# **UBM Plus** User's Guide

24-6310 Rev-E

**Federal law restricts this device to sale by or on the order of a physician.**

**FEDERAL COMMUNICATIONS COMMISSION (FCC)**
**UNINTENTIONAL EMITTER PER FCC PART 15**

This device has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in an office installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions in the user manual, may cause harmful interference to radio or television reception. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a different circuit from that to which the receiver is connected.
- Consult Accutome, Inc. or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation of this product is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

**CAUTION: Changes or modifications not expressly approved by Accutome, Inc. could void the FCC compliance and negate your authority to operate the product.**

The A-Scan Plus Connect is Manufactured by:

Accutome, Inc.
3222 Phoenixville Pike
Malvern, PA 19355 USA
Toll Free (USA): 1-800-979-2020
International: 610-889-0200
Fax: 610-889-3233

EC REP
EMERGO EUROPE
Molenstraat 15
2513 BH, The Hague
The Netherlands

CE
0086

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# 1 Introduction

## Accutome UBM Plus Overview

The Accutome UBM Plus provides high quality anterior segment imaging and play back with the ease of plugging into any window's based computer in the world, using either Microsoft Windows® XP (SP2) or later. The Accutome UBM also has many additional features that allow multiple methods of viewing, diagnosing and printing acquired images.

Figure 1.1 - Accutome UBM Plus Components

## Features

The Accutome UBM Plus images the internal structures of the eye and is designed for easy access to all functions.

The UBM  provides the following general features:

- Adjustable TGC (Time Gain Compensation) curves
- Gamma Settings (Post Image Processing)
- Automatic Image Orientation Labeling
- A-Vector
- Image Annotation
- Image Movie Playback
- Image Diagnostic Measurements - distance, area and angle
- Patient data storage and retrieval
- Patient data reports and printouts

### Adjustable TGC Curves

The Accutome UBM Plus allows you to adjust the Gain, Time Gain Compensation (TGC) as a default in Setup, live during an exam or on a saved existing exam.

## Gamma Settings
The Accutome UBM Plus allows you to adjust the Gamma settings as a default in Setup, live during an exam or on a saved existing exam.

## Gain Adjustment
The Accutome UBM Plus allows you to adjust the signal gain while scanning or on a saved image enhancing image quality.

## Automatic Image Orientation Labeling
The Accutome UBM Plus allows you to set image orientation labels as a default in Setup, live during an exam or on a saved existing exam.

## Image Playback
The Accutome UBM Plus allows you to play live images during scanning or to playback saved images.

## Measurements
The Accutome UBM Plus provides several types of image measurements:
Point- to-Point
Distance
Area
Angle

## Patient Data Storage and Retrieval
The Accutome UBM Plus saves all patient exams in a preset designated folder on the user computer, allowing you to playback, archive and backup any and all patient exams.

## Reports and Printouts
The Accutome UBM Plus allows you to prepare reports containing exam information and snapshots of selected imaging views. You can also print a snapshot at any time; during an exam or from a stored exam.

## Components
The components that are standard with each Accutome instrument are:

- UBM Ultrasound Probe
- Probe Holder
- Footswitch
- Wired Mouse
- This User Manual
- CD containing Accutome UBM software
- Anterior Segment Imaging Scleral Shells (18mm and 22mm)

All components are packed in a plastic carrying case. The user supplies a PC with Microsoft Windows® XP (SP2) or later as the operating system and Microsoft word as the platform for the report.

## About This Manual

This manual is a guide for technicians and opthamologists who are experienced in ultrasonographic biometric techniques.
This manual is organized as follows:

**Section 2 - Safety**
Summarizes safety precautions, warnings, symbols and terms.

**Section 3 - Getting Started**
Provides installation instructions, overview of Accutome UBM Plus basic operation.

**Section 4 - Accutome UBM Plus Setup**
Provides instructions on how to set up physicians, users, and system operational functions.

**Section 5 - Performing Exams**
Provides detailed instructions on how to acquire exam images.

**Section 6 - Patient Image Analysis**
Describes how to review and make comments for an individual patient.

**Section 7 - Printing Images and Reports**
Provides detailed instructions on how to print patient exam images, create and print or save reports.

**Section 8 - Archive**
Provides instructions on how to recall patient exams and archive exams to a CD or DVD.

**Section 9 - Maintenance**
Provides general maintenance instructions.

**Section 10 - Specifications**
Provides Accutome UBM Plus physical and operational specifications

**Section 11 - Warranty and Repairs**
Describes Accutome UBM Plus warranty information and repair procedures.

Having read this manual you will be able to set up the Accutome UBM Plus, perform scans, playback, save frames as snapshots, analyze images, print snapshots, create reports and archive patient exams.

# 2 Safety

## Safety Information

The section lists:

- Safety Precautions associated with the Accutome UBM Plus
- Safety Precautions of a general nature

**FEDERAL LAW RESTRICTS THIS DEVICE TO SALE BY OR ON THE ORDER OF A PHYSICIAN.**

### Safety Issues to Consider When Using the Accutome UBM Plus

The Accutome UBM Plus is non invasive. The ultrasound probe is immersed in an anterior segment imaging scleral shell, that is placed on to the anesthetized eye and filled with sterile saline and energy in the form of ultrasound is transmitted in to the eye. The power level of the ultrasound pulses is controllable by the Application Software, and the user has control of this power setting. The maximum power allowed to be set by the Application Software, and/or by the user is below the FDA, Health Canada, and EU maximum power limits. The Accutome UBM Plus Probe must be cleaned and disinfected before use.

### Symbol Definitions for the UBM Plus

Attention! Consult Instruction Manual

Type B Medical Device

No User Serviceable Parts

Do Not Use Near Flammable Gasses

Type II Insulation

Disposal of Product within the EU

### Indications for Use

This instrument is used for the imaging of the internal structure of the eye including opaque media and anterior segment pathology, for the purpose of diagnosing pathological or traumatic conditions of the eye.

**WARNING! THE UBM PLUS IS NOT INTENDED FOR FETAL USE!**

## Symbol Definitions for the Accutome UBM Plus

Statements, graphics and symbols listed below are used on components of the Accutome UBM Plus. Descriptions and meanings are listed to the right of the symbols.

## Disposal Requirements

The B-Scan Plus contains electronic components. At the end of its useful life it must be properly disposed of in compliance with local regulations.

### Disposal of the Product within the EU

EU directives and national regulations currently in force at the time of marketing prohibit the disposal of the UBM Plus specified on the delivery note in domestic waste or by municipal waste disposal companies. If the UBM Plus or its components are resold, the seller has the duty to notify the buyer that the product must be disposed of in compliance with local regulations

## Safety Precautions and Disinfection

**WARNING! DO NOT IMMERSE THE PROBE TIP IN TAP WATER AS THE FLUORIDE CAN DAMAGE THE CRYSTAL.**

**WARNING! DO NOT AUTOCLAVE!**

## Disinfection and Cleaning

Disinfection issues are confined to the Accutome probe that comes in contact with the patient's eye. In order to prevent the transmission of disease, refer to the OSHA and CDC guidelines for proper control of disinfection. These guidelines are frequently updated so be sure to contact OSHA, CDC, or your local disease control for the latest information and disinfection technique.

Accessories such as the extension handle or Goldman Tonometer Adapter which might come in contact with eye fluids should be cleaned with an FDA cleared high level disinfectant.

The probe must be cleaned between patients to prevent patient-to-patient transfer of infection. It is the user's responsibility to ensure that the relevant standards are maintained and that the products and procedures are effective and appropriate for ophthalmic applications. The following information is provided for the guidance of users, and specific products are mentioned for illustration only. Accutome does not endorse the use of these or any other product. Products must be used in accordance with the manufacturer's instructions.

## Safety Precautions

There are several areas in the use of the above Accutome products that require special attention, as they may pose a safety threat.

DO NOT AUTOCLAVE THE PROBES OR CONNECTORS.

DO NOT IMMERSE THE PROBE'S CABLES OR METAL CONNECTORS. ALLOW TO DRY BEFORE USE.

DO NOT WIPE THE PROBE END; IT MAY RESULT IN DAMAGE TO THE CRYSTAL.

DO NOT IMMERSE THE PROBE TIPS IN TAP WATER. USE DISTILLED WATER FOR CLEANING AND DISINFECTION

## Cleaning Procedure at Point of Use

Clean the probe handle with a damp cloth. Use appropriate products to clean the computer, keyboard and monitor. Cables may be cleaned with a soft cloth and alcohol. The probe holder should be washed with warm water and mild detergent.
Probe and Transducer:
The user must use the following procedure to clean the transducer and probe daily: Keep the transducer and probe connected, soak/rinse the transducer and probe end thoroughly with distilled water.

- Inspect all surfaces carefully for debris or build up.
- If there is still debris, soak/rinse the transducer and probe tip end with distilled water again. Repeat until all debris is gone.
- Let the transducer and probe air dry.

## Disinfection of the Probes with Alcohol

One recommended disinfection technique is to clean the probe assemblies with 70% isopropyl alcohol.
A 5-10 minute exposure is recommended. It is imperative that the alcohol be given to time to evaporate before applying a probe to that patient's eye. Do not completely immerse the probe or cable, only the tip of the probe should be placed in the solution.

After cleaning, rinse the end of the probe thoroughly with distilled water to remove all traces of the liquid used.

Let transducer and probe air dry.

## High- Level Disinfection of the Probe

If high level disinfection is required by your facility, the probe may be cleaned using an FDA cleared high level disinfectant, such as Cidex® OPA Activated Dialdehyde Solution.

If your facility is located in the EU, Mikrozid wipes are a compatible method of high-level disinfection for Accutome probes.

**Note: Be sure to follow the disinfectant manufacturer's written protocol when using any antibacterial solution, including high level disinfectants.**

**CAUTION: GENERAL INDICATIONS FOR USE OF THE ACCUTOME PROBE INCLUDE ON EXTERNAL STRUCTURALLY INTACT AREAS OF THE EYE GLOBE AND ORBIT AREAS ONLY.**

## Electrical Hazard and Safety

The instrument, foot switch and probe of the Accutome UBM Plus are electrical/electronic devices. Reasonable care should be taken when making electrical connection and handling electrically powered devices. Avoid use of damaged electrical equipment or frayed electrical cords. If repair or maintenance is being performed, the equipment must be turned off and the power cord disconnected

**WARNING! THE UBM PLUS IS ONLY TO BE USED WITH A COMPUTER USING A MEDICAL**

**GRADE POWER SUPPLY COMPLIANT WITH IEC60601-1**
Please refer to the manufacturer's instructions regarding its use.
The user is responsible for ensuring the PC to which the UBM Plus is connected must be of the grounding type in compliance with applicable electrical codes.
To avoid interruption of a procedure the user is responsible for ensuring that all power and USB connections are secure and that the laptop is fully charged.

**CAUTION: TO AVOID POSSIBLE LOSS OF PATIENT DATA STORED IN THE PC, ENSURE THAT THE DATA IS BACKED UP ON SOME DEVICE EXTERNAL TO THE PC.**

## Avoiding Equipment Damage

The Accutome UBM Plus provides no explosion protection from static discharge or arcing components. Do not operate the instrument in the presence of explosive gases such as flammable mixtures of anesthetic and air, or nitrous oxide.

**CAUTION! CARDIAC RHYTHM DISTURBANCES DURING PERFUSION STUDIES USING GAS ULTRASOUND CONTRAST AGENTS HAVE BEEN OBSERVED IN THE DIAGNOSTIC RANGE OF MECHANICAL INDEX (MI) VALUES. SEE THE SPECIFIC PACKAGE INSERT FOR THE CONTRAST AGENT BEING USED FOR DETAILS**

**WARNING! THE PROBE TIP OF THE UBM PLUS IS NEVER TO COME IN CONTACT WITH THE PATIENT'S EYE, AS IT MAY RESULT IN A CORNEAL ABRASION OR SIMILAR TYPE INJURY**

**WARNING! SELECTING THE WRONG TISSUE MATERIAL WILL RESULT IN SERIOUS MEASUREMENT ERRORS**

**WARNING! OPERATING OR STORING THE DEVICE BEYOND THE ENVIRONMENTAL RANGES IN THE SPECIFICATIONS CHAPTER MAY RESULT IN ERRONEOUS READINGS AND/OR PREMATURE FAILURE OF THE DEVICE.**

## Avoiding Electromagnetic and Other Interference

Do not use a cellular telephone and other devices not complying with EMC Class B requirements, as its signals may cause the equipment to malfunction. The effect of radio signals on medical devices is dependent on various factors and therefore unpredictable.

To avoid electromagnetic interference, the device must be installed and put into operation in accordance with the user manual and using the components supplied by Accutome.

**WARNING!! THE USE OF ACCESSORIES, TRANSDUCERS AND CABLES OTHER THAN THOSE SPECIFIED BY THE MANUFACTURER MAY RESULT IN INCREASED EMISSIONS OR DECREASED IMMUNITY OF THE UBM PLUS.**

**WARNING!! THE UBM PLUS SHOULD NOT BE USED ADJACENT TO OR STACKED WITH OTHER EQUIPMENT AND THAT IF ADJACENT OR STACKED USE IS NECESSARY, THE UBM PLUS SHOULD BE OBSERVED TO VERIFY NORMAL OPERATION IN THE CONFIGURATION IN WHICH IT WILL BE USED.**

## Connection of PEMS by NETWORK/DATA COUPLING to Other Equipment.

If the PEMS is intended to be connected by NETWORK/DATA COUPLING to other equipment that is outside the control of the PEMS MANUFACTURER, the technical description shall:

1. Specify the characteristics of the NETWORK/DATA COUPLING necessary for the PEMS to achieve its INTENDED USE;
2. List the HAZARDOUS SITUATIONS resulting from a failure of the NETWORK/DATA COUPLING to provide the specified characteristics;
3. Instruct the RESPONSIBLE ORGANIZATION that:
    - Connection of the PEMS to a NETWORK/DATA COUPLING that includes other equipment could result in previously unidentified RISKS to PATIENTS, OPERATORS or third parties;
    - The RESPONSIBLE ORGANIZATION should identify, analyze, evaluate and control these RISKS;
    - Subsequent changes to the NETWORK/DATA COUPLING could introduce new RISKS and require additional analysis; and
    - Changes to the NETWORK/DATA COUPLING include:
    - Changes in NETWORK/DATA COUPLING configuration;
    - Connection of additional items to the NETWORK/DATA COUPLING;
    - Disconnecting items from the NETWORK/DATA COUPLING;
    - Update of equipment connected to the NETWORK/DATA COUPLING;
    - Upgrade of equipment connected to the NETWORK/DATA COUPLING.

# 3 Getting Started

## Assembling the Accutome UBM Plus

The UBM accurately images intraocular structures of the human eye using ultrasound. The product consists of a UBM Plus Ultrasound Probe, a Probe Holder, a foot switch, a wired mouse, an anterior segment immersion shell, a User Manual, and a CD containing the Accutome UBM+ software, all packed in a plastic carrying case. The user supplies a PC with Microsoft Windows® XP (SP2) or later.
The Accutome UBM is designed to be used in multiple environments and is as simple as carrying a notebook computer and probe. The instrument requires virtually no assembly. You simply need to install the software and plug the probe, the mouse receiver and foot switch into your computer's USB ports and activate the USB ports.

### What you need

For a complete Accutome environment you will need the following:

- Windows OS based Personal Computer (PC) - Accutome recommends, Microsoft Windows® XP (SP2), based Personal Computer (PC) - Intel Core 2 Duo (2.40GHz) or later, 4M L@ Cache, 66MHZ
- Accutome Ultrasonic UBM Plus Probe
- Accutome Ultrasound UBM Plus software
- 4 USB Port(s) recommended, 2 USB ports minimum
- Wired Mouse
- Printer
- Foot switch
- Anterior Segment Imaging Scleral Shells (18mm and 20mm)

### PC

The computer used for the Accutome UBM Plus should meet the requirements outlined in Table 3.1 below:

Table 3.1 - UBM Computer Specifications

| | |
|---|---|
| PC | PC with Intel Core 2 Duo (2.40GHz) 4M L2 Cache, 667MHz Dual Core or higher with 4 USB ports |
| Operating System | Microsoft Windows® XP(SP2) or later |
| LCD | 15.5 inch wide screen WSXGA+ LCD Panel or larger |
| Memory | 2.0 GB, DDR2-667 SDRAM, 2 DIMM |
| Hard Drive | 80GB, 7200 RPM, 160 GB or higher for higher patient flow site (more than 30 B-scans per month) |
| Module Bay Device | 8X (or higher) DVD+/-RW with control software (needed for archiving) |
| Graphics | 256MB NVIDIA® Quagro NVS 110M TurboCacheTM |
| Power Supply | Medical grade power supply or isolation transformer |

**Note: You will also need a printer connected to the computer to print snapshots or reports.**

### Probe
The probe provided with the UBM Plus is an essential component of the product. No other probes, other than probes specifically approved by Accutome are to be used.

### Anterior Segment Imaging Scleral Shell
The Anterior Segment Imaging Scleral Shells (18mm and 20mm) provided with the UBM Plus are an essential component of the product. No other shells, other than shells specifically approved by Accutome are to be used. Two shells constructed of Plexiglas® G Acrylic with interior diameters of 18mm and 20mm are included with the UBM Plus.

### Printer
The Accutome UBM Plus can utilize any PC compatible printer that is connected to the UBM Plus computer.

### Footswitch
The footswitch is required to be used to stop and start the image acquisition.
The Accutome UBM Plus software is shipped on a CD which contains all of the programs you will need to install for proper system operation.

**PLEASE READ THROUGH ALL OF THE INSTALLATION INSTRUCTIONS BEFORE INSTALLING ANY SOFTWARE!!**

**Important:**

- DO NOT plug the Accutome probe into the USB port until instructions ask you to do so.
- The computer must be running Microsoft Windows® XP (SP2) or later operating system.
- The computer must have a local hard disk drive which is labeled "C:"
- The screen resolution (DPI setting) must be set to "Normal Size" (96DPI).
- The account used to install and run the program must belong to Administrators Group.
- The computer must have Microsoft Word 2003 or higher to generate reports.
- The computer must have Adobe Acrobat Reader version 5.0 or higher to read the "UBM Plus User Guide" (PDF).

## Installation procedure when using Microsoft Vista
### Installation - Phase One
### Set up
1. Plug the wired mouse USB adapter is found on the underside of the mouse into the USB port located on the back of the computer.
2. Turn the computer on.
3. Follow the appropriate instructions to install Accutome's UBM Plus software. If you are using either Microsoft® 7 or Vista, please continue

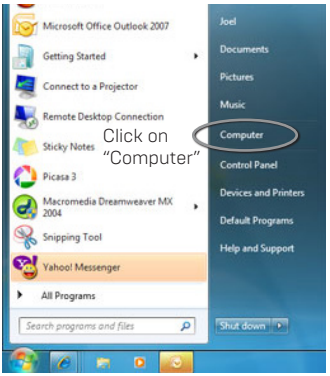
reading. If you are using Microsoft Windows® XP 32-bit SP2, please continue reading. If you are using Microsoft Windows® 7 or Vista 64-bit SP2 please proceed to page 15. If you are using Microsoft Windows® 7 or Vista 32-bit, please proceed to page 25.

## Part I

Follow the steps below to check for a "C:" drive, if you do not have a "C:" drive, you should stop installation immediately because you will not be able to run the program on this computer.

1. Click (Start) on the bottom left corner of the desktop and then click "Computer" on the right of the pop-up menu.
2. You should see (C :) under "Hard Disk Drives" list. Close the window after you are done.

Start Menu Icon




Click on "Computer"

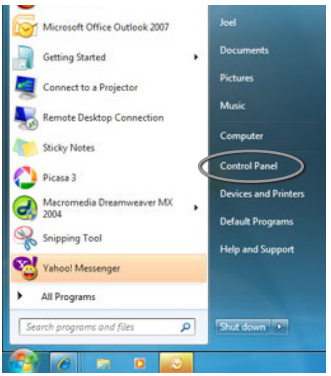
Local hard drive MUST be labeled "(C:)

## Part II

Follow the steps below to turn off the "User Account Control (UAC)" of Windows Vista.

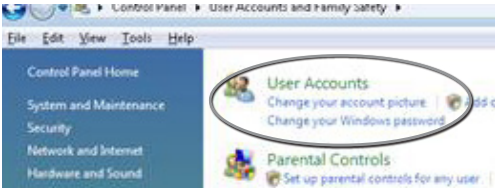
**NOTE: UAC is a new security feature of Windows Vista. However, it interferes with the installation of UBM Plus program and device driver of the USB probe. You can turn it back on using the same procedure after you finished the entire installation process.**

1. Open "Control Panel" window by clicking (Start) located on the bottom left corner of the desktop. Click "Control panel" located on the right side of the pop-up menu.

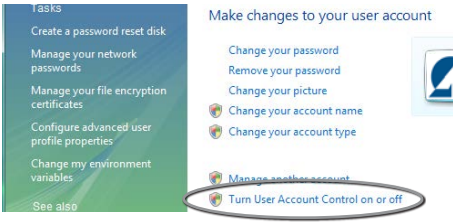


2. Click “User Accounts and Family Safety.”

3. Click “User Accounts.”



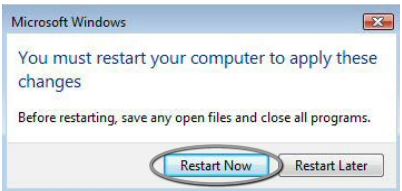

4. Click “Turn User Account Control on or off.”




5. Click “Continue” on “Windows needs your permission to continue” window.

6. Uncheck the toggle box “Use User Account Control (UAC) to help protect your computer” and click “OK.”

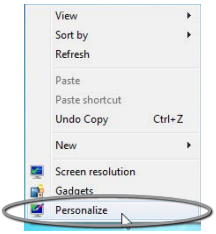
7. Click “Restart Now” on the “You must restart your computer to apply these changes” window. Wait for your computer to restart and login to the same account.



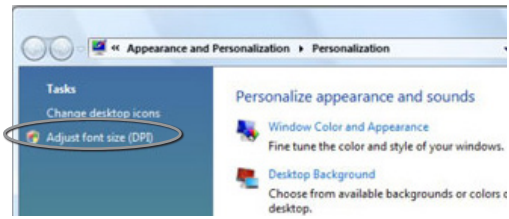
## Part III

Follow the steps below to check and set the screen resolution (DIP setting):

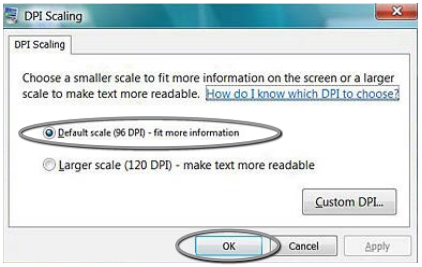
1. Right click your mouse on an empty space on the desktop and select "Personalize."




2. Click "Adjust font size (DPI)" located at left side of the "Personalization" window.




3. Click and select "Default scale (96 DPI)" toggle button in the "DPI Scaling" window and click on "OK" to close the window.




## Installation - Phase Two

Follow the steps below to install the "Accutome UBM Plus" application:

1. Insert the installation disk into the CD-ROM drive and close all other remaining open applications. Click on "Run setup.exe" in the "AutoPlay" pop-up window and "Preparing to Install ..." window appears on desktop which may take up to a minute.
   If the install does not automatically begin, open "My Computer." Double click on the "UBM Install" icon. Double click on "Setup". It will take several seconds to unpack the installation package. Advance through the windows by clicking "Next."
2. When the window of "Welcome to the InstallShield Wizard for Accutome UBM" appears, click "Next." Click "I accept the terms in the license agreement" when the "License Agreement" window appears. Click "Next." Click "Install." After UBM Plus application files are copied onto your computer a few icons will appears on your desktop. "Installing Microsoft® DirectX®" window will automatically appear on desktop at this time. If it does not appear automatically, double click on the icon "Launch DXSETUP.exe" on the desktop to install Microsoft DirectX 9.0 manually.
3. Click "I Accept Agreement." Click "Next." Click "Next" to start installation of Direct X. Click "Finish" to complete installation Direct X on your system.

Click "Finish" to close the "Install Accutome UBM Plus" window and complete the installation steps for required files and libraries for running "Accutome UBM Plus" applications.

4. A window "Adobe Reader 8.1.0 – Setup" window automatically appears on desktop after "Install Accutome UBM Plus" window closed. Click "Next" when the "Acrobat Reader 8.1.0 Setup" window appears. Click "Install" to start installation. Click "Finish" to complete installation.
5. Insert the Accutome UBM-Probe into a USB port. You can select the USB port in the front of a desktop computer or on the side of a notebook computer.
    - The "Found New Hardware Wizard" will appear on the desktop. Click on "Locate and install driver software (recommended)." It takes a minute for searching the driver.
    - In the "Windows Security" window, click on "Install this driver software anyway" and the system will install the driver for the probe.
    - After the driver has been installed and all windows are closed, the window "Found New Hardware Wizard" will reappear. You will need to repeat steps a and b one additional time to complete driver installation.
    - If you wish to activate a second or all USB drives to operate the foot switch and/or probe from any USB port, simply plug the probe into those USB drives at this time and drivers will automatically install.
6. Unplug the probe and eject the installation CD from the CD/DVD drive. Reboot your machine by clicking on (Start). Click "▶." Select "Restart." After the machine restarts login (if necessary) to your account. Wait until the desktop appears; then plug the probe into the USB port you activated earlier. Wait 10 seconds after connecting the UBM-Probe.

You can either read the user guide by double clicking the icon "Launch UBM Plus User Guide" on the desktop or double click the "Launch Accutome UBM.exe" icon on the desktop to start the program.

**Note: If your computer does not have Microsoft Word 2003 or 2007 installed, please install a valid copy of either one the program because you will need Word to generate reports.**

## Quick Start User Guide for Accutome UBM Plus

If Set up is already done, skip to step II

**Click on Set Up.**

- Click the "Facilities" tab and enter Facility information.
- Click the "Users" tab and enter all Users.
- Click the "Sequences" tab and enter screening sequences for Pre Set scanning.
- Click the "Options" tab and select "Exam Name Combinations" then set "Gain."
- Click the "Physicians" tab and enter Physicians.
- Click "Done."

**Click on New Exam**

- Enter Patient first and last name in the appropriate Fields.
- If "Medical Record #" label is white, you are required to enter a medical record number (at least 5 digits) before you can start scan.
- Enter any other patient information for this patient.
- If pre-defined scans are being used you can chose that now under Scan Group.
- Click "Start."

At this point you would start scanning the patient. After each scan you would label the scan in free scan mode.

- OD/OS
- Scan position on clock
- Type of Scan (Axial, Trans, etc.)

If you are using Pre-defined scanning then the machine label scans. While scanning you can do Live Zoom (up to 2X with/out losing any resolution).
You can also move the image on the screen while scanning by clicking and holding the left mouse button then dragging the image. (Zooming feature is under the Tools tab)
You can also click on Probe tab and change the scan time (8, 17, 34 sec). If you want to raise or lower gain, that can be done now or after, when analyzing.
After scanning is complete click on the Analyze button on the bottom of the screen. At this time you view your scans.

- To review a recorded scan click on scan under Views to review the cine loop.
- After clicking you can play the loop by clicking on the Play button.
- To view frame by frame while playing, click on Pause then use the left and right arrows, or use the mouse to drag the slide bar.
- To look at the next view click on Stop and then click on view.
- To do Measurement on the images:

  Line 1 is defaulted

  1. Hold down left click on the mouse from the starting point then drag to ending point and release.
  2. You can now change velocity by clicking the box next to velocity and changing the number.
     - For Line 2 click on Line 2
     - To circle images click on Area

## Install Example Exams – OPTIONAL

- Insert the installation disk into the CD-ROM drive. "Preparing to Install ..." will appear automatically. Click "Cancel" and stop the installation process.
- Open "My Computer" window by clicking on "Start" located on the bottom left corner of the window. Click "My Computer" located on the right side of the pop-up menu.
- Right click the "UBM Install" icon (CD-ROM drive) and select "Open. "Double clicking on "Example Exams" folder in the window "UBM Install" to show folder contains. To extract the exam by double clicking on the file "Test Exams.zip" and a folder named "HYPEMA,OS_2006-11-3T13" appears in the window.

- Double clicking on the folder icon called "Accutome" on the desktop then double clicking on "Exam Data" folder in the "Accutome" window appears in desktop.
- Drag the folder "HYPEMA,OS_2006-11-3T13" in "Test Exams" window and drop it into the "Exam Data" window. It takes few minutes to copy entire folder.
- Close all windows and eject the CD after you are done.

**PLEASE READ THROUGH INSTRUCTIONS BEFORE INSTALLING SOFTWARE - IMPORTANT:**

- **DO NOT plug the Accutome probe into the USB port until all applications and drivers have been installed.**
- **The computer must have a local hard disk drive which is labeled "C:"**
- **The screen resolution (DPI setting) must be set to "Normal Size" (96DPI).**
- **The computer must have Microsoft Windows XP SP2 and .NET Framework 2.0.**
- **The account used to install and run the program must belong to Administrators Group.**
- **The computer must have Adobe Acrobat Reader version 5.0 or higher to display the "UBM Plus User Guide."**
- **Follow the steps below to install "Accutome's "UBM Plus" to a personal computer.**

## Windows XP SP2 Software Installation

### Installation - Phase One

Plug the wired mouse USB adapter is found on the underside of the mouse) into the USB port located on the back of the computer. Turn the computer to "On."

### PART I

Follow the steps below to check for a "C:" drive, if you do not have a "C:" drive you will not be able to install the program on your computer.
Go to "Start," click on "My Computer." You should see (C:) under "Hard Disk Drives."

### Part II

Follow the steps below to set the screen resolution (DIP setting):

1. Right click your mouse on an empty space on the desktop, select "Properties." "Display Properties" window will appear on the desktop. Click "Setting" tab in the window. Click "Advanced" button and select "General" tab.
2. Set "DPI Setting" to "Normal Size (96 DPI). " Click on "OK." Return to "Display Properties" window. Set "Screen Resolution" to either "1280 by 1024" or "1680 by 1050." If your screen supports a higher resolution we recommend setting it to "1680 by 1050." Click "OK" to close "Display Properties" window and proceed to Installation - Phase Two.

## Installation - Phase Two

Follow the steps below to install the "UBM Plus" application:

1. Insert the installation disk into the CD-ROM drive. "Preparing to Install ..." will automatically appears. In case the install does not start automatically, open "My Computer." Double click on the "UBM Install" icon. Double click on "Setup." It will take several seconds to unpack the installation package. Advance through the windows by clicking "Next."
2. When the window of "Welcome to the InstallShield Wizard for Accutome UBM" appears, click "Next. " Click "I accept the terms in the license agreement" when the "License Agreement" window appears. Click "Next." Click "Install." After UBM Plus applications files were copied onto your computer and few icons appears on desktop, a window "Installing Microsoft® DirectX®" will automatically appears on desktop. If it does not appear automatically, Double click on the icon "Launch DXSETUP.exe" on the desktop to install Microsoft DirectX 9.0 manually.
3. Click "I Accept Agreement." Click "Next." Click "Next" to start installation of Direct X. Click "Finish" to complete installation Direct X on your system. Click "Finish" to close the "Install Accutome UBM Plus" window and complete the installation steps for required files and libraries for running "Accutome UBM Plus" applications.
4. If a "Microsoft .NET Framework 2.0 Setup" window automatically appears on the desktop means that the installation program could NOT find ".NET Framework 2.0" package on your system and try to install it. Click "Next." Click "I accept the terms of the License Agreement" and then click "Install" to start installing the package. Click "Finish" to complete installation.
5. A window "Adobe Reader 8.1.0 – Setup" window automatically appears on desktop either after "Install Accutome UBM Plus" window closed or after "Microsoft .NET Framework 2.0 Setup" window closed. Click "Next" when the "Acrobat Reader 8.1.0 Setup" window appears. Click "Install" to start installation. Click "Finish" to complete installation.
6. Insert the Accutome UBM-Probe into a USB port. You can insert the probe in the front of a desktop computer or on the side of a notebook computer.
    - The "Found New Hardware Wizard" will appear on the desktop. Select "No, not this time" and click "Next" to advance screens.
    - In the next screen, make sure "Install the Software Automatically (Recommended)" is selected. Click "Next". The system will find the driver for the probe and the window "Hardware Installation" will appear. Click "Continue Anyway." Click "Finish."
    - After the driver has been installed and all windows are closed, the window "Found New Hardware Wizard" will reappear. You will need to repeat steps a and b one additional time to complete driver installation.
7. We recommend that you install the driver on at least two USB ports (either on the front of a desktop PC or on the side of a notebook PC) in the event one port is already being used by another device. Be sure to unplug the probe from the current USB port and insert it into the other USB port.
8. Repeat the steps under step 4 a, b, and c.

Unplug the probe and eject the installation CD from the CD/DVD drive. Reboot your machine by Clicking on "Start". Click "Turn Off Computer." Select "Restart" then click on "OK." After the machine restarts login (if necessary) to your account. Wait until the desktop appears; then plug the probe into the USB port you activated earlier. Wait 10 seconds after connecting the B-Probe.
You can either read the user guide by double clicking the icon "Launch UBM Plus User Guide" on the desktop or double click the "Launch Accutome UBM.exe" icon on the desktop to start the program.

## Quick Start User Guide For Accutome Ubm Plus

If Setup is already done then skip to step II.

**Click on Set Up**

- Click the "Facilities" tab and enter Facility information
- Click the "Users" tab and enter all Users
- Click the "Sequences" tab and enter screening sequences for pre set scanning
- Click the "Options" tab and select "Exam Name Combinations" then set "Gain."
- Click the "Physicians" tab and enter Physicians.
- Click "Done."

**Click on New Exam**

- Enter Patient first and last name in the appropriate Fields.
- If "Medical Record #" label is white, you are required to enter a medical record number (at least 5 digits) before you can start scan.
- Enter any other patient information for this patient.
- If pre-defined scans are being used you can chose that now under Scan Group
- Click "Start"

At this point you would start scanning the patient. After each scan you would label the scan in free scan mode.

- OD/OS
- Scan position on clock
- Type of Scan (Axial, Trans, etc.)

If you are using Pre-defined scanning then the machine label scans. While scanning you can do Live Zoom (up to 2X with/out losing any resolution).
You can also move the image on the screen while scanning by clicking and holding the left mouse button then dragging the image. (Zooming feature is under the Tools tab)
You can also click on Probe tab and change the scan time (8, 17, 34 sec). If you want to raise or lower gain, that can be done now or after, when analyzing.
After scanning is complete click on the Analyze button on the bottom of the screen. At this time you view your scans.

- To review a recorded scan click on scan under Views to review the cine loop.
- After clicking you can play the loop by clicking on the Play button.
- To view frame by frame while playing, click on Pause then use the left and right arrows, or use the mouse to drag the slide bar.
- To look at the next view click on Stop and then click on view.

- To do Measurement on the images:
  Line 1 is defaulted
    1. Hold down left click on the mouse from the starting point then drag to ending point and release.
    2. You can now change velocity by clicking the box next to velocity and changing the number.
        - For Line 2 click on Line 2
        - To circle images click on Area

### Install Example Exams – OPTIONAL

- Insert the installation disk into the CD-ROM drive. "Preparing to Install ..." will appear automatically. Click "Cancel" and stop the installation process.
- Open "My Computer" window by clicking on "Start" located on the bottom left corner of the window. Click "My Computer" located on the right side of the pop-up menu.
- Right click the "UBM Install" icon (CD-ROM drive) and select "Open". Double clicking on "Example Exams" folder in the window "UBM Install" to show folder contains. To extract the exam by double clicking on the file "Test Exams.zip" and a folder named "HYPEMA,OS_2006-11-3T13" appears in the window.
- Double clicking on the folder icon called "Accutome" on the desktop then double clicking on "Exam Data" folder in the "Accutome" window appears in desktop.
- Drag the folder "HYPEMA,OS_2006-11-3T13" in "Test Exams" window and drop it into the "Exam Data" window. It takes few minutes to copy entire folder.
- Close all windows and eject the CD after you are done.

## Accutome UBM Plus Installation Instructions For Windows 7 & Vista 64-bit

**PLEASE READ THROUGH ALL OF THE INSTALLATION INSTRUCTIONS BEFORE INSTALLING ANY SOFTWARE!!**
**Important:**

- **DO NOT plug the Accutome probe into the USB port until instructions ask you to do so.**
- **The computer must be running Microsoft Windows 7 or Vista 64-bit operating system (OS).**
- **If install to Vista 64-bit OS please make sure it has Service Pack 1 (SP1) or newer.**
- **The computer must have a local hard disk drive which is labeled "C:".**
- **The screen resolution (DPI setting) must be set to "Normal Size" (96DPI) or 100%.**
- **The account used to install and run the program must belong to Administrators Group.**
- **The computer must have Microsoft Word 2003 or higher to generate reports.**
- **The computer must have Adobe Acrobat Reader version 5.0 or higher to read the "UBM Plus User Guide" (PDF).**

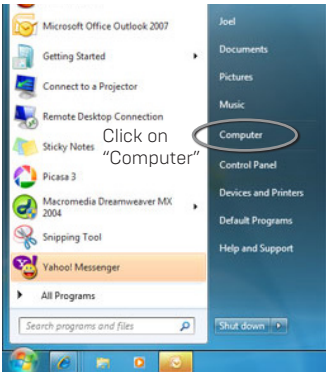
## Installation - Phase One

Plug the wired mouse USB adapter (adapter is found on the underside of the mouse) into the USB port located on the back of the computer. Turn the computer to "On" and login.

### PART I

Follow the steps below to check for a "C:" drive, if you do not have a "C:" drive, you should stop installation immediately because you will not be able to run the program on this computer.

1. Click (Start) on the bottom left corner of the desktop and then click "Computer" on the right of the pop-up menu.
2. You should see (C :) under "Hard Disk Drives" list. Close the window after you are done.

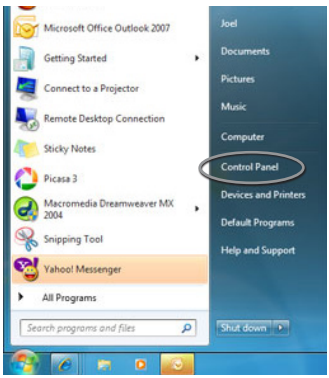


Local hard drive
MUST be labeled "(C:)

### Part II

Follow the steps below to turn off the "User Account Control (UAC)" of Windows 7 and Vista. These steps can be used in both Windows 7 and Vista. Note: the snapshots were captured form Vista.

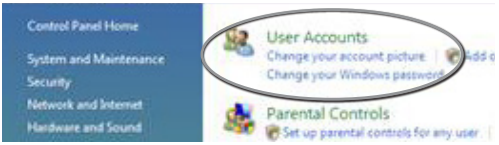
**Note: UAC is a security feature of Windows 7 and Vista. However, it interferes with the installation of UBM Plus program and device driver of the USB probe. You can turn it back on using the same procedure after you finished the entire installation process.**




1. Open "Control Panel" window by clicking (Start) located on the bottom left corner of the desktop. Click "Control panel" located on the right side of the pop-up menu.

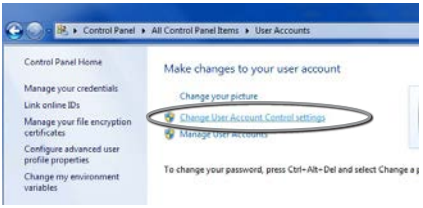
2. Click “User Accounts and Family Safety.”

3. Click “User Accounts.”

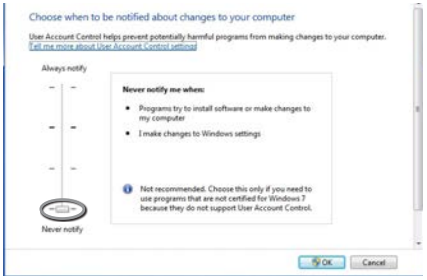



## Windows 7

Click “Change User Account Setting”



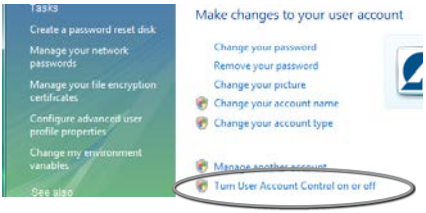

Move the slider down to “Never notify” to turn UAC off. Then click “OK”.




**Note: For Windows 7, You MUST “Restart” the computer from (Start) to make change effective.**

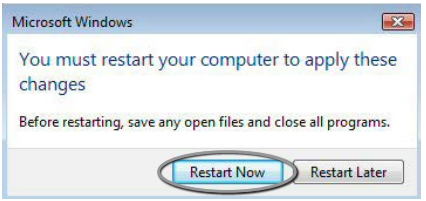
## Windows Vista

Click “Turn User Account Control on or off”




Click “Continue” on “Windows needs your permission to continue” window. Click and uncheck the “Use User Account Control (UAC) to help protect your computer” and click “OK”.

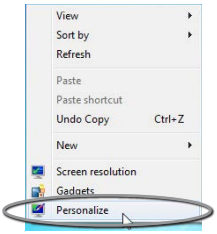
Click “Restart Now” on the “You must restart your computer to apply these changes” window. Wait for your computer to restart and login to the same account.



## Part III

Follow the steps below to check and set the screen resolution (DIP setting):

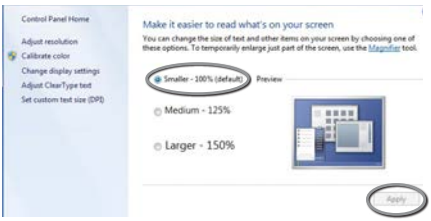
Right click your mouse on an empty space on the desktop and select “Personalize”.




### Windows 7

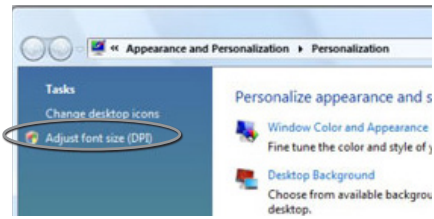
Click “Display”

Select “Smaller – 100%” and click “Apply”

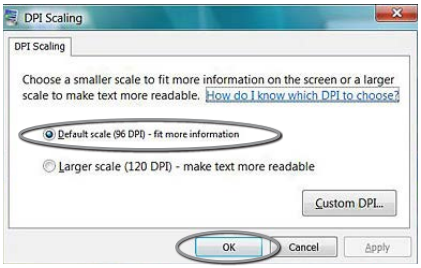



### Windows Vista

Click “Adjust font size (DPI)”




Select “Default scale (96 DPI)” and Click “OK”.



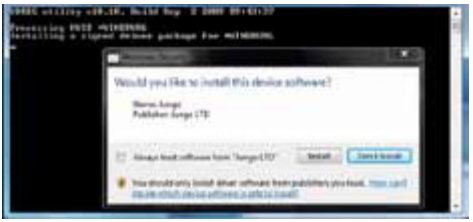
## Installation - Phase Two

Follow the steps below to install the "Accutome UBM Plus" application:

1. Insert the installation disk into the CD-ROM drive and close all other remaining open applications. Click on "Run setup.exe" in the "AutoPlay" pop-up window and "Preparing to Install ..." window appears on desktop which may take up to a minute.
   If the install does not automatically begin, open "My Computer." Double click on the "UBM Install" icon. Double click on "Setup". It will take several seconds to unpack the installation package. Advance through the windows by clicking "Next."
2. When the window of "Welcome to the InstallShield Wizard for Accutome UBM" appears, click "Next." Click "I accept the terms in the license agreement" when the "License Agreement" window appears. Click "Next." Click "Install." After UBM Plus application files are copied onto your computer a few icons will appears on your desktop.
3. A window "Welcome to Setup foe DirectX" window will appear on desktop at this time. If it does not appear automatically, Double click on the icon "Launch DXSETUP.exe" on the desktop to install Microsoft DirectX 9.0 manually.

4. Click "I Accept Agreement." Click "Next." Click "Next" to start installation of Direct X. Click "Finish" to complete installation Direct X on your system.

5. After install Microsoft DirectX 9.0 a window "Would you like to install this device software? Name: Jungo" appears on the desktop. Click "Install" button to install the Jungo device driver.




6. After install Jungo driver, a window "Windows can't verify the publisher of this driver software" appear on the desktop. Click "Install this driver software anyway" install the Accutome UBM probe device driver.

7. Click “Finish” to close the “Install Accutome UBM Plus” window and complete the installation steps for required files and libraries for running “Accutome UBM Plus” applications.
8. A window “Adobe Reader 8.1.0 – Setup” window automatically appears on desktop after “Install Accutome UBM Plus” window closed. Click “Next” when the “Acrobat Reader 8.1.0 Setup” window appears. Click “Install” to start installation. Click “Finish” to complete installation.

9. Insert the Accutome B-Probe into a USB port. You can select the USB port in the front of a desktop computer or on the side of a notebook computer. The driver will be installed automatically and ready to use.
10. Unplug the probe and eject the installation CD from the CD/DVD drive. Reboot your machine by Clicking on (Start). Click “►”. Select “Restart”. After the machine restarts login (if necessary) to your account. Wait until the desktop appears; then plug the probe into the USB port you activated earlier. Wait 10 seconds after connecting the B-Probe.

You can either read the user guide by double clicking the icon “Launch UBM Plus User Guide” on the desktop or double click the “Launch Accutome UBM.exe” icon on the desktop to start the program.

**Note: If your computer does not have Microsoft Word 2003 or 2007 installed, please install a valid copy of either one the program because you will need Word to generate reports.**

## Quick Start User Guide For Accutome Ubm Plus

If Set up is already done skip to step II

**Click on Set Up**

- Click the “Facilities” tab and enter Facility information
- Click the “Users” tab and enter all Users
- Click the “Sequences” tab and enter screening sequences for Pre Set scanning
- Click the “Options” tab and select “Exam Name Combinations” then set “Gain”.
- Click the “Physicians” tab and enter Physicians.
- Click “Done”

**Click on New Exam**

- Enter Patient first and last name in the appropriate Fields
- If “Medical Record #” label is white, you are required to enter a medical record number (at least 5 digits) before you can start scan.
- Enter any other patient information for this patient.
- If pre-defined scans are being used you can chose that now under Scan

Group
- Click "Start"

At this point you would start scanning the patient. After each scan you would label the scan in free scan mode.
- OD/OS
- Scan position on clock
- Type of Scan (Axial, Trans, etc.)

If you are using Pre-defined scanning then the machine label scans. While scanning you can do Live Zoom (up to 2X with/out losing any resolution).
You can also move the image on the screen while scanning by clicking and holding the left mouse button then dragging the image. (Zooming feature is under the Tools tab)
You can also click on Probe tab and change the scan time (8, 17, 34 sec). If you want to raise or lower gain, that can be done now or after, when analyzing.
After scanning is complete click on the Analyze button on the bottom of the screen. At this time you view your scans.
- To review a recorded scan click on scan under Views to review the cine loop.
- After clicking you can play the loop by clicking on the Play button.
- To view frame by frame while playing, click on Pause then use the left and right arrows, or use the mouse to drag the slide bar.
- To look at the next view click on Stop and then click on view.
- To do Measurement on the images:

  Line 1 is defaulted

  1. Hold down left click on the mouse from the starting point then drag to ending point and release.
  2. You can now change velocity by clicking the box next to velocity and changing the number.
     - For Line 2 click on Line 2
     - To circle images click on Area

## Install Example Exams – OPTIONAL

- Insert the installation disk into the CD-ROM drive. "Preparing to Install ..." will appear automatically. Click "Cancel" and stop the installation process.
- Open "My Computer" window by clicking on "Start" located on the bottom left corner of the window. Click "My Computer" located on the right side of the pop-up menu.
- Right click the "UBM Install" icon (CDROM drive) and select "Open". Double clicking on "Example Exams" folder in the window "UBM Install" to show folder contains. To extract the exam by double clicking on the file "UBM-DEMO,IOL_2009-5-5T4.zip" and a folder named "UBM-DEMO,IOL_2009-5-5T4" appears in the window.
- Double click on the folder icon called "Accutome" on the desktop then double clicking on "Exam Data" folder in the "Accutome" window appears in desktop.
- Drag the folder "UBM-DEMO,IOL_2009-5-5T4" in "Test Exams" window and drop it into the "Exam Data" window. It takes few minutes to copy entire folder.
- Close all windows and eject the CD after you done.

# Accutome UBM Plus Installation Instructions For Windows 7 & Vista 32-bit

**PLEASE READ THROUGH ALL OF THE INSTALLATION INSTRUCTIONS BEFORE INSTALLING ANY SOFTWARE!!**

**Important:**

- **DO NOT plug the Accutome probe into the USB port until instructions ask you to do so.**
- **The computer must be running Microsoft Windows 7 or Vista 32-bit operating system (OS).**
- **The computer must have a local hard disk drive which is labeled "C:".**
- **The screen resolution (DPI setting) must be set to "Normal Size" (96DPI) or 100%.**
- **The account used to install and run the program must belong to**
- **Administrators Group.**
- **The computer must have Microsoft Word 2003 or higher to generate reports.**
- **The computer must have Adobe Acrobat Reader version 5.0 or higher to read the "UBM Plus User Guide" (PDF).**

## Installation - Phase One

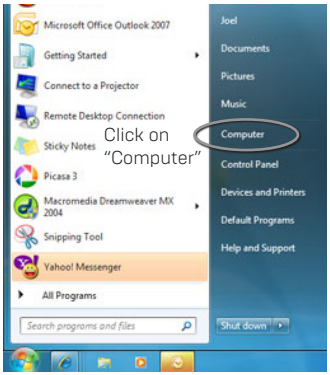
Plug the wired mouse into the USB port located on the back of the computer. Turn the computer to "On" and login.

### PART I

Follow the steps below to check for a "C:" drive, if you do not have a "C:" drive, you should stop installation immediately because you will not be able to run the program on this computer.

1. Click (Start) on the bottom left corner of the desktop and then click "Computer" on the right of the pop-up menu.
2. You should see (C :) under "Hard Disk Drives" list. Close the window after you are done.

Start Menu Icon

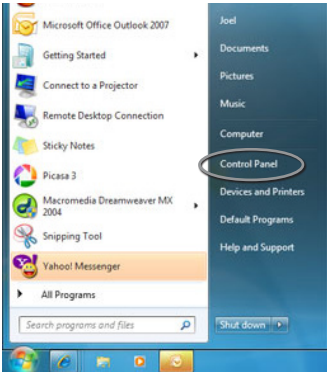



Click on "Computer"

Local hard drive
MUST be labeled "(C:)

## Part II

Follow the steps below to turn off the "User Account Control (UAC)" of Windows 7 and Vista. These steps can be used in both Windows 7 and Vista. Note: the snapshots were captured form Vista.

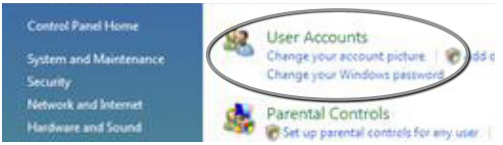



**Note: UAC is a security feature of Windows 7 and Vista. However, it interferes with the installation of UBM Plus program and device driver of the USB probe. You can turn it back on using the same procedure after you finished the entire installation process.**

1. Open "Control Panel" window by clicking (Start) located on the bottom left corner of the desktop. Click "Control panel" located on the right side of the pop-up menu.

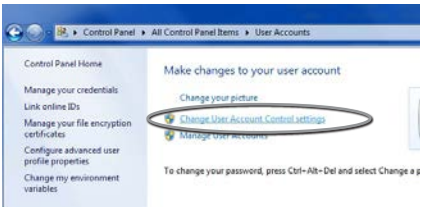
2. Click "User Accounts and Family Safety."

3. Click "User Accounts."



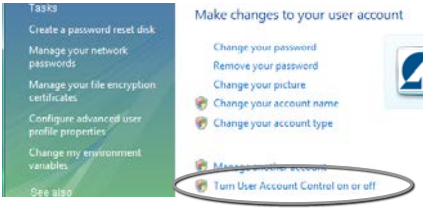

### Windows 7

Click "Change User Account Setting"



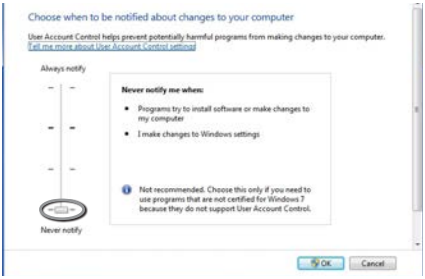

### Windows Vista

Click "Turn User Account Control on or off"



### Windows 7

Move the slider down to "Never notify" to turn UAC off. Then click "OK".

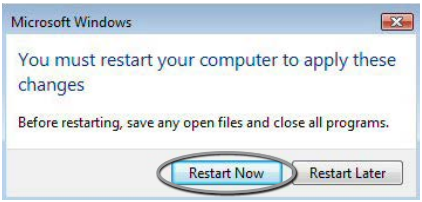



**Note: For Windows 7, You MUST "Restart" the computer from (Start) to make change effective.**

### Windows Vista

Click "Continue" on "Windows needs your permission to continue" window. Click and uncheck the "Use User Account Control (UAC) to help protect your computer" and click "OK".

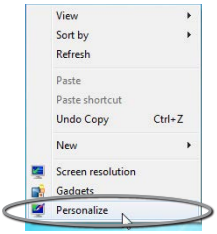
Click "Restart Now" on the "You must restart your computer to apply these changes" window. Wait for your computer to restart and login to the same account.




## Part III

Follow the steps below to check and set the screen resolution (DIP setting):

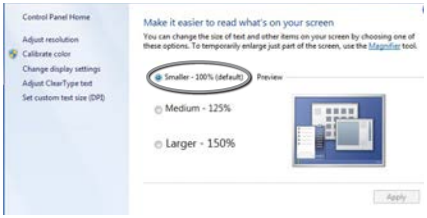
Right click your mouse on an empty space on the desktop and select "Personalize".



**Windows 7**

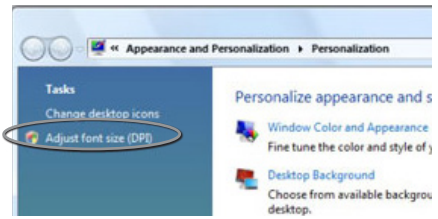
Click “Display”

Select “Smaller – 100%” and click “Apply”

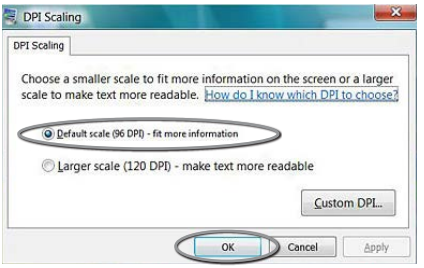



**Windows Vista**

Click “Adjust font size (DPI)”




Select “Default scale (96 DPI)” and Click “OK”.



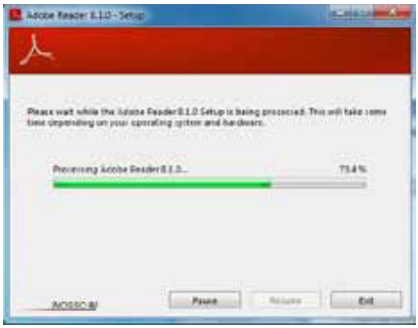

## Installation - Phase Two

Follow the steps below to install the “Accutome UBM Plus” application:

1. Insert the installation disk into the CD-ROM drive and close all other remaining open applications. Click on “Run setup.exe” in the “AutoPlay” pop-up window and “Preparing to Install ...” window appears on desktop which may take up to a minute.
   If the install does not automatically begin, open “My Computer.” Double click on the “UBM Install” icon. Double click on “Setup”. It will take several seconds to unpack the installation package. Advance through the windows by clicking “Next.”
2. When the window of “Welcome to the InstallShield Wizard for Accutome UBM” appears, click “Next.” Click “I accept the terms in the license agreement” when the “License Agreement” window appears. Click “Next.” Click “Install.” After UBM Plus application files are copied onto your computer a few icons will appears on your desktop. “Installing Microsoft® DirectX®” window will automatically appear on desktop at this time. If it does not appear automatically, Double click on the icon “Launch DXSETUP.exe” on the desktop to install Microsoft DirectX 9.0 manually.
3. Click “I Accept Agreement”. Click “Next”. Click “Next” to start installation of Direct X. Click “Finish” to complete installation Direct X on your system.

Click "Finish" to close the "Install Accutome UBM Plus" window and complete the installation steps for required files and libraries for running "Accutome UBM Plus" applications.

4. A window "Adobe Reader 8.1.0 – Setup" window automatically appears on desktop after "Install Accutome UBM Plus" window closed. Click "Next" when the "Acrobat Reader 8.1.0 Setup" window appears. Click "Install" to start installation. Click "Finish" to complete installation.



5. Insert the Accutome B-Probe into a USB port. You can select the USB port in the front of a desktop computer or on the side of a notebook computer.
    - The "Found New Hardware Wizard" will appear on the desktop. Click on "Locate and install driver software (recommended)". It takes a minute for searching the driver.
    - In the "Windows Security" window, click on "Install this driver software anyway" and the system will install the driver for the probe.
    - After the driver has been installed and all windows are closed, the window "Found New Hardware Wizard" will reappear. You will need to repeat steps a and b one additional time to complete driver installation.
    - If you wish to activate a second or all USB drives to operate the footswitch and/or probe from any USB port, simply plug the probe into those USB drives at this time and drivers will automatically install.
6. Unplug the probe and eject the installation CD from the CD/DVD drive. Reboot your machine by Clicking on (Start). Click "►". Select "Restart". After the machine restarts login (if necessary) to your account. Wait until the desktop appears; then plug the probe into the USB port you activated earlier. Wait 10 seconds after connecting the B-Probe.

You can either read the user guide by double clicking the icon "Launch UBM Plus User Guide" on the desktop or double click the "Launch Accutome UBM.exe" icon on the desktop to start the program.

**Note: If your computer does not have Microsoft Word 2003 or 2007 installed, please install a valid copy of either one the program because you will need Word to generate reports.**

Figure 3.1 - Accutome UBM Plus Probe

## Probe

The Accutome UBM Plus probe is an integral component of the Accutome UBM Plus product. The probe is easily installed by connecting the end of the cable into the UBM's computer USB port. The marker at the top of the probe is easily aligned with eye tissues during scanning and the start/stop button makes operation simple. Image scanning can also be started or stopped with the foot switch.

**Note: You cannot acquire image scans with the Accutome UBM Plus product without the Accutome probe.**

**Note: The Accutome UBM Plus probe has been designed to be used with an Anterior Segment Imaging Scleral Shell.**

## Footswitch Setup

The footswitch provided with the Accutome UBM Plus can be used to start and stop scanning. The footswitch is simple to install; plug the end of the foot switch cable into an unused USB port on the computer running the Accutome UBM Plus.

Figure 3.2 - Accutome Anterior Segment Imaging Scleral Shells (18mm and 20mm)

Figure 3.3 - Accutome UBM Plus Footswitch

## Basic Operation

The basic operation of the Accutome UBM Plus consists of the following steps:

1. Turn on the UBM Plus computer.
2. Start the Accutome program (refer to "Starting Accutome UBM Plus Program" below).
3. Start a new exam (refer to "How to Start a New Patient Exam").
4. Enter patient exam information (refer to the "How to Start a New Patient Exam" section).
5. Set up the scan.
6. Scan the patient eye(s).
7. Make any necessary image adjustments.
8. Analyze the image.
9. Print or save the Patient Report.

### Starting Accutome UBM Plus Program

The Accutome UBM program is launched like any other Windows program, either through a shortcut on the desktop or by accessing the "Start" programs menu.

1. If launching the UBM Plus software from the desktop, click on the icon displayed below. The UBM Plus software will display at the main screen.

Figure 3.4 - Accutome UBM Plus Desktop Shortcut

### How To Start A New Patient Exam

To start a new Patient exam:

1. On the Accutome Main Screen, click on "New Exam." Refer to Figure 3.5.

Figure 3.5 - Main Screen Starting New Exam

### Entering Patient Exam Information

After you execute "New Exam" from the Accutome UBM Plus main screen the Patient Exam Screen will launch shown in Figure 3.6. The pre-filled information fields the setup defaults.

1. When you start a new exam the Accutome UBM will launch the Exam Info Screen shown below and will clear all fields.

**Note: The Patient/Exam Info Screen contains drop down lists that are created during UBM setup. Refer to Chapter 4, Setup for further information.**

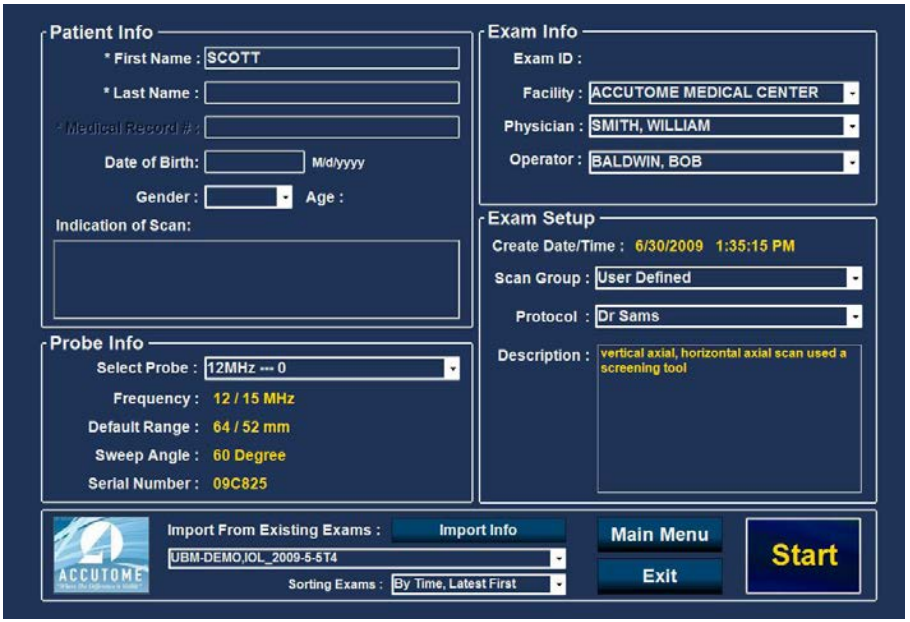



Figure 3.6 - New Exam Info Screen

2. Enter information in data fields by clicking in each field and typing accordingly. In Figure 3.7 the First Name field has just been completed.
3. The Patient Name must be entered to proceed to the next screen. Select the First Name field and enter the Patient First Name.
4. Use the Tab key, or select the Last Name field and enter the Patient Last Name.
5. Continue entering all relevant Patient information.
6. If you wish to select a Facility, select one from the predefined (in UBM Setup) Facility drop down list. Position the cursor on the small

Figure 3.7 - Entering New Patient Information

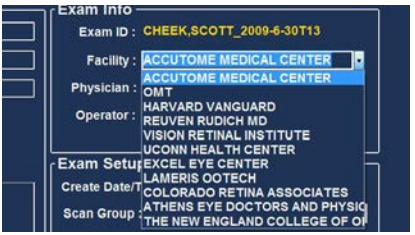



Figure 3.8 - Selecting Facility

arrow at the right of the facility field. Left click to open the drop down list. Position the mouse over the up/down arrows at the right of the drop down list Click the mouse to move through stored facilities. Once you see the facility you want to select, position the mouse cursor over the facility and left click. The selected facility will fill in the facility field.

7. Continue to select Physician and Operator from the drop downs lists located at the right side of the each field. Position the cursor on the small arrow at the right of the physician and operators fields. Left click to open the drop down list. Position the mouse over the up/down arrows at the right of the drop down list Click the mouse to move through stored physicians and operators. Once you see the Physician and Operators you want to select position the mouse cursor over the Physician and Operator and left click. The selected Physician and Operator will fill in the Physician and Operator field.

Figure 3.9 - Selecting Physician

8. Select a predefined or undefined Scan Group and Protocol (Sequence) within the group from the Scan Group and Protocol drop down lists. Position the cursor on the small arrow at the right of the Scan Group and Protocol fields. Left click to open the drop down lists. Position the mouse over the up/down arrows at the right of the drop down lists. Click the mouse to move through stored Scan Group and Protocols. Once you see the Scan Group and Protocol you want to select position the mouse cursor over the Scan Group and Protocol and left click. The selected Scan Group and Protocol will fill in the Scan Group and Protocol field.

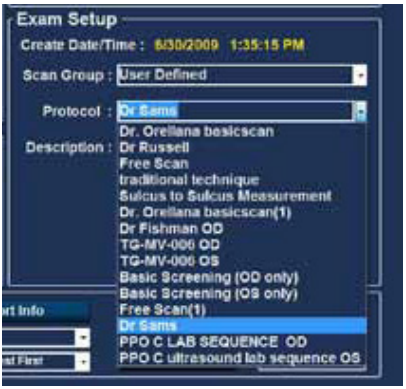



Figure 3.10 - Selecting Scan Group and Protocol

9. Click on the "Start" button, located at the bottom right of the Patient/ Exam Info Screen.

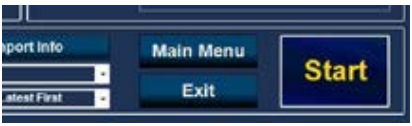



Figure 3.11 - Starting A New Exam

10. The UBM Plus will launch the Exam Screen shown below.

Figure 3.12 - Exam Screen

## Selecting an Existing Patient for Exam

When performing a follow up examination of an existing patient, the previously stored patient data can be automatically pasted in to the New Exam screen.
To start an examination of an existing patient, select New Exam from the main menu. The exam info screen will be displayed. At the bottom of the screen there will be a drop down window, labeled Import from Existing Exam:
Position the cursor on the small arrow located to the right of the Import from Existing Exams: window. Left click the mouse to open the drop down list.
Position the mouse cursor on the name of the patient you would like to re image and left click. The previously stored information will be loaded in to the Patient Info and Exam Setup screen.
Pressing Start will start the exam.

## Operation

After you have entered all the Patient information and prior to scanning you should set the imaging selections to your liking.
The selections you can change are:

- Current View - OD/OS which eye are you measuring, OD or OS? Which orientation is the probe, Axial, Transverse, or Longitudinal
- Probe - Available adjustments are range and power
- Cine - Adjust the play back speed of the film loops
- TGC - Time gain compensation, independently adjust the near mid and far range gain
- Gamma - Image processing software, ability to change the gray scale

All imaging selections (other than current view) are available in the Tools palette, by selecting the tab. See Figure 3.13 for tools location.

Figure 3.13 - Tool Palette and Current View

Figure 3.14 - Probe Tab Active

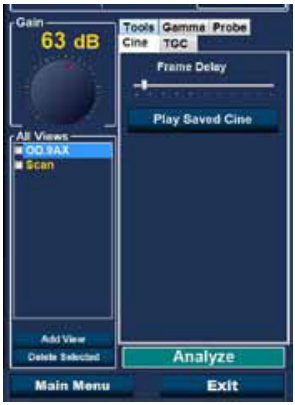



Figure 3.15 - Cine Tab Active

Figure 3.16 - TGC Tab Active

Figure 3.17 - Gamma Tab Active

## Scanning

To capture a patient scan image:

1. Adjust any Probe, Cine, TGC or Gamma settings using the appropriate tab.
2. Depress the foot pedal to activate the image acquisition film loop.
3. Once scanning has started the UBM Plus will store the last 4.5, 8.5, 17, 34 seconds of image data (predetermined in the set up, cine buffer selection).
4. When you stop the scanning by either using the trigger switch on the probe, the foot switch, or by clicking “Stop” on the Exam Screen, the Accutome UBM Plus will stop the Image Acquisition film loop. To go to the next view in the sequence you must step on the foot switch or press the start/stop button on the probe. The UBM Plus will also create a new view in the sequence if you continue to scan after completing all the defined sequence steps.

**Note: For detailed information on scanning refer to the "Performing Exams" section of this manual.**

### How to Print an Exam

After you have acquired and analyzed a patient exam you may want to print a portion of the exam.
To print an image of an scan:

1. With the appropriate Patient exam active, press the "Snapshot " or "Print Image" button, located to the right side of the image display.
2. The Accutome UBM Plus will copy or print the screen. Snapshots are saved as part of the patient exam.
3. You can view and revise all snapshots for printing in an existing exam using the "Reports" tab on the Analyze screen.

**Note: For detailed information on printing and reports refer to the "Printing Images and Reports" section of this manual.**

### How to Save Patient Exams

The Accutome UBM Plus allows you to save patient records at any point during the exam. Whenever you start/stop a scan, using the probe or foot switch, the scan just completed is saved in the patient's exam folder.

There is no need to do anything other than operating the UBM Plus to save patient exams. To complete an exam you must leave the screen for the active patient; select "Main Menu," "New Exam," "Exit" or "Analyze." The active patients exam will close and contain all scans made.

## Insertion of the Anterior Segment Imaging Scleral Shell

The Physician performing the exam will select the appropriate size Scleral Shell, 18mm or 20mm to be used during the examination based on the shape and size of the Patient's eye.

1. Recline the patient
2. Anesthetize both eyes
3. Using your thumb and index finger separate the eye lids, exposing the cornea and Sclera
4. Holding the Anterior Segment Imaging Scleral Shell, securely place the shell over the cornea
5. Release the lids
6. Maintain a constant downward force to keep the shell from leaking

**Note: Patients that are squeezing excessively, causing the lids to be difficult to open may be asked to look at their toes. This action relaxes the lid muscles.**

**Note: Some Clinicians have reported a better seal between the shell and Scleral by adding a small amount of goinosol or gentile gel to the Flanged base of the Anterior Segment Imaging Scleral Shell.**

7. Pour sterile saline solution in to the shell
8. Place the UBM Plus probe in to the Anterior Segment Imaging Scleral Shell and begin imaging the eye
9. The position of the probe depends on the area of interest

**WARNING! THE PROBE TIP OF THE UBM PLUS IS NEVER TO COME IN CONTACT WITH THE PATIENT'S EYE, AS IT MAY RESULT IN A CORNEAL ABRASION OR SIMILAR TYPE INJURY.**

10. The small Accutome symbol located on the probe is the screen orientation marker. It indicates the top of the screen in relationship to the probe's position.
11. Upon completion of the exam tilt the patient's head to the side, and remove the shell. The shell should easily pop out, not requiring any adjusting or pulling on the eyelids.
12. Have tissues in hand to catch the saline solution which will run down the patient's face upon removal of the shell.

# 4 Setup

## Setting Up the UBM Plus

The Accutome UBM Plus is equipped with personal preference options, and provides the flexibility necessary to customize your instrument. You can not only create new scanning sequences, you can also set many operational defaults.

Setup options include:

- Export data
- Adding new Users
- Adding Physicians
- Creating Sequences
- Editing Sequences
- Setting New Exam Defaults, including Gamma, TGC, and Information Displayed

### How to Access Setup

After you launch the Accutome software the main screen shown in Figure 4.1 below will be displayed. Select "Setup" and click to launch the Setup window.

Figure 4.1 - Selecting Setup

### Setup Menu Selections

When you select "Setup" the Accutome UBM Plus displays the setup window shown below. The window has tabs that correspond to the various setup features. Each tab will display the corresponding screen upon selection. The default tab upon

launching setup is “Facilities” as shown in Figure 4.2.
The Setup tabs are as follows:

- Facilities - location to add, edit and delete exam facilities
- User - location to add, edit and delete Accutome UBM Plus users
- Sequences - location to add, edit and delete probing sequence protocols
- Options - location to edit application and image control options
- Physicians - location to add, edit and delete physicians associated with the Accutome UBM Plus
- Export - location to control export of data format

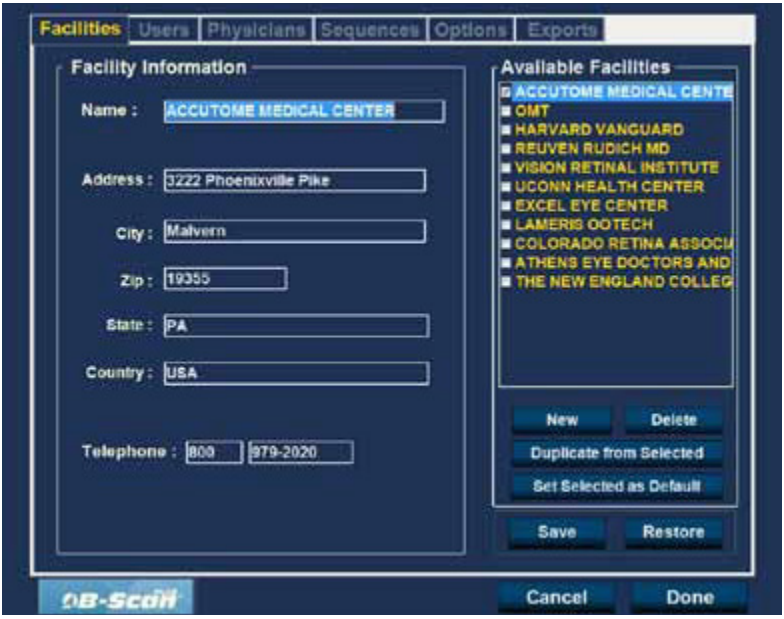



Figure 4.2 - Setup Facilities Tab

## Facilities

The Facilities tab (and related screen) is the first tab displayed upon starting Setup. The Accutome UBM Plus provides the ability to add facilities where exams will take place. The list of available facilities is displayed at the right of the screen and command buttons related to facility functions are located below the list.

### How to Add New Facilities

To add a new facility:

1. In the Facilities screen select “New” as shown in Figure 4.3.

Figure 4.3 - Selecting “New” Facility

2. Activate the Name area under the Facility Information area as shown in Figure 4.4. The available information fields are:
   - Name
   - Address
   - Description
3. After entering all facility data click "Save" to save the information.
4. An "Update Restore Point" dialog will launch. If you would like to save all changes, and have the current facilities setup become the data restore point click "Yes." If you would like to retain the old data restore point click "No."

Figure 4.4 - New Facility Information Active

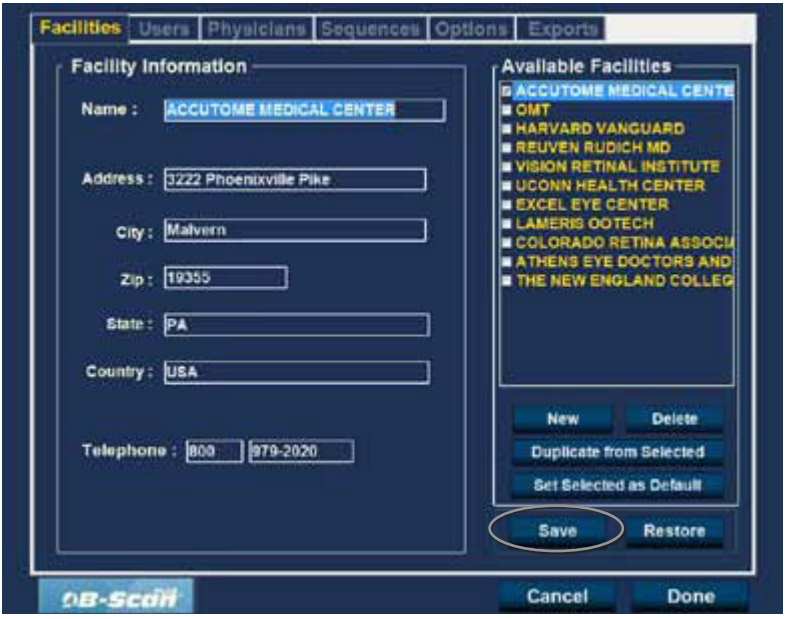



Figure 4.5 - Saving New Facility

## Deleting Facilities

To delete a facility:

- Select the facility you would like to delete from the "Available Facilities" list.
- Click on "Delete."
- The facility will be deleted from the list of Available Facilities.

## Duplicate Facilities from Selected

To duplicate a facility's information:

1. Select the facility you would like to duplicate from the "Available Facilities" list.
2. Click on "Duplicate."
3. A copy of the facility will be displayed in the list of Available Facilities with "(1)" beside the name. If you make more than one copy the number will increment with each copy.
4. You may change any facility information as needed.

## Set Selected Facility as Default

To set a facility as the default UBM operation:

1. Select the facility you would like to become the default from the "Available Facilities" list.
2. Click on "Set Selected as Default."
3. The facility will become the default to appear when you power up the Accutome UBM Plus.

## Save

To save all facility information:

1. Click on "Save."
2. An "Update Restore Point" dialog will launch. If you would like to save all changes, and have the current facilities setup become the data restore point click "Yes." If you would like to retain the old data restore point click "No."

Figure 4.6 - New Facility Information Active

## Restore

To restore the previously saved facility information:

1. Click on "Restore."
2. A "Restore Facilities" dialog will launch. Click "Yes" to revert to the previously saved facilities information.

Figure 4.7 - Restore Facilities Dialog

# Users

The Users tab (and related screen) is the second tab from the left in Setup. The Accutome UBM Plus provides the ability to add Users to a UBM user list.

## How to Add a New User

To add a new user:

1. In the Users screen select "New" as shown in Figure 4.8 below.

Figure 4.8 - Users Screen

2. Activate the Name area under the Users Information area as shown below. The available information fields are:
   - First Name
   - Last Name
   - Facility - select entered facility from drop down menu
   - Department
   - Telephone
3. After entering all user data click "Save" to save the information.
4. An "Update Restore Point" dialog will launch. If you would like to save all changes, and have the current users setup become the data restore point click "Yes." If you would like to retain the old data restore point click "No."

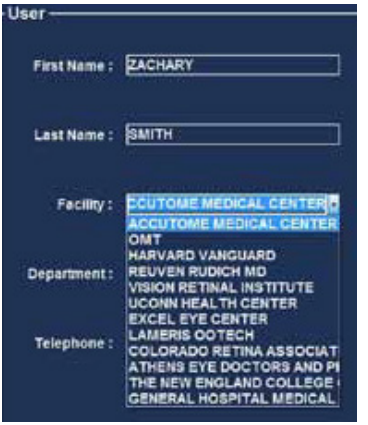



Figure 4.9 - New User Information Active

Figure 4.10 - Saving New User

## Deleting Users

To delete a user:

1. Select the user you would like to delete from the "Available Users" list.
2. Click on "Delete."
3. The user will be deleted from the list of Available Users.

## Set Selected User as Default

To set a user as the default UBM operation:

1. Select the user you would like to become the default from the "Available Users" list.
2. Click on "Set Selected as Default."
3. The user will become the default to appear when you power up the
4. Accutome UBM Plus.

## Save

To save all user information:

1. Click on "Save."
2. An "Update Restore Point" dialog will launch. If you would like to save all changes, and have the current users setup become the data restore point click "Yes." If you would like to retain the old data restore point click "No."

Figure 4.11 - Update Restore Point Dialog

## Restore

To restore the previously saved facility information:

1. Click on "Restore."
2. A "Restore Users" dialog will launch. Click "Yes" to revert to the previously saved users information.

Figure 4.12 - Restore Users Dialog

# Sequences

The Sequences tab (and related screen) is the third tab from the left in Setup. The Sequences screen (see Figure 4.13) allows you to set up operational protocols for the Accutome UBM Plus. A Sequence is the series of predefined scans with labelled views, scan methods and positions that are executed during anterior segment UBM diagnostic imaging. A Sequence is defined by the following:

1. Number of scans (or views)
2. Eye being scanned -OD/OS during each scan
3. Probe scanning method for each scan
4. Probe position for each scan

Figure 4.13 - Sequences Screen

## How to Create Sequences

The process for creating sequences consists of:

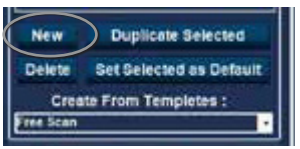
1. Adding a new sequence
2. Adding scans for the sequence
3. Defining each scan

The list of available sequences is displayed at the right of the screen and command buttons related to available sequences are located below the list.

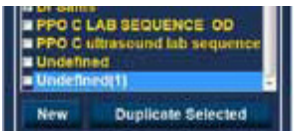
## How to Add New Sequences

To add a new sequence:

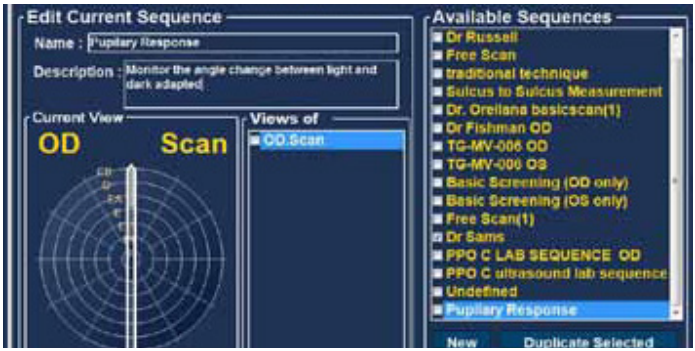
1. In the Sequences screen select “New” as shown in Figure 4.14.
2. The UBM Plus will list the new sequence as “Undefined” in the Available Sequences list.




4.14 - Adding New Sequence




4.15 - Adding New Sequence




4.15 - Assigning Name to New Sequence

In the Name field, located below "Edit Current Sequences" enter the name of the newly added sequence. When you have finished entering the new name the sequence name in "Available Sequences" will be renamed as shown in Figure 4.15. Enter a description of the scanning sequence in the description field if necessary.

## How to Define the Sequence Scan

The key components in defining the sequence scan are the eye (OD/OS), scanning method and probe position for the scan.

To change the first scan of the sequence:

1. Select the first view, or scan, of the new sequence by either clicking in the checkbox or double clicking on the scan title (e.g. OD.Scan) as shown in Figure 4.16.

Figure 4.16 - New Sequence - New View Active

The first view of the new sequence can be changed to any eye, scanning method, and position that you want by simply making selections and changing them if necessary. The selections you can make and edit are listed below.

## Edit Current View Selections

The Accutome UBM Plus provides all the tools necessary to change the sequence scan view. Using the Edit Current View selections you can change:

- Eye - OD/OS
- Probe Scanning Method - Axial, Long (Longitudinal) and Trans (Transverse)
- Probe Position - Wheel with indicator representing the hours of the clock and position that the probe should be placed on the eye for the active scan. Change position by dragging the indicator.

**Note: OD.Scan, a free scan of the right eye, is the default given to the first scan of any new sequence. If you do not want this as your first scan, edit the scan.**

2. Probe positioning for a scan is illustrated graphically by a wheel, representing the hours of the clock. There is an indicator with an arrow at one end which indicates the position and can be dragged to edit the probe position. When you initially select the position wheel to edit the current view the first scan defaults to the 12AX (Axial) probe position, with 12 being the 12:00 position as shown in Figure 4.17.
3. If you would like to change the probe position for the scan select the tip of the position indicator and drag the indicator around the position wheel until it as at the appropriate position or hour on the clock.
4. If you would like to change the method of scanning from AX (Axial - the default) select either or Long (Longitudinal) or Trans (Transverse).

Figure 4.17 - First Scan Editing View

## How to Add Another Sequence Scan

The "Views of" panel on the Sequences screen list all available scans in the current sequence. There are several command buttons for manipulating the sequence scans:

- Insert Under - adds a new scan under the currently selected scan
- Add at End - adds a new scan to the end of the sequence
- Move Up - moves the selected scan up in the sequence order
- Move Down - moves the selected scan down in the sequence order
- Delete Selected - deletes the selected scan from the sequence order

Figure 4.18 - Adding A New Sequence Scan

To add another scan to the new sequence:

1. Click "Insert Under" as shown in Figure 4.18.
2. The newly added sequence scan will display as "Scan" as shown in Figure 4.19. The "Scan" scan is active, is a free scan view and has no definition.

Figure 4.19 - New Sequence Scan (View) Added

3. To assign a particular eye for scanning to the sequence scan either OD or OS, click on the appropriate eye. In Figure 4.19 OD is being assigned to the active scan.

4. Adjust the position for the new sequence scan by dragging the tip of the position indicator as shown in Figure 4.20. The new scan defaults to AX as the method for probing. If you would like to change the probing method select either "Long" or "Trans."
5. When you arrive at the appropriate position for the probe in the newly added sequence scan release the position indicator. The new position will be reflected in the label for the new sequence scan as shown in Figure 4.21. The indicator stopped at 3:00 AX and the label for the scan was changed from OD.Scan to OD.
6. Continue to add and define new sequence scans as previously described. When your sequence is complete and ready to save click on the "Save" button as shown in Figure 4.22.

Figure 4.20 - Change Probe Orientation

Figure 4.21 - Change Probe Orientation

Figure 4.22 - Saving New Sequence

## Deleting Sequences

1. Select the sequence you would like to delete from the "Available Sequences" list.
2. Click on "Delete."
3. The sequence will be deleted from the list of Available Sequences.

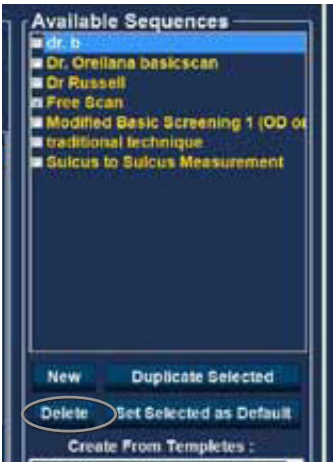



Figure 4.23 - Deleting A Sequence

## Duplicate Sequences from Selected

To duplicate a sequence's information:

1. Select the sequence you would like to duplicate from the "Available Sequences" list.
2. Click on "Duplicate."
3. A copy of the sequence will be displayed in the list of Available Sequences with "(I)" beside the name. You may then change any information for the new sequence as necessary. If you make more than one copy, the number will increment with each copy.

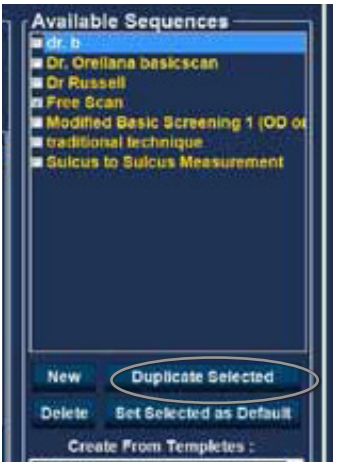



Figure 4.24 - Duplicating Current Sequence

## Set Selected Sequence as Default

To set a sequence as the default UBM Plus operation:

1. Select the sequence you would like to become the default from the "Available Sequences" list.
2. Click on "Set Selected as Default."
3. The sequence will become the default to appear when you power up the Accutome UBM Plus.

## Save

To save all sequence information:

1. Click on "Save."
2. An "Update Restore Point" dialog will launch. If you would like to save all changes, and have the current available sequences setup become the data restore point click "Yes." If you would like to retain the old data restore point click "No."

Figure 4.25 - Update Restore Point Dialog

## Restore

To restore the previously saved sequence information:

1. Click on "Restore.
2. "A "Restore Sequences" dialog will launch. Click "Yes" to revert to the previously saved sequences information.

Figure 4.26 - Update Restore Point Dialog

# Options

The Options tab (and related screen) is the fourth tab from the left in Setup. The Options screen (see Figure 4.27) allows you to set up optional operational parameters for the Accutome UBM Plus application. The options you can set are:

- Exam folder
- Exam name combination

- Probe controls
- Start/Stop controls
- Information displayed on images and measurement screen position
- Filing and printing options
- Image Controls - TGC, gamma settings and gain

Figure 4.27 - Options Screen

## Folders of Exams

There are two selections folders; Main and Restored. The Main folder is the location at which you store any new patient exams. The Restored Exams folder is the location which you designate for restoring patient exams.

### Main Folder

The Exam Folder selection allows you to designate the location of the folder in which you would like to store new patient exams.

The default location is: C:\\Program Files\Accutome\Exam Data. You can store patient exams in any computer location you choose. To change from the default location:

1. Click on "Select" as shown in Figure 4.28.

Figure 4.28 - Selecting Main Exam Folder

2. The Accutome UBM Plus will launch a Windows browser as shown in Figure 4.29. Using the browser locate the folder for storing exam data.
3. If you would like to restore the default folder for exam data, click on "Reset."

Figure 4.29 - Windows Browser - Locate Exam Folder

## Restored Folder

The Restored selection allows you to designate the exam folder location to which you would like to restore patient exams from backup.
The default location is:
C:\\Program Files\Accutome\Restored Exams.
You can store patient records in any computer location you choose. To change from the default location:

1. Click on "Select" as shown in Figure 4.30.

Figure 4.30 - Selecting Restored Exam Folder

2. The Accutome UBM Plus will launch a Windows browser as shown in Figure 4.31. Using the browser, locate the folder where you would like to restore exam data.
3. If you would like to restore the default folder for exam data, click on "Reset."

Figure 4.31 - Windows Browser - Locate Exam Folder

## Exam Name Combination

The Exam Name Combination allows you to select how patient information will appear on a patient exam and exam record. There are many combinations of several fields that are available for the Exam Name. The fields are as follows:

- Last Name - patient's last name
- First Name - patient's first name
- MRN - medical record number
- Date Time - date and time that exam occurred.

The default Exam Name Combination is:
LastName,FirstName_MRN_DateTime
To use a combination other than the default select the combination from the drop down list as shown in Figure 4.32.

Figure 4.32 - Selecting Exam Name Combinations

## Probe Control

The Probe Control options allow you to change the default settings of the probe. The options are:

- Cine Buffer
- Start/Stop
- Power

### Frequency

The frequency of the Accutome UBM Plus is fixed at 48 MHz. On the screen you will see windows that allow change of frequencies. These adjustments are for use with the 12.5 MHz probe only and will not change the operational frequency of the Accutome UBM Plus probe.

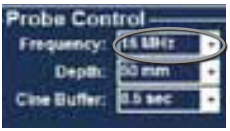



Figure 4.33 - Selecting Probe Frequency

**Note: Changing these settings may result in changes to the characteristics of the optional 12.5 MHzB-Scan Probe. Please consult the B-Scan Plus operator's manual before making any changes to these settings.**

### Depth

The Depth of the Accutome UBM Plus is fixed at 30 mm. On the screen you will see windows that allow change of depth. These adjustments are use for use with the 12.5 MHz probe only and will not change the operational depth of the Accutome UBM Plus probe.

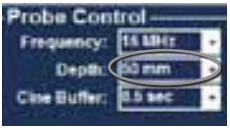



Figure 4.34 - Selecting Probe Depth

**Note: Changing this setting may result in changes to the characteristics of the optional 12.5 MHz B-Scan Plus Probe. Please consult the B-Scan Plus operator's manual before making any changes to this setting.**

### Cine Buffer

The Cine Buffer is the length of time data is stored for each acquired image. For example, with a setting of 8.5 seconds, the last 8.5 seconds of the film loop is saved as the scanned image.

The cine buffer options are:

- 4.5 sec
- 8.5 sec
- 17 sec
- 34 sec

The default cine buffer is 8.5 sec.

To change the cine buffer select the appropriate value from the drop down list located at the right of the Cine Buffer field as shown in Figure 4.35.

Figure 4.34 - Selecting Probe Cine Buffer

**Start/Stop**
The Start/Stop selection allows you to choose the method to start/stop the probe. The choices are:

- Probe Button
- Footpedal
- Both

To choose a start/stop option simply click the radio button beside the appropriate selection. The default setting is "Both."

**Note: When configuring the software it is recommended that the default setting of both be used, allowing the user to start/stop the probe in multiple ways. Accutome recommends using the footpedal to activate and freeze the probe.**

## Power

The Power selection allows you to adjust the power level of the signal through the UBM probe. The power level is indicated by a number (a percentage from 0 to 100) located beneath the label "Power" and by the location of the adjustment arrow on the scale. To adjust the power select the arrow indicator and slide as shown in Figure 4.35 until you reach the appropriate value.

Figure 4.35 - Adjusting the Power Level.

## System Defaults

When you select "System Defaults" in the Probe Control area, all probe settings will return to the default settings.

## Info On Images

The "Info on Images" selections allow you to choose what information is displayed on patient images and the position of the measured data. The options are:

- Info to Show
- Measured Data Position

**Info to Show**
The following fields are available to be shown on any patient image:

- Facility
- Physician
- User
- Patient

To have any of the fore mentioned fields display on an image click in the checkbox to enable the field. The default is to show the Facility, Physician and User only.

**Measurement Data Position**
The Measured Data Position selection determines upon which side of the screen the measured data will appear; the left side is the default. To change the position select either left or right radio button.

## File and Print

The File and Print selections allows you to show the name on the medical record snapshot filename and to select a print page format.

### Show Name on Snapshot Filename

By selecting the "Show Name on Snapshot Filename" whenever you take a snapshot of a patient image, the file name for the image will be stored with the Patient Name (entered when starting an exam) as the first part of the file name. To select/deselect this option simply click the checkbox. The default is to show the patient name on the snapshot filename.

### Print Format

The Print Format option determines the page layout when printing a patient image; Portrait or Landscape. The default is Landscape. To change print format select either radio button.

## Image Controls

One of the great features of the Accutome UBM Plus is the ability to view the actual adjustments to image controls live, while you are changing the settings. As you make image control adjustments the Small Image Window, located at the bottom right of the screen (see Figure 4.36 below) displays how the changes will affect image scanning. The image controls on the Setup Options Screen allow you to adjust:

- TGC
- Gamma
- Gain

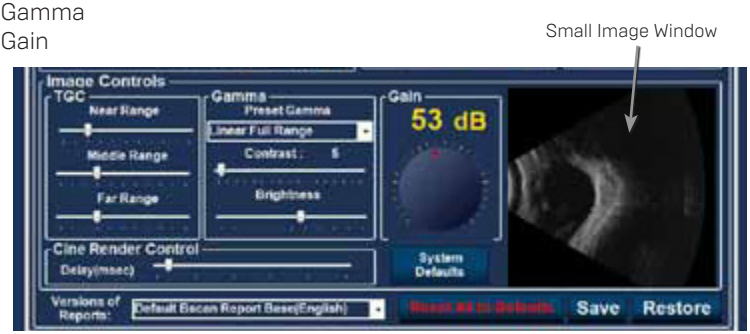



Figure 4.36 - Image Settings Before Adjustment

### TGC

TGC (Time Gain Compensation) is the ability to adjust the signal gain segmentally as distance from the probe increases.

There are three TGC setup options:

1. Near - increases the gain for the anterior portion of the eye in the UBM Image
2. Middle - increases the gain for the middle portion of the UBM Image
3. Far - increases the gain for the far portion of the UBM Image

To adjust the TGC image scan presets slide the appropriate setting indicators as shown in Figure 4.37.

Figure 4.37 - TGC Adjustment

## Gamma Settings

The Gamma portion of the Image Controls Setup allows you to choose a preset gamma for scanning and to adjust the brightness and contrast for captured images.

### Preset Gamma

Adjusting gamma settings make certain parts of the scanned image brighter and others less bright. There are 12 preset gamma settings:

- Linear Full Range
- S-Curve Full Range
- Log Full Range
- Color

The default gamma setting is S-Curve Full Range. To change the gamma preset select the appropriate value from the drop down list located at the right of the depth field as shown in Figure 4.38.

Figure 4.38 - Selecting a Preset Gamma

### Contrast

You can adjust the contrast between light and dark areas of the scanned image capture by dragging the slide indicator as shown in Figure 4.39.

Figure 4.39 - Adjusting Contrast and Brightness

### Brightness

You can adjust the brightness of the scanned image capture by dragging the slide indicator as shown in Figure 4.39.

Figure 4.40 displays the changes made to image controls and their effect on scanning.

Figure 4.40 - Image Settings After Adjustments

## Gain

The gain feature of the Accutome UBM Plus allows you to adjust the strength of the signal as it travels through the eye, thereby making the captured image brighter.

**Adjusting the Gain**

The Accutome UBM Plus provides an user-adjustable gain feature. To the left of the Small Image Window there is a knob with a red drag point. Adjustment to the gain is as simple as dragging the knob. As you adjust the gain you can see the difference in the Small Image Window.

To adjust the Image Control Gain:

1. Select the red drag point the gain adjustment knob as shown in Figure 4.41.
2. Drag the knob until the dB level (and the image visual) reaches the appropriate level as shown in Figure 4.42.

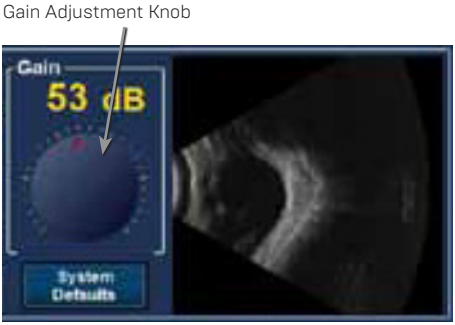



Figure 4.41 - Selecting Gain Adjustment

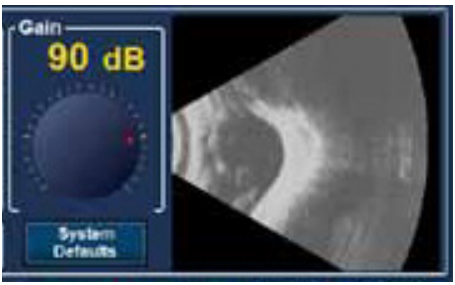



Figure 4.42 - Adjusting Gain

## Image Controls System Defaults

If would like to restore all adjustments made to the Image Controls to the System Defaults, select "System Defaults" located under the Gain Adjustment knob.

## Reset All to Defaults

If you would like to restore all option setting adjustments to the system defaults:

1. Click on "Reset all to Defaults."
2. A "Restore All to System Setting" dialog will launch. If you would like to restore all option settings and not save changes, click "Yes." If you would like to retain the changes made to Option settings click "No."

Figure 4.43 - Restore All Options To System Defaults

## Save

To save all option information:

1. Click on "Save."
2. An "Update Restore Point" dialog will launch. If you would like to save all changes, and have the current options setup become the data restore point click "Yes." If you would like to retain the old data restore point click "No."

Figure 4.44 - Update Restore Point Dialog

### Restore

To restore the previously saved options information:

1. Click on "Restore."
2. A "Restore Options" dialog will launch. Click "Yes" to revert to the previously saved Options information.

Figure 4.45 - Update Restore Point Dialog

## Exiting Setup

When you want to leave the UBM Setup function you must select one of the following:

**Done** - Selecting "Done" closes the Setup window and returns you to the main Accutome UBM Plus Screen.

**Cancel** - Allows you to reject any changes that may have been made in Setup. If you select "Cancel" the dialog box shown in Figure 4.46 will launch. Select "OK" if you would like to cancel all changes made and return to the UBM Plus main screen.

Figure 4.46 - Exiting Setup (Cancel)

## Physicians

The Physicians tab (and related screen) is the fifth tab from the left in Setup. The Accutome UBM Plus provides the ability to add Physicians to a UBM Plus physician list.

### How to Add a New Physician

To add a new physician:

1. In the Physicians screen select "New" as shown in Figure 4.47.

Figure 4.48 - Physicians Screen

2. Activate the Name area under the Physicians Information area as shown to the right. The available information fields are:
   - First Name
   - Last Name
   - Facility - select entered facility from drop down menu
   - Department
   - Telephone
3. After entering all physician data click "Save" to save the information.
4. An "Update Restore Point" dialog will launch. If you would like to save all changes, and have the current physicians setup become the data restore point click "Yes." If you would like to retain the old data restore point click "No."

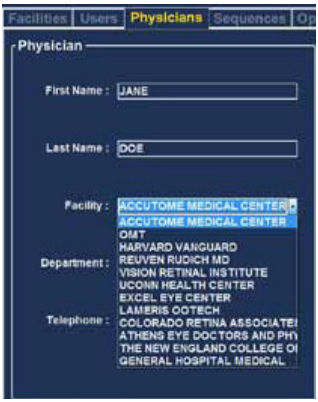



Figure 4.49 - Physician Name Entered

## Deleting Physicians

To delete a physician:

1. Select the physician you would like to delete from the "Available Users" list.
2. Click on "Delete."
3. The user will be deleted from the list of Available Users.

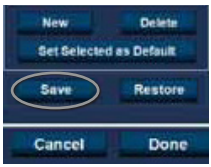



Figure 4.50 - Saving New Physician

## Set Selected Physician as Default

To set a physician as the default UBM Plus operation:

1. Select the physician you would like to become the default from the "Available Physicians" list.
2. Click on "Set Selected as Default."
3. The physician will become the default to appear when you power up the Accutome UBM Plus.

Figure 4.51 - Update Restore Point Dialog

## Save

To save all user information:

1. Click on "Save."
2. An "Update Restore Point" dialog will launch. If you would like to save all changes, and have the current physicians setup become the data restore point click "Yes." If you would like to retain the old data restore point click "No."

Figure 4.52 - Restore Physicians Dialog

## Restore

To restore the previously saved Physician information:

1. Click on "Restore."
2. A "Restore Users" dialog will launch. Click "Yes" to revert to the previously saved Physician information.

## Users

The Users tab (and related screen) is the fifth tab from the left in Setup. The Accutome UBM Plus provides the ability to add Users to a UBM Plus user list.

### How to Add a New Users

To add a new User:

1. In the Users screen select "New" as shown in Figure 4.53.

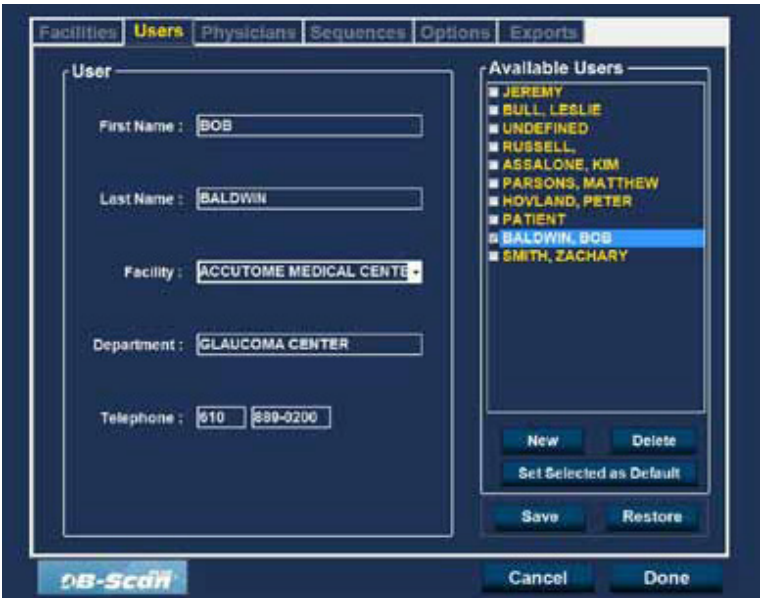



Figure 4.53 - Users Screen

2. Activate the Name area under the Users Information area as shown to the right. The available information fields are:
   - First Name
   - Last Name
   - Facility - select entered facility from drop down menu
   - Department
   - Telephone
3. After entering all user data click "Save" to save the information.
4. An "Update Restore Point" dialog will launch. If you would like to save all changes, and have the current users setup become the data restore point click "Yes." If you would like to retain the old data restore point click "No."

Figure 4.54 - Physician Name Entered

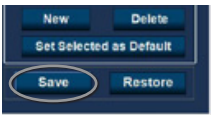



Figure 4.55 - Saving New Users

## Deleting Users

To delete a user:

1. Select the user you would like to delete from the "Available Users" list.
2. Click on "Delete."
3. The user will be deleted from the list of Available Users.

## Set Selected User as Default

To set a user as the default UBM Plus operation:

1. Select the user you would like to become the default from the "Available Users" list.
2. Click on "Set Selected as Default."
3. The user will become the default to appear when you power up the Accutome UBM Plus.

## Save

To save all user information:

1. Click on "Save."
2. An "Update Restore Point" dialog will launch. If you would like to save all changes, and have the current users setup become the data restore point click "Yes." If you would like to retain the old data restore point click "No."

Figure 4.56 - Update Restore Point Dialog

## Restore

To restore the previously saved User information:

1. Click on "Restore."
2. A "Restore Users" dialog will launch. Click "Yes" to revert to the previously saved User information.

Figure 4.57 - Restore Users Dialog

# 5 Performing Exams

## Overview

The Accutome UBM Plus is very simple to operate, and has advanced features to help you obtain the best possible images.

The Accutome UBM Plus creates eye images by sending a signal through the eye from the ultrasonic probe. The signal echoes off the various parts of the eye (cornea, lens) and returns a signal to the probe. The returned signal is translated by the Accutome UBM Plus and displayed as the patient image.

The Accutome UBM Plus provides many user controls to obtain high quality diagnostic images. These include the probe, TGC and gamma adjustments. This chapter provides you with information to scan, control, and review images.

## Exam Steps

The basic steps in performing an exam are:

1. Start a "New Exam" from the main Accutome UBM Plus screen.
2. Enter all necessary information on the Initial Exam Screen; i.e. patient, exam and exam setup information.
3. Start the Exam on the Initial Exam Screen.
4. Set up probe if necessary.
5. Anesthetize the eyes
6. Insert the Anterior Segment Imaging Scleral Shell
7. Fill shell with saline solution
8. If using a preset sequence, perform the first scan in the sequence
9. If using Free Scan, perform the first scan and label the scan, if necessary
10. Make any adjustments to the images, if necessary, such as adjustment of the gain
11. Add scans, if necessary
12. Analyze exams to allow printing and sharing of the date or starting a new exam

## How to Start a New Exam

All Accutome UBM Plus functions are easily accessed from the main screen. To start a new exam click on "New Exam" as shown in Figure 5.1.

Figure 5.1 - Starting A New Exam

## No Probe Found

If the Accutome UBM Plus probe is not connected, not connected properly, or for some other reason is not recognized you will receive the message Figure 5.2. If you exit the program, reinsert the probe, and restart the program, and you still receive the message please contact Accutome Customer Support for help.

Figure 5.2 - No Probe Found Message

## Initial Exam Screen

Upon starting a new exam (by selecting "New Exam" from the main Accutome UBM Plus Screen) the Accutome UBM Plus launches the Initial Exam Screen shown in Figure 5.3. On this screen you start a new patient exam by entering Patient data and making appropriate selections for the new patient. The screen is divided into the following areas:

- Patient Info - requires you to enter current patient data
- Probe Info - displays the current probe operational specifications
- Exam Info - displays the Exam ID generated by the Accutome UBM Plus and provides selections for facility, physician and operator
- Exam Setup - displays exam creation date and time, and provides selections for the exam to be performed.

You may select an existing patient by choosing "Import from Existing Exam."

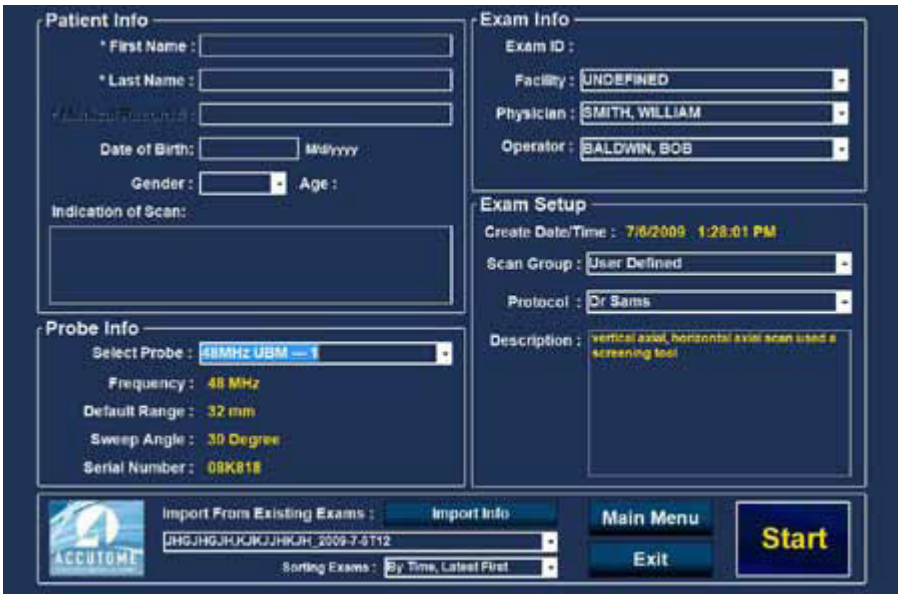



Figure 5.3 - Initial Exam Screen

### Entering Information on Initial Exam Screen
The Initial Exam Screen is set up like a typical Windows® application and you enter information, move between fields, and select items from drop down lists like using any other software tool.

### Entering Data
When you are in a field, such as the First Name, you simply place the cursor in the field and type the appropriate information.

### Moving Between Fields
To move from one field to another you can either click in the new field or use the Tab key. The tabbing order of fields on the Initial Exam Screen runs in an intuitive, sequential order.

### Selecting Items from a Drop Down List
Many of the fields in the Initial Exam Screen contain a drop down list at the right of the field. To select an item from the drop down list:

1. Select the drop down arrow and scroll through the list
   or
2. Use the ↑↓ arrow keys to scroll through the list
   or
3. Type the first letter of the item you wish to select and scroll through the list.

## Patient Info
The Patient Info area displays patient information and has fields that require data entry as outlined below.

### Required Fields
The only fields that require entry in the Patient Info are the First Name and Last Name fields. Both these fields are used to create a unique patient exam record.

### First Name
The Name fields in the Patient Info area require an entry of a minimum of three alphanumeric characters. There is no need to enter names in both First and Last Name fields; if you choose to enter a first name you do not have to enter a last name.

### Last Name
The Name fields in the Patient Info area require an entry of a minimum of three alphanumeric characters. There is no need to enter names in both First and Last Name fields; if you choose to enter a last name you do not have to enter a first name.

### Medical Record Number
Whether the Medical Record Number appears is determined by the Exam Name Combination selected in the Setup, Options tab. If the Medical Record Number in

included in the Exam Name Combination, the Medical Record number is entered by the user. The B-Scan then generates an Exam ID based on the specific Exam Name Combination chosen. The medical record field requires an entry of a minimum of five alphanumeric characters.

Figure 5.4 - Initial Exam Screen With Patient Name

## Date of Birth

The patient's date of birth is not a required field. If you choose to enter the date it should be in the MM/DD/YY format.

## Gender

The gender field provides a drop down to select either Male (M) or Female (F) as shown in Figure 5.5. Gender is not a required entry.
Position the cursor on the small arrow at the right of the gender field. Left click to open the drop down list. Position the mouse over the up/down arrows at the right of the drop down list. Click the mouse to move through gender. Select M or F by positioning the mouse cursor and left clicking.

Figure 5.5 - Selecting Gender

## Indication of Scan

The Indication of Scan field in the Patient Info area can be edited with any information related to patient's scan. To add information, click in the field and type.

## Probe Info

The Probe Info displayed on the New Exam initial Info Screen is informational only and is automatically determined depending which model of probe is plugged in.

## Frequency

The Frequency field indicates the frequency of the signal from the probe through the eye.

## Default Range

The Default Range field displays the default depth range displayed on the screen.

## Gain

The Gain field displays the gain of the image signal.

### Sweep Angle
The Sweep Angle field displays the angle at which the probe sweeps the eye during imaging.

### Serial Number
The Serial Number field displays the serial number of the connected Accutome UBM Plus probe.

## Exam Info
The Exam Info area displays information related to the current exam and patient.

### Exam ID
The UBM generates an Exam ID based on this entered Medical Record number in combination with the date and tracking number.

### Facility
In the Facility field you can select the facility for the Patient Exam by selecting the name from the drop down list. Facility names are entered in the UBM Setup. (Refer to Chapter 4 of this manual).

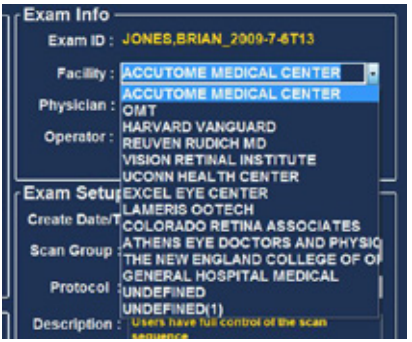


Figure 5.6 - Selecting Facility

Position the cursor on the small arrow at the right of the facility field. Left click to open the drop down list. Position the mouse over the up/down arrows at the right of the drop down list Click the mouse to move through stored facilities. Once you see the facility you want to select, position the mouse cursor over the facility and left click. The selected facility will fill in the facility field.

### Physician
In the Physician field you can select the physician for the Patient Exam by selecting the name from the drop down list. Physician names are entered in the UBM Setup. (Refer to Chapter 4 of this manual).

Figure 5.7 - Selecting Physician

Position the cursor on the small arrow at the right of the physician field. Left click to open the drop down list. Position the mouse over the up/down arrows at the right of the drop down list Click the mouse to move through stored physicians. Once you see the physician you want to select, position the mouse cursor over the physician and left click. The selected physician will fill in the physician field.

## Operator

In the Operator field you can select the operator for the Patient Exam by selecting the name from the drop down list. Operator names are entered in the UBM Setup on the Users tab. (Refer to Chapter 4 of this manual).

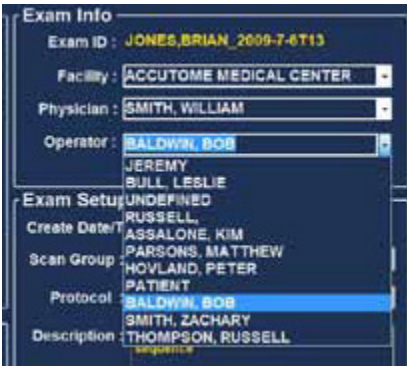



Figure 5.8 - Selecting Operator

Position the cursor on the small arrow at the right of the operator field. Left click to open the drop down list. Position the mouse over the up/down arrows at the right of the drop down list Click the mouse to move through stored operators. Once you see the operator you want to select, position the mouse cursor over the operator and left click. The selected operator will fill in the operator field.

# Exam Setup

The Exam Setup area displays information relating to the date and time the current exam was created and provides selections for exam scan groups, protocols and a field for describing the selected protocol.

## Create Date/Time

The Create Date/Time field displays the time stamp created by the Accutome UBM Plus for the time that the current patient exam was started.

## Scan Group

The UBM Plus provides the ability to set up Imaging Sequence protocols and select the protocols for exams. The setup protocols become User Defined. When you are selecting a Scan Group you have the option to either select User Defined or System Defaults. If you would like to run a customized protocol you must select "User Defined."

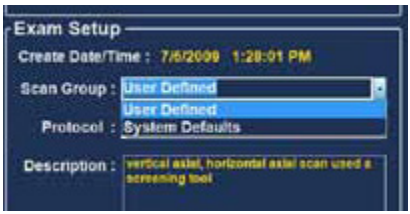



Figure 5.9 - Selecting Scan Group

## Protocol

All Sequences protocols created in the UBM Plus Setup are listed in the Protocol drop down. If you selected System Defaults as the Scan Group all the system default protocols will be listed. If you selected User Defined as the Scan Group all the customized sequence protocols will be listed.
For more information on Sequencing protocols refer to Chapter 4, Setup, of this manual.

## Description

The Description field in the Exam Info area provides a description of the scanning protocol being performed with the Accutome UBM Plus.

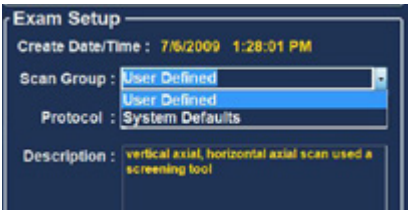



Figure 5.9 - Selecting Scan Protocol

## Import From Existing Exam

In some instances you may want to re scan an already stored patient. To load the already stored patient information click on the existing exams drop down window and click on the patient to rescan. Once selected, click on import info. This loads the previously entered data into the Patient Info, Exam Info and Exam Setup tables.

## Start Exam

After you have completed all necessary fields in the Initial Exam Screen and have made the appropriate selections or selected an already existing Exam click "Start."

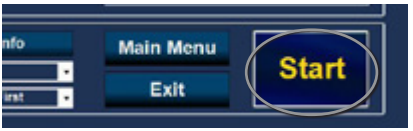



Figure 5.10 - Starting New Exam

## Use of the Anterior Segment Imaging Scleral Shell

The Physician performing the exam will select the appropriate size Scleral Shell, 18mm or 20mm to be used during the examination based on the shape and size of the patient's eye.

1. Recline the patient
2. Anesthetize both eyes
3. Using your thumb and index finger separate the eye lid, exposing the cornea and sclera
4. Holding the Anterior Segment Imaging Scleral Shell, securely place the shell over the cornea
5. Release the lids
6. Maintain a constant downward force to keep the shell from leaking

**Note: Patients that are squeezing excessively, causing the lids to be difficult to open may be asked to look at their toes. This action relaxes the lid muscles.**

**Note: Some Clinicians have reported a better seal between the shell and Sclera by adding a small amount of goinosol or gentile gel to the Flanged base of the Anterior Segment Imaging Scleral Shell**

7. Pour sterile saline solution into the shell
8. Place the UBM Plus probe in to the Anterior Segment Imaging Scleral Shell and begin imaging the eye
9. The position of the probe depends on the area of interest

**WARNING! THE PROBE TIP OF THE UBM PLUS IS NEVER TO COME IN CONTACT WITH THE PATIENT'S EYE, AS IT MAY RESULT IN A CORNEAL ABRASION OR SIMILAR TYPE INJURY.**

10. The small Accutome symbol located on the probe is the screen orientation marker. It indicates the top of the screen in relationship to the probe's position
11. Upon completion of the exam tilt the patient's head to the side, and remove the shell. The shell should easily pop put, not requiring any adjusting or pulling of the eyelids
12. Have tissues in hand to catch the saline solution which will run down the patient's face upon removal of the shell

## Exam Screen Features

Upon start of the exam the Accutome UBM Plus launches the Exam Screen. The Exam Screen displays:

- Exam Information
- Current View
- All Views
- Tools Palette with Selectable Tabs for Probe and Scan Controls
- TGC Adjustments
- Gamma Adjustments
- Zoom Controls
- Show A-Vector
- Edit Exam Info
- Analyze
- Cine Buffers Display
- Menu Buttons
- Print and Snap Shot
- Angle

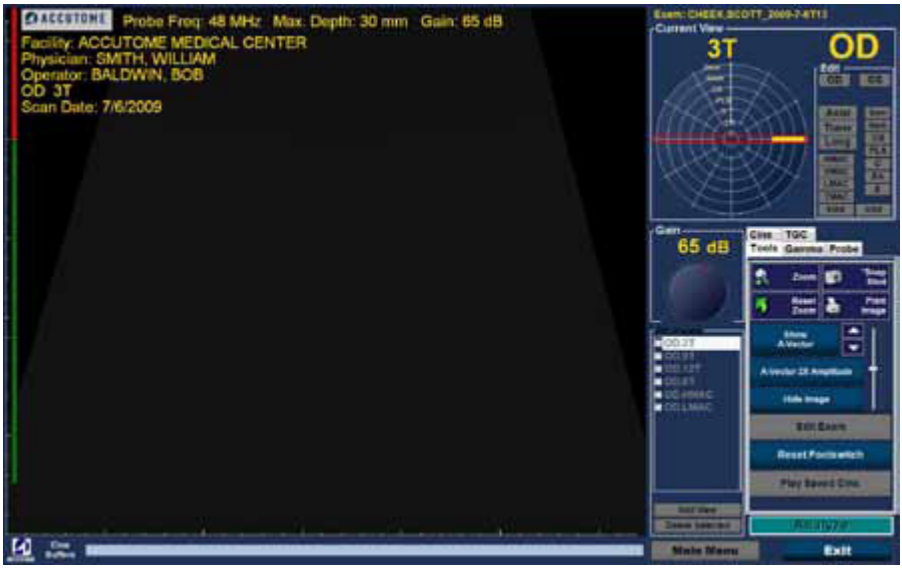



Figure 5.11 - Exam Screen Layout

## Exam Information Displayed Above Image

Above the Exam Screen's Imaging area, in the top right or left corner there is an area that displays some or all of the following fields:

- Probe Frequency (Prob Freq)
- Maximum Probe Signal Depth (Max. Depth)
- Medical Record Number (MRN)
- Exam Creation Time (Date)
- Facility - Facility display can be turned on or off in UBM Plus Setup, Options tab
- Physician - Physician display can be turned on or off in UBM Plus Setup, Options tab
- Operator - Operator display can be turned on or off in UBM Plus Setup, Options tab
- Current View in Image Sequence Protocol

The information fields displayed and the position of the information on the screen is determined by the Options settings in Setup.

## Current View

The Current View area displays the position of the currently active step in the imaging sequence. The position is displayed in both a textual and graphical format. You can also edit the current view in this area. There is also a "View" that allows you to view the image frames for the previous sequence steps.

## All Views

The All Views area displays all views in all steps of the current imaging sequence.

## Tools Palette

The tools palette contains all the tool for adjusting and controlling scans. In the palette there are tabs for:

- Probe
- TGC
- Gamma
- Cine
- Tools

### Probe Tab

The probe tab is shown below. Showing the tab open allow the control of the following:

- Frequency-Defaults to 48
- Range-Defaults to 30mm
- Cine Buffer-The cine buffer is the length of the film loop. The user can select between 4.5, 8.5, 17 and 34 seconds.
- Adjusting the power
- Power scan and save cine-In addition to using the footswitch to start and stop the film loops, there are the scan and save scan buttons

Figure 5.12 - Probe Tab

located under the Probe Tab. These buttons allow the control of the probe using the mouse.

## TGC Adjustments

TGC (Time Gain Compensation) is an adjustment to compensate for the strength of the signal through the eye. The TGC adjustments are:

- Near - adjustment for signal near the probe
- Mid - adjustment for the middle of signal
- Far - adjustment for portion of signal farthest from probe.

TGC is explained in greater detail in Chapter 6, Patient Image Analysis.

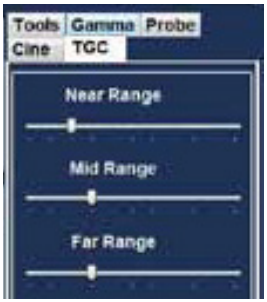



Figure 5.13 - TGC Adjustments Tab Selected

## Gamma Adjustments

Gamma curves are a type of contrast adjustment that favors selectively, the low end, high end, or middle end of the contrast gradient. There is no correct gamma only the one that best delineates the subject of interest. The Gamma adjustments allow you to adjust the brightness mapping of the UBM image. The adjustments area contains a drop down list of predefined gamma settings, and gamma contrast and brightness controls that can be adjusted by dragging. Gamma is explained in greater detail in Chapter 6, Patient Image Analysis.

Figure 5.14 - Gamma Adjustments Tab Selected

## Cine

The frame delay controls the speed or frames per seconds that the film loop is played back.
There is also a mouse controlled button, "Play saved Cine," that allows the saved film loops to be played.

Figure 5.15 - Cine Adjustments/ Play Tab Selected

## Tool Tab

- Zoom-Clicking on this allows up to 8X magnification of the image
- Snap shot-Takes a picture of the frozen image and places it in the
- manage report screen
- Reset zoom-Resets the image to the default size
- Print image-Is a button that allows the printing of any image on the screen Show and hide A-vector-These buttons turn on and off the A-vector
- Hide image-Hides the B-scan so that the A-vector can more easily be examined
- Edit exam-Allow the exam information screen

Figure 5.16 - Tool Tab

to be edited
- Reset footswitch
- Play saved cine

## Add View

The Add View function allows you to add new scan views to the scanning sequence. To add a new view to the current scanning sequence:

1. In the All Views area select "Add View."
2. Label the new scan view.
3. In the Current View area select OD or OS for the new step.
4. The newly added scan will be active and display as OD.Scan or OS.Scan.
5. Adjust the new scan settings. Select the probe orientation for the step: Axial, Longitudinal (Long) or Transverse.
6. Select the view position indicator in the Current View area and drag the indicator tip to the desired position.

## Edit Current View

When you select "Edit" in the Current View area the UBM Plus allows changes to the currently active scan view label. Edit the label for the view. Make the adjustments to the probe orientation or positions by dragging the position indicator. The changes will be reflected in the new name of the step. For example, if you changed the probing orientation for OD.12AX to Transverse, the new scan name is "OD.12T."

## Current View

There are three probe orientations:

- Axial
- Long (Longitudinal)
- Trans (Transverse)

### Axial

Axial is the center of the cornea and is used to denote a scan with the probe perpendicular to the cornea.

### Longitudinal

In a Longitudinal image the probe can be held at any angle with respect to the patient's limbus.

### Transverse

In a transverse image the probe is held at an angle to the optical axis of the eye, not directly over the corner as in an Axial image, such that the probe crosses or transverses the optical axis.

## Edit Exam Info

When you select "Edit Exam Info" the Accutome UBM Plus displays a window containing the Patient and Exam info entered in the Initial Exam Screen (refer to the "Initial Exam Screen" section of this manual). You can edit and save any of the information displayed in this window.

Figure 5.17 - Edit Exam Information Window

## Analyze

When you select "Analyze" the Accutome UBM Plus launches the Image Analysis Screen where you can play, reverse and forward, take measurements and zoom on selected portions of an image for a highly successful diagnosis. The UBM image analysis features are explained in detail in Chapter 6, Patient Image Analysis, of this manual.

## Menu Buttons

The two buttons located at the bottom of the Exam Screen; Main Menu and Exit perform Accutome UBM Plus menu functions.

## Main Menu

When you click on "Main Menu" the Accutome UBM Plus returns you to the top level, main menu.

## Exit

When you click "Exit" the Accutome UBM Plus program closes.

## Probe Usage In Scanning

The Accutome UBM Plus provides every feature needed to get high quality, accurate scans. You can place the probe with in the anterior segment shell and always capture a clear image.

### How the UBM Works

The Accutome UBM Plus probe is an ultrasonic probe and sends a sound wave through the anterior segment being scanned. As the sound wave travels through the various anterior segment tissues the sound wave bounces off these tissues and produces an echo of varying amplitude determined by the density of the tissue. The denser the tissue the larger the echo and the greater the signal that is returned. Greater tissue density and a stronger echo show up as a brighter spot in the image.

A-Scan is a thin, parallel sound beam passing through a small point within the anterior segment of the eye. The echoes received back as the signal passes through the various anterior segment tissues are represented by spikes arising from a baseline. A-Scan is therefore an Amplitude scan. B-Scan is an oscillating A-Scan passing through a slice of tissue rather than a point and the echoes that are received back represent dots that form an image. The higher the density of tissue that the UBM wave hits will be returned as a stronger echo, or brighter dot in the image. B-Scan is therefore a Brightness scan. For example, the iris is a highly dense, smooth surface and when scanned the image returned will be bright as shown in Figure 5.18.

### Probe Operation

The Accutome B-Scan Plus emits an oscillating sound beam that pulses, pauses and pulses again. The pause allows the UBM Plus to receive, process and display the returning echo. The pulse-echo is repeated thousands of times per second resulting in a "real-time" display. The sound beam "slices" through a section of intraocular tissue covering approximately thirty degrees.

Figure 5.18 - Probe Operation

## Marker Alignment

There is a marker at the end of the Accutome UBM Plus probe, the Accutome logo, that indicates the direction of the "slice" being imaged by the probe. See Figure 5.19 below for examples of the marker positioning for a vertical and a horizontal slice. You must know where the slice is being directed at all times to produce an accurate scan. In Figure 5.19 below there are two very different slices with the same probe position; the marker is rotated from a vertical slice position to a horizontal slice position. The slice positions when defining a probe view are indicated as hours on the face of a clock.

The marker located on the UBM Probe also indicates the orientation of the probe with resect to the image on the monitor. The marker is positioned towards the left side of the screen.

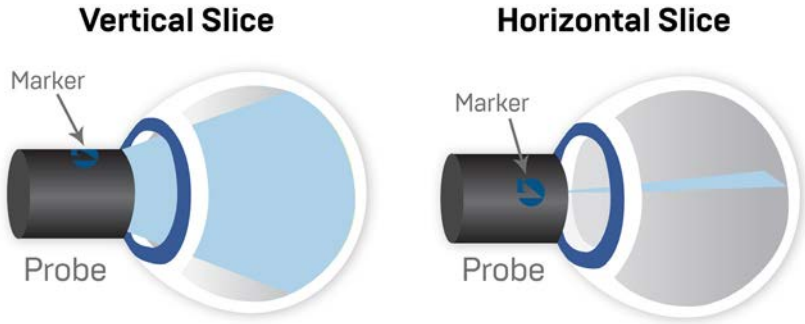



Figure 5.19 - Eye and Probe Marker Alignment

## Probe Positions

One of the great features of the Accutome UBM Plus is the ability to use the probe in any position and be able to quickly and easily label the scan view.

There are three major positions for holding the probe when you scan. Within these positions there are slices that correspond to the hours of a clock. A position label consists of the probe position and slice position. The three probe positions are:

- Axial
- Longitudinal
- Transverse

Depending upon the purpose of your scan; e.g. basic scan vs. scanning for a pathology will determine which probe position you use. When scanning you move the probe around the eye within each of these positions. A brief summary of the three positions follows.

### Axial Probe Positions

An Axial UBM is a slice through the center of the lens. Axial scans are labeled according to the orientation of the marker, followed by "AX." If the scan is performed with the marker aimed superiorly or vertical, the scan can be labeled 12AX. For a horizontal scan the marker should be aimed nasally and labeled 3AX

for the right eye, or 9AX for the left eye. For an oblique scan, aim the marker at the oblique clock hour (which will place that meridian at the top of the display screen) while retaining the patient's gaze and the probe face centered on the cornea; i.e. 2:00, 9:30 etc.

## Longitudinal Probe Positions

Longitudinal scans are radial scans encompassing only one clock per slice, from the posterior pole to the anterior periphery.
All longitudinal scans should be labeled with an "L" and the clock hour of the meridian being examined; i.e. L10, L3 etc.

## Transverse Probe Positions

Transverse probe positions demonstrate the lateral extent of pathology, encompassing approximately six clock hours in one slice. The patient's gaze is directed toward the area of interest and the probe is placed on the opposite sclera with the marker oriented parallel to the limbus.
In horizontal transverse approaches the marker is aimed nasally so the upper portion of the screen represents the nasal section of the globe (the upper portion of the screen will always be 3:00 in the right eye, or 9:00 in the left eye.
In vertical approaches the marker is aimed superiorly, so that the upper portion of the screen represents the superior portion of the globe (12:00 in OD or OS).
In oblique transverse approaches the marker is aimed toward the upper portion of the globe so that the upper portion is represented at the top of the screen.
Labeling of transverse scans is done according to the portion of the globe being examined (where the sound beam is being directed) not by the position in which the probe is being held on the globe.
First label the portion of the globe being scanned in the center of the display by recording the clock hour that represents the meridian that lies in the center of the screen followed by the locator that indicates how far out in the periphery you are at the clock hour i.e 3-3mm, 3 E etc.
The locators are:

- 3mm-3 mm ring
- 6mm-6 mm ring
- CB-Ciliary Body
- Pla-Pars Plana
- O-Ora Cerata
- EA-Equator Anterior
- E-Equator

In addition to the three basic position labels, there are six of specialized labels that can be selected as needed. They are listed below.

- HMAC-Horizontal Macula
- VMAC-Vertical Macula
- LMAC-Longitudinal Macula
- TMAC-Transverse Macula
- HAX-Horizontal Axial
- Vax-Vertical Axial

## How to Scan

To start and freeze a scan with Accutome UBM Plus is as simple as pressing the start/stop button on the probe or stepping on the footswitch. Both the probe and the footswitch can be used for start/stop operation if the setup is predefined to use both (See "Start/Stop" on page 53 of this manual).
If you are using both the probe and the footswitch for start/stop action, they will each perform the operation that is the opposite of the last operation executed. For example, if you start scanning by stepping on the footswitch and press the trigger button on the probe the scanning will stop.

### Using the Footswitch

The footswitch toggles between start/stop. To start or stop scanning step on the footswitch. Once you have completed the first scan the image you have captured will appear in the image area of the screen.

### Scanning with a Predefined Protocol

Figure 5.20 shows the first step of a scan completed using a scan group protocol. After you complete the first scan and have stopped the probe you should move the probe to conform to the next scan in the sequence. For example in Figure 5.20 the first scan is labeled "OD.VAX" and the second scan is labeled "OD.12L". When you finish the first scan you should move the probe on the patient's eye from the 12:00 axial slice to the 12.00 longitudinal.

Figure 5.20 - New Exam Selected Protocol - First Scan Complete

## Scanning without a Protocol

When you are not following a predefined protocol for scanning the first scan always defaults to OD.Scan. If you are making a free scan of the right eye you should change the view label for this scan (see the "Edit Current View" section).

Figure 5.21 - New Exam No Protocol - First Scan Selected

Start and stop the scan using the footswitch. Once the first scan is captured as shown in Figure 5.22 proceed with the second scan.

Figure 5.22 - New Exam - First Scan Complete

## Proceed with the Next Scan

After you have completed the first scan and you step on the footswitch the UBM Plus will automatically add another scan to the "All Views" list. The label for the second scan will default to OD.Scan(2).

Figure 5.23 - New Exam- Second Scan Complete

## Adding a View

You may decide during the scanning process that you need to scan another view of the patient's eye.
To add another view:

1. Click on the "Add View" button as shown in Figure 5.24.

Figure 5.24 - Adding A View

## Adjusting the Gain

You may decide the signal gain for your new view is too strong or not strong enough. To adjust the signal gain:

1. Select the red dot in the adjustable gain knob with the mouse cursor.
2. Holding down the left mouse button drag the knob until you reach the gain value you want.
3. If the mouse you are using has a scroll wheel you can move the wheel instead of dragging the knob to reach the gain value.

Figure 5.25 - Adjusting Gain

## Changing the Scan View

After you have added a new scan to the list of All Views you may want to change the label of the view if the new scan has an intended purpose. For example, if the new scan is intended to capture a transverse view of the eye you want to label the

view transverse.
To change a scan view:

1. Activate the scan by clicking on the scan view name or clicking the checkbox beside scan view name.
2. Move to the "Edit Current View" area of the Exam Screen and select the correct probe position as shown in Figure 5.26.
3. Change the clock hour by dragging the arrow indicator around the clock until you reach the correct slice position.
4. Click on Transverse
5. For transverse scans you may also select the appropriate orbit for the new scan. Place the mouse cursor inside the orbit wheel. Click on the correct orbit for the new scan.
6. The edited current view will appear in the list of "All Views" as shown in Figure 5.29.

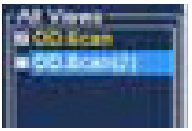


Figure 5.26 - Changing a View - Probe Position

Figure 5.27 - Changing A View - Slice Position

Figure 5.28 - Changing A View - Global Orbit

Figure 5.29 - Changing A View - Done

## A-Vector

The A-Vector function displays an equivalent A-Scan of the captured UBM Plus image. Looking at the A-Vector you can get a graphical picture of the echoes received back through the eye from the ultrasonic probe.
The echoes are represented as spikes arising from the baseline and indicate the sound beam travelling through the different intraocular tissues.
To activate the A-Vector:

1. Select "Show A-Vector" from the Tools tab as shown in Figure 5.30 below.
2. The A-Vector will be displayed under the live image as shown in Figure 108 below. To close the A-Vector select "Hide A-Vector."
3. Below the Show A-vector button is a button that allows you to toggle between 1X and 2X amplification

Figure 5.30 - Selecting A "Show A-Vector"

of the A-vector. This can be of particular use when used for tissue differentatin. Selecting that will allow you to dabble between "A-vector IX Amplitude" or "A-vector 2X Amplitude."

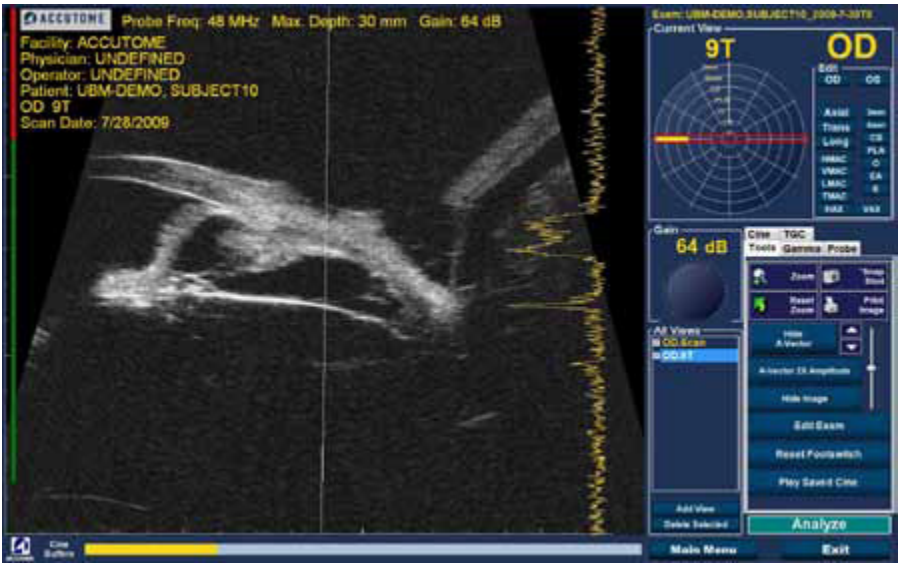



Figure 5.31 - A-Vector Displayed

## Completing Patient Exam

After you have completed the patient exam you have several choices to exit the screen.

### Main Menu

The Main Menu selection will return to the Accutome UBM Plus main screen.

### New Exam

The New Exam selection will close the current patient exam and return you to the Initial Exam Screen (see Figure 5.3). Enter new patient information and start a new exam.

### Exit

Selecting "Exit" will close the Accutome UBM Plus software.

### Analyze

Selecting "Analyze" will launch the Analyze Screen with the current patient active. On the Analyze Screen you can make image adjustments, take measurements, and generate snapshot lists and reports. For further information on image analysis refer to the "Patient Image Analysis" section of this manual.

# 6 Patient Image Analysis

## Overview

The Accutome UBM Plus provides many features for high quality, personalized, image capture and analysis. You can perform image analysis with Accutome UBM Plus during an exam or later, on a saved, existing exam.

## Selecting Images For Analysis

There are two methods of selecting an image for analysis:

1. In the New Exam Screen by executing "Analyze" after a patient exam has been scanned.
2. By selecting a saved Existing Exam and displaying it in the Analyze Screen.

## How To Select An Existing Exam

To select an existing exam:

1. In the Accutome UBM Plus top level, Main Screen select "Existing Exam" as shown in Figure 6.1 below.

Figure 6.1 - Starting Existing Exam

2. The Analyze Screen shown in Figure 6.2 below will display.

Figure 6.2 - Analyze Screen

## Analyze Screen

The Analyze Screen contains many features to enhance image diagnostics.

### Analyze Screen Features

Upon start of the exam the Accutome UBM launches the Analyze Screen. The Analyze Screen displays:

- Exam Information
- All Exams (drop down list for selecting an existing exam)
- Current View (active display of scan sequence)
- Play Controls (for viewing scan film loops)
- TGC Adjustments
- Tools Palette - including Zoom Controls, A-Vector, Comments, Print Image, Snap Shot
- Gamma Adjustments
- Edit Exam Info
- Angle

Figure 6.3 - Analyze Screen Layout

## Exam Information Displayed above Image

Above the Exam Screen's Imaging area is an area that displays some or all of the following fields:

- Probe Frequency (Prob Freq)
- Maximum Probe Signal Depth (Max. Depth)
- Medical Record Number (MRN)
- Exam Creation Time (Date)
- Facility - Facility display can be turned on or off in UBM Plus Setup, Options tab
- Physician - Physician display can be turned on or off in UBM Plus Setup, Options tab
- Operator - Operator display can be turned on or off in UBM Plus Setup, Options tab
- Current View of stored scanned film loops

The default position for exam information fields is at the top left of the screen. The information fields that are displayed and the position on the screen where the fields are displayed can be changed in the setup mode.

## Current View

The Current View area displays the position of the currently active scan in the scanning sequence. The position is displayed in both a textual and graphical format. You can also edit the current view in this area.

## Current View Orbital Locators

When you are examining a captured image the Current View area will display, as you select, on the graphical representation of the image the following orbits:

- 3mm-3 mm ring
- 6mm-6 mm ring
- CB-Ciliary Body
- Pla-Pars Plana
- O-Ora Cerata
- EA-Equator Anterior
- E-Equator

## Editing Current View Info

When you click "Edit" in the Current View area the UBM Plus changes the currently active imaging sequence step. After you make the adjustments to the probe orientation or positions by dragging the position indicator the changes will be reflected in the new name of the step. For example, you changed the probe orientation for OD.12AX to Transverse, the new step name is "OD.12T."

## Views to Review

The Views to Review area displays all views in all steps of the current imaging sequence.

## Play Controls

The play controls allow you to play, pause, stop, move forward and move back through an image scan.

## Zoom Controls

The Zoom Controls allow you to zoom in on the image and then return to the normal size view by clicking "Reset Zoom." Zoom is explained in greater detail in Chapter 6, Patient Image Analysis.

## TGC Adjustments

TGC (Time Gain Compensation) is an adjustment to compensate for the strength of the signal through the eye. The TGC adjustments are:

- Near - adjustment for signal near the probe
- Mid - adjustment for the middle of signal
- Far - adjustment for portion of signal farthest from probe

## Gamma Adjustments

The Gamma adjustments allow you to adjust the brightness mapping of the UBM image. The adjustments area contains a drop down list of predefined gamma settings and gamma indicators for Contrast and Brightness that can be adjusted by dragging.

## Edit Exam Info

When you select "Edit Exam Info" the UBM displays a window containing the Patient and Exam info entered in the Initial Exam Screen (refer to the "Edit Exam Information Window" section). You can edit and save any of the information displayed in this window.

## Menu Buttons

The three buttons located at the bottom of the Exam Screen; Rescan, Main Menu and Exit perform Accutome UBM Plus menu functions.

- Main Menu - When you click on "Main Menu" the Accutome UBM Plus returns you to the top level, main menu.
- Rescan - When you click on "Rescan" the Accutome UBM Plus will launch the Exam Imaging Screen where you can rescan the patient exam.
- Exit - When you click "Exit" the Accutome UBM Plus program closes.

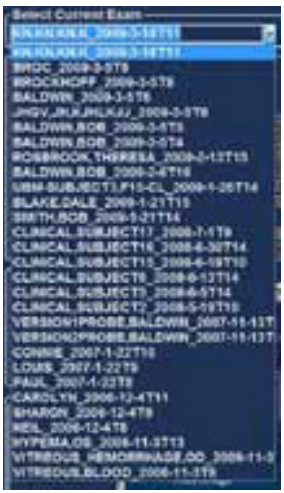



Figure 6.4 - Selecting a Patient Exam

# Selecting an Existing Exam

The Analyze Screen will display the current patient exam if you entered the Analyze Screen by selecting "Analyze" on the New Exam screen. If you entered the Analyze Screen from the Main Accutome UBM Plus

Screen you need to select an existing exam from the All Exams drop down list.

1. The "All Exams" drop down list is located at the top, right side of the screen. Select the patient exam for analysis from the list.
   Position the cursor on the small arrow at the right of the All Exams field. Left click to open the drop down list. Position the mouse over the up/down arrows at the right of the drop down list Click the mouse to move through Patient Exams.
2. Position the mouse cursor on the name of the Exam you would like to analyze. The exam will displayed in the screen as shown in Figure 6.5.

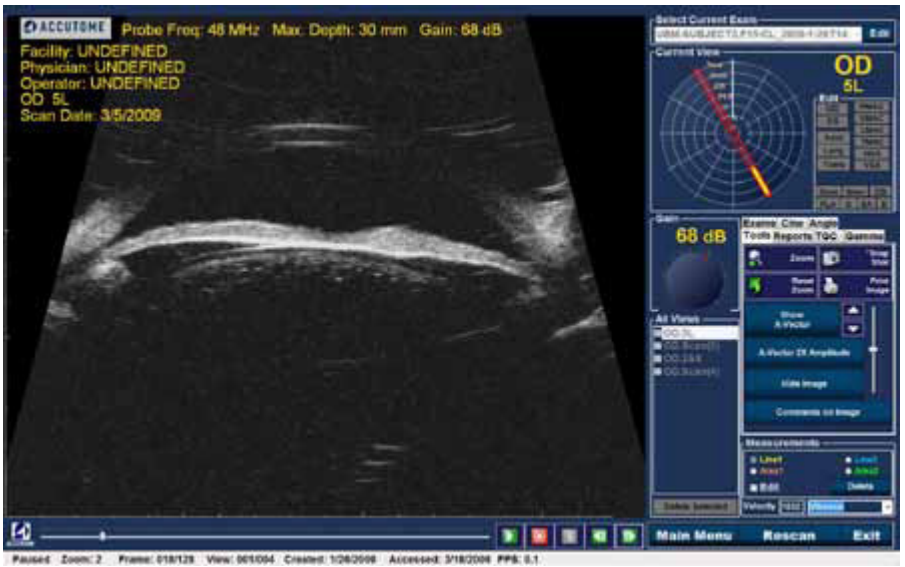



Figure 6.5 - Existing Exam Displayed

## How to Edit Exam Info

To edit the information for the active patient click on "Edit," located at the right of the "Select current Exam" fields. The "Edit Exam Information Window" shown in Figure 6.6 on the next page. This window contains all the information entered into the initial patient exam screen. The window contains drop down lists and text fields that can be changed.

### Drop Down Lists

The drop down lists in the Edit Exam Information window are all prefilled during setup. The drop down lists are:

- Facility
- Physician
- Operator

To change the fields with drop down lists; position the cursor on the small arrow at the right of each field. Left click to open the drop down list. Position the mouse over the up/down arrows at the right of the drop down list Click the mouse to move

through the stored lists. Once you see the item in the drop down list you want to select position the mouse cursor over the item and left click. The selected item will fill in the field.

## Text Fields

The text fields in the Edit Exam Information Window that you can change are:

- Facility Name
- Physician First Name
- Physician Last Name
- Operator First Name
- Operator Last Name
- Patient First Name
- Patient Last Name
- Patient First Name
- Patient Date of Birth
- Patient Gender
- Indication for Scan
- Diagnosis

To change any text field:

1. Click the mouse cursor in the field.
2. If there is text to remove drag the mouse and select the text and hit the "Delete" key on the computer keyboard.
3. Place the mouse cursor In the empty text field and type the new text.

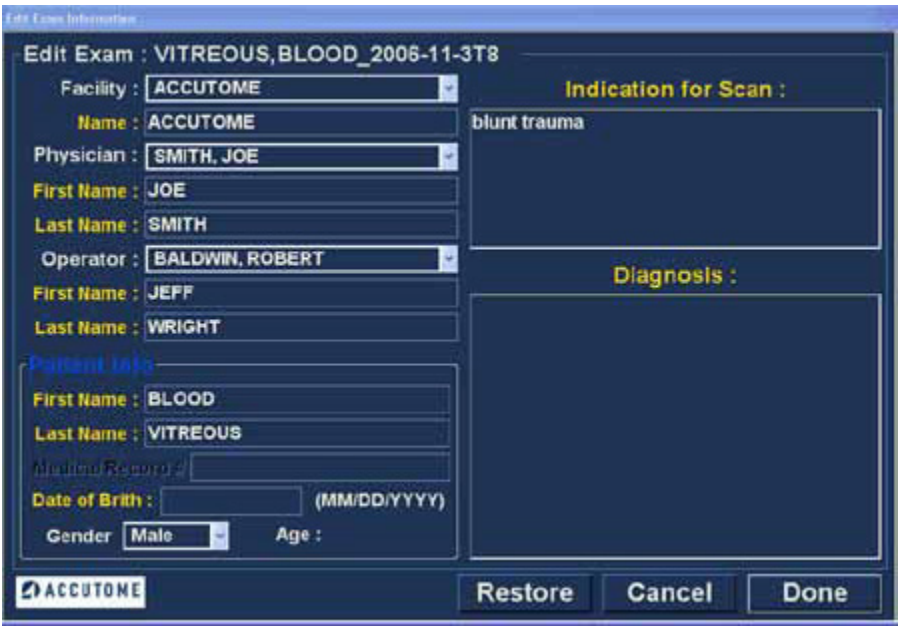



Figure 6.6 - Edit Exam Information Window

## Restore

If you have made any changes in the Edit Exam Information and would like to restore the information to the previous state click on "Restore." The dialog displayed in Figure 6.7 will launch. If you would like to restore the information click "OK," if not click "Cancel."

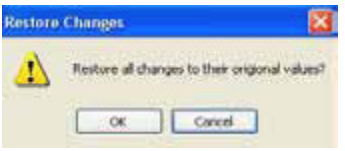



Figure 6.7 - Restore Exam Information Dialog

## Cancel

If you would like to cancel the Edit Exam Information activity without saving changes click on "Cancel." The dialog displayed in Figure 6.8 will launch. If you would like to cancel the process click "OK." If you would like to return to the Edit Exam Information window and continue activity, click "Cancel."

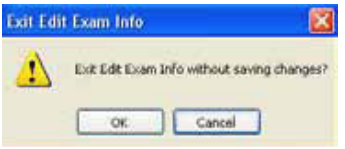



Figure 6.8 - Cancel Exam Information Dialog

## Done

When you have finished making all edits in the Edit Exam Information window click "Done." The Edit Exam Information window will close and you will return to the Existing Exam Screen.

# Exams

In the Tools Palette there is a tab labeled "Exams." The Exams tab allows you to select the Exams folder location. Click on the Exams tab and the Exams folder selections will display as shown in Figure 6.9 below. There are two selection on the Exams tab: "Use Main Folder" and "Use Restored Folder." The Restored folder is the folder that has been setup in setup mode for restored exams, or exams that you have loaded from a CD/DVD or restored from a backup on the Local/Net disk.

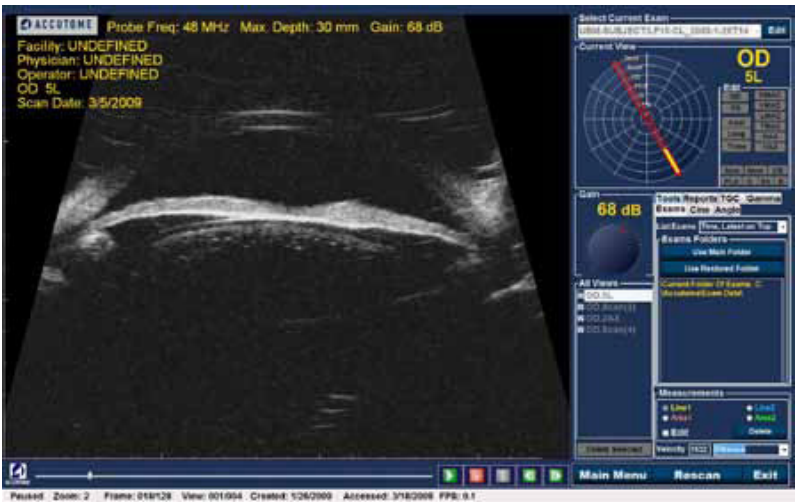



Figure 6.9 - Exams Tab

## Playing an Exam

The Accutome UBM Plus allows you to view any portion of a scan film loop. At the bottom of the existing exam screen are the image playback controls. They are intuitive and easy to use and similar in appearance to controls on a VCR or DVD remote controller. The playback controls consist of:

- Play
- Stop (and return to the beginning of the film loop)
- Pause
- Forward one frame at a time or continuously
- Backward one frame at a time or continuously

When you first load a scan film loop the only playback control buttons that are enabled are the play, forward, and backward. To start the scan film loop click on the Play button as shown in Figure 6.10 below.

## Stopping an Exam

After you have started playing a scan film loop the Stop and Pause buttons become active as shown in Figure 6.10. When you click the Stop button the scan film loop stops and returns to the beginning.

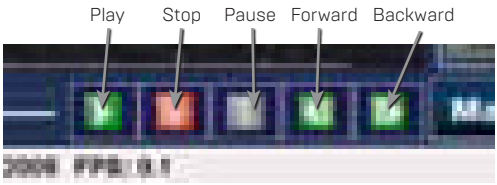



Figure 6.10 -Exam Play Controls

## Pause

When you click on the Pause button shown in Figure 6.10 the scan film loop will pause and not play in any direction.

## Forward

When you click on the Forward button shown in Figure 6.10 the scan film loop will play forward. There are two methods of playing forward: you can move forward one frame at a time or you can move forward through frames continuously. To play one frame at a time click on the forward button, once and then click again. To play frames forward continuously click on the forward button and hold the left mouse button down. The scan film loop will continue to play forward until you release the left mouse button.

## Backward

When you click on the Backward button shown in Figure 6.10 the scan film loop will play backward. There are two methods of playing backward: you can move backward one frame at a time or you can move backward through frames continuously. To play one frame at a time click on the backward button, once and then click again. To play frames backward continuously click on the backward button and hold the left mouse button down. The scan film loop will continue to play backward until you release the left mouse button.

# TGC Adjustment

TGC (Time Gain Compensation) feature provides for segmental adjustment throughout the entire range of the probe's sonic echo. For example, the echo

nearest to the probe's transducer might be selectively reduced to better distinguish tissue within the anterior segment, while at the same time the echo from the ciliary body might be selectively amplified in order to achieve a well balanced image having optimum brightness throughout the length of the eye. Alternately, the clinician may use TGC to selectively amplify only the Vitreous echoes or only the Anterior Chamber echoes. This feature provides unparalleled control of image quality and thus diagnostic quality.

The TCG settings can be adjusted to facilitate viewing certain areas of the eye, by increasing the gain for that portion of the signal with a specific TGC setting. There are three adjustable TGC settings:

1. Near - increases the gain for the anterior portion of the UBM image
2. Middle - increases the gain for the middle portion of the UBM image.
3. Far - increases the gain for the deepest portion of the UBM image.

### How to Adjust the TGC

The TGC adjustments (see Figure 6.11) on both the Exam and Analyze Screen are easy to use. The adjustments are graphical slide indicators that be dragged to increase and decrease the signal gain for a selected portion of the image.

1. Select the TGC tab from the tools palette.
2. To adjust the gain slide the appropriate setting indicators.

Figure 6.11 - TGC Adjustments Displayed

## Image Enhancement Gammas

The Gamma adjustment feature is another great diagnostic feature that allows you to selectively manipulate the ratio between signal (or gain) and image brightness (known as Gamma), resulting in greatly enhanced tissue differentiation. Very subtle tissue differences can be made strikingly different for easy identification of boundaries between tissues of different characteristics. For example, differences between the vitreous and vitreous condensate (floaters), or the differences between the retinal surface and hyaloid membrane can be brought into sharp relief. There are 4 gamma settings and each setting is intended to facilitate viewing different portions of the eye. Gamma can be adjusted in the live Exam Screen or later on an existing image in the Analyze Screen. The 4 gamma settings are:

- Linear Grey-Scale
- S-Curve Grey-Scale
- Log Grey-Scale
- Color

### Linear Grey-Scale

The Linear gamma represents a "standard" processing algorithm. Linear describes a grey scale representation of a UBM Plus echogram in which the brightness represented on the screen is directly proportional to the strength of the ultrasonic echo. Therefore an ophthalmic structure which reflects the maximum echo would

be represented as pure white, while no echo would be represented as pure black; and echoes in between would be represented proportionally as shades of gray, directly proportional to the strength of the ultrasonic echo.
Figure 6.12 below displays an example of a UBM Plus image with a Linear Grey-Scale gamma setting.

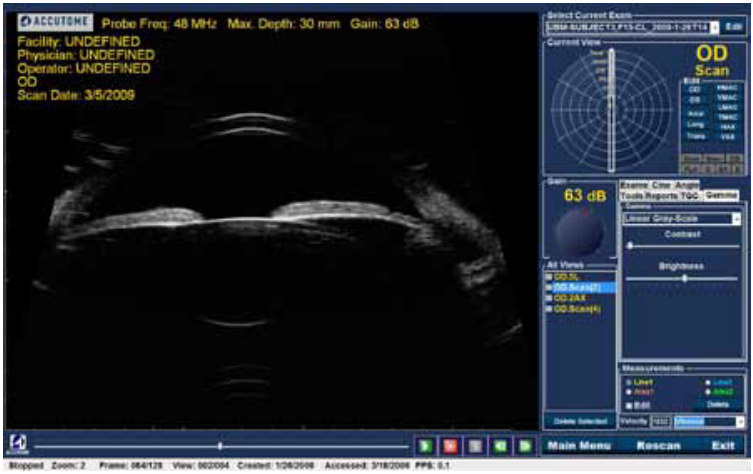



Figure 6.12 - Linear Full Range Gamma Setting

## S-Curve Grey-Scale

The S-Curve gamma represents a signal to brightness response, which when plotted, would result in a curve resembling the shape of the letter "S." The brightness response differs from Linear and Log in that the image contains a higher contrast for mid range signals. Figure 6.13 below displays an example of a UBM Plus image with a S-Curve Grey-Scale gamma setting.

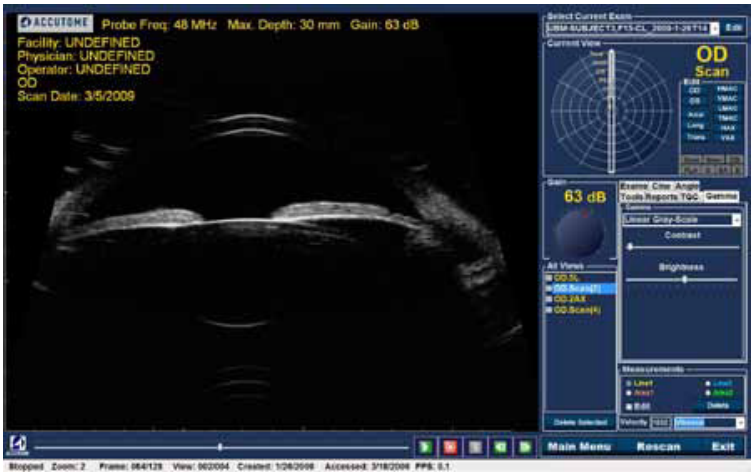



Figure 6.13 - S-Curve Full Range Gamma Setting

## Log Grey-Scale

The Log gamma settings stands for "Logarithm" and the ultrasound response curve can be represented as conventional logarithmic curve whose brightness response differs from the linear algorithm. The image represented by the Log gamma produces higher contrast for weaker signals. Figure 6.14 below displays an example of a UBM image with a Log Grey-Scale gamma setting.

Figure 6.14 - Log Full Range Gamma Setting

## Color

The color gamma setting allows you to view the image in color. The color setting can be advantageous in seeing any abnormalities that may not easily be seen in the other grey scale gamma settings.

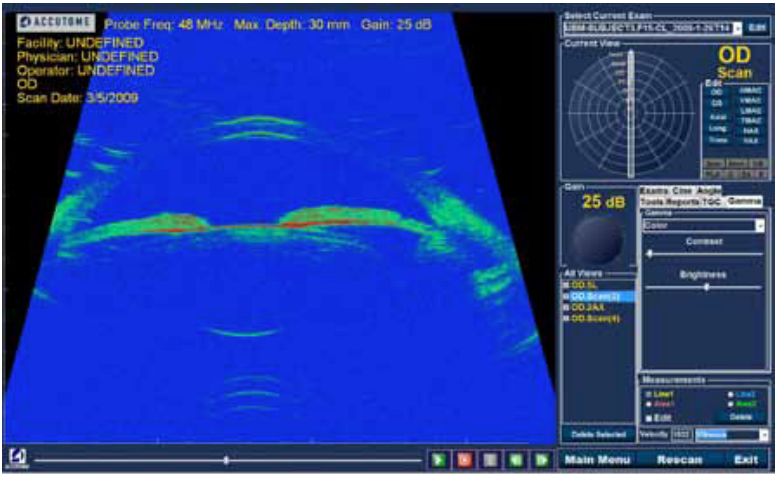



Figure 6.15 - Color Gamma Setting

## Changing Gamma Settings

To change the gamma setting you must first select the "Gamma" tab from the tools palette. With the Gamma tab displayed, position the cursor on the small arrow at the right of the gamma field. Left click to open the drop down list as shown in Figure 6.16. Position the mouse over the up/down arrows at the right of the drop down list Click the mouse to move through gamma list. Once you see the gamma setting you want to select position the mouse cursor over the setting and left click. The selected gamma will adjust the image on the screen.

Once you have selected the new gamma setting you can further adjust the Contrast and Brightness settings by dragging the indicator and viewing the results on the screen. Higher contrast enhances denser tissue; lower contrast enhances lower density tissue such as vitreous membrane.

Figure 6.16 - Selecting a New Gamma Setting

## How to Use Zoom

To access the Zoom feature click on the "Tools" tab from the Tools palette. The zoom feature allows you to zoom in on a selected patient image. Zoom proportionally expands the image and fills the UBM screen. Zoom has preset values that increment by steps of .2 from 1.2 to 8; e.g. 1, 1.2, 1.4, 1.6, 1.8, 2.0 etc., up to 7.99. To use the Zoom feature:

1. Click the "Zoom" selection.
2. Continue clicking until the image is zoomed at the appropriate level.

Figure 6.17 - Zoom Selected

## Reset Zoom

After you have zoomed in on an image you may want to reset the view back to the default normal view. To reset the zoom value simply click on "Reset Zoom."

Figure 6.18 - Zoom Changed

## How to Move Image

After you have made adjustments to the size of the image you may want to move the image around on the screen to view different portions of the eye. It is simple to move images in the Accutome UBM Plus. Place the Windows mouse cursor over any location on the image and notice the cursor become a small cross (small +). Then hold down the mouse button and the + becomes directional compass. Holding the mouse button down and moving the mouse causes the image to move. The image move icon is shown in Figure 6.19.

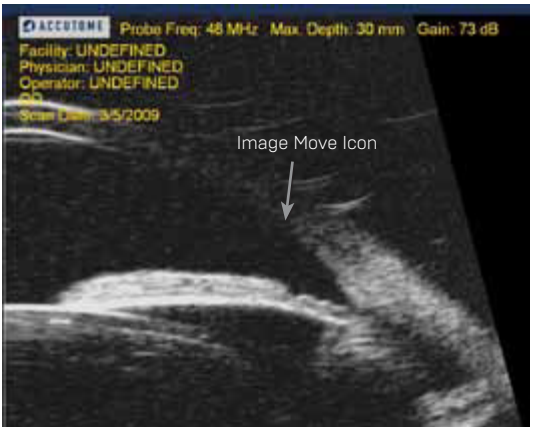



Figure 6.19 - Image Move Icon

1. Move the icon and the image will move in the same direction.

## How to Take a Measurement on an Existing Image

The Analyze Screen provides the diagnostic feature of making measurements on a UBM Plus image. You can measure on a zoomed image; you get much finer

resolution  of the measurements. Measurements as small as .1 mm can be easily taken. There are eight separate measurements you can take:

- Line 1
- Line 2
- Angle 1
- Angle 2
- Angle 3
- Angle 4
- Area 1
- Area 2

## Measurement Types

The UBM Plus provides for two line, or distance measurements, two area measurements and four angle measurements.  You can display all four measurements on the screen simultaneously.

Figure 6.20 - Line 1 Measurement Selected

### Taking Distance Measurements

To take a distance measurement:

1. Select either Line 1 or Line 2 in the Measurements area as shown in Figure 6.20.
2. Right click and hold on the image at the starting point of the measurement, and drag the line along the length of the feature you would like to measure.
3. The measurement will be displayed on the screen as shown in Figure 133 on the next page.
4. You can easily change the velocity of sound to reflect the density of tissue being measured. Click in the velocity field. Select the velocity field by holding down the left mouse button and dragging the value, highlighting the numerical velocity of sound. Press the keyboard “Delete” key to erase it and type in the new value.
5. An alternative way to change the velocity of tissue is to use the predefined velocity drop down list. Position the cursor on the small arrow at the right of the pre defined velocity field. Left click to open the drop down list. Position the mouse over the eye tissue you want to select and left click. Below is a listing of the predefined tissue setting.
    - Vitreous
    - Lens
    - Pmma
    - Silicon Lens
    - Acrylic
    - Silicon oil1
    - Silicon oil2
    - Soft tissue

**WARNING! SELECTING THE WRONG TISSUE MATERIAL WILL RESULT IN SERIOUS MEASUREMENT ERRORS**

Figure 6.21 - Line 1 Measurement Displayed

## Taking Area Measurements

To take an area measurement:

1. Select either Area 1 or Area 2 in the Measurements area as shown in Figure 6.22.

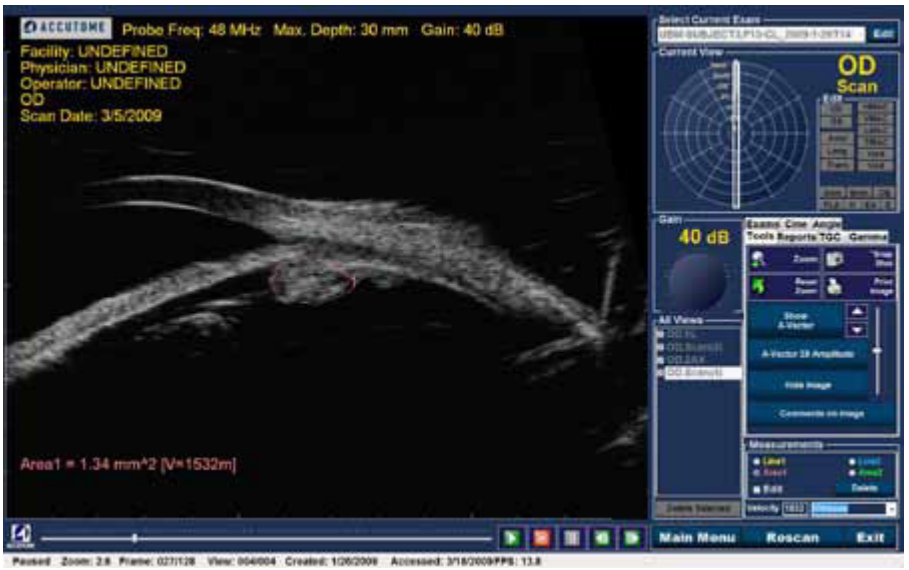



Figure 6.22 - Area 1 Measurement Selected

2. Right click on the image and drag the outline of the area on the image you

would like to measure.

3. The measurement will be displayed on the screen as shown in Figure 135 on the next page.
4. You can change the velocity of the sound to reflect the density of the tissue being measured. Click in the Velocity field. Select the velocity by holding down the left mouse button and dragging the value. Press the keyboard "Delete" key and type in the new value for the velocity.
5. An alternative way to change the velocity is to use the predefined velocity settings. Position the cursor on the small arrow at the right of the pre defined velocity field. Left click to open the drop down list. Position the mouse over the eye tissue you want to use and left click. Below is a listing of the predefined tissue setting.
    - Vitreous
    - Lens
    - Pmma
    - Silicon Lens
    - Arcylic
    - Silicon oill
    - Silicon oil2
    - Soft tissue

**WARNING! SELECTING THE WRONG TISSUE MATERIAL WILL RESULT IN SERIOUS MEASUREMENT ERRORS**

Figure 6.23 - Area 1 Measurement Displayed

**Delete Current**

When you click on "Delete Current" the current, active measurement will be deleted from the Analyze Screen.

## Taking Angle Measurement

1. Position the mouse cursor over the Angle tab as illustrated in Figure 6.24 and left click on mouse.
2. Using the mouse, position the cursor at the starting point of the area measurement. An angle measurement is required (Refer to Figure 6.25).
3. Hold the right mouse button down and drag the ray or base line until you reach the vertex or intersection of the angle (Refer to Figure 6.26). Release and depress the right mouse button. This anchors the vertex and allow you to drag the second ray or line to the end point (Refer to Figure 6.27). Before releasing the right mouse button, adjust the end point of the angle.

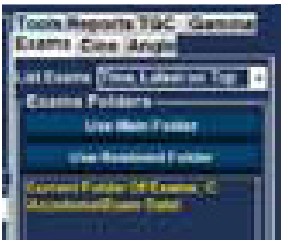


Figure 6.24 - Selecting Angle Tab

Figure 6.25 - Positioning the Angle Cursor

Figure 6.26 - Angle Vertex

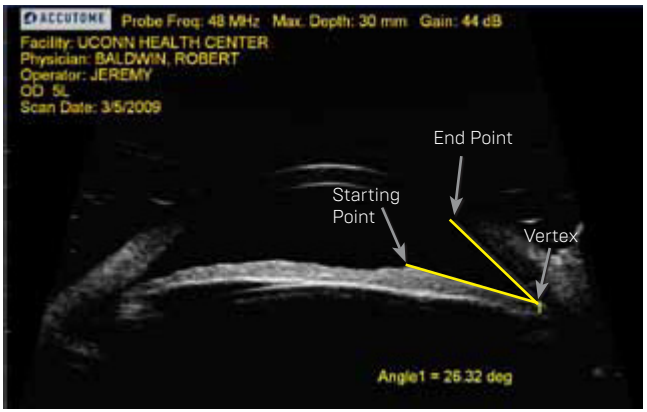



Figure 6.27 - Example of Iris Angle

## A-Vector

The A-Vector function displays an equivalent A-Scan of the captured UBM Plus image. Looking at the A-Vector you can get a graphical picture of the echoes received back through the eye from the ultrasonic probe.

The echoes are represented as spikes arising from the baseline and indicate the sound beam travelling through the different intraocular tissues. The A-Vector function can be useful is diagnosing pathologies with the eye.

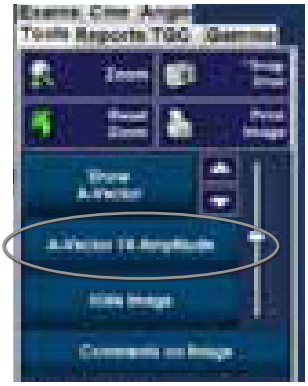


Figure 6.28 - Selecting "Show A-Vector"

To activate the A-Vector:

1. Select "Show A-Vector" as shown in Figure 6.28.
2. The A-Vector will be displayed under the live image as shown in Figure 141 on next page.
3. The position of the A-Vector on the image can be moved by using the buttons or the slide control to the right of the Hide A-Vector button.
4. To close the A-Vector select "Hide A-Vector."
5. Below the Show A-vector tab is a tab that will say "A-vector IX Amplitude" or "A-vector 2X Amplitude." This tab allows you to switch between single or double amplitude A-vetor.

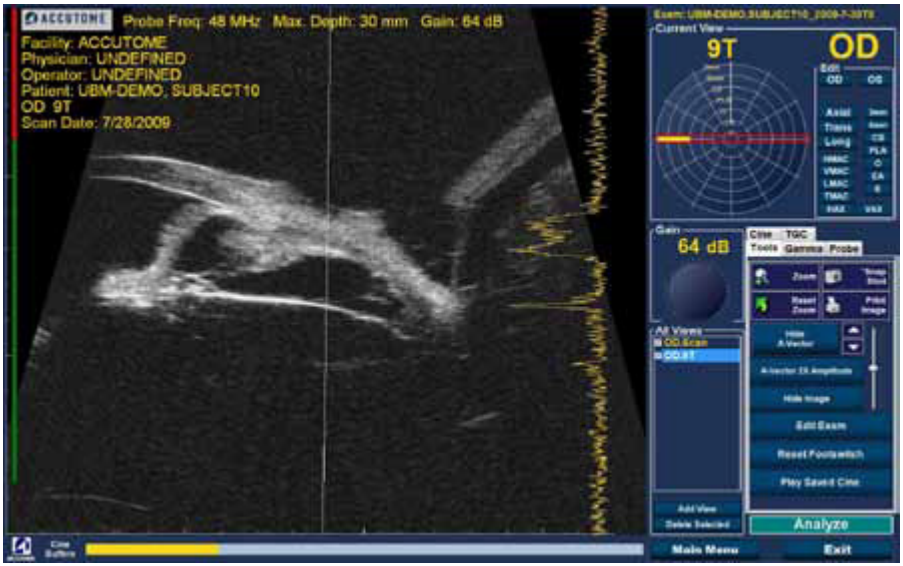



Figure 6.29 - A-Vector Displayed

## Comments on Image

The Accutome UBM Plus allows you to place comments on an image from a patient exam. The comments feature can be important in providing an accurate image analysis. To place a comment on an image:

1. In the "Tools" tab of the tools palette, select "Comments on Image" as shown in Figure 6.30.
2. The "Comments on Image" dialog shown in Figure 143 below will display on the screen.
3. Click in the text field and enter your comments.
4. If you would like to clear the comments that you have typed, click on "Clear."
5. Select "Done" when you are finished.

Figure 6.30 - Selecting "Comments on Image"

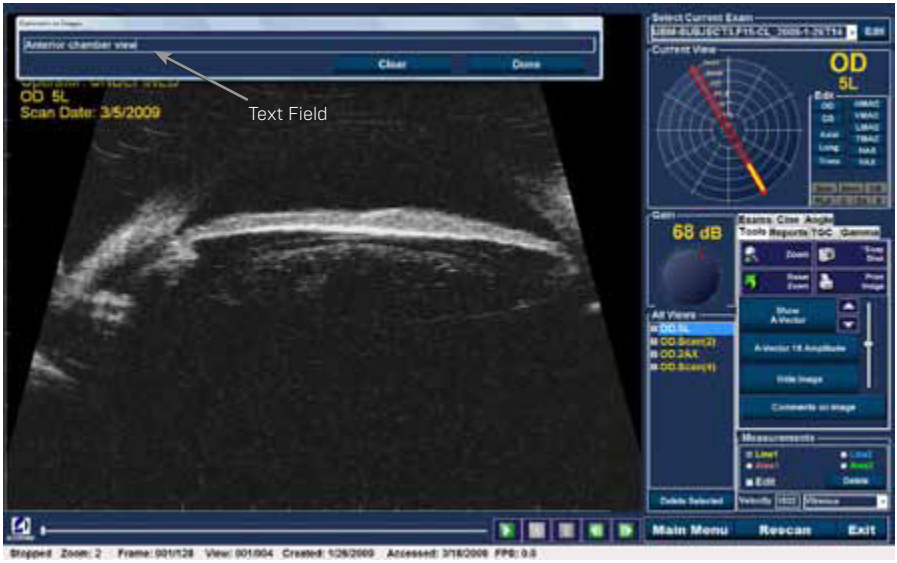



Figure 6.31 - Entering Comments

6. The entered comments will appear on the image as shown in Figure 6.32.

Figure 6.32 - Comments Appearing on Image

# 7 Printing Images & Reports

## Overview

The Accutome UBM Plus has every feature you need to capture and print any portion of a patient exam. Not only does the Accutome UBM Plus allow you to print to any printer you can also print single snap shots of any elevation of any image, print on plain or thermal paper, select multiple images and print them in a report.

## Printing Images

There are three ways to print images:

- Print from a live scan
- Print from an existing patient exam
- Print from a report

When printing from a live scan or an existing patient exam you must first stop the scan at the frame you would like to print.

### How to Print an Image

With the Accutome UBM Plus you can easily print any frame of any scan by simply selecting the frame, making any necessary image adjustments and clicking the "Print Image" button. You can also select a frame and save the frame as a snapshot. The steps to print a patient image are:

1. If not printing an active patient scan, select the appropriate patient exam (see "Selecting Patient Exam" below).
2. Select the frame you would like to print (see "Selecting a Frame" below).
3. Print the frame.
4. Save or print the report (see the "Print or Save Report" section).

### Selecting Patient Exam

To select the patient exam:

1. After launching Accutome UBM Plus, select "Existing Exam." The UBM Plus Analyze Screen will display with the existing exam drop down list.
2. Scroll through the drop down list until you find the patient for whom you would like to create a report.
3. Once selected, the patient's exam will appear on the screen.

**Note: For more information on selecting existing exams refer to the "How to Select an Existing Exam" section of this manual.**

### Selecting a Frame

4. In the list of views, click on the elevation you want to watch.
5. Click the play button and hit pause at the appropriate frame.
6. You can also single step through the scans until you display the frame you want to print. Single step through the frames by clicking the forward and back buttons.

**Note: For more information on scan playback and selecting frames refer to the "Playing an Exam" section of the manual.**

### Adjusting Images

If the frame you would like to print needs enhancement use the tools provided with the Accutome UBM Plus.

1. Open the tools palette and make all the necessary adjustments to the image:
    - Zoom and position the image
    - Turn on the A-Vector
    - Add comments
    - Select Print or Snapshot

**Note: For more information on adjusting images refer to the "Patient Image Analysis"section of this manual.**

### Executing Print

To print either a live scan or from an existing exam, when the frame you have selected is ready for print:

1. Click on the "Print Image" button in the tools palette as shown in Figure 7.1.
2. The frame will be immediately printed to either plain paper printer on 8 1/2 inch paper or to thermal paper from a USB video graphic printer.

Figure 7.1 - Printing a Frame

**Note: If you are going to generate a report the images you wish to include in the report must be captured as snapshots.**

## Creating Reports

With the Accutome UBM Plus you can create a report for any patient. The report can contain the following:

- Patient Name
- Physician
- Clinician
- Indication for Scan
- Patient snapshot images

All patient information is saved as part of the patient record. Snapshot images of the patient exam are also saved with the patient record every time you save a scan frame as a snapshot. The steps to create a patient report are:

1. Select the appropriate patient exam (see "Selecting Patient Exam" below).
2. Capture all necessary snapshots if not previously captured (see "Capturing Snapshots" on the next page).
3. Select Reports tool (see the "Reports Tool" section).
4. Execute Manage Reports (see the "Executing Manage Reports" section).
5. Create a New Report for the active patient (see the "Create a New Report" section).
6. Select the snapshots you would like to place in the report (see the "Selecting Snapshots" section).

7. Print or save the report (see the "Print or Save Report" section).

## Selecting Patient Exam

To select the patient exam:

1. After launching Accutome UBM Plus, select "Existing Exam". The UBM Plus Analyze Screen will display with the existing exam drop down list.
2. Scroll through the drop down list until you find the patient for whom you would like to create a report.
3. Once selected, the patient's exam will appear on the screen.

**Note: For more information on selecting existing exams refer to the "How to Select an Existing Exam" section of this manual.**

## Capturing Snapshots

If there are any additional snapshots you would like to add to the patient report:

1. Select the appropriate elevation from the list of scan views.
2. Play the selected patient view.
3. Pause at the frame you would like to make a snapshot.
4. Adjust any of the image settings if necessary.
5. Click "Snap Shot."
6. The frame will be exported to a file, linked to the patient in either a bit map or jpg format. The file name for the snapshot is determined by the "Exam Name Combination" selected during setup. Snapshots can easily be incorporated into an email or pasted into a report.

## Reports Tool

When you are ready to create a report select the "Report" tab from the tools palette as shown in Figure 7.2. The Reports tools has three function buttons:

- Snapshot List - displays all available snapshots for the active patient
- Manage Reports - launches the manage reports window
- Delete Selected - deletes snapshot(s) selected from the snapshot list

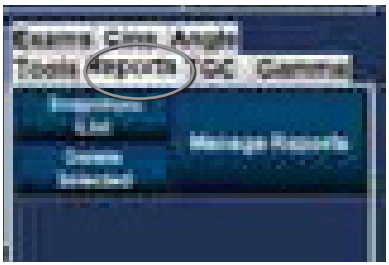


Figure 7.2 - Selecting Reports Tool

## Snapshot List

To display all snapshots available for the active patient:

1. Click on "Snapshots List" as shown in Figure 7.3.
2. All snapshots will be displayed in the panel below the reports tool buttons.

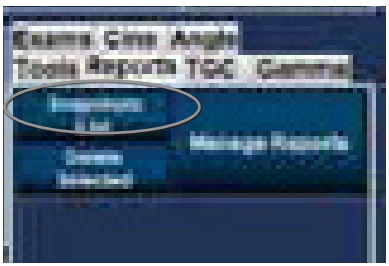


Figure 7.3 - Selecting Snapshot List

## Deleting Snapshots

If for any reason you don't want to keep one of the patient snapshots the Accutome UBM Plus allows you to simply select the snapshot and delete. The snapshot file, in the patient's exam folder will be permanently deleted providing space on the UBM computer to store more snapshot files. To delete a snapshot:

1. Select the snapshot by dragging around it, or clicking on it.
2. You can also select multiple snapshots by dragging around several, or by pressing the "Ctrl" key and clicking each snapshot you'd like to select.
3. When the snapshot(s) you'd like to delete are selected click on "Delete Selected" as shown in Figure 7.4.
4. The Accutome UBM Plus will then launch the dialog displayed below. If you would like to permanently delete the snapshot file from the system (from the computer which you are using to operate the B-Scan) select "Yes." If you don't want to delete the snapshot select "No."

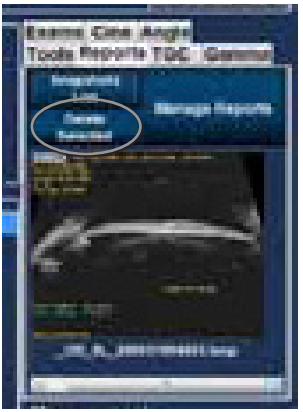


Figure 7.4 - Deleting a Selected Snapshot from List

Figure 7.5 - Confirming Snapshot Deletion

## Executing Manage Reports

When you are satisfied with the list of snapshots to enter in the report click on "Manage Report" in the Reports tab as shown in Figure 7.6.

## Create a New Report

After you execute "Manage Reports" the Accutome UBM Plus launches the Report Form window with the snapshot list at the right as shown in Figure 151 below. The Report Form window also contains function buttons with which you can save additional snapshots to files, delete a selected snapshot, or refresh the image list after making image edits or selections. You will create the actual report in this window. To start a new report:

1. Click on the "New" button as shown in Figure 7.6 on the next page. The form for reports will display as shown in Figure 7.7 on next page.

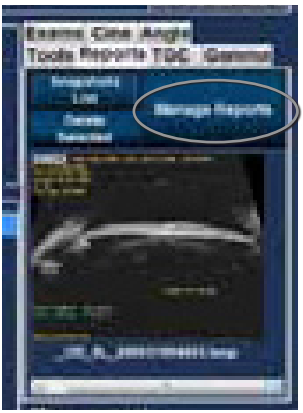


Figure 7.5 - Executing Manage Reports

## Report Form

Figure 7.6 - Creating a New Report

After you execute "New" in the Manage Reports window the Reports Form will display as shown in Figure 7.7. The Report Form for the selected patient will display all information in all the fields that have been predefined in either the setup or the patient exam (either when creating a new exam file or when editing a patient exam). The Report template displays the following fields:

- Facility
- MRN
- Name
- Physician
- Clinician
- Indication for Scan
- Diagnosis
- Two sign off lines for Clinician and Physician

There is also an area located below the information fields where selected snapshots will be loaded.

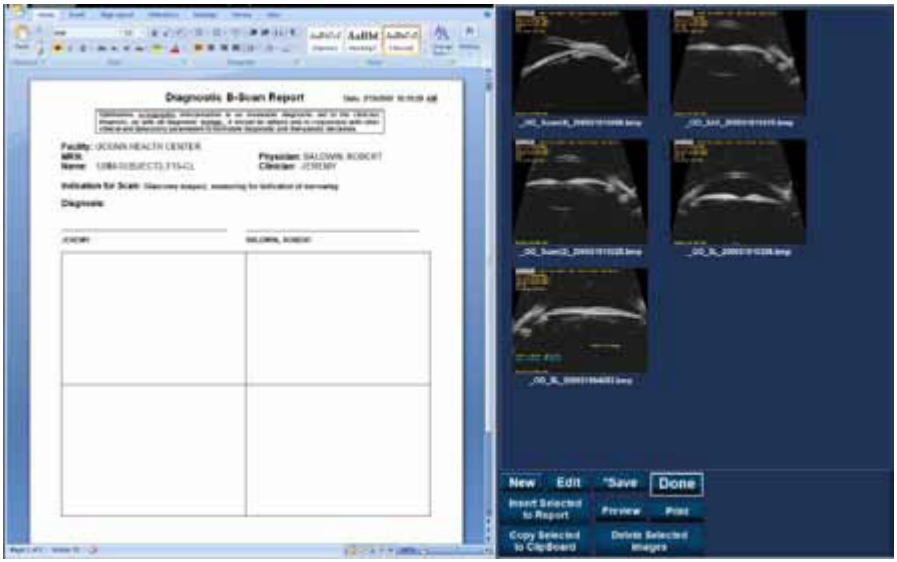



Figure 7.7 - Report Form

## Selecting Snapshots

The snapshots are displayed at the right side of the report form. Select the snapshots to be inserted into the report as described below.

Left click and hold on the mouse in the blue area near the first snapshot, then drag until you select all snapshots you would like to place in the report as shown in Figure 7.8.

1. You can also select individual snapshots by holding the "Ctrl" key and

select each snapshot one at a time.

2. A maximum of four (4) snapshots can be selected at any one time. If you need to insert more than four snapshots, select the first four and insert them, then select up to four more and insert them. Continue selecting and inserting until all snapshots are inserted.

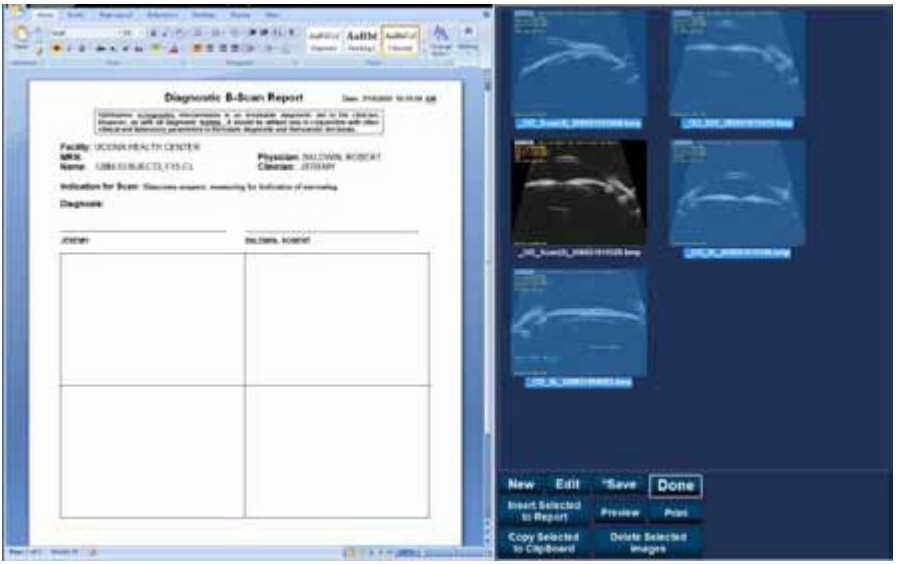



Figure 7.8 - Selecting Snapshots

## Pop Up Windows

When viewing snapshots in the report form page, it may be difficult to see subtle changes in ocular structures. To assist in viewing the snapshot, we have an enlarged pop up view feature.

To enlarge a snapshot for viewing; positioning the cursor over the snapshot of interest and double click the left mouse button. This will open a pop up window. The snapshot will now be displayed five times its original size. The picture must be closed, by left clicking the close box in the pop up window, before it can be pasted in the report.

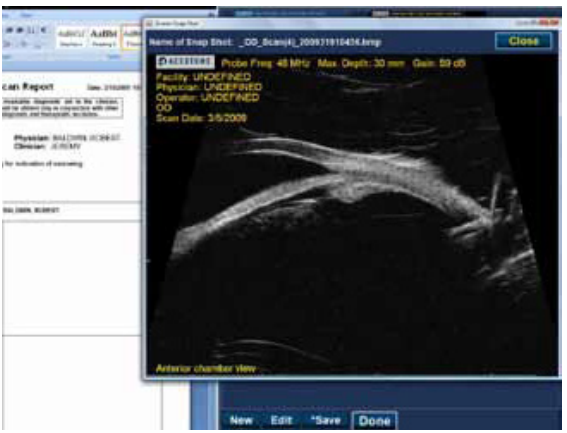



Figure 7.9 - Pop Up Windows

## Inserting Selected Snapshots

After you have selected all the snapshots you would like to include in the report click on "Insert Selected to Report" as shown in Figure 7.10. The report is now ready to print or save.

Figure 7.10 - Inserting Selected Snapshots

### Alternate Method for Selecting & Inserting Snapshots

1. Left click on the snapshot you want to insert into the report, and click on "Copy Selected to Clipboard."
2. Click on the frame in the report where you want the selected snapshot, and select paste to put the selected snapshot into the selected frame.

## Print or Save Report

Once you have completed the report you can print and/or save the report to keep a copy.

To print the report:

1. Click on the "Printer" button as shown in figure 7.11.
2. The report will print to the printer connected to the Accutome UBM Plus computer.

To save the report:

1. To Save report, Click on the "Save" button as shown in Figure 7.11.

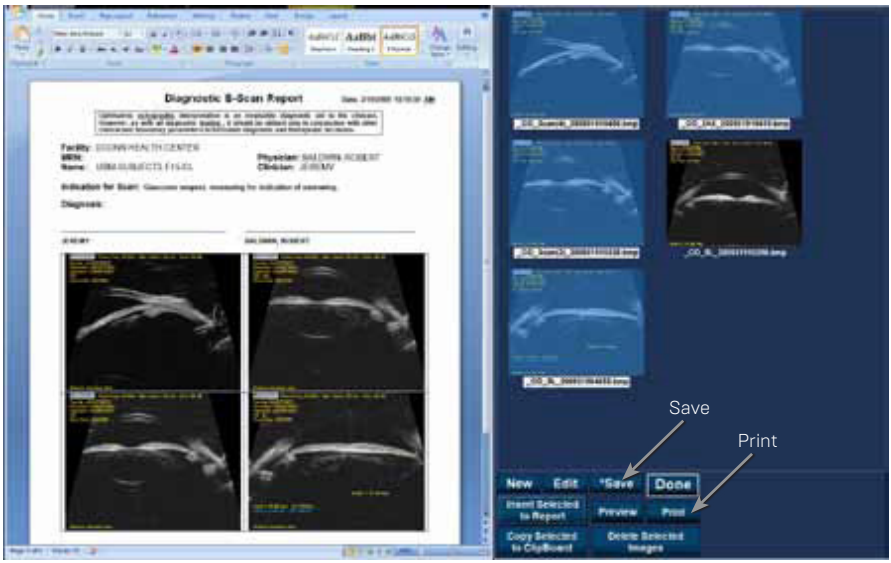



Figure 7.11 - Saving A Patient Report

# 8 Archive & Restore

## Overview

The Accutome UBM Plus makes archiving and restoring patient exams and their film loops an easy process. Using the Archive function you can manage all exam file functions; burn exam film loops to a CD/DVD or backup exam film loops on a local or network hard drive. You can also load patient exams from discs, acquire disc information, verify burn or backup and store reports only (not entire patient exam). To access the archive function click on the Archive button in the Accutome UBM Plus main window as shown in Figure 8.1.

Figure 8.1 - Selecting Archive

## Archive Screen

The Accutome UBM Plus will launch the Archive screen shown below with two tabs; Backup and Restore. The default is Backup. On this screen you can select multiple patient exams and burn them to a CD or DVD. You can also backup selected exams to a location your computer or network. The Archive Screen is divided into four major sections:

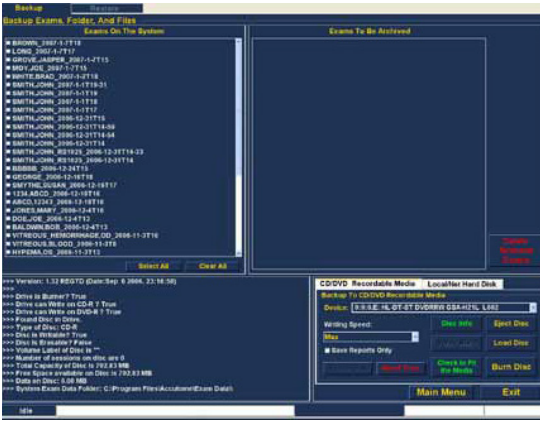



Figure 8.2 - Archive Screen

1. Exams on the System - displays all available exams
2. Exams to Be Archived - after selecting exams for burning to a CD/DVD or for backup they will be displayed in this area
3. Process Information Area - provides live feedback as text for any selected archive activity. When you first start the Archive function this area displays information about the CD/DVD drive and disc
4. Tool Palettes - contains tools for checking and burning CD/DVDs and tools for archiving (backup) to a local or network hard disk. There are two tabs: CD/DVD Recordable Media and Local/Net Hard Disk

## Archive to CD or DVD

The process to archive patient exams is extremely simply; insert a disc in the CD/DVD drive, select the exams and click burn. The steps to archive patient exams to a CD/DVD are:

1. Insert a CD or DVD into the computer drive
2. Select the patient exams you would like to archive
3. Select "Burn Disc" on the CD

### Selecting Patient Exams

When you launch the Archive function the UBM Plus displays all exams found on the system at the left side of the screen. You will select the exams to archive from this list. You can select the exams one at a time or select all exams at once.

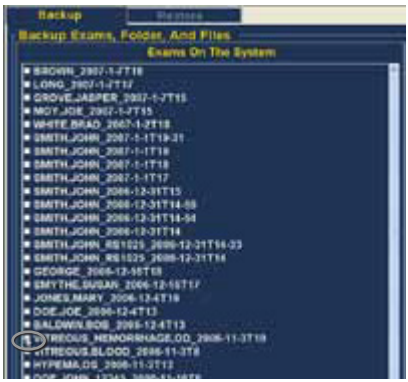



Figure 8.3 - Selecting the First Exam

### Selecting Individual Exams

To select exams one at a time:

1. Click in the check box beside the exam name as shown in Figure 8.3.
2. You can also click on the name of the exam you would like to select as shown in Figure 8.4.

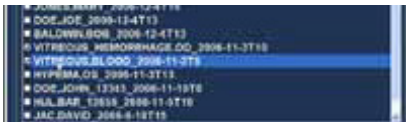


Figure 8.4 - Selecting the Second Exam

### Select All

If you would like to archive all exams on the system and don't want to select them individually:

1. Click "Select All" as shown in Figure 8.5. All system exams will be displayed in the "Exams To Be Archived" section of the screen as shown in Figure 8.6 on next page.

Figure 8.5 - Select All

### Clear All

If you don't want to archive all system exams you can individually de-select the exams you don't want to archive by clicking in the check box or on the exam name or you can clear all the exams from the list to be archived. To clear all selected exams from the archive list:

1. Click on "Clear All" as shown in Figure 8.6. The "Exams To Be Archived" list will be emptied. You can then individually select the exams if wanted.

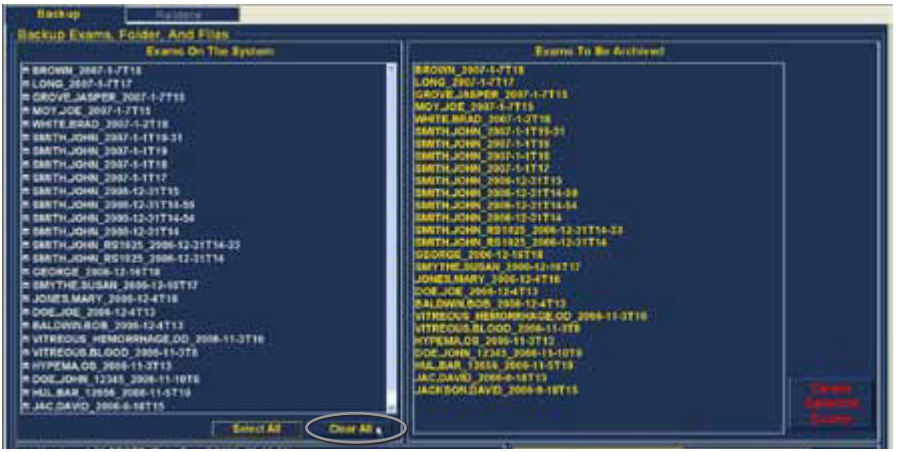



Figure 8.6 - All Exams Displayed - Clear All

## Burn Disc

Once you have selected all the exams you would like to burn on the CD/DVD:

1. 1. Select "Burn Disc" to execute the burn as shown in Figure 8.7.
2. While the disc is burning the archive screen will display in the process information area the burning progress as shown in Figure 8.8. Disc burning information includes textual information and burn progress in the status bar at the bottom of the screen.

Figure 8.7 - Burning the Disc

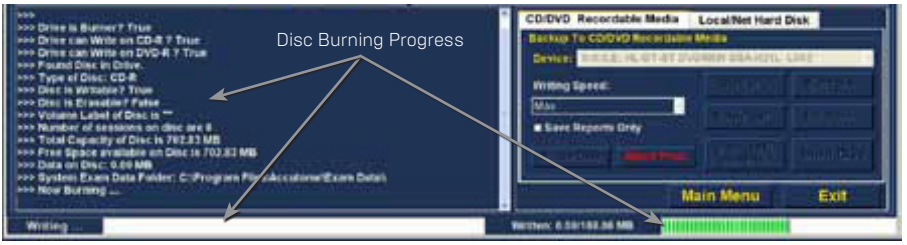



Figure 8.8 - Disc Burning Progress

## Archive to a Local/Net Hard Disk

The Archive function also gives you the option of backing up files to a local or network hard disk. The process like burning a CD/DVD is simple:

1. Select the patient exams you would like to backup.
2. Select the Backup tool.
3. Select the Destination Folder.
4. Select "Backup Exams."

## Selecting Patient Exams

When you are backing up patient exams you select them in the same manner as if you were burning a CD/DVD. Refer to "Selecting Patient Exams" on page 108 for instructions.

## Selecting the Backup Tool

To activate the backup tools:

1. Locate the Local/Net Hard Disk tab in the tools palette.
2. Click on the tab as shown in Figure 8.9.

Figure 8.9 - Selecting the Local/Net Hard Disk Tools

## Selecting the Destination Folder

After you have selected the exams you would like to back up you need to designate the location at which you would like to store the exams.

1. Click on "Select Destination Folder" as shown in Figure 8.10.

Figure 8.10 - Launching Select Destination Folder

## Locating Destination Folder

1. After you execute "Select Destination Folder" the UBM Plus will launch a Windows browser shown in Figure 8.11 on the next page.

2. Using the Windows browser locate the folder in which you would like to backup the patient exams.
3. After you have the selected the destination folder the path and name of the folder will appear as shown in Figure 8.12

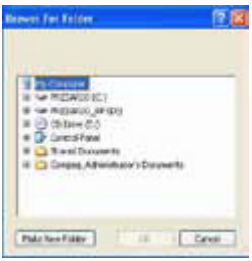


Figure 8.11 - Windows Browser - Locating Destination Folder

Figure 8.12 - Destination Folder Displayed

4. To complete the backup process click on "Backup Exams" as shown in Figure 8.13.
5. The status bar at the bottom of the Archive Screen will display backup activity, indicating that the backup is in process and how much of the backup has been completed (see Figure 8.14 below).

Figure 8.13 - Execute Backup Exams

Figure 8.14 - Backup Activity

## Additional Archive Features

The Archive function provides many other additional features that allow you to gather information about disc size and operation, allows you to manage exams, and to load exams from discs.

## Delete Selected Exams

After you have archived patient exams you may want to delete them to free up computer disk space. The "Delete Selected Exams" function allows you to permanently remove a patient exam. To delete selected exams:

1. Select the exam(s) you would like to delete (see the "Selecting Patient Exams" section of this manual).
2. Click on "Delete Selected Exams" as shown in Figure 8.15.

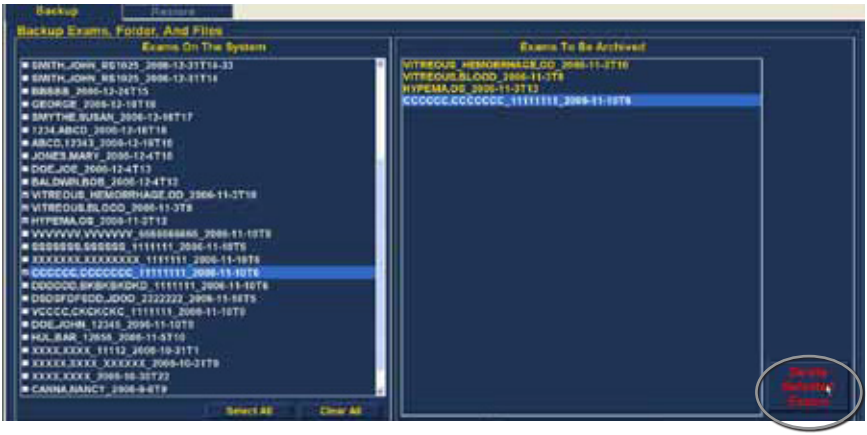



Figure 8.15 - Delete Selected Exams

3. The Accutome UBM Plus will issue a warning shown in Figure 8.16 about deleting the file. Click on "Yes" if you would like to permanently delete the file. Click "No" or "Cancel" if you would like to terminate the delete process.

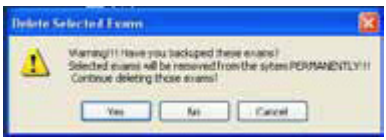



Figure 8.16 - Deleting Exam Warning

## Disc Tool Features

There are many features in the CD/DVD tab of the tools palette that are informational and perform disc operations.

## Save Reports Only

The "Save Reports Only" function when selected will burn only the reports to the CD/DVD.

## Erase Disc

The "Erase Disc" function erases all information on the CD/DVD (if it is erasable).

## Abort Proc.

The "Abort Proc." function stops whatever disc process is in operation; e.g. you are burning a CD and you would like to stop the burn, select "Abort Proc."

## Disc Info

When you select "Disc Info" the Accutome UBM Plus displays information about the CD/DVD including disc size, date, the number of sessions, amount of space remaining in the disc, etc. as shown in Figure 8.17 below.

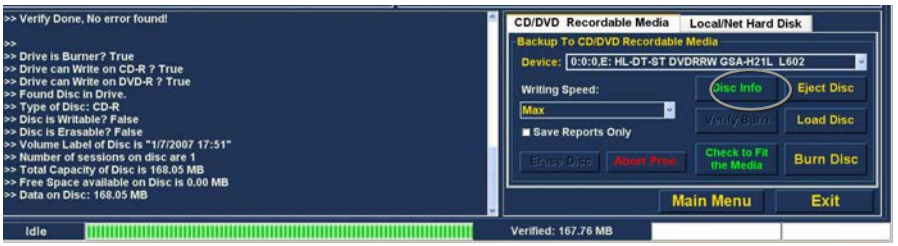



Figure 8.17 - "Disc Info"

## Verify Burn

The "Verify Burn" feature confirms that an executed disc burn actually happened by listing all files burned on the CD/DVD and confirming that the burn process was successful as shown in Figure 8.18.

Figure 8.18 - Verify Burn Results

## Check to Fit the Media

The "Check to Fit Media" feature checks the amount of disc space required to burn the selected exams and displays both the required and available disc space.

## Eject Disc

Eject Disc" will automatically eject the CD/DVD from the computer drive.

## Load Disc

The "Load Disc" feature loads the contents of the disc installed in the CD/DVD drive and launches a Windows browser so that you can select the location for loading the disc.

## Local/Net Hard Disk

There are many features in the Local/Net Hard Disk tab of the tools palette that are informational and perform backup operations.

### Checking System Free Space
The "Checking System Free Space" feature searches all connected local and net hard disk and displays the amount of disk space available on each.

### Space Required
The "Space Required" feature displays the amount of disk space required to backup the selected exams.

### If Name Conflict Found
The "If Name Conflict Found" feature allows you select an option if there are duplicate file (exam) names found during your backup.

- Create New - will create a new exam name by adding a number to end of the redundant exam.
- Overwrite - will keep the same exam name and overwrite the exam that is currently on the local/net disk.

### Check Name Conflict
The "Check Name Conflict" feature will check if there are duplicate names in the selected destination folder and the selected exams that you are going to backup.

### Abort Backup
The "Abort Backup" stops the backup process when selected.

### Verify
The "Verify" feature allows you to confirm that the selected exams have been backed up into the selected destination folder. When you select this feature you will receive the following message "Exams in the backup are the SAME as the original" if the backup properly executed.

## Restore Screen
Not only can you archive patient exams with the Accutome UBM Plus but you can also restore them to your computer for analysis and reporting. The Restore screen is represented by a tab on the main Archive screen. To access the Restore screen, click on the "Restore" tab as shown in Figure 8.19.

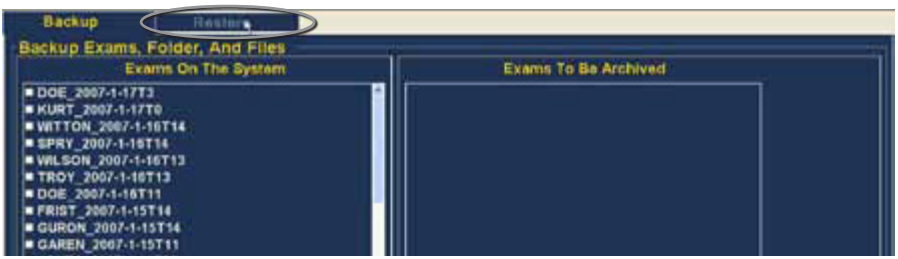



Figure 8.19 - Selecting the Restore Screen

The Accutome UBM Plus will launch the Restore screen shown below. On this screen you can select and restore multiple patient exams from a CD or DVD. You can also restore selected exams from a location on your computer or network. The Restore Screen is divided into four major sections:

1. Restore Exams Palette - three tabs when selected display exams selected on backup, exams on destination and exams on system.
2. Exams to Be Restored - after selecting exams for restoring from a DVD/CD or from a local/network hard drive backup they will be displayed in this area.
3. Process Information Area - provides live feedback as text for any selected restore activity. When you first start the Restore function this area displays information about the DVD/CD drive and disc.
4. Tool Palettes - contains tools for locating and loading exams from DVD/CDs and tools and from a local or network hard disk. There are two tabs: DVD/CD Device and Local/Net Hard Disk.

Figure 8.20 - Restore Screen

## Restore from DVD or CD

The process to restore patient exams from a DVD/CD is extremely simply; insert a disc in the DVD/CD drive, select the exams and click restore. There may only be one patient exam on a CD or DVD. The steps to restore patient exams to a DVD/CD are:

1. Insert a CD or DVD into the computer drive.
2. Select the patient exam(s) you would like to restore.
3. Select "Restore" on the DVD/CD Device tab.

## Selecting Patient Exams

When you launch the Restore function the UBM Plus defaults to displaying all exams found on the DVD/CD at the left side of the "Exams on Backup" tab of restore exams palette (top left corner of the screen). You will select the exams to restore from this list. You can select the exams one at a time or select all exams at once.

**Note: The folder where the restored exams will be placed is preset on the Options Screen during Accutome UBM Plus setup. See the "Restored Folder" section of this manual for more information.**

**Note: On the DVD/CD tab you can also select exams for restoring from a computer folder. See the "Selecting All Exams To Be Restored" section of this manual for more information.**

## Selecting Individual Exams

To select exams one at a time:

1. Click in the checkbox beside the exam name as shown in Figure 8.21.
2. The selected exam will appear in the "Selected Exams To Be Restored" list as shown in Figure 8.22.
3. You can also click on the name of the exam you would like to select as shown in Figure 8.23.

Figure 8.21 - Selecting the First Exam

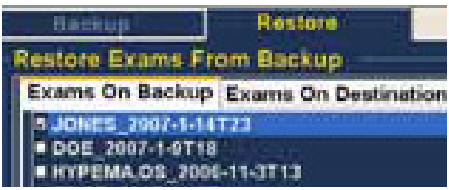



Figure 8.22 - First Exam Selected

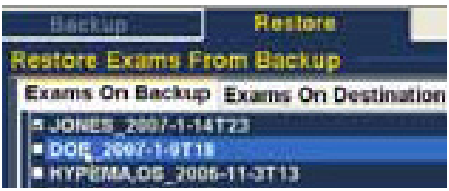



Figure 8.23 - Selecting the Second Exam

## Select All

If you would like to archive all exams on the system and don't want to select them individually:

1. Click "Select All" as shown in Figure 180 below. All system exams will be displayed in the "Selected Exams To Be Restored" section of the screen as shown in Figure 8.24.

## Clear All

If you don't want to restore all selected exams you can individually de-select the exams you don't want to restore by clicking in the checkbox or on the exam name or you can clear all the exams from the list to be restored. To clear all selected exams from the restore list:

1. Click on "Clear All" as shown in Figure

Figure 8.24 - Select All and Clear All Exams to be Restored

8.24. The "Selected Exams To Be Restored" list will be emptied. You can then individually select the exams if wanted.

## Restore

Once you have selected all the exams you would like to restore from the DVD/CD:

1. Select "Restore" to execute the restoring process as shown in Figure 8.25.
2. While the exams are being restored the restore screen will display in the process information area the restoring progress as shown in Figure 8.26. Exam restoring information includes textual information and restore progress in the status bar at the bottom of the screen.

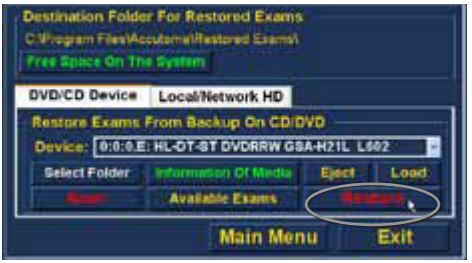



Figure 8.25 - Restoring the Exam from the CD

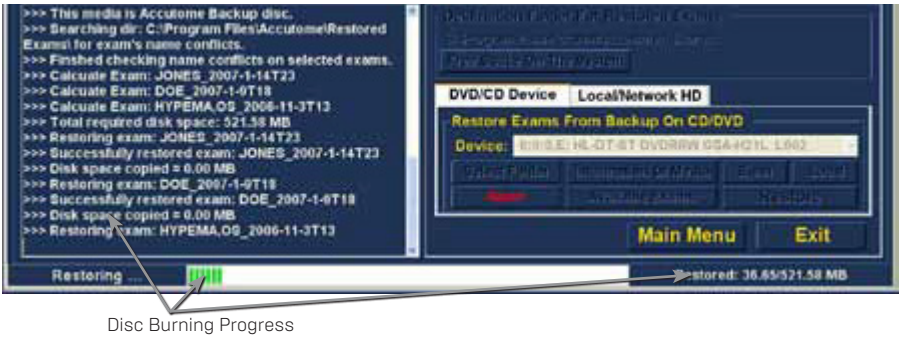



Figure 8.26 - Exam Restoring Progress

## Restore Local/Network Hard Disk

The Restore function also gives you the option of restoring files from a local or network hard disk. The process like restoring from a DVD/CD is simple:

1. Select the Local/Network HD tab.
2. Select the folder from which you would like to restore exams.
3. Select the patient exams you would like to restore.
4. Select the Restore tool.

**Note: The folder where the restored exams will be placed is preset on the Options Screen during Accutome UBM Plus setup. See the "Restored Folder" section of this manual for more information.**

## Selecting the Local/Network HD Tool

To activate the local/ network hard drive restore tools:

1. Locate the Local/Net HD tab in the tools palette.
2. Click on the tab as shown in Figure 8.27.
3. The Local/Network HD tools will be displayed as shown in Figure 8.28.

Figure 8.27 - Selecting the Local/Net Hard Disk Restore Tools

Figure 8.28 - Local/Network HD Restore Tools Active

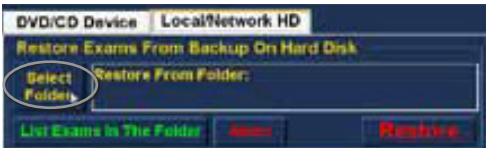



Figure 8.28 - Local/Network HD Restore Tools Active

## Selecting the Folder for Restoring Exams

Before you can restore selected exams you need to locate the folder from which they will be restored.

1. Click on "Select Folder" as shown in Figure 8.29.
2. After you execute "Select Folder" the UBM Plus will launch a Windows browser shown in Figure 8.30.
3. Browse the local and network drives and folders until you locate the folder from which you would like to restore exams.

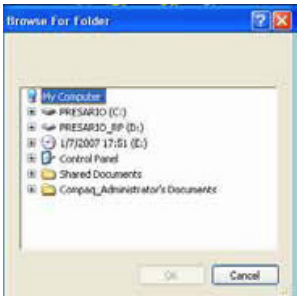



Figure 8.29 - Windows Browser

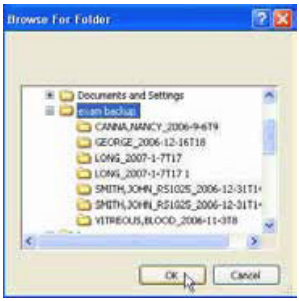



Figure 8.30 - Locating Source Folder

4. After you have the selected the restore from folder the path and name of the folder will appear as shown in Figure 8.31 on the next page. The contents of the folder will also display in the "Exams on Backup" tab.

Figure 8.31 - Source Folder Displayed

## Selecting Patient Exams

When you are backing up patient exams you select them in the same manner as if you were burning a DVD/CD. Refer to "Selecting Patient Exams" on page 108 for instructions.

## Executing Restore

To complete the restore process:

1. Click on "Restore" as shown in Figure 8.32.
2. The status bar at the bottom of the Restore Screen will display restoring activity, indicating that the exam restoration is in process and how much of the backup has been completed (see Figure 8.33).

Figure 8.32 - Execute Restore Exams on Local/Network HD

Figure 8.33 - Restore Activity

# Additional Restore Features

The Restore function provides many other additional features that allow you to gather information about restore size and operation and allows you to manage exams.

## Exams on Backup Features

When the "Exams on Backup" tab is active there are many additional features available related to the exams in the backup folder.

Figure 8.34 - Exams on Backup Tab Active

### Select All
When you execute "Select All" all patient exams in the "restore from folder" will be selected for restoration.

### Clear All
When you execute "Clear All" all selected exams for restoration will be cleared from the "Selected Exams To Be Restored" list.

### Total Space Needed
The "Total Space Needed" feature checks the amount of disk space required to restore the selected exams and displays the required disk space.

### Check Conflict
The "Check Conflict" feature will check if there are duplicate names in the Restored Exams folder and the selected exams in the restore from folder.

### Overwrite Old Exams
When you activate "Overwrite Old Exams" by clicking the radio button, the restore process will keep the same exam name and overwrite the exam that is currently on the local/net disk. If you are overwriting an exam in the restore process you will receive a warning message similar to the one shown in Figure 8.35.

Figure 8.35 - Overwrite Warning

## Exams on Destination
The Exams on Destination tab as shown in Figure 8.36 displays the contents of the current Restored exams folder. Additional features allow you to select and delete current restored exams.

Figure 8.36 - Exams on Destination - Restored Exams Folder

### Select All
When you click on "Select All" all the restored exams in the destination folder will be selected.

### Clear All
When you click on "Clear All" all the selected restored exams in the destination folder will be de-selected.

### Remove Selected Exams
After you have restored patient exams you may want to delete them to free up computer disk space. The "Remove Selected Exams" function allows you to permanently remove a restored patient exam. To remove selected exams:

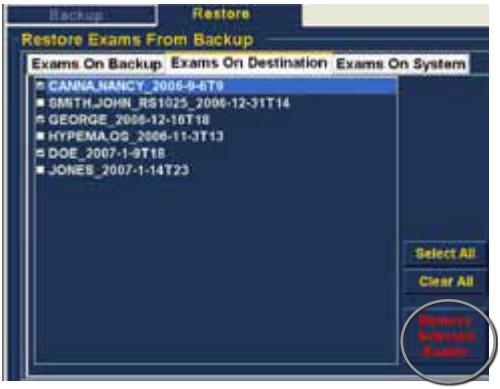



Figure 8.37 - Remove Selected Exams

Figure 8.38 - Removing Exam from Restored Folder Warning

1. Select the exam(s) you would like to delete (see the "Selecting Patient Exams" section of this manual).
2. Click on "Remove Selected Exams" as shown in Figure 8.37.
3. The Accutome UBM Plus will issue a warning shown in Figure 8.38 about deleting the file. Click on "Yes" if you would like to permanently delete the file. Click "No" or "Cancel" if you would like to terminate the delete process.

## Exams on System
The "Exams On System" tab when active displays all the exams in the Accutome UBM Plus Exam Data folder. The list can be useful in determining which exams need to be restored.

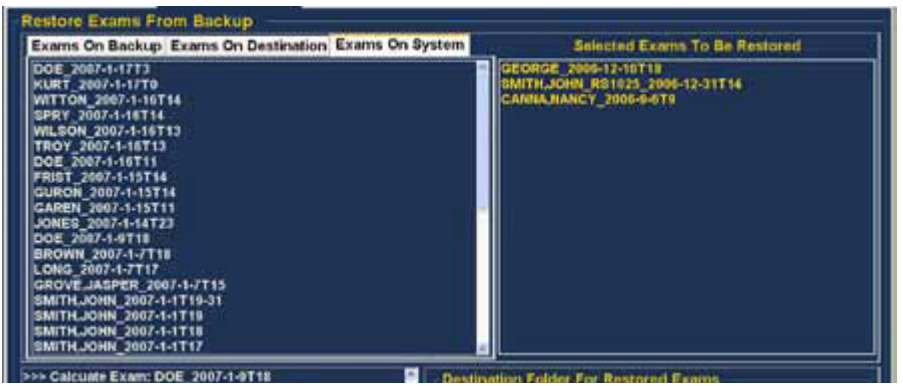



Figure 8.39 - Exams on System - Accutome Exam Data Folder

## DVD/CD Features

There are many features in the DVD/CD Device tab of the tools palette that are informational and perform disc and restore operations.

## Free Space On The System

When you execute "Free Space on System" as shown in Figure 8.40, the Accutome UBM Plus will display all available space on all drives.

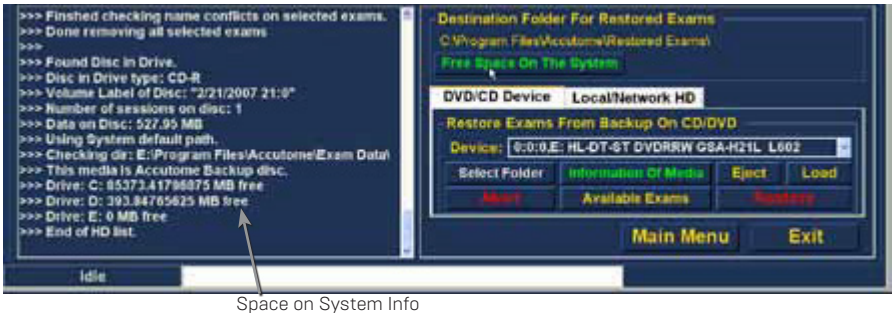



Figure 8.40 - Free Space on System

## Select Folder

The "Select Folder" feature launches a Windows browser and allows you to select the folder from which you would like to restore exams.

## Information of Media

When you select "Information of Media" the Accutome UBM Plus displays information about the DVD/CD in the device drive, including disc size, date, the number of sessions, amount of space remaining in the disc, etc. as shown in Figure 8.41.

Figure 8.41 - Information of Media

## Eject

"Eject" will automatically eject the DVD/CD from the computer drive.

## Load

The "Load" feature closes the DVD/CD drive drawer if the computer system has this feature.

## Abort

The "Abort" function stops disc process of restoration or loading.

## Available Exams

The "Available Exams" function lists all exams that can be restored in the Exams on Backup tab.

### Local/Net Hard Disk

There are many features in the Local/Net Hard Disk tab of the tools palette that are informational and perform restore operations.

### Select Folder

The "Select Folder" feature launches a Windows browser and allows you to select the folder from which you would like to restore exams.

### List Exams in the Folder

The List Exams In The Folder" feature lists all the exams contained in the selected restore folder.  Exams are listed in the "Restore Exams from Backup" tab.

### Abort

The "Abort" function stops the restoring process when selected.

## Main Menu and Exit

The Main Menu and Exit buttons located at the bottom of the Archive and Restore Screens bring you back to the UBM Plus main menu and exit the UBM Plus program accordingly.

# 9 Maintenance

## General Maintenance

Maintenance that should be performed on the Accutome UBM Plus consists of activities such as keeping surfaces free of dust and dirt and storing in a dry and cool place so as to not adversely effect electronic parts.
Care must be taken to use only proper non-linting cloths and non-corrosive solvents when cleaning the screen.

**Caution: No abrasives or harsh cleaning solutions should be used while cleaning the Accutome UBM Plus.**

When drying the transducer, a soft material and dabbing motion must me used so as to not scratch the gold plating. When using a circular motion, scratching can occur causing weak areas in the gold, in which the cleaning solution can penetrate and start lifting the gold. This condition significantly reduces the performance of the transducer.

Do not immerse the probe end in tap water as the fluorine will damage the transducer.

# 10 Specifications

## Overview

This section provides the physical and operational specifications of the Accutome UBM Plus.

## Physical Specifications

Table 10.1 below lists the physical specifications and associated peripherals.

Table 10.1 -Accutome UBM Plus Physical Specifications

| | |
|---|---|
| **Probe (Accutome Part Number 24-6320)** | |
| Frequency | 48 MHz |
| Dimensions | 7.0 inches long X 1.25 inches diameter; 17.78cm long X 3.18cm diameter |
| Weight | 0.375lb or 0.170 kg |
| Cable Length | 6 feet or 1.83 m |
| Interface Connector | USB Type A |
| **Footswitch (Accutome Part Number 24-6180)** | |
| Dimensions | 4 inches X 3.25 inches X 1.25 inches high; 10.16cm X 8.26cm X 3.18 cm high |
| Weight | 0.337 lb or 0.153 kg |
| Cable Length | 6 feet or 1.83 m |
| Interface Connector | USB Type A |
| **Wired Mouse (Accutome Part Number 24-6330)** | |
| Dimensions | 1.75 inches X 2.25 inches X 1.63 inches; 4.45cm X 5.72 cm X 4.14 cm |
| Weight | 0.222 lb or 0.101 kg |
| Interface Connector | USB Type A |
| **Probe Holder (Accutome Part Number 24-6320)** | |
| Dimensions | 7.7 Inches X 4.3 Inches X 2.09 Inches High or 19.56 cm X 10.92 cm X 5.61 cm |
| Weight | 0.75 lb or 0.340 kg |
| **Safety and EMI Standards** | |
| IEC 60601-1 Medical Electrical Equipment: General Requirements for Safety | |
| IEC 60601-1-2 Medical Electrical Equipment: Electromagnetic Compatibility | |
| IEC 60601-2-37 Medical Electrical Equipment: Particular Requirements for Ultrasound Equipment | |

## Environmental Specifications

Table 10.2 below lists the Accutome UBM Plus system operating and storage values for temperature and humidity.

Table 10.2 -Environmental Specifications

| Temperature | |
|---|---|
| Operating | +10° C to +40° C |
| Storage | -20° C to +60° C |
| **Relative Humidity** | |
| Operating | 20% to 80% (non-condensing) |
| Storage | 15% to 90% (non-condensing) |
| **Atmospheric Pressure** | |
| Operating | 700 - 1060 hPa |
| Storage | 500 - 1060 hPa |

## Computer Specifications

Table 10.3 below provides the recommended specifications for the computer to be used with the Accutome UBM Plus.

Table 10.3 Recommended Computer Specifications

| | |
|---|---|
| PC | Intel CoreTM 2 Duo (2.20GHz) 667MHz Dual Core or equivalent |
| I/O Ports | Recommend 4 USB 2.0, Minimum 2 USB 2.0 |
| Operating Systems | Microsoft Windows® XP (SP2) or later |
| Display | 15.4 inch WSXGA+ LCD or larger |
| Memory | 2.0 GB, DDR2-667 SDRAM |
| Hard Disk Drive | 80 GB Hard Disk Drive, 9.5 MM, 7200 RPM |
| CD/DVD Drive | 8X DVD+/-RW w/Roxio Software™ and Cyberlink Power DVD |
| Video Controller | 256 MB NVIDIA® Quadro NVS 110M TurboCache™ |
| Power Supply | Medical Grade Power Supply or Isolation Transformer |

**Note: The user must supply the computer. The computer is not provided with the Accutome UBM Plus.**

## EMC Compliance Information

Medical Electrical Equipment needs special precautions regarding EMC and needs to be installed and put into service according to the EMC information provided in this manual. Portable and mobile RF communications equipment can affect Medical Electrical Equipment.

Table 10.4 - Guidance And Manufacturer's Declaration - Electromagnetic Emissions

| The UBM Plus is intended for use in the electromagnetic environment specified below. The customer or the user of the UBM Plus should assure that it is used in such an environment. | | |
|---|---|---|
| **Emissions Test** | **Compliance** | **Electromagnetic Environment Guidance** |
| RF Emissions CISPR 11* | Group 1 | The UBM Plus uses RF energy only for its internal function. Therefore, its RF emissions are very low and not likely to cause any interference in nearby electronic equipment |
| RF Emissions CISPR 11* | Class B | The UBM Plus 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 | N/A | |
| Voltage fluctuations/ flicker emissions IEC61000-3-3 | N/A | |

Table 10.5 - Guidance And Manufacturer's Declaration - Electromagnetic Immunity

| The UBM Plus is intended for use in the electromagnetic environment specified below. The customer or the user of the UBM Plus should assure that it is used in such an environment. | | | |
|---|---|---|---|
| **Immunity Test** | **IEC 60601 test level** | **Compliance Level** | **Electromagnetic Environment Guidance** |
| Electrostatic Discharge (ESD) | +/- 6kV Contact | +/- 6kV Contact | Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%. |
| IEC 61000-4-2 | +/- 8kV Air | +/- 8kV Air | |
| Power frequency (50/60Hz) magnetic field IEC 61000-4-8 | 3 A/m | 3 A/m | Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment. |

Table 10.6 - Guidance And Manufacturer's Declaration - Electromagnetic Immunity

The UBM Plus is intended for use in the electromagnetic environment specified below. The customer or the user of the UBM Plus 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 | N/A | Portable and mobile RF communications equipment should be used no closer to any part of the UBM Plus, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.<br>Recommended separation distance<br>$d = 1.2\sqrt{P}$<br>$d = 1.2\sqrt{P}$ 80 MHz to 800 MHz<br>$d = 1.2\sqrt{P}$ 800 MHz to 2,5 GHz<br><br>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). Field strengths from fixed RF transmitters, as deter-mined 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: |
| Radiated RF IEC 61000-4-3 | 3 V/m 80MHz to 2,5 GHz | 3 V/m | |

NOTE 1 At 80 MHz and 800 MHz, the higher frequency range 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 radio broadcast and TV 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 UBM Plus is used exceeds the applicable RF compliance level above, the UBM Plus should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the UBM Plus
[b] Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3V/m

Table 10.7 - Recommended Separation Distances Between Portable And Mobile Rf Communications Equipment And The UBM Plus

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

| Rated maximum output power of transmitteer W | Separation distance according to frequency of transmitter m | | |
|---|---|---|---|
| | 150 kHz to 80 MHz d = 1.2√P | 80 MHZ to 800 MHz d = 1.2√P | 800 MHz to 2,5 GHz d = 1.2√P |
| 0,01 | 0.12 | 0.12 | 0.23 |
| 0,1 | 0.38 | 0.38 | 0.73 |
| 1 | 1.2 | 1.2 | 2.3 |
| 10 | 3.8 | 3.8 | 7.3 |
| 100 | 12 | 12 | 23 |

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 separation distance for the higher frequency range applies.
NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

## Operating Modes

The following table summarizes the mode/application possibilities for each system/transducer compination:

Table 10.8 -Operating Modes

| Clinical Application | A | B | M | PWD | CWD | CD | Combined (specify) | Other† (specify) |
|---|---|---|---|---|---|---|---|---|
| Ophthalmic | | X | | | | | | |
| Fetal Imaging & Other* | | | | | | | | |
| Cardiac, Adult & Pediatric | | | | | | | | |
| Peripheral Vessel | | | | | | | | |

* Abdominal, Intraoperative, Pediatric, Small Organ (breast, thyroid, testes, etc.), Neonatal Cephalic, Adult Cephalic, Musculo-Skeletal (conventional), Musculo-Skeletal (superficial)
† Examples may include: Amplitude Doppler, 3-D Imaging, Harmonic Imaging, Tissue Motion Doppler, Color Velocity Imaging.

Table 10.9 -Operating Modes

| Data Storage Capacity | |
|---|---|
| Patients & Patient Data | Only limited by the computer's disk storage capacity |

Table 10.10 - Range and Accuracy

| UBM Plus Setting | | Line/Area | Clinical Accuracy | Accuracy Range (mm) |
|---|---|---|---|---|
| Frequency (MHz) | Depth (mm) | | | |
| 48 | 30 | Line | <1% | 30 |
| 48 | 30 | Area | <1% | 30 |
| 48 | 30 | Angle | <1% | 30 |

## Acoustic Output

Table 10.11 below provides the acoustic output reporting for the following:

**Transducer Model:** UBM (S/N 35-01430)
**Operating Mode:** B-Mode
**Application(s):** Ophthalmic

Table 10.11 - Acoustic Output Reporting Table for Track 1 Autoscanning Mode

| Acoustic Output | | | MI | ISPPA.3 (mW/cm2) | ISPPA.3 (W/cm2) |
|---|---|---|---|---|---|
| Global Maximum Value | | | 0.0710 | 0.0385 | 6.86 |
| Associated Acoustic Parameter | Pr.3 (MPa) | | 0.316 | --- | --- |
| | Wo (mW) | | --- | 4.38E-3 | 4.38E-3 |
| | Fc (MHz) | | 19.7 | 19.7 | 19.7 |
| | Zsp (cm) | | 1.00 | --- | 1.00 |
| | Beam Dimension | x-6 (cm) | --- | --- | 0.0397 |
| | | y-6 (cm) | --- | --- | 0.0359 |
| | PD (iS) | | 0.0400 | --- | 0.0400 |
| | PRF(Hz) | | 4100 | --- | 4100 |
| | EBD | Az. (cm) | --- | 0.700 | --- |
| | | Ele. (cm) | --- | 0.700 | --- |
| Operating Control Conditions | 30 Degree Scan Angle | | | | |
| | 256 Lines Per Scan | | | | |
| | 256 Lines Per Scan | | | | |

These values are based on measurements of production units.

# 11 Warranty & Repairs

## Warranty

Accutome, Inc. warrants its new equipment to be free from defects in workmanship or materials. Any product that is proven to be defective will be repaired or replaced at our discretion, free of charge, up to one year from the date of purchase by the initial user of the equipment from Accutome, Inc. or any of its authorized distributors.

This warranty covers all repairs and servicing of parts that proved defective by manufacture and not by misuse or mishandling. This type of service will be handled by our trained sales force, or if necessary, in our home office. Shipping charges for returns or repair of non-warranted items will be the responsibility of the customer. Alteration, repair or modification of any product that is performed by persons not authorized by Accutome, Inc. will result in immediate loss of warranty.

## Product Returns

Follow the instructions given below to return products to Accutome Inc.

### Service and Repair

Before returning instruments for service or repair, contact the Accutome Technical Service Group for a Return Goods Authorization (RGA) number.

Toll Free (in USA): 1-800-979-2020
Tech Service: 1-610-889-0200
Fax: 1-610-889-3233

After receiving authorization, print the RGA number on the outside of the package and send the instrument to:

Technical Service Group
Accutome, Inc.
3222 Phoenixville Pike
Malvern, PA 19355

### All Other Returns

Returns for non-service related reasons must be authorized by the Accutome Customer Service Department. Please contact Customer Service for an RGA number.

Merchandise returned within 60 days of date of invoice will be credited as follows:

- Full credit for all merchandise returned in resalable condition

### Non-Returnable Merchandise

Accutome Inc. will not authorize a return for:

- Merchandise held longer than 60 days

## Replacement Parts

Table 11.1 below lists items that are available from Accutome, Inc. or from your local sales representative. Please be sure to use the Accutome part number for the item when placing an order.

Table 11.1 -Accutome Replacement Parts

| Description | |
|---|---|
| **Standard Parts** | **Accutome Part No.** |
| Probe Kit | 24-6320 |
| Foot Switch | 24-6180 |
| Mouse | 24-6330 |
| Probe Holder | 24-6370 |
| UBM Immersion Eye Cup Kit | 24-6305 |

## Documentation

Accutome will make available on request circuit diagrams, component parts, lists, descriptions, calibration instructions or other information that will assist qualified technical personnel to repair the Accutome UBM Plus.

US and Canada (800) 979-2020
International (610) 889-0200
European Office +31 (0) 485-350300
Info@accutome.com
**www.accutome.com**