



User manual

Analyzer DNA

version 2023/11/11

#8460



Dear user, thank you for purchasing **Divesoft Nitrox Analyzer**.
We wish you many safe NITROX dives.

DISCLAIMER

WARNING This analyzer is designed for measuring the content of oxygen in air or NITROX. It cannot be used to analyze mixtures containing other gases than oxygen - nitrogen mixtures. For diving breathing mixtures containing helium use one of DIVESOFT's trimix analyzers.

ATTENTION: THE DEVICE IS NOT WATERPROOF. DO NOT EXPOSE THE ANALYZER TO WATER.

The physical and chemical principles of the sensors used do not guarantee that the sensors will be selectively sensitive to a specific gas (oxygen, helium); there are a number of gases to which the sensors respond. Therefore, the gas composition shown by the analyzer does not mean by itself that the real composition of the mix is equal to the displayed values. The displayed mix composition is invalid unless the mixing technology ensures that there are no other gases present in the mix except air/nitrogen, pure oxygen and pure helium.

The analyzer is not a certified measuring instrument. The results of measuring are only informative and it is not possible to use such results where a certified measuring instrument is required.

When analyzing mixes in situations where the incorrect composition of the mixes could cause material damage, injury to health or threaten human health or life, for example in the

case of breathing mixes for diving, the results of the analysis may not be used as confirmation of the correct mix composition. In these cases, the analyzer can only be used as an aid for increasing the probability that such incorrect mix composition will be detected before its use. The correctness of the mix composition must be established by the technology used to prepare it.

The correct preparation of breathing mixes for diving (NITROX included) requires special knowledge and experience which is possible to gain, for example, through an appropriate course. A failure to apply such knowledge can lead to an incorrect mix, even though the results of the analysis are seemingly correct. Such a situation can also be the result of a failure to take into account the influence of temperature and compressibility, an insufficient blending of the mix and other factors.

Please remember that the analyzer can be broken or damaged and that the oxygen sensor is by its nature subject to ageing and thus its properties deteriorate.

Therefore always verify the measured data in another way, such as by precise preparation of the mix, another analytical method, etc. In addition, the measured value must be subject to critical assessment using a common-sense approach and if it differs from the allowable variation of mixing accuracy, it must be considered invalid.

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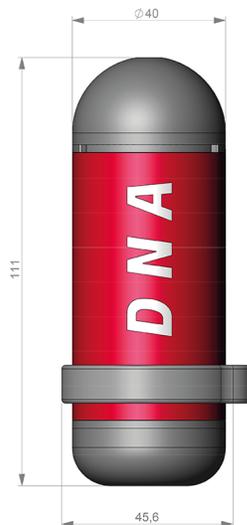
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1. TECHNICAL DATA



Dimensions: 45,6 × 111 x 40 mm

Weight: 100 g

Weight with DIVESOFT sensor: 126 g

Battery used: CR 2450

Compatible oxygen sensors: R22S, R22D

Measuring range: Total measuring range is up to 300mV, uses two subranges (up to 150mV and up to 300mV). The switching is automatic. The polarity of the sensor must be observed.

Accuracy: Oxygen analysis from 1-100% with accuracy of +/-1%.

2. USE

2.1 Before first use

For battery saving reasons before purchasing the product, the battery is separate from the analyzer. Before first use, **install the included battery** according to section **3.1 Battery Replacement**

2.2 App Download

To use the analyzer, you must download the Divesoft.App. This app is available for both Android and iOS phone operating systems. These versions are available here, or directly in the app stores:

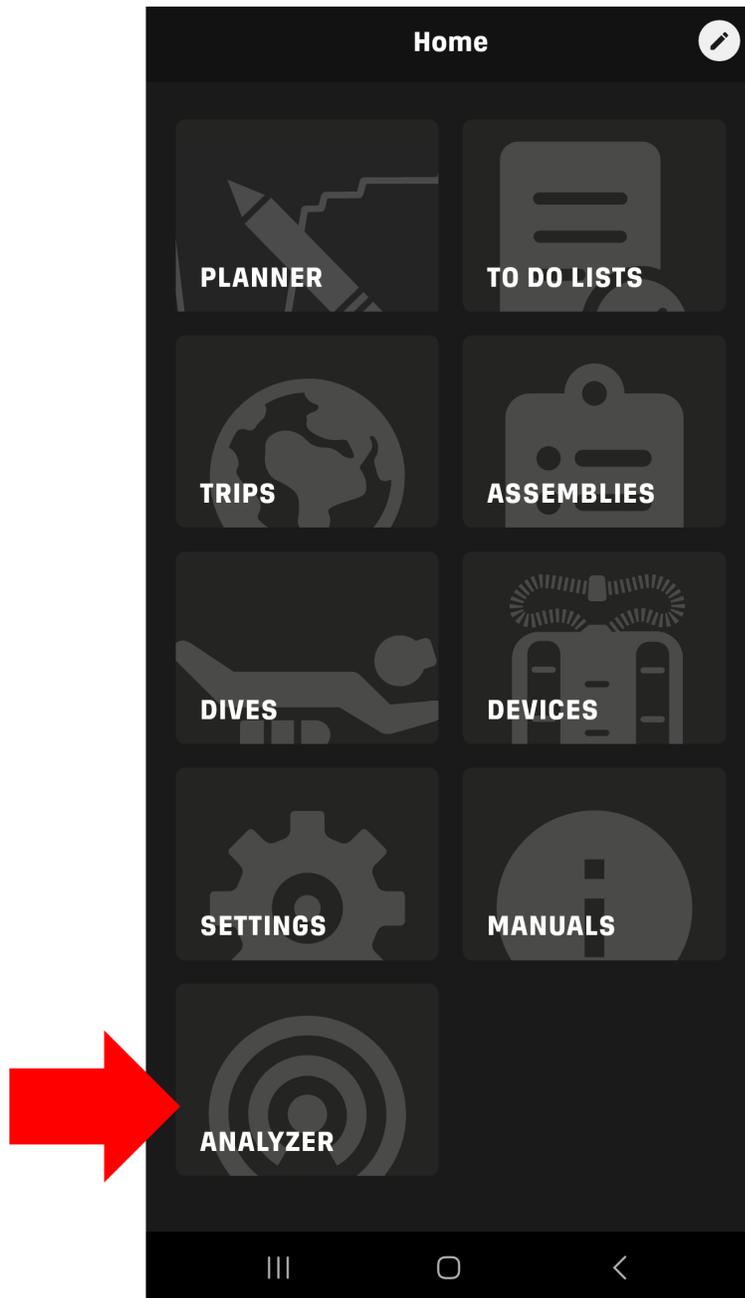


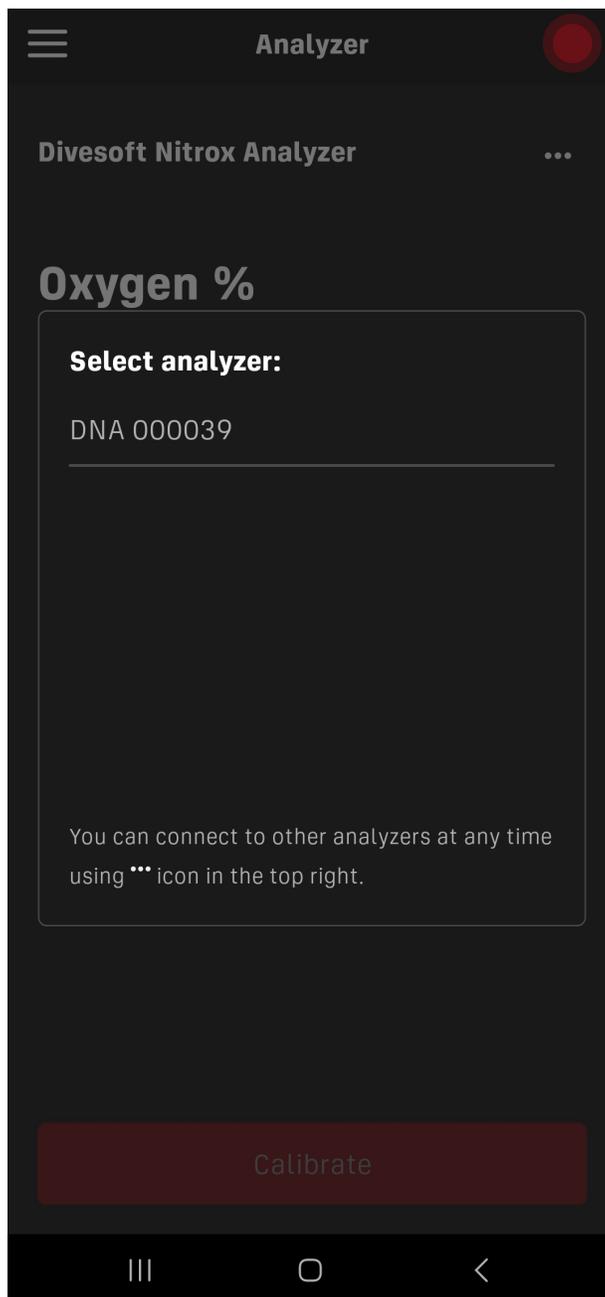
NOTE: Analyzer feature works in app version 1.7.0 or higher.

2.3 Pairing

1. Launch the app on your mobile phone.
2. Select the ANALYZER tile on the home screen.
3. The app will give you available analyzers nearby. The serial numbers of the DNA analyzers are displayed. The serial number can be found on the body of the analyzer under the ring.
4. The app will show you a measurement screen with the uncalibrated sensor and the sensor voltage value.

Note - the next time you run the app, if the paired DNA analyzer is in range, the app will display the analyzer measurement directly.





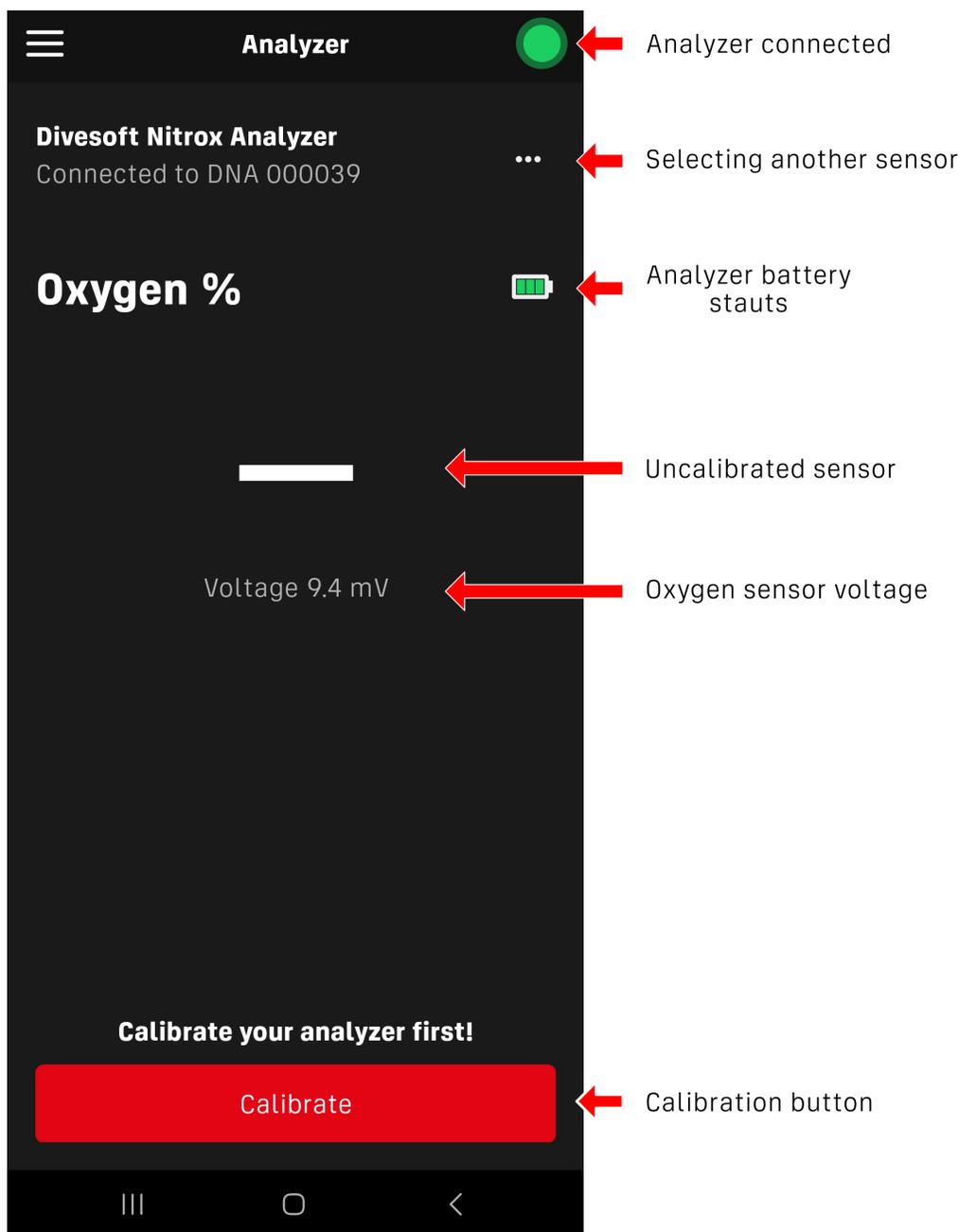
2.4 Calibration

Calibration is required before each new use of the analyzer. Calibration can be to ambient air or to oxygen.

In the case of calibration to air, it must be ensured that the gas in contact with the sensor is guaranteed to be air. If there is a risk that the sensor has been purged with a gas other than air,

draw air from the inlet hole of the analyzer for about 10 seconds.

If calibrating on oxygen, a guaranteed source of pure oxygen is required. For oxygen calibration, we recommend the use of a professional DIVESOFT flow limiter with tubing for accurate and efficient calibration.



1. Select the calibration option using the button at the bottom of the app screen.

2. Select the calibration method AIR or OXYGEN.
3. Allow the calibration gas to flow into the analyzer and wait for the sensor voltage to stabilize.
4. Press CONFIRM.



NOTE: Ensure that the sensor voltage value is within the sensor manufacturer's parameters when exposed to the gas. DIVESOFT oxygen sensors have an air voltage range of 7 - 13 mV. It is advisable to verify that the sensor shows linear measurement

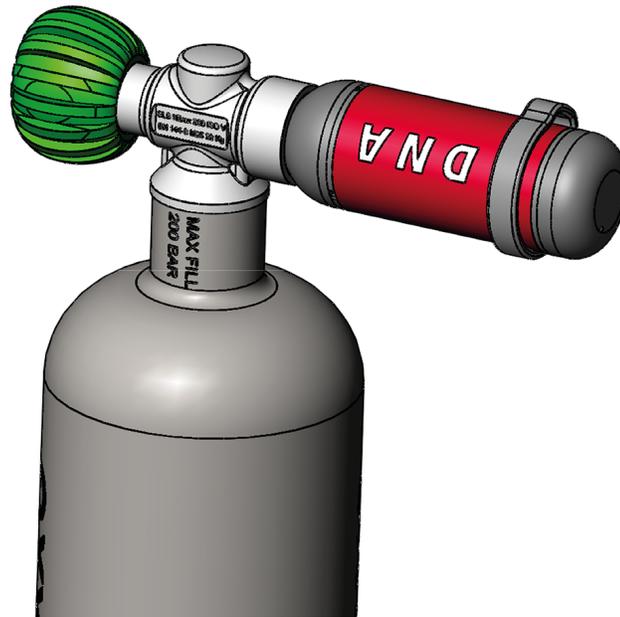
values When calibrating on oxygen. This can be done by multiplying the air voltage value by 4.76. The result should correspond to the voltage value on oxygen.

2.5 Analyzing

Start the application and wait for the DNA analyzer to pair - display the mixture value and the oxygen sensor voltage. Open the valve of the cylinder containing the gas to be analyzed so that only a very gentle stream of gas escapes from the valve. Place the front of the analyzer against the bottle valve and press firmly so that all the analyzed gas flows through the analyzer and no gas leaks past.

Monitor the value in the mobile app. The steady state value can be considered as the measurement result.

NOTE: For a more accurate and efficient measurement with minimal loss of measured gas, use the **DIVESOFT professional limiter**. The flow limiter tubing fits into the inlet hole in the front of the restrictor.



3. MAINTENANCE

3.1 Battery Replacement

The DNA analyzer uses commercially available **CR 2450** button cell batteries.

The battery life in the analyzer is 1 - 2 years. The battery status is displayed on the application screen when the analyzer is connected. Replace the battery if the battery capacity is low or the application cannot find the analyzer at all.

1. Pull the bottom of the analyzer out.
2. Remove the battery - use your fingernail or a flat tool to flip the metal lever to the side and remove the battery.

3. Insert the new battery with the narrower side down.
4. The LED will flash 8 times green if the battery has sufficient capacity. If the battery capacity is low, the LED will flash 8 times in red.

The battery is included in the package.

The battery is not covered by the warranty.



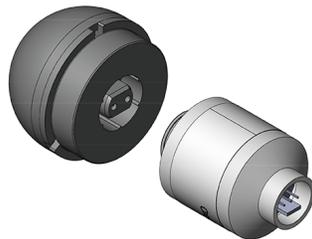


3.2 Changing the sensor

R22 sensors with molex connector are used in the device. For the analysis of NITROX mixtures, sensors discarded after 1 year of use in rebreathers can be used. The sensor should not be more than 2 years old overall at the time of use in the analyzer and should produce a voltage within the range specified by the manufacturer.

1. Pull out the front of the analyzer (Do not use brute force or violent movement to avoid damage to the cables).
2. Remove the molex connector. To remove the molex connector, use a fingernail or flat tool to pry the white lever inside the sensor and gently pull on the connector cables.

3. Unscrew the sensor from the analyzer.
4. Screw the new sensor into the front of the analyzer.
5. Connect the molex connector. CAUTION: The polarity of the sensor must be observed!
6. Pressurize the front of the analyzer into the analyzer body.



The sensor is not included in the basic package.

3.3 Firmware update

WARNING: Do not perform a firmware update with a low battery. Check battery status before updating firmware.

1. Download the new firmware to your smartphone from the DIVESOFT support site <https://www.divesoft.com/en/support>

2. Download the external nRF Device Firmware Update application and run it.
3. Pull out the bottom of the analyzer.
4. Start the bootloader - Press the button in the hole in the bottom of the analyzer for 6 sec. To press the button, use, for example, a SIM card removal tool or a paper clip, etc. If the bootloader is successfully switched, the LED next to the battery inside the bottom of the analyzer lights up for 1 sec in red and then the red and green LEDs flash alternately.
5. In the application, select the downloaded firmware file.
6. Select the DNA analyzer. In the application it is displayed as DNA-DFU (only if switched to bootloader). The serial number is not displayed.
7. Press START in the application.
8. After the firmware is loaded, the new firmware will automatically start.

NOTE: Should an error occur during upload, the device will remain in bootloader mode and the action can be repeated. In case of inactivity for 2 minutes, the analyzer will switch back to standard mode.

3.4 Used sensors and batteries

Treat used oxygen sensors as hazardous waste. Use collection points or containers designed for the collection of used batteries.

Dispose of used batteries in designated collection containers or take them to a collection point.

ANALYZER DNA - USER MANUAL

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