

Echo Wave II Software

Options Settings



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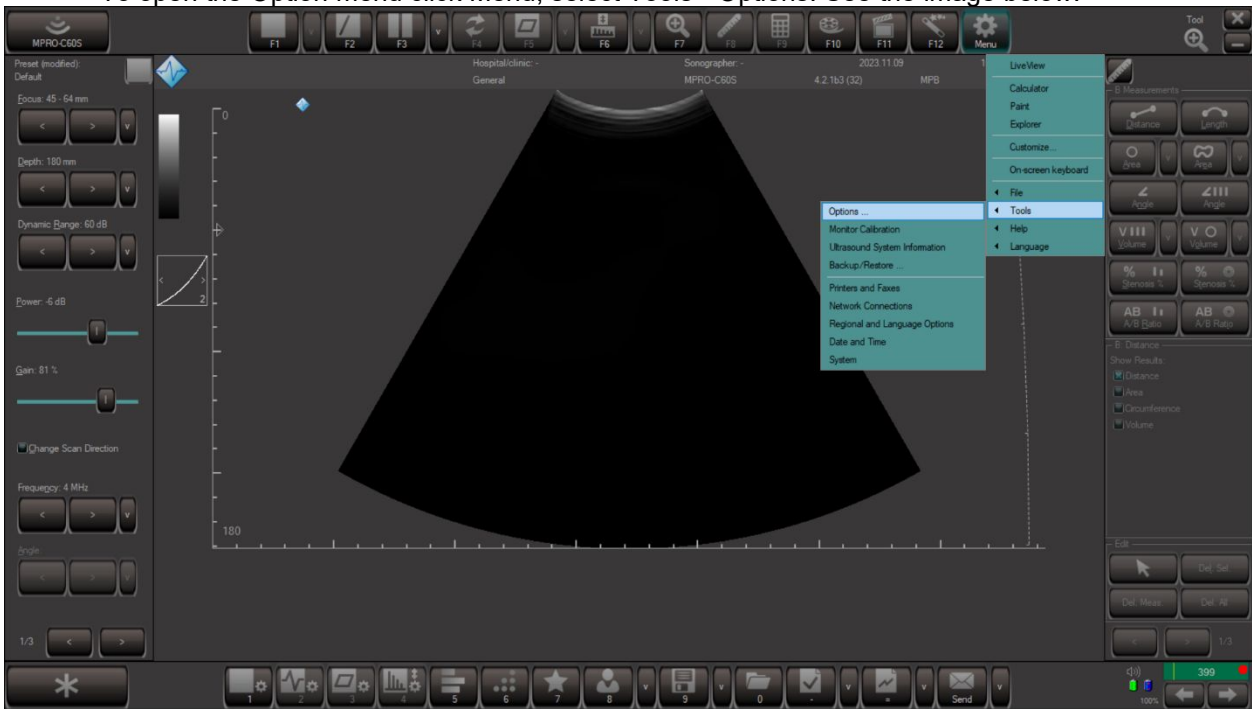
1. Introduction

This document describes "Echo Wave II" ultrasound scanning software settings in the Options menu.

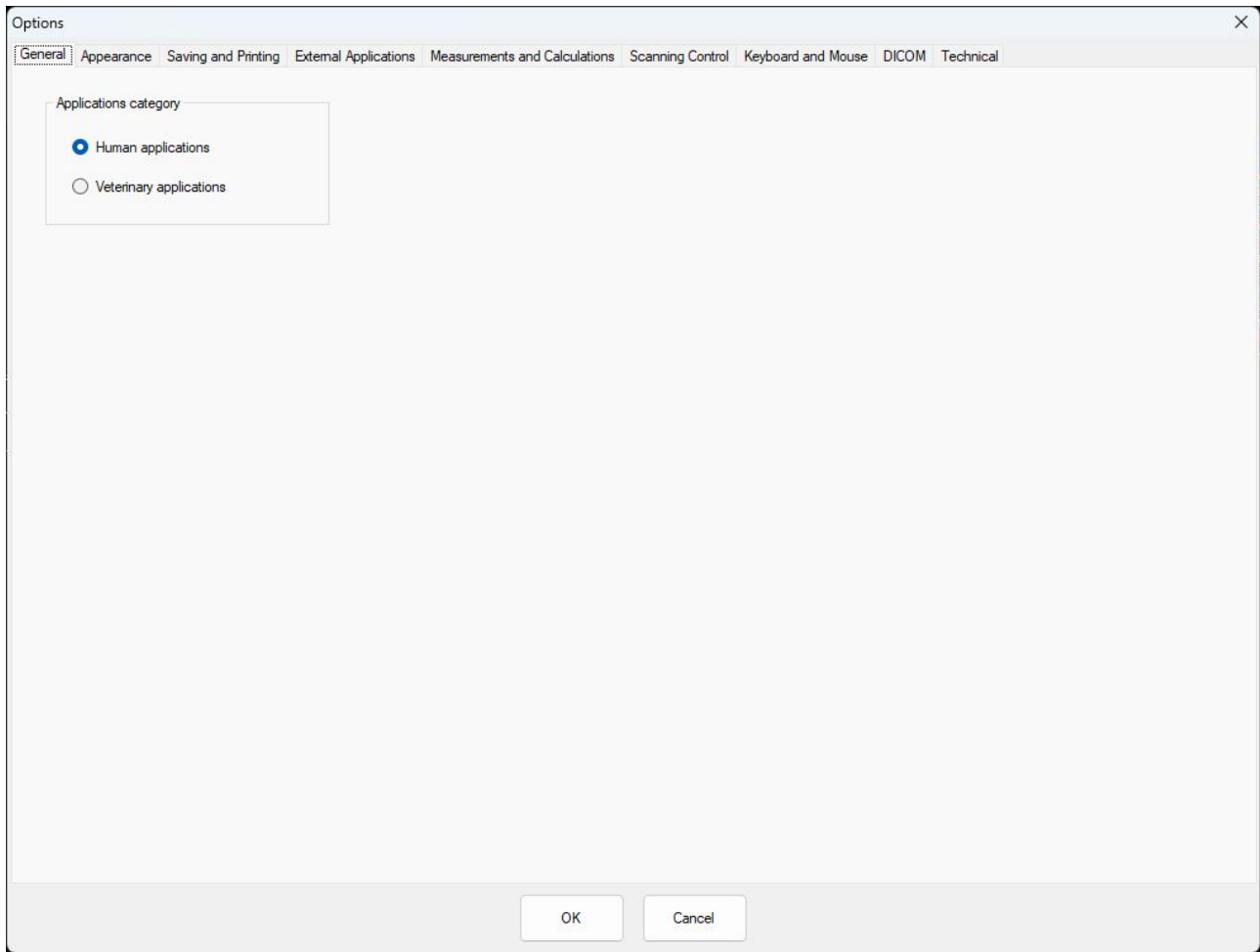
Echo Wave II application has very wide possibilities to adjust how it looks and acts in different situations, change units, and many more. This is possible to do in the Options menu. This document describes the Options menu functions in detail.

Please note that in this manual the software screenshots shown may look slightly different from the actual software user interface because the user interface can be customized and depends on the chosen options.

To open the Option menu click Menu, select Tools->Options. See the image below.



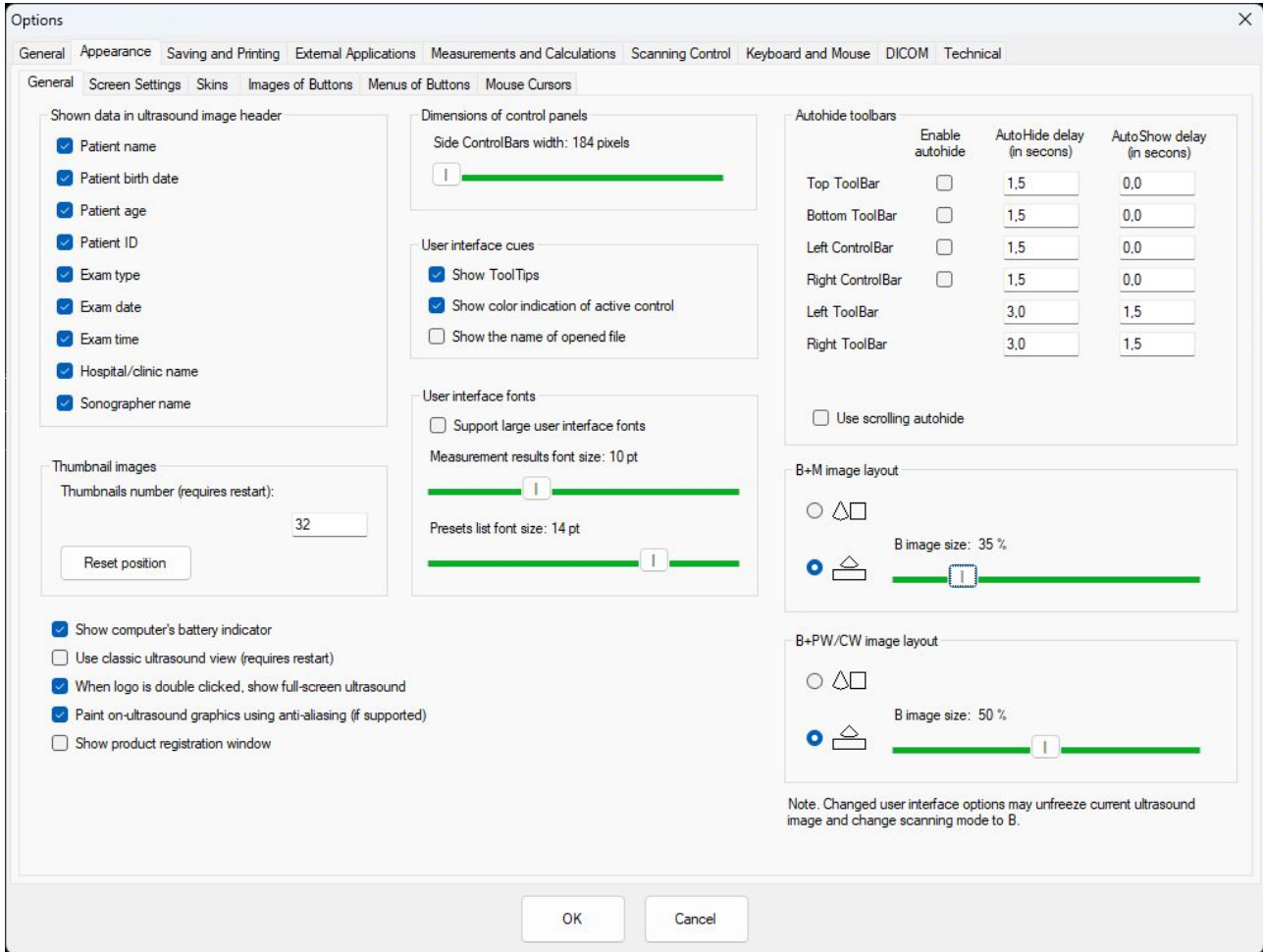
2. General Tab



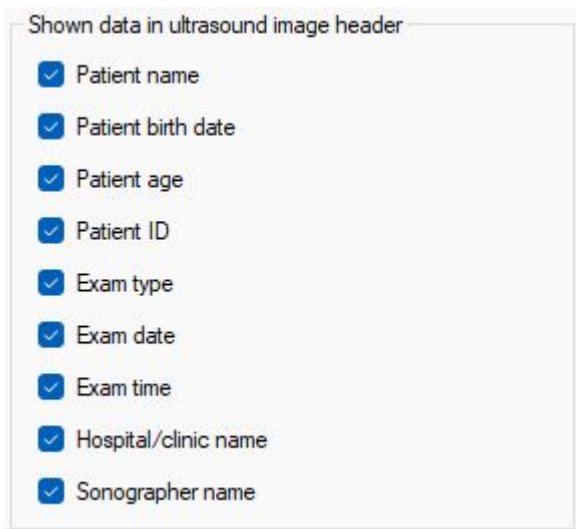
It is possible to select the usage of ultrasound scanner: Human or Veterinary applications. Depending on the selection, corresponding measurement packages and scanning presets will be used.

3. Appearance Tab

3.1. Appearance Tab -> General Tab

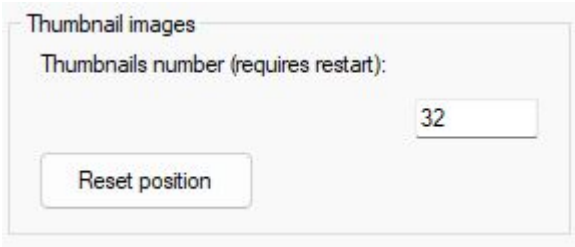


Changing these settings will add or remove the selected items from the ultrasound image header. See the image below.



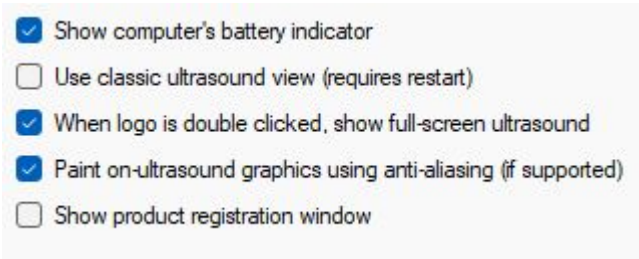
This data will be seen when you save the image and while you are working with the device.

To change the values of these data you should go to the Patient Information menu. Please refer to the Echo Wave II user manual.



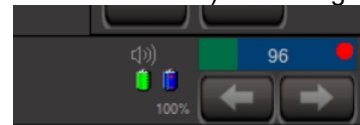
Thumbnails number changes the number of thumbnails stored by the software.

It is possible to move/resize the thumbnail window. Pressing the **Reset position** button will resize the thumbnail window to its default size and move it to the default place.

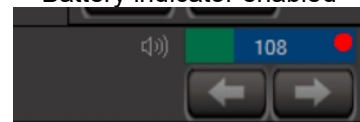


Show computer battery indicator

This check box shows/hides the PC battery indicator (blue color) with charge percentage and Ultrasound Scanner Monitor status (green or red colors). See images below:



Battery indicator enabled



Battery indicator disabled

Use classic ultrasound view

Enabling this control will change the program's appearance to the "classic" view. Advanced skinization mode is disabled and menu auto hide options are changed. This allows to set as big ultrasound image as possible and to achieve better performance on less powerful computers.

Paint on-ultrasound graphics using anti-aliasing

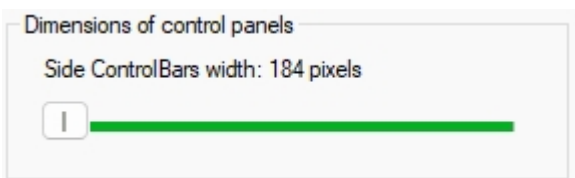
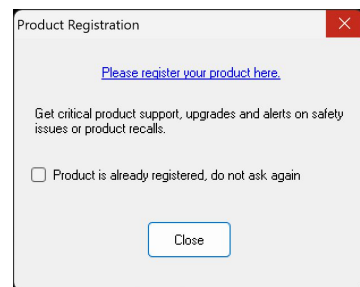
When enabled all graphics on ultrasound image (i.e., measurements) are painted using anti-aliasing – more smooth. If this control is disabled graphics will be "pixelized".

When logo is double clicked, show full-screen ultrasound

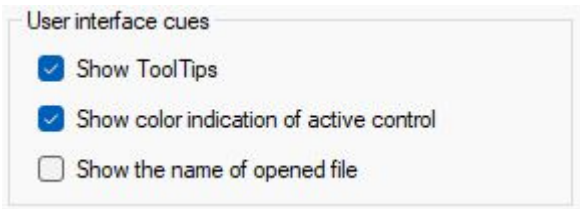
Double clicking the TELEMED logo in the left corner of the ultrasound image header will start full screen ultrasound.

Show product registration window

This control enables/disables showing the registration window during program startup.



This control changes the dimensions of the **Side Control Bars**. Making the dimension bigger makes buttons wider what is more convenient in some cases.



Show the name of opened file

When enabled in the bottom left side of the opened file you will see the file name.

Show ToolTips

Enabling this control shows additional information for some of the control buttons. Information is shown when you hover the mouse pointer and wait for a while.

Show color indication of active control

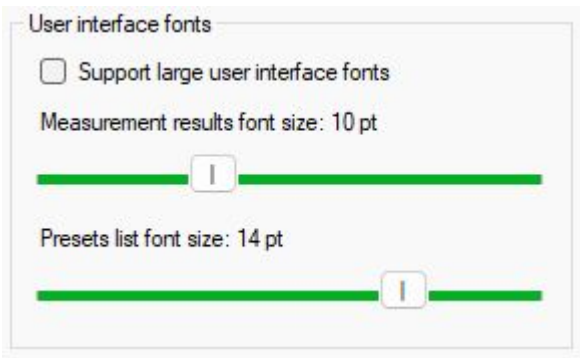
When enabled active control has 2 yellow lines on the sides. See the image below.



Support large user interface fonts

If enabled, Echo Wave will use font size which is set in Windows settings.

*If you want to make text larger enable this control and then change font size in Windows settings (restart may be needed). You may also want to change the **Side Control Bars width** to make a large text fit.*

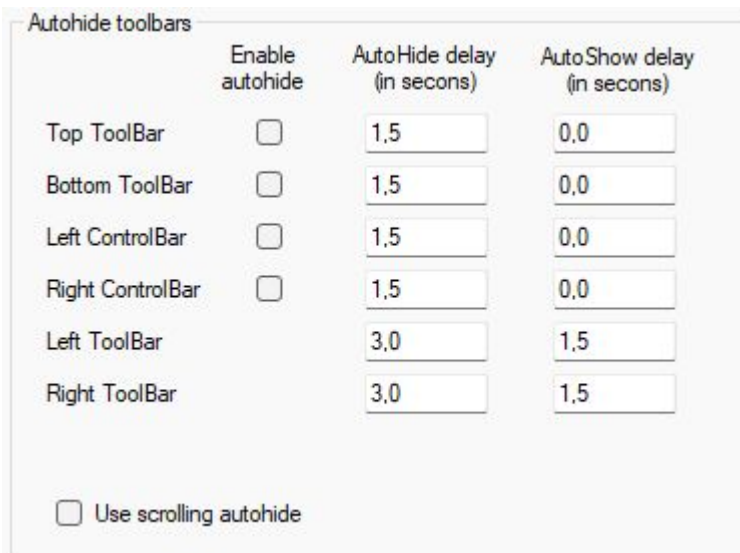


Measurement result font size

Changes the font size of measurement results that are shown below ultrasound image.

Preset list font size

Changes the font size of the preset list.



Enable autohide

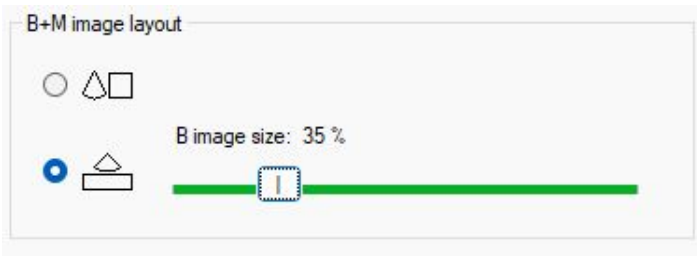
Enables/disables automatic hiding of selected Toolbar. It is possible to select which toolbar to hide, select delay before hiding and delay before showing the selected toolbar.

The hidden toolbar will appear on the screen automatically when the mouse cursor is in the hidden toolbar area or area near corresponding software border. Shown toolbar will be hidden when the mouse moves away from it.

Use scrolling autohide

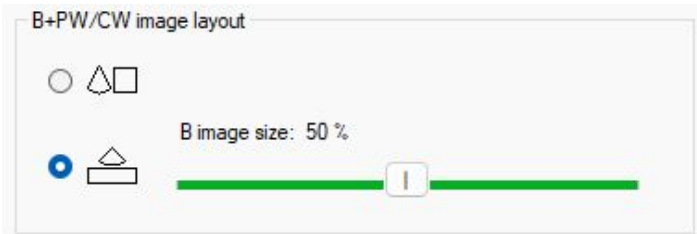
Changes style of hide/unhide toolbar movement: immediately or smoothly.

***Autohide** is very useful on smaller screens when there is not enough space to display ultrasound image and all controls simultaneously.*



Changes the layout of B and M images.

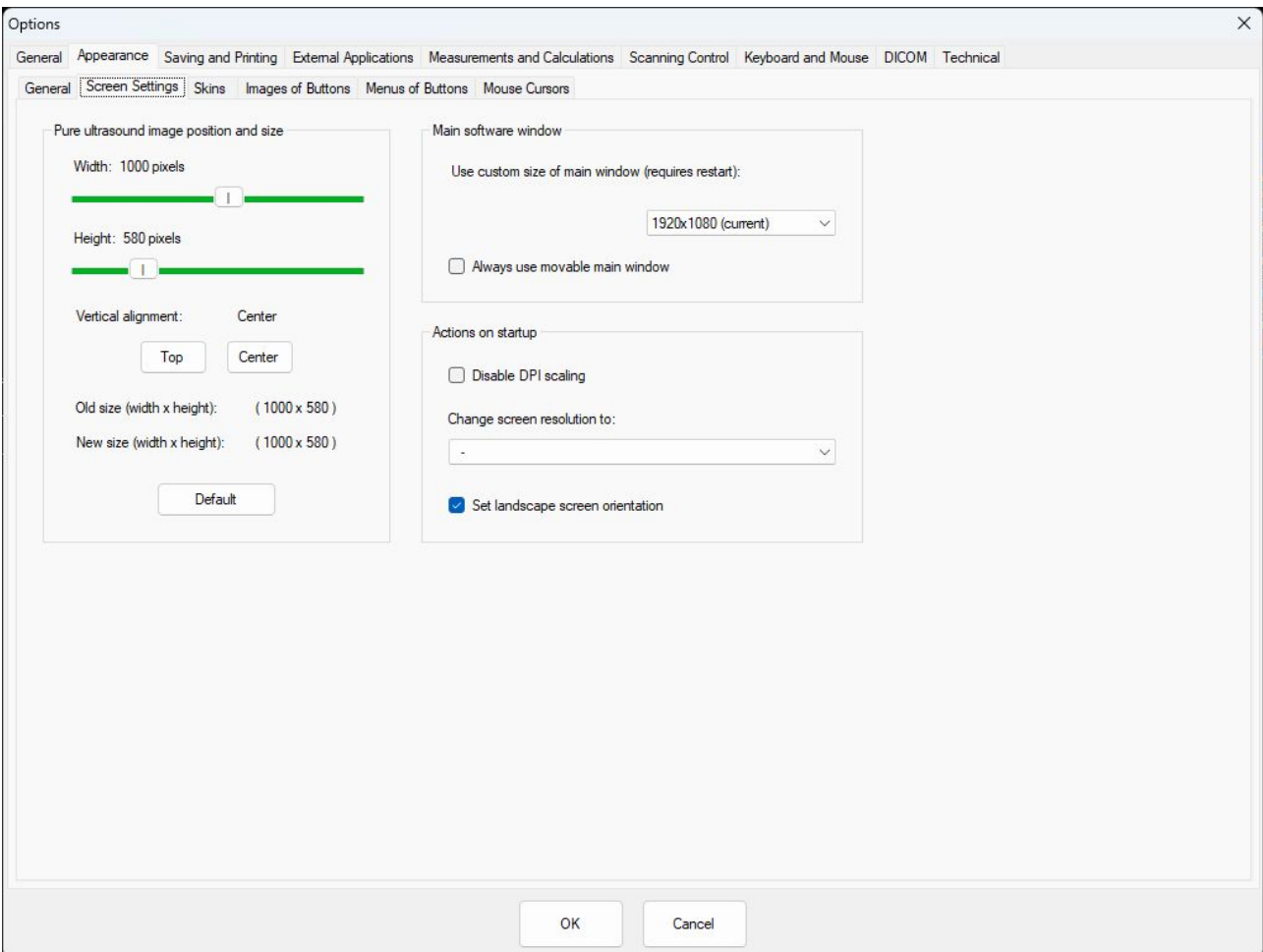
The slider changes the size of the B image compared to the size of the M image. A larger number means a larger B image size, but a smaller M image size.

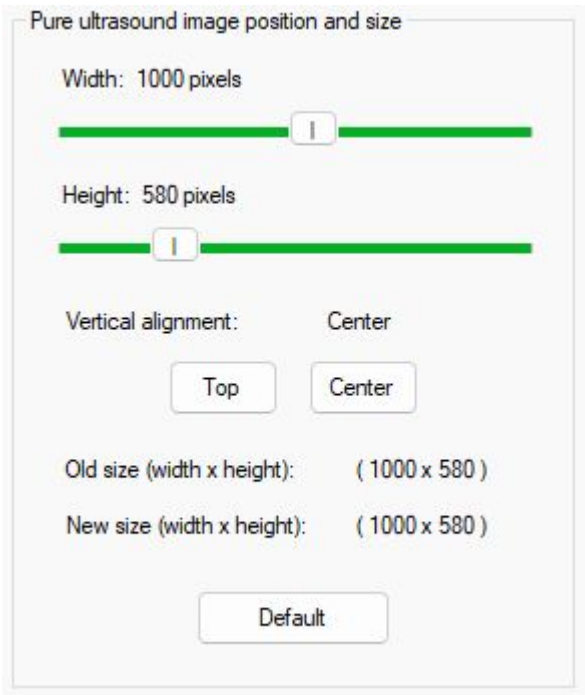


Changes the layout of B and PW/CW images.

The slider changes the size of the B image compared to the size of the PW/CW image. A larger number means a larger B image size, but a smaller PW/CW image size.

3.2. Appearance Tab -> Screen Settings Tab

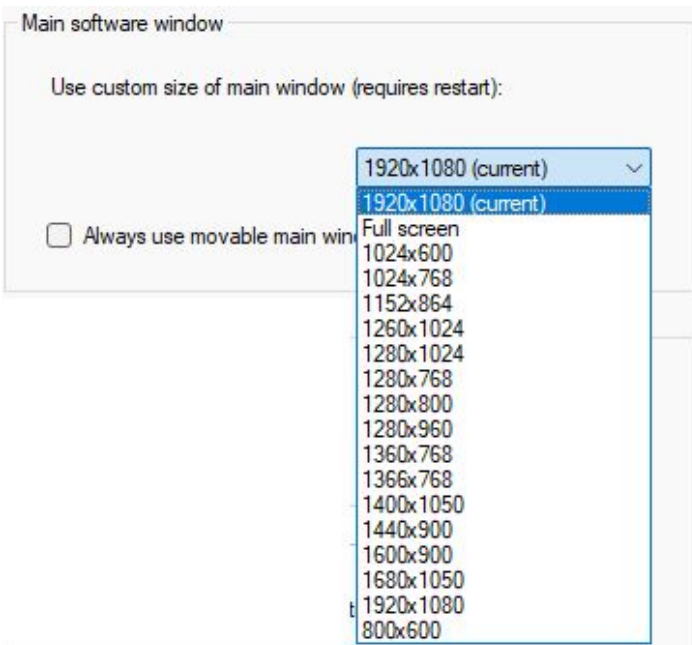
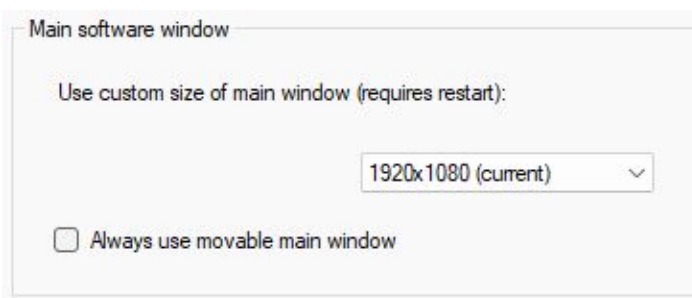




This control group allows to change the size of the displayed ultrasound image in pixels.

Set vertical alignment- **Top** or **Center** or press **Default** to factory setting of the vertical position of the ultrasound image.

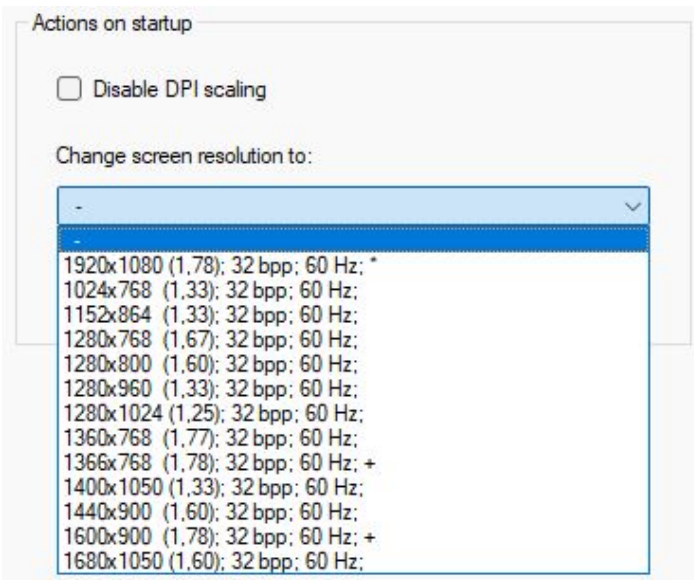
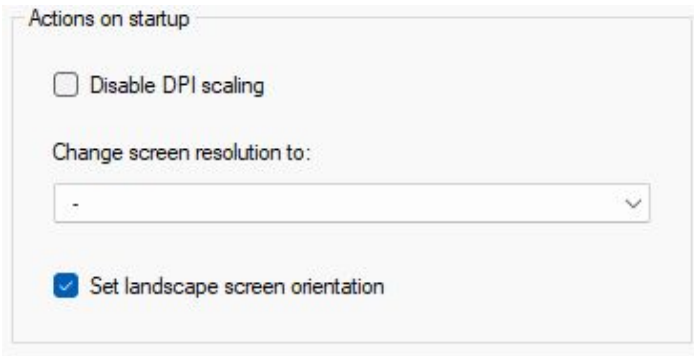
You can make Ultrasound image larger, but a very large size can lead to distortions caused by image resizing and low frame rate on less powerful computers.



It is possible to select a custom size of the main program window. If full screen is selected from the drop list, then after restart size will automatically change to largest possible size for this screen.

Always movable main window, if the check box is enabled - allows moving main program window in full-screen mode.

By default, this control is disabled because moving software in full-screen mode means what part of the software window will be not seen.



Disable DPI scaling check box.

If enabled, during program start up DPI scaling set in Windows settings is disabled. Using the display scaling, you can make on-screen items such as text and icons more substantial and more comfortable to read and use.

Change screen resolution to:

During program start up changes the **computer** display resolution to selected.

Changing screen resolution, you change the “scale” of the software window. You can make everything look bigger. To do that you can select lower resolution from the list. To help make the right choice there are some additional details near each resolution: 1920x1080 resolution itself, (1.78) resolution ratio, 32 bpp color depth; 60Hz screen refresh rate.

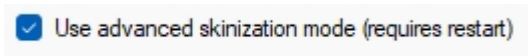
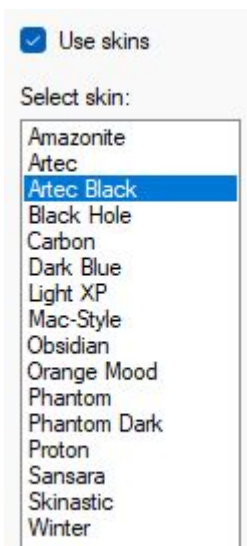
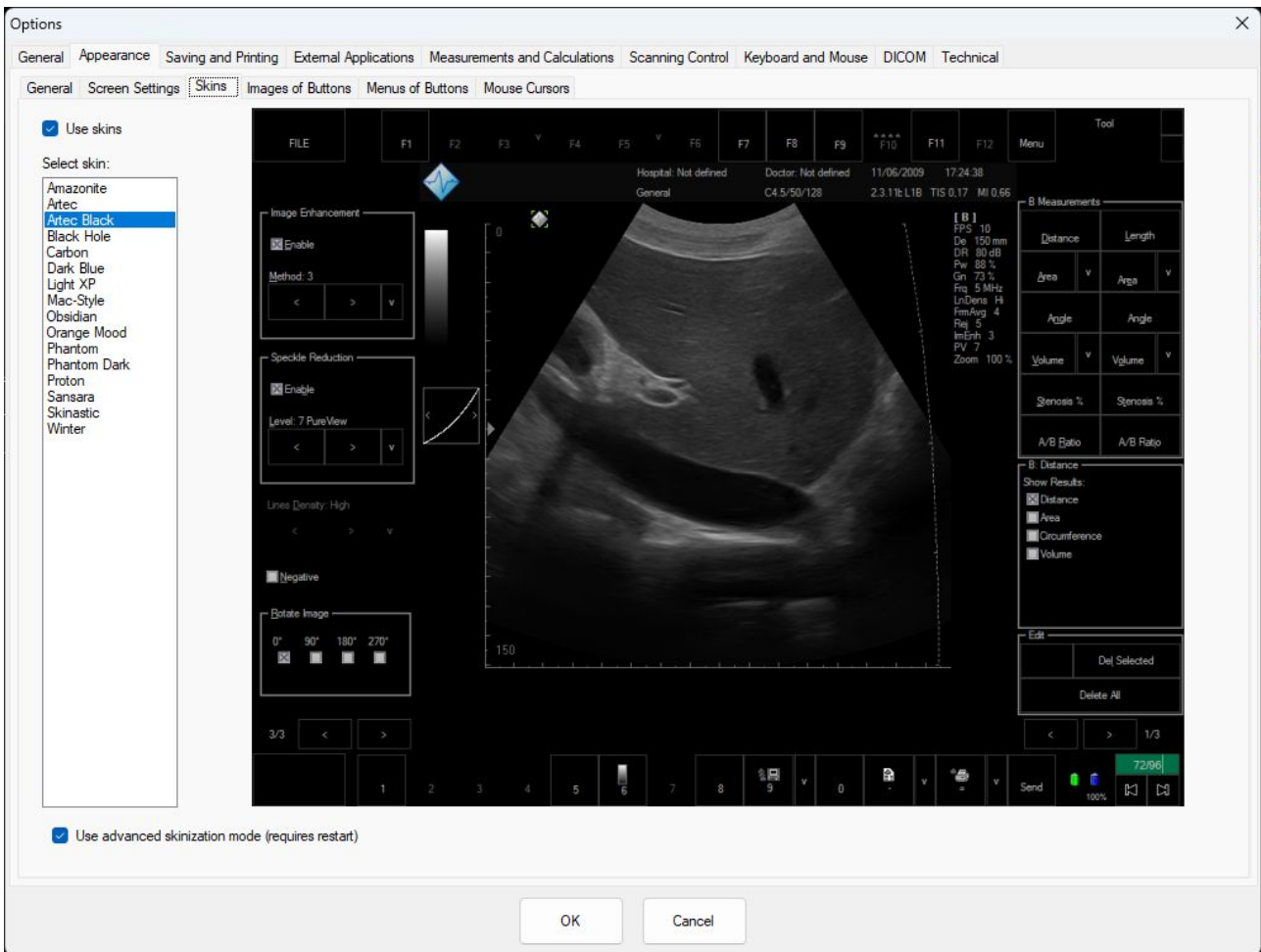
The best choices are resolutions with the same or close screen ratio. They are marked with a “+” sign in the end. The “” sign is marking default resolution.*

Set Landscape screen orientation

If disabled program can be used in portrait orientation if such is set in Windows settings. This option may be used on tablet computers.

To return all changes to the default state set ultrasound image size to default, main window size to full screen, remove DPI scaling, screen resolution to -, and restart the software.

3.3. Appearance Tab -> Skins Tab

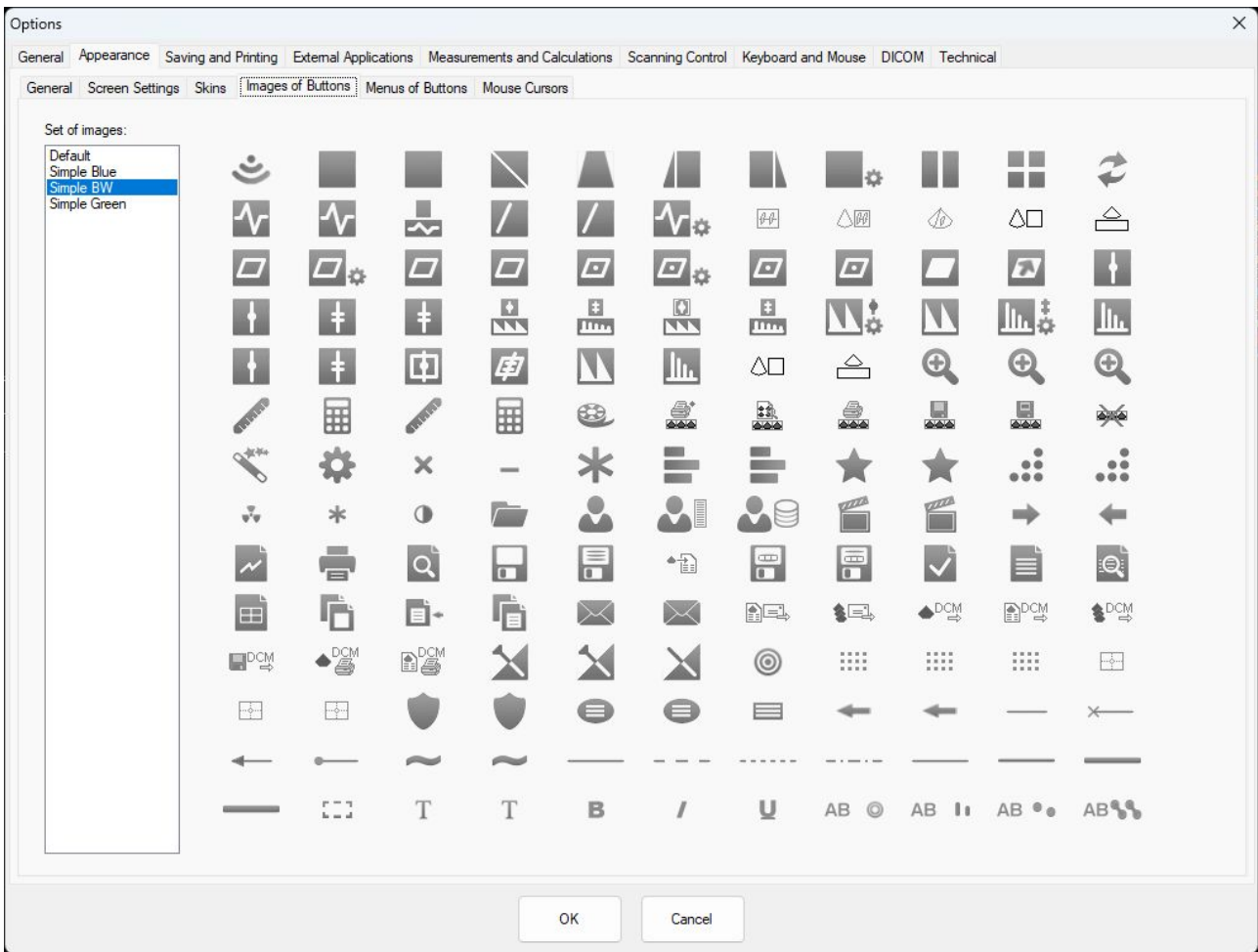


Use skins check box
Enables or disables skin usage. If disabled, the use of advanced skinization mode is also disabled after software restart.

Select skin
Allows to select skin.

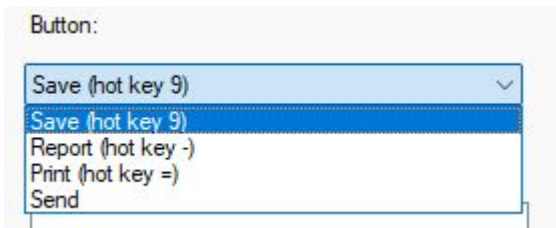
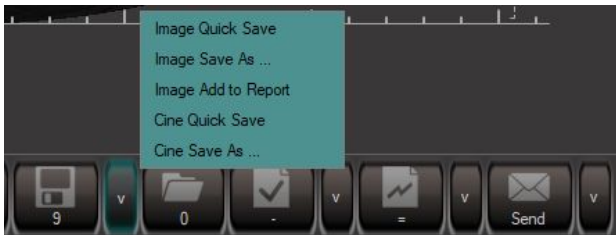
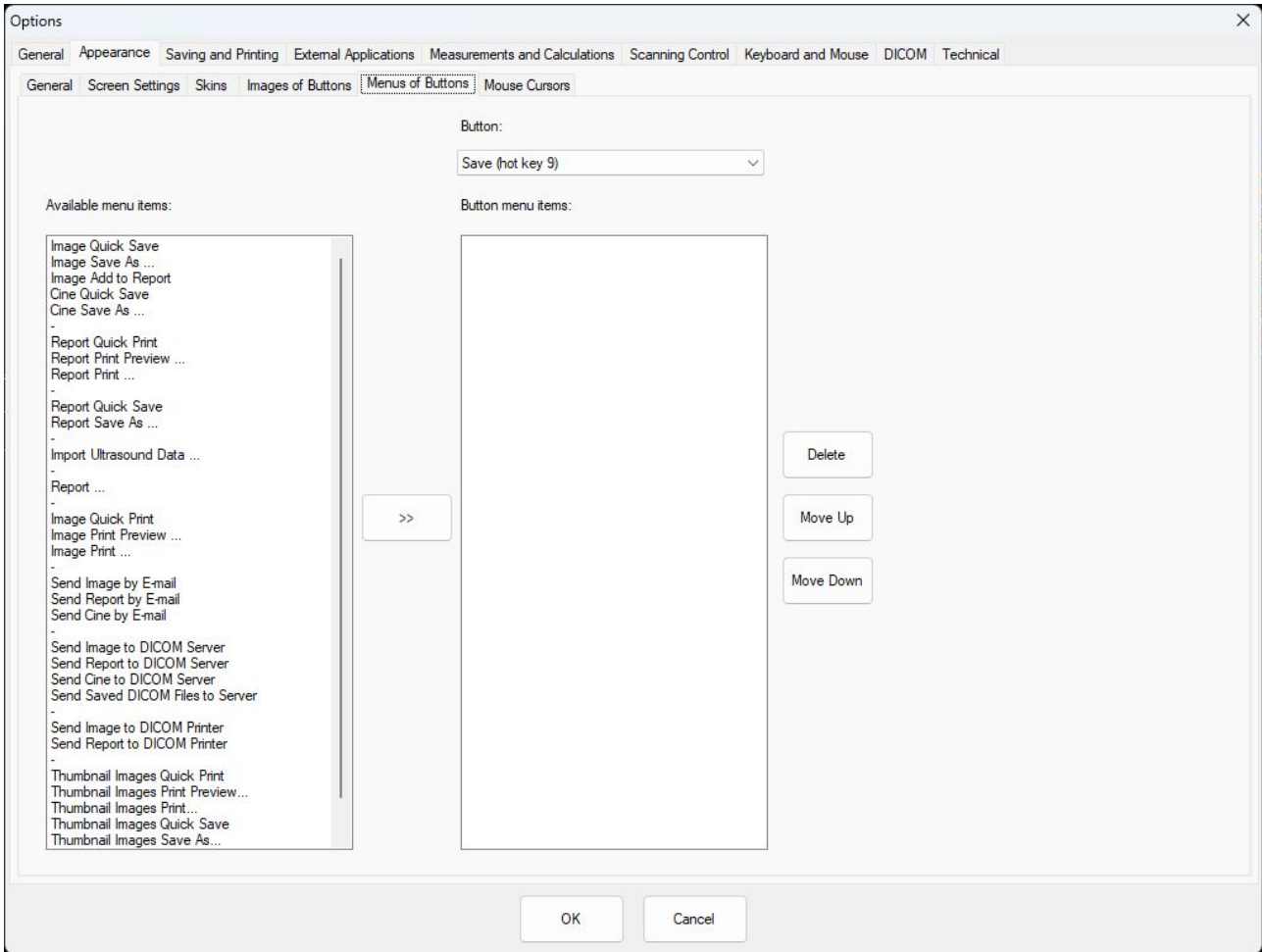
Use advanced skinization mode check box
If disabled and the software is restarted, then advanced, requiring more computer resources skins are replaced with simple skins (Windows color schemes). To apply them, software restart is needed.

3.4. Appearance Tab -> Images of Buttons Tab



Allows to select images of buttons from the list.
Select a set of images from the list, and the preview of selected icons will appear. Press OK to apply the selection.

3.5. Appearance Tab -> Menus of Buttons Tab



It is possible to change the functionality of 4 control buttons at software bottom toolbar.

From the **Button drop list** you can select which button functions you want to change

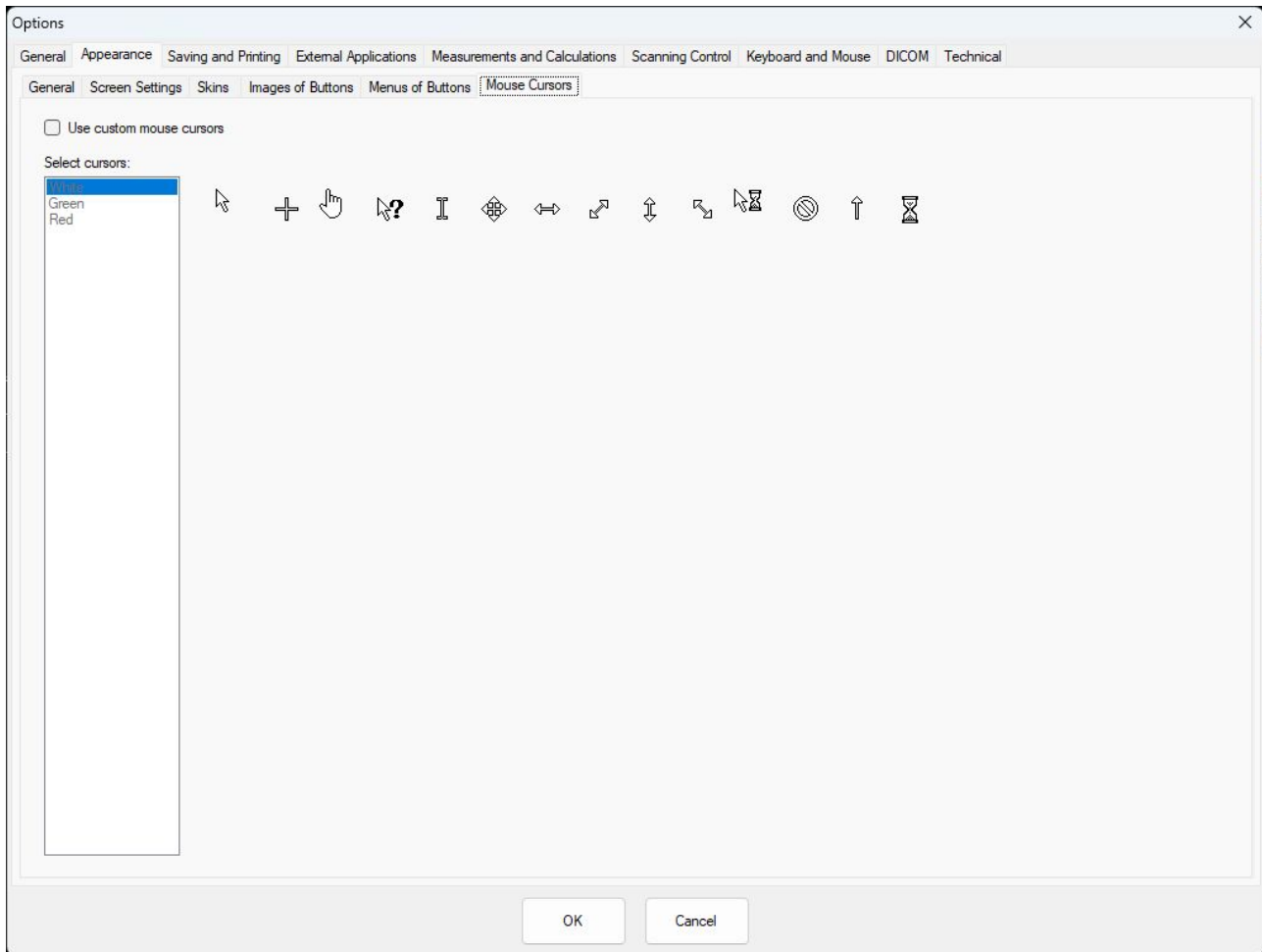
Then from the **Available menu items** you can select one or more functions to apply to the selected button.

Select the function then press the arrow ">>", the selected menu item will move to **Button menu items** – a list of custom-applied menu items.

It is possible to **Delete**, **Move Up** or **Move Down** button menu items.

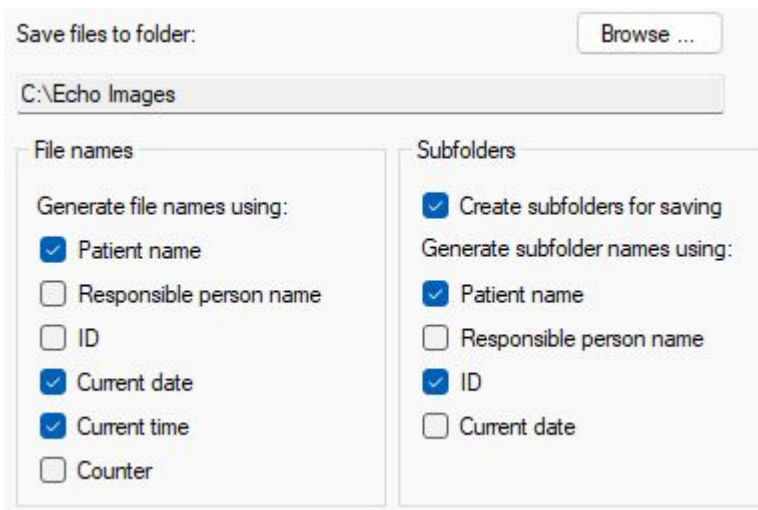
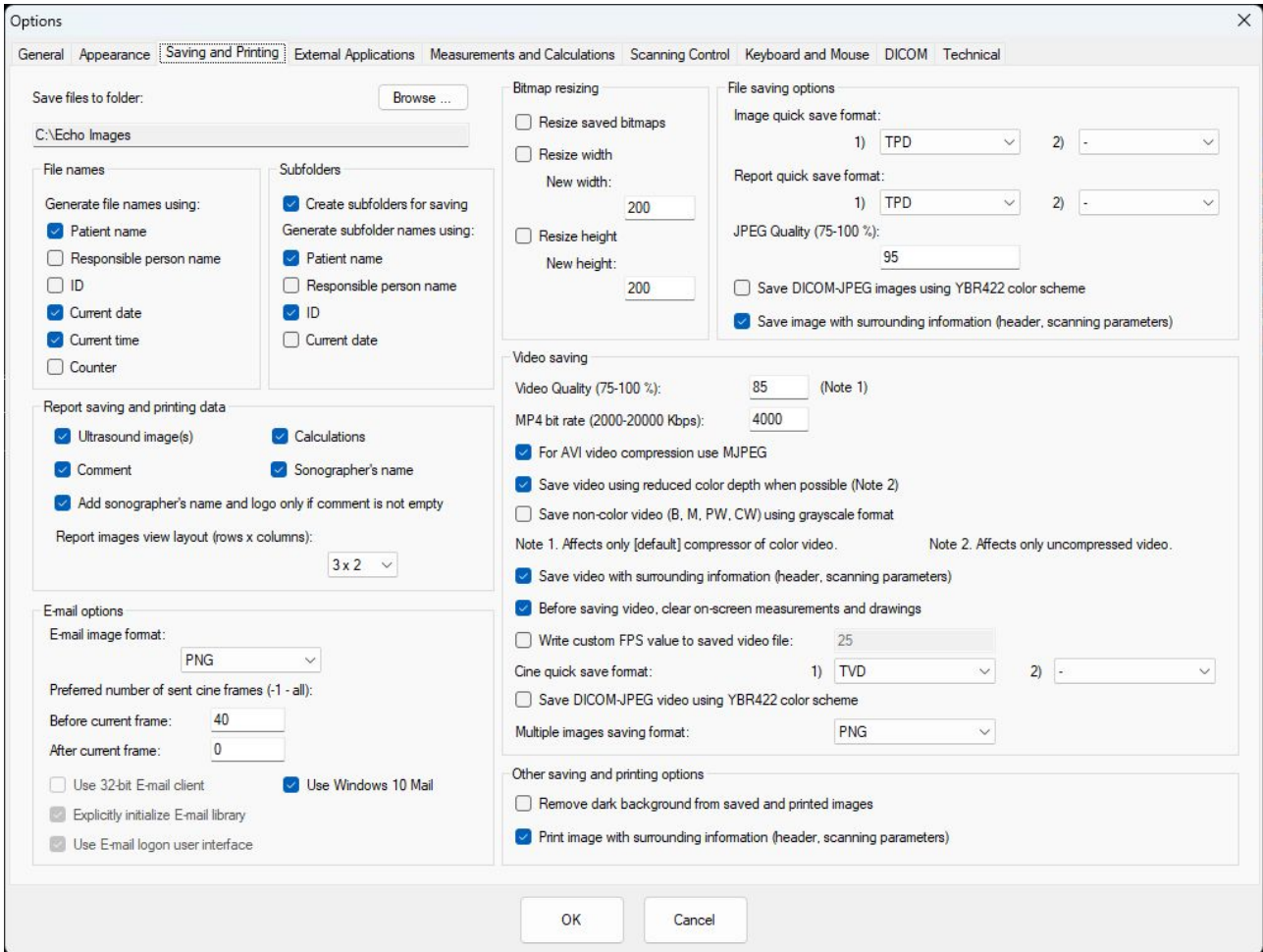
To restore default menu items, delete all custom-added menu items.

3.6. Appearance Tab -> Mouse cursors Tab



If the **Use custom mouse cursors** control is enabled and desired set of mouse cursors is selected from the list, then, after click on “OK” button, these cursors are applied. Preview of cursors is shown at the right of the list.

4. Saving and Printing Tab



Pressing **Browse** will allow you to change the default folder for ultrasound image storage.

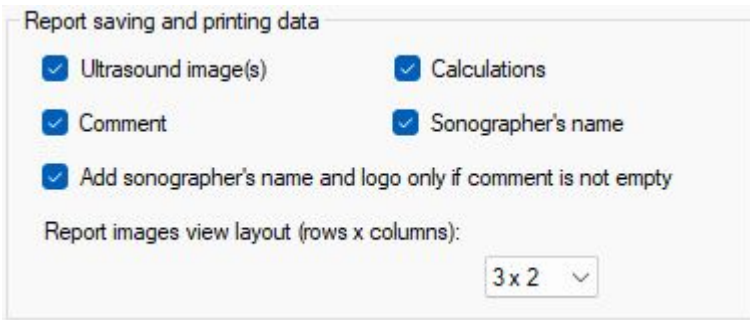
Generate names using

The file name will be generated depending on the selected checkboxes.

Generate subfolders for saving

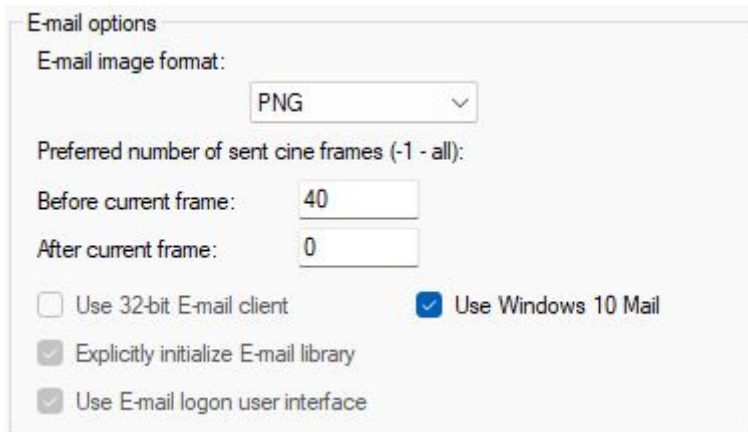
Subfolder names are created depending on selected checkboxes: **Patient name**, **Responsible person name**, **ID** or **Current date**.

This allows sorting of images by saving them to separate subfolders.



Allows to select what data should be displayed in generated report. There is the possibility to select that the sonographer's name and logo to report is added only if the comment field is not empty.

The drop list Rows x Columns at the bottom is changing the layout of images shown in report dialog and the number of image columns in generated report.



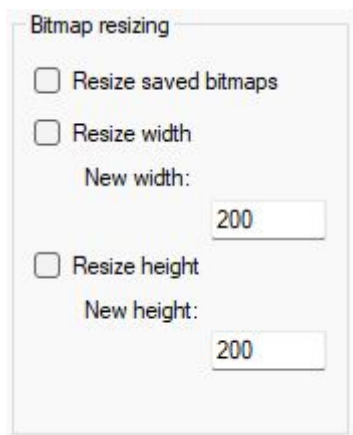
E-mail image format drop list allows to select what image format should be used and attached to the e-mail when you press **Send by E-mail** in the Graphical User Interface (GUI).

Preferred number of sent cine frames selects the preferred number of cine frames that will be included in the e-mail attached file. It is possible to set a number of frames before the current frame and select some number after the current frame. The current frame is the fame displayed at the moment when the **Send Cine by E-mail** command was selected. Entered number “-1” means all frames before or after current frame.

Use Windows 10 Mail. When selected, Windows 10 mail will be used for sending images and cines. Please note that copy of sent attachments will be saved to documents folder of the current user.

Use 32-bit E-mail client. This should be selected if you are using 64-bit Windows and installed 32-bit E-mail software.

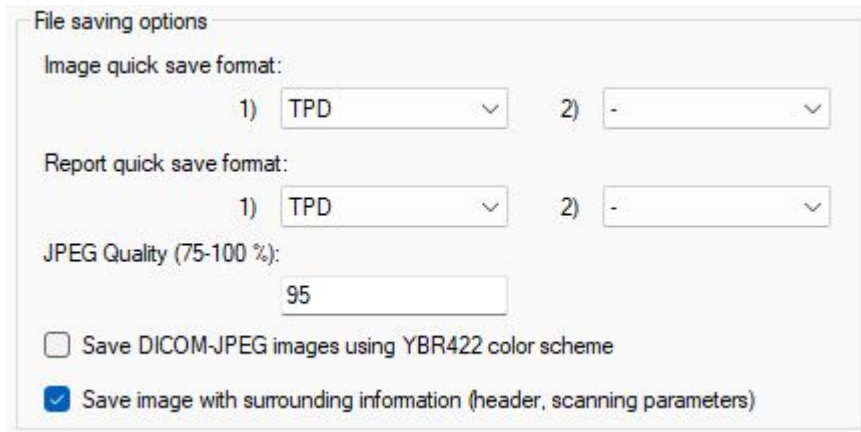
Explicitly initialize E-mail library and **Use E-mail logon user interface** should be disabled if you are using Windows Live Mail. Otherwise, you can see the message “There is no email program associated...” even if you have set the default e-mail program.



Resize saved bitmaps

When enabled, all saved images will have entered width/height values.

This may be useful when you need to have an image having a specific small size. Max width/height values are 999.



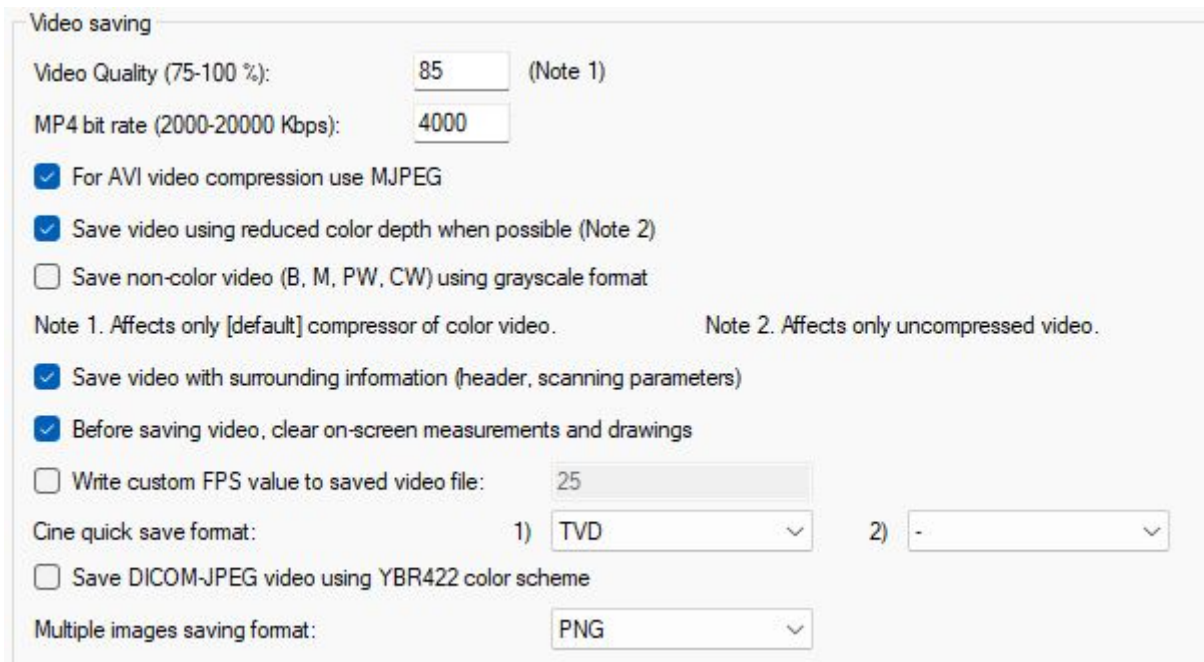
File saving options allows to select what file types will be used then you are pressing **Quick Image Save** or **Quick Cine Save**.

It is possible to save the same image file in 2 different file formats. If some value is selected in the 2nd drop list, then the file will be saved in 2 formats.

JPEG Quality field changes the quality of saved JPEG files. The small quality number gives a small image size but reduces the quality.

Also, it is possible to select to **save DICOM-JPEG using YBR422 color scheme**. This may be used if your DICOM viewer does not support RGB format that is used by default.

Save image with surrounding information (header, scanning parameters). if disabled, then the software will save just plain ultrasound image with depth/width markers.



Video Quality changes the quality of a compressed video file. Larger quality gives better video quality but requires more space for storage.

MP4 bit rate allows to change the bit rate from 2000 to 20000 kbps. Larger bitrate gives better image quality but requires more space for video storage.

Save video using reduced color depth when possible. Helps to reduce the space required for uncompressed video storage.

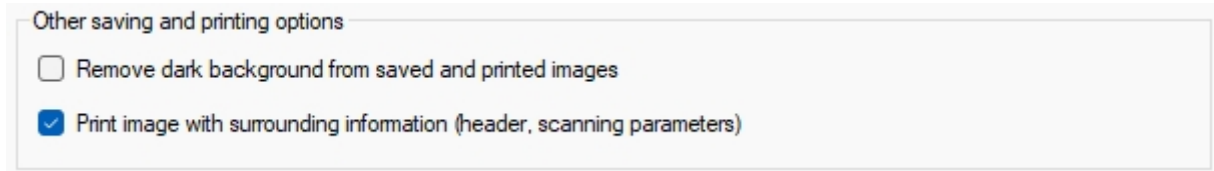
Save non-color video (B, M, PW, CW) using grayscale format. Saving in grayscale format makes video file smaller.

Before saving video, clear on-screen measurements and drawings. Measurements are usually done only on one frame from the entire cine. Saving them on video is not convenient.

Write custom FPS value to saved video file. This option allows to write to video file desired frame rate value if used video viewer cannot handle actual ultrasound frame rate that may be enough high.

Cine quick save format allows to select the cine file format and if needed it is possible to choose save file in 2 different formats simultaneously.

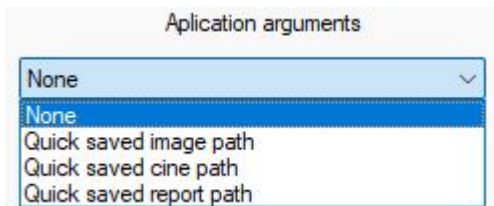
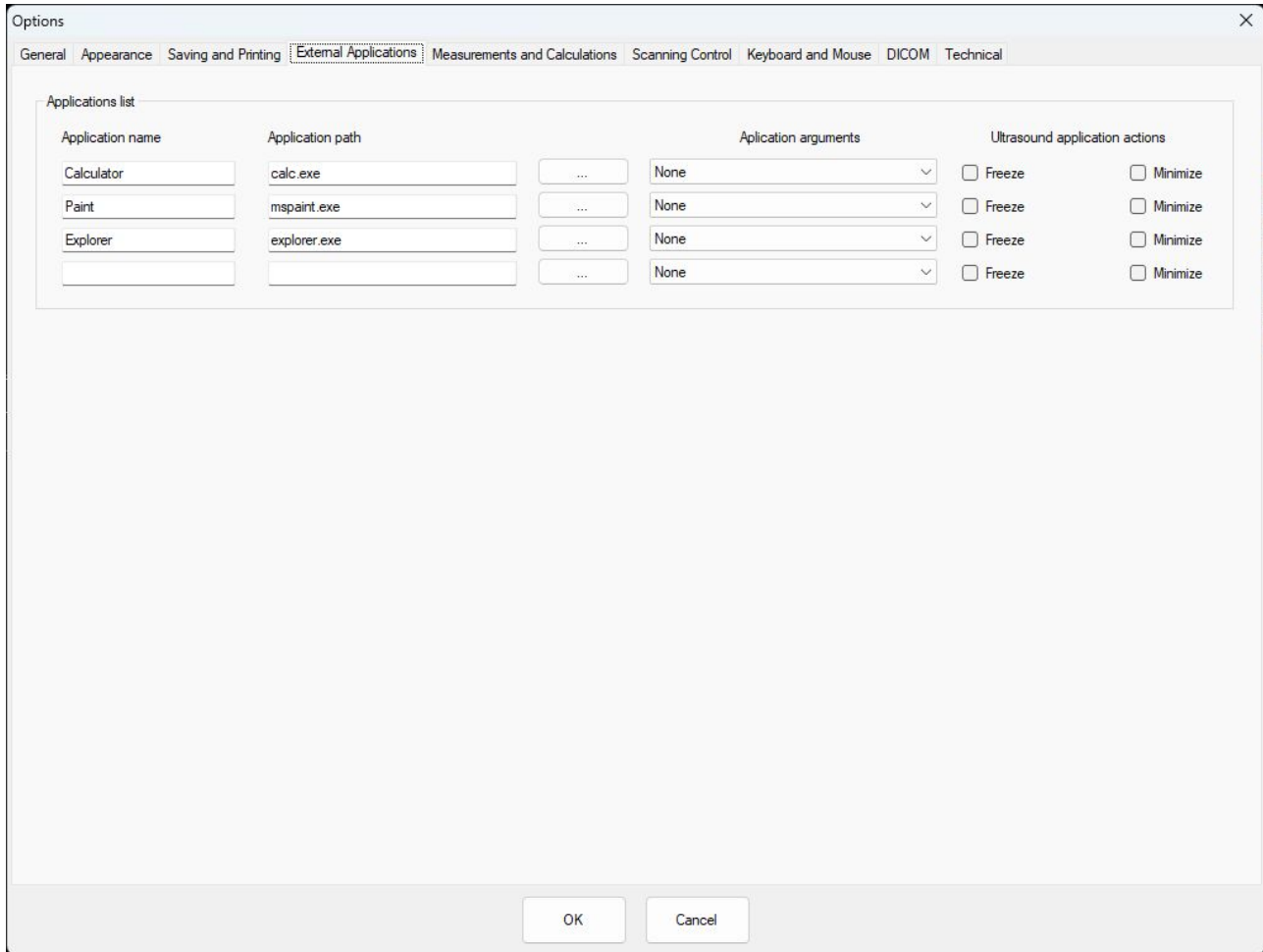
Multiple images saving format changes the format of saved Multiple images. Multiple images – special mode when cine is saved as multiple images where every frame is a separate image file.



The first check box removes dark background from saved and printed images and replaces it with white. This allows to save toner when printing and makes header/scanning parameters text more contrast.

The second check box allows to select if images are printed with surrounding information or this information is removed and is printed only pure ultrasound area. This option will affect only images sent to the printer.

5. External Applications Tab



Allows to select external applications that are visible after pressing the software “Menu” button at top toolbar.

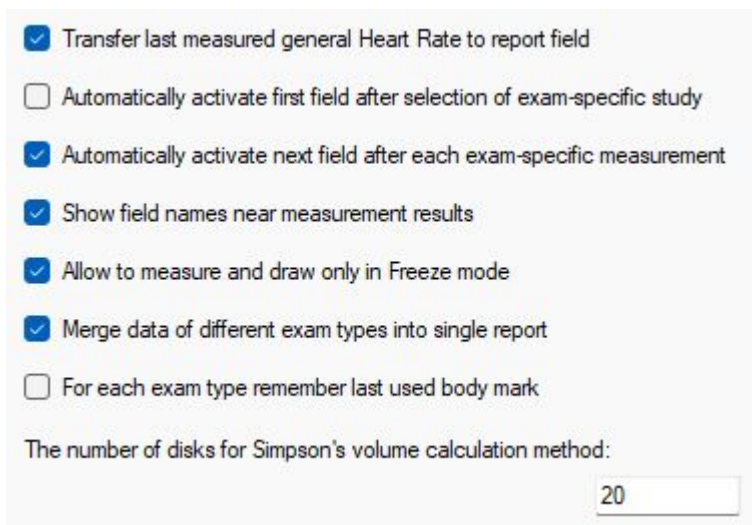
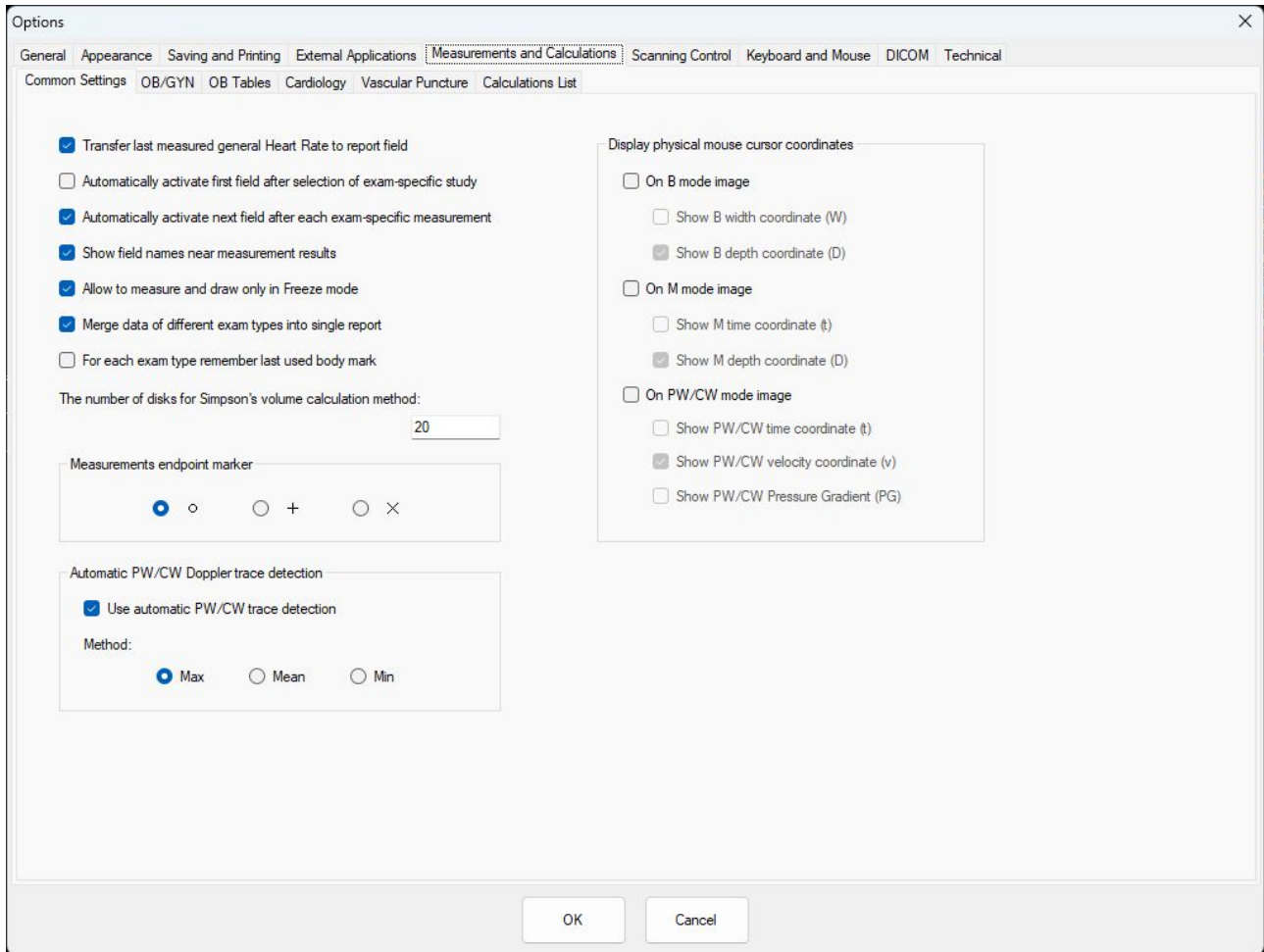
It is possible to modify or add custom programs. After pressing the “...” button, the Explorer window will appear. After *.exe file selection, its path will appear in the text box and the user should enter the **Application Name**.

Also, it is possible to send some **arguments** to the application

Enabling **Freeze** and/or **Minimize** check boxes will force Echo Wave II to Freeze ultrasound or Minimize itself when external application opened.

6. Measurements and Calculations Tab

6.1. Measurements and Calculations Tab -> Common Settings Tab



Transfer last measured general Heart Rate to report field

If enabled, last general Heart Rate (HR) measurement on M mode image or on PW mode image is transferred to HR report field and to HR field in Patient window.

Automatically activate first field after selection of exam-specific study

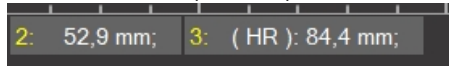
If enabled, move the focus to the first exam parameter. It is highlighted with 2 lines. After the selection of the exam, you can immediately start doing measurements.

Automatically activate next field after each exam-specific measurement.

If enabled, allows to do all exam-specific listed measurements one by one without selecting something additionally

Show field names near measurement results

When some exam specific measurement is done, if this control is enabled, near measurement result below ultrasound image is shown the name of measured field (like HR).



Allow to measure and draw only in Freeze mode

If disabled allows to do measurements or draw during live ultrasound mode. The main disadvantage of measuring in live mode is the possibility of what probe will move and as a result measuring objects will move or disappear.

Merge data of different exam types into single report

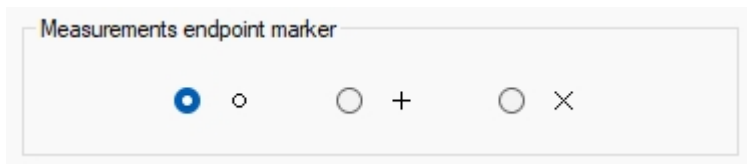
If enabled it is possible to select in the measurement menu different types of measurement (General, OB/GYN, Abdominal...) and they will be saved in one report. If this control is disabled the user must choose the exam type in the Patient window. Then only this exam type-specific measurements will be seen and only they will be saved in the report.

For each exam type remember last used body mark

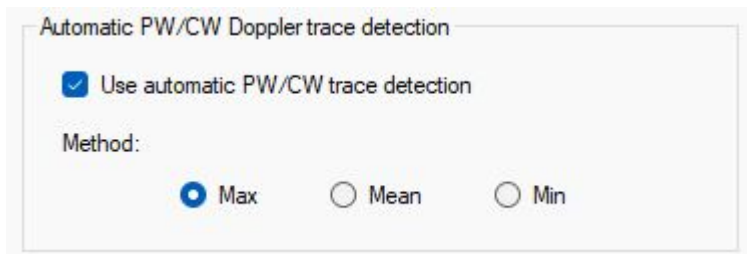
If enabled, then every time you select exam at Patient window, the software restores and displays near ultrasound image the body mark that was used last time with that exam type.

The number of disks for Simpson's volume calculation method

Changes the number of disks used for volume calculation using Simpson's method.



Changes marker view used for measurement endpoints



Use automatic PW/CW Doppler trace detection checkbox selects if PW trace is detected automatically by software (option is enabled) or is painted manually by the user (option is disabled).

Method radio boxes allows to select what values should automatic trace algorithm use and return to the user. It is possible to select to use the maximal value, calculate the mean value or return the minimal detected value.

If the check box **On B mode image** is enabled, then:

Show B width coordinate(W) in the upper right corner will be displayed the current mouse cursor width position on the ultrasound image in mm. The center of ultrasound image will be 0, value to the left will have negative values and values to the right will be positive

Show B depth coordinate(D) in the upper right corner will be displayed the current mouse cursor depth position on the ultrasound image in mm.

If the check box **On M mode image** is enabled, then:

Show M time coordinate(t) in the upper right corner of M mode image will be displayed cursor time position in s.

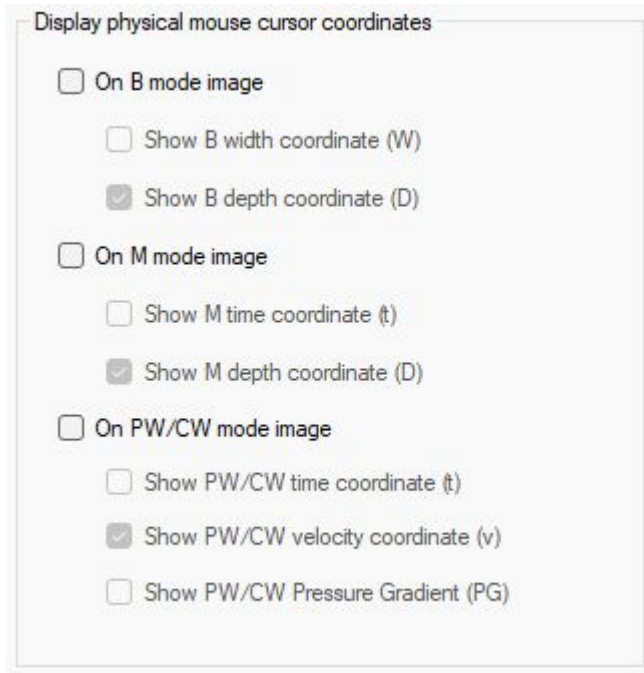
Show M depth coordinate(D) in the upper right corner of the M mode image will be displayed cursor depth position in mm.

If the check box **On PW/CW mode image** is enabled, then:

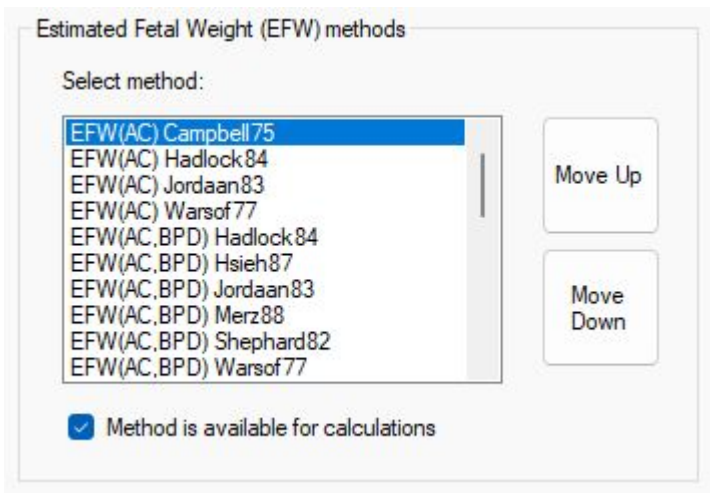
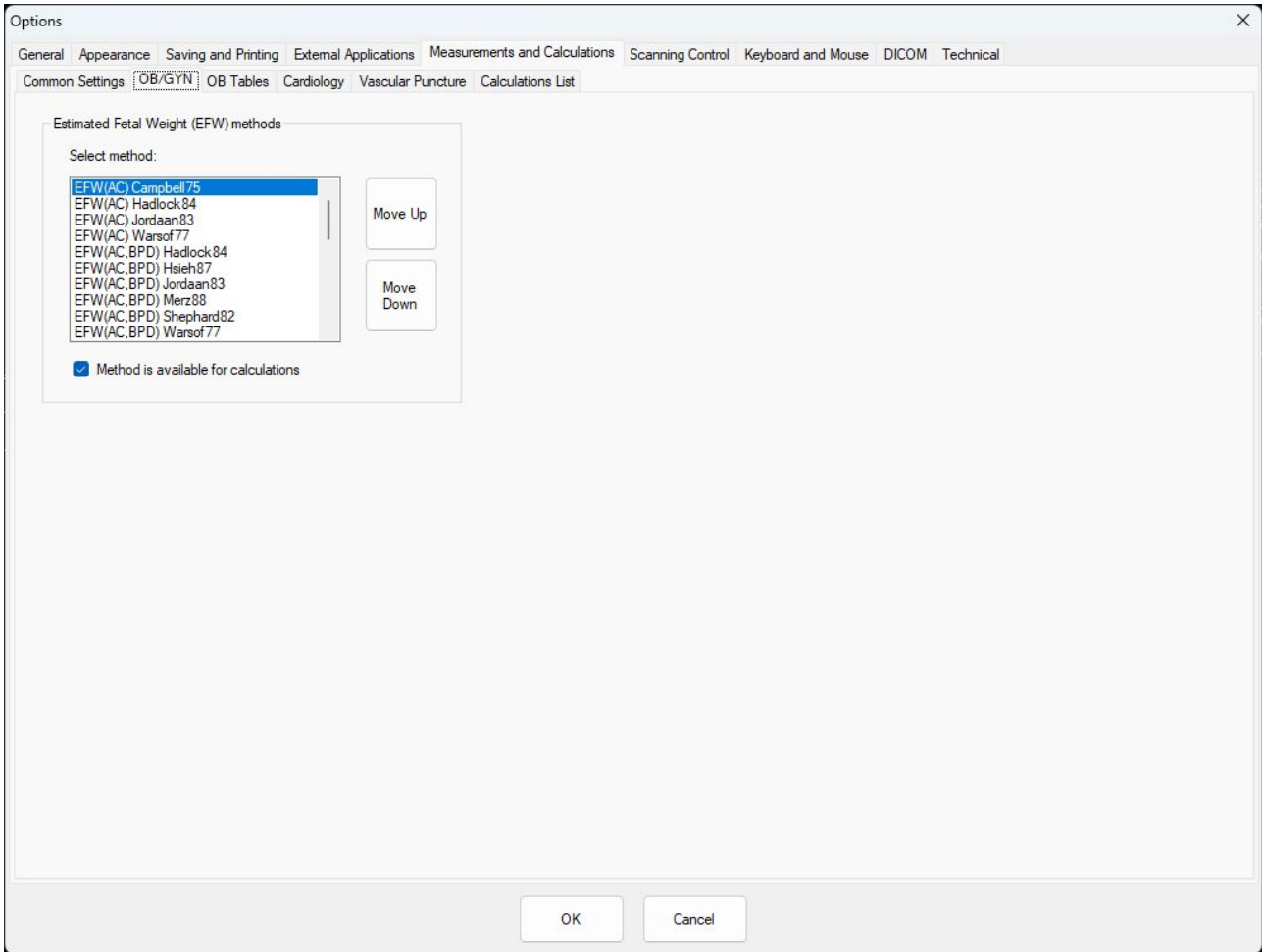
Show PW/CW time coordinate(t) in the upper right corner of PW/CW mode image will be displayed cursor time position in s.

Show PW/CW velocity coordinate(v) in the upper right corner of PW/CW mode image will be displayed cursor velocity value in cm/s.

Show PW/CW Pressure Gradient(PG) in the upper right corner of the PW/CW mode image will be displayed cursor pressure gradient value in mm/Hg.



6.2. Measurements and Calculations Tab ->OB/GYN Tab



Estimated Fetal Weight (EFW) methods

If one of the methods is selected in the list, then it is possible to enable/disable the selected method by clicking **Method is available for calculations** check box.

The selected method can be moved up or down in the list by clicking the **Move UP** or **Move DOWN** buttons.

6.3. Measurements and Calculations Tab ->OB Tables Tab

This settings window allows to modify or create a new OB table.

On the left side of this tab are shown current table values. On the right side are controls to modify the table.

Table category: allows to select from the database the category of tables to display.

Select table: Allows to select the exact table from the list.

It is possible to **Add New Table**, **Delete Selected Table**, **Move Up** or **Move Down** the selected table by pressing the corresponding buttons.

By pressing **Export** or **Import** buttons it is possible to import or export selected table from/to text file.

Table/Result Name:

Parameter:

Growth table Table is available for calculations

Comments: GA(AC) Hadlock82
AC - Abdominal Circumference

Reference: Hadlock FP, Deter RL, Hamist RB, Park SK. Fetal abdominal Circumference

Table/Result Name field allows modification of the selected table name.

Parameter list allows to select what parameter is measured (for example, AC - Abdominal Circumference) and defined in table.

Growth table checkbox, if enabled, means that table is defined for Growth trending. Otherwise, table is used for Gestational Age (GA) calculation.

Table is available for calculations checkbox, if enabled, means that selected table is used for calculations and available at OB options window. If disabled, the table is not used for calculations.

This option allows to select preferred tables or tables that are usually used in your country or clinic from many available tables.

Comment field allows to enter table comments and reference the source of the table.

Table input format: Look-up result

	Input	-3	-2	-1	0	1	2	3
Caption:	AC(mm)				GA(w+d)	SD(d)		
Use for input:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Options:	<input checked="" type="checkbox"/> "-1" = "1"	<input type="checkbox"/> "-2" = "2"	<input type="checkbox"/> "-3" = "3"	<input type="checkbox"/> Absolute SD values input				
Add new row		Insert new row		Current table row:			Delete selected row	
				<input type="text"/>			OK	

GA table row format: Meas. or calc. ("Input") / GA ("0") / GA SD ("1")
 GA table units: Meas. or calc. - mm, cm2; GA - w+d, d; GA SD - w+d, d

Caption fields allow to specify table column names. First column is an input (measurement), column marked with "0" is a central look-up result (Gestational Age for GA table). Columns "-3", "-2", "-1", "1", "2", "3" at the left and right of column "0" are for Standard Deviations (SD).

For Gestational Age (GA) tables, "Input" column is some parameter that is measured on ultrasound like AC (Abdominal Circumference) and central result "0" is Gestational Age (GA). GA is specified as weeks+days.

For Growth trending tables, "Input" column is Gestational Age (GA) and result column "0" depends on used parameter (for example, AC).

Use for input checkboxes, if enabled, specify what columns are used in table. Some tables in referenced publications may have only input value and look-up result (GA), others may also have standard deviations of different intervals specified as SD, 2SD, 3SD or percentages.

Options checkboxes, if enabled, allow to specify that standard deviation columns "-1", "-2", "-3" are equal to corresponding columns "1", "2", "3" with negative sign and enter data of only positive SD column(s).

Absolute SD values input checkbox, if checked, means that standard deviation values are entered as absolute, and otherwise values are entered as relative to the central "0" value. Selection depends on how standard deviation is specified in the referenced publication.

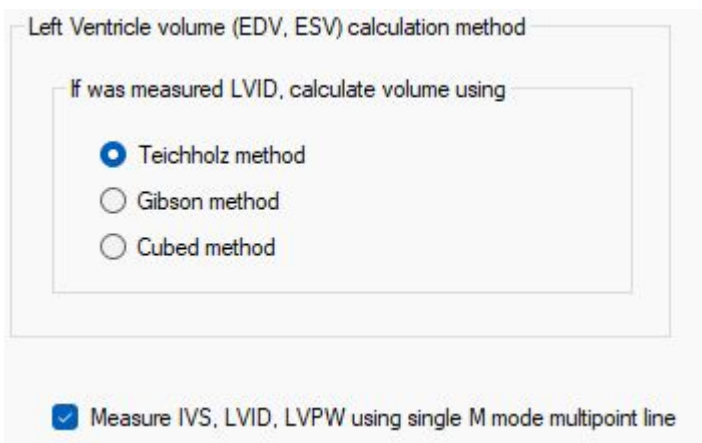
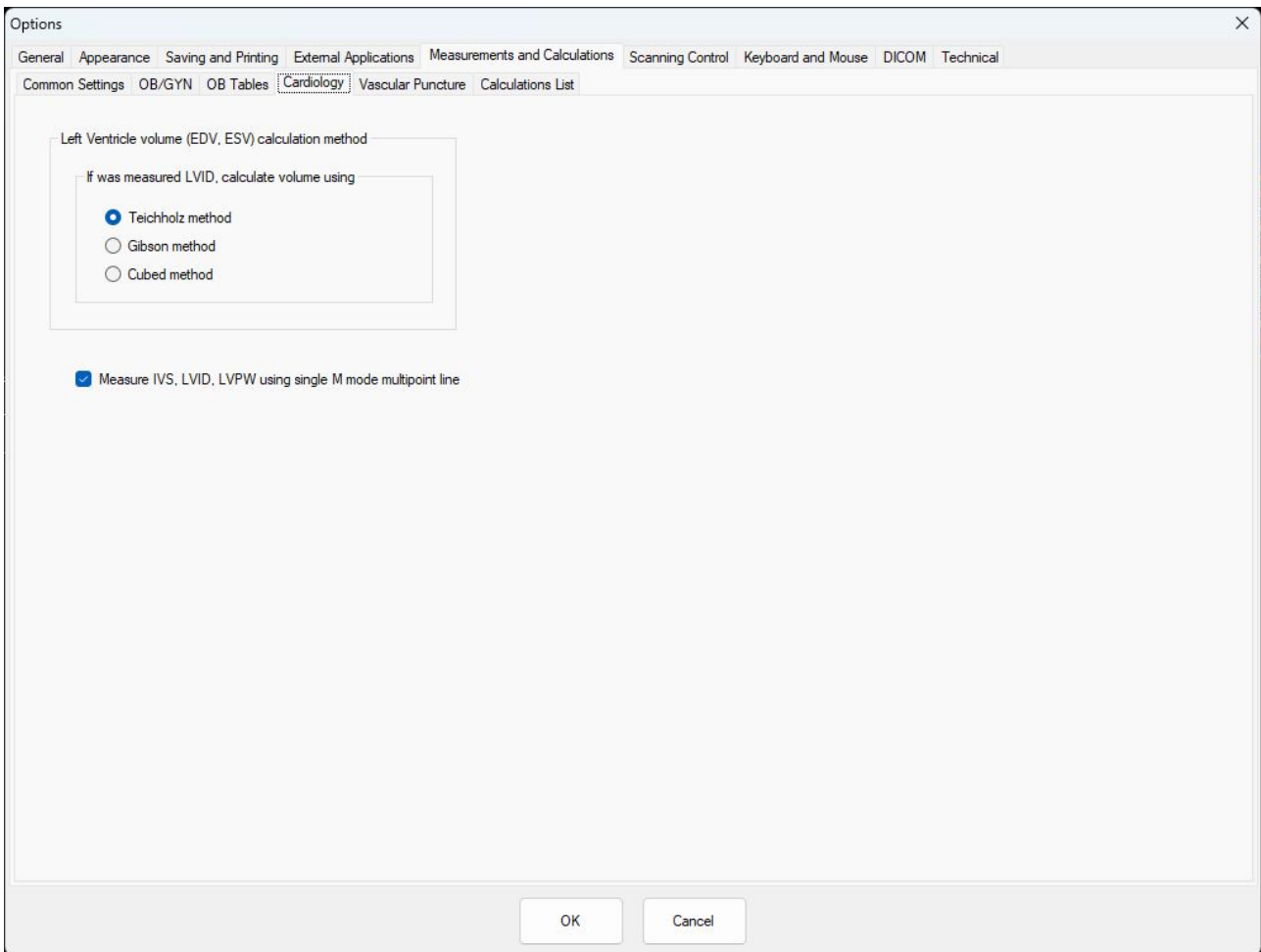
Add new row button adds an empty row to the end of the table. **Insert new row** button inserts empty row above selected table row. **Delete selected row** button deletes the selected table row.

Current table row field allows to modify data of the selected row. Entered data must correspond to columns that were selected using "Use for input" checkboxes. As separators are used semicolons ";".

Measurements on ultrasound are entered as numbers in mm or cm2 units. GA is entered using w+d (weeks+days) format (like "5+10"), absolute SD is entered using w+d format, relative (not absolute) SD is entered using days (d).

The **OK** button sets data from the "Current table row" field to the selected table row.

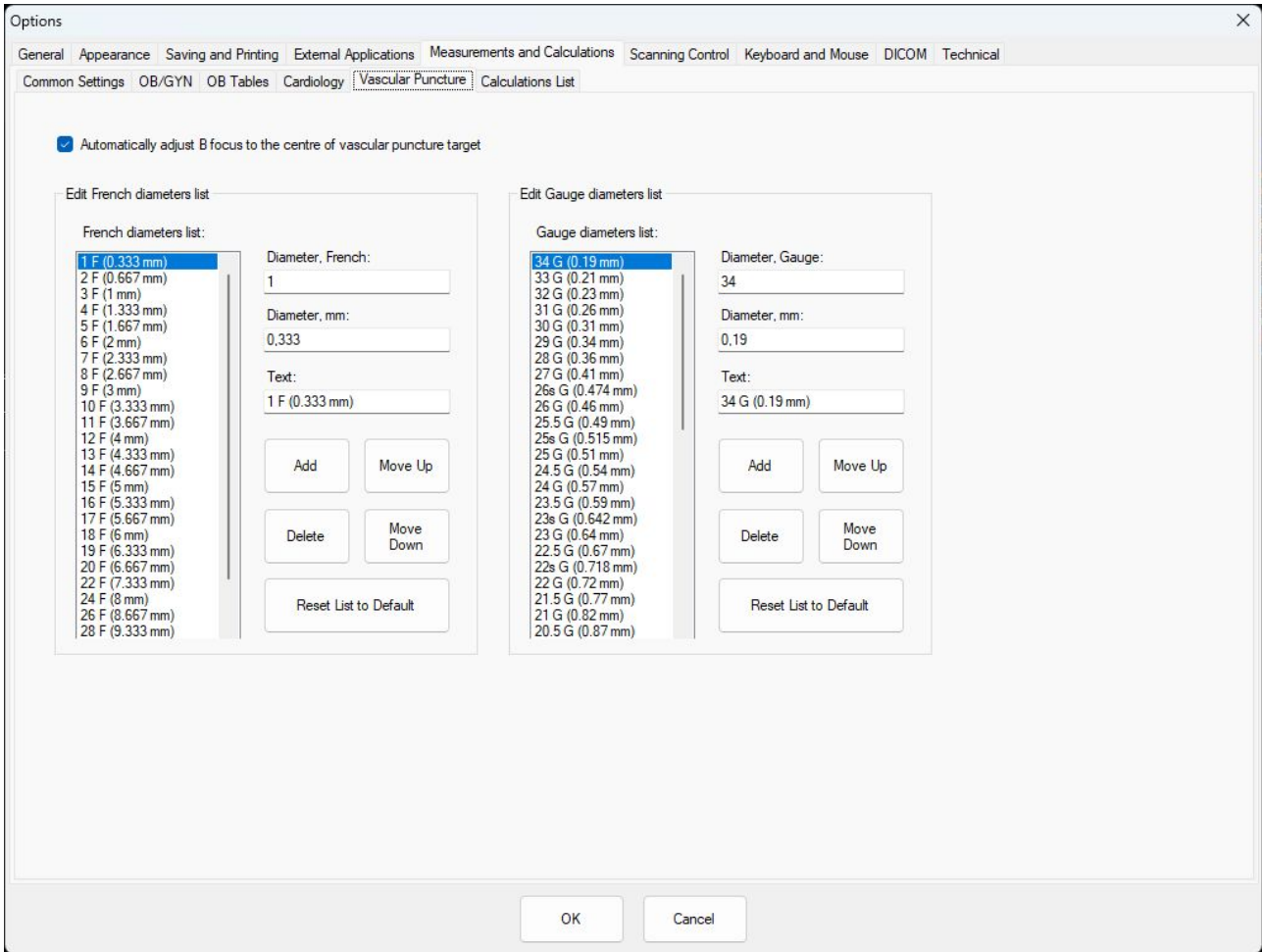
6.4. Measurements and Calculations Tab ->Cardiology Tab



Method checkboxes allow to select Left Ventricle volume calculation method when doing exam-specific Cardiology measurements.

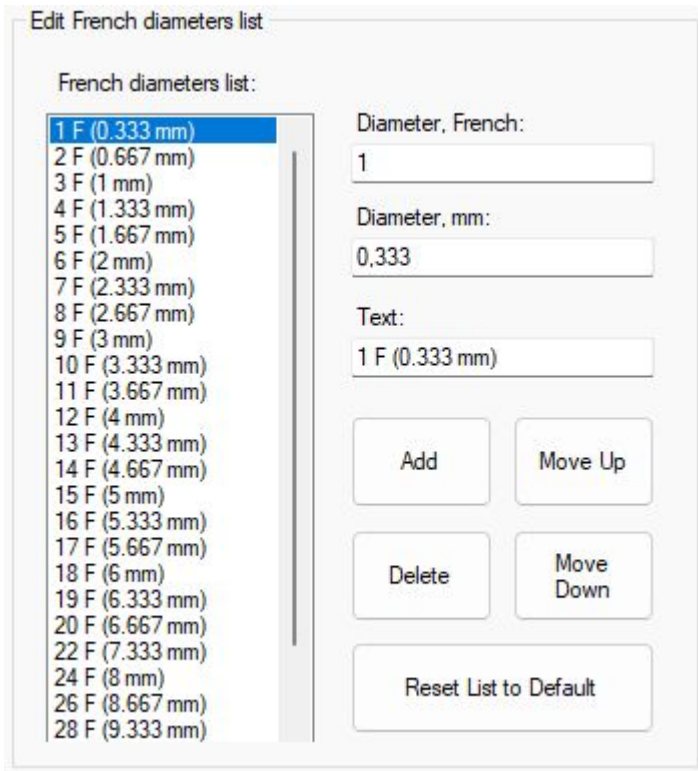
Measure IVS, LVID, LVPW using single M mode multipoint line checkbox, if enabled, specifies that mentioned measurements will be done by setting points along single vertical line on the M mode image. If this option is disabled, each measurement is done with separate distance measurement.

6.5. Measurements and Calculations Tab ->Vascular Puncture Tab



Automatically adjust B focus to the centre of vascular puncture target

If the check box **Automatically adjust B focus to the centre of vascular puncture target** is enabled, then ultrasound image focus will automatically move if the target is moved



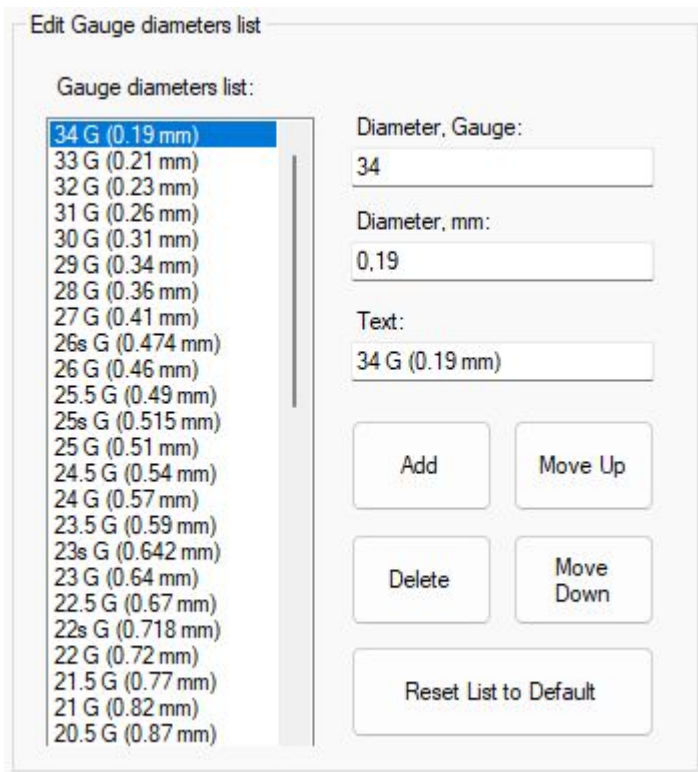
French diameters list is the list of all saved catheter/needle diameters in French unit that will be shown when using Vascular Puncture control panel and selecting “French” units. It is possible to select any item in this list, and then item information will appear on the right:

Diameter French: diameter value in French units

Diameter, mm: diameter value in mm This value is used by the system for calculation and representation.

Text: displayed set name
It is possible to modify any of the items. Buttons **Add** and **Delete** allow to add new or delete selected item. Buttons **Move Up** and **Move Down** allow to move selected list item down or up in the list.

Reset List to Default will reset the list to its initial state, and user-added items will be removed.



Gauge Diameters List is the list of all saved catheter/needle diameters in Gauge scale that will be shown when using Vascular Puncture control panel and selecting “Gauge” units. It is possible to select any item in this list, and then all item information will appear on the right:

Diameter, Gauge: diameter value in Gauge units

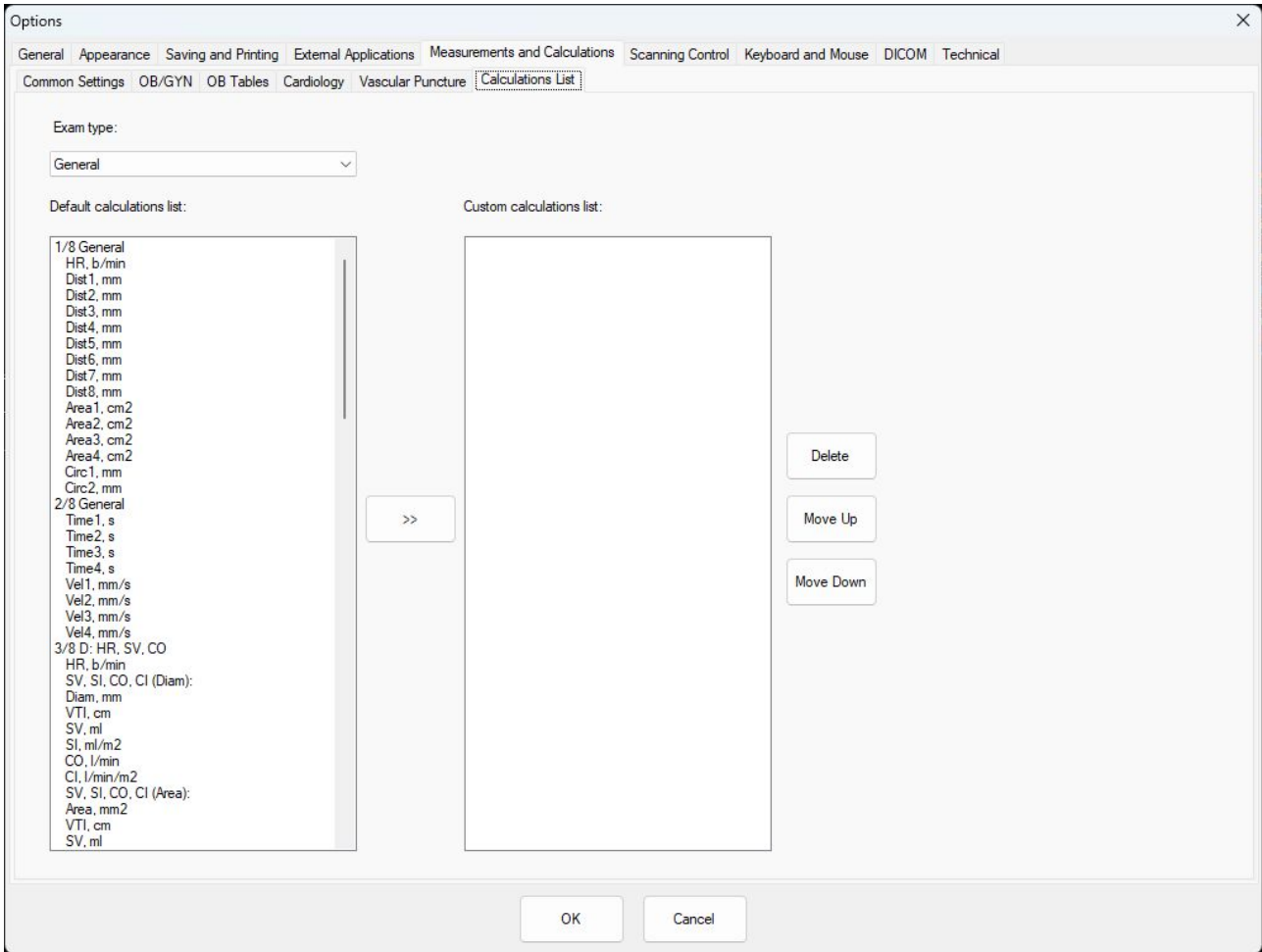
Diameter, mm: diameter value in mm This value is used by the system for calculation and representation.

Text: displayed set name
It is possible to modify any of the items. Buttons **Add** and **Delete** allow to add new or delete selected items. Buttons **Move Up** and **Move Down** allow to move selected item down or up in the list.

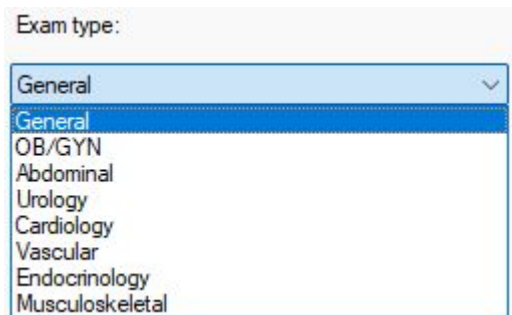
Reset List to Default will reset the list to its initial state, and user-added sets will be removed.

Above options allow to create custom lists of catheter/needle sizes in French and Gauge units.

6.6. Measurements and Calculations Tab ->Calculations List Tab



This settings window allows to create the custom calculation list according to your needs.



Exam Type drop list allows to select what exam type will be modified.

Default calculations list:

1/8 General
 HR, b/min
 Dist1, mm
 Dist2, mm
 Dist3, mm
 Dist4, mm
 Dist5, mm
 Dist6, mm
 Dist7, mm
 Dist8, mm
 Area1, cm2
 Area2, cm2
 Area3, cm2
 Area4, cm2
 Circ1, mm
 Circ2, mm

2/8 General
 Time1, s
 Time2, s
 Time3, s
 Time4, s
 Vel1, mm/s
 Vel2, mm/s
 Vel3, mm/s
 Vel4, mm/s

3/8 D: HR, SV, CO
 HR, b/min
 SV, SI, CO, CI (Diam):
 Diam, mm
 VT1, cm
 SV, ml
 SI, ml/m2
 CO, l/min
 CI, l/min/m2
 SV, SI, CO, CI (Area):
 Area, mm2
 VT1, cm
 SV, ml

Custom calculations list:

>>

Delete

Move Up

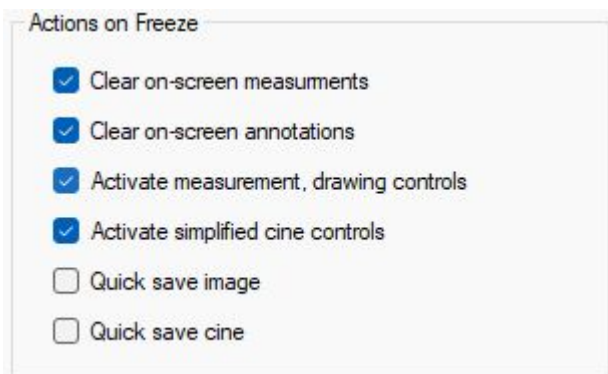
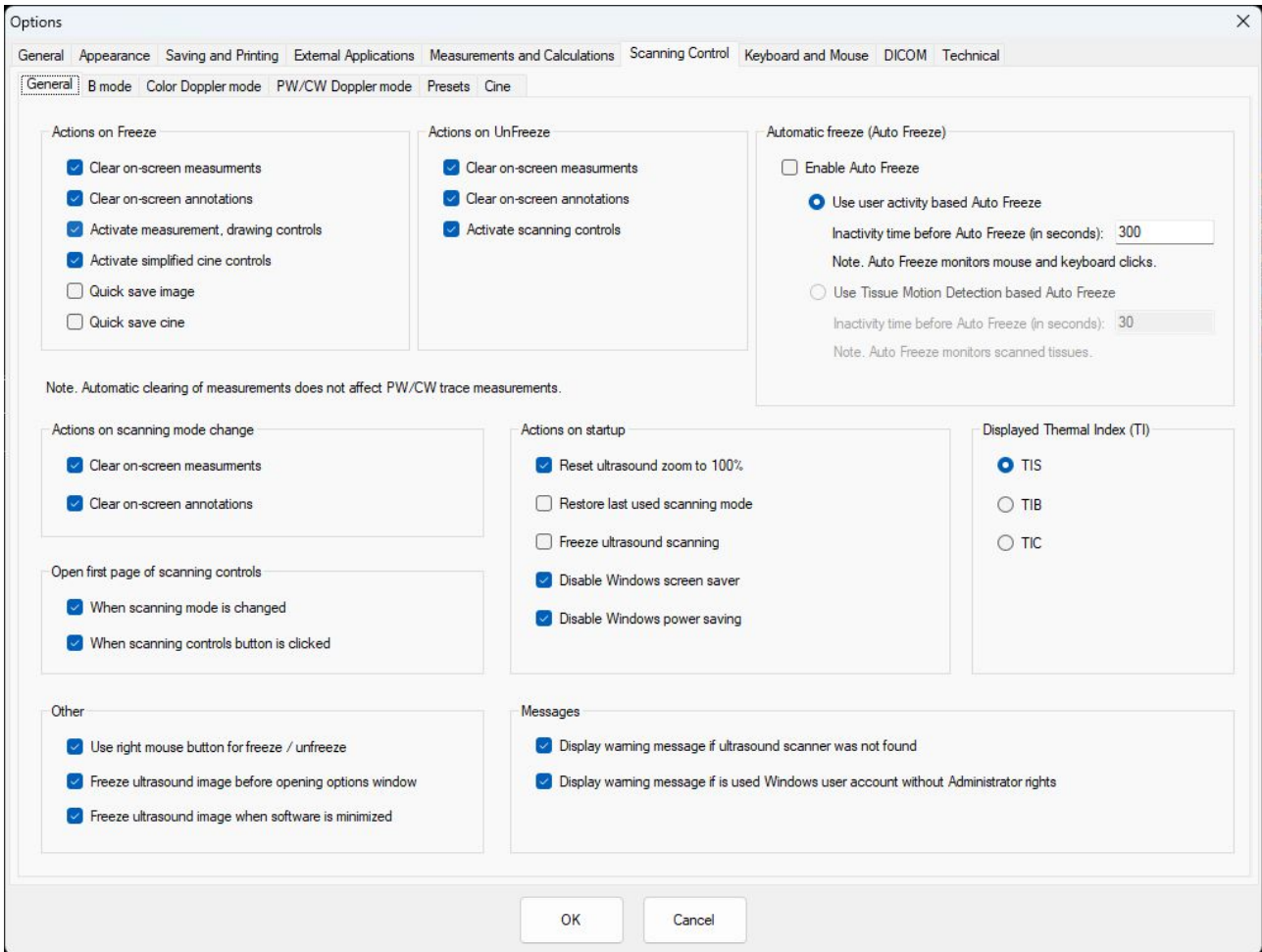
Move Down

Default calculations list: the list of calculations available by default. If any of the default calculations will be transferred to the **Custom calculations list**, then program will use the custom list of calculations. By pressing **Delete**, **Move Up** or **Move Down** buttons it is possible to correct the calculation position in the custom list.

To return to the default calculation list you should delete all entries in the custom calculation list field.

7. Scanning Control Tab

7.1. Scanning Control Tab -> General Tab



Clear on-screen measurements if enabled all measurements are cleared when the freeze is activated.

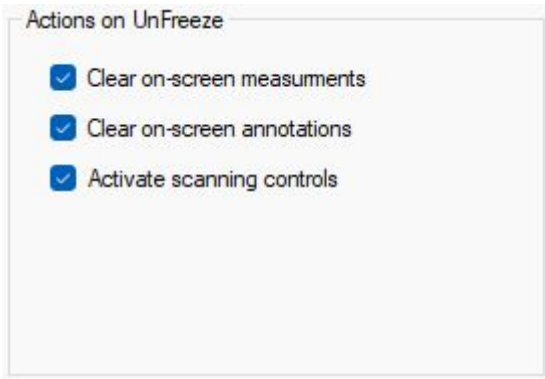
Clear on-screen annotations if enabled all annotations are cleared when the freeze is activated.

Activate measurement, drawing controls if enabled and if the measurements menu is active allows immediately after Freeze to do measurements.

Activate simplified cine controls if enabled then the user can immediately after freeze change frames using the keyboard Left/Right buttons

Quick save image if enabled makes quick image save each time when freeze is activated.

Quick save cine if enabled makes quick cine save each time when freeze is activated.

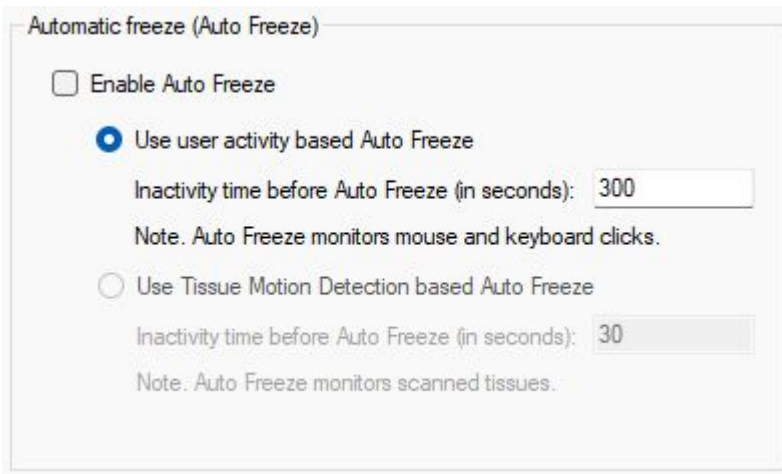


Clear on-screen measurements if enabled all measurements are cleared when the freeze is deactivated.

Clear on-screen annotations if enabled all annotations are cleared when the freeze is deactivated

Activate Scanning controls

If enabled then after deactivating the Freeze focus will be moved to the scanning control menu on the left. This allows to select and change parameters by using keyboard buttons. Up/Down to select and Left/Right to change parameters value.



Enable Auto Freeze, when enabled, will make ultrasound device go to freeze mode after some time of inactivity. Options specify how activity is measured.

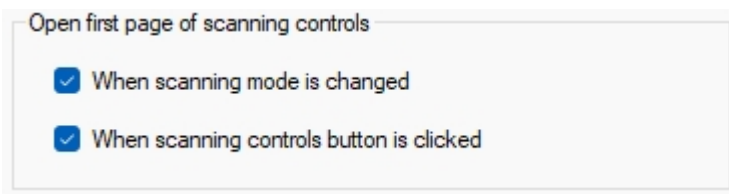
Use user activity based Auto Freeze. When enabled, software will detect user activity - keyboard clicks, mouse movements and, if no activity is detected in set time interval, system will go to freeze mode.

Use Tissue Motion Detection based Auto Freeze. When enabled, software automatically senses if there are some changes/tissue movements on the ultrasound image. If no changes are detected in the set time interval, the system will go to freeze mode.



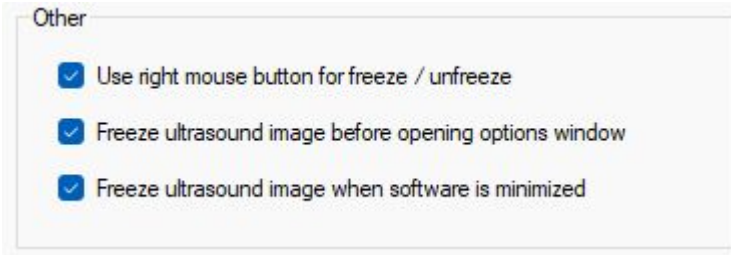
Clear on-screen measurements. If enabled, then, if the user changes scanning mode, all measurements will be cleared.

Clear on-screen annotations. If enabled, then, if the user changes scanning mode, all annotations will be cleared.



When Scanning mode is changed. If enabled, then, if scanning mode is changed, software will open the first page of scanning controls.

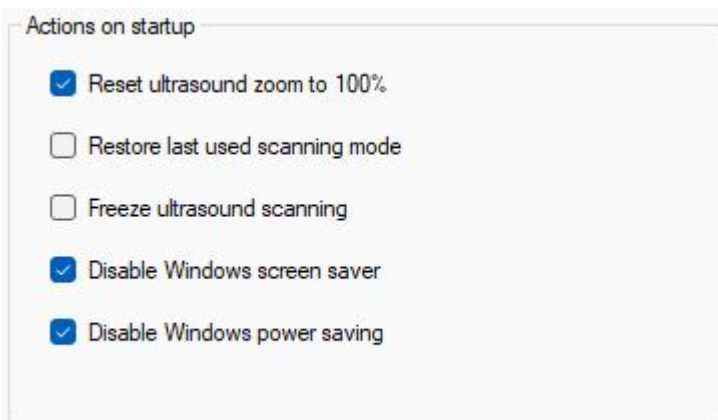
When scanning controls button is clicked. If enabled, then, if scanning controls button (keyboard keys 1-4) at bottom toolbar is clicked, software will open the first page of scanning controls. If this option is not enabled, software will activate current page of scanning controls of corresponding mode.



Use right mouse button for freeze/unfreeze. When enabled, each right mouse button click will freeze/unfreeze ultrasound scanning. The mouse pointer should be on the ultrasound image.

Freeze ultrasound image before opening options window. When enabled, ultrasound image will be frozen and the Options window will open.

Freeze ultrasound image when software is minimized. When enabled, ultrasound image will be frozen if the software window is minimized.



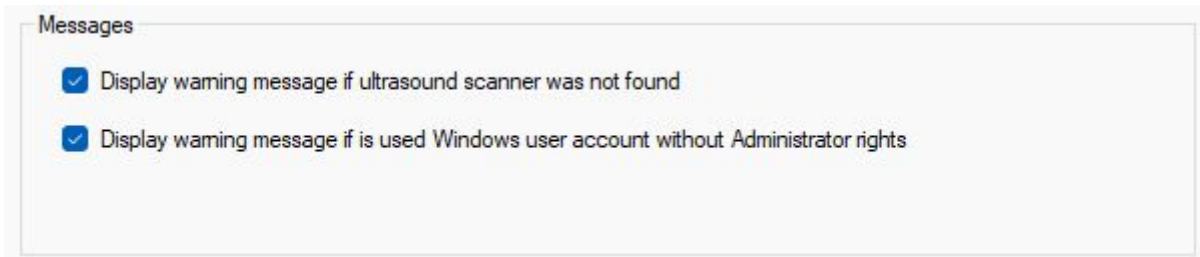
Reset ultrasound zoom to 100%. If enabled, then during the start-up ultrasound image zoom will be reset to default 100%. If not enabled, then software will restore last used zoom value.

Restore last used scanning mode. If enabled, then, after the system starts, last used scanning mode will be enabled. If this option is disabled, software will start in B mode.

Freeze ultrasound scanning. If enabled, then, after the system starts, ultrasound system will be in freeze mode.

Disable Windows screen saver. If enabled, then, while Echo Wave II software is open, Windows screen saver will be disabled.

Disable Windows power saving. If enabled, then, while Echo Wave II software is open, Windows power saving will be disabled.



Display warning message if ultrasound scanner was not found. If enabled, then, each time the ultrasound scanner will not be detected, you will see the message.

Display warning message if is used Windows user account without Administrator rights. If enabled, then, each time the system is started by the user without the Administrator's rights, you will see the warning message.

Displayed Thermal Index (TI)

TIS

TIB

TIC

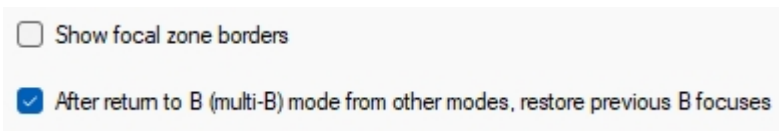
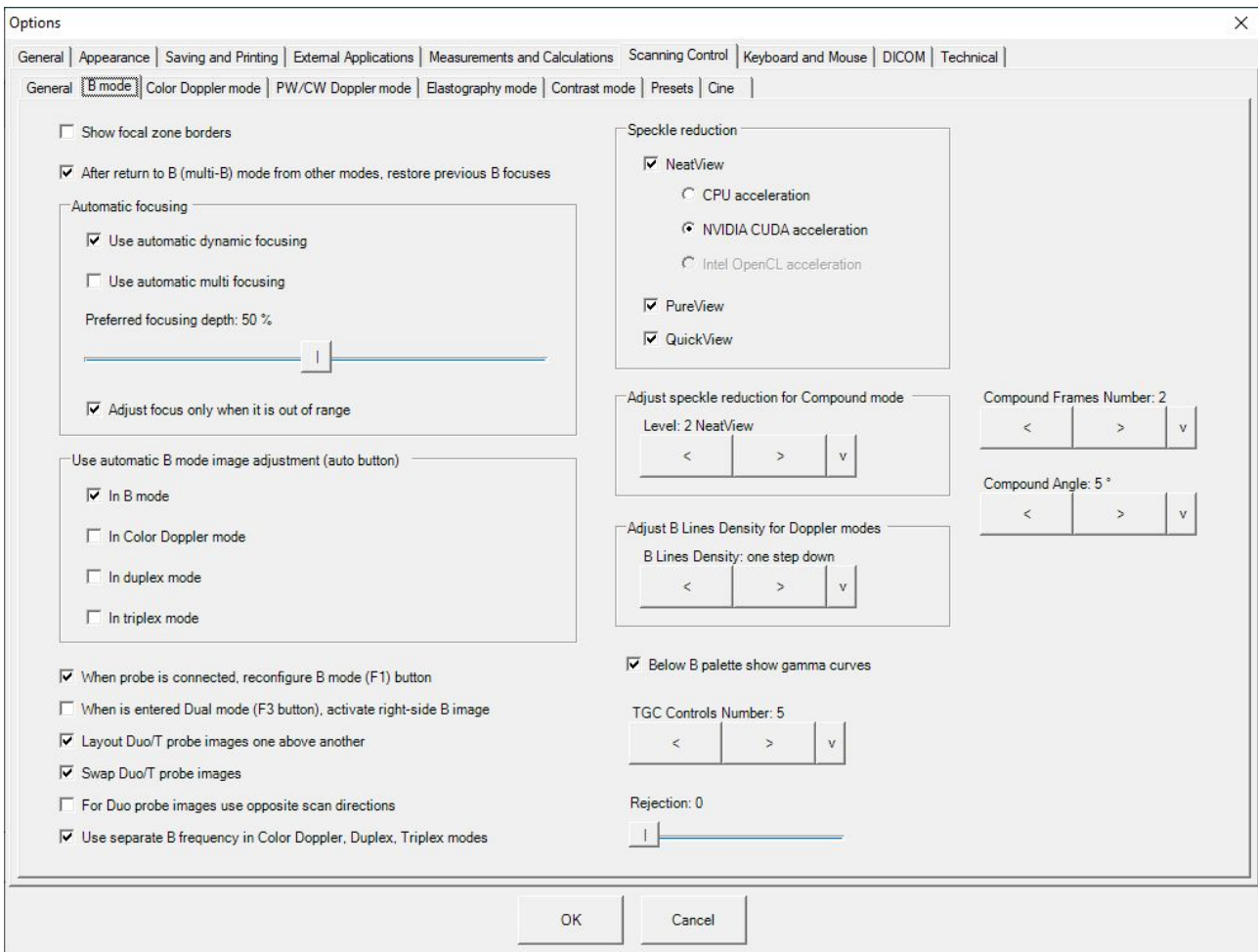
Allows to select what type of **Thermal Index (TI)** to display:

TIS: thermal index in soft tissue

TIB: thermal index for bone at the focus

TIC: thermal index for cranial bone

7.2. Scanning Control Tab -> B mode Tab



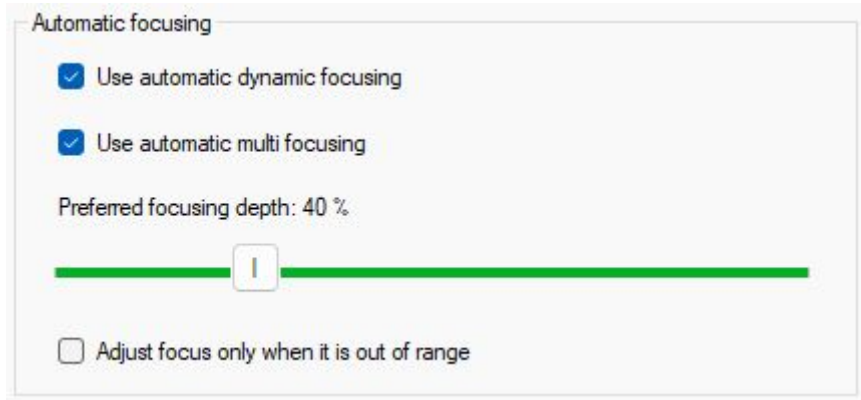
Show focal zone borders.

When enabled, special characters appear above and below focus marks. They are marking the width of the focusing zone.



After return to B (multi-B) mode from other modes, restore previous B focuses.

If enabled, then the initial B mode focus will be restored when returning from other imaging modes (CFM, PW,...). Normally in Doppler modes is used single B focus and it moves together with the Doppler window/marker. This option allows to return B focusing state to the one that was before entering Doppler mode.



Use automatic dynamic focusing

When enabled, after depth change software adjusts dynamic mode focuses to keep them at preferred focusing depth that is specified as a percentage of current scanning depth. The software will try to keep focuses at the center (or other specified position) of visible image or as close as possible near it. Focusing depths in millimeters may change after each scanning depth change. If automatic focusing option is not enabled, after depth change focuses remain at the same depths in millimeters, and this means that they may move away from the central part of visible image and you will need to adjust the focusing depth manually using Focus control.

Use automatic multi focusing

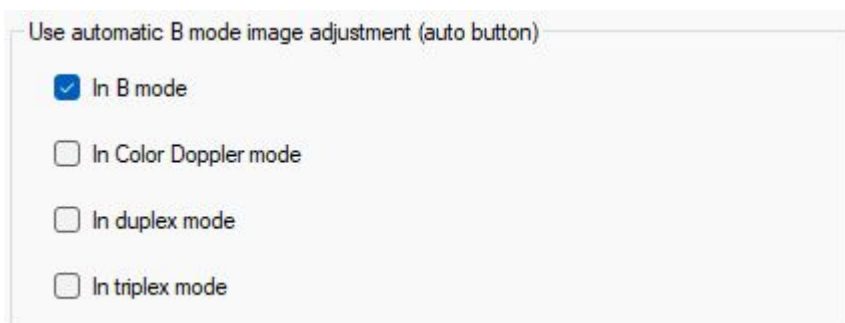
When enabled, operates in the same way as **Use automatic dynamic focusing**, with exception that affected focusing mode is multifocus (static focusing).

Preferred focusing depth

Allows to select preferred automatic focusing depth that is specified as a percentage of current scanning depth.

Adjust focus only when it is out of range

When enabled, the software adjusts focus not every time when depth is changed, but only when, after depth change, the focus becomes out of range. This happens if scanning depth is large, focus is set at large depth, and the user selects smaller scanning depth that is smaller than previously specified focusing depth. In such case, the software will automatically set focus to the lowest possible value for the newly specified scanning depth. Depending on the used ultrasound scanner, automatic out of range focus adjustment may be done even if all automatic focusing options are turned off.



Allows to select in what modes (B, Color Doppler, duplex, triplex) is done automatic B mode image adjustment when at software top toolbar clicked "Auto" (F12) button. By default automatic B image adjustment is done only in B mode (checked checkbox **In B mode**). If you want B image to be automatically adjusted when you click "Auto" button in Color Doppler mode, put the check on **In Color Doppler mode**.

- When probe is connected, reconfigure B mode (F1) button
- When is entered Dual mode (F3 button), activate right-side B image
- Layout Duo/T probe images one above another
- Swap Duo/T probe images
- For Duo probe images use opposite scan directions
- Use separate B frequency in Color Doppler, Duplex, Triplex modes

When probe is connected reconfigure B mode (F1) button

When enabled and the probe is connected or software is started, the software will reconfigure F1 button to correspond to current scanning mode (type). Otherwise button selection will be left as is.

When is entered Dual mode (F3 button), activate right-side B image.

When enabled, after entering Dual mode right side B image will be active, otherwise active is the left B image.

Layout Duo/T probe images one above another

When enabled, Duo/T probe images are positioned one above the other, otherwise they are positioned side by side

Swap Duo/T probe images

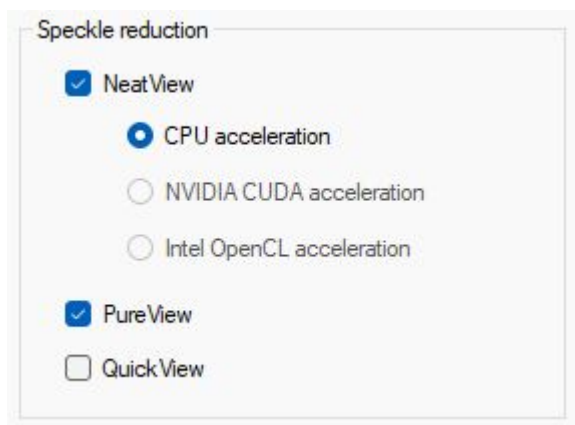
When enabled Duo/T probes are swapped

For Duo probe images use opposite scan directions

When enabled, scanning direction of one Duo probe image is changed to the opposite. This is done to achieve a continuous probe image – the end of the first probe image is the beginning of the second probe image.

Use separate B frequency in Color Doppler, Duplex, Triplex modes.

When enabled, B image probe frequency for the listed imaging mode can be configured independently and is restored when entering corresponding mode. If disabled, B frequency will be the same for all these three modes.



Checkboxes allow to configure what speckle reduction filters are allowed to use in software Speckle Reduction control.

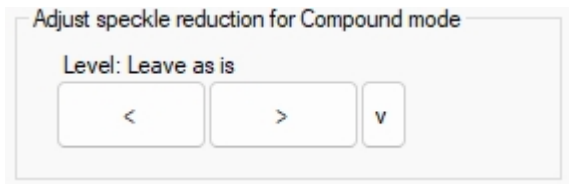
NeatView check box allows to enable or disable NeatView speckle reduction filters. Radio buttons below allow to select the acceleration method. Depending on the system, it is possible to select CPU, Nvidia Cuda or Intel Open CL acceleration.

PureView check box allows to enable/disable PureView speckle reduction filters

QuickView check box allows to enable/disable QuickView speckle reduction filters

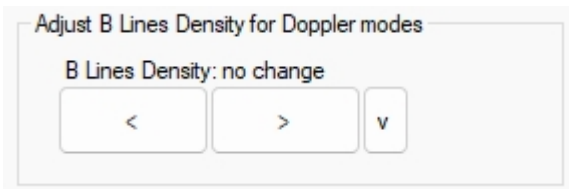
At least one speckle reduction filter

must be enabled.



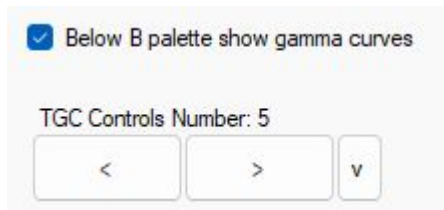
Allows to select what speckle reduction filter level will be initially used when the compound mode is selected.

It is possible to select: Leave as is, Disable or some desired level of NeatView/PureView filter



Adjust **B Lines Density** for Doppler modes

Allows to select B lines density in Doppler modes: one step down or leave not changed. Making B line density one step down will lower B image resolution, but increase frame rate.

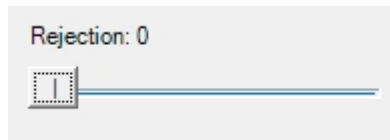


Below B palette show gamma curves

When enabled, on the left side of the ultrasound image below B palette appears control showing B mode gamma curves and allowing to select palette.

TGC controls number

Allows to select the number of TGC sliders. It is possible to select from 5 to 10 TGC controls.



Rejection

Ultrasonic signal rejection is a processing that changes a range of the values of the ultrasonic signal received. Generally speaking, this processing is used to reduce visibility of noises on ultrasonic images.



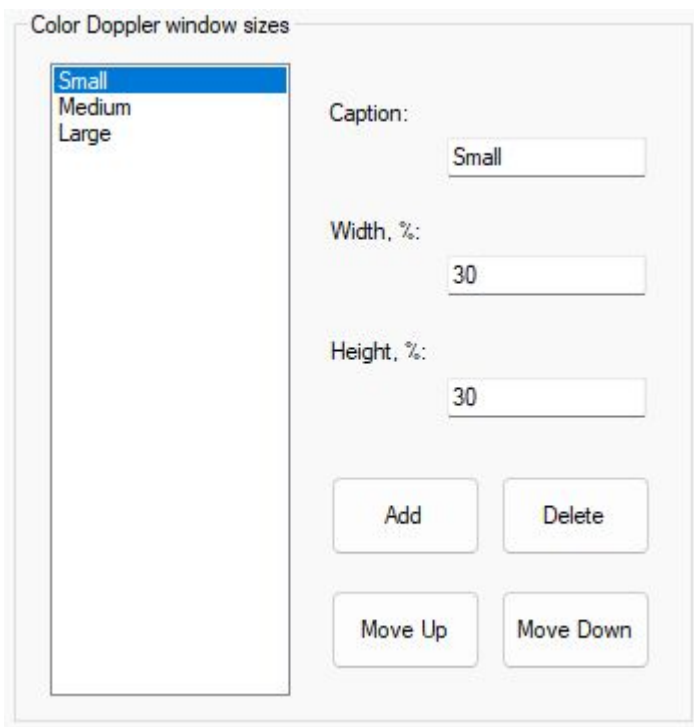
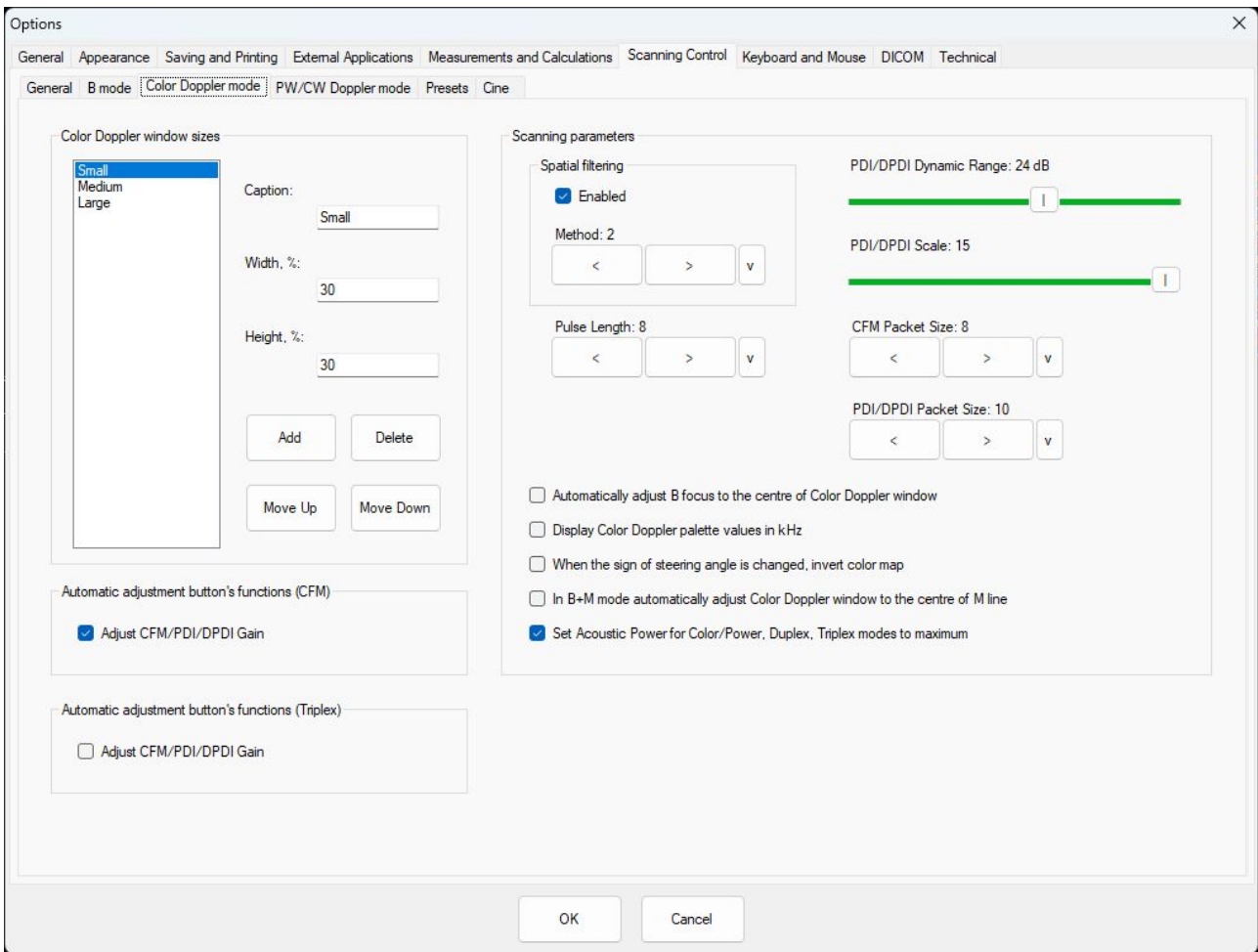
Compound frames number

Allows to change the number of frames used for compound ultrasound image creation. It is possible to select from 2 to 5 frames. Using larger number of frames may lead to better compound image quality but may reduce frame rate.

Compound Angle

Allows to change the angle used to form the compound image. It is possible to select from 2 degrees to 10 degrees.

7.3. Scanning Control Tab -> Color Doppler mode Tab



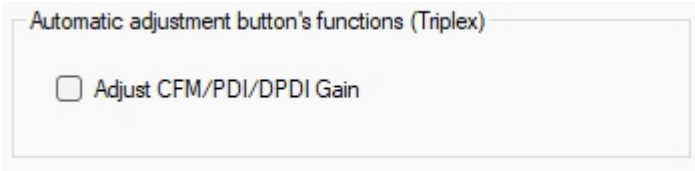
Specifies predefined color Doppler window sizes that are shown in window size control.

Window size is set in percentages from the whole ultrasound image.

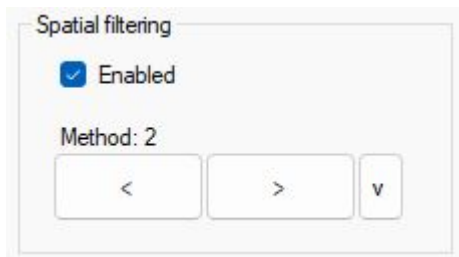
The user can customize the list of Doppler window sizes, move list items up or down, add new and delete selected items using **Move Up**, **Move Down**, **Add**, **Delete** buttons. Displayed name of selected list item is entered to **Caption** field, horizontal size to **Width** field, vertical size to **Height** field.



When enabled, Automatic Adjustment (F12) button becomes functional in Color Doppler modes. When it is activated, color Gain is automatically adjusted.



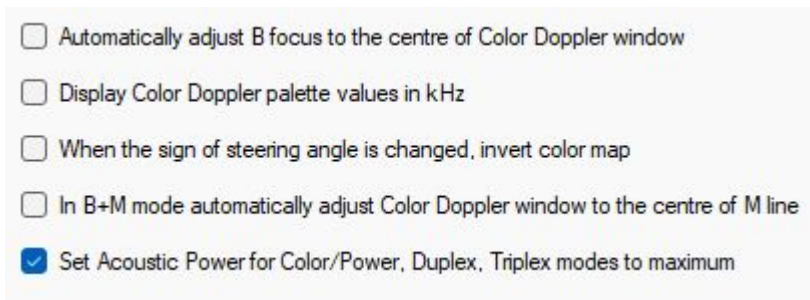
When enabled Automatic Adjustment (F12) button becomes functional in Triplex mode. When it is activated, color Gain is automatically adjusted.



When enabled, **Spatial filter** allows to obtain smoother Color Doppler Images. Higher values make the Color Doppler image smoother, but the resolution of the image is decreasing.



The **Pulse Length** control allows to adjust the resolution of the Color Doppler image. Increasing pulse length will increase the sensitivity and image quality, but this will also increase TI and MI. In some cases, the increase of pulse length may lead to automatic Power reduction for safety reasons.



Automatically adjust B focus to the centre of Color Doppler window.

When enabled, focus is automatically adjusted to the centre of the Color Doppler window and, if the window is moved, the focus will also move.

Display Color Doppler palette values in kHz. When enabled, the velocity values above and below Color Doppler palette are displayed in kHz. By default they are displayed in cm/s.

When the sign of steering angle is changed invert color map.

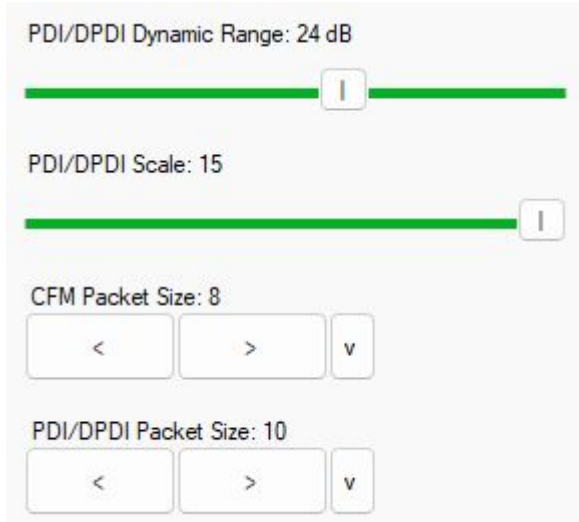
If enabled, after the change of steering angle from positive to negative, the color map is inverted (blood flow direction will be inverted).

In B+M mode automatically adjust Color Doppler window to the center of M line.

If enabled, then the color window will be adjusted to the center of the M line horizontally and will automatically move if the M line is moved.

Set Acoustic Power for Color/Power, Duplex, Triplex mode to maximum.

If enabled, then color modes will always start with Acoustic Power set to maximum value.



Dynamic Range controls how echo intensities are converted into various shades of gray. A larger dB value means that more shades of gray are used.

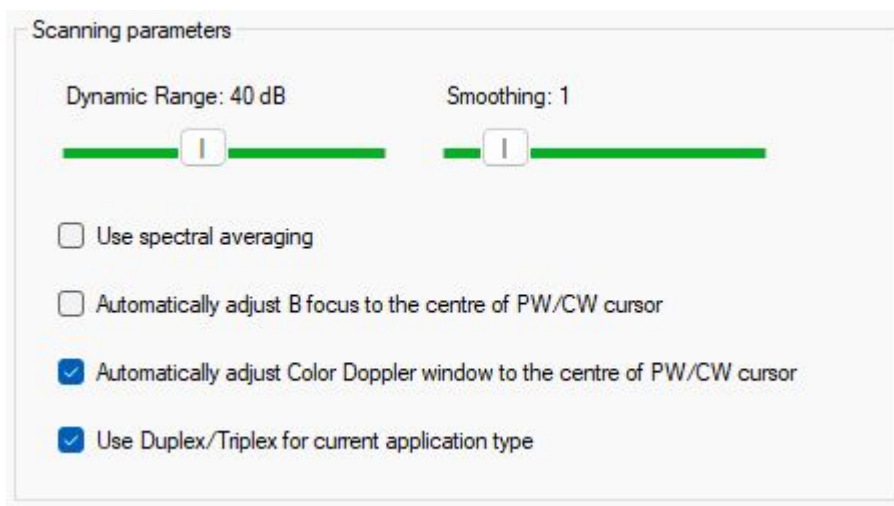
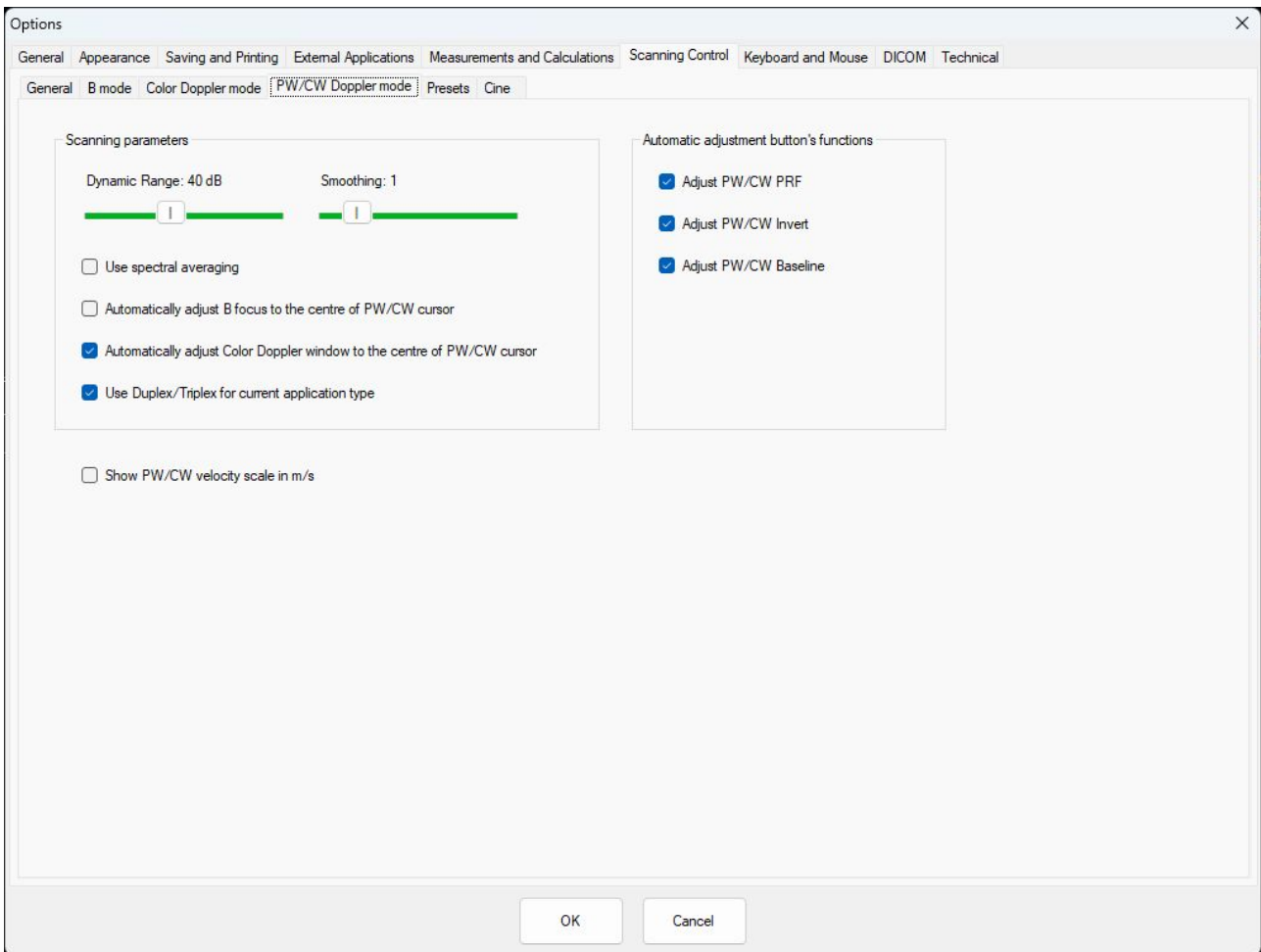
More shades of gray in some cases can lead to unwanted noise appearance. It is better to adjust this parameter step by step while checking the resulting image.

PDI/DPDI Scale adjustment changes the level of power visualized in Power Doppler and Directional Power Doppler modes.

CFM Packet Size changes the intensity of the colors in the Color Doppler mode. Larger values increase the intensity but will lower the frame rate.

PDI/DPDI Packet Size changes the intensity of the colors in the Power Doppler and Directional Power Doppler modes. Larger values increase the intensity but will lower the frame rate.

7.4. Scanning Control Tab -> PW/CW Doppler mode Tab



Dynamic Range controls how echo intensities are converted into various shades of gray. A larger dB value means that more shades of gray are used.

More shades of gray in some cases can lead to unwanted noise appearance. It is better to adjust this parameter step by step while checking the resulting image.

Smoothing allows you to obtain smoother spectral Doppler images. Larger values make the image

smoother.

Use spectral averaging

Spectral averaging makes spectral Doppler images smoother.

Automatically adjust B focus to the centre of PW/CW cursor

When enabled, B focus is automatically adjusted to the centre of PW/CW cursor and will automatically move if the cursor is moved

Automatically adjust Color Doppler window to the centre of PW/CW cursor

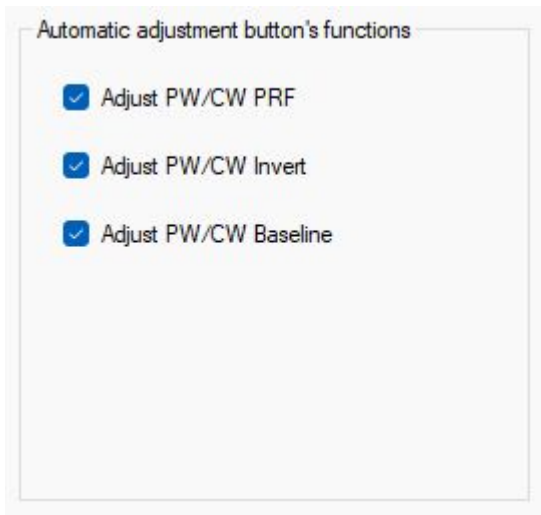
When enabled, Color Doppler window is automatically adjusted to the centre of PW/CW cursor and will automatically move if the cursor is moved

Use Duplex/Triplex for current application type

When enabled, Duplex/Triplex will be enabled for the current exam type, and otherwise it will be disabled.

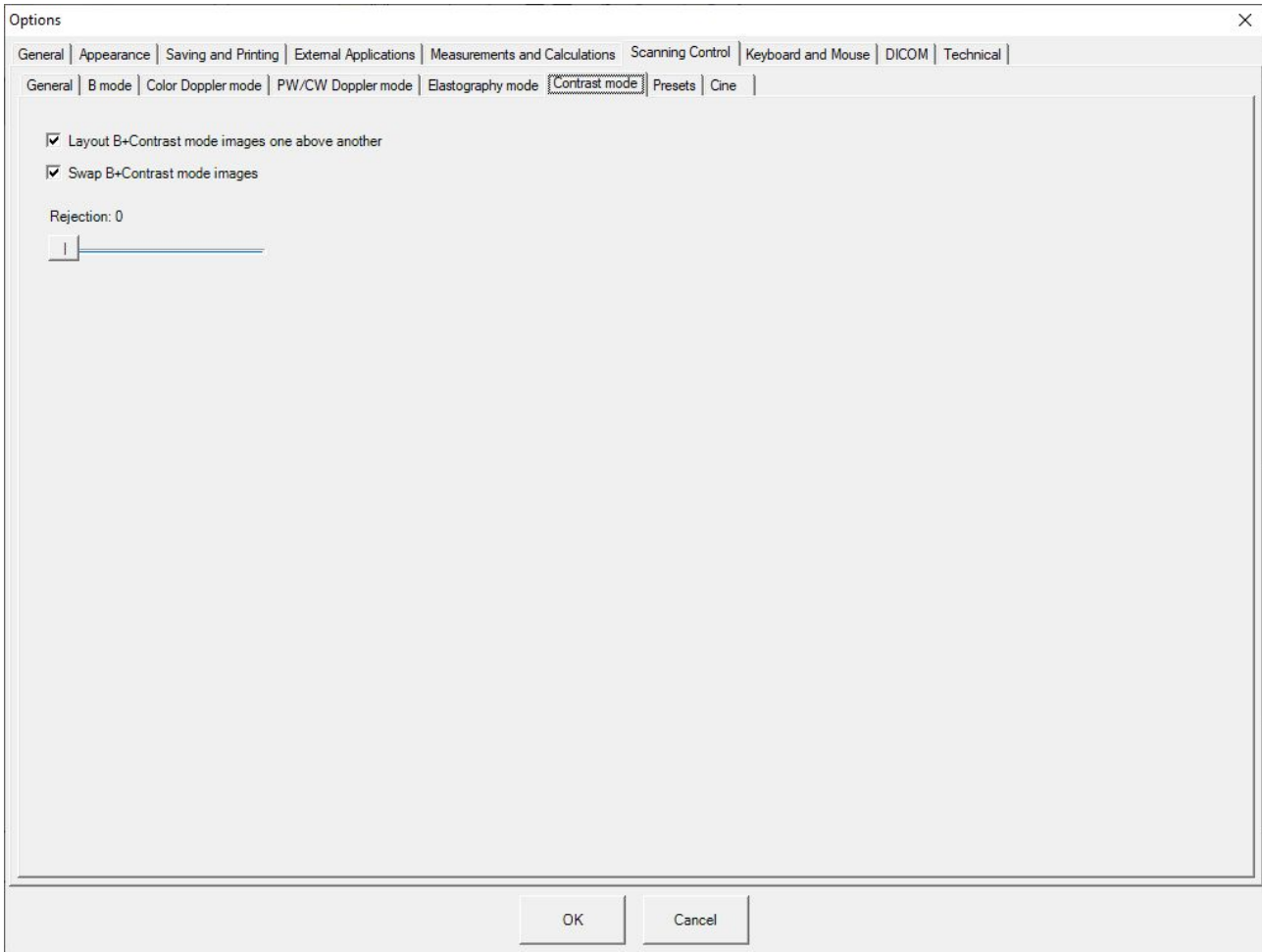
Show PW/CW velocity scale in m/s

When enabled, PW/CW velocity scale will be shown in m/s. Otherwise PW/CW velocity scale is shown in cm/s.



Selected functions/adjustments that will be done when "Auto" (F12) button is clicked in spectral Doppler modes.

7.5. Scanning Control Tab -> Contrast mode Tab



Layout B+Contrast mode images one above another

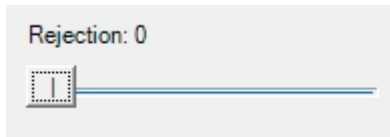
Swap B+Contrast mode images

Layout B+Contrast mode images one above another

When enabled, B and Contrast images are positioned one above another. Otherwise they are positioned side by side

Swap B+Contrast mode images

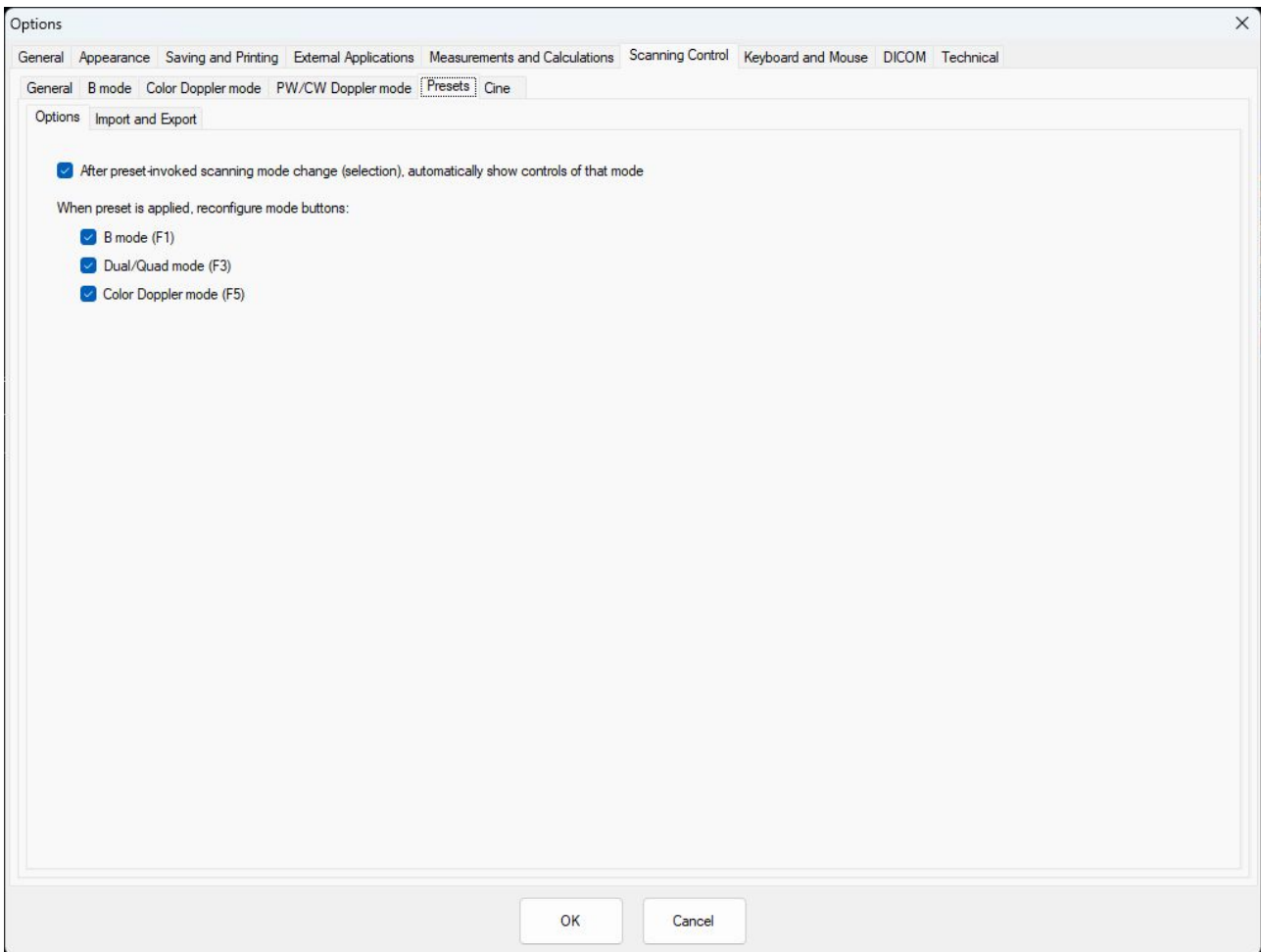
When enabled B and Contrast images are swapped



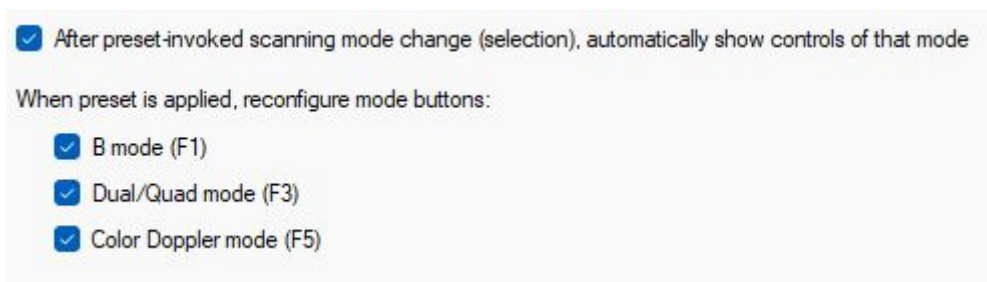
Rejection

Ultrasonic signal rejection is a processing that changes a range of the values of the ultrasonic signal received. Generally speaking, this processing is used to reduce visibility of noises on ultrasonic images.

7.6. Scanning Control Tab -> Presets Tab



7.6.1. Scanning Control Tab -> Presets Tab-> Options Tab



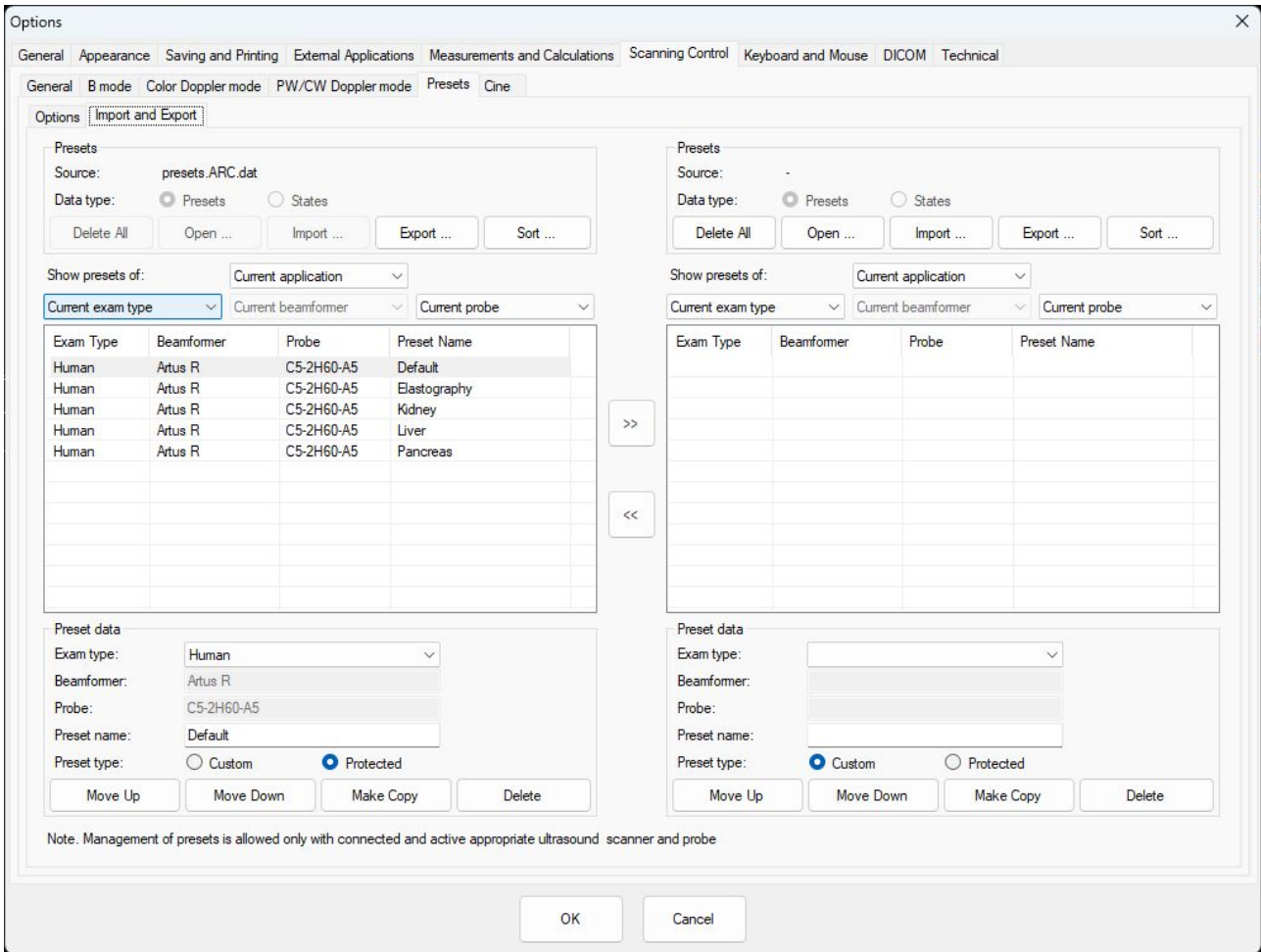
After preset invoked scanning mode change, automatically show the controls of that mode

If enabled, after selecting the preset automatically will appear the controls of the mode that was saved in the preset.

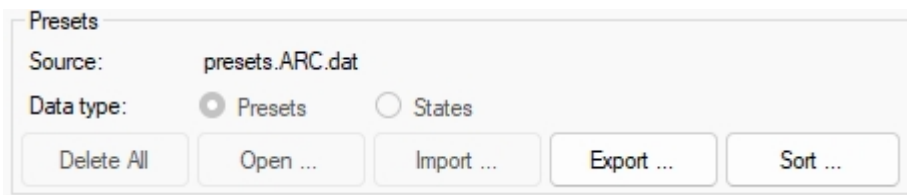
When preset is applied, reconfigure mode buttons

If enabled, after selecting the preset will be reconfigured corresponding top toolbar button with menu to match scanning mode that was saved in the preset. For example, if preset changes mode to PDI, then F5 button will be reconfigured to invoke PDI (default is CFM). If the option is not enabled, top toolbar buttons with menus are not reconfigured

7.6.2. Scanning Control Tab -> Presets Tab-> Import and Export Tab



Preset Import and Export consist of 2 similarly looking parts. The Left part shows the presets that are currently used by the program. The Right part shows imported/opened presets. It is possible to move favorite presets here and export them to file.



Source: shows the name of the *.dat file used by software to store current presets.

Data type: indicates what data is shown in the list. In user mode are shown **Presets**. In software service mode it is possible to access last used settings (**States**) when software was closed.

Delete All Remove all presets.

Open Opens a preset file.

Import Imports selected file. Import adds files to already present presets list while **Open** replaces them.

Export Exports selected presets.

Sort Allows to select how presets are displayed. It is possible to select between 2 ways:

“Probe, Exam” or “Exam, Probe”.

Delete All, Open and **Import** functions are only available in the Right menu part. Selected presets between Left and Right parts are moved using arrow buttons “>>” and “<<”.

Show presets of: Current application Current exam type Current beamformer Current probe

Exam Type	Beamformer	Probe	Preset Name
Human	Artus R	C5-2H60-A5	Default
Human	Artus R	C5-2H60-A5	Elastography
Human	Artus R	C5-2H60-A5	Kidney
Human	Artus R	C5-2H60-A5	Liver
Human	Artus R	C5-2H60-A5	Pancreas

It is possible to filter presets by different parameters:

Application type: All applications or Current application

Exam Type: All exam types, Current exam type, Human or Veterinary depending on **Application type** selection. Selections “All exam types” and “Current exam type” were left for compatibility with previous software versions when presets were divided by exam type. Now presets are divided only by application type (Human or Veterinary).

Probe: All probes, Current probe or any probe from the list

Preset data

Exam type: Human

Beamformer: Artus R

Probe: C5-2H60-A5

Preset name: Default

Preset type: Custom Protected

Move Up Move Down Make Copy Delete

When preset is selected, preset data will appear.

User can modify the preset **Exam type** - Human or Veterinary and change the **Preset name**.

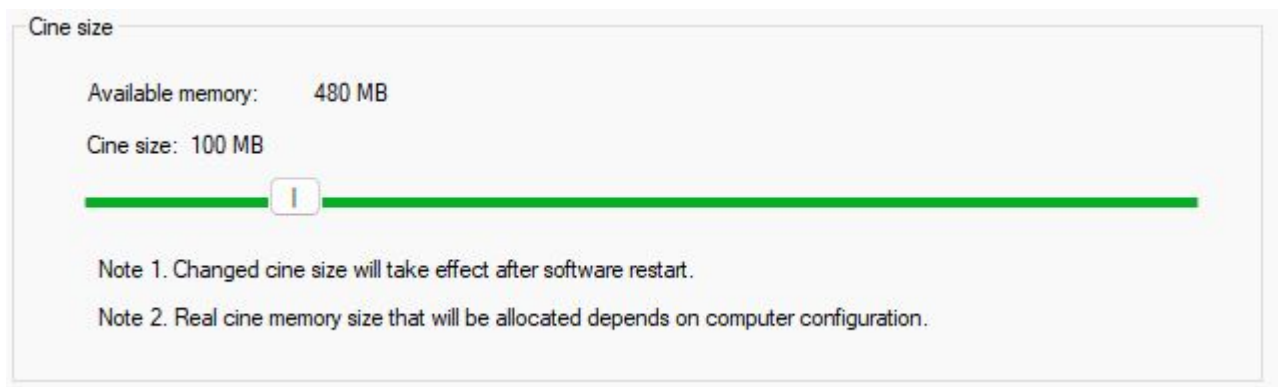
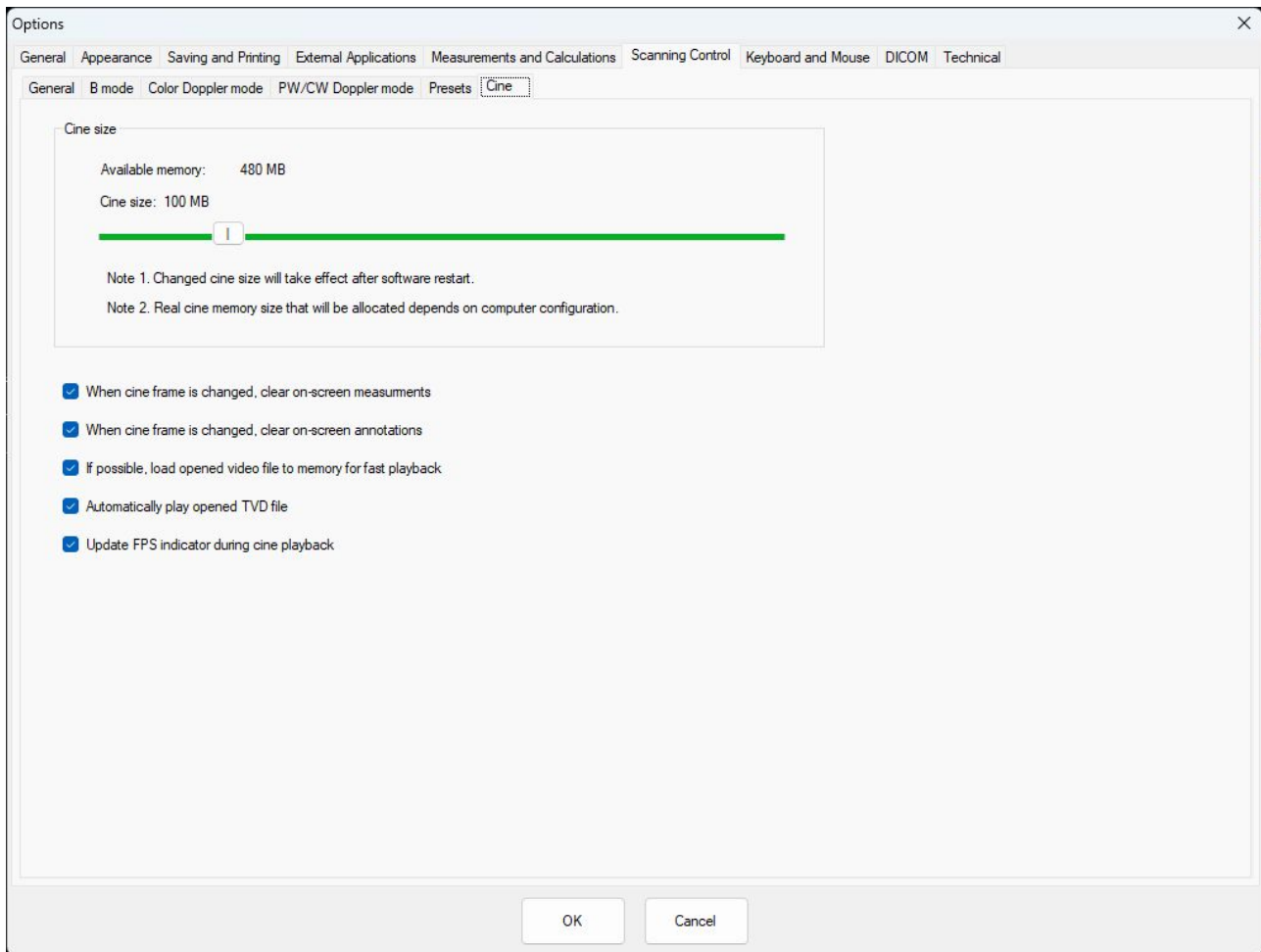
Also it is possible to change the **Preset type**. Protected type usually have presets created in Telemed, and Custom – are presets created by the user. If preset is protected, it cannot be deleted from main user interface.

Pressing **Move Up/Down** buttons will move the selected preset up or down in the list. **Make Copy** will create a copy of the selected preset. **Delete** will delete the selection.

This option window is useful when you want to export your presets for backup purposes or for moving them to another computer.

*Pressing the **Export** button will export presets that were selected in the list below. If required, desired to export presets can be moved to the Right side (using the arrow button “>>”) and then selected and exported using the Right side **Export** button. Several presets in the list can be selected by holding the Shift keyboard key and clicking desired presets interval with the mouse or holding Shift and using the keyboard Up/Down arrows. Also multiple selections can be made by holding the keyboard Ctrl button and clicking presets with the mouse.*

7.7. Scanning Control Tab -> Cine Tab



Cine size

This control allows to select what amount of available memory to use for cine storage while scanning. The more memory is selected, the larger cine (more frames) can be stored.

- When cine frame is changed, clear on-screen measurements
- When cine frame is changed, clear on-screen annotations
- If possible, load opened video file to memory for fast playback
- Automatically play opened TVD file
- Update FPS indicator during cine playback

When cine frame is changed, clear on-screen measurements.

If enabled, then changing of current frame to another one will clear all measurements.

When cine frame is changed, clear on-screen annotations.

If enabled, then changing the current frame to another one will clear all annotations (on-ultrasound texts, arrows).

If possible, load opened video file to memory for fast playback

If enabled, then software will try to load the opened AVI video file to memory. If the file is large and there is not enough available memory, then the file will remain on disk. Loading file to memory improves video playback performance.

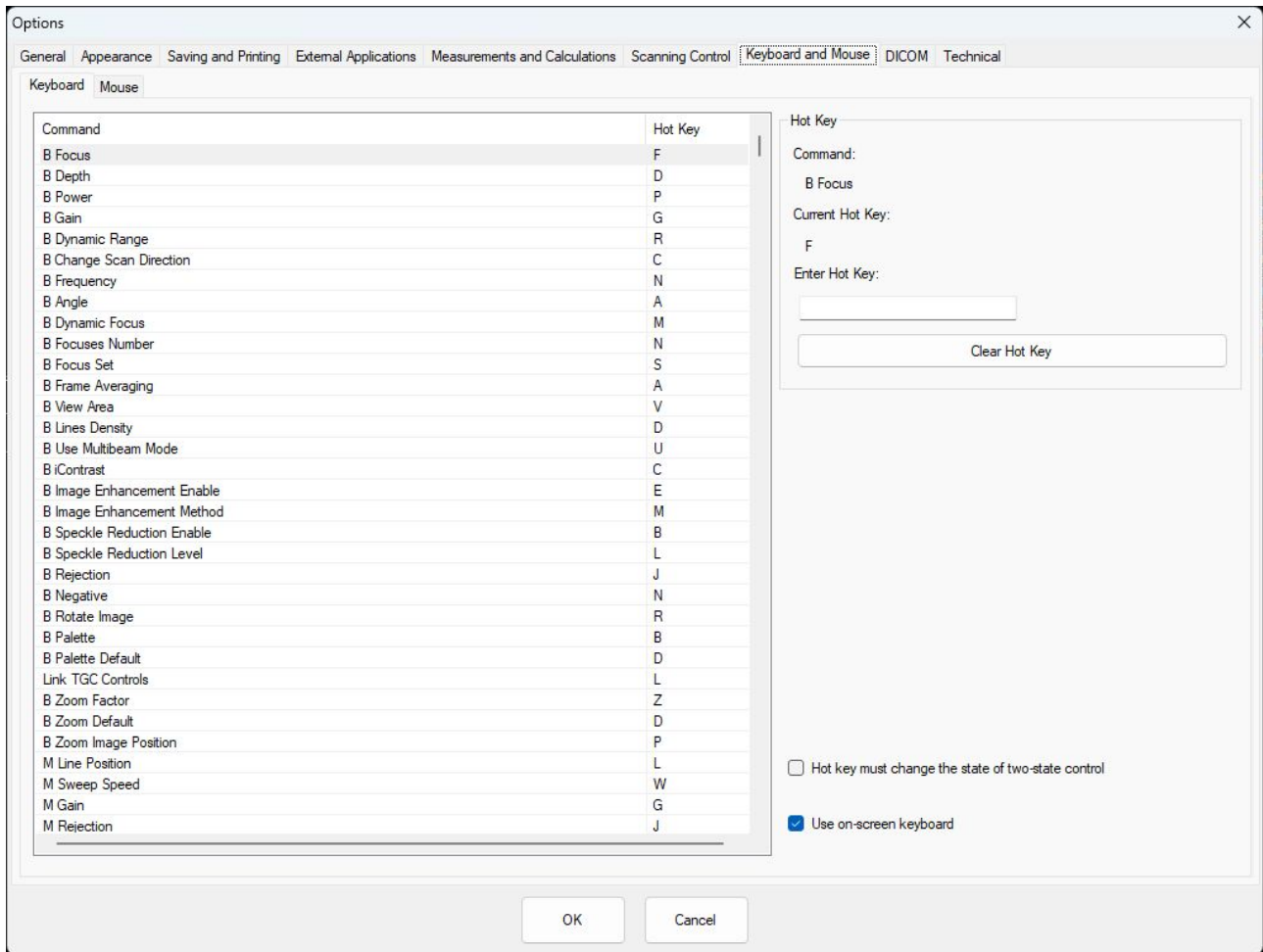
Automatically play opened TVD

If enabled, then the opened TVD file will be played automatically.

Update FPS indicator during cine playback

If enabled, then during cine playback FPS indicator will show cine playback frame rate.

8. Keyboard and Mouse Tab



Command	Hot Key
B Focus	F
B Depth	D
B Power	P
B Gain	G
B Dynamic Range	R
B Change Scan Direction	C
B Frequency	N
B Angle	A
B Dynamic Focus	M
B Focuses Number	N
B Focus Set	S
B Frame Averaging	A
B View Area	V
B Lines Density	D
B Use Multibeam Mode	U
B iContrast	C
B Image Enhancement Enable	E
B Image Enhancement Method	M
B Speckle Reduction Enable	B
B Speckle Reduction Level	L
B Rejection	J
B Negative	N
B Rotate Image	R
B Palette	B
B Palette Default	D
Link TGC Controls	L
B Zoom Factor	Z
B Zoom Default	D
B Zoom Image Position	P
M Line Position	L
M Sweep Speed	W
M Gain	G
M Rejection	J

The list of commands with assigned Hot Keys.

Hot Key

Command:
B Focus

Current Hot Key:
F

Enter Hot Key:

It is possible to change the command short key.

The user should select a command from the list and enter a new hot key value (click some letter on keyboard) after selecting the **Enter Hot Key** field. A new value will be set. If hot key letter is inside command text, at main user interface it will be shown underlined.

Pressing the **Clear Hot Key** button will remove the hot key completely.

Hot key must change the state of two-state control.

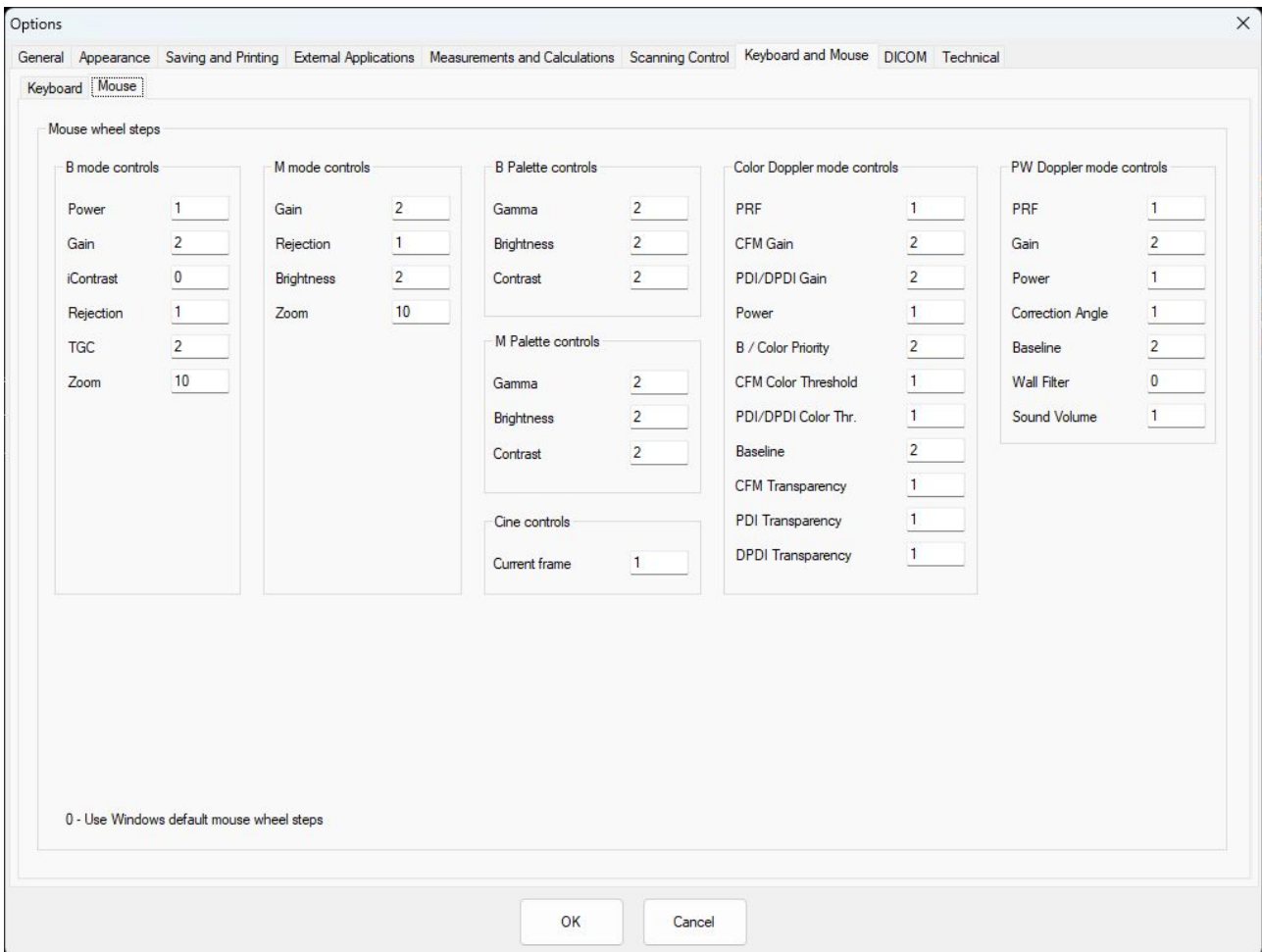
If enabled, then if the user press the hot key assigned to the two-state control (checkbox) the value of this control will change. If disabled, then, after pressing the hot key assigned to the two-state control, the control will be selected and to change the value additional button must be pressed (left or right keyboard arrow)

Hot key must change the state of two-state control

Use on-screen keyboard

Use on-screen keyboard

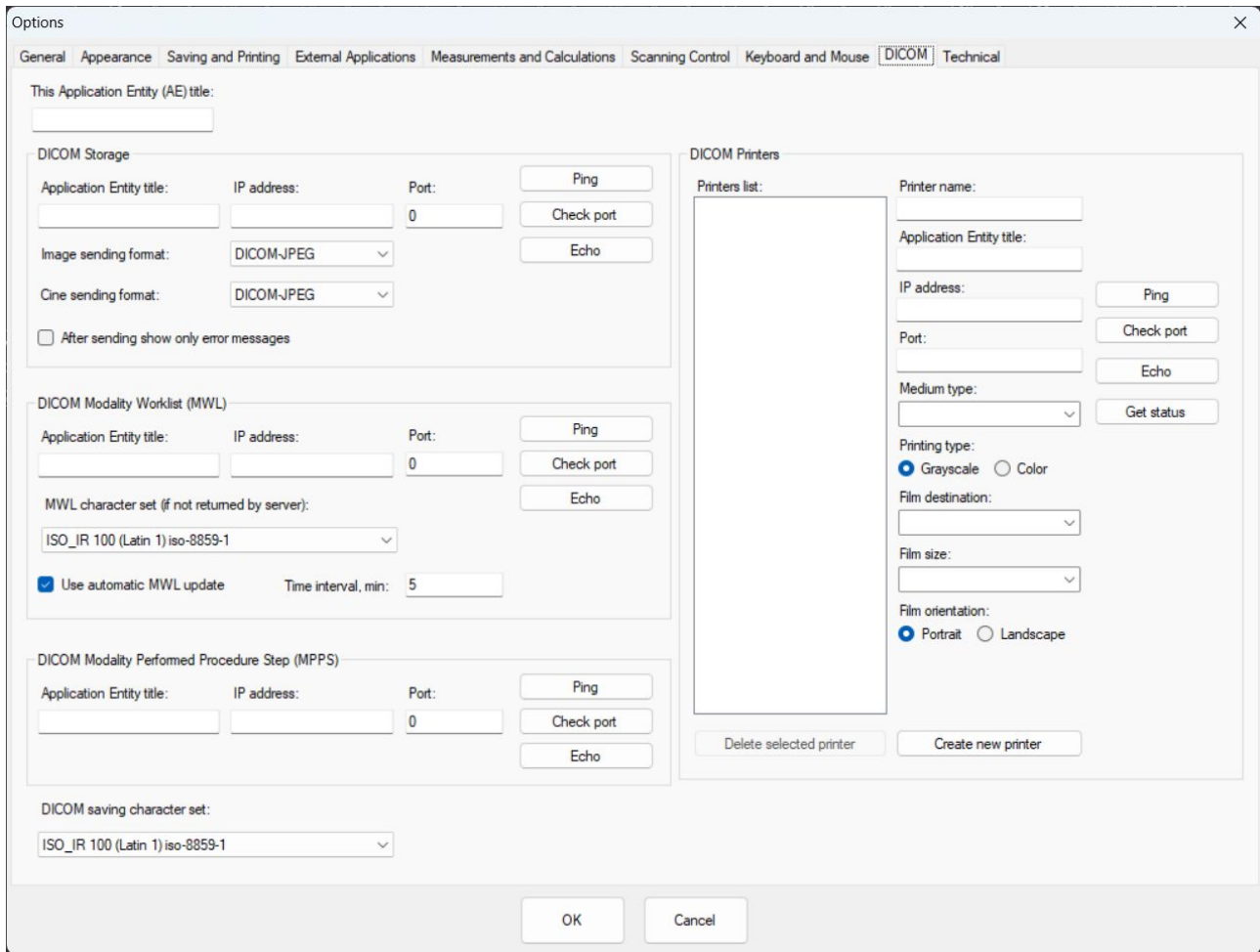
If enabled, then, if the user selected a function or menu which needs to enter data to text field, special on-screen keyboard icon will appear. Selecting it will show the onscreen keyboard. This is very useful if you do not have a physical keyboard connected.



This options tab allows to configure how many indices in scanning control's values list correspond to single mouse wheel step. If in text field is entered value 1, this means that control values are not skipped. If is entered 2, this means that by rotating mouse wheel we see every second value of selected control. Larger step values can be entered when the control has many values.

If 0 is selected, then the software will use the wheel step setting from the Windows operating system.

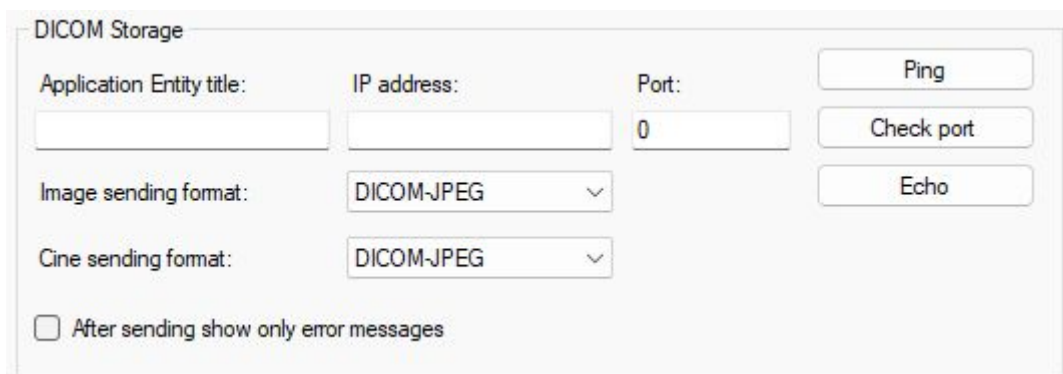
9. DICOM Tab



This tab allows to adjust software DICOM settings. When doing adjustments, please also read “Echo Wave II Software DICOM Conformance Statement” and DICOM Conformance Statements of used servers.

This Application Entity (AE) title:

The field allows to enter this Application Entity (AE) title. AE titles (names) are used when configuring communication between different DICOM entities (applications, devices).



DICOM Storage group is used to configure sending of DICOM images to DICOM images storage

server if you have one.

Application Entity title field is used to enter DICOM AE title of storage server, **IP address** - IP address of storage server, **Port** - port of storage server.

Image sending format and **Cine sending format** lists allows to select either DICOM (uncompressed) or DICOM-JPEG (JPEG compressed) image/cine format. The use of JPEG compression produces smaller images that require less storage. JPEG compression is lossy.

Before selecting sending formats you will need to check specification or DICOM Conformance Statement of your images storage server to find out what formats it supports.

After sending show only error messages, if enabled, after image/cine sending to the DICOM storage server shows the status message only if an error occurs. If disabled, status messages are shown every time for any status.

Buttons **Ping**, **Check port** and **Echo** are used to test communication with the DICOM storage server.

Ping sends an Internet Control Message Protocol (ICMP) echo message to the specified address.

Check port tries to connect to specified IP address and port using TCP socket.

Echo sends DICOM echo message to the specified server.

DICOM Modality Worklist (MWL) group is used to configure DICOM MWL server parameters if you have such a server. After entering MWL server parameters you will be able to select examination patients from a DICOM Worklist that is opened by clicking on the "Select patient from DICOM worklist" button inside the "Patient" window.

Here **Application Entity title**, **IP address** and **Port** fields are used to enter the corresponding data of the MWL server. Buttons **Ping**, **Check port** and **Echo** are used to test communication with the server.

MWL character set list is used to specify the character set that must be used to decode received DICOM data if the server does not return this information.

Use automatic MWL update checkbox and **Time interval** in minutes field allow to send periodic queries to MWL server and get newly registered patients data from it. If this option is not enabled, for sending queries must be clicked "Send query" button at the DICOM Worklist window.

DICOM Modality Performed Procedure Step (MPPS) group is used to configure DICOM MPPS server parameters if you have such a server. MPPS is used to update the examination status on the server and group to server sent images by exam. For this you need to select the patient from MWL, click "Start exam" button there, send images to the server and, when done, click "Finish exam" button to finish the examination.

Here **Application Entity title**, **IP address** and **Port** fields are used to enter the corresponding data of MPPS server. Buttons **Ping**, **Check port** and **Echo** are used to test communication with the server.

DICOM saving character set:

ISO_IR 100 (Latin 1) iso-8859-1

DICOM saving character set list is used to specify the character set that is used when saving texts inside DICOM images and cines. Selection of the character set depends on your used language. Please read “Echo Wave II Software DICOM Conformance Statement” to see what character set should be used for what language.

DICOM Printers

Printers list:

Printer name:

Application Entity title:

IP address:

Port:

Medium type:

Printing type:

Grayscale Color

Film destination:

Film size:

Film orientation:

Portrait Landscape

DICOM Printers group is used to configure network printers that support DICOM format if you have such printer connected to your network.

Printers list shows the names of added printers. When the printer in this list is selected, its data is populated to other fields.

To add new printer, click **Create new printer** button. To delete selected printer, click **Delete selected printer** button.

Printer name is printer’s name that will be shown at menu of “Send” button at software bottom toolbar.

Application Entity title, IP address and **Port** fields are used to enter corresponding data of the

DICOM printer.

Buttons **Ping**, **Check port** and **Echo** are used to test communication with the DICOM printer

Get status button gets and displays the printer status.

Medium type list allows to select what medium is used in printer, for example, PAPER, FILM.

Printing type radio buttons select if the printer must print color or grayscale images.

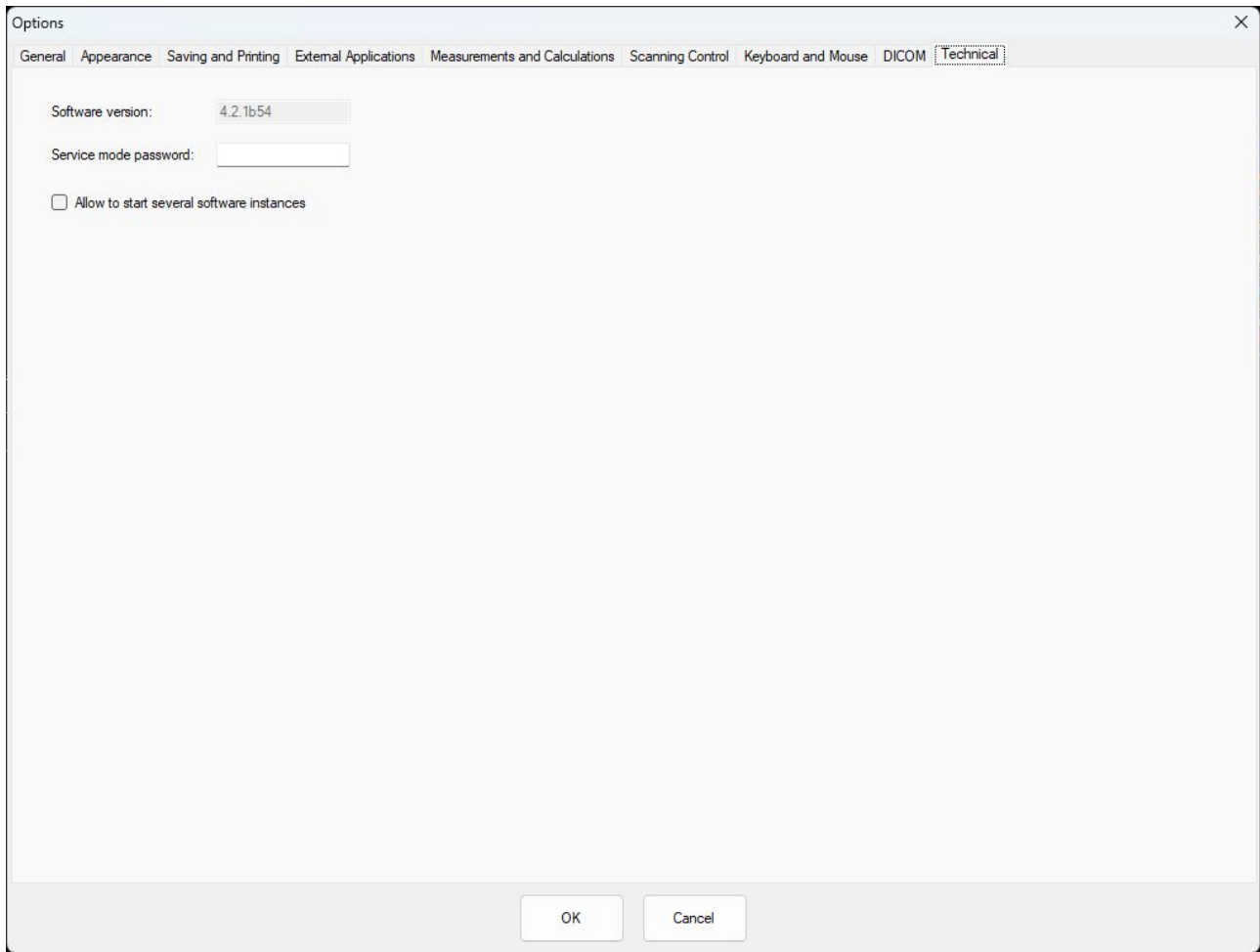
Film destination list allows to select from what printer bin is used medium for printing.

Film size list allows to select film size, for example, A4.

Film orientation radio buttons select if film orientation is portrait or landscape.

Please check the documentation of your printer and its DICOM Conformance Statement to know what settings must be used.

10. Technical Tab



Service mode password:

This options menu allows to enable service mode - the special mode dedicated to TELEMED engineers.

Allow to start several software instances

Enabling this check box will allow to start a few Echo Wave II instances.

11. References

1. Echo Wave II Software Reference Manual.
File: "EchoWaveII_Software_Reference_Manual.*".
2. Echo Wave II Software DICOM Conformance Statement.
File: "EchoWaveII_Software_DICOM_Conformance_Statement.*".

12. Revision History

Revision	Revision Date	Description of Revision	Revision Author
0.1.0	2024.01.16	Draft	I.Ciunel
0.2.0	2024.01.23	Various changes and additions.	V.Perlibakas
1.0.0	2024.02.27	Initial release.	V.Perlibakas
1.0.1	2024.10.28	Added information about Contrast mode tab.	V.Perlibakas
1.0.2	2025.04.18	Added information about B and Contrast modes Rejection control.	V.Perlibakas
1.0.3	2025.08.29	Postal code in company address changed to LT-02301.	V.Perlibakas

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