NiTek X Dive Computer
User Guide

Dive Rite
www.DiveRite.com

Date of Purchase _____

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Chapter 1

Introduction

Summary

This chapter provides an overview of the NiTek X, lists the NiTek X's features and functions, and covers warning information that should be read before using your NiTek X.

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Overview

Congratulations on your purchase of the NiTek X dive computer. The NiTek X is a sophisticated and comprehensive dive computer that was designed to offer you the latest in dive computer technology, safety, and reliability.

The NiTek X dive computer is a multifunctional computer for recreational diving, providing information on depth, dive times, no-decompression and decompression times, and nitrogen and helium absorption and elimination during all dive phases, including ascent, surface interval times, and subsequent dives.

This information is displayed on an easy-to-read display, providing simple and direct communication between the diver and the computer. With an easy-to-read display, the diver has no problem following and reading the displayed information.

The NiTek X comes standard with a number of modes, including a sleep mode, time mode, dive set mode, dive plan mode, log mode, profile mode, PC transfer mode, dive mode, external oxygen-cell capabilities, OC mode, and CC mode.

Note: It is extremely important that you carefully read and understand this manual. Make sure you fully understand how the NiTek X operates before diving with it.

This manual has been divided into three chapters:

- **Introduction:** Covers the features and functions, specifications, and warnings for the NiTek X
- **Using the NiTek X:** Covers the operation of each mode for the NiTek X
- **Care and maintenance:** Covers how to properly care for and maintain the NiTek X and change the battery

Features and Functions

The NiTek X incorporates a number of important modes and features:

- The NiTek X turns on automatically upon descent
- On the surface, the NiTek X displays a minimum of date and time
- The NiTek X uses easily accessible and highly reliable push buttons instead of exposed electrical contacts
- The NiTek X can be programmed to monitor exposure to seven different gas mixtures during a dive in either open-circuit or closed-circuit mode. Gas mixtures including combinations of oxygen, helium, and nitrogen can be programmed. Underwater, NiTek X users can switch between mixes at the push of a button
- The NiTek X is capable of functioning up to a depth of 492 feet (149 meters)
- The NiTek X automatically adjusts for altitudes up to 19,685 feet (6,000 meters)
- The NiTek X displays a variety of data underwater including: date, time of day, temperature, current and maximum depths, no-decompression dive time elapsed and remaining time
- The NiTek X displays data specifically related to the use of Enriched Air Nitrox (EANx) and helium including: fraction of oxygen (FO2) setting, fraction of helium (FHe) setting, partial pressure of oxygen (PO2), and an oxygen limit index (OLI) representing the cumulative effect of a diver's exposure to elevated PO2s (the theoretical "CNS clock") as a bar graph
- Through a combination visible alarms, the NiTek X helps to alert the diver to a number of possibly hazardous situations including: violation of ascent rate, no-decompression state, and whether mandatory decompression stops are necessary or if the diver has ascended above a mandatory stop ceiling. Nitrox specific warnings occur when the diver approaches or exceeds a user-preset limiting PO2 (1.4 or 1.6), or when

cumulative exposure to elevated PO2s exceeds recommended limits

- The NitekX can be used with closed-circuit rebreathers and includes constant-PO2 setpoint capabilities (0.4 to 1.6), and is upgradable for 4th cell monitoring
- External oxygen-sensor monitoring and analysis capabilites can be added
- The NiTek X can be programmed to display data in Imperial or metric units
- Dive depth can be displayed in fresh or salt water equivalents
- Preset and custom Conservatism or Gradient Factors can be programmed to increase dive-safety margins
- Special mode indicators makes it easy to determine what display mode or screen you are in at any time
- The NiTek X has a selectable backlight to illuminate the screen in all light conditions
- The NiTek X's memory capability enables it to hold and display log data for a minimum of 15 hours of dive time, depending on settings
- Detailed dive-profile information can be stored for each dive through user-programmable sample intervals of 15 or 30 seconds (the longer intervals allow data for a greater number of dives)
- Dive data can be uploaded and stored in a dive log format on a desktop or laptop computer using the Diverite NiTek Workbench™ software and optional PC interface.

Specifications

Algorithm: Buhlmann ZH-L16

Sample tissues: 16

Tissue half-lives: from 5 to 640 minutes

Size and weight
- Length: 3.9-inches (9.9cm) wide
- Height: 3.7-inches (9.39cm) high
- Thick: 0.78-inches (1.98cm) deep
- Weight: 12 ounces (340 gms)

Display face
- Backlight illumination
- Low battery indicator
- Two user buttons
- Auto-pressure switch

Depth sensor
- Sea and fresh water calibration
- Measuring range: 0 to 492 feet (0 to 149 m) measured every second
- Accuracy: +/- 3% + 2 feet (0.5 m)
- Surface interval time: from 0 to 48 hrs
- Diving time: from 0 to 699 minutes
- Ascent rate warning: 26 to 59 feet per minute (8 to 18 m)

Clock
- Accuracy: +/- 30 sec on average per month
- 24-hour display

Thermometer
- Measuring range: -40 °F to 176 °F (-40 °C to 85 °C)
- Accuracy: +/- 4 °F (2 °C)
- Measurement interval: Every second during dive mode

Altitude
- Altitude function monitoring: from 0 to 19,685 feet (6,000 m)
- Battery
- Li/MnO2 CR 123A 3V battery
- Average battery life: About 3 years (50 dives/year)
- Replacement: User replaceable

Breathing gas
- Mixes: 7 gas settings
- O2 setting range: 8 to 99 percent
- O2 setting: 1% increments
- He setting range: 0 to 92 percent
- He setting: 1% increments

Dive log
- Dive logging: Minimum of 15 hours, depends on settings
- Profile sampling rates: 15 or 30 seconds

Warnings

This information has been developed for your safety. Please read and understand this manual completely before using your NiTek X dive computer.

Important safety information:

- Before using your NiTek X, it is extremely important that you read the following points—as well as similar warning and caution notices that appear throughout this manual. Failure to do so could result in damage to or loss of equipment, serious personal injury, or death.
- The NiTek X is designed for use by certified divers who have maintained a sufficient level of knowledge and skill proficiency through a combination of formal training, ongoing study, and experience. It is not intended for use by persons who lack these qualifications and thus, may not be able to identify, assess, and manage the risks scuba diving entails. Use of the NiTek X in conjunction with Enriched Air Nitrox (EANx) or Trimix requires that divers be trained and certified for Nitrox or Trimix diving.
- The NiTek X is not intended for use by commercial or military divers whose activities may take them beyond the commonly accepted depth limits for recreational or technical diving.
- Although the NiTek X is capable of calculating decompression stop requirements, users must remember that dives requiring mandatory stage decompression carry substantially greater risk than dives made well within no-decompression limits.
- The NiTek X is designed for use by one diver at a time. Divers should not share a single NiTek X—or any other dive computer—on the same dive. Additionally, no diver should lend their NiTek X to anyone else until it calculates that no measurable residual nitrogen remains after previous dives and no longer displays the “desaturation time” indicator while in time mode. Further, no diver should use their NiTek X for repetitive dives—unless that same properly functioning NiTek X has accompanied them on all previous

dives in the same repetitive dive series and is thus, accurately monitoring the diver's total exposure to oxygen, helium, and nitrogen.

- Neither the NiTek X—nor any other dive computer—physically measures the amount of nitrogen present in body tissues or the rate at which nitrogen is being absorbed or released. The NiTek X monitors depth and time, and uses this data to work a mathematical formula designed to emulate how individuals in good general health and whose physical characteristics do not place them among those at higher risk of decompression illness (DCI) are assumed to absorb and release nitrogen and/or helium from body tissues. Thus, the NiTek X cannot compensate for factors such as age, obesity, dehydration, cold, or exertion, which experts believe place divers at greater risk of DCI. If these, or similar factors apply to you, use the NiTek X—and other dive computers or dive tables—with even greater caution.
- Experts still know surprisingly little regarding the exact nature and causes of decompression illness (also known as decompression sickness, DCI, or DCS). Susceptibility to DCI may vary substantially from person to person and from day to day. Neither the NiTek X—nor any other dive table or computer—can guarantee that you will not suffer decompression illness. Even though you use these items correctly, you may still suffer DCI. Use your NiTek X conservatively and in conjunction with other dive planning devices, such as dive tables. Do not rely on the NiTek X, or any similar device, as your sole means of avoiding decompression illness.

When diving…

- Do not "push" the no-decompression limits (NDLs). Make safety stops before ascending. If you exceed the no-decompression limits, check your breathing gas supply at all stop depths.
- The NiTek X does not monitor breathing gas supply. You must monitor this yourself, on every dive, using a submersible pressure gauge or equivalent device.

- Because the NiTek X can be programmed to use multiple gases, it is extremely important that you have set the proper gases in the NiTek X before your dive and you understand how to switch between the different mixes during your dive.
- Do not rely solely on this or any other dive computer. Take a back-up dive computer or dive tables (along with a separate means of monitoring depth and dive time).
- Be aware that the NiTek X makes assumptions regarding residual nitrogen and/or helium based on altitude settings. Avoid making abrupt changes in altitude following a dive, as doing so may be very dangerous.

Chapter 2

Using the NiTek X

Summary

This chapter provides topics about using, setting, and understanding each of the modes and options of the NiTek X.

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Getting Started

The NiTek X has many modes (including Open-Circuit and Closed-Circuit) and screens as well as a number of options that can be changed, depending on your dive location and profile. The following is a checklist of general things that you should pay attention to before, during, and after a dive.

Before a dive

- Check that the proper time and date are set. If you are traveling, your NiTek X may still be set to your home time zone
- Check that the proper mixes and modes are set. Ensure that you are in either the appropriate O/C or C/C mode when programming your NiTek X computer
- Make sure that you review the dive plan mode for maximum depths and times for the mixes you are using.

During a dive

- Monitor the NiTek X throughout your dive for depth and time
- Monitor the Pressure Gas in Tissue (PGT) and Oxygen Limited Indicator (OLI) O2 loading bar graphs
- Pay attention to any alarms, such as an ascent rate warning
- Follow the no-decompression limits or complete the required decompression displayed.

After a dive

- Monitor surface interval time if making another dive
- Follow desaturation and no-fly guidelines
- Review your dive using the log mode and profile mode
- Download the dive log to your PC if you have the optional PC interface.

Accessing display modes and screens

There are some display modes that the NiTek X enters and/or exits automatically. For example, by taking the NiTek X underwater, the dive mode automatically turns on. Upon surfacing, the NiTek X automatically enters the surface mode.

To access other modes or screens, requires the use of the NiTek X's buttons.

Button operation

The NiTek X has two buttons (A (mode) and B (set)), which are used to access the different modes and screens. To use the buttons, simply press the button once or hold the button down depending on what you are trying to do. The correct procedure to use is clearly defined in each topic throughout the manual.

- A (mode) button: This button is used to select and scroll through the different modes, such as time mode and locks in setting values when setting options
- B (set) button: This button is used to set an option, such as setting the date

The front of the NiTek X, showing the two buttons that are used to access and setup the different modes and options

Surface Mode

Surface mode is the NiTek X's default-screen mode, with either "O/C" or "C/C" displayed on the screen (depending on settings). The computer returns to this mode automatically upon surfacing from a dive and from other modes when two to three minutes of inactivity have passed.

After several minutes of inactivity, the NiTek X will go into its "sleep" mode to conserve battery usage. To wake from sleep mode, momentarily press either button.

> **Note:** O/C or C/C refers to either Open-Circuit or Closed-Circuit, and can be switched by simultaneously holding buttons A and B for two to three seconds.

The NiTek X may display additional information concerning time/date, mixture settings, alarm settings, exposure to nitrogen and oxygen, desaturation time, and surface interval time. These items are covered in "Surface mode (Upon Surfacing From a Dive)" Dive Option Set and Display mode and "Altitude Operation."

(1) Date: This is the month and day. The first digit is the month and the second digit is the day. For example, 1-24 represents the twenty-fourth day of January.

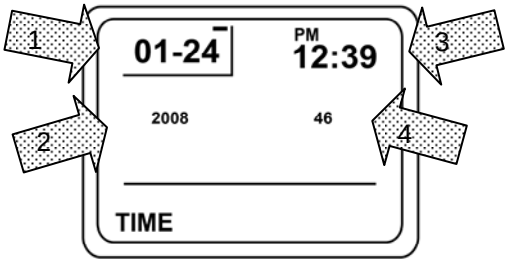
(2) Time of day: This is the time of day expressed in hours and minutes. Time can be displayed in 24-hour (military) format or 12-hour format. When in 12-hour format, an AM or PM appears on the screen.

Entering Surface mode from another mode

When you are using other modes, it is very easy to return to Surface mode. Simply press and hold button A for two to three seconds or repeatedly press button A until O/C or C/C is displayed. Simultaneously pressing and holding button A and button B for two to three seconds will toggle between the two modes.

Time Display and Set Mode

Time Display and Set mode is used to set and view the time of day and date. When you enter this mode, “TIME” is displayed on the screen.



(1) Date: This is the month and day. The first digit is the month and the second digit is the day. For example, 1-24 represents the twenty-fourth day of January.

(2) Year: This is the year.

(3) Time of day: This is the time of day expressed in hours and minutes. Time can be displayed in 24-hour (military) format or 12-hour format. When in 12-hour format, an AM or PM appears on the screen.

(4) Seconds: This is the seconds for the time of day.

To display the time and date:

Time and date information is displayed when the NiTek X is the Surface mode screen.

1. To enter the Surface mode screen from any other screen, repeatedly press button A.

   “C/C” or O/C” will be displayed in the lower left of the screen, with the time and date across the top of the screen.

Setting the time and date

Setting the time and date are done in the time set mode. You can enter or change the year, month, day, hours, minutes, and seconds in this mode.

To set the time and date:

1. Press and hold button B for four to five seconds while in Surface mode.

   The “seconds” field flashes.

2. Press button B to “00” the seconds field, or press button A to select another field, such as the minutes field.

3. Using buttons A and B, set the year, month, day, hour, minutes, seconds, and whether you want the time displayed in 24-hour format. For example, 1:00 PM would be 13:00 in 24-hour format.

4. When finished, press button A for 2 to 3 seconds to return to surface mode.

Dive Option Set and Display Mode

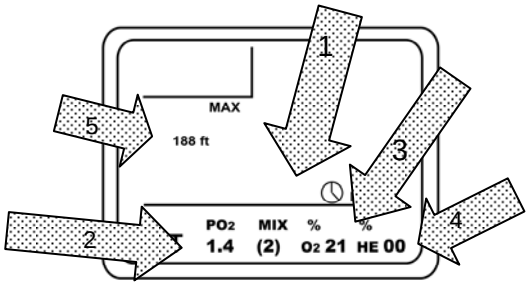
Dive Option Set and Display mode is where all “dive” option settings are displayed and set up.

Using Dive Option Set and Display mode

Dive Option Set and Display mode is when the NiTek X is operating in its normal mode, “OC” or “C/C” is displayed on the screen, and all computer mode functions are operational. Using these settings is described in the Dive Computer mode section. The Dive Option Set and Display mode “SET” is used to review and change option settings that pertain to an upcoming dive. The operating depth limit when in dive operation is 492 feet (149 meters).

> **Note:** The NiTek X can be set to operate in the Open Circuit (O/C) or Closed Circuit (C/C) mode, depending on dive options set.

When the computer is in Dive Option Set and Display mode, “SET” is displayed on the screen. There are four screens that are used to set up all of the computer mode options.



Dive Option Display and Set fields for screen one

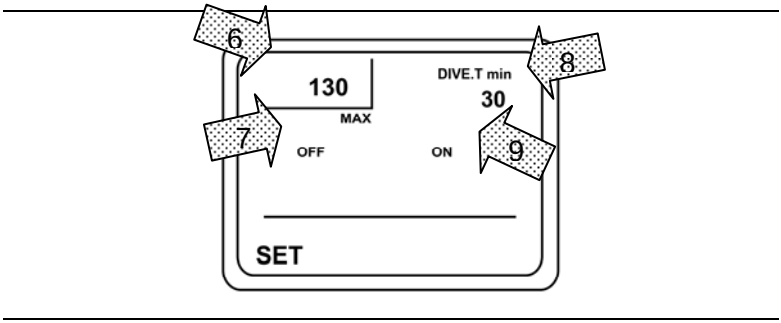
(1) Mix number: This is the mix number you are setting.

(2) PO2 or SP setting: This is the PO2 setting for the mix number selected in O/C mode, or setpoint (SP) setting in C/C mode. The PO2 can be set for 1.4 or 1.6 in O/C mode, and the SP for 0.4 to 1.6 in CC mode.

(3) FO2 gas percentage: This is the oxygen percentage for the mix number selected. The O2 percentage setting range is 8 to 99 percent.

(4) FHe gas percentage: This is the helium percentage for the mix number selected. The He percentage setting range is 0 to 92 percent.

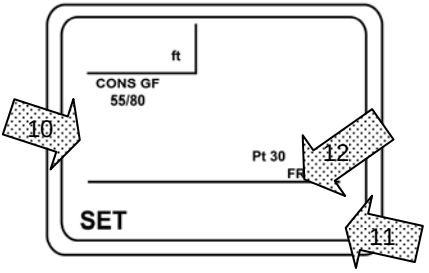
(5) Maximum operating depth (MOD) for FO2 setting: This is the safe operating depth (maximum) for the mix selected. This is based on a limiting PO2 factor of either 1.4 or 1.6 atmospheres.



Dive Option Display and Set fields for screen two

(6 and 7) Max depth alarm: This is an alarm that can be set to flash the maximum depth and screen backlight when a maximum depth is reached. When the alarm is turned on, the maximum depth alarm symbol is displayed.

(8 and 9) Maximum time alarm: This is an alarm that can be set to flash the maximum time and screen backlight when a maximum dive time is reached. When the alarm is turned on, the "clock" alarm symbol is displayed.

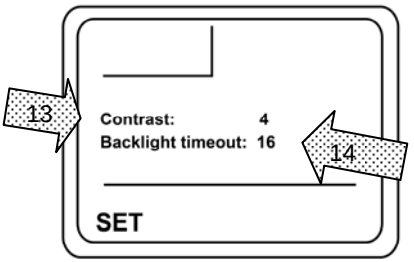


Dive Option Display and Set fields for screen three

(10) Conservatism or Gradient Factor: This allows you to select between the 3 standard Gradient Factors (75/95, 40/100 or 30/75) or input a custom Gradient Factor. For more information on Gradient Factors and which settings may be better for you, refer to related sections of this User Guide and to sources such as the 'Jurgensen Marine Hammerhead Electronics User Manual'.

(11) Salt or Fresh water: This is the setting for salt water or fresh water use.

(12) Dive-Profile Sampling: This is how frequently (every 15 or 30 seconds) depth data is measured and stored during a dive.



Dive Option Display and Set fields for screen four

(13) Contrast: This allows you to set the contrast ratio between the text and background screen.

(14) Backlight Timeout: This allows you to change the length of time the backlight is lit when activated.

To enter Dive Set mode:

1. Press button A until “SET” is displayed.
2. Press button B to enter the dive set up option screen.
3. Using the topics that follow, set up your desired dive option settings.

Setting PO2 Setpoints (Closed Circuit only)

Note: Be sure you have properly selected C/C mode before setting the PO2 setpoints you plan on using on your dive.

Different setpoints can be chosen to allow for use with different gas mixtures on any particular dive. You can also set the NiTek X to monitor an external oxygen cell in the rebreather. Not all of the setpoints have to be selected for each mix, only the mixes that you plan on using.

Note: If you only plan on using one PO2 setpoint and mixture on your dive, you only need to set that PO2 and mix.

To set PO2 setpoints:

1. If not already in closed circuit (C/C) mode, put the NiTek X in C/C mode by simultaneously pressing and holding buttons A and B for 2-3 seconds.
2. Press and hold button A for 3-4 seconds until “SP” is flashing.

   Note: If an external rebreather oxygen-cell has been connected and calibrated, “EXT” can be displayed instead of “SP”. Press button B to toggle between “EXT” and “SP”.

2. Press button A to enter the setpoint selection mode.

   The setpoint PO2 value is flashing.

3. Press button B to change the PO2 to the desired value that you want to set or change.
4. Press button A to select the mix setting.
5. Press button B to set the mix number.

6. When finished, press button A to return to the surface mode.

Setting Mix1 Through Mix7 Gas Percentages

Note: Be sure you have properly selected O/C or C/C mode before setting the breathing mix(es) you plan on using on your dive.

There are up to seven different mixes that can be used for any particular dive. Not all of the mixes have to be set, only the mixes that you plan on using. Each mix can have an oxygen (FO2) and helium (FHe) setting.

- FO2 percentages can be set for 8 to 99 percent oxygen
- FHe percentages can be set for 0 to 92 percent helium

Note: If you only plan on using one mix on your dive, you only need to set mix1.

To set gas mix percentages:

1. Press button A until “SET” is displayed.
2. Press button B to enter the dive set up option screen.

   Mix1 is flashing.
3. Press button B to change the mix number to the desired mix number that you want to set or change.
4. Press button A to select the PO2 setting.
5. Press button B to set the maximum PO2 value (1.4 or 1.6) for the selected mix number.
6. Press button A to select the O2 gas percentage.
7. Press button B to set the O2 percentage you are setting for the selected mix number.

   Note: Maximum operating depth will change, based on the O2 percentage selected.
8. Press button A to select the He gas percentage.
9. Press button B to set the He percentage you are setting for the selected mix number.

10. When finished, press button A to advance to the next option (Maximum Depth Alarm). To exit, press and hold button A for 2 to 3 seconds to return to surface mode.

Setting the Maximum Depth Alarm

The NiTek X has a maximum depth alarm that is activated when the diver reaches the maximum depth that is set. When the max depth is reached, the screen backlight, current depth and maximum depth indicators will flash until you have ascended to a depth that is shallower than the maximum depth setting.

The alarm can be turned on or off and can be set from 0 to 500 feet (0 to 150 meters).

To set the Maximum Depth alarm:

1. Press button A until “SET” is displayed.
2. Press button B to enter the dive set up option screen.

   Mix1 is flashing.
3. Repeatedly press button A until the screen changes and maximum depth (upper left of screen) is flashing.
4. Press button B to set the depth when you want the alarm to sound.
5. Press button A.

   The Maximum Depth Alarm on/off (center left of screen) flashes.
6. Press button B to toggle the alarm on or off.
7. When finished, press button A to advance to the next option (Dive Time Alarm). To exit, press and hold button A for 2 to 3 seconds to return to surface mode.

Setting the Dive Time Alarm

The NiTek X has a dive-time alarm that is activated when the diver reaches the maximum time that is set for the dive. When the dive time is reached, the screen backlight, dive-time and maximum dive-time alarm indicators will continue to flash until after you surface. The dive-time alarm can be used when you

want to set a maximum dive time for your dive. The alarm indicates when this time has expired.

The alarm can be turned on or off and can be set from 0 to 690 minutes.

To set the Maximum Dive Time alarm:

1. Press button A until “SET” is displayed.
2. Press button B to enter the dive set up option screen.

   Mix1 is flashing.
3. Repeatedly press button A until the screen changes and maximum dive-time (upper right of screen) is flashing.
4. Press button B to set the time when you want the alarm to sound.
5. Press button A.

   The Maximum Dive Time Alarm on/off (center right of screen) flashes.
6. Press button B to toggle the alarm on or off.
7. When finished, press button A to advance to the next option (Conservatism/Gradient Factor). To exit, press and hold button A for 2 to 3 seconds to return to surface mode.

Setting for Conservatism or Gradient Factor

The NiTek X allows you to add an additional safety margin to the no-decompression limits and decompression-stop times. There are three preset values plus a user-changeable setting. The three preset values correspond to Gradient Factor ratios 75/95, 40/100 and 30/75 (0, 1 or 2, respectively), while the user-changeable setting is to allow a custom factor.

Before going diving, set the computer to your preferred Conservatism/Gradient Factor. A higher setting results in shorter no-decompression times and longer decompression stop times.

To set a preset Conservatism/Gradient Factor:

1. Press button A until “SET” is displayed.
2. Press button B to enter the dive set up option screen.

   Mix1 is flashing.
3. Repeatedly press button A until the screen changes and CONS0, CONS1, CONS2 or CONS-GF flashes.
4. Press button B to toggle through the selections.

   If you wish to use CONS-GF, press button B when CONS-GF flashes. You can then input your own Gradient Factor by using button B to move through the values and button A to select.
5. When finished, press button A to advance to the next option (Metric or Imperial). To exit, press and and hold button A for 2 to 3 seconds to return to surface mode.

Setting the Computer for Metric or Imperial operation

The NiTek X can calculate and give you values in Imperial units or Metric units. When in Imperial, depth values are expressed in feet. When in Metric, depth values are expressed in meters.

To set for Metric or Imperial operation:

1. Press button A until “SET” is displayed.
2. Press button B to enter the dive set up option screen.

   Mix1 is flashing.
3. Repeatedly press button A until the screen changes and ft or m is flashing.
4. Press button B to toggle between ft (feet) and m (meter).
5. When finished, press button A to advance to the next option (Dive Profile). To exit, press and hold button A for 2 to 3 seconds to return to surface mode.

Setting the Dive Profile Sampling Rate

The NiTek X allows you to choose how frequently it samples and stores depth, time, etc. data. The data it samples and stores is used in profile mode or when the data is uploaded to a personal computer. There are two sampling rates to choose from: 15-second and 30-second. The 30-second sampling rate is the computer's "default" setting.

The 15-second sampling rate enables the computer to sample and store data every 15 seconds during a dive. The 15-second sampling rate provides a more detailed dive profile, but because it stores more information, fewer dives can be stored.

The 30-second sampling rate enables the computer to sample and store data every 30 seconds during a dive. The 30-second rate provides a less-detailed dive profile, but it is capable of storing more information for more dives.

Note: When the computer's memory storage is full, it overwrites the oldest dive profile data stored with the new information.

To set the dive profile sampling rate:

1. Press button A until "SET" is displayed.
2. Press button B to enter the Dive Set-Up option screen.

   Mix1 is flashing.
3. Repeatedly press button A until the screen changes and the Dive Profile Sampling Rate is flashing.
4. Press button B to toggle between 15- and 30-seconds.
5. When finished, press button A to advance to the next option (Salt or Fresh Water Use). To exit, press and hold button A for 2 to 3 seconds to return to surface mode.

Setting for Fresh or Salt Water Use

The NiTek X is capable of operating using fresh or salt water calculations. This is based on:

- One atmosphere of saltwater is 33 feet (10 meters)
- One atmosphere of freshwater is 34 feet (10.3 meters)

Before going diving, set the computer to the type of water you are diving in. This allows for the most accurate calculations with respect to no-decompression limits, etc.

To set for fresh or salt water use:

1. Press button A until “SET” is displayed.
2. Press button B to enter the dive set up option screen.

   Mix1 is flashing.
3. Repeatedly press button A until the screen changes and SEA or FRESH is flashing.
4. Press button B to toggle between fresh or sea water.
5. When finished, press button A to advance to the next option (Contrast). To exit, press and hold button A for 2 to 3 seconds to return to surface mode.

Setting for Screen Contrast

The NiTek X is capable of changing the degree of image contrast between the screen characters and the background to aid in visibility in poor lighting situations.

Before going diving, set the computer to give a contrast ratio that allows for easiest readability conditions. The default ratio is 5, and ranges from 0 to 10.

To set for Screen Contrast use:

1. Press button A until “SET” is displayed.
2. Press button B to enter the dive set up option screen.

   Mix1 is flashing.
3. Repeatedly press button A until the screen changes and the contrast number is flashing.
4. Press button B to increasne the contrast ratio.
5. When finished, press button A to advance to the next option (Backlight). To exit, press and hold button A for 2 to 3 seconds to return to surface mode.

Setting for Backlighting

The NiTek X is capable of changing the length of time the screen backlight is lit to aid in visibility in poor lighting situations. The timeout ranges from 2 - 20 seconds in 2-second intervals, or 'never' (always on).

> **Note:** The 'never' setting will quickly drain the battery, and should be used very sparingly.

Before going diving, set the computer for the time you would like the backlight to stay illuminated.

To set backlight timeout:

1. Press button A until "SET" is displayed.
2. Press button B to enter the Dive Set-Up option screen.

   Mix1 is flashing.
3. Repeatedly press button A until the screen changes and the backlight timeout value is flashing.
4. Press button B to toggle through the times.
5. When finished, press button A return to the SET mode. To exit, press and hold button A for 2 to 3 seconds to return to surface mode.

Understanding Default Mode

Once the computer's gas mixes are programmed, the settings are stored in the computer unless the battery is replaced. When the battery is replaced, all gas mixture settings change to 21 percent oxygen, 00 percent helium, and 79 percent nitrogen.

Note: The computer will retain all decompression and dive-log information when the battery is replaced.

Note: Removing the battery when the dive computer is in decompression violation mode will not clear any decompression violation information – the countdown will resume at the time the battery had been removed.

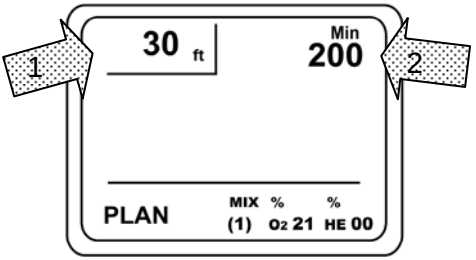
Note: You should not rely on the NiTek X as the sole means of tracking your exposure to elevated partial pressures of oxygen. It

is recommended that you use either a second computer or another tracking method, such as dive tables.

Plan Mode

Plan mode enables you to determine how long you can stay at various depths while remaining within the no-decompression limits. The no-decompression time limits are based on the gas mix that is set for mix1. If you are making a dive within 24 hours of a previous dive, the no-decompression time limits are based on the residual nitrogen remaining.

The two most important values that are displayed on the screen in plan mode are the depth and no-decompression time limit.



(1) Depth: When you first enter Plan mode, the initial depth displayed is 30 feet (9 meters). You can advance the depth in 10 foot (3 meter) increments. Fifteen different dive plan depth increments can be displayed to a maximum depth of 170 feet (51 meters).

(2) No-Decompression Limit (NDL): Depending on the depth displayed and the current FO2 setting, the available no-decompression limit, up to a maximum of 200 minutes, is displayed. If the computer is in default mode, a series of horizontal lines appears.

If the NiTek X calculates that there is residual nitrogen present from previous dives, the available no-decompression limits are shorter. Depending on how much residual nitrogen is present, no NDL time may be displayed for some deeper depths. If this takes place, a series of horizontal dashes are displayed. Similarly, for combinations of depth and FO2 that would cause a diver to exceed a limiting PO2 of 1.6 atmospheres, a series of horizontal dashes appear in place of the no-decompression limit.

To enter Plan mode:

1. Repeatedly press button A until “PLAN” is displayed.
2. Press button B to enter the Plan mode screen.
3. Press button B to advance the depth.

   The no-decompression time limits change automatically based on the depth.
4. When finished, press and hold button A for 2 to 3 seconds to return to surface mode.

WARNING: Do not plan dives to depths deeper than those for which the NiTek X is capable of displaying an available no-decompression limit. Doing so could cause you to exceed the no-decompression limits or a limiting PO2 of 1.4 or 1.6 atmospheres. This may increase your risk of decompression illness or CNS oxygen toxicity and can lead to serious personal injury or death.

Dive Computer Mode

Dive Computer mode is automatically entered when the computer enters the water. It begins performing its dive calculations once you descend below 5 feet (1.5 meters).

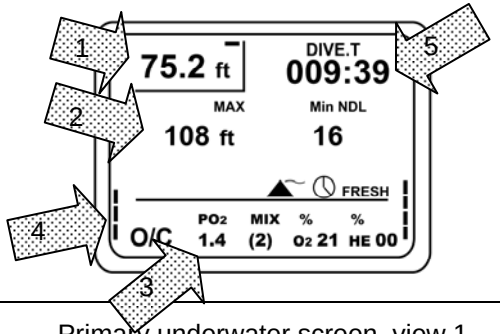
Caution: Prior to diving, always check to ensure that the O/C or C/C modes, FO2 and FHe settings are correct and that the computer is not in default mode.

While in diving mode, the computer calculates and displays information about your dive and prompts you with safety stop information and warnings if needed.

While underwater, there are two screens you can toggle between and you can switch to different gas mixes when needed.

Primary Underwater Screen

When you enter the water, the primary screen shows your depth, remaining no-decompression time limit, dive time, max depth, PO2 for selected mix, mix number, O2 and HE percentages for gas selected, and the OLI and PGT bar graphs.



Primary underwater screen, view 1

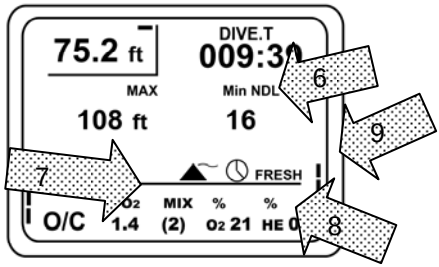
(1) Depth: This is the current depth.

(2) Maximum depth: This is the maximum depth that has been reached during the dive.

(3) PO2: This is the partial pressure of O2 at your current depth. It is based on the FO2 settings for the mix selected.

(4) O2 (OLI) bar graph: This is the oxygen limit index (OLI) that calculates the cumulative effect of your exposure to elevated partial pressures of oxygen (PO2). There are a maximum of nine bars. When all bars are displayed, it means that you have used 100 percent of your “CNS” clock. This graph increases when you descend due to higher partial pressures and may decrease when you ascend.

(5) Dive time: This is the time spent (in minutes and seconds) underwater, measured from the time you descended below 5 feet (1.5 meters).



Primary underwater screen, view 2

(6) Remaining no-decompression limit (NDL): This is the time that is remaining (in minutes) before you reach the no-decompression limit. This NDL time limit increases when you ascend and decreases when you descend.

(7) Mix number: This is the mix number for which the computer is currently calculating dive data.

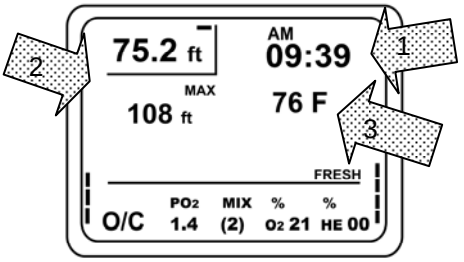
(8) O2 and HE percentages: This is the oxygen and helium percentages programmed for the gas mix number that is selected.

(9) PGT bar graph: This is how much nitrogen and helium the computer assumes your body has absorbed. There are a maximum of nine bars. When all nine bars are displayed, it

means that you are at or have exceeded the no-decompression limits.

Second Underwater Screen

While underwater, you can change to the second diving mode screen that displays additional information. When you switch screens, the current depth, conservatism (Gradient Factor), time of day and temperature is displayed.



Second underwater screen

(1) Time of day: This is the current time of day.

(2) Maximum Depth: This is the maximum depth that has been reached on this dive.

(3) Temperature: This is the current temperature.

To display the second diving mode screen:

1. Press and hold button B.

   The back light turns on, and the second screen is displayed.

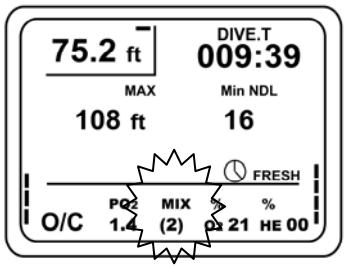
2. Release button B to return to the primary diving mode screen.

Changing Gas Mixes Underwater

Because the NiTek X has the ability to use seven different gas mixes during a dive, you need the ability to switch between these

mix settings while underwater. When you switch mix settings, the PO2 adjusts to reflect the current mixture you are breathing.

Note: Only switch gas mixes when you have reached the safe operating depth limit for the gas you are switching to.



Gas mix number flashes on the screen

To change gases underwater:

1. Press button A.

   The back light turns on and the mix number flashes.

2. Press button B to select a mix number.

   The O2 and HE percentages change to the programmed mix and the PO2 indicator changes to reflect the PO2 for the selected mix.

   Note: Only the mix numbers that have been programmed with a gas mixture are available.

3. Press button A to lock in the mixture and return to the primary diving mode screen.

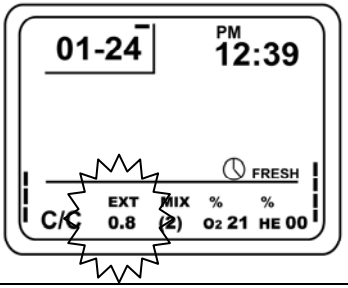
   Note: You cannot lock in a mix if it causes you to exceed a PO2 of 1.4 or 1.6 atmospheres, depending on what was programmed.

Changing Setpoints Underwater

Because the NiTek X has the ability to be used with a closed-circuit rebreather, you can switch between different PO2

setpoints while underwater. When you change setpoints, the computer displays the current mixture you are breathing.

Note: Only switch setpoints when you have reached a safe operating depth for the PO2 you are switching to.



C/C mode with EXT cell PO2 display

To change setpoints underwater:

1. Press and hold button A for 2-3 seconds.

   The backlight turns on and the setpoint “SP” flashes.

   -OR-

   The backlight turns on and “EXT” flashes (if an external oxygen-cell has been connected).

   Note: You cannot change the SP setting when in EXT mode.

   Press button B to switch between “SP” and “EXT”.

2. Press button A and the SP number flashes.
3. Press button B to scroll through the setpoint numbers.

   The setpoint value changes to reflect the PO2 for the selected mix, and the O2 and HE percentages change to reflect the programmed mix.

   Note: Only setpoints that have been programmed with a gas mixture are available. You can quickly scroll through the setpoints with button B.

4. Press button A to lock in the new setpoint and return to the primary diving mode screen.

   Note: You cannot lock in a setpoint if it causes you to exceed a PO2 of 1.6 atmospheres.

Warnings While in Dive Mode

While in diving mode, there are several warnings that you should be alert to.

- Default warning
- Ascent rate warning
- PO2 limit warning
- PGT limit warning
- Oxygen limit index (OLI) warning
- Decompression warning
- Decompression-stop violation warning
- Out-of-range warning

Default Warning

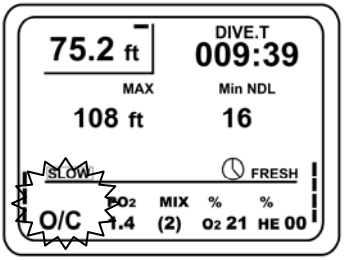
If the computer is in default mode or set to a hypoxic mix at the beginning of a dive, the backlight will flash. If you ascend and set the mix percentages, you can restart the dive. See "Understanding Default Mode" for more information.

Ascent Rate Warning

The NiTek X assumes that you keep your ascent rate within the following limits:

Depth range	Ascent rate
0 to 19 feet (0 to 5.9 meters)	26 feet (8 meters) per minute
20 to 58 feet (6 to 17.9 meters)	39 feet (12 meters) per minute
59 feet (18 meters) or deeper	52 feet (16 meters) per minute

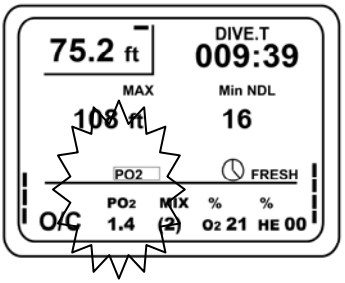
If you exceed these ascent rates, "SLOW" flashes on the screen and the backlight flashes. The warning displays until you slow your ascent to an acceptable rate or you reach 5 feet (1.5 meters).



Ascent rate warning flashes “SLOW” on the screen

PO2 Limit Warning

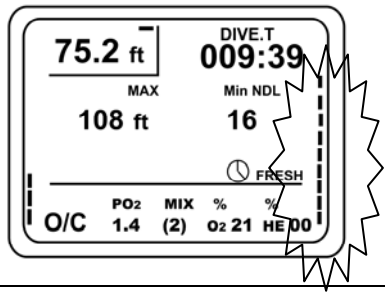
The PO2 warning indicates that you have exceeded 1.4 or 1.6 atmospheres for the gas you are breathing. If you exceed the PO2 setting, the PO2 symbol, PO2 %, and the backlight will flash.



PO2 limit warning flashes “PO2” on the screen

PGT Limit Warning

The Pressure Gas in Tissue (PGT) limit warning indicates that you are approaching the no-decompression limits. When seven or more of the nine bars are displayed, the PGT graph flashes. If all nine bars are displayed, the NiTek X will change to the decompression mode.

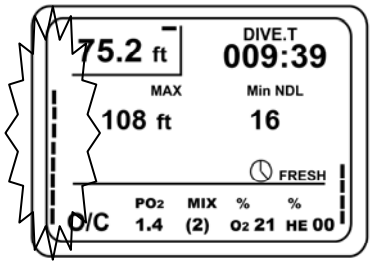


PGT limit warning bars flash on the screen

Oxygen Limit Index (OLI) Warning

The NiTek X's oxygen limit index (OLI) reflects the cumulative effect of your exposure to elevated partial pressures of oxygen. The PO2 warning only accounts for the intensity of the exposure, but the OLI accounts for both the intensity and length.

When seven of the O2's nine bars are displayed, the OLI graph flashes. If you do not ascend to a shallower depth, and all nine of the O2's bars are displayed, "OLI" continues to flash until the O2 bar graph drops to seven bars.

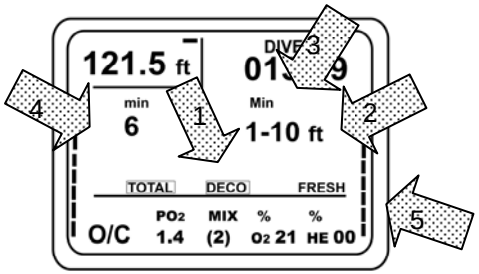


OLI limit warning bars flash on the screen

Decompression Mode

If you exceed the no-decompression limits, the computer enters decompression mode. This indicates that you will have to limit your ascent time and enter a series of one or more decompression stops.

Caution: Decompression diving is considered to substantially increase your risk of decompression illness.



Decompression warning with “DECO” displayed on the screen

(1) Deco stop symbol: The “DECO” symbol displays indicating that you have to stop at the depth displayed.

(2) Required stop depth: This is the required decompression stop depth.

(3) Required stop time: This is the time you must remain at the indicated stop depth.

(4) Total ascent time: This is the total amount of time (in minutes) you must spend at the decompression stops and the ascent time between decompression stops.

(5) PGT bar graph: This is how much nitrogen and helium the computer assumes your body has absorbed. There are a maximum of nine bars. When all bars are displayed, it means that you are at or have exceeded the no-decompression limits and have entered decompression.

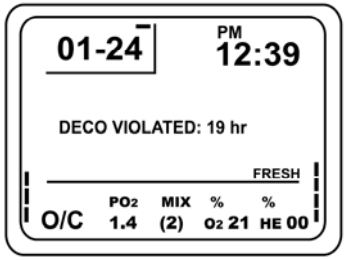
Decompression Stop Violation Warning

A decompression stop violation warning takes place when you ascend to a shallower depth than the indicated stop depth or if you do not spend sufficient time at the required depth before ascending. When you enter this violation, the computer’s “DECO” symbol and backlight will flash. These items continue

blinking as long as you remain shallower than the indicated stop depth.

Caution: If you do not correct an indicated deco stop violation, the warnings continue for several minutes after surfacing. At this point, the computer will display a “Decompression Violation” warning with a countdown timer beginning at 24 hours.

Note: Removing the battery will stop the timer, which will resume the count-down time when the battery is reinserted.



“DECO VIOLATION: 19 hr” displayed the screen

Out-Of-Range Warning

The following can cause the out-of-range warning:

- Descend below the computer’s maximum operating depths for computer mode
- Exceed an actual bottom time of 699 minutes
- Accrue a total ascent time of over 999 minutes

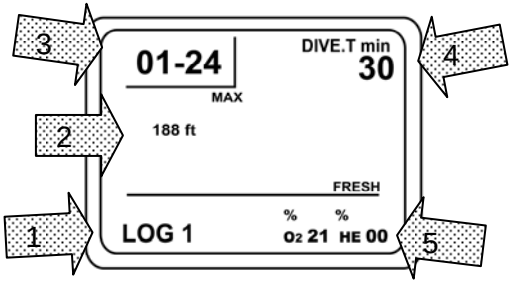
An out-of-range warning will cause the screen backlight to flash.

WARNING: A NiTek X displaying an out-of-range warning is incapable of displaying other critical information such as depth, time, ascent rate, PO2, OLI and deco stop violations, and required decompression stops. For this reason, you should not, under any circumstance, use a NiTek X in such a way that would

cause an out-of-range warning. Under such conditions, the risk of serious personal injury or death would be substantial.

Log Mode

For each dive, the NiTek X stores information, such as depth, time, gases, etc. in a log. This stored log information can be viewed directly from the NiTek X's screen when in log mode. The logbook will hold a minimum of 15 hours, depending on settings. Each dive is assigned a log number and the day's date, making it easy for you to toggle between the dive log pages.



(1) Log entry number: This is the sequence in which the log appears. The most recent log entry has the lowest number, beginning with log one. When the computer's memory is full, the oldest dives are overwritten with the new dives. This causes the log entry number assigned to an earlier dive to change.

(2) Max depth: This is the maximum depth reached during the dive.

(3) Date: This the month and day of the dive.

(4) Dive time: This is the actual bottom time for the dive.

(5) FO2 and FHE gas percentages: These are the FO2 and FHE gas percentages that you entered for the dive. All calculations were based on these percentages.

To view a dive log:

1. Press button A until "LOG" is displayed.
2. Press button B to enter the log mode screen.
3. Press button B to change to the log page for the most-recent dive.

-OR-

Repeatedly button B to scroll “down” through the logged dives. To fast scroll, press and hold button B.

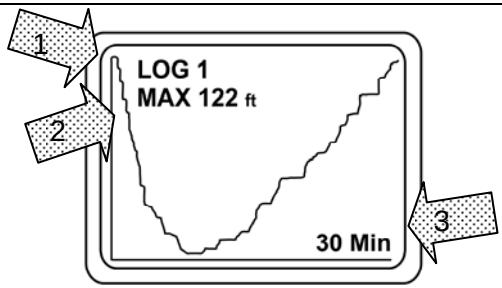
4. When finished, press and hold button A for 2 to 3 seconds to return to surface mode.

Profile Mode

Profile mode enables you to see a record of the depths you reached at various points during a dive. You can display a detailed profile of each dive stored in the log. When a dive is selected, the computer automatically displays the depth and the time in the dive when you reached that depth until it reaches the end of the dive.

Dive profile information is either stored in 15- or 30-second intervals during a dive. This must be set in dive mode before a dive. Refer to “Setting the dive profile sampling rate” for more information.

The dive number and date of the dive are displayed when you scroll through the dives. This makes it easy to find the dive profile you want to view.



(1) Dive log number: This is the dive number that corresponds to the dive number when in log mode.

(2) Max depth: This is the maximum depth reached during the dive.

(3) Dive time: This is the actual bottom time for the dive.

To view a dive profile:

1. Repeatedly press button A until “PROF” is displayed.
2. Press button B to enter the profile mode screen.
3. Press button B to change to the profile page for the most-recent dive.

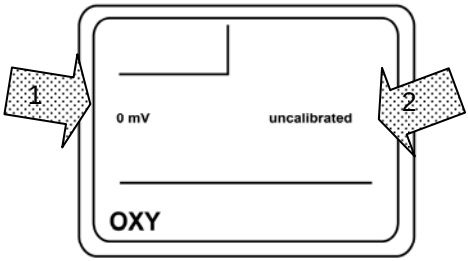
-OR-

Repeatedly button B to scroll “down” through the profiled dives. To fast scroll, press and hold button B.

4. When finished, press and hold button A for 2 to 3 seconds to return to surface mode.

OXY Mode

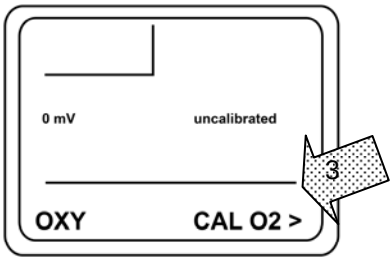
Using an external cable and oxygen-sensor cell, you can use your NiTek X with a closed circuit rebreather to monitor the constant-PO2 setpoint and decompression information.



Oxygen-analysis mode, screen 1

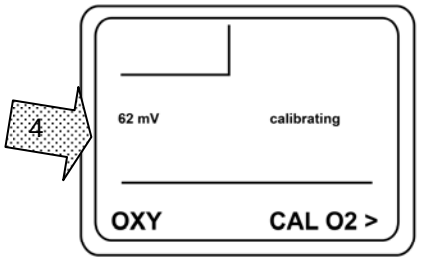
(1) mV reading: This is the initial part of the sequence for calibration of an oxygen-cell. This shows that the oxygen-cell has not been connected yet.

(2) uncalibrated: This shows that the oxygen-cell has not been connected or calibrated to a standard gas-mixture.



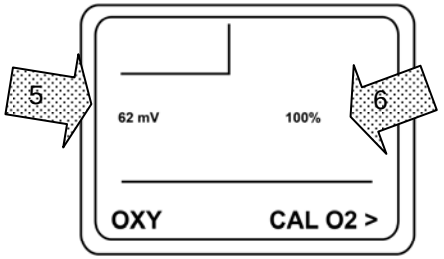
Oxygen-analysis mode, screen 2

(3) CAL O2 >: This shows that the oxygen-cell has been connected and is ready to be calibrated.



Oxygen-analysis mode, screen 3

(4) mV reading: This shows that the oxygen-cell has been connected and is displaying its output.



Oxygen-analysis mode, screen 4

(5) and (6): mV reading and O2 percentage: This shows that the oxygen-cell has been calibrated and is displaying its output.

To enter the OXY mode:

1. Remove knurled cap at upper left of NiTek X and attach an appropriate external cable and oxygen-cell to the connector.
2. Repeatedly press button A until “OXY” is displayed.
3. Press button B to enter the OXY analysis mode screen.

   “0 mV Uncalibrated” is displayed on the screen.
4. Press button A

   “CAL O2” is displayed on the screen.

5. Press button B to enter calibrate-mode of oxygen-cell, using a source of 100% oxygen for reference.

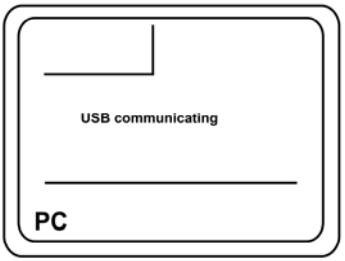
   “xx mV calibrated” (where xx is the mV reading of your oxygen-cell) and the oxygen percentage is displayed on the screen.

6. To return to surface mode, press and hold button A for 2 to 3 seconds.

7. Set the NiTek X to “C/C” (closed-circuit) mode. It will display “EXT” instead of “SP” (setpoint), indicating that it is reading the PO2 level of the external oxygen-cell.

PC Transfer Mode

You can transfer the stored dive log information to your personal computer using the optional NiTek X WorkBench™ software and a USB interface.



To enter PC transfer mode:

1. Remove the knurled cap at upper left of the NiTek X and attach an appropriate external cable to the connector.
2. Connect the other end of the cable to an internet-compatible PC or Mac computer with NiTek X Workbench™, and start the NiTek X Workbench™ program on the computer.
3. Repeatedly press button A on the NiTek X until “PC” is displayed.
4. Press button B to enter the PC transfer mode screen.

   “USB communicating” is displayed on the screen.
5. Transfer the dive log data to your PC.
6. When finished, press and hold button A for 2 to 3 seconds to return to surface mode.
6. You may now access your NiTek X dive computer to download your dives and make change to settings (such as date/time, gas mixes, conservatism, alarms, etc).

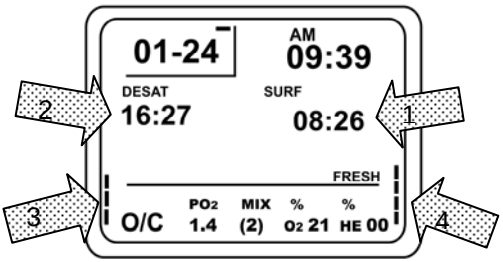
Surface Mode (upon surfacing from a dive)

Once you surface from a dive, the NiTek X automatically switches to surface mode. In addition to the normal information displayed in surface mode such as time of day, there is other information that is displayed that pertains to the dive you just completed. This includes:

- Desaturation time
- Surface interval time
- Pressure Gas in Tissue (PGT) bar graph
- Oxygen limit index (OLI) bar graph

This information is displayed the screen until the NiTek X calculates that it is no longer needed or after 24 hours have passed since the last dive.

Note: If you are making repetitive dives, you need to pay attention to your surface interval and use it in conjunction with plan mode. This ensures that you stay within no-decompression limits.



(1) Surface interval time: This is the amount of time you have spent on the surface since your last dive if there is residual nitrogen present from a previous dive. It can display up to 24 hours of surface interval time.

(2) Desaturation time: This is the amount of time, expressed in hours and minutes, that must pass before the residual nitrogen levels drop to a point where subsequent dives are treated as a single (non-repetitive) dives. This is not the same as “time to fly.”

(3) O2 OLI bar graph: This indicates CNS toxicity level at the end of the dive. This drops as your surface interval time increases.

(4) PGT exposure bar graph: This is the amount of residual nitrogen and helium in your body at the end of the dive. This drops as your surface interval time increases.

WARNING: It is recommended that you wait at least 24-hours following any dive before flying in an aircraft or driving to altitude. Failure to allow sufficient surface interval time before doing so may increase your risk of decompression illness (DCI).

Altitude Operation

The NiTek X adjusts automatically for diving at altitudes of up to 19,685 feet (6,000 meters).

The NiTek X monitors altitude information in all modes, except PC transfer mode. Upon arriving at altitude, the NiTek X's PGT bar graph may show that there is excess nitrogen present, even though you may not have made any dives in the preceding 24 hours.

If you have obtained the altitude specialty diver training (which everyone should do before diving at altitudes substantially above sea level), you already understand that this should be expected. By ascending to a higher altitude from a lower one, your body has more nitrogen saturated in body tissues than would be present had you spent the preceding 24 hours at the higher altitude. By displaying residual nitrogen and a surface interval, your NiTek X is merely reflecting this fact.

Prior to using the NiTek X at altitudes substantially above sea level, you should find out what the actual altitude of your dive site is.

If the level of residual nitrogen calculated by the NiTek X is unusually high (seven or eight bars) when going to altitude, the computer will be unable to enter dive mode. Avoid taking the computer to altitude when residual nitrogen levels are this high, and do not enter the water until nitrogen levels have dropped substantially.

> **Note** Do not place the NiTek X in dive mode when making sudden, substantial changes in altitude, such as when flying in an airplane. This can be caused by storing the NiTek X with wet dive gear, which may cause it to turn on and enter dive mode. This can interfere with the computer's ability to function accurately.

Chapter 3

Care and maintenance

Summary

This chapter provides care and maintenance and battery information for the NiTek X.

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Replacing the battery • 56

Proper Handling Techniques

The NiTek X is constructed to withstand the most demanding diving conditions. It is, however, a high-precision instrument, which requires proper care.

Caution: Failure to follow these handling techniques may result in damage to the NiTek X.

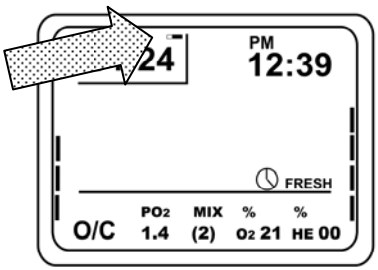
- Do not store the computer in hot, humid, or wet environments. The pressure transducer is sensitive to both heat and humidity. If impaired, it may cause incorrect altitude or depth readings.
- When in hot and/or humid environments, dip the computer in water for several minutes to cool it to room temperature before using it. If it is cold, allow the computer to warm to room temperature. Do not take it underwater immediately after doing so.
- Do not transport your NiTek X on an aircraft or take it to altitude while it is sealed in an air-tight container or in a damp environment. Doing so may interfere with its ability to correctly read, display, and track depth information.
- The NiTek X's Liquid Crystal Display (LCD) may darken if left in a hot environment (such as on a car's dashboard). It will return to normal once allowed to cool, however, extensive exposure to heat may shorten LCD life. Cold weather can dim the LCD display.
- Be aware that weather-related changes in air-pressure can cause incorrect display of altitude settings. Be sure to check indicated altitude settings against actual altitude before use.
- Your NiTek X is not to be disassembled by anyone other than Dive Rite. Unauthorized disassembly will violate the warranty.
- If the NiTek X does not appear to be functioning properly, do not use it to dive. Return it to your authorized Dive Rite dealer for repair.

- The NiTek X should not come in contact with solvents or any type of chemical substances
- Do not use compressed air to dry the NiTek X
- Do not use the NiTek X in hyperbaric chambers if the device is not fully submerged in water
- Always rinse the computer with freshwater after use
- Store the NiTek X in a cool, dry location. After diving, wipe the computer dry and store it in a location separate from other damp items.

Low Battery Warning

The battery that comes with the NiTek X is designed to last for up to three years under normal use. You may get more or less use from the battery depending on how often it is used and how it is cared for.

Note: The battery symbol will begin to “empty” when the battery starts to run low and will be completely empty when the battery is critically low.



Cautions

- All NiTek X functions may cease within two to three days of the low battery symbol first appearing. Always have low a battery replaced promptly.
- A depleted battery that is left in a NiTek X for a long period of time may leak. Replace battery promptly.

Replacing the battery

Battery replacement is an easy operation that can be done by the user. The battery must be replaced whenever the low battery symbol (fixed or blinking) is displayed.

Note: When you replace the battery, all data regarding gas mixes, time, and date, etc. is lost. Be sure to re-enter the data after replacing the battery.

Before replacing the battery, you should have a clean working area free of dirt, dust, and moisture, and you need the following items:

- CR123A Lithium battery
- Silicone grease
- Lint-free cloth
- Cotton swabs
- Pencil with a good eraser tip

To replace the battery:

1. Locate the battery compartment. It is inside the small knurled cap on the upper-right side of the computer.
2. Remove the knurled cap. Be sure to hold the computer with its right side facing down to minimize any water droplets from getting into the battery compartment,
3. Examine the battery and battery compartment for signs of corrosion. Wipe off any sand or dirt from the cover and o-ring using a cotton swab.
4. Remove the old battery.
5. Clean the new battery contacts with the pencil eraser.
6. Remove the o-ring from the cap. Be careful not to damage the o-ring.
7. Clean the o-ring, and place a thin layer of silicone grease on the o-ring.
8. Install the o-ring in the cap.
9. Install the new battery, making sure that the polarity is correct (positive end faces inward).
10. Screw the battery cap back into place. Do not over tighten.
11. Reset the time and date.

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