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# OPTICAL COHERENCE TOMOGRAPHY

# RS-330

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**Frequently Asked Questions**

**Shop floor staff / Clinicians**



**Q - How easy is the RSD to use?**

A - The fully automated system allows anyone to capture great scans with limited training. Auto alignment, auto tracking, auto optimisation and auto capture ensure very easy scan acquisition. It can also be used in manual mode or situations where scan capture may prove difficult.

**Q - What are the best scans to capture in a busy practice?**

A - There are 8 posterior scans to choose from, but the most valuable would be the Macula Map, the Disc Map and the colour fundus image. These can be taken in quick succession as a 'Combo' Scan.

**Q - How long do scans take?**

A - Combo mode speeds things up and with good patient direction it can be done on both eyes in around 2 minutes.

**Q - Will there be a flash when the OCT scan is being taken?**

A - There is no flash involved with the OCT scan as infrared light is invisible. There will only be a flash for a fundus photograph.

**Q - Can you take an OCT scan for an epileptic patient?**

A - As there is no flash involved with the OCT scan capture it is safe to perform on patient's with epilepsy. However, in the case of photo sensitive epilepsy, it is important to ensure the fundus camera mode is switched off.

**Q - Is it safe to take an OCT scan for someone who is pregnant?**

A - Yes, it is safe to perform an OCT scan on a pregnant patient.

**Q - Is having an OCT scan like an 'X-ray of the eye'?**

A - Although the OCT provides a very detailed health assessment it does not work in the same way as an X-ray. The OCT uses harmless, infrared light as opposed to the radiation involved in an X-ray. This is why it is safe to be performed on all.

**Q - Will cataracts effect the OCT scan?**

A - Like any imaging device, if something blocks the OCT signal (infrared light source) from reaching the retina, the image quality will be poorer. It is common for OCT scan quality to be less in patients with cataracts (i.e. Reduced SSI score).

**Q - Can the OCT be taken with the room lights on?**

A - Yes, the OCT can be taken with the room lights on, however as the patient's pupil will be naturally larger in the dark, it would be easier to take the scan with the room lights off.

**Q - Can a child have an OCT scan?**

A - It is possible to perform an OCT scan on a patient of any age, as long as they can be correctly positioned on the chin and forehead rest and the patient is able to fixate on the fixation light.



**Q - Do I really need to input all the Px data?**

A - It is important to input the correct gender, age and race for each Px. Once the scans have been captured, the data is compared to a 'normal database' based on these 3 main parameters.

**Q - I've never heard of some of the race categories...?!**

A - NAVIS-EX is a global product and therefore covers races from all over the world. In the UK the most commonly used categories would be '*Caucasian*', '*African origin*' and '*Asian*'.

*NB* – Please be aware the '*Asian*' category refers to far east Asia. Anyone from near Asia (Middle East, Indian sub-continent) should be categorised under '*Caucasian*'.

**Q - What is the best way to turn on the RSD and PC?**

A - Turning on power to the system and starting the NAVIS-EX software

- Turn on the PC.
- Turn on the power switch of the system main body.
- Turn on the monitor and other peripheral devices.
- Double-click the NAVIS-EX icon on the desktop.
- The log-in screen appears.
- Input the log-in name and password. At the time of the initial start-up, the log-in name is '*User*'
- The password is '*User*'. Both the log-in name and password are case-sensitive.
- Click '*Log in*'. NAVIS-EX is activated.

**Q - Is there a specific order to turning on the RSD?**

A - No. Using Windows 10 means that it shouldn't make a difference which way round you turn on the PC and RSD. If you have any issues with the RSD connecting to the PC, boot the PC first and get NAVIS-EX running, then turn on the RSD.

**Q - Why does the touch screen not turn on?**

A - The power cord may not be connected. Check the connection of the power cord.  
The power switch may not be turned on. Check whether the power switch is turned on.

**Q - The touch screen does not turn on even though the system power is on.**

A - The system main body may be in sleep mode. Restore the system main body from sleep mode by pressing any button or by touching the RSD touch screen.

**Q - The touch screen turns off suddenly.**

A - The system main body may have gone into sleep mode. Restore the system main body from sleep mode by moving the mouse or pressing any button on the keyboard or by touching the RSD touch screen.

**Q - The computer monitor does not turn on even when the computer is in operation.**

A - The computer may be in sleep mode. Restore the computer from sleep mode by moving the mouse or pressing any button on the keyboard.

**Q - The computer monitor turns off suddenly.**

A - The computer may be in sleep mode. Restore the computer from sleep mode by moving the mouse or pressing any button on the keyboard.

**Q - Error codes 123, 151, 154, 602 or 604 are displayed.**

A - A communication error has occurred. A USB cable may have become disconnected or loose. Check all the connections between the RSD and the PC. Restart both the RSD and PC in the normal way.

Generally, error codes displayed on the OCT touchscreen should be reported to the team at Birmingham Optical.

**Q - What is the focussing range of the RSD?**

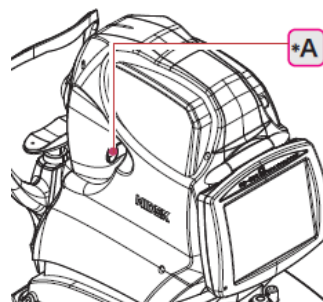
A - On its own, the RSD can cope with prescriptions -12D to +15D. Using the compensation lens can further increase this range.

**Q - The internal fixation lamp is blurred.**

A - The compensation lens may be inserted. Remove the lens by pushing the compensation lens select lever to the deepest position (0 position).

**Q - What is the compensation lens?**

A - The compensation lens is the black paddle located at the LHS of the RSD. The OCT will prompt you to 'switch to either a plus or minus compensation lens' if it requires any additional focussing power.



- If pulled out by one notch → MINUS
- If pulled out fully → PLUS

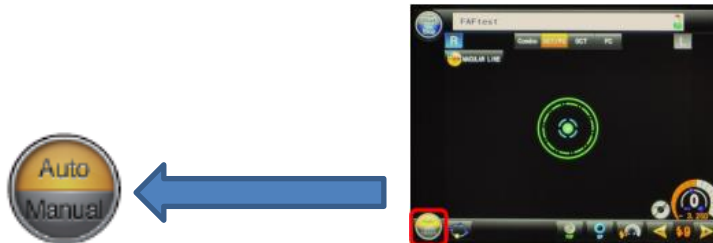
The device will always display a prompt message when required. Ensure the compensation is reset back into the device when complete.

**Q - The image cannot be captured.**

- A -
- The patient may not be looking at the fixation light at the time of capture. Instruct the patient to focus on the green fixation light.
  - The intended part may be outside the range for image capture. If the refractive power of the patient is outside the range within which the system can adjust the focus, insert a compensation lens using the compensation lens select lever.
  - The safety stopper may be the cause. Press and hold the safety stopper, then move the main unit to the position where image capture becomes possible.

**Q - The automatic image capture does not function.**

A - The manual function may be selected. Select the Auto function.



- The patient's eyelid may be detected, or the pupil diameter may not be large enough. Ask the patient to open their eyes wider.
- Room illumination may be reflecting on the cornea. Darken the room.
- The auto tracking and auto shot may not always function effectively with eyes with cataract, keratoconus or immediately after corneal surgery and where severe myopia or hyperopia (above -12D to +15D). In such cases, capture images by pressing the release button when scan is in position and ready to capture.

**Q - Why does the RSD move in and out automatically when the patient is in position?**

A - When the OCT is in the recommended *AUTO* capture mode, all the steps for capturing the OCT scan are fully automatic. The movements are the RSD trying to accurately focus on the retina. If the Px is not correctly positioned, they are moving excessively, or their tears are not sufficient to allow good focussing, the RSD may 'search' for the eye to try and obtain focus.

**Checklist:**

- 1) Position of the patient -make sure their chin is on the chinrest and head against the forehead rest.
- 2) Ensure the eyes are lined up with the eye level markers on the headrest.
- 3) Make the patients comfortable by adjusting the table and chin rest height.
- 4) Advise the Px, 'Look at the green dot inside the OCT, I will tell you when you can blink normally and when you must stare'.

**Q - Why is the Captured image quality low?**

A - The objective lens or the lens of the anterior segment adapter may be contaminated. Use the puffer to get rid of any debris, then wipe the surfaces with a clean, dry microfibre cloth. NEVER spray anything liquid into the RSD.

The patient's eyelid or eyelashes may be interfering with image capture. Ask the patient to open their eyes wider.

It is possible to increase the resolution of the OCT scan by increasing the '**OCT Sensitivity**'. By default, the scans are set to '*Regular*' sensitivity, but can be increased to '*Fine*' or '*Ultra-fine*'. Be aware by doing this the scan does take longer to capture.

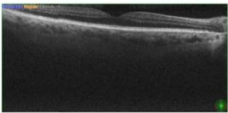
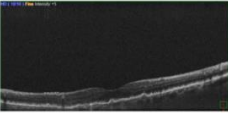

**Q - How can I ensure I have performed a 'good scan'?**

A - Before the patient positions themselves on the chin rest a brief explanation is recommended.

For example:

**'Please look at the green dot inside the OCT, I will tell you when you can blink and when you must stare. It is important to stay still and keep in position'**

- When '**OPTIMISING**' is displayed on the touch screen, the patient can blink normally.
- When 'Optimising' disappears from the touch screen, the scan is about to start and the px should stare.
- A single beep will sound as the scan starts and '**CAPTURING**' will be displayed on the touch screen.
- A double beep will sound to mark the end of the scan capture. At this point the patient can blink again.
- Once the scan is complete check and confirm a good scan has been taken.

<p><b>MACULA MAP SCAN</b></p> <p>(patient is advised to look straight ahead at the green light)</p> <p>Too high</p>  <p>Too low</p> 	<ol style="list-style-type: none"> <li>1) In a good scan, the SSI score should be 7 or over (at least 1 green bar).</li> <li>2) The position of the scan is central in the black box. A good floating scan. Not too high and not too low (shown in diagram)</li> <li>3) It is important to distinguish the difference between the 'zig-zags' of a blink which will appear all through the scan and the 'zig-zags' that appear just at the edges of the scan, which are normal.</li> </ol> <p>When all good = PRESS OK (scan saved).</p> <p>If bad =RETRY (scan deleted immediately).</p> <p>If unsure = NG (Not Great) this temporarily SAVES the scan and you can try again.</p>
<p><b>DISC MAP SCAN</b></p> <p>(patient is advised to follow the green light which moves to the side)</p> 	<ol style="list-style-type: none"> <li>1) In a good scan, the SSI score should be 7 or over (at least 1 green bar).</li> <li>2) The Optic disc image must be fairly central in the red box (<i>Spider in the box</i>). This confirms the patient has flooked where they were meant to.</li> <li>3) Centrally positioned with no blinks.</li> </ol> <p>To gain better positioning on scans, refining the position is recommended. This can be done using the white up and down arrows.</p> <p>The position of the scan can only be refined when <b>OPTOMISE</b> disappears off the screen and just before <b>CAPTURING</b> appears.</p>



**Q - Why does 'Z pos NG' or 'Focus NG' show on the RSD screen sometimes?**

A - There are two main reasons. Firstly, the Px may just have blinked inappropriately or at the wrong time during the capturing process – ask the Px to blink a couple of times and press 'AUTO Z' button. The RSD should now lock on and capture the scan.

Secondly, The RSD uses the tear film as its main focus. If the tears are drying out, 'Z pos NG' may appear - ask the Px to blink a couple of times and press 'AUTO Z' button. The RSD should now lock on and capture the scan.

In some cases, the use of lubricating drops for the eyes may be beneficial.

**Q - Why did the Optometrist ask for a repeat scan when the SSI was 7/10 on the initial scan?**

A - Even though the SSI was acceptable, the scan may have had other errors. Ensure you always check the scan on the PC monitor for positioning and blinks.

**Q - Why does the RSD take longer to Optimise in some patients?**

A - Think of the 'OPTIMISING' stage as fine tuning. The RSD will only optimise for as long as it needs to – this may be 5 seconds or half a second. If it has the retina in focus it will try and capture the scan. Always follow the rule of, 'if 'OPTIMISING' is on the RSD screen, the Px can blink normally – if 'OPTIMISING' is not on the RSD screen, the Px must stare'.

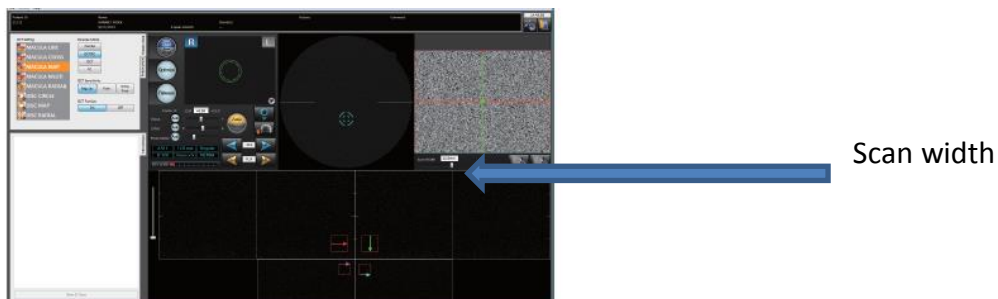
**Q - I'm struggling to capture a good scan on a Px with high myopia / astigmatism.**

A- The shape of the b-scan can vary, especially if the patient has high myopia ('U' shaped) or high astigmatism ('Diagonal'). These differences make it more difficult for the RSD to know where to focus and as a result difficult to get the scan positioned satisfactorily in the scan box.

B- To improve an image, you can reduce the scan width which has the effect of 'flattening out' the curves, which makes it easier for the RSD to automatically focus.

You can also turn off 'Auto-shot' (in the options menu) to give yourself more time to position the scan before capturing using the joystick button.

For the most difficult eyes, capturing on 'Manual' mode will probably help (see Manual capture guide).



**Q - If the scan has not captured automatically, should I press the capture button on the joystick?**

A - If the scan does not automatically capture, it is possible to perform a manual scan capture by pressing the capture button on the joystick.

Manual over-ride in this way should be done with caution, if the scan has not automatically captured this is normally for good reason and scan quality will likely be poor.

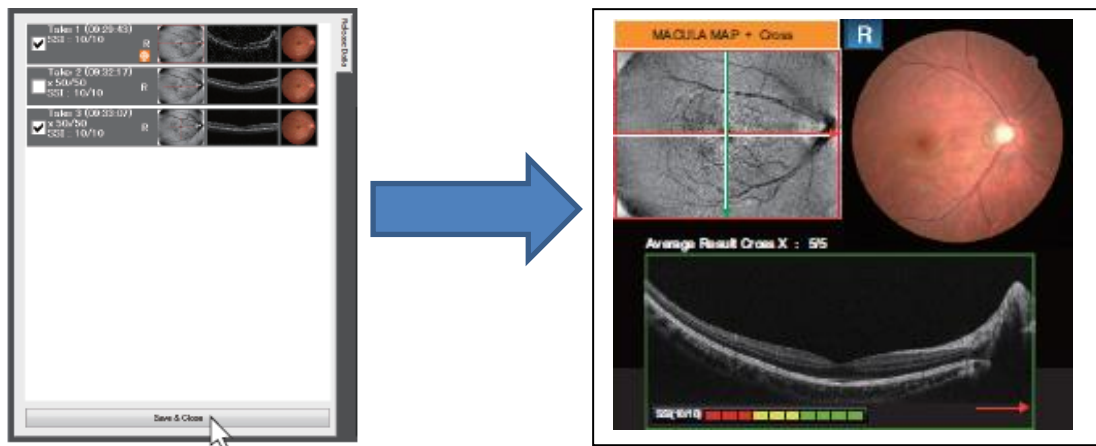
**Q - The Optometrist has requested another scan after the eye exam, how can I do this?**

A - The key point is the Optometrist will be very specific as to which scan they request. Along the top of the RSD touchscreen there are 4 buttons. Select **OCT**, then press the scan name to reveal all the possible scan types. Choose the requested scan from the menu and press close.

- **COMBO** - Pre-set programme (most likely the first-choice option).
- **OCT/FC** – One OCT scan immediately followed by a fundus photo.
- **OCT** – One OCT scan only.
- **FC** - Fundus camera – photo of the back of the eye

**Q - Is it possible to review scans before saving? I cannot remember which scan was best!**

A - It is possible to review scans before selecting 'Save and Close'. The small grey thumbnails can be double clicked to open the scan review page.



Any scans that are left unticked will **NOT** be saved onto the patient file.

**Q - Can you capture a single eye on 'Combo' mode?**

A - You can complete a combo scan on both or an individual eye depending on the needs of the patient or clinician.

To complete a 'Combo' scan on a single eye, align with the eye to be tested and run the complete combo scan.

The 'Save and Close' will be replaced with 'Show Release Data'. By selecting 'Show Release' after the tested eye is complete the scan thumbnails and 'Save and Close' will display. Scans can now be saved as normal.

**Q - How do I get back to somewhere I recognise?!**

A - Press BACK and this will return to the main Px screen or database screen.



If in capture mode, use the 'out of the door icon'.





**Q - What is the shutdown procedure at the end of the day?**

A -

- Always close NAVIS-EX software.
- Shut down Windows. Alternatively, you can leave the OCT capture PC on and it will enter low power mode. Many clients choose to do this.
- Turn off power to the PC.
- Push the compensation lens select lever (A) to the deepest position.
- Turn off the power switch to the RSD main body. Power can be turned off regardless of the displayed screen.
- Place the objective lens cap on the objective lens.
- Clean the forehead rest and chinrest and fit the dust cover