

Visionix VX130

User Guide



UM30200013-ENG VX130 June 2016 Rev1.0

VISIONIX
The Vision of the Future

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1. Introduction

The VX130 is a multifunctional eye diagnostic device. There are several operation modes combined in a single platform: keratometer, corneal topographer, tonometer, multi-slit pachymeter and retro illumination.

- The wavefront aberrometer uses the Shack-Hartmann principle and is used as an advanced autorefractometer that measures both lower and higher order aberrations of the refraction of the eye. The aberrometer principle can measure the maximum pupil size of the pupil or the default pupil size specified in the settings.
- The corneal topographer uses 24 Placido disks to measure the shape of the anterior surface of the cornea. It shows a detailed description of the shape of the cornea that can be presented as corneal aberrometry. The placido rings also function as a keratometer.
- The Scheimpflug pachymeter analyzes the anterior chamber of the eye (thickness of the cornea, irido corneal angles, anterior chamber analysis and kappa angle) by illuminating it with a slit of light and a camera using the Scheimpflug technique. The Multi Slit beam scans the cornea providing both *anterior* and *posterior* corneal data, such as, thickness maps, and topographical maps of the anterior and posterior cornea.
- The air-puff non-contact tonometer measures the intraocular pressure.
- Retro illumination imaging captures the light reflected from the eye to help identify dark spots on camera. It is designed to take images of eyes with pupils of a diameter of 2-8mm

The device is fully automated and a number of different measurements can be performed by a single command including alignment and focusing.

This guide explains how ophthalmologists, optometrists, and other eye-care professionals can use the VX130. It includes instructions on how to setup, operate and maintain the unit.

Caution Federal (U.S.) Law restricts this device to sale by or on the order of a physician.

1. 1 Indications for Use

Indications for use:

VX130 is a multi-function diagnostic device combining wavefront aberrometer, corneal topographer, retro-illuminator and pachymeter and tonometer, indicated for:

- Measuring the refraction of the eye giving both lower and higher order aberrations
- Measuring the shape of the anterior and posterior cornea
- Retro-illumination imaging of the eye
- Measuring the intraocular pressure without contacting the eye for glaucoma evaluation.
- Photographing the eye and taking images of the eye to evaluate the thickness of the cornea.

1.2 About this Guide

This guide contains the following chapters:

Chapter	Description
Safety ⁵	Information about using the VX130 safely
Equipment and Installation ⁹	Equipment in the VX130 package, description of the unit's parts, installing and setting up the unit, turning the unit on and off
Overview of the Software ¹⁷	Introduction to the interface screens
Managing Patients ⁹⁸	Adding patient records to the database; finding, modifying and deleting existing patient records
Performing a Diagnostic ¹⁰⁵	Preparing the patient and the unit for an exam procedure; initiating and running the exam; working with the test results
Managing the List of Test Results ¹³⁰	Opening, exporting, moving, and deleting test results that are stored in the database
Managing the Database ¹³⁷	Configuring the patient display, exporting and importing the database, deleting patient records
General Actions and Features ¹⁴³	Additional information about the VX130 and its features - screen saver, password protection, virtual keyboard, updating the software, and getting assistance
Configuring the Unit ¹⁴⁸	Information about configuring the unit's settings
What Should I Do If...? ¹⁸⁹	Troubleshooting common problems
Maintenance ¹⁹¹	Routine maintenance procedures
Appendices ²⁰¹	Technical specifications, conformation with international standards, contact information

1.3 Warning

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2. Safety

Manufacturer provides sufficient information to ensure patient safety, avoid system malfunctions, and prevent incorrect readings.

Manufacturer declines all responsibility for injury to patients or damage to equipment due to ignorance of its safety instructions or in the event that they are not followed.

The safety information appears in the form of warnings and alert messages.

➤ **Important!**

- Never attempt to disassemble or reassemble the equipment. There are no user serviceable parts in the device.
- Do not modify the equipment in any way.
- Repairs and maintenance must be carried out only by qualified service personnel.
- Operators and patients should keep hands and body clear from moving parts on the device.
- This is a Class 1 laser product with an embedded Class 3R laser.

2.1 Electricity

➤ **Important!**

- To avoid risk of electric shock or bodily injury, do not handle the electrical plugs with wet hands.
- To avoid risk of electric shock or fire, make sure the VX130's power cord is not damaged before plugging it into an electrical outlet.
- To avoid risk of electric shock, the power cord should be fully inserted in an outlet equipped with a protective ground connection.
- When connecting external devices such as a screen or printer, ensure that the device conforms to IEC 60950-1:2005 Information Technology Equipment - Safety.

2.2 Transport, Storage, and Handling

➤ **Important!**











- Transport the VX130 in its specially designed case.
- Make sure the packing is firm and secure.
- Do not subject the VX130 to strong vibrations. Shocks or violent movements can cause malfunctions.

2.3 Precautions During Use

• Important!

- Do not place or use the VX130 in direct sunlight.
- Do not expose the VX130 to excessive dust or humidity.
- Do not place the VX130 in a hot air current (e.g. above a heater).
- Do not obstruct the ventilation vents.
- Never place the VX130 close to the following types of equipment which can perturb the reception of commands from the remote control:
 - Halogen lamp (direct or indirect)
 - Fluocompact lamp
- Keep the screen surface clean. Protect it from dust, fingerprints, and shocks.
- When you switch off the VX130, wait at least 5 seconds before switching it on again.

2.4 Symbols

Symbol	Description
	This equipment is a Class 1 laser product.
	Invisible laser radiation
	Important: consult the documents supplied with the equipment
	Alternating current
	Type BF
	The equipment must be returned to the manufacturer for scrapping (see Waste Electrical and Electronic Equipment (WEEE) Directive ^[208])
	Manufacturer
	Year of Manufacturing
	Serial Number
	Compliance with Medical Device Directive 93/42/EC
Rx Only	Caution: Federal (U.S.) Law restricts this device to sale by or on the order of a physician.

3. Equipment and Installation

-
- [List of Equipment Supplied](#) ^{□9}
 - [Unit Parts](#) ^{□9}
 - [Installation Procedures](#) ^{□14}
 - [Turning the Unit On and Off](#) ^{□15}

3. 1 List of Equipment Supplied

The VX130 package contains the following items:

- VX130 unit
- Power cord
- Dust cover
- Headrest cover
- Chin-rest paper
- Printer paper roll
- CD and documentation

3. 2 Description of the Device

-
- [User Side](#) ^{□10}
 - [Patient Side](#) ^{□11}
 - [Printer Side](#) ^{□13}

User Side



No	Description
1	Optical-measurement head Contains the hardware used to perform all of the measurements during patient diagnostic exams.
2	On/Off switch Shuts down the machine
3 & 6	Ventilation Slots
4	Power-cable connector Connect the supplied power cable to this connector; plug the other end of the cable into a standard electrical outlet.
5	Connectors for external devices See the table below for a list of the available connectors.

No	Description
7	Case Contains the unit's computer and other electronics
8	LED touch screen

The following connectors for external devices are available:

Port Type	Uses
USB (4 ports)	<ul style="list-style-type: none"> Connect an external hard drive or flash drive to export data from the unit's database and/or to import data to the unit. Connect a keyboard to use instead of or along with the virtual keyboard ¹⁴³. Connect a mouse to use instead of or along with the touch screen. Connect a printer to print on standard printer paper.
Network (2 ports)	Connect a network cable to connect the unit to a LAN. You will then be able to export and import data to and from computers on the LAN.
Serial port (RS-232)	Connect a compatible optometric device, such as a phoropter, to the unit
VGA port	Connect an external monitor to the unit

Patient Side



No	Description
1	Headrest The patient should lean their forehead on the headrest during all diagnostic procedures.
2	Chin rest The patient should lean their chin on the chin rest during all diagnostic procedures.

Printer Side



VX130 unit, printer side

No	Description
1	Ventilation slot
2	Printer LED Printer status indicator: <ul style="list-style-type: none"> • LED off Printer is turned off. • LED on (not flashing) Printer is turned on and ready to print. • LED flashing Printer is on, but either there is no paper or there is a malfunction
3	Printer paper-feed button Press to feed a small amount of paper through the paper slot (#5).
4	Paper slot Paper is fed through this slot when it is loaded.
5	Paper-roll compartment For paper-loading instructions, see Loading Paper into the Printer ¹⁵ .

3.3 Installation Procedures

- [Site Requirements](#) ¹⁴
- [Opening the Box](#) ¹⁴
- [Electrical Connection](#) ¹⁴
- [Loading Paper into the Printer](#) ¹⁵

Site Requirements

The VX130 unit should be placed on a clear table or desktop close to a power outlet. The unit should not be exposed to direct light on the patient side. Better results will be obtained if the unit is located in a room with limited illumination.

Unpacking the Unit

To unpack the unit:

- Remove the straps around the box.
- Open the carton with care.
- Lift the protective top cover to uncover the accessories listed in the packing list.
- Remove the accessories to uncover the VX130 unit, which is packed in a protective plastic bag.
- **➤ Important!**
Do not grab or hold the screen when extracting the device from the box.
- Take the VX130 out of the box and put it on the table.
- Lift the protective plastic bag to uncover the device.

Electrical Connection

To connect the unit to an electric outlet:

- Check that the power supply voltage corresponds to that required by the equipment (see the identification label on the back of the unit).
- Insert the power connector of the power cord into the power-cable connector on the unit (#4 in the illustration of the [user side](#) ¹⁰).
- Connect the power plug to a wall outlet.

Loading Paper into the Printer

If the paper roll is used up, the printer LED indicator blinks.

To insert a paper roll into the printer:

- Lift the handle in the middle of the paper compartment and pull the cover down.
- If an empty paper roll is in the printer, remove it.
- Insert the new roll with the end of the paper on the top of the roll.
- Feed the paper into the slot at the top of the compartment.
- Push the paper-compartment door closed.

3.4 Turning the Unit On and Off

To turn the unit on:

- Press the On/Off switch (#2 in the illustration).

To turn the unit off:

- From the software, in the [Home Screen](#)¹⁷, select the **Turn Off** button.
-OR-
- From the software, in the [Configuration screen](#)¹⁴⁸, select the **Turn Off** button.
-OR-
- On the unit, press the **On/Off** switch.

Regardless of which of these methods you use to turn off the unit, it shuts down. If you turn the unit off using the software, the head moves back to its default position. It is important to ensure that the head is in its default position before moving the unit.

Notes

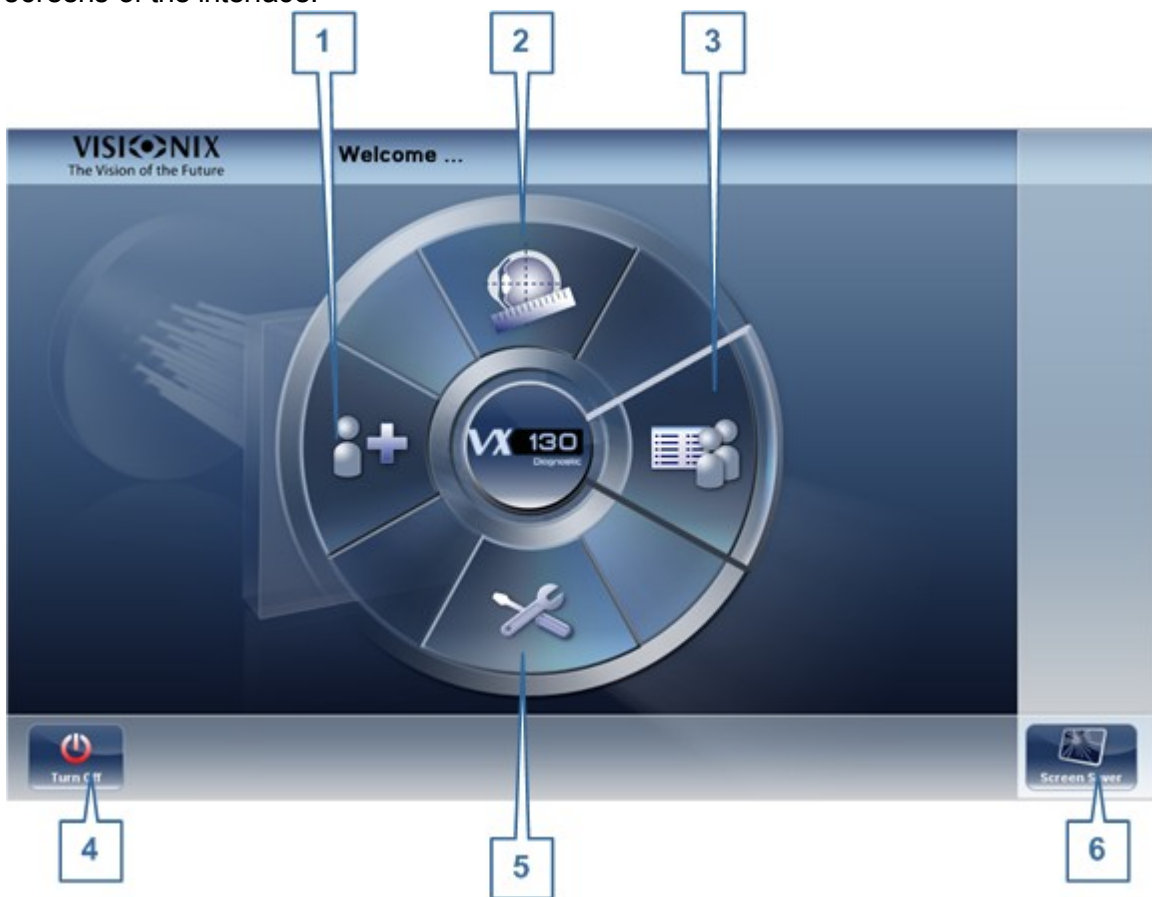
- If you intend to pack and/or move the device, you must turn it off using the software.

4. Overview of the Software

- [Home Screen](#)^{□17}
- [Patient Screen](#)^{□18}
- [Measure Screen](#)^{□21}
- [Results Screen](#)^{□32}

4.1 Home Screen

The **Home** screen is the main menu of the VX130. It gives you access to all of the functional screens of the interface.

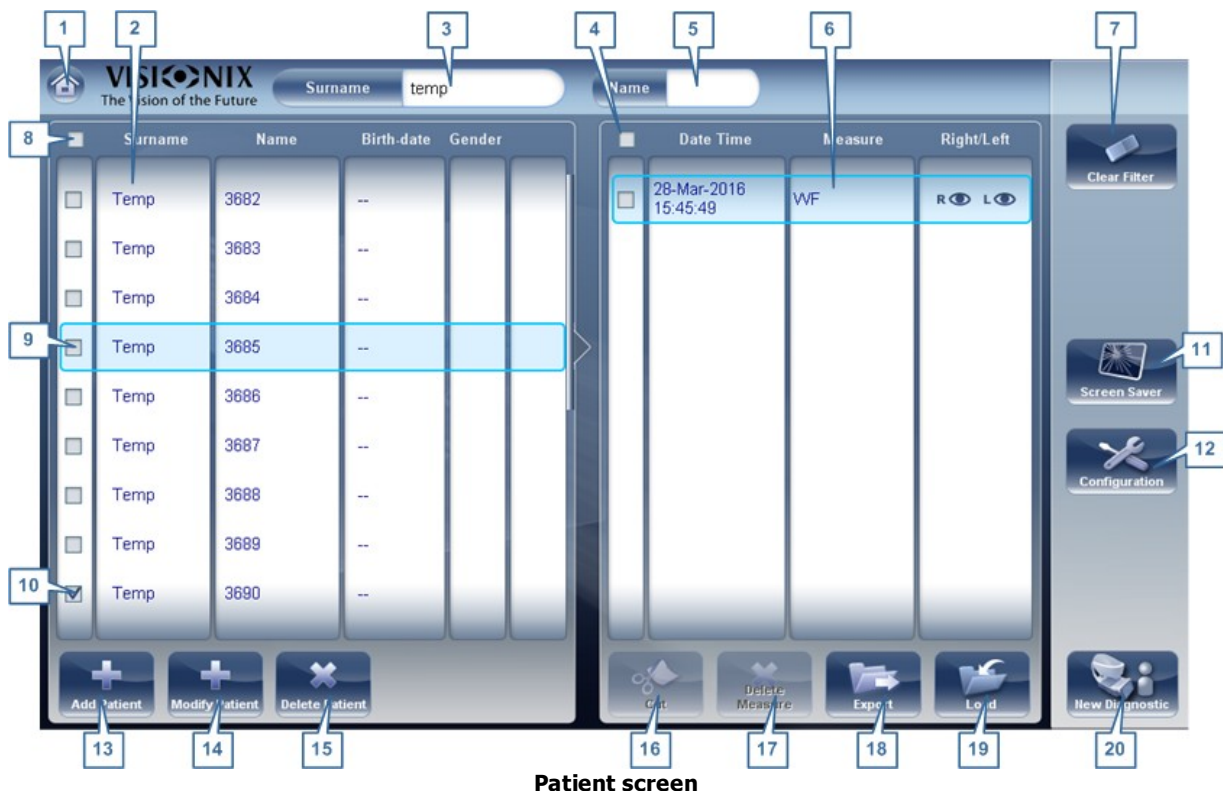


No	Description
1	<p>dd Patient button</p> <p>Opens the Patient screen^{□18} with the Patient Information^{□98} dialog box open so that you can begin entering patient information immediately.</p>

No	Description
2	Measurement screen button Opens the Measurement screen ¹²¹ without a patient selected. The results will be saved temporarily with an automatically generated ID number.
3	Open Patient screen button Opens the Patient screen ¹¹⁸ and displays the list of patients
4	Turn Off button Shuts the unit down. See Turning the Unit On and Off ¹¹⁵ .
5	Configuration Screen button Opens the Configuration screen ¹⁴⁸
6	Screen Saver button Turns on the screen saver.

4.2 Patient Screen

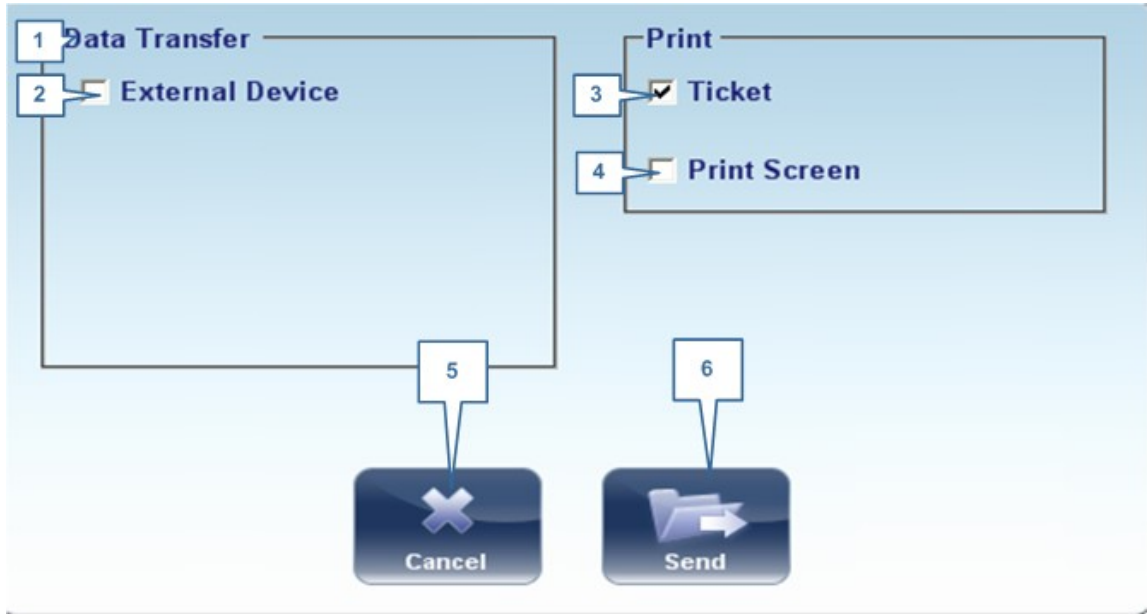
The **Patient** screen gives you access to the patient database. You can create new patient records, modify existing patient information, view stored test results, and initiate a new diagnostic procedure for a selected patient from this screen.



No	Description
1	Home button Opens the Home screen ¹⁷ .
2	Patient list List of patients in the database; drag your finger (or mouse) over the entries to scroll up or down.
3	Surname filter Enter one or more letters. The list of patients is filtered and only displays patients whose last names begin with the specified sequence of letters.
4	Mark all measures Mark the check boxes of all the displayed measures. ut (#16 ¹⁸) and Delete Measure (#17 ¹⁸) are applied to all measures whose check boxes are marked.
5	Name filter Enter one or more letters. The list of patients is filtered and only displays patients whose first names begin with the specified sequence of letters.
6	Measure list List of test results for the selected patient; drag your finger (or mouse) over the items to scroll up or down.
7	Clear Filter button Clear all patient filters and display all the patient records in the database.
8	Mark all patients Mark the check boxes of all the displayed patient records. Delete Patient (#15 ¹⁸) is applied to all patients whose check boxes are marked.
9	Selected patient record Blue border indicates a patient record is selected. The measures in the Measure list belong to the selected patient. In addition, Modify Patient (#14 ¹⁸) opens the patient data for the selected patient.
10	Marked check box Example of a marked check box
11	Screen Saver button Turns on the screen saver.
12	Configuration button Opens the Configuration screen ¹⁴⁸ .
13	Add Patient button Opens the Patient Information ⁹⁸ dialog box.
14	Modify Patient button Opens the patient data of the selected patient (#9 ¹⁸) Note This button is only available when a patient is selected in the list.
15	Delete Patient button Deletes all the patient records whose check boxes are marked (#10 ¹⁸) Note This button is only available when the check boxes of one or more patients are selected in the list.

No	Description
16	<p>ut button Removes all the measures whose check boxes are selected from the selected patient record, and saves them in the clipboard so that they can be pasted into a different patient record.</p> <p>Note This button is only available when the check boxes of one or more measures are selected.</p> <p>Note When ut is selected, the button is replaced with a Paste button. Select the patient record in which you want to insert the cut measures and then select Paste to insert them.</p>
17	<p>Delete Measure button Deletes all the measures whose check boxes are marked</p> <p>Note This button is only available when the check boxes of one or more measures are selected.</p>
18	<p>Export button Exports the selected measures to an external file and/or prints the measurement results or screenshot</p> <p>Note This button is only available when a measure is selected.</p>
19	<p>Load button Opens the selected measure in the Results screen³².</p> <p>Note This button is only available when a measure is selected.</p>
20	<p>New Diagnostic button Initiates a new diagnostic procedure for the selected patient. The results of the diagnostic are automatically stored in the patient's record.</p>

When exporting (clicking on the no. 18 Export button) from the patient screen the following pop-up will appear:



No	Description
1	Data Transfer Options for transferring data from the device to other devices
2	External Device Exporting data from the VX130 to another device
3	Ticket Allows printing the data on a ticket in the device's internal printer
4	Print Screen Select to print a screenshot of the summary screen, this requires a connection to an external printer.
5	ancel Cancels your selection.
6	Send Confirms the selection and performs the transfer

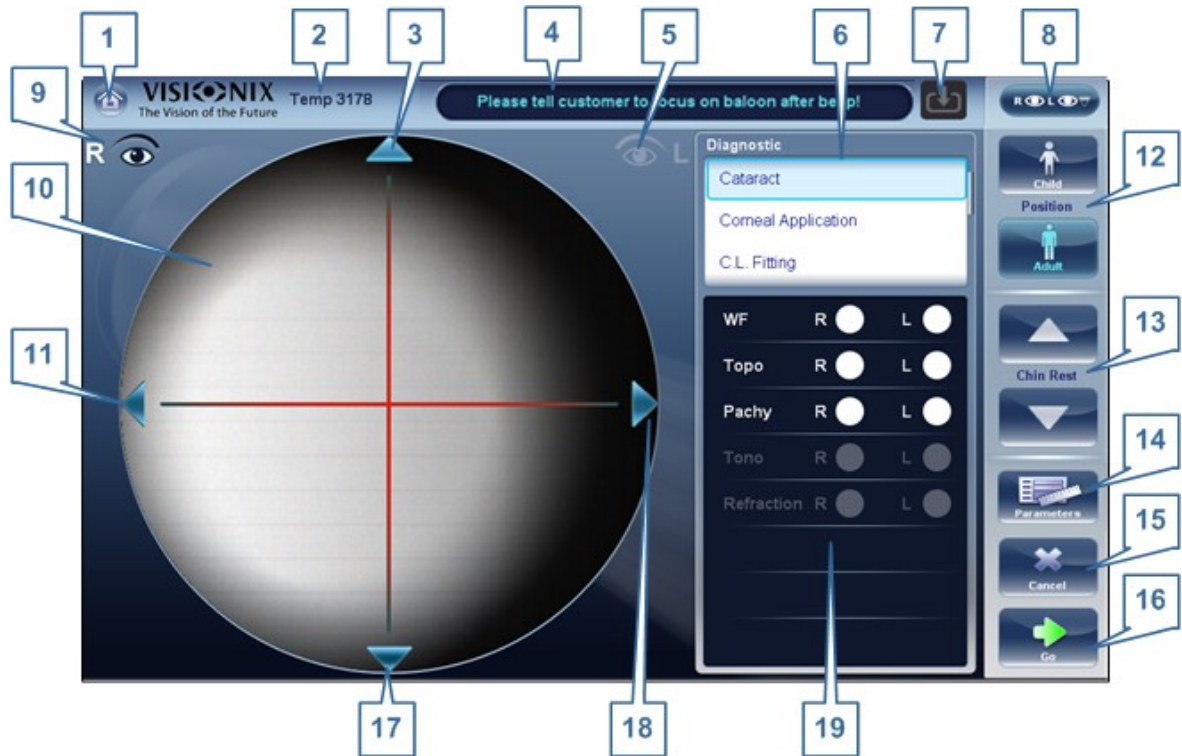
The export popup from the patient screen enables you to export data via an **external device**. Select the checkbox next to **external device**, and then press **SEND**. To print a screenshot of the screen you are viewing, select **Print Screen**.

4.3 Measure Screen

The **Measure** screen is used to select, initiate, and follow the progress of diagnostic tests.


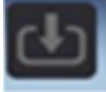
Before a Measurement

When you first open the **Measure** screen, before you start running the diagnostic, the screen looks like this:



Measure screen before measurement begins

No	Description
1	Home button Opens the Home screen ¹⁷ .
2	Patient Name (or ID) of current patient. Note If no patient was selected before the Measure screen was opened, a temporary name is generated by the system by combining "Temp" with a number (e.g., "Temp 1184").
3	Up arrow Raise the unit's head so that it aligns better with the patient's eyes.
4	Message field A text field in which the system displays messages to you, such as instructions for you to give to the patient or information about the testing process.

No	Description
5	<p>Left-eye indicator When active, indicates that the head is aligned with the patient's left eye</p> <p>Note In the illustration above, the right-eye indicator is active (see #8²² below) and the left one is not active.</p>
6	<p>Diagnostics available List of available diagnostic tests. Drag up and down on the list to scroll it, if necessary, and select the type of test you want to perform. Go to Diagnostics¹⁵² for a complete list of available options.</p>
7	<p>Input arrow Using this Input arrow is a quick way to change a "Temp patient" into a patient that already exists in your XML database. Simply click the blue arrow  to load patient details from your database. If the arrow is greyed out, , it means that the input folder is empty, and there is no information available for loading. For more information, go to Importing XML data.¹⁰⁰</p>
8	<p>Eye selector Select the eye or eyes to be tested.</p>
9	<p>Right-eye indicator When active, indicates that the head is aligned with the patient's right eye</p> <p>Note In the illustration above, the right-eye indicator is active, and the left one is not (see #5²², above)</p>
10	<p>amera view Shows the image that is visible through the camera</p> <p>Select any spot in the image to move the unit's head to align that spot with the cross hairs in the center of the image.</p>
11	<p>Left arrow Move the unit's head to the left so that it aligns better with the patient's eyes.</p>
12	<p>Position Select dult to move the head and chin rest into the default positions for adults, or select hild to move them into the default positions for children.</p> <p>Once you have done this, you can fine-tune the head and chin-rest positions using the the chin-rest controls (#12²²), the arrows (#3²², #10²², #16²², and #17²²).</p>
13	<p>hin Rest Raise or lower the chin rest.</p>

No	Description
14	<p>Parameters Open a dialog box in which you can change the number of times WF Tono teststest will be performed during this diagnostic. This feature also allows you to select a single, or multi-slit pachy measurement.</p> <p>Note If the WF and Tono tests are not included in this diagnostic, changing the values in the dialog box will have no effect.</p>
15	<p>ancel Cancel the measurement procedure and return to the previous screen.</p>
16	<p>Go Begin the diagnostic test.</p>
17	<p>Down arrow Lower the unit's head so that it aligns better with the patient's eyes.</p>
18	<p>Right arrow Move the unit's head to the right so that it aligns better with the patient's eyes.</p>
19	<p>Measures to be performed Indicates which measurement procedures will be performed for the diagnostic selected in the Diagnostics list (#6²²).</p>

When clicking on Parameters (no. 13 above), the following dialog box is displayed:

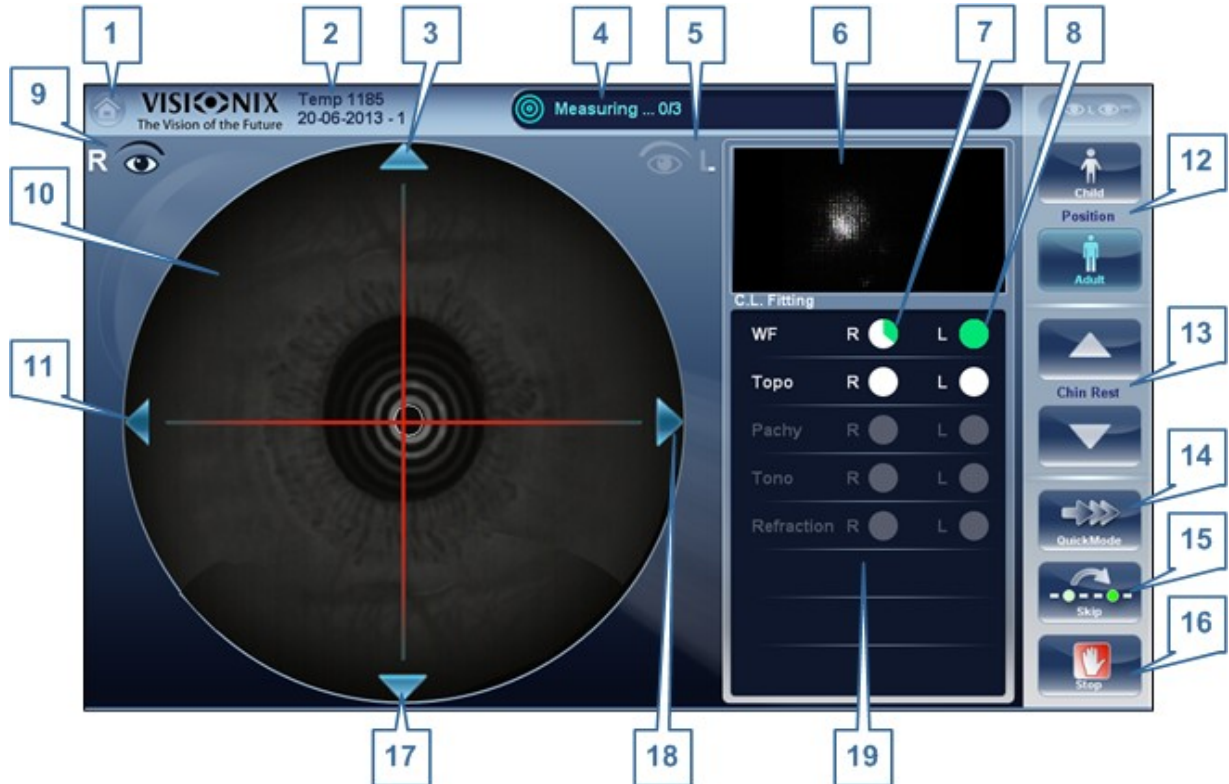


No	Description
1	WF Measurements The number of Wavefront measurements to perform
2	Include with WF Click this checkbox to include a near measurement in the wavefront measurement.
3	Tono Measurements Select to modify number of tono measurements to perform
4	Reading Distance The distance to perform the near vision test, from 30-60cm

No	Description
5	<p>Select either Single or Multi Slit to choose the pachy measurement. The Multi Slit measurement scans a large portion of the cornea and gives information regarding the posterior cornea thickness and topography.</p> <p>Note The Multi Slit measurement may take a bit longer than the Single Slit pachy measurement.</p>
6	<p>ancel Closes the dialogue box without saving</p>
7	<p>Save Saves the user's preferences</p>
8	<p>Demo Puff Select to demonstrate tono air puff.</p>

During a Measurement

After you select **Go** to begin the selected measurement procedure, the **Measure** screen shows information about the measurement process. During the measurement process, you can adjust the unit's head and chin rest as you would before the process began. You can also speed the measurement process up, skip parts of the test, or stop the test.



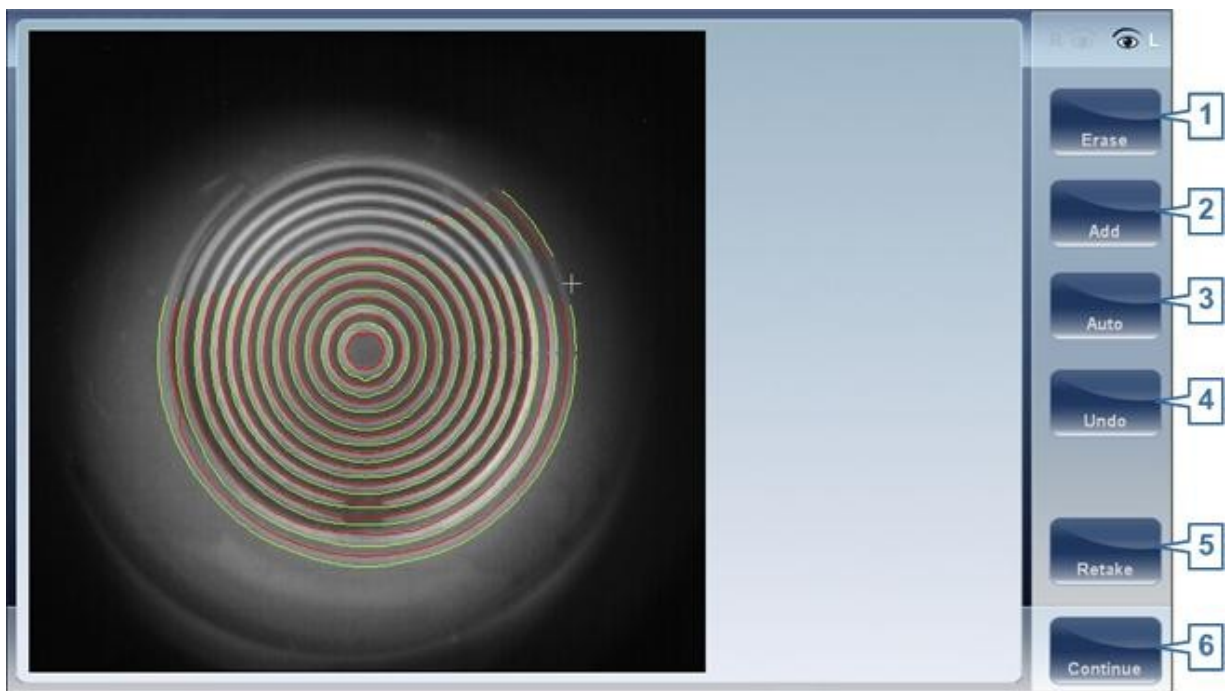
Measure screen during measurement process

No	Description
1	Home button [Button not available when a diagnostic is in progress]
2	Patient Name (or ID) of current patient. Note If no patient was selected before the Measure screen was opened, a temporary name is generated by the system by combining "Temp" with a number (e.g., "Temp 1184").
3	Up arrow Raise the unit's head so that it aligns better with the patient's eyes.
4	Message field A text field in which the system displays messages to you, such as instructions for you to give to the patient or information about the measurement process.
5	Left-eye indicator When active, indicates that the measurement is currently being performed on the patient's left eye. Note In the illustration above, the right-eye indicator is active (see #9 ²² below) and the left one is not active.
6	Sensor view During measurement, the Shack-Hartmann image is displayed in this area.

No	Description
7	<p>Measure in progress Indicates that this measure is currently being performed.</p>
8	<p>Completed test Indicates that the measure was already performed.</p>
9	<p>Right-eye indicator When active, indicates that the measure is currently being performed on the patient's right eye.</p> <p>Note In the illustration above, the right-eye indicator is active, and the left one is not (see #5^{□22}, above).</p>
10	<p>Camera view Shows the image that is visible through the camera.</p> <p>Note To manually center the image, select the spot that should be in the center of the image. The unit's head moves so that that spot is aligned with the cross hairs in the center of the image.</p>
11	<p>Left arrow Move the unit's head to the left so that it aligns better with the patient's eyes.</p>
12	<p>Position Select adult to move the head and chin rest into the default positions for adults, or select child to move them into the default positions for children. The default PD is also set appropriately for adults or children when you select one of these options.</p> <p>Once you have done this, you can fine-tune the head and chin-rest positions using the chin-rest controls (#13^{□22}) and the arrows (#3^{□22}, #11^{□22}, #17^{□22}, and #18^{□22}).</p>
3	<p>Chin rest Select the arrows to raise or lower the chin rest.</p>
14	<p>Quick mode Speed the measurement process up.</p> <p>This option is only available during WF measurements. It is useful if the patient has trouble sitting still for a long period of time. The results of the measurement may be slightly less accurate than they would be in standard mode.</p>
15	<p>Skip Cancel the current stage of the measurement procedure and proceed to the next stage. For example, if a measurement is being performed on the patient's left eye, selecting this button would discontinue the measurement on that eye, and begin measuring the other eye.</p>
16	<p>Stop Stop the entire measurement process. When this button is selected, the measurement procedure is aborted, and the pre-test Measure screen^{□22} is displayed.</p>
17	<p>Down arrow Lower the unit's head so that it aligns better with the patient's eyes.</p>

No	Description
18	Right arrow Move the unit's head to the right so that it aligns better with the patient's eyes.
19	Measurement status Indicates which measures are included in the current measurement procedure, and shows the status of those measures that have already been completed.

Immediately after the measurement, the Ringer edit screen will be displayed (only if a topography measurement has been made). In this screen, the user can edit the rings detected by the device and those rings that were wrongfully detected.



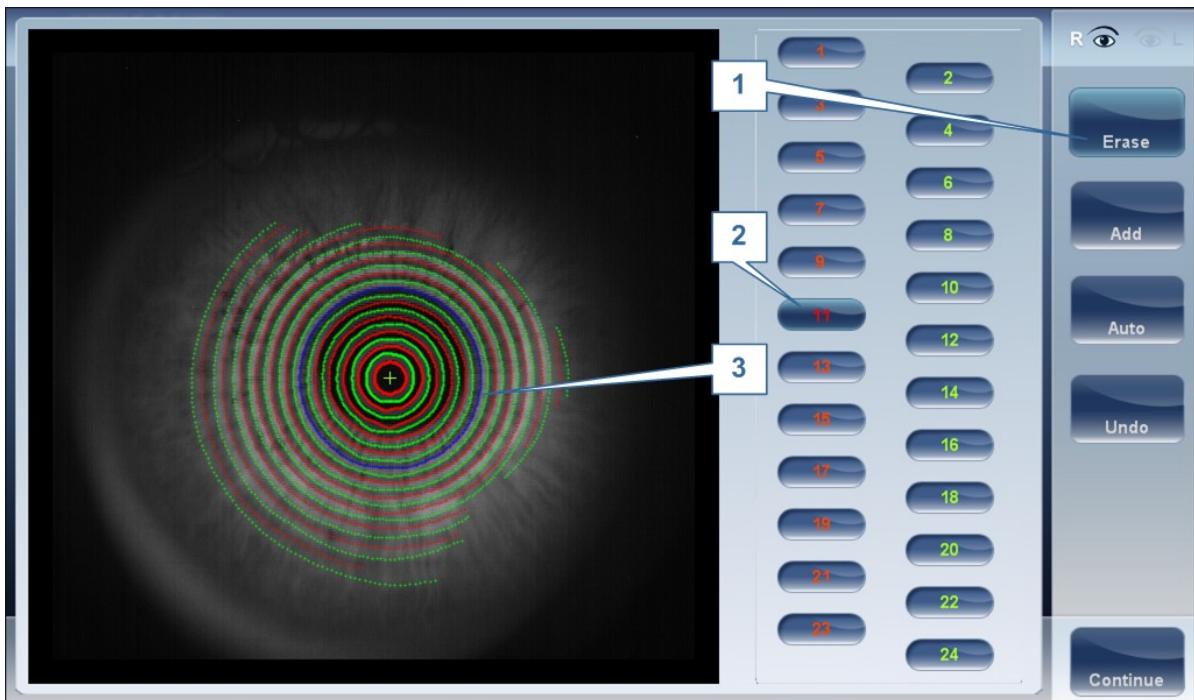
Ringer Screen

No	Description
1	Erase To erase individual rings in the topo map image select "Erase". A list of ring positions opens. Select the position of the ring you would like to erase, and then move the cursor over it, and only ring in the selected position will be erased. Note, the outer rings are in higher positions, from position 24 and downwards, while the inner ring is position 1. Note If you erase more than 10% of the topography rings, you may reduce the accuracy of the results.

No	Description
2	<p>dd</p> <p>Select the position number of the ring (shown in blue), then trace the ring in that position, the device "draws" a new ring. Note, rings can only be drawn if the topo image is relatively clear.</p>
3	<p>uto</p> <p>Allows deleting rings by touching the screen. This is the default mode.</p>
4	<p>Undo</p> <p>Undo the modifications</p>
5	<p>Retake</p> <p>Retakes the measurement</p>
6	<p>ontinue</p> <p>Validates the modifications that were done and computes the topography map</p>

Editing the Ringer

If you select **DD** or **ER SE** from the menu above, the following screen appears:



No	Description
1	<p>Operation buttons</p> <p>Select these buttons to add, erase, undo, or continue.</p>

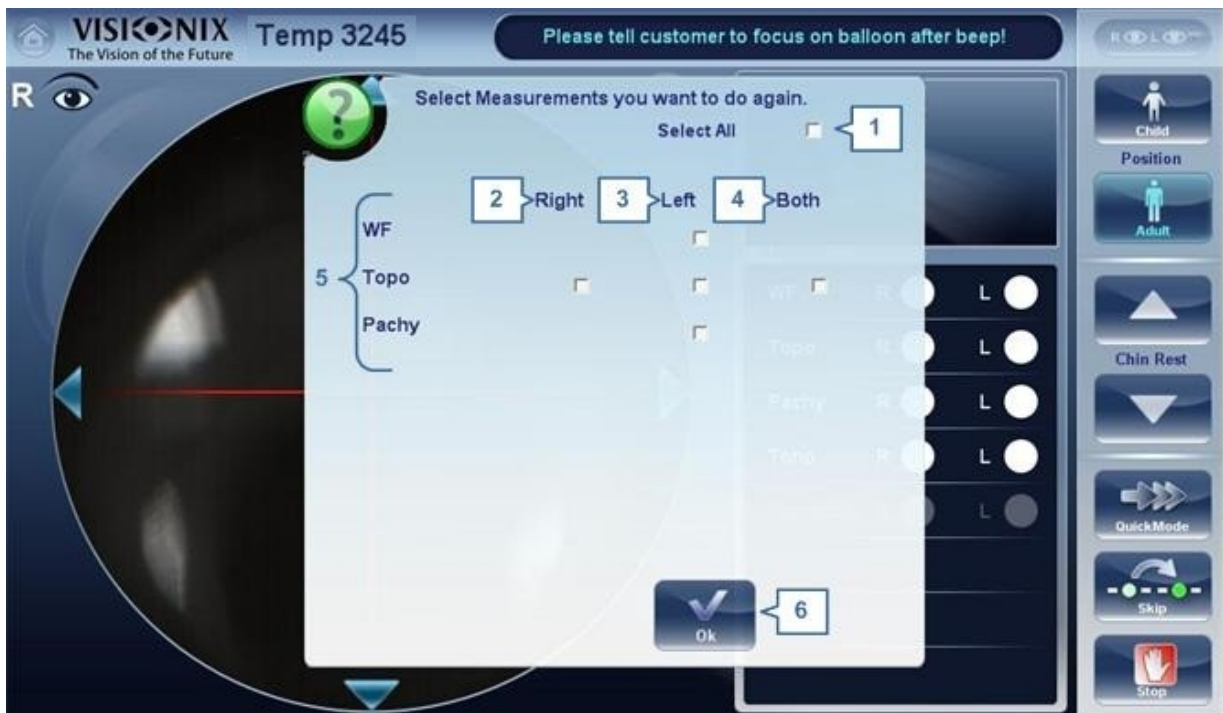
No	Description
2	Ring Positions Select the position of the ring that you would like to modify. Once selected the ring will appear blue.
3	Selected Ring Once you have selected a Ring in #2, it will appear blue and it can be erased/ added to. To erase the ring, move the cursor over the areas that you would like to be erased. To add to the ring, move the cursor over the area you would like to draw. In the image above, the ringer selected is in position number 11.

To erase rings at will, select **UTO** and then slowly move the cursor over the rings you want erased. This action can erase several rings at a time. After modifying the the Rings, select Continue, and the changes will be saved.

Note only changes done immediately after the examination will be saved.

Repeating a measurement

After the results screen is displayed, it is possible to repeat the measurement by clicking the "Measure" button (See: Results Screen). After clicking the Measure button, the following dialogue box is opened:



No	Description
1	Select all Selects all measurements for both eyes

No	Description
2	Right Measurements for the right eye
3	Left Measurements for the left eye
4	Both Measurements for both eyes
5	List of measurements The list of measurements that were performed previously and that can be repeated
6	OK Validates the selection and performs the new measurement according to the selection

Select the measurements that you want repeated, and continue with the measurement as normal.

4.4 Results

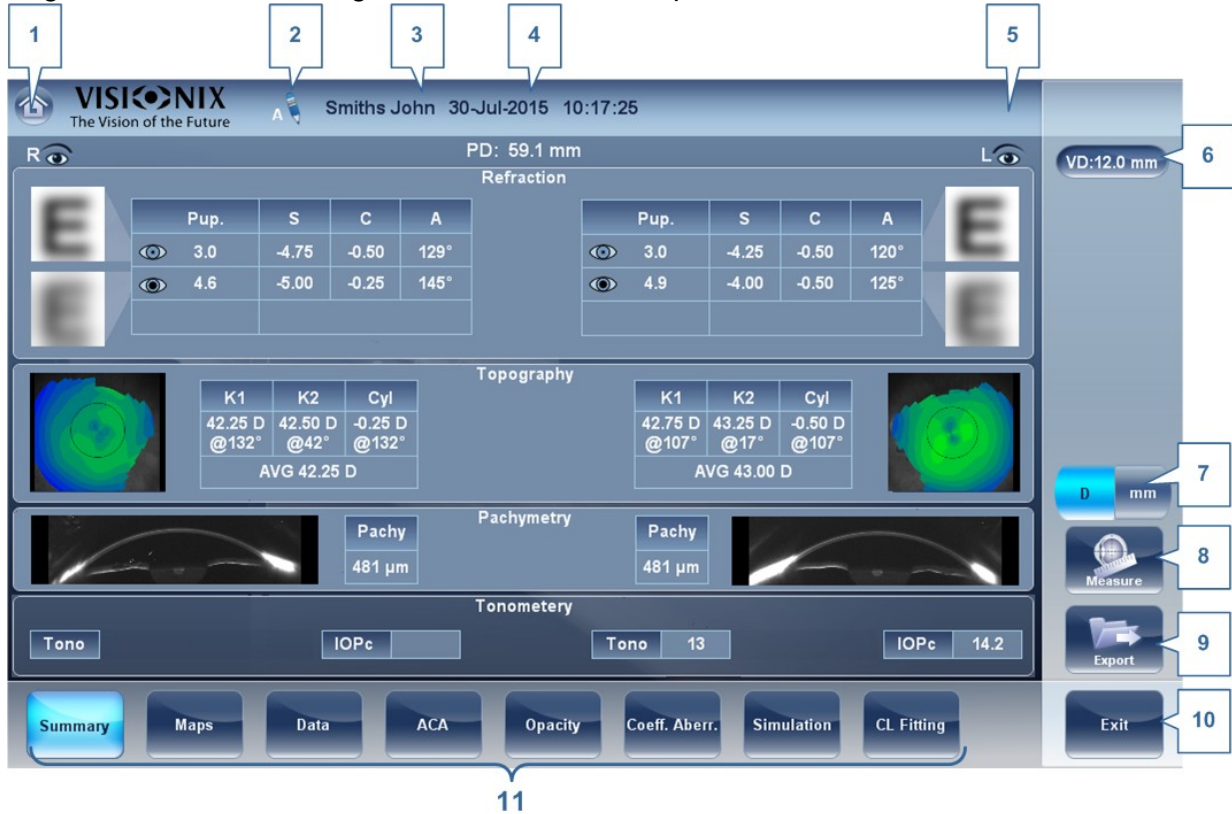
The **Results** screen displays the results of diagnostic measurements. It opens when a diagnostic test is completed or when stored test results are loaded from the [Patient screen](#)¹⁸.

The **Results** screen initially displays the [Summary tab](#)³⁴, which gives a condensed view of the results. The other tabs of the **Results** screen show certain aspects of the results in greater detail, and are listed below

-
- [Overview of Summary Screen](#)³³
 - [Maps Tab](#)⁴⁷
 - [Data Tab](#)⁶⁶
 - [ACA Tab](#)⁷³
 - [Opacity Tab](#)⁷⁹
 - [Coeff. Aberrations](#)⁸³
 - [Simulation](#)⁸⁷
 - [CL Fitting](#)⁹¹

Overview of the Summary Screen

The **Results** screen is dynamic, and may have a different layout and data according to the diagnostic chosen. This is general an overview of a possible results screen:



No	Description
1	Home button Opens the Home screen ^{D17} .
2	Note This note may contain comments, additional information about the patient, or measurement. Click on the note to open it.
3	Patient name The surname and first name of the patient.
4	Date and Time The date and time of the measurement
5	Left eye Indicator Results displayed on this side of the screen are those of the left eye
6	VD Vertex distance, this button displays the distance of the refraction measurement, it allows you to toggle between the default and zero.

No	Description
7	<p>D/mm button</p> <p>This button allows you toggle between displaying the results in millimeters and diopters.</p>
8	<p>Measure button</p> <p>Opens the Measure screen¹²², with the patient's name selected, so that you can perform additional tests that were not included in the current diagnostic.</p>
9	<p>Export button</p> <p>Exports the test results to a file on an external device and/or prints the test results. To view more export options, go to Exporting from the Results Screen¹³³.</p>
10	<p>Exit button</p> <p>Closes the Results screen, and displays the default screen (which is selected in the configuration settings¹⁶⁶).</p>
11	<p>Tabs</p> <p>This section may have fewer tabs, depending on the diagnostic chosen. Select a tab to display the topic in greater detail.</p>

Dynamic Summary Tabs

The **Dynamic Summary** tab is displayed by a default opening of the **Result** screen. It gives a condensed view of the results.

Note: If results for a particular type of test are not available, the result fields are left blank. This chapter will show some of the various summary tabs and their descriptions.

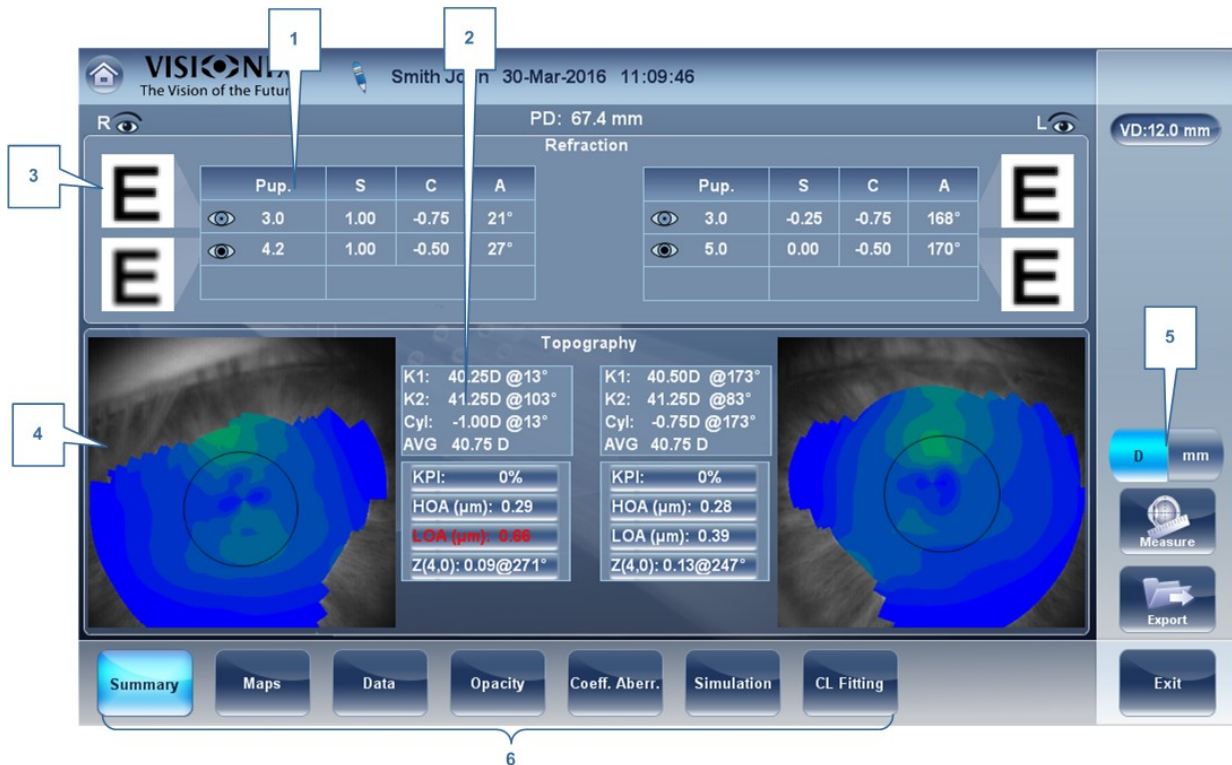
Summary Tab for All Diagnostic



No	Description
1	Right-eye indicator Indicates that the test results on this side of the screen are for the right eye
2	PD Patient's pupillary distance (if available).
3	Refraction Displays the photopic and mesopic refractions, with the pupil sizes. The image shows the Photopic (above) and Mesopic (below) simulation of vision. The clarity of the E indicates how well the patient sees from the eye under photopic or mesopic conditions. Double-tap (or double-click) the E to open a visual acuity simulation for daytime / nighttime vision.
4	Topography Displays the topographic map of the eye as well as the keratometry values. Double-tap (or double-click) to open the topography map sub-tab for the eye.
5	T- Pachymetry Displays a Scheimpflug image of the cornea as well as the thickness of the cornea at its center. Double-tap (or double-click) to open the ACA sub-tab for the eye.
6	Min Displays the minimum corneal thickness measured. This is only displayed if a multi slit pachy was measured.

No	Description
7	Tonometry Displays the Glaucoma evaluation results which include: the tonometry test results in PO mm/Hg, the average of the tonometry test results, and the irideo angles and the anterior chamber depth results. In addition it displays the adjusted tonometry results which is based on formulas selected in the settings menu. Double-tap (or double-click) to open the Tonometry Tab ⁷³ sub-tab.
8	IOPc This is the adjusted tonometry results which is based on formulas selected in the settings menu. Double-tap (or double-click) to open the Tonometry ⁷³ tab.

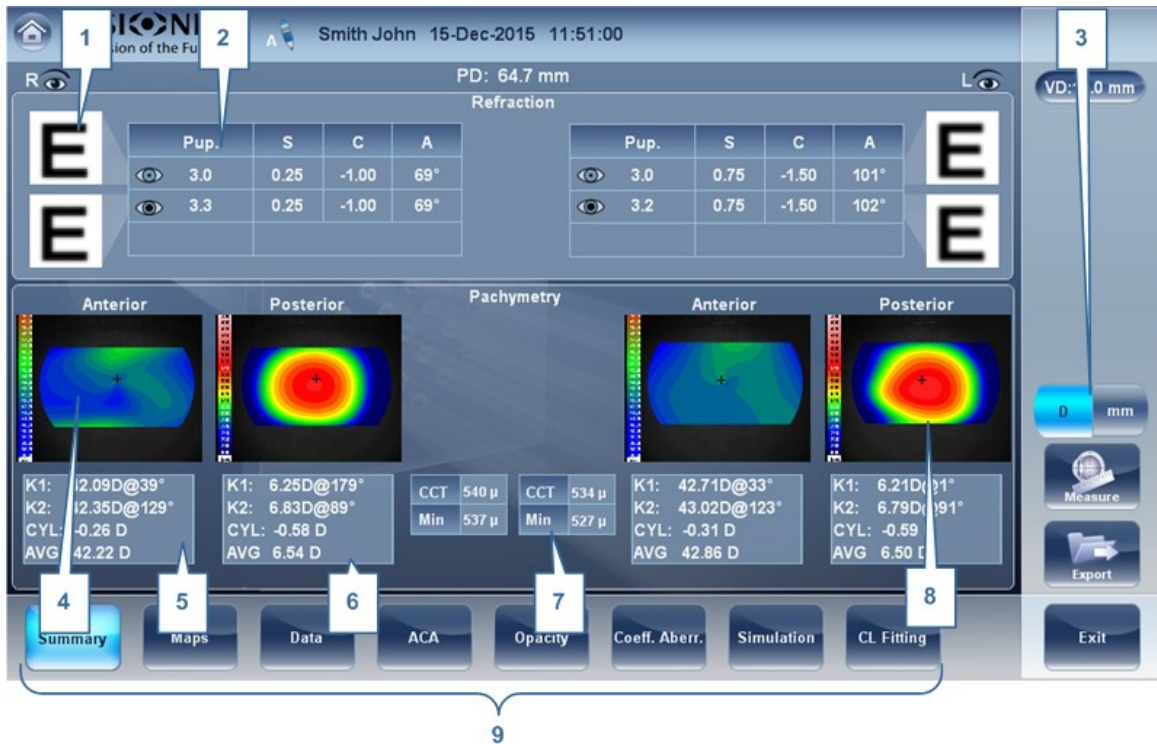
Summary Tab for C.L. Fitting:



No	Description
1	Refraction Displays the photopic and mesopic refractions, with the pupil sizes.
2	Keratometry Displays the keratometry readings, KPI values (Keratconus Index), and High Order and Low Order aberrations

No	Description
3	E Simulation The clarity of the E indicates how well the patient sees from the eye under photopic or mesopic conditions. Double-tap (or double-click) the E to open a visual acuity simulation for daytime / nighttime vision.
4	Topography Displays the topographic map of the eye Double-tap (or double-click) to open the topography map sub-tab for the eye.
5	D/mm Select button to toggle between Dioptres and mm
6	Subtabs Select subtabs to view subject in greater detail

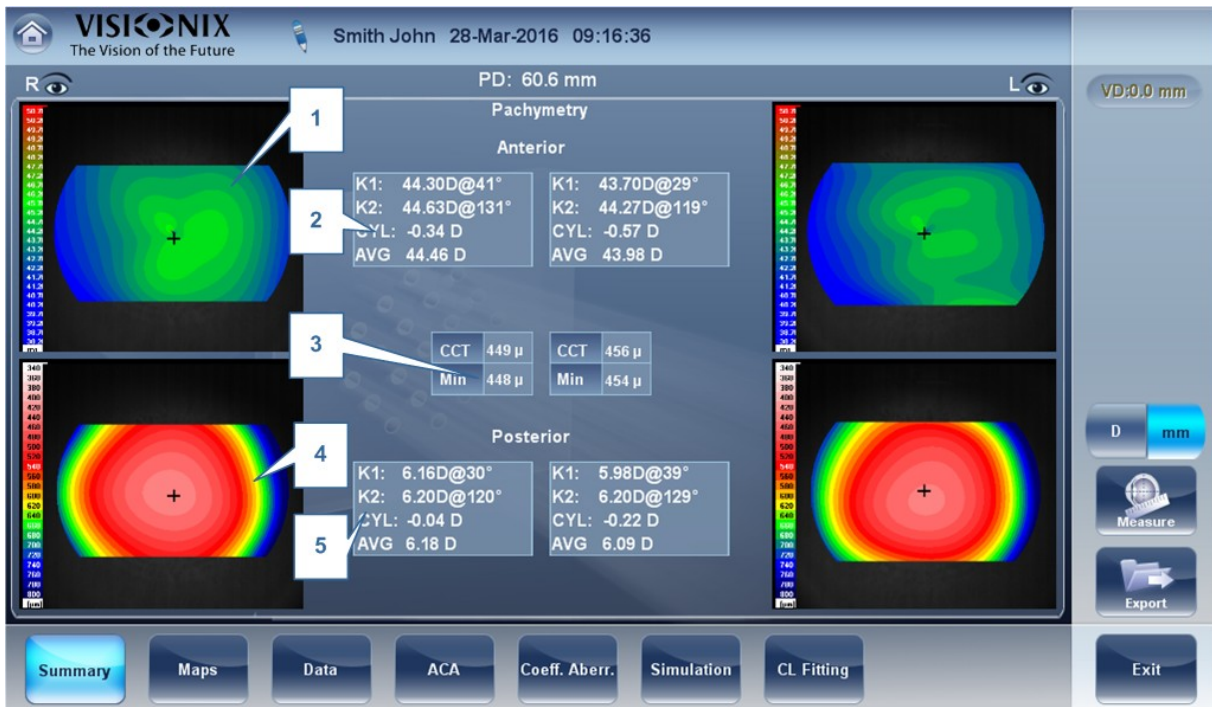
Corneal App/Cataract diagnostic:



No	Description
1	E Simulation The clarity of the E indicates how well the patient sees from the eye under photopic or mesopic conditions. Double-tap (or double-click) the E to open a visual acuity simulation for daytime / nighttime vision.
2	Refraction Displays the photopic and mesopic refractions, with the pupil sizes. Keratometry Displays the keratometry readings, KPI values (Keratconus Index), and High Order and Low Order aberrations

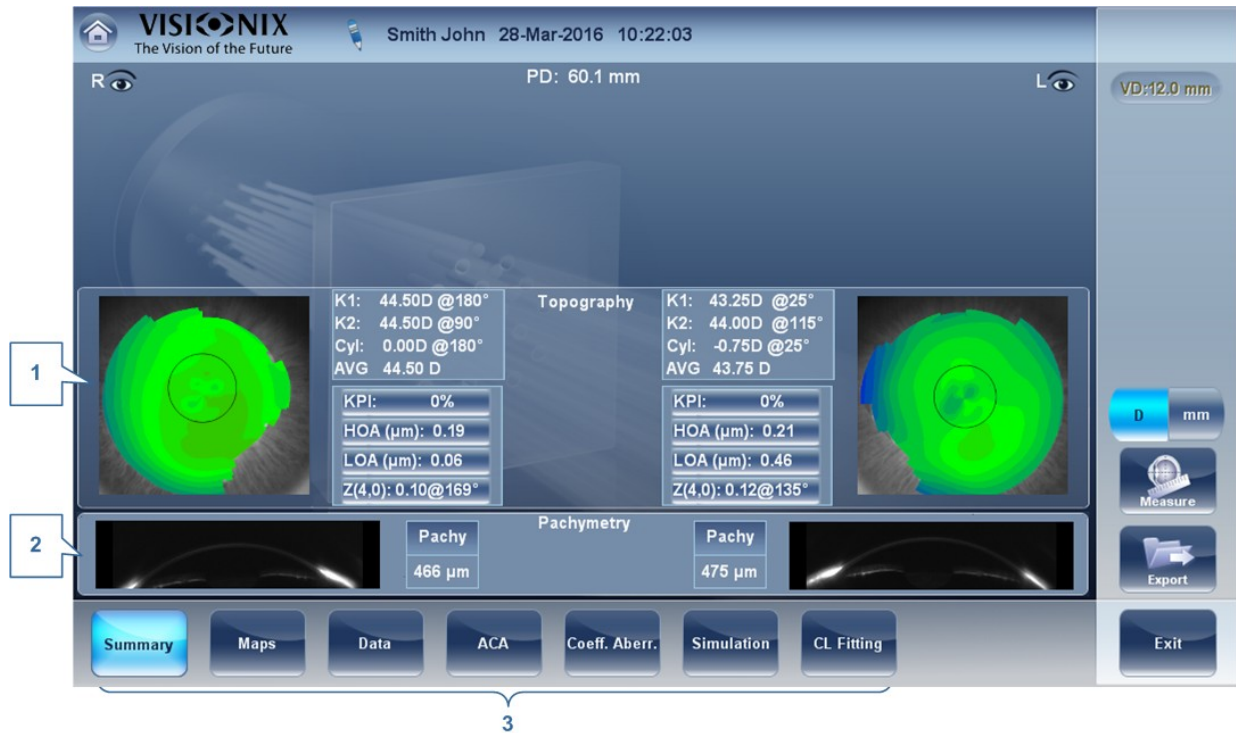
No	Description
3	D/mm Select button to toggle between Dioptres and mm
4	axial Anterior Map Displays the Axial map of the Anterior cornea
5	Anterior Keratometry Displays the keratometry data of the of the Anterior cornea: K1 & K2, and the cylinder and axis of the cornea.
6	Posterior Keratometry Displays the keratometry data of the of the Posterior cornea: K1 & K2, and the cylinder and axis of the cornea.
7	Pachymetry This table displays two values: CCT - Central Corneal thickness. Min- this is the minimum corneal thickness.
8	Thickness Map Displays the thickness map of the cornea
8	Subtabs Select to see tab subject in greater detail

Summary tab for Pachy diagnostic



No	Description
1	axial Anterior Map Displays the Axial map of the Anterior cornea
2	Anterior Keratometry Displays the keratometry readings, cylinder, and axis of the anterior cornea.
3	Pachymetry This table displays two values: CCT - Central Corneal thickness. Min- this is the minimum corneal thickness.
4	Thickness Map Displays the thickness map of the cornea
5	Posterior Keratometry Displays the keratometry readings, cylinder, and axis of the posterior cornea. Note The posterior K Values in millimeters and diopters are very similar due to a low difference of refractive indexes. The refractive index difference from air to the cornea is 0.33 5 while the difference from anterior to posterior cornea is 0.04.

If the measurement was taken in Single Slit pachy mode, and not Multi Slit pachy (as listed above), the summary screen will look like this:

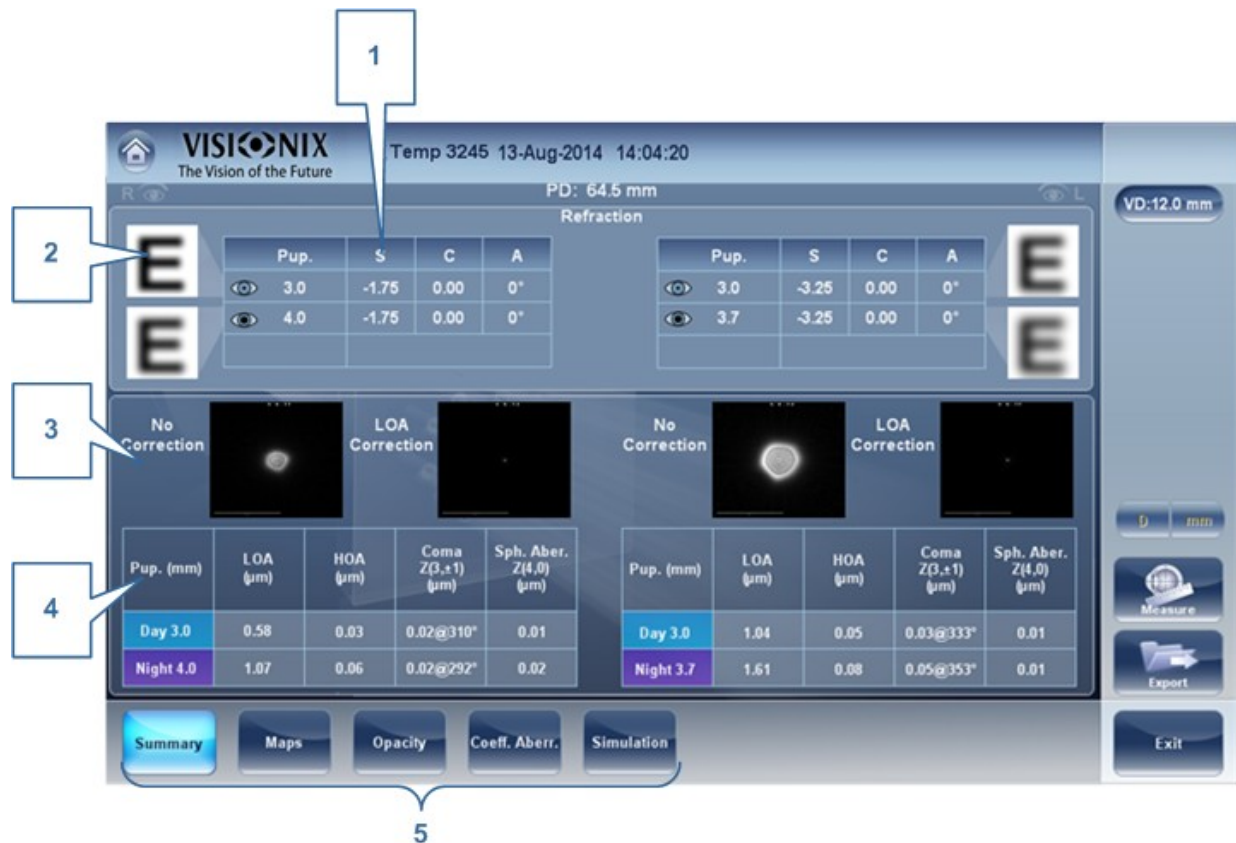


No	Description
1	Topography Displays the topographic map of the eye as well as the keratometry values. Double-tap (or double-click) to open the topography map sub-tab for the eye.
2	Pachymetry Displays a Scheimpflug image of the cornea as well as the thickness of the cornea at its center. Double-tap (or double-click) to open the ACA sub-tab for the eye.
3	Subtabs Select subtabs to view subject in greater detail

To select the pachy mode for all measurements, Single or Multi Slit pachy go to the [Settings](#)¹⁵⁵ menu or click on the [Parameters](#)²² button to modify only the current measurement

The Summary screen for the **Glaucoma Evaluation** diagnostic is identical to the **Pachy** diagnostic. Tonometry data is located in the Data Tab (no tonometry data if only a pachy measurement is taken). For more information, please go to the [Tonometry](#)⁷³

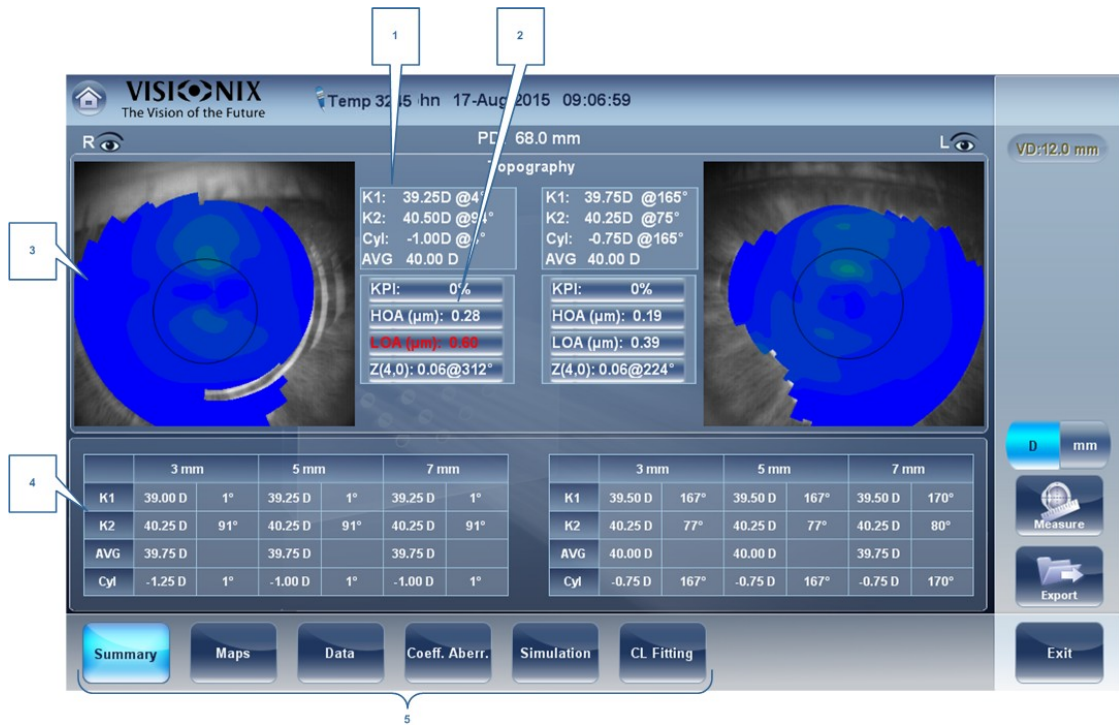
Summary Screen for WF



No	Description
1	Refraction Displays the photopic and mesopic refractions, with the pupil sizes.

No	Description
2	E Simulation The clarity of the E indicates how well the patient sees from the eye under photopic or mesopic conditions. Double-tap (or double-click) the E to open a visual acuity simulation for daytime / nighttime vision.
3	PSF Displays the PSF, with no correction, and with LOA correction
4	 aberrations Displays values for LOA and HOA under photopic and mesopic conditions
5	Subtabs Select to view subject in greater detail

Summary Screen for Topo



No	Description
1	Keratometry Displays the K1 and K2 values
2	 aberrations hart Displays the LOA and HOA as well as KPI (kerataconus index) values
3	Topo Displays the corneal topography map

No	Description
4	K Readings Displays the keratometry values according to different pupil diameters (3,5,7mm)
5	Subtabs Select to view subject in greater detail

Summary Screen for Refraction

VISIONIX
The Vision of the Future

Temp 3178 18-Mar-2015 17:30:22

PD: 70.5 mm

Refraction

Pup.	S	C	A
3.0	3.25	-3.25	175°
5.0	3.50	-3.25	174°

Pup.	S	C	A
3.0	-1.25	-0.25	126°
5.0	-2.00	-0.25	129°

Topography

K1: 39.50D @172°	K1: 40.00D @132°
K2: 41.25D @82°	K2: 42.25D @42°
Cyl: -1.75D @172°	Cyl: -2.25D @132°
AVG: 40.38 D	AVG: 41.13 D

VD:12.0 mm

D/mm

Measure

Export

Exit

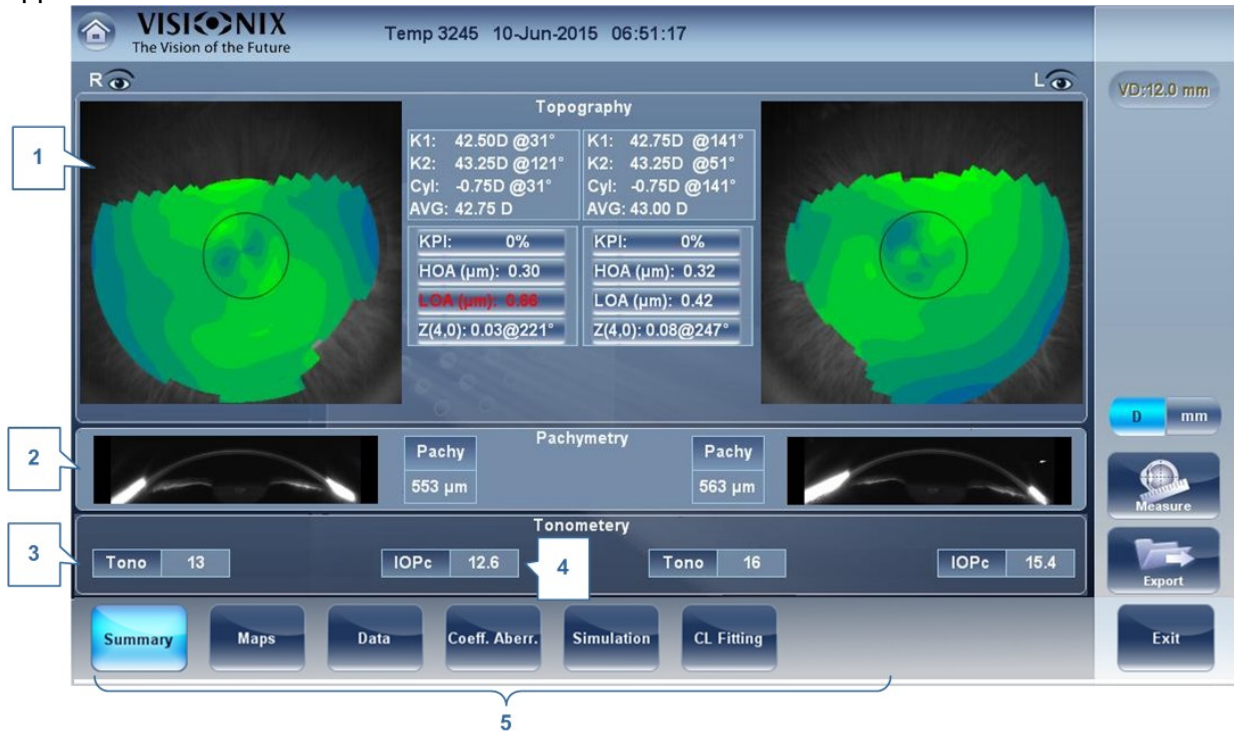
Summary

No	Description
1	Refraction Displays the photopic and mesopic refractions, with the pupil sizes.
2	Keratometry Displays the keratometry readings, KPI values (Keratconus Index), and High Order and Low Order aberrations
3	VD Displays the vertex distance of the results.
4	D/mm Select button to toggle between Dioptres and mm

5	<p>Subtabs</p> <p>Select subtabs to view subject in greater detail</p>
---	---

Summary Tab for Custom Diagnostic

The Custom Diagnostic can contain many different measurements according to your preferences. To select which measurements will be included in Custom diagnostic, go to [Custom Diagnostic](#)¹⁵². If **Topo**, **Pachy**, and **Tono** are selected, the summary screen will appear like this:



No	Description
1	<p>Topography</p> <p>Displays the topographic map of the eye as well as the keratometry values. Double-tap (or double-click) to open the topography map sub-tab for the eye.</p>
2	<p>Pachymetry</p> <p>Displays a Scheimpflug image of the cornea as well as the thickness of the cornea at its center. Double-tap (or double-click) to open the ACA sub-tab for the eye.</p>
3	<p>Tonometry</p> <p>Displays the Glaucoma evaluation results which include: the tonometry test results in PO mm/Hg, the average of the tonometry test results. If results fall outside the average range, the irideo angles are displayed here as well.</p>
4	<p>IOPc</p> <p>This is the adjusted tonometry results which is based on formulas selected in the settings menu. Double-tap (or double-click) to open the Tonometry Tab⁷³ sub-tab.</p>

5	<p>Subtabs</p> <p>Select subtabs to view subject in greater detail</p>
---	---

Summary Tab for Pupillometry Diagnostic

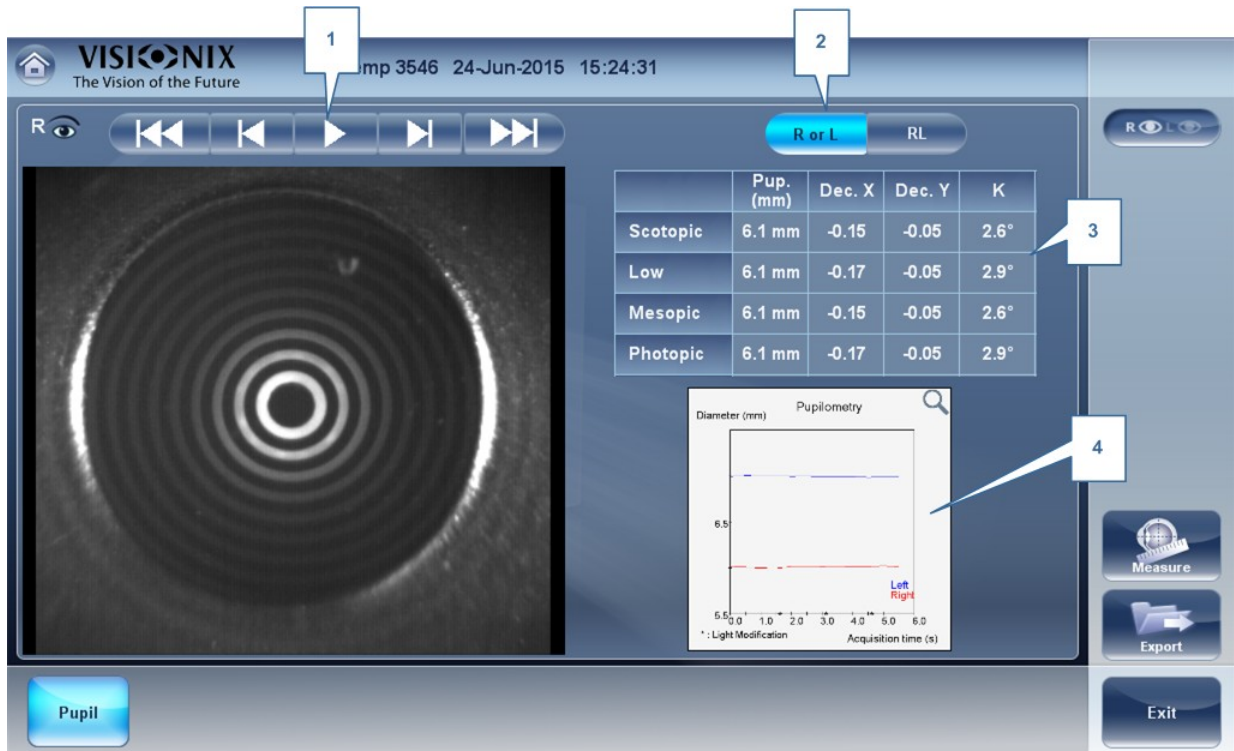
The screenshot shows the VISIIONIX software interface for Pupillometry Diagnostic. At the top, it displays 'Temp 3546 24-Jun-2015 15:24:31'. The interface is divided into several sections:

- 1** Points to a table of pupil measurements for the right eye (R). The table has columns for light conditions (Scotopic, Low, Mesopic, Photopic), Pupil size (mm), Dec. X, Dec. Y, and K.
- 2** Points to a circular image of the pupil.
- 3** Points to a button labeled 'Pupil'.
- 4** Points to a graph titled 'Pupillometry' showing 'Diameter (mm)' vs 'Acquisition time (s)'. The graph has two lines, one blue for 'Left' and one red for 'Right', with a horizontal dashed line at 6.5 mm.
- 5** Points to a button labeled 'R or L' with 'RL' selected, indicating both eyes are being measured.

On the right side, there are buttons for 'Measure', 'Export', and 'Exit'. The top right corner shows 'R L' and 'RL' eye icons.

No	Description
1	<p>Pupil Measurements</p> <p>Displays the pupil measurement in different light conditions: Scotopic, Low, Mesopic, Photopic conditions.</p>
2	<p>Pupil Image</p> <p>Displays the image of the pupil for each eye.</p>
3	<p>Pupil</p> <p>Select to display the pupil subtab, including a short video of the eye's reaction to the changing light conditions.</p>
4	<p>hart</p> <p>This chart displays the pupil size for each eye in the changing light conditions.</p>
5	<p>R or L and R/L</p> <p>Select view single eye or both eyes at once.</p>

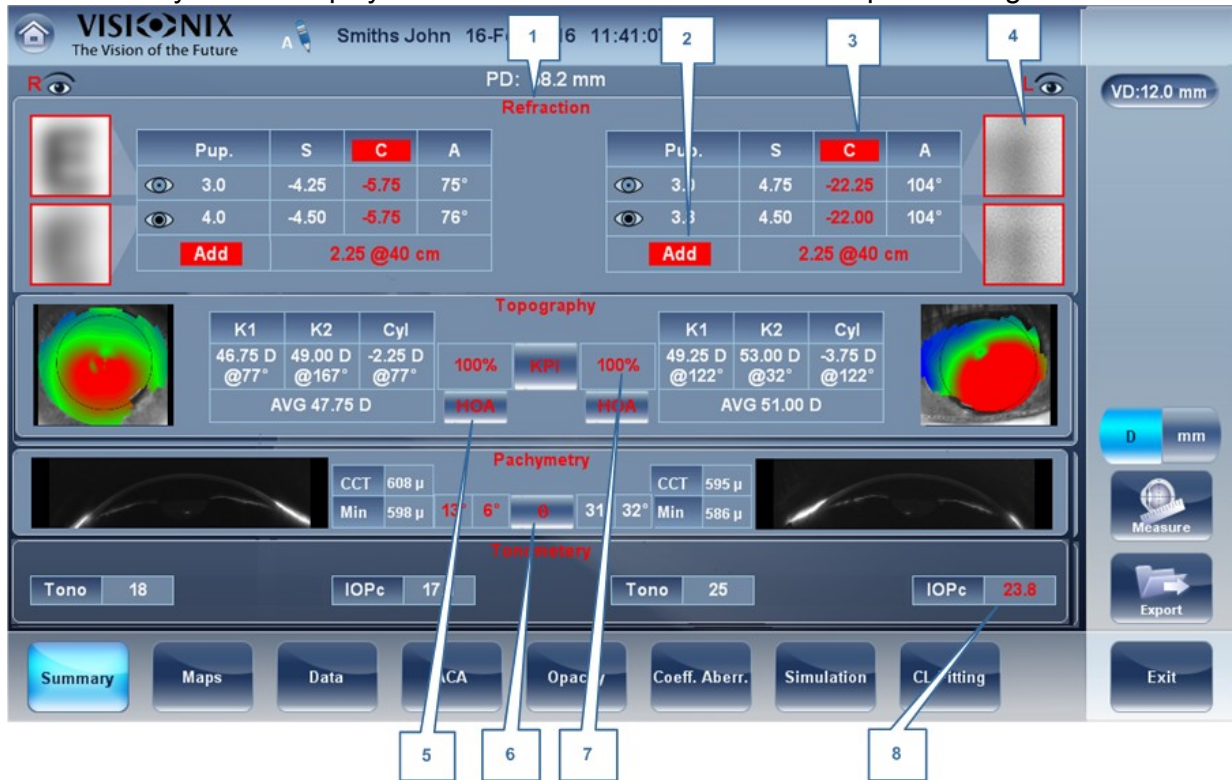
If you toggle the "R or L" button the following screen appears:



No	Description
1	Play/Pause buttons Select to play, pause, rewind, or fast forward the pupil video.
2	R or L and R/L Select view single eye or both eyes at once.
3	Pupil Measurements Displays the pupil measurement in different light conditions: Scotopic, Low, Mesopic, Photopic conditions.
4	Chart This chart displays the pupil size for each eye in the changing light conditions.

Special Alerts

The summary tab will display alerts when results fall outside the expected range:



No	Description
1	<p>Refraction</p> <p>Refraction is displayed in red:</p> <ul style="list-style-type: none"> • When there is a difference of more than 2D in the refraction between the eyes • If the difference in refraction of the same eye in mesopic and photopic light is a different of 1D sphere and 0.75D cylinder, the caution is also displayed. • When Sphere is above $\pm 20D$ or Cylinder is more than $\pm 8D$. • When pupil diameter is less than 2.5mm in at least one eye. • When Pupil size difference between OD and OS is greater than 1mm. • When cylinder is greater than 4D in either eye.
2	<p>dd</p> <p>Add is displayed in red when the difference between the expected addition for age and measured addition is greater than 1D.</p>
3	<p>Cylinder</p> <p>The cylinder is displayed in red:</p> <ul style="list-style-type: none"> • When cylinder is greater than 4D in either eye. • When the cylinder difference between the eyes is more than 2D.

No	Description
4	<p>E Simulation</p> <p>E simulation is outlined in red when:</p> <ul style="list-style-type: none"> • The delta between the night and day sphere is >1D and/or cylinder is greater than >0.75D • The Ocular HOA RMS equivalent sphere is larger than 0.5D in the right or left eye.
5	<p>HO</p> <p>HOA is displayed in red when corneal or ocular RMS equivalent sphere is greater than >0.5D in either eye.</p>
6	<p>Pachymetry</p> <p>Pachymetry is displayed in red and irideo anges are displayed when the central corneal thickness is below 400µm or higher than the 700µm.</p>
7	<p>KPI</p> <p>KPI result is displayed in red when its value is higher than the normal population</p>
8	<p>IOPc</p> <p>The IOPc value is displayed in red when the inter-ocular pressure is above 20mHg, irideo angles are displayed. Also displayed when angles are flatter than <21 degrees in either eye.</p>

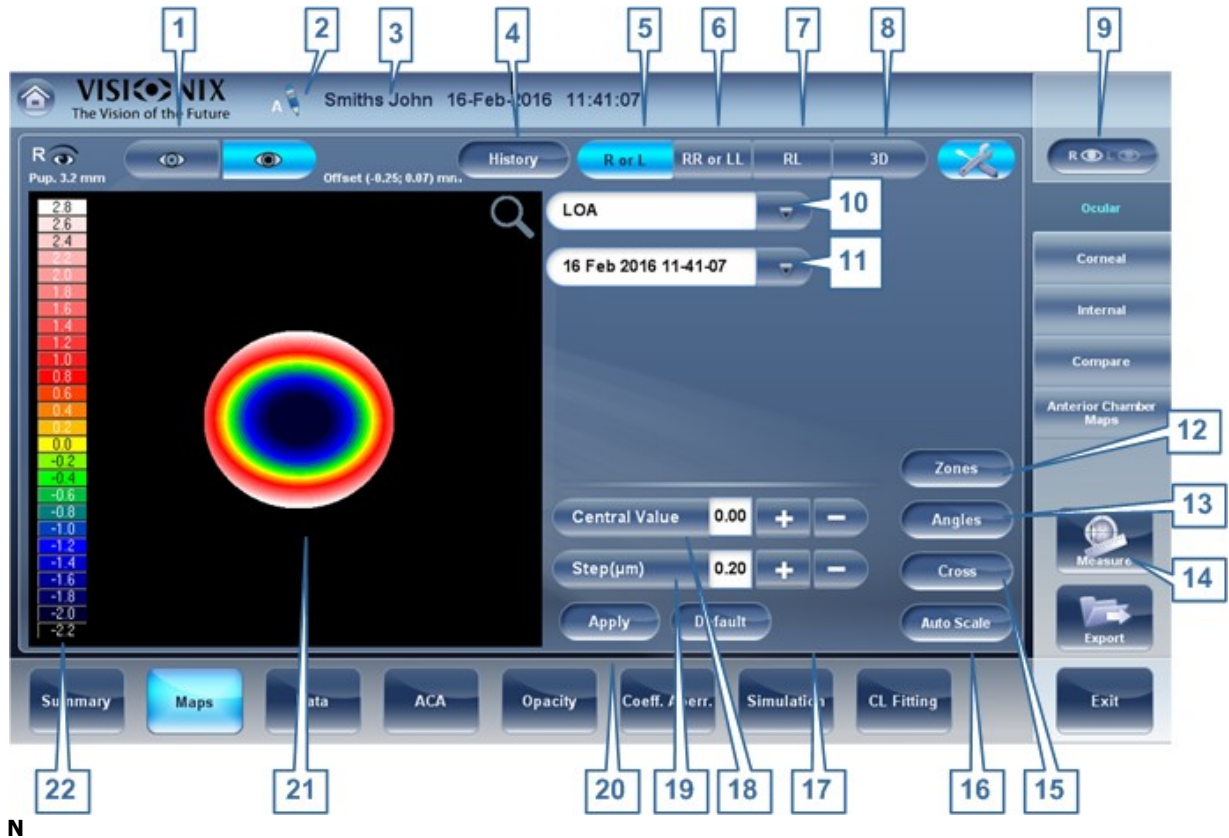
4.5 Maps Tab

The Maps tab displays wavefront maps of aberrations and topographic maps of the cornea.

-
- [Ocular](#) ⁸⁴
 - [Corneal](#) ⁸⁵
 - [Internal](#) ⁵⁸
 - [Compare](#) ⁵⁹
 - [Anterior Chamber Maps](#) ⁶²

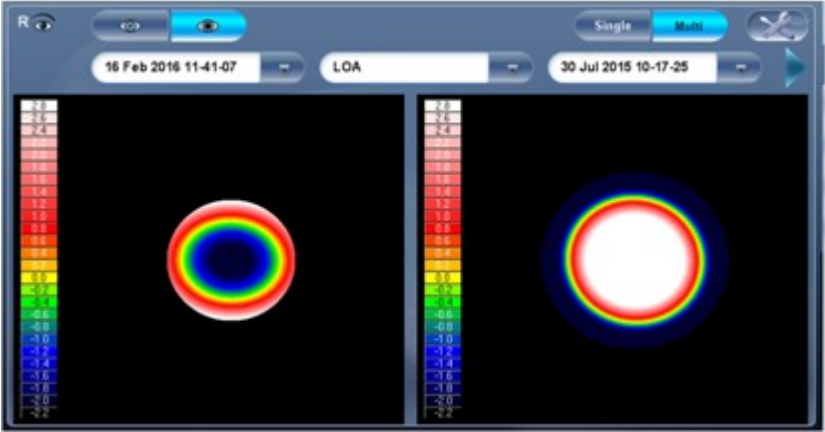
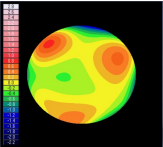
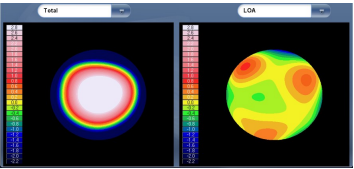
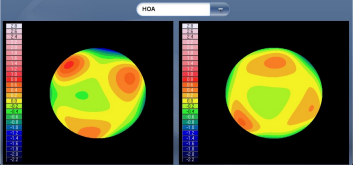
Ocular

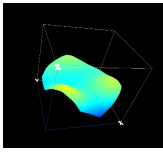
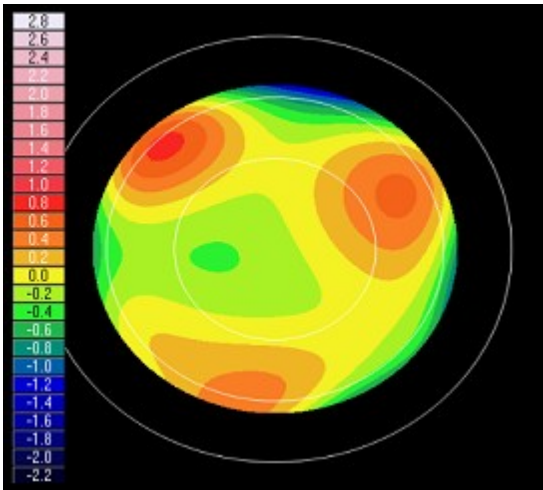
The **WF** sub-tab displays wavefront maps of the ocular aberrations of one or both eyes. Display options allow you to view results for photopic and mesopic conditions, to view maps of both eyes at once or of each eye individually, to isolate lower- and higher-order aberrations, to change the step and central value of a map, and to superimpose guidelines of various types onto the maps.

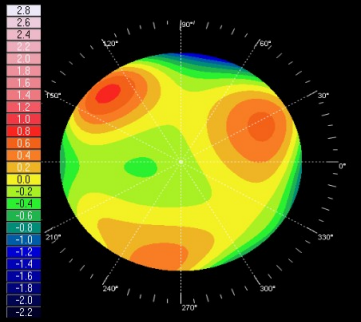
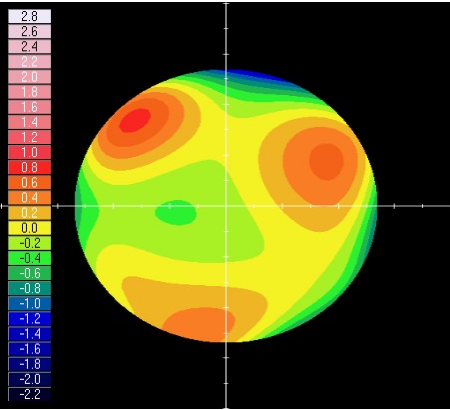






N

No	Description
1	Photopic /Mesopic selector Select Day to display maps for daytime light conditions or Night to display maps for nighttime light conditions.
2	Note Select this to view an existing note, or add a note in the patient file. For more information go to Adding a Patient ⁹⁸ .
3	Name and date Patient's name and date and time of the measurement

<p>4</p>	<p>History</p> <p>Displays map results from previous and current topographic maps according to selected date.</p> 
<p>5</p>	<p>R or L mode</p> <p>Displays single map, for the eye selected in the eye selector.</p>  <p>R or L mode</p>
<p>6</p>	<p>RR or LL mode</p> <p>Display two maps, both for the same eye - namely, the eye selected in the eye selector; displaying two maps of the same eye allows you to compare two types of aberrations. For example, you could display HOA data in one of the maps, and LOA data in the other.</p>  <p>RR or LL mode</p>
<p>7</p>	<p>RL mode</p> <p>Displays two maps, one for each eye. Both maps are displayed with the same display options.</p>  <p>RL mode</p>

<p>8</p>	<p>3D Displays one map, for the eye selected in the eye selector, in 3D mode.</p>  <p>3D mode</p> <p>Note: In 3D mode, you can change the orientation by dragging your finger (or the cursor, if a mouse is connected to the unit) on the image.</p>
<p>9</p>	<p>Eye Indicator</p> <p>Indicates and toggles between Left and Right eyes</p>
<p>10</p>	<p>Map-type selector</p> <p>Select one of the following map types:</p> <ul style="list-style-type: none"> • Total: Display composite of all aberrations • HOA: Display only high-level aberrations • LOA: Display only low-level aberrations • Sphere: Display only the sphere aberrations • Cylinder: Display only the cylinder aberrations
<p>11</p>	<p>Date Tab</p> <p>Opens a map from previous examinations. This is only available if the patient has previous examinations saved in the database.</p>
<p>12</p>	<p>Zones: Select this button to superimpose zone guidelines (3, 5, and 7mm) on the map display, or to remove them when they are displayed.</p>  <p>Map with Zones illustrated</p>

<p>13</p>	<p>ngles: Superimpose angle guidelines on the map display, or to remove them when they are displayed.</p>  <p>Map with angle guidelines</p>
<p>14</p>	<p>Measure</p> <p>Select to retake measurement. Warning, if selected prior to exiting and saving measurement first time, your previous results will be erased.</p>
<p>15</p>	<p>ross: Superimpose cross-hair guidelines on the map display, or to remove them when they are displayed.</p>  <p>Map with cross-hair guidelines</p>
<p>16</p>	<p>uto-scale: Activate or deactivate auto-scaling. When auto-scaling is activated, the step and central value of the map are set automatically, and the Step and entral Value selectors are disabled. When it is deactivated, the Step and Central Value selectors are enabled.</p>
<p>17</p>	<p>Default button</p> <p>Resets the Step and entral Value according to what is defined as default in the Settings menu.</p>
<p>18</p>	<p>entral Value selector</p> <p>Select the middle value for the color scale. Select  to increase the value, or  to decrease it.</p> <p>Changes you make to the entral Value are implemented when you select pply.</p>
<p>19</p>	<p>Step selector</p> <p>Select the rate of change for the color scale: the range of values represented by each distinct color. Select  to increase the step, or  to decrease it.</p> <p>Changes you make to the Step value are implemented when you select pply.</p>

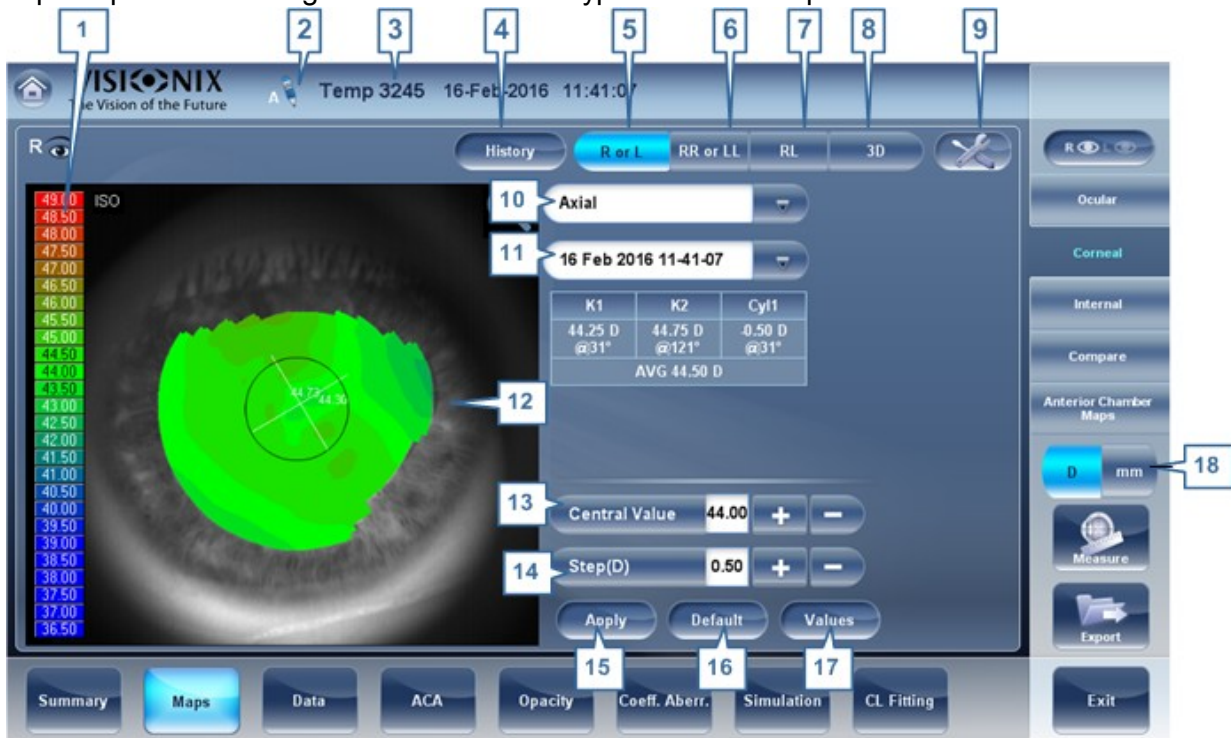
20	Apply button Implements changes you make to the Step and Central Values .
21	Map Map of the aberrations.
22	Scale Shows the color-coding scale used in the map.



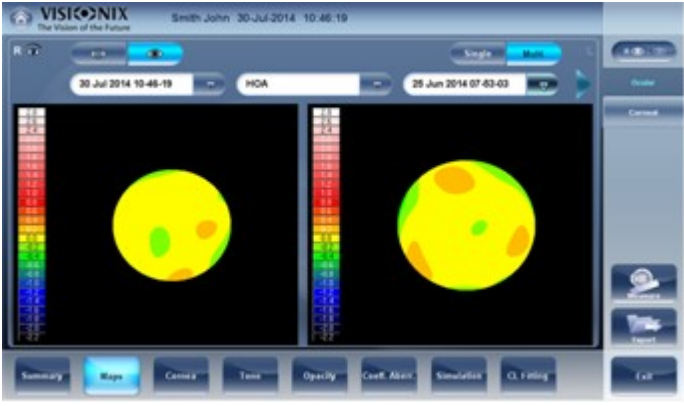
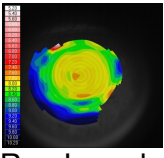
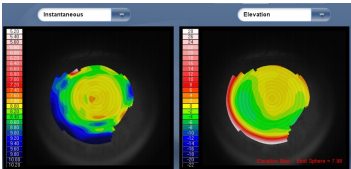
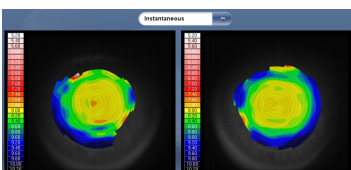
Click on the  icon to display/remove the tools (angles, zones, etc)

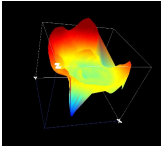
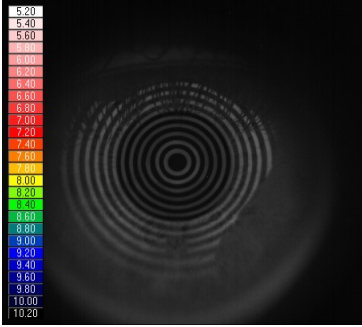




Corneal

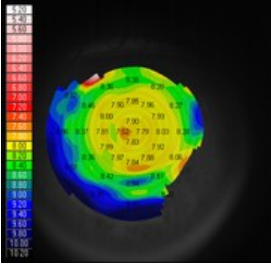
The **Topo** sub-tab displays topographic maps of the corneas of one or both eyes. Display options allow you to view maps of both eyes at once or of each eye individually, to view four different types of topographic maps, to change the step and central value of a map, and to superimpose data and guidelines of various types onto the maps.



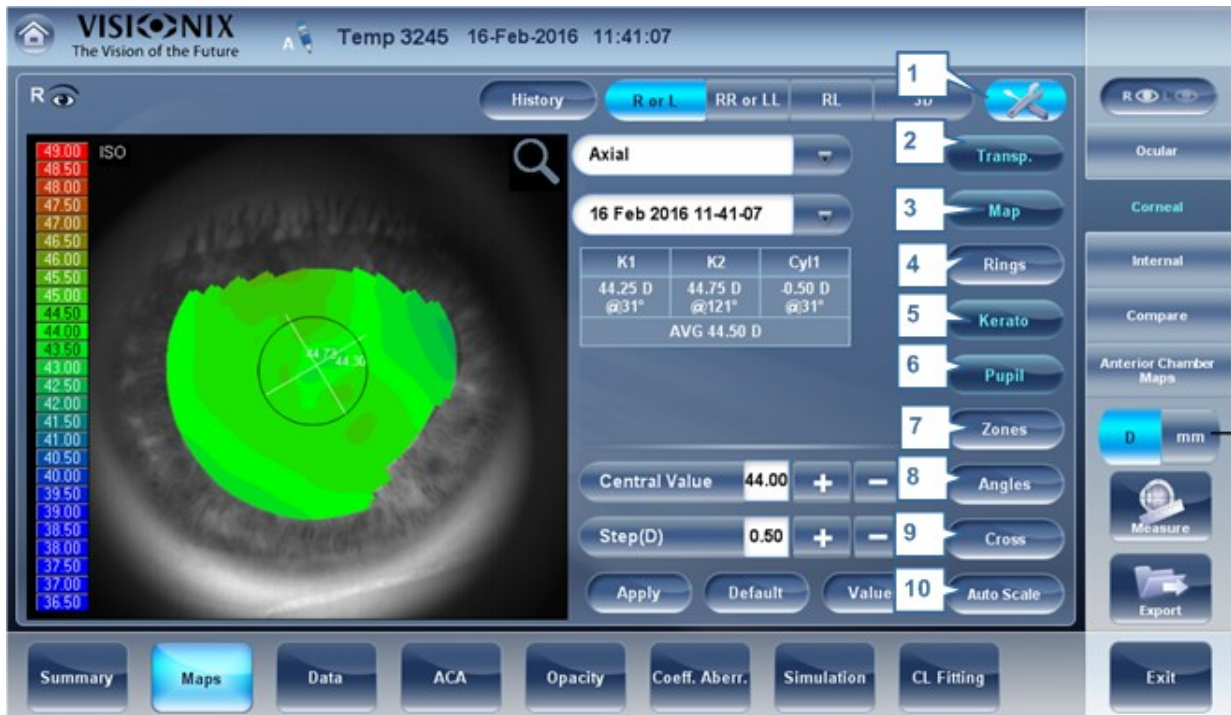
No	Description
1	Scale Indicates the color-coding scale used in the map.
2	Note Click to view an existing note, or add a note in the patient file. For more information go to Adding a Patient ⁹⁸ .
3	Name and date Patient's name and date and time of the measurement

<p>4</p>	<p>History</p> <p>Displays map results from previous and current topographic maps according to selected dates.</p> 
<p>5</p>	<p>R or L Displays one map, for the eye selected in the eye selector.</p>  <p>R or L mode</p>
<p>6</p>	<p>RR or LL</p> <p>Displays two maps, both for the same eye - namely, the eye selected in the eye selector; displaying two maps of the same eye allows you to view the same data in different ways. For example, you could display HOA data in one of the maps, and LOA data in the other.</p>  <p>RR or LL mode</p>
<p>7</p>	<p>RL: Display two maps, one for each eye. Both maps are displayed with the same display options.</p>  <p>RL mode</p>

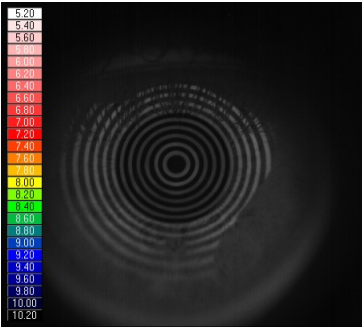
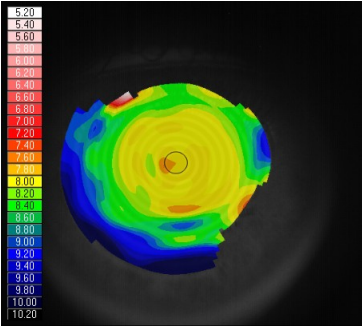
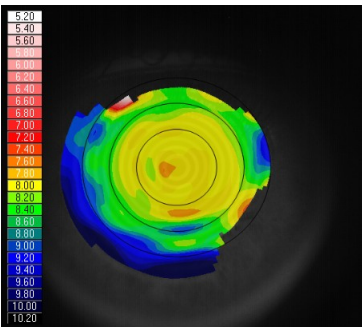
<p>8</p>	<p>3D Display one map, for the eye selected in the eye selector, in 3D mode.</p>  <p>3D mode</p> <p>Note: In 3D mode, you can change the orientation by dragging your finger (or the cursor, if a mouse is connected to the unit) on the image.</p>
<p>9</p>	<p>Tools</p> <p>Click to open/close the tools menu.</p>
<p>10</p>	<p>Map-type selector</p> <p>Select the topo map to be displayed</p>
<p>11</p>	<p>Date Tab</p> <p>If more than one measurement was performed for the current patient, this tab opens a drop-down menu with the dates of other measurements selected. To view a map of a different date, select it from this menu.</p>
<p>12</p>	<p>Map</p> <p>Displays the topographic map of the cornea according to the map selected from the drop down menu</p> <p>Rings</p> <p>Displays the image of the Placido rings that were projected onto the cornea. Select Rings to view ringer and make modifications.</p>  <p>Concentric rings</p>
<p>13</p>	<p>entral Value selector</p> <p>Select the middle value for the color scale. Select  to increase the value, or  to decrease it.</p> <p>Changes you make to the Step value are implemented when you select Apply.</p>
<p>14</p>	<p>Step selector</p> <p>Select the rate of change for the color scale: the range of values represented by each distinct color. Select  to increase the step, or  to decrease it.</p> <p>Changes you make to the Step value are implemented when you select Apply.</p>
<p>15</p>	<p>Apply button</p> <p>Apply changes you make to the Step and Central Value values.</p>

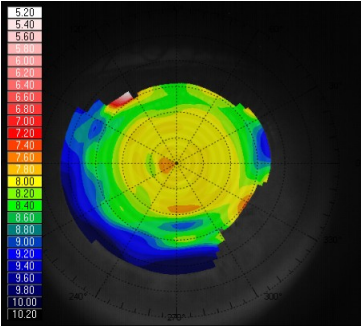
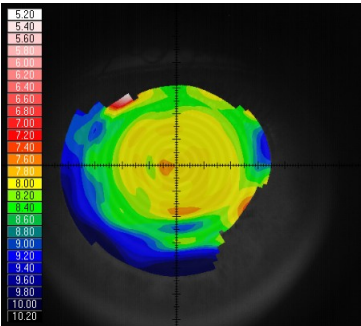
16	<p>Default button Reset the Step and Central Value to their default values^{D162}.</p>
17	<p>Values button Shows or hides values on the maps</p>  <p>Values displayed on map</p>
18	<p>Diopter/mm button Toggles the display of values between diopters and millimeters.</p>

Once the Tool menu is activated, the screen will look like this:

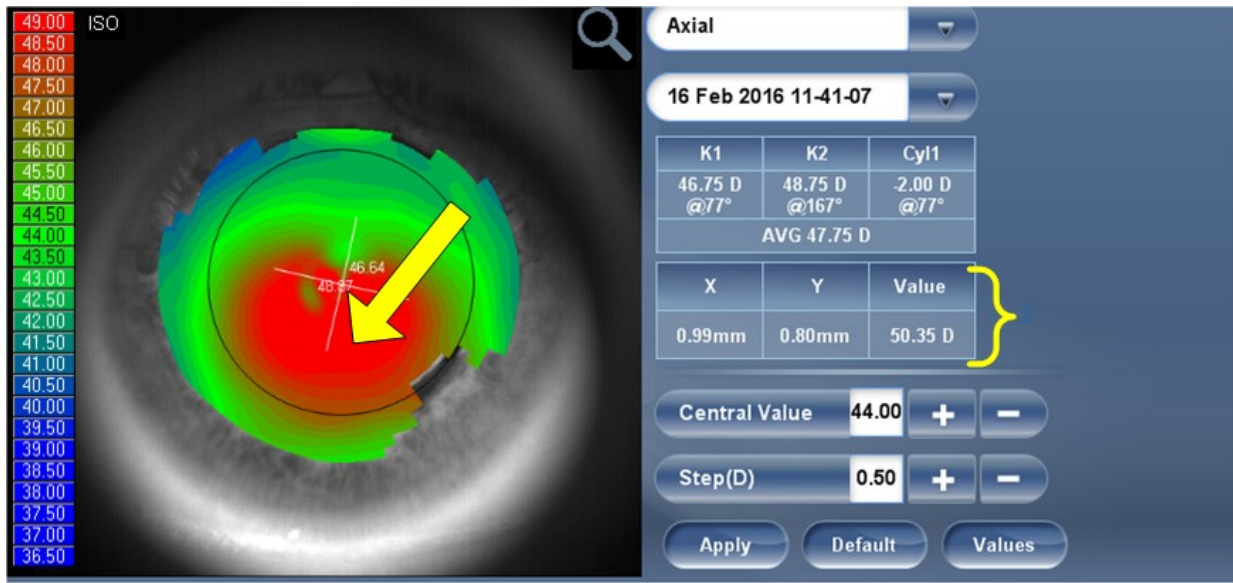


No	Description
1	<p>Tools Click to open/close the tool menu.</p>
2	<p>Transparent Displays the photo of the eye in the background with the projection of the Placido rings</p>

3	<p>Map</p> <p>Displays the topographic map of the cornea according to the map selected from the drop down menu (in #5).</p>
4	<p>Rings</p> <p>Displays the image of the Placido rings that were projected onto the cornea. Select Rings to view ringer and make modifications.</p>  <p>Concentric rings</p>
5	<p>Kerato</p> <p>Displays/hides the central keratometry values.</p>
6	<p>Pupil</p> <p>Superpose a circular guideline on the map indicating where the pupil is or remove it when it is displayed.</p> 
7	<p>Zones</p> <p>Superpose zone guidelines (3, 5, and 7mm) on the map display, or to remove them when they are displayed.</p>  <p>Map with zone guidelines</p>

<p>8</p>	<p>ngles</p> <p>Superimpose angle guidelines on the map display, or to remove them when they are displayed.</p>  <p>Map with angle guidelines</p>
<p>9</p>	<p>ross</p> <p>Superpose cross-hair guidelines on the map display, or remove them when they are displayed. Each gap is of 1mm in size.</p>  <p>Map with cross-hair guidelines</p>
<p>10</p>	<p>uto-scale</p> <p>Activate or deactivate auto-scaling. When auto-scaling is activated, the step and central value of the map are set automatically, and the Step and Central Value selectors are disabled. When it is deactivated, the Step and Central Value selectors are enabled.</p>

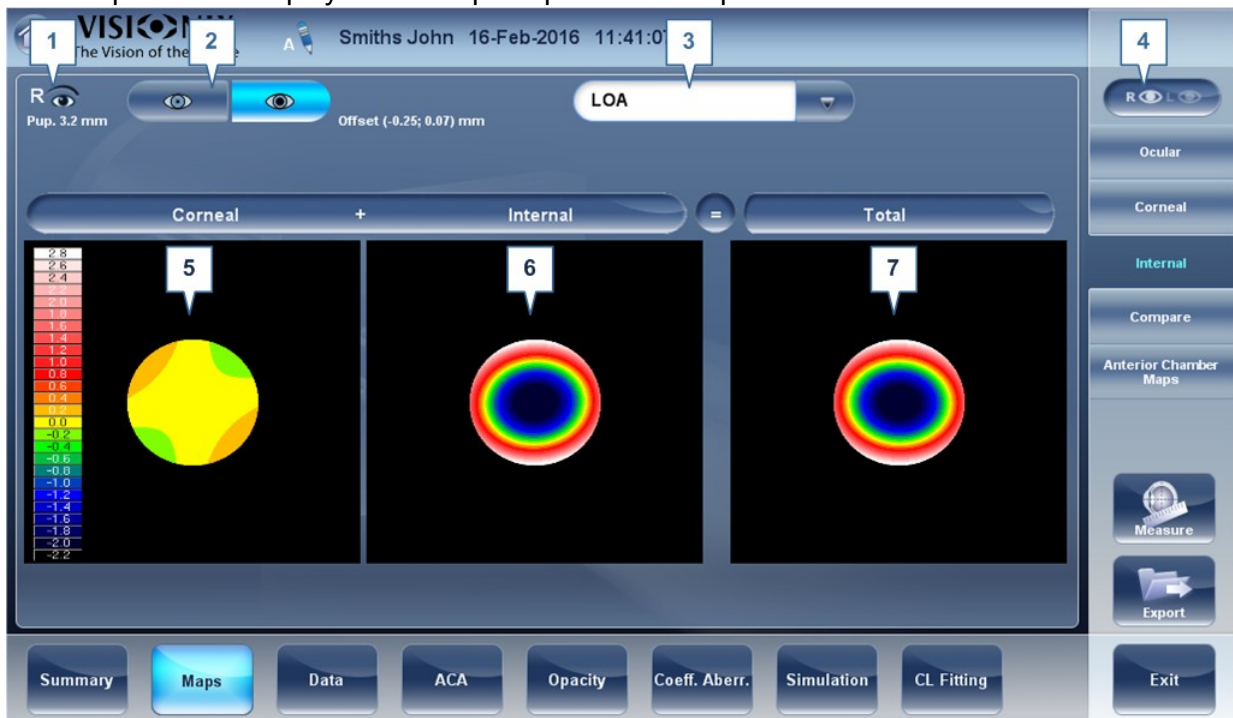
To display the values at a particular location of the map, click on a point in the map, and a table with the value and location appears, as seen below.



Internal

The **Internal** aberrations map represents the differences between the corneal aberrations, and the ocular aberrations for each eye. These aberrations can stem from anywhere along the optical system from posterior cornea to retina; most commonly from the crystalline lens.

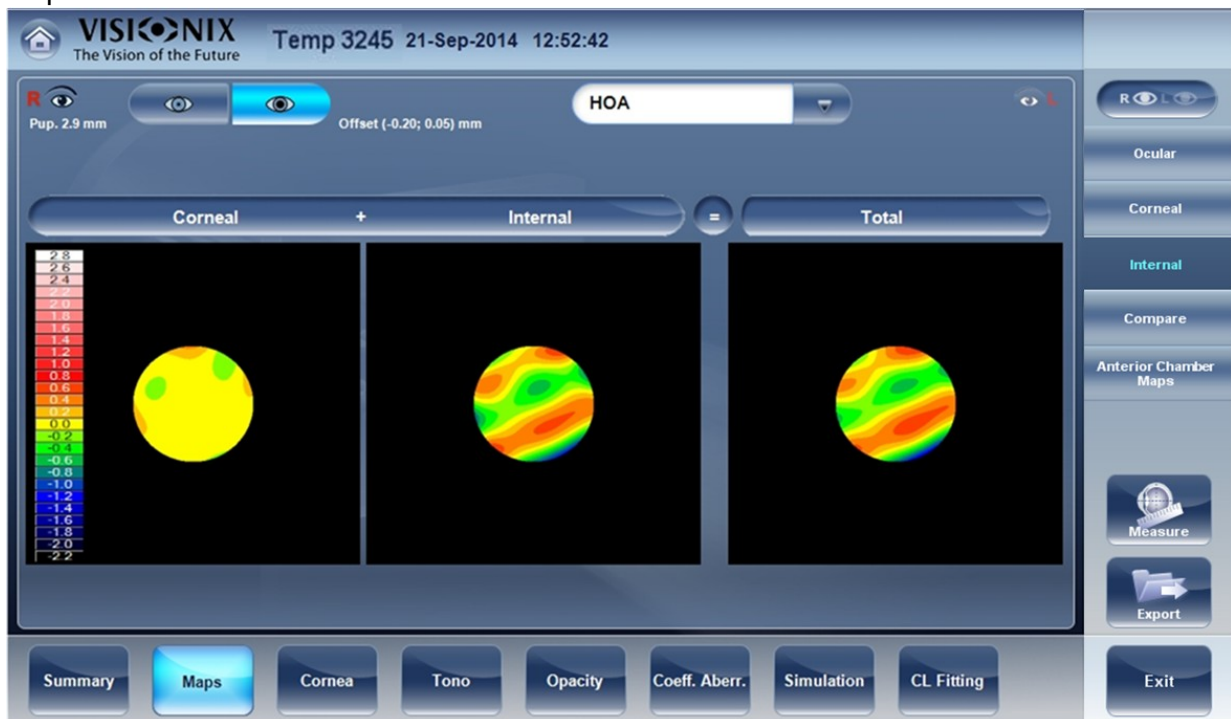
The maps can be displayed both in photopic and mesopic conditions.



No	Description
1	Left eye Indicator Results displayed on this side of the screen are those of the left eye

No	Description
2	Photopic /Mesopic selector Select Day to display maps for daytime light conditions or Night to display maps for nighttime light conditions.
3	Map Selection Select a map from this menu to be displayed. The maps available for selection are: Total, LOA, HOA, Cylinder, and Coma maps.
4	Eye selector Select the eye you wish to be displayed.
5	Corneal map This displays the corneal map that contains the corneal aberrations.
6	Internal map This displays the internal map that contains the internal aberrations.
7	Total map This displays the map that contains the total aberrations for the eye selected.

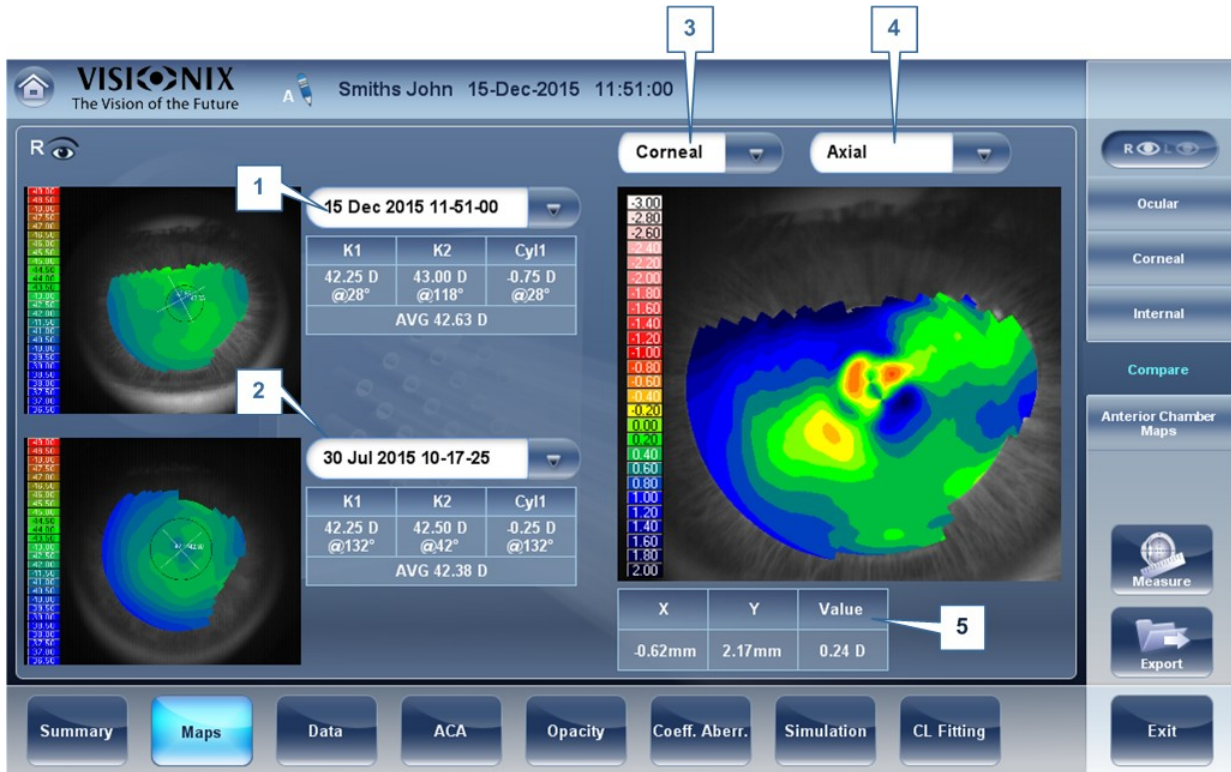
The Internal Maps are useful for indicating the location of the aberrations, for example in the map below:



The Internal map here, illustrates how most of the total aberrations are due to Internal aberrations. This could be an indication of Cataract, or an internal eye issue.

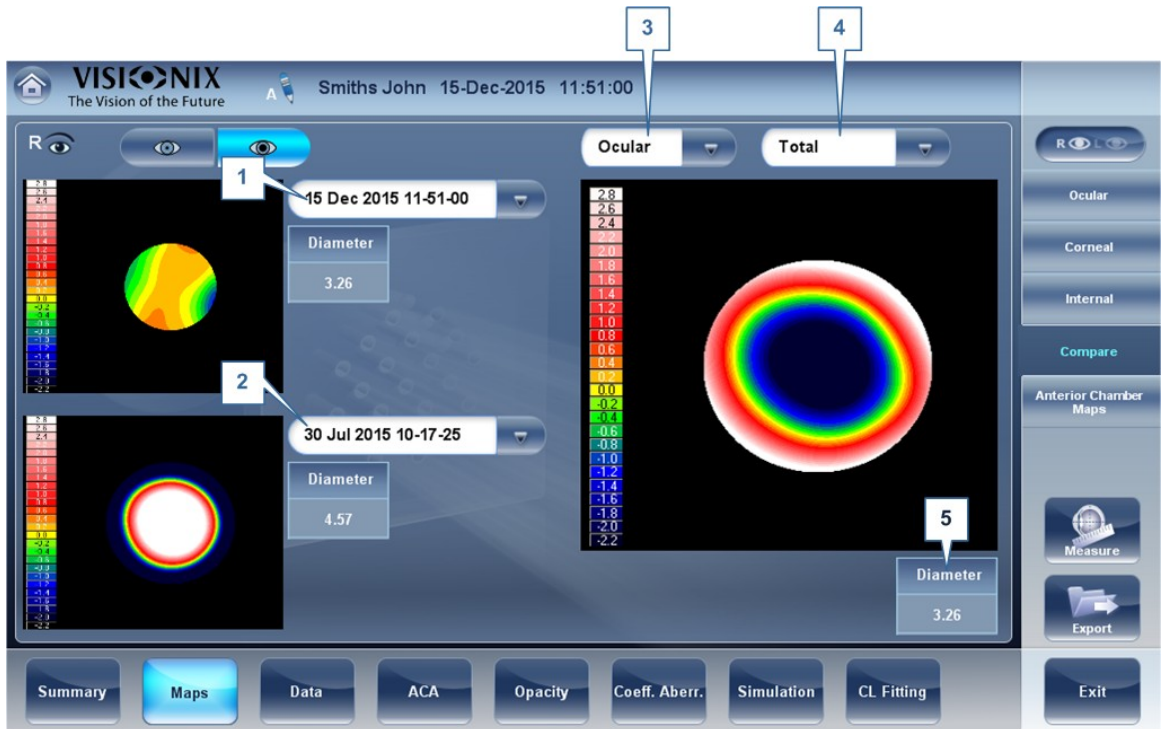
Compare

The **Compare** map feature compares two maps for the same patient and generates a delta map to illustrate changes over time. This map is available after retrieving a patient's measurement when the patient has more than one measurement in their file. Both corneal maps and ocular maps are available for comparing.



No	Description
1	Previous Date Tab Select the date of the map that you would like to have the current map compared to.
2	Current Date tab By default, the date selected here will be for the current measurement. To select a different date, click on the arrow, and a list of previous measurements will become available for selection.
3	Map Selection Select a map type from this menu to be displayed.
4	Map Selection Select a map from this menu to be displayed. The maps available for selection for Corneal maps are: Axial, Tangential, Total, LOA, and HOA maps.
5	Delta To display data changes at any point on the map, click any location on the map and the data will be displayed here.

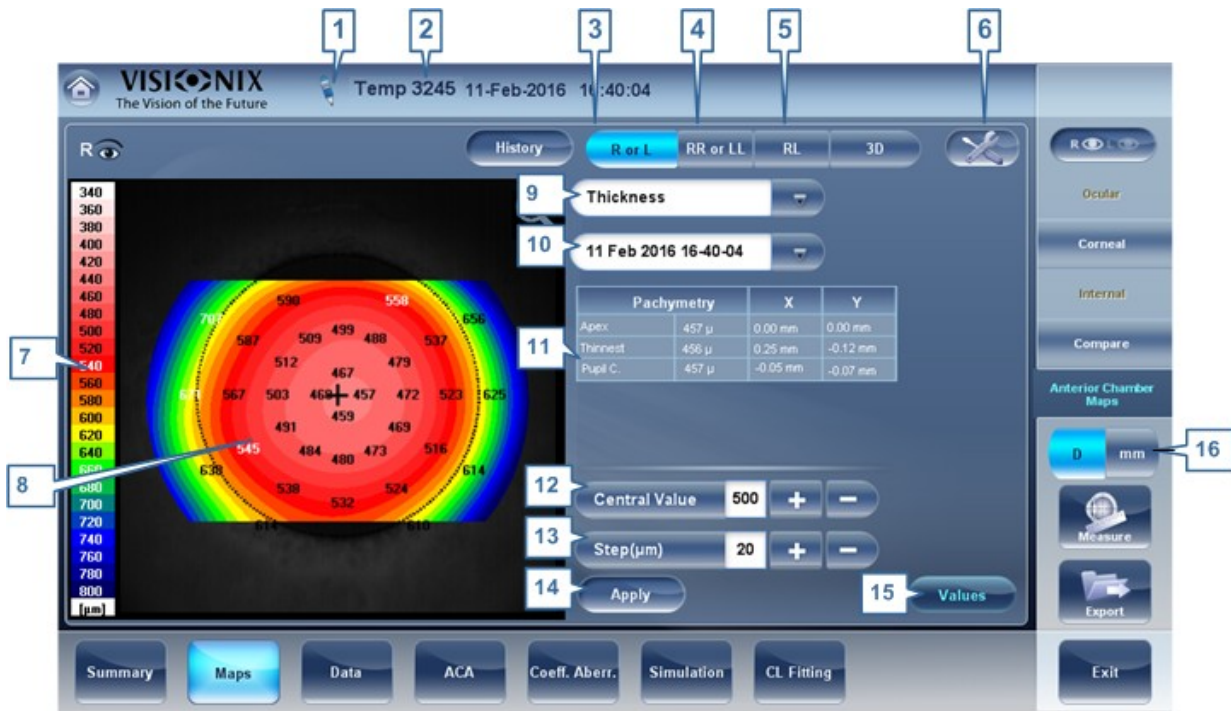
Compare Ocular Maps

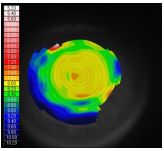


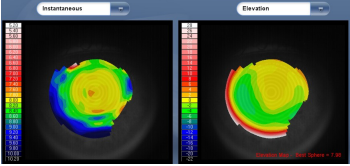
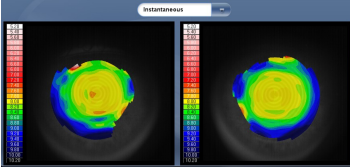

No	Description
1	<p>urrent Date tab</p> <p>By default, the date selected here will be for the current measurement. To select a different date, click on the arrow, and a list of previous measurements will become available for selection.</p>
2	<p>Previous Date Tab</p> <p>Select the date of the map that you would like to have the current map compared to.</p>
3	<p>Map Selection</p> <p>Select a map type from this menu to be displayed, either Ocular or Corneal maps are available for selection.</p>
4	<p>Map Selection</p> <p>Select a map from this menu to be displayed. The maps available for selection for Ocular maps are: Total, LOA, and HOA maps.</p> <p>Corneal maps available for selection are: Axial, tangential, total, HOA, and LOA maps,</p>
5	<p>Pupil Diameter</p> <p>This is the maximum people diameter based on the pupil of the smaller map.</p>





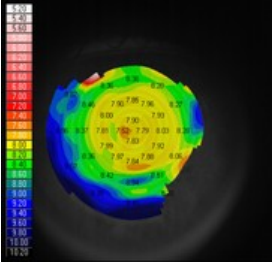
Anterior Chamber Maps

The pachy Multi Slit measurement generates topographical and thickness maps of both the anterior and posterior corneal surfaces. For example, here is a map of the corneal thickness:

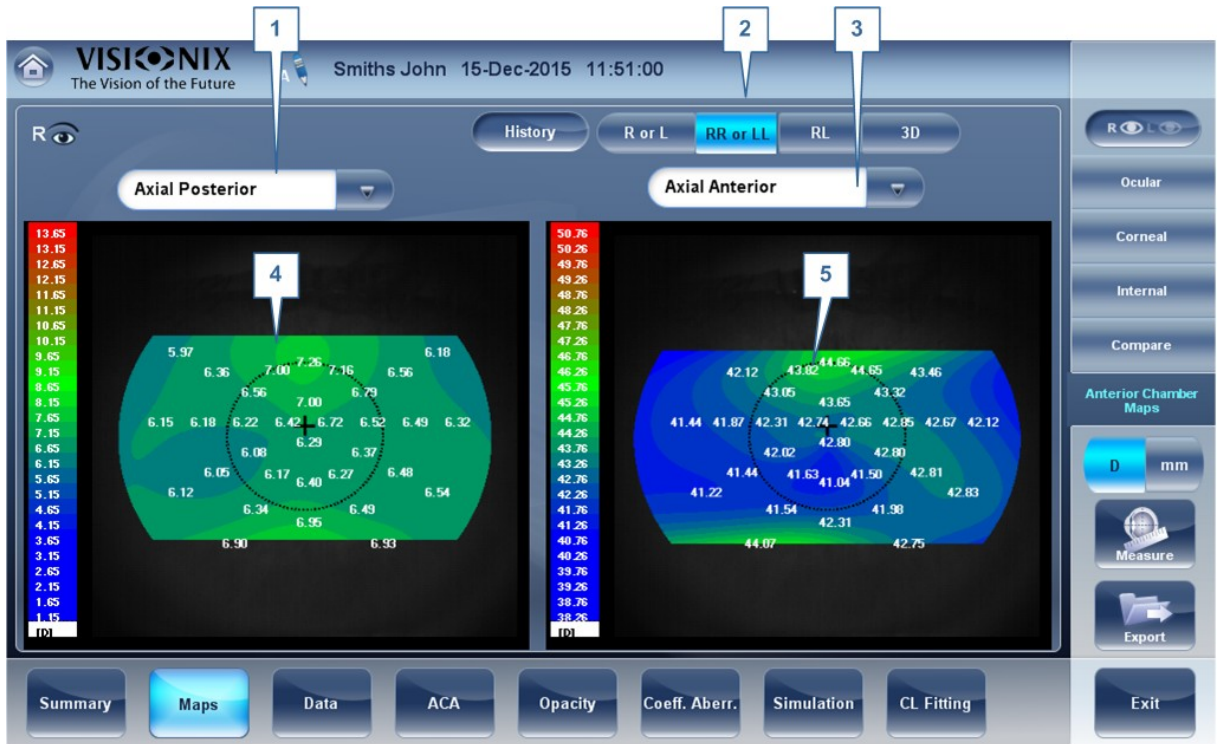


No	Description
1	<p>Note</p> <p>Click to view an existing note, or add a note in the patient file. For more information go to Adding a Patient¹⁹⁸.</p>
2	<p>Name and date</p> <p>Patient's name and date and time of the measurement</p>
3	<p>R or L Displays one map, for the eye selected in the eye selector.</p>  <p>R or L mode</p>

<p>4</p>	<p>RR or LL</p> <p>Displays two maps, both for the same eye - namely, the eye selected in the eye selector; displaying two maps of the same eye allows you to view the same data in different ways. For example, you could display HOA data in one of the maps, and LOA data in the other.</p>  <p>RR or LL mode</p>
<p>5</p>	<p>RL: Display two maps, one for each eye. Both maps are displayed with the same display options.</p>  <p>RL mode</p>
<p>6</p>	<p>Tools</p>  <p>Click this icon to insert the tools: Transparent, Map, Kerato, Pupil, Zones, Angles, and Cross.</p>
<p>7</p>	<p>Scale</p> <p>Indicates the color-coding scale used in the map.</p>
<p>8</p>	<p>Map</p> <p>Displays the map of the cornea according to the map selected from the drop down menu (#10)</p>
<p>9</p>	<p>Map-type selector</p> <p>Select a map from the dropdown menu, options are: Thickness map, Axial Anterior, Axial Posterior, Tangential Anterior, Tangential, Posterior, Elevation Anterior, Elevation Posterior, Refraction Anterior, Refraction Posterior, Refraction Total</p>
<p>10</p>	<p>Date Tab</p> <p>When loading a saved measurement, this option is available for patients with more than one previous measurement. Click on this tab to open the drop down menu to view maps from previous dates.</p>
<p>11</p>	<p>Pachymetry</p> <p>This table displays the pachymetry values for the Apex, thinnest part, and the pupil center of the cornea as well as their locations on the X, Y axis.</p>

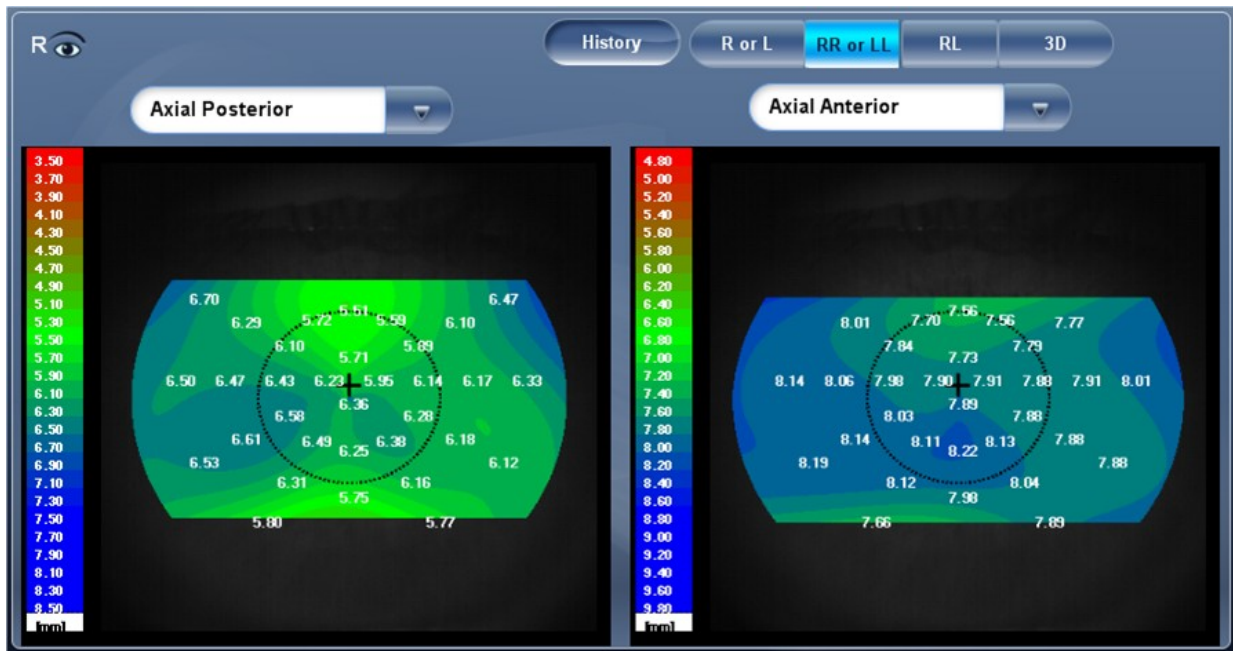
12	<p>entral Value selector</p> <p>Select the middle value for the color scale. Select  to increase the value, or  to decrease it.</p> <p>Changes you make to the Step value are implemented when you select Apply.</p>
13	<p>Step selector</p> <p>Select the rate of change for the color scale: the range of values represented by each distinct color. Select  to increase the step, or  to decrease it.</p> <p>Changes you make to the Step value are implemented when you select Apply.</p>
14	<p>pply button</p> <p>Apply changes you make to the Step and Central Value values.</p>
15	<p>Values button</p> <p>Shows or hides values on the maps</p>  <p>Values displayed on map</p>
16	<p>Diopter/mm button</p> <p>Toggles the display of values between diopters and millimeters.</p>

These maps are also useful for comparing the Anterior and Posterior cornea. For example, here are axial maps of the Anterior and Posterior corneas for the Right eye:



No	Description
1	Map Selector Select the map you wish to compare, in this case, the Axial Posterior map was selected.
2	RR or LL Displays two maps, both for the same eye - displaying two maps of the same eye.
3	Map Selector Select the map you wish to compare, in this case, the Axial Anterior map was selected.
4	axial Posterior Map Displays the axial posterior corneal map.
5	axial nterior map Displays the axial anterior corneal map.

Due to the small refractive index differences between the anterior and posterior surface, the **Diopter** power of the posterior cornea is much smaller than might be expected. These same maps have more similar values when viewed in **millimeters**, as seen below.



The **posterior** values here are between (approx.) 5-6 millimeters, whereas the **anterior** values are between (approx.) 7-8.5 millimeters.

4.6 Data Tab

The **Data** tab displays topographic information of the cornea.

- [Topo Data](#)⁶⁶
- [Anterior Chamber Data](#)⁷⁰
- [Tono](#)⁷³

Topo Data

The **Topo Data** sub-tab of the **Cornea** tab displays information about the shape of the cornea. The sub-tab displays the results of the Topo test in three tables: **Eccentricity, Sagittal, and Meridians**.



No	Description
1	<p>Keratoconus Probability Index Keratoconus probability results. See Keratoconus Table^{□68}.</p>
2	<p>Sim_K</p> <ul style="list-style-type: none"> • K1 & K2 Two orthogonal radii values where K1 is the flattest meridian and K2 is the steepest meridian • VG Average of K1 and K2 - the mean curvature value between K1 and K2 • YL Corneal toricity - the difference in diopters between curvatures of the principal meridians (K1 and K2) and axis of the negative cylind
3	<p>Geometry table</p> <p>Geometry of the cornea ($P=1-e^2$) and ($Q= P-1$):</p> <ul style="list-style-type: none"> • P: Is a factor indicating how similar the shape of the cornea is to a perfect sphere, in the case of a perfect sphere, $P=1$ • e: This is a factor describing the eccentricity of the cornea, for a perfect sphere, $e=0$. • Q: Is a factor indicating the asphericity of the cornea, for a sphere, $Q=0$ <p>Note: An example of average corneal values: $P=0.8$, $Q=-0.2$, and $e=0.45$. These are not the values of a perfect sphere as average corneas are aspheric.</p>
4	<p>Menu</p> <p>Select the geometrical data to be displayed: Eccentricity^{□68}, Sagittal Radius^{□69} and Meridians^{□71}.</p>

No	Description
5	Eccentricity Table Displays the local eccentricity values according by location on the cornea.

Keratoconus Table

The **Keratoconus** table displays the following data:

- **KPI** Index of the probability of keratoconus

UTION Keratoconus indices are designed to be an adjunct to a clinical examination, and should never be used as a sole assessment tool in the diagnosis of Keratoconus.

Results of a clinical trial of the Keratoconus Prediction Index (KPI) are described in reference 1 and more details of the mathematics are given in reference 2.

Reference 1. Calossi A. Le altimetrie corneali con sistemi a disco di Placido. In: Mularoni A, Tassinari G, eds. La Topografia Altitudinale. Canelli, Italy: Fabiano Editore; 2005:136-139.

Reference 2. Maeda N, Klyce SD, Smolek MK, Thompson HW. Automated keratoconus

- **SI** Symmetry index - the difference between the mean power of two circular zones centered in the vertical axis
- **G** Apical Gradient of Curvature - the mean variation per unit of length of the corneal power between the corneal apex and the periphery of the keratoconus
- **K** Apical Keratometry - the curvature of the corneal apex

Note Values that are associated with a high probability of keratoconus are marked with an asterisk, like the SI and AGC values in this example:

Keratoconus	
KPI	37%
SI	*1.70
AGC	*1.68
AK	7.06

Eccentricity Table

The **Eccentricity** table shows the eccentricity of the cornea (P) at various predefined positions. The positions are defined by the meridian and by the angle from the keratometric measurement axis. R0 is the apical position (corneal apex) and the angles are 10°, 15°, 20°, 25°, and 30°. The meridians used are the nasal, temporal, inferior, and superior semi-meridians and the horizontal and vertical meridians. The mean is the average of the horizontal and vertical meridians.

Eccentricity-P		Mer.	R0	10°	15°	20°	25°	30°
Nasal	354°	43.75 D	0.91	0.84	0.77	0.57	0.46	
Temporal	174°	44.06 D	1.28	0.91	0.81	0.69	0.62	
Inferior	264°	43.84 D	2.03	0.80	0.76	0.78	0.88	
Superior	84°	45.92 D	0.56	0.43	0.41	-0.11	-0.11	
Horizontal	174°	43.90 D	1.10	0.88	0.79	0.63	0.54	
Vertical	84°	44.86 D	1.29	0.62	0.59	0.34	0.88	
Medium	0°	44.38 D	1.20	0.75	0.69	0.49	0.67	

Sagittal Radius Table

The **Sagittal Radius** table shows the radius of the curvature of the cornea at various predefined positions. The positions are defined by the meridian and by the angle from the keratometric measurement axis. R0 is the apical position (corneal apex) and the angles are 10°, 15°, 20°, 25°, and 30°. The meridians used are the nasal, temporal, inferior, and superior semi-meridians and the horizontal and vertical meridians. The mean is the average of the horizontal and vertical meridians.

Sagittal Radius		Mer.	R0	10°	15°	20°	25°	30°
Nasal	273°	7.79	7.89	7.90	8.07	8.28	8.52	
Temporal	93°	7.88	7.90	7.97	8.06			
Inferior	183°	7.80	7.86	7.90	8.04	8.22	8.34	
Superior	3°	7.77	7.86	7.90	8.05	8.13		
Horizontal	93°	7.84	7.90	7.94	8.07	8.28	8.52	
Vertical	3°	7.79	7.86	7.90	8.05	8.18	8.34	
Medium	0°	7.81	7.88	7.92	8.06	8.22	8.43	

Sagittal Radius table

Anterior Chamber Data

The Anterior Chamber Data tab contains data on the geometry of the cornea:

- [Index](#)⁷¹
- [Axial K](#)⁷⁰
- [Meridians](#)⁷¹

Axial K

The Axial K tables display the **Anterior Corneal** surface K readings, and the **Posterior Corneal** surface K readings.

Anterior Surface		
K1	42.12 D	0°
K2	43.04 D	90°
AVG	42.58 D	
Cyl1	-0.92 D	0°

Posterior Surface		
K1	5.88 D	11°
K2	6.72 D	101°
AVG	6.30 D	
Cyl1	-0.84 D	11°

No	Description
1	Anterior Surface These are the K readings from the anterior surface of the cornea calculated in the Multi Slit Sheimflug measurement.
2	Posterior Surface These are the K readings from the posterior surface of the cornea calculated in the Multi Slit Sheimflug measurement.

Meridians Table

The **Meridians** table shows the radius of eye curvature in three increments: 3 mm, 5 mm, and 7 mm, for the following values:

- **K1 & K2** Two orthogonal radii values where K1 is the flattest meridian and K2 is the steepest meridian
- **VG** Average of K1 and K2 - the mean curvature value between K1 and K2
- **YL** Cylinder measurement

Meridians						
	3 mm		5 mm		7 mm	
K1	7.90	96	7.91	97	7.95	93
K2	7.78	6	7.83	7	7.88	3
AVG	7.84		7.87		7.91	
Cyl	-0.66	96	-0.41	97	-0.40	93

Meridians table

Index

The Index tab contains a summary of all of the Anterior Chamber data of the cornea

No	Description	Value	Anterior	Posterior
2	Apex	457 μ , (0.00,0.00)		
3	Thinnest Point	456 μ , (0.25,-0.12)		
4	Pupil Diameter	6.42 mm		
5	Pupil Center	457 μ , (-0.05,-0.07)		
6	White To White	12.04 mm		
7	Kappa α	0.09 mm , 1.53°		
8	ACD	3.34 mm		
9	Anterior Chamber	3.34 + 0.46 = 3.80		
10	ACV	190.92 mm ³		
11	Average Angle IC	45.4°		
12	K1		7.76 mm @ 150	6.56 mm @ 30
13	K2		7.73 mm @ 60	6.36 mm @ 120
14	AVG		7.74 mm	6.46 mm
15	Cyl1		-0.22 D	-0.19 D
16	Kmax		7.55 mm	6.13 mm
	KPI			
	Q			
17	Total refractive power		1 mm	43.70 D
			2 mm	43.68 D

No	Description
----	-------------

1	Menu Select to view the following data: Index, Meridians, or Axial-K table
2	pex Displays the corneal thickness (μm) at the corneal apex and its location (mm).
3	Thinnest Point Displays the thinnest point measured (μm) on the cornea and its location (mm) with regard to the apex. Please note: it is not necessarily located at the apex of the cornea.
4	Pupil Diameter Displays the pupil diameter as measured in millimeters.
5	Pupil enter The thickness measured (μm) at the geometric center of the pupil and its location with regard to the apex (mm).
6	White to White Displays the area between where the sclera ends and begins again, the corneal width.
7	Kappa angle This is the measured angle between the fixation axis and the optical axis.
8	D Anterior Chamber depth (mm)
9	Anterior Chamber This is the sum of the ACD and the corneal thickness.
10	V Anterior Chamber Volume (mm^3)
11	Average angle I This represents the average Irido Angle calculated for each eye.
12	K1 The radius of the flattest meridian of anterior and posterior corneal surfaces.
13	K2 The radius of the steepest meridian of the anterior and posterior corneal surfaces.
14	VG Average of K1 and K2 - the mean curvature value between K1 and K2 of the anterior and posterior corneal surfaces
15	YL Cylinder measurement of the anterior and posterior corneal surfaces

16	KMax K Max is the maximum curvature from the axial curvature maps of the anterior and posterior cornea. (D)
17	Total Refractive Power The refractive power calculated at different diameters (mm). Open this menu to change the diameter displayed

Tonometry Tab

The **Tono** tab displays the results of tonometry measures, and the results of pachymetry measures. For each eye, the results of the measures are displayed individually, and their average is also displayed, in the following columns:

The screenshot shows the VISIONIX software interface with the Tono tab selected. The top bar displays 'Temp 3245', '16-Feb-2016', and '11:41:07'. The main display area contains two columns of data for IOP and Pachy measurements, and two columns of data for various corneal parameters. Numbered callouts 1-9 point to specific data points in the tables.

Measurement	IOP mm/Hg	Pachy	IOPc mm/Hg
1	18	577.0	17.1
2			
3			
AVG	18.0		17.1

IOPc correction by: Doughty 1

Measurement	IOP mm/Hg	Pachy	IOPc mm/Hg
1	25	589.5	23.8
2			
3			
AVG	25.0		23.8

	Left	Right
ACD	2.45 mm	2.37 mm
ACV	99.1 mm ³	95.7 mm ³
Kappa α	6°	9°
Decentration	0.3 mm	0.4 mm
IC Angles	13°	6°

	Left	Right
IC Angles	31°	32°

The interface also includes a sidebar with buttons for 'R', 'L', 'Topo Data', 'Anterior Chamber Data', 'Tono', 'D mm', 'Measure', 'Export', and 'Exit'. At the bottom, there is a navigation bar with buttons for 'Summary', 'Maps', 'Data', 'ACA', 'Opacity', 'Coeff. Aberr.', 'Simulation', 'CL Fitting', and 'Exit'.

No	Column
1	Measurement Notation of measurement number and average
2	IPO mm/Hg Displays the actual intraocular pressure that was measured.
3	Pachy Displays the thickness of the cornea at its center, in microns.
4	IPOc mm/Hg Displays corrected values for the intraocular pressure, taking the pachymeter readings into account.

No	Column
5	D Displays the anterior chamber depth
6	V Displays the anterior chamber volume.
7	Kappa angle Displays the kappa angle.
8	Decentration Displays the decentration between the pupil apex and the visual point on the cornea.
9	I angles Displays the interior chamber angles for each eye.

Warning The safety and efficacy of the VX130 in measuring intraocular pressures in patients with greater than 3 diopters of corneal astigmatism or greater than 33mmHg of intraocular pressure has not been evaluated.”

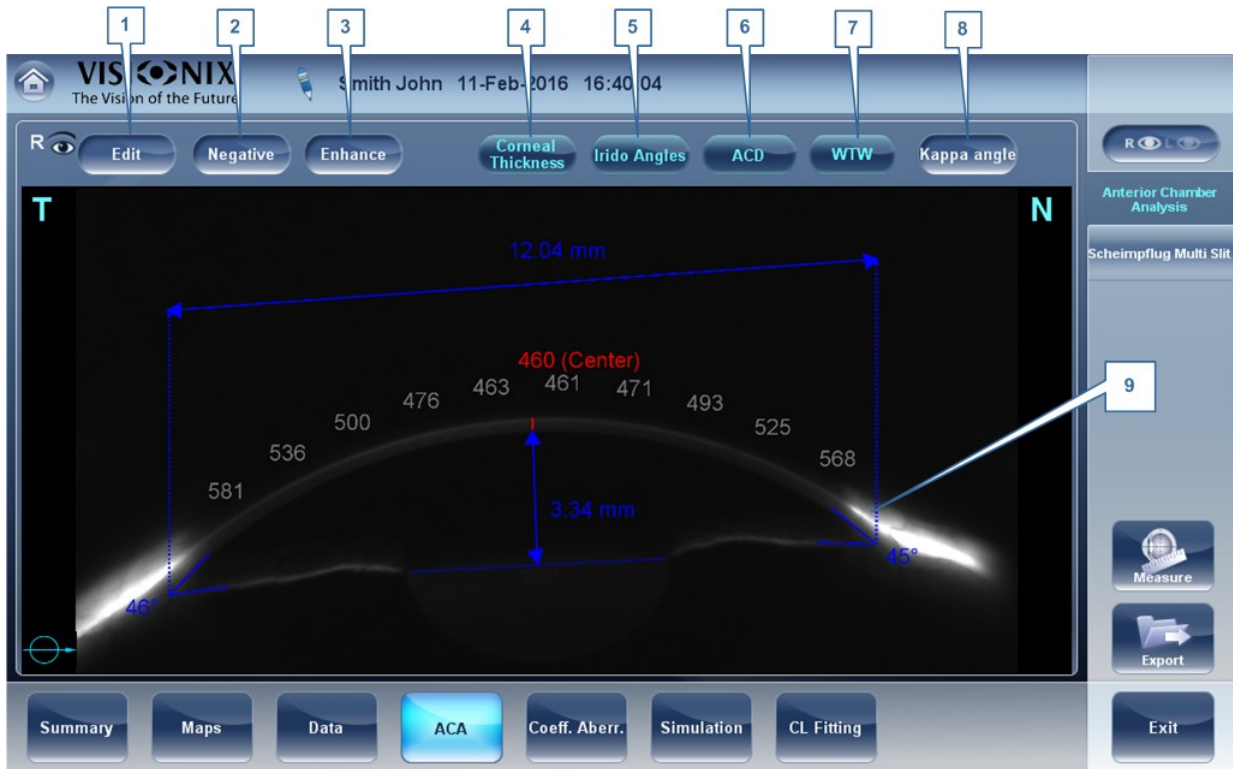
4.7 ACA

This tab includes data on the Anterior Chamber of the Cornea, such as:

- [Anterior Chamber Analysis](#)⁷⁴
- [Scheimflug Multi Slit](#)⁷⁸

Anterior Chamber Analysis

The **Anterior Chamber Analysis** sub-tab of the **Cornea** tab displays diagram and graph for the anterior chamber analysis (pachymetry, irido corneal angle, corneal thickness). The user can edit this diagram by re-positioning the measured points. **Note** it is only possible to save the reposition of the points immediately after the measurements. When retrieving results, points that are repositioned will not be saved.

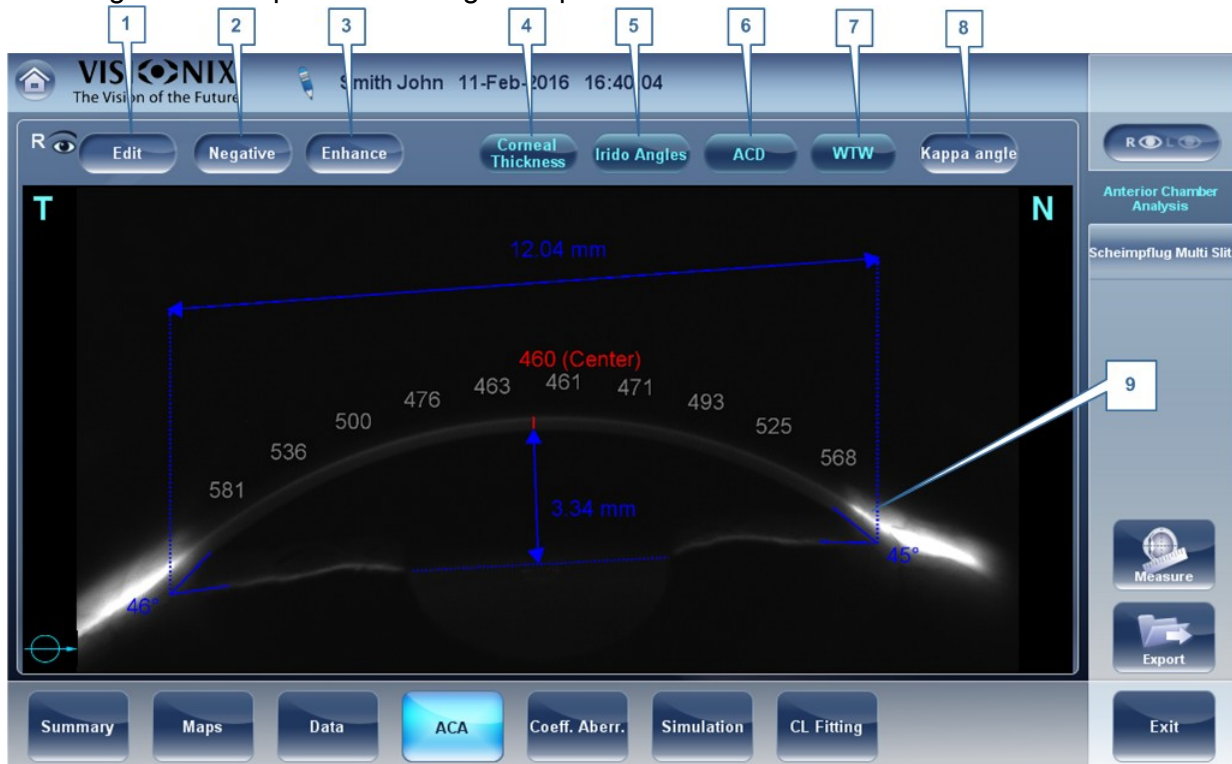


No	Description
1	Edit Displays the Edit screen. In this screen, the measured points can be repositioned by the user. For more information, see Edit ⁷⁶ .
2	Negative Displays a negative of the image of the cornea.
3	Enhance Enhances the outlines of the image.
4	Corneal Thickness Displays values of the corneal thickness in a few areas on the cornea image.
5	Irido Angles Displays the Irido Angle values and positions on the image.
6	ACD Displays the Anterior Chamber Depth in millimeters.
7	WTW Displays the White to White (in relation to the cornea) distance.
8	Kappa Angle Displays the angle between the center of the cornea and the visual axis.

9	<p>ornea</p> <p>Scheimpflug image of the cornea. T Indicates that this is the temporal side of the eye. N Indicates that this is the nasal side of the eye. The Orientation Indicates the orientation of the pachymetry (in the example, a horizontal cut). The entral orneal Thickness (T), in microns is displayed in red.</p>
---	--

Edit

The **Edit** screen allows the user to relocate the measured points on the image in order to obtain better values. Clicking on one of the three sections of the image will display a zoom-in of that image. It is then possible to drag each point to a new location.



Please note: if the measured results are not within the following bounds, the **Edit** screen will be automatically displayed when entering the **nterior hamber nalysis** results for that eye

- $5^\circ < \text{Irido Angle} < 60^\circ$
- $1.5\text{mm} < \text{ACD} < 4.5\text{mm}$
- $8\text{mm} < \text{WTW}$
- Irido points should be within their respective EDIT window
- $-30^\circ < \text{Pupil Angle} < +30^\circ$
- $200\mu < \text{Corneal Thickness} < 800\mu$
- Corneal thickness values should be symmetrical respective to center

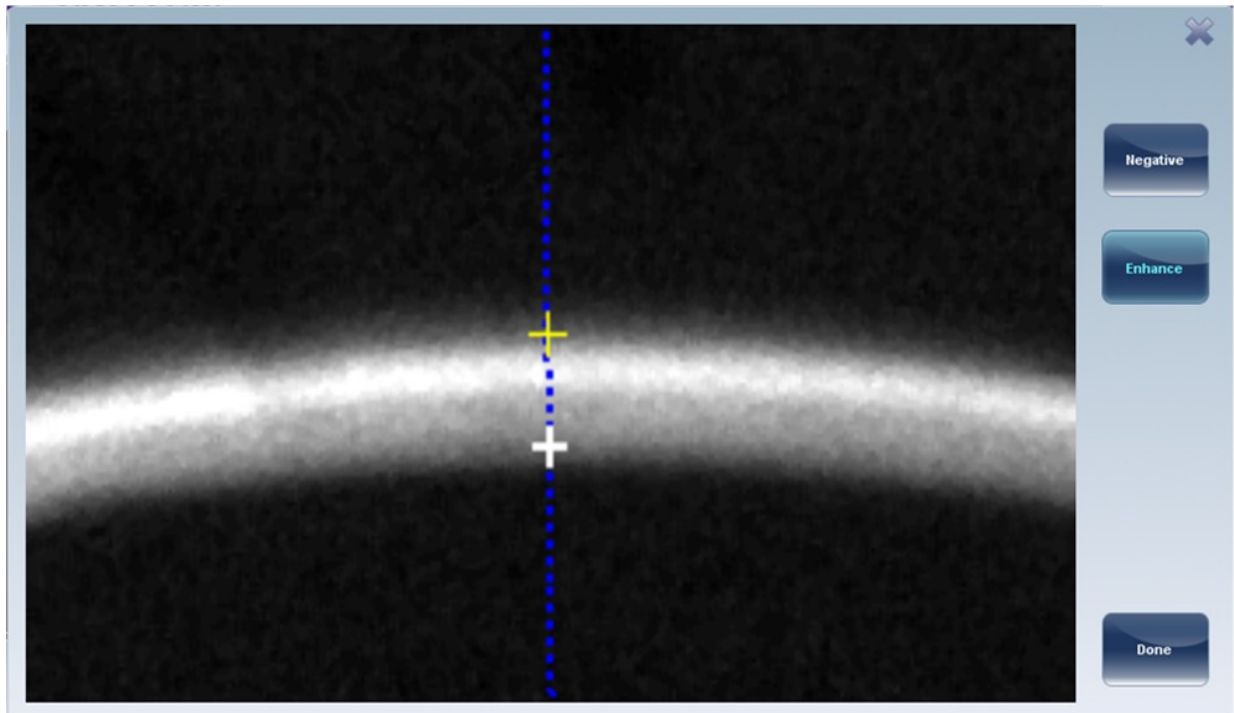
Edit Central Corneal Thickness

To edit central corneal thickness:

Select the yellow cross and drag it to the outer border of the cornea.

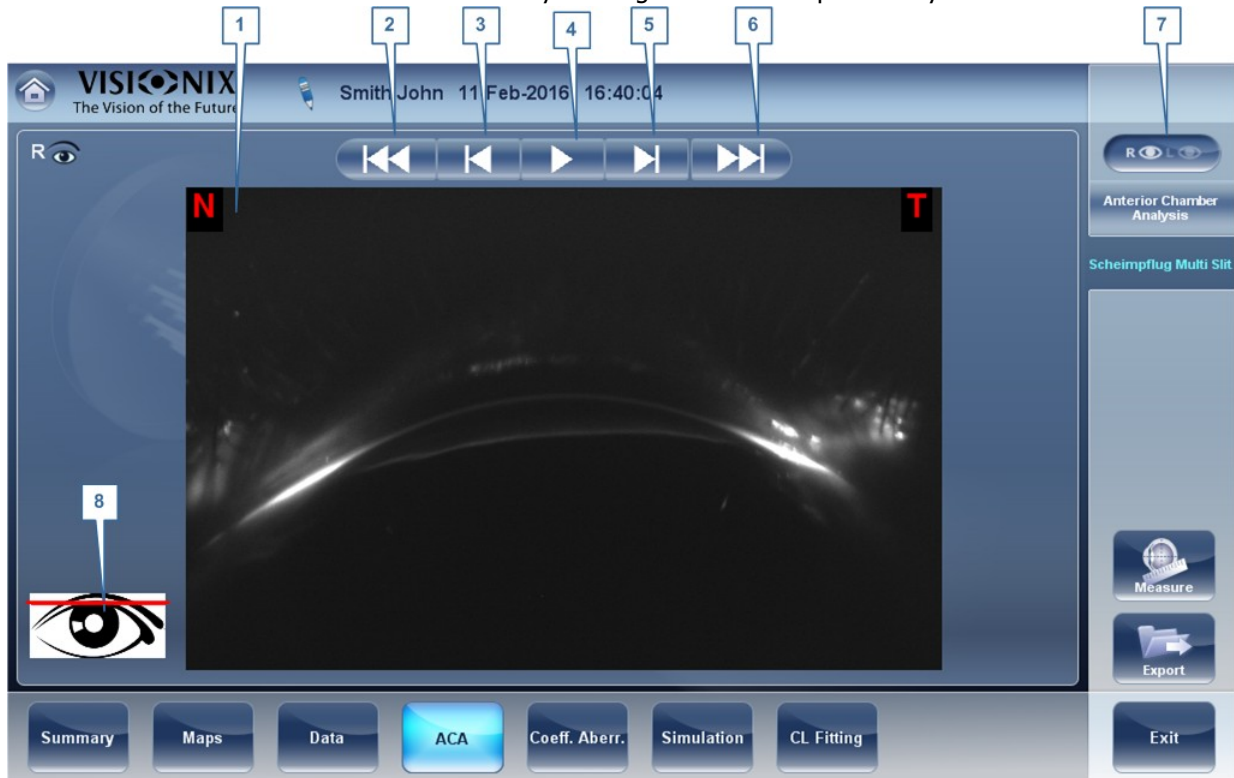
Please note: This is only recommended if dissatisfied with the automatic corneal thickness recognition. This will change the values for central corneal thickness and display only the CCT, the other values along

the periphery of the cornea will be erased.



Scheimflug Multi Slit

The Scheimflug Multi-Slit scans the anterior chamber from top to bottom, giving a moving horizontal cross-sectional view of the anterior chamber of the eye. It begins from the top of the eye:

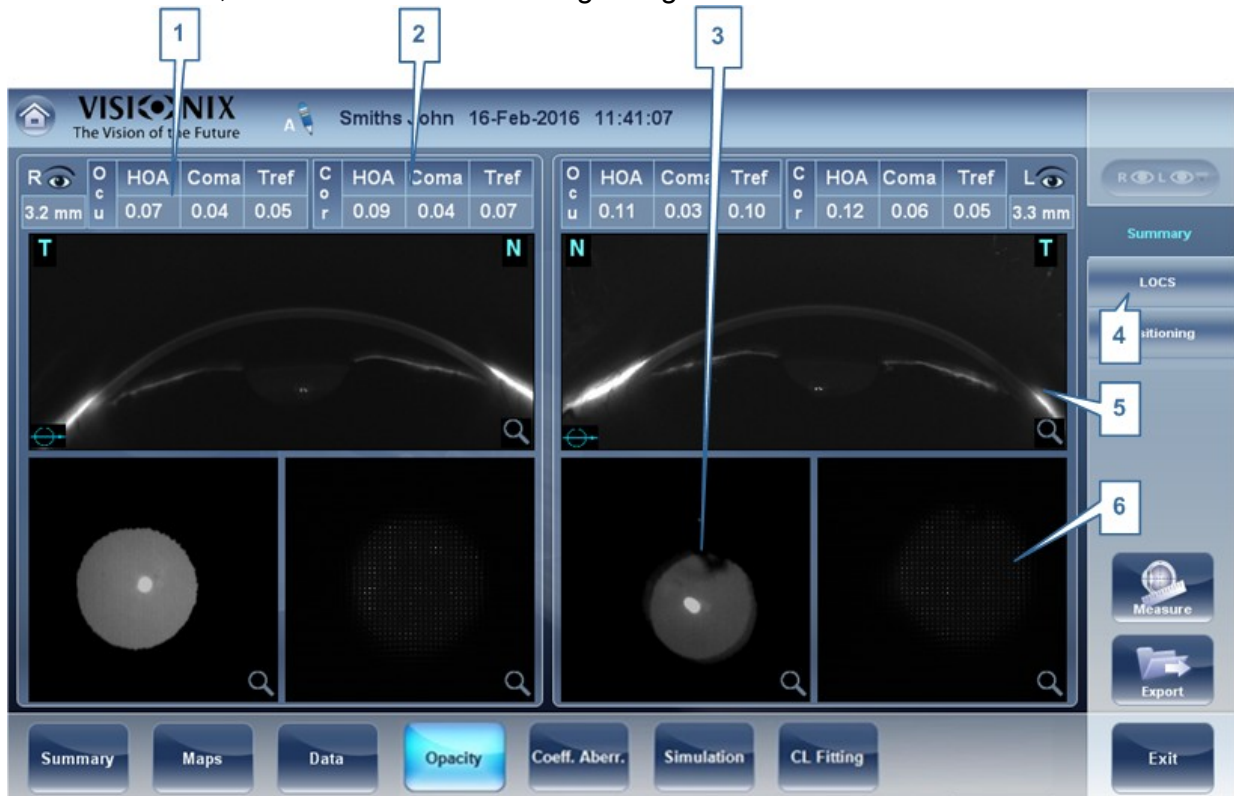


No	Description
1	Sheimflug Multi-Slit Scan The Sheimflug Multi-Slit scan is displayed here.
2	Fast Rewind Click here to go back several images.
3	Rewind Click here to move back one image.
4	Play/Pause Click here to pay or pause the Sheimflug Multi-Slit scan of the anterior chamber of the cornea.
5	Forward Click here to go forward one image.
6	Fast Forward Click here to go forward several images.
7	R/L Click here to switch between the Right and Left eyes.

8	<p>Red line</p> <p>The red line shown in this image is an indication of where the cross-sectional image is coming from along the eye. Notice that the red line is near the top of the eye in this image, as the movie starts from the top of the eye.</p>
---	--

4.8 Opacity Tab

The **Opacity** tab graphically displays the results of several measures - corneal aberrations, retro-illumination, and Shack-Hartmann - to give a general overview of the anterior chamber.



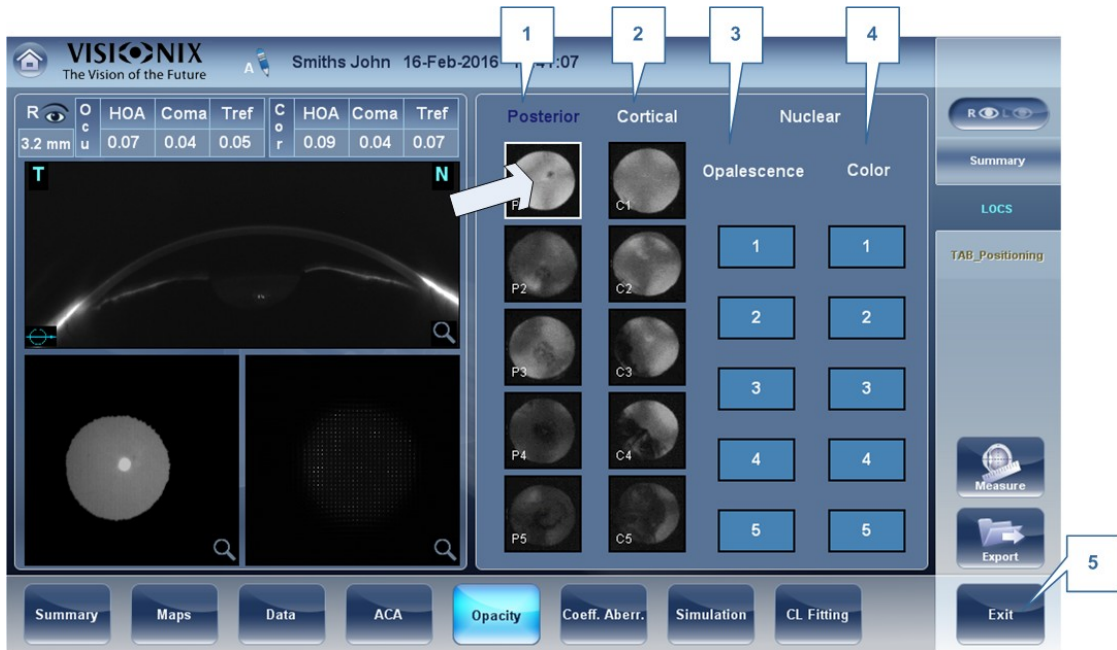
No	Description
1	<p>Ocular aberrations</p> <p>Displays values for ocular high order aberrations</p>
2	<p>Corneal aberrations</p> <p>Displays values for corneal high order aberrations</p>
3	<p>Lens</p> <p>Displays the retro illumination image of the lens and opacities</p>

No	Description
4	LO S This subtab contains a menu of retro illumination images. After entering this subtab, select the image that most clearly resembles your patient's retro image . More details listed below.
5	ross Section Cross sectional image of the cornea and interior chamber
6	Shack-Hartmann Shack-Hartmann image.

Note: To view a larger version of an image, double-click it.

LOCS Screen

Once this subtab is selected, the following screen appears:



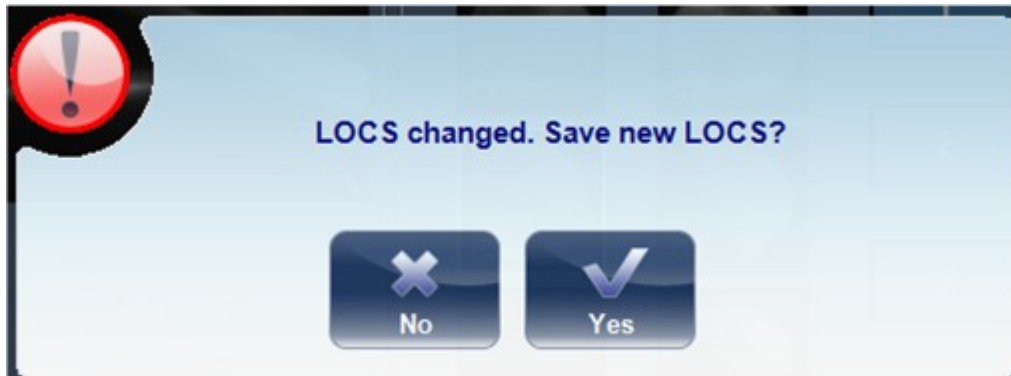
No	Description
1	Posterior Select the image that most clearly resembles the patient's retroillumination image. The image on top represents the mildest posterior opacity, while the image on bottom represents the most severe posterior opacity.
2	ortical Select the image that most clearly resembles the patient's retroillumination image. The image on top represents the mildest cortical opacity, while the image on bottom represents the most severe cortical opacity.

No	Description
3	Opalescence Select the image that most clearly resembles the patient's retroillumination image. #1 represents the least opacity, #5 represents the most opacity.
4	olor Select the image that most clearly resembles the patient's retroillumination image. #1 represents the lightest color, #5 represents the darkest color.

Select the image that best matches the cornea of the patient. There are 4 categories to choose from: Posterior, Cortical, Opalescence, and Color.

Please note only one of these 4 options can be selected.

After exiting the results screen, you will see the message:

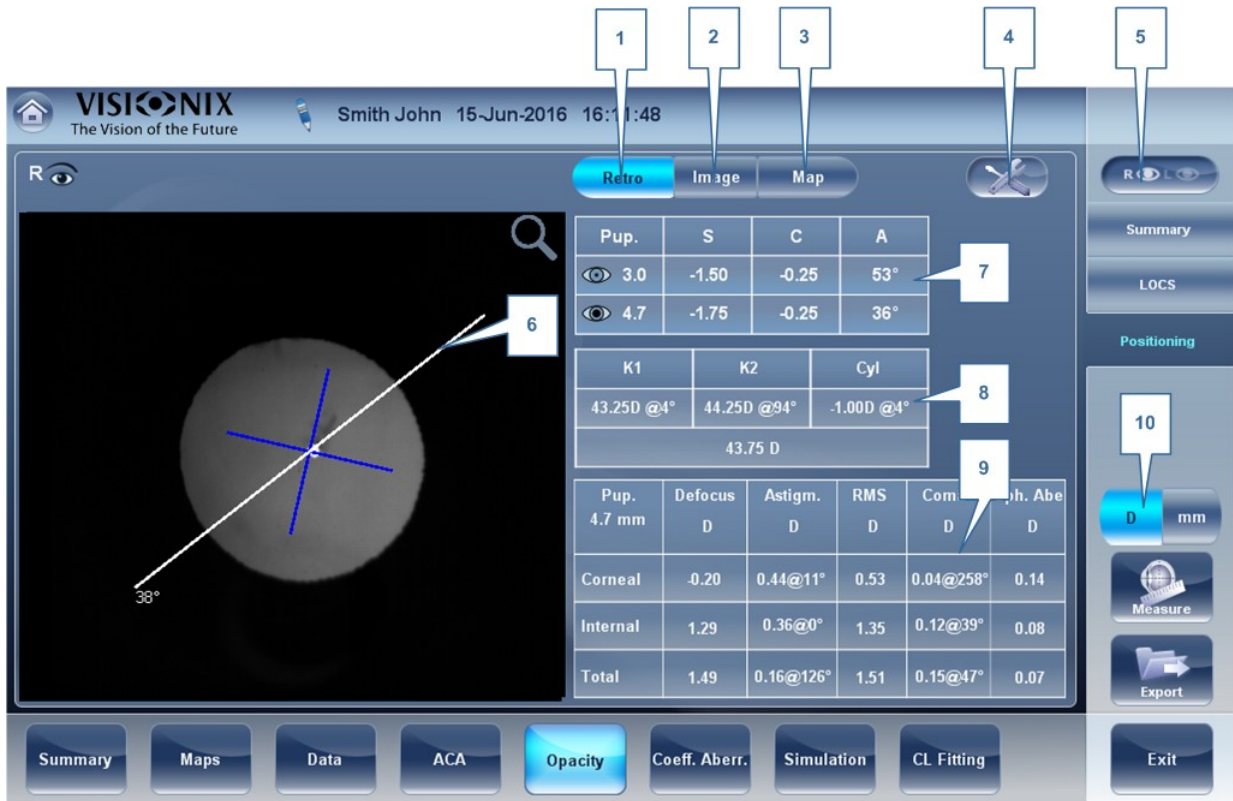


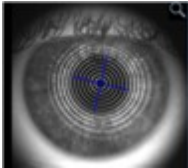
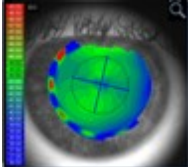
Click **Yes** to save or **No** to discard changes. LOC selection may only be saved after retrieving the results and not immediately after the measurement.

Positioning

The Position Subtab displays the various layers of the anterior chamber, the ringer, and corneal map, and the retro illumination image of the lens along with the aberrations from three sections of the eye: **corneal** aberrations, **total** aberrations, and **internal** aberrations.

Click on the image to draw a ruler, and drag the ruler to change its axis. This feature may be helpful in examining eyes pre/post cataract surgery.



No	Description
1	Retro This tab displays the retro illumination image of the eye.
2	Image Click on this tab to display the image of the eye with the placido rings as seen here 
3	Map Click on this tab to display the corneal topography map as seen here 
4	Tools Click on this button to open/close the tools menu
5	R/L Click on this icon to switch to the Right or Left eyes.

No	Description
6	Ruler Click on the image to draw a ruler. To change the axis of the ruler, drag it to your desired axis.
7	Refraction This table displays the refraction data, the sphere, cylinder and axis of the eye being shown both in mesopic and photopic light conditions.
8	Kerotomy This table displays K1, K2, and the axis of the selected eye.
9	Aberrations This table displays the Corneal, Internal, and total aberrations of the eye.
10	D/mm Click on this button to toggle between diopter and millimeters.

4.9 Coeff. Aberr.

The **Aberration Coefficients** tab shows the values of the Zernike coefficients in units of mm for:

[Ocular](#)⁸⁴

[Corneal](#)⁸⁵

[Internal](#)⁸⁶

There are three options for the aberration coefficients to be displayed:

Main Values: Shows a selection of the most common aberrations; defocus, astigmatism, total lower order (LOA), total higher order (HOA), coma, spherical aberration, fourth order astigmatism, trefoil and tetrafoil. Aberrations are shown in value and axis form.

LO : Shows the values of the lower order aberrations, total LOA, tilt, defocus and astigmatism.

HO : Shows the values of the common higher order aberrations, total HOA, trefoil, coma, tetrafoil, fourth order astigmatism, spherical aberration, pentafoil, fifth order trefoil and fifth order coma.

Ocular

The **Ocular** sub tab shows the value of the Zernike coefficients of the entire eye from the wavefront measurement. It is possible to display either day / night data or right / left data.



No	Description
1	aberration coefficients Choose aberration coefficients to be displayed
2	Left / Right display Choose right / left display
3	Photopic / Mesopic display Choose day / night display
4	Graphical representation Each of the bars represents either Night/Day aberrations, or Right/Left aberrations, depending on what is selected in 2 & 3.
5	Numerical representation These are the values for the coefficient of aberrations, they are listed by type and according to either Night/Day or R/L eyes.
6	Scale Changes scale of graphical representation

Corneal

The **orneal** sub-tab shows the values of the Zernike coefficients from the front corneal surface from the corneal topography measurement. It is possible to display either day / night data or right / left data.



No	Description
1	Aberration coefficients Choose aberration coefficients to be displayed
2	Left / Right display Choose right / left display
3	Photopic / Mesopic display Choose day / night display
4	Graphical representation Each of the bars represents either Night/Day aberrations, or Right/Left aberrations, depending on what is selected in 2 & 3.
5	Numerical representation These are the values for the coefficient of aberrations, they are listed by type and according to either Night/Day or R/L eyes.
6	Scale Changes scale of graphical representation

Internal

The **Internal** Coefficient of Aberrations tab represents the differences between the corneal aberrations, and the ocular aberrations for each eye. Zerniki coefficients are displayed for Corneal, Internal and total aberrations. For example, the graph below illustrates that most of the HOA, Defocus, and RMS are due to Internal eye aberrations.



No	Description
1	Photopic / Mesopic display Choose day / night display
2	Aberration coefficients Choose aberration coefficients to be displayed
3	Left / Right display Choose right / left display
4	Graphical representation Each of the bars represents aberrations from three parts of the cornea: Corneal, Internal, and Total aberrations.
5	Numerical representation This table shows the coefficient aberration values for each section of the cornea listed here, the Corneal, Internal, and Total aberrations.
6	Scale Changes scale of graphical representation

4. 10 Simulation

Visual acuity measures the eye's ability to distinguish object details and shape using HOA (High Order Aberrations) and LOA (Low Order Aberrations).

Visual acuity measurement is applicable to **Topography** (corneal) and to **Wave Front** (ocular). Results for both options are interpreted in the same manner.

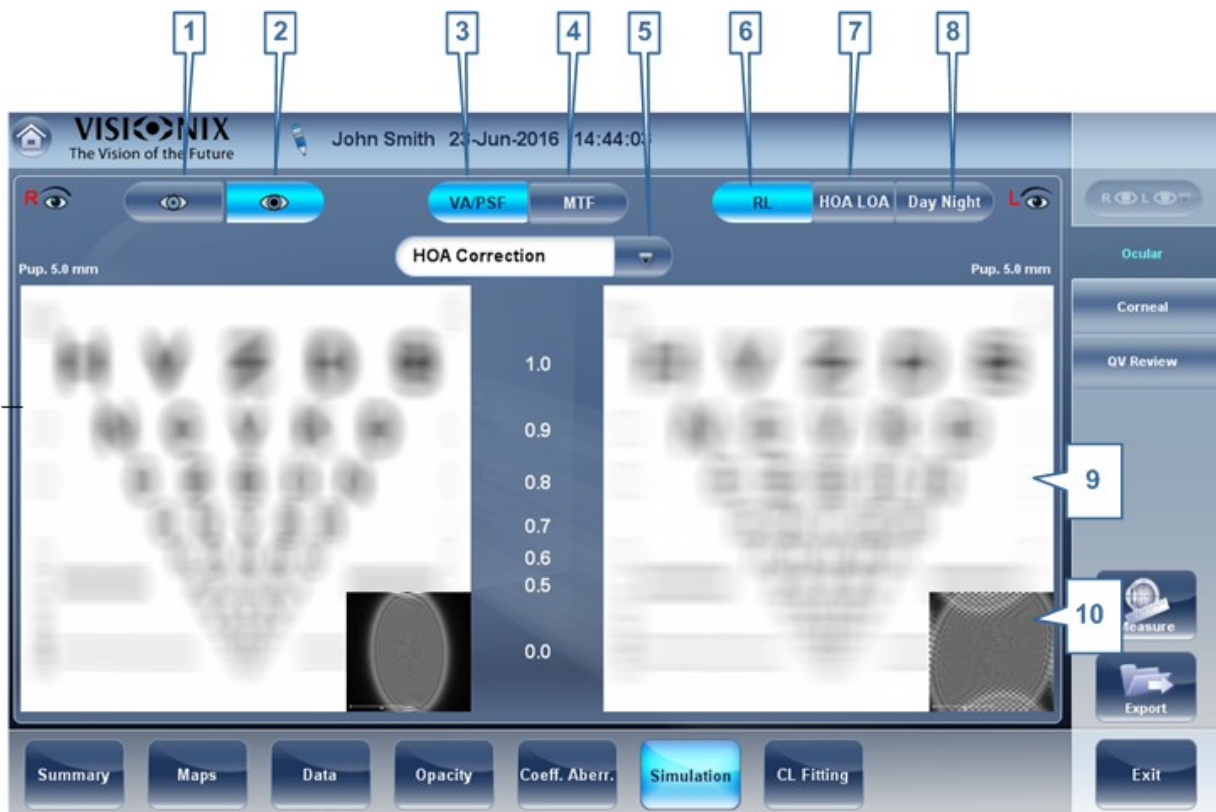
Simulations are available are:

[Ocular](#)⁸⁷

[Corneal](#)⁸⁹

[QV Tab](#)⁹⁰

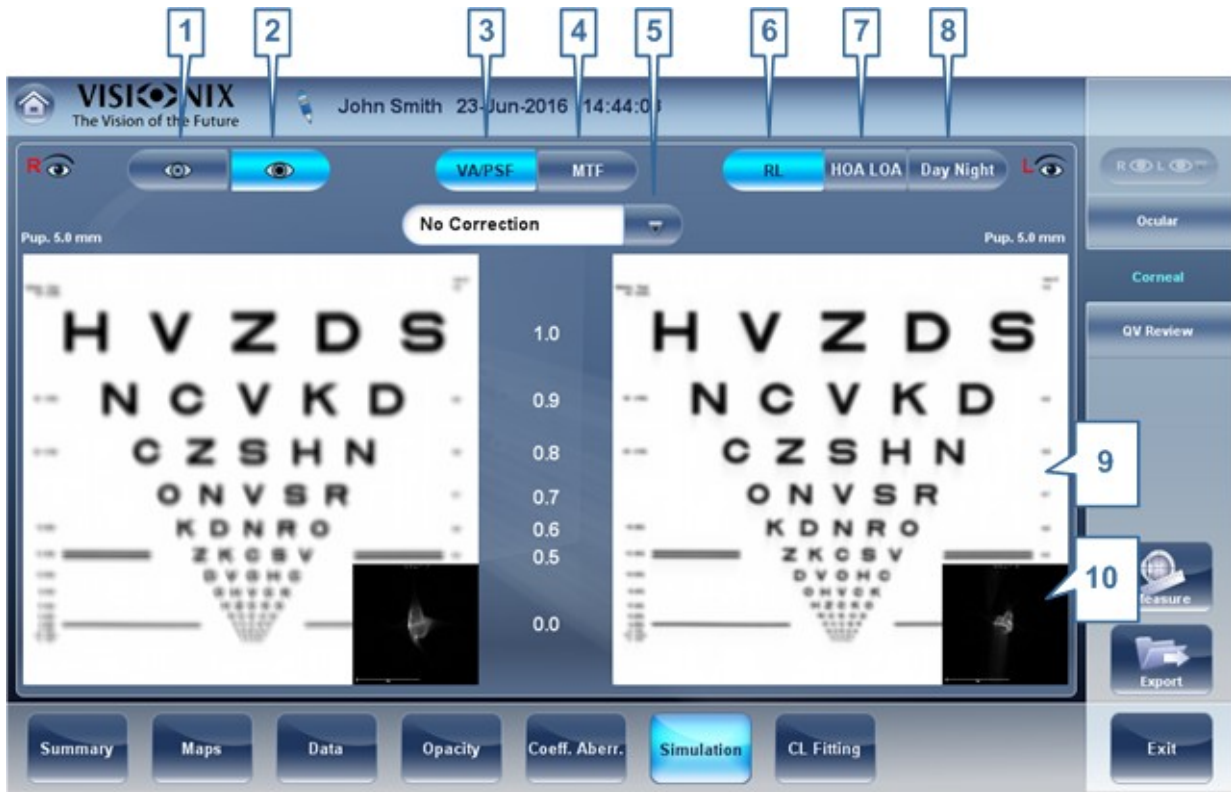
Ocular



No	Description
1	Photopic selector Choose day display

No	Description
2	<p>Mesopic Choose night display</p>
3	<p>V selector/PSF Allows you to toggle between the Visual acuity card display and the PSF (Point Spread Function) Display</p>
4	<p>MTF selector Displays the MTF graph.</p>
5	<p>Correction selector Select HOA to access the same image with an HOA correction. Select LOA to access the same image with a LOA correction. It is possible to select no correction at all, or Full correction.</p>
6	<p>R/L Display two cards, one for each eye. Both cards are displayed with the same display options</p>
7	<p>HO /LO Displays two cards for each eye, one with HOA and one with LOA corrections.</p>
8	<p>Day Night Display correction for day or night conditions for one eye.</p>
9	<p>Visual acuity image Reflects the actual quality of patient eyesight.</p>
10	<p>PSF Image of the corneal PSF (Point Spread Function).</p>

Corneal

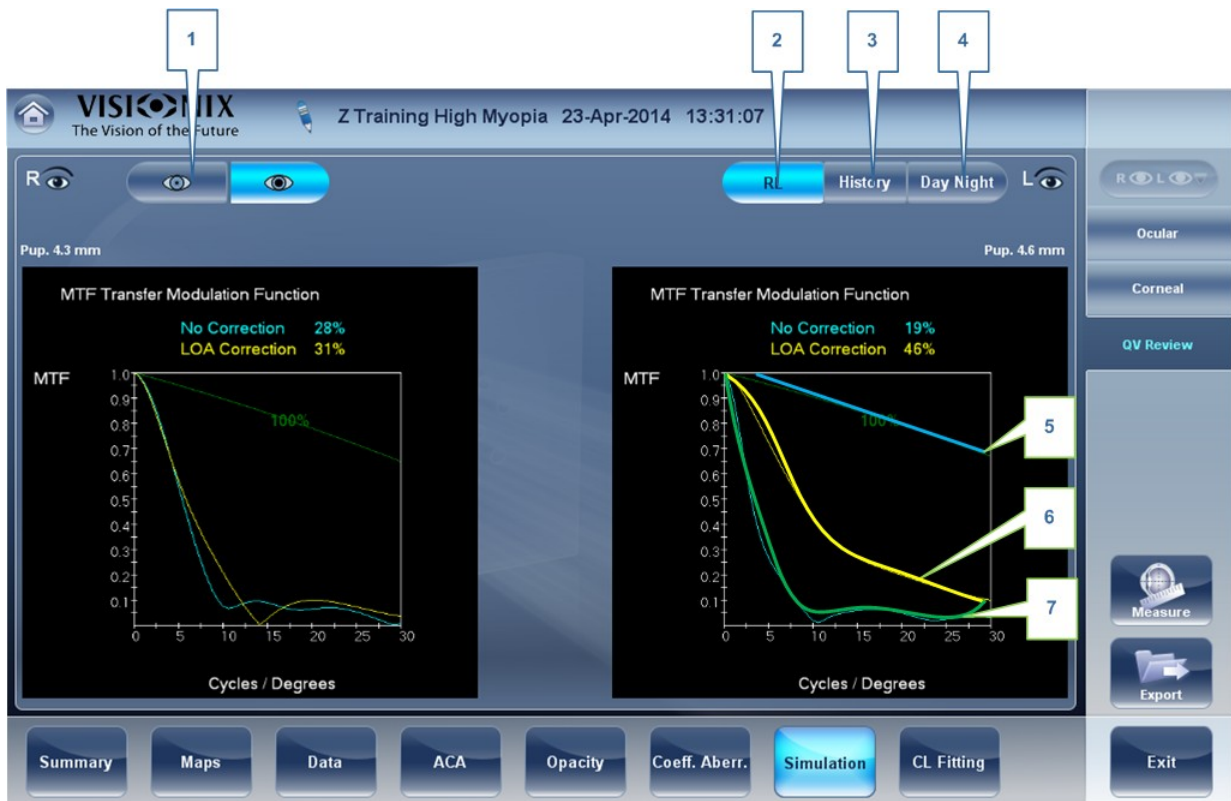


No	Description
1	Photopic selector Choose day display
2	Mesopic Choose night display
3	V selector/PSF Allows you to toggle between the Visual acuity card display and the PSF Display
4	MTF selector Displays the MTF graph.
5	Correction selector Select HOA to access the same image with an HOA correction. Select LOA to access the same image with a LOA correction. It is possible to select no correction at all, or Full correction.
6	RL Display two cards, one for each eye. Both cards are displayed with the same display options
7	HO LO Displays two cards for each eye, one with HOA and one with LOA corrections.

No	Description
8	Day Night Display correction for day or night conditions for one eye.
9	Visual cuity image Reflects the actual quality of patient's eyesight.
10	PSF Image of the corneal PSF (Point Spread Function)

QV

The QV (Quality of Vision) tab opens MTF (Modulation Transfer Function), displaying the LOA correction, displaying without any corrections, and displaying the 100% corrections function.



No	Description
1	Pupil Selector Select to display data for either mesopic or photopic pupils.
2	RL Display two cards, one for each eye. Both cards are displayed with the same display options

No	Description
3	History Displays map results from previous and current topographic maps according to selected date
4	Photopic /Mesopic selector Select Day to display maps for daytime light conditions or Night to display maps for nighttime light conditions.
5	100% This line displays the MTF function with no aberrations present.
6	LO corrections The yellow line displays the MTF with all the LOA aberrations corrected, only HOA aberrations are present.
7	No orrection This displays the MTF with no corrections, both HOA and LOA aberrations are present.

4. 11 CL Fitting

In this tab you can fit contact lens to a patient according to the test results. There are several contact lens types listed according to their manufacturer as well as their dimensions in the dropdown menu of the CL Fitting tab. Choose a specific lens type and the software calculates the approximate fitting for you.

Note It is possible that the contact lens dimensions listed in the software have changed since this version was updated. To avoid miscalculations, we recommend checking all the dimensions directly from contact lens manufacturer before prescribing contact lenses.

[Lens](#) ⁹¹

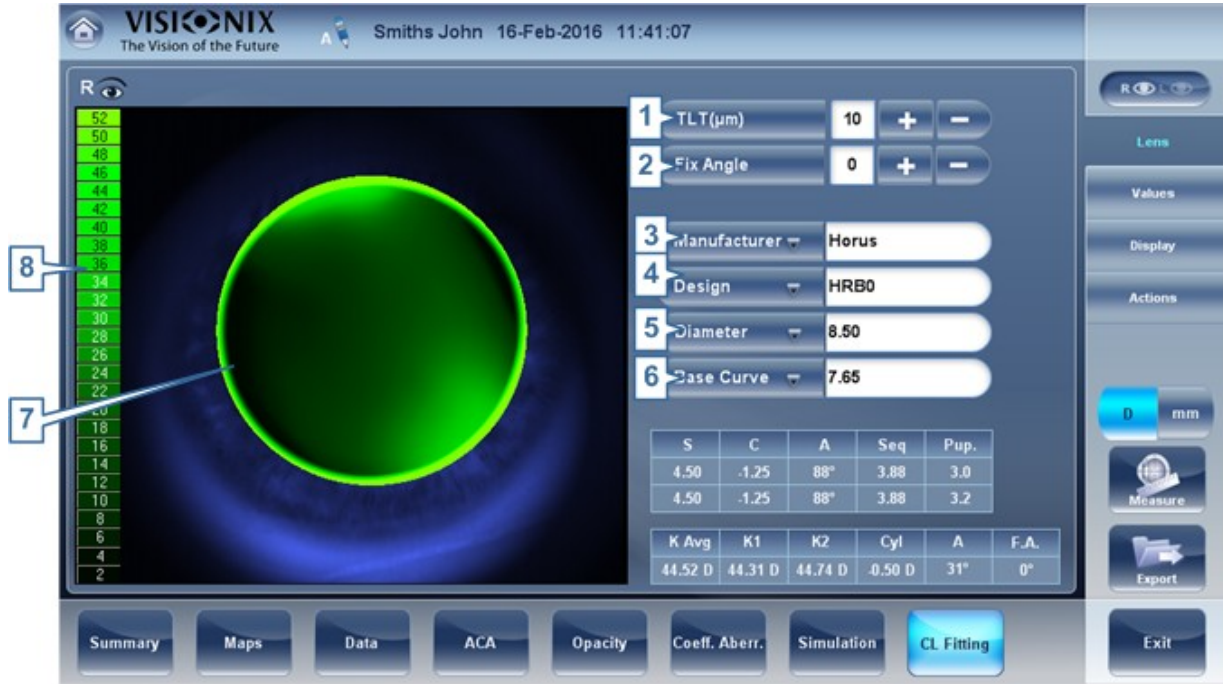
[Values](#) ⁹³

[Display](#) ⁹⁴

[Actions](#) ⁹⁵

Lens

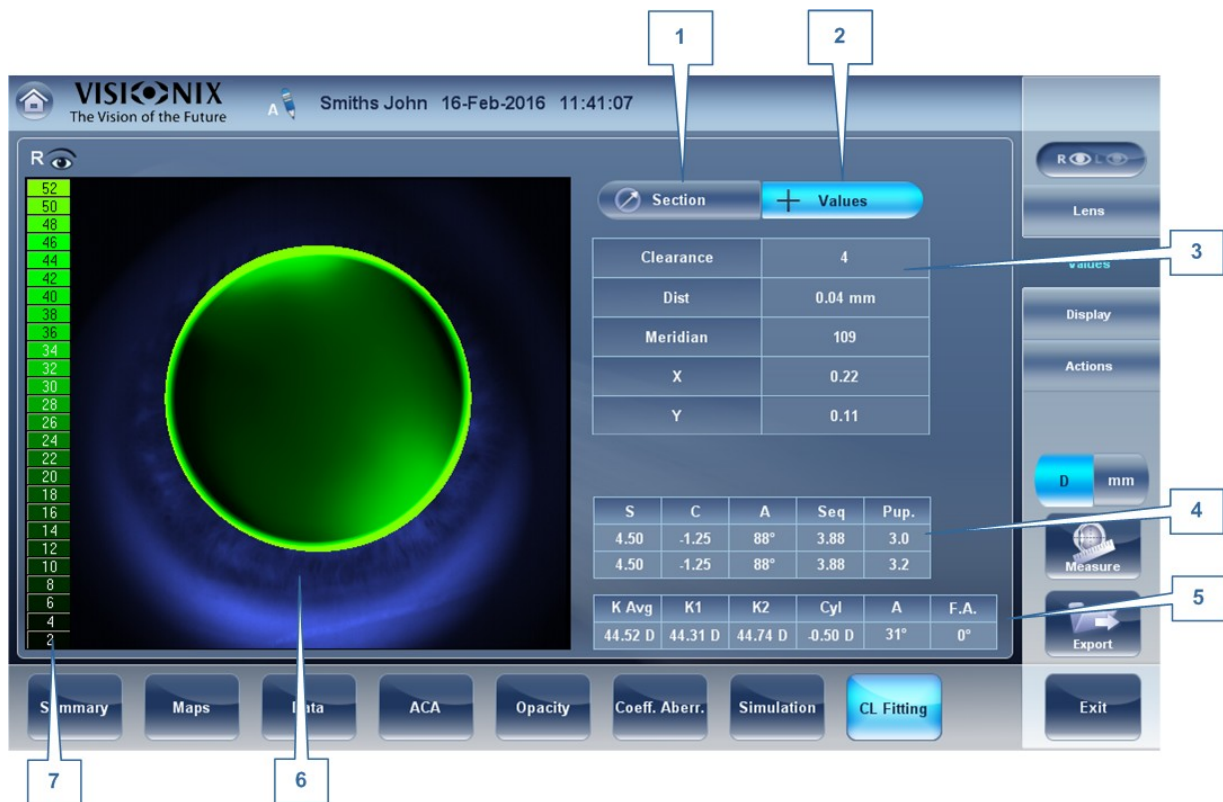
Choose a lens manufacturer and then select the most suitable lens from the given selection.



No	Description
1	<p>TLT (Tear Layer Thickness)</p> <p>Permits setting the value by which the lens is lifted at its center with respect to the cornea.</p> <p>When the TLT is modified, a new model lens or a new manufacturer must be selected; the lenses that meet the new application criteria are displayed. The program “remembers” the variation in TLT setting and uses this criterion the next time the Contact Lenses environment is accessed.</p>
2	<p>Fix ngle</p> <p>The orientation of K1, allows selecting the direction of the flattest meridian of a toric lens. The default value is the direction of the flattest meridian of Sim K. You can modify this parameter to simulate a lens rotation. This parameter need to be set before you choose the manufacturer.</p>
3	<p>Manufacturer</p> <p>Select a contact lens manufacturer</p>
4	<p>Design</p> <p>Select the most suitable lens from the given selection.</p>
5	<p>Diameter</p> <p>Choose the diameter of the lens</p>
6	<p>ase urve</p> <p>Choose the base curve of the lens</p>

No	Description
7	Display Displays the contact lens image superimposed on the image of the eye
8	Scale The scale used for the image in the display

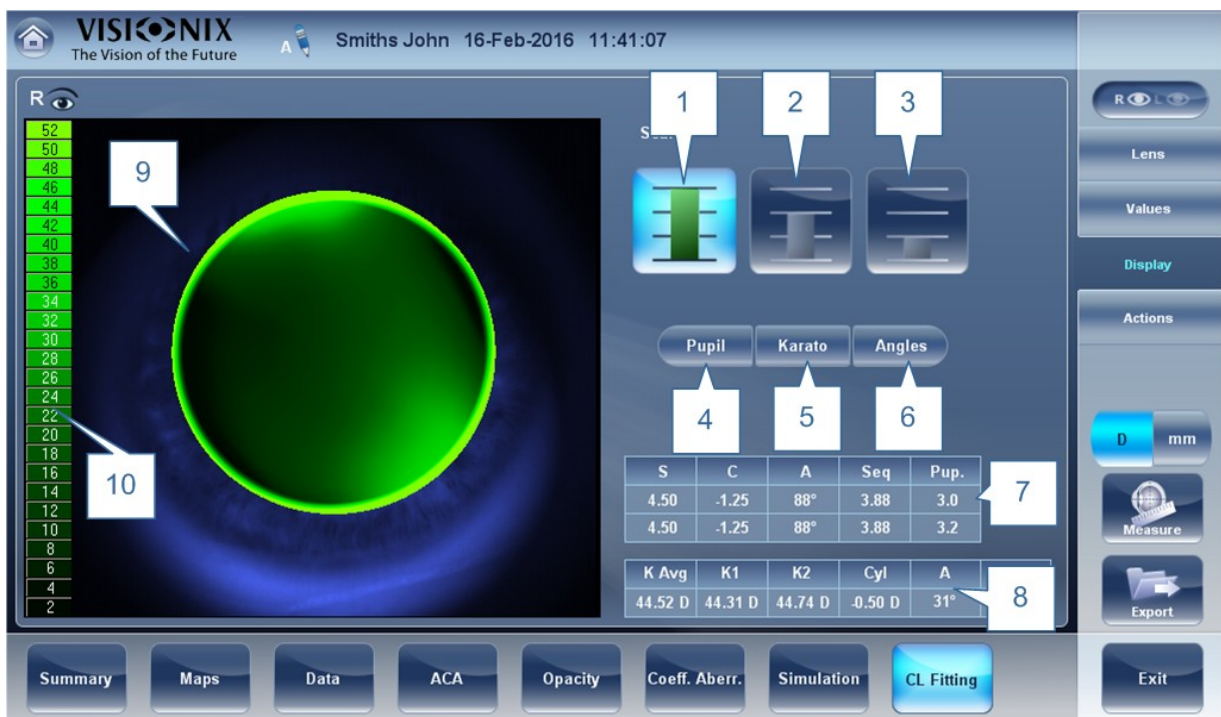
Values



No	Description
1	Section Display Displays a cross-section of the lens
2	Values Display Select the display of the values on the contact lens map
3	Values Table Displays the values of the point where the user clicks on the image
4	Refraction values Displays the refraction values for the patient

No	Description
5	Keratometry values Displays the keratometry values of the patient
6	Display Displays the contact lens image superimposed on the image of the eye
7	Scale The scale used for the image in the display

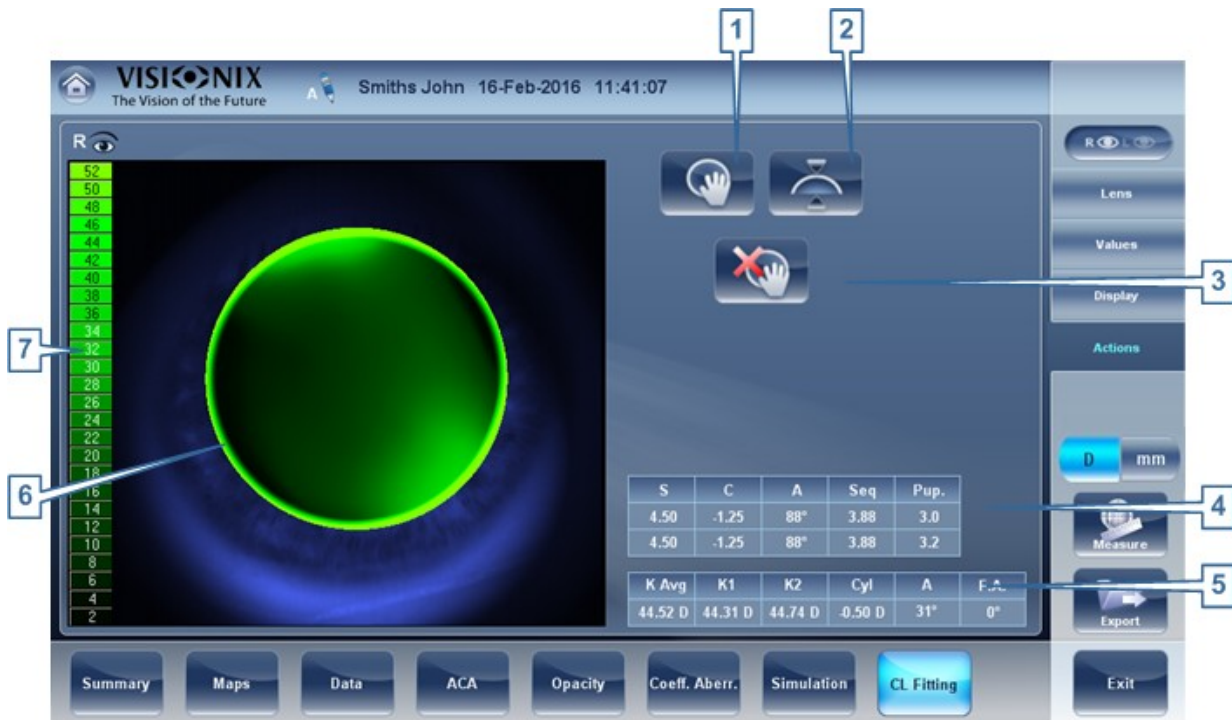
Display



No	Description
1	1st Scale selection
2	2nd Scale selection
3	3rd Scale selection
4	Pupil Displays the pupil on the map
5	Kerato Displays kerato values and cross on the map

6	Angles Displays angles on the map
7	Refraction values Displays the refraction values for the patient
8	Keratometry values Displays the keratometry values of the patient
9	Display Displays the contact lens image superimposed on the image of the eye
10	Scale The scale used for the image in the display

Actions



No	Description
1	Move lens Moves the lens on the image of the eye
2	Tilt lens Tilts the lens
3	Reset move lens Undos all changes

No	Description
4	<p>Refraction values Displays the refraction values for the patient</p>
5	<p>Keratometry values Displays the keratometry values of the patient</p>
6	<p>Display Displays the contact lens image superimposed on the image of the eye</p>
7	<p>Scale The scale used for the image in the display</p>

5. Managing Patients

You can manage the patient database - add patients, modify patient information, search for patients, and delete patient records - in the [Patient screen](#)¹⁸.

-
- [Adding a New Patient](#)⁹⁸
 - [Adding a New Patient Before Performing an Exam](#)⁹⁸
 - [Adding a Person from the Same Family](#)¹⁰⁰
 - [Modifying a Patient's Information](#)¹⁰¹
 - [Selecting Patients](#)¹⁰¹
 - [Searching for a Patient](#)¹⁰²
 - [Deleting Patients](#)¹⁰³

[5.1 Adding New Patients](#)

You can add a new patient to the database either before or after you perform exams on them. You can also add a number of related patients to the database quickly by duplicating the current patient record and modifying those parts that are different.

[Adding a Patient Before Performing an Exam](#)

To add a new patient before performing an exam:



- In the [Home screen](#)¹⁷, select the **dd Patient** option
- OR -
In the [Patient screen](#)¹⁸, select the **dd Patient** button.

The **Patient Information** dialog box is displayed on top of the [Patient screen](#)¹⁸.



Add Patient dialog box on top of the Patient screen

- Fill in the fields.
- Select one of the following:

No	Description
1	<p>Note</p> <p>Select to add a Note in the patient file. This note can be accessed by clicking on  symbol in the results screen, in the measurement screen, or in the patient screen. Once information has been added, the note will appear like this .</p>
2	<p>ancel</p> <p>Cancels saving new patient.</p>
3	<p>Save</p> <p>Save the new patient in the database, close the dialog box, and display the patient screen.</p>
4	<p>Save & New</p> <p>Save the new patient in the database and leave the dialog box open. You can add an additional patient by modifying the fields as necessary and saving the additional patient's information.</p> <p>Note This is convenient if you want to create a number of new patient records at one time. For example, you could use this option to create new patient records for all of the members of a family.</p>

No	Description
5	<p>Save and Diag</p> <p>Save the new patient in the database, close the Patient screen¹¹⁸, and open the Measure screen²¹. This enables you to go directly from adding a new patient in the database to performing measurements on them.</p>

Adding a Patient After Performing an Exam

You can perform an exam without first providing patient information. When the exam is completed, the exam results are saved in the database as temporary records under automatically generated names - with "Temp" as the surname, and a number as the first name. Temporary records remain in the database until you delete them manually or they are deleted by the system during routine maintenance. At any time before they are deleted, you can convert them into permanent patient records by adding patient information to them, or by cutting the results from the temporary patient record and pasting them into a permanent record (see [Moving Test Results to a Different Patient](#)¹³⁵).

Adding Related Patients


To add patients from the same family to the database:

- In the [Patient Information](#)⁹⁸ dialog box, fill in the fields for the first member of the family.
- Select **Save & New**. The patient is saved in the database, but their information is still displayed in the dialog box.
- Modify the information in the dialog box. Select **Save & New** if you want to add additional family members to the database, or either **Save** or **Save and Diag** if there are no additional family members to add. For additional information about these options, see [Adding a Patient Before Performing an Exam](#)⁹⁸.


Adding a Patient from an XML database

The VX130 is XML enabled, allowing data import from compatible XML databases. To import



the data to the device, click on the  icon located at the top left of the Measurement screen. Once you have imported the data, continue with the measurement. The measurement will be saved with the name and details from the database.



If the icon is grayed out  it means that there is no data available for importing. Before beginning to import data, please make sure that your settings are configured properly in the [Export Data Configuration](#)¹⁶⁷.

5.2 Modifying a Patient's Information

To modify a patient's information:

- In the [Patient screen](#)¹⁸, in the patient list, select the patient.
- Below the patient list, select **Modify Patient**. The **Patient Information** dialog box opens.
- Modify the fields as necessary.
- Select **Save**. The changes are saved, and the dialog box closes.

5.3 Selecting Patients

There are two ways patients can be selected: individually, or as part of a group. Patients must be selected individually in order to see or modify their personal information and to view and manage their test results. Patients can be selected as a group in order to delete their records from the database.

To select a single patient in order to see the patient's information and test results:

- In the [Patient screen](#)¹⁸, in the patient list, select the patient. The patient's entry in the list is highlighted with a blue border.

To select one or more patients in order to delete them:

- In the [Patient screen](#)¹⁸, in the patient list, select the check box beside each patient you want to delete.



Patients selected individually and as a group

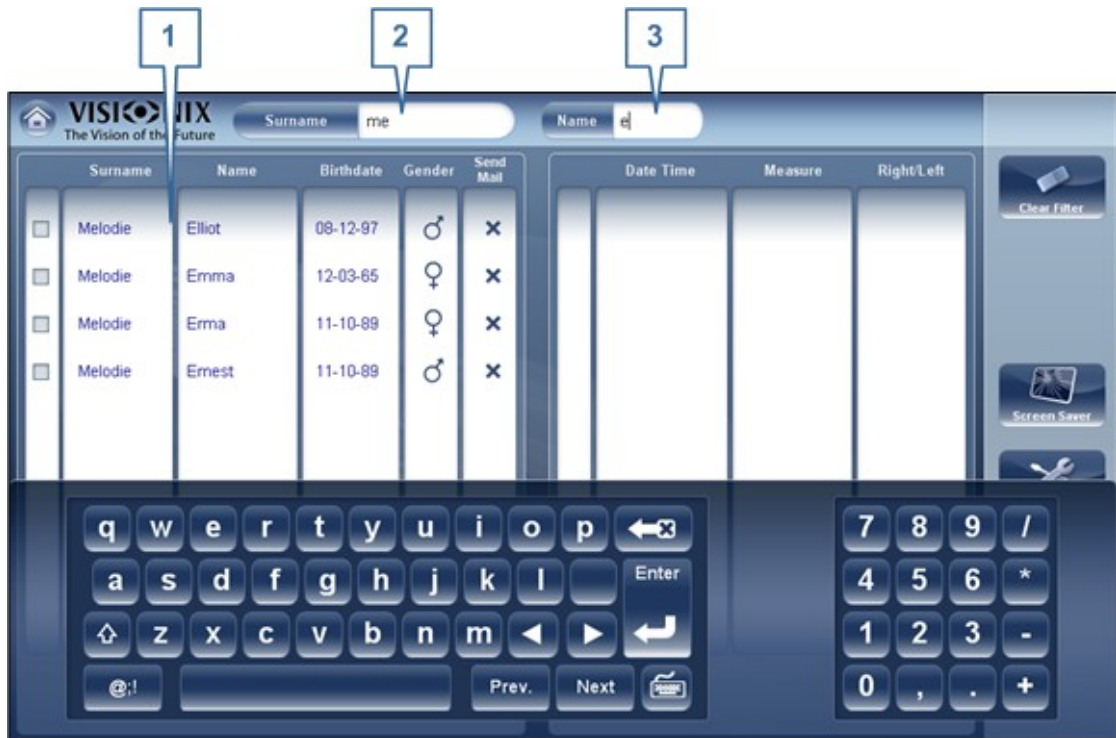
No	Description
1	Check box selected (to select patients as a group)
2	Patient selected (as an individual)

5.4 Searching for a Patient

You can search for a patient by filtering the display so that it only shows patients whose first and/or last names begin with a specified sequence of letters.

To filter the patient list:

- In the [Patient screen](#)¹⁸, at the top of the screen, in the **Surname** field, enter one or more letters from the beginning of the surname you want to see. Only those entries whose surnames begin with the sequence of characters you entered are displayed in the list.
- In the **Name** field, enter one or more letters from the beginning of the given name you want to see. Only those entries whose given names begin with the sequence of characters you entered are displayed in the list.



Filtered patient list

No	Description
1	Filtered list
2	Surname filter
3	Name filter

5.5 Deleting Patients

To delete patients from the patient list:

- In the [Patient screen](#)¹⁸, select the check box beside each patient record you want to delete.
- At the bottom of the screen, select **Delete Patient**. You are prompted to confirm that you want to delete the selected patients.
- Select **Yes**. The patient records are deleted from the list.

6. Performing a Diagnostic

You can initiate a new diagnostic procedure by opening the [Measure screen](#)^{□21}. The **Measure** screen can be opened from any of the following screens:

- [Home screen](#)^{□17}
- [Patient screen](#)^{□18}
- [Results screen](#)^{□32}

Once the **Measure** screen is opened, you can prepare the patient and select the test options, as explained under [Preparing to Run a Diagnostic](#)^{□108}, and then select **Go** to begin running the diagnostic tests.

Initiating a Diagnostic from the Home Screen

To initiate a new diagnostic procedure from the **Home** screen, you need only select the **Measure screen** option (#2 in the diagram [above](#)^{□17}).

Note that if you open the **Measure** screen directly from the **Home** screen, no patient is selected. The system automatically generates a patient name for the results, with "Temp" as the surname and a number as the first name (e.g., "Temp 1184"). Temporary records remain in the database until you delete them manually or they are deleted by the system during routine maintenance. At any time before they are deleted, you can convert them into permanent patient records by adding patient information to them (see [Modifying a Patient's Information](#)^{□101}), or by cutting the results from the temporary patient record and pasting them into a permanent record (see [Moving Test Results to a Different Patient](#)^{□135}).

Initiating a Diagnostic from the Patient Screen

In the **Patient** screen, you can initiate a new diagnostic procedure in a number of ways:

- Select **New Diagnostic** with no patient record selected. The **Measure** screen opens with a temporary patient name ("Temp" + a number; see above).
- Select a patient record and then select **New Diagnostic**. The **Measure** screen opens for the selected patient. After you run the diagnostic procedure, the results are automatically saved in the selected patient's record.
- For a new patient, in the **Add Patient** dialog box, fill in the patient's information, and then select **Save and Diag**. The patient record is added to the database, and the **Measure** screen opens for the new patient. After you run the diagnostic procedure, the results are automatically saved in the new patient's record.

Initiating a Diagnostic from the Results Screen

When the [Results screen](#)^{□32} is open, either immediately after a diagnostic procedure was completed, or when the results were loaded from the patient's record (see [Loading Test Results](#)^{□131}), select **Measure** to open the **Measure** screen for the patient. You can then run some or all of the tests over again or run additional tests.

6.1 Preparing to Run a Diagnostic

After you open the [Measure screen](#)^{□21}, there are a number of things you should do before you start running the diagnostics:

- Clean the headrest.
- Place a new sheet of protective paper over the chin rest, or clean the chin rest.
- In the **Measure** screen, in the list of available measures (#6 in the diagram [above](#)^{□22}), select the diagnostic you want to perform. The tests needed to perform the selected diagnostic are highlighted in the list of tests (#18 in the diagram [above](#)^{□22}).
- In the upper-right corner (#7 in the diagram [above](#)^{□22}), select whether you want to perform the diagnostics on the right eye, the left eye, or both.
- Under **Position**, select **adult** if the patient is an adult, or **child** if the patient is a child. The unit's head and chin rest move to the default positions for the selected type of patient.
- If you are performing the and you want to modify the parameters of these tests (the number of measures to take), in the **Measure** screen, select **Parameters**. In the dialog box that opens, modify the parameters as required, and then select **OK** to save the changes.
- Instruct the patient to sit down, place their chin on the chin rest, and lean their forehead on the headrest.
- If you need to fine-tune the position of the chin rest, select the **Chin Rest** up and down arrows (#12 in the diagram [above](#)^{□22}) as necessary to move the chin rest up or down.
- If you need to adjust the position of the unit's head, select the up, down, right, and left arrows on the edge of the lens view (#3, #16, #17, and #10 in the diagram [above](#)^{□22}) as necessary to move the head up, down, right, or left.
- Instruct the patient to look at the target (balloon). You should see their eye in the image of the lens view in the **Measure** screen.
- Align the patient's pupil with the center of the target (see [Centering the Patient's Eye](#))^{□107}.

Once you have done all of these things, select **Go** to begin the diagnostic.

6.2 Managing the Diagnostic Procedure

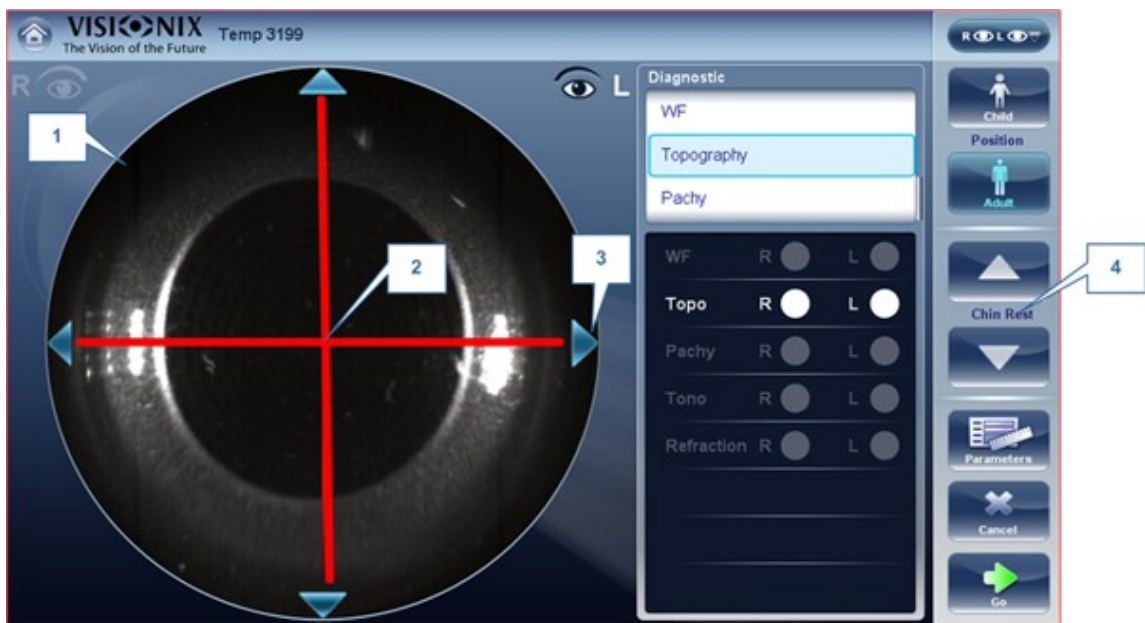
The diagnostic procedure is managed in the [Measure screen](#)^{□21}. In this screen, you can select the diagnostic you want to perform, position the unit head and chin rest so that the patient's eye is centered in the camera view, modify default test settings, start the diagnostic procedure, and monitor its progress.

-
- [Centering the Patient's Eye](#)^{□107}
 - [Skipping a Measure during a Diagnostic](#)^{□108}

- [Speeding the Measurement Process Up](#)¹⁰⁹
- [Stopping a Diagnostic Before it Is Finished](#)¹⁰⁹
- [Measuring Multi Slit pachy](#)¹¹³
- [Performing a Tonometry](#)¹¹⁰
- [Measuring Multi Slit](#)¹¹³

Centering the Patient's Eye

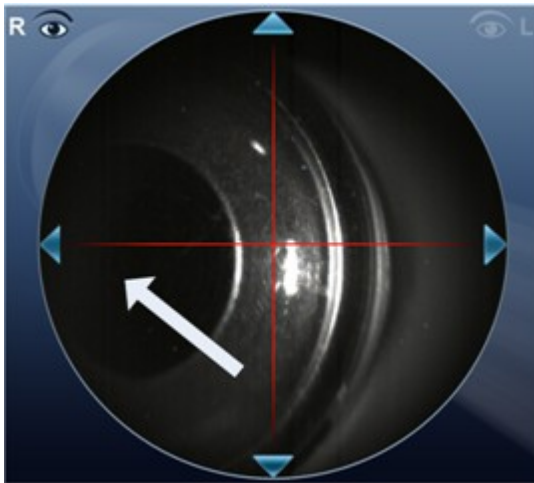
Before beginning a measurement, make sure that the patient's eye is centered in front of the Camera View:



No	Description
1	Camera View Shows image of patient's eye as it appears in front of the camera.
2	Direction arrows Press on arrows to center patient's eye in the camera view
3	Camera cross The patient's eye should be in the center of the camera cross
4	Chinrest arrows Use the arrows to raise or lower the chinrest

In the [Measure screen](#)¹²¹, you can see the camera view (#1), make sure that the patient's eye is in the center of the cross (#2). To center the eye use the arrows located on the sides of the camera view (#3) to move up,down, left or right. If you don't see the patient's eye in the camera view, you may also need to raise or lower the chin rest by pressing the arrows located on the right side of the measurement screen (#4).

If the eye is visible in the camera view, but not quite centered:



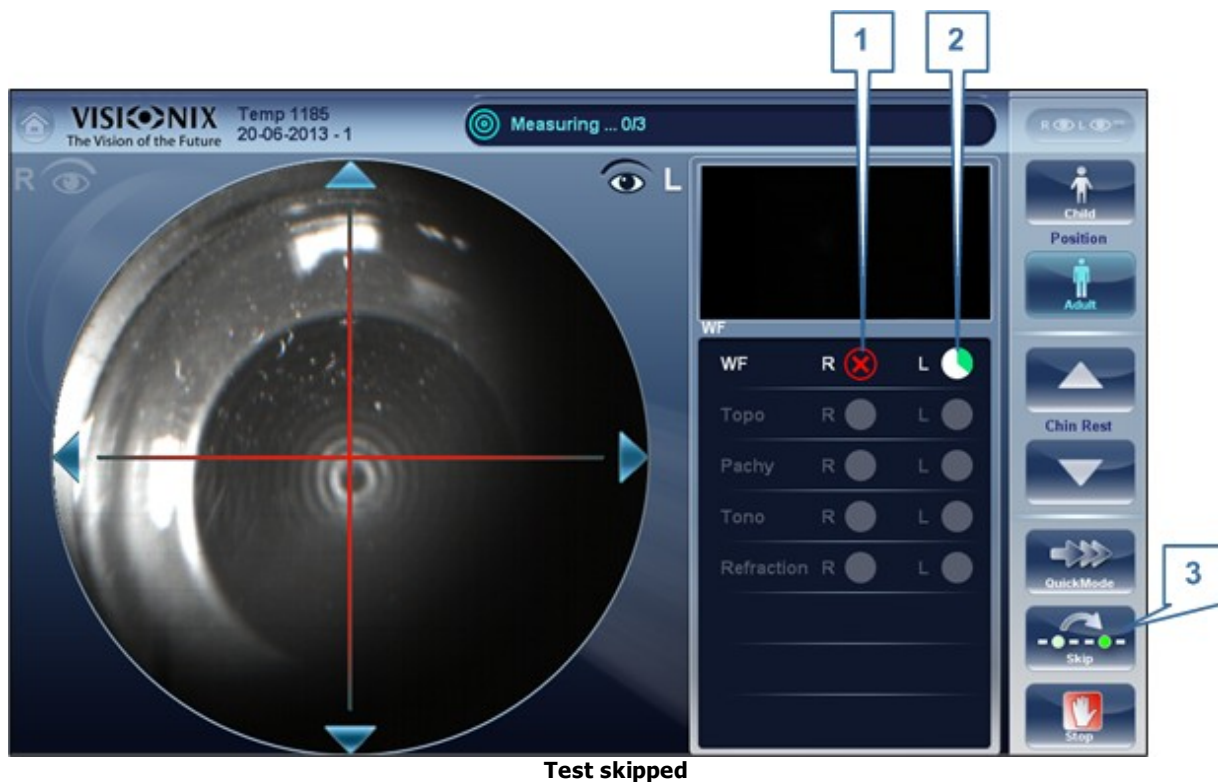
Tap on the center of pupil (from camera view- white arrow) , the device will automatically recenter itself around the pupil.

Note To ensure maximum accuracy, if the examiner accidentally moves the head of the VX130 so that the patient's eye is not centered in front of the camera view, the device will reposition itself so that it is re-centered in front of the eye.

Skipping a Measure during a Diagnostic

During a diagnostic, a **Skip** button is located at the lower-right side of the screen (#15 in the overview of the [Measure screen](#)²⁶ above). Select the button to skip the current test and begin the next test, if any more tests remain, or end the diagnostic and display the results in the [Results screen](#)³².

If a test is skipped during a diagnostic procedure, the circle representing it is marked with a red X (✘).



Test skipped

No	Description
1	Test skipped
2	Next test underway
3	Skip button

Speeding the Measurement Process Up

Once you have started running a diagnostic, you can choose to make the measurement process faster if necessary.

To speed the Wave Front measurement process up:

- In the [Measurement screen](#)²⁶, select **Quick Mode**. Note: this only works for the wave front measurement.

Stopping a Diagnostic Before it Is Finished

When a diagnostic is running, you can choose to stop it at any point.

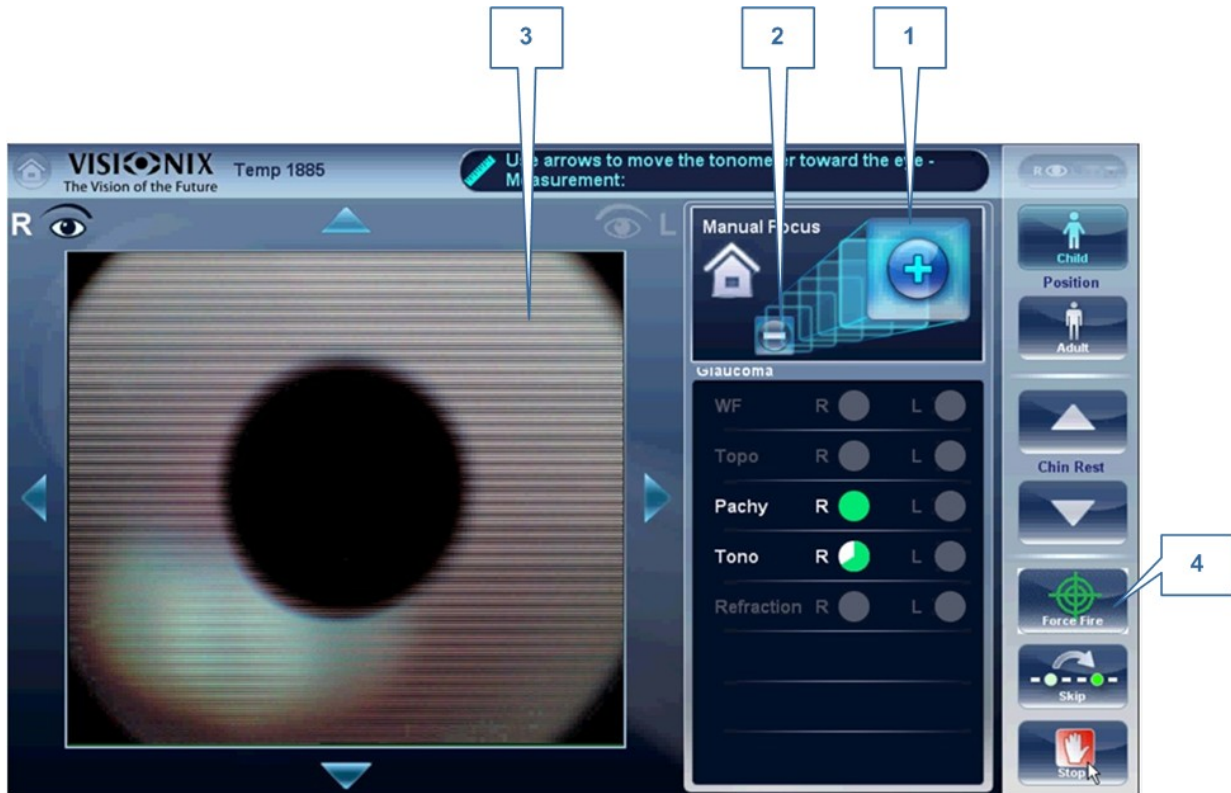
To stop the diagnostic before it is completed:

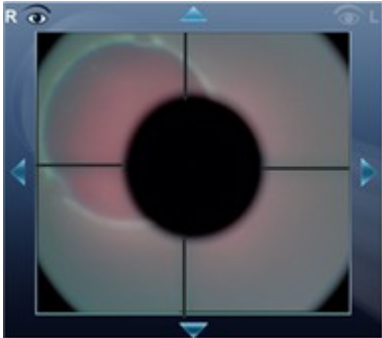
- In the [Measurement screen](#)²⁶, select **Stop**.


Glaucoma Evaluation

The VX130 provides **Glaucoma** evaluation by measuring both intraocular pressure (IOP) via air-puff tonometry, as well as pachymeter measurement to evaluate anterior chamber depth and irideo angles. You can run the **Glaucoma** evaluation as a stand alone measurement, or select the **LL** measurement, where it is automatically included.

After the unit completes the pachy measurement, it descends to the tonometer mode. It uses the centering and focusing acquired from the pachy measurement to center and focus the tonometer measurement. The following screen will appear.



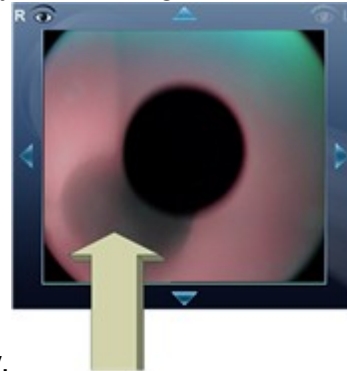
1	<p>Plus</p> <p>Select the + button to move the focus closer to the eye</p>
2	<p>Minus</p> <p>Select the - button to move the focus further from the eye</p>
3	<p>Focus of orneal ross</p>  <p>Once focused, the cross appears like this.</p>

1	<p>Plus</p> <p>Select the  button to move the focus closer to the eye</p>
4	<p>Force Fire</p> <p>When you are satisfied with the focus, you can select Force Fire to take a measurement, or wait for the device to take a measurement.</p>

Ask the patient to focus on the black dot. To automatically get the measurement the VX130 needs to be centered and focused. The cross should be focused and clear behind the black large dot. By default, the tonometer will usually do the measurement automatically, but sometimes you may need to help it center and focus.

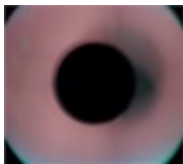
How to help the tonometer focus

1. If one circle is around the other, click on the grey circle to align both circles. Once






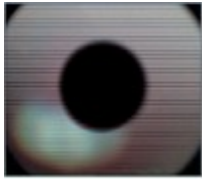




centered, the tono will fire the puff automatically.

2. If the grey circle is blurry. Press on the  button continuously until satisfied with the focus, and then the tono will fire the puff automatically.



Troubleshooting

If your camera View looks like this	What to do
	<p>The cross is not focused, the cross is not visible, only one white circle is visible. Press on the  continuously until the cross becomes focused. If the cross becomes blurry again, you passed the focus, press on the  button until it becomes clear again. When if focus, the tono will fire the puff automatically.</p>

If your camera View looks like this	What to do
	<p>The circles are not centered, the patient moved. Push the house icon  to get back to your initial point and then continue to focus and center the cross and circles.</p>
	<p>The cross is not focused, press the  continuously until the cross becomes better focused. If the cross becomes blurry again, you passed the focus, press the  button until satisfied with the focus. The tono will fire automatically at the correct focus.</p>

Focused and centered but no measurement taken?

If the circles and cross are focused and clear, but the device has not taken a measurement,



you can force the device to take a measurement by pressing Force Fire

If the device remains in one location, and does not seem to be autofocusing, check [Tono Automation](#)¹⁵⁵ to see if the device is set to **Semi** mode.

Semi Mode

By default, the device has an Auto focus which is fast and accurate. However, another focusing mode available is Semi Mode. In this mode, the tonometer will remain at the focal point found by the pachymeter, and correction of the focus must be done by the examiner. To adjust the focus, follow the steps listed above. To select the tonometer modes, go to [Tono Automation](#)¹⁵⁵. **Please note, in this mode, the device will remain at a set focus point, and all the focusing will be done by the examiner, no tono measurements will be taken if the device is not in focus.**

Demo Puff/Modify number of measurements

If you would like to demonstrate the tono puff for your patient, select the Parameters button and then press "Demo Puff". This popup menu also allows you to modify the number of times each eye is measured by the tonometer.



To modify the type of Pachy measurement, select Single or Multi from Parameters popup menu, and click Save. A Single measurement will give the pachymetry values for the cornea's center, whereas, the Multi pachy measurement can obtain data from the anterior and posterior surfaces of the cornea.

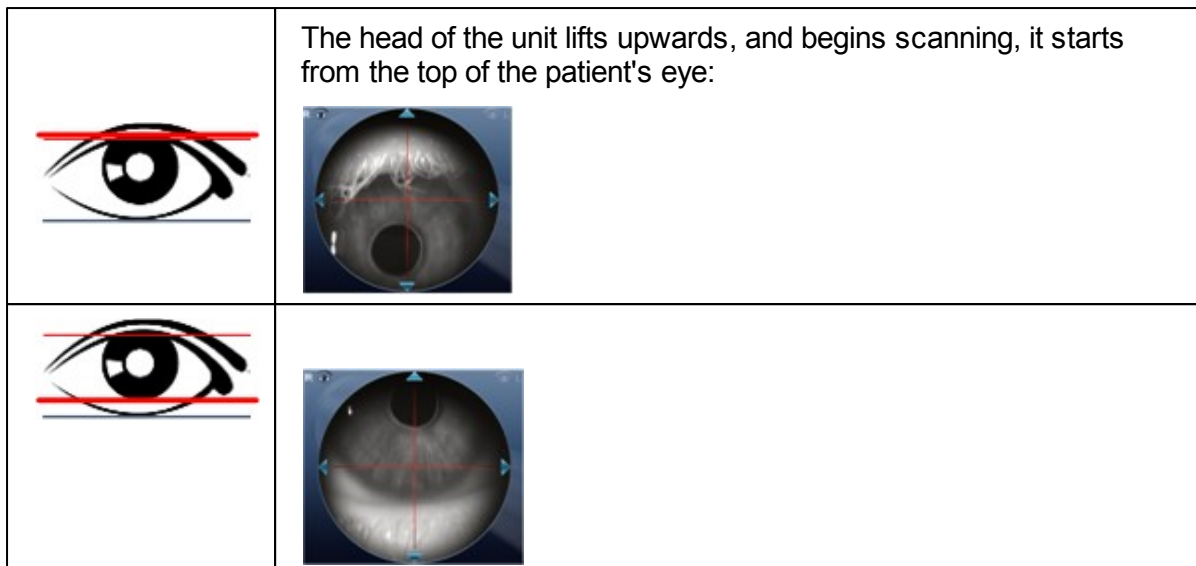
Note: The Multi pachy measurement takes a bit longer to complete the measurement.

Measuring Multi Slit

The Multi Slit pachy scans the cornea. This measurement may be taken along with other measurements, such as tonometry or wavefront, or just with the topography measurement.

1. Following the steps listed in [Centering the Patient](#)¹⁰⁷
2. Ask the patient to open their eyes **as wide as possible**, this will ensure minimum movement during the procedure and a larger coverage of the cornea.
3. The device automatically focuses and centers itself and then a blue light is shined on the center of the cornea (sometimes more than once).

	<p>The head of the unit lifts upwards, and begins scanning, it starts from the top of the patient's eye:</p>
	<p>It continues scanning downward until it reaches the bottom of the patient's eye.</p>



4. The device continues on to the Topo measurement, and the red placido discs are illuminated.
5. Once the measurement is completed, the device may complete different measurements depending on what was selected, or it will continue to the [Results](#) ³² screen.

If the patient's eye is partially closed, the Multi Slit measurement will not have enough measurement area and you will get a Failure message. In this case, the device will display the Single pachy measurement data.

Manual Focus

Manual Focus will automatically be activated if the device is unable to get a good focus, enabling the examiner to correct the focus manually using the **+** and **-** buttons. It may be activated in the following modes:

- **Topo Measurement**
- **Pachy**
- **Tono**

How do you know if you are in Manual Focus?

The tonometer measurement always has manual focus available along with its autofocus, that is its normal mode. However, the other measurements have indicators if the device was not able to autofocus. The **Topo** measurement and the **Pachy** measurements have indicator:

Topo Manual Focus Indicator:

During the topo manual focus, the top left window in the measurement screen has this image:



Pachy Manual Focus Indicator :

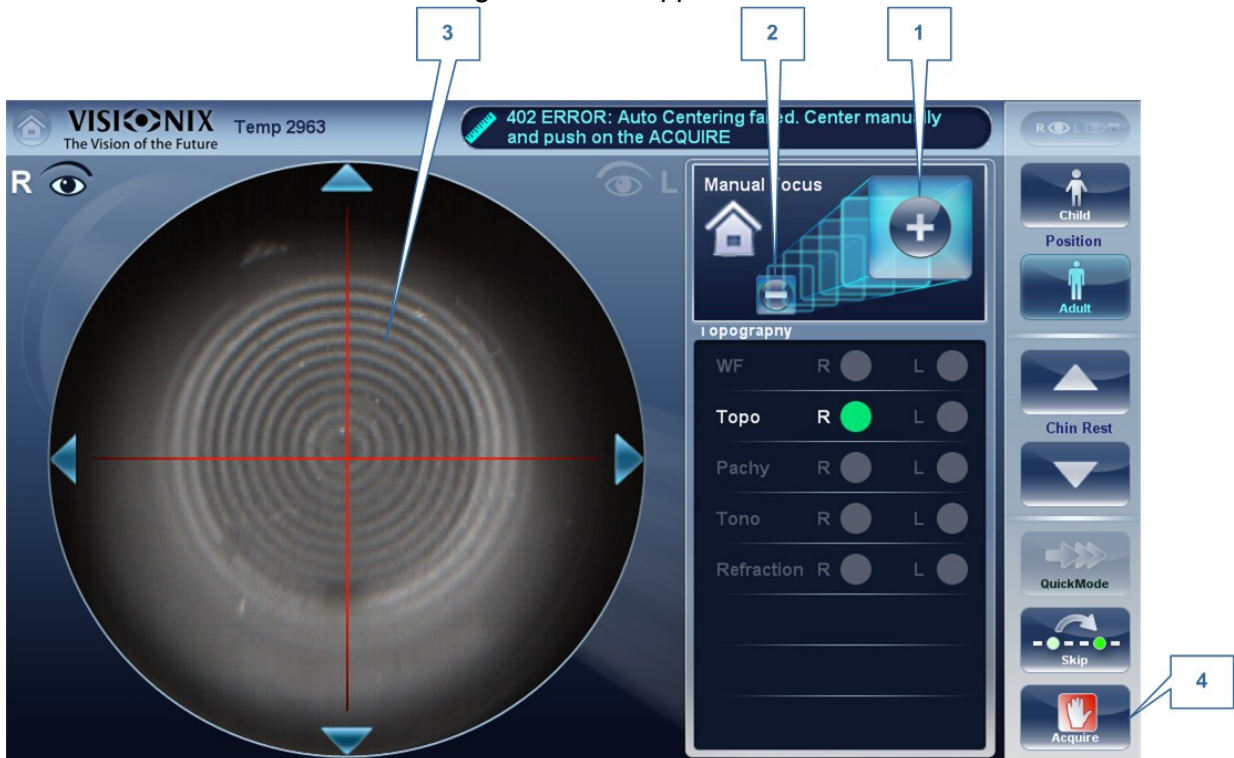
During the pachy manual focus, you will see two indicators, the image above (with the house icon), as well as the warning message, "Step 1: Center and Focus the rings and Select Acquire".



Tono Manual Focus

The Tono Manual Focus is always available alongside the tono autofocus. For instructions on improving the tono autofocus, go to [Glaucoma Evaluation](#)¹¹⁰.

Topo Manual Focus

During the **Topo** measurement, if device is unable to focus automatically, it will switch to **Manual Focus**. The following screen will appear:



1	Minus Select the  button to move the focus further from the eye
2	Plus Select the  button to move the focus closer to eye
3	orneal rings These rings should be as sharp and as dark as possible
4	cquire Press this button once you are satisfied with the focus of the corneal rings

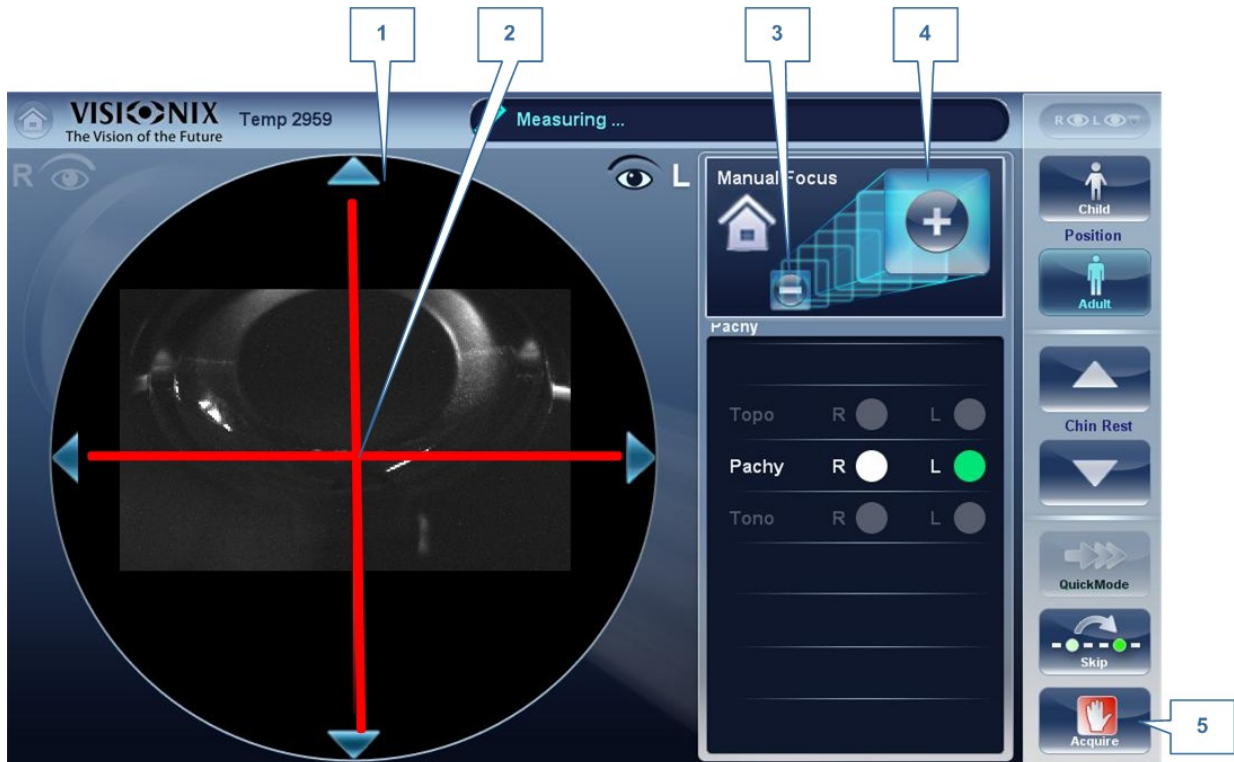
Note this is also the first step to **Pachy Manual Focus**

Pachy Manual Focus



Immediately before the device switches to Pachy Manual Focus, a message appears, "Step 1: Center and Focus the rings and select ACQUIRE". Select "OK", and complete the steps listed in [Topo Manual Focus](#)

Once that step is completed, you will see a message, "Step 2: Use the focus buttons to align the cornea Apex and then select Acquire." After selecting, "OK", you will see the following screen:

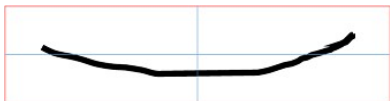


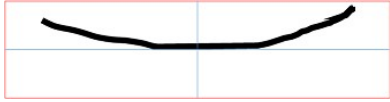

e.



Pachy Manual Mode (Step 2)

1	<p>orneal pex</p> <p>The corneal apex should be aligned in the center of the cross horizontally, vertically it should be slightly above the red cross (as seen in the image above).</p>
2	<p>ross</p> <p>The Cross is used to center the corneal apex vertically and horizontally.</p>
3	<p>Minus utton</p> <p>Select the  button to lower the corneal apex</p>
4	<p>Plus utton</p> <p>Select the  button to move the raise the corneal apex</p>
5	<p>cquire</p> <p>Completes Measurement</p>

Sometimes, the cornea is not centered above the cross (#2 above) accurately, and may appear below it or above it. For example, if it appears like this :

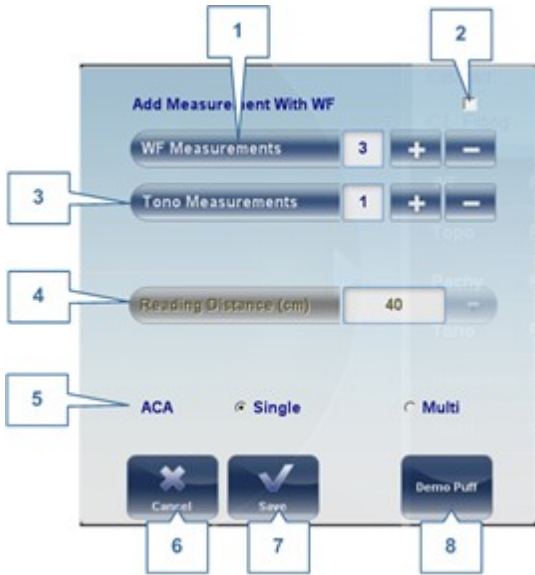
Image of the Camera View	How to Fix it
 <p>Cornea is too low- illustration</p>	<p>Use the  and  buttons to lower or raise it until it is centered.</p>
 <p>Cornea is centered- illustration</p>	<p>Cornea is centered properly, you can continue with measurement, press cquire.</p>
 <p>Centered Corneal Image</p>	<p>This is a properly centered corneal image.</p>

After completing this step, select, **cquire**.

Near Vision Testing

To add Near Vision Testing to the Wavefront Diagnostic:

In the Measurement screen, select the Parameters button:



No	Description
1	Wave Front The number of Wave front measurements to be selected.
2	Include Select this checkbox to include NV testing with wavefront
3	Tono Measurements The number of tono measurements to be measured
4	Reading Distance Changes distance of Near Vision testing, can be adjusted from 30-60cm
5	Select Single or Multi Slit pachy measurement.
6	Cancel Cancels the near vision test
7	Save Saves your preferences
8	Demo Puff Select to demonstrate tonometer air-puff.

Note: Any changes made via the Parameters popup will only affect the current measurement.

6.3 Working with the Test Results

The test results are displayed automatically in the [Results screen](#)¹³² as soon as the diagnostic procedures are finished. You can choose from a variety of ways to display the results in the **Results** screen. In addition, you can print the results, export them to a file on an external device, or initiate additional diagnostics from within the **Results** screen. The test results are also automatically saved in the patient database, so you can see them again at any time.

-
- [Retaking/ Adding a Measurement](#)¹¹⁹
 - [Exporting the Results to a Phoropter](#)¹²⁰
 - [Exporting the Results to a Network or USB](#)¹²¹
 - [Exporting the Results to an External Device](#)¹²³
 - [Export the Results to an Email](#)¹²⁴
 - [Exporting the Results to Remote Access](#)¹²⁶
 - [Printing the Test Results](#)¹²⁶
 - [Generating a Report](#)¹²⁷
 - [Saving the Test Results](#)¹²⁸

Retaking/Adding a Measurement

Retaking a measurement

If for some reason, you are dissatisfied with the results of your examination, there is an option of retaking the measurement before exiting the results menu. Immediately after completing the



measurement, select the **Measure button**.

After selecting the diagnostic you wish to perform, the following screen opens:

If the new diagnostic selected, contains measurements that were already performed, the device will ask you if you wish to repeat them. Select the measurements you wish to be repeated, and then select, "**OK**". Continue on with the measurement as normal.

Adding measurements

To add measurements to your results screen, select the **Measure** button immediately after completing the measurement. If no measurements are to be repeated, this popup menu will not open. Select a diagnostic and continue with the examination. The additional will appear in your results screen along with your previous measurements.

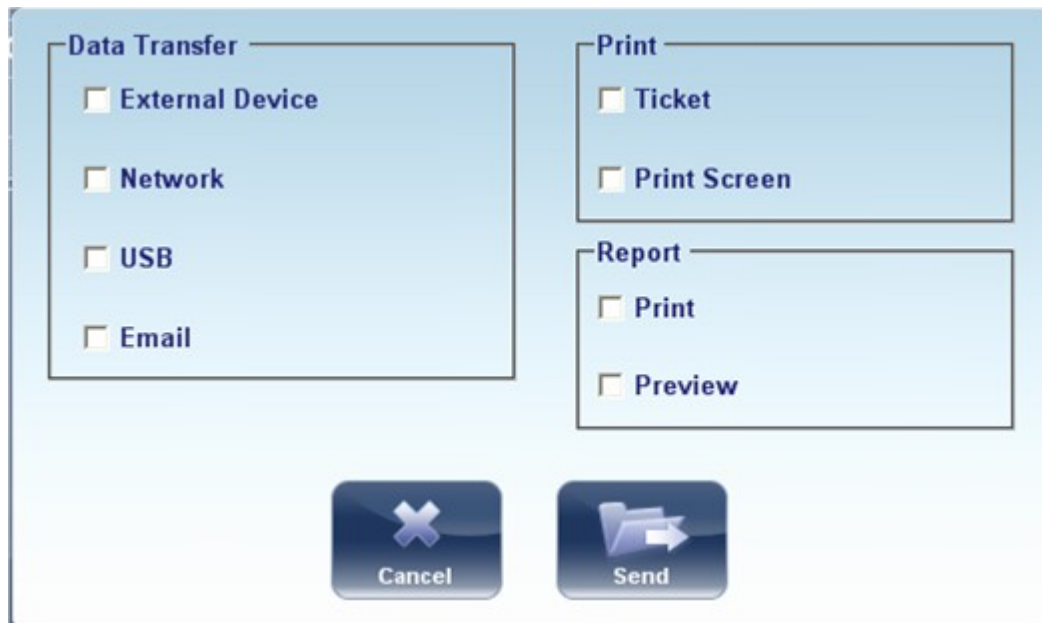
Note When you repeat a measurement via the **Measure** button, the previous results are erased.

Exporting the Results to a Phorofter

From the [Results screen](#)¹³², you can export test results to a phorofter that is either connected directly to the unit through its serial port or its USB port, or can be accessed over the network to which the unit is connected.

To export test results to phorofter:

- In the **Results** screen, select the **Export** button.
- Under **Data Transfer**, select the **External Device**.
- Select **Send**. The test results are sent to the phorofter.



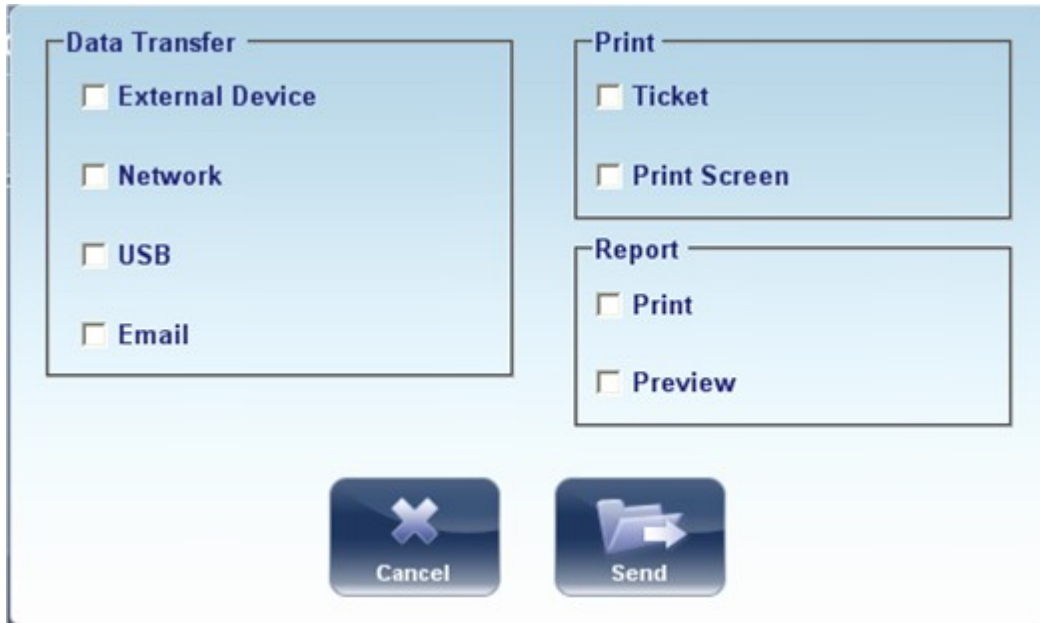
Note Make sure that the phorofter is selected in the [Export Settings menu](#)¹⁶⁷ and that it is properly connected to the VX130.

Exporting the Results to a Computer or USB Storage Medium

From the [Results screen](#)³², you can export test results to a computer that can be accessed by the VX130 via the local network, or to a USB storage medium (such as an external hard disk, a flash drive, or a memory card in a card reader connected to the unit's USB port) connected to the unit, from the **Export** dialog box.

To export test results to a Network or USB:

- In the **Results** screen, select the **Export** button. An Export dialog box opens.



Export dialog box

- Under **Data Transfer**, you may select your preference, **Network**, or **USB** .
- Select **Send** and this browser opens



- Browse for your preferred location and Select **OK**.

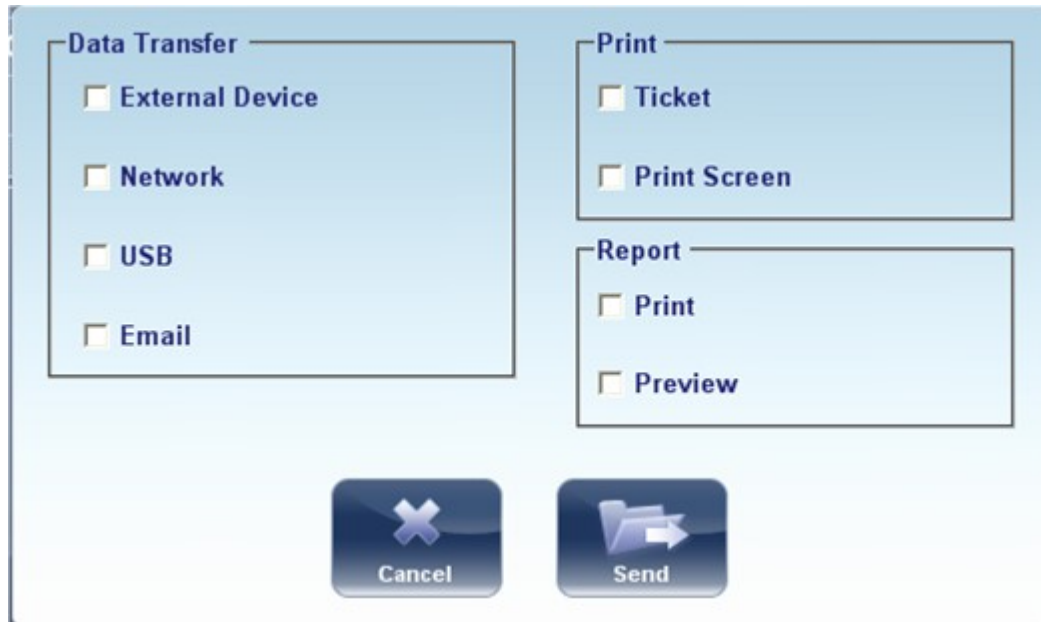
Note: Make sure that the devices are connected to the VX130.

Note Before connect a **USB** memory stick, please check that them to ensure it is virus free.

Exporting the Results to an External Device

To export test results to an External Device:

- In the **Results** screen, select the **Export** button. An Export dialog box opens.



Export dialog box

- Under **Data Transfer**, select **External Device**.
- Select **Send**.

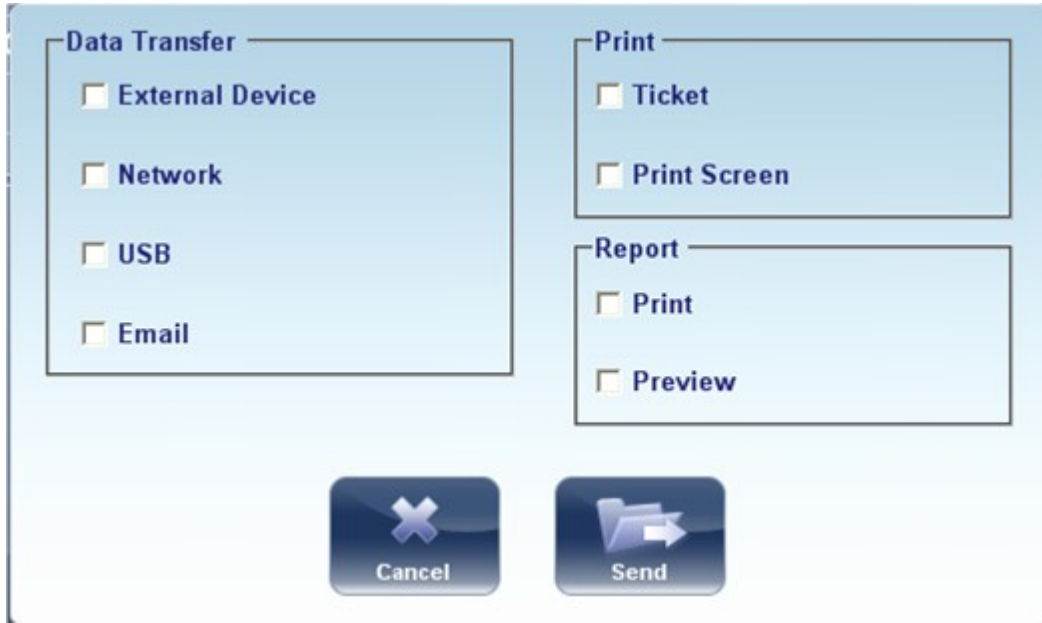
Note Make sure that the devices are connected to the VX130 and that External Device is configured properly in the [Export Settings](#)¹⁶⁷.

Exporting the Results to an Email

From the [Results screen](#)³², you can export test results to an email message to a default recipient, or to a new recipient.

To export test results in an Email message:

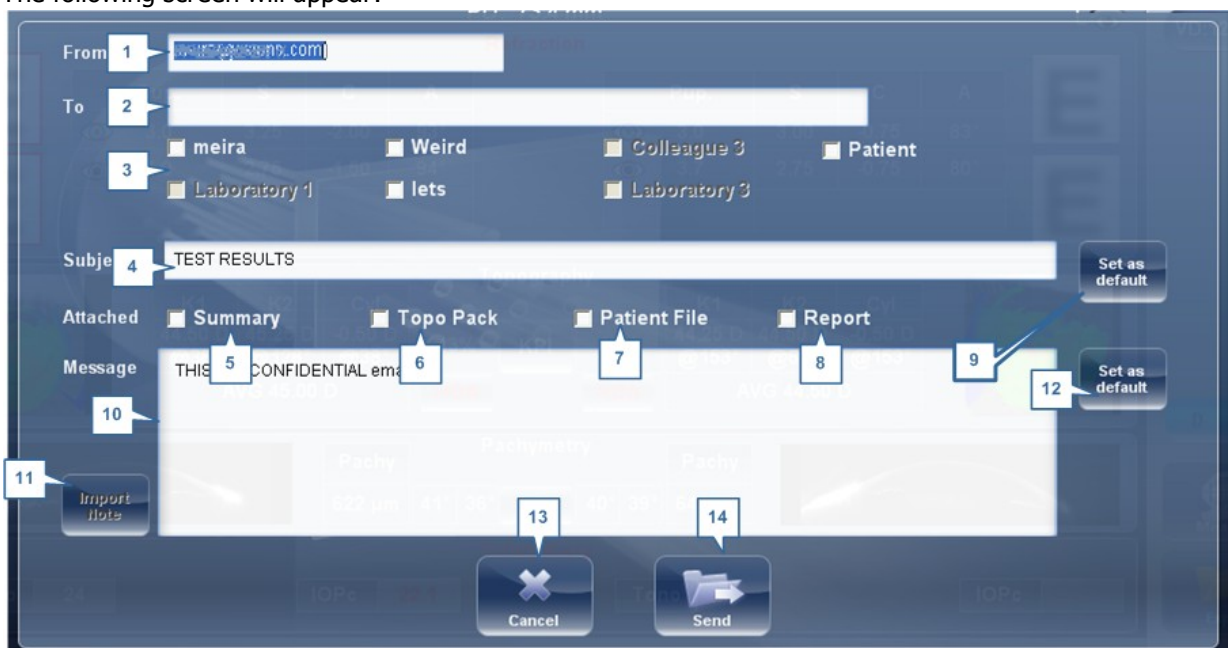
- In the **Results** screen, select the **Export** button. An Export dialog box opens.



Export dialog box

Select **Email**, and **SEND**, and the following screen appears:

The following screen will appear:



No	Description
1	<p>From</p> <p>This displays by default the name of the sender from the settings menu.</p>
2	<p>To</p> <p>Type the email address you want the information sent to in this field or go to #3 to select the default recipient.</p>
3	<p>Default Recipients</p> <p>The default recipients are displayed here. To send an email, select the checkboxes next to the names you want the email sent to. Both Colleagues and Laboratories are available for selection. To configure default recipients, go to Printing/Email¹⁷¹.</p>
4	<p>Subject</p> <p>This can be free text or a default subject. To select the current subject as default, click on #9, "Set as Default" button.</p>
5	<p>Summary</p> <p>Select to add summary screen to the message.</p>
6	<p>Topo Pack</p> <p>Includes the Elevation maps.</p>
7	<p>Patient File</p> <p>This is the patients data in a zip file.</p>
8	<p>Report</p> <p>This is the pdf file of the patient's report</p>
9	<p>Set as Default</p> <p>Sets the subject as a default subject</p>
10	<p>Message ox</p> <p>Add your message here.</p>
11	<p>Import Note</p> <p>Includes the note from the patient file in the body of the message.</p>
12	<p>Set as Default</p> <p>Sets the message as default message.</p>
13	<p>ancel</p> <p>Cancels the message.</p>
14	<p>Send</p> <p>Click to send the message.</p>

Note To send an email, the Email settings must first be configured in the [Printing/Email](#)

[171](#) settings menu.

Exporting to Remote Access

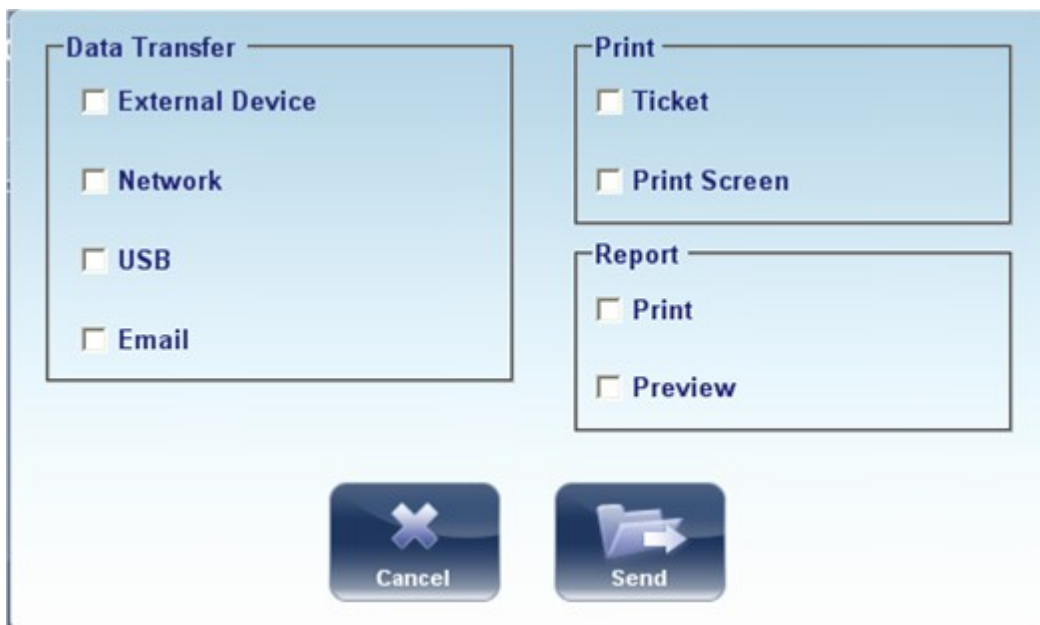
Data is automatically exported to Remote Access immediately after taking a measurement (by default). However, if for some reason, you wish to retroactively export the data, it is possible to do so, via the [Rebuild Remote Access](#)¹⁷⁴ button in the Settings menu.

Printing the Test Results

In the [Results screen](#)³², you can print the test results by exporting them to the built-in printer.

To print the test results on the built-in printer:

- In the **Results** screen, select the **Export** button.
- Under **Print**, select **Ticket**.
- Select **Send**.



Export dialog box

To print a screenshot of your results:

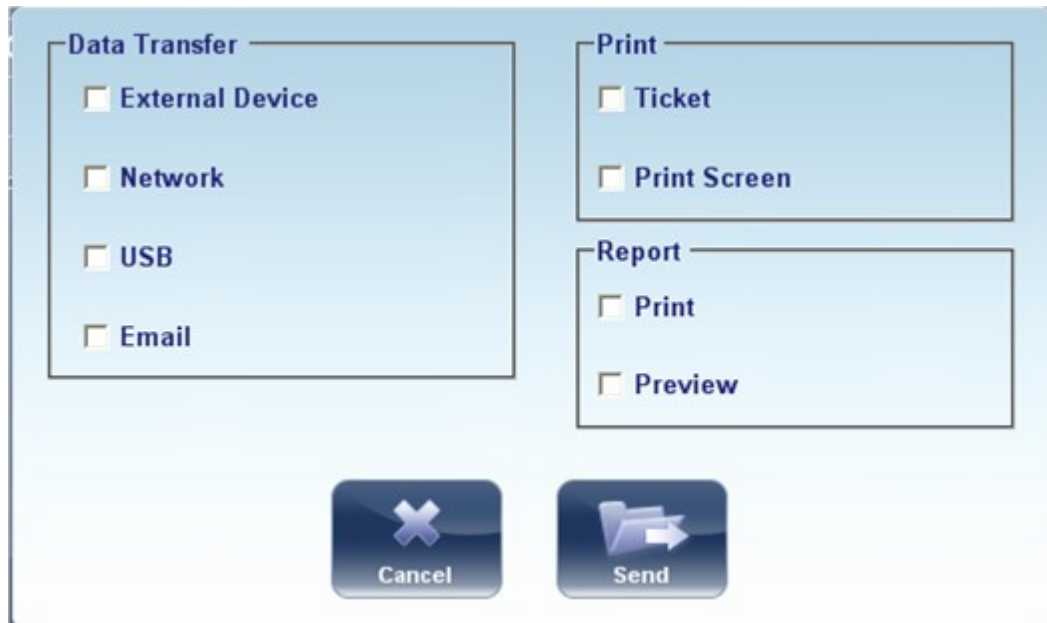
- Under print select **Print Screen**
- Select **Send**

Note: to print to an external printer, you must have it selected in the [Export Print Settings](#)¹⁷¹ menu.

Generating a Report

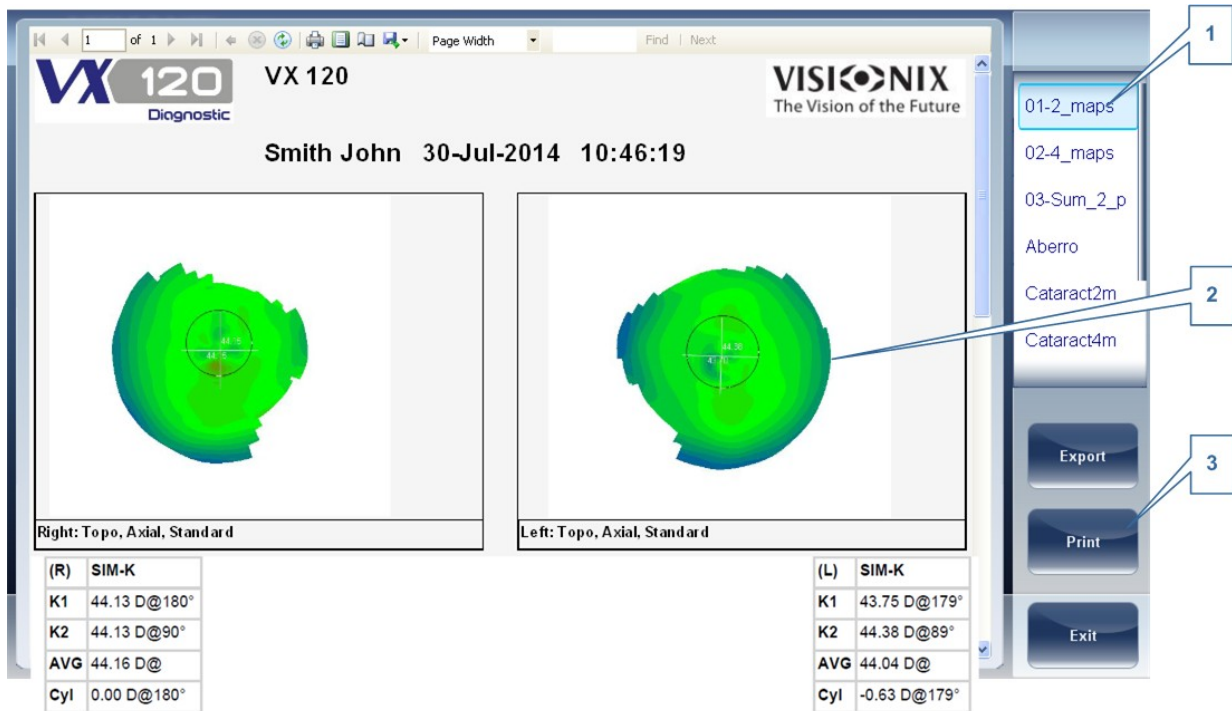
To generate a report:

- In the **Results** screen, select the **Export** button.
- The following dialog box opens:



- Under **Print**, select **Report**.
- Select **Send**.

The Report viewer window opens:



No	Description
1	Template Menu Select the report template according to your preferences
2	This shows a preview of the maps and data available in the report
3	Select Print to print the report, or Export to send it to another device.

For more information on possible **Report** configurations, go to [Configuring a Report](#)¹⁷⁹

Saving the Test Results

The test results are automatically saved in the database. If a patient was selected before the diagnostic was initiated, the test results are saved under the patient's name. If no patient was selected when the diagnostic was initiated, the system generates a temporary name, with surname "Temp," and a number for the first name (e.g., "Temp 1185").

Temporary test results are automatically deleted from the system at given intervals (once a day, week, or month, depending on the configuration settings; see [Clearing History](#)¹⁴¹). If you want to save a temporary test result permanently, you must either cut the results from the temporary record and paste them into a normal patient record, or add the correct patient information to the temporary record. Both of these actions can be performed in the [Patient screen](#)¹¹⁸ (see [Moving Test Results to a Different Patient](#)¹³⁵ and [Modifying a Patient's Information](#)¹⁰¹).

. Managing the List of Test Results

Stored test results are managed in the [Patient screen](#)¹¹⁸. The results are stored under the patient's name.

To see the list of test results for a patient:

- In the [Patient screen](#)¹¹⁸, on the left side of the screen, select the patient's entry. The patient's entry is highlighted with a blue border, and their test results are listed on the right side of the screen.

-
- [Selecting Test Results](#)¹³⁰
 - [Loading Test Results](#)¹³¹
 - [Exporting Test Results from the Patient Screen](#)¹³²
 - [Exporting Test Results from the Results Screen](#)¹³³
 - [Moving Test Results to a Different Patient](#)¹³⁵
 - [Deleting Test Results](#)¹³⁵

7.1 Selecting Test Results

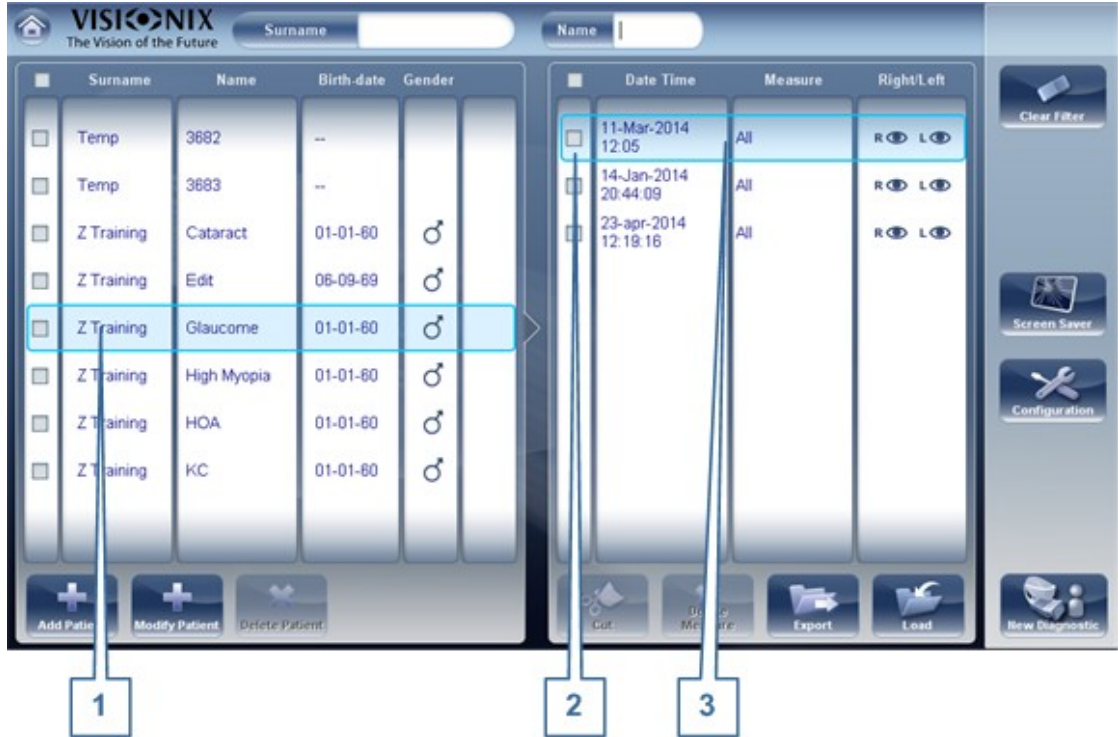
There are two ways test results that are stored in the database can be selected: individually, or as part of a group. To select them individually, select the result you wish to modify, and then you can view, print, or export it. The results can be selected as a group, in order to move them from one patient record to another, or to delete them from the database.

To select a single test result:

- In the [Patient screen](#)¹⁸, in the result list, select the result. The result is highlighted with a blue border.

To select one or more test results in order to move or delete them:

- In the [Patient screen](#)¹⁸, in the result list, select the check box beside each result you want to delete.



Test results selected individually and as a group

No	Description
1	Selected patient
2	Check box selected (to select results as a group)
3	Result selected (as an individual)

7.2 Loading Test Results

To load test results:

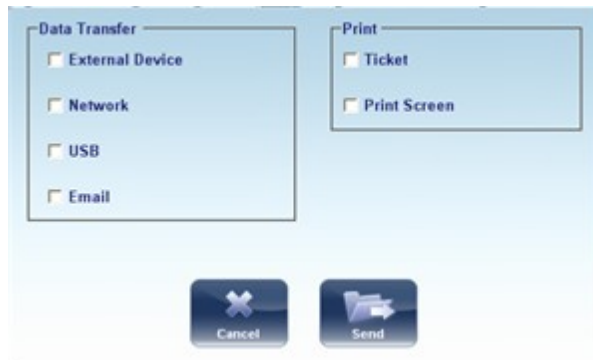
- In the [Patient screen](#)¹⁸, in the result list, select the result. The result is highlighted with a blue border.
- At the bottom of the list, select **Load**. The selected test result is opened in the [Results screen](#)³².

7.3 Exporting Test Results from the Patient Screen

Test results can be exported from the Patient screen to the built-in printer for printing as a ticket or to a file on an external device connected to the unit.

To export test results from the Patient screen:

- In the Measures list (#6 in the Patient Screen [above](#)¹⁸), select the measure you want to export. The measure is highlighted with a blue border.
- At the bottom of the list, select **Export**. The **Export** dialog box opens.



Export dialog box

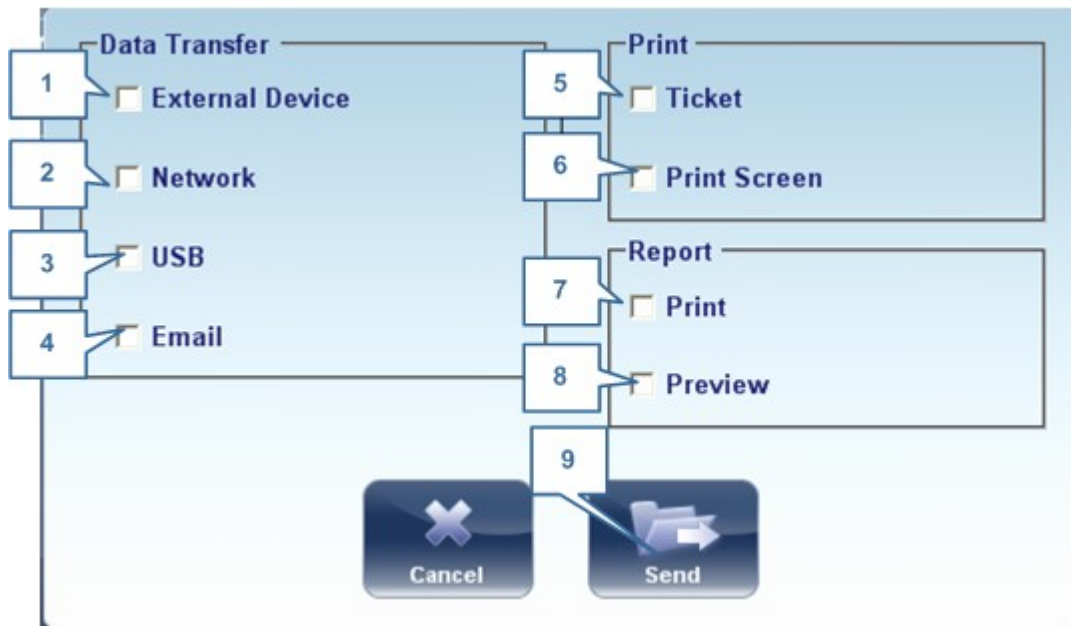
- To print the test results on the built-in printer, under **Print**, select **Ticket**, and then select **Send**. The ticket is printed.
- OR -
- To export the test results to an external file, under **Transfer**, select the external device, and then select **Send**. A file saver dialog box opens. Navigate to the folder in which you want to save the file, enter a name for the file, and select **Save**.

7.4 Exporting Test Results from the Results Screen

Test results can be exported from the Results screen to the built-in printer for printing as a ticket or to a file on an external device connected to the unit.

To export test results from the Results screen:

- Select the **Export** button. The **Export** dialog box opens.



Export dialog box

No	Description
1	<p>External Device</p> <p>Select to transfer data from the device to an external device; for example, XML data (and XML databases), or data to a phorofter head. To view external device options, go to the Export Settings¹⁶⁷ configuration menu.</p>
2	<p>Network</p> <p>Select to transfer data from the device to the network. To view data options and configure an export path, go to the Export Settings¹⁶⁷ configuration menu.</p>
3	<p>US</p> <p>Select to transfer data from the device to a USB. To view data export options go to the Export Settings¹⁶⁷ configuration menu.</p> <p>Warning-before connecting a US to the device, please make sure that it has been first screened for viruses.</p>

No	Description
4	<p>Email</p> <p>Select to transfer data to email to recipients. Go to Email settings¹⁷¹, to configure host and recipient options.</p>
5	<p>Ticket</p> <p>Allows printing the data on a ticket in the device's internal printer</p>
6	<p>Print Screen</p> <p>Select to print a screenshot of the summary screen, this requires a connection to an external printer.</p>
7	<p>Print</p> <p>Prints the report selected as default in the Printing menu¹⁷¹, this requires a connection to an external printer.</p>
8	<p>Preview</p> <p>Opens a report preview of the measurement results.</p>
9	<p>Send</p> <p>Confirms the selection and performs the transfer</p>

- To print the test results on the built-in printer, under **Print**, select **Ticket**, and then select **Send**. The ticket is printed.

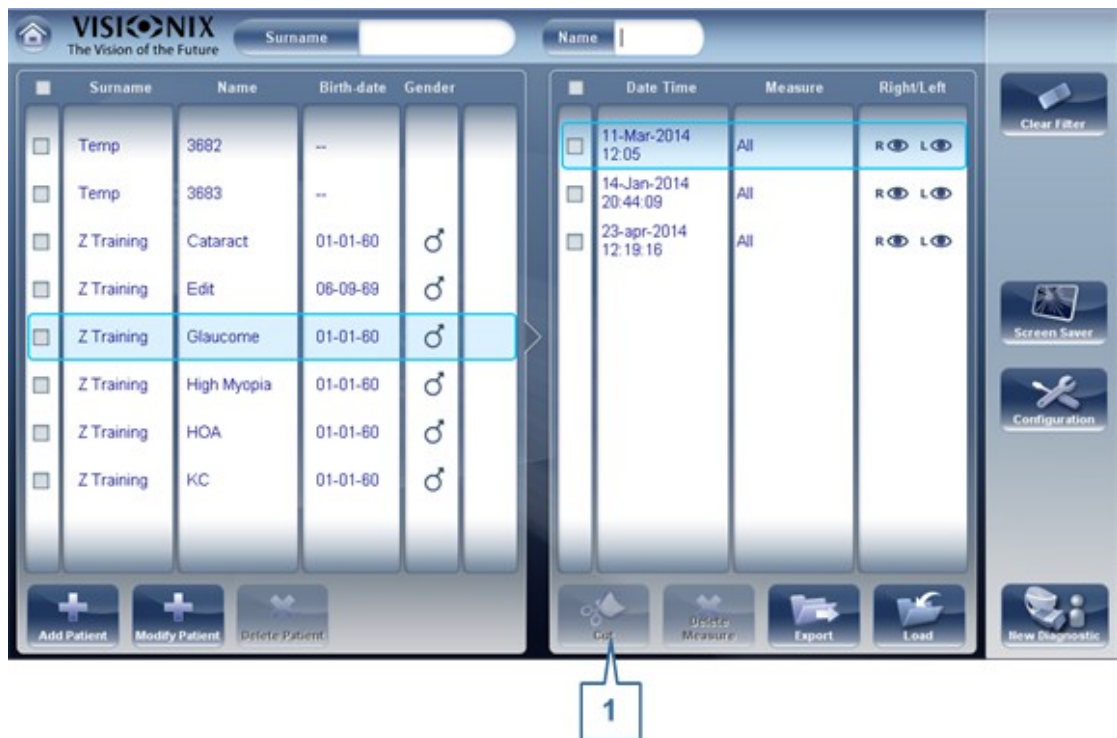
- OR -

To export the test results to an external file, under **Transfer**, select the external device, and then select **Send**. A file saver dialog box opens. Navigate to the folder in which you want to save the file, enter a name for the file, and select **Save**.

7.5 Moving Test Results to a Different Patient

To move test results to a different patient:

- In the [Patient screen](#)¹⁸, in the results list, select the result. The result is highlighted with a blue border.
- At the bottom of the list, select **ut**. The selected test result is removed from the current patient record. The patient selection is cleared, and, as a result, no patient is selected and no test results are listed in the results list.
- Select the patient entry to which you want to move the test results. The patient entry is highlighted with a blue border, and the **ut** button is replaced with a **Paste** button.



Patient screen with Paste button

- Select **Paste** (no. 1). You are prompted to confirm that you want to paste the selected test results into this entry.
- Select **Yes**. The test results are added to the selected patient record, and appear in the list of test results on the right side of the screen.

7.6 Deleting Test Results

To delete test results from a patient record:

- In the [Patient screen](#)¹⁸, select the check box beside each test result you want to delete.
- At the bottom of the screen, select **Delete Measure**. You are prompted to confirm that you want to delete the selected measures.
- Select **Yes**. The test results are deleted from the patient record.

. Managing the Database

The patient database contains all the patient information stored by the system. All test results are associated with specific patient records; even if you performed diagnostic tests without inputting any patient information, the results are stored in the patient database under automatically generated temporary patient records. You can also export the entire contents of the database to an external file as a backup; import patient records that were previously exported; and delete all of the patient records, or all of the temporary patient records, from the VX130 database.

For general information about working with patient records, see [Patient Screen](#)¹⁸.

-
- [Exporting and Importing the Database](#)¹³⁷
 - [Deleting All Temporary Patient Records](#)¹⁴¹
 - [Deleting All Patient Records](#)¹⁴¹

8.1 Exporting and Importing the Database

You can export the entire database to a folder that is stored on an external device, such as a USB hard drive or flash drive, or a PC that is on the same LAN as the VX130. You can also import the data from any the Manufacturer database. It is possible to either import an entire database or just the data for a single patient.

To export your database to an external device:

- Selecting the **Maintenance** tab opens the following screen:



in the **Database** section on the right, select the **Backup** button



. A **Browse for Folder** dialog box opens.



- Navigate to the device on which you want to save the exported database data, and select (or create and select) the folder in which you want to save the data.
- Select **OK**. The backup begins. A folder called *ClientDB* is created in the folder you selected, and the data from the database is saved in it. A **Copying** dialog box opens and shows the progress of the backup, and a **Database Backup in Progress** message is displayed.

When the backup is completed, a new message appears asking if you want to clean the data from the VX130 database.



Database Backup in Progress message



Clean Database message

- If you want to delete all of the data from the database on the VX130 unit, select **Yes**. Otherwise, select **No**.

Note For additional information about deleting all of the data from the database, see [Deleting All Patient Records](#)¹⁴¹.

To import data from an exported database:

- In the [Configuration screen](#)¹⁴⁸, in the **Maintenance** tab, in the **Database** section on the right, select **Data Import**. A **rowse for Folder** dialog box opens.
- Navigate to the device on which the database data is located, and select the *ClientDB* folder in which it is stored.

Note If you wish, you can import the data for a single patient rather than all the data in the database. To do so, in the *ClientDB* folder, select the patient's folder. (The name of the folder contains the patient's full name, birth date, and gender. For example, the folder called *Melodie#Emma#12-03-65#f* contains the data for Emma Melodie, whose birthday is 12.3.65 and whose gender is female.)

- Select **OK**. The data import process begins. A **Copying** dialog box opens and shows the progress of the import, and a **Retrieve Database in Progress** message is displayed. When the import process is completed, the dialog box and the message disappear.



Retrieve Database in Progress message

Note: During the import process, you may be prompted to confirm that you want to overwrite an existing folder with an imported one if they both have the same name. Data for new patients will be added to the existing database, and will not be overwritten in your database. Select **Yes** to overwrite the existing data.

8.2 Deleting All Temporary Patient Records

Temporary patient data is automatically deleted from the database either every day, week, or month, depending on the configuration settings (see [Device Parameters](#))¹⁴⁸. In addition, you can manually delete all temporary data at any time.

To delete all temporary patient records from the database:

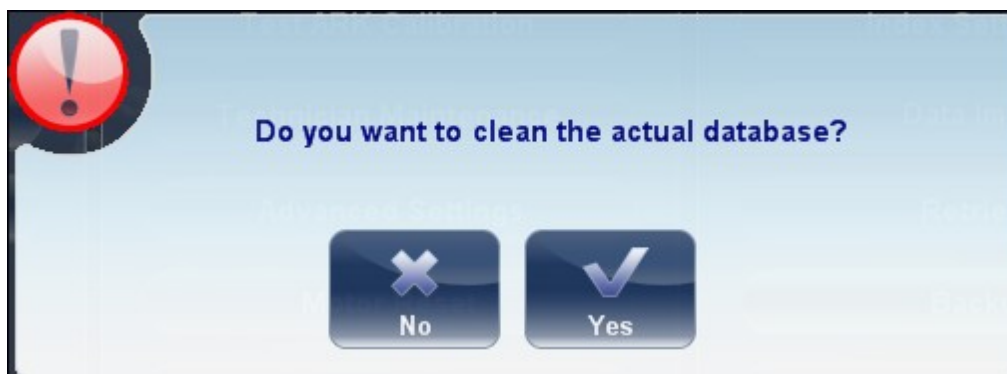
- In the [Patient screen](#)¹¹⁸, in the **Surname** filter, type *Temp*. Only patient records whose surname field begins with *Temp* are displayed. This includes all of the temporary patient records in the database.
- In the title bar of the Patient list, select the check box (#8 in the diagram of the [Patient screen](#)¹¹⁸).
- Ensure that there are no patient records displayed that are not temporary records (that is, records of patients whose surnames begin with "Temp"). If there are any, clear the check boxes beside their names.
- Below the Patient list, select **Delete Patient**. You are prompted to confirm that you want to delete the selected patient records.
- Select **Yes**. The selected patient records are deleted.

8.3 Deleting All Patient Records

If necessary, you can delete the entire Patient database.

To delete the entire Patient database:

- In the [Configuration screen](#)¹⁴⁸, in the **Maintenance** tab, in the **Database** section on the right, select **Data Deletion**. A appears asking if you want to clean the data from the VX130 database.



Clean Database message

- Select **Yes**. You are prompted to confirm that you want to delete all of the records in the database.
- A **Deleting** dialog box opens, and shows the progress of the deletion process. When the process is completed, the dialog disappears.

. General actions and Features

This chapter provides additional information about the VX130 and how to work with it: using the screensaver and securing the screen with a password, entering text into text fields, connecting a keyboard and mouse to the unit, updating the software, and getting assistance.

-
- [Launching the Screen Saver](#)¹⁴³
 - [Securing the Screen](#)¹⁴³
 - [Entering Text](#)¹⁴³
 - [Updating the Software](#)¹⁴⁵
 - [Getting Assistance](#)¹⁴⁶

9.1 Launching the Screen Saver

You can launch the screen saver from either the [Home screen](#)¹⁷ or the [Patient screen](#)¹⁸.

To launch the screen saver:

- Select the **Screen Saver** button.

The unit can also be configured to launch the screen saver automatically after a specified number of minutes have passed without any user actions (see [Screen Saver](#)¹⁴⁹).

Note We recommend adding a password to the screensaver to prevent access by unauthorized people. To learn more about adding a password, go to, [Securing the Screen](#)¹⁴³.

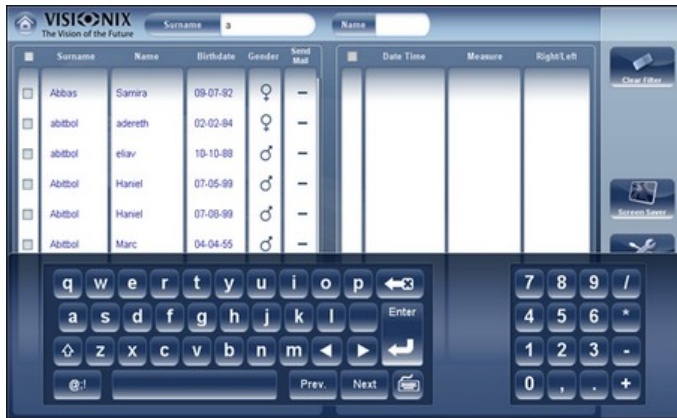
9.2 Securing the Screen

You can secure the system by requiring a password to deactivate the screen saver. Ideally, you should also configure the screen saver to start automatically after a few minutes with no user activity. For additional information, see [Screen Saver](#)¹⁴⁹.

9.3 Entering Text


Whenever you select a text field, such as the field in which you enter a patient's name (see [Adding New Patients](#)⁹⁸), a virtual keyboard opens on the screen to enable you to enter characters. In addition, if you wish, you can connect a mouse and/or a keyboard to the unit's USB ports. If you connect a keyboard, you can enter characters into text fields with either the virtual keyboard or the physical keyboard. Similarly, if you connect a mouse, you can select characters in the virtual keyboard either by tapping them on the touch screen or by clicking

them with the mouse.



Virtual Keyboard open in Patient screen

To close the virtual keyboard:

- Select the  button.

9.4 Updating the Software

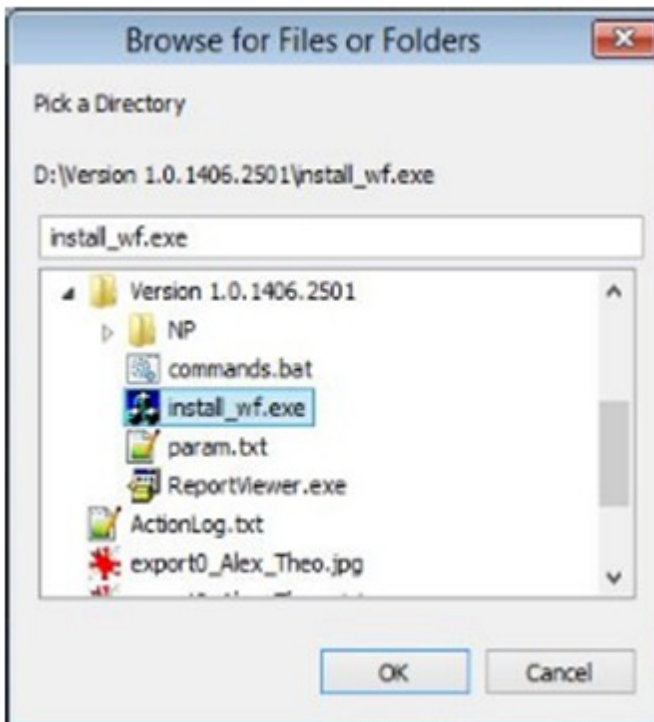
When the Manufacturer releases a software update, you can use it to update the software on the VX130 unit.

To update the software:

- After receiving the update file from the Manufacturer and save it either on the VX130 itself or on a device to which it can connect. (For example, download the update file to a USB flash drive and then plug the flash drive into the unit's USB port.)
- From either the [Home screen](#)¹⁷ or the [Patient screen](#)¹⁸, open the **onfiguration** screen.
- Select the **Maintenance** button. The **Maintenance** tab opens.
- On the left side of the screen, under **Software Maintenance**, select **Software Upgrade**



A file selector dialog box opens



- Navigate to the update file.
- Select **OK**.

9.5 Integrated Help

The VX130's help manual can be accessed directly from the software. To access the Help



files, click on the icon. To close the Help files, click on the "X" located at the top left of the screen.

9.6 Getting Assistance

If your VX130 is connected to the internet, technical-support staff can connect to the unit on-line if necessary to give guidance and troubleshoot problems. This feature makes use of Teamviewer, a software package that enables remote control and Desktop sharing of PCs. You can activate Teamviewer in the [Configuration screen](#)¹⁴⁸, in the **Maintenance** tab. For additional information about this option, please contact your technical support team.

10. onfiguring the Unit

10.1 Accessing the Configuration Settings

To open the Configuration screen from the Home screen:

- Select the **onfiguration Screen** button (#5 in the diagram [above](#)¹⁷).



To open the Configuration screen from the Patient screen:

- Select the **onfiguration** button (#12 in the diagram [above](#)¹⁸).

10.2 Overview of the Configuration Screen

The **onfiguration** screen gives you access to the VX130's settings and system maintenance functions.



No	Description
1	<p>Help</p>  <p>Click on the  to open the help guide. To close the Help guide, click on the X at the corner of the screen.</p>
2	<p>Sub-tab buttons</p> <p>Some of the tabs are divided into sub-tabs. Select a button to display the sub-tab.</p>

No	Description
3	<p>Functional buttons</p> <p>Standard buttons that are available in all the onfiguration screen tabs:</p> <ul style="list-style-type: none"> • Turn Off Turn off the machine (see Turning the Unit On and Off¹⁵) • Eject US Safely eject hardware device connected to the unit's USB port. • Factory Restore the factory settings. (Note: This does not delete any data.) • ancel Cancel all changes that were made to the configuration settings. • Save Save all changes that were made to the configuration settings, close the onfiguration screen, and display the Home screen¹⁷
4	<p>Tab buttons</p> <p>Select a button to display the tab containing the configuration settings for the category, or select the Maintenance¹⁸⁶ tab to access system maintenance functions, such as upgrading the software and calibrating the hardware.</p>

10.3 Modifying Configuration Settings

You can modify any of the configuration settings that appear in the various tabs of the **onfiguration** screen.

To modify configuration settings:

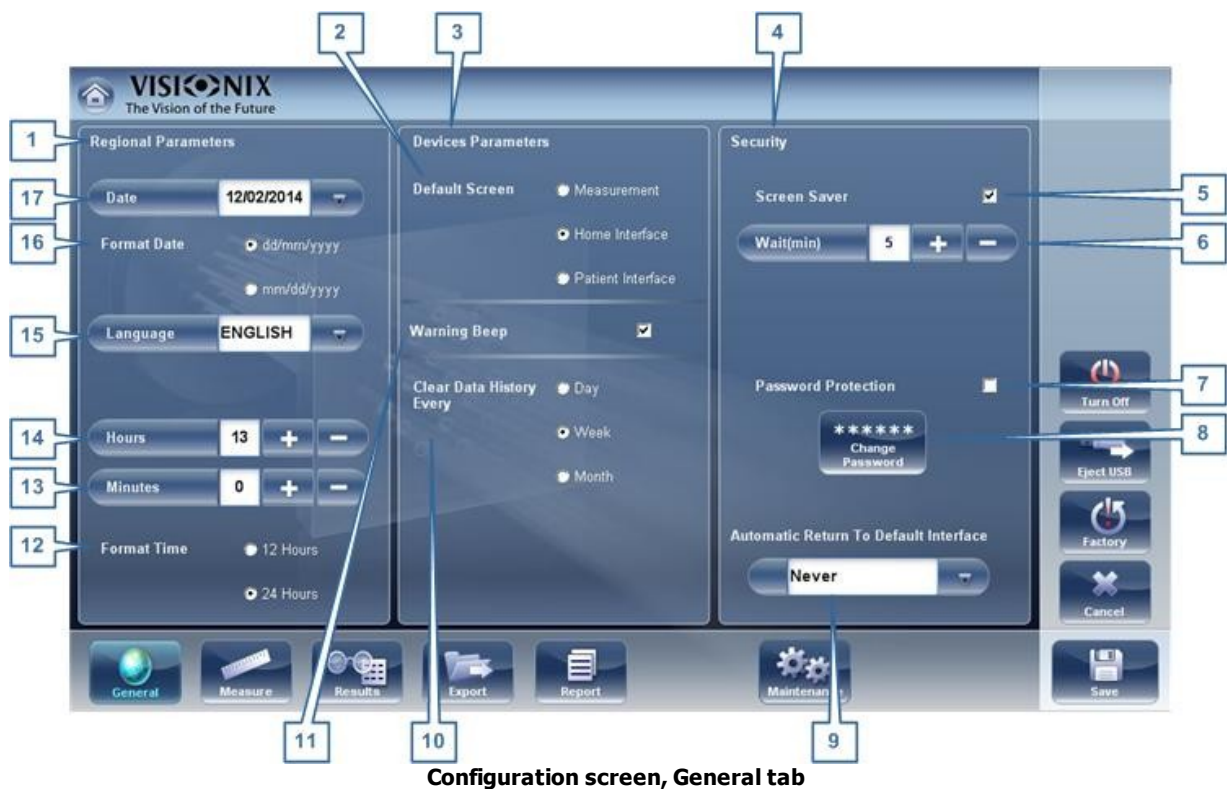
- Modify the settings you want to change. You can modify settings in more than one tab without saving the changes, as long as you do not close the **onfiguration** screen before you save them.
- When you have changed everything you wanted to change, select **Save**. The changes are implemented, and the previous screen is displayed.

10.4 General Settings

The **General** tab of the **onfiguration** screen is divided into three sections:





- Regional Parameters: Date, time, and language settings
- Device Parameters: Selecting the default screen, and scheduling how often temporary data is cleared from the database

- Security: Screen-saver settings



Configuration screen, General tab

No	Description
1	Regional Parameters
2	Default Screen Select the screen you want to use as the default screen - the screen that is displayed when you first turn on the VX130, and when you select Exit to close the Results screen ^{□32} . The default screen can be the Home screen ^{□17} , the Patient screen ^{□18} , or the Measure screen ^{□21} .
3	Device Parameters
4	Security
5	Screen Saver Select the check box to configure the screen saver to be activated automatically when there has been no user activity for the number of minutes selected under Wait (below).
6	Wait (min) Displays the number of minutes of inactivity that will cause the screen saver to be activated. Select the + and - buttons to modify the number.
7	Password Protection Select the check box to require a password to deactivate the screen saver.

No	Description
8	<p>Change Password</p> <p>Select this button to change the password.</p> <p>In the dialog box that opens, under Old Password, enter the current password (By default, there is no password.) Under New Password, and under Confirm Password, enter the new password. Select OK to close the dialog box.</p>
9	<p>Automatic Return to Default Interface</p> <p>Allows the user to quit the Results screen and return to the default screen automatically after the selected amount of time. Select this button to modify the time, according to your preference (for example 2 min, 3 min, Never).</p>
10	<p>Clear Data History Every</p> <p>Select how often you want the system to delete temporary patient records from the database.</p> <p>Note Temporary patient records are the results of measurements that were performed without being associated with a patient record. They have the surname "Temp" and a number for the first name.</p>
11	<p>Warning Beep</p> <p>Select whether or not you would like a beep to sound when a warning message is displayed.</p>
12	<p>Format Time</p> <p>Select the type of hour display to use in the rest of the interface:</p> <ul style="list-style-type: none"> • 12 Hours The 12-hour clock, with AM and PM to indicate which half of the day is intended • 24 Hours The 24-hour clock
13	<p>Minutes</p> <p>Displays the current minutes past the hour. Select the  and  buttons to reset the current minute.</p>
14	<p>Hours</p> <p>Displays the current hour. Select the  and  buttons to reset the current hour.</p>
15	<p>Language</p> <p>Select the interface language</p>
16	<p>Format Date</p> <p>Select the format for displaying the date in the interface:</p> <ul style="list-style-type: none"> • dd/mm/yyyy European standard, e.g., June 26, 2013 would be displayed as 26/06/2013 • mm/dd/yyyy American standard, e.g., June 26, 2013 would be displayed as 06/26/2013

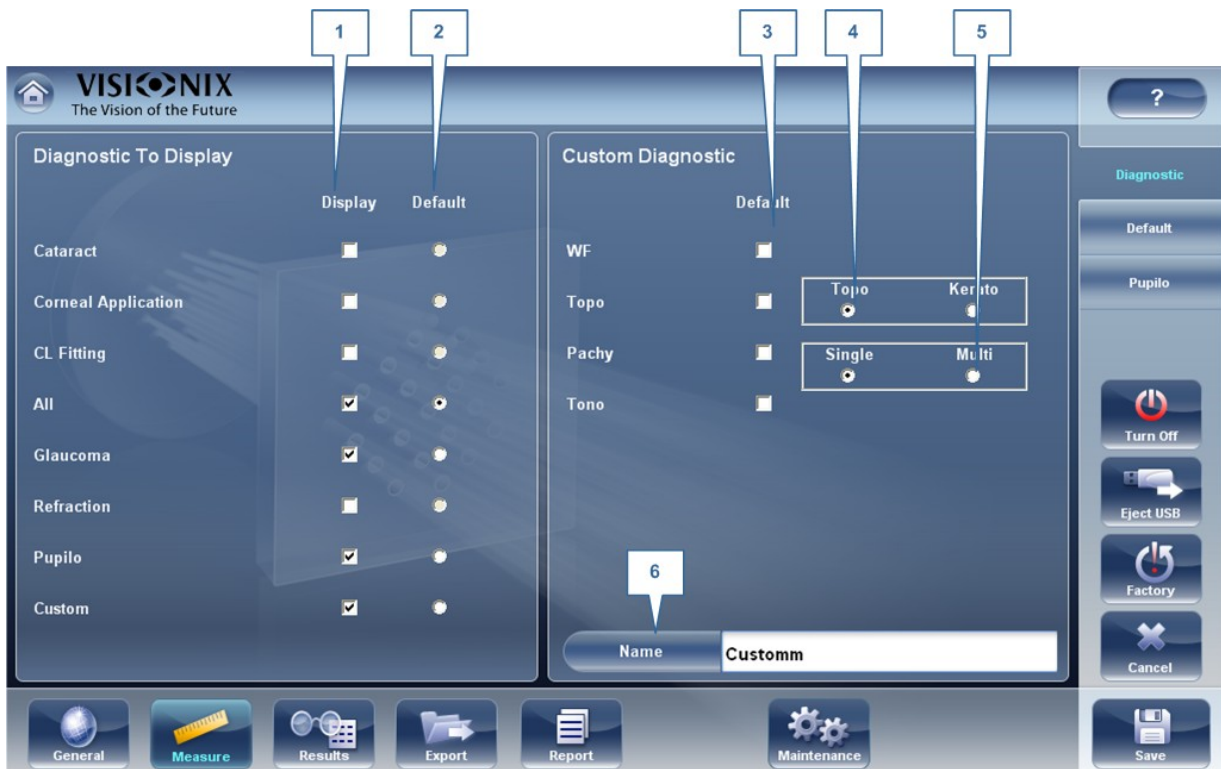
No	Description
17	Date Select the current date.

10.5 Measurement Settings

- [Default Diagnostic Tests](#) ¹⁵²
- [Default Device Settings](#) ¹⁵⁵
- [Pupillo](#) ¹⁵⁷

Diagnostic

The **Diagnostic** sub-tab of the **Measure** tab allows you to choose which diagnostics will be available in the list of diagnostics in the [Measure screen](#) ²². You can also select which of the diagnostics will be the default test - the diagnostic that will be selected when you first open the **Measure** screen.

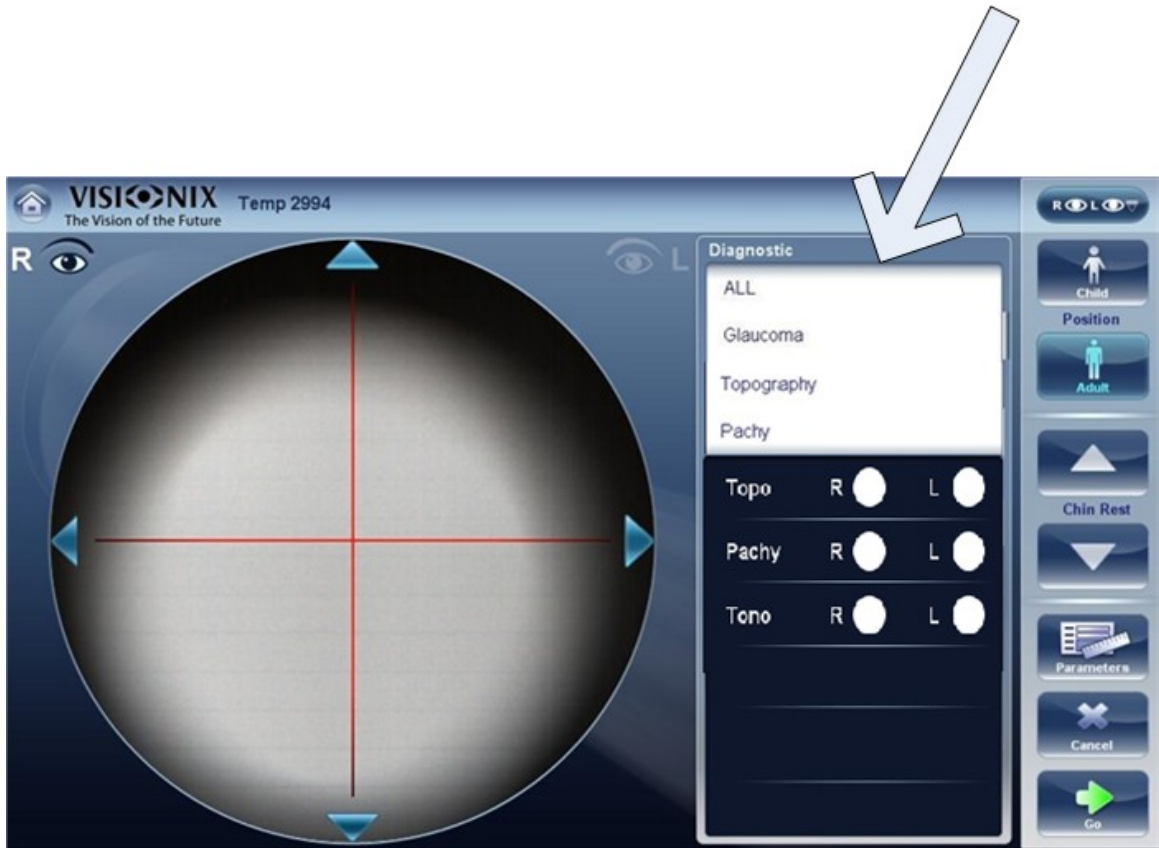


No	Description
1	<p>Display</p> <p>Select the diagnostic you wish to display in the menu from the measurement screen.</p>
2	<p>Default</p> <p>Select the default measurement, only one measurement may be selected.</p>
3	<p>Custom Diagnostic</p> <p>Select the measurements to be included in the Custom diagnostic</p>
4	<p>Topo</p> <p>Select either Topo, or Kerato measurement. Both measurements give K readings, but only the Topo generates topography maps.</p>
5	<p>Pachy</p> <p>Select either Single or Multi pachy measurement</p>
6	<p>Name</p> <p>In this field you can customize the name of the custom measurement.</p>

To configure the list of diagnostics:

- In the **Display** (no. 1) column, select the check box of every diagnostic test you want to have available in the [Measure screen](#)^{□22}.
- In the **Default** (no. 2) column, select the default diagnostic - the diagnostic that will be selected when you open the [Measure screen](#)^{□22}.

Scroll down to view additional diagnostics



Diagnostic	Description
All	Includes WF, Topo, Tono, Keratometry, Pachy , Single or Multi-slitand Refraction
Glaucoma	Includes Pachy, Tono, and Topo measurements
Refraction	Includes Refraction measurements
Wavefront	Includes Wavefront, aberrations, and Refraction measurements
Topography	Includes Topography measurements
Pachy	Includes Pachy (Single or Multi slit) and topo measurements.
Cataract	Includes Wavefront, Topography and Pachy measurements
Corneal App.	Includes Wavefront, Topography and Pachy measurements

Diagnostic	Description
C.L. Fitting	Includes Wavefront and Topo measurements
Pupillo	This measurement displays pupil size and reaction time according to different light conditions.
Custom	This measurement can be tailored according to your preferences and may include all of the measurements in the device except for pupillo. Please note: Kerato is not available with Multi pachy.

To choose a measurement, select it from the list above. Only measurements selected in the [Default menu](#)¹⁵⁵ will appear in the measurement menu.

Default

The Default sub-tab of the Measure tab has two sections. In the first section, **Default Device Settings**, you can set default sound and luminosity settings, and choose whether the default head-rest and chin-rest positions will be for adults or children. In the second section, **Measurement Default Settings**, you can select the default number of times the Wavefront and Tonometry tests should be performed and whether to include near vision in your wavefront measurements. You can change the position setting and the number of times the tests should be performed on the fly in the [Measure screen](#)²² before you start a measurement.

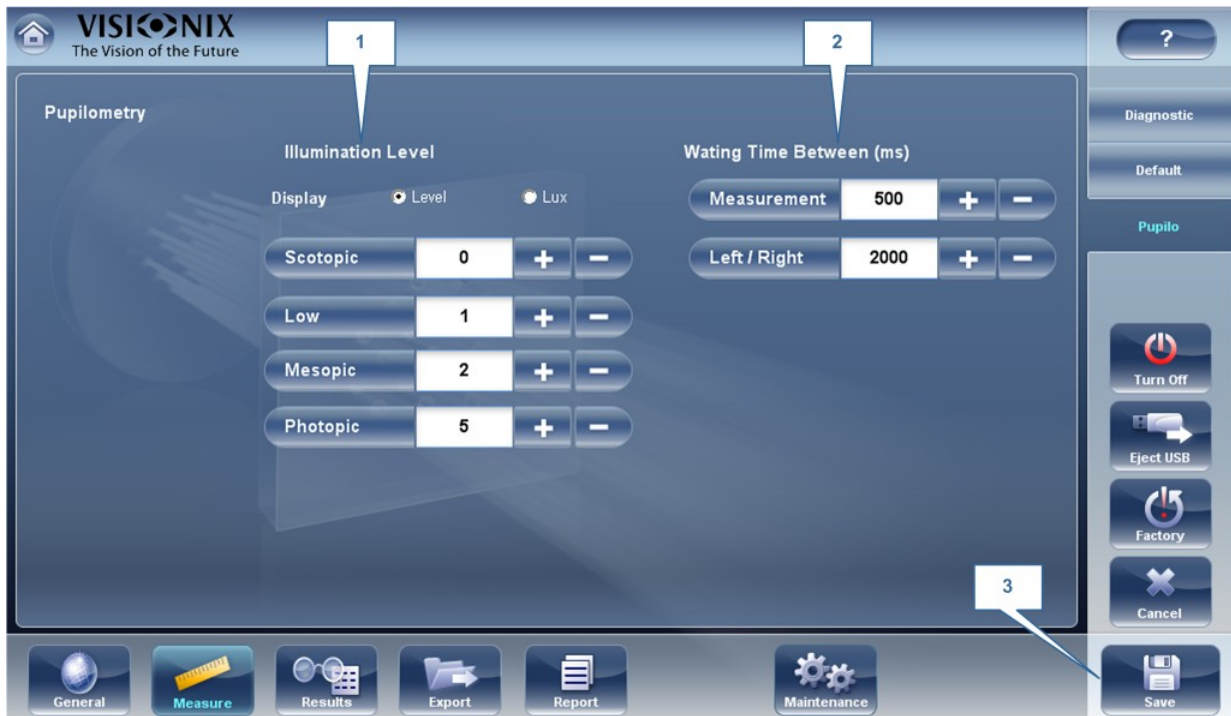


No	Description
1	<p>beep</p> <p>Select the volume of the beep sounds that the unit emits during the measurements. Measurement Default Settings</p> <ul style="list-style-type: none"> • WF Measurements: Displays the default number of times the Wave Front test should be repeated. Select the + and - buttons to change this value. • Tono Measurements: Displays the default number of times the Tonometry test should be repeated. Select the + and - buttons to change this value.
2	<p>Target Luminosity</p> <p>Select the luminosity level of the fixation target. Topo with Ringer</p> <p>Display the topography results with the Ringer option after the measurement is done and before the results are displayed.</p>
3	<p>Position</p> <p>Select whether the default position of the head rest and chin rest should be appropriate for adults or for children.</p>
4	<p>Reading Distance</p> <p>Set the reading distance for the near measurement, from 30-70cm.</p>
5	<p>dd Measurement with WF</p> <p>Select to add Near Vision in the Wave Front test. Select the + and - to change the default distance for near vision testing. Note: this will add Near Vision testing to every wavefront test.</p>
6	<p>WF Measurements</p> <p>Select the number of wavefront measurements for each wavefront exam. Only measurements that include wavefront will be effected.</p>
7	<p>Tono Measurements</p> <p>Tono Measurements: Displays the default number of times the Tonometry test should be repeated. Select the + and - buttons to change this value. Only examinations that include tonometry will be effected.</p>
8	<p>Tono automation</p> <p>Two types of focusing are available for the tonometer, Auto and Semi. By default, the tonometry measurement is in Auto focusing mode, where the device can take a measurement with little intervention by the examiner. In Semi mode, the tonometer remains at the centering point found in the pachymeter measurement and all of the focusing is done by the examiner.</p>

No	Description
9	Two types of pachy measurements are available to measure the anterior chamber. Single slit- measures the corneal thickness of the central cornea. Multi slit measures the thickness and topography and obtains data regarding both the anterior and posterior corneal surfaces. Please note: the Multi slit measurement takes a bit longer than the single slit measurement.
10	Topo with Ringer By default the ringer is available for editing. To remove the ringer display shown immediately after topo measurements, unselect this checkbox.

Pupillo

We recommend using default pupillo illumination settings, although they can be modified in this screen:



No	Description
1	Illumination Level Use the + and - to adjust the illumination levels.
2	Waiting Time Use the + and - to adjust the waiting time between illumination levels.
3	Save Select to save your changes.

10.6 Results Settings

Refraction Aberrations

[WF](#)¹⁴⁸

[Topography](#)¹⁶²

Tono

[Multi Slit](#)¹⁶⁵

Refraction Aberration Settings

The **Refraction and aberration** sub-tab of the **Results** tab contains the default display settings for refraction and aberration data of the [Results Screen](#)³²



No	Description
1	<p>Terminology</p> <p>It is possible to set the terminology for the map and scale to Tangential or Instantaneous (for the map) and to Standard or Absolute, Auto or Normalized (for the scale)</p>
2	<p>Refraction</p> <p>Default settings for Refraction and Ocular Wavefront</p>
3	<p>Step</p> <p>Select the measurement display increments.</p>
4	<p>Cylinder</p> <p>Select negative or positive cylinder convention, or select Auto to set the sign of the cylinder to match the sign of the sphere equivalent.</p>
5	<p>Vertex Distance</p> <p>Select the default vertex distance. (You can change this value on the fly in the Results screen.)</p>
6	<p>Abserrations</p> <p>Default settings for the corneal and ocular aberrometry</p>
7	<p>Zernike Unit</p> <p>Select the units (microns or diopters) for displayed measurements.</p>
8	<p>Tono</p> <p>Select the tonometry adjustment formula from the dropdown menu. This formula adjust the tonometry measured according to the results of the pachymetry.</p>
9	<p>WF Presentation</p> <p>Select Day/Night to present the refractometry measurements as photopic and mesopic values, or 3/5 to present the refractometry measurements as values for 3 mm and 5 mm pupil apertures.</p>
10	<p>Abserrations aperture</p> <p>If you selected Day/Night for WF Presentation (above), choose Day to present measurements by default in terms of the photopic pupil aperture, or Night to present them in terms of the mesopic pupil aperture.</p> <p>If you selected 3/5 for WF Presentation (above), choose whether measurements should be presented by default in terms of a 3mm pupil aperture or a 5mm pupil aperture.</p>

Tonometer corrections formulas:

Ehlers 1

Formula:

$$\text{Corrected IOP} = \text{Measured IOP} - (\text{CCT}-520) \times 5/70$$

CCT is the central corneal thickness in mm

Reference:

Ehlers N, Bramsen T, Sperling S. Applanation tonometry and central corneal thickness. Acta Ophthalmol (Copenh) 1975; 53: 34–43

Whitacre

Formula:

$$\text{Corrected IOP} = \text{Measured IOP} - (\text{CCT}-560) \times 2/100$$

Reference:

Whitacre MM, Stein RA, Hassanein K. The effect of corneal thickness on applanation tonometry. Am J Ophthalmol 1993; 115: 592 – 596

Doughty 1 (for normal eyes)

Formula:

$$\text{Corrected IOP} = \text{Measured IOP} - (\text{CCT}-535) \times 1.1/50$$

Reference:

Doughty MJ, Zaman ML. Human corneal thickness and its impact on intraocular pressure measures: a review and meta-analysis approach. Surv Ophthalmol 2000; 44: 367–408

Doughty 2 (for glaucomatous eyes)

Formula:

$$\text{Corrected IOP} = \text{Measured IOP} - (\text{CCT}-535) \times 2.5/50$$

Reference:

Doughty MJ, Zaman ML. Human corneal thickness and its impact on intraocular pressure measures: a review and meta-analysis approach. Surv Ophthalmol 2000; 44: 367–408

Ehlers 2

Formula:

$$\text{IOP correction} = -0.0706 \times \text{CCT} + 38.504$$

Reference:

Ashish A Patwardhan, Mohammad Khan, Susan P Mollan, Paul Haigh The importance of central corneal thickness measurements and decision making in general ophthalmology clinics: a masked observational study BMC Ophthalmology 2008, 8:1

Dresdner

Formula:

$$\text{IOP correction} = -0.0423 \times \text{CCT} + 23.28$$

Reference:

Markus Kohlhaas, Andreas G. Boehm, Eberhard Spoerl, Antje Pursten, Hans J. Grein, Lutz E. Pillunat Effect of central corneal thickness, corneal curvature, and axial length on applanation tonometry Arch Ophthalmol. 2006; 124:471-476

Herndon

Formula:





$$\text{IOP correction} = -0.05 \times \text{CCT} + 27.25$$

Reference:

Leon Herndon, Review of Ophthalmology, July 2002 88-90



No	Description
1	<p>Default Map</p> <p>Select which maps to display in the Results screen³² as default</p>
2	<p>Color Palette</p> <p>The colors for max and min curvature are always the same in the color palette. The size of the interval defines the remaining colors.</p> <ul style="list-style-type: none"> ANSI has 21 to 25 steps from red to blue. Specifically for ANSI Z80.23 red, orange, and yellow show the steeper areas of the cornea. Green is an “intermediate” color. Light and dark blue show the flattest areas. ISO has 26 steps from red to blue Custom palette has 26 steps from white to blue. The central value is yellow. In the settings you can choose this color palette and apply green as the central value. <p><i>Note: In case some value is greater than the highest interval or smaller than the lowest interval, those areas will be as the color assigned to highest interval or the lowest interval</i></p>

No	Description
	<i>respectively.</i>
3	<p>Step</p> <p>Select the default rate of change for the color scale: the range of values represented by each distinct color. Select  to increase the step, or  to decrease it.</p> <p>Note You can manually change the step in the Results screen³² as necessary. This setting only defines the initial setting.</p> <p>Note When NSI is selected under Map, the Step is automatically set to 1.0, and the selection cannot be changed.</p>
4	<p>entral Value</p> <p>Select the default middle value for the color scale. Select  to increase the value, or  to decrease it.</p> <p>Note You can manually change the central value in the Results screen³² as necessary. This setting only defines the initial value.</p> <p>Note When either NSI or ISO are selected under Map, the entral Value is automatically set to 44.00, and the selection cannot be changed.</p>
5	<p>Green in the middle</p> <p>Select this option to orient the palette so that the central value is displayed in green rather than the default yellow.</p> <p>Note When either NSI or ISO are selected under Map, this option cannot be selected.</p>
6	<p>Display by Default</p> <p>Selection of the parameters to display in the Results screen³²</p>





Topography

The **Topography** sub-tab of the **Results** tab has two sections. The upper section contains general settings. The **Palette Topography** section contains settings that define how the color-coding of topographic maps will be implemented.

The color palette on the left side of the screen changes dynamically as you change the settings in the Palette Topography section. In addition, when certain settings are selected, other settings in this section are automatically set, and their fields become unavailable. For example, if, under **Map**, you select ANSI, all of the other settings in the section are set automatically and cannot be changed.



No	Description
1	<p>Default Map</p> <p>Select which maps to display in the Results screen³² as default.</p>
2	<p>Unit</p> <p>Select the default display units - mm or Diopter units.</p> <p>Note You can change the units in the Results screen³² as necessary. This setting only defines the initial units used.</p> <p>Note When NSI is selected under Map, Diopter is automatically selected in this field, and the selection cannot be changed.</p>
3	<p>Eccentricity</p> <p>Select the eccentricity value to display, Q, P, or e</p>
4	<p>Standard Scale</p> <p>In this scale, colors correspond to values to ensure uniformity when comparing between maps. There are a few possible standard scales: ANSI, ISO, Klyve/Wilson and Maguire/Waring. It is possible to set a custom standard scale by setting the central value and the step. The maximum and minimum values are then automatically determined.</p> <p>Select the default color-coding convention:</p> <ul style="list-style-type: none"> • NSI Use the ANSI color-coding convention. All of the other settings in the Palette Topography section are set automatically as required by this convention and cannot be changed. The middle value will be set to 44D and step to 1D. • ISO: Use the ISO color-coding convention. The scale, central value, and color of the central value, are set automatically as required by this convention and cannot

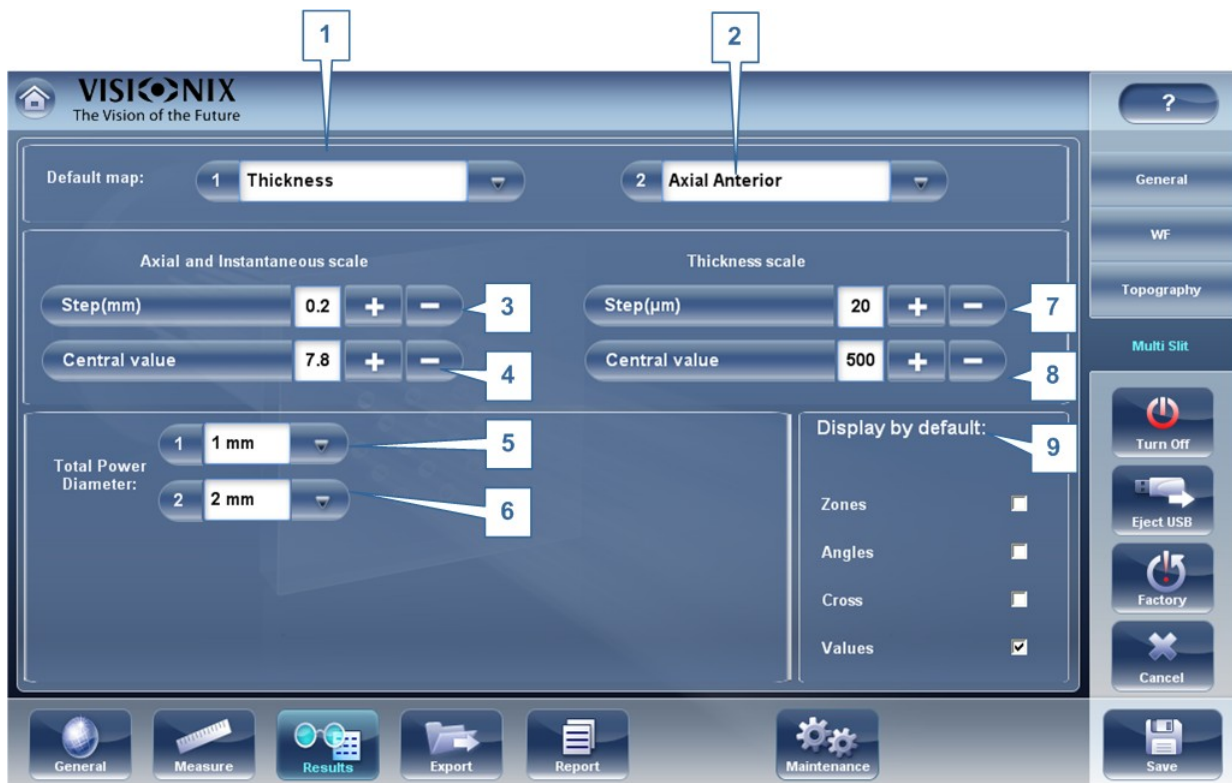
No	Description
	<p>be changed. The middle value is set to 44D and the step can be modified 0.5, 1.0 or 1.5D.</p> <ul style="list-style-type: none"> • ustom Allows you to set up the palette as you wish; all of the other settings are available. <p>Note These settings define the <i>default</i> settings that are used in topographic maps in the Results Screen^{□32}. You can always change the units, step, and central value in the Maps Tab^{□47}.</p>
5	<p>Step</p> <p>Select the default rate of change for the color scale: the range of values represented by each distinct color. Select  to increase the step, or  to decrease it.</p> <p>Note You can manually change the step in the Results screen^{□32} as necessary. This setting only defines the initial setting.</p> <p>Note When NSI is selected under Map, the Step is automatically set to 1.0, and the selection cannot be changed.</p>
6	<p>entral Value</p> <p>Select the default middle value for the color scale. Select  to increase the value, or  to decrease it.</p> <p>Note You can manually change the central value in the Results screen^{□32} as necessary. This setting only defines the initial value.</p> <p>Note When either NSI or ISO are selected under Map, the entral Value is automatically set to 44.00, and the selection cannot be changed.</p>
7	<p>olor Palette</p> <p>The colors for max and min curvature are always the same in the color palette. The size of the interval defines the remaining colors.</p> <ul style="list-style-type: none"> • ANSI has 21 to 25 steps from red to blue. Specifically for ANSI Z80.23 red, orange, and yellow show the steeper areas of the cornea. Green is an “intermediate” color. Light and dark blue show the flattest areas. • ISO has 26 steps from red to blue • Custom palette has 26 steps from white to blue. The central value is yellow. In the settings you can choose this color palette and apply green as the central value. <p><i>Note: In case some value is greater than the highest interval or smaller than the lowest interval, those areas will be as the color assigned to highest interval or the lowest interval respectively.</i></p>

No	Description
8	<p>Green in the Middle</p> <p>Select this option to orient the palette so that the central value is displayed in green rather than the default yellow.</p> <p>Note When either NSI or ISO are selected under Map, this option cannot be selected.</p>
9	<p>Display by Default</p> <p>Selection of the parameters to display in the Results screen³²</p>









Note To ensure maximum accuracy, if the examiner accidentally moves the head of the VX130 so that the patient's eye is not centered in front of the camera view, the device will reposition itself so that it is re-centered in front of the eye. If a maximum decenter tolerance is not met the device will not take a measurement.

Multi Slit

The pachy Mutli slit scans a large portion of the cornea, allowing data collection from both the anterior and posterior corneal surfaces.



No	Description
1	<p>Default Map1</p> <p>This map will be displayed by default in the Maps tab</p>

2	<p>Default Map2</p> <p>This map will be displayed by default in the Maps tab, for example, if RR or LL tabs are selected.</p>
3	<p>Steps (mm)</p> <p>This is the steps for Axial and Instantaneous maps scale, select  or  to modify the values.</p>
4	<p>Central value (mm)</p> <p>This is the central value for the Axial and Instantaneous map scale, select  or  to modify the values</p>
5&6	<p>Total Power Diameter (mm)</p> <p>Calculates the total refractive power of the cornea according to your selected diameter. For example, the refractive power of a diameter of 1mm (around pupil) may be 40D while the refractive power of 5mm may be 39D. A big change in refractive power may indicate an irregular cornea.</p>
7	<p>Step (µm)</p> <p>This is the steps for Thickness map scale, select  or  to modify the values</p>
8	<p>Central value (µm)</p> <p>This is the central value for the Thickness map scale, select  or  to modify the values</p>
9	<p>Display by Default</p> <p>Select which tools to display by default, Angles, Zones, Cross, and Values</p>

10.7 Export Settings

The export settings define the settings that control how the results of the selected (or current) diagnostic can be exported to other devices or printed.

Note These settings relate to the handling of individual test results. For information about exporting the entire Patient database, see [Exporting and Importing the Database](#)¹³⁷.

[Export Data](#)¹⁶⁷

[Printing/Email](#)¹⁷¹

[Automatic Actions](#)¹⁷³

[Remote Access](#)¹⁷⁴

[Reports](#)¹⁷⁷

Export Data

The **Export Data** sub-tab of the **Export** tab contains settings that control what happens when you export the current test results to an external storage device or optometric instrument.



Configuration screen: Export tab, Export-Informatics sub-tab

No	Description
1	US Several file options are available for exporting via USB according to your preferences, fill in the checkboxes of the data you want exported.
2	Network Several file options are available for exporting via Network according to your preferences, fill in the checkboxes of the data you want exported.
3	Export Directory Choose the path to the directory you wish to export to

No	Description
4	<p>External Device</p> <p>Check this box if you would like to export to an external device. External devices are connected with RS232 VXBOX and XML protocols to create XML files sent via the network. This allows file transfer to EMR and other equipment such as VX55, a phoropter, and Remote Access. The test results will be transmitted to the device in the selected format. Remote Access may be accessed via the URL path specified in the XML data per patient. Once configured, any computer on the Intranet may view the patient file remotely.</p>
5	<p>XML Export</p> <p>After checking External Device, select this field to specify the data path to export XML.</p>
6	<p>XML Import</p> <p>Select to Import XML data (patient name and information) from your specified data path. Double click on the box to choose the location of the data to be imported, the press S VE. After configuring the XML import, data will become available for import in the Measurement Screen. For more information, go to Adding a Patient via XML</p>

Settings for Export to a File

The settings in the first section define the destination of exported files, their format, and the patient information they should contain.

The first row defines the settings for exports to devices connected to the VX130's USB port. (When you export a file to a USB device, a Windows **Save as** dialog box opens, allowing you to navigate to a folder and specify a file name for the file.)

The second row defines the settings for exporting to devices to which the VX130 connects via the local network. You can specify the path of the device and the folder on the device in which the files should be saved.

To configure the file-export options:

- To enable exporting to the device connected to the USB port, select the first check box in the **US** row (i.e., the check box immediately to the right **US**).
- To enable exporting to a device that can be accessed through the local network, select the first check box in the **Network** row.
- For each option you selected (**US** and/or **Network**), select the options as follows:

Option	Description
Screenshot (JPG)	Select this option to export the data as a JPG image file.

Option	Description
Patient file	Select this option to export the data as a VX130 patient file. This creates an XPS file containing the test results and the patient's information (as specified under Naming Patient Info) in the format used by the VX130 database. The test results and patient information can be imported from this file to another database.
Surname	Select this option to include the patient's surname in the exported data.
1st Name	Select this option to include the patient's first name in the exported data.
ID	Select this option to include the patient's ID number in the exported data.

- If you select more than one option, all of the options you select are activated. For example, if you select both Screenshot and Patient file, both a JPG image of the result's [Summary tab](#)¹⁶⁹ and a Patient file will be exported.
- If you activated the **Network** option, under **Export directory**, enter the path of the folder in which you want to save exported data. To expedite exporting to a network, we recommend mapping the network drive, for more information go to [How to Map a Network Drive](#)¹⁶⁹.

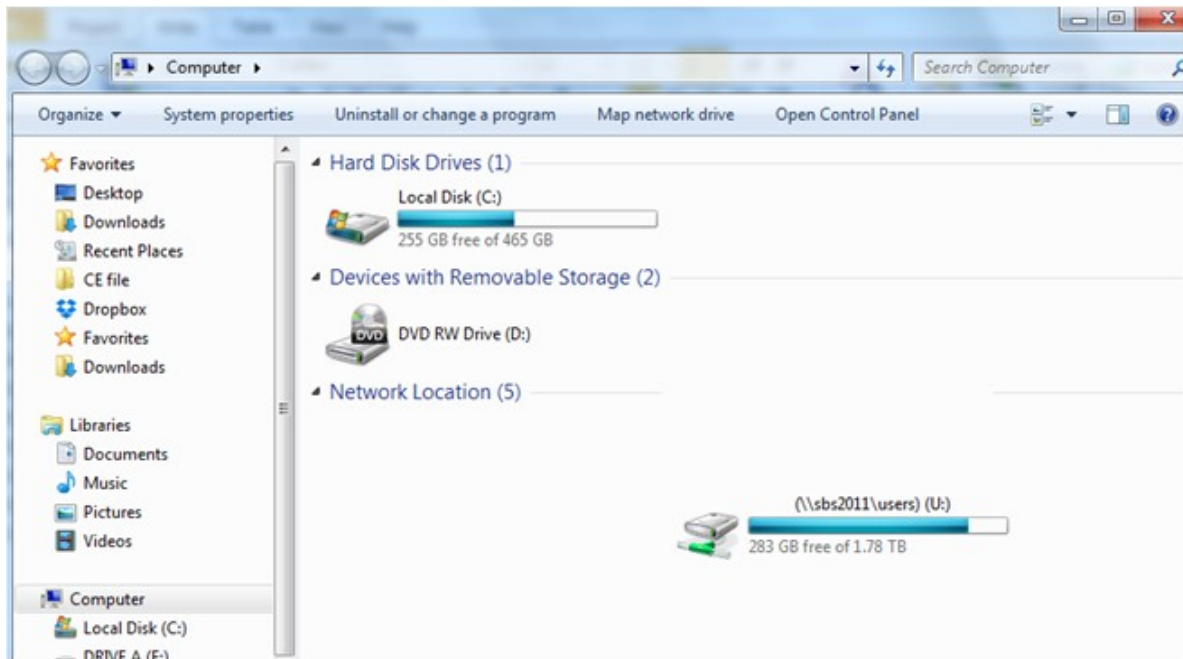
How to Map a Network Drive

To map a network drive:

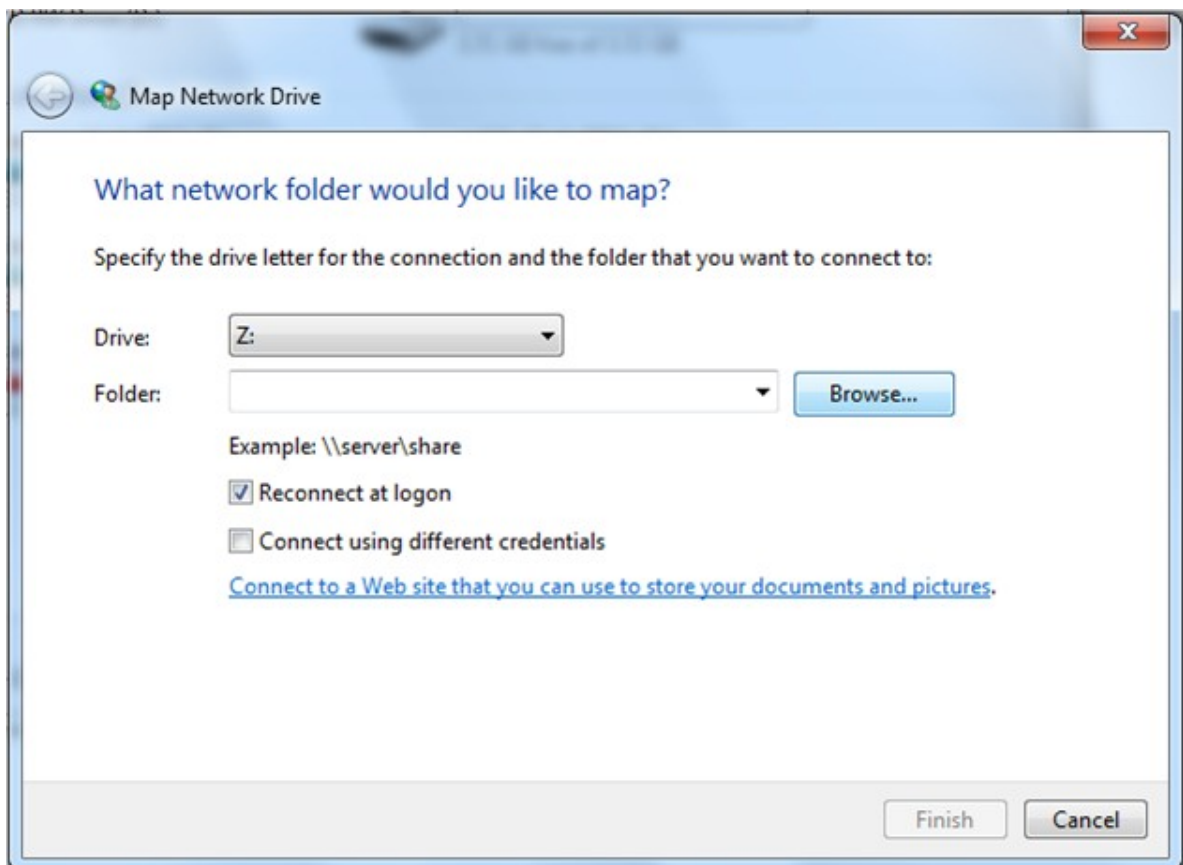
Configuring the Unit

1. With an external keyboard, click CTRL+F4
2. Select Application "Exit"

3. Click  + e to access Windows Explorer



4. Select Map Network Drive



5. In the **Drive** box, choose a letter to represent your new network drive
6. Select **rowse**, and choose the folder you'd like access to from within the network
7. Select **OK** and then **Finish**
8. Now this driver is available for selection in the [export popup](#)¹³³ and in the [Settings->Export menu](#)¹⁶⁷

Printing/Email

The **Printing** sub-tab of the **Export** tab contains settings that control what happens when you choose to export test results to a printer for printing. The left section of the screen configures the printing of *tickets* - printouts from the VX130's built-in printer. The right section configures printing that is performed by an external printer connected to the unit's RS-232 serial port or to one of its USB ports.

Note in order to set an external printer please call technical support or your agent.



Configuration screen: Export tab, Printing sub-tab

No	Description
1	Ticket Check this box if you would like to print a ticket with the device's printer

No	Description
2	<p>Ticket Header</p> <p>If you want to include a standard text at the top of each ticket, select the Ticket Header check box, and then enter the text in the lines below it. For example, you could enter your name and address in the lines.</p>
3	<p>Header Text</p> <p>Enter the text of the header here</p>
4	<p>Format</p> <p>Select the type of printout you want</p>
5	<p>Character Size</p> <p>Select either Large print or Small print</p>
6	<p>Print</p> <p>Check this box to print using an external printer. You can select to print a Screenshot (of the Summary tab)³⁴ and/or Report.</p>
7	<p>Printer</p> <p>Select a default printer (only if you are connected to an external printer)</p>
8	<p>Email</p> <p>Select checkbox to add email options</p>
9	<p>Test Email</p> <p>Select this button to send a test email. A confirmation message will appear.</p>
10	<p>From</p> <p>Type your email address in this field</p>
11	<p>Host</p> <p>Include the host name here, for samples of host names and configurations, go to #16, SMTP.</p>
12	<p>Password</p> <p>Type your email password in this field.</p>
13	<p>Port</p> <p>This is a field which is sometimes required according to your server configurations.</p>
14	<p>Colleagues</p> <p>Type the colleague's name and email address here. Up to 3 colleagues can be included as the default recipient. To add additional colleagues, click buttons 2 & 3.</p>
15	<p>Laboratory</p> <p>Type the laboratory's name and email address here. Up to 3 laboratories can be included as the default recipient. To add additional laboratories, click buttons 2 & 3.</p>

No	Description
16	<p>Host configurations</p> <p>This popup shows possible host configurations, such as SMTP configurations, Port settings.</p>

Email

To configure the Email feature, type in your email address (#8), password (#12), and host (#11) and port (13) specifications listed above. These specifications are liable to vary depending on your particular email service. Some common email specifications are list here (#16), but may differ than listed here. We recommend using the Test Email button to confirm your email is configured properly. In addition, please make sure that your device is connected to the internet.

Note Emails cannot be sent automatically to ensure patient privacy. If emails can only be sent via the Export popup from the patient results.

Automatic Actions

The **Automatic Actions** sub-tab of the **Export** tab specifies which export options will be performed automatically when a measure is completed, and which options will appear in the **Export** dialog box.



Configuration screen: Export tab, Automatic Actions sub-tab

To configure the automatic-actions settings:

- In the **Automatic Actions** (no. 1) section, select the options that should be performed automatically after a measure is finished (Exporting data (no.2) or Printing (no. 3)).
- In the **Selected Items for Export Popup** (no. 4), section, select the options that should appear in the **Export** dialog box (the options available are either for Exporting data (no. 5) or for Printing (no. 6)).
- Select **Popup Always Open** (7) to always open the **Export** dialog box when **Export** is selected. Clear this option to automatically perform the actions selected in the **Selected Items for Export Popup** section when **Export** is selected.

Remote Access

Remote Access allows users on the same network to see the results remotely by using the device's IP in the browser. In the browser, you can see the patients list in chronological order, and for each patient, their tests results. All security standards in your intranet may be applied to the VX130.

To select the data for viewing in the Remote Access site:



No	Description
1	Access Remote Active When checkbox is selected, remote access data will be created automatically, after every measurement. To remove this option, unselect checkbox.
2	IP Address Displays IP address of Remote Access data site.

No	Description
3	Rebuild Remote Access Data Click this button to add Previously taken measurements to the remote access site.
4	Save Allows the user to save the selected preferences

If the Access Remote Active checkbox is selected, data will be automatically exported after every measurement. It may take a few moments for the measurement to appear in the remote access site. If you have data in the VX130 that is not already in the remote access site, either imported data, or old data that was not exported after the measurement, you have the option of exporting it retroactively.

There are two methods of exporting data retroactively:

1. Exporting just the missing measurements
2. Exporting the entire database.

Please note, option #2 will take a while and may slow down the device. Therefore, we recommend these steps are done while the device is idle.

To export data retroactively, click on the **Rebuild Remote Access Data** button and the following screen appears:



No	Description
1	Cancel Cancels selection

No	Description
2	No Once selected, only missing data will be added to the remote access site. Any data already saved in the Remote Access site, will remain.
3	Yes This option will save the entire database in the Remote Access site, new data and as well as previously existing data.

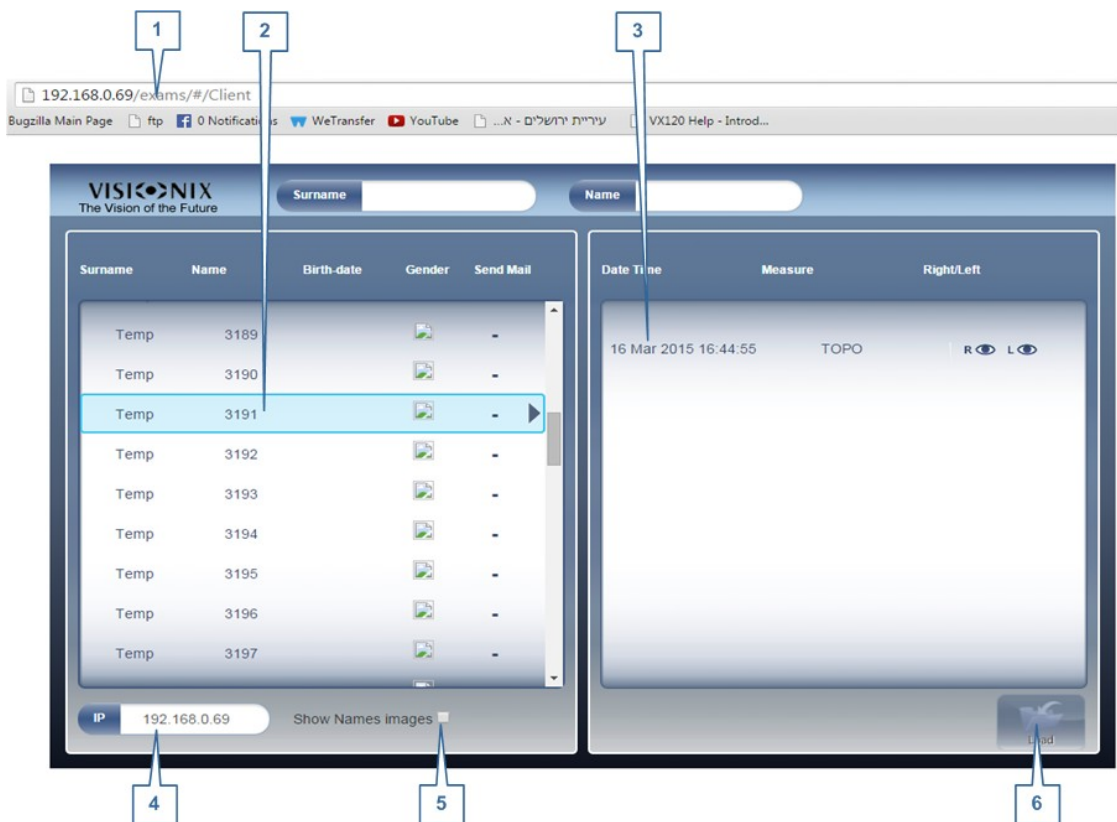
Note Remote access (from intranet) allows viewing images only data modification, such as replacing data, deleting data, and making other changes are not possible via remote access.

Viewing in Your Browser

Once you have completed the configuration, you can see the maps and data in the browser or your PC, MAC, or tablet with any OS.

To view Remote Access in your browser:

- Open your browser and enter the IP address listed in the [Remote Access](#)¹⁷⁴ menu.
- The following screen opens up:



No	Description
1	IP address Type in the IP address listed in the Remote Access menu, may vary from time to time
2	Patient Name of patients, including birthday, gender, and email preference
3	Diagnostic List of diagnostics and dates measurements were taken
4	IP address Identical address as listed in browser, is indication you are connected to site properly
5	Show Names Images Select checkbox to view the names of the image files listed in the results
6	Load Select to load patient's data

Please note: the first time it may take longer to load the database.

- If you choose the option “show name images”, you will see in red on each map and data the original file.
- Select the patient name, select the measurement you want to load and press LOAD

In cases where images are not selected in the settings, they will not be saved and it will show NO DATA



- Click EXIT to go back to the database.

Reports

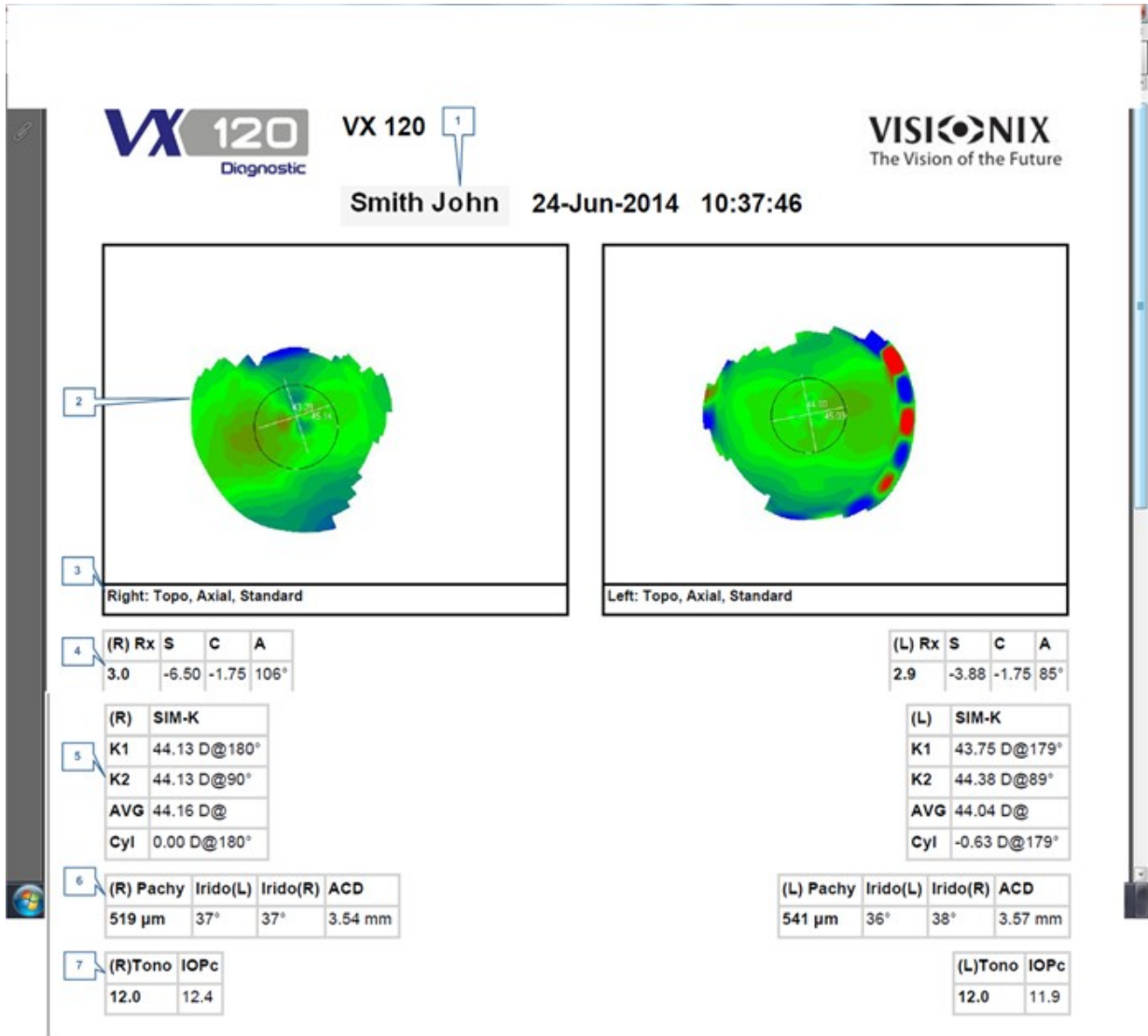
The VX130 comes with a Report feature, which enables you to view your patient's test results in a clear, concise manner. You can choose the layout and data to be included in a report from over 6 predefined templates, or define your own, custom template.

The report templates included in the VX130 cover topics:

- Cataract
- Aberrations
- Topography
- Glaucoma
- Mixed/All Diagnostics

For more information about creating a report go to [Generating a Report](#)¹²⁷

Here is one example of a default report template:



No	Description
1	Patient Info Includes patient's name or ID, date, and time of examination
2	Map Displays a map of the selected preference/default setting

No	Description
3	Name of map Name of map displayed
4	Refraction Displays the refraction data table
5	Sim K Displays Sim K data table
6	Pachy Displays pachy data table: pachy thickness, irideo angle values, and anterior chamber depth
7	Tono Displays the tono data table along with IOPc correction

Note In order for a report to be available in the Export popup from the Results screen, it needs to be selected in Settings Export Print Report

For learning about how to define a Custom report, go to [Configuring a Report](#)¹⁷⁹

Configuring a Report

The VX130 comes with an option to define a custom report . There are 3 screens that you will need to configure in order to complete the report configuration: The title & logo configuration , the maps configuration, and the data table configuration.

To Configure a Report:

- In the **Settings** menu, select **Report**:



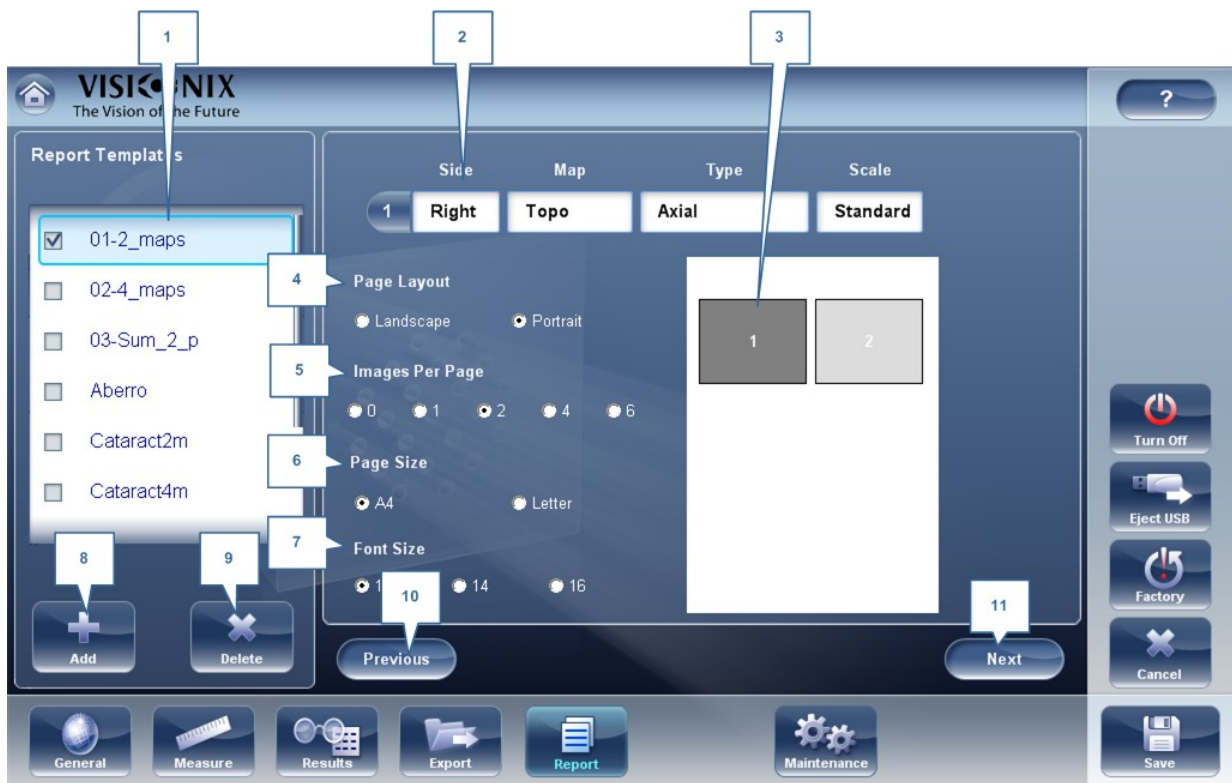
Title & Logo Screen

No	Description
1	Name Displays the name of the template shown in the window (No.1)
2	Logo Select to add a Logo (jpeg or bmp file) from your network or USB
3	Template Name Add the name of the template
4	Personalize Add text here to personalize
5	dd Select dd to add a new template, once you have selected this button it changes to ancel , and you can select it to cancel template
6	Delete Select to delete the template

No	Description
7	Previous Select to show previous screen
8	Next Select to continue to the next step

- After Using the **dd** button to open a new template, add name, logo (if desired) and text in fields 2, 3 & 4
- Select Next

This screen allows you to configure the layout and maps of the template:

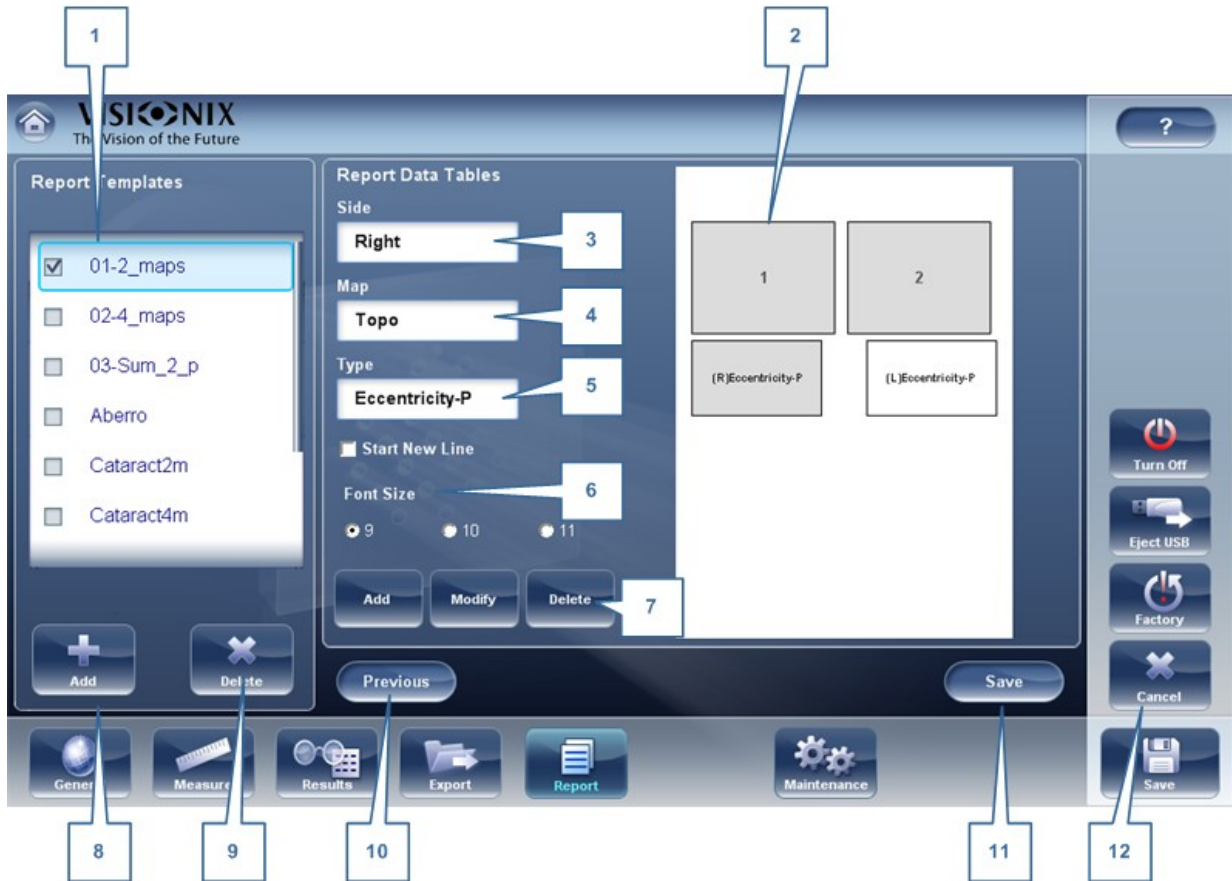


Maps Configuration Screen

No	Description
1	Name Displays the name of your new template
2	Map Details Select to modify: type, eye selection, and scale Map types available are: Topo, WF, Internal, Pachy, Multi Slits, Retro, and Pupillo

No	Description
3	Map Preview Shows map preview, select the map you want to make changes to
4	Page Layout Select Landscape or Portrait
5	Images Per page Select the number of images per page, from 1-6 images
6	Page Size Select your page preference
7	Font Size Select your font preference
8	dd Select to add a new template
9	Delete Select to delete template
10	Previous Select to go to previous screen
11	Next Select to proceed to the next step

- Select your page layout preferences in steps #6, 7 & 8
- In order to make changes to each map, you must first select it in window #3, then then use the dropdown menus in #2 to modify map: Size, Map, Type, and Scale. Only the selected map will be modified.
- Select **Next**
- The **Report Data Table** screen allows you to make changes to the data tables:



Data Tables Configuration Screen

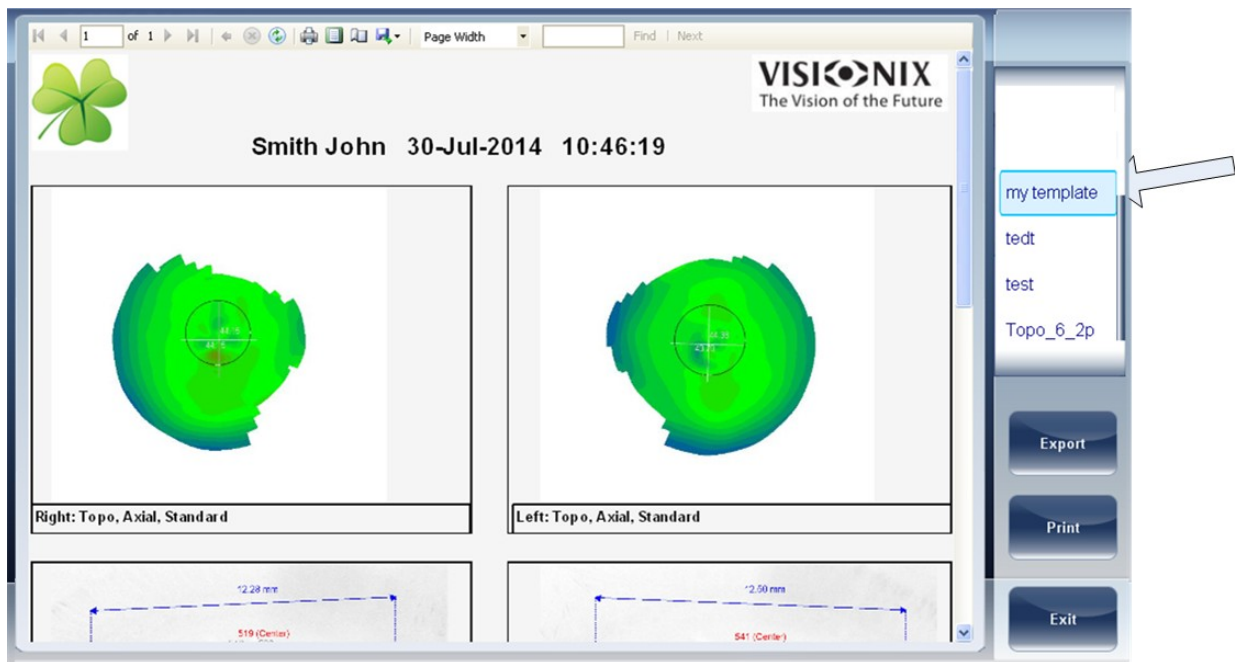
No	Description
1	Name Displays the name of your new template
2	Preview Window Displays a preview of the report template
3	Side Select to choose which eye to add data table from, right or left
4	Map Select to choose diagnostic to display in the data table: Topo, WF , Pachy, Tono, or Mutli Slit

No	Description
5	Type Select to choose what type of data table to display for each diagnostic, for example, if you select Topo (in #5), you can choose: Kerataconus or RMS data
6	Font Size Select the font size according to your preference.
7	dd, Modify, and Delete Select the table you want to edit, and then select one of these options according to your preference.
8	dd Template Select to add a report template
9	Delete Template Select to delete report template
10	Previous Select to go to previous screen
11	Save Select to save template
12	ancel Select to cancel modifications

- To add a data table in the template select **dd**
- In fields 3, 4 & 5 select the data you would like to show in the table: the eye displayed, the diagnostic, and the type of data table
- To make modifications in existing tables, select the table in window #2, and then use the **Modify/Delete** buttons
- When you are finished with your modifications, select **Save**

Note Before generating a report please confirm it is selected in the Settings menu.

Once you have defined your custom template according to your preferences, it will automatically appear in the **Report Viewer** menu shown here on the right of the dialog box below:



- Select the template of your choice from the menu, a preview of the report will appear in window.
- Select **Export** to export to external source or **Print** according to your preference
- For more information on creating a report, go to [Generating a Report](#)¹²⁷

10.8 Restoring the Factory Settings

You can return all the configuration settings to their factory-default values.

To restore the factory settings:

- In the **onfiguration** screen, select **Factory**. You are prompted to confirm that you want to restore all the factory settings.
- Select **Yes**. The factory settings are restored for all of the configuration settings.

10.9 Maintenance Screen

The maintenance screen has many tabs that you can access in order to change settings in the overall maintenance of the device:



No	Description
1	Assistance Select to open Teamviewer and get assistance ¹⁴⁶
2	Version Selecting this button displays the software version number
3	Software Upgrade Selecting this option allows you to upgrade software, for more information go to Updating the Software ¹⁴⁵
4	Save Measurement Files Saves last measurement to spy files
5	Test Topo Calibration Select to test topo calibration. This test should be conducted by an authorized technician only.
6	Test Tono Calibration Artificial Eye Select to test the tono calibration of the artificial eye. This test should be conducted by an authorized technician only.
7	Test Topo Pachy Calibration Select to test calibration for topo and pachy measurements. This test should be conducted by an authorized technician only.

No	Description
8	Technician Maintenance Select to open the technical settings of the software, this should only be done by a technician, password required.
9	Advanced Settings Select to open advanced settings, password required.
10	Motor Reset Select to reset motors
11	Patient Reference Select to set the patient reference in the database according to the patient's First Name or I.D.
12	Database path This displays the path that the database is located
13	Index Setting up This button updates the index of the patient screen. This is recommended after deleting/importing patient records
14	Data Import Select this button to import data ¹³⁷ from USB or Network
15	Retrieval Select to retrieve data ¹³⁷ from a USB or Network
16	Backup Select this button to backup ¹³⁷ your database
17	Data Deletion Select to delete ¹⁴¹ your database.

11. What Should I Do If...

You may encounter some of the following common problems while working with the VX130. If you do, try following the suggested solutions listed below. If the problem persists and the suggested solution does not remedy it, contact a qualified service representative or your local distributor.

Problem	Possible Causes	Suggested Solutions
Images are not properly centered	<ul style="list-style-type: none"> • External lights or windows near the unit • Large patches of light near the unit 	<ul style="list-style-type: none"> • Ensure that there no bright lights or windows near the unit or the patient. • Ensure that there are no large irregular patches of light on the patient or on the unit.
Measured pupil size is different from the expected or actual pupil size	<ul style="list-style-type: none"> • External lights or windows near the unit • Large patches of light near the unit 	<ul style="list-style-type: none"> • Ensure that there no bright lights or windows near the unit or the patient. • Ensure that there are no large irregular patches of light on the patient or on the unit.
High-order aberrations that differ from what is expected	<ul style="list-style-type: none"> • Direct light falling on the unit or on the patient. 	<ul style="list-style-type: none"> • Ensure that there no bright lights or windows near the unit or the patient. • Ensure that there are no large irregular patches of light on the patient or on the unit.
Tickets do not print	<ul style="list-style-type: none"> • Paper jam • Out of paper 	<ul style="list-style-type: none"> • Open the print paper door and release the paper. • Replace the paper roll.

12. Maintenance

This chapter explains how to clean the VX130 unit and how to perform routine maintenance tasks.

-
- [Cleaning the Unit](#)¹⁹¹
 - [Replacing the Printer Paper](#)¹⁹²

12.1 Cleaning the Unit

• Important!

Before cleaning the unit, turn it off and unplug it from the electric outlet.

To clean the plastic surface of the VX130, dampen a cloth with a commercial, non-abrasive cleaner and gently wipe the top, bottom, and front surfaces.

UTION Do not spray or pour any liquid directly on the device.

UTION Do not use caustic or abrasive cleaners.

Chin Rest

Regular cleaning of the chin rest with a soft cloth and alcohol is strongly recommended. Chin rest paper coverings are supplied with the device. Use the paper to cover the chin rest after each patient use.

Headrest

Regular cleaning of the forehead rest with a soft cloth and alcohol is strongly recommended. The forehead rest is the only part of the machine that comes into contact with the patient.

12.2 Replacing the Printer Paper

The printer is mounted on the right side of the VX130 unit. If the paper roll is used up, the **Printer** LED indicator blinks.

To insert a paper roll into the printer:

- Lift the handle in the middle of the paper compartment and pull the cover down.
- If an empty paper roll is in the printer, remove it.
- Insert the new roll with the end of the paper at the top of the roll.
- Feed the paper into the slot at the top of the compartment.
- Push the paper-compartment door closed.

12.3 Packing the System

Packaging

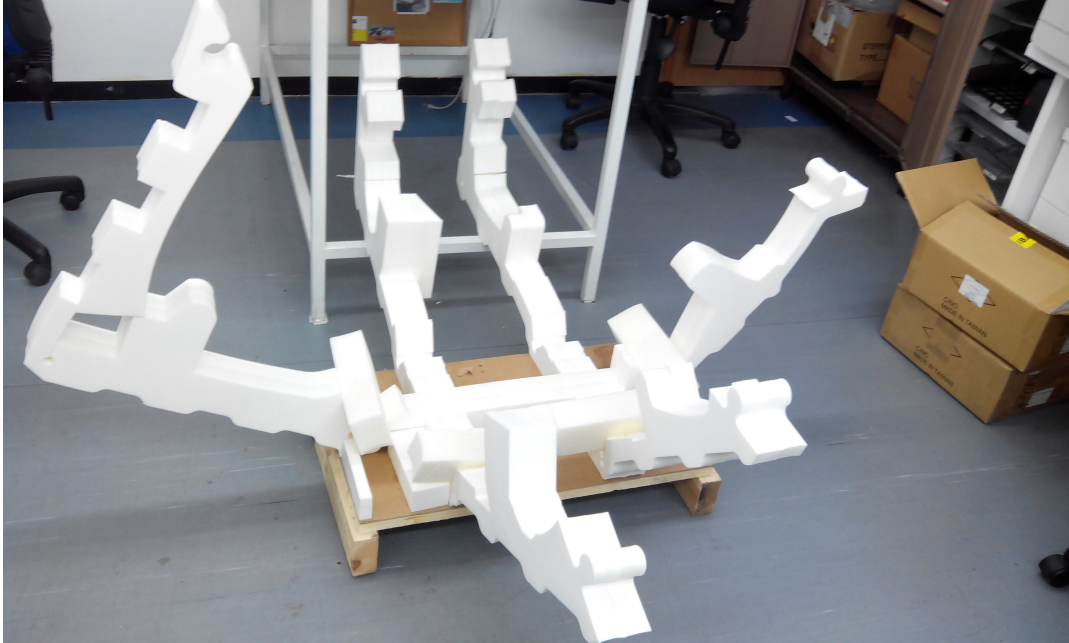
Before packaging, shut down the device by clicking the "Turn off" button (from the Home screen, for example). Make sure that the device's head is lowered to its parking position.

Put the device in the plastic bag:

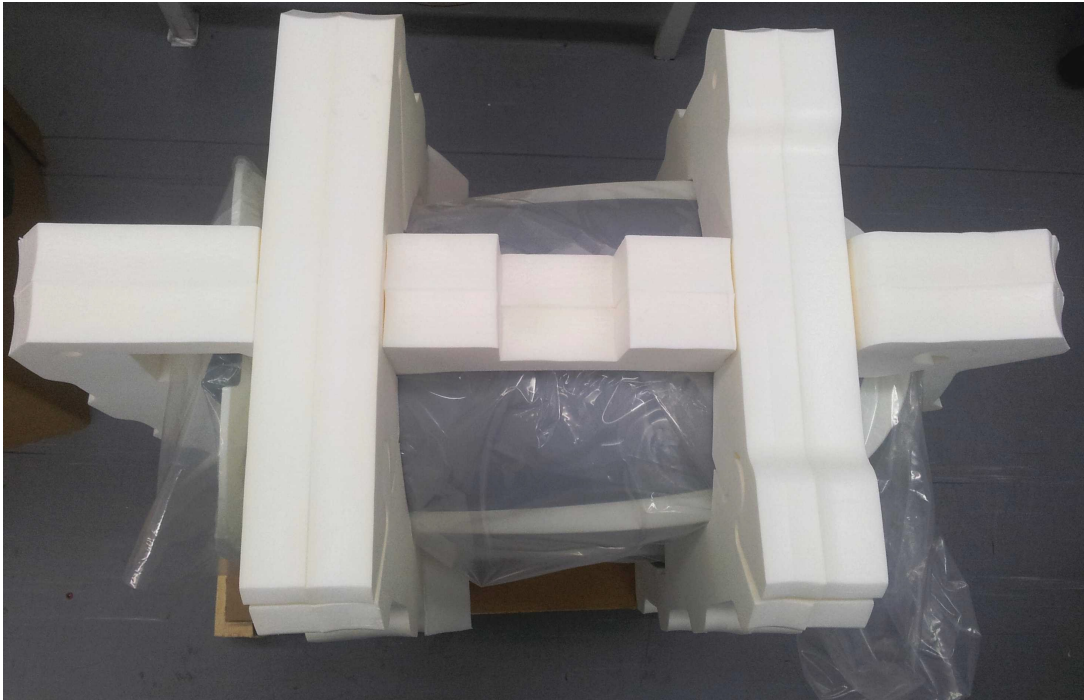


Open the foam protectors and place the device inside.

Note which side goes to the headrest and which side goes to the screen respective to the foam protector.



Close the foam protector as shown (two steps):



Place the additional foam protector at the center:



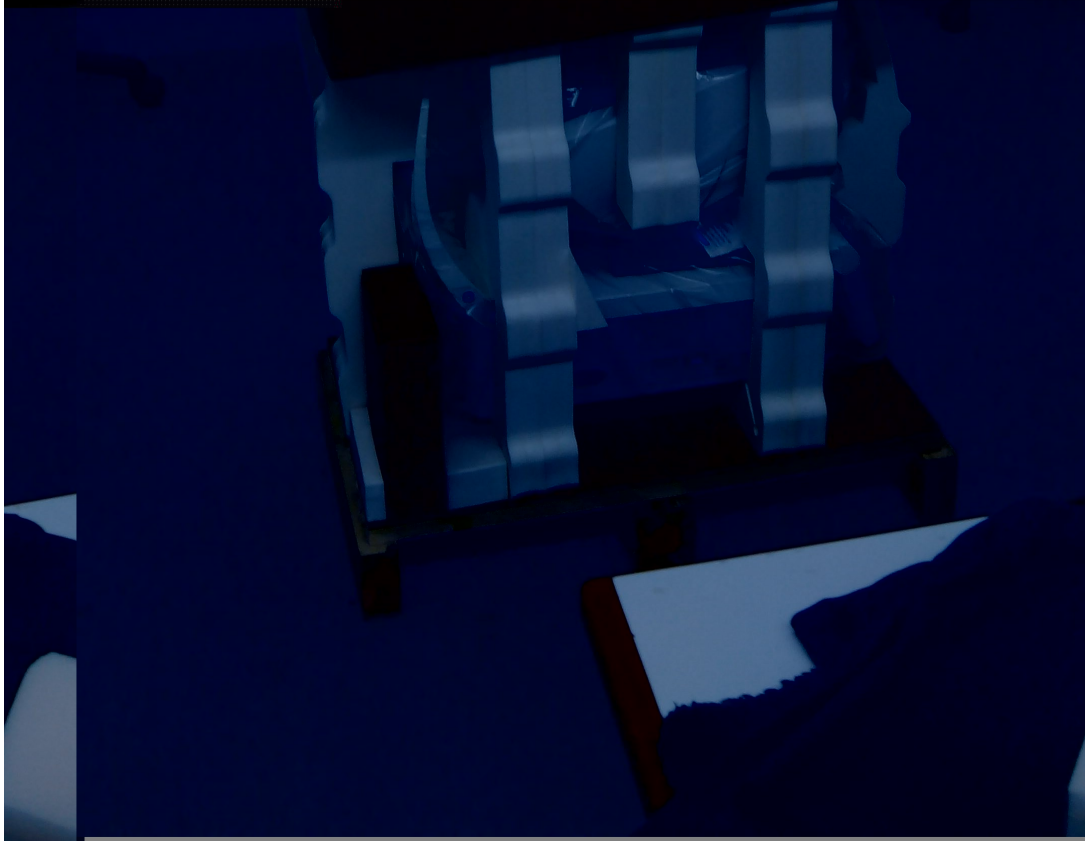
Accessories box:



Accessories box location:



Place the cardboard box on top of the device and apply tape to close the box.





Close the box using the two black bands. Make sure to tighten the bands.



13. Appendices

13.1 Technical Specifications

Device Specifications

Power supply	100-240 V AC, 50/60 Hz, 300 W
Type of protection against electric shocks	Class 1
Degree of protection against electric shocks	Type BF
IP classification	IPXo
Size (W×L×H)	312mm × 530mm × 570mm
Weight	25 kg

Operating Conditions

Temperature	+10°C to +35°C
Hygrometry	30% to 90%

Storage Conditions

Temperature	-10°C to +55°C
Hygrometry	10% to 95%

Transport Conditions

Temperature	-40°C to +70°C
Hygrometry	10% to 95%

AR and Power Mapping Specifications

Spherical Power Range	-20D to +20D for vertex distance 12mm
Cylinder Power Range	0D to 8D
Axis	0 - 180°
Measuring Area	2.0 mm - 7.0 mm pupil (3 zones)
Number of Measuring Points	1400 points for 7mm pupil
Working Distance	94mm
Method	Shack-Hartmann

Corneal Topography Specifications

Number of Rings	24
Number of Measuring Points	6144
Number of Analyzed Points	> 100,000
Diameter of Covered Corneal Area at 43D	From 0.75 mm to > 10 mm
Diopters	37.5D to 56D
Repeatability	0.03 mm
Method	Placido Disk

Pachymeter Specifications

Measurement Wavelength	455nm no UV
Measurement Range	150µm - 1300µm
Accuracy	< 5µm
Method	Static Schiempflug

Tonometer Specifications

Calibrated Range	7mmHg – 50mmHg
Accuracy	+/-2 mm/Hg
Method	Non-contact air puff applanation tonometry

Cataract Screening Specifications

Measurement wavelength	850nm
Method	Retro led

LCD Screen Specifications

Screen type	TFT LCD
Touchscreen type	Capacitance type
Size	10" WSVGA resolution (1024 × 600 pixels)
Contrast ratio	500
Typical luminosity	250 Cd/m2

In a clinical comparison with a Goldmann tonometer on 231 eyes covering the range – 33 mmHg, 5% of measurements with the VX130 tonometer were within ±5mmHg of the Goldmann tonometer measurements.

13.2 Clinical Studies

Pachymeter Study:

A clinical study was performed including 68 normal eyes that compared the VX130 pachymeter function with the Pentacam rotating Scheimpflug camera. Measurements of central corneal thickness (CCT) were recorded. The mean CCT on the VX130 was $541.74 \pm 39.76\mu\text{m}$ (std dev) and on the Pentacam was $535.72 \pm 37.93\mu\text{m}$. The VX130 measures $6.02\mu\text{m}$ thicker than the Pentacam. A Bland Altman graph showing the average and standard deviations of the measurement differences as well as the 95% confidence levels (std dev $\times 1.96$) and the 99% confidence levels (std dev $\times 2.58$) is shown in Figure A1. The 95% confidence levels for the measurement were from $24.54\mu\text{m}$ to $-16.80\mu\text{m}$ and 99% confidence levels for the measurement were from $31.08\mu\text{m}$ to $-23.34\mu\text{m}$.

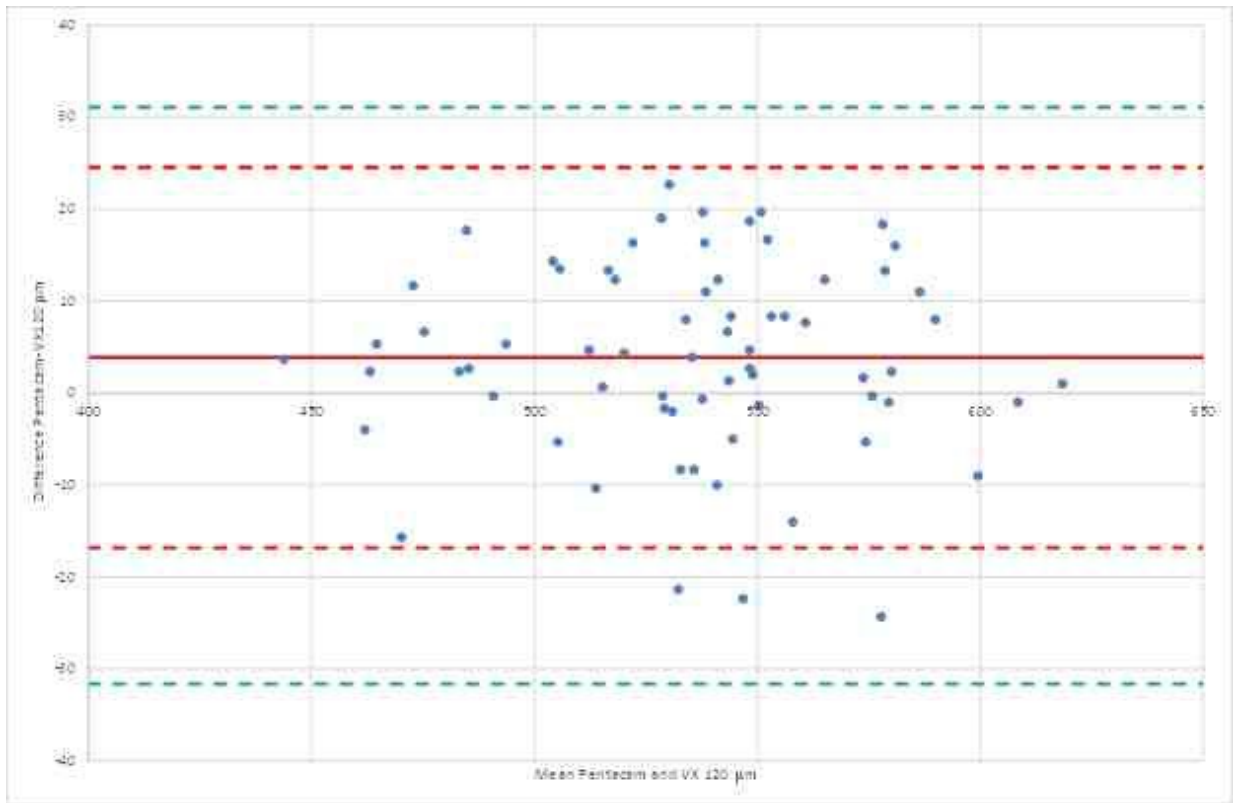


Figure A1: Bland Altman graph for the pachymeter comparison showing the difference between the reference and test pachymeters, the average difference and 95% (red) and 99% (green) confidence levels.

Tonometry Study:

In a clinical comparison with a Goldmann tonometer on 231 eyes covering the range 7 – 33 mmHg, 96% of measurements with the VX130 tonometer were within ± 5 mmHg of the Goldmann tonometer measurements.

13.3 Conformity to International Standards

The VX130 conforms to the international standards described below.

Directives and Standards

The VX130 complies with the Medical Device Directive 93/42/EC and is in Class IIa (rule 10).



- IEC60601-1 (2005): Medical electrical equipment - Part 1: General requirements for basic safety and essential electrical safety performance.
- IEC60601-1-2 (2005): Medical electrical equipment - Part 1-2: General requirements for safety - Collateral standard: Electromagnetic compatibility – Requirements and tests.

Lifetime of the product years
1st E marking 2013-12

Electromagnetic Emissions

The VX130 is intended for use in the electromagnetic environment specified below. The customer or the user of the VX130 should assure that it is used in such an environment.


Emission test	Compliance	Electromagnetic environment – guidance
RF emissions CISPR 11	Group 1	The VX130 uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class B	The VX130 is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purpose.
Harmonic emissions CEI 61000-3-2	Class A	
Voltage fluctuations / flicker emissions CEI 61000-3-3	Complies	

Electromagnetic Immunity

The VX130 is intended for use in the electromagnetic environment specified below. The customer or the user of the VX130 should assure that it is used in such an environment.

Immunity test	Test level IEC 60601	Compliance level	Electromagnetic environment – guidance
Electrostatic discharge (ESD) IEC 61000-4-2	±6 kV contact ±8 kV air	Complies	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.

Immunity test	Test level IEC 60601	Compliance level	Electromagnetic environment – guidance
Electrical fast transient/ burst IEC 61000-4-4	± 2 kV for power supply lines ± 1 kV for input/output lines	Complies	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	± 1 kV differential mode ± 2 kV common mode	Complies	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	<5 % UT (>95 % dip in UT) for 0,5 cycle 40 % UT (60% dip in UT) for 5 cycles 70 % UT (30 % dip in UT) for 25 cycles <5 % UT (>95 % dip in UT) for 5 sec	Complies	Mains power quality should that of a typical commercial or hospital environment. If the user of the VX130 requires continued operation during power mains interruptions, it is recommended that the VX130 be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 hertz) magnetic field IEC 61000-4-8	3 A/m	Complies	Power magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
Note UT is the a.c. mains voltage prior to application of the test level.			

Immunity test	Test level IEC 60601	Compliance level	Electromagnetic environment – guidance
<p>Conducted RF CEI 61000-4-6</p> <p>Radiated RF CEI 61000-4-3</p>	<p>3 Vrms 150 kHz to 80 MHz</p> <p>3 V/m 80 MHz to 2,5 GHz</p>	<p>3 V</p> <p>3 V/m</p>	<p>Portable and mobile RF communications equipment should be used no closer to any part of the VX130, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.</p> <p>Recommended separation distance</p> <p>$d=1,17\sqrt{P}$</p> <p>$d=1,17\sqrt{P}$ 80 MHz to 800 MHz</p> <p>$d=2,33\sqrt{P}$ 800 MHz to 2,5 GHz</p> <p>where P is the maximum output power rating of the transmitter in watts (W) according to the manufacturer and d is the recommended separation distance in meters (m).</p> <p>Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey ^a, should be less than the compliance level in each frequency range ^b.</p> <p>Interference may occur in the vicinity of equipment marked with the following symbol:</p> 
<p>Note 1: At 80 MHz and 800 MHz, the higher frequency range applies.</p> <p>Note 2: These guidelines may not apply in all solutions. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people</p>			
<p>^a Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the VX130 is used exceeds the applicable RF compliance level above, the VX130 should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the VX130.</p> <p>^b Over the frequency range 150 kHz à 80 MHz, field strengths should be less than 3 V/m.</p>			

Manufacturer



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Waste Electrical and Electronic Equipment (WEEE) Directive



This symbol indicates that the equipment incorporates electronic assemblies and other components that are subject to the Waste Electrical and Electronic Equipment Directive which advise that such electronic and electrical devices should not be scrapped as ordinary domestic waste.

To avoid environmental risks or other dangers caused by irresponsible scrapping, this product and all its accessories must be disposed of separately in accordance with the practices indicated in the WEEE Directive for EU member countries and in local regulations for other countries. For further information on disposal of this product, please contact your local dealer or the manufacturer.

13. 4 Contact Information

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