NeoFox Quick Start Guide

You're on your way to deeper insight into your oxygen measurements using high-speed optical technology. Follow this guide to quickly start turning the unknown into the known.

Introduction

The NeoFox Phase Fluorometer is used with Ocean Insight's NeoFox Viewer software and custom probes. Ocean Insight's oxygen sensor probes are low-power, portable devices that offer high sensitivity, reversibility, and stability. The sensor matrix consumes none of the oxygen being measured, allowing for continuous contact with the sample. Sensors are ideal for viscous samples and are immune to interference caused by pH change or from changes in ionic strength, salinity, and biofouling.

The NeoFox connects to a PC via USB connection and saves your data in an easy-to-use Microsoft Excel format. NeoFox can be configured with single-channel LED excitation and detection. There is an on-board pressure transducer which measures atmospheric pressure.

System Contents

All NeoFox systems include:

- NEOFOX-GT Phase Fluorimeter
- Power Supply with International Adapters
- USB Cable

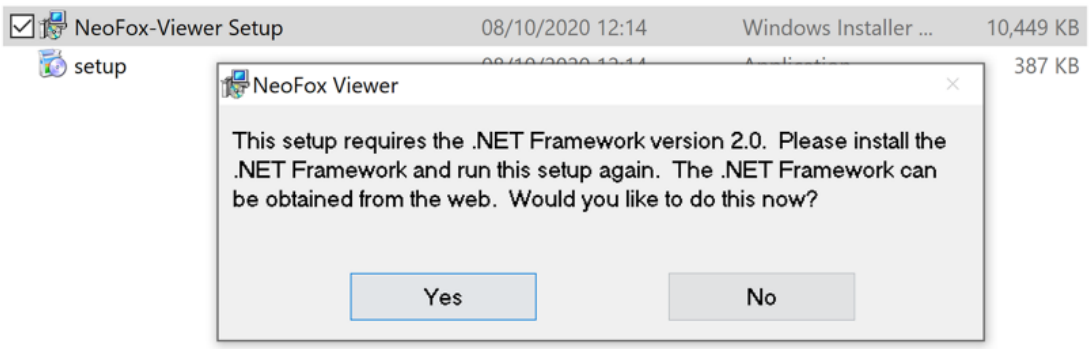
Depending on the sensor form-factor purchased, your system may also include:

- Optical Bifurcated Fiber Bundle (BIFBORO-###-2 or RE-BIFBORO-2)
- Splice Bushing (21-02, only with select probes)
- Sensor Probe
  - *Note: Pink/red/orange coating at the tip is the oxygen-responsive chemistry. DO NOT CLEAN OR ATTEMPT TO REMOVE*
- Pack of Non-Invasive Oxygen Patches (used with RE-BIFBORO-2)
- Temperature Probe

Software Setup

Install NeoFox Viewer v2.90
Install this package before connecting the NeoFox hardware.

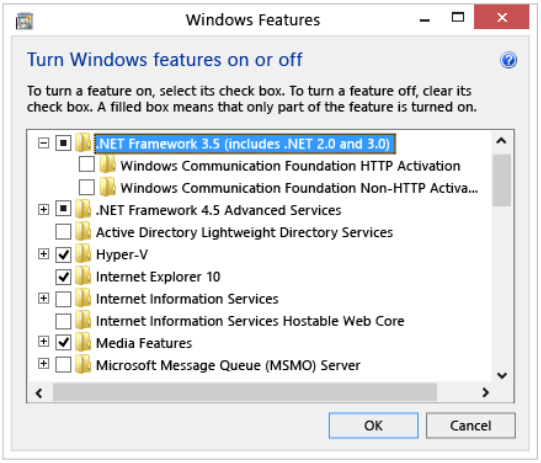
Are you seeing the .NET Framework message below?



The fix is simple! You can enable the .NET Framework 3.5 through the Windows Control Panel. This option requires an Internet connection.

1. Press the Windows key on your keyboard, type "Windows Features", and press Enter. The **Turn Windows features on or off** dialog box appears.
2. Select the **.NET Framework 3.5 (includes .NET 2.0 and 3.0)** check box, select **OK**, and reboot your computer if prompted.

With NeoFox Viewer installed, you are now ready to set up the Hardware



Hardware Setup

WARNING

Ensure that the plastic caps are covering the two SMA connectors on the front of the NeoFox unit. Intense UV radiation is emitted from the LEDS when the unit is powered-up. Do NOT look directly at the LED output with the naked eye.

Note

You must install the NeoFox Viewer operating software prior to connecting the NeoFox hardware to the computer. The NeoFox Viewer software installs the drivers required for the NeoFox hardware.

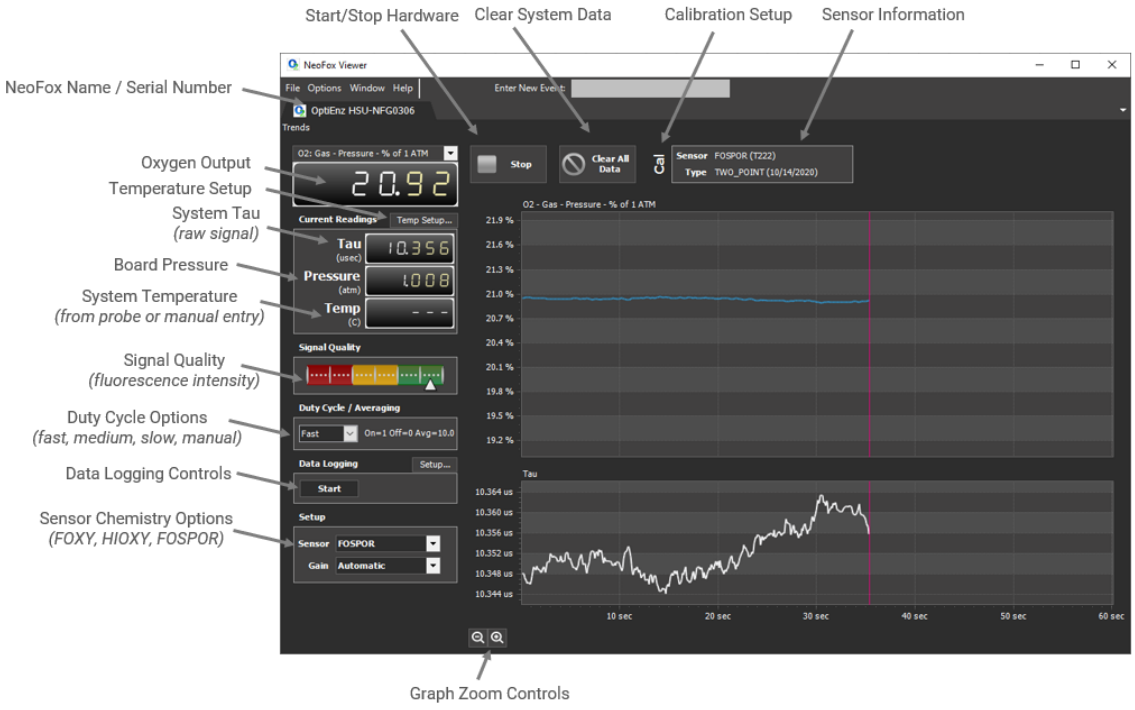
1. Unpack the equipment and verify that you have all the necessary components
2. Connect power cord from the power supply that came with your NeoFox unit from back of unit to an AC outlet. Do NOT look directly at the light being emitted with the naked eye.
3. Connect the NeoFox unit to your computer using the USB cable.
4. Connect the temperature probe (if you have one) to the rear panel of the NeoFox unit.
5. Locate the bifurcated fiber that came with the system. This optical fiber assembly has a “Y” shaped design.
6. Connect one arm (it doesn’t matter which one) of the bifurcated end of the probe fiber to LED connector and the other arm to the Detector connector on front of unit.

7. If you are using an Oxygen probe, locate the 21-02 SMA Splice Bushing that came with the probe. Screw one end of the splice bushing into the SMA 905 connector on the end of the probe. If you are using the RedEye Patch, you don't need the splice bushing.

Quick Start to Instrument Operation

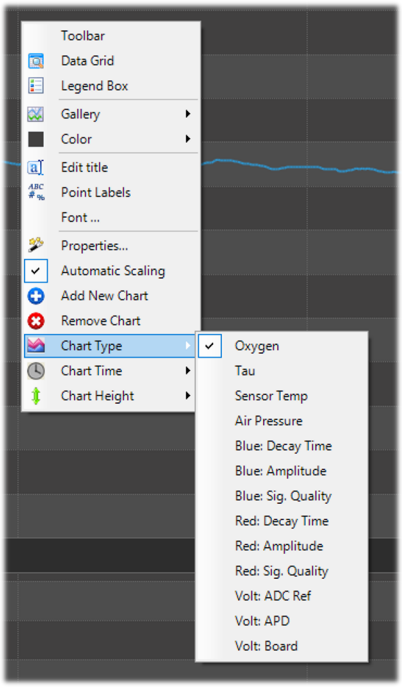
When the NeoFox is connected to your computer, Windows will find the drivers and notify you that the device is ready.

On opening the NeoFox Viewer Software you will see the dark-themed dashboard described below:



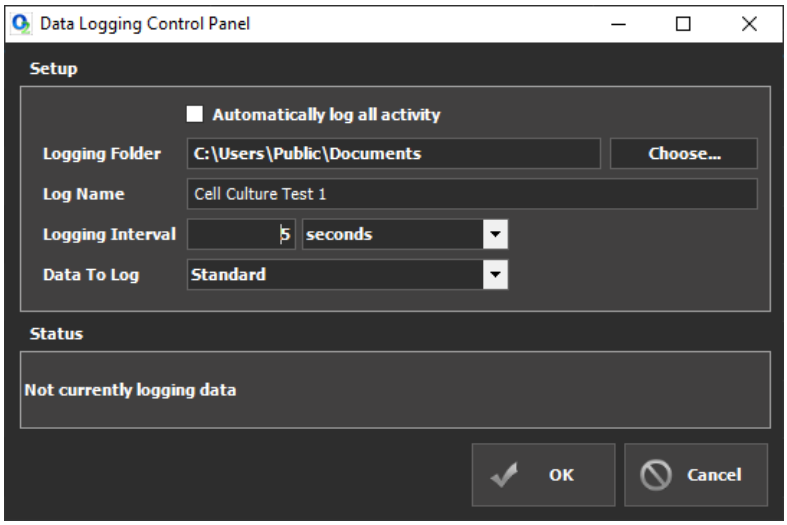
Graph Tools

Right-click anywhere on the graphs for complete control of what data is displayed and how.

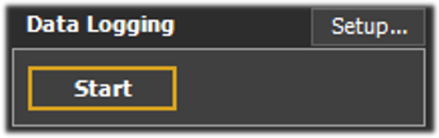


Data Logging

Click 'Setup' on the Data Logging Controls tab. Proceed to enter data logging parameters before starting your study.



Be sure to click ***Start*** after setting up parameters.



Calibration Steps Required for Measurement

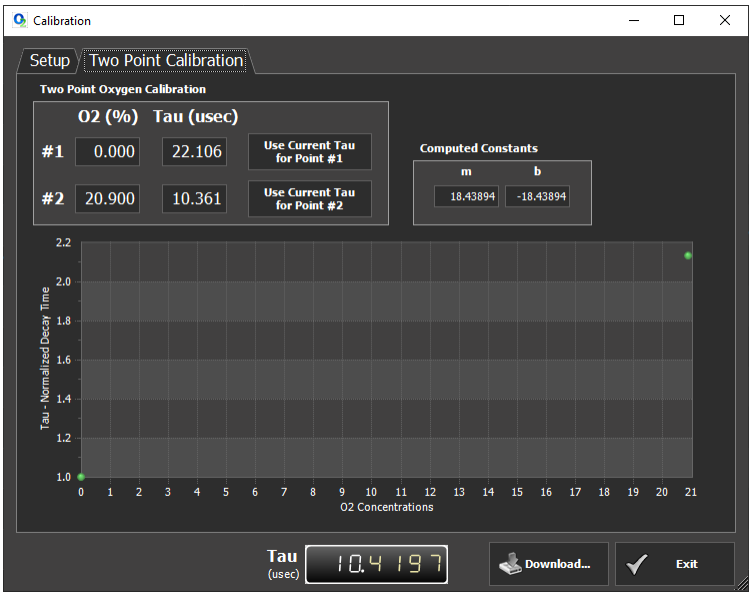
Consult the NeoFox Calibration Guide for all available options and considerations regarding calibration of your system.

The system at least requires a 2-point calibration for accurate measurement. Watch this short video for the proper protocol of making a 2-point oxygen calibration in gas or liquid:

https://youtu.be/JeQs24DFoR4?t=26

In summary:

- Under the '*Options*' drop down menu, select '*Oxygen Calibration*' to open the calibration window
- Acquire and save Tau values at 2 known oxygen levels (reference points). Each fixed point concentration is entered in the table along with the corresponding tau value via the '*Use Current Tau*' button.



Notes on Oxygen Reference Points

A 0% oxygen reference is needed, for which any oxygen-free gas such as argon, nitrogen, helium, etc would typically be used. Alternatively, 0% reference solution can be prepared by mixing a suitable oxygen scavenging chemical with water.

The second calibration point can be any non-zero oxygen level within the limits of sensitivity of the sensor. Most commonly, 20.9% (atmospheric air) is selected as the standard second point oxygen concentration.

Take care that gas or liquid reference points are at one fixed temperature, which must be the same as that used in the experiment. Any changes in temperature will look to the sensor like a change in oxygen concentration.

Be sure to allow sufficient time for the tau value to stabilize, which is displayed at the bottom of the calibration window.

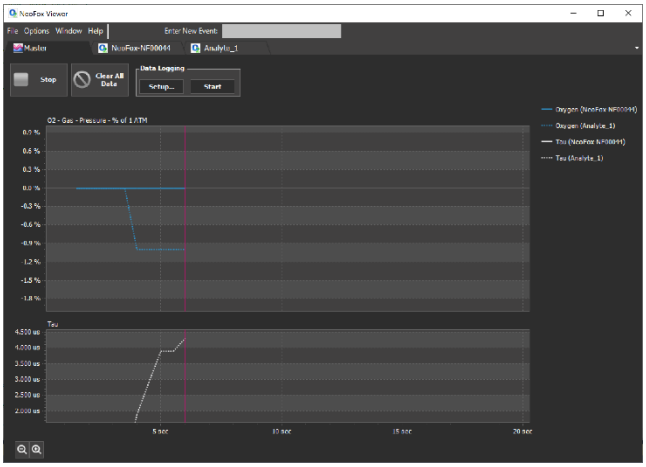
Click ***Download*** to write the new calibration to the device.

New NeoFox Viewer Software Features

NeoFox Viewer v2.90 brings several key updates from prior software releases, including:

Master Tab for Multi-Channel Support

A Master Tab is now displayed when multiple NeoFox's are connected, showing a conveniently combined graphical view of all channels.



Duty Cycle Options

In prior versions, changes to system Duty Cycle needed to be performed through the Advanced Settings.

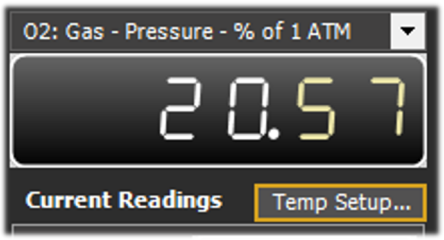
In this release, the following pull-down options are made available on the main display:

Setting	LED On-Time (sec)	LED Off-Time (sec)	Total Cycle Time (sec)	Averaging (sec)
Fast	1	0	*(always on)*	10
Medium	3	7	10	3
Slow	5	25	30	5

Changing the values in Advanced Settings as was previously done will change the setting to display 'Manual'.

Reduced Duty Cycle can help prolong sensor stability for long-term applications where the LED light may contribute to photobleaching drift over time.

Temperature Probe Assignment



In this latest release, you can now assign one NeoFox temperature probe to another NeoFox or indeed multiple units, eliminating the need for independent temperature probes attached to each channel.

Click the new ***Temp Setup*** button under the oxygen display to open a new window for temperature value assignment.

Temperature values are only used for:

- Calculating oxygen if a Multi-Point Calibration is loaded
- Logging temperature data relevant to the study

You can omit the temperature aspect, or enter a manual value, or choose not to use the temperature probe.