-7
- [Data Table](#), page B-8
- [Lens Design Thumbnails](#), page B-11
- [Design Lens](#), page B-13
- [Map View](#), page B-15
- [Change Rx](#), page B-16
- [Options](#), page B-17
- [Order](#), page B-26



Note: MasterFit II is an optional software feature that is separately licensed. You must activate the software for it to function on your ATLAS. You can register a Trial (30-Day) or Full license. Note that a Trial License is not available for Windows Vista. To activate, go to www.meditec.zeiss.com/register. You may also contact Carl Zeiss Meditec:

In the U.S.: Call Carl Zeiss Meditec at 1-800-341-6968.

Outside the U.S.: Contact your local Carl Zeiss Meditec distributor.

E-mail: z.customersupport@meditec.zeiss.com.

You can activate a Trial or Full license using the procedure that is provided in [\(I\) License Registration](#).

Overview
 Single View
 OD / OS
 2-Difference
 3-Difference
 Trend
 Trend Analysis
 Custom

PathFinder II

MasterFit II

Display (F4) ▾

Accessing MasterFit II

MasterFit II can be selected from the **Display** pop-up menu on the ANALYSIS SCREEN for a selected patient (see [Display \(F4\) pop-up menu](#) on page 5-1).

Patient Refraction

If the selected patient doesn't have any saved lens designs, the PATIENT REFRACTION SCREEN is displayed first as shown in [Figure B-1](#) below.

You can enter the patient's refraction data on this screen or later on the CHANGE RX SCREEN (see [Change Rx](#) on page B-16). Select the **Vertex Distance (mm)** and **Cylinder Type**. Enter the patient's **Distance Rx** correction data for each eye. **Correction corneal plane** values will be calculated by the software.

If you select **Use trial lens**, you can also enter in **Trial lens** and **Over refraction** data.

MasterFit II

Vertex Distance (mm) 13.0

Use trial lens

Cylinder Type
 Minus cylinder
 Plus cylinder

	OD			OS		
	Sphere(D) (-35 to 35)	Cylinder(D) (-15 to 0)	Axis(°) (1 to 180)	Sphere(D) (-35 to 35)	Cylinder(D) (-15 to 0)	Axis(°) (1 to 180)
Distance Rx	0.00	0.00	180	0.00	0.00	180
Trial lens	0.00	0.00	180	0.00	0.00	180
Over refraction	0.00	0.00	180	0.00	0.00	180
Correction corneal plane	0.00	0.00	180	0.00	0.00	180

Next Exit

Figure B-1 Patient Refraction Screen

Clicking **Next** displays the MasterFit II Display ([Figure B-2](#)) and a recommended lens design will be created for each eye. If you click **Exit**, the Patient Refraction dialog will close and the MasterFit II Display will not be displayed.

MasterFit II Display

The MasterFit II Display contains the Fluorescein Map, Contact Lens Design thumbnails, Tear Film Thickness Profile Graphs, Data Table, Lens Parameters, Design/Map View, Change Rx button, Change Lens button, Option button, Order button, and Toolbar as shown in Figure B-2 below.

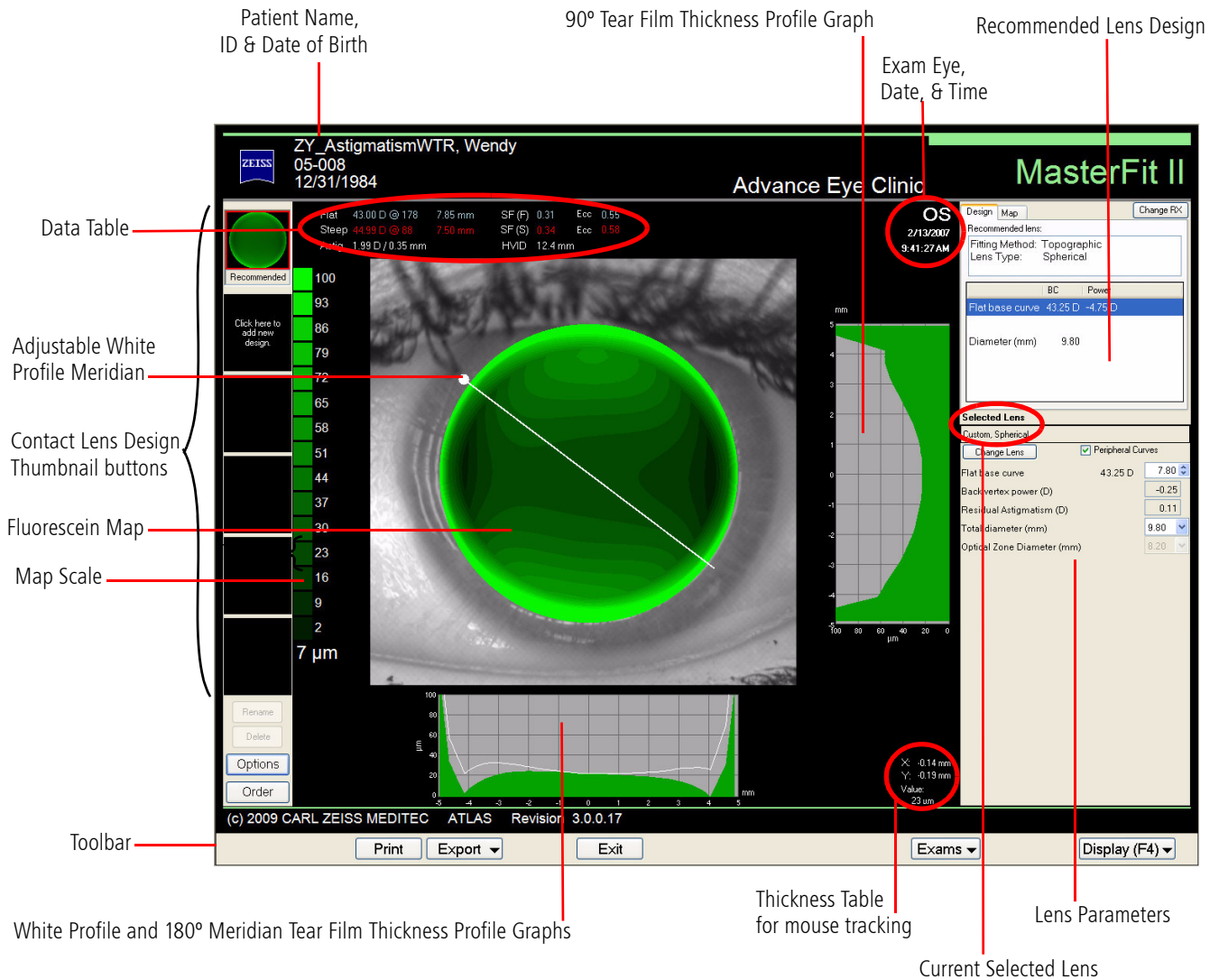


Figure B-2 MasterFit II Display

MasterFit II (Optional)

The Toolbar

Print

Selecting **Print** will open a standard Windows **Print** dialog where you can select print options and print a MasterFit II report for the selected patient (Figure B-3).

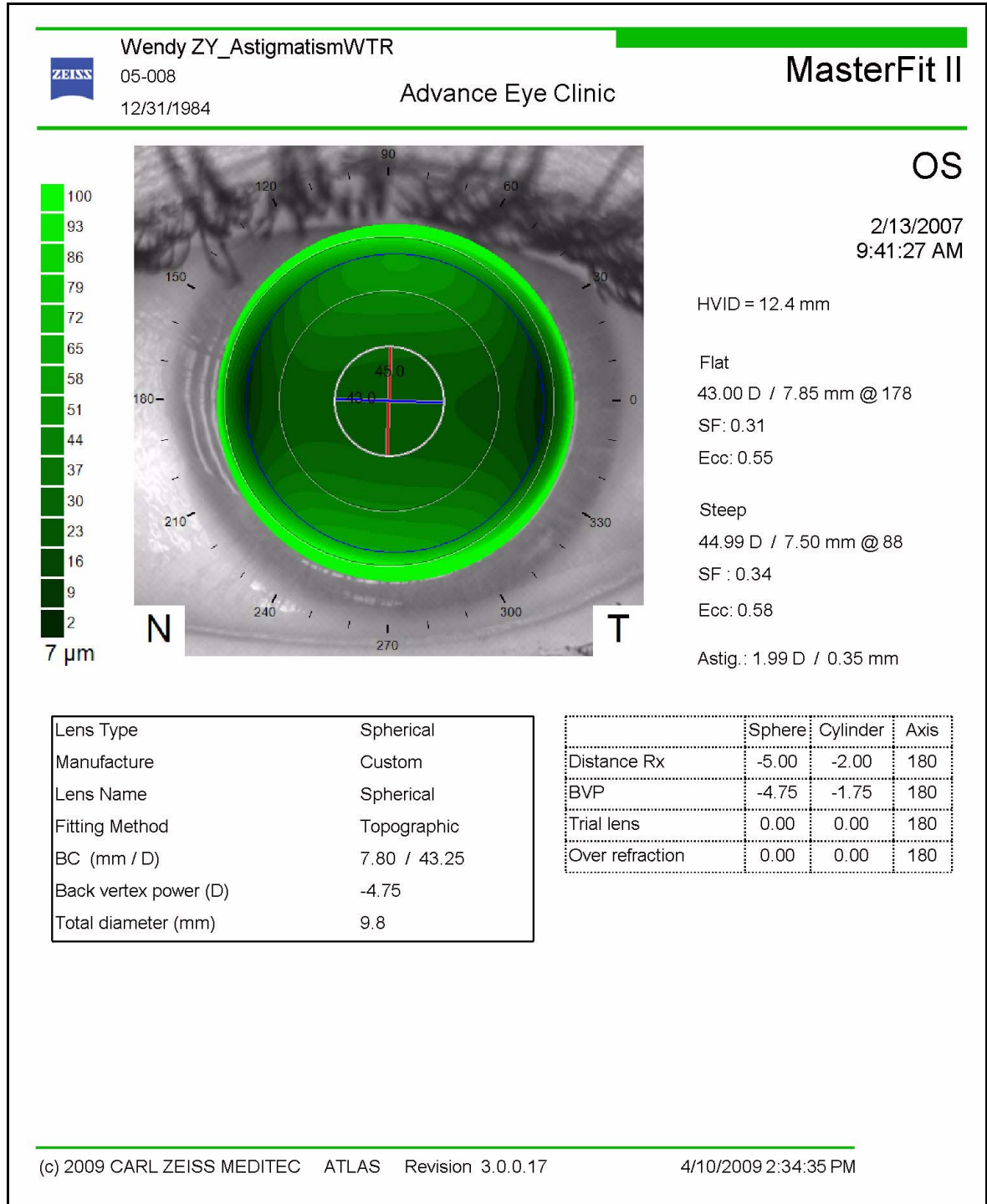


Figure B-3 MasterFit II Report

Export

Export (or **Export > Export current screen to file**) will open a save dialog where you can save the MasterFit II Display in various file formats (BMP, JPG, TIFF, and PDF). The file format you select will be saved for subsequent exports.

If you have enabled DICOM Data Export (see [Enable and Configure DICOM Data Export and Worklist Import](#) on page 11-26), selecting **Export > Export current screen to DICOM** will export the current screen to a DICOM system. See [Exporting Data to DICOM Systems](#) on page 11-25 for more information.

Exit

Selecting the **Exit** button will exit the MasterFit II Display and return you to the PATIENT SELECTION WINDOW or the EXAM PREVIEW/EXAMS RESULTS SCREEN (if you just acquired an image). If you have made any changes to a contact lens design, a dialog will be displayed ([Figure B-4](#)). Select **Yes** to save your changes. Select **No** to discard your changes.

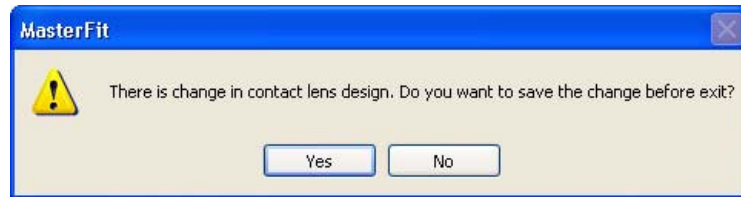


Figure B-4 Save Design Dialog

Exams Pop-Up List

Selecting the **Exams** pop-up list button displays a list of exams for the patient, including exam comments. The current exam is shown with an amber checkbox. Selecting an exam on the list with the mouse will automatically change to the selected exam ([Figure B-5](#)).

	9/9/1997 2:37:26 PM [OD] 5 month post op PRK OD
	7/31/1997 8:34:54 AM [OD] 3 months PO
	5/29/1997 4:29:13 PM [OD] 2 week check,6 weeks post -op prk Dr. Atlas
✓	5/15/1997 10:28:30 AM [OD] 4 week post-op
	4/30/1997 1:50:18 PM [OD] 2 week PO PRK
	4/23/1997 2:48:48 PM [OD] 1 week PO
	3/17/1997 2:36:22 PM [OD] Pre-OP

Figure B-5 Exams Button Pop-Up List

All exams for the patient can be selected.

Overview
 Single View
 OD / OS
 2-Difference
 3-Difference
 Trend
 Trend Analysis
 Custom

PathFinder II
 MasterFit II
 Display (F4) ▾

Display (F4) Pop-Up Menu

Clicking the **Display (F4)** pop-up menu button (or pressing the **F4** function key on the keyboard) displays a list of Displays. Some choices may be unavailable for a selected patient because of a lack of exam data or licenses. See (5) [Displays](#) for a description of each Display.

Fluorescein Map

The Fluorescein Map ([Figure B-6](#)) is a green color map of simulated fluorescein tear film layer thickness (between the back surface of the contact lens and the cornea) for the current selected lens design shown over the Ring image of the eye. The shades of green correspond to the values (μm) shown on the scale at the left of the screen—darker green areas have small tear film thicknesses while brighter greens areas have larger tear film thicknesses. The software will initially place the lens at the geometric center of the cornea (or the corneal vertex if the geometric center location is not available). You can manually move the lens by clicking inside the lens and dragging up/down and/or left/right.

Click and drag the white solid circle at end of the white Profile Meridian with left mouse button to rotate it (Profile Meridian enabled).

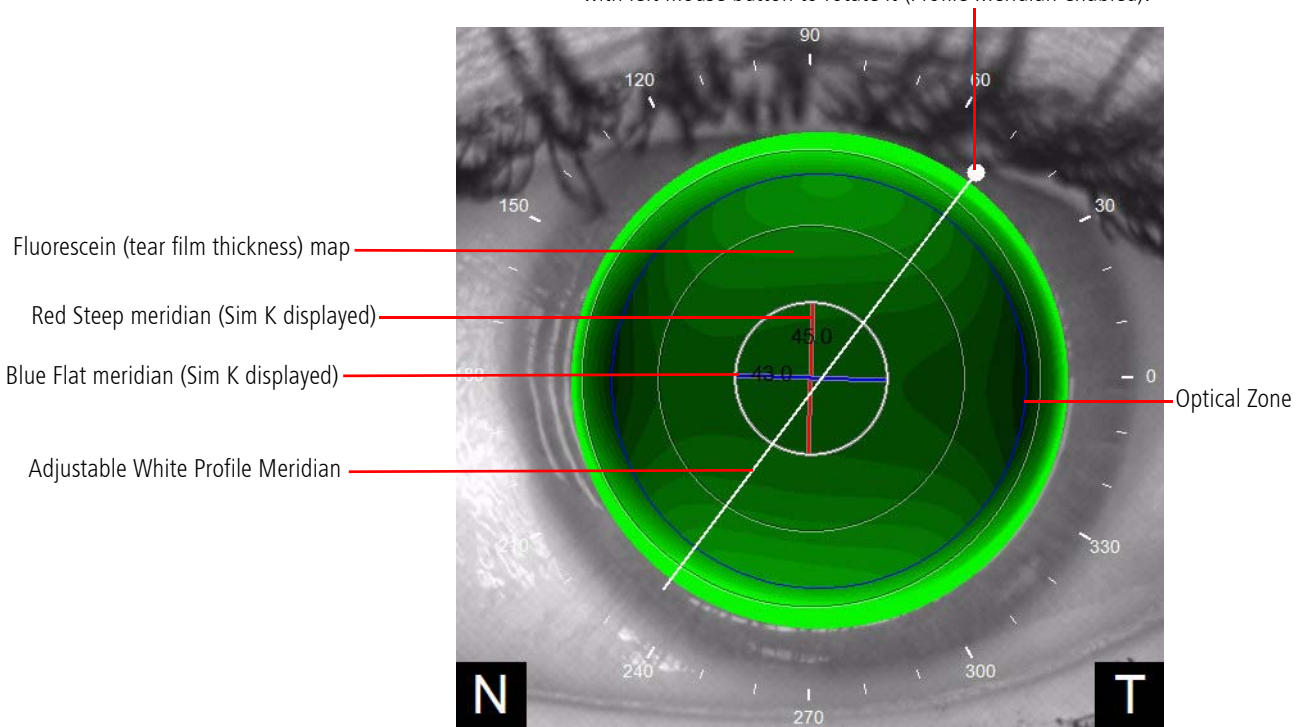




Figure B-6 Fluorescein Map (Sim Ks Displayed)

- ☞ **Note:** For some non-ATLAS 9000 exams the Rings Image will not be displayed.
- ☞ **Note:** For certain irregular corneas, the Fluorescein Map cannot be generated, and the message "Unable to display" will be displayed.

 Note: A highly irregular cornea may result in a poor simulation fit. The clinician may observe the tear film profile trending by changing the lens type, the lens parameters, and the lens position. It may be impossible to avoid large tear film thickness due to large disparities between the corneal shape and the contact lens. In some cases, it may be possible for the contact lens to “settle” in one of many positions.

 Note: Large tear film profile differences may be observed when moving the contact lens far away from the central position where the contact lens parameters were originally chosen.

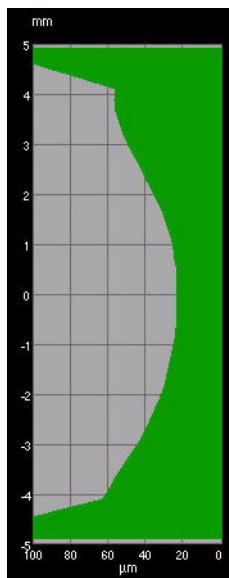
The steepest meridian is shown with a red line, and the flattest meridian with a blue line (only shown when Sim K is selected on the DISPLAY PREFERENCES SCREEN or pop-up Overlay Display Options menu; see [Display Preferences](#) on page B-9). The steep and flat meridians are always 90 degrees apart.

Thickness Mouse Tracking

X: 1.78 mm
 Y: -2.02 mm
 Value:
 14 μ m

Hover the mouse over any point on the Fluorescein Map to see the tear film thickness value (micrometers) calculated at that point and the location (mm away from the corneal vertex) in x, y coordinates in the lower left of the MasterFit II display (shown on the left).

Tear Film Thickness Profile Graphs



To the right of the Fluorescein Map is the Vertical (90°) Tear Film Thickness Profile Graph (shown on the left) which plots the tear layer thickness (μ m) (solid green area) along the corneal surface (distance from corneal apex in mm) for the 90° meridian on the Fluorescein Map.

Below the Fluorescein Map are the Horizontal (180°) and white Profile Meridian Tear Film Thickness Profile Graphs which plot the tear layer thickness (μ m) along the corneal surface (distance from corneal apex in mm) for the 180° meridian (solid green area) and white Profile Meridian (white graph) on the Fluorescein Map ([Figure B-7](#)).

White Tear Film Thickness Profile Graph (μ m)
 for white Profile Meridian (Profile Meridian enabled)



Figure B-7 White Profile and 180° Meridian Tear Film Thickness Profile Graphs

The white Profile Meridian and white Tear Film Thickness Profile Graph are only displayed when **Profile Meridian** is enabled for display (see [Overlay](#) on page B-9). The default white Profile Meridian is the flat axis value (note that it initially covers the display of the flat blue meridian if Sim Ks are displayed). The white Profile Meridian can be rotated to any angle (0 – 360 degrees) by clicking on the white circle at the end with the left mouse button and dragging ([Figure B-6](#)). The profile graph and meridian values are updated automatically. This allows the doctor to judge the fit of the chosen lens based on the simulated fluorescein pattern in any meridian (axis) that is desired. The rotated meridian value is not saved when saving lens.

Data Table

The Data table ([Figure B-8](#)) displays the lens power (Diopters and mm, **steep** and **flat** axis), **steep** and **flat** axis meridian values, astigmatism, **steep** and **flat** Shape Factor/Eccentricity, and HVID value that were calculated for the currently selected lens design.

Flat	48.16 D @ 175	7.01 mm	SF (F)	0.86	Ecc	0.93
Steep	49.17 D @ 85	6.86 mm	SF (S)	0.86	Ecc	0.93
Astig.	1.01 D / 0.14 mm		HVID	12.2 mm		

Figure B-8 Data Table

Astig. (Astigmatism)

Astigmatism is the difference between the Steep and Flat K values displayed as a positive value.

Shape Factor (SF)

See [Shape Factor \(SF\)](#) on page 7-9 for more information.

Eccentricity (Ecc)

See [Eccentricity](#) on page 7-9.

HVID (ATLAS 9000 data only)

The HVID (Horizontal Visible Iris Diameter) value (mm) is the same as the Horizontal limbus diameter or white-to-white diameter. This is only measured on an ATLAS 9000 instrument.



Display Preferences

Display preferences for the Fluorescein Map View can be set by selecting the **Options** button in the lower left of the MasterFit II Display. On the **Options** screen select the **Display Preferences** tab (Figure B-9). Some display options can also be set by right-clicking on the Fluorescein Map Display to pop up Display Options menus (as shown on the left).

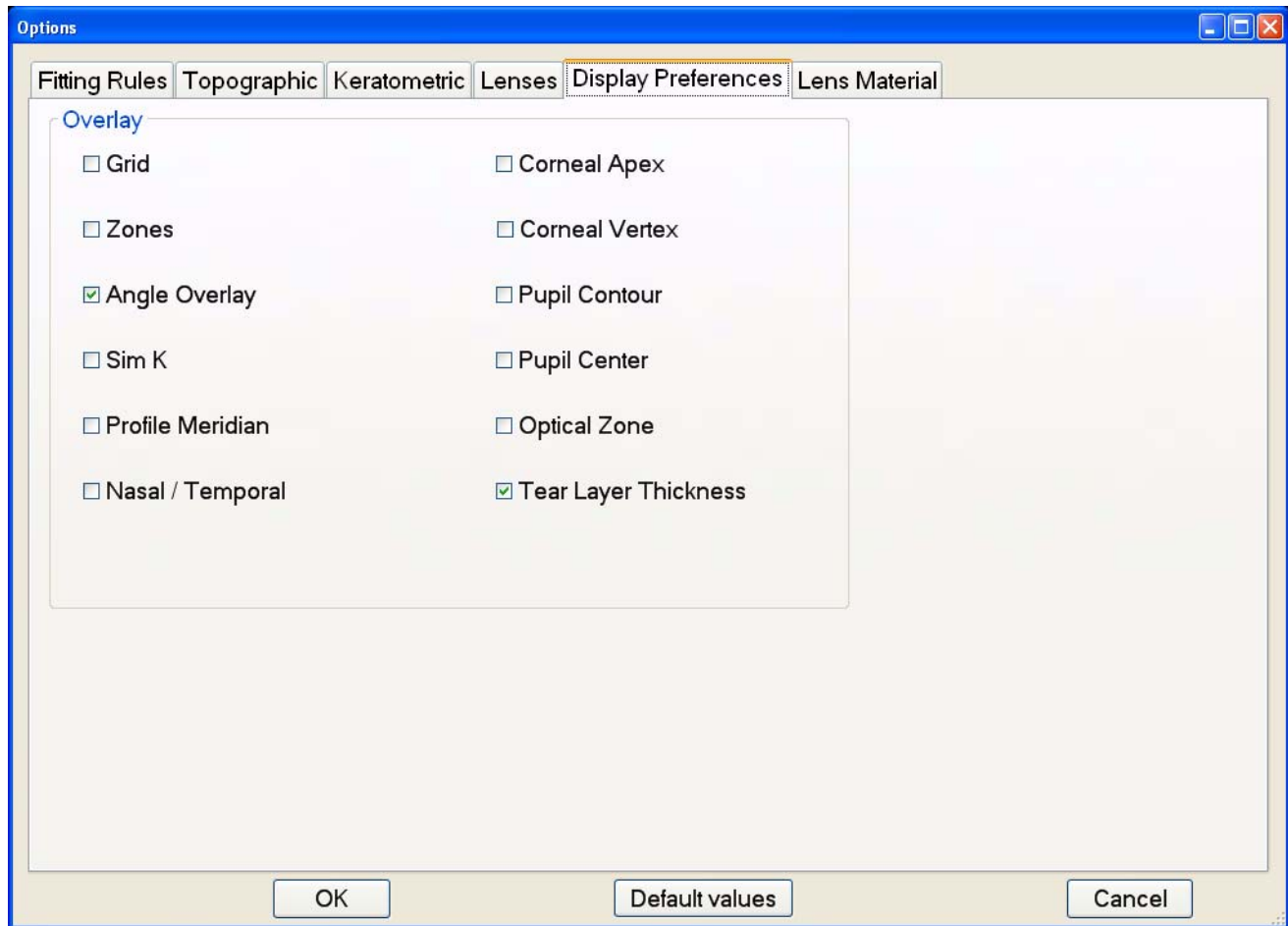


Figure B-9 Options – Display Preferences

Overlay

The Overlay section allows you to select which overlays display on the Fluorescein Map. A checkmark means the selected overlay will be displayed. See [Overlay](#) on page 7-6 for information. **Sim K** toggles the display of the red steep meridian and blue flat meridian, and their values. **Profile Meridian** (or **Show Profile Meridian** on pop-up display options) toggles the display of the white Profile Meridian on the Fluorescein map (see [Fluorescein Map](#) on page B-6). The **Optical Zone** is the central portion of the contact lens calculated from the base curve, and typically comprises from 65% to 80% of the lens diameter (displayed as a dark blue circle) (see [Figure B-6](#) and [Figure B-10](#)). Beyond the Optical Zone are the peripheral curves ([Peripheral Curves \(Custom Lens only\)](#) on page B-15). **Tear Layer Thickness** displays the tear film layer thickness (μm) just inside the optical zone boundary at both ends of the steep and flat meridians.

Opacity

Select the opacity of the Fluorescein Map: 100% is completely opaque and covers up the Rings Image, while 0% is completely transparent. Setting to something in between allows display of the green Fluorescein Map and the Rings Image.

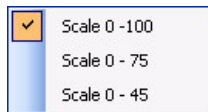
Width

Select the width of image to display in millimeters.

Rendering

Image rendering can be either **Contour** (default) or **Smooth**. The Contour option displays the color image with color contours, while the Smooth option displays the color image with a smooth color gradation. See [Rendering](#) on page 7-4 for examples.

Fluorescein Map Scale



Right-clicking on the map scale (see [Figure B-6](#)) to the left of the Fluorescein Map will pop up a scale menu where you can select the scale for the green Fluorescein Map tear film layer thickness. The shades of green that correspond to the values (μm) shown on the scale will change on the Fluorescein Map.

Lens Design Thumbnails



Design Information

Topographic
 Lens Type: Toric
 Lens Name: Custom
 BC: 42.75 / 7.90 mm / 0.75 D
 BC 2: 49.00 / 6.90 mm / 1.00 D
 Total diameter (mm): 9.50 mm
 Modified: 1/12/2009 10:12:57 AM

MasterFit II allows you to have up to six lens designs for each eye. The left of the MasterFit II Display (Figure B-2) contains thumbnail buttons (shown on the left) where you can add and edit up to five user lens designs. The first lens design is always the Recommended lens design automatically calculated by the software and named Recommended. It cannot be deleted or renamed.

The Recommended lens design is calculated by the software based upon acquired eye image information, refractive data (see Change Rx on page B-16), lens fitting rules (see Fitting Rules on page B-17), and your preferred lenses (see Lenses on page B-22). The Recommended lens design will change if you edit the refractive data, fitting rules, or preferred lenses.

Mousing over a lens design thumbnail will display a pop-up information box (shown on the left) containing lens design parameters, and for user designs, the design modification date and time.

The currently selected lens design is displayed with a red border (Lens Design 2 shown on the left). You can click on a design thumbnail to make it the selected lens design. The Fluorescein Map will be automatically updated (see Fluorescein Map on page B-6).

Lens Design Parameters

Base Curve (BC) is the curvature of the central portion of the back surface of the lens. Figure B-10 displays a bicurve lens design which has one base curve and one secondary peripheral curve. Most rigid corneal lenses used today are either bicurve or tricurve. The back vertex power is the effective power of the lens measured from the back surface.

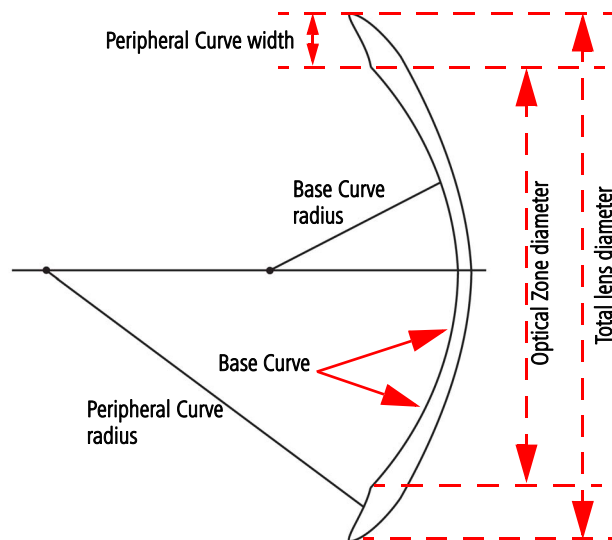


Figure B-10 Spherical Bicurve Lens Design Diagram

Spherical lenses have one base curve. All toric lens except the front toric have two base curves, a steep base curve and flat base curve, perpendicular to each other. Aspheric lenses have a varying base curve defined by the back optic zone eccentricity.

Add a New Lens Design

To add a new lens design, click on the empty thumbnail labeled “Click here to add new design.” A new lens design thumbnail will be created and selected with the currently selected thumbnail’s design parameters. The first lens design is named “1” with subsequent designs named “2, 3, etc.” You can rename the lens designs using the **Rename** button (see [Rename](#) below).



Note: You can also add a new design by changing the lens or lens design parameters of the Recommended lens design.

Rename

Click the **Rename** button to rename the currently selected lens design (thumbnail). A **Change Name** dialog will be displayed ([Figure B-11](#)). You can also click on the name of the design on the bottom of the thumbnail to bring up the **Change Name** dialog.

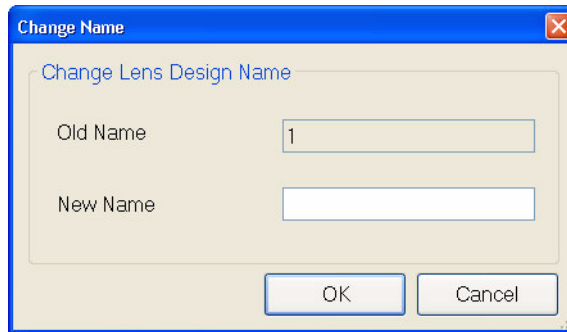


Figure B-11 Contact Lens Design – Change Name Dialog

Enter the new name in the **New Name** field and select **OK** to save your new name. A dialog will be displayed confirming your request for a new name. Select **Yes** to rename the design or **No** to cancel the renaming.



Note: You cannot rename the Recommended lens design.

Delete

Click the **Delete** button to delete the currently selected lens design (thumbnail). A dialog will be displayed confirming your request for deletion. Select **Yes** to delete the design or **No** to cancel the deletion.



Note: You cannot delete the Recommended lens design.

Design Lens

The Design tab (Figure B-12) displays the recommended lens parameters.

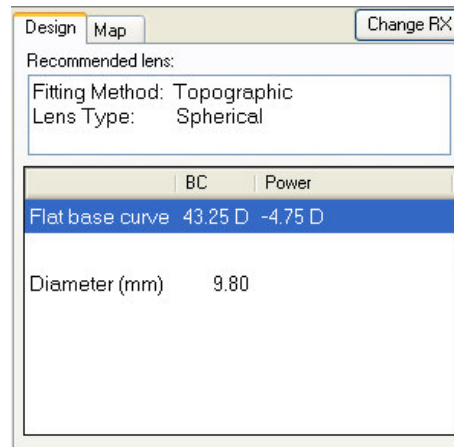


Figure B-12 Design Tab

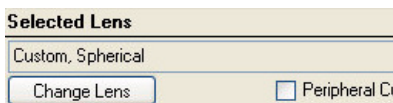
The software determines a Fitting Method, Lens Type, and other lens parameters based upon acquired eye image information, refractive data (see [Change Rx](#) on page B-16), lens fitting rules (see [Fitting Rules](#) on page B-17), and your preferred lenses (see [Lenses](#) on page B-22). The Flat base curve value display units can be set to mm or Diopters (see [Units](#) on page 7-2).

Change Lens

Change Lens

The **Change Lens** button displays the LENS BROWSER SCREEN (Figure B-13) which allows you change the currently selected lens. To select a new lens, follow these steps:

1. Select a lens type from the **Select Lens Type** drop-down menu.
2. In the left column, select a lens manufacturer by clicking on it.
3. In the right column, select a lens name from the list by clicking on it.
4. The selected lens's design parameters are shown below the two columns.
5. Click **OK** to select the lens.
6. The selected lens will be displayed in the field above the **Change Lens** button (shown on the left) and the Fluorescein Map Display will be updated.



Lens Types

- **Spherical** – This is the most frequently fitted lens; it has spherical curves on both the front and back surfaces.
- **Front toric** – This lens has a spherical back surface with cylinder ground into the front surface.; it is used to correct residual astigmatism on relatively spherical corneas.
- **Back toric** – The cylinder is on the back surface only; this lens is used to fit highly cylindrical WTR or ATR corneas, combined with residual astigmatism, when lens flexure or rotation is a problem.
- **Bi-Toric** – This lens has a minus cylinder curve on the posterior surface and a plus cylinder on the anterior curve; it is used for high WTR or ATR corneal toricity with residual astigmatism.

MasterFit II (Optional)

- **Aspheric** – The back surface of this lens has a continuous elliptic or parabolic shape that is steeper in the center and flattens toward the periphery; it is used to match the anterior surface of an aspheric cornea with a Shape Factor between 0.50 and 0.70.

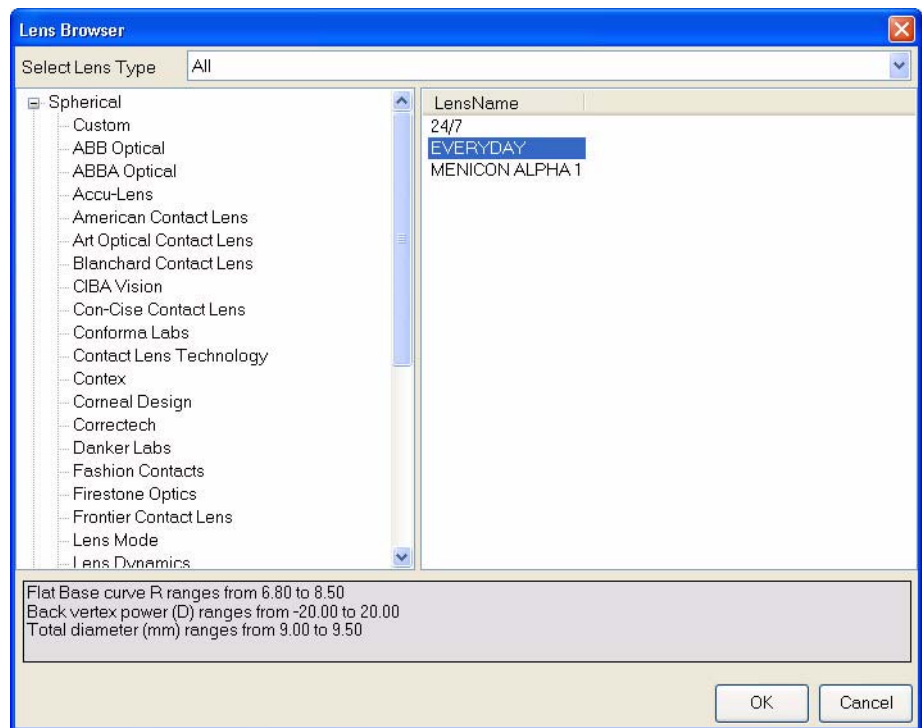


Figure B-13 Lens Browser Screen



Note: If you change the lens of the Recommended lens design, a new design will automatically be added to the Lens Design Thumbnails.

Lens Parameters

The LENS PARAMETERS SCREEN (Figure B-14) displays lens design parameters which can be edited by selecting different values in the drop-down menus for each parameter. If you have the Recommended lens design selected, a new lens design thumbnail will automatically be created.

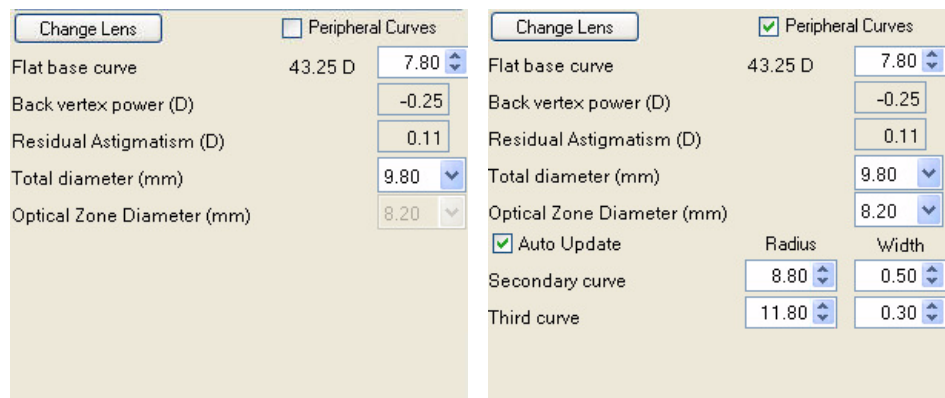


Figure B-14 Lens Parameters Screens

Peripheral Curves (Custom Lens only)

For Custom lens, checking **Peripheral Curves** adds Secondary and Third Curve Radius and Width to edit. Peripheral Curves, which typically encompass the outer 15 to 25% of the lens, surround the optical zone of the lens. See [Figure B-10](#).

If **Auto Update** is checked (default), the Peripheral Curves will change by the same amount as any change to the Flat base curve value.



Note: Set the **Secondary** and **Third Curves** to the same values to create a bi-curve design.

Residual Astigmatism

When the contact lens is placed on the cornea, the tear lens corrects the astigmatism on the cornea but not the astigmatism due to the other components of the eye—**Residual Astigmatism** is the remaining astigmatism or refractive error that is still present. Residual astigmatism is calculated only from a spherical lens fit.

Map View

The **Map** tab ([Figure B-15](#)) displays a corneal topography map for the currently selected exam. You can select **Axial**, **Elevation**, **Tangential**, or **Mean** from the drop-down menu.

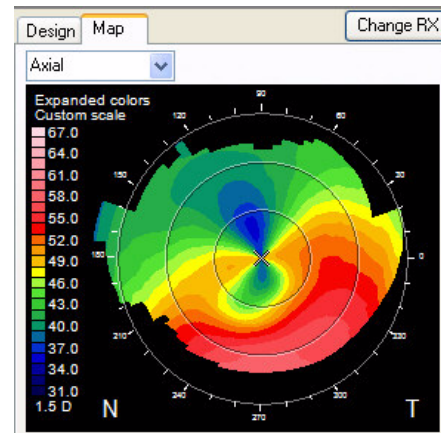


Figure B-15 Map Tab

Axial is selected as the default View. See [Axial Curvature](#) on page 6-2 for more information on the Axial Curvature View. See [Elevation](#) on page 6-6 for more information on the Elevation View. See [Tangential Curvature](#) on page 6-4 for more information on the Tangential Curvature View. See [Mean Curvature](#) on page 6-19 for more information on the Mean Curvature View. The maps use the same settings as in the Single View Display.

Change Rx

Change Rx

The **Change Rx** button displays the CHANGE RX SCREEN (Figure B-16) which allows you to enter and edit the patient's refraction data.

Change Rx

MasterFit II

Vertex Distance (mm) 13.0

Use trial lens

Cylinder Type

Minus cylinder

Plus cylinder

	OD			OS		
	Sphere(D) (-35 to 35)	Cylinder(D) (-15 to 0)	Axis(°) (1 to 180)	Sphere(D) (-35 to 35)	Cylinder(D) (-15 to 0)	Axis(°) (1 to 180)
Distance Rx	0.00	0.00	180	0.00	0.00	180
Trial lens	0.00	0.00	180	0.00	0.00	180
Over refraction	0.00	0.00	180	0.00	0.00	180
Correction corneal plane	0.00	0.00	180	0.00	0.00	180
Tear lens	0.00	0.00	180	0.00	0.00	180
Back vertex power	0.00	0.00	180	0.00	0.00	180

OK Cancel

Figure B-16 Change Rx Screen

Vertex Distance (mm) – Select the corneal vertex distance (mm) from the drop-down menu.

Use trial lens – Select this to use a trial lens. If selected, enter in **Trial lens** and **Over refraction** data for the Sphere, Cylinder, and Axis.

Cylinder Type – Select the radio button for your cylinder convention (**Minus cylinder** or **Plus cylinder**).

Distance Rx – Enter in the Sphere, Cylinder, and Axis values for the distance correction.

Correction corneal plane, **Tear lens**, and **Back vertex power** will be calculated by the software for the Sphere, Cylinder, and Axis.

Options

Options

The **Options** button on the lower left of the MasterFit II Display displays the OPTIONS SCREEN which allows you to select and edit your preferred lenses, define lens fitting rules, and set your display preferences for the Fluorescein Map View. In addition, a Lens Material list can be defined and edited.

Some units will be displayed in mm or Diopters depending on your global unit setting (see [Units](#) on page 7-2).

Click the **Default values** button to return all edited parameter values back to the default values of the software.

Select **OK** to save your changes on all Tab screens of the OPTIONS SCREEN. All changes are saved globally. Select **Cancel** to discard your changes and close the OPTIONS SCREEN.

Fitting Rules

Selecting the **Options** button and then selecting the Fitting Rules tab displays the Options – Fitting Rules dialog ([Figure B-17](#)).

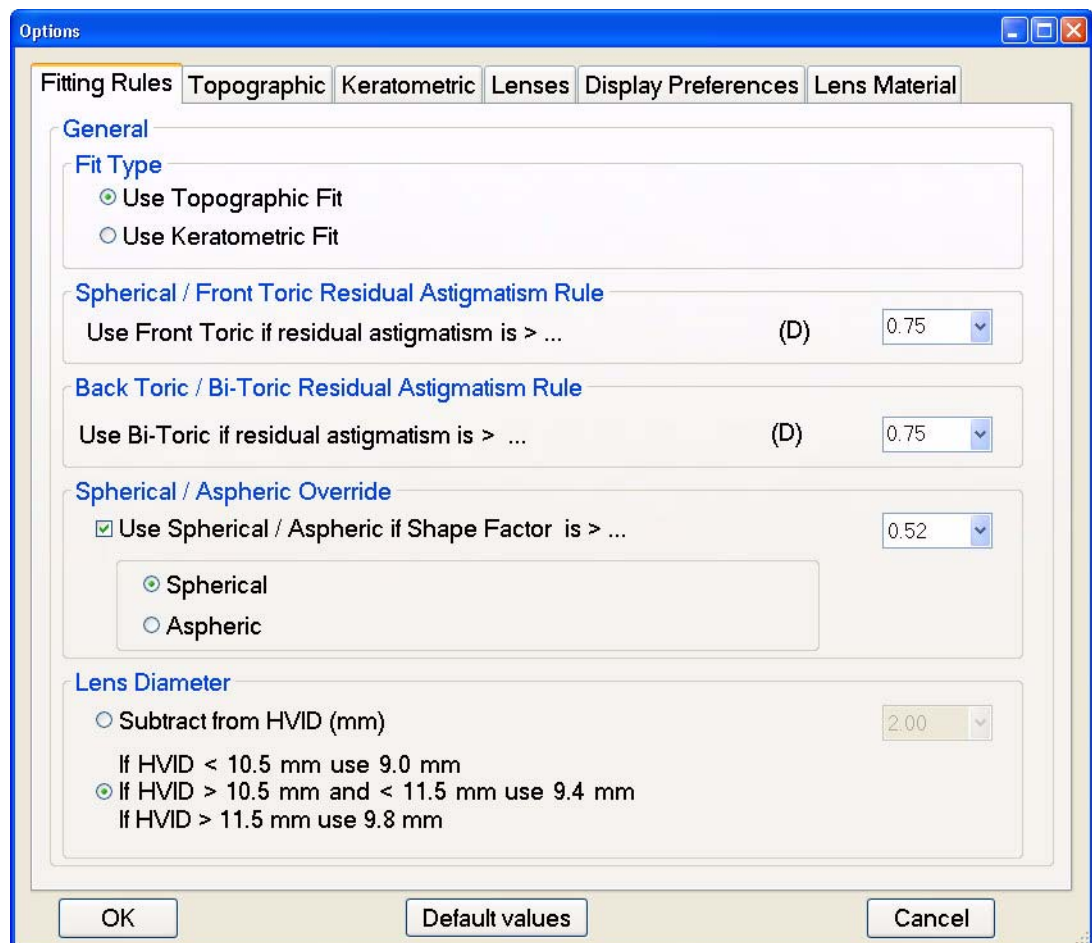


Figure B-17 Options – Fitting Rules Tab

Fit Type

- If the **Use Topographic Fit** radio button is checked, MasterFit II's topography-based fitting rules is used to determine the recommended contact lens type. See [Topographic](#) on page [B-19](#) for the Topographic Fitting Rules.
- If the **Use Keratometric Fit** radio button is checked, then the software determines the recommended contact lens type using the Keratometric Fitting Rules. See [Keratometric](#) on page [B-20](#) for the Keratometric Fitting Rules.

Spherical / Front Toric Residual Astigmatism Rule

- **Use Front Toric if residual astigmatism is >** – Enter an astigmatism value to determine if a Front Toric lens will be used.

Back Toric /Bi-Toric Residual Astigmatism Rule

- **Use Back Toric/Bi-Toric if residual astigmatism is >** – Enter an astigmatism value to determine if a Bi-Toric lens will be used.

Spherical / Aspheric Override

- **Use Spherical / Aspheric if Shape Factor is >** – If checked, enter a Shape Factor value and select either **Spherical** or **Aspheric** to determine if a Spherical/Aspheric lens will be used.

Lens Diameter

Select one of the two radio buttons:

- **Subtract from HVID (mm)** – The initial lens diameter will be calculated by subtracting this value from the HVID value. This lens diameter will be used in selecting an available lens diameter, based upon the lens diameter available for the recommended lens from the catalog.
- **If HVID < 10.5 mm use 9.0 mm, If HVID > 10.5 mm and < 11.5 mm use 9.4 mm, If HVID > 11.5 mm use 9.8 mm** – Select this to select the lens diameter based upon the HVID value as follows:
 - Set Lens diameter to 9 mm if HVID < 10.5 mm
 - Set Lens diameter to 9.4 mm if HVID > 10.5 mm and < 11.5 mm
 - Set Lens diameter to 9.8 mm if HVID > 11.5 mm

Note that ATLAS 900 series exams use an HVID of 11.5 mm.

Topographic

Selecting the **Options** button and then selecting the **Topographic** tab displays the Options – Topographic dialog (Figure B-18).

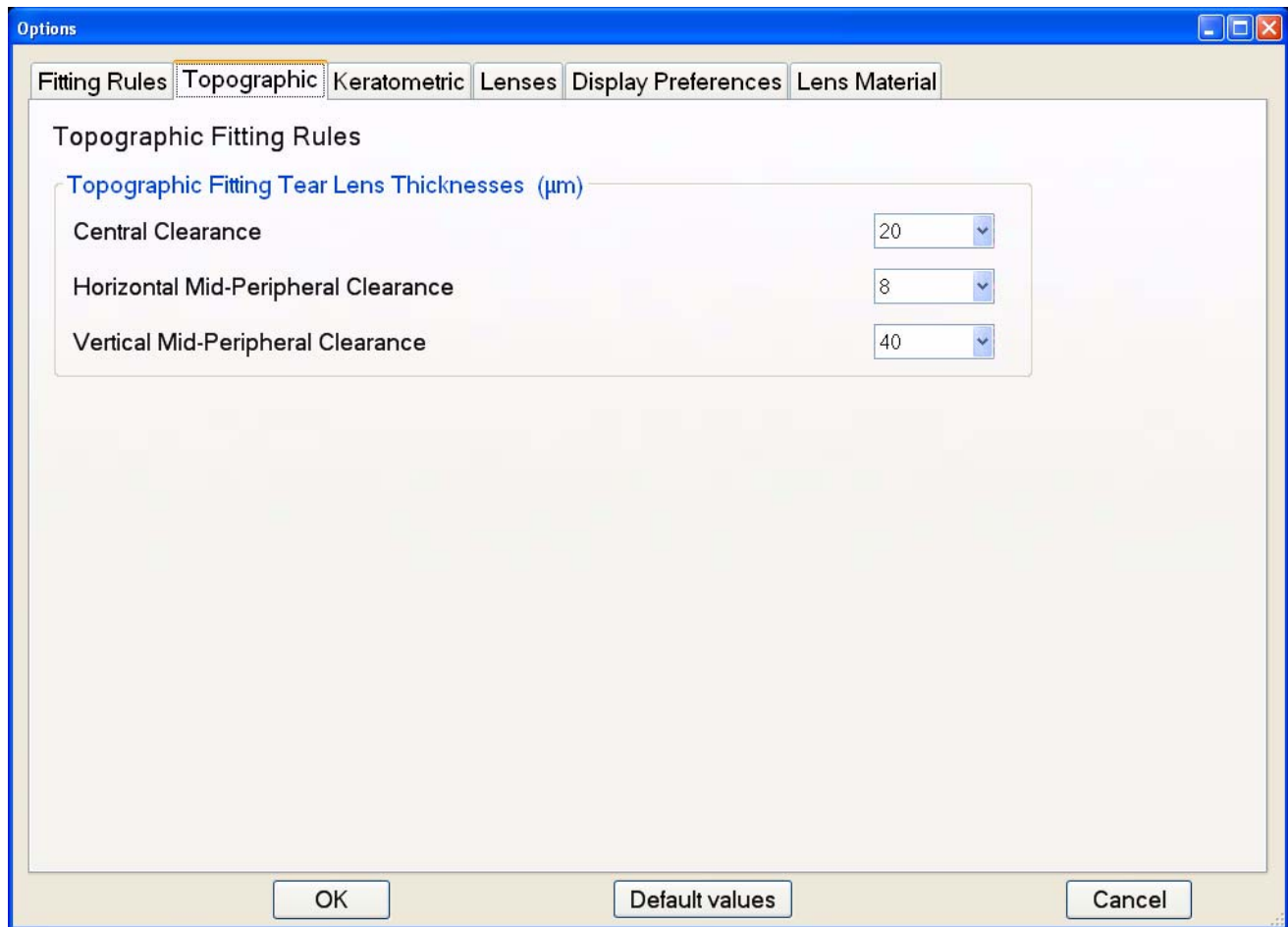


Figure B-18 Options – Topographic Tab

If the **Use Topographic Fit** Fit Type radio button is checked in the Fitting Rules tab (Figure B-17), MasterFit II's topography-based fitting optimizes the tear film clearance using the following methodology:

1. The center of the lens should clear the central cornea by approximately 20 μm .
2. There should be a mid-peripheral contact point along the horizontal meridian.
3. The lens should maintain unobstructed movement along the vertical meridian of approximately 40 μm .

The topographic fitting algorithm attempts to create a contact lens design which will provide the selected tear lens thickness (TLT) for the following:

Topographical Fitting Tear Lens Thicknesses (μm)

- **Central Clearance** – This is the TLT in the central 0.5 degree center of the eye.
- **Horizontal/Vertical Mid-Peripheral Clearance** – Horizontal Mid-Peripheral Clearance is the peripheral clearance along the corneal Sim K axis closest to 180°. Vertical Mid-Peripheral Clearance is the peripheral clearance along the corneal Sim K axis closest to 90°.

Keratometric

Selecting the **Options** button and then selecting the **Keratometric** tab displays the **Options – Keratometric** dialog (Figure B-19).

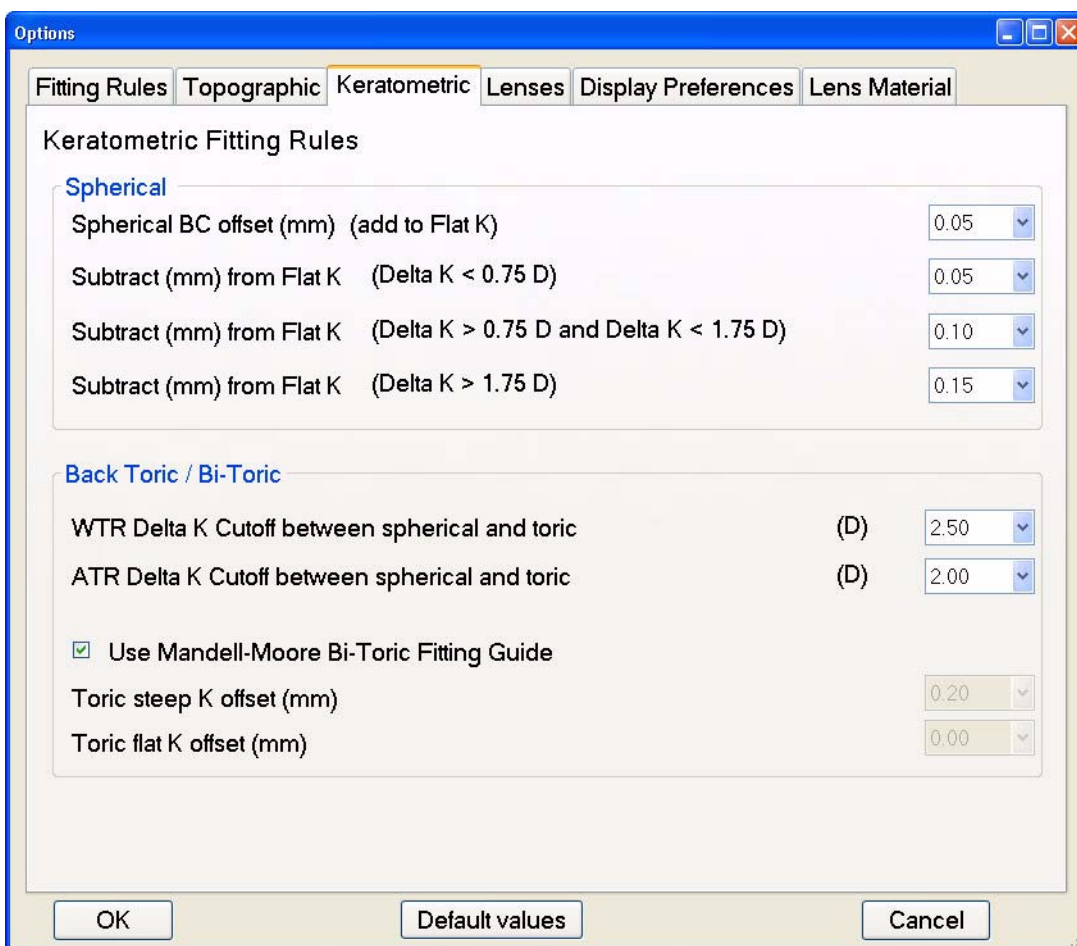


Figure B-19 Options – Keratometric Tab

If the **Use Keratometric Fit** Fit Type radio button is checked in the **Fitting Rules** tab (Figure B-17), then the software determines the recommended contact lens type using the **Keratometric Fitting Rules**. The parameters can be edited by selecting different values in the drop-down menus for each parameter. **Keratometric Fitting Rules** for **Spherical**, **Bi-Toric**, and **Front Toric** lens types can be edited, along with lens diameter.

Spherical

- **Spherical BC offset (mm) (add to Flat K)** – Enter the mm value to add to the initial base curve radius which is set to the flat Sim K value.
- **Subtract (mm) from Flat K (Delta K < 0.75 D (0.15 mm))** – Enter the mm value to subtract from the initial base curve value when the Delta K value is less than 0.75 Diopters (0.15 mm).

- **Subtract (mm) from Flat K (Delta K > 0.75 D (0.15 mm) and Delta K < 1.75 D (0.35 mm))** – Enter the mm value to subtract from the initial base curve value when the Delta K value is greater than 0.75 Diopters (0.15 mm) but less than 1.75 Diopters (0.35 mm).
- **Subtract (mm) from Flat K (Delta K > 1.75 D (0.35 mm))** – Enter the mm value to subtract from the initial base curve value when the Delta K value is greater than 1.75 Diopters (0.35 mm).

Back Toric / Bi-Toric

- **WTR Delta K Cutoff between spherical and toric** – If the corneal astigmatism is WTR (With The Rule) and greater than this value, then a spherical design will be changed to a toric design.
- **ATR Delta K Cutoff between spherical and toric** – If the corneal astigmatism is ATR (Against The Rule) and greater than this value, then a Spherical design will be changed to a Toric design.
- **Use Mandell-Moore Bi-Toric Fitting Guide** – Check this to use the Mandell-Moore Bi-Toric Fitting Guide. See <http://www.gpli.info> for more information.
- **Toric steep K offset (mm)** – If the Mandell-Moore Bitoric Fitting Guide is not checked, enter the mm to add to the steep K value for the steep base curve value.
- **Toric flat K offset (mm)** – If the Mandell-Moore Bitoric Fitting Guide is not checked, enter the mm to add to the flat K value for the flat base curve value.

Lenses

Selecting the **Options** button and then selecting the Lenses tab displays the Option – Lenses dialog (Figure B-20).

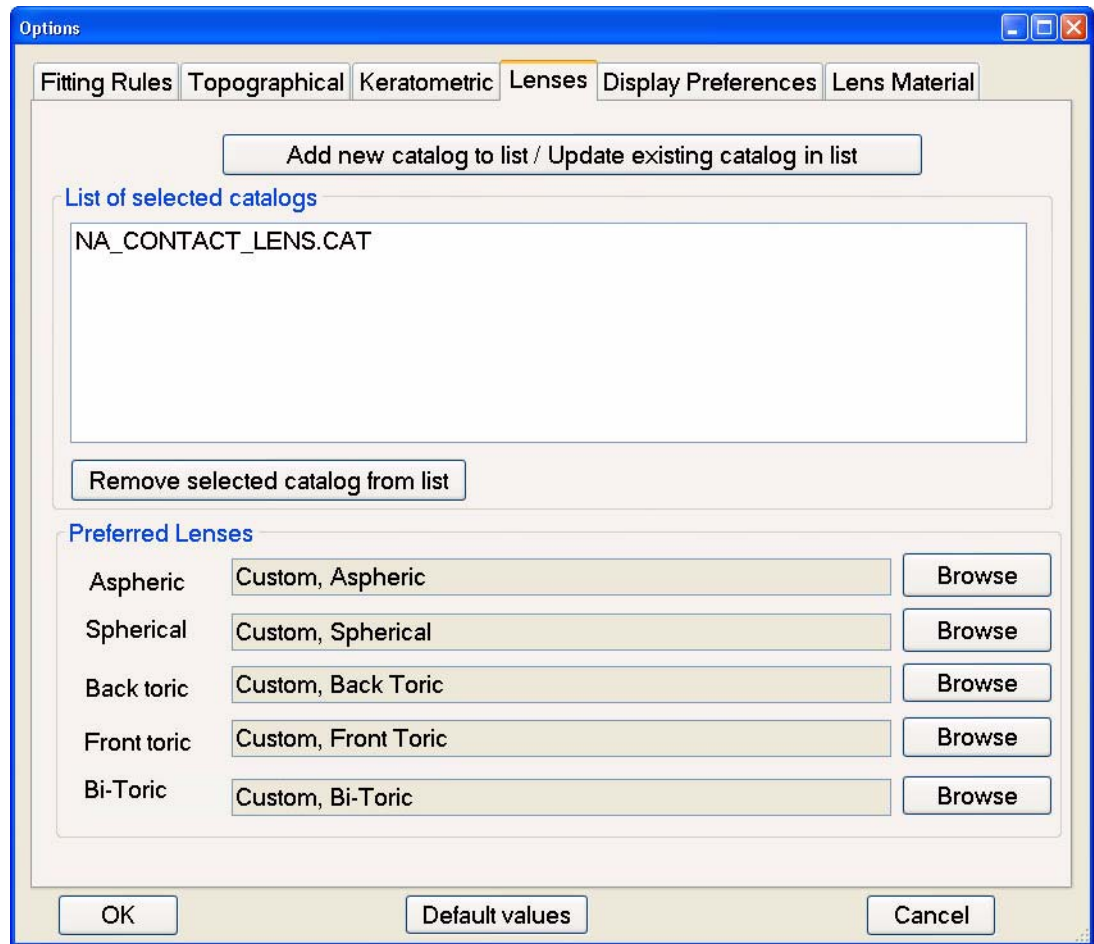


Figure B-20 Options – Lenses Tab

Lens Catalogs

The **List of selected catalogs** table shows the current list of contact lens catalogs. MasterFit II comes with two catalogs: a North American Contact Lens catalog (NA_CONTACT_LENS.CAT) and a European Union Catalog (EU_CONTACT_LENS.CAT) which are located in "*C:\Documents and Settings\All Users\Application Data\Carl Zeiss Meditec\ATLAS\contactlens*" for Windows XP; for Windows Vista the path is "*C:\Program Data\Carl Zeiss Meditec\ATLAS\contactlens*." Additional and updated contact lens catalogs may be available for download on the ATLAS System Technical Support section of our website (www.meditec.zeiss.com/atlas).

To add or update the list, select the **Add new catalog to list / Update existing catalog in list** button to open a standard **Open** dialog where you can find and open a Catalog File in the CAT format. If a catalog with same name already exists, it will be replaced.

If you want to remove a lens catalog from the list, first select a catalog file from the list with your mouse and then select the **Remove selected catalog from list** button to remove it. If a preferred lens belongs to the removed catalog, a generic lens of appropriate type will be set to the preferred lens.

Preferred Lenses

Use the **Preferred Lenses** fields to set the preferred lens for each type of lens (**Aspheric, Spherical, Back toric, Front toric, Bi-Toric**). When the software calculates the recommended lens type, it will use the preferred lenses entered here for that type. The software displays the Recommended lens on the **Recommended** tab (see [Design Lens](#) on page [B-13](#)).



Note: If you do not select a preferred lens for a lens type, a custom lens for that type will be selected by default.

Lens Material

Selecting the **Options** button and then selecting the Lens Material tab displays the Options – Lens Material dialog (Figure B-17).

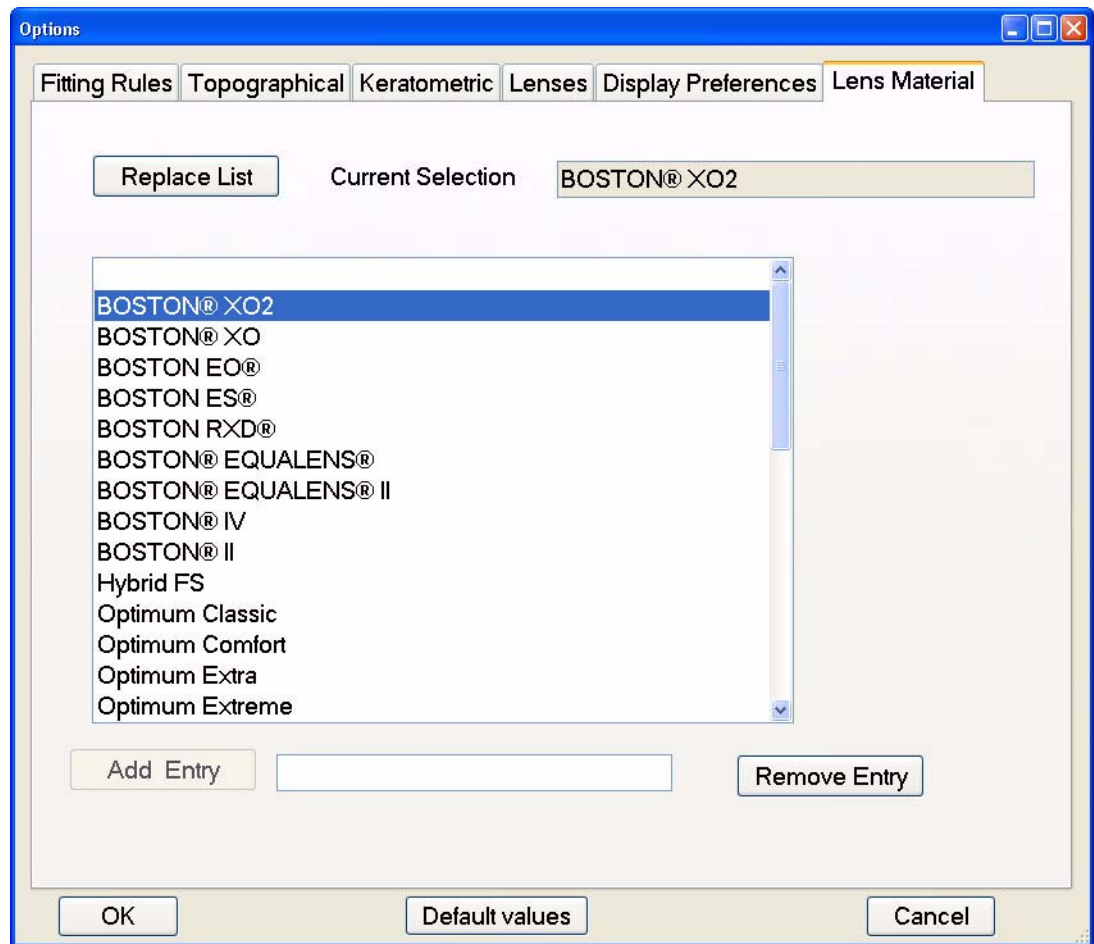


Figure B-22 Options – Lens Material Tab

The **Lens Material** dialog displays a list of lens materials. You can select a lens material to be used on the Contact Lens order form (see [Order](#) on page [B-26](#) for more information).

The current lens material is shown in the **Current Selection** field and will be the default material on the Contact Lens order form. Select **Remove Entry** to delete this material.

To add a new lens material to the list, enter the description (< 30 characters) in the text field to the right of the **Add Entry** button, and then select **Add Entry**.

Select **Replace List** to open a standard **Open** dialog and locate and open a MasterFit Lens Material File(*.txt). The current Lens Material List will be replaced and overwritten.

Order

Order

The **Order** button on the lower left of the MasterFit II Display allows you to select, print, edit, and save Order Forms. Selecting the **Order** button displays the **Contact Lens order form** dialog (Figure B-23). When opened, it is updated with the currently selected patient information and lens designs, replacing the current template tags with values. You can edit the file by scrolling and clicking in the text box.

Eye	OS
Quantify:	1
Lab / Manufacturer	
Lens Material	BOSTON@ X02
Color	Clear
Dot OD	Yes
Lens Name	Custom

Buttons at the bottom: Preview/Print, Save to file, Exit

Figure B-23 Contact Lens Order Form

Browse

Click the **Browse** button to display a standard **Open** dialog where you can find and open an Order form template file in RTF format. An Order form template file contains tags that will be replaced with real values once it is opened. The tags allow you to customize your order form. For a list of available tags see [Table B-1, "Order Template Form Tags and Values,"](#) on page 27. A sample order form named "DefaultOrderForm.rtf" is the default Order Template form and is located in "C:\Documents and Settings\All Users\Application Data\Carl Zeiss Meditec\ATLAS\contactlens" for Windows XP; for Windows Vista the path is "C:\Program Data\Carl Zeiss Meditec\ATLAS\contactlens."

Table B-1 Order Template Form Tags and Values

Tag	Value
#Date	Current date
#Time	Current time
#Institution	Institution name
#Doctor	Doctor name
#PatientName	Patient name
#PatientDOB	Patient birth date
#PatientID	Patient ID
#Eye	Exam eye
#Manufacturer	Lens manufacture name
#LensName	Lens name
#LensType	Type of lens
#LENS_COLOR	Lens Color (current eye)
#RIGHT_LENS_DOTTED	Right Lens Dotted (Yes/No)
#OD_LENS_COLOR	Lens Color (OD)
#OS_LENS_COLOR	Lens Color (OS)
#BOZR1	Base Curve
#BOZR2	Base Curve 2 (Toric)
#TD	Lens diameter
#ADD	ADD value
#OD_EYE	Exam eye (OD)
#OD_Manufacturer	Lens manufacture name (OD)
#OD_LensName	Lens name (OD)
#OD_LensType	Type of lens (OD)
#OD_BOZR1	Base Curve (OD)
#OD_BOZR2	Base Curve 2 (Toric) (OD)
#OD_TD	Lens diameter (OD)
#OD_ADD	ADD value (OD)
#OS_EYE	Exam eye (OS)
#OS_Manufacturer	Lens manufacture name (OS)
#OS_LensName	Lens name (OS)
#OS_LensType	Type of lens (OS)
#OS_BOZR1	Base Curve (OS)
#OS_BOZR2	Base Curve 2 (Toric) (OS)
#OS_TD	Lens diameter (OS)
#OS_ADD	ADD value (OS)

Table B-1 Order Template Form Tags and Values

Tag	Value
#OS_BVP2	Steep back vertex power (Toric) (OS)
#OD_BVP2	Steep back vertex power (Toric) (OD)
#BVP2	Steep back vertex power (Toric)
#OZD	Optic zone diameter (current eye)
#OS_OZD	Optic zone diameter (OS)
#OD_OZD	Optic zone diameter (OD)
# SEC_RADIUS	2nd curve radius
# PER_RADIUS	3rd curve radius
#SEC_CURVE_WIDTH	2nd curve width
#PER_CURVE_WIDTH	3rd curve width
# OS_SEC_RADIUS	2nd curve radius (OS)
# OS_PER_RADIUS	3rd curve radius (OS)
# OS_SEC_CURVE_WIDTH	2nd curve width (OS)
# OS_PER_CURVE_WIDTH	3rd curve width (OS)
# OD_SEC_RADIUS	2nd curve radius (OD)
# OD_PER_RADIUS	3rd curve radius (OD)
# OD_SEC_CURVE_WIDTH	2nd curve width (OD)
# OD_PER_CURVE_WIDTH	3rd curve width (OD)
# OD_Lens_Material	Lens material (OD)
# OS_Lens_Material	Lens material (OS)

Lens Material

Select the lens material from the **Lens Material** drop-down box. The currently selected lens material on the **Options – Lens Material** dialog will be selected by default (see [Lens Material](#) on page B-28).

Lens Color

Select the lens color from the **Lens Color** drop-down box. The default is Clear.

Right Lens Dotted

Check **Right Lens Dotted** to have the right lens dotted for identification. The default is checked.

Preview/Print

Click this button to preview/print the Order Form. This will open a standard Windows **Print Preview** dialog where you can select print options and preview/print the Order Form.

Save to file

Click this button to save the Order Form as an RTF or text file. This will open a standard Save as dialog where you can save the Order Form with a name, type, and location of your choice. The default file name is Patient Last name + Patient first name + Eye + Date.

Exit

Click this button to exit the Contact Lens order form dialog and return to the MasterFit II Display.

(C) DICOM Gateway (Optional)

Overview

The DICOM (Digital Imaging and Communications in Medicine) Gateway is an optional software program that allows you to connect one or more ATLAS instruments to a qualified DICOM 3.0 Ophthalmic Compatible Electronic Medical Records (EMR) system, Patient Management System (PMS), or DICOM archive that supports EPDF or Secondary Capture, for paperless workflow. When the DICOM Gateway is properly installed and configured on an ATLAS, the ATLAS can display a list of patients who are scheduled for exams (“DICOM Modality Worklist”). When a patient is selected from this list, all demographic data (e.g., name, patient ID, birthdate, etc.) is entered automatically into the ATLAS database. Once the exam is performed, any report that would normally be printed can be automatically added to the patient's electronic medical record for easy viewing and analysis. This workflow eliminates the need to manually enter patient demographic information into the ATLAS and dramatically increases clinic efficiency by eliminating the need to print or scan any diagnostic reports.



Note: The DICOM Gateway is an optional software program that is separately licensed. You must activate the software for it to function on your ATLAS.

To activate, go to www.meditec.zeiss.com/register. You may also contact Carl Zeiss Meditec:

In the U.S.: Call Carl Zeiss Meditec at 1-800-341-6968.

Outside the U.S.: Contact your local Carl Zeiss Meditec distributor.

E-mail: z.customersupport@meditec.zeiss.com.

You can activate a license using the procedure that is provided in (I) [License Registration](#).



Note: You should check the ATLAS DICOM Conformance Statement and with your vendor to determine the compatibility of their system with the DICOM Gateway before purchasing an EMR/PMS system. Your EMR/PMS must be DICOM 3.0 Ophthalmic Compliant and support EPDF.

The DICOM Gateway Version 1.0 is compatible with ATLAS's running System Software Version 3.0 or later. The procedures for installing and configuring the DICOM Gateway software on an ATLAS are described in detail in this appendix. For using the DICOM Gateway see [Importing from Worklists \(Instrument Only\)](#) on page 11-20, and [Exporting Data to DICOM Systems](#) on page 11-25.

This appendix includes the following topics:

- [DICOM Gateway Configuration Steps](#), page C-2
- [Network Broker Installation](#), page C-3
- [Network Broker Configuration](#), page C-6
- [Launching the Configuration Tool](#), page C-7
- [General Information](#), page C-8
- [Network Broker Configuration Tool Steps](#), page C-10

Network Broker Service

The main software component of the DICOM Gateway that runs on the ATLAS is called the Network Broker service. The software acts as an intermediary between your ATLAS and your DICOM Storage and Worklist Servers (Figure C-1).

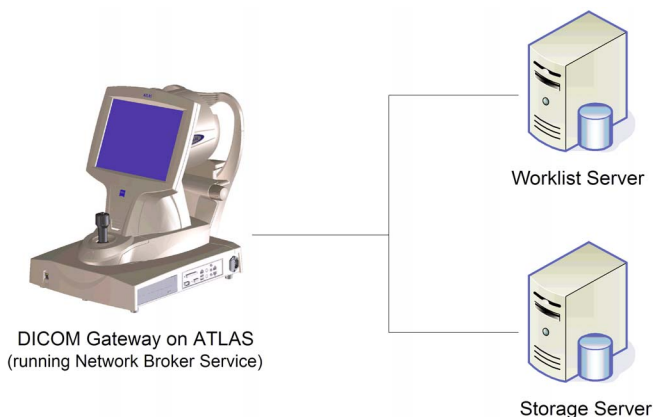


Figure C-1 DICOM Gateway Setup Diagram

DICOM Gateway Configuration Steps

The setup process for your complete DICOM Gateway solution includes the following steps that you will need to perform:

1. **DICOM Server Setup:** Set up your DICOM storage server and modality worklist server to recognize the AE Title of the ATLAS that will be connected through the Network Broker service. This is a potentially complex and time-consuming process whose details depend on your system, and which should only be attempted by someone who has expert knowledge of this system.
2. **Network the ATLAS:** Configure your ATLAS to connect to your network. See your IT or PACS administrator for more information.
3. **License DICOM Gateway:** License the DICOM Gateway on the ATLAS.
See [\(I\) License Registration](#) for more information.
4. **Install Network Broker:** Install the Network Broker service on the ATLAS.
See [Network Broker Installation](#) on page C-3 for more information.
5. **Configure Network Broker:** Run the Network Broker Configuration program to configure the Network Broker service to recognize the connected ATLAS and to communicate with the designated Storage and Worklist servers. See [Network Broker Configuration Tool Steps](#) on page C-10 for more information.
6. **Run the Network Broker Service with new configuration:** Make sure you have restarted the ATLAS to start the Network Broker Service with the new configuration.



Note: If the Network Broker service is stopped, it can be manually started by selecting **Options > Preferences > DICOM Export Configuration > Restart Network Broker** in the ATLAS software (except Windows Vista Review Stations), or by selecting **Start > All Programs > CZM > Network Broker > Start Network Broker service** from the Windows desktop.

7. **Use DICOM on your ATLAS:** Query your worklist server for requested exams, perform these exams and export the desired ATLAS reports to the patient record. See [Importing from Worklists \(Instrument Only\)](#) on page 11-20, and [Exporting Data to DICOM Systems](#) on page 11-25.

Network Broker Installation

The following instructions describe the installation of the Network Broker software. The Network Broker installation program is found on the ATLAS Version 3.0 installation CD.

Please read all instructions before performing the installation.

Important Installation Notes

1. **Plan and allow sufficient time for installation and configuration.**
2. **Administrator Account Required.** To install or to use this software, you must be logged in to Windows as a Computer administrator.
3. **Non-public JRE Installed.** The installer also installs a non-public Java Runtime Environment (JRE) for the Network Broker. Any already existing JREs are neither used nor modified. Upon first launch of the Network Broker a Windows Security Alert will be displayed if you have Windows Firewall turned on (see [Windows Security Alert](#) on page C-7).


Installation Instructions



Note: If a previous version of Network Broker is installed, it needs to be uninstalled before installing the Network Broker.



Note: The screenshots shown in this document may differ slightly from the screens displayed during installation.

1. Exit the ATLAS system software (click **File > Exit** or click the  at upper right) to enter the operating system environment. The Windows desktop will appear.
2. Install the ATLAS Version 3.0 installation disk into its drive. Wait for the installation program to start automatically.
3. Click **Cancel** to cancel the Version 3.0 installation.
4. Click **Start > Explore** to launch Windows Explorer.
5. Open the **NetworkBroker** folder on the Version 3.0 disk.
6. Double-click the file named "**NetworkBroker_1.3.msi**" to launch the Network Broker installation program.

7. After preparatory steps complete, the INSTALLSHIELD WIZARD WELCOME window appears:



Figure C-2 InstallShield Wizard Welcome Window

8. Click **Next** to begin installation. The INSTALLSHIELD WIZARD DESTINATION FOLDER window is displayed:

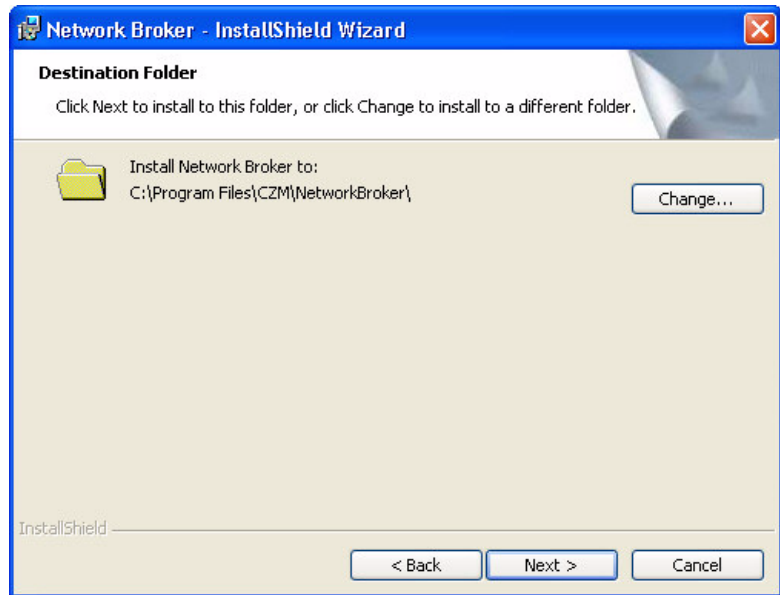


Figure C-3 InstallShield Wizard Destination Folder Window

To install into the default folder, *C:\Program Files\CZM\Network Broker*, click **Next**. To install into a different folder, click the **Change** button to select another folder, and then click **Next** to continue installation.

9. An INSTALLSHIELD WIZARD READY TO INSTALL window is displayed:

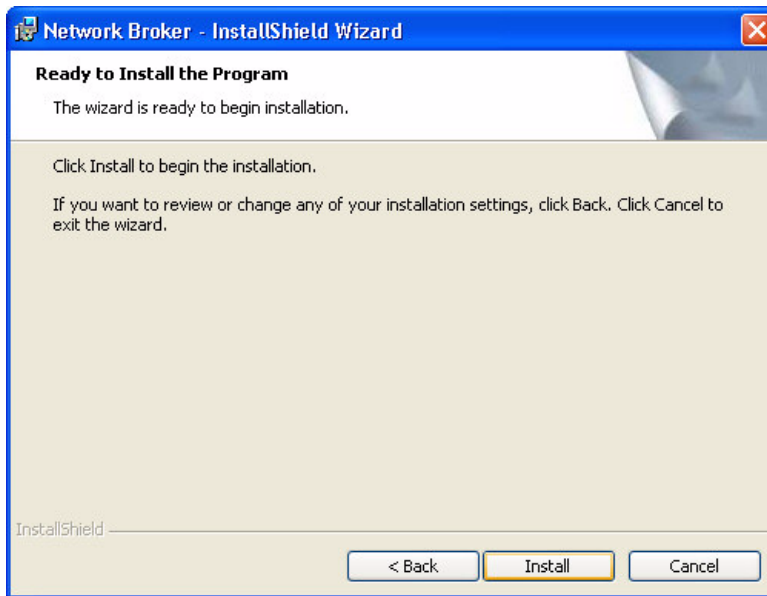


Figure C-4 InstallShield Wizard Ready to Install Window

Click **Install** to begin the installation.

10. An INSTALLSHIELD WIZARD STATUS window tracks progress of the installation:

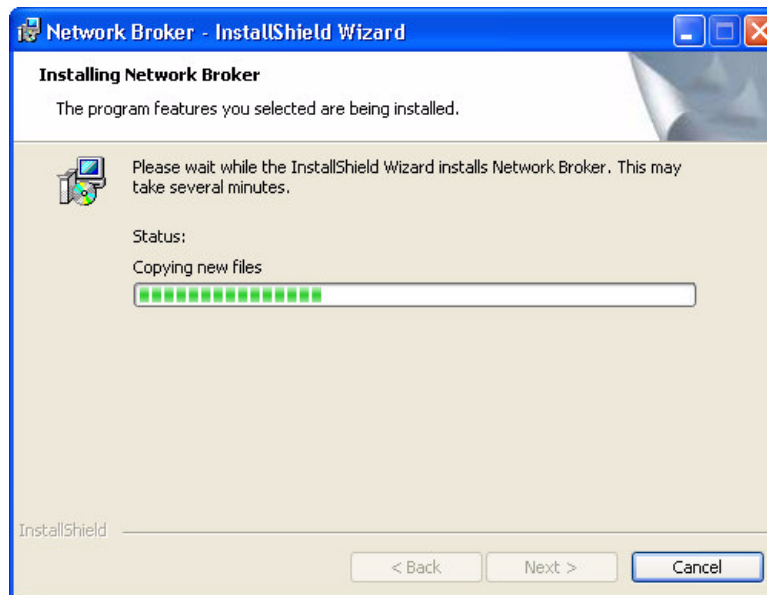


Figure C-5 InstallShield Wizard Status Window

11. An INSTALLSHIELD WIZARD COMPLETED window is displayed when installation is complete:

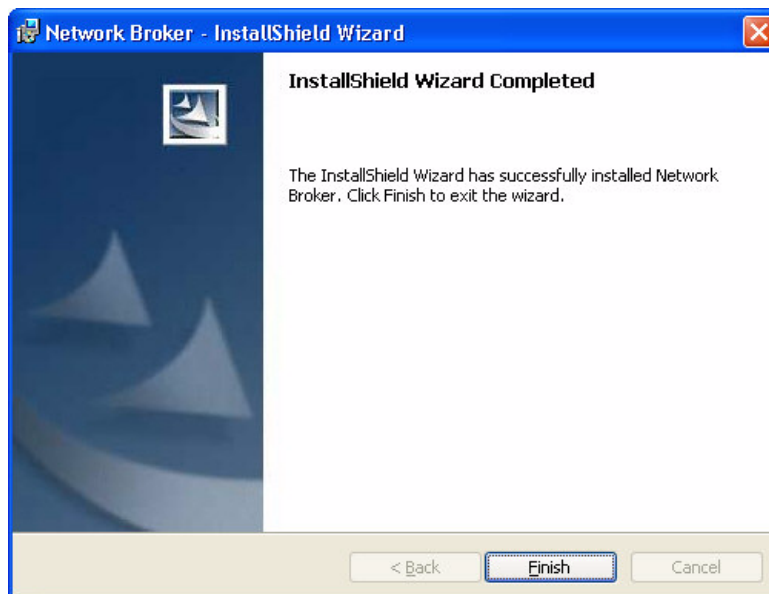


Figure C-6 InstallShield Wizard Completed Window

12. Click **Finish** to end the installation.


Network Broker Configuration

The Network Broker Configuration Tool helps you to configure the Network Broker. This section describes how to configure the Network Broker Configuration Tool for use with VISUPACT™ 4.4 (or later) or a DICOM system and an ATLAS.

After completing the configuration, you must restart Windows on the ATLAS to start the Network Broker service with the new configuration.

1. Launch the Network Broker Configuration Tool from the ATLAS. See [Launching the Configuration Tool](#) on page C-7.
2. Go through all 10 steps of the Configuration Tool to configure the Network Broker. See [Network Broker Configuration Tool Steps](#) beginning on page C-10.
3. Restart Windows on the ATLAS to start the Network Broker service with the new configuration.

Launching the Configuration Tool

To launch the Network Broker Configuration Tool, select **Options > Preferences > DICOM Export Configuration > Configure Network Broker** in the ATLAS software (except Windows Vista Review Stations), or select the Windows key  on the keyboard to see the Windows Task Bar, and then select **Start > All Programs > CZM > Network Broker > Configuration Tool** to display the WELCOME SCREEN (Figure C-7).

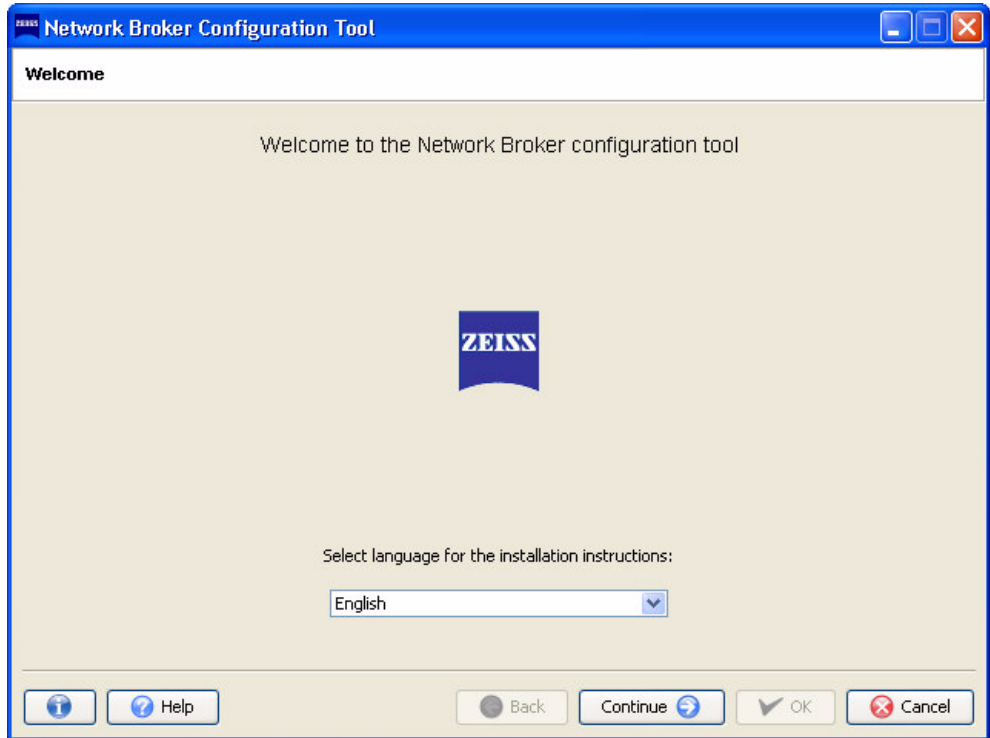


Figure C-7 Configuration Tool Welcome Screen

Windows Security Alert

Upon first launch of the Network Broker a Windows Security Alert will be displayed (Figure C-8) if you have Windows Firewall turned on. You must unblock the JRE from Windows Firewall by selecting the **Unblock** button.



Figure C-8 Windows Security Alert – Windows Firewall

The Java(TM) Platform SE binary program will then be displayed on the Exceptions tab (Figure C-8) of Windows Firewall (Start > Control Panel > Windows Firewall > Exceptions).

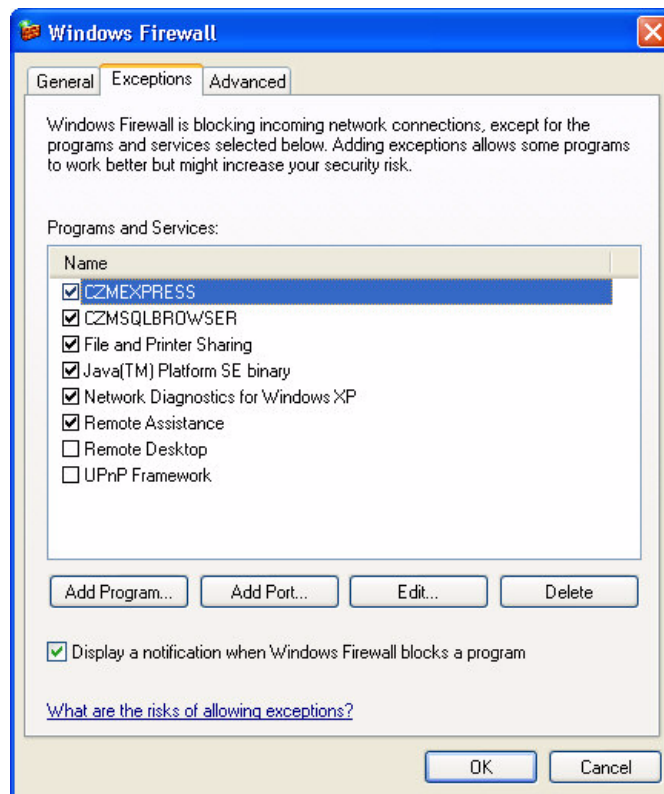
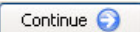





Figure C-9 Windows Firewall Exceptions Tab

General Information

Configuration is done in a series of wizard steps. To navigate between configuration steps, click the **Continue**  and **Back**  buttons.

It is not possible to move on to the next configuration step until the current configuration step has been completed without errors. If an invalid value is entered in an entry field, this field will be displayed in red. In addition, an exclamation mark will be displayed to the left of the field next to the field label.

To complete the configuration, click the **OK**  button in the final configuration step. A message will be displayed, indicating that the configuration data has been saved correctly. If an error occurs during configuration, an error message is displayed.

Select **Cancel**  at any step if you want to cancel the configuration. The configuration will be aborted and the Configuration Tool will close. A backup of the existing configuration will be made automatically. This ensures that the configuration can be aborted at any time without losing the existing (old) configuration data. The existing configuration will be restored automatically.

Version information is available by clicking on the "i"  button on the left.




Configuration Tool Language Selection

The language for the Network Broker Configuration Tool is selected on the WELCOME SCREEN (Figure C-7) by selecting the language from the pop-up menu. This setting is for the Configuration Tool only and does not affect the language used by the Network Broker. The default language depends on the current system locale.

Available languages are:

- English
- German
- French
- Italian
- Spanish

Configuration Tool Help

Help for the current step is available by clicking on the **Help** button  to display the HELP SCREEN.

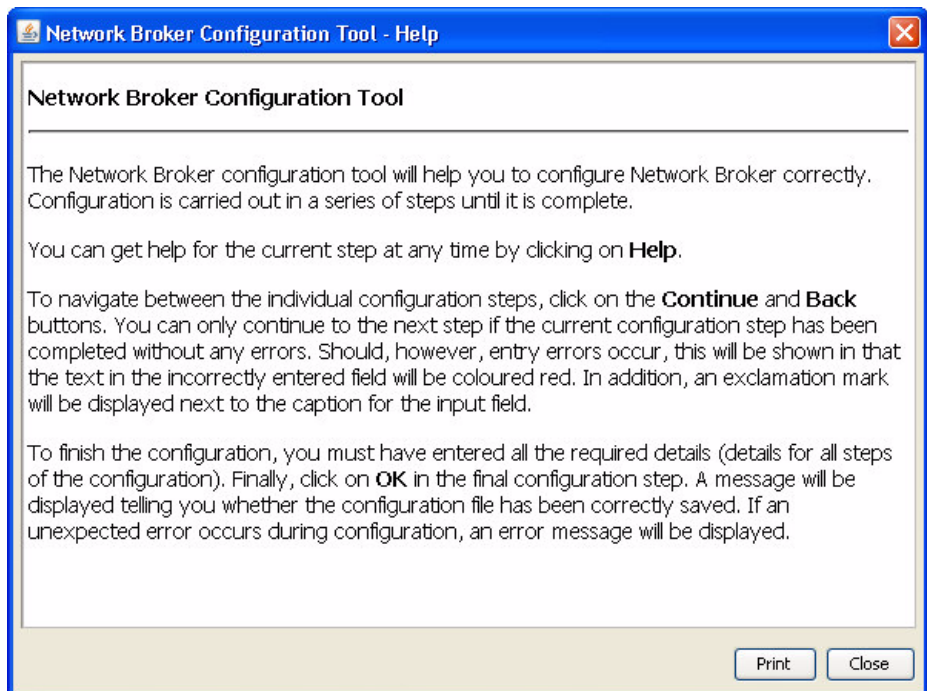




Figure C-10 Help Screen

You can print the help information by clicking **Print**.

Network Broker Configuration Tool Steps

 **IMPORTANT!** The Network Broker Configuration Steps below describe how to configure each step for VISUPAC and a non-specific DICOM System. All screenshots show the VISUPAC Configuration, but callouts (marked with a *****) show where you would enter your DICOM specific configuration information. This specific information should be provided for you by your PACS Administrator or IT person.

Step 1: Select Configuration Type

Clicking **Continue**  on the WELCOME SCREEN (Figure C-7) will display the STEP 1 SCREEN (Figure C-11).

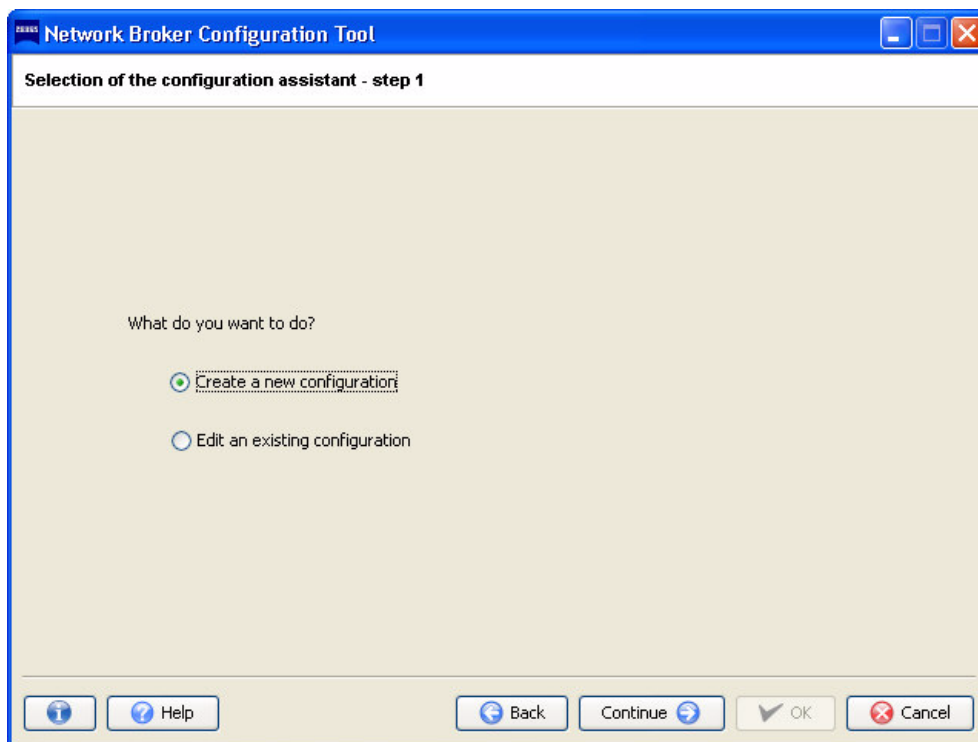


Figure C-11 Step 1 – Create a New Configuration

On the STEP 1 SCREEN, you can either create a new configuration using the Configuration Tool or edit an already existing configuration. Editing an existing configuration is only possible if there is a previously created configuration. Whether you are creating a new configuration or editing an existing configuration, a back-up copy of the existing configuration will be created. This allows you to abort the configuration process at any time without losing the existing (old) configuration data.

To begin a new configuration select **Create a new configuration** to create a new configuration for the ATLAS.

Click **Continue**  to continue to the next step.

Step 2: Device Selection

Clicking **Continue**  on the STEP 1 SCREEN (Figure C-11) will display the STEP 2 SCREEN (Figure C-12).

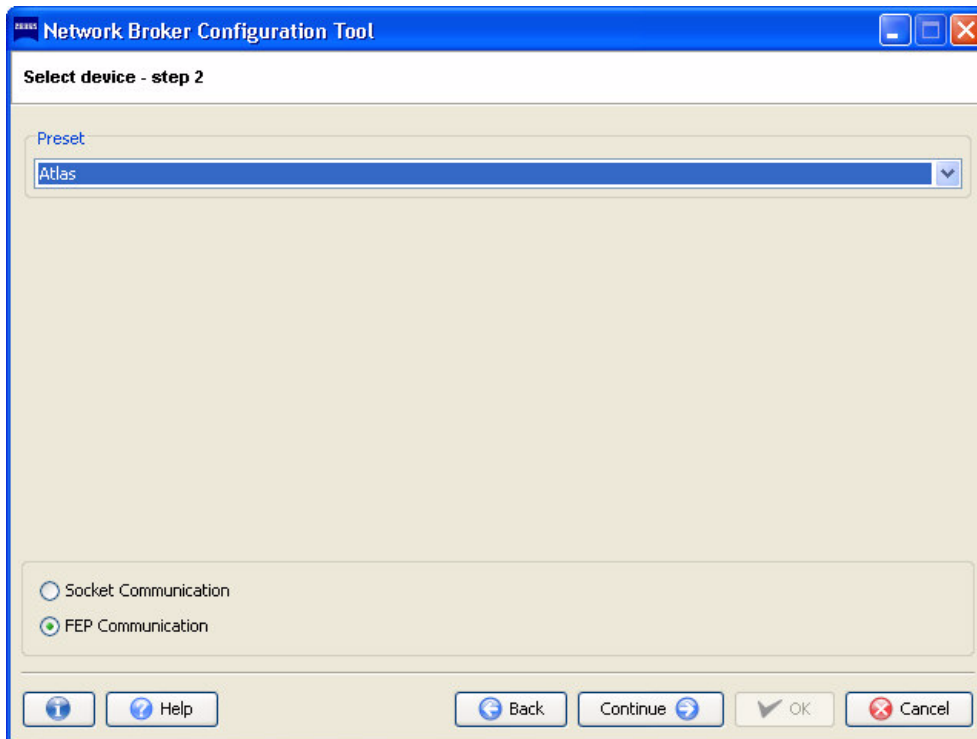


Figure C-12 Step 2 – Device Selection

On the STEP 2 SCREEN, a preset device can be selected. The **Preset** drop-down menu (Figure C-13) lists all the instruments that can be configured using the Configuration Tool.

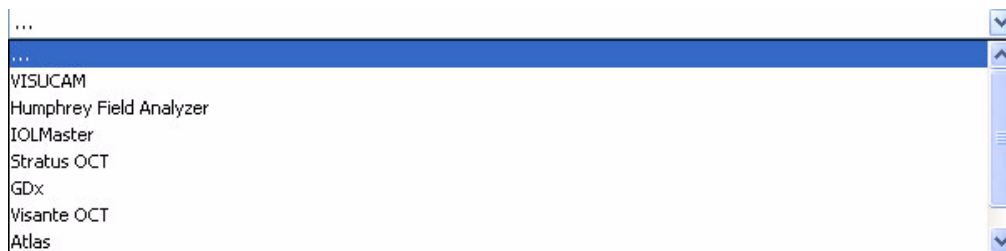



Figure C-13 Preset Device List

After selecting a preset device from the list, the communication protocol for that device can then be specified by clicking on the corresponding radio button: **Socket Communication** or **FEP Communication** (File Export Protocol). It is also possible to simply select a protocol, without selecting a preset device by choosing entry '...' from the list. The generic default configuration will then be started for this protocol.

On the STEP 2 SCREEN, select **Atlas** from the **Preset** drop-down menu. **FEP Communication** is automatically selected as the communication protocol—leave it selected. Click **Continue**  to continue to the next step.

Step 3: DICOM Application Entity Title

Clicking **Continue**  on the STEP 2 SCREEN (Figure C-12) will display the STEP 3 SCREEN (Figure C-14).

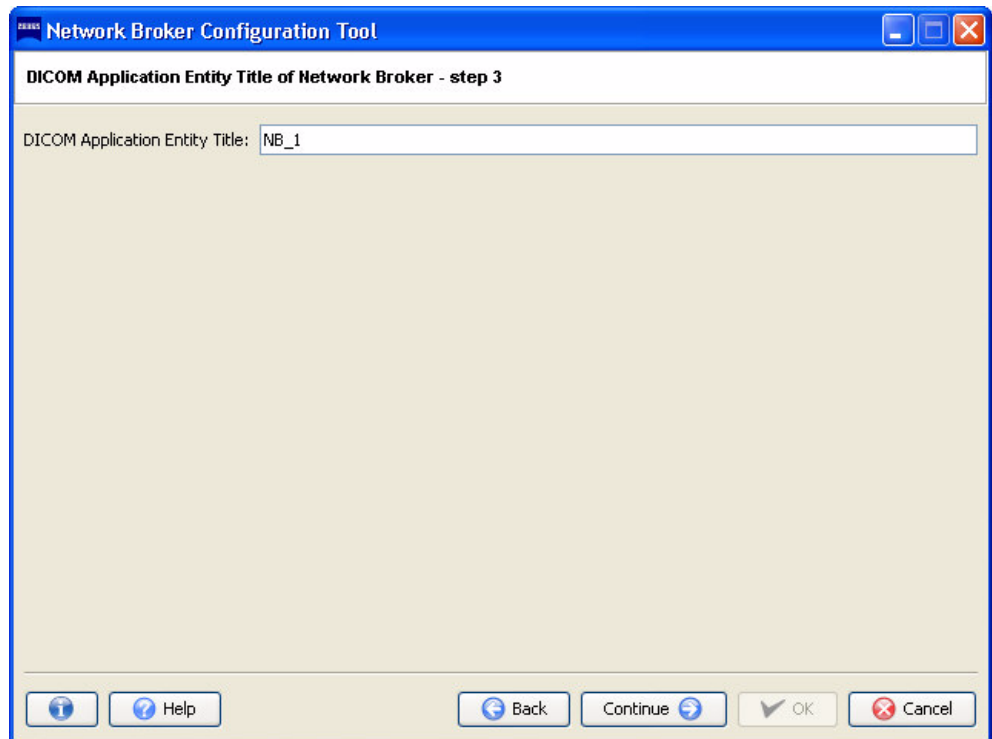


Figure C-14 Step 3 – DICOM Application Entity Title

In the **DICOM Application Entity Title** field, enter **NB_1**—the name of the Network Broker in the DICOM environment.

If invalid characters are entered in the name field, the name in the DICOM Application Entity Title field will be displayed in red and an exclamation mark will be displayed to the left of the field next to the field label.

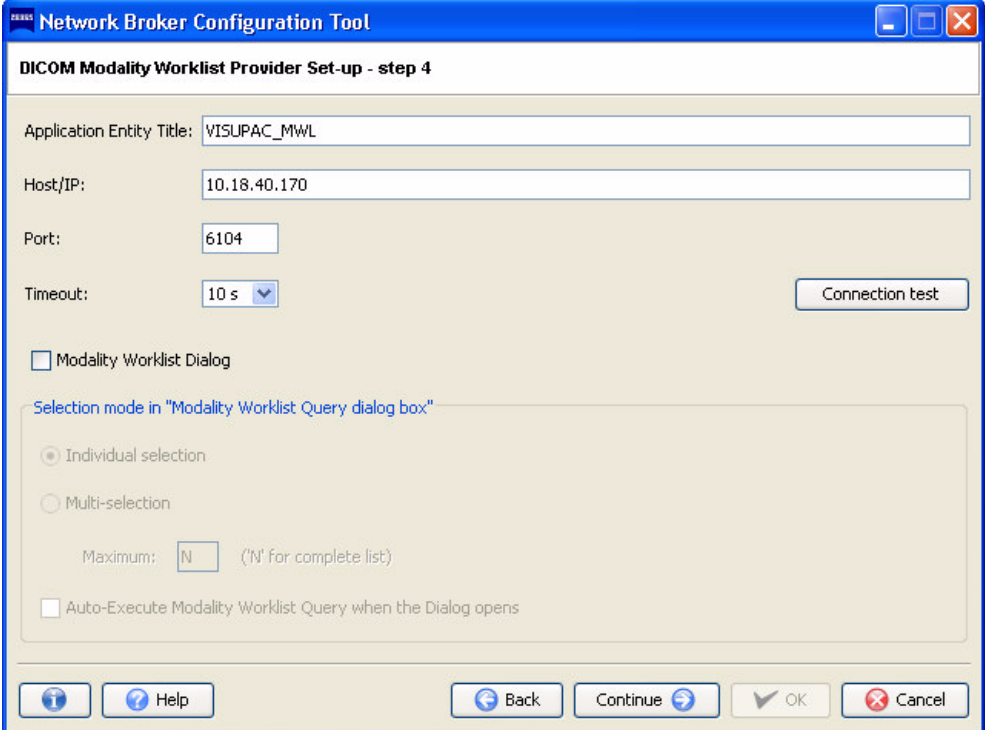
The DICOM Application Entity Title is the name used by Network Broker in the DICOM environment, i.e. which it uses to communicate with both the DICOM Storage Provider and the DICOM Modality Worklist Provider.

Click **Continue**  to continue to the next step.

Step 4: DICOM Modality Worklist Provider Setup

Clicking **Continue**  on the STEP 3 SCREEN (Figure C-14) will display the STEP 4 SCREEN (Figure C-15).

* For a DICOM system, enter the AET Title, Host/IP address, and Port for the DICOM Modality Worklist Provider.



The screenshot shows the 'Network Broker Configuration Tool' window with the title 'DICOM Modality Worklist Provider Set-up - step 4'. The fields are filled with the following values:

- Application Entity Title: VISUPAC_MWL
- Host/IP: 10.18.40.170
- Port: 6104
- Timeout: 10 s

There is a 'Connection test' button to the right of the Timeout field. Below the fields is a checkbox for 'Modality Worklist Dialog' which is unchecked. Underneath is a section titled 'Selection mode in "Modality Worklist Query dialog box"' with two radio buttons: 'Individual selection' (selected) and 'Multi-selection'. Below these is a 'Maximum:' field with 'N' entered and the text '(N for complete list)'. At the bottom of this section is another unchecked checkbox: 'Auto-Execute Modality Worklist Query when the Dialog opens'. The bottom of the window contains a row of buttons: 'Help', 'Back', 'Continue', 'OK', and 'Cancel'.

Figure C-15 Step 4 – DICOM Modality Worklist Provider Setup

For VISUPAC, enter **VISUPAC_MWL** in the **Application Entity Title** field.

For your DICOM system, enter the name of the DICOM Modality Worklist Provider (MWL) in the **Application Entity Title** field. This is the name by which the DICOM Modality Worklist Provider is recognized and addressed in the DICOM environment. This should be provided for you by your PACS Administrator or IT person.

For VISUPAC and your DICOM system, enter the address and port for the DICOM Modality Worklist Provider in the **Host/IP** and **Port** fields. The **Timeout** field is used to set the time interval to be assigned to the provider—it can be left at 10 seconds.

Verify that the **Modality Worklist Dialog** checkbox is left unchecked.

Connection Test

After entering the Host/IP and Port number, the connection to this Host can be tested.

Ensure that you are physically connected to the host and that the application will not be blocked by a firewall. To carry out the test, click the **Connection test** button. This will open a new window, displaying the status of the connection test. During the connection test, a socket connection to the specified host and port is established. After that, a DICOM association is opened to test whether the peer system acts as a Modality Worklist Provider. If the system is able to connect correctly to the address given, a message will be displayed indicating that the connection test was successful.

If either no socket connection could be established or the peer system isn't a DICOM Modality Worklist provider, an error message is displayed (Figure C-16).

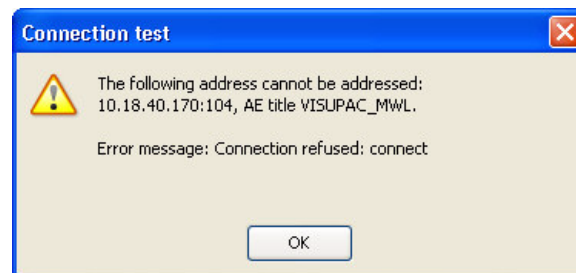





Figure C-16 Connection Test Failure

Once you have filled in all the fields, click **Continue**  to continue to the next step, or click **Back**  to return to the previous step.

If you do not perform a connection test, a dialog will be displayed when you click **Continue**  (Figure C-17).

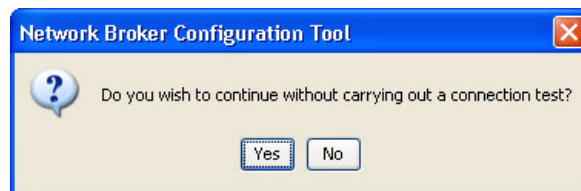


Figure C-17 Connect Test Dialog

Select **Yes** to continue to the next step, or **No** to remain on the STEP 4 SCREEN and then perform a connection test.

Step 5: DICOM Storage Provider Setup

Clicking **Continue**  on the STEP 4 SCREEN (Figure C-15) will display the STEP 5 SCREEN (Figure C-18).

* For a DICOM system, enter the AET Title, Host/IP address, and Port for the DICOM Storage Provider.

* For a DICOM system, select **Encapsulated PDF** or **Multi-Frame Grayscale Byte Secondary Capture**.

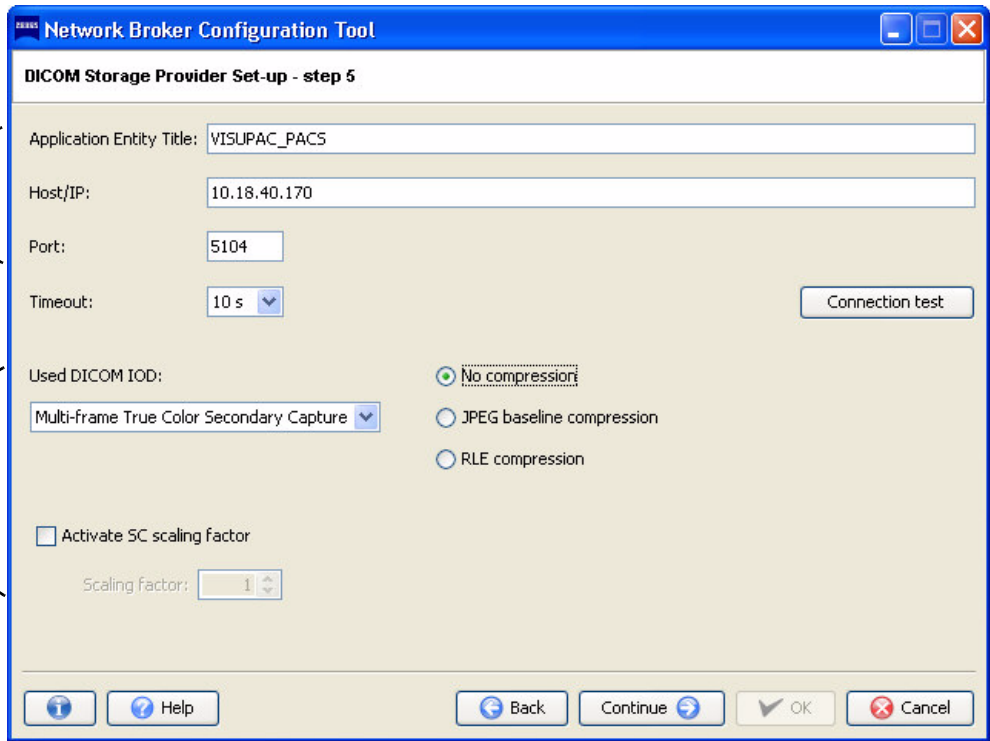


Figure C-18 Step 5 – DICOM Storage Provider Setup

For VISUPAC, enter **VISUPAC_PACS** in the **Application Entity Title** field.

For your DICOM system, enter the name of the DICOM Storage Provider in the **Application Entity Title** field. This is the name by which the DICOM Storage Provider is recognized in the DICOM environment. Network Broker will address the DICOM Storage Provider using this name. This should be provided for you by your PACS Administrator or IT person.

For VISUPAC and your DICOM system, enter the address for the DICOM Storage Provider in the **Host/IP** field. For VISUPAC, enter **5104** in the **Port** field. For your DICOM system, enter the port for the DICOM Storage Provider in the **Port** field. The **Timeout** field is used to set the time interval to be assigned to the provider—it can be left at 10 seconds.

For your DICOM system, in the **Used DICOM IOD** drop-down menu, select **Encapsulated PDF** or **Multi-frame True Color Secondary Capture**. If you selected **Multi-frame True Color Secondary Capture**, select a compression level radio button: **No compression**, **JPEG baseline compression**, or **RLE compression**. For Encapsulated PDF, no compression is available, because the compression is already done inside the PDF document.

The scaling factor determines whether and to what degree the image saved in DICOM is to be scaled down in comparison with the original. It is not available for PDF documents. To activate the scaling factor, check the **Activate SC scaling factor** checkbox and select a scaling factor in the entry box (from .1 to 1, where .1 is 10% and 1 is 100%).

For VISUPAC, select **Multi-frame True Color Secondary Capture, No compression**, and leave the **Activate SC scaling factor** unchecked.

Connection Test

After entering the Host/IP and Port number, you can now test the connection to this Host.

Ensure that you are physically connected to the host and that the application will not be blocked by a firewall. To run the test, click on **Connection test**. This will open a new window, displaying the status of the connection test. During the test, a socket connection to the specified host and port is established. If this is successful, a DICOM association is opened to check if the peer system is a DICOM Storage SCP and accepts the selected combination of DICOM IOD and compression.

If the system is able to connect correctly to the address given, a message will be displayed indicating that the connection test was successful.

If either no socket connection could be established, the peer system isn't a DICOM Storage SCP, or for another reason, an error message is displayed (Figure C-19).

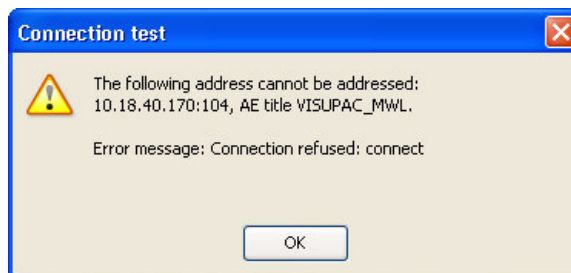


Figure C-19 Connection Test Failure

Common error messages coming from the peer system could be:

- "Abstract syntax not supported" if the selected IOD is not supported by it.
- "Transfer syntax not supported" if the selected compression isn't supported.

Once you have filled in all the fields, click **Continue** to continue to the next step, or click **Back** to return to the previous step.

If you do not perform a connection test, a dialog will be displayed when you click **Continue** (Figure C-20).

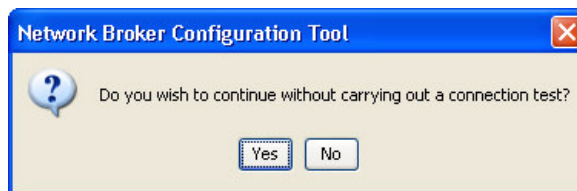


Figure C-20 Connect Test Dialog

Select **Yes** to continue to the next step, or **No** to remain on the STEP 5 SCREEN and then perform a connection test.

Step 6: CZM-XML Application Entity Title

Clicking **Continue**  on the STEP 5 SCREEN (Figure C-18) will display the STEP 6 SCREEN (Figure C-21).

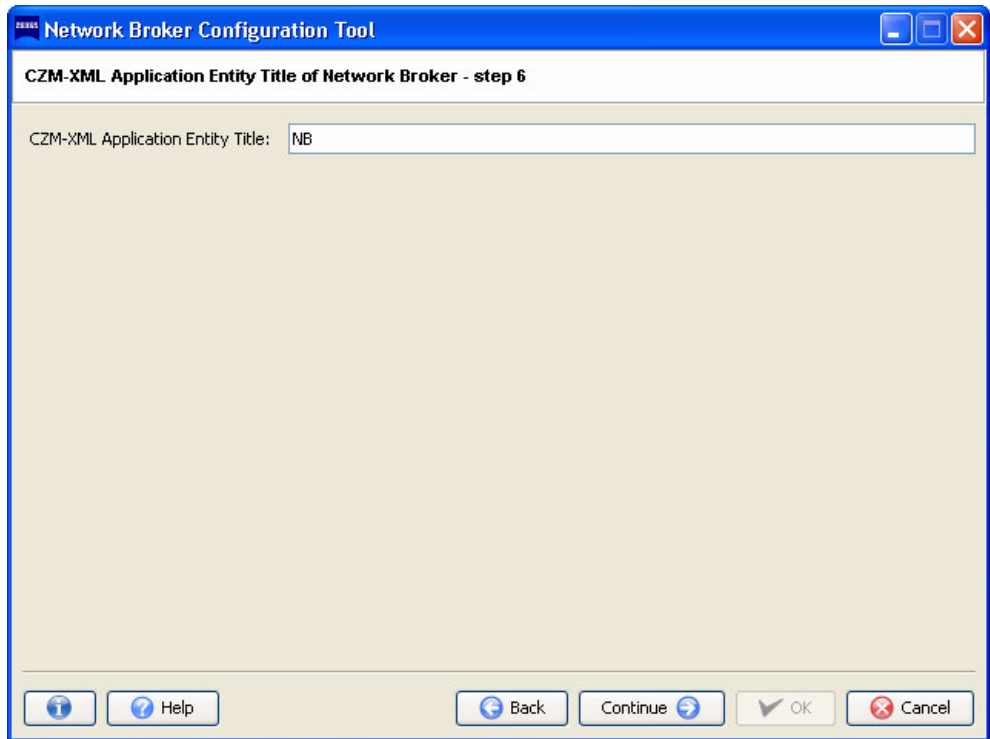


Figure C-21 Step 6 – CZM-XML Application Entity Title

Enter **NB** in the **CZM-XML Application Entity Title** field. It will be addressed by the connected instrument using this name via CZM-XML.

Click **Continue**  to continue to the next step.

Step 7: Instrument Setup

Clicking **Continue**  on the STEP 6 SCREEN (Figure C-21) will display the STEP 7 SCREEN (Figure C-22).

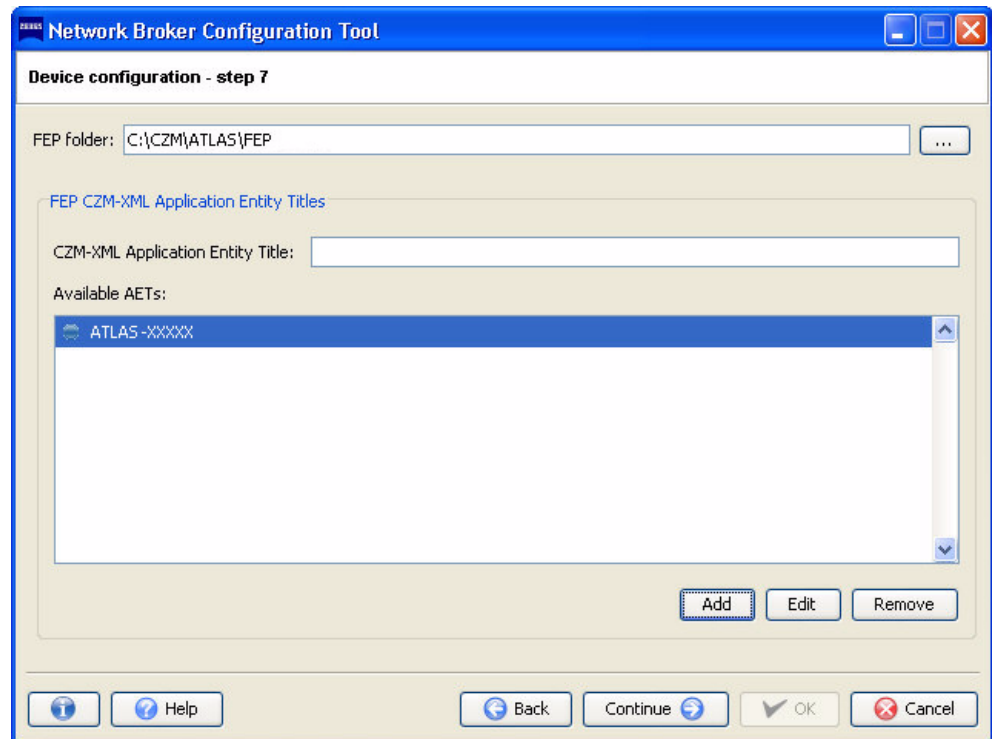


Figure C-22 Step 7 – HFA FEP Communication

In the **FEP folder** field, enter or select the path to the ATLAS DICOM Export Folder. The default path to the ATLAS DICOM Export Folder is **C:\CZM\ATLAS\FEP**.

For VISUPAC, enter the serial number of the ATLAS instrument (ATLAS-XXXXX) in the **CZM-XML Application Entity Title** field. The serial number of your ATLAS can be found on the right side of the ATLAS instrument to the left of the connectors (see Figure 1-8). For a DICOM system, you can enter any name, but it must be unique. Click **Add** to add the AET to the list of Available AETs. There is no reason to add more than one ATLAS Application Entity Titles (AETs). Click **Edit** if you need to edit the ATLAS AET.

Once you have filled in all the fields, click **Continue**  to continue to the next step.

Step 8: Hotkey Setup

Clicking **Continue**  on the STEP 7 SCREEN (Figure C-22) will display the STEP 8 SCREEN (Figure C-23).

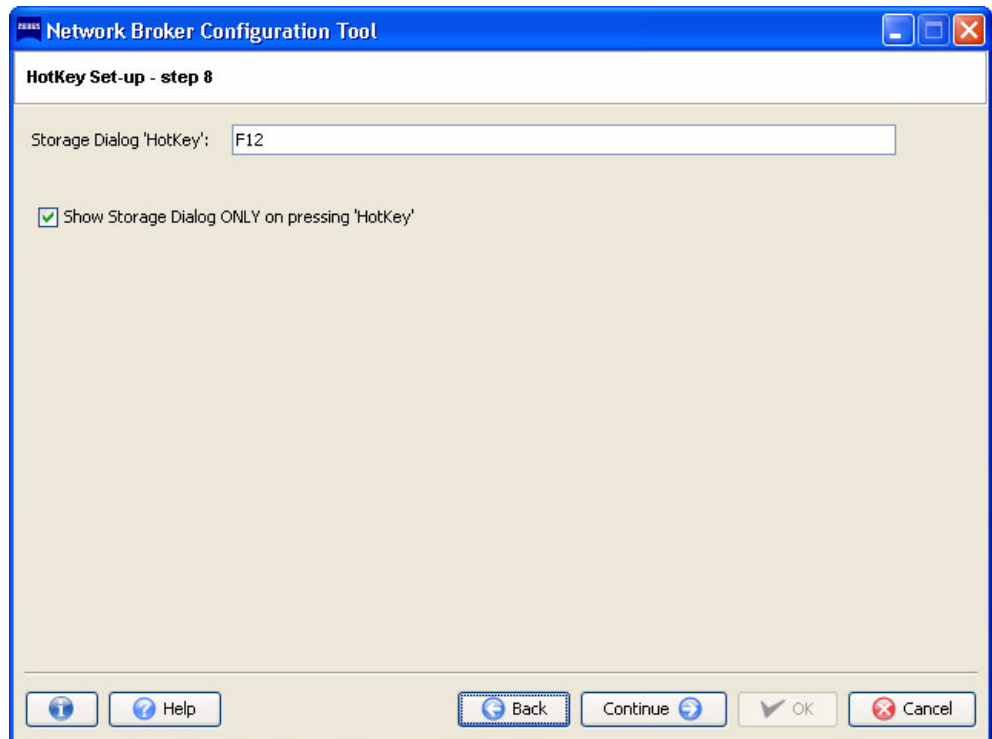
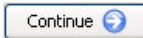



Figure C-23 Step 8 – Keyboard Shortcut Key Setup (Default: F12)

Select the keyboard shortcut key for activating the Network Broker window by pressing a key or function key (or any key combination; e.g., SHIFT-F10, CTL-SHIFT 2, etc.) on the keyboard in the **Storage Dialog 'Hotkey'** field.

The **Show Storage Dialog ONLY on pressing 'Hotkey'** option means that the Storage window will only be activated when the keyboard shortcut key is pressed. If this checkbox is not checked, the Storage window will be displayed in the foreground whenever a storage request is made.

Click **Continue**  to continue to the next step, or click **Back**  to return to the previous step.

Step 9: Language Selection

Clicking **Continue**  on the STEP 8 SCREEN (Figure C-23) will display the STEP 9 SCREEN (Figure C-24).

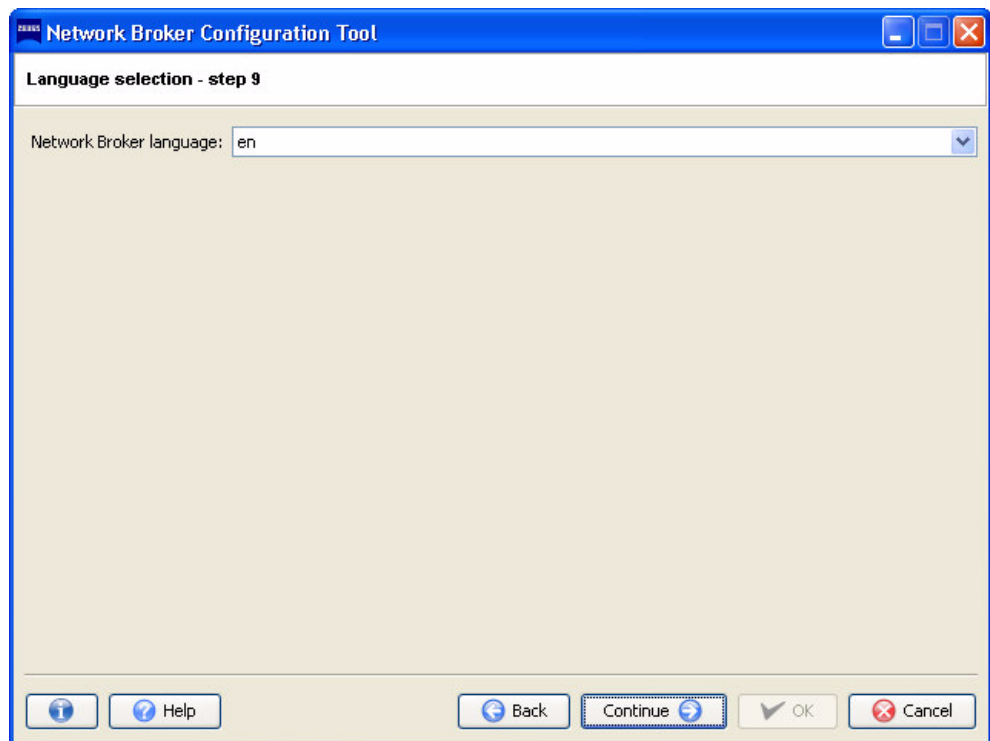


Figure C-24 Step 9 – Language Selection

Select the language for the Network Broker application from the **Network Broker language** drop-down list (Figure C-25). This setting relates only to the language used in the Network Broker itself, and is independent of the language used during setup.

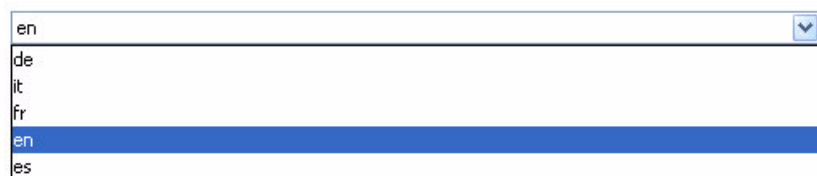
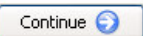



Figure C-25 Network Broker Language List

Available languages are:

- en (English)
- de (German)
- fr (French)
- it (Italian)
- es (Spanish)

Click **Continue**  to continue to the next step, or click **Back**  to return to the previous step.

Step 10: Configuration Complete

Clicking **Continue**  on the STEP 9 SCREEN (Figure C-24) will display the STEP 10 SCREEN (Figure C-26).

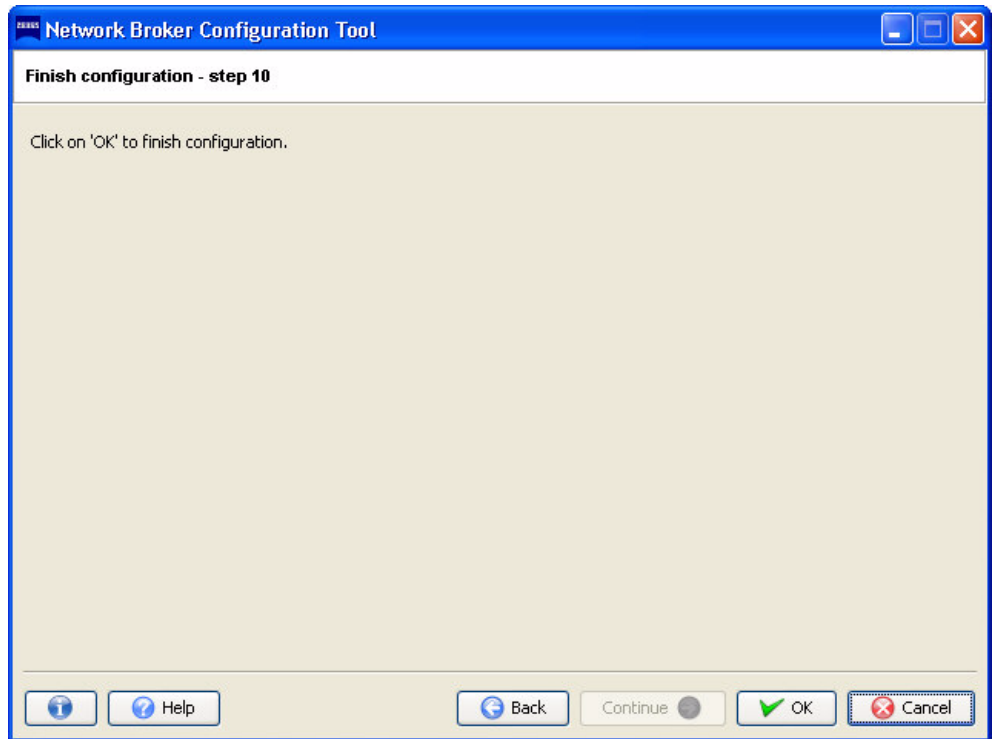



Figure C-26 Step 10 – Finish Configuration

Click **OK**  to save the configuration settings to the configuration file. If the configuration has been completed correctly, the Network Broker Configuration Tool will report a successful configuration and save your settings (Figure C-27).

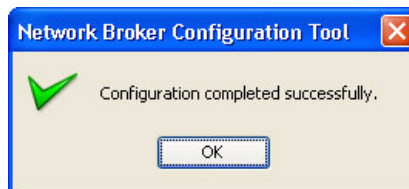


Figure C-27 Configuration Completed Successfully

Click **OK** to close the Network Broker Configuration Tool.



IMPORTANT!: Restart the ATLAS to start the Network Broker Service with the new configuration.

(D) Network Configuration Guide

Chapter Overview

This chapter provides configuration instructions to enable transfer of ATLAS data from an ATLAS instrument to a personal computer (PC) running ATLAS Review Software (an ATLAS Review Station) via network connection. Topics include:

- [Network Capabilities](#), page D-1
- [WARNING: Risks of Internet Connectivity](#), page D-1
- [Security Recommendations](#), page D-2
- [Approved Third Party Hardware and Software](#), page D-5
- [Prohibited Activities](#), page D-5
- [Using the Network File Server](#), page D-5
- [Network File Server System Requirements](#), page D-6
- [Configuration for Export via Preexisting Office Network](#), page D-6
- [Configuration for Direct Network Connection](#), page D-19



Note: Users are responsible for network setup and maintenance, including installation and configuration of all necessary hardware and software. Carl Zeiss Meditec Technical Support is limited to testing network connectivity of the ATLAS System. Technical Support cannot troubleshoot or repair problems with network connectivity.

Network Capabilities

The ATLAS System instrument and ATLAS Review Software are designed for network data transfer. ATLAS supports the following:

- Windows and Novell networks.
- Creation of user accounts
- Networking via a local area network or intranet.
- Users can archive to and retrieve from a network file server.



WARNING: Risks of Internet Connectivity

When connected to the Internet, the ATLAS System may be vulnerable to serious security risks, including viruses and worms that could disable your system or adversely affect its performance. Internet connectivity enables third party software, software drivers and updates to be downloaded to your system, either automatically or intentionally. Installation of any unapproved software, including drivers, could degrade the performance of the instrument and/or lead to corrupted diagnostic or therapeutic information and may void the instrument warranty.



WARNING: When networking the ATLAS System, use only network cables with an unshielded RJ-45 connector. Use of a shielded network connector in the ATLAS System could result in electrical shock to the patient and/or examiner.

Security Recommendations

If the ATLAS System is connected to the Internet, we recommend you use the Windows Automatic Update feature to install all *high-priority* operating system patches and fixes *with the exception of driver and hardware updates*. We also recommend routinely scanning for viruses.

Windows Automatic Update

The default (shipped) and recommended Windows Automatic Update setting and update steps are described below. Note: If you have installed Windows XP SP3 (Service Pack 3), the system will prompt you to turn on/off automatic updates upon reboot. Select **Yes** and then follow the configuration steps below to configure Windows Automatic Update to the recommended setting.

1. Select **Start > Settings (Classic Start Menu only) > Control Panel > Automatic Updates** to display the AUTOMATIC UPDATES window.
2. Select **Notify me but don't automatically download or install them** as shown in [Figure D-1](#) below.

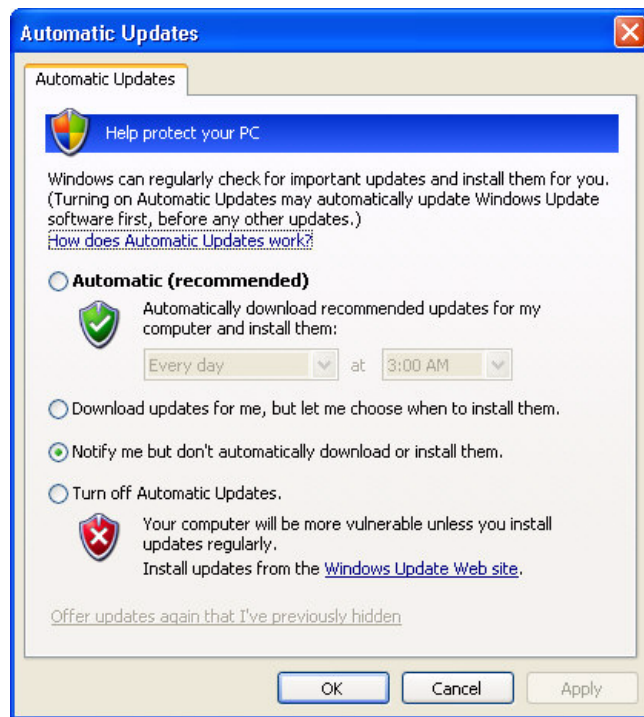
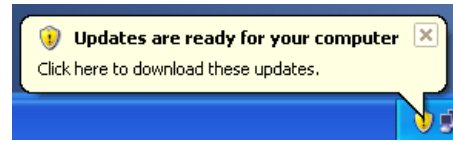


Figure D-1 Automatic Updates Window (Recommended Setting)

3. Select **OK** to save your setting and close the window.

4. When new updates become available, click on the text prompt shown below



or later on the yellow shield icon () in the Windows Taskbar to choose the updates to download.

5. Review the updates shown in the AUTOMATIC UPDATES window and unselect any driver or hardware update. See [Figure D-2](#) below where a hardware driver update has been unselected.



WARNING: All non-high-priority updates (driver, hardware or optional updates, etc.) should not be installed.

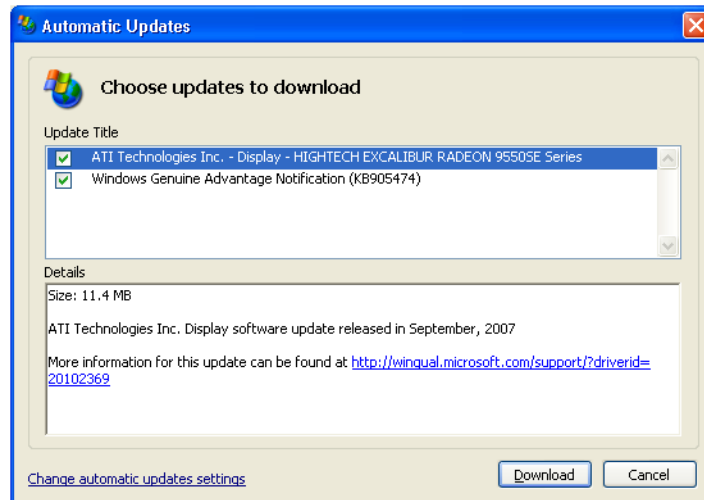


Figure D-2 Automatic Updates Window (Choose updates to download)

6. Select **Download** to begin downloading the selected updates.

7. If you unselect an update, a HIDE UPDATES window will be displayed. Click to display a green checkmark next to **Don't notify me about these updates again** as shown in [Figure D-3](#) below and then select **OK**.

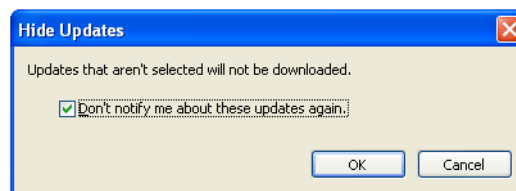
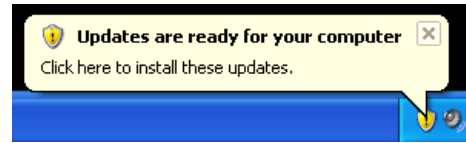



Figure D-3 Hide Updates Window

8. When the downloads are complete for the selected updates, click on the text prompt shown below



- or later on the yellow shield icon () in the Windows Taskbar to install the updates.
9. An AUTOMATIC UPDATES window will be displayed prompting for an installation method as shown in Figure D-4 below.

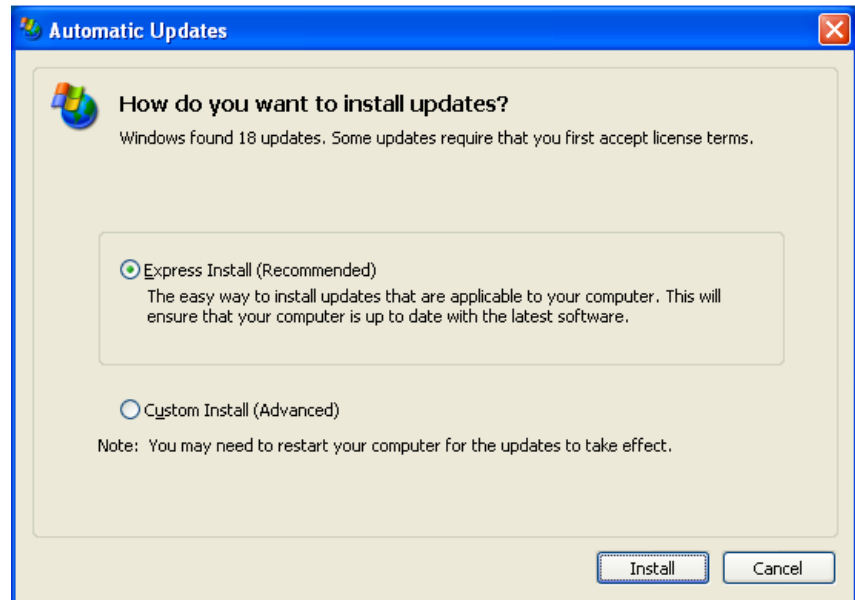


Figure D-4 Automatic Updates Window (How do you want to install updates?)

10. Select **Express Install** and then **Install** to install all of the downloaded updates.
11. Depending on the update(s), you may need to first accept license terms and/or restart the ATLAS computer after installation is complete.

Anti-Virus Software

The software has been tested with McAfee Virus Scan Plus and Kaspersky Anti-Virus 2009, but anti-virus software does not come with the ATLAS System pre-installed. We recommend that you disable automatic scanning, because it may interfere with instrument operation. Please refer to the ATLAS System section of our website (www.meditec.zeiss.com/atlas) for the current list of approved anti-virus software.



Note: Do not perform virus scanning while acquiring exam data.

Approved Third Party Hardware and Software

Please refer to the ATLAS System section of our website (www.meditec.zeiss.com/atlas) for the current list of approved hardware and software. If you wish to use a third party device, seek technical support from the device manufacturer. Repairs necessitated by the attempt to use a non-approved device are not covered under warranty.



Note: Carl Zeiss Meditec does not provide technical support for the use of unapproved third party hardware or software.

Prohibited Activities

The following activities are **prohibited** using the ATLAS System instrument.



WARNING: Attempting to perform these prohibited activities may void your ATLAS warranty and may result in damage to your ATLAS System. Carl Zeiss Meditec is not responsible for software upgrades or repairs necessitated by the attempted performance of the following prohibited activities.

- Do not relocate the ATLAS System database to a network file server.
- Do not share the ATLAS System printer on the network if the printer is connected to the USB port.

Using the Network File Server

Using a network file server is recommended in offices that have a local area network, especially if you have multiple ATLAS instruments. Once you have set up the instrument(s) on the network, you can use the network file server for routine archiving.

Set Up Network Server



Note: Configuring the server and the instrument for data transfer to a network file server should be attempted only by a network administrator or system administrator.



Note: If you attempt a data transfer function when the network is down or the server is down, the function will fail and the instrument will notify you that a connection could not be established.

Network File Server System Requirements

Operating System

- Windows 2003 Server®
- Windows 2003 Small Business Server

System Requirements

If you plan to use a network file server it must meet the following minimum requirements:

- Processor: 800MHz processor or faster
- Memory: 256 MB RAM
- NTFS drive partition(s) for ATLAS data. ATLAS data is compatible only with NTFS.
- 100GB available disk space for data storage (should be expandable)
- Network interface card 100 or 1000 Mbps
- External Hard Drive or Tape backup unit for offsite disaster protection



Note: It is the user's responsibility to protect their exam data from loss by frequent backup of the network server. Backup media should be of archival quality, and the media should be stored in a secure, remote location.



WARNING: Failure to backup the network file server may result in the loss of medical exam data.

Network File Server Recommendations

In addition to the minimum requirements listed above, we recommend the following for the network file server:

- A mirrored RAID array for data storage-strongly recommended.
- An uninterruptible power supply (UPS)-strongly recommended.
- The file server must be started prior to networked ATLAS instruments and PCs running ATLAS Review Software, and shut down after ATLAS instruments and PCs running ATLAS Review Software.



It is strongly recommended that the file server not be used for interactive programs, such as web browsing or word processing.

Configuration for Export via Preexisting Office Network

This section explains how to configure the ATLAS and a Review Station PC to communicate via your pre-existing office network (a local area network or LAN). To do this, the ATLAS and the Review Station PC each must be connected to the office network by a standard network patch cable. It is the user's responsibility to install the necessary cables.

Most networks use a DHCP server to automatically assign an IP address to the Review Station PC and the ATLAS instrument. If your network uses static IP addresses, contact your network administrator to have the device added. If no network exists, see [Configuration for Direct Network Connection](#) on page D-19.

Install the Network Cable

1. For both the ATLAS and the Review Station PC, plug one end of a standard network patch cable into the computer Ethernet port. Plug the other end of the cable into the office network outlet.

Create a Common Administrator User Account



Note: If you are using a file server to transfer ATLAS data, create and use a user account with the same username and password on all three network endpoints: the ATLAS instrument, the network file server and the Review Station PC. Follow the instruction below.

1. On the ATLAS, create a new administrator account for use as the default account.
2. On the Review Station (and the server), create and always use a new Computer administrator account with the same username and password as on the ATLAS.

To access user account settings:

- Click **Start > Control Panel > User Accounts**.



Note: Do not edit nor delete the **Tech Support** account, which is to be used only by Carl Zeiss Meditec technical support personnel. If you change or delete this account, CZM technical support may be unable to restore access to your system, in case you lose the password for the Administrator account. In this case, a service call would be required to replace the system hard drive.

Create a Shared Folder

To configure an ATLAS 9000/993/995 or Windows XP Review Station, see [Create a shared folder on a Windows XP Review Station](#) on page D-8.

To configure a Windows Vista Review Station, see [Create a shared folder on a Windows Vista Review Station](#) on page D-11.

Create a shared folder on a Windows XP Review Station

1. Create a local folder on the Review Station for exported data. The new folder can be created in any available path on the hard disk drive. In the example below, the new folder was created by right-clicking on the Windows desktop, and then selecting **New > Folder** (Figure D-5).

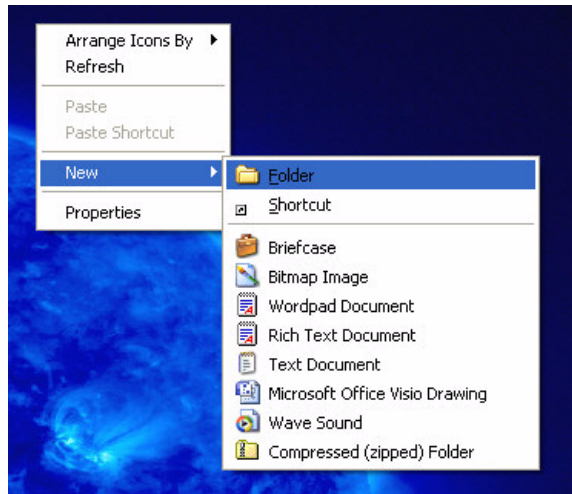


Figure D-5 Right-click on Desktop, Select New > Folder

Continuing the example, the new folder created on the Windows desktop was named **Netshare** (Figure D-6).



Figure D-6 Right-click New Folder, Select Sharing and Security

2. Right click on the new folder, and then select **Sharing and Security...** as shown in Figure D-6.

3. If you have Simple File Sharing enabled, the following Netshare Properties dialog opens to the Sharing tab (Figure D-7).

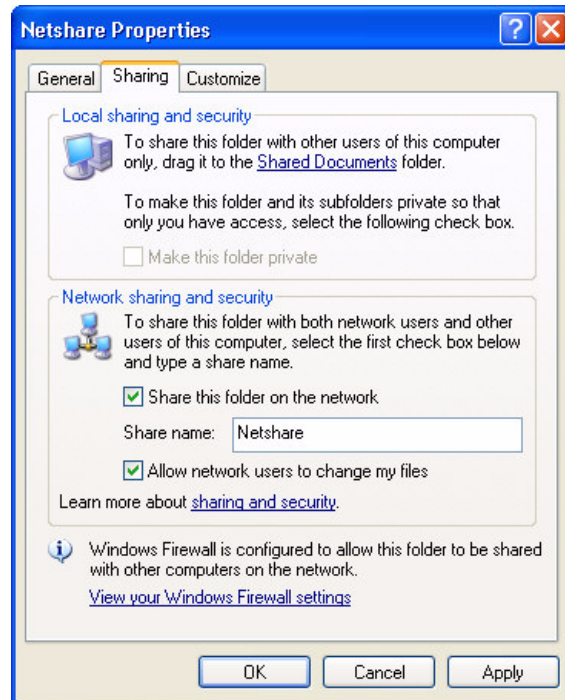


Figure D-7 Netshare Properties (Simple File Sharing ON)

If you have Simple File Sharing disabled, the following Netshare Properties dialog opens to the Sharing tab (Figure D-8).

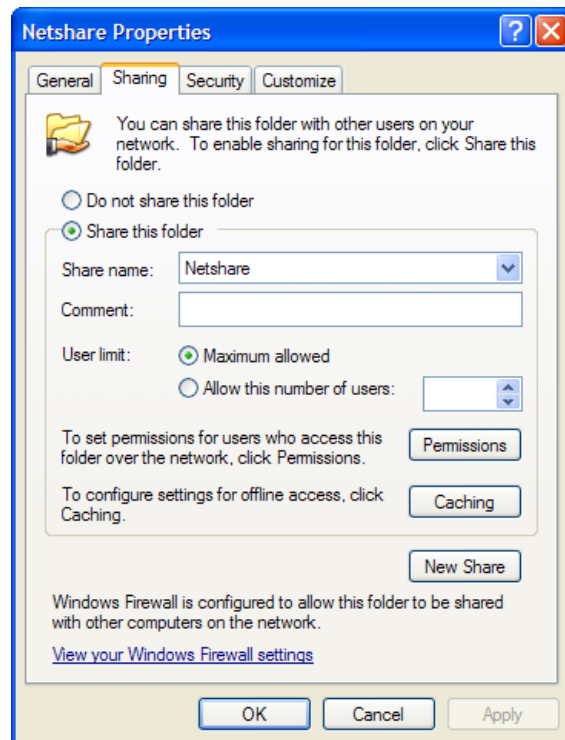


Figure D-8 Netshare Properties (Simple File Sharing OFF)

4. If you see the Netshare Properties dialog from [Figure D-7](#), select **Share this folder on the network** and **Allow network users to change my files** as shown in [Figure D-7](#).
5. If you see the Netshare Properties dialog from [Figure D-8](#), select the **Permissions** button. The Permissions for Netshare dialog opens ([Figure D-9](#)).

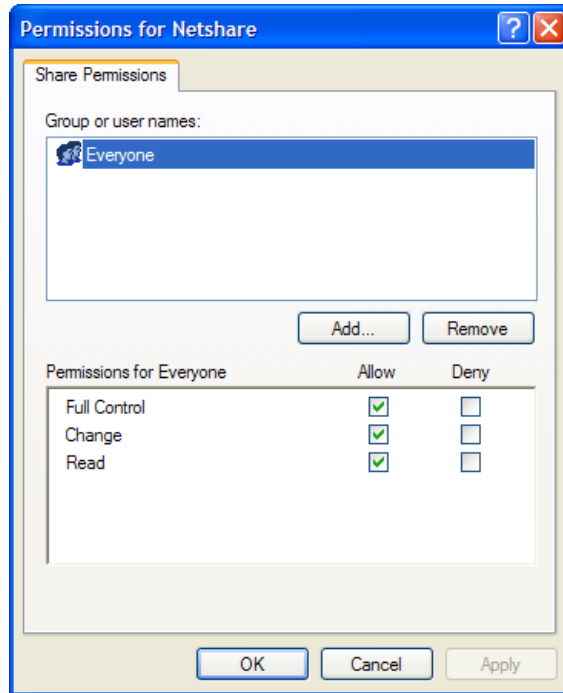


Figure D-9 Permissions for Netshare Dialog

Select the **Allow** checkbox for **Full Control** as shown in [Figure D-9](#) so that all checkboxes for Allow are checked. Click **OK** to save changes and close the Permissions for Netshare dialog.



Note: You can change the **Share Name** if desired. The default share name is the same as the folder name. We recommended you use the default share name.

6. Click **OK** to save changes and close the Netshare Properties dialog.
7. The Netshare folder now displays a shared folder icon ([Figure D-10](#)).



Figure D-10 Netshare Folder Icon (Shared)

Create a shared folder on a Windows Vista Review Station

1. Create a local folder on the Review Station for exported data. The new folder can be created in any available path on the hard disk drive. In the example below, the new folder was created by right-clicking on the Windows desktop, and then selecting **New > Folder** (Figure D-11).

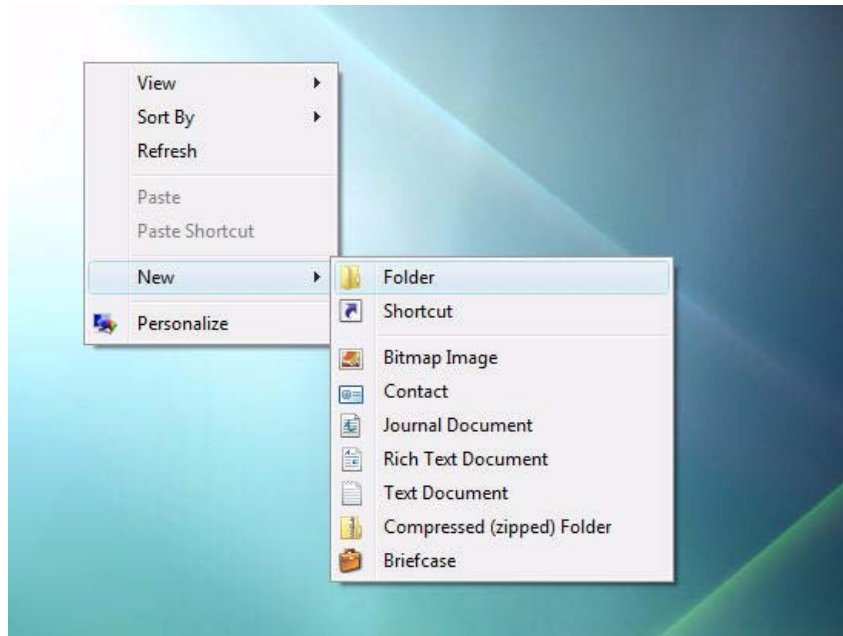


Figure D-11 Right-click on Desktop, Select New > Folder

Continuing the example, the new folder created on the Windows desktop was named **Netshare** (Figure D-12).

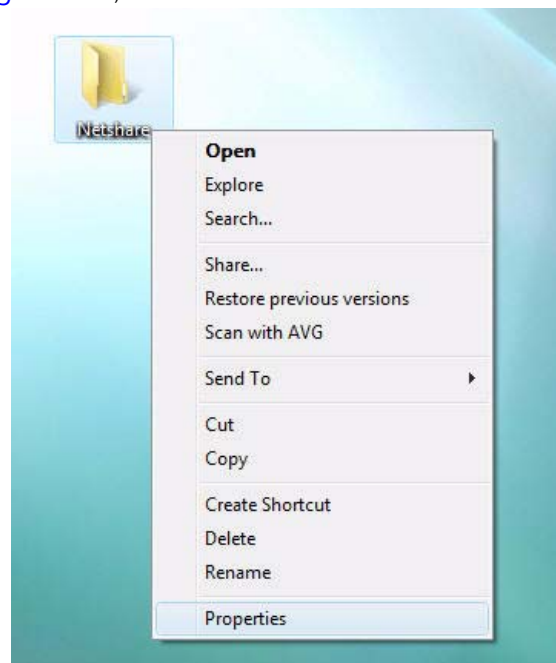


Figure D-12 Right-click New Folder, Select Properties

2. Right click on the new folder, and then select **Properties** as in [Figure D-12](#). Select the **Sharing** tab on the Netshare Properties dialog ([Figure D-13](#)).

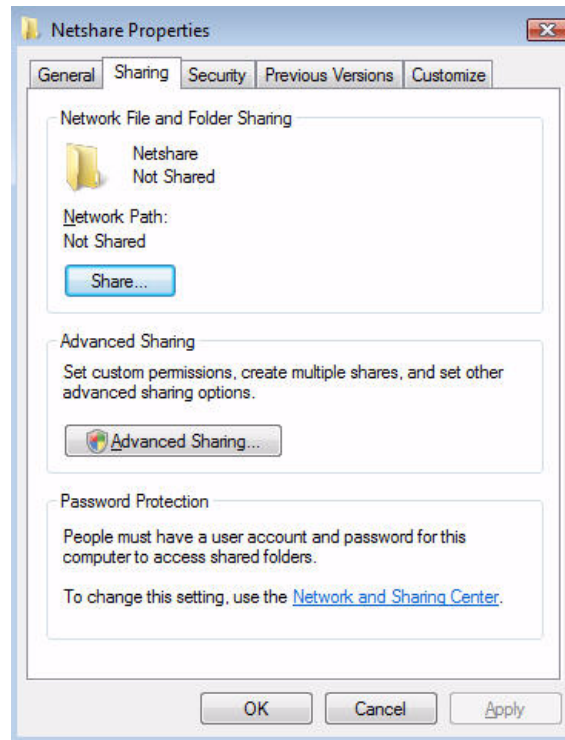


Figure D-13 Netshare Properties – Sharing Tab

3. Select the **Advanced Sharing...** button. If you have User Account Control enabled you will see a **User Account Control – Windows needs your permission to continue** dialog. Click **Continue** to proceed. The Advanced Sharing dialog opens ([Figure D-14](#)).

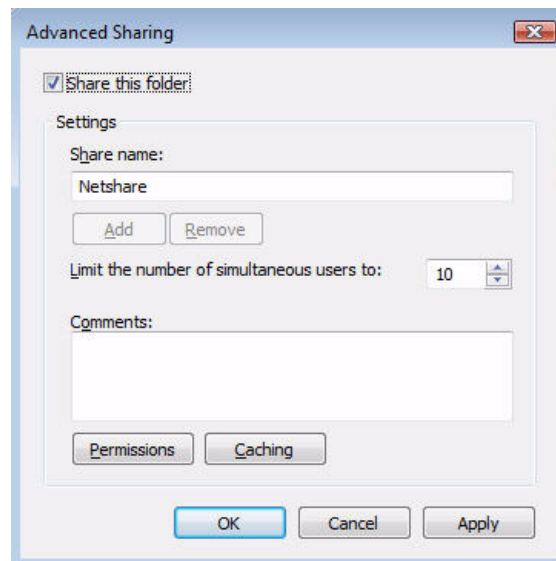


Figure D-14 Advanced Sharing Dialog



Note: You can change the **Share Name** if desired. The default share name is the same as the folder name. We recommended you use the default share name.

4. Select the **Permissions** button. The Permissions for Netshare dialog opens (Figure D-15).

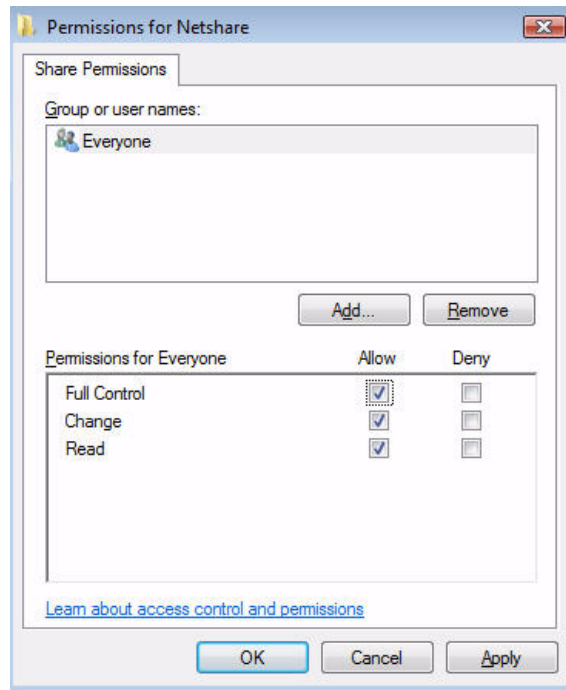


Figure D-15 Permissions for Netshare Dialog

5. Select the **Allow** checkbox for **Full Control** as shown in Figure D-15 so that all checkboxes for Allow are checked.
6. Click **OK** to save changes and close the Permissions for Netshare dialog.
7. Click **OK** to close the Advanced Sharing dialog.
8. Click **OK** to close the Netshare Properties dialog.
9. The Netshare folder now displays a shared folder icon (Figure D-16).

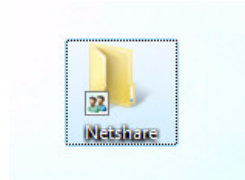


Figure D-16 Netshare Folder Icon (Shared)

Map a Drive Letter to a Shared Folder in Windows XP

The following instructions describe how to map a drive letter to a shared folder in Windows XP. This could be used to map a drive letter on an ATLAS 9000 to a Review Station PC shared folder for data export, or to map a drive letter on a Review Station PC to an ATLAS 993/995 shared database folder for data import.

1. Right-click on the **My Computer** icon, and then select **Map Network Drive...** as in [Figure D-17](#).



Figure D-17 Right-click My Computer, Select Map Network Drive

The Map Network Drive dialog appears ([Figure D-18](#)).

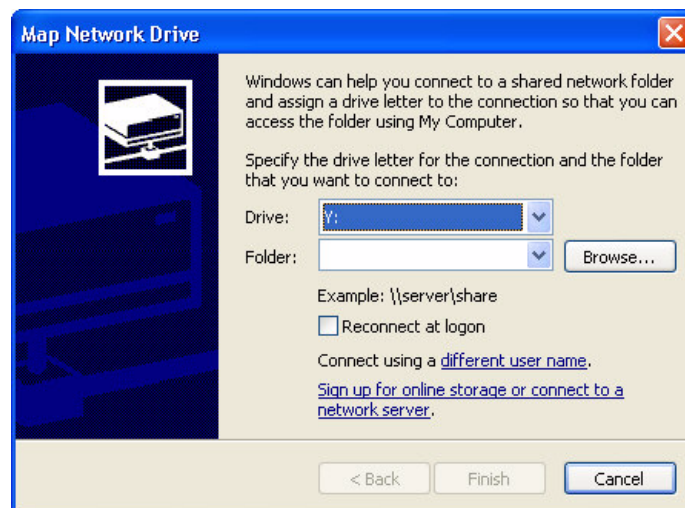


Figure D-18 Map Network Drive Dialog

2. Click the down-arrow next to the Drive field, and select an unused drive letter from the list.

3. In the Folder field, enter the computer name and shared folder name. Use the format “\computer name\shared folder name” as shown below (Figure D-19). In this example, the computer name is **station1** and the shared folder name is **netshare**. The names are not case-sensitive.

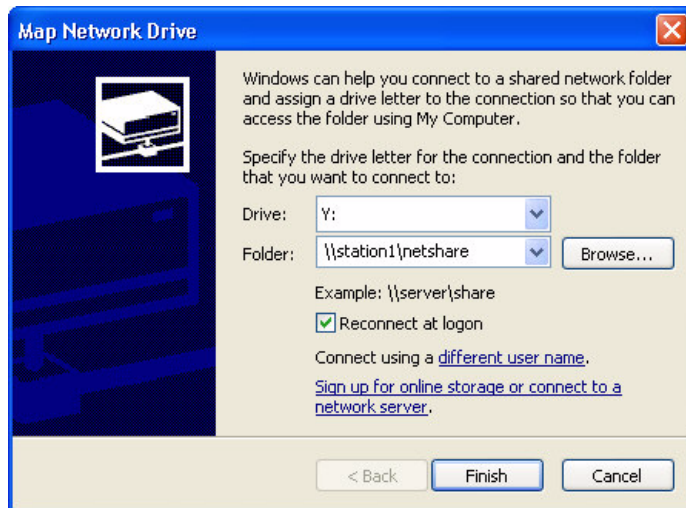






Figure D-19 Enter the Review Station Computer Name and Shared Folder Name

-  **Note:** To find the Review Station computer name: Select **Start**, right-click **My Computer** and select **Properties**. Then select **Computer Name** to view the computer name.
-  **Note:** To find the ATLAS 993/995 computer name: Select **Start > Settings > Control Panel > Network**. Then select the **Identification** tab to view the computer name.
-  **Note:** You must use two backslashes before the computer name as shown in the example.
-  **Note:** You must select the **Reconnect at logon** checkbox to allow the system to reconnect to the shared drive each time Windows starts.

4. Click **Finish** to save your changes and close the Map Network Drive dialog.

Map a Drive Letter to a Shared Folder in Windows Vista

The following instructions describe how to map a drive letter to a shared folder in Windows Vista. This could be used to map a drive letter on an ATLAS 9000 to a Review Station PC shared folder for data export, or to map a drive letter on a Review Station PC to an ATLAS 993/995 shared database folder for data import.

1. Select **Start > Computer**. Right-click **Computer** and select **Map Network Drive...** as shown in [Figure D-20](#).

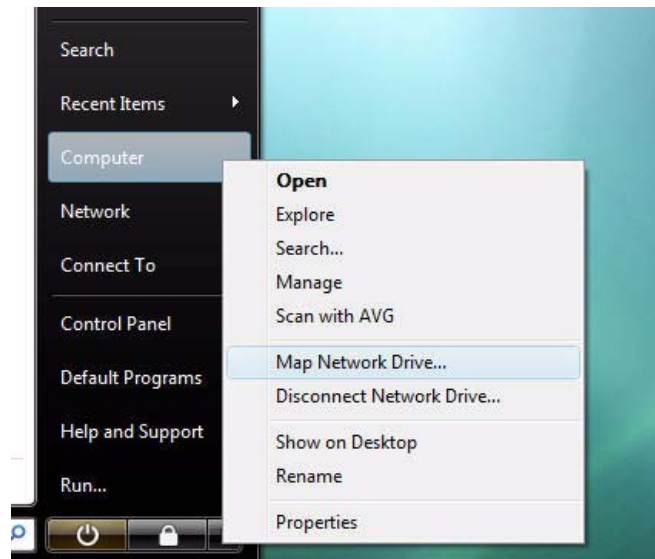


Figure D-20 Right-click Computer, Select Map Network Drive

The Map Network Drive dialog appears ([Figure D-21](#)).

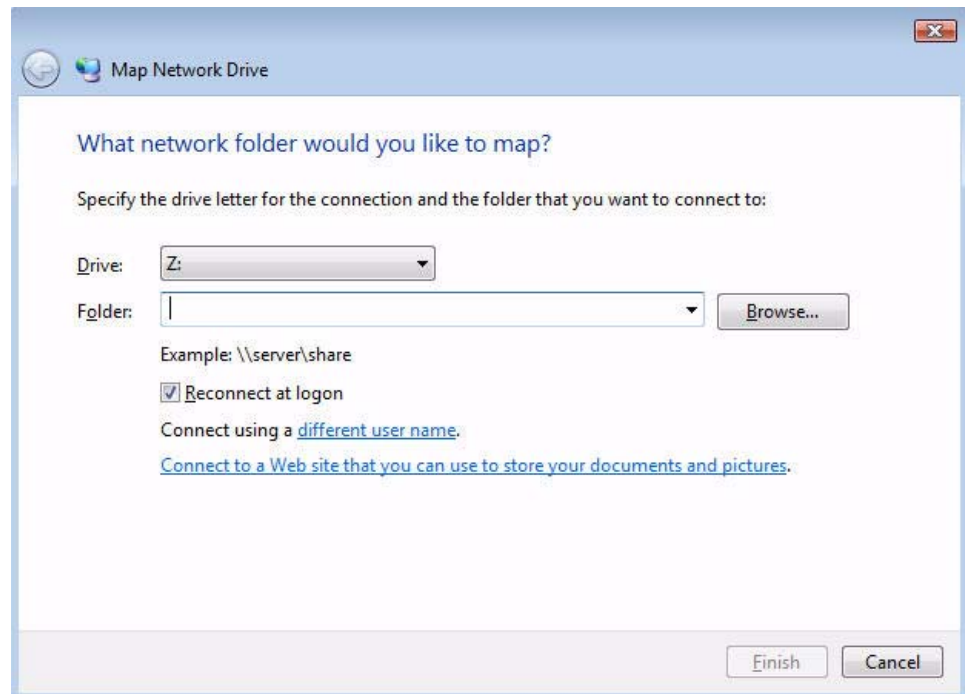


Figure D-21 Map Network Drive Dialog

2. Click the down-arrow next to the Drive field, and select an unused drive letter from the list.
3. In the Folder field, enter the computer name and shared folder name. Use the format “\computer name\shared folder name” as shown below (Figure D-22). In this example, the computer name is **station1** and the shared folder name is **netshare**. The names are not case-sensitive.

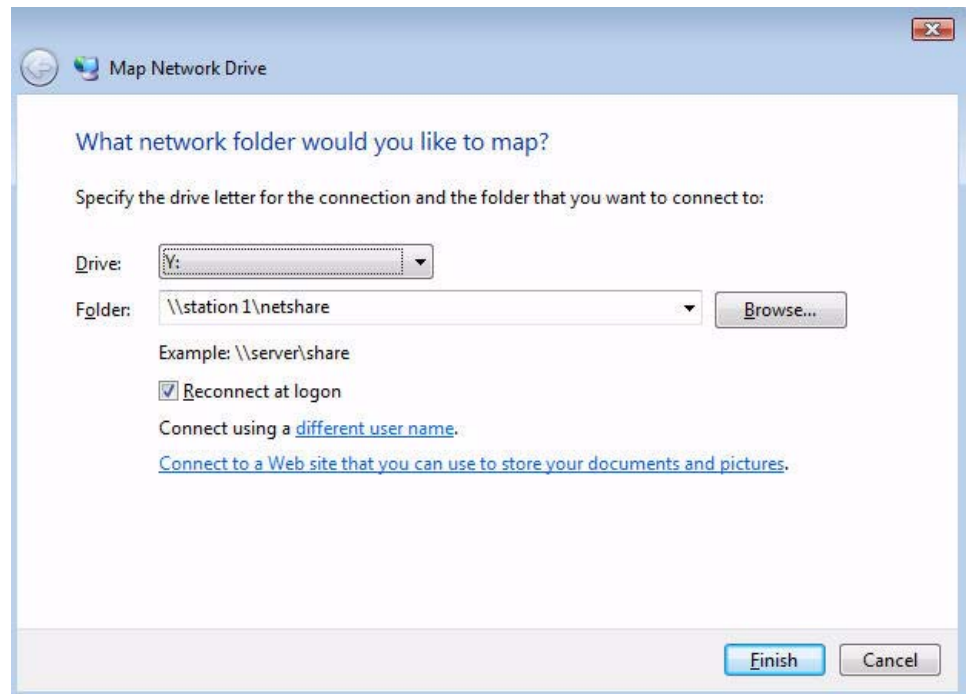






Figure D-22 Enter the Review Station Computer Name and Shared Folder Name

-  Note: To find the Review Station computer name: Select **Start**, right-click **My Computer** and select **Properties**. Then select **Computer Name** to view the computer name.
-  Note: To find the ATLAS 993/995 computer name: Select **Start > Settings > Control Panel > Network**. Then select the **Identification** tab to view the computer name.
-  Note: You must use two backslashes before the computer name as shown in the example.
-  Note: You must select the **Reconnect at logon** checkbox to allow the system to reconnect to the shared drive each time Windows starts.

4. Click **Finish** to save your changes and close the Map Network Drive dialog.

Using the Mapped Drive for Import and Export

If you mapped a Review Station shared folder to an ATLAS 9000, the new drive letter will now be available during the export process on the ATLAS instrument. In the example in [Figure D-19](#), the drive letter **Y:** was mapped to the shared folder on the Review Station. To export to the Review Station PC from the ATLAS instrument, select the mapped drive letter (**Y:** in this case) as the export target. For more detail, refer to [Exporting to ATLAS 9000 Series Media](#) on page 11-21.

If you mapped an ATLAS 993/995 shared database folder to a Review Station, the new drive letter will be available to select for database import. On the **Map Network Drive** dialog in Windows XP ([Figure D-19](#)), you would enter `"//ATLAS1/exams"` for an ATLAS 993/995 with a computer name of "ATLAS1" and a database directory of "C:/exams." See [Importing from ATLAS 900 Series Instrument Databases](#) on page 11-5.

Import Data from the Local Shared Folder


To have access in ATLAS Review Software to the data exported from the instrument, you must complete the process by importing it from the local shared folder you created as described above.


See [Importing from ATLAS 9000 Series Export Media](#) on page 11-3 for information on importing ATLAS 9000 Series media. To import from the local shared folder you created in Windows XP, click **Browse** on the **Import Options** dialog to find and select the local shared folder; in the examples described above, this is the folder named **Netshare** on the Windows desktop ([Figure D-6](#)). When finished, click **OK**.

Configuration for Direct Network Connection

This section explains how to configure a direct network connection between the ATLAS and a PC running ATLAS Review Software. If you do not have a preexisting networking infrastructure, this option provides an alternative. To do this, the sending and receiving platforms must be connected by an unshielded RJ-45 crossover cable (or network switch and network cable) between their respective Ethernet ports. It is the user's responsibility to acquire and install the necessary cable and/or switch.

In this scenario, the ATLAS instrument and the Review Station PC will each be automatically configured with an IP address.

 **Note:** You should use a direct connection only if no other networking infrastructure exists, because while so configured, both the ATLAS and the Review Station PC will be limited in the ability to communicate via other network connections.

 **Note:** A direct connection allows patient data to be transferred from the ATLAS to the Review Station utilizing the ATLAS export functions or Review Station's import functions.

Direct Connection Procedure

1. Plug one end of the RJ-45 crossover cable (or network switch and network cable) into the Ethernet port on the ATLAS. Plug the other end of the cable into the Ethernet port on the Review Station PC.
2. The ATLAS instrument and the Review Station PC will each be automatically configured with an IP address.

Reconnecting Review Station to a Preexisting Network

To reconnect the Review Station to a preexisting network, disconnect the cable (and/or switch), and stop sharing the shared folder. If the data folder is shared on a preexisting network, it may be visible to all network users and the Internet. When not connected to the ATLAS, we strongly recommended that you disable sharing of the data folder.

(E) Network Storage Device Configuration

Introduction

This appendix instructs you how to configure a network attached storage device (NAS device), also known as a network drive, for use with the ATLAS System. These instructions provide requirements and recommendations for the NAS device, but are generic with respect to brand, the choice of which is at the discretion of the user. You can attach the NAS device directly to one of the ATLAS System Ethernet ports, or you can connect it via your office network (local area network or LAN). These instructions cover both scenarios.

Once installed and correctly configured for use with the ATLAS System, the NAS device serves the same functions as a network server (primarily archiving), and the instructions for using a network server apply to the use of the NAS device.



WARNING: We strongly recommend you use peripheral devices supplied or approved by Carl Zeiss Meditec, when available, because they will have been tested to work with the instrument. If you do use a peripheral device that conforms with the requirements in this section but is not supplied by Carl Zeiss Meditec, do not install any unapproved third-party software on the instrument. Installation of any unapproved software, including drivers, could degrade the performance of the instrument and/or lead to corrupted diagnostic or therapeutic information and may void the instrument warranty.

Please refer to the ATLAS section of our website (www.meditec.zeiss.com/atlas) for the current list of approved hardware and software. If you wish to use a third party peripheral device, seek technical support from the device manufacturer. Repairs necessitated by the attempt to use a non-approved peripheral device are not covered under warranty.

NAS Device Safety Warnings



WARNING: To maintain patient safety, an isolation transformer is required when connecting externally powered peripheral devices such as a NAS device within 1.5 meters (4.9 feet) from the patient. In addition, an isolation transformer is required for all externally powered peripheral devices outside this distance unless these devices are (1) connected to the ATLAS using an Unshielded Twisted Pair (UTP) network cable (CZMI recommends using a least a CAT 5 UTP network cable), (2) plugged into a different power outlet than the ATLAS, and (3) qualified by CZM for use with the ATLAS. Failure to observe this warning could result in electrical shock to the patient and/or examiner.



WARNING: To directly connect the NAS device to the ATLAS System using an Ethernet network patch cord (UTP cable), only use an unshielded Ethernet RJ-45 connector. Use of a shielded Ethernet connector will ground the printer through the ATLAS System, which could result in electrical shock to the patient and/or examiner. It could also invalidate the system safety approval.



WARNING: Do not use the NAS device or the instrument with an extension cord or a power strip (multiple portable socket outlet). For additional safety, do not plug the NAS device and the instrument into the same wall outlet. Failure to observe this warning could result in electrical shock to the patient and/or examiner.

NAS Device Requirements

For safety and minimally acceptable performance when used with ATLAS, the user must select a NAS device with the following characteristics:

- **100BaseT or 1000BaseT Ethernet capable.** For safety reasons, USB connection is not permitted with ATLAS.
- **Network patch cord for direct connection to ATLAS:** UTP CAT5e cord with an **unshielded** RJ-45 connector, at least 10 feet (3.05 meters) long to enable you to place the NAS device outside the patient environment. See related safety warnings above. Note that many network drives you purchase may contain patch cords that are shielded or of insufficient length to use with ATLAS. In such cases, you must purchase this cord separately.
- **Drive media formatted using NTFS:** ATLAS data is compatible only with NTFS.
- **Approvals:** The NAS device you select must conform with local agency requirements. In Europe, CE approval is required. In North America, UL, CSA or equivalent approval is required; and FCC approval is required.

NAS Device Recommendations

- **Recommended storage capacity:** At least as large as the ATLAS System hard drive, currently 80 GB.
- **Backup solution:** To maintain redundancy of data backup, we strongly recommend you use the backup solution of your choice for the NAS device, especially when you have used the ATLAS System long enough for it to begin deleting archived exams automatically. Depending on the usage rate, it may take many months up to a few years before ATLAS begins to clear archived exams automatically.
- You can use multiple NAS devices as a backup solution, but when you use two or more NAS devices concurrently, you must use a switch or router. The switch/router may be directly connected to the instrument or elsewhere on the local area network. Configuration in this scenario is the user's responsibility.

Install and Configure the NAS Device

You can attach the NAS device directly to one of the ATLAS System Ethernet ports, or you can connect it via your office network (local area network or LAN). These instructions apply to both scenarios.

1. With the ATLAS System and the NAS device turned off, use a network patch cord to connect the NAS device either directly to the ATLAS System, or to the office network (local area network or LAN) on which the ATLAS System resides. Refer to the manufacturer's instructions for details regarding installation of the NAS device.



Note: For safety, observe the warnings and requirements on page E-2 that relate to the type and length of cord.

2. Turn on the NAS device and wait for initialization to complete before you turn on the ATLAS System. Often a color change in a light on the front of the NAS device indicates initialization is complete, but see the manufacturer's instructions for details on initialization.
3. Turn on the ATLAS System. After you complete the startup process, exit the ATLAS System software, going to the Windows desktop.

- In the system tray at lower right, you may observe a Local Area Connection notice resulting from attachment of the NAS device. Ignore the message at this point.

4. In the ATLAS System optical drive, install the CD that accompanies the NAS device, which will install and run the NAS device configuration program. Follow the on-screen instructions, using the default settings. While running the NAS device configuration, observe the following recommendations:

A. Installation Type: If you are presented with an option to choose a type of installation, for example a choice between "typical," "minimal" and/or "custom" installation, we recommend you choose "typical" or "minimal." Do not perform a "custom" installation unless you have reason to do so and the knowledge and experience required, which would be equivalent to that of a network or system administrator.

B. Record Storage Drive Name: If you are presented with the option to change the name of the NAS device, you can either use the default name or change it at your discretion, but in either case, you must write it down, because you may need it to complete configuration on the ATLAS System. You can use the space below:

NAS Device Name (also known as Network ID): _____

C. Workgroup Name Must Match ATLAS Workgroup Name: If you are presented with the option to change the workgroup name of the NAS device, you must make it match the workgroup name of the ATLAS System, which is "WORKGROUP" by default—this name is not case-sensitive on ATLAS. If the ATLAS System is connected to an office network as part of a different workgroup name, then you must use that workgroup name.

5. When you complete NAS device configuration, exit the configuration program and remove the CD from the ATLAS System optical drive.

On ATLAS, Map a Network Drive to the NAS Device

In some cases, the configuration software of the NAS device automatically maps the correct folder of the NAS device to a drive letter on the ATLAS System. When this is the case, configuration is complete and the NAS device is ready to use. In other cases, you must map a drive on the ATLAS System to the proper folder of the NAS device using Windows Explorer:

1. On the Windows desktop, open Windows Explorer: right-click on **Start** and select **Explore**.
2. In the Explorer **Address** field, type two backslashes and then the NAS device name you recorded in step 4.B. above, and press **Enter**.



Note: If you failed to record it properly, note that you can often find the NAS device name on a label on the back of the NAS device. The device name, for this purpose, may be presented as the **Network ID**. Enter the entire network ID/device name after the two backslashes, with no spaces.

If you have typed the device name correctly, and the NAS device is correctly configured and turned on, when you press **Enter**, Explorer should find the NAS device on the left and display its contents on the right, as in the Windows XP example below.

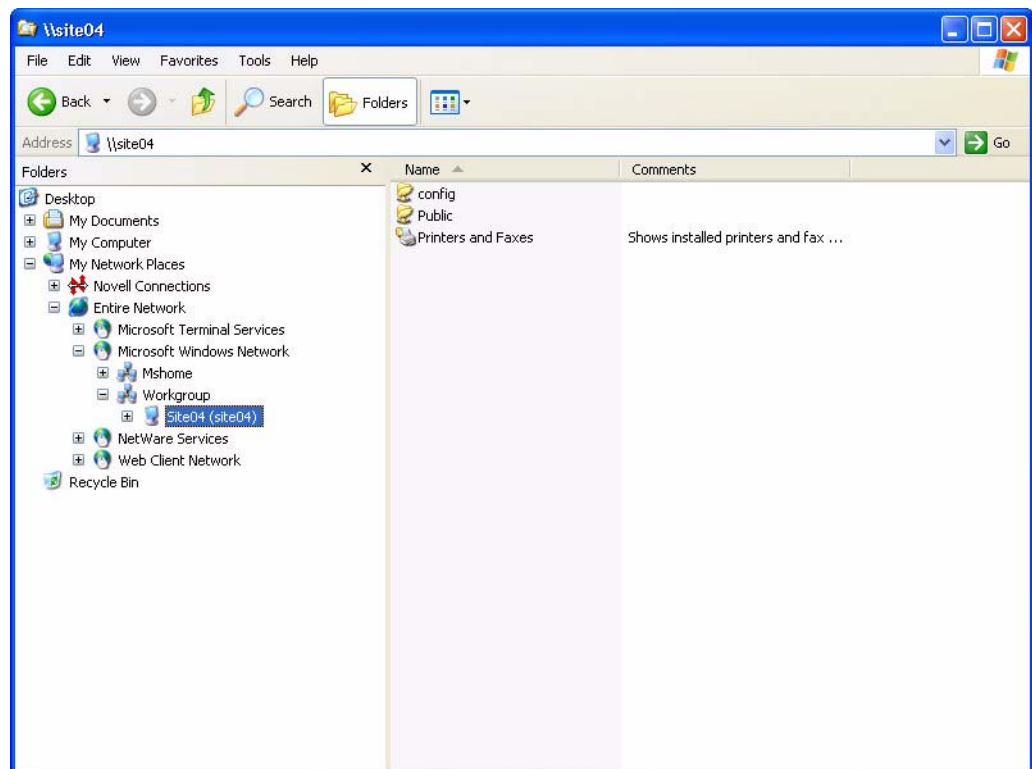


Figure E-1 Explorer Finds NAS Device and Displays Its Contents

- Now you must map a drive on the ATLAS System to the NAS device folder that is accessible to all users for storage. In the example above, the folder named **Public** is the correct folder. The folder name for your NAS device may be similarly indicative that it is intended for use as the storage folder. Consult the manufacturer's instructions to determine which folder is intended for this purpose.
- Click to select the correct storage folder. Click **Tools > Map Network Drive**. The Map Network Drive dialog appears.

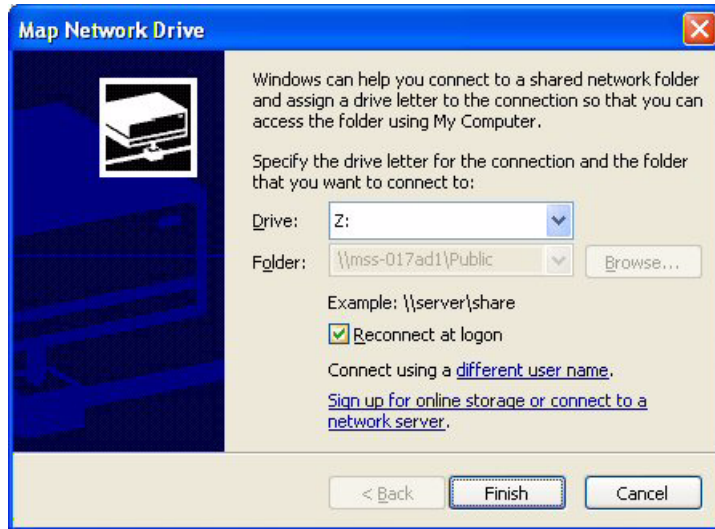


Figure E-2 Map Network Drive Dialog

- In the **Drive** field, select any available network drive letter, using the down-arrow on the right. You may, for example, choose N: for network storage device.
 - In the **Folder** field, note that the folder name is already selected and unavailable to be changed.
 - Do not clear the **Reconnect at logon** check box.
- Click **Finish**. You have now completed configuration. To archive to the NAS device, register the drive letter assigned to the NAS device as an archive volume. See [Create a New Archive Location](#) on page 10-9 for details.

Cleaning the NAS Device

Regular periodic cleaning of the NAS device is not required. However, if the device becomes dusty, you may clean it using a soft bristle brush such as a keyboard brush. Do not use liquid cleaners unless specifically directed by the manufacturer, since they may drip into the device and cause it to malfunction.

(F) Printer Configuration

Introduction

This appendix instructs you how to configure a printer for use with ATLAS System. These instructions provide requirements and recommendations for the printer, but are generic with respect to brand, although one may be supplied with the instrument. Specific configuration instructions vary by printer, and users are advised to closely follow the instructions supplied. These instructions cover two configurations for communication between instrument and printer:

1. [Network Configuration](#) (page F-3), either via direct connection between instrument and printer, or via connection of instrument and printer to a local area network.
2. [USB Configuration](#) (page F-3), via direct USB connection between instrument and printer.

Approved Printers

CZM recommends using a printer that has been specifically qualified for the ATLAS, because untested drivers could interfere with instrument operation. Please contact your CZM representative for qualified printers in your geography.

Many printers are available that are compatible with Microsoft Windows XP. Please note if you use an unqualified printer with the ATLAS, CZM cannot guarantee technical support. Repairs necessitated by the attempt to use a non-qualified device are not covered under warranty. Any printer considered must meet the following criteria:

- Windows XP compatible
- Network port or USB port (the network port must be 100, 10/100, or 10/100/1000 Base T. If a USB port is used, an isolation transformer is required).
- Color printing
- Ability to print on 8.5 x 11 paper in the US or appropriate paper size outside the US.



WARNINGS: We strongly recommend you use peripheral devices supplied or approved by Carl Zeiss Meditec, when available, because they will have been tested to work with the instrument. Installation of any unapproved software, including drivers, could degrade the performance of the instrument and/or lead to corrupted diagnostic or therapeutic information and may void the instrument warranty.

Prior to installing any printer other than one qualified by CZM, please perform an external data backup. Many printers come with optional software. Install the required drivers only. Do not install any optional software.

Printer Safety Warnings



WARNING: To maintain patient safety, an isolation transformer is required when connecting externally powered peripheral devices (i.e., printer, USB drive, etc.) within 1.5 meters (4.9 feet) from the patient. In addition, an isolation transformer is required for all externally powered peripheral devices outside this distance unless these devices are (1) connected to the ATLAS using an Unshielded Twisted Pair (UTP) network cable (CZMI recommends using a least a CAT 5 UTP network cable), (2) plugged into a different power outlet than the ATLAS, and (3) qualified by CZM for use with the ATLAS. Failure to observe this warning could result in electrical shock to the patient and/or examiner.



WARNING: To directly connect a printer to the ATLAS System only use a UTP cable. Use of a shielded Ethernet connector will ground the printer through the ATLAS System, which could result in electrical shock to the patient and/or examiner. It could also invalidate the system safety approval.



WARNING: Do not use the printer or the instrument with an extension cord or a power strip (multiple portable socket outlet). For additional safety, do not plug the printer and the instrument into the same wall outlet. Failure to observe this warning could result in electrical shock to the patient and/or examiner.

Installation Overview

The following three general steps are common to all configurations. These steps are explained further in the specific sections.

1. **Printer hardware setup and configuration:** Refer to the instructions provided with the printer to unpack and set up the printer hardware. Printer configuration is typically not required.
2. **Connect hardware to enable communication between instrument and printer.** The hardware used depends on the type of configuration you select: either a network cable or a USB cable.
3. **Configure the instrument software to communicate with the printer,** including installation of printer drivers, if required. If there are no driver installation instructions provided with the printer, then driver installation is not required.

Network Configuration

Typically, no printer configuration is required for the network configuration. Three general steps are required for configuration:

1. Connect the printer to the ATLAS System via network cabling
2. Power on the printer
3. Install printer drivers on the ATLAS System. Note: If printer drivers are already installed, open the printer configuration and modify the port by replacing the existing printer Hostname with the actual Hostname of the printer being used. The Hostname for the printer can be found by printing the printer's information page (line 6).

This is the usual sequence of steps, but **follow any additional instructions provided with the printer or from Carl Zeiss Meditec.**

Using Network Cable(s) to Connect ATLAS System and Printer

To establish network communication between the ATLAS System and the printer, you can directly connect instrument and printer with the network (Ethernet) cable, or connect both instrument and printer to the local area network or to a network switch/router/hub connected to the ATLAS System.



Note: Use the same kind of network cable in all cases. (If you connect instrument and printer to the network rather than to each other, you will need two network cables.) Do not use an RJ-45 crossover cable for direct connection between instrument and printer.

USB Configuration

No printer configuration is required for the USB configuration. Three general steps are required for configuration: install printer drivers on the ATLAS System if required, connect the printer to the ATLAS System via USB, and power on the printer. This is the usual sequence of steps, but **follow any additional instructions provided with the printer from Carl Zeiss Meditec.**



WARNING: To maintain patient safety, peripheral devices connected to a USB port (i.e., printer, USB drive, etc.) and plugged into an electrical outlet must also be connected to an isolation transformer. In addition, the instrument operator must not touch the patient and a peripheral device at the same time while examining the patient. Failure to observe this warning could result in electrical shock to the patient and/or examiner.

(G) Data Transfer Using Optical Disks

Overview

You can transfer data between ATLAS instruments, and computers running ATLAS Review Software with an optical drive and Roxio® Drag-to-Disc™ software installed. This appendix explains the features and limitations of ATLAS data transfer using optical disks, and provides instructions for data transfer.



Important Note: The Roxio Drag-to-Disc software is pre-installed on the ATLAS instrument and specially configured for use with it. Do not re-install Roxio Drag-to-Disc on the instrument. The Roxio Easy Media Creator CD included with your instrument is provided to satisfy licensing requirements only.

A computer running ATLAS Review Software will need to have Roxio Drag-to-Disc or another similar application installed in order to use optical disks for data export. No additional license is provided for Roxio Easy Media Creator for use with ATLAS Review Software.

Compatible Media Formats

The ATLAS instrument, or a computer running ATLAS Review Software with an optical drive, can use the following types of disks to transfer data:

- CD-R – writable CD
- CD-RW – rewriteable CD

In addition, the ATLAS instrument or your Review Station computer, may also be able to use the following:

- DVD±R – writable DVD
- DVD±RW – rewriteable DVD



Note: Check the logo on the face of the optical drive. If the DVD-Multi logo is present, then the ATLAS instrument can write to DVD media.



Note: The optical disks you use must first be formatted, as explained in the section [Disk Formatting](#) on page [G-2](#).

Compatible Data Transfer Functions

Optical disks can be used for configuration restore, and all export and import functions.



Note: You cannot archive to the optical drive.

Export and Import

You can copy ATLAS 9000 Export Media data to an optical disk for transfer to another ATLAS instrument or to a personal computer (PC) running the ATLAS Review Software.



Note: On a PC, it may be possible to view and analyze ATLAS data using third party software. Beyond the instructions here, Carl Zeiss Meditec does not support the import of ATLAS data to a PC other than a PC running ATLAS Review Software; neither do we specify third party software you can use on a PC to view and analyze ATLAS data, nor support its use.



Note: To successfully export from a Review Station PC, the PC must also have Roxio Drag-to-Disc (or another similar application) installed, plus an optical drive capable of writing to the chosen media.

ATLAS Data Transfer Instructions

The actual data transfer functions—export and import—are done using the ATLAS software in the usual way, except that you enter or select the optical drive as the target or source drive for data transfer (you can also enter or select a folder on the optical drive; e.g. E:\data export), and you insert a *compatible formatted disk* in the optical drive. ATLAS can write multiple and incremental export data to a disk that already contains export data. See the indicated sections of the user manual below for details.

- See [Export](#) on page 11-21 for instructions to export.
- See [Import](#) on page 11-3 for instructions to import.



Note: You must first format the disk, as described in [Disk Formatting](#) on page G-2.

Proper Disk Care

We do not recommend that you use optical disks for long-term data storage. Use should be limited to data transfer between systems. Take care to protect these media from damage. We recommend you use hard plastic cases when transporting and shipping these media. Optical disks are very susceptible to scratches that could render them unreadable.



Disk Formatting

This section explains how to format optical disks using Roxio Drag-to-Disc as it is installed on the ATLAS instrument. To backup or export requires an optical disk formatted in the Universal Disk Format (UDF1.5).



Warning: Formatting permanently erases any data currently on the disk!

General Steps

1. Install the optical disk into the ATLAS optical drive. Wait approximately 30 seconds for the drive to recognize the media type. If you attempt the next step before the drive is ready, you will get an error message, "There is no disk."
2. To access the Drag-to-Disc software, you do not have to close the ATLAS software. Select the Windows key  on the keyboard. Using your mouse, bring the screen pointer down to the bottom of the screen. This will cause the Windows Task Bar to appear along the bottom. Notice the icons in the System Tray at bottom right. (When you mouse-over an icon, its name appears.)
3. Right-click the Roxio Drag-to-Disc icon  and select **Format Disc** from the pop-up menu, as shown on the left. The Drag-to-Disc Format Options dialog appears. See [Disk Format Options](#) below.

Application Window	Alt+I
Hide Drag-to-Disc	Alt+D
Keep In Front	Alt+K
Settings	Alt+S
<hr/>	
View Disc Contents	Alt+V
Disc Properties	Alt+O
Eject Disc	Alt+J
<hr/>	
Format Disc	Alt+F
Rename Disc	Alt+R
Erase Disc	Alt+E
<hr/>	
Paste	Alt+P
<hr/>	
Drag-to-Disc Help Center	Alt+H
About Drag-to-Disc	Alt+A
<hr/>	
Exit Drag-to-Disc	
Launch Scandisc	

Disk Format Options**CD-R and DVD±R disks**

No format options are available for CD-R or DVD±R disks ([Figure G-1](#)).

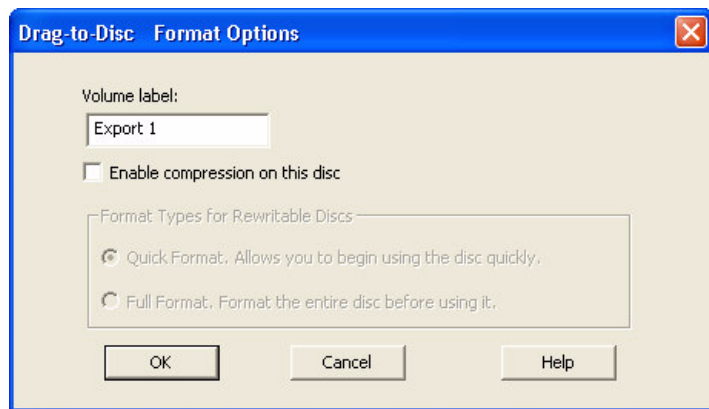


Figure G-1 CD-R Format Options

If desired, type a name in the **Volume Label** field. Click **OK** to begin formatting. A **Drag-to-Disc Preparation** dialog appears during formatting. Formatting is brief. The dialog disappears when it is complete. Once formatted, you cannot format CD-R or DVD±R disks again, nor can you erase them.

CD-RW and DVD±RW Format Options

For a new, blank CD-RW or DVD±RW, you have only the option to perform a full format (Figure G-2).

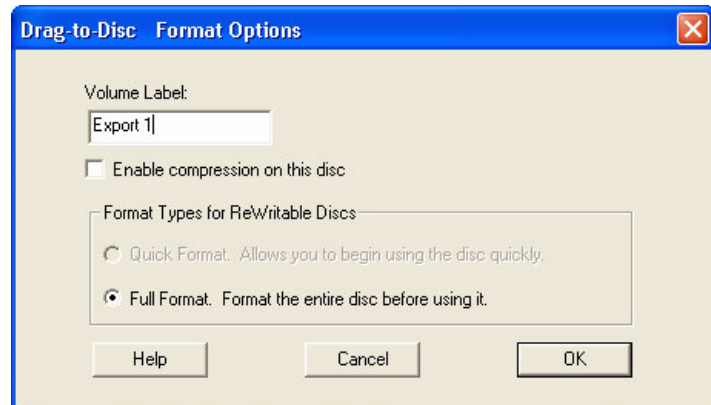


Figure G-2 Disk Full Format Option

A full format requires 18-29 minutes (Figure G-3).

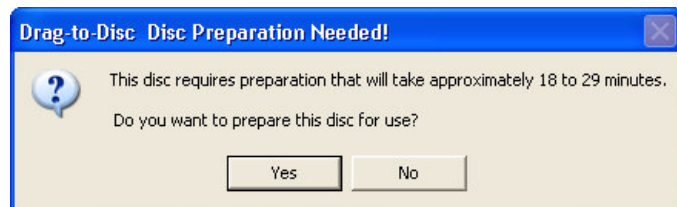


Figure G-3 Full Format Disc Preparation

If the CD-RW or DVD±RW was previously formatted, you can perform a quick (Figure G-4) or full format

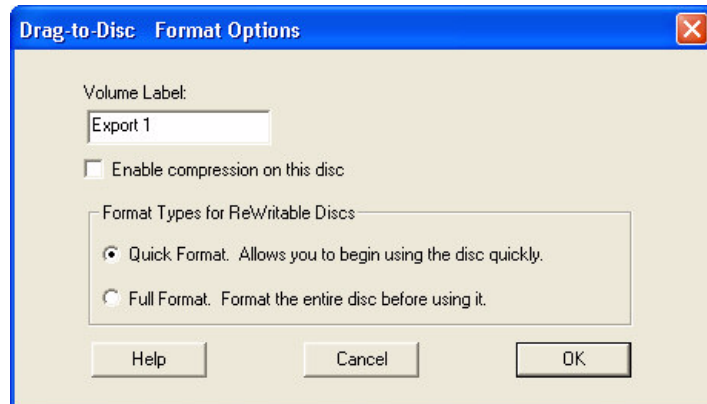


Figure G-4 Disk Quick Format Option



Note: Both quick and full formatting effectively erase any data currently on the disk. Use these options with care to prevent loss of patient data.

The Advantage of Full Format

Full format has this advantage: the disk ejects immediately after writing when you eject it. If the disk is quick formatted, it requires 15 seconds to 4 minutes for the disk to eject after writing to it, depending on the amount of data written.

Roxio Drag-to-Disc Software Configuration

CD-R or DVD±R Optical Disks

To successfully import ATLAS data from a CD-R or DVD±R optical disk to a Review Station PC, the Roxio Drag-to-Disc Eject Options must be configured to finalize the disk upon ejection (enable the disk to be read on any computer), as shown in Figure G-5. Do not

change the configuration of the Roxio Drag-to-Disc software, particularly the eject settings. The correct eject settings are seen in [Figure G-5](#) below.

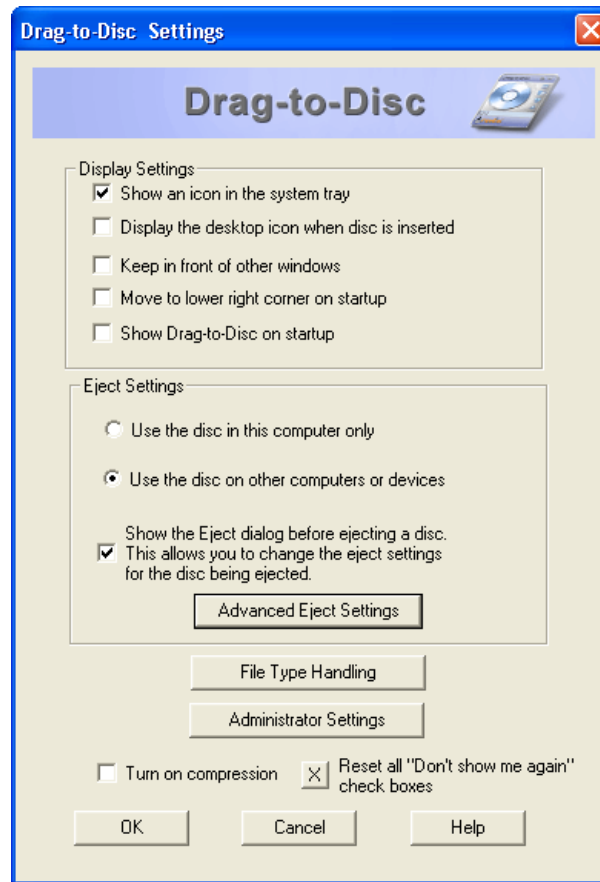


Figure G-5 CD-R and DVD±R Drag-to-Disc Eject Options

CD-RW or DVD±RW Optical Disks

To successfully import ATLAS data from a CD-RW or DVD±RW rewriteable optical disk to a Review Station PC, Roxio Drag-to-Disc will prepare the disk to be read on any other computer upon disk ejection, as shown in [Figure G-6](#).

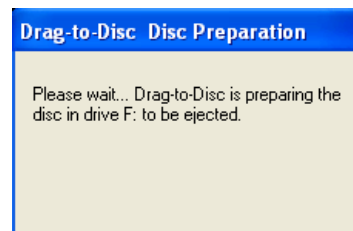


Figure G-6 CD-RW and DVD±RW Drag-to-Disc Preparation

When preparation is completed, the disk will be ejected with a dialog displayed as shown in [Figure G-7](#).

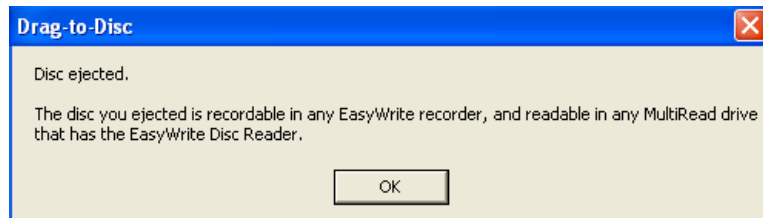


Figure G-7 CD-RW and DVD±RW Disk Ejection Dialog

When you insert the disk into another computer that doesn't have Roxio Drag-to-Disc software installed, a dialog will be displayed as shown in [Figure G-8](#).



Figure G-8 Roxio Setup Wizard Dialog

In order to read the rewriteable optical disk on this computer, select **Yes** to install the EasyWrite Disc Reader software. A language dialog will be displayed. Select your language and select **Next** to continue the installation as shown in [Figure G-9](#).

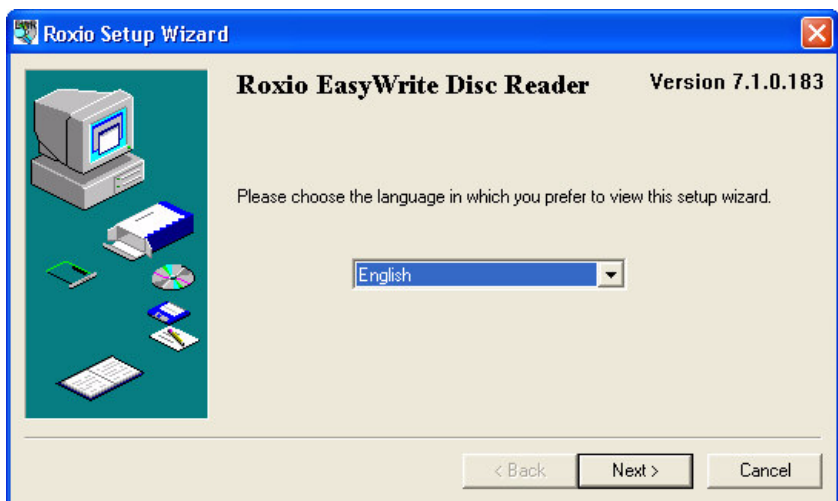


Figure G-9 Roxio Setup Wizard Dialog – Select Language

Select **Install** to continue the installation as shown in [Figure G-10](#).



Figure G-10 Roxio Setup Wizard Dialog – Install

When installation completes, select **YES** to reboot your system as shown in [Figure G-11](#).

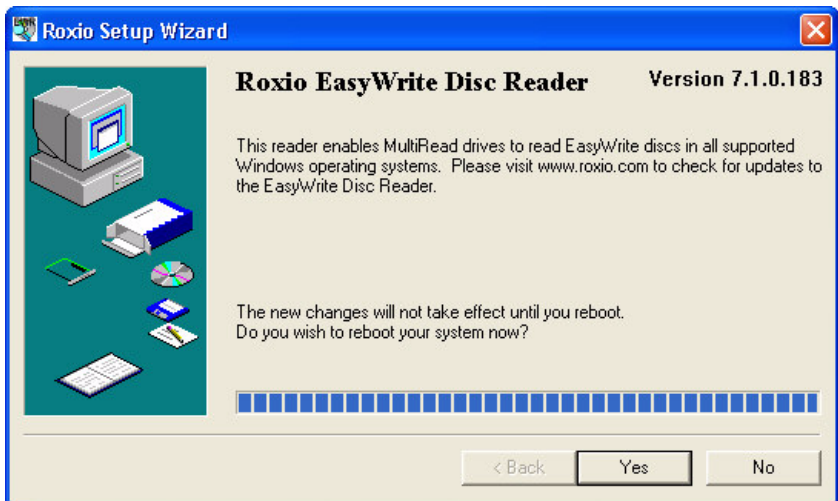


Figure G-11 Roxio Setup Wizard Dialog – Reboot

After computer reboot, the disk should now be readable for ATLAS import functions.

(H) Routine Maintenance

Chapter Overview

Carl Zeiss Meditec designed the ATLAS System (and the optional power table) to require very little user maintenance. Most maintenance activities covered here are required only occasionally, except for the calibration check and routine cleaning between patients. This chapter covers the following topics:

- [Fuse Replacement](#), page H-1
- [Calibration Check](#), page H-4
- [Handling Error Messages](#), page H-7
- [Hard Disk Defragmentation](#), page H-7
- [Routine Cleaning](#), page H-8
- [List of User Replacement Accessories](#), page H-9

Note Regarding Warranty



Note: Except for the main power fuses, the ATLAS System has no user-replaceable parts. The user must not attempt hardware repairs, except fuse replacement, without consulting Carl Zeiss Meditec service personnel. To do so voids the instrument warranty. However, we may provide software updates that users can install.

Fuse Replacement

Both the instrument and the optional power table have two fuses. Instructions to check and replace the fuses in both the instrument and table are included below. First we offer help in determining the source of power problems.



Note: Except for fuse replacement, only authorized Carl Zeiss Meditec service engineers may disassemble the instrument and replace parts. If fuse replacement does not repair the problem, or if another sort of problem prevents normal operation, contact Carl Zeiss Meditec customer service. In the U.S., call 800-341-6968. Outside the U.S., contact your local Carl Zeiss Meditec distributor.

Determine the Source of the Power Problem

This section assumes that the instrument will not power on. Troubleshooting your power problem depends on whether or not you power the instrument through the optional power table.

If Not Using the Optional Power Table

If you power the instrument directly from a wall outlet (not through the optional power table), check the following to determine the source of the power problem, in order:

1. Is there power available everywhere in your office?
 - If not, there may be a localized power outage in your office or a general power outage in your neighborhood.

- If so, proceed to step 2.
2. Is the instrument power cord plugged in at both ends?
- If not, plug in the cord and try to power up the instrument.
 - If so, check the instrument fuses and replace them if necessary. See [Check and Replace Instrument Fuses](#) on page H-2 for instructions.

If Using the Optional Power Table

If you are using the optional power table, the instrument is powered through it. Check the following to determine the source of the power problem, in order:

1. Is there power available everywhere in your office?
 - If not, there may be a localized power outage in your office or a general power outage in your neighborhood.
 - If so, proceed to step 2.
2. Does the table have power (while the instrument does not)? You can test the table by trying the lift.
 - **If the table has power**, the power problem is within the instrument. First, check that the instrument power cord is plugged in at the power table and at the instrument. Next, check the instrument fuses and replace them if necessary. See [Check and Replace Instrument Fuses](#) on page H-2 for instructions.
 - **If the table does not have power**, the power problem is likely within the table. First, check that the table is plugged in at both the wall outlet and at the table. Next, check the table fuses and replace them if necessary. See [Check and Replace Table Fuses](#) on page H-4 for instructions.

Check and Replace Instrument Fuses

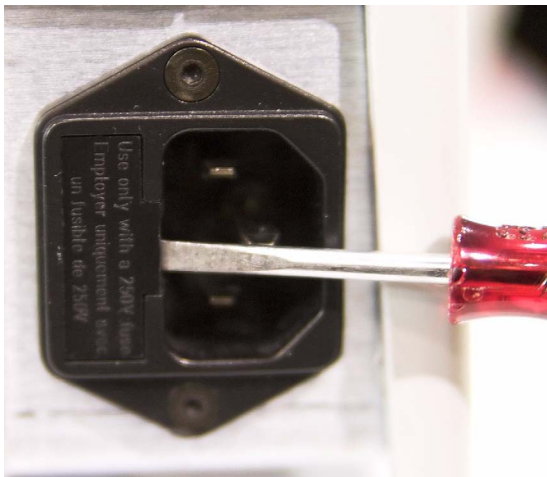
Two fuses are located on the right side of the instrument just to the left of the power cord inlet.



CAUTION: Carefully follow these instructions to safely check and replace fuses. Always power down the instrument and unplug the power cord before proceeding. At all times, use the minimum force necessary to accomplish each step so as to prevent damage or injury.

1. Power down the instrument. Unplug the power cord.

- Using a narrow-bladed screwdriver, gently pry open the fuse holder, from the side, to expose and remove the fuse holder.




With screwdriver, pry open fuse holder from the side.



Remove fuse holder with fingers.

Figure H-1 Opening instrument fuse assembly and removing fuse holder

Information about the proper replacement fuses is found adjacent to the fuse holder.

 Fuse type and rating for both instrument fuses: T3.15 A 250 V, Slow Blow.



WARNING: Always replace fuses with the same type and rating. Failure to do so may create a risk of fire.

- Slide out the fuse holder and check the filament for breakage. Dispose of any defective fuses.
- Insert the new fuse in the holder. Slide the holder back into the housing until it snaps closed.
- Plug in the power cord at both ends.
- Your instrument is now ready to be powered on.

Check and Replace Table Fuses

Two fuses are located just below the table power cord inlet, near the floor. Carefully follow these instructions to safely check and replace fuses.

1. Power down the instrument. Unplug the table power cord at both ends, for safety and easy access.

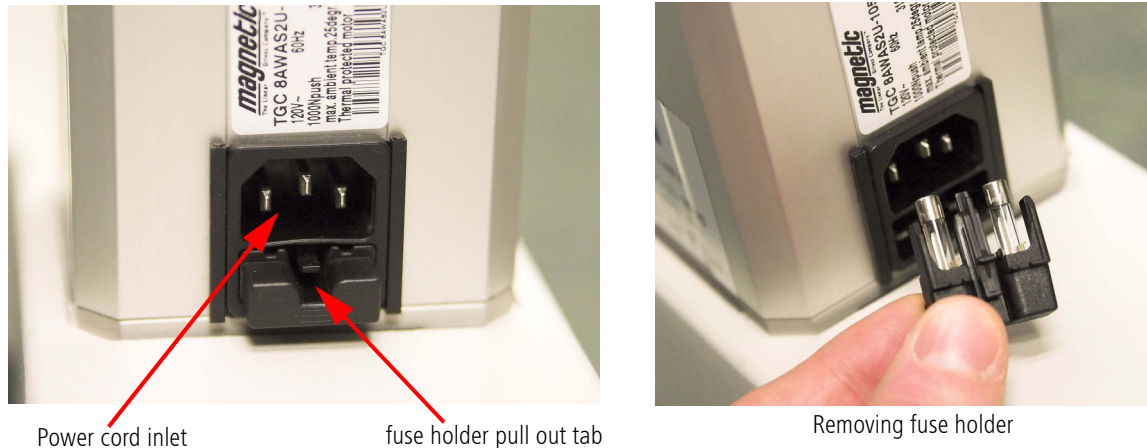


Figure H-2 Removing table fuses

2. The fuse holder can be removed out of the housing by grasping it while pressing down on the center tab of the fuse holder and firmly pulling out.
3. Check the filament for breakage. Dispose of any defective fuses. Information about the proper replacement fuses is found on a label just above the fuse holders (see [Power Table Specifications](#) on page K-4.)



WARNING: Always replace fuses with the same type and rating. Failure to do so may create a risk of fire.

4. Insert the new fuse in the holder. Slide the holder firmly back into the housing securing it in place.
5. Plug in the table power cord at both ends. Your instrument is now ready to be powered on.

Calibration Check

The Calibration Check function tests the ATLAS instrument to make sure it is providing accurate measurements. A calibration bar with three mounted spheres is placed in the chin rest assembly. Using the **Calibration Check...** function on the **Tools** menu, capture a series of three sphere images that are then analyzed to see if the measurements are within the defined ranges. The calibration test is performed by taking one image of each of the different size spheres in the order from largest to smallest size—35.0 D (9.65 mm), 42.2 D (8.0 mm), and 54.9 D (6.15 mm). The test is performed in diopters or mm, depending on your current Units setting (see [Units](#) on page 7-2).

We recommend that you run the calibration option at least once a month.

Follow these steps to perform a calibration check:

1. Place the calibration bar in the two slots provided on the chin rest. Be sure the spheres are facing the projection head (Figure H-3).



Figure H-3 Calibration Bar Inserted into Chin Rest Assembly

2. Select **Tools > Calibration Check...**
3. For the first image, focus the projection head first on the largest sphere (35.0 D or 9.65 mm) at the left end of the calibration bar (Figure H-4).

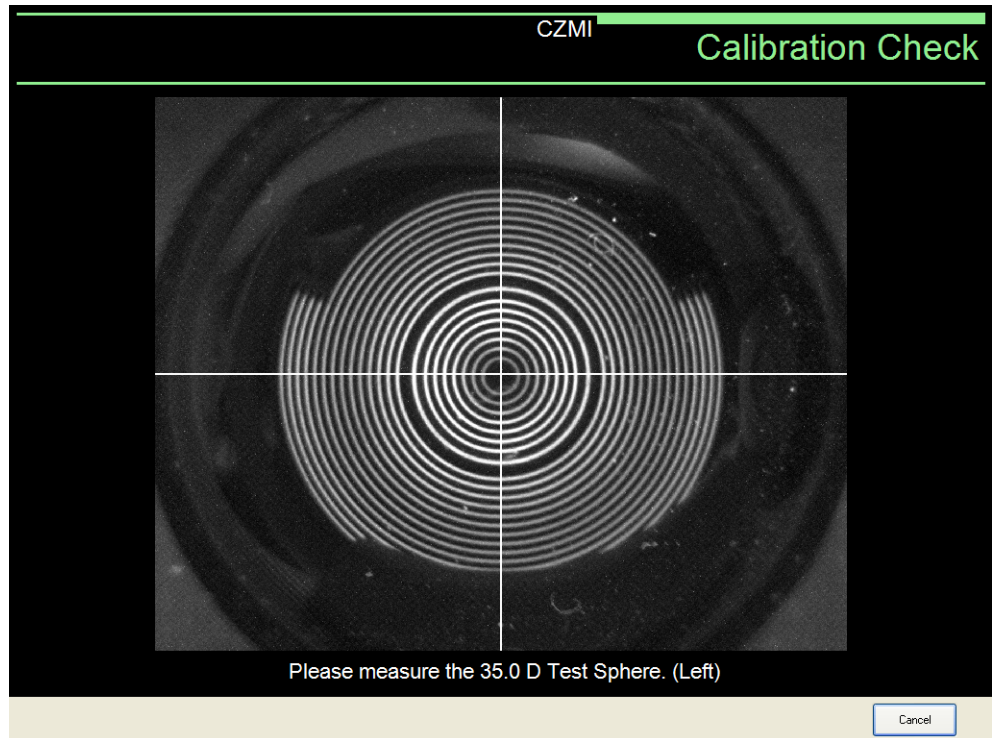


Figure H-4 Calibration Check—35.0 D Test Sphere.

4. Align the projection head by centering the crosshairs in the smallest ring of the image displayed.
5. When the image is aligned and focused, press the button on the joystick to capture the image.



Note: If the calibration test fails, first clean the front surface of the spheres with a soft cloth and repeat the calibration test before calling Technical Support.

6. Continue to align, focus, and capture images for each of the other two remaining spheres when prompted—the 42.2 D (8.00 mm) sphere in the center, and the 54.9 D (6.15 mm) sphere on the right end of the calibration bar.
7. When you have finished capturing images for all three spheres, a dialog appears showing the final results of the calibration test (Figure H-5). If all three spheres report PASS then your ATLAS is providing accurate measurements. If a FAIL is reported for at least one of the spheres, try cleaning the sphere with a soft cloth and repeating the calibration check before calling Technical Support.

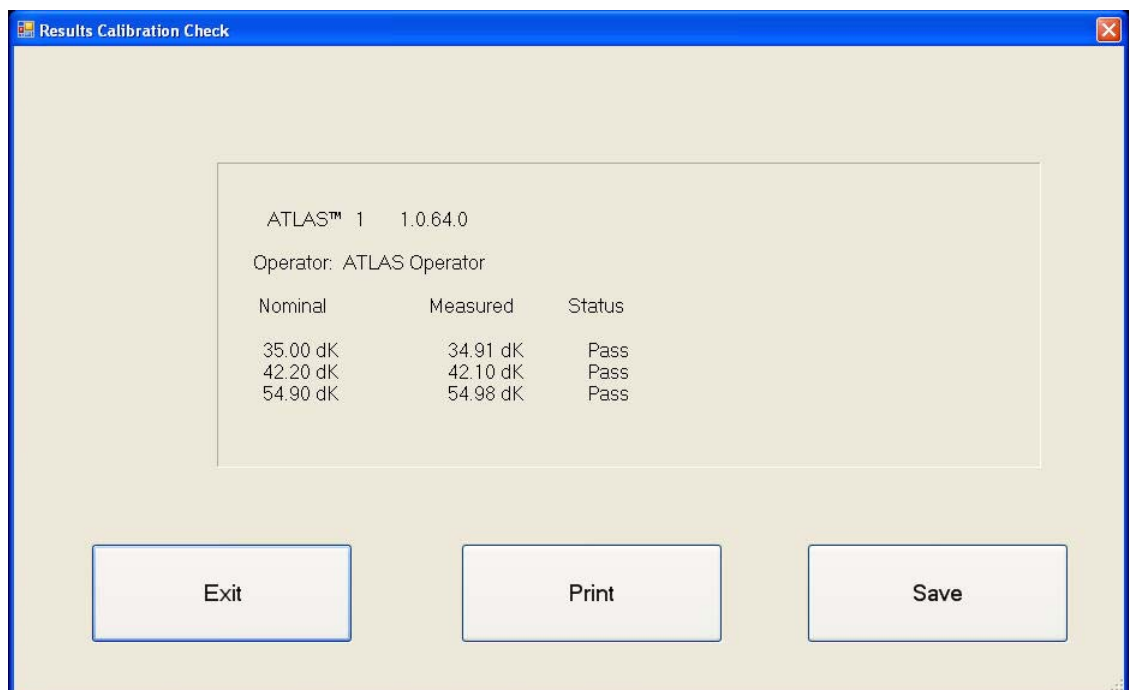


Figure H-5 Calibration Check—Results

8. Select **Exit** to exit the Calibration Check function, **Print** to print the results, or **Save** to open a **Save** dialog and save the results to a text file. The default calibration file is saved as a time-stamped calibration check file (e.g. 15253520081121CalibrationCheck.txt) in "*C:\ATLAS\CalibrationCheck*."
9. The calibration check is finished. Remove the calibration bar from the chin rest.

Handling Error Messages

In normal instrument start-up, the User Login dialog appears. If the system fails the system check, or if some other error prevents the system's normal function, document the circumstances and any associated error messages, and report it to Carl Zeiss Meditec customer service. In the U.S., call 800-341-6968. Outside the U.S., contact your local Carl Zeiss Meditec distributor. Often error messages can be resolved with solutions provided over the telephone.

Please be prepared to provide CZM the serial number of your instrument. It is located on the label affixed to the back of the instrument, under the rear cover.


Hard Disk Defragmentation

Defragmentation of the ATLAS System computer hard disk becomes necessary when you begin to clear archived exams regularly. The process of deleting data and then writing again to the hard disk fragments the hard drive, which degrades database and system performance over time. To maintain peak performance, we recommend that you check if the hard disk requires defragmentation after each five times archived exams are cleared. Recall that the system can initiate clearance of archived exams automatically when necessary.



Note: Since hard disk defragmentation usually requires several hours to complete, we recommend that you start defragmentation at the end of the day and let the process run overnight. If defragmentation is not complete in the morning, it does no harm to stop defragmentation and continue using the instrument.

To defragment the hard drive, follow these steps:

1. Exit the ATLAS System (click **File > Exit** or click the  at upper right) to enter the Windows environment.
2. Click Windows **Start > All Programs > Accessories > System Tools > Disk Defragmenter**. The Disk Defragmenter appears.
3. Select the **C:** drive and click **Analyze** to determine whether the drive requires defragmentation. When analysis completes, a dialog will appear to inform you whether or not the drive requires defragmentation. If it does, click **Defragment**. If it does not, click **Close**.

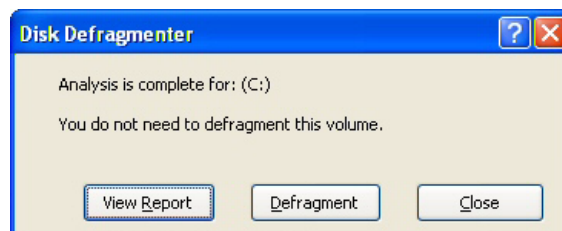


Figure H-6 Sample Defragmenter Analysis Outcome

Routine Cleaning

The forehead and chin rests, and to a lesser extent the imaging aperture, are the only parts that require routine cleaning. Instructions are included below for occasional cleaning of the instrument covers and optional power table.

Forehead and Chin Rests

The instrument parts that routinely contact the patient—the forehead and chin rests—should be cleaned between each examination with an alcohol prep swab. These parts are not removable.

The Imaging Aperture

The imaging aperture should not contact the patient's eye. Still, you should clean it occasionally or as necessary to remove dust and oily smudges, ensuring true images. You may use an alcohol prep swab or cotton swab dipped in isopropyl alcohol. (You may use the Volk Precision Optical Lens Cleaner.) Wipe dry with a soft, non-linting cloth or tissue. If the lens inadvertently contacts the patient's eye, clean it before proceeding with the examination.

Calibration bar

The calibration bar should be cleaned with alcohol and wrapped in a soft cloth. Care should be taken not to scratch the surface of the spheres.

Occasional Cleaning of Instrument Covers and Optional Power Table



WARNING: The instrument has no special measures to protect against harmful ingress of water or other liquids (classified IPX0—ordinary equipment). To avoid damage to the instrument and a safety hazard, cleaning solutions, including water, must be applied sparingly, with a non-linting cloth that is dampened only—not dripping wet! You must not use aerosols on or near the instrument.



Note: When dusting of the instrument or table is necessary, use a dry non-linting soft cloth. Do not use aerosols, as these can penetrate the instrument covers and damage the instrument.



Note: When the instrument covers or table require cleaning or disinfecting, wipe with a non-linting cloth or swab, **dampened only—not dripping wet!**—with water or alcohol. Wipe dry with a clean and soft non-linting cloth.

List of User Replacement Accessories

Part Number	Description
2660100022511	Power Cord, 120 V
2660100022581	Power Cord, 220 V
2660021121801	Power Cord, China
2660021121716	USB Keyboard, Mini (Black)
Variable	(Optional) USB/Network Printer
Variable	(Optional) Instrument Power Table
2660021102326	Antiseptic Wipes (Box of 200)
0000001345415	USB Mouse (Optical)
2660100057793	Dust Cover, Instrument
2660021120470	Test Eye Kit
2660021121819	Cable, Ethernet, CAT5e (14')
2660021116418	Cable, USB MA-MB (6')
2660100057507	Roxio Software on Disk
2660100033594	Fuse T3.15 A 250 V (For 100-120 V and 220-240 V Systems)
2660021134314	ATLAS 3.0 Upgrade Kit/User Documentation CD
2660021135270	ATLAS 3.0 User Manual_ENG

To order: In the U.S., call 800-341-6968. Outside the U.S., contact your local Carl Zeiss Meditec distributor.

(I) License Registration

ATLAS Review Software and the optional software features run under license protection. PathFinder II and MasterFit II have the option of registering a Trial (30-Day) or Full license. They will not run until you register their corresponding license. Each ATLAS Review Station operates under separate license protection—you will need to purchase a license for each ATLAS Review Station. Follow the instructions below to register a software license.

- Note:** ATLAS Review Software includes one or more software Certificate serial numbers for your license or licenses. Each Certificate serial number you receive must be registered separately. Additional licenses may be obtained from Carl Zeiss Meditec at 1-800-341-6968. Outside the United States, please contact your local Carl Zeiss Meditec distributor.

- Important:** A license is valid **only** for the computer you register it to—it cannot be transferred to another computer without purchasing another license. Be certain of your network configuration before licensing ATLAS Review to a computer.

- Note:** If the computer has multiple network cards you may need to register the license again.

- Note:** On Windows Vista computers, each user (User Account) will need to register a license using the same Certificate Serial Number, License Key and Security Code.

Registering ATLAS Review Software

When you first run the ATLAS Review Software without registering a license, the LICENSE VIEW window (Figure I-1) will be displayed.

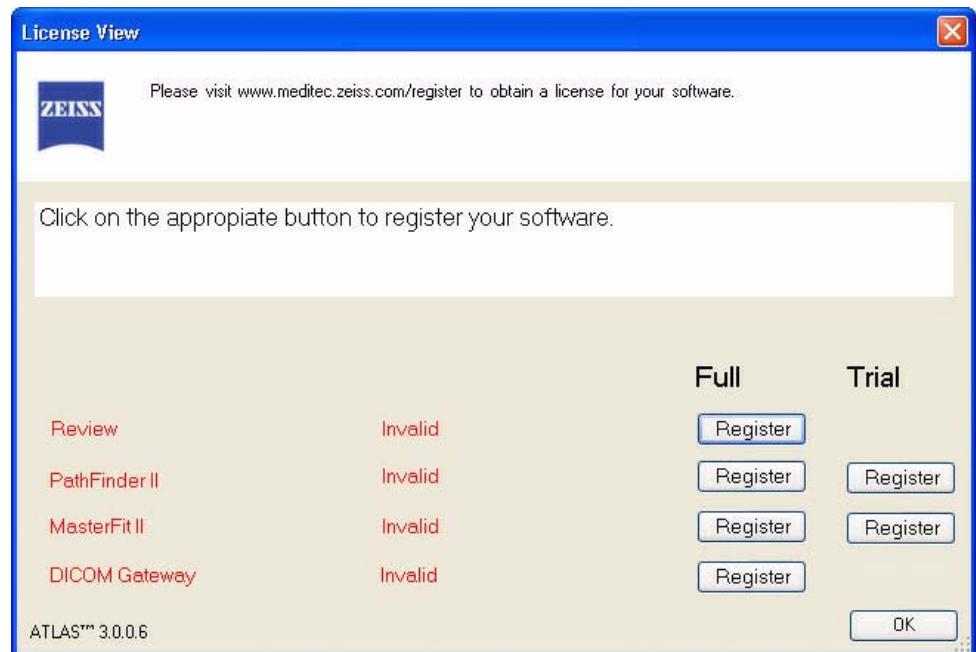


Figure I-1 License View Window

Registering Optional Software Features

You can also register the optional software features at any time the software is running by selecting **View Licenses...** on the **Help** menu. The LICENSE VIEW window will be displayed (Figure I-1). If the software is not running, start the software by **double-clicking** the icon on the desktop. You may need to logon with a User Name and Password.

Registering a Trial License



Note: Trial Licenses are not available on Windows Vista computers.

1. Click **Register** under the **Trial** heading for the license you want to register. A dialog will be displayed similar to the one shown below (Figure I-2).

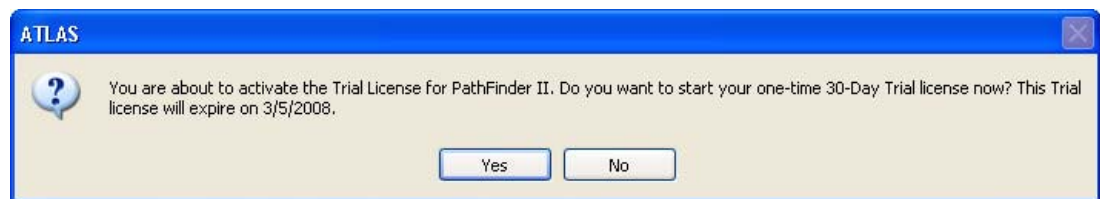


Figure I-2 Trial License Dialog

2. Click **Yes** to start your 30-Day Trial license. The LICENSE VIEW window will be displayed with the Trial license registered (Figure I-3).

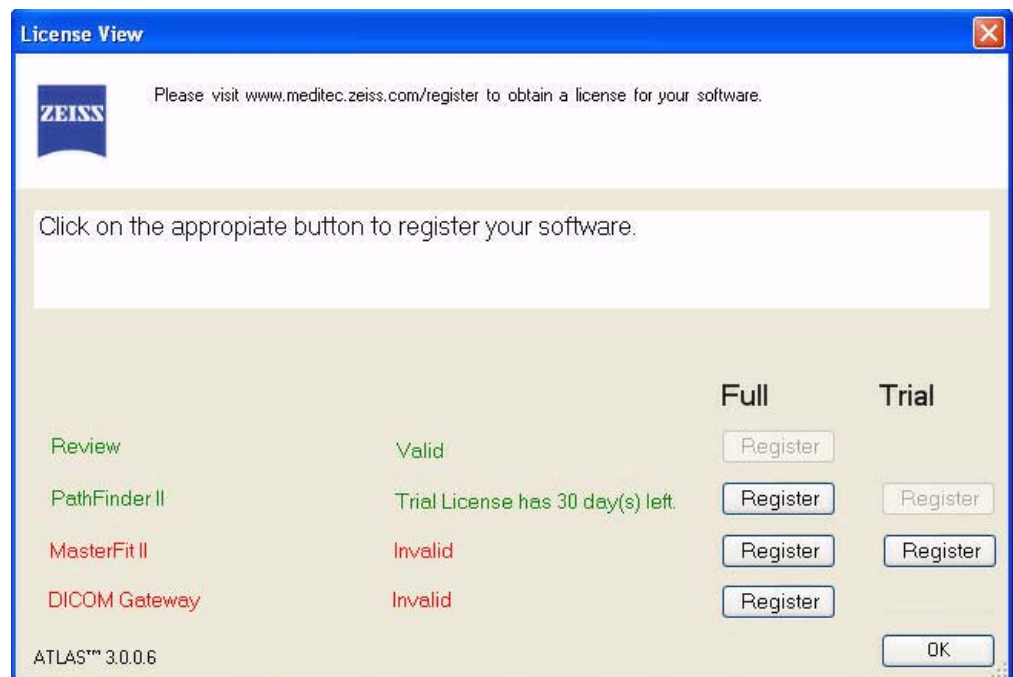


Figure I-3 License View Window – PathFinder II 30-Day Trial License Registered

3. Select **OK** to close the LICENSE VIEW window and begin using the software.

4. You have 30 days from the date of registering to continue using the software. The number of days left in your Trial license is shown on the LICENSE VIEW window (Figure I-3). Each day during the Trial period you will be notified at application startup with a dialog such as shown in Figure I-4 below:

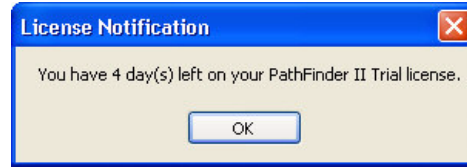


Figure I-4 License Notification Dialog

5. Click **OK** to continue using the software for your remaining trial days. At the end of your Trial license, the license will expire and you will need to purchase a Full license to continue using the software.

Registering a Full License

1. Click **Register** for the license(s) you want to register.
2. The CZM License Registration Utility dialog (Figure I-5) appears.

A screenshot of the "CZM License Registration Utility 5.2" dialog box. The dialog is divided into three steps:

- STEP 1: Enter Software Certificate Serial Number.** This section contains a text box for "Certificate Serial Number" with the value "RAI", a text box for "FEATURE TO BE REGISTERED:" containing "ATLAS Review Software.", and a text box for "Node ID:" with the value "F72B3B32".
- STEP 2: Obtain License Key and Security Code.** This section contains the text "Register License on the Web. Use link below:" followed by a blue hyperlink: <http://www.meditec.zeiss.com/register>.
- STEP 3: Register Licensed Feature.** This section contains the text "Enter the License Key and the Security Code obtained on STEP 2 and Save." followed by two text boxes: "License Key:" and "Security Code:". At the bottom right of this section are "Save" and "Close" buttons.

Figure I-5 CZM License Registration Utility Dialog – Review Software

License Registration

3. Under FEATURE TO BE REGISTERED, confirm that the name of the feature you selected matches the license certificate you are about to register.
4. Make a note of the unique Node ID of your system. Enter the Certificate Serial Number provided on the software certificate, obtained from Carl Zeiss Meditec customer, or found on a sticker affixed to the back of the CD case, including the alphabetic prefix and the intervening dash before the number.
5. To obtain a License Key and Security Code, go to the Carl Zeiss Meditec website: www.meditec.zeiss.com/register. If your language is other than English, select your language under the “Other Languages:” area of the website.



Note: If you have questions regarding software registration, please contact Carl Zeiss Meditec. In the United States please call Carl Zeiss Meditec at 1-800-341-6968 or by email at z.customersupport@meditec.zeiss.com. Outside the United States, please contact your local Carl Zeiss Meditec distributor.

6. Go to the bottom of the page, where it says: “When ready use the [form](#) to create your License Key” and click on the word “[form](#)” (See [Figure I-6](#) below).

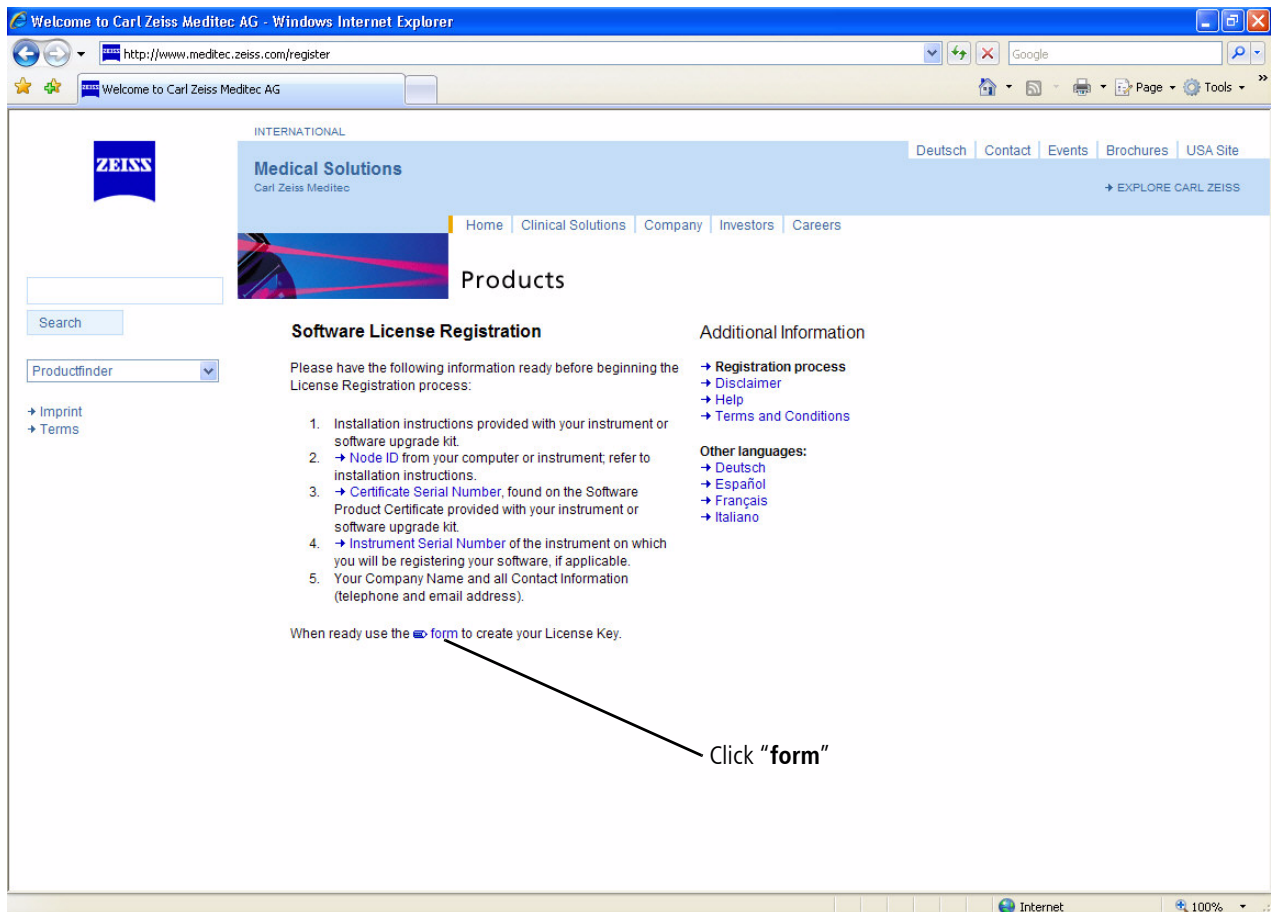



Figure I-6: Carl Zeiss Meditec Software License Registration Page on the Internet

7. Enter your Certificate Serial Number and click the **Submit** button.

8. Enter your Node ID and personal information and click the **Submit** button to generate your License Key and Security Code.
9. Write down your License Key and Security Code, or print out and save the entire web page for reference.

 **Note:** If you are unable to complete the license registration process, click **Cancel** to quit the license registration utility. Double-click the ATLAS Review Software desktop icon to restart the software and return to Step 1 of license registration above.

10. Returning to the CZM License Registration Utility, enter the License Key and Security Code in the appropriate fields. The **Save** button will become active only when the correct information is entered. When the **Save** button becomes active, click **Save**.
11. If the license registration is successful, a dialog will be displayed confirming successful registration (Figure I-7).

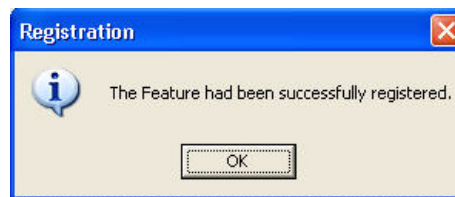


Figure I-7 Successful License Registration Dialog

12. Click **OK** to close the dialog and complete the license registration.
13. The LICENSE VIEW window (Figure I-8) is displayed with the Full license registered. Select **OK** to begin using the software.

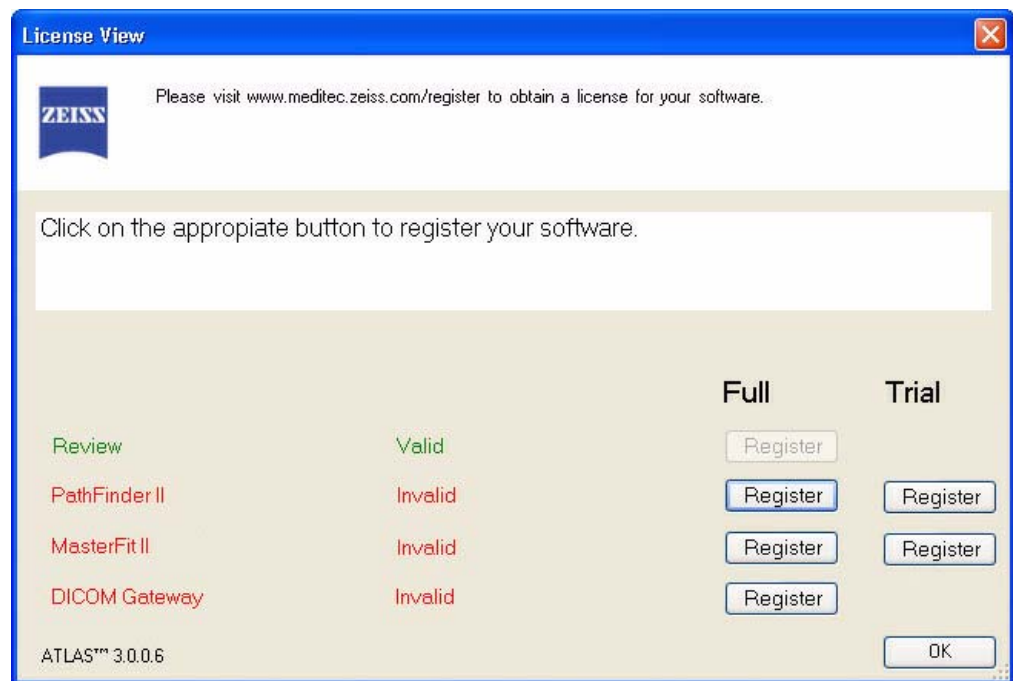


Figure I-8 License View Window with Full Review License Registered



Note: If you get an error message, verify that you have entered the correct values for your license information and try again.

(J) Glossary

2 -Difference Display

A display that shows the currently selected exam, the previous exam for the same eye, and the power differences between the two.

3-Difference Display

A five-map display providing information on the surgical and healing changes that take place on the eye after corneal surgery. It is also useful to follow contact lens induced change over time, to determine the effect that the lens is having on the cornea.

Archive

1) The process of incrementally saving specific patient data to media or a file server in a form suitable for later retrieval, or 2) the physical media or volume on the file server used to store such patient data. Used for freeing hard drive space on the computer and backup.

Astigmatism

Corneal astigmatism occurs when the cornea is not symmetric about its optical axis. It is calculated as the difference between the Steep and Flat K values displayed as a positive value.

Axial Curvature View

A graphic in which the corneal surface is represented in two dimensions (x and y) with the assigned color representing a given measure (e.g., curvature) of the cornea at that location.

Button

An object displayed on the computer screen that can be selected with the touchpad or mouse and activated by clicking.

Calibration Bar

Frame with three mounted spheres that is placed in the chin rest assembly in order to capture images used to calibrate the system.

Calibration Test

Process of checking the ATLAS system to make sure it is providing accurate measurements.

Category

A set of patients. Categories are used to classify patient records in local storage.

Chin Rest

Assembly that cradles the patient's chin and forehead during an examination.

CIM

Corneal Irregularity Measurement.

Clear

The deletion of exam data that has been previously archived.

Computer

ATLAS instrument component that contains the central processing unit, random-access memory, and disk drive.

Corneal Apex

The location on the corneal surface, of a normal cornea, where the mean of the local principal curvatures is greatest. For a normal eye, the corneal apex shows the center of symmetry.

Corneal Vertex

The corneal vertex defines the center of all maps and is equal to the point on the cornea where the instrument optical axis is perpendicular to the corneal surface (the center of the innermost ring).

CZM

Carl Zeiss Meditec.

Database

A complete record of all patient and exam information in the instrument. The database is stored on the instrument's hard disk.

DICOM

Digital Imaging and Communications in Medicine. DICOM is a standard for handling, storing, printing, and transmitting information in medical imaging. It includes a file format definition and a network communications protocol. The communication protocol is an application protocol that uses TCP/IP to communicate between systems. DICOM files can be exchanged between two entities that are capable of receiving image and patient data in DICOM format.

EMR

Electronic Medical Records.

Ethernet

Ethernet is a family of standard computer networking technologies for local area networks (LANs). Allows you to network your instrument with different computers, printers or office management systems to share information and exams.

Export

Process of copying exams from the hard drive to a CD or network location; typically used to transfer exams from one instrument to another.

Field

A portion of a screen display that contains information such as a patient's name or date of examination.

File Server

A computer system provided by the customer or third-party to store Patient Data files.

Fluorescein

An inert organic compound dye that is used to stain the tear film for contact lens fitting and to assess the integrity of the cornea. It mixes with the tear film and glows in the presence of ultraviolet light or cobalt blue light.

Geometric center

Point on the cornea corresponding to the center of the limbus contour.

HVID

Horizontal Visible Iris Diameter (mm). This is the same as the Limbus diameter (mm) or White-to-White (mm).

Import

Process of copying exams from another location (i.e., Network drive) to the hard drive; typically used to transfer exams from one instrument to another.

Joystick

Device used to focus the image of a patient's eye and trigger the image capture routine.

Joystick Lock

Control located in the joystick locks the projection head in place while the instrument is being moved.

JPEG

A commonly used method of compression for photographic images. The compression method is usually lossy compression, meaning that some visual quality is lost in the process and cannot be restored. Image files that employ JPEG compression are commonly called "JPEG files" and the most common filename extensions are .jpg and .jpeg. The name JPEG stands for Joint Photographic Experts Group, the name of the committee that created the standard.

Keratometry View

Data display that provides information similar to data obtained using a Keratometer; shows dioptric values for three optical zones: central, intermediate, and peripheral.

LASIK

Laser in situ keratomileusis. A method of surgically correcting refractive errors by using a microkeratome to create a corneal flap and then ablating tissue in the stromal bed of the cornea using an excimer laser. Under this precise control, the laser reshapes the curvature of the cornea to correct for nearsightedness, farsightedness or astigmatism.

LAN

A local area network (LAN) is a computer network covering a small geographic area, like a home, office, or group of buildings.

Landscape Orientation

An image printed across the wide axis of a sheet of paper, i.e., 11" wide by 8½" long.

Liquid Crystal Display (LCD) Screen

Used for viewing images and exams, similar to a laptop computer screen.

MasterFit II

MasterFit II is an optional software feature for the ATLAS System that incorporates contact lens fitting capabilities.

Media

Removable media used to store Patient Data files. A CD or DVD used on the ATLAS optical drive is an example of a media.

Micrometer (μm)

A metric unit of measurement equivalent to one millionth of a meter, or one thousandth of a millimeter ($1000 \mu\text{m} = 1 \text{ mm}$, $1 \text{ m} = 3.28 \text{ ft}$).

Millimeter (mm)

A Metric unit of measurement equivalent to one thousandth of a meter ($1000 \text{ mm} = 1 \text{ m}$, $10 \text{ mm} = 1 \text{ cm}$, $1 \text{ m} = 3.28 \text{ ft}$).

Oblate

Describes corneal eccentricity, where the cornea is more elliptical in the vertical meridian. An eye following myopic refractive surgery is an example of an oblate cornea, with the center being flatter than the periphery.

Orientation

The way that images are printed, either across the narrow axis of a sheet of paper (portrait orientation) or across the wide axis (landscape orientation).

Overview Display

A Display that shows four separate data views of an exam; the views that appear in this Display can be by set in a Parameter Set.

PACS

Picture archiving and communication systems used in medical imaging. PACS are computers or networks dedicated to the storage, retrieval, distribution and presentation of medical images. The medical images are stored in an independent format. The most common format for image storage is DICOM (Digital Imaging and Communications in Medicine).

PathFinder II

PathFinder II is an optional software feature for the ATLAS System designed to identify abnormal, pathologic, and normal corneas.

Patient Selection Window

The active screen where the user can select a patient, add a new patient, or view today's patient list.

PDF

Portable Document Format from Adobe®. PDF is fixed-layout document format used for representing documents in a manner independent of the application software, hardware, and operating system. Each PDF file can encapsulate a complete description of the document that includes the text, fonts, images, and vector graphics that compose the document.

Photopic

Condition in which the eye is in a "light adapted" state.

Placido disk

Name associated with a group of concentric rings.

PDMS

Patient Data Management System. See [PMS](#) below.

PMS

Patient Management System. PMS is a category of software that deals with the day-to-day operations of a medical practice. Such software frequently allows users to capture patient demographics, schedule appointments, maintain lists of insurance payers, perform billing tasks, and generate reports. PMS is often connected to electronic medical records (EMR) systems. While some information in a PMS and an EMR overlaps—for example, patient and provider data—in general the EMR system is used for assisting the practice with clinical matters, while PMS is used for administrative and financial matters.

Pop-up/drop down menu

A list of choices that pops up or drops down from an area of the screen when clicked on by the mouse.

Portrait Orientation

An image printed across the narrow axis of a sheet of paper, i.e., 8½" wide by 11" long.

Prolate

Describes corneal eccentricity, where the cornea is more elliptical in the horizontal meridian. Normal human corneas are prolate, but a highly prolate cornea usually indicates corneal pathology.

Projection Head

ATLAS instrument component that projects rings and houses the video cameras used to capture images of a patient's eye.

Q Value

Q value is an index of asphericity and is a measure of the shape of the cornea: Q is defined as the inverse (or negative) of the Shape Factor. The index of asphericity indicates how much the curvature changes upon movement from the center to the periphery of the cornea. A normal cornea is prolate (i.e., becomes flatter toward the periphery) and has the asphericity Q of -0.26. A prolate surface has negative Q values and positive oblate surface values. Most myopic laser vision corrections change the anterior corneal surface from prolate to oblate.

OcuLign® Mode

This mode enables capturing an image that is compatible with the Carl Zeiss Meditec CRS-Master Software. This feature is used when capturing the photopic image so you can use the exam for corneal guided ablation with the CRS-Master Software.

Retrieve

The process of reading specific Patient Data from an Archive. Unlike restoring from a backup, retrieving is a routine part of the data management workflow.

Rings Image View

Data display that shows the actual image of the eye as captured by the ATLAS system while Placido rings are projected onto it.

RMS

Root Mean Square (abbreviated RMS or rms), also known as the quadratic mean, is a statistical measure of the magnitude of a varying quantity. The name comes from the fact that it is the square root of the mean of the squares of the values.

Scotopic

Condition in which the eye is in a “dark adapted” state.

Selection List

A list of choices, such as patient names or data views, that appear on the screen; choices can be made by positioning the arrow over a selection and clicking the mouse button.

Synchronize

The process of retrieving new data from an archive and storing it locally. Specifically, this refers to retrieving index data, rather than image data.

TIFF

Tagged Image File Format, an image file format for storing images. Unlike standard JPEG, TIFF files using lossless compression (or no compression at all) can be edited and resaved without suffering a compression loss or image quality degradation. Storing a sequence of images in a single TIFF file is also possible.

TKM

Toric Keratometric Mean.

Topographical

A display that graphically represents three-dimensional features.

Touchpad

Pad used to move a pointer around the screen and make selections by “clicking” one of the control buttons located on the bottom of the touchpad.

Trend Analysis Display

A multi-exam display that shows the currently selected exam and up to three previous exams for the same eye along with a data analysis table of the exams, including mean and standard deviation.

Trend Display

A multi-exam display that shows the currently selected exam and up to three previous exams for the same eye.

Zernike Polynomial

An orthogonal set of polynomials that are used to describe the aberrations of the cornea or lens from an ideal spherical shape.

XML

Extensible Markup Language.

(K) Specifications

ATLAS Model 9000 Instrument

Field of view

- 17 mm X 14.5 mm

Number of Placido Rings

- 22 (18 superiorly)

Display Range

- 15 to 95 D (3.5 to 22.5 mm)

Accuracy/Repeatability

- Complies with ANSI Z80.23-2008, American National Standard for Ophthalmics – Corneal Topography Systems – Standard Terminology, Requirements, Type A.
- Complies with ISO 19980:2005, International Standard – Ophthalmic instruments – Corneal Topographers, Type A.

Table K-1 Accuracy Table^a – Test Surfaces (Axial Curvature Difference, D / Elevation Difference, μm)

	Zone 1: Center (≤ 3 mm)			Zone 2: Middle (3 mm < diameter ≤ 6 mm)			Zone 3: Outer (diameter > 6 mm)		
	Mean ^b	1 Std. Dev. ^c	2 Std. Dev. ^c	Mean ^b	1 Std. Dev. ^c	2 Std. Dev. ^c	Mean ^b	1 Std. Dev. ^c	2 Std. Dev. ^c
Sphere ^d	0.004/---	0.050/0.30	0.100/0.60	0.024/---	0.022/0.37	0.044/0.74	0.001/---	0.040/0.71	0.080/1.42
Torus ^e	0.077/---	0.068/0.33	0.136/0.66	0.124/---	0.029/0.60	0.058/1.19	0.207/---	0.059/2.57	0.118/5.14
Asphere ^f	0.055/---	0.045/0.30	0.090/1.20	0.064/---	0.036/0.67	0.072/1.34	0.071/---	0.064/3.26	0.128/6.52

a. All test surfaces oriented with respect to the CT axis: normal to the optical axis ($\pm 1^\circ$) and centered on the optical axis (± 0.1 mm)

b. Mean difference only for Axial power.

c. Mean of standard deviation of difference between paired datasets for each zone.

d. Radius of curvature: $r = 8.000$ mm; diameter = 12.7 mm; eccentricity = 0.0

e. Toric: Radii of curvature, $r_1 = 8.000$ mm and $r_2 = 8.4000$; diameter = 12.7 mm; eccentricity = 0.0

f. Ellipsoid: Central radius of curvature, $r = 7.8$ mm; diameter = 12.7 mm; eccentricity = 0.5; prolate ($Q = 0.25$)

Table K-2 Repeatability Table^a – Human Corneas (Axial Curvature Difference, D / Elevation Difference, μm)

Zone 1: Center (≤ 3 mm)			Zone 2: Middle (3mm < diameter ≤ 6 mm)			Zone 3: Outer (diameter > 6 mm)		
Mean ^b	1 Std. Dev. ^c	2 Std. Dev. ^c	Mean ^b	1 Std. Dev. ^c	2 Std. Dev. ^c	Mean ^b	1 Std. Dev. ^c	2 Std. Dev. ^c
0.114/---	0.29/0.63	0.58/1.27	0.103/---	0.20/1.72	0.41/3.44	0.084/---	0.21/4.27	0.43/8.55

a. (20 patients) x (1 eye per patient) X (2 exams per eye). Total: 20 paired datasets.

b. Mean of absolute difference between paired datasets for each patient for each zone (Axial power only).

c. Mean of standard deviation of difference between paired datasets for each zone.

Specifications

Placido Ring Illumination

- Infrared LED (950 nm)

Optics

- Digital CMOS camera with 1280 x 1024 pixel resolution

Computer

- Windows XP Professional
- Internal storage: Up to 35,000 exams
- Writable Optical Drive
- 3 Ethernet ports, 2 USB 2.0 ports
- Integrated 12.1" TFT-LCD color flat panel display

Physical

- Dimensions (instrument only): 52 L x 37 W x 50 H (cm)
- Dimensions (in crate): 77 L x 55 W x 80 H (cm)
- Weight (instrument only): 17.7 kg (39 lbs.)
- Weight (in crate): 31 kg (69 lbs.)

Electrical Requirements

Electrical Rating

- 100-240 V, 50-60 Hz, 2-1 A

Fuse Rating



- T3.15 A 250 V



WARNING: Always replace fuses with the same type and rating. Failure to do so may create a risk of fire.

Environmental Conditions

Transport and Storage

Temperature: -40 to +70 deg. C

Relative Humidity: 10% to 100%, including condensation

Atmospheric Pressure: 50 to 106 kPa

Operation

Temperature: +15 to +30 deg. C

Relative Humidity: 30% to 75%, excluding condensation

Atmospheric Pressure: 70 to 106 kPa

ATLAS Review Software

Operating System

- Microsoft® Windows XP Professional with Service Pack 2 or 3
- Microsoft Windows Vista® Business with Service Pack 1
- 32 Bit systems

System Requirements

The system running ATLAS Review Software must meet the following minimum requirements:

- Processor: 500 MHz or faster
- 20 GB available hard disk space
- Memory: 1 GB RAM for Windows XP, 2 GB for Windows Vista; when running additional applications concurrently, more memory may be required.
- Windows file system: NTFS required. FAT16 and FAT32 are not supported.
- CD-ROM drive (required for installation)
- 1024 x 768 pixel screen resolution; 16 bit color
- Microsoft Internet Explorer 4.72 or higher (for license registration)
- TCP/IP is installed

Network File Server System Requirements

Operating System

- Windows 2003 Server
- Windows 2003 Small Business Server

System Requirements

If you plan to use a network file server it must meet the following minimum requirements:

- Processor: 800MHz processor or faster
- Memory: 256 MB RAM
- NTFS drive partition(s) for ATLAS data. ATLAS data is compatible only with NTFS.
- 100GB available disk space for data storage (should be expandable)
- Network interface card 100 or 1000 Mbps
- External Hard Drive or Tape backup unit for offsite disaster protection



Note: It is the user's responsibility to protect their exam data from loss by frequent backup of the network server. Backup media should be of archival quality, and the media should be stored in a secure, remote location.



WARNING: Failure to backup the network file server may result in the loss of medical exam data.

Instrument Table (optional)

Table K-3 Power Table Specifications

	PN 24-41200-301	PN 24-41200-302	PN 24-41400-30
Electrical Rating	100 - 120 V~, 50-60 Hz, 8.0 A	100 - 120 V~, 50-60 Hz, 8.0 A	230 V~, 50-60 Hz, 6.3 A
Fuse Rating	T8.0 A, 250 V	T8.0 A, 250 V	T6.3 A, 250 V
Table Top Dimensions	43 D x 79 W (cm)	43 D x 79 W (cm)	43 D x 79 W (cm)
Table Min / Max Height	66 Min, 101 Max (cm)	66 Min, 101 Max (cm)	66 Min, 101 Max (cm)
Table Foot Print	64 D x 86 W (cm)	64 D x 86 W (cm)	64 D x 86 W (cm)
Table Weight	34 kg (75 lbs.)	34 kg (75 lbs.)	34 kg (75 lbs.)



WARNING: Always replace fuses with the same type and rating. Failure to do so may create a risk of fire.



Warning: Do not reconfigure system components on the table, nor add non-system devices or components to the table, nor replace original system components with substitutes not approved by Carl Zeiss Meditec. Such actions could result in failure of the table height adjustment mechanism, instability of the table, tipping and damage to the instrument, and injury to operator and patient.

USB Powered Devices**Electrical Requirements**Power Rating

- 500 mA per USB port

(L) Legal Notices

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2660021135270 B

ATLAS User Manual

System Software 3.0

Specifications subject to change

Content

**User Manual Supplement:
ATLAS Model 9000**
[2660021136504 A]

2

User Manual Supplement: ATLAS Model 9000

■ Acquisition and Review Techniques – Best Practices

User Manual Supplement
Supplément au guide de l'utilisateur
Supplemento della Guida dell'utente
Bedienungsanleitung Ergänzung
Complemento del Manual del usuario



Contents

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Document Applicability

This document applies to the ATLAS Model 9000 Instrument and ATLAS Review Software.

(A) User Manual Supplement: ATLAS Model 9000






Introduction

Proper image acquisition combined with careful exam review techniques facilitate good image quality and measurement results on the ATLAS™ Model 9000 instrument.

Certain patient and alignment conditions should be taken under consideration for the best results. See [Acquisition Techniques – Best Practices](#) on page [A-1](#).

Some artifacts may be difficult to detect during acquisition. Choose the best quality data by conducting a detailed analysis review. If problems are observed for any of the following methods, additional exams should be acquired. Acquiring multiple measurements is relatively easy and increases your analysis success later. See [Detailed Analysis Review](#) on page [A-9](#).

Note that not all of these techniques are applicable to all software versions.

-  **Note:** This document is a supplement to the ATLAS User Manual. Please refer to the ATLAS User Manual for primary information relating to the ATLAS Model 9000 instrument and ATLAS Review Software.
-  **Note:** Due to the number of software versions, this document may contain screen images and terms that differ from those displayed on your version.
-  **Note:** The responsibility is upon the medical practitioner to determine the level of performance required, the quality of the measurement data, and the appropriate use of the data for their application.
-  **Note:** The ATLAS Model 9000 instrument and ATLAS Review Software are not intended to be used as the sole diagnostic for disease.
-  **CAUTION:** Decisions involving therapeutic and/or surgical procedures should be made only after considering total clinical information, and not on the basis of a single index measurement or analysis.

Acquisition Techniques – Best Practices

Patient and alignment conditions to consider include:

- Excessive Patient Motion (saccade, nystagmus, neuro-motor dysfunction) (see [Excessive Patient Motion](#) on page [A-2](#)).
- Patient Anatomy Obscuring Cornea (includes eyelids, eyelashes, nose, and eyebrows) (see [Patient Anatomy Obscuring Cornea](#) on page [A-3](#)).
- Tear Film Breakup (includes Dry Eye, insufficient blinking) (see [Tear Film Breakup](#) on page [A-5](#)).
- Pupil Contour Artifacts (around iris/pupil boundary) (see [Pupil Contour Artifacts](#) on page [A-7](#)).

Excessive Patient Motion

Excessive patient motion (saccade, nystagmus, neuro-motor dysfunction) may cause image quality issues. An example of excessive patient motion is shown in [Figure A-1](#) where the ring image is characterized by an overall blurring effect, and the red ring detection lines are poorly fitted and broken.

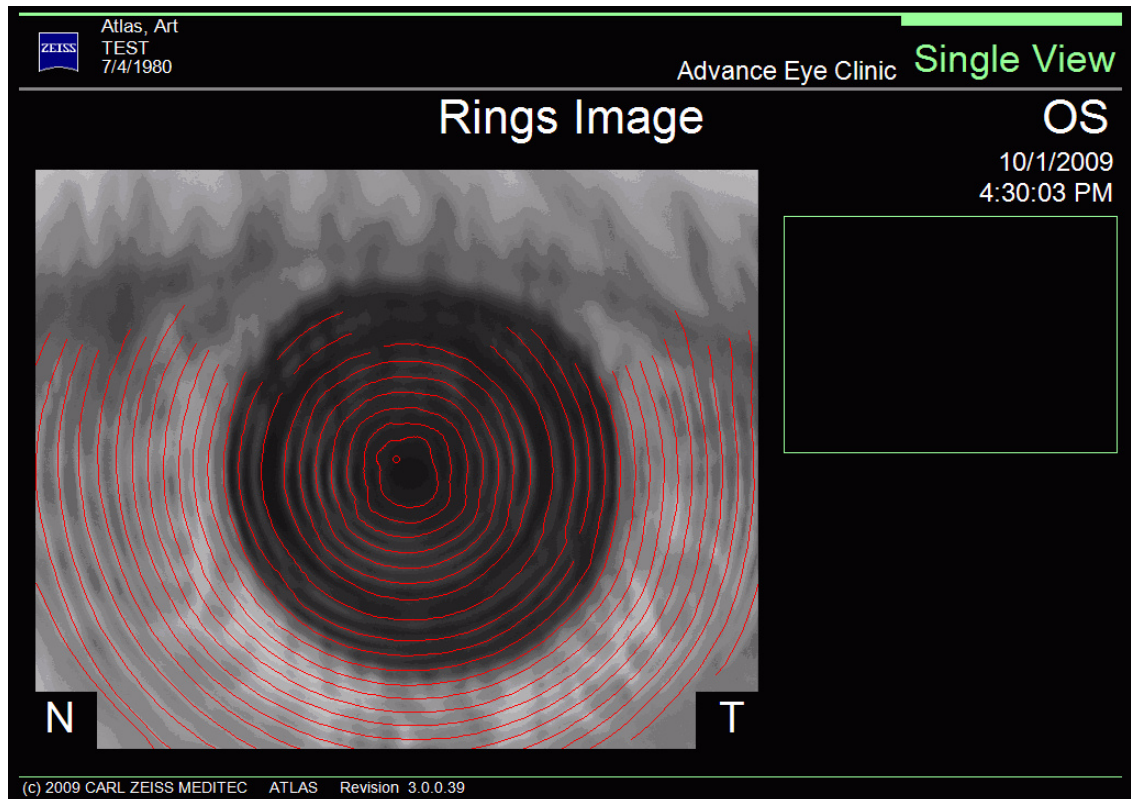


Figure A-1 Excessive Patient Motion Example

If this should occur, make sure the patient is comfortably positioned for the exam and is aligned properly, and then retake the exam. Ask the patient to blink, look at the orange fixation light, and remain as still as possible while you align the projection head. When focusing, achieve the clearest and sharpest image of *all* the rings.

Patients with neurological dysfunction or with vision loss may have difficulty fixating. Perform multiple measurements and analyze the ring image discarding acquisitions for motion blurring, apparent vertex position changes, etc.

Patient Anatomy Obscuring Cornea

Patient anatomy may obscure the cornea and cause poor image quality. Anatomy that affects corneal coverage area and may block the ring mires include eyelids, eyelashes, nose, and eyebrows. This is illustrated in the rings image example shown in [Figure A-2](#). Note how the superior zone is shadowed with no rings.

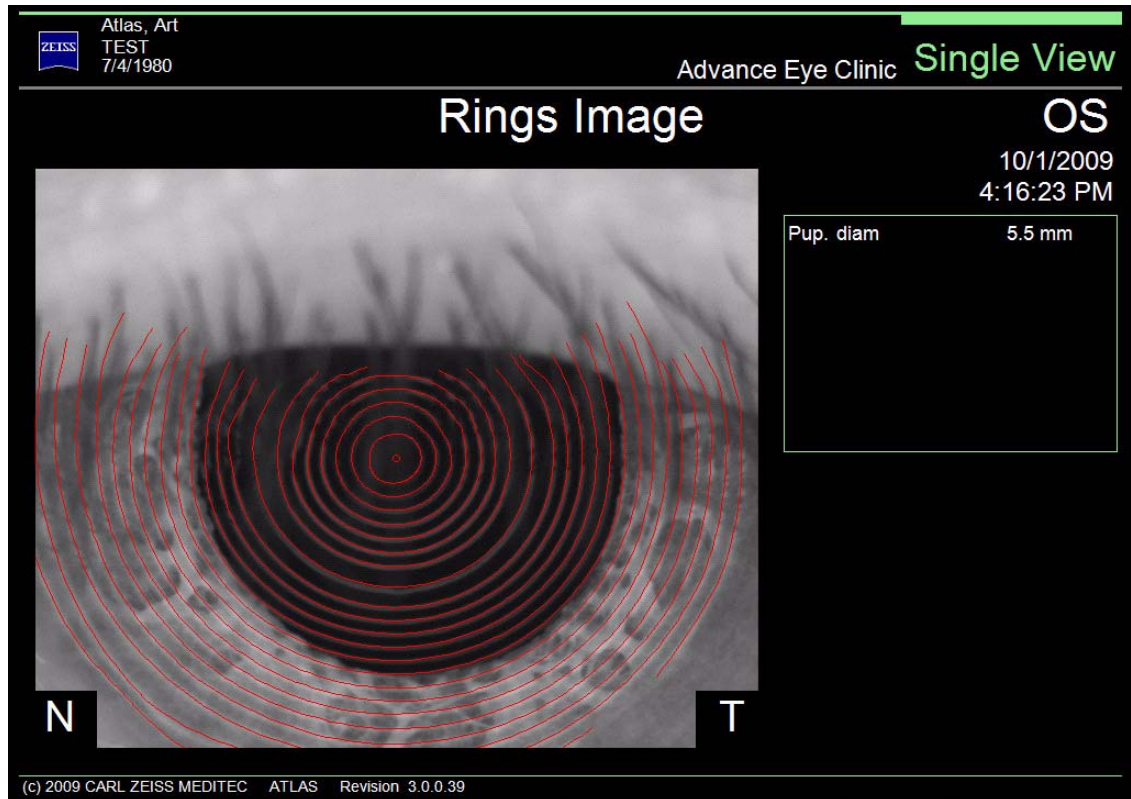


Figure A-2 Patient Anatomy Example – Rings Image

Check the Axial Curvature View for patient anatomy obscuring the cornea. The corresponding Axial Curvature View for this image is shown in [Figure A-3](#).

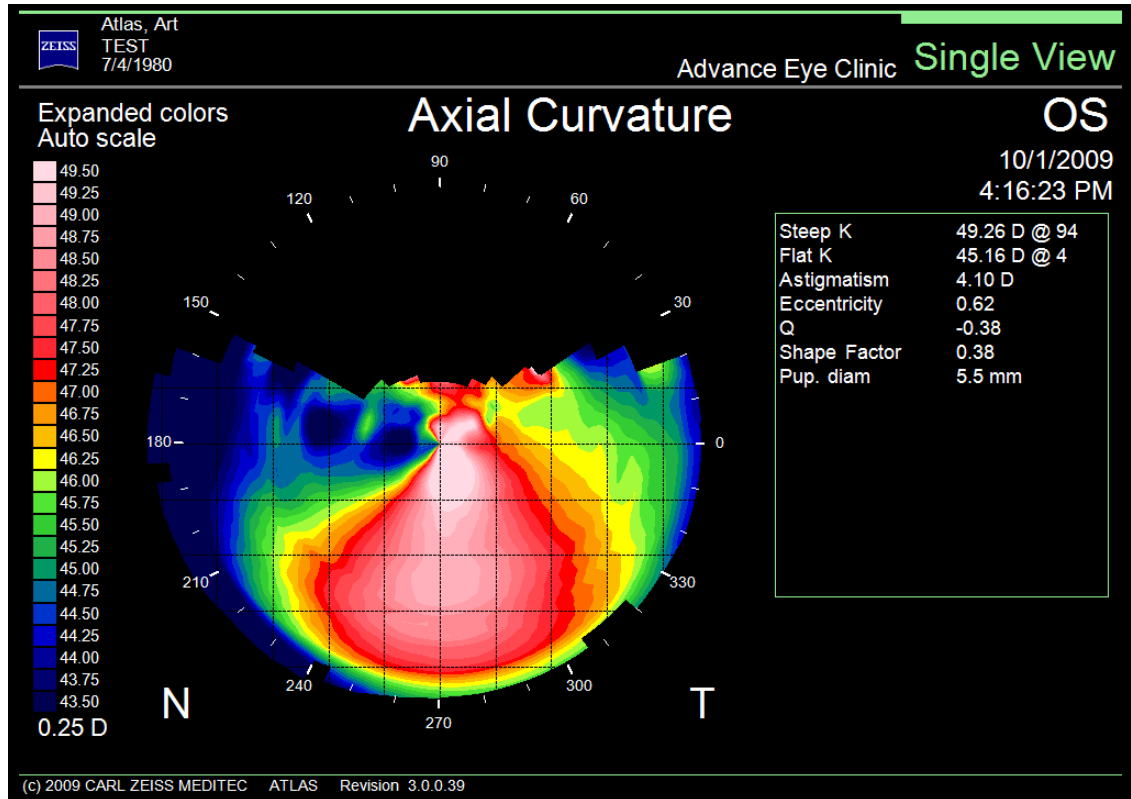


Figure A-3 Patient Anatomy Example – Axial Curvature View

If this should occur, realign the patient in the chin rest and ask him/her to “open eyes wide” prior to a repeated acquisition. A speculum, or other method, may be used to improve corneal coverage.

Tear Film Breakup

Tear film breakup may be caused by Dry Eye or insufficient blinking. Tear film uniformity affects ring detection. In this example (Figure A-4, Figure A-5, and Figure A-6), there is Tear Film Artifact. Notice how the red ring detection lines break up and do not follow the white ring mires, due to tear film irregularity. This may be caused by Dry Eye. Patients with Dry Eye may require artificial tears to prevent tear film breakup.

If tear film breakup should occur, ask the patient to “blink” and “open wide”, and then retake the exam. Shortly after blinking, but before the tear film breakup starts, is the optimal time to acquire the measurement.

The Refractive Power View is the most sensitive to viewing these artifacts. For System Software V3.0 users, it is recommended that Exam Preview and SmartCapture™ be turned on so that the 4 best quality images are presented for analysis.

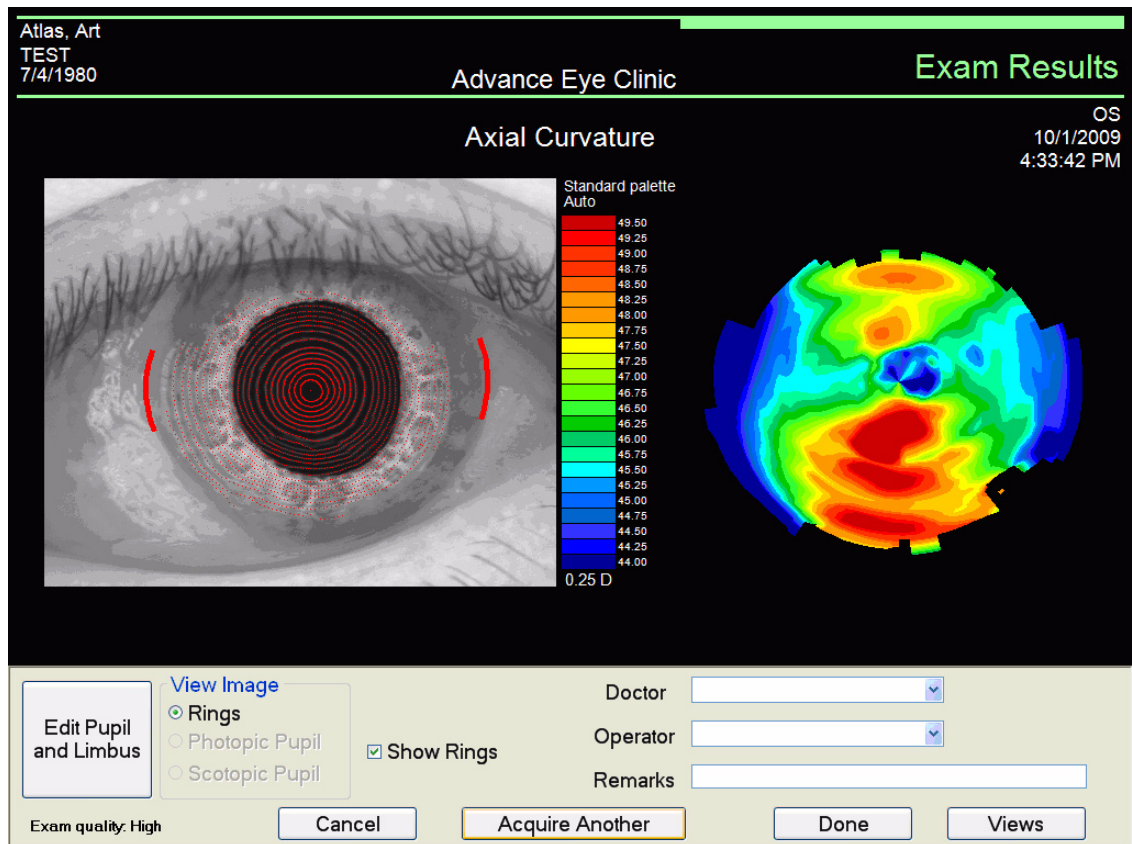


Figure A-4 Tear Film Breakup Example

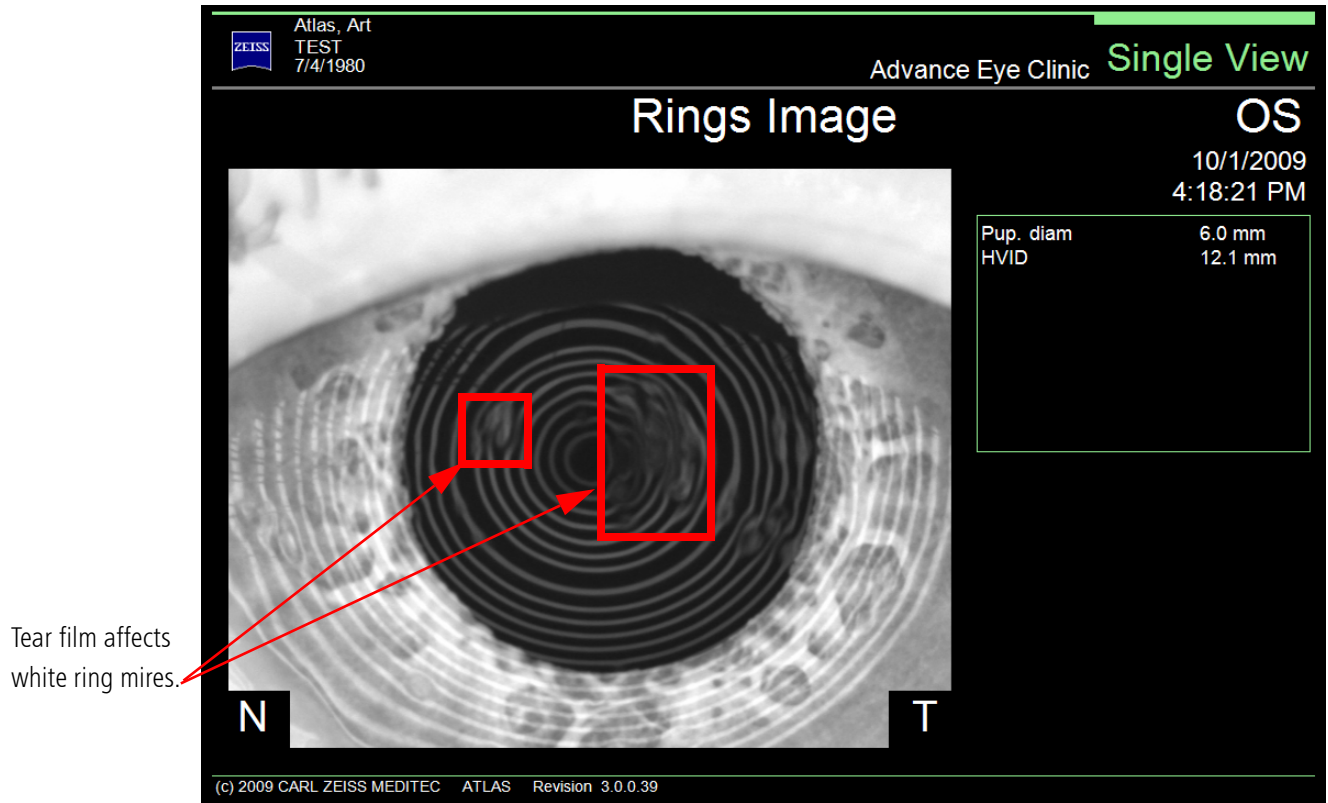


Figure A-5 Tear Film Affecting White Ring Mires

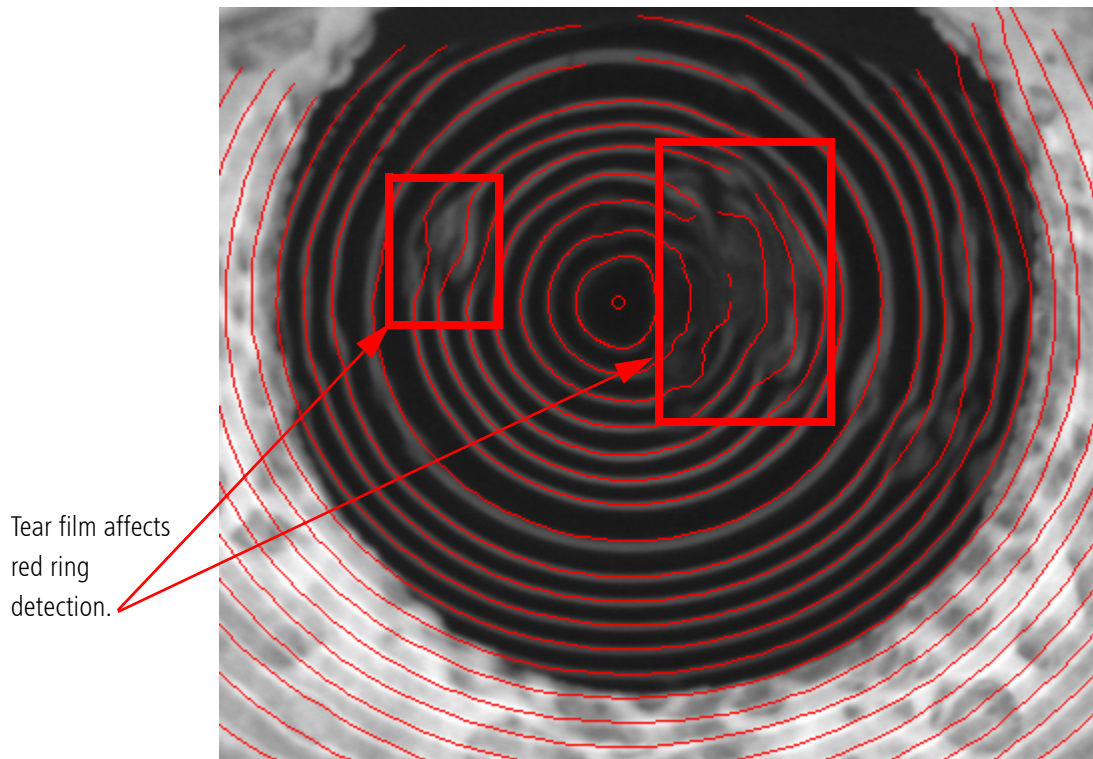


Figure A-6 Zoomed Image of Tear Film Breakup

Pupil Contour Artifacts

Pupil contour artifacts may be present around the iris/pupil boundary. In certain cases the artifact is readily observable. Confirm that the red rings match the white Placido rings and that color topography maps are not distorted or show artifacts. You can use the pupil contour as a guideline to reference distortions. An example of distortion artifacts around the pupil contour are shown on the Axial Curvature View in [Figure A-7](#).

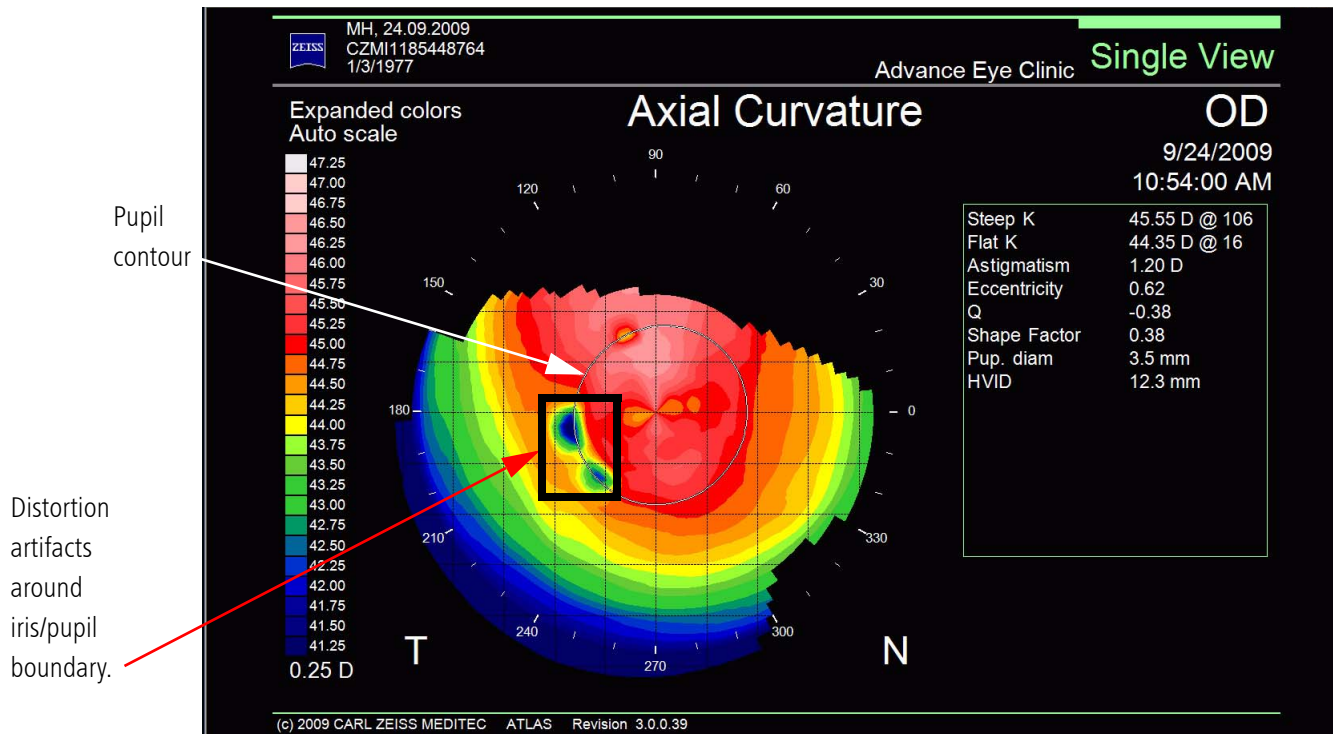


Figure A-7 Axial Curvature View Showing Distortion Artifacts

If this should occur, you may dilate or darken the room lights to encourage a larger pupil, and retake the exam. Patients with smaller pupils may be more susceptible to greater repeatability variations, especially those patients with a light-colored iris. Either use a darkened room, or cover fellow eye, to facilitate dilated pupils to achieve a pupil size preferably larger than 4.5 mm.

In certain cases, the effects of the artifact may be subtle. For System Software 3.0 users, check Sim K values on the EXAM PREVIEW screen ([Figure A-8](#)). Typically, the standard deviation of the Sim K values should be less than 0.25 Diopters. Review all acquisitions on the EXAM PREVIEW screen. If you are unsure of the quality of your image, the best option is to repeat the measurement and confirm. Check repeatability carefully. See [Detailed Analysis Review](#) on page [A-9](#).

Check Sim K Standard Deviation values.

ZEISS Atlas, Art TEST 7/4/1980 Advance Eye Clinic Exam Preview

10/1/2009 4:54:20 PM OD 10/1/2009 4:54:23 PM OD 10/1/2009 4:54:26 PM OD 10/1/2009 4:54:28 PM OD

Date Time	Image Quality	PathFinder II Eligible	Eccentricity	Shape Factor	Flat K	Steep K	HVID	Pupil Diameter	Save
10/1/2009 4:54:20 PM	High	Fail	0.62	0.39	44.17 D (7.64 mm) @ 39	44.82 D (7.53 mm) @ 129	11.8	3.3	
10/1/2009 4:54:23 PM	Medium	Fail	0.58	0.33	43.57 D (7.75 mm) @ 42	44.06 D (7.66 mm) @ 132	12.0	3.4	
10/1/2009 4:54:26 PM	High	Fail	0.62	0.38	44.55 D (7.58 mm) @ 43	44.90 D (7.52 mm) @ 133	11.9	3.4	
10/1/2009 4:54:28 PM	High	Fail	0.61	0.38	44.65 D (7.56 mm) @ 40	45.27 D (7.46 mm) @ 130	11.8	3.4	
Mean			0.61	0.37	44.24 D (7.63 mm) @ 41	44.76 D (7.54 mm) @ 131	11.9	3.4	
Std Dev			0.02	0.02	0.43	2	0.44	2	1

View Image
 Rings
 Photopic Pupil
 Scotopic Pupil

Views Rings Image
 Show Rings
 Show Pupil
 Show Limbus

Doctor
 Operator

Figure A-8 Exam Preview Screen Showing High Standard Deviation of Sim K Values

Detailed Analysis Review

Some artifacts may be difficult to detect on the EXAM PREVIEW or EXAM RESULTS screen. Choose the best data by conducting a detailed analysis review. Analysis can be performed on the ATLAS Review Software (Software Version 3.0 only). If problems are observed for any of the following methods, additional exams should be acquired.

- Check the map Views, in particular, the Axial Curvature and the Refractive Power Views. Artifacts are usually very localized with sharper defining characters.
- Check the Ring Image View with Zoom rings image turned on. Look for the Cone of Focus™ ring (ring 8) to be equidistant to adjacent rings, all rings in focus, and good ring detection following the ring mires image.
- Use the Trend Display (Figure A-9) or Trend Analysis Display (System Software V3.0 only) (Figure A-10) to identify distinctly different exams. The Trend Analysis Display shows the mean and standard deviation of the Sim K values, useful to determine repeatability. In these Figures, notice the distortion artifacts on the 10:54:00 exam, and the higher Sim K values on the 10:54:23 exam—either one of the other exams should be selected as the best quality image.

Significantly different color topography map than the other exams on this Display.

Significantly different Sim K values than the other exams on this Display.

Distortion artifacts around pupil contour.

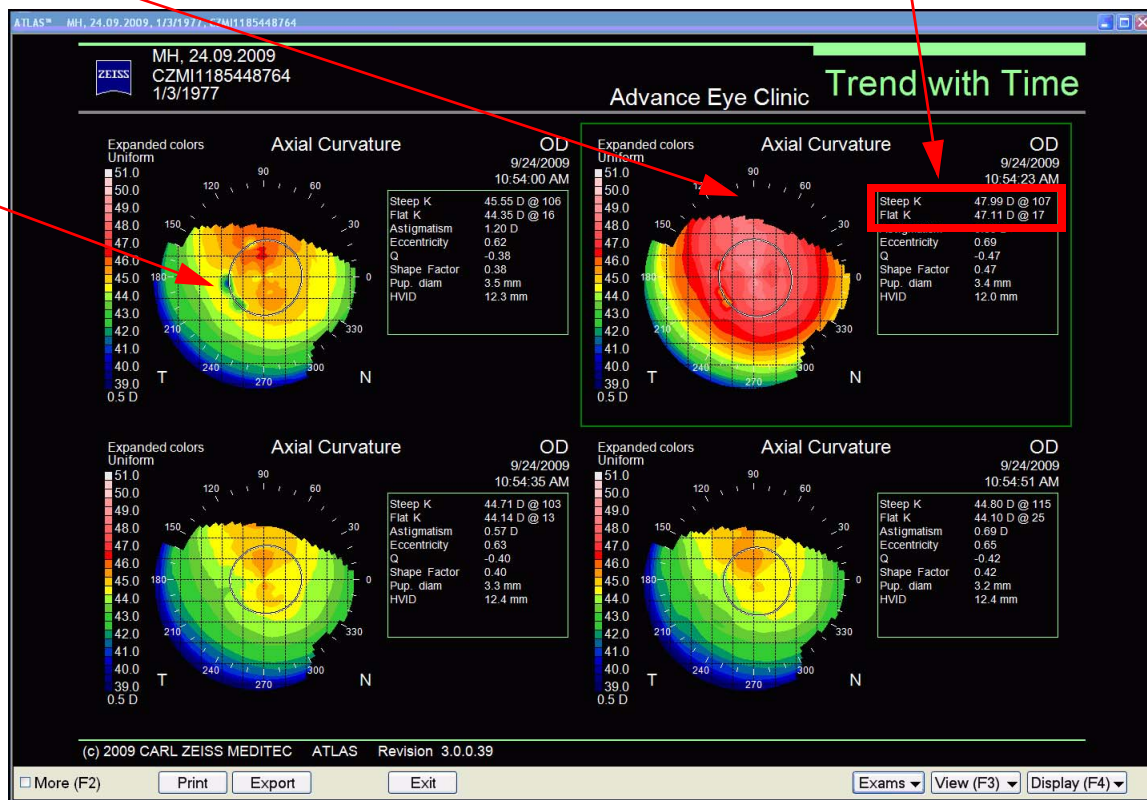


Figure A-9 Trend Display Revealing Outlier Exams

Significantly different color topography map than the other exams on this Display.

Distortion artifacts around pupil contour.

Significantly different Sim K values than the other exams on this Display.

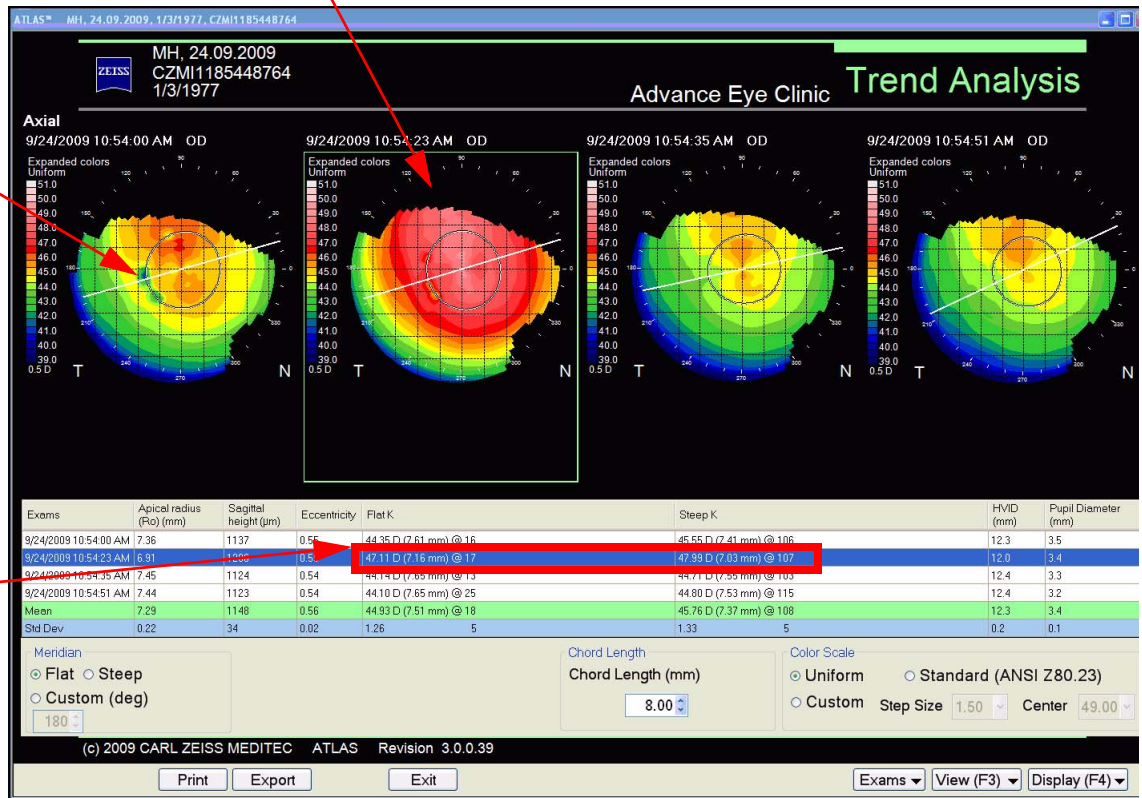


Figure A-10 Trend Analysis Display Revealing Outlier Exams



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2660021136504 A

ATLAS Model 9000

User Manual Supplement

Specifications subject to change without notice

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ATLAS Software Version 3.00
[2660021134283 B]

3

Release Notes: ATLAS

■ Software Version 3.0

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Document Applicability

This document applies to ATLAS Software Version 3.0 for the ATLAS 9000 Instrument and Review Software.

Release Notes: ATLAS Software Version 3.0

- [1. New Features](#), page [A-1](#)
- [2. Maintenance Updates](#), page [A-2](#)
- [3. Corrected Anomalies](#), page [A-3](#)
- [4. Use Notes](#), page [A-3](#)
- [5. Known Anomalies](#), page [A-5](#)

1. New Features

Licensed features described in this section are optional and may not be activated on your instrument, either because the feature is not currently available in your market, or because you have not purchased the software license.

The following new features are included in ATLAS Software Version 3.0:

1. (Optional Licensed Feature) MasterFit II Software. The MasterFit II Contact Lens Software enables the user to design gas permeable (GP) contact lenses and to simulate the resulting fluorescein pattern on the cornea. MasterFit II features both topographic or keratometric-based lens fitting methods. Based on customizable fitting preferences, MasterFit II will recommend the most appropriate lens type (including spherical, aspheric, front toric, back toric, and bi-toric designs) and will design a custom lens that best achieves the desired fitting preferences. The MasterFit Software set is an optional feature: it is installed with Version 3.0 software but runs under license protection and must be purchased.
2. (Optional Licensed Feature) DICOM Gateway. The DICOM (Digital Imaging and Communications in Medicine) Gateway allows the user to connect one or more ATLAS systems to a qualified DICOM 3.0 Ophthalmic Compatible Electronic Medical Records (EMR) system, Patient Management System (PMS), or DICOM archive, for paperless workflow. The DICOM Gateway is an optional feature: it must be installed, configured and purchased. This feature runs under license protection.
3. (Optional Licensed Feature) ATLAS Review Software. ATLAS Review Software running on a separate computer is functionally identical to the software running on the ATLAS instrument except for the ability to acquire images. ATLAS Review Software is an optional feature: it must be installed, configured and purchased. This feature runs under license protection.

2. Maintenance Updates

1. (Optional) Use SmartCapture™. Now optional, SmartCapture Image Analysis technology captures images at a rate of 15 images per second before you actually press the joystick button or spacebar at image acquisition. If the Use SmartCapture™ option is enabled, SmartCapture analyzes these images and uses the best acceptable image for image processing on the Exam Results Screen, or the best four images for the Exam Preview Screen. If the Use SmartCapture™ option is not enabled, only the last image is displayed on the Exam Results Screen, or the last four images (displayed in chronological order, left to right) on the Exam Preview Screen.
2. (Optional) Exam Preview Screen. If enabled, the Exam Preview Screen displays the last four images (displayed in chronological order, left to right) in the image frame buffer (or best four images if the Use SmartCapture™ option is on). Clicking a Save button below an image marks it for saving and viewing. A Parameters Table displays values for Eccentricity, Shape Factor, Flat and Steep Sim K's, HVID, and Pupil Diameter for each image. The mean and standard deviation values for these parameters are also displayed for the images.
3. Trend Analysis Display. The Trend Analysis Display shows up to four exams for the same eye, along with a table of data analysis parameters. Data Parameters displayed include Apical radius (Ro) (along meridian), Sagittal height (along meridian), Eccentricity (along meridian), Flat and Steep Sim K's, HVID, and Pupil Diameter values for each image. The mean and standard deviation values for these parameters are also displayed for the images.
4. Rings Image Zoom. The Rings Image View now has an option to display a zoomed in rings image to 10mm. Only available for ATLAS 9000 exams.
5. RMS Data. The Corneal Wavefront, Image Simulation, PSF, and MTF Views can now display RMS data. The Root Mean Square (RMS) value of the Zernike coefficients determines how much wavefront error the anterior cornea has. The higher the RMS value, the larger the amount of wavefront error. Low (2nd order aberrations only), High (3rd order aberrations and greater only), and Total (Low + High) RMS values (μm), and their "equivalent defocus" values (diopters only) are displayed. Equivalent defocus is the amount of defocus needed to produce the same RMS wavefront error produced by one or more higher-order aberrations. Equivalent defocus allows us to compare the order of magnitude of different kinds of aberrations and judge their clinical significance.
6. Database Recovery Tool. When logged in as admin user, the Database Recovery Tool (**Tools > Database Recovery Tool**) enables you to synchronize from a system's own database archive for database recovery. The Database Recovery Tool should only be used with assistance from a Carl Zeiss Meditec authorized technical support technician.

7. Synchronize Status Indicator. The Synchronize indicator reports synchronization status in terms of connectivity. A red circle with a white "X" indicates that no synchronization volumes are enabled. A green light indicates all enabled synchronization volumes are connected. A yellow light indicates at least one enabled synchronization volume is connected, and at least one enabled synchronization volume is disconnected. A red light indicates all enabled synchronization volumes are disconnected. You can mouse over the indicator for details.
8. Export Single Exams. When exporting ATLAS 9000 data, (**File > Export > To Atlas 9000 Series Export Media**), you can select a single exam or only certain exams for a patient, rather than all exams, by clicking the **Select Exams** button and then selecting the exams you want to export for each patient.

3. Corrected Anomalies

1. Refractive Power View Display Anomalies. In Software Version 2.0, if mm is selected as the units (global parameter) in a View, the Refractive Power View in Profile view mode correctly displays diopter values as the unit, but incorrectly mm as the label. Also the Color view in the circle will not be correct. This anomaly has been corrected so that diopters and the Color view are correctly displayed.

4. Use Notes

1. **Note:** The Review Software requires administrative privileges in order to run.
Action: User must have administrative privileges to use the Review Software.
2. **Note:** The Review Software cannot be installed on an ATLAS instrument.
Action: The user should read the Review Software installation guide before installing the Review Software.
3. **Note:** If Print2VisuPaC is chosen as the default printer, it must be configured to Portrait Mode. Selecting Print2VisuPaC Landscape mode can cause an error.
Action: If using Print2VisuPaC, always use Portrait mode.
4. **Note:** All named Parameter Sets have revised default settings.
Action: To update to the revised default settings, select the Defaults button for each Parameter Set.
5. **Note:** The rings image is only displayed on the simulated fluorescein map view for exams created on the ATLAS 9000 in MasterFit II.
Action: Exams created on earlier Atlas models can be viewed in MasterFit II but the rings image is not displayed.
6. **Note:** The contact lens can only be moved on the simulated fluorescein map view for exams created on the ATLAS 9000 in MasterFit II.
Action: Exams created on earlier ATLAS models can be viewed in MasterFit II but the contact lens cannot be moved.

7. **Note:** The MasterFit II software uses the Refraction that has been input by the operator to help determine the contact lens power. If no refractive data has been entered, the software assumes a plano refraction and displays a warning to the operator.

Action: The operator should enter refractive data in order for the MasterFit II software to be able to determine appropriate contact lens powers and parameters.
8. **Note:** In some instances, the MasterFit II software lens design area of the screen is cut off when the tool bar is being displayed or the window has been resized (Review Software).

Action: The operator can hide the tool bar to make all the contact lens design items visible or maximize the window if it has been resized.
9. **Note:** The initial archive of a database containing thousands of exams will take a long time. For example, on the ATLAS 9000 instrument it will take about 10 hours to complete archiving 1000 exams.

Action: Initial archiving of large database should only be started at a time when the use of the instrument is not required for a long time.
10. **Note:** The initial synchronization of an archive containing thousands of exams will take a long time. For example, on a late model computer it will take approximately 10 hours to complete synchronizing 1000 exams.

Action: Initial synchronizing of a large archive should only be started at a time when the use of the computer is not required for a long time.
11. **Note:** Exporting all the patients in a large database can be very slow and is not recommended.

Action: Do not attempt to export all patients at a single time from a large database.
12. **Note:** Exporting all the patients in a large database to the DICOM Gateway can be very slow and is not recommended.

Action: Do not attempt to export all patients at a single time to the DICOM Gateway from a large database.
13. **Note:** The space needed for export is calculated based upon a single patient, not on the number of exams to be exported.

Action: If exporting a large number of exams, check beforehand that there is enough free space on the destination drive. A single exam takes between 1 and 4 MB of space.
14. **Note:** Archiving does not stop when available space on the archive volume drops below the red Archive Status (200 MB available on archive volume) during the archive process.

Action: If Archive Status turns yellow, either free up space on the archive volume or create a new archive volume before archiving.

15. **Note:** If you have Auto print after acquisition checked in the Printing Options dialog, or Enable Automatic End of Exam Export checked in the DICOM Configuration tab, the selected reports and Views at the end of exam acquisition are only printed or exported to DICOM for the last saved OD and OS exam.

Action: Other saved exams taken at exam acquisition can be printed or exported to DICOM by selecting the exams on the Analysis Screen after acquisition, and then printed or exported.

16. **Note:** Larger than expected tear film clearances under the peripheral curve regions may be observed in the MasterFit II fluorescein simulation. MasterFit II does not blend between the base, secondary peripheral, and third peripheral curve regions. Blending effectively lowers the peripheral region and reduces the effective peripheral clearance.

Action: None.

5. Known Anomalies

1. **Anomaly:** If Print2VisuPac is installed and the printing mode is set to landscape an unhandled exception will occur.

Work-Around: When using Print2VisuPac, set the printing mode to portrait.

Preventive: None.

2. **Anomaly:** The Review Software installer will not work on a Windows XP 64 bit system. It will attempt to install Windows Framework .NET 2.0 for a 32 bit system.

Work-Around: When installing the Review Software on a Windows XP system, use only a 32 bit Windows XP system.

Preventive: None.

3. **Anomaly:** The Review Software does not support Large size (120 DPI) display setting when the screen resolution is set to 1024 x 768.

Work-Around: Change the DPI setting in the Advanced button under the Settings tab in the Display Properties dialog to the Normal size setting (96 DPI) or change to a larger screen resolution than 1024 x 768.

Preventive: None.

4. **Anomaly:** Pressing the space bar very rapidly during Image Acquisition can cause the software to save images that include thumbnail images in the upper part of the image, causing the upper part of the image to not be included in the image processing.

Work-Around: Re-acquire images since missing data cannot be reconstructed.

Preventive: Be careful to only press the space bar once when acquiring an image or use the joystick to acquire images.

5. **Anomaly:** Special characters not in English character set (e.g., Ä) are case sensitive in Basic and Advanced search.

Work-Around: Type in a special character and then use the vertical scroll bar to locate the desired patient.

Preventive: Use the correct case when searching patients with names containing special characters not in English character set.

6. **Anomaly:** An unhandled exception error can occur during an Import operation if the operator types in a path as "e:" rather than "e:\." The error is caused by omitting to type in the backslash.

Work-Around: Type in the backslash if typing the path manually.

Preventive: Use the browse button to select the path.

7. **Anomaly:** ATLAS export functions do not span media disks. The media disk must have enough space to accommodate all the export data.

Work-Around: Use a USB hard drive or NAS drive with enough free space to accommodate the export data.

Preventive: Check beforehand that there is enough free space on the media disk to accommodate the export data. A single exam takes between 1 and 4 MB of space.

8. **Anomaly:** When you enter Exam Acquisition, the live video image may be black. This is more likely to occur if you leave the ATLAS 9000 on for many days.

Work-Around: Exit out of Exam Acquisition and the ATLAS application. Reboot the ATLAS 9000 computer.

Preventive: Turn off the ATLAS System computer each day.

9. **Anomaly:** When exporting ATLAS 9000 data, if you select Export to Zip Format and the export folder already contains patients exported without using the Zip format, then the created Zip file will contain the currently selected patients and the previously exported patients. Note: Any existing Zip files in the folder will not be included.

Work-Around: Create a new folder when exporting patients.

Preventive: Create a special folder for exporting Zip files.

10. **Anomaly:** For 2-Difference and 3-Difference Displays, using the keyboard to change exams in the Exams/Views window does not work.

Work-Around: Select exams with the touchpad or mouse.

Preventive: None.



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Release Notes: ATLAS

Software Version 3.0

Specifications subject to change without notice

Content

Version 3.0 Installation Instructions

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4

ATLAS Corneal Topography System

■ Model 9000 Instrument Software Version 3.0



Installation and Licensing Instructions
Instructions d'installation et d'octroi de licence
Installazione del software e informazioni sulla licenza
Installations- und Lizenzierungsanweisungen
Instrucciones de instalación y licencia



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Document Applicability

This document applies to the ATLAS 9000 Instrument, System Software Version 3.0 or higher, unless superseded.

Version 3.0 Installation Instructions

Introduction

This document provides instructions to install the ATLAS™ Model 9000 system software Version 3.0 upgrade for an existing installation of ATLAS Version 1.0.1.0 or 2.034, and to license the optional software features. Topics include:

- [Important Installation Notes](#), page 1
- [Brief Installation Instructions](#), page 2
- [Detailed Installation Instructions](#), page 3
- [License Registration](#), page 8

Please read all instructions before performing the installation.

Important Installation Notes



WARNING: Before installing any new software, you should completely archive the instrument database. For instructions, refer to the Archive Management chapter in the ATLAS User Manual. Failure to archive the database could result in loss of patient data or the patient database.


1. Successful installation requires that you be logged on to the system with a user account that has administrator privileges. The default user account on ATLAS Model 9000 instruments has administrator privileges.
2. Plan and allow sufficient time for installation. It will take about 10 minutes to install the upgrade and about another 10 minutes to register an optional software feature.
3. If you are upgrading from Version 1.0.1.0, your old database will undergo a conversion process which is very fast. If you have a very large database, it will only take a little longer time to complete. If any patients exist without a Patient ID, a Patient ID will be created for them using the patient's first and last name (e.g. Patient ID = johnadams).
4. If you are upgrading from Version 1.0.1.0, some View Editor parameters may change after upgrade due to their change to a global parameter. These global parameters are General—Units, General—Rendering, Color—Color Scale, Color—Color Palette, and Overlay. If you want to keep your old settings for these global parameters, it is recommended to write down your current settings for these parameters for each Parameter Set before you upgrade.
5. If you are upgrading from Version 1.0.1.0, all named Parameter Sets for ATLAS Version 3.0 software have revised default parameter settings. To use the Version 3.0 default settings, select each Parameter Set and then select the **Defaults** button.
6. Carl Zeiss Meditec strongly recommends using Acronis to create a new hard drive image (called a new "archive" in Acronis) after completion of a successful software upgrade. See the CZM System Recovery Tool Instructions document on the User Documentation CD.

7. The optional software features runs under license protection. To use these software features you must first register them. For instructions, see [License Registration](#) starting on page 8.

Brief Installation Instructions

These brief installation instructions are not detailed and do not include screenshots. They are intended for users familiar with the process of installing new software, and users who do not encounter any difficulties during installation. Use the [Detailed Installation Instructions](#), starting on page 3, if you are not familiar with installing software in general, or if you encounter difficulties with installation. The detailed instructions include screenshots.


Brief Install Steps:

1. If the ATLAS Model 9000 software is running, exit the ATLAS software by selecting **File > Exit**, or click the  at upper right, and then select **Yes** to exit.
2. Install the Version 3.0 installation disk into its drive. Wait for the installation program to start automatically.
3. Prior to installation, the Microsoft® Report Viewer application must be installed if not already installed. Click **Install** to install the Report Viewer application.
4. When preparatory steps complete, the **Welcome** dialog appears.
5. Click **Next**. The **License Agreement** dialog appears.
6. Read the license agreement and select the radio button next to **I accept the terms of the license agreement**. Click **Next**. The **Ready to Install the Program** dialog appears.
7. Click **Install**. The **Installation Complete** dialog appears when installation is complete.
8. Click **Finish** to exit the installation program.
9. You can remove the ATLAS Software Version 3.0 installation CD from the optical drive.
10. To start ATLAS Software, **double-click** the ATLAS Software shortcut on your computer desktop.
11. (Optional) Carl Zeiss Meditec strongly recommends using Acronis to create a new hard drive image (called a new "archive" in Acronis) after completion of a successful software upgrade so later recovery may be to the most recent software version. See the CZM System Recovery Tool Instructions document on the User Documentation CD.
12. (Optional) Create a new Version 3.0 backup of Configuration Files (see the ATLAS User Manual for more information).
13. (Optional) See [License Registration](#) on page 8 if you want to register any optional software feature.

Detailed Installation Instructions

These detailed installation instructions include screenshots. They are intended for users unfamiliar with the process of installing new software, and users who encounter difficulties during installation.

Detailed Install Steps

1. If the ATLAS Model 9000 software is running, exit the ATLAS software by selecting **File > Exit**, or click the  at upper right, and then select **Yes** to exit.
2. Install the ATLAS Software Version 3.0 installation disk into its drive. Close the drive and wait for the installation program to start automatically.



Note: If you cancel installation, to restart installation you must either open and close the CD drive, or if autoplay fails, use Windows Explorer (right-click **Start** and select **Explore**) to find and double-click the file named **setup.exe** on the ATLAS Model 9000 system software Version 3.0 installation CD.

3. Prior to installation, the Microsoft Report Viewer application must be installed if not already installed. The INSTALLSHIELD WIZARD window appears:

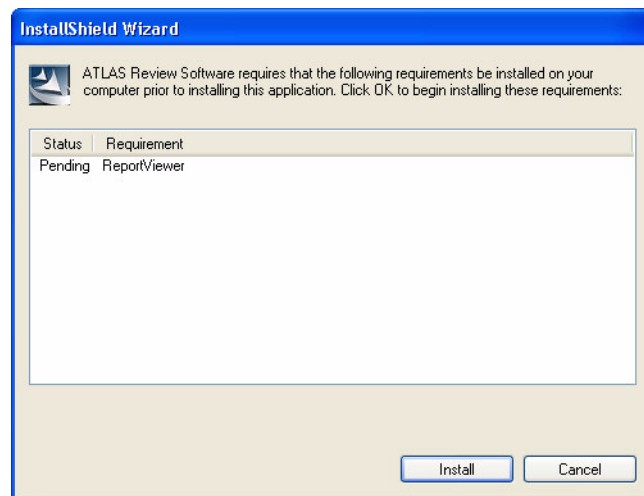


Figure 1 InstallShield Wizard for Report Viewer

4. Click **Install** to install the Report Viewer application:

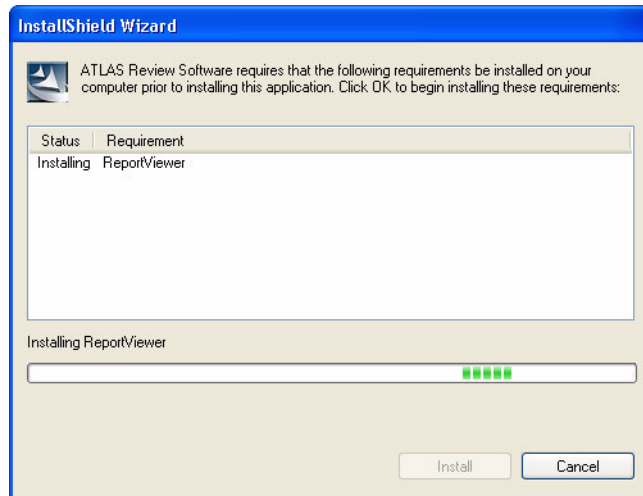


Figure 2 Installing Microsoft Report Viewer



Note: Microsoft Report Viewer is required for printing. You will not be able to print from ATLAS Software if it is not installed. It is shown in your list of currently installed Windows programs as **Microsoft Report Viewer Redistributable 2005**. Do not uninstall.

5. After completing installation of Report Viewer, you will see the installation splash screen and InstallShield Wizard dialog, as shown below.

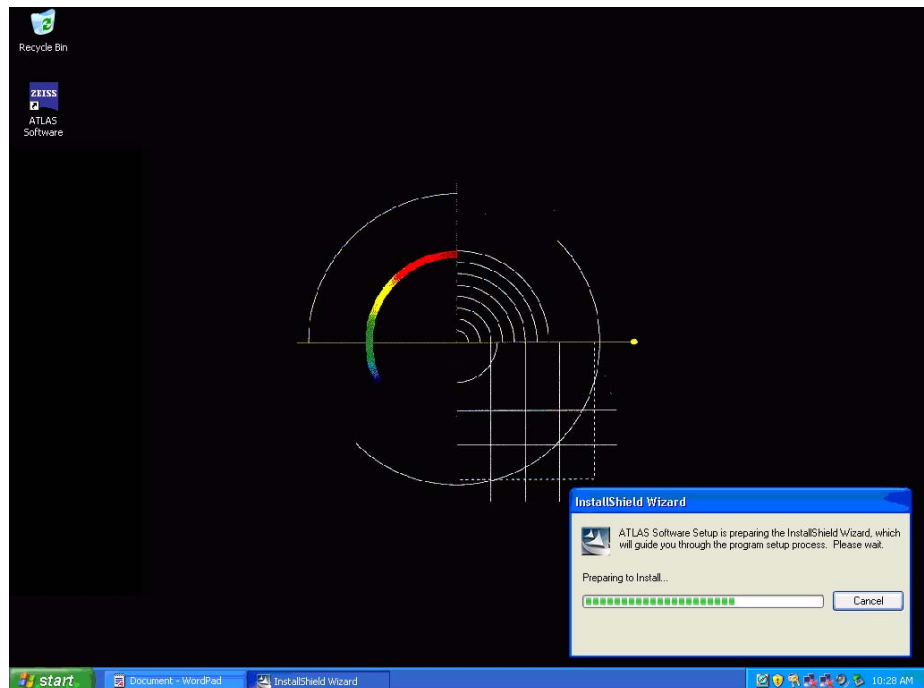


Figure 3 Splash Screen and InstallShield Wizard Dialog

6. After preparatory steps complete the Welcome dialog appears.

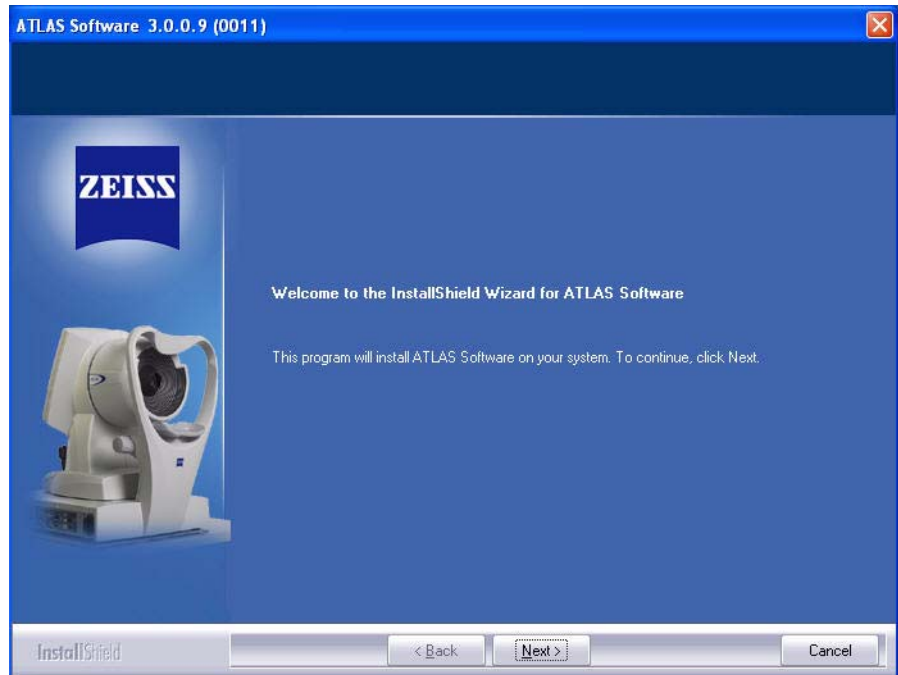


Figure 4 Welcome Dialog

7. Click **Next**. The License Agreement dialog appears.

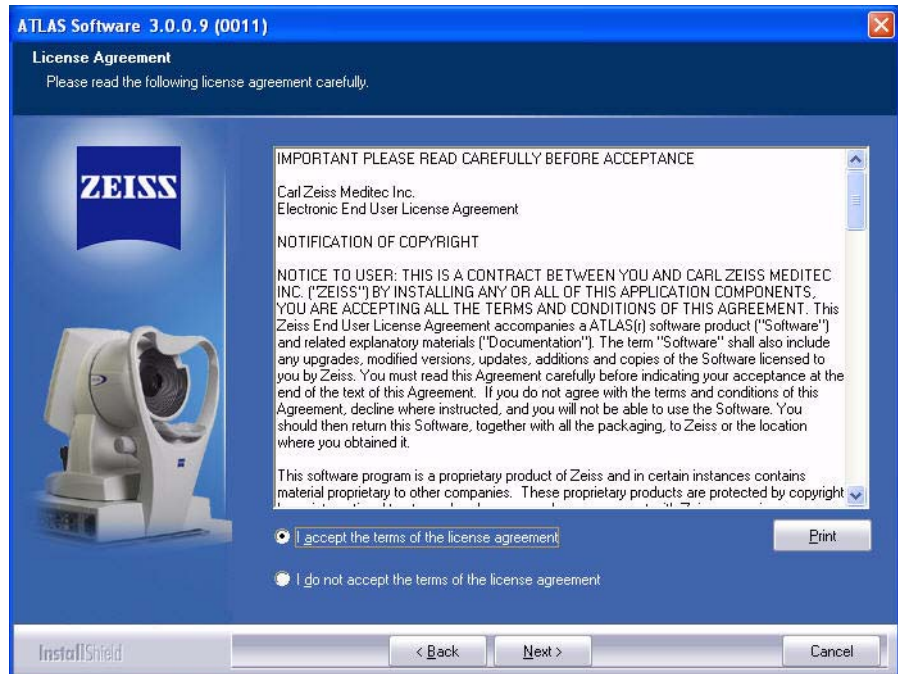


Figure 5 License Agreement Dialog

8. Read the license agreement and select the radio button next to **I accept the terms of the license agreement** (You must accept the license agreement to complete installation). Click **Next**. The Ready to Install the Program dialog appears.

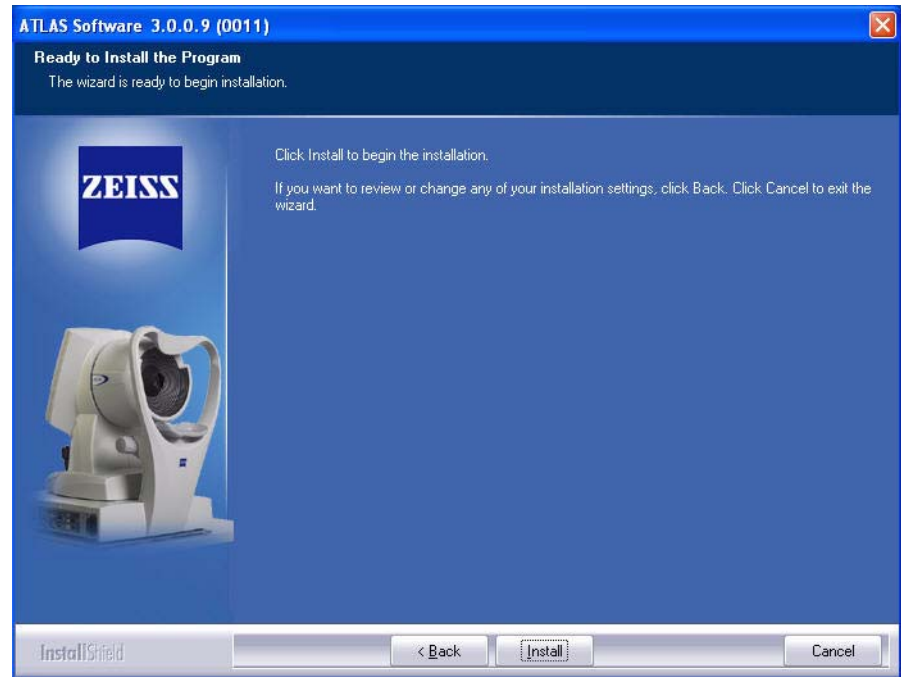


Figure 6 Ready to Install the Program Dialog

9. Click **Install** to begin installation. A Setup Status dialog reports installation progress.

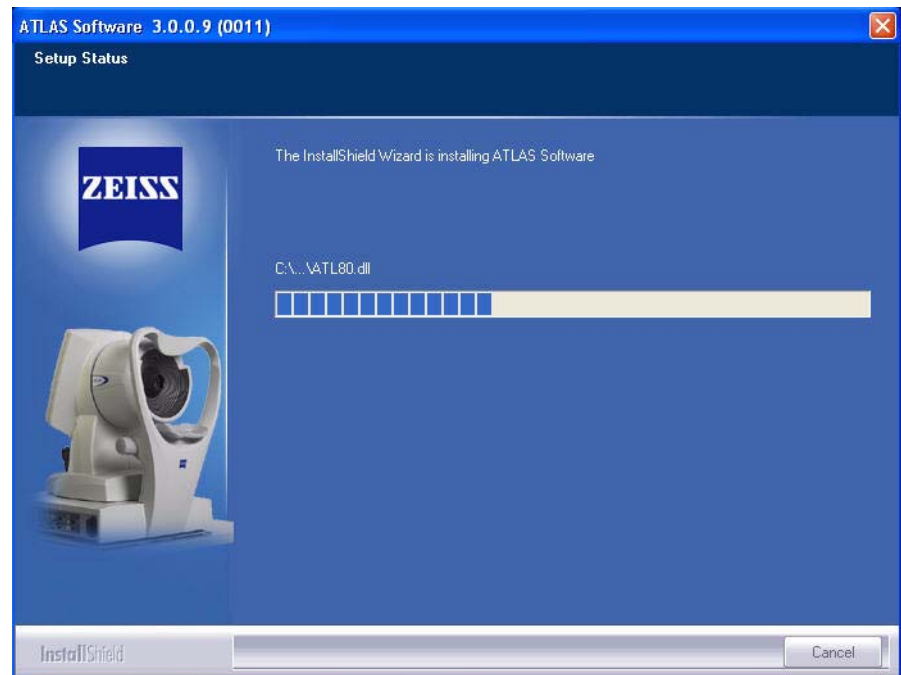


Figure 7 Setup Status Dialog During Installation

10. The InstallShield Wizard Complete dialog appears when installation is complete.

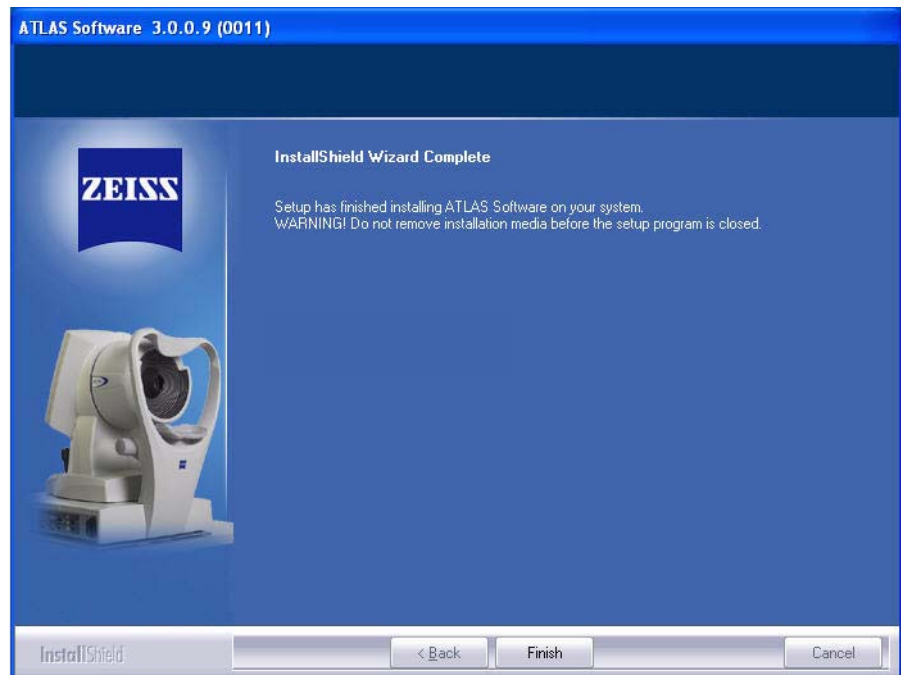



Figure 8 InstallShield Wizard Complete Dialog

11. Click **Finish** to exit the installation program. You can remove the ATLAS Software Version 3.0 installation CD from the optical drive.
12. To start ATLAS Software, **double-click** the ATLAS Software shortcut on your computer desktop. Alternatively, you can select **Start > All Programs > Carl Zeiss Meditec > ATLAS Software**.
13. If you are upgrading from Version 1.0.1.0, upon first time launch of ATLAS Software Version 3.0, your ATLAS Version 1.0 data will undergo a conversion to the new Version 3.0 format. This should only take a few seconds.
14. (Optional) Carl Zeiss Meditec strongly recommends using Acronis to create a new hard drive image (called a new "archive" in Acronis) after completion of a successful software upgrade so later recovery may be to the most recent software version. See the CZM System Recovery Tool Instructions document.
15. (Optional) If you are upgrading from Version 1.0.1.0, Configuration Files are all converted to a new format and are active after upgrade. However, previous version 1.0 **Configuration Files backups** cannot be used to restore your Configuration Files in Version 3.0 or later. To create a new Version 3.0 backup of the Configuration Files, see **Back Up/Restore Configuration Files (admin only)** in the Data Management Chapter of the ATLAS User Manual.
16. (Optional) See [License Registration](#) on page 8 if you want to register any optional software feature.

License Registration

ATLAS's optional software features run under license protection. They will not run until you register their corresponding license. PathFinder™ II and MasterFit™ II have the option of registering a Trial (30-Day) or Full license. Follow the instructions below to register a software license.

 **Note:** The ATLAS Model 9000 Version 3.0 upgrade kit may include one or more license certificates. If not, a license may be obtained by contacting Carl Zeiss Meditec by email at z.customersupport@meditec.zeiss.com. To reach us by phone, in the United States please call Carl Zeiss Meditec at 1-800-341-6968. Outside the United States, please contact your local Carl Zeiss Meditec distributor. Each certificate you receive must be registered separately.

To start license registration:

1. Make sure the ATLAS Software is running and the PATIENT SELECTION window is displayed. If not, start the ATLAS Software by **double-clicking** the ATLAS Software icon on the desktop.
2. You may need to logon with a User Name and Password.
3. Select **View Licenses...** on the **Help** menu to display the LICENSE VIEW window (Figure 9).

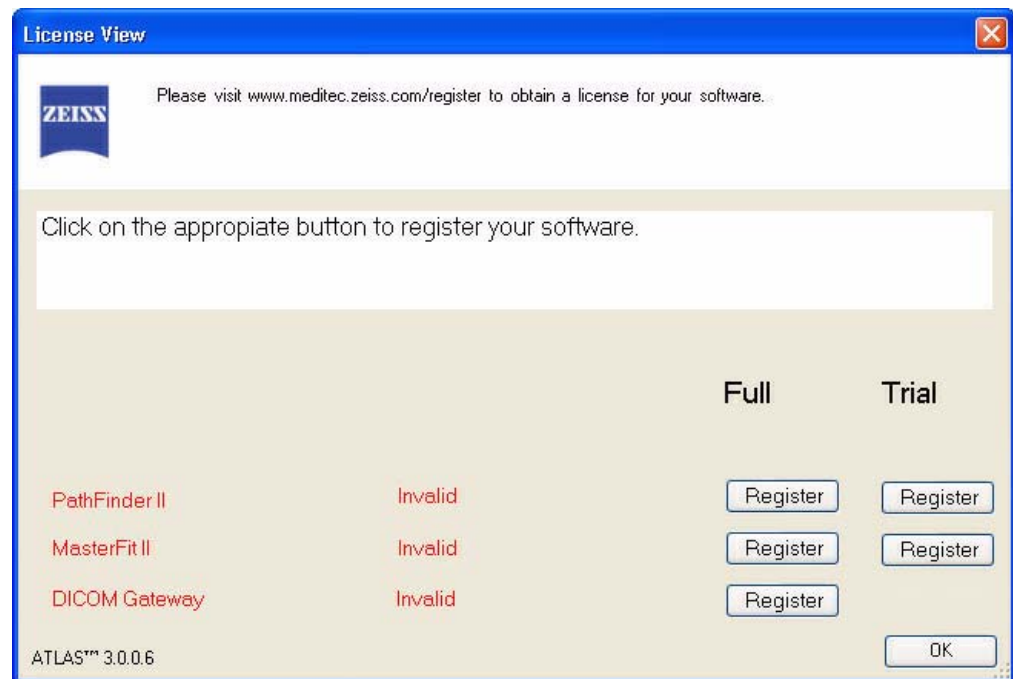


Figure 9 License View Window

Registering Optional Software Features

The following licensed features are pre-installed in ATLAS Software Version 3.0, but will not be active until registered, unless they have been registered previously.

- PathFinder II (30-day Trial available)
- MasterFit II (30-day Trial available)
- DICOM Gateway

If you have purchased these features, the corresponding software certificates will be included in the software kit.

You can register the optional software features at any time ATLAS Software is running by selecting **View Licenses...** on the **Help** menu. The LICENSE VIEW window will be displayed (Figure 9). If ATLAS is not running, start ATLAS by **double-clicking** the ATLAS Software icon on the desktop. You may need to logon with a User Name and Password.

Registering a Trial License

1. Click **Register** under the **Trial** heading for the license you want to register. A dialog will be displayed similar to the one shown below (Figure 10).



Figure 10 Trial License Dialog

2. Click **Yes** to start your 30-Day Trial license.

3. The LICENSE VIEW window will be displayed with Trial license registered (Figure 11).

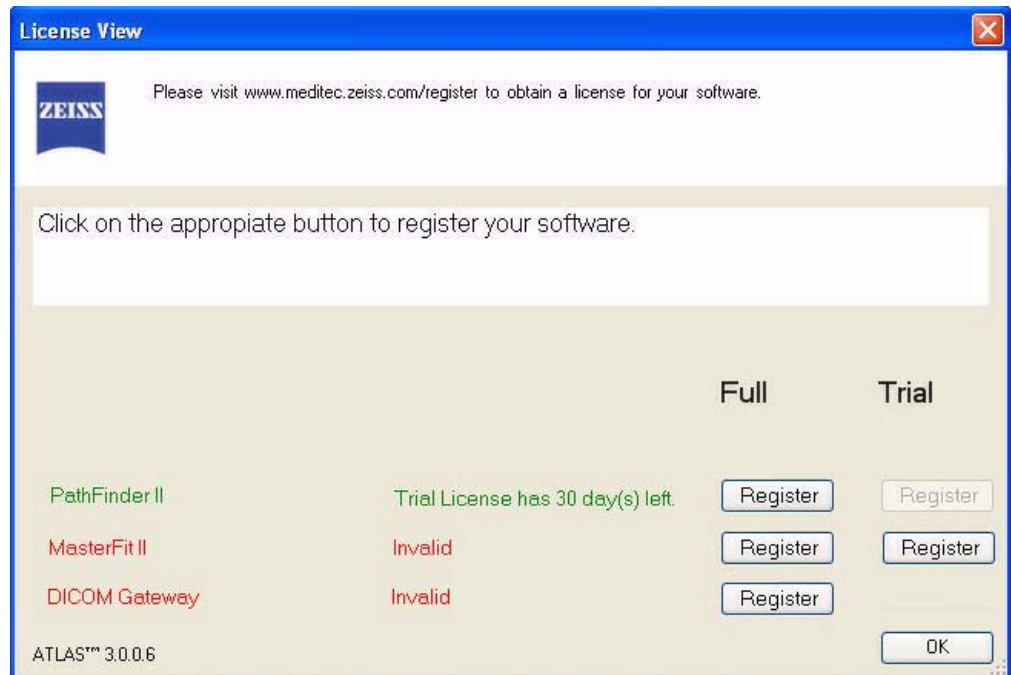


Figure 11 License View Window – PathFinder II 30-Day Trial License Registered

4. Select **OK** to close the LICENSE VIEW window and begin using the software.
5. You have 30 days from the date of registering to continue using the software. The number of days left in your Trial license is shown on the LICENSE VIEW window (Figure 11). When the number of days left is seven or less, you will be notified at application startup with a dialog such as shown in Figure 12 below:

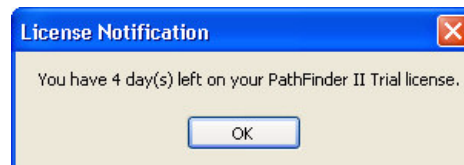


Figure 12 License Notification Dialog

6. Click **OK** to continue using the software for your remaining trial days. At the end of your Trial license, the license will expire and you will need to purchase a Full license to continue using the software.

Registering a Full License

1. Click **Register** for the license(s) you want to register.
2. The CZM License Registration Utility dialog (Figure 13) appears.

CZM License Registration Utility 5.2

STEP 1: Enter Software Certificate Serial Number.

Certificate Serial Number:

FEATURE TO BE REGISTERED:

ATLAS DICOM Gateway.

Node ID:

STEP 2: Obtain License Key and Security Code.

Register License on the Web. Use link below:

<http://www.meditec.zeiss.com/register>

STEP 3: Register Licensed Feature.

Enter the License Key and the Security Code obtained on STEP 2 and Save.

License Key:

Security Code:

Figure 13 CZM License Registration Utility Dialog For DICOM Gateway

3. Under FEATURE TO BE REGISTERED, confirm that the name of the feature you selected matches the license certificate you are about to register.
4. Make a note of the unique Node ID of your system. Enter the Certificate Serial Number provided on the software certificate, obtained from Carl Zeiss Meditec customer, or found on a sticker affixed to the back of the CD case, including the alphabetic prefix and the intervening dash before the number.
5. To obtain a License Key and Security Code, go to the Carl Zeiss Meditec website: www.meditec.zeiss.com/register. If your language is other than English, select your language under the "Other Languages:" area of the website.



Note: If you have questions regarding software registration, please contact Carl Zeiss Meditec by email at z.customersupport@meditec.zeiss.com. To reach us by phone, in the United States please call Carl Zeiss Meditec at 1-800-341-6968. Outside the United States, please contact your local Carl Zeiss Meditec distributor.

6. Go to the bottom of the page, where it says: "When ready use the [form](#) to create your License Key" and click on the word "[form](#)" (see [Figure 14](#) below).

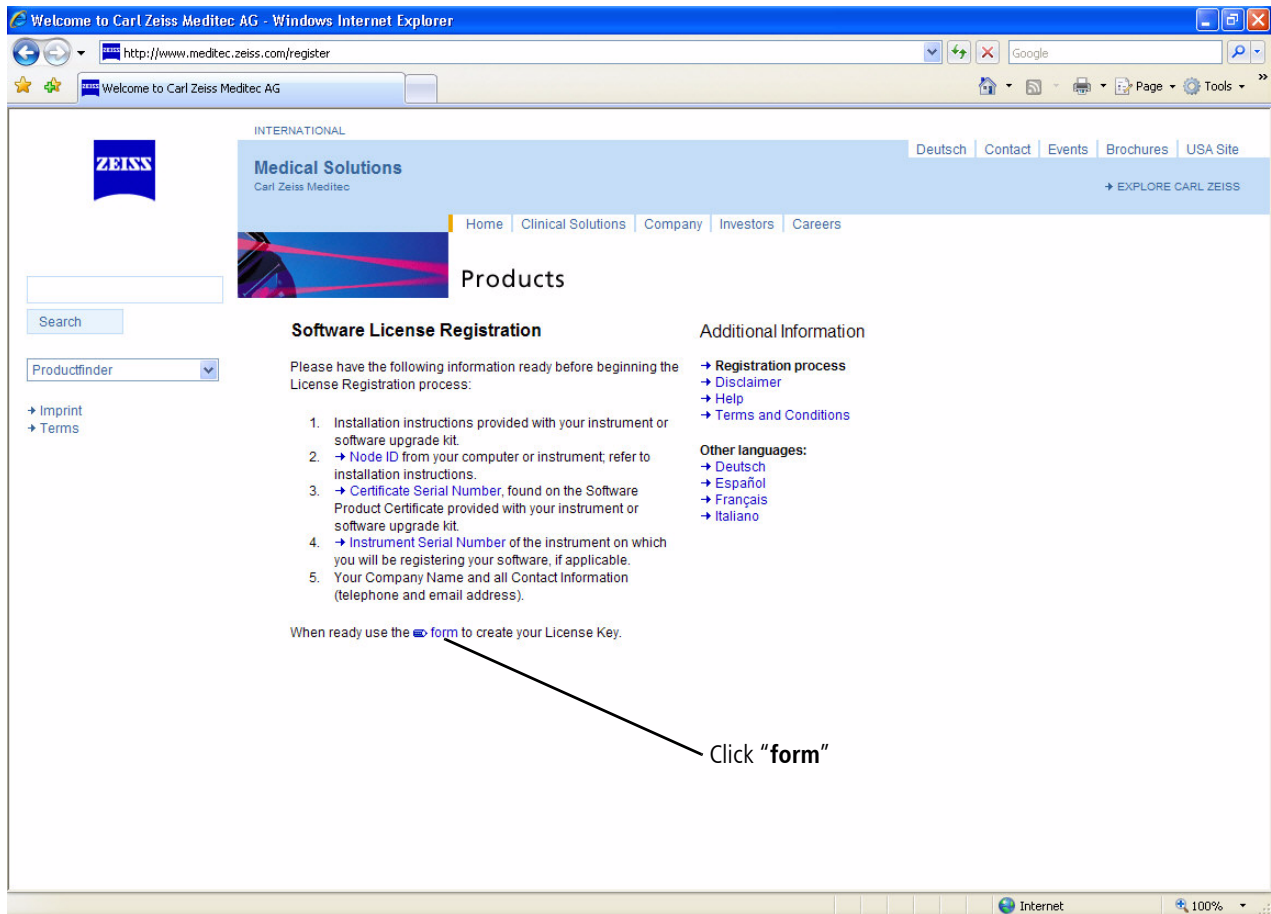


Figure 14: Carl Zeiss Meditec Software License Registration Page on the Internet

7. Enter your Certificate Serial Number and click the **Submit** button.
8. Enter your Node ID and personal information and click the **Submit** button to generate your License Key and Security Code.
9. Write down your License Key and Security Code, or print out and save the entire web page for reference.



Note: If you are unable to complete the license registration process, click **Close** to quit the license registration utility. Double-click the ATLAS Software desktop icon to restart the software and return to Step 1 of license registration above.

10. Returning to the CZM License Registration Utility, enter the License Key and Security Code in the appropriate fields. The **Save** button will become active only when the correct information is entered. When the **Save** button becomes active, click **Save**.

11.If the license registration is successful, a dialog will be displayed confirming successful registration (Figure 15).



Figure 15 Successful License Registration Dialog

12.Click **OK** to close the dialog and complete the license registration.

13.The LICENSE VIEW window (Figure 16) is displayed with the Full license registered. Select **OK** to begin using the software.

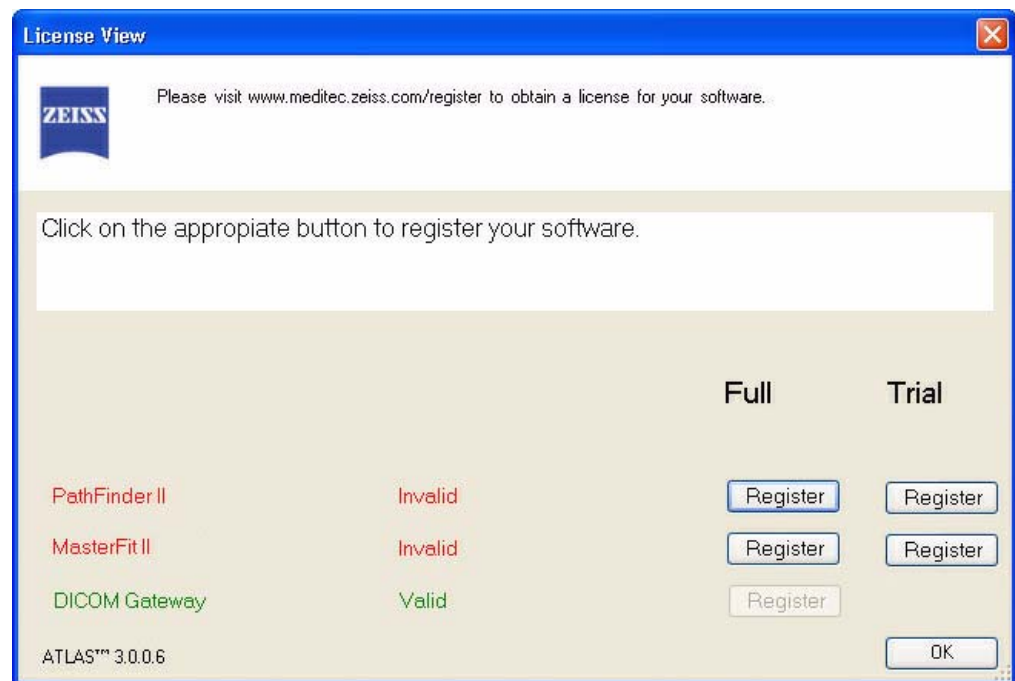




Figure 16 License View Window with Full Review License Registered

 **Note:** If you get an error message, verify that you have entered the correct values for your license information and try again.

14.After registering a Full license for a software feature, you can register additional software licenses now by selecting the **Register** button for the software you want to license, or later by selecting **View Licenses...** on the **Help** menu.

 **Note:** To purchase additional licensed features, contact Carl Zeiss Meditec at 1-800-341-6968 or by email at z.customersupport@meditec.zeiss.com. Outside the United States, please contact your local Carl Zeiss Meditec distributor.



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ATLAS Model 9000 Software Installation

System Software Version 3.0

Specifications subject to change

Content

ATLAS Review Installation Instructions

[2660021142711a]

5

ATLAS Corneal Topography System

Review Software



Installation and Licensing Instructions



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Document Applicability

This document applies to ATLAS Review Software 3.0.1, unless superseded.

ATLAS Review Installation Instructions

Introduction

This document provides instructions to install and license ATLAS® Review Software, and to license any optional software features you have purchased.

Topics include:

- [Important Installation Notes](#), page 1
- [Review Software System Requirements](#), page 1
- [Network File Server Minimum Requirements](#), page 2
- [Brief Installation Instructions](#), page 4
- [Detailed Installation Instructions](#), page 5
- [License Registration](#), page 14
- [Set Up and Configure the Review Software](#), page 20
- [Connect Review Station to your ATLAS Instrument](#), page 20

Please read all instructions before performing the installation.

Important Installation Notes

1. **Plan and allow sufficient time for installation.**
2. **Administrator Account Required.** To install, to license or to use this software, you must be logged in to Windows® as an Administrator (Microsoft Windows® XP and Windows 7).
3. **ATLAS Review Software installs InterBase 2007 SP3.** For applications using Interbase 2007 SP3 prior to the installation of ATLAS Review Software, see [Possible Interbase Login when starting ATLAS Review](#) on page 3.
4. **Microsoft Report Viewer is installed and required for printing.** It is shown in your list of currently installed Windows programs as **Visual J #2.0 Redistributable Package**. Do not uninstall.
5. **One Computer Per License.** ATLAS Review Software runs under license protection: To use the software, you must register one license for each computer on which you install it. See [License Registration](#) on page 14.
6. **License registration is required.** ATLAS Review Software and its optional software features run under license protection. To use the system software and any optional software features, you must register each license shipped with the software. See [License Registration](#) starting on page 14.

Review Software System Requirements

Operating System

- Microsoft Windows XP Professional with Service Pack 3 or higher, 32-bit
- Microsoft Windows 7 Home Premium and Professional (32-bit and 64-bit versions)

System Requirements

The system running ATLAS Review Software (Review Station) must meet the following minimum requirements:

- Processor: 500 MHz or faster
- 20 GB available hard disk space
- Memory: 1 GB RAM for Windows XP, 2 GB for Windows 7; when running additional applications concurrently, more memory may be required.
- Windows file system: NTFS required. FAT16 and FAT32 are not supported.



WARNING: Many older and a few newer computers use the FAT16 or FAT32 file system. Before installing, you must confirm that the hard drive where you will install ATLAS Review Software uses NTFS. To check the file system, right-click on the hard drive in Windows Explorer and select Properties. If it uses FAT16 or FAT32, it is possible to convert the drive to NTFS; however, conversion to NTFS entails risk that current applications or data may be lost due to error or may be incompatible with NTFS. The user, and not Carl Zeiss Meditec, assumes all risks associated with converting the file system to NTFS. Before you convert to NTFS, we recommend you consult an information technology (IT) expert. Instructions can be found in the Windows Explorer help system.

- CD-ROM drive (required for installation)
- 1024 x 768 pixel screen resolution; 16 bit color



Note: ATLAS Review does not support a display resolution of 1024 x 768 with Large size (120 DPI) DPI setting.

- Microsoft Internet Explorer® 4.72 or higher (for license registration)
- TCP/IP is installed

Network File Server Minimum Requirements

Operating System

- Windows 2003 Server
- Windows 2003 Small Business Server

System Requirements

If you plan to use a network file server it must meet the following minimum requirements:

- Processor: 800MHz processor or faster
- Memory: 256 MB RAM
- NTFS drive partition(s) for ATLAS data. ATLAS data is compatible only with NTFS.
- 100GB available disk space for data storage (should be expandable)
- Network interface card 100 Mbps
- Tape backup unit



Note: It is the user's responsibility to protect their exam data from loss by frequent backup of the network server. Backup media should be of archival quality, and the media should be stored in a secure, remote location.



WARNING: Failure to backup the network file server may result in the loss of medical exam data.

Network File Server Recommendations

In addition to the minimum requirements listed above, we recommend the following for the network file server:

- A mirrored RAID array for data storage—strongly recommended.
- An uninterruptible power supply (UPS)—strongly recommended.
- The file server must be started prior to networked ATLAS instruments and Review Stations, and shut down after ATLAS instruments and Review Stations.



Note: It is strongly recommended that the file server not be used for interactive programs, such as web browsing or word processing.

Possible Interbase Login when starting ATLAS Review

When starting ATLAS Review Software, it is possible a Database Login dialog (Figure 1) will be displayed during system check if you have installed another application using Interbase 2007 SP3 prior to installing ATLAS Review Software.

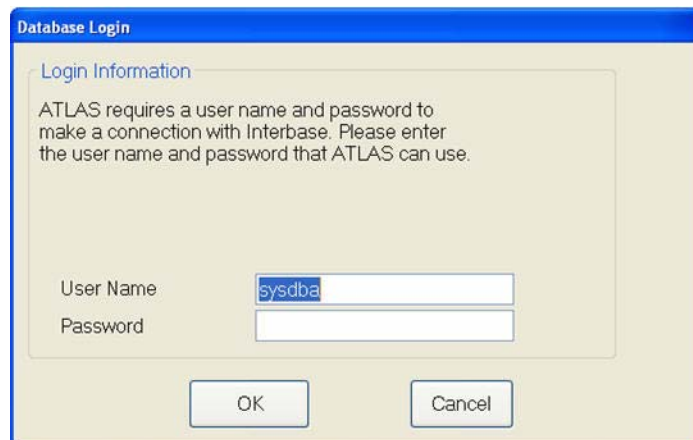


Figure 1 Interbase Database Login

ATLAS uses the default Interbase User Name (sysdba) and Password (masterkey), but a previously installed application using Interbase 2007 SP3 may be using a different user name and password. If ATLAS Review Software is installed after the other application, it will not change the Interbase user name and password of the other application. If this is the case and a Database Login dialog is displayed, you will need to enter the user name and password from the other previously installed application. Please contact your IT administrator for the user name and password if you do not know it. After entering in the other application's user name and password, ATLAS Review Software will run, and you will not need to enter this information again.

Brief Installation Instructions

These brief installation instructions are not detailed and do not include screenshots. They are intended for users familiar with the process of installing new software, and users who do not encounter any difficulties during installation. Use the [Detailed Installation Instructions](#), starting on page 5, if you are not familiar with installing software in general, or if you encounter difficulties with installation. The detailed instructions include screenshots.

1. Install the ATLAS Review Software installation disk into its drive.
2. When preparatory steps complete, the WELCOME window appears.
3. Click **Next**. The LICENSE AGREEMENT window appears.
4. Read the license agreement and select the radio button next to **I accept the terms of the license agreement**, then click **Next**. The CHOOSE DESTINATION LOCATION window appears.
5. Click **Next** to install into the default folder location. The READY TO INSTALL THE PROGRAM window is displayed.
6. Click **Install** to begin installation. A SETUP STATUS window tracks progress of the installation. The INSTALLSHIELD WIZARD COMPLETE window appears when installation is complete.
7. Click **Finish** to exit the installation program. You can remove the ATLAS Review Software installation CD from your drive.
8. To start ATLAS Review Software, **double-click** the ATLAS Review Software shortcut on your computer desktop.




Note: On Windows 7 computers, you may need to **right-click** on the ATLAS Review Software shortcut, and select **Run as Administrator**.


9. See [License Registration](#) on page 14 to register the ATLAS Review Software and any other optional software features.
10. See [Set Up and Configure the Review Software](#) on page 20 to configure ATLAS Review Software to your practice preferences.
11. See [Connect Review Station to your ATLAS Instrument](#) on page 20 to connect your ATLAS instrument to the ATLAS Review Station.


Detailed Installation Instructions

These detailed installation instructions include screenshots. They are intended for users unfamiliar with the process of installing new software, and users who encounter difficulties during installation.

1. Install the ATLAS Review Software installation disk into its drive. Close the drive and wait for the installation program to start automatically.

 **Note:** If you cancel installation, to restart installation you must either open and close the CD drive, or if autoplay fails, in Windows XP use Windows Explorer (right-click **Start** and select **Explore**) to find and double-click the file named **setup.exe** on the ATLAS Review Software 3.0.1 installation CD; in Windows 7, select **Run setup.exe** in the pop-up dialog.

 **Note:** In Windows 7, if you have User Account Control (UAC) enabled you will see a **User Account Control – Windows needs your permission to continue** dialog. Click **Yes** to proceed.

 **Note:** Microsoft Report Viewer application will be installed if not already installed. Microsoft Report Viewer is required for printing. You will not be able to print from ATLAS Review if it is not installed. It is shown in your list of currently installed Windows programs as **Visual J #2.0 Redistributable Package**. Do not uninstall.

2. For successful installation, the Microsoft .NET Framework 2.0 must be installed if not already installed. The installation program checks for Microsoft .Net Framework 2.0, and installs it if necessary. Some systems already have .NET Framework 2.0, in which case this section is not applicable. If Microsoft .NET Framework 2.0 needs to be installed, you will see “Configuring Microsoft(R) .NET Framework” in the InstallShield Wizard dialog. Microsoft .NET Framework can take many minutes to install, depending on the speed of your computer processor and hard drive.

3. After completing installation of required software, you will see the installation splash screen and InstallShield Wizard dialog, as shown below.

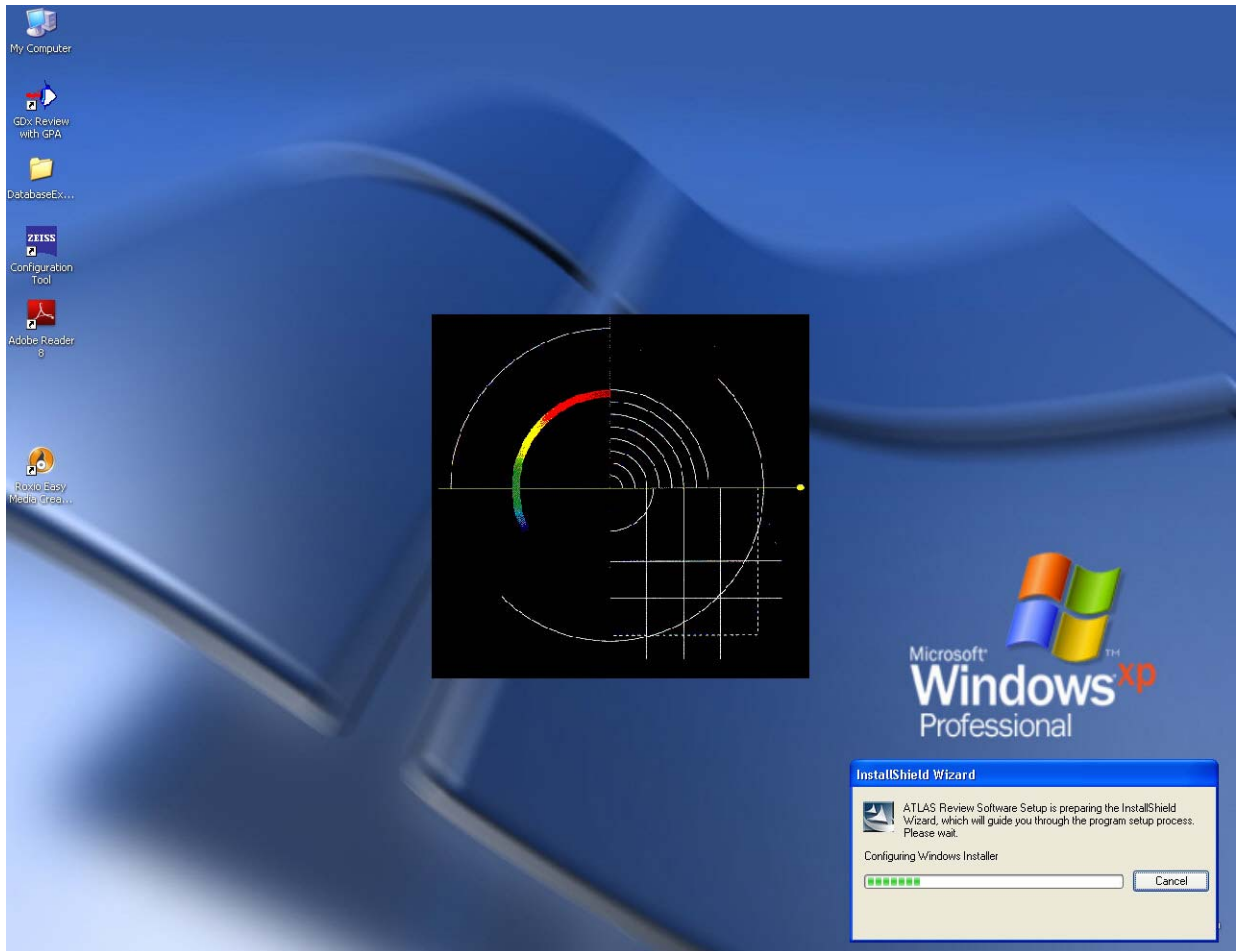


Figure 2 Splash Screen and InstallShield Wizard Dialog

4. When preparatory steps complete, the INSTALLSHIELD WELCOME window appears:

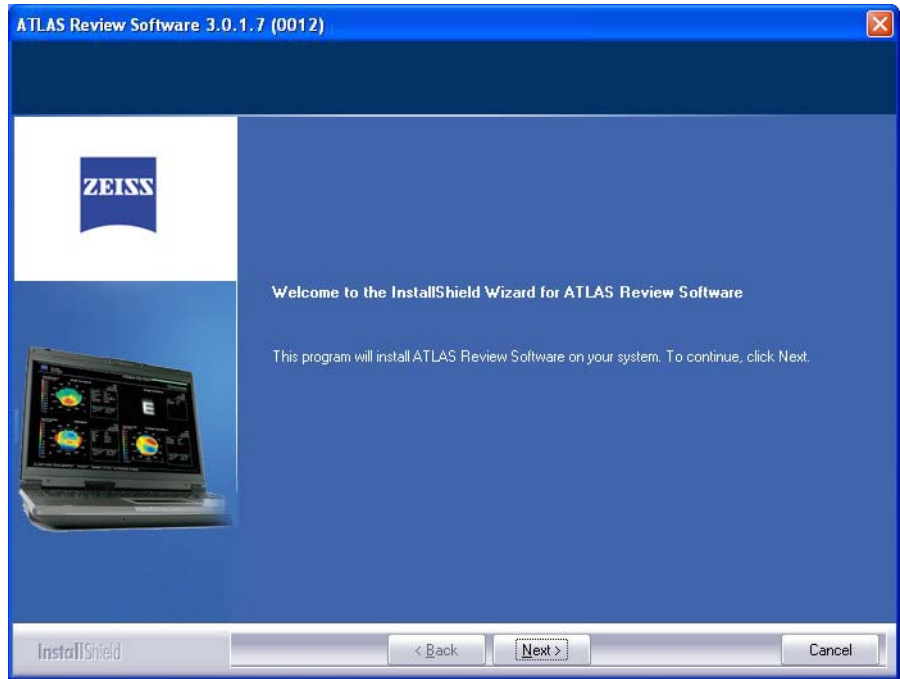


Figure 3 InstallShield Welcome Window

5. Click **Next** to begin installation.

6. After preparatory steps, the License Agreement window appears.



Figure 4 License Agreement Window

7. Read the license agreement and select the radio button next to **I accept the terms of the license agreement**. (You must accept the license agreement to complete installation.)
8. Click **Next** to continue. The CHOOSE DESTINATION LOCATION window is displayed:

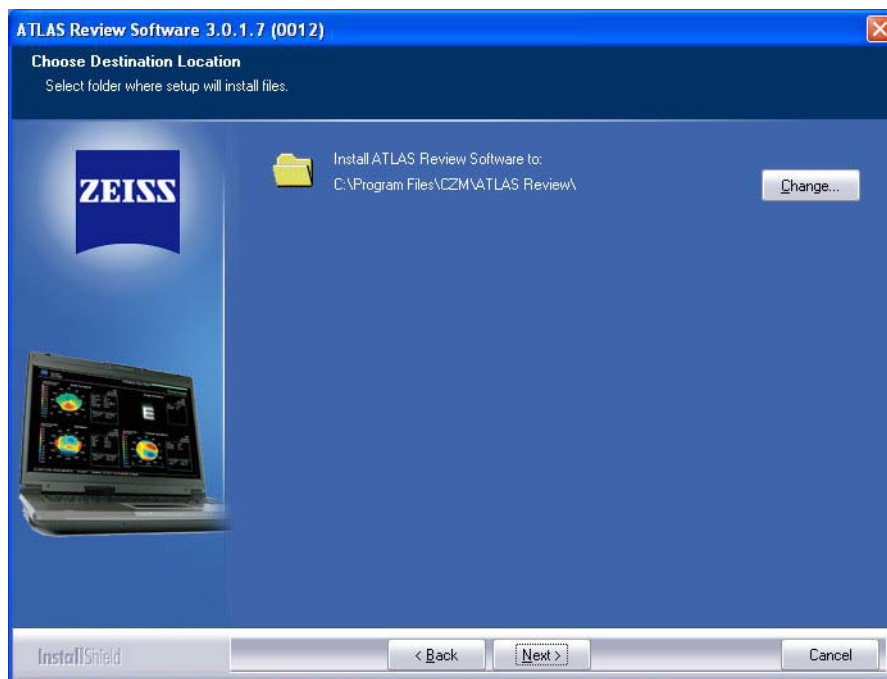


Figure 5 Choose Destination Location Window

To install into the default folder, *C:\Program Files\CZM\ATLAS Review*, click **Next**.
To install into a different folder, click the **Browse** button to select another folder, and then click **Next** to continue installation.

9. The READY TO INSTALL THE PROGRAM window is displayed:

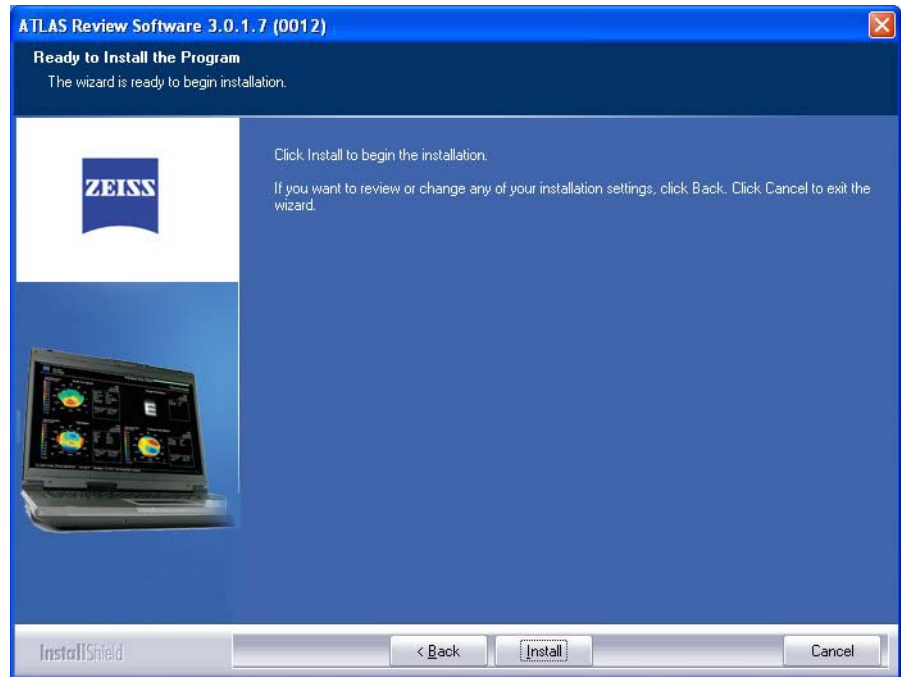


Figure 6 Ready to Install the Program Window

Click **Install** to begin the installation. If you want to review or change any of your installation settings, click **Back**. Click **Cancel** to exit the wizard and cancel the installation.

Possible Adobe Reader Installation

10. If you don't have Adobe® Reader® version 5 or above, then Adobe Reader 8 will be installed.
11. A security message may appear behind the ATLAS Review Software Installation screen. Click the Adobe Reader icon on the Windows taskbar to see the security message, and then click **Run** to continue the installation.

12. The ADOBE READER 8 - SETUP window will be displayed:

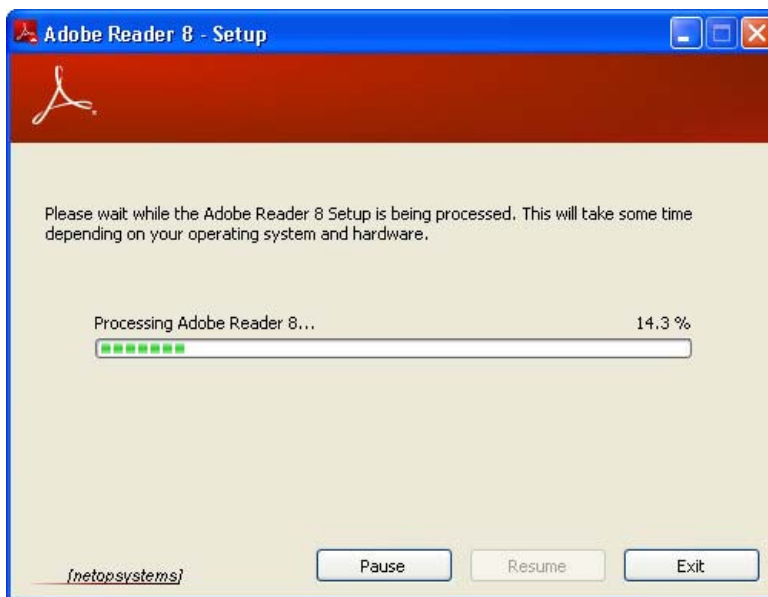


Figure 7 Adobe Reader Setup Window

13. Click **Next** to install Adobe Reader in the default folder:

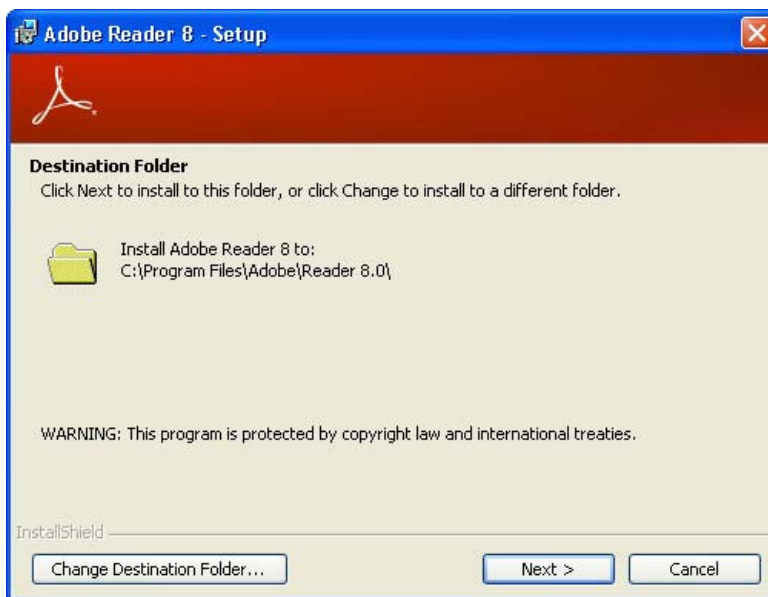


Figure 8 Adobe Reader Destination Folder Window

14. Click **Install** to begin the installation:

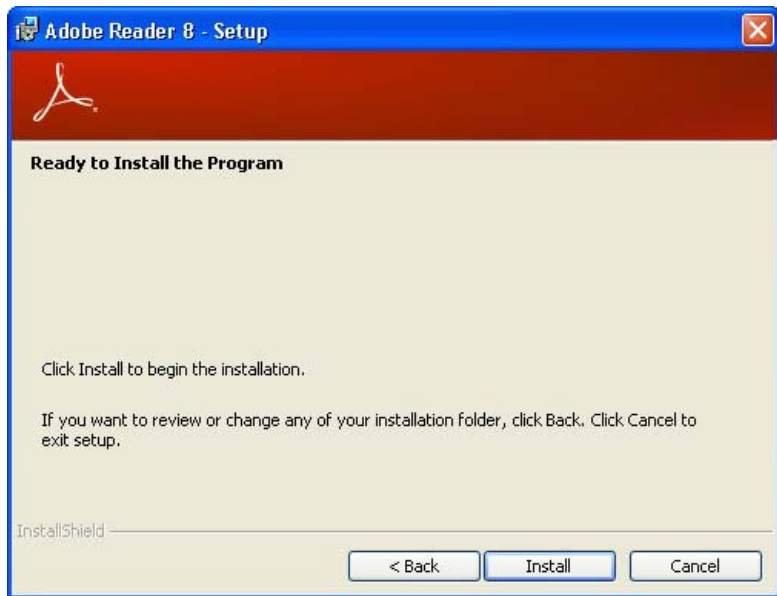


Figure 9 Adobe Reader Ready to Install the Program Window

15. A window tracks progress of the installation:

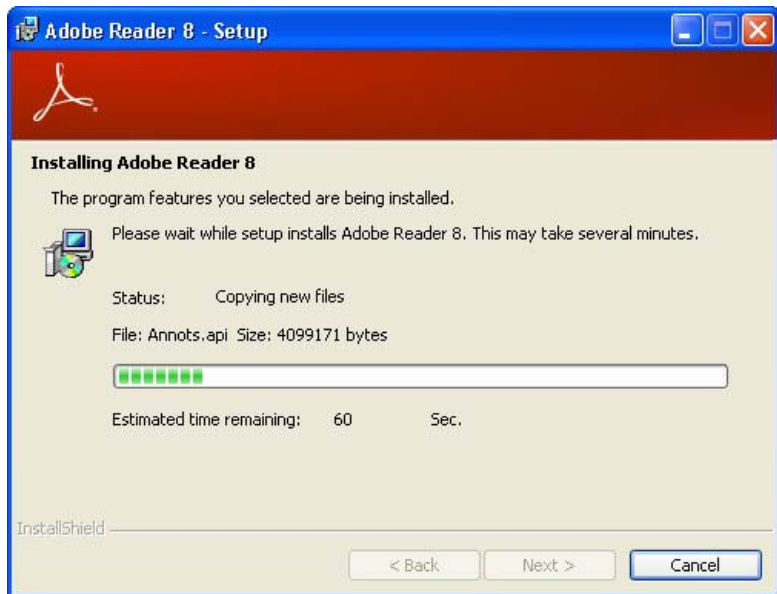


Figure 10 Adobe Reader Installing Adobe Reader 8 Window

16. Uncheck **Launch Adobe Reader 8**. Click **Finish** to complete the installation of Adobe Reader 8:

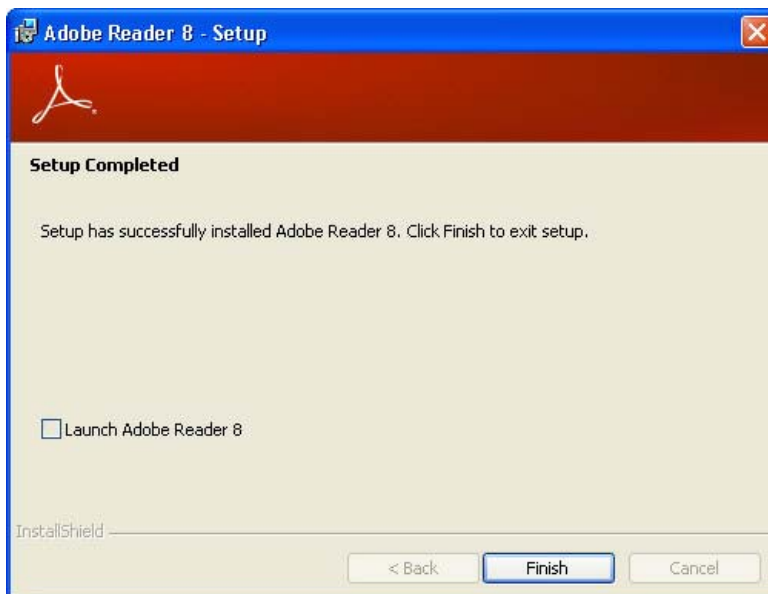


Figure 11 Adobe Reader Setup Completed Window

Continuing Installation

17. The SETUP STATUS window tracks progress of the installation:

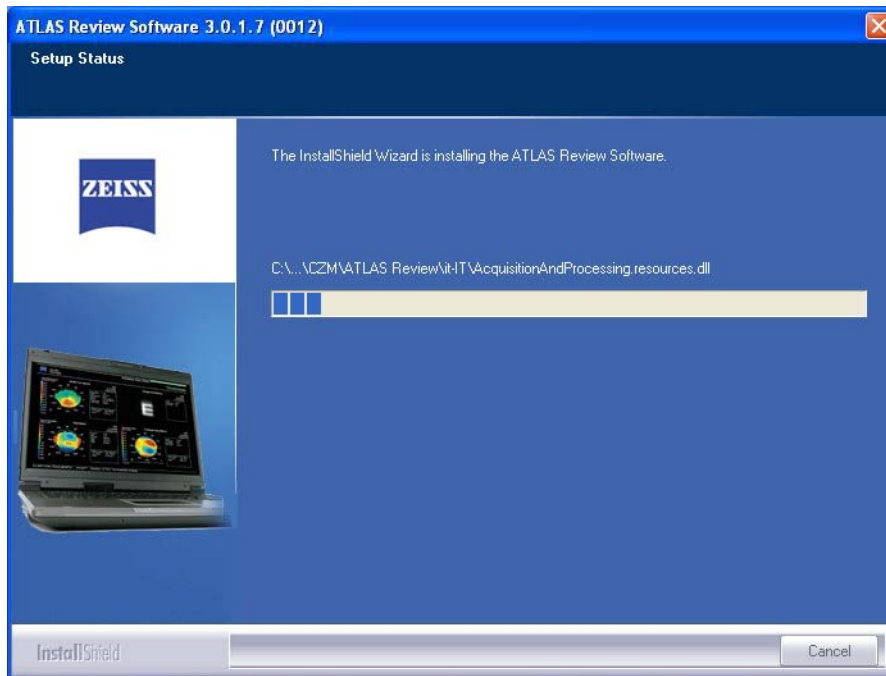


Figure 12 Setup Status Window

When complete, the INSTALLSHIELD WIZARD COMPLETE window (Figure 13) appears:

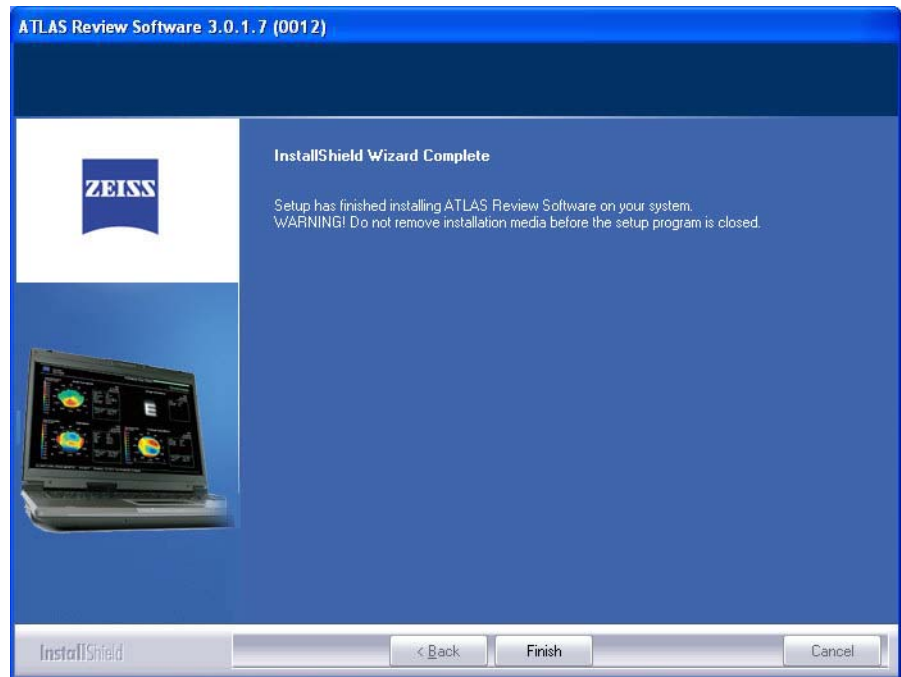


Figure 13 InstallShield Wizard Complete Window

18. Click **Finish** to close the window. Installation is now complete and you can remove the ATLAS Review Software installation CD from your drive.

19. To start ATLAS Review Software, **double-click** the ATLAS Review Software shortcut (shown on the left) on your computer desktop. Alternatively, you can select **Start > All Programs > Carl Zeiss Meditec > ATLAS Review Software**.



Note: On Windows 7 computers, you may need to **right-click** on the ATLAS Review Software shortcut, and select **Run as Administrator**.


20. See [License Registration](#) on page 14 to register the ATLAS Review Software and any other optional software features.

21. See [Set Up and Configure the Review Software](#) on page 20 to configure ATLAS Review Software to your practice preferences.

22. See [Connect Review Station to your ATLAS Instrument](#) on page 20 to connect your ATLAS instrument to the ATLAS Review Station.

License Registration


ATLAS Review Software and its optional software features run under license protection. PathFinder™ II and MasterFit™ II have the option of registering a Trial (30-Day) or Full license. They will not run until you register their corresponding license. Follow the instructions below to register a software license.


 **Note:** ATLAS Review Software includes one or more Certificate serial numbers for your license or licenses. Each Certificate serial number you receive must be registered separately. Additional licenses may be obtained from Carl Zeiss Meditec. To activate, go to www.meditec.zeiss.com/register. You may also contact Carl Zeiss Meditec:


In the U.S.: Call Carl Zeiss Meditec at 1-800-341-6968.

Outside the U.S.: Contact your local Carl Zeiss Meditec distributor.

E-mail: z.customersupport@meditec.zeiss.com.

 **Important:** A license is valid **only** for the computer you register it to—it cannot be transferred to another computer without purchasing another license. Be certain of your network configuration before licensing ATLAS Review to a computer.

 **Note:** If the computer has multiple network cards you may need to register the license again.

 **Note:** Trial Licenses are not available on Windows 7 computers.

Registering ATLAS Review Software

When you first run the ATLAS Review Software without registering a license, the LICENSE VIEW window (Figure 14) will be displayed.

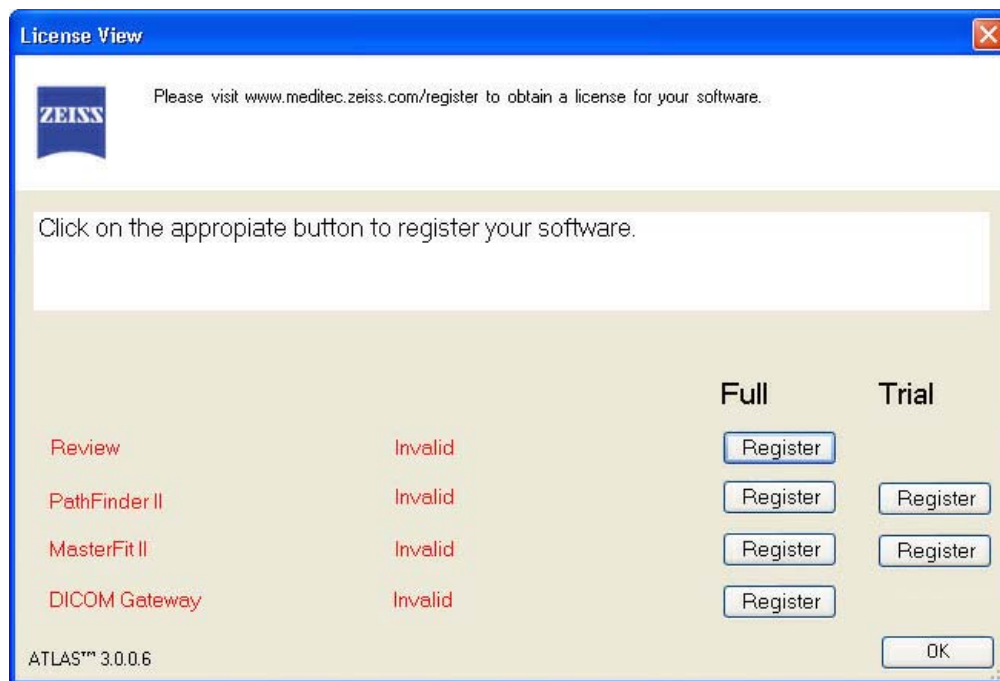


Figure 14 License View Window


Registering Optional Software Features

The following licensed features are pre-installed in ATLAS Review Software 3.0.1, but will not be active until registered, unless they have been registered previously.


- PathFinder II (30-day Trial available, Windows XP only)
- MasterFit II (30-day Trial available, Windows XP only)
- DICOM Gateway

If you have purchased these features, the corresponding software certificates will be included in the software kit.

You can register the optional software features at any time ATLAS Review Software is running by selecting **View Licenses...** on the **Help** menu. The LICENSE VIEW window will be displayed (Figure 14). If ATLAS Review Software is not running, start ATLAS Review Software by **double-clicking** the ATLAS Review Software icon on the desktop. You may need to logon with a User Name and Password.

 **Note:** On Windows 7 computers, you may need to **right-click** on the ATLAS Review Software shortcut, and select **Run as Administrator**.

Registering a Trial License

 **Note:** Trial Licenses are not available on Windows 7 computers.

1. Click **Register** under the **Trial** heading for the license you want to register. A dialog will be displayed similar to the one shown below (Figure 15).

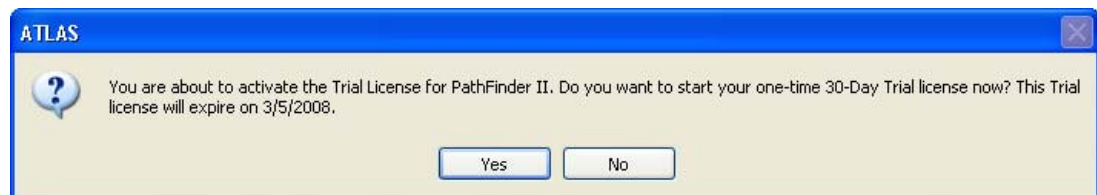


Figure 15 Trial License Dialog

- Click **Yes** to start your 30-Day Trial license. The LICENSE VIEW window will be displayed with Trial license registered (Figure 16).

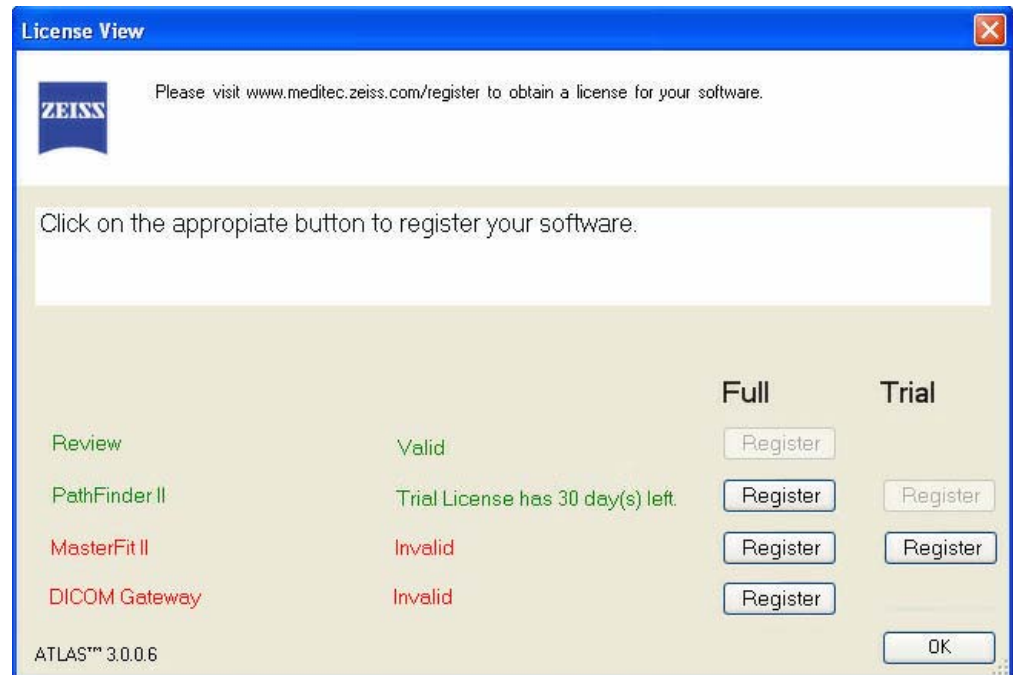


Figure 16 License View Window – PathFinder II 30-Day Trial License Registered

- Select **OK** to close the LICENSE VIEW window and begin using the software.
- You have 30 days from the date of registering to continue using the software. The number of days left in your Trial license is shown on the LICENSE VIEW window (Figure 16). When the number of days left is seven or less, you will be notified at application startup with a dialog such as shown in Figure 17 below:

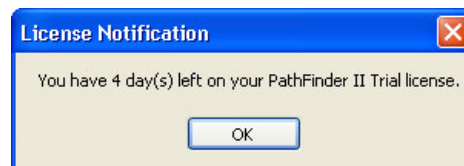


Figure 17 License Notification Dialog

- Click **OK** to continue using the software for your remaining trial days. At the end of your Trial license, the license will expire and you will need to purchase a Full license to continue using the software.

Registering a Full License

- Click **Register** for the license(s) you want to register.
- The CZM License Registration Utility dialog (Figure 18) appears.

CZM License Registration Utility 5.2

STEP 1: Enter Software Certificate Serial Number.

Certificate Serial Number:

FEATURE TO BE REGISTERED:

Node ID:

STEP 2: Obtain License Key and Security Code.

Register License on the Web. Use link below:

<http://www.meditec.zeiss.com/register>

STEP 3: Register Licensed Feature.

Enter the License Key and the Security Code obtained on STEP 2 and Save.

License Key:

Security Code:

Figure 18 CZM License Registration Utility Dialog For Review Software

3. Under FEATURE TO BE REGISTERED, confirm that the name of the feature you selected matches the license certificate you are about to register.
4. Make a note of the unique Node ID of your system. Enter the Certificate Serial Number provided on the software certificate, obtained from Carl Zeiss Meditec customer, or found on a sticker affixed to the back of the CD case, including the alphabetic prefix and the intervening dash before the number.
5. To obtain a License Key and Security Code, go to the Carl Zeiss Meditec website: www.meditec.zeiss.com/register. If your language is other than English, select your language under the "Other Languages:" area of the website.



Note: If you have questions regarding software registration, please contact Carl Zeiss Meditec at z.customersupport@meditec.zeiss.com. To reach us by phone, in the United States please call Carl Zeiss Meditec at 1-800-341-6968. Outside the United States, please contact your local Carl Zeiss Meditec distributor.

6. Go to the bottom of the page, where it says: "When ready use the [form](#) to create your License Key" and click on the word "[form](#)" (See [Figure 19](#) below).

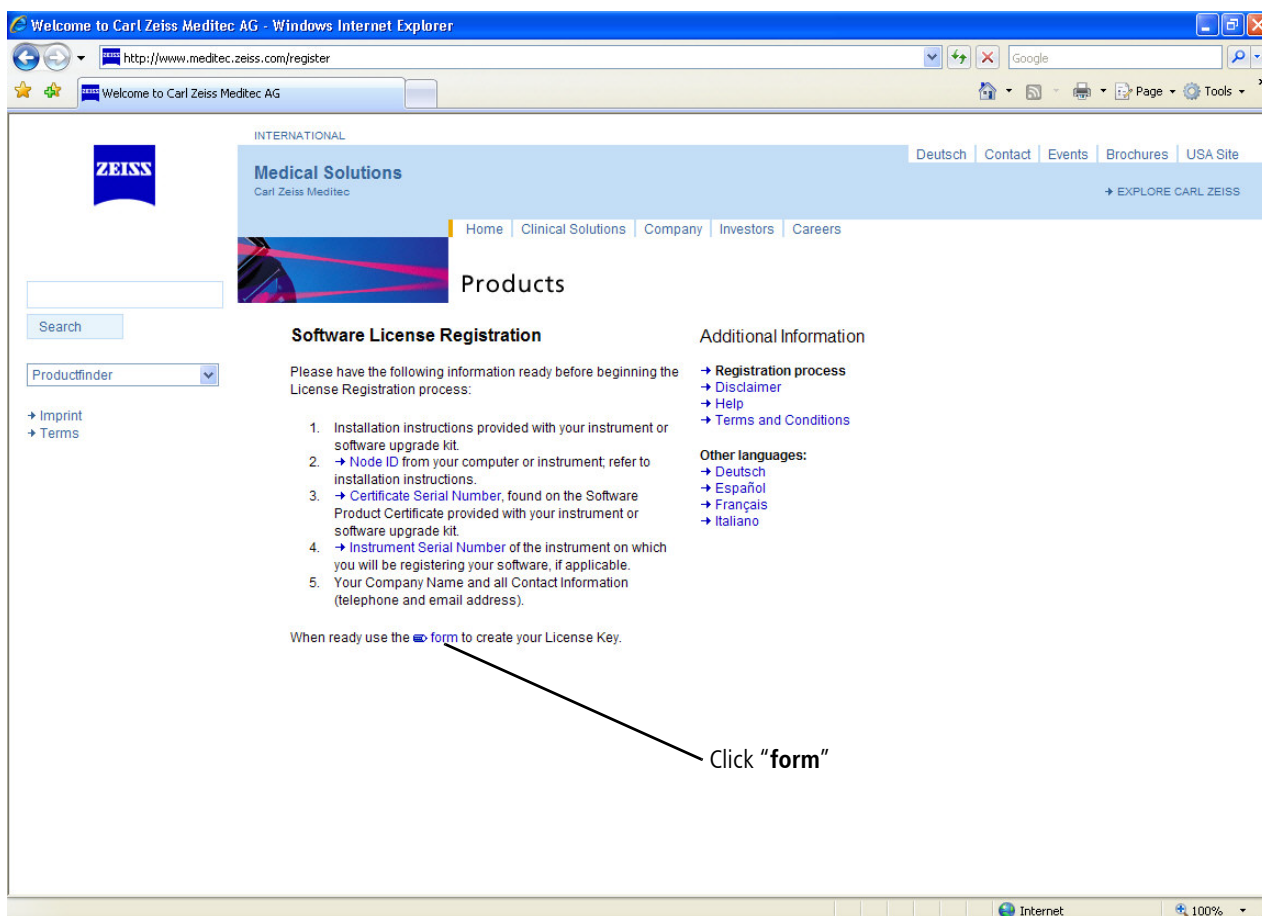


Figure 19 Carl Zeiss Meditec Software License Registration Page on the Internet

7. Enter your Certificate Serial Number and click the **Submit** button.
8. Enter your Node ID and personal information and click the **Submit** button to generate your License Key and Security Code.
9. Write down your License Key and Security Code, or print out and save the entire web page for reference.



Note: If you are unable to complete the license registration process, click **Close** to quit the license registration utility. Double-click the ATLAS Review Software desktop icon to restart the software and return to Step 1 of license registration above.

10. Returning to the CZM License Registration Utility, enter the License Key and Security Code in the appropriate fields. The **Save** button will become active only when the correct information is entered. When the **Save** button becomes active, click **Save**.

11.If the license registration is successful, a dialog will be displayed confirming successful registration (Figure 20).



Figure 20 Successful License Registration Dialog

- 12.Click **OK** to close the dialog and complete the license registration.
- 13.The LICENSE VIEW window (Figure 21) is displayed with the Full license registered. Select **OK** to begin using the software.

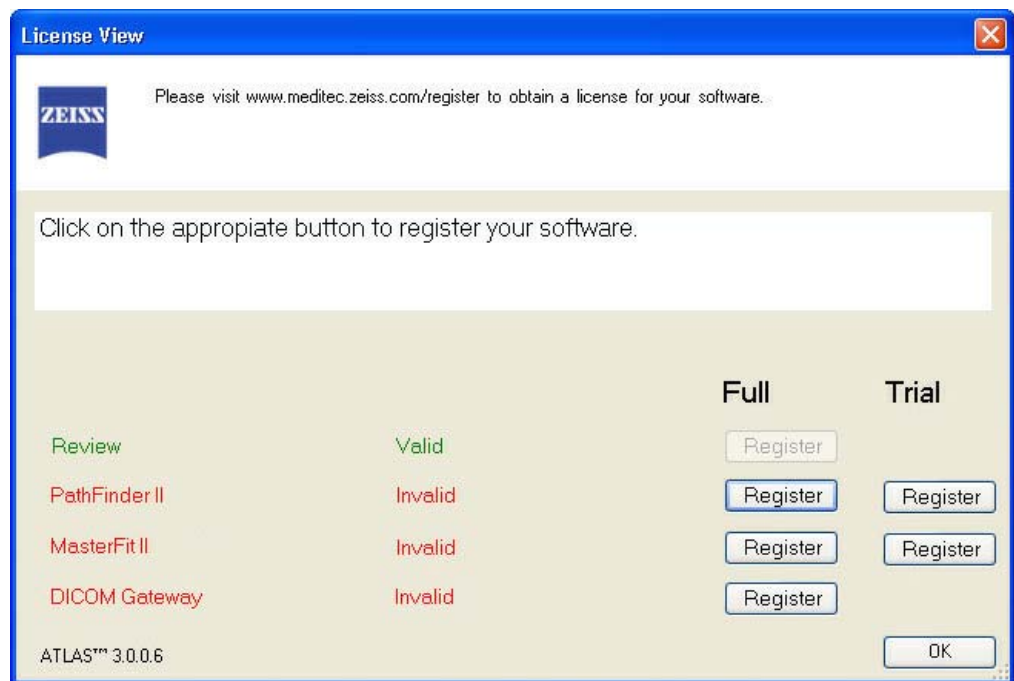




Figure 21 License View Window with Full Review License Registered

 **Note:** If you get an error message, verify that you have entered the correct values for your license information and try again.

14.After registering a Full license on ATLAS Review Software, you can register additional software licenses now by selecting the **Register** button for the software you want to license, or later by selecting **View Licenses...** on the **Help** menu.

 **Note:** To purchase additional licensed features, contact Carl Zeiss Meditec Software Licensing at 1-800-341-6968 or by email at z.customersupport@meditec.zeiss.com. Outside the United States, please contact your local Carl Zeiss Meditec distributor.

Set Up and Configure the Review Software

ATLAS Review Software needs to be configured to your practice preferences. Refer to the following checklist to customize ATLAS Review Software. See the ATLAS User Manual for more information.

- change language see [Language](#) in [Operational Overview](#))
- name institution (see [Create Institution Name](#) in [Data Management](#))
- create staff user accounts (see [Staff Registration](#) in [Data Management](#))
- set user login preference (see [User Login](#) in [Operational Overview](#))

Connect Review Station to your ATLAS Instrument

You can connect an ATLAS Review Station to an ATLAS Model 9000 or ATLAS Model 900 Series instrument for data review and analysis. **The setup steps described below are brief and generic and are designed to be performed by an information technology specialist.** For details, refer to the Network Configuration Guide, Archive Management, Export and Import chapters in the ATLAS User Manual for assistance.

Connect to ATLAS Model 9000 Instrument

The recommended¹ method to connect to the ATLAS Model 9000 instrument is done by synchronization from an ATLAS Model 9000 archive through a networked connection (see [Figure 22](#)).

1. An alternate method is to manually import from ATLAS 9000 Series Export Media. This can be used in a non-networked environment.

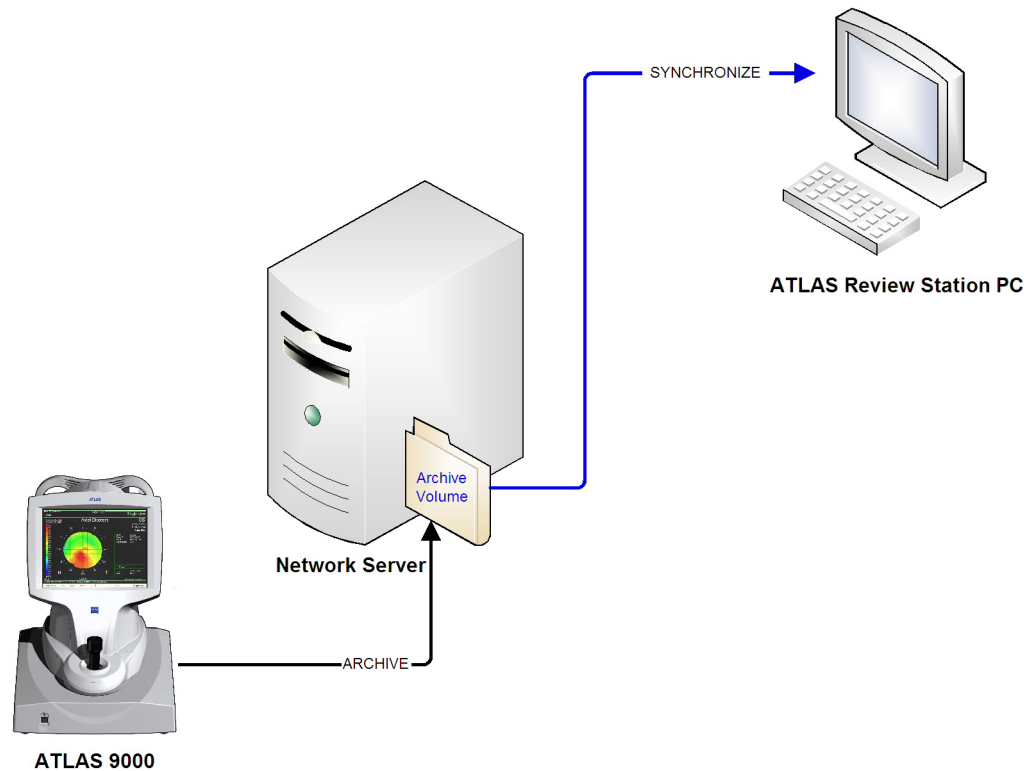


Figure 22 Synchronization Diagram

1. You must connect the ATLAS 9000 instrument and Review Station to a network.

Configure ATLAS Instrument

2. Configure the ATLAS instrument and a network file server/NAS drive to communicate.
3. If no current archive exists on the ATLAS instrument, click **Archive > Archive Management** and create a new archive location on the network file server and make it the current archive.
4. Perform a manual archive from the ATLAS instrument, which will archive the entire ATLAS database to the current archive volume. This could take some time depending on the size of the database. Once archiving is complete, the ATLAS instrument data will be available for synchronization with a properly configured Review Station.



Note: For an existing large ATLAS database, it is recommended to repeat Step 3 above to create a new archive volume that will be used by the ATLAS Review Station to synchronize new ATLAS instrument exam data only.

Configure ATLAS Review Station

5. Configure the ATLAS Review Station and the same network file server to communicate. You will have to map a network drive on the Review Station to the network file server.
6. From the Review Station, click **Archive > Synchronize Volumes**. The Archive Locations to Synchronize dialog opens.

7. Click **Add** and then use the **Open** dialog that appears to navigate through the drive mapped in Step 5 to locate the ATLAS archive file named **Archive.xml** in the ATLAS instrument current archive location. Click **Open** to add the archive location to the list of archives to be synchronized on the Review Station. Select **Yes** to the confirmation message.
8. To make the ATLAS instrument data available on the Review Station, click **Archive > Synchronize**. Depending on the size of the ATLAS archive, synchronization can take minutes to hours to complete. Once complete, the ATLAS instrument data will be available for viewing and analysis on the ATLAS Review Station.
9. Select **View Today's Patients** to select the imported patients.

Configure Automatic ATLAS 9000/ATLAS Review Station Connection

10. On the ATLAS 9000 select **Auto** in the **Options > Preferences > Archive/Synchronize > Archive** section to have the ATLAS instrument automatically archive new and imported exams.
11. On the ATLAS Review Station, select **Auto** in the **Options > Preferences > Archive/Synchronize > Synchronize** section to have ATLAS Review automatically synchronize networked archive databases.

Connect to ATLAS Model 900 Series Instrument

The recommended¹ method to connect to an ATLAS Model 900 Series instrument is done by importing from an ATLAS Model 900 Series instrument database through a network connection (see [Figure 23](#)).

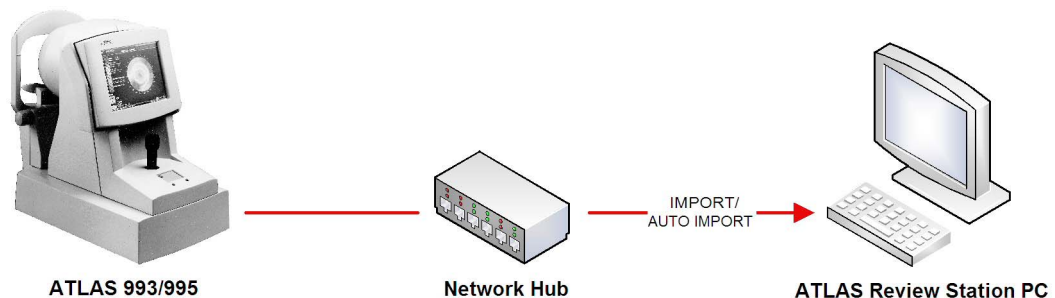


Figure 23 ATLAS 900 Series Database Import Diagram



WARNING/CAUTION: Initial import of ATLAS 900 series databases could take several hours depending on the size of the database. Do not use the ATLAS 9000/Review Station during that time.

1. You must connect the ATLAS 993/995 instrument and Review Station to a network.

¹ An alternate method is to manually import from ATLAS 900 Series Export Media. This can be used in a non-networked environment.

2. Configure your ATLAS instrument for networking and ATLAS file sharing. You must share the folder where the ATLAS 993/995 database is located. The default exams database resides in the C:\EXAMS folder. On the ATLAS Review Station, you can map a drive letter to the ATLAS 993/995 database folder.

Configure ATLAS Review Station

3. On the ATLAS Review Station, configure Import Settings with ATLAS 900 Series Importer. While in patient selection mode, click **Tools > Run Atlas Importer** to display the ATLAS 900 Series Importer dialog.
4. Click the **Database** button to display the **Select ATLAS 900 Series Database** dialog.
5. To add an ATLAS 900 Series Instrument database, click an **Add** button to display the **Add / Edit ATLAS 900 Series Database** dialog.
6. In the **Name** field, type in a name for the ATLAS 900 Series Instrument.
7. In the **Location** field, you can type in the exact path to the database folder, if you know it, or click the browse (...) button to find and select the folder. A **Choose file with name Corneal.mdb** dialog appears, enabling you to browse anywhere in a local or network path that is accessible. If you mapped an ATLAS 993/995 database folder to a drive letter, you can enter it here. You must choose a file with the name **Corneal.mdb**, since all ATLAS 900 Series databases have this name.
8. In the **Import Option** field, select **All** (for all exams).
9. Click the **Add** button to add the database. The **Select ATLAS 900 Series Database** dialog will be displayed showing the database you have just added.
10. To import the exams from the ATLAS 900 Series Instrument database now, click **Start Import**. The exam import process begins and the **Import Exam Status** dialog will be displayed.
11. When complete, click the **Exit Importer** button to return to the PATIENT SELECTION window.
12. Select **View Today's Patients** to select imported patients.

Configure Automatic ATLAS 900/ATLAS Review Station Connection

13. ATLAS Review can be set to automatically import exams from ATLAS 900 Series Instrument databases. To turn on automatic importing, while in patient selection mode, click **Options > Auto ATLAS 900 Series Importer Setting**. The **Auto ATLAS 900 Series Importer Setting** dialog appears.
14. Check **Turn on Auto ATLAS 900 Series Importer** to turn on automatic importing. Click the **OK** button to save your changes.
15. When new exams are found they will be automatically imported into your current database.



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ATLAS Review Software Installation

System Software 3.0.1

Specifications subject to change without notice

Content

Release Notes:
ATLAS Review-Software, Version 3.0.1
[2660021142620a]

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Release Notes: ATLAS Review Software

■ Software Version 3.0.1



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Document Applicability

This document applies to ATLAS Review Software Version 3.0.1, unless superseded.

Release Notes: ATLAS Review Software Version 3.0.1

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- [2. Maintenance Updates](#), page 1
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1. New Features

Licensed features described in this section are optional and may not be activated, either because the feature is not currently available in your market, or because you have not purchased the software license.

The following new feature is included in ATLAS Software Version 3.0.x:

1. (Optional Licensed Feature) MasterFit™ II Software. The MasterFit II Contact Lens Software enables the user to design gas permeable (GP) contact lenses and to simulate the resulting fluorescein pattern on the cornea. MasterFit II features both topographic or keratometric-based lens fitting methods. Based on customizable fitting preferences, MasterFit II will recommend the most appropriate lens type (including spherical, aspheric, front toric, back toric, and bi-toric designs) and will design a custom lens that best achieves the desired fitting preferences. The MasterFit Software set is an optional feature: it is installed with Version 3.0 software but runs under license protection and must be purchased.

2. Maintenance Updates

Licensed features described in this section are optional and may not be activated, either because the feature is not currently available in your market, or because you have not purchased the software license.

1. (Optional) DICOM Gateway. The DICOM (Digital Imaging and Communications in Medicine) Gateway allows the user to connect one or more ATLAS Review Stations to a qualified DICOM 3.0 Ophthalmic Compatible Electronic Medical Records (EMR) system, Patient Management System (PMS), or DICOM archive, for paperless workflow. The DICOM Gateway must be installed, configured, and licensed to operate.
2. Beginning with ATLAS Review Software 3.0.1, Microsoft® Windows® 7 operating system is supported. ATLAS Review Software 3.0.1 now supports Microsoft Windows 7 Home Premium and Professional (32-bit and 64-bit versions). Notes about Windows Vista in the user manual apply to Windows 7 with the following exceptions:
 - The note to disable "Fast User Switching" in *(2) Operational Overview > System Start and Login > Starting ATLAS Review Software Running on a PC* should be

- read as follows for Windows 7: Click **Start**, type **gpedit.msc** in the **Search programs and files** field, and then press **Enter** on the keyboard. Select **Administrative Templates > Computer Configuration > System > Logon > Hide entry points for Fast User Switching**. Then follow the remaining instructions.
- Steps 4, 8, 9 in *(D) Network Configuration Guide > Configuration for Export via Preexisting Office Network > Create a shared folder on a Windows Vista Review Station* should be read as follows for Windows 7. Step 4 is "Select **Share this folder**. Select the **Permissions** button. The Permissions for Netshare dialog opens." Step 8 is "Click **Close** to close the Netshare Properties dialog." In Step 9, the shared folder icon will not change.
 - The note in *(I) License Registration*, "Note: On Windows Vista computers, each user (User Account) will need to register a license using the same Certificate Serial Number, License Key and Security Code.", is no longer valid. With Windows 7, you only need to register one license per computer.
 - The path to start the Network Broker service from the Windows desktop in *(C) DICOM Gateway (Optional) > DICOM Gateway Configuration Steps* should be read as follows for Windows 7: **Start > All Programs > Carl Zeiss Meditec > Network Broker > Network Broker**.
 - The path to launch the Network Broker Configuration Tool from the Windows desktop in *(C) DICOM Gateway (Optional) > Launching the Configuration Tool* should be read as follows for Windows 7: **Start > All Programs > Carl Zeiss Meditec > Network Broker > Configuration Tool**.
3. Beginning with ATLAS Review Software 3.0.1, Microsoft Windows Vista® is no longer supported. Notes about Windows Vista in the user manual apply to Windows 7 with the exceptions described in Maintenance Update number 2 above.
 4. The path to start the Network Broker service from the Windows desktop in *(C) DICOM Gateway (Optional) > DICOM Gateway Configuration Steps* should be read as follows for Windows XP: **Start > All Programs > Carl Zeiss Meditec > Network Broker > Start Network Broker service**. The path to launch the Network Broker Configuration Tool from the Windows desktop in *(C) DICOM Gateway (Optional) > Launching the Configuration Tool* should be read as follows for Windows 7 and Windows XP: **Start > All Programs > Carl Zeiss Meditec > Network Broker > Configuration Tool**.
 5. Trend Analysis Display. The Trend Analysis Display shows up to four exams for the same eye, along with a table of data analysis parameters. Data Parameters displayed include Apical radius (Ro) (along meridian), Sagittal height (along meridian), Eccentricity (along meridian), Flat and Steep Sim K's, HVID, and Pupil Diameter values for each image. The mean and standard deviation values for these parameters are also displayed for the images.
 6. Rings Image Zoom. The Rings Image View now has an option to display a zoomed in rings image to 10mm. Only available for ATLAS 9000 exams.

7. RMS Data. The Corneal Wavefront, Image Simulation, PSF, and MTF Views can now display RMS data. The Root Mean Square (RMS) value of the Zernike coefficients determines how much wavefront error the anterior cornea has. The higher the RMS value, the larger the amount of wavefront error. Low (2nd order aberrations only), High (3rd order aberrations and greater only), and Total (Low + High) RMS values (μm), and their “equivalent defocus” values (diopters only) are displayed. Equivalent defocus is the amount of defocus needed to produce the same RMS wavefront error produced by one or more higher-order aberrations. Equivalent defocus allows us to compare the order of magnitude of different kinds of aberrations and judge their clinical significance.
8. Synchronize Status Indicator. The Synchronize indicator reports synchronization status in terms of connectivity. A red circle with a white “X” indicates that no synchronization volumes are enabled. A green light indicates all enabled synchronization volumes are connected. A yellow light indicates at least one enabled synchronization volume is connected, and at least one enabled synchronization volume is disconnected. A red light indicates all enabled synchronization volumes are disconnected. You can mouse over the indicator for details.
9. Export Single Exams. When exporting ATLAS 9000 data, (**File > Export > To Atlas 9000 Series Export Media**), you can select a single exam or only certain exams for a patient, rather than all exams, by clicking the **Select Exams** button and then selecting the exams you want to export for each patient.

3. User Profile

Specific assumptions regarding the profiles of individuals performing software operation or data interpretation are given below. The user manual contains information that will aid in the proper software operation and interpretation of the resultant data.

Review Software Operation

Demographic

- The user should be adult, and at least one of the following:
- Ophthalmologist or other Medical Doctor
- Optometrist or equivalent
- Nurse
- Certified Medical Technician
- Ophthalmic Photographer
- Non-certified Assistant

Occupational Skills

The user should be able to perform all of the following tasks:

- Power on the computer

- Find and modify patient identifying data
- Select exams and generate an analysis report
- Review the analysis report for completeness
- Print or export an analysis report
- Power off the computer

Data Interpretation

Demographic

The user should be one of the following:

- Ophthalmologist or other Medical Doctor
- Optometrist or equivalent

Occupational Skills

The user should have the following skills:

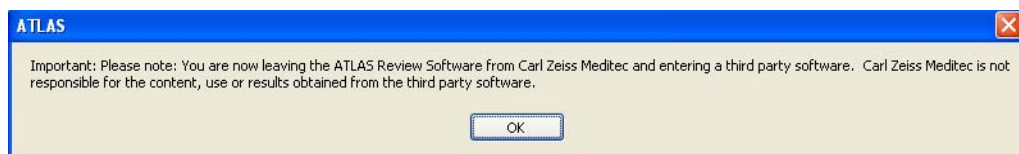
- See Review Software Operation above

Job Requirements

The user should have training and certification in the analysis and treatment of ophthalmic diseases or other eye-related medical issues as required by governing bodies.

4. Use Notes

1. **Use Note:** Health care providers have responsibility for the protection of patient health information (PHI), both hardcopy and electronic.
Action: To protect patient confidentiality of your exported electronic data, the use of encryption is recommended and is the responsibility of the user.
2. **Use Note:** When there is a large amount of data to be synchronized, Auto Synchronize will automatically be turned off (if currently on) to prevent the software from becoming unresponsive.
Action: Manually synchronize (**Archive > Synchronize**) to complete the synchronization. When manual synchronize is complete, Auto Synchronize can be turned back on (**Options > Preferences > Archive/Synchronize**). Note that Auto Synchronize will not be automatically turned on.
3. **Use Note:** When launching an optional third-party software module from within ATLAS Review Software 3.0.1, a disclaimer dialog box displays as shown below:



Action: Read the disclaimer message and select **OK** to use the third-party software module.

4. **Use Note:** The Review Software requires administrative privileges in order to run.
Action: User must have administrative privileges to use the Review Software.
5. **Use Note:** The Review Software cannot be installed on an ATLAS instrument.
Action: The user should read the Review Software installation guide before installing the Review Software.
6. **Use Note:** If Print2VisuPaC is chosen as the default printer, it must be configured to Portrait Mode. Selecting Print2VisuPaC Landscape mode can cause an error.
Action: If using Print2VisuPaC, always use Portrait mode.
7. **Use Note:** All named Parameter Sets have revised default settings.
Action: To update to the revised default settings, select the Defaults button for each Parameter Set.
8. **Use Note:** The rings image is only displayed on the simulated fluorescein map view for exams created on the ATLAS 9000 in MasterFit II.
Action: Exams created on earlier Atlas models can be viewed in MasterFit II but the rings image is not displayed.
9. **Use Note:** The contact lens can only be moved on the simulated fluorescein map view for exams created on the ATLAS 9000 in MasterFit II.
Action: Exams created on earlier ATLAS models can be viewed in MasterFit II but the contact lens cannot be moved.
10. **Use Note:** The MasterFit II software uses the Refraction that has been input by the operator to help determine the contact lens power. If no refractive data has been entered, the software assumes a plano refraction and displays a warning to the operator.
Action: The operator should enter refractive data in order for the MasterFit II software to be able to determine appropriate contact lens powers and parameters.
11. **Use Note:** In some instances, the MasterFit II software lens design area of the screen is cut off when the tool bar is being displayed or the window has been resized (Review Software).
Action: The operator can hide the tool bar to make all the contact lens design items visible or maximize the window if it has been resized.
12. **Use Note:** The initial synchronization of an archive containing thousands of exams will take a long time. For example, on a late model computer it will take approximately 10 hours to complete synchronizing 1000 exams.
Action: Initial synchronizing of a large archive should only be started at a time when the use of the computer is not required for a long time.
13. **Use Note:** Exporting all the patients in a large database can be very slow and is not recommended.
Action: Do not attempt to export all patients at a single time from a large database.

14. **Use Note:** Exporting all the patients in a large database to the DICOM Gateway can be very slow and is not recommended.

Action: Do not attempt to export all patients at a single time to the DICOM Gateway from a large database.

15. **Use Note:** The space needed for export is calculated based upon a single patient, not on the number of exams to be exported.

Action: If exporting a large number of exams, check beforehand that there is enough free space on the destination drive. A single exam takes between 1 and 4 MB of space.

16. **Use Note:** Archiving does not stop when available space on the archive volume drops below the red Archive Status (200 MB available on archive volume) during the archive process.

Action: If Archive Status turns yellow, either free up space on the archive volume or create a new archive volume before archiving.

17. **Use Note:** Larger than expected tear film clearances under the peripheral curve regions may be observed in the MasterFit II fluorescein simulation. MasterFit II does not blend between the base, secondary peripheral, and third peripheral curve regions. Blending effectively lowers the peripheral region and reduces the effective peripheral clearance.

Action: None.

5. Corrected Anomalies

1. **Refractive Power View Display Anomalies.** In Software Version 2.0, if mm is selected as the units (global parameter) in a View, the Refractive Power View in Profile view mode correctly displays diopter values as the unit, but incorrectly mm as the label. Also the Color view in the circle will not be correct. This anomaly has been corrected so that diopters and the Color view are correctly displayed.

6. Known Anomalies

1. **Anomaly:** If Print2VisuPac is installed and the printing mode is set to landscape an unhandled exception will occur.

Work-Around: When using Print2VisuPac, set the printing mode to portrait.

Preventive: None.

2. **Anomaly:** The Review Software installer will not work on a Windows XP 64 bit system. It will attempt to install Windows Framework .NET 2.0 for a 32 bit system.

Work-Around: When installing the Review Software on a Windows XP system, use only a 32 bit Windows XP system.

Preventive: None.

3. **Anomaly:** The Review Software does not support Large size (120 DPI) display setting when the screen resolution is set to 1024 x 768.
Work-Around: Change the DPI setting in the Advanced button under the Settings tab in the Display Properties dialog to the Normal size setting (96 DPI) or change to a larger screen resolution than 1024 x 768.
Preventive: None.
4. **Anomaly:** Special characters not in English character set (e.g., Ä) are case sensitive in Basic and Advanced search.
Work-Around: Type in a special character and then use the vertical scroll bar to locate the desired patient.
Preventive: Use the correct case when searching patients with names containing special characters not in English character set.
5. **Anomaly:** An unhandled exception error can occur during an Import operation if the operator types in a path as "e:" rather than "e:\". The error is caused by omitting the backslash.
Work-Around: Type in the backslash if typing the path manually.
Preventive: Use the browse button to select the path.
6. **Anomaly:** ATLAS export functions do not span media disks. The media disk must have enough space to accommodate all the export data.
Work-Around: Use a USB hard drive or NAS drive with enough free space to accommodate the export data.
Preventive: Check beforehand that there is enough free space on the media disk to accommodate the export data. A single exam takes between 1 and 4 MB of space.
7. **Anomaly:** When exporting ATLAS 9000 data, if you select Export to Zip Format and the export folder already contains patients exported without using the Zip format, then the created Zip file will contain the currently selected patients and the previously exported patients. Note: Any existing Zip files in the folder will not be included.
Work-Around: Create a new folder when exporting patients.
Preventive: Create a special folder for exporting Zip files.
8. **Anomaly:** For 2-Difference and 3-Difference Displays, using the keyboard to change exams in the Exams/Views window does not work.
Work-Around: Select exams with the touchpad or mouse.
Preventive: None.
9. **Anomaly:** When selecting a different View from the Views tab on an Analysis Screen with the More (F2) button enabled, and then selecting **Export > Export current screen to DICOM**, the screen exported to your DICOM system is incorrectly titled to the previously selected View.
Work-Around: Do not use **Export > Export current Screen to DICOM** from the More (F2) screen.
Preventive: None.

10. **Anomaly:** In Windows 7, the color map portion of the display in Trend Analysis is not fully refreshed when the operator removes one or more of the currently selected exams. The exam statistics are updated and all printouts and exports are correct.

Work-Around: After removing one or more of the currently selected exams, click on either the exam statistics area or the color map area of the display to refresh the display.

Preventive: None



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2660021142620 A

ATLAS Review Software 3.0.1

Release Notes

Specifications subject to change without notice

Content

ATLAS – HP 6988 Printer Configuration
[2660021133636 B]

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ATLAS Model 9000

■ Configuration Instructions for HP 6988 Printer

Configuration Instructions
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Document Applicability

This document applies to ATLAS System Software Version 3.0 or higher, unless superseded.

ATLAS - HP 6988 Printer Configuration

Introduction

This document instructs you how to configure the HP® 6988 printer for use with the ATLAS™ instrument. You can install the HP 6988 in two configurations for communication between instrument and printer:

1. [USB Configuration](#) (page 2), via direct USB connection between instrument and printer.
2. [Network Configuration](#) (page 2), either via direct connection between instrument and printer, or via connection of instrument and printer to a local area network.



Printer Safety Warnings

WARNING: To maintain patient safety, an isolation transformer is required when connecting externally powered peripheral devices (i.e., printer, USB drive, etc.) within 1.5 meters (4.9 feet) from the patient. In addition, an isolation transformer is required for all externally powered peripheral devices outside this distance unless these devices are (1) connected to the ATLAS using an Unshielded Twisted Pair (UTP) network cable (CZMI recommends using a least a CAT 5 UTP network cable), (2) plugged into a different power outlet than the ATLAS, and (3) qualified by CZM for use with an ATLAS instrument. Failure to observe this warning could result in electrical shock to the patient and/or examiner.

WARNING: To directly connect a printer to the ATLAS only use a UTP network cable. Use of a shielded network cable will ground the printer through the ATLAS, which could result in electrical shock to the patient and/or examiner. It could also invalidate the system safety approval.

WARNING: Do not use the printer or the instrument with an extension cord or a power strip (multiple portable socket outlet). For additional safety, do not plug the printer and the instrument into the same wall outlet. Failure to observe this warning could result in electrical shock to the patient and/or examiner.

WARNING: If you connect the printer incorrectly—for example, by plugging the printer and instrument into the same wall outlet, or by using a shielded network cable—you could invalidate the system safety approval.

Installation Overview

Before configuring the printer to communicate with the ATLAS, the following three general steps are required for both USB and Network configurations. These steps are explained further in the specific sections.

1. **Printer hardware setup:** Refer to the instructions provided with the printer to unpack and set up the printer hardware.
2. **Connect hardware.** The hardware used depends on the type of configuration you select: either a network cable or a USB cable.
3. **Configure the Hostname.** Network connection only.

USB Configuration

For the USB configuration:

- You must connect the printer with the existing USB interface cable.
- The HP 6988 Printer driver is already installed on the ATLAS.
- No printer software configuration is required for the USB configuration.

This concludes the procedure to configure the ATLAS and a HP 6988 printer with a USB connection. The printer is now ready for normal use.

Network Configuration

A network connection can be established either (1) directly between the ATLAS and the printer, or (2) by connecting both the ATLAS and the printer to the local area network or to a network switch or hub connected to the ATLAS. One network patch cord (or network cable) is supplied with the printer and is a standard part commonly available at electronics stores. Follow the instruction steps below.

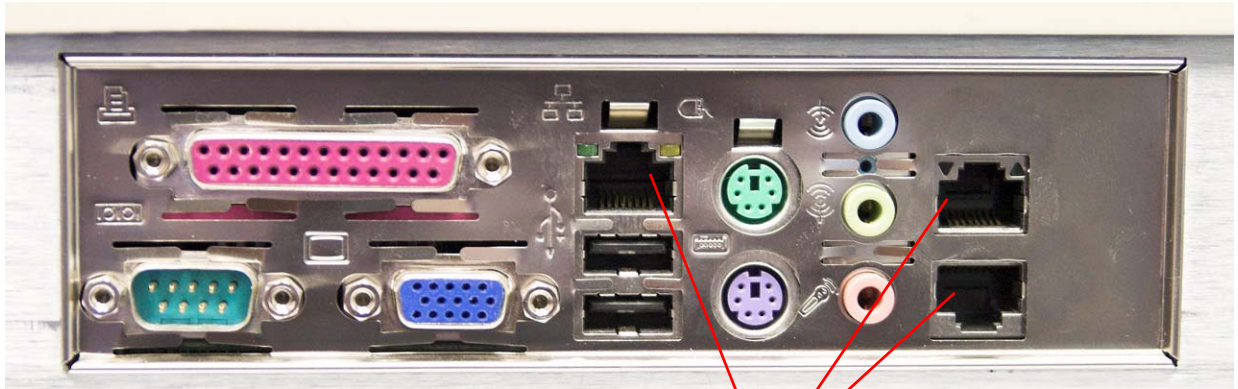
1. Connect the Hardware

For the direct connection between ATLAS and printer, use one UTP network cable to connect the network ports on both devices.

For the connection to a local area network, use two shielded or unshielded network cables. Connect the network ports on each device to the corresponding ports on the local area network.

Connect the power supply output to the printer. Connect a UTP network cable to the printer and to a network port on the right side of the ATLAS ([Figure 1](#)). (Use one cable to


connect the printer and computer directly, or two network cables to connect printer and computer separately to a network, switch or hub.)




Network Ports

Figure 1 ATLAS Network Ports on Right Side of Instrument

2. Configure the Host Name

 **Important Note Regarding the IP Address:** These instructions assume that the ATLAS and the printer are configured to obtain an IP address automatically. The ATLAS ships this way from Carl Zeiss Meditec, so this will be the case unless someone has intervened to configure the ATLAS with a static IP address. If the ATLAS has a static IP address, then use the printer manufacturer's instructions, rather than these instructions, to configure the printer. Observe that the IP address for the ATLAS and the printer must be in the same range. In most cases, it is sufficient to change the number in the last field of the IP address. If the IP address or other networking parameters of your ATLAS have been adjusted since delivery from Carl Zeiss Meditec, or if your particular office network configuration is not compatible with these instructions, consult your network administrator or information technology (IT) professional to make sure you install and configure the print driver correctly. This is because the specific characteristics of individual network configurations can vary greatly.

The HP 6988 printer driver is already installed on the ATLAS instrument. Follow these steps to complete the configuration by updating the printer **Hostname** as follows:

1. To determine the printer **Hostname**, press the '✓' button on the printer to print out a report page. The printer **Hostname** appears on line 6 of the report page in the **Hostname** field.
2. Select the Windows key  on the keyboard to see the Windows **Start** menu.
3. Select **Start > Printers and Faxes** to access the Printers and Faxes dialog as shown in [Figure 2](#).

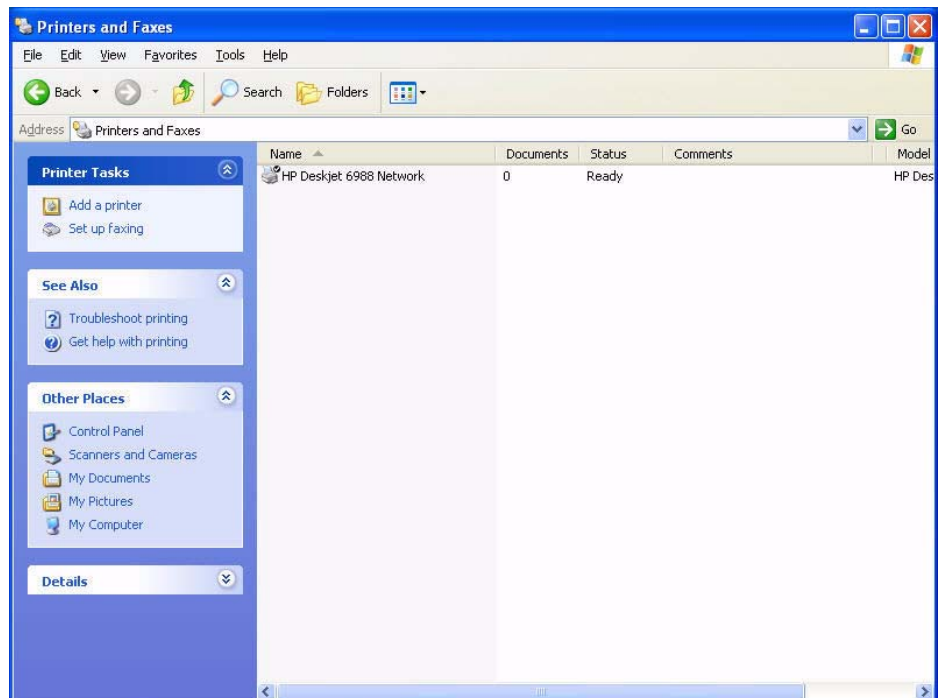


Figure 2 Printer and Faxes Dialog

- To update the **Hostname** on the ATLAS, right-click on the **HP Deskjet 6988 Network** printer icon, and then select **Properties**. Click on the **Ports** tab as shown in [Figure 3](#).

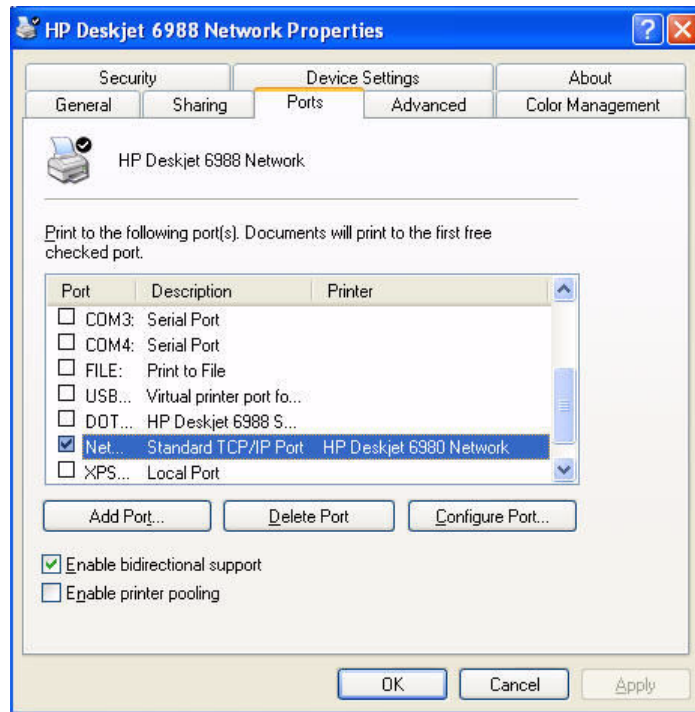


Figure 3 HP Deskjet 6988 Network Properties – Ports Tab

- Verify that **Network – Standard TCP/IP Port** is selected ([Figure 3](#)), and then select **Configure Port** ([Figure 4](#)).

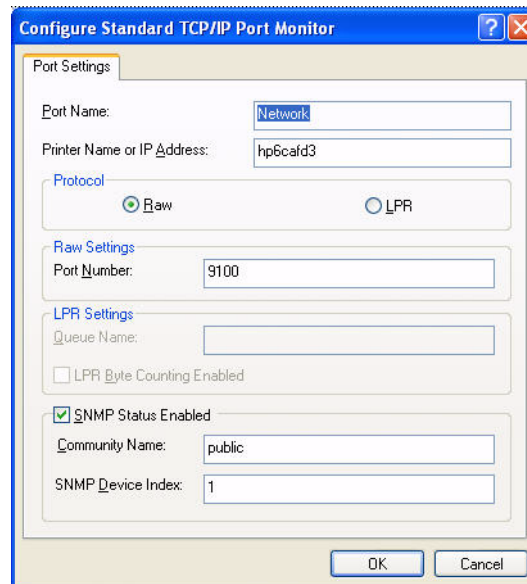


Figure 4 Configure Standard TCP/IP Port Dialog – Old Hostname

6. Type in exactly the new printer **Hostname** from line 6 of the report page in the **Printer Name or IP Address** field (Figure 5), and then select **OK** twice to close the configuration and printer properties windows.

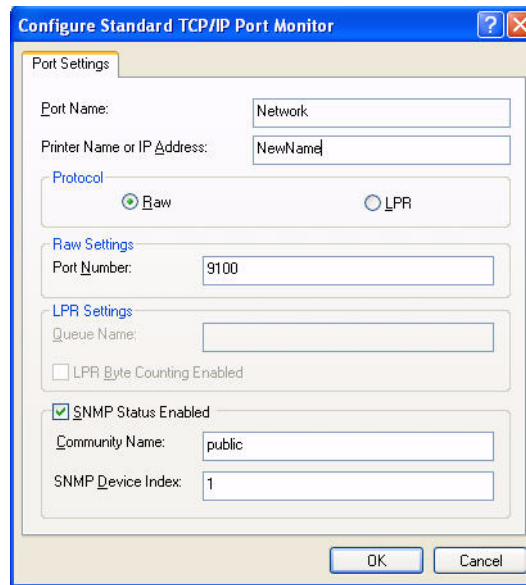


Figure 5 Configure Standard TCP/IP Port Dialog – New Hostname

This concludes the procedure to configure the ATLAS and HP 6988 printer in a network configuration. The printer is now ready for normal use.



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ATLAS Model 9000 – HP 6988

Printer Configuration

Specifications subject to change

* Carl Zeiss Meditec is the manufacturer of medical devices and associated stand-alone software, but is not the manufacturer of the accessory described in this manual.

Content

Disposal of the product within the EU

[2005-06-27]

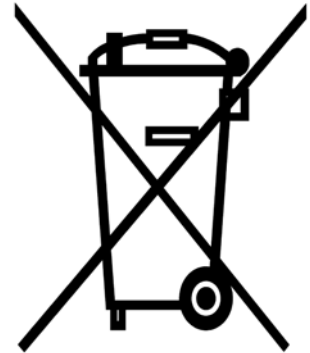
8

Entsorgung des Produktes innerhalb des EU-Raumes

Das auf dem Lieferschein spezifizierte Produkt darf entsprechend den zum Zeitpunkt der Inverkehrbringung geltenden EU-Richtlinien und nationalen Vorschriften nicht über den Hausmüll oder kommunale Entsorgungsunternehmen entsorgt werden.

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Bei Wiederverkauf des Produktes oder dessen Bestandteilen hat der Verkäufer den Käufer davon in Kenntnis zu setzen, dass das Produkt entsprechend den aktuell gültigen nationalen Vorschriften entsorgt werden muss.



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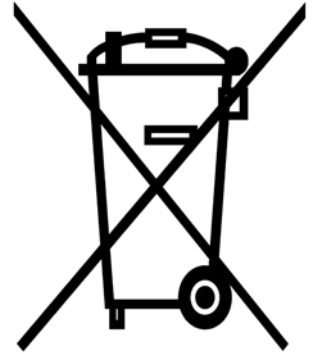
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266002-1134-240-Doks-GB-131114

ATLAS 9000 SW 3.0
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