Vision Screener

Short Manual 10

“Troubleshooting malfunctions and measurement interruptions”

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This manual is a supplementary short manual. For important information about your device, such as its intended use, basic handling, technical information, maintenance, service, and warranty information, please refer to the user manual that was delivered with your Plusoptix device. This user manual can also be downloaded on our homepage (plusoptix.com), under support.

List of further supplementary short manuals

1. Checking the scope of delivery and learning about the device
2. Adjusting settings and setting up WLAN
3. Preparing and performing a measurement
4. Viewing the measurement results
5. Entering, retrieving or deleting patient data
6. Documenting measurement results electronically
7. Documenting measurement results on paper
8. Exporting back-ups and reports (only plusoptiX S12C and S16)
9. Downloading software updates
10. Troubleshooting malfunctions and measuring interruptions

1 Troubleshooting guide

Over 80% of all service inquiries relate to errors when switching on the Plusoptix Vision Screener, errors when operating the screen or measuring interruptions, which have been caused by errors in using the Plusoptix Vision Screener. These errors can only be attributed to the Plusoptix Vision Screener in very rare cases. In the following chapters, you will find step-by-step instructions about diagnostics and troubleshooting.

2 Trouble-shooting when switching device on

a) The “plusoptiX S12C” or “plusoptiX S12R” cannot be switched on

If the „plusoptiX S12C / S12R“ cannot be switched on, connect the power adapter to a plug and check whether the green LED lights up on the upper side of the power adapter. Now connect the 12V charging cable to the device. If the device now switches on, check whether rechargeable batteries are inserted correctly (see short manual 1).

b) The “plusoptiX S12C” or “plusoptiX S12R” switches off again immediately

If the device switches off again immediately, the rechargeable batteries are likely to be discharged. Connect the 12V charging cable to charge the batteries. Check whether the power supply unit is receiving current (green LED on top of the power adapter lights up). You can use the device while it is being charged. To do so, simply switch the device on while the 12V charging cable is connected.

c) The “plusoptiX S16” cannot be switched on

If the “plusoptiX S16” cannot be turned on, plug the power supply into a socket and check whether the green LED on the top of the power supply lights up. If not, use another socket.

3 Malfunctions when using touch screen

a) Screen of “plusoptiX S12C / S12R” switches off suddenly

To save power, the device automatically switches the screen off after some time. Touch the screen to activate it again. If the screen is not activated by touching it, the device has switched off automatically. Simply switch it back on again by pressing the On/Off button.

Note:
Define in Basic settings after how many seconds the device should automatically switch off the screen and after how many minutes it should automatically switch off itself.

b) Buttons on screen do not function

plusoptiX S12C:
Place the fingertip of your index finger flat on the screen to select a button. Do not tap on the screen with the fingertip or finger nail.

plusoptiX S12R and S16:
Tap on the screen with the fingertip or finger nail.

Every time you touch the screen a small mouse pointer indicates the place in which the screen has been "hit". If you are unable to select a button by touching the screen, check the position of the mouse pointer on the screen. Ensure that the mouse pointer hovers above the button.

Please read short manual 1 to learn more about the option to connect an USB-keyboard and –mouse.

c) Screen flickers during a measurement

If the camera lens of the device is too close to a person or an object, the integrated infrared LEDs automatically switch off. The camera image on the screen is then not exposed and shows up black. After a second, the devices switches on the infrared LEDs again and if the person or object is still too close to the camera, only a short white flicker appears on the screen before the infrared LEDs are switched off again.

Simply increase the distance between the camera lens and the person or object, and the exposure of the camera image will automatically adjust again.

4 Troubleshooting measurement interruptions

If no measurement results are available, an error message and an action recommendation followed by a "Refer or try again" or “Try again” status message are displayed.

Attention:
If you receive the “Refer or Try again” screening result three times in a row and the surrounding conditions for the measurement are correct, the child must be referred for a further examination by an ophthalmologist.

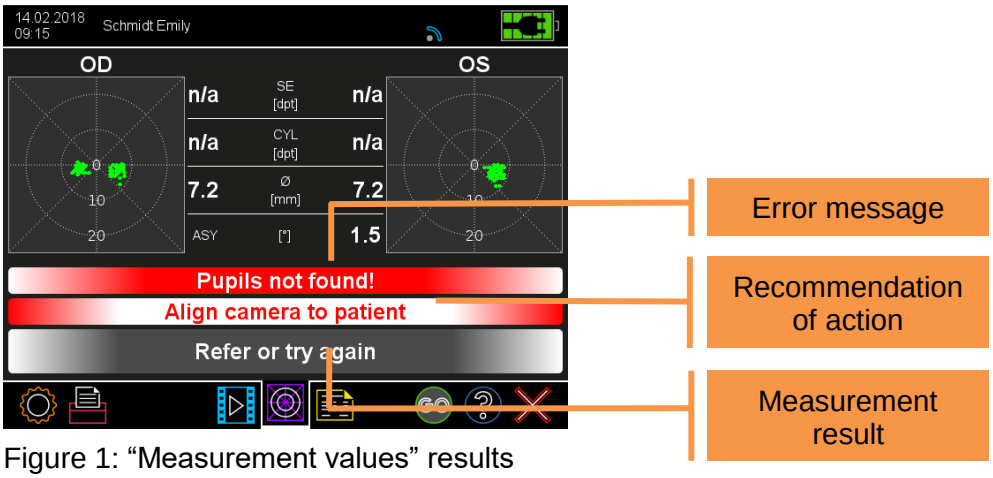


Figure 1: “Measurement values” results page after an inconclusive measurement

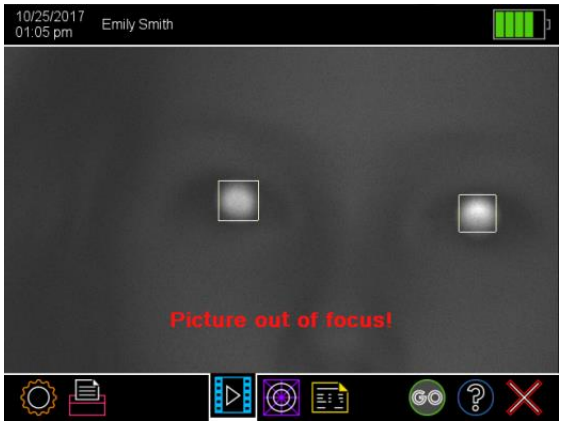
Note:
Causes of errors, which are recognised by the Plusoptix Vision Screener, are highlighted in red on the “Measurement values” results page. After each inconclusive measurement, check both the readings and the pupils in the camera image to determine the cause of the error. On the camera image, the cause of the error message can usually be better recognized by looking at the pupils, as on the results page "Measurements".

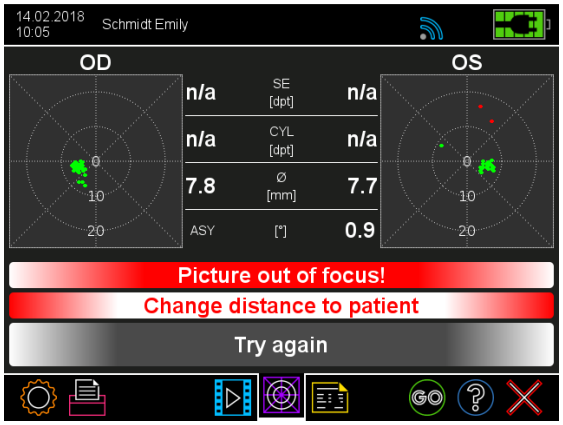
The following overview provides a list of all error messages that are stored in the software:

a) "Picture out of focus"
b) "Patient does not focus on the camera!"
c) "Pupils too big!"
d) "Pupils too small!"
e) "Too much IR ambient light!"
f) "Pupils not found!"
g) "Measurement incomplete!"
h) "Corneal reflexes are too dark!"

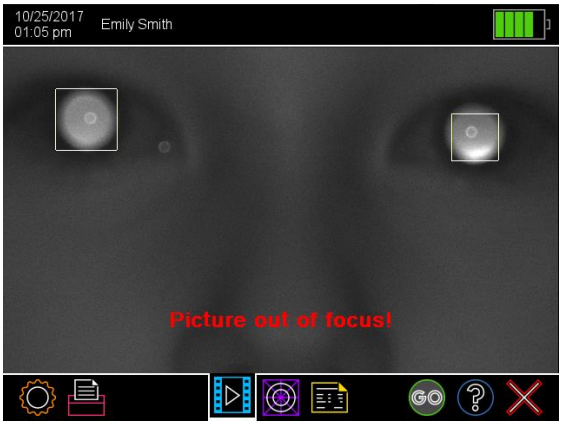
These errors are described below.

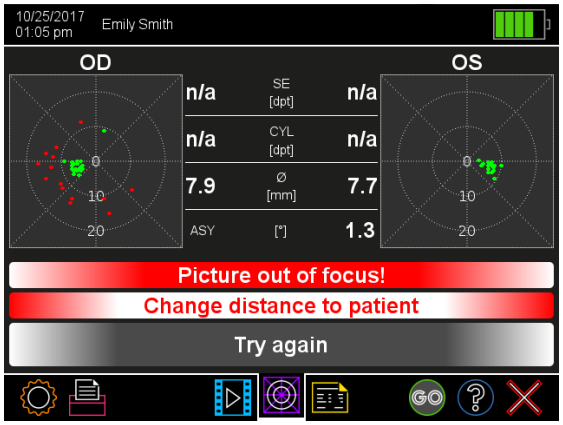
a) Picture out of focus





In this example, the patient is too far away. Other than the eyes, half of the patient's face can be see in the camera image.





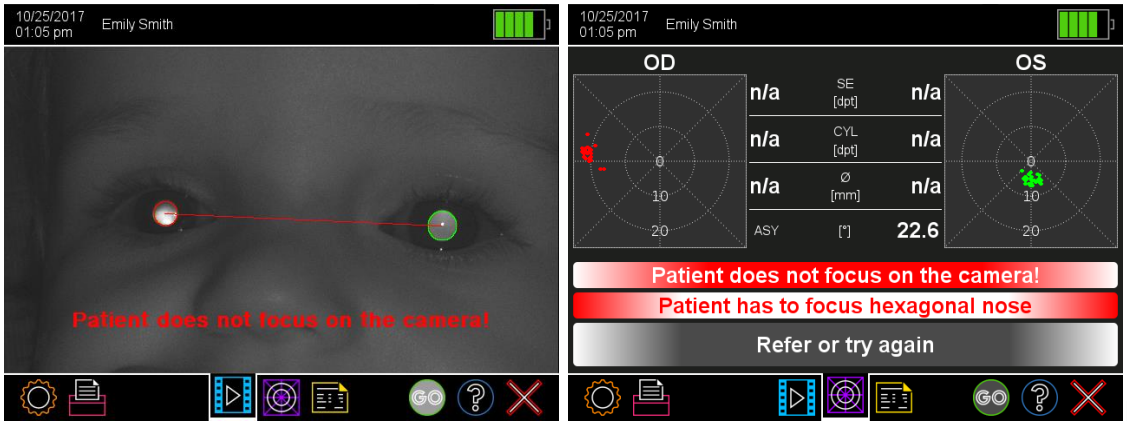
In this example, the patient is too close to the "plusoptiX S12". Both eyes are close to the left and right edges of the camera image.

Cause: This error message is shown if the measuring distance is not right.

Reason: The camera is well focussed on the measuring distance of 1 meters and measures from a distance of between 37⅓ and 41⅓ inch (95 and 105 cm).

Tip: You can detect the correct measuring distance when the camera image is shown in high definition on the screen and you can see each individual hair of the eyebrows and eyelashes.

b) Patient does not focus on hte camera!



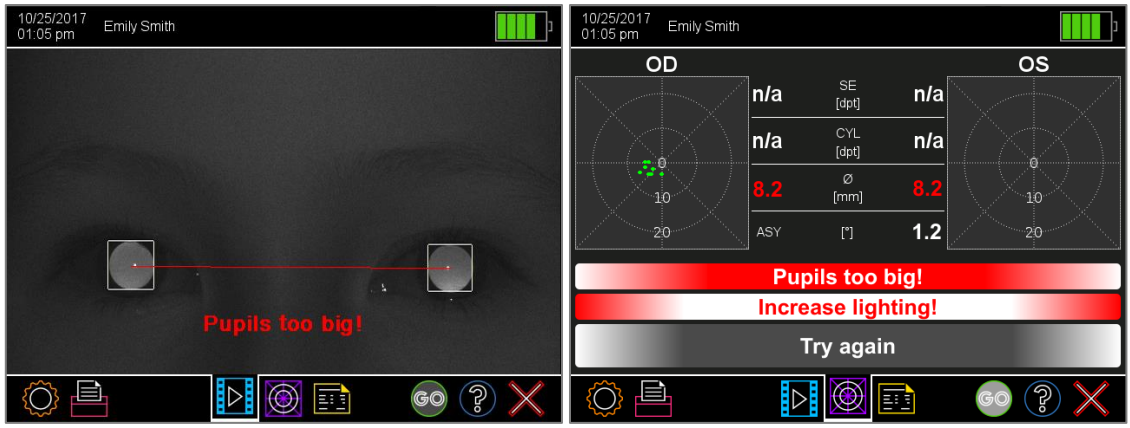
In this example, the patient is looking to the left of the camera (when seen from the patient). The red points in the gaze map highlight this line of vision.

Cause: This error message is shown if the patient is not looking at the hexagon on the camera face.

Reason: To avoid incorrect refraction measurement values in the periphery of the eyes, both eyes must be facing the middle of the camera.

Tip: Position the child so that their knees and nose are facing the camera. Do not use any external fixation aids and stay calm! Both corneal reflexes must be seen in the centre of the pupil middle on the camera image. Only green points should be seen in the two gaze maps on the “Measurement values” results page.

c) Pupils too big!



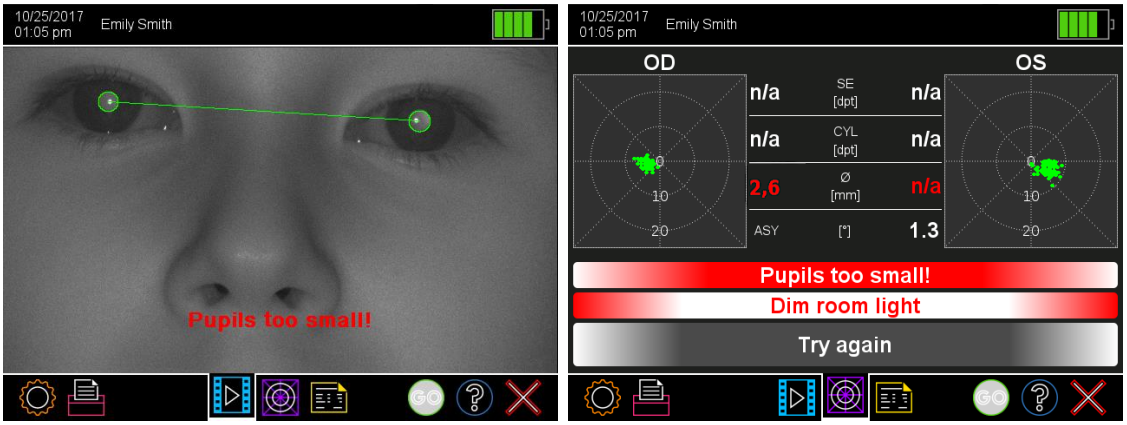
In this example, the pupils are greater than 8.0 mm.

Cause: This error message is shown if one or both pupil diameters are greater than 8.0 mm.

Reason: The pupil reflexes will be overexposed if the pupils are too large. In this case, the measurement will be interrupted inconclusively. If measurement values are still shown, these have a greater tolerance.

Tip: Brighten the examination room so that the pupils become smaller.

d) Pupils too small!



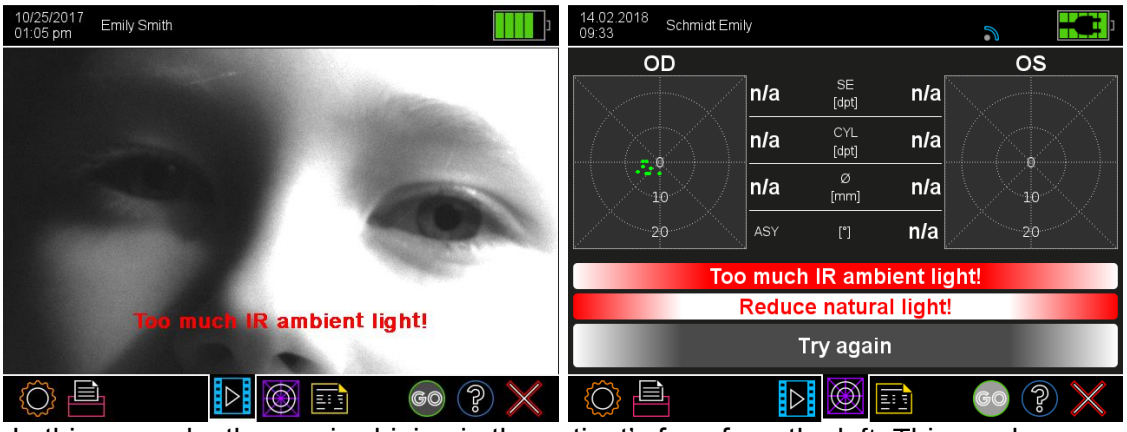
In this example, the pupils are smaller than 3.0 mm.

Cause: This error message is shown if one or both pupil diameters are smaller than 3.0 mm.

Reason: The pupil reflexes will be underexposed if the pupils are too small. In this case, the measurement will be interrupted inconclusively. If measurement values are still shown, these have a greater tolerance.

Tip: Make the examination room darker so that the pupils get bigger. Avoid an excessively dark examination room, as children will feel unhappy and try and look around. The examination room should be at least so bright that you could read a newspaper.

e) Too much IR ambient light!



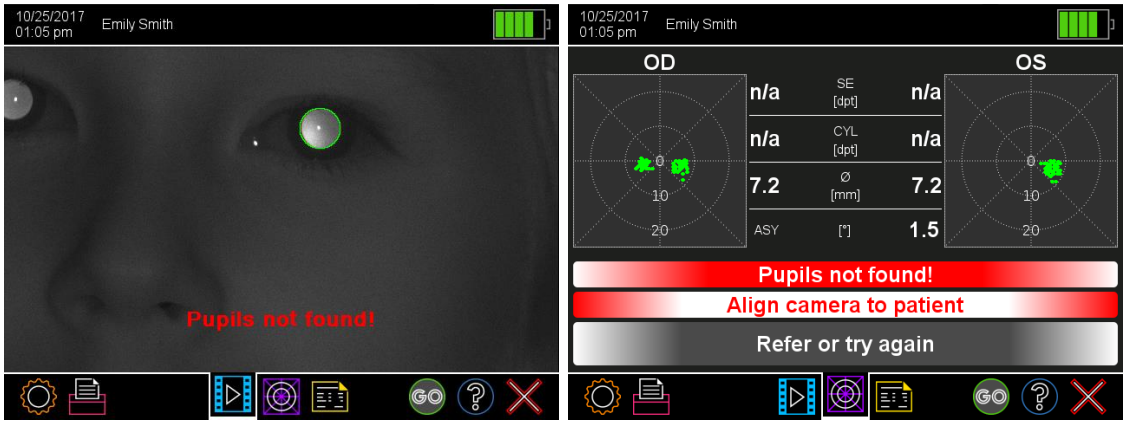
In this example, the sun is shining in the patient's face from the left. This can be seen from the shadows over the nose.

Cause: This error message is shown if there is too much infrared light in the examination room.

Reason: The measurement is carried out using infrared light and other sources of infrared light (e.g. sun, halogen spotlights, lightbulbs etc.) cause disturbances.

Tip: Close the curtains to block out the sunlight, turn off or dim heat-radiating light sources or point them in a different direction.

f) Pupils not found!



In this example, neither pupil can be seen completely on the camera image.

Note:

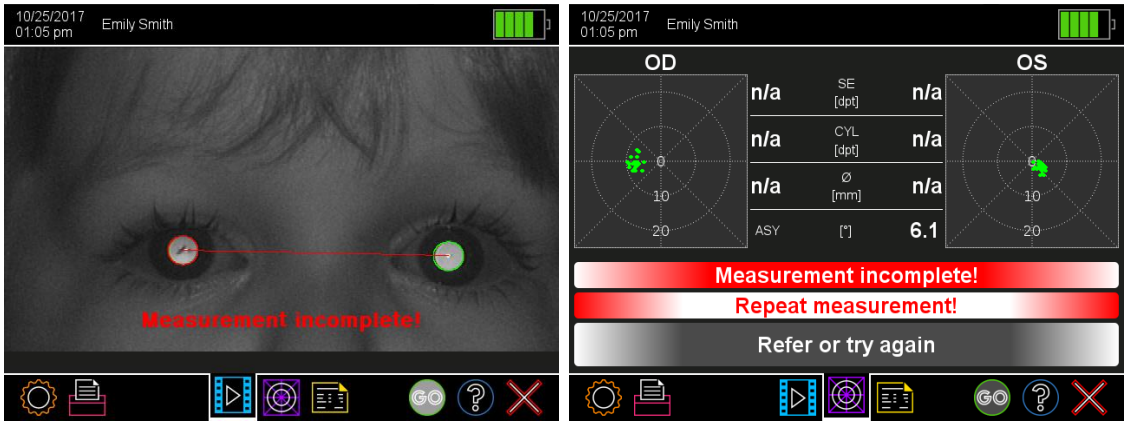
The error message “Pupils not found!” can have many other causes (e.g. scars on the cornea, media opacities, cataracts, keratoconus, retinal detachments, etc.). For this reason, the camera image must be checked in case of this error message.

Cause: This error message is displayed if the software cannot recognise pupils in the camera image, the pupil reflex looks unusual or the pupils are partially covered by reflections, hair, eyelashes or eyelids.

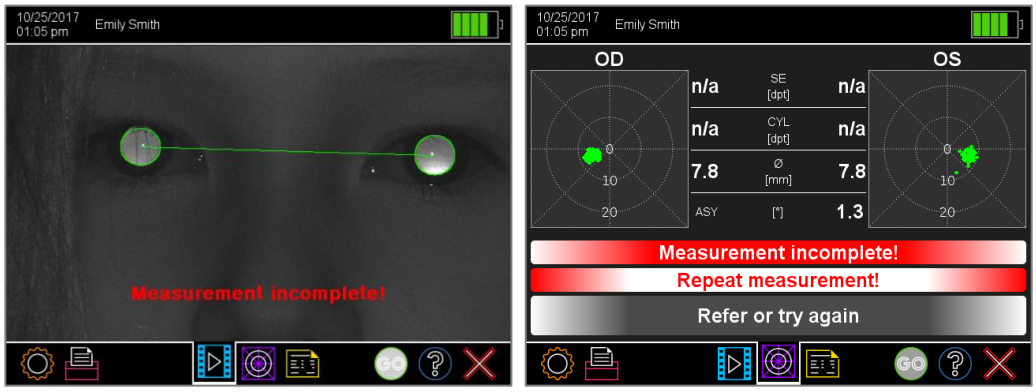
Reason: To be able to take a measurement, both pupils must be fully visible and the infrared light of the camera must be reflected by the retina.

Tip: Brush long hair out of the face before taking the measurement. Ask the child to open their eyes wide or lift their chin if they are looking shyly to the ground.

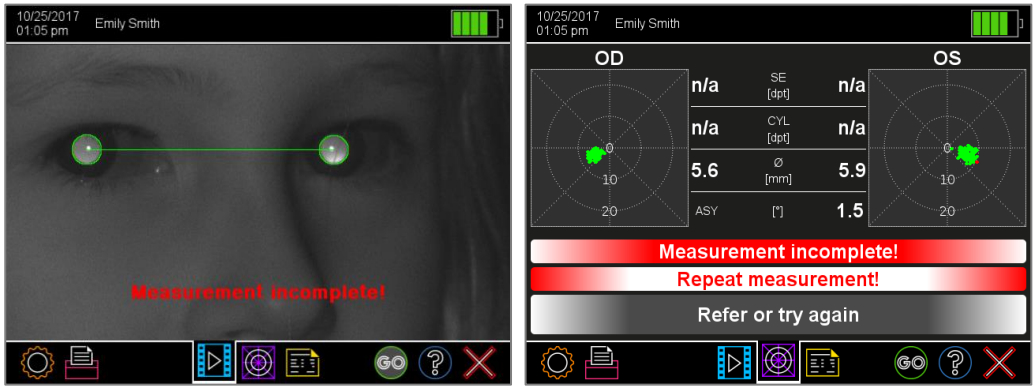
g) Measurement incomplete!



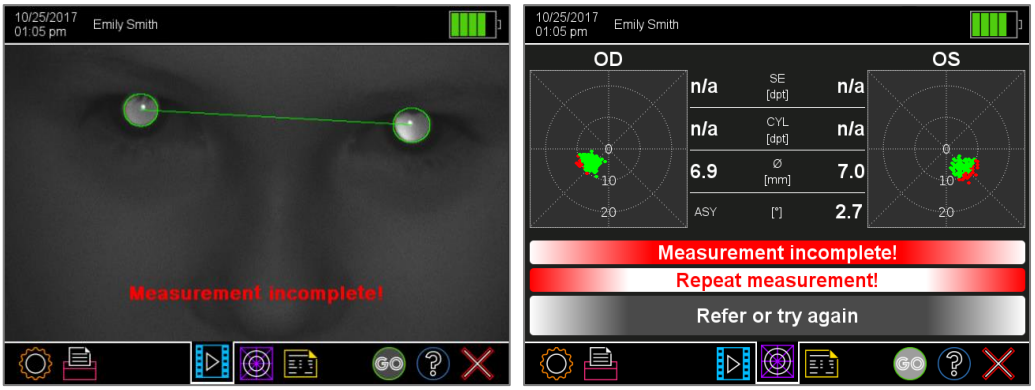
In this example, the right pupil (OD) is partially covered by a media opacities (cataract).



In this example, the right pupil is covered by the upper eyelashes and the left pupil by hair.



In this example, the patient is sitting at an angle to the camera and looking over his right shoulder a little. You can see this from the fact that his nose can be seen from the side.

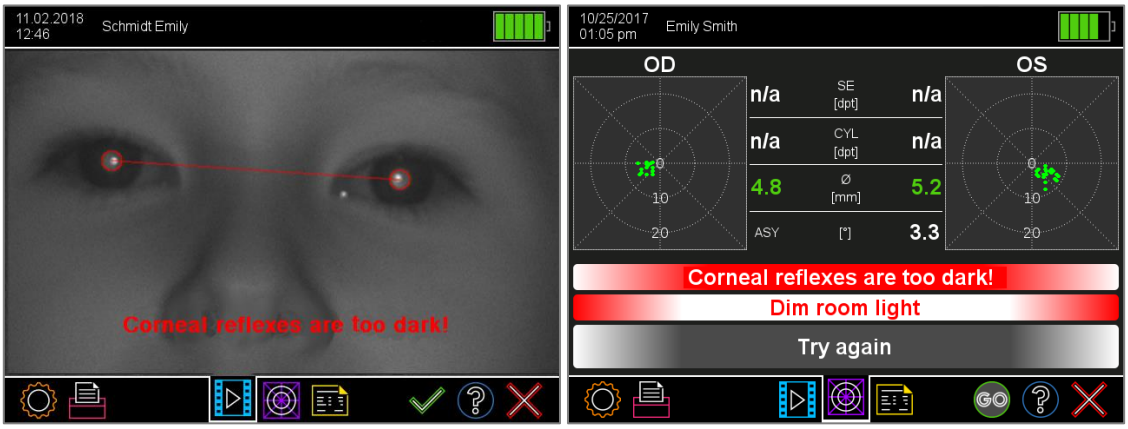


In this example, the patient has tilted their head downwards and is looking up into the camera. The pupils are partially covered by the upper eyelids.

Note:
The error message “Measurement incomplete!” can have many other causes (e.g. scars on the cornea, media opacities, cataracts, keratoconus, retinal detachments, etc.). For this reason, the camera image must be checked in case of this error message.

Cause: This error message is displayed when the measurement has started, but could not be completed.
Reason: After a measurement has begun, this must be completed within 20 seconds.
Tip: Start the measurement again immediately by pressing the trigger twice.
Position the child so that their knees and nose are facing the camera. Ask the child to lift their head or hold the Plusoptix Vision Screener lower down.

h) Corneal reflexes are too dark!



In this example, too little infrared light is reflected from the retina.

Cause: This error message is displayed if the corneal reflexes are too dark.
Reason: The measurement is carried out with infrared light which is reflected from the retina. If too little light comes back from the retina, no measurement can be taken.
Tip: Darken the examination room so that the pupils become larger and more infrared light can return to the camera.