

**Nitroxbuddy2**  
breathe smart

## ***SMART Oxygen Analyzer***



## ***User Manual***

**DiveNav**  
EXPLORE YOUR OCEAN

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## 1 WELCOME

Thank you for purchasing Nitroxbuddy2, the world first SMART Oxygen Analyzer specifically designed for Scuba divers.

You can use Nitroxbuddy2 either as a stand-alone device or connected to your smartphone via Bluetooth.

When you use Nitroxbuddy2 together with the My Nitroxbuddy App you can analyze your scuba tanks using your smartphone or tablet. You can also save logs of your analysis and add to them useful information such as images, tank info, fill cost, and dive operator.

You can also use the My Nitroxbuddy App to determine the Maximum Operating Depth and the Equivalent Air Depth. Check on our website how to get the My Nitroxbuddy app.

## 2 NITROBUDDY2 OVERVIEW

Nitroxbuddy2 can analyze gasses with Oxygen content from 0.3% to 99.9%.



Integrated  
Tank adapter

Dot Matrix LCD  
with Backlight

Oxygen Sensor

Rechargeable  
Li-Ion battery

Activation button

Data logger:  
- Oxygen  
- Temperature  
- Ambient Pressure

USB

Nitroxbuddy2 features a user rechargeable Li-Ion battery, a Dot-matrix LCD display and a Bluetooth low energy transceiver so it can be programmed and/or controlled with a smartphone or a tablet.

The Nitroxbuddy2 housing includes an integrated tank adapter so it can be used to analyze a gas directly from a SCUBA tank. Additionally DiveNav offers a low pressure BC adapter accessory that mounts directly on the housing.

## 3 WARNINGS

**WARNING: Scuba Diving is a dangerous activity. Diving with an incorrect breathing gas mix could lead to serious personal injury and even death. Make sure you know how to properly calibrate and use your Nitroxbuddy2. Read and follow the instructions contained in this manual.**

**WARNING: Nitroxbuddy2 includes an Oxygen sensor that must be calibrated before each use. An improper calibration may result in the use of an incorrect breathing gas mix, which could lead to serious personal injury and even death.**

**WARNING: Do not use Nitroxbuddy2 if you are not Nitrox certified.**

**WARNING: Do not use Nitroxbuddy2 if it is not calibrated.**

**WARNING: Keep Nitroxbuddy2 away from heat sources.**

**WARNING: Do not expose Nitroxbuddy2 to direct sunlight.**

**WARNING: Do not place Nitroxbuddy2 under heavy object such as scuba tanks.**

**WARNING: Store Nitroxbuddy2 in a dry place.**

**WARNING: Do not immerse Nitroxbuddy2 underwater.**

**WARNING: Nitroxbuddy2 includes an electrochemical sensor containing potassium hydroxide which can cause burns if it comes in contact with eyes, skin and other body parts. Dispose of sensors according to local regulations.**

**WARNING: Nitroxbuddy2 is designed for use at atmospheric pressures only. It is not designed for use in a hyperbaric chamber. Use of Nitroxbuddy2 in a hyperbaric chamber will result in incorrect readings and may damage the unit.**

## 4 BEFORE FIRST USE

When you unpack your Nitroxbuddy2 make sure you have received all the accessories; if you have ordered a basic Nitroxbuddy2 you should have received also an USB charging cable. If you have ordered a Nitroxbuddy2 DELUXE, in addition to the USB cable you should have also received a carrying case and the Low Pressure Inflator adapter. Please note that the carrying case is NOT waterproof.

Before you use your Nitroxbuddy2 for the first time make sure that it has not been damaged during shipping or that internal components did not come loose. First check Nitroxbuddy2 for any sign of damage then gently shake it and listen for any rattling sound.

Now turn ON your Nitroxbuddy2 by pushing the activation button and check for the battery symbol to be full. If not, place Nitroxbuddy2 under charge for a couple of hours.

## 5 QUICK GUIDE

To turn ON your Nitroxbuddy2 just push the activation button; Nitroxbuddy2 will first show a welcome screen and then, if there are no errors or warnings conditions, will enter the main screen.

See the SETTINGS section for more details on errors or warnings conditions and the various operating screens supported by Nitroxbuddy2.

There is no need to turn OFF your Nitroxbuddy2 as it will automatically go to sleep after a couple of minutes. You can program the sleep time using the My Nitroxbuddy app.

The Oxygen sensor calibration lasts only few hours, so, before you can use your Nitroxbuddy2 you must calibrate its Oxygen sensor. In fact, it is good practice to calibrate the Oxygen sensor before each use.

With Nitroxbuddy2 you can perform an Oxygen sensor calibration either with the stand-alone unit or with the assistance of a smartphone.

The stand-alone, manual Oxygen calibration is limited to air, it is time based and it takes 1 minute while the smartphone assisted Oxygen calibration has more flexibility; as an example, using the My Nitroxbuddy app you can calibrate the Oxygen sensor using any single reference gas or you could even perform a 2-point calibration using two reference gasses. See the My Nitroxbuddy app tutorial on [www.divecomputertraining.com](http://www.divecomputertraining.com) for more information.

To perform a manual Oxygen sensor calibration with the stand-alone unit, first turn the unit ON by pushing the activation button, then, once Nitroxbuddy2 is in the main screen, HOLD the button for 2 or more seconds to enter the main settings screen. From there, push the button once for about 1 second to select O2 CAL and then HOLD the button to enter the O2 calibration screen.

During an Oxygen sensor calibration it is very important to expose Nitroxbuddy2 to a known source of gas flowing at a constant rate. **If you plan to perform an Oxygen sensor calibration by exposing Nitroxbuddy2 to ambient air MAKE SURE Nitroxbuddy2 acclimates for at least 5 minutes as the gas flow within the device is reduced and a shorter period might produce incorrect results.**

Now, position your Nitroxbuddy2 in front of the valve of a scuba tank containing air and open the tank valve slowly so to limit the gas flow to few liters per minute. If you have ordered the Low Pressure Inflator adapter then you can connect your Nitroxbuddy2 directly to the low pressure hose. Once you are ready PUSH the activation button to start the Oxygen sensor calibration.

As mentioned above, the stand-alone, manual Oxygen calibration is limited to air, it is time based and it takes 1 minute.

Now that Nitroxbuddy2 is calibrated, go ahead and use it; if the unit is asleep turn it ON by pushing the activation button, then, once Nitroxbuddy2 shows the main screen, position your Nitroxbuddy2 in front of the valve of the scuba cylinder containing the breathing gas you want to analyze and open the tank valve slowly so to limit the gas flow to few liters per minute.

Hold steady and after few seconds you will see the value of Oxygen updating on the display. We recommend to hold the analyzer in position for about 60 seconds.

Once the analysis is completed you have the option to hold the results on the screen for about 60 seconds; to do so, just push the button until you see the letter "H" next to O2 on the top of the display.

## 6 SETTINGS

### 6.1 Button

Nitroxbuddy2 's single button has two modes: PUSH or HOLD.

PUSH is when you push the button for about one second and then you release it.

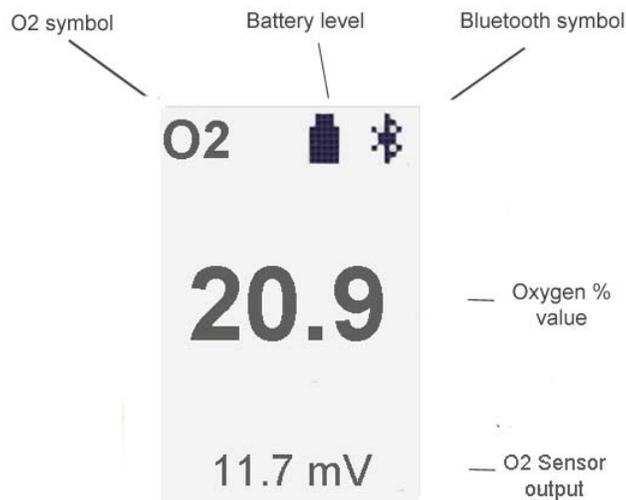
HOLD is when you push the button for more than 2 seconds and then you release it.

For multiple pushes, like when navigating a sub-menu, you will need to wait about one second between consecutive pushes.

### 6.2 Display

Nitroxbuddy2 is equipped with a Dot-Matrix LCD display with user programmable backlight; you can program the intensity of the backlight and its duration.

The image below shows the Normal Operating Mode screen.



The bluetooth symbol could be either OFF, ON or flashing. When it is flashing it means that Nitroxbuddy2 is advertising its presence and it is ready to be connected to a smartphone equipped with the My Nitroxbuddy app.

If the bluetooth symbol is always ON it means that Nitroxbuddy2 is actually connected to a smartphone.

If the bluetooth symbol is OFF it means that the radio is sleeping.

To awake the bluetooth radio just PUSH the activation button and the bluetooth symbol will begin to flash and will continue to do so for about 2 minutes. After that period that bluetooth radio will go back to sleep.

### 6.3 Menus Navigation

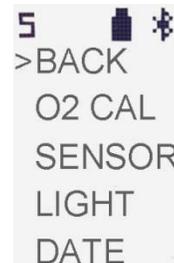
The navigation among the various menus is done via a combination of HOLD and PUSH. In general a HOLD enters a sub-menu while a PUSH moves the cursor to the next item in the menu.

To enter the Main Settings menu from the Normal Operating Mode just HOLD the button.

Please note that the stand-alone settings are accessible only when Nitroxbuddy2 is NOT connected to a smartphone.

If you try to access the Main Settings menu while the analyzer is connected to a smartphone, the analyzer will display a warning screen and will give you the option to disconnect from the smartphone.

This image on the right shows the Main Settings menu.



This menu contains 5 sub-menus: BACK, O2 CAL, SENSOR, LIGHT and DATE.

To access a sub-menu first position the > pointer on the line you want to select by as many PUSH as required then enter the sub-menu by a HOLD.

If you HOLD when BACK is selected you will go back to the previous menu. In the case of the image above you will go back to the Normal Operating Mode.

The S symbol on the top row indicates that you are in the settings operating mode.

The O2 CAL sub-menu allows you to perform an Oxygen sensor calibration.

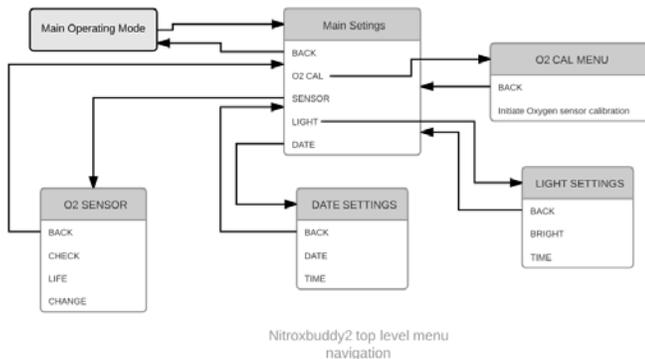
The SENSOR sub-menu allows you to access settings for the Oxygen sensor.

The LIGHT sub-menu allows you to program intensity and duration of the backlight.

The DATE sensor allows you to program date and time.

Please note that the settings available in stand-alone mode are a sub-set of the full set of settings available with the My Nitroxbuddy app.

See below the top level view of Nitroxbuddy2 menus.



## 7 OXYGEN SENSOR

Nitroxbuddy2 comes equipped with an electrochemical Oxygen sensor. The life of an Oxygen sensor is difficult to estimate as it might be affected by several factors such as usage, exposure to a gas with high content of Oxygen, temperature and humidity.

Also, an Oxygen sensor does not die immediately but slowly degrades over time.

We recommend to replace the factory installed Oxygen sensor every 12 months. But, if you are in the middle of a dive trip you can simply extend the life of the O2 sensor by simulating a replacement either in stand-alone mode or via the My Nitroxbuddy app.

Please note that it is **YOUR** responsibility to set the sensor life correctly. The analyzer only provides you a reminder but it has absolutely no knowledge if the lifetime you entered is correct for the O2 sensor you are using.

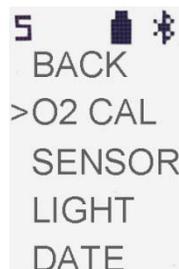
### 7.1 O2 Sensor Calibration

As indicated earlier, with Nitroxbuddy2 you can perform an Oxygen sensor calibration either with the stand-alone unit or with the assistance of a smartphone.

To calibrate the Oxygen sensor while in stand-alone mode, first turn the unit ON.

Then, while the unit is in the Normal Operating Mode, HOLD the button and enter the Main Settings menu.

Now, PUSH the button to position the pointer on the O2 CAL sub-menu as per image on the right.



Now, HOLD the button to enter the Oxygen Sensor calibration sub-menu show in the image on the left.



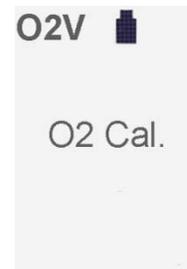
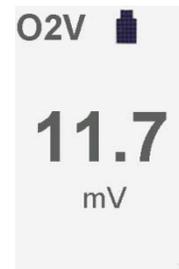
As indicated earlier, HOLD enters the sub-menu selected by the pointer while a PUSH moves to the next line down. In this specific case, HOLD will go back to the previous menu while PUSH will start the calibration of the Oxygen sensor.

During an Oxygen sensor calibration it is very important to expose Nitroxbuddy2 to a known source of gas flowing at a constant rate.

**WARNING: If you plan to perform an Oxygen sensor calibration by exposing Nitroxbuddy2 to ambient air MAKE SURE Nitroxbuddy2 acclimates for at least 5 minutes as the gas flow within the device is reduced and a shorter period might produce incorrect results.**

Now, position your Nitroxbuddy2 in front of the valve of a scuba tank containing air and open the tank valve slowly so to limit the gas flow to few liters per minute. If you have ordered the Low Pressure Inflator adapter then you can connect your Nitroxbuddy2 directly to the low pressure hose.

Once you are ready PUSH the activation button to start the Oxygen sensor calibration and Nitroxbuddy2 will alternate the 2 screens below until the O2 calibration is completed.



As mentioned above, the stand-alone, manual Oxygen calibration is limited to air, it is time based and it takes about one minute.

### 7.2 O2 Sensor Replacement

In order to replace the Oxygen sensor you will need first to open Nitroxbuddy2 by removing the 3 screws on the back of the unit and the large O-ring on the tank adapter.

Then disconnect the molex connector from the old O2 sensor and connect it to the new one.

Make sure you also install on the new O2 sensor the 2 extra O-rings that were previously mounted on the old O2 sensor as they are needed to keep the sensor in place inside the enclosure.

Once you are done, go the Main Settings menu and PUSH the button to position the pointer on the SENSOR sub-menu.



Then HOLD the button to enter the SENSOR sub-menu.

Now scroll down to select the CHANGE sub-menu and enter it.

Now, PUSH the button to confirm that you have replaced the Oxygen sensor and Nitroxbuddy2 will acknowledge it and turn off after a few seconds.



Please note that when you replace the Oxygen sensor while in stand-alone mode, Nitroxbuddy2 will automatically assign to the O2 sensor a lifetime of 12 months.

**WARNING: the Oxygen sensor contains chemicals which can cause burns if they come in contact with eyes, skin and other body parts. Dispose of the Oxygen sensor according to local regulations.**

## 8 BATTERY

Nitroxbuddy2 is equipped with a user replaceable LIR 10440 AAA 3.7V rechargeable battery that can be easily recharged using the provided USB cable. We strongly recommend you keep the battery properly charged all times.

**WARNING: If you do not keep the battery properly charged the battery might die off and you might not be able to recharge it all.**

**WARNING: If you let the battery become very empty or even die, it might take several hours to recharge it.**

## 9 WARRANTY

DiveNav, Inc. (the "Company") warranty obligations for Nitroxbuddy2 (the "Product") are limited to the terms set forth in this document as well as those set forth in the Warranty section of the company website.

Company warrants the Product against substantial defects in material and workmanship under normal use for a period of one (1) year from the date of original purchase (the "Limited Warranty").

This Limited Warranty is non-transferable and covers only the original purchaser.

An original or copy of the sales receipt from the original sales retailer or Company website is required to validate the warranty coverage.

This Limited Warranty does not cover the battery and products purchased through non-authorized dealers. Warranty claims must be made directly to the Company.

### 9.1 Limitation of Liability

IN NO EVENT SHALL COMPANY, NOR ITS AFFILIATES, NOR ITS EMPLOYEES, OFFICERS, DIRECTORS, AGENTS, CONTRACTORS, DISTRIBUTORS, SUPPLIERS OR ASSIGNS (THE "RELEASED PARTIES") BE LIABLE TO YOU OR ANY THIRD PARTY FOR ANY INDIRECT, INCIDENTAL, CONSEQUENTIAL, SPECIAL, EXEMPLARY OR PUNITIVE DAMAGE ARISING OUT OF THE USE OF THE PRODUCT, INCLUDING, WITHOUT LIMITATION, PROPERTY DAMAGE, LOSS OF VALUE OF THE PRODUCT, DEATH, INJURY OR ANY OTHER DAMAGES THAT MAY BE CAUSED TO YOU, YOUR FAMILY, HEIRS, ESTATE OR ASSIGNS. NOTWITHSTANDING ANY DAMAGES THAT YOU MIGHT INCUR FOR ANY REASON WHATSOEVER (INCLUDING, WITHOUT LIMITATION, ALL DAMAGES REFERENCED HEREIN) AND ALL DIRECT OR GENERAL DAMAGES IN CONTRACT, TORT (INCLUDING NEGLIGENCE AND OTHERWISE), THE ENTIRE LIABILITY OF THE COMPANY SHALL BE LIMITED TO THE AMOUNT ACTUALLY PAID BY YOU FOR THE PRODUCT. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU.

### 9.2 Exclusions and Limitations

Company's Limited Warranty applies only to the Product. The warranty does not apply to any non-Company products, even if packaged or sold with the Product. This warranty does not apply to damage caused by abuse, misuse, accident, tampering, force majeure, or modifications of the Product.

### 9.3 Remedy

Your sole and exclusive remedy for a breach of this Limited Warranty, and Company's sole and entire liability is, at Company's discretion, to repair or replace the defective Product or refund the purchase price of the defective Product within thirty (30) calendar days of the date of purchase. Repair or replacement (including part and labor) shall be made at Company's expenses. Company reserves the right to send you a replacement product that is the same or an equivalent substitute. Replacement products will be furnished only on an exchange basis. Replacement products are warranted as above for the remainder of the original applicable Product warranty period.

### 9.4 Warranty Disclaimer

EXCEPT AS SET FORTH ABOVE IN THIS LIMITED WARRANTY, THE PRODUCT IS PROVIDED ON AN "AS IS" BASIS AND THE COMPANY MAKES NO OTHER EXPRESS OR IMPLIED WARRANTIES TO THE EXTENT PERMITTED BY LAW AND SPECIFICALLY DISCLAIMS AND EXCLUDES ALL IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. IF SUCH DISCLAIMER OF ANY IMPLIED WARRANTY IS NOT PERMITTED BY LAW, THE DURATION OF ANY SUCH IMPLIED WARRANTIES IS LIMITED TO THE DURATIONS SET FORTH IN THIS LIMITED WARRANTY. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OF IMPLIED WARRANTIES OR LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY MAY LAST, SO SUCH LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU.

## 9.5 Obtaining Warranty Service

If you wish to make a claim under this warranty with respect to the Product, you can do that either by using our website or by sending an e-mail to customer.service@divenav.com with the following information:

- 1) Attach photocopy of original purchase receipt.
- 2) Provide purchase date, product UPC code, and serial number.
- 3) Write brief description of the problem.
- 4) Provide a telephone number and e-mail address at which you can be reached during normal business hours.

All of the above information is required before a warranty claim will be accepted. Once Company validates your claim, we will issue you an RMA (Return Material Authorization) number and shipping information.

## 10 FCC

### 10.1 FCC Compliance Statement

#### **FCC ID: RSY2015COOTWO**

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- \* Reorient or relocate the receiving antenna.
- \* Increase the separation between the equipment and receiver.
- \* Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- \* Consult the dealer or an experienced radio/TV technician for help.

### 10.1 FCC Caution

The user is cautioned that changes and modifications made to the equipment without the approval of manufacturer could void the user's authority to operate this equipment.

## 11 COPYRIGHT NOTICE

This manual is copyrighted and it may not be copied, reproduced, translated or transformed into any electronic format without prior written consent of DiveNav, Inc.