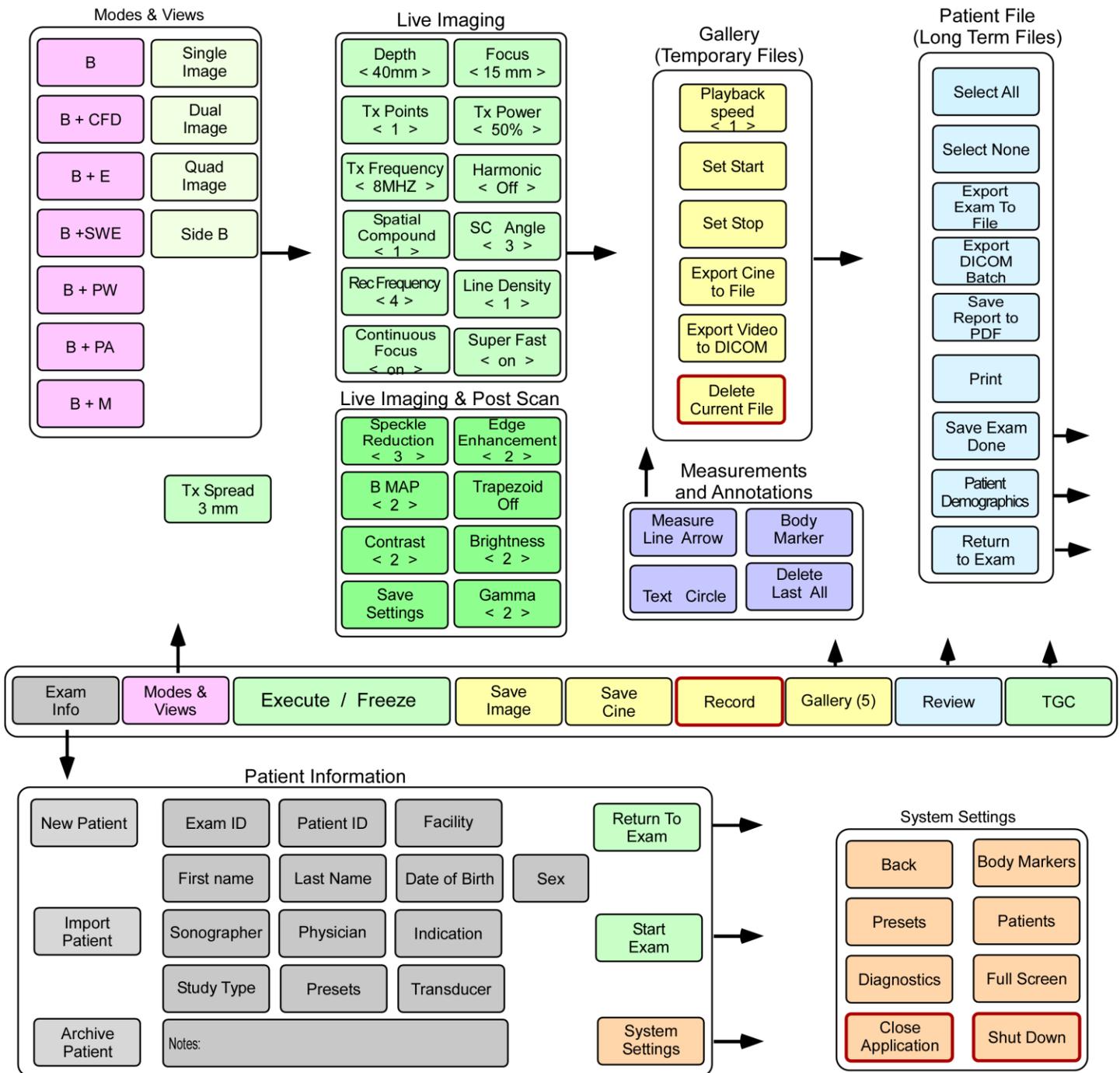


Controls Reference



The Controls are coded by color:

Gray is Demographic Data and Text,
 Pink is Mode changes,
 Green is operations on live data,
 Yellow is operations on images into and in the Gallery (that is a temporary storage facility),
 Blue are operations on the Patients final file and permanent storage,
 Mauve is operations of measurements and overlays on the image for indicators of reference,
 Orange is for presetting the setups and exiting the application.

Controls outlined in red require attention or caution.

When the UltraVision powers up the Patient information panel is shown.

Patient Information

New Patient	Exam ID	Patient ID	Facility		Return To Exam
	First name	Last Name	Date of Birth	Sex	
Import Patient	Sonographer	Physician	Indication		Start Exam
	Study Type	Presets	Transducer		
Archive Patient	Notes:				System Settings

New Patient

- Resets all Patient Information fields to their default values. The defaults include a new unique Exam ID (chosen by the system), the default Facility (comes from configuration file), Sonographer, Physician and the transducer that is currently plugged in. The user may modify any of these or proceed straight to scanning, with only the unique Exam ID identifier. (This is not recommended as the patient database will contain only the Exam ID for future searches.)

Exam ID

-Exam ID is at first assigned by the UltraVision to be a unique 10 digit alphanumeric. This is used in the database to create a new unique entry. The user may press this button and enter their own Exam ID. This field is searchable in the database.

Patient ID

-A 20 alphanumeric field to be filled by the user and is searchable in the database.

Facility

-A 20 alphanumeric field that may be filled with the user's choice, designated for the Facility and is searchable in the database.

First name

-A 20 alphanumeric field that may be filled with the user's choice, designated for the Patient's First Name which will appear at the top of the Scan screen and is searchable in the database.

Last Name

-A 20 alphanumeric field that may be filled with the user's choice, designated for the Patient's Last Name which will appear at the top of the Scan screen and is searchable in the database.

Date of Birth

-Either type in a date or select it from a calendar. This date field that is searchable in the database.

Sex

-A two choice selection that and is searchable in the database.

Sonographer

-A 20 alphanumeric field that may be filled with the user's choice, designated for the Sonographer's Name and is searchable in the database.

Physician

-A 20 alphanumeric field that may be filled with the user's choice, designated for the Physician's Name which will appear at the top of the Scan screen and is searchable in the database.

Indication

-A 20 alphanumeric field that may be filled with the user's choice, designated for the Indication's for the scan and is searchable in the database.

Study Type

-A 20 alphanumeric field that is designated for the Study Type which sets the pre-sets for the study as a quality measure and for sonographer time saving. The Study Type will appear at the top of the Scan screen and is searchable in the database. Study Types are preset by the user or the supplier and will appear in the pull down list as they are created.

Presets

-A pull down menu of system settings made by the user or the supplier, with the Save Settings button. This is designed for when the user makes adjustments to the settings and wishes to save them for later use.

Save
Settings

Transducer

-Shows the name of the transducer that is connected. It may be used to select another transducer if the multiple transducer option is connected or to operate while mimicking another transducers characteristics.

Notes:

-Provided to allow the user to add lengthy notes to the Patient Database.

Import
Patient

-Used to bring a previously stored Patient's Record into the Database. The button uses the Windows Explorer and is covered in more detail under the User's manual. This is useful when transferring an exam from another system.

Archive
Patient

- Used to open a search window to load previous exams. The button uses the UltraVision's database and is covered in more detail under the User's manual.

Return To
Exam

-Appears only if the user entered this screen from an ongoing study and allows the user to return to the study without changing any settings.

Start
Exam

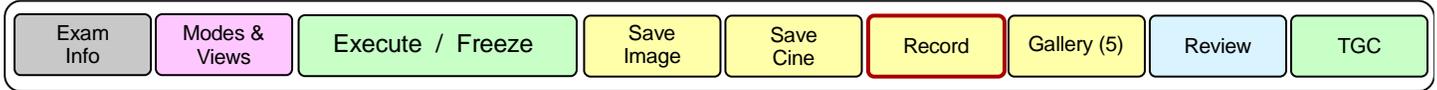
-Starts the scanning process. It may be used straight after power up from the Patient Information Screen or after edits to the Patient information Screen. The UltraVision will enter the Scan Mode where it will have an Image area in the center surrounded by multiple controls.

System
Settings

-Sends the user to the System Settings Screen where system information is displayed. This default is configured by the Preset and Study type, presets or diagnostics may be entered.

Scan Controls

The Main Controls are at the bottom edge and are:



Exam Info -Returns the system to the Patient Information Screen.

Modes & Views -When the UltraVision Application arrives at the Scan screen from the Patient Information Screen, it defaults to B-Mode (grayscale morphological imaging mode). This default is configured by the Preset and Study type. The system will scan for several frames to form the current image and then freeze. Pressing Modes and Views will open a tab with options to change to another mode, or switch to Dual/Quad views.

Execute / Freeze -This button toggles the system between live and frozen images. (In Freeze mode it is blue.) The system will return to freeze mode if no button is pressed for 3 minutes during live scanning. When frozen, the system emits no transmit pulses.

Save Image -While scanning a live image, a frame can be saved to the Gallery for later review. This does not affect the live scanning. The Gallery button index will be incremented by 1.

Save Cine -While scanning a live image the last 9 seconds of frames will be stored to the Gallery for later review. This does not affect the scanning. The Gallery button index will be incremented by 1.

Record - The UltraVision can be set with this button to record all the live images in an extended video. This button has a red surround and will turn red when recording as it will record until a limit on the hard drive is met and this will have substantial resource usage and should not be left on indefinitely.

Gallery -The gallery button enters the gallery mode where the Gallery functional buttons and the recorded images, cines, and videos can be edited. Touching an image will bring it to the center screen where post scan processing functions like Speckle reduction, edge enhancement, measurements and annotation can be modified. Once added the image can again be saved to the Gallery. Cines and Videos are distinguished by a play button (arrow) in the Thumbnail and they can be used with all the post scan processing and editing functions. The edited cines, and videos should the also be saved by the Save Cine button. See Gallery Buttons.

Review -Places the system in Review mode where images, cines and videos are placed into the Patient's database and reports are generated and printed.

TGC -Presents the TGC potentiometers to the screen for adjustments on live images. (See section on TGC below.)

Live Imaging

The following buttons are used during live imaging only.

Depth < 40mm >	-Adjusts the Field of View (FOV). The FOV can span 1 cm to 30 cm deep but may be restricted by the current transducer to logical limits. The width is automatically adjusted to keep the correct aspect ratio in the image.
Focus < 15 mm >	-Sets the focus depth of the image for the transmit function.
Tx Points < 1 >	-Sets the number of transmit focal points in the image. Invoking two or more brings up another button. The number of transmits divides the frame rate so care should be taken if visualization of moving objects is critical.
Tx Spread 3 mm	-The TX spread button defines how far apart each focus depth should be.
Tx Power < 50% >	-Determines the percentage of power that should be used in transmitting. The power is increased to visualize deeper into the patient.
Tx Frequency < 8MHZ >	-Defines the transmit frequency. The higher the frequency the finer the structure visible but the lower the frequency the deeper the image can be visualized.
Harmonic < Off >	-In harmonic imaging mode a finer structure with less side lobes is attainable but penetration is sacrificed.
Spatial Compound < 1 >	-Spatial compounding adds data at a point that has been addressed from different acoustic line angles. This tends to smooth the image and get better edge visualization of the edges of a cyst. The number is the number of extra transmissions to each point so higher means slower frame rate but better resolution.
SC Angle < 3 >	-The Spatial Compounding (SC) selects the angle at which the acoustic line vectors are spaced.
Rec Frequency < 4 >	-The receive frequency is a set of frequency filters that are optimized for image quality. (See table in User Manual.) The wider the filter the sharper the image definition. A narrower filter has less noise or a particular noise may be excluded.
Line Density < 1 >	-This number represents the number of acoustic lines that are created for each element in the transducer. Transducers usually have 128, 192 and 256 elements so a line density of 2 will have 256, 384 or 512 acoustic lines.
Continuous Focus < on >	-A method to optimize focus at all depths is used.
Super Fast < on >	-A reduced field of view and optimization of frame rate over image quality. Frame rates of 600frames per second are possible depending on settings.

Live Imaging and Post Scan Processing Functions

The following buttons are for use during live scanning and for post scan processing on saved images.

Speckle
Reduction
< 3 >

-Selects the amount of spatial filtering that is used to reduce the speckle in the image. Values are between 0 and 5, with 5 having the greatest impact.

Edge
Enhancement
< 2 >

-Selects the amount of spatial filtering that is used to enhance the edges of regional features. Values are between 0 and 5 with 5 having the greatest impact.

B MAP
< 2 >

-Specifies the preprogrammed mapping of the 16 bit input data into the 8 bit grayscale that is visible on the monitor. Values are between 1 and 5.

Trapezoid
Off

-Utilizes the edges of the image that are scanned by the spatial compounding or truncates the edges to be square. The edges are not addressed by all acoustic vectors and so have less image quality but can be useful to show what is normally outside the field of view.

Contrast
< 2 >

-The contrast is set to a greater number (between -10 and +10) to emphasize the contrast in the image.

Brightness
< 2 >

-The brightness is set to a greater number (between -10 and +10) to brighten up the image and *show the lower grayscales.*

Gamma
< 2 >

-As the value of this button increases (between 0 and 7) the brightness of the smaller backscatter echoes is emphasized in the image.

Save
Settings

-Brings up a new screen where, under a user can define a new name, for all the current settings to be stored in the system. This setting of the system can be retrieved through the Presets button in the Patient Information Screen.

Time Gain Compensation (TGC)

TGC

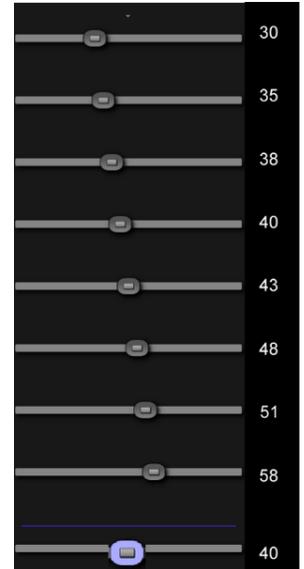
-The TGC function brings in a panel of 10 potentiometers. The first is represented as a dot at the top of the panel and is for the gain to be used at the skin line. This is singled out as special as it is a characteristic of the transducer and is not usually adjusted with the same frequency as the tissue TGC. It is adjusted by tapping on the side of the dot where this gain should be moved to.

-The next eight potentiometers represent the gain for the tissue at the adjacent point in the field of view. The distance represented down the screen is automatically scaled.

-The tenth potentiometer is the overall gain and is added to each of the other potentiometer gains for ease in just increasing the gains together.

The value of each potentiometer is shown to the potentiometer's right from 1 to 40 (dB).

The user will find it easier to set the 8 TGC values by just sweeping his or her finger down the touch screen.



Measurements and Annotations

These buttons are available on the screen whenever they may be used.

Measure
Line Arrow

-The left side of this button will put the system in line measurement mode. In this mode the user touches the screen with one finger where the user wants the line to begin and drags the finger to the point where the user wants the line to end. The length of the line will appear in the bottom right corner of the screen. When done multiple times, the line and the length result will use matching colors to differentiate each measurement. Placing the finger in the region of the end of a line allows the user to edit the end position. Magnification of the area to be measured with a two-finger gesture is recommended. To disengage this feature, press the left side of the button again to toggle it off

-The right side of the screen will place an arrow on the screen in the same procedure as for making line measurements.

Text Circle

-The left side of this button will place text on the screen where a finger press indicates. A keyboard will be provided for this purpose.

-The right side of this button will place a circle on the screen and dragging the finger will enlarge the circles diameter.

Body
Marker

-Bring up a selection of body markers that the user may pick from. Pressing outside the selection area returns the screen with the selected body marker in the top left of the screen. The user may then drag this body marker to any position on the screen.

Delete
Last All

-The left side of this button delete the last overlay graphic. Pressing the right side of this button deletes all overlay graphics.

Gallery Controls

The Gallery controls allow the user to select specific images and shorten comes and videos for storage in the permanent Patient Data Base.

At the bottom of the image display there is



The Gallery Panel displays all the recorded images, cines and recordings on the left side on the panel as thumbnails, with the following controls on the right side of the panel.

Thumbnails operate like Windows movies and have the same controls which are a copy of the first image reduced in size and have:

- A blue border to indicate that the thumbnail is selected.

- A blue tick in the top left to select the image/video. This can be used to delete multiple, or to indicate the data of the thumbnail will be included in the patient file.

- A play button (arrow) in the middle to indicate the thumbnail is a cine or video

- A pause glyph (two vertical bars) to indicate that the thumbnail is active but stopped

Playback
speed
< 1 >

- Images may be collected at greater than the display rate. This button allows the user to reduce the rate at which images are displayed to make it easier to select the images to place in the patients file.

Set Start

- Sets the start point in a cine or recording which limits the beginning of the recorded video when cycling through and displaying frames. This is used to trim cines for storage in the patients file.

Set Stop

- Sets the end point in a cine or recording which limits the end of the recorded video when cycling through and displaying frames. This is used to trim cines for storage in the patients file.

Save
Cine

- Located with the Main Controls. This is used to save the current (in this context edited cine to) a new cine file.

Export Cine
to File

- Brings up the Windows Explorer for the user to select a location to save the current cine to a MP4 file.

Export Video
to DICOM

- Saves the current cine to the patients file as a DICOM file.

Delete
Current File

- Asks for a confirmation which must be confirmed within 3 seconds and the deletes the image, cine or video.

Patient Files

Review

-Located on the main controls of the scan screen this enters the Review mode where exams may be saved. In this mode the gallery buttons will also be present for editing images, cines, and videos to make them shorter or delete them from the patient record.

Select All

-Each thumbnail image to the left of this button has a select feature of a small blue arrow in the top left corner of the thumbnail when active. This button will select all the thumbnails (usually for storage). Select none deselects all the thumbnails.

Select None

- Deselects all the thumbnails.

Export
Exam To
File

-Takes all the selected thumbnails and exports them to a file with the Patient Information. This button brings up a Windows explorer panel for the user to select where to export the Patient File to (usually a USB stick).

Save
Report to
PDF

-Exports the selected images as a PDF Report. Once this is done testing it will be opened by a PDF viewer. Cines and Videos will only show the thumbnail frame. This is whichever frame was selected when the Cine was saved.

Print

-Prints the patient report. If a Wi-Fi stick is in the UltraVision and a printer has been set up it will print the report and send a copy to the patients archive. If a Wi-Fi stick is not present the file will be dated and just be sent to the patient archive.

Patient
Demographics

-Returns control to the Patient information Screen so the user may update or correct and demographics before saving the exam and closing.

Save Exam
Done

-Saves the current selected images to the Patient Archive and closes the patient data file in the system and sets the UltraVision ready for the next patient.

Modes and Views

B

-Sets B-Mode only. B-Mode is a grayscale representation of the amplitude of the backscatter the transducer sees over a two-dimensional slice of the patient.

B + CFD

-Sets B-Mode plus Color Flow Doppler fused into the one image with color Red for blood moving towards the transducer and blue moving away from the transducer.

B + E

-Sets two simultaneous images with a B-Mode Image on the left and compression elastography on the right.

B + SWE

-Sets two simultaneous images with B-Mode on the left and a Shear wave estimation of the modulus of the tissue on the right.

B + PA

-Sets two simultaneous images with B-Mode on the left and a Photoacoustic image amplitude of the backscatter from each point in the image generated by the expansion caused by the absorption of light by chromophores present at each point in the image. This mode is for research only and requires a laser light source.

B + M

-Sets two simultaneous images with B-Mode on the left from which an acoustic line is selected and indicated and replication of the chosen line on the right at a user selected repetition rate.

Single Image

-Sets the display choice for a single image on the display area.

Dual Image

-Sets the display choice for two images, side by side on the display area.

Quad Image

-Sets the display choice for four images in quadrants on the display area.

Side B

-Creates a live B-Mode image on the right side keeping the current image but moving it to the left.

System Settings

The system settings are not intended for sonographer use but are for advanced user programming of the system overall defaults.

Back

-Allow the user to exit System Settings and go back to the Patient Information Screen where the user came from.

Body Markers

-Allows the user to add new body markers which are in the form of a black and white PNG file which can be created by most graphic programs. This button displays a Windows explorer window allow the user to select their created graphic.

Presets

-Allows the user to create a new Study Type and save the body markers for that study type.

Diagnostics

-Displays temperatures and voltages throughout the system and allows some minor adjustments.

Full Screen

-Operates the UltraVision in a reduced size window allowing the user better access to windows and should not be changed from full screen by the user.

Close
Application

-Closes the UltraVision application and will allow system control in Windows. By activating this button, the user will lose the current study settings and images.

Shut Down

-Closes the UltraVision application and turns off the system. By activating this button, the user will lose the current study settings and images.