ATMOS ai

DIVE COMPUTER

OWNER'S GUIDE

LIMITED TWO-YEAR WARRANTY

For details, refer to the Product Warranty Registration Card provided.

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ATMOS ai Owner's Guide, Doc. No. 12-7153

San Leandro, Ca. USA 94577

TRADEMARK NOTICE

PATENT NOTICE

U.S. Patents have been issued, or applied for, to protect the following design features:
Dive Time Remaining (U.S. Patent no. 4,586,136), Data Sensing and Processing Device (U.S. Patent no. 4,882,678), and Ascent Rate Indicator (U.S. Patent no. 5,156,055). User Setable Display (U.S. Patent no. 5,845,235) is owned by Suunto Oy (Finland).

DECOMPRESSION MODEL

The programs within the ATMOS ai simulate the absorption of nitrogen into the body by using a mathematical model. This model is merely a way to apply a limited set of data to a large range of experiences. The ATMOS ai dive computer model is based upon the latest research and experiments in decompression theory. **Still, using the ATMOS ai, just as using the U.S. Navy (or other) No Decompression Tables, is no guarantee of avoiding decompression sickness, i.e. "the bends."** Every diver's physiology is different, and can even vary from day to day. No machine can predict how your body will react to a particular dive profile.

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CONTENTS (continued)

CONTENTS (continued)

⚠ **Pay special attention to items marked with this Warning symbol.**

⚠ WARNINGS AND SAFETY RECOMMENDATIONS

- The ATMOS ai is not intended for use by military or commercial divers.
- The ATMOS ai is intended for use by recreational divers who have successfully completed a nationally recognized course in scuba diving, and diving with enriched nitrogen-oxygen (nitrox) mixtures.
- It must not be used by untrained persons who may not have knowledge of the potential risks and hazards of scuba diving, and diving with nitrox.
- You must obtain scuba certification, and certification in diving with nitrox before using the ATMOS ai, if you have not already done so.
- It should NOT be utilized for any competitive, or repetitive square wave or unplanned decompression diving, it is intended solely for recreational use and multilevel diving.
- As with all underwater life support equipment, improper use or misuse of this product can cause serious injury or death.
- Conduct your dives in such a manner so as to insure that you continuously check the computer's proper function.
- If you do not fully understand how to use this dive computer, or if you have any questions, you should seek instruction in its use from your authorized AERIS dealer before you utilize this product.
- Never participate in sharing or swapping of a dive computer. Doing so may result in injury or death.
- If you exceed certain limits, the ATMOS ai will not be able to tell you how to get safely back to the surface. These situations exceed tested limits and can result in loss of some ATMOS ai functions for 24 hours after the dive in which a Violation occurred.
- The ATMOS ai enters Immediate Violation Mode when a situation totally exceeds its capacity to predict an ascent procedure. These dives represent gross excursions into decompression that are beyond the boundaries and spirit of the ATMOS ai design. If you are following these dive profiles, AERIS advises you not to use an ATMOS ai dive computer.

FEATURES and DISPLAYS

WELCOME TO AERIS !
AND
THANK YOU FOR CHOOSING THE ATMOS ai !

Your ATMOS ai presents the information that you need before, during, and after your air (or nitrox) dives using a combination of easy to read displays and identification icons. It can also be set to operate simply as a digital depth gauge/timer.

This instructional guide is intended to help you become familiar with the functions and features available and show you examples of displays that you could expect to see in the various operational modes. Ensure that you read through this complete Owner's Guide.

Remember that the rules you learned in your basic scuba certification course(s) still apply to the diving you will do while using a dive computer - some will become even more important. Technology is no substitute for common sense, and a dive computer only provides the person using it with data, not the knowledge to use it.

Since the ATMOS ai can be used when diving with either Air or Nitrox, the term Breathing Gas is used in this manual.

- Breathing Gas is the gaseous mixture breathed during a dive.
- Air is a breathing gas that contains approximately 21% oxygen and 79% nitrogen (nature's common nitrogen-oxygen mixture).
- Nitrox is a nitrogen-oxygen breathing gas that contains a higher fraction of oxygen than air (>21%).

CONTROL BUTTONS

The two Control Buttons allow you to select display options, access specific information when you want to see it, and activate the Unit and the Backlight.

The Front button is named **Advance** (Fig. 1a) and the Bottom/Side button **Select** (Fig. 1b).

BAR GRAPHS

Nitrogen Bar Graph

The Nitrogen Bar Graph (Fig. 1c) represents tissue loading of nitrogen, showing your relative no decompression or decompression status. As your depth and elapsed dive time increase, segments will add to the Graph, and as you ascend to shallower depths, the Bar Graph will begin to recede, indicating that additional no decompression time is allowed for multilevel diving.

The Nitrogen Bar Graph monitors 12 different nitrogen compartments simultaneously and displays the one that is in control of your dive. It is divided into a green No Decompression (normal) zone, a yellow Caution zone (also No Decompression), and a red Decompression (danger) zone.

While you cannot provide a guarantee against the occurrence of decompression sickness, you may choose your own personal zone of caution based upon age, physique, excessive weight, etc., to reduce the statistical risk.

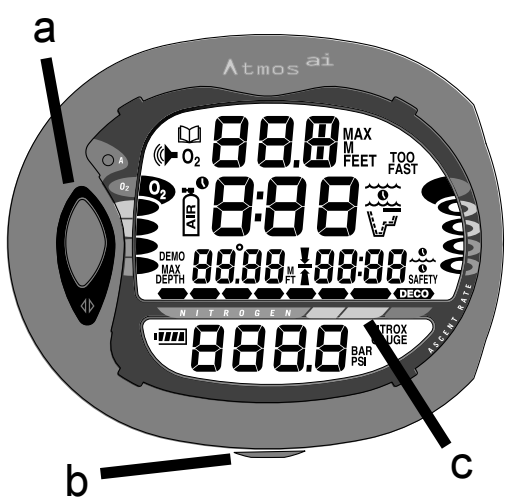


Fig. 1 - Buttons and NiBG

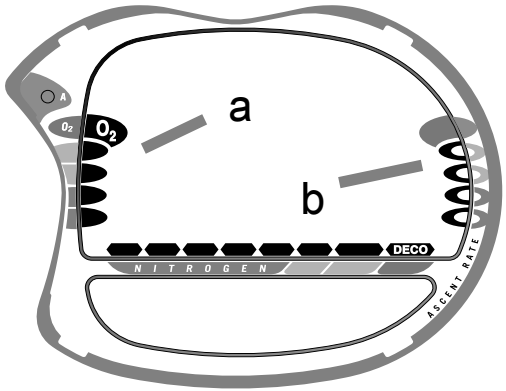


Fig. 2 - O2BG and VARI

Oxygen Accumulation Bar Graph (O2BG)

The O2 Bar Graph (Fig. 2a) represents oxygen loading, your relative oxygen tolerance dosage (OTU), showing the maximum of either per dive accumulated oxygen, or 24 hour period accumulated oxygen. As your accumulation increases during the dive, segments will add to the Bar Graph, and as loading decreases, it will begin to recede, indicating that additional exposure is allowed.

NOTE: Displays associated with oxygen and the O2 Bar Graph will only appear if FO2 has been set at a value other than 'Air' (e.g., a numerical value).

Deeper than 60 feet (18 m)

Segments	Ascent Rate =	
Displayed	FPM	MPM
0	0-20	0 - 6
1	21-30	6.5-9
2	31-40	9.5-12
3	41-50	12.5-15
4	51-60	15.5-18
5	>60	>18

60 feet (18 m) & Shallower

Segments	Ascent Rate =	
Displayed	FPM	MPM
0	0-10	0 - 3
1	11-15	3.5-4.5
2	16-20	5-6
3	21-25	6.5-7.5
4	26-30	8-9
5	>30	>9

Variable Ascent Rate Indicator

Variable Ascent Rate Indicator (VARI)

The Variable Ascent Rate Indicator (Fig. 2b) provides a visual representation of ascent speed (i.e., an ascent speedometer). Green is a 'normal' rate, yellow a 'caution' rate, and red is 'Too Fast'. The segments of the Variable Ascent Rate Indicator represent 2 sets of speeds which change at a reference depth of 60 feet (18 meters). Refer to the chart for segment values.

WARNING: At depths greater than 60 feet (18 meters), ascent rates should not exceed 60 feet per minute (18 mpm). At depths of 60 feet (18 meters) and shallower, ascent rates should not exceed 30 feet per minute (9 meters per minute).

INFORMATIONAL DISPLAYS

Each numeric and graphic display represents a unique piece of information. It is imperative that you understand the formats, ranges, and values of the information represented to avoid any possible misunderstanding that could result in error.

Tank Pressure Display

Tank pressure is displayed numerically in the lower window (Fig. 3a). Values of pressure are displayed from 0 PSI (BAR) up to 5000 PSI (352 BAR) in increments of 10 PSI (.5 BAR).

Depth Displays

During a dive, the **Current Depth** display (Fig. 3b), indicates depths from 0 to 330 feet (99.9 meters) in 1 foot (.1 meter) increments. The **Maximum Depth** reached during that dive will be displayed in the upper window (Fig. 3c).

- When the unit is set to operate as a Digital Depth Gauge/Timer (referred to as User Set Gauge Mode), the Depth Display range is 'extended' to 399 feet (120 meters).
- At depths greater than 99.9 meters, it will indicate metric values in increments of 1 meter.

During a Decompression Dive, the required **Ceiling Stop Depth** is displayed instead of Max Depth. Max Depth can then be viewed by pressing the Advance (Front) button.

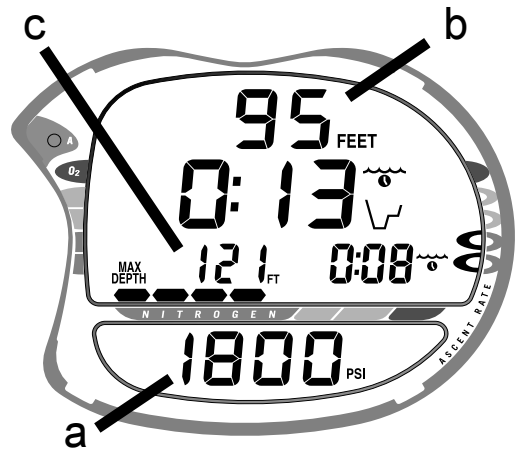


Fig. 3 - Pressure and Depth

Time and Date Displays

Time displays are shown in hour:minute format (i.e., 1:22 represents 1 hour and 22 minutes, not 122 minutes!). The colon that separates hours and minutes blinks once per second when the display is indicating real time (e.g., Elapsed Dive Time), and is solid (non-blinking) when times are calculated projections (e.g., Time to Fly).

Due to the importance of the information it presents, the **Main Time** display is configured with the largest segments of the LCD in the upper window (Fig. 4a). A **second time display** is located in the lower right portion of the window (Fig. 4b). Both displays are identified by a clock icon.

- Time of Day can be set for 12 hour format (AM/PM) or 24 hour format.

Date is displayed in the lower screen only to identify dive data while it is viewed in the Log Mode.

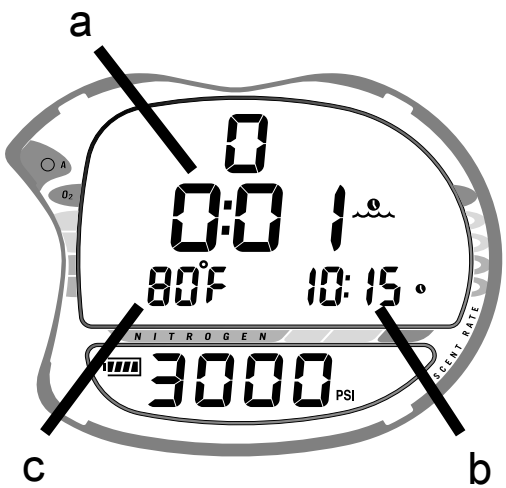


Fig. 4 - Time and Temperature

When Units of Measure are set for 'Imperial', the Month appears to the left of Day. When set for Metric, the Month appears to the right of Day.

Temperature Display

Ambient Temperature is displayed in the upper window (Fig. 4c) while in the Surface Mode and can be viewed as part of an Alternate Display when the Advance (Front) button is pressed while in a dive mode. If the Temperature exceeds a value of '99', 2 dashes (- -) will be displayed on the screen until the unit's temperature decreases to '99'.

NOTE: The Informational Displays are described in detail as the various operating modes they appear in are presented throughout this manual.

AUDIBLE ALARM

When warning situations activate the Alarm, the unit will emit a continuous beeping tone for 10 seconds, or until the situation is corrected, or it is acknowledged by pressing the Advance (Front) button for 2 seconds. If acknowledged by the user and the situation corrected, the Alarm will sound again upon reentry into the warning situation, or entry into another type of warning situation.

A red LED Warning Light located on the upper left portion of the module is synchronized with the Audible Alarm and will indicate an Alarm when the unit emits a tone. It will be OFF when the Alarm is acknowledged, or Set OFF (a user setting).

Warning situations that will sound the Alarm, if it is turned ON (a user setting), include -

- Entry into Decompression Mode
- PO2 => than the Max PO2 Alarm (a user setting), or => 1.60 ATA.
- Descent deeper than the Max Depth Alarm (a user setting).
- Nitrogen Bar Graph Alarm (a user setting).
- Dive Time Remaining Alarm (a user setting).
- Elapsed Dive Time Alarm (a user setting).
- O2 Accumulation => allowable per dive limit, or limit for a 24 hour period.
- Ascending above a required Decompression stop depth for < 5 min. (Conditional Violation).
- Ascent rate exceeds 60 fpm (18 mpm) if > 60 ft (18 m), or 30 fpm (9 mpm) if <= 60 ft (18 m).
- Turn Pressure Alarm (a user setting).
- End Pressure Alarm (a user setting).

During the following situations, the 10 second continuous tone will be followed by a 5 second steady beep that will not turn off when acknowledged, <u>even if it was user Set OFF</u> -

- Ascending above a required Decompression stop depth for more > 5 min. (Delayed Violation).
- Decompression requires a ceiling stop depth => 70 FT (18 M).
- Being on the surface for 5 minutes after a Conditional Violation (Permanent Violation).

A single short beep (which cannot be disabled) is emitted - after the Diagnostic check, upon automatic return to Surface Mode from Simulator Mode, upon completion of a fast battery change with calculations/settings saved, and upon change from Delayed to Full Violation after that dive.

BACKLIGHT

To activate the Backlight while in the Surface Mode or during a dive-

- **press the <u>Select (Bottom) button</u>.**

- The screens (upper and lower) will be illuminated for button depression time plus 3, 5, or 7 seconds (a user setting). Press and release the button again to activate as desired.

- The Backlight does not operate during a Low Battery condition.

NOTE: AERIS recommends that you always carry primary and backup dive lights when conducting dives that could include low light situations.

POWER SUPPLY

The ATMOS ai utilizes one (1) 3 volt, CR2450 Lithium Battery that should provide from 300 dive hours of operation if you conduct one 1 - hour dive each time the unit is activated, to over 600 dive hours of operation if you conduct two or more dives each time the unit is activated.

Battery Indicator

A Battery Indicator (icon) provides an indication of Battery condition. The Battery Indicator will be displayed during Surface Mode (Fig. 5a). It will not be displayed during Dive Modes.

Low Battery Condition

- Voltage level is checked upon activation and every 10 minutes during operation.
- Once 75% of full power is consumed, the Indicator will display only one bar and the icon will flash once per second as a warning that the Battery is to be changed prior to conducting any further dives with the unit.
- If a Low Battery Condition exists <u>when the unit is activated (by pressing the button),</u> the Battery icon will appear flashing once per second for 5 seconds followed by shutdown of the unit.
- If the <u>button is not pressed to activate the unit</u> prior to a dive, and a Low Battery Condition exists, the Low Battery icon will appear flashing as a warning upon descent past 4 feet (1.2 meters). No other information will be displayed and the unit will not enter Dive Mode.
- If the unit did not display the Low Battery icon 'prior to' entering the Dive Mode, and a Low Battery Condition occurs <u>during the dive</u>, there will be sufficient Battery power to maintain unit operation for the 'remainder of that dive'. The Low Battery icon will appear flashing upon surfacing when Surface Mode is displayed.

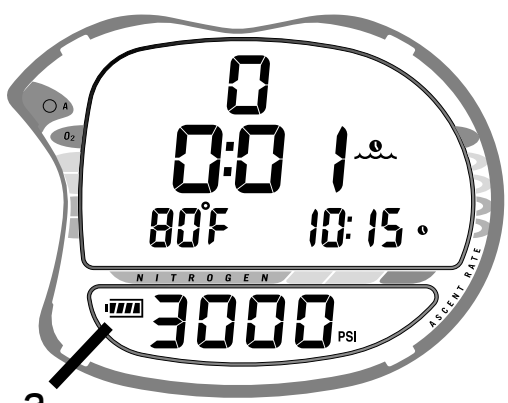


Fig. 5 - Battery Indicator

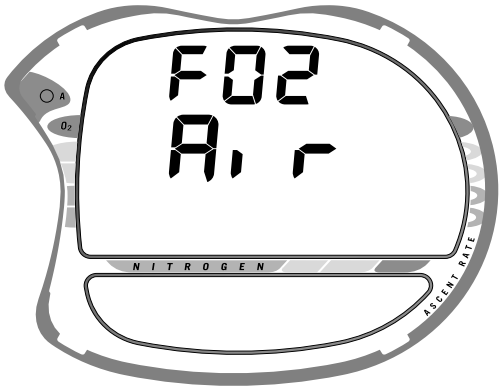


Fig. 6 - FO2 Air

FO2 MODE

After Activation, the ATMOS ai will operate as an Air computer without displaying information associated with oxygen calculations, unless it is set for a percentage of oxygen (FO2) other than Air (numerical value between 21 and 50 %).

NOTE: Setting FO2 is described on Page 27.

When set with an **FO2 value of 'Air'** (Fig. 6), the ATMOS ai will perform calculations the same as if FO2 were set for 21% oxygen, internally accounting for oxygen loading for any subsequent Nitrox dives. However, oxygen related displays, warnings, and the O2 bar graph will not appear on the display for that dive, or subsequent dives, unless FO2 is set for a numerical value (21 - 50).

Once a dive is made with the unit set as a nitrox computer (FO2 set for a numerical value), the unit cannot be programmed to operate as an 'Air' computer until 24 hours after the last dive. 'Air' will not be displayed as an option in the FO2 Mode. However, you can set FO2 for 21% for use with Air.

When FO2 is set at a **value of 21%** (Fig. 7), the unit will remain set at 21% for subsequent nitrox dives until FO2 is set to a higher value, or until it automatically turns off and is reactivated.

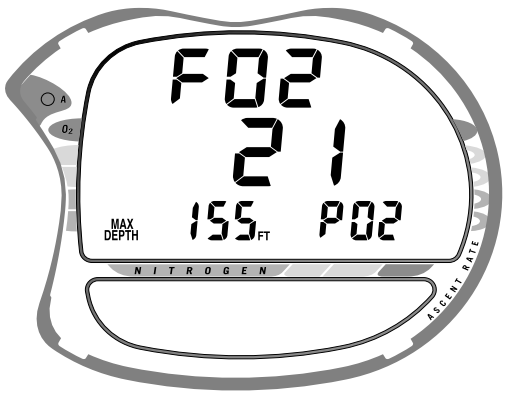


Fig. 7 - FO2 of 21%

WARNING: The percentage of oxygen (FO2) in the nitrox mix being used must be set 'before each' nitrox dive, unless the FO2 50% Default feature has been turned OFF.

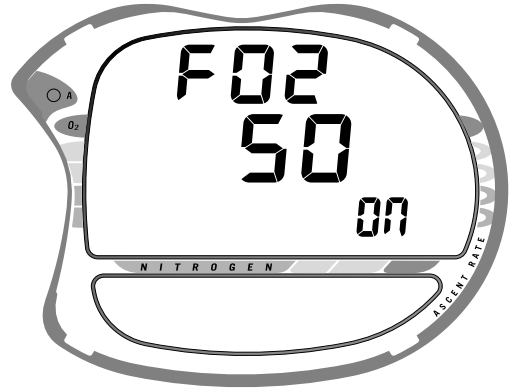


Fig. 8 - FO2 Default ON

FO2 50% Default

<u>If the Default is set to ON</u> and FO2 is set to a value 'greater than 21%', the FO2 set point value will automatically revert to 50% 10 minutes after that dive (Fig. 8). The Maximum Depth that can be achieved with a PO2 of 1.60 ATA will also be displayed.

- <u>FO2 must therefore be reset for each repetitive nitrox dive</u>, or the value will automatically 'default' to 50(%) and the dives will be calculated based on 50% O2 (50% nitrogen) for oxygen calculations and 21% O2 (79% nitrogen) for nitrogen calculations.

WARNING: If you surface for greater than 10 minutes during a dive, a subsequent descent will be considered a new dive and FO2 must be reset.

<u>If the Default is set to OFF</u>, the FO2 value for repetitive dives remains the same (Fig. 9) until the set point is manually changed.

WARNING: Even if the Default is set to OFF, the FO2 set point should be 'verified' to match the FO2 in the nitrox mix being used before each nitrox dive.

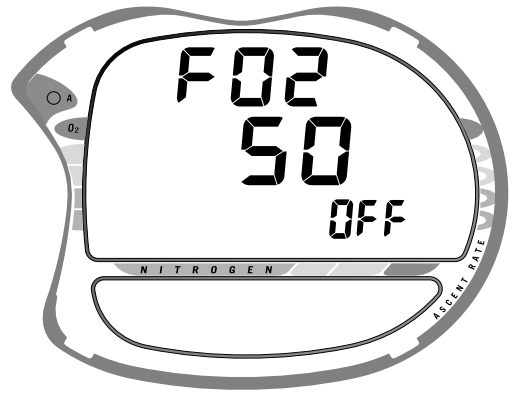


Fig. 9 - FO2 Default OFF

DIVE TIME REMAINING

One of the most important pieces of information on Aeris dive computers is the 'Dive Time Remaining numeric display'. The ATMOS ai constantly monitors no decompression status, oxygen accumulation, and breathing gas consumption rate.

The Dive Time Remaining* display will indicate <u>the time that is more critical for you</u> at that particular moment (i.e.; whichever time is the least amount available). The specific time being displayed is identified by the No Decompression Dive Time icon, the O2 Time icon, or Tank icon.

(* This unique feature has been granted U.S. Patent No. 4,586,136.)

No Decompression Dive Time Remaining

No Decompression Dive Time Remaining is the maximum amount of time that you can stay at your present depth before entering a decompression situation. It is calculated based on the amount of nitrogen absorbed by hypothetical tissue compartments. The rates each of these compartments absorb and release nitrogen is mathematically modeled and compared against a maximum allowable nitrogen level. Whichever one is closest to this maximum level is the controlling compartment for that depth. Its resulting value will be displayed numerically (Fig. 10a) along with the No Decompression Dive icon and graphically as the Nitrogen Bar Graph (Fig. 10b).

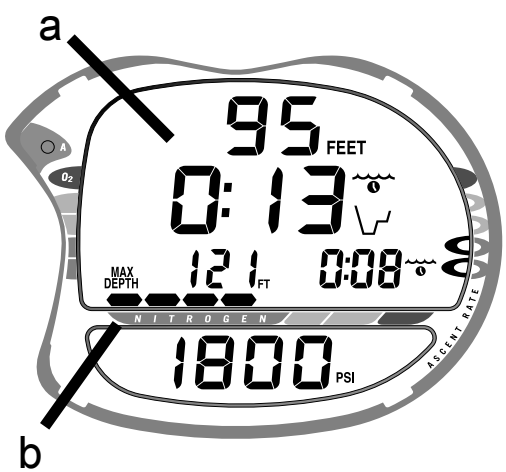


Fig. 10 - No Decompression Dive Time Remaining

<u>As you ascend from depth following a dive that has approached the no decompression limit, the Nitrogen Bar Graph will recede as control shifts to slower compartments. This is a feature of the decompression model that is the basis for multilevel diving, one of the most important advantages that Aeris dive computers offer.</u>

The no decompression algorithm is based upon Haldane's theory using maximum allowable nitrogen levels developed by Merrill Spencer. Repetitive diving control is based upon experiments designed and conducted by Dr. Ray Rogers and Dr. Michael Powell in 1987. Diving Science and Technology® (DSAT), a corporate affiliate of PADI®, commissioned these experiments.

Oxygen Accumulation Time Remaining

Oxygen accumulation (exposure) during a dive, or 24 hour period, appears graphically as the Oxygen Accumulation (O2) Bar Graph (Fig. 11a). As time remaining before reaching the oxygen exposure limit decreases, segments are added to the O2 Bar Graph.

When the amount of time remaining before reaching the oxygen limit becomes less than the No Decompression Dive Time Remaining, calculations for that depth will be controlled by oxygen. Oxygen Time Remaining will then appear as the main numeric time display (Fig. 11b) as signified by the O2 Time icon appearing on the display. As oxygen accumulation continues to increase, the O2 Bar Graph will enter the yellow Caution Zone.

Air Time Remaining

The ATMOS ai calculates Air Time Remaining using a patented algorithm that is based a diver's individual breathing gas consumption rate and current depth. Tank Pressure is measured once each second and an average rate of consumption is calculated over a 60 second period. This Rate of Consumption is then used in conjunction with a knowledge of the depth dependence to predict the breathing gas required for the diver to make a safe controlled ascent including any required decompression stops.

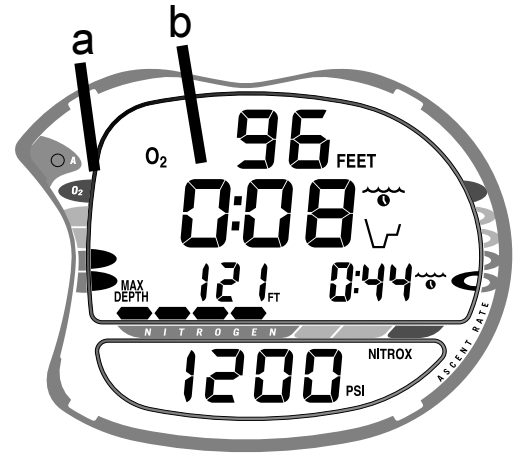


Fig. 11 - O2 Accumulation Dive Time Remaining

Breathing Gas Consumption and Depth are continuously monitored and Air Time Remaining reflects any change in circumstances. For example, when a buddy starts breathing from your octopus or you suddenly find yourself swimming against a strong current and begin breathing more rapidly, the ATMOS ai will recognize the change and adjust the Air Time Remaining accordingly.

Remember, the Air Time Remaining is the time you can remain at the present depth and still safely surface with the tank pressure reserve that you selected during setup (End Pressure Alarm Set Point).

When Air Time Remaining indicates zero (Fig. 12a), you should immediately initiate a controlled ascent while monitoring your tank pressure. However, there is no reason to panic, the ATMOS ai has allowed for the breathing gas necessary for a safe ascent including any emergency decompression stops required.

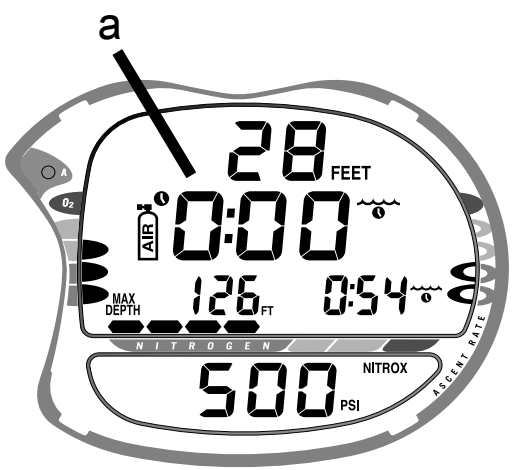


Fig. 12 -Air Time Remaining =

Example:

- You set the End Pressure Alarm for 300 PSI (20.5 BAR)
- You are at a depth of 60 feet (20 meters)
- Air Time Remaining decreases to 0:00
- You ascend at a maximum rate of 30 fpm (10 mpm)
- You surface with 300 PSI (20.5 BAR) pressure still in your tank

⚠ WARNINGS AND SAFETY RECOMMENDATIONS

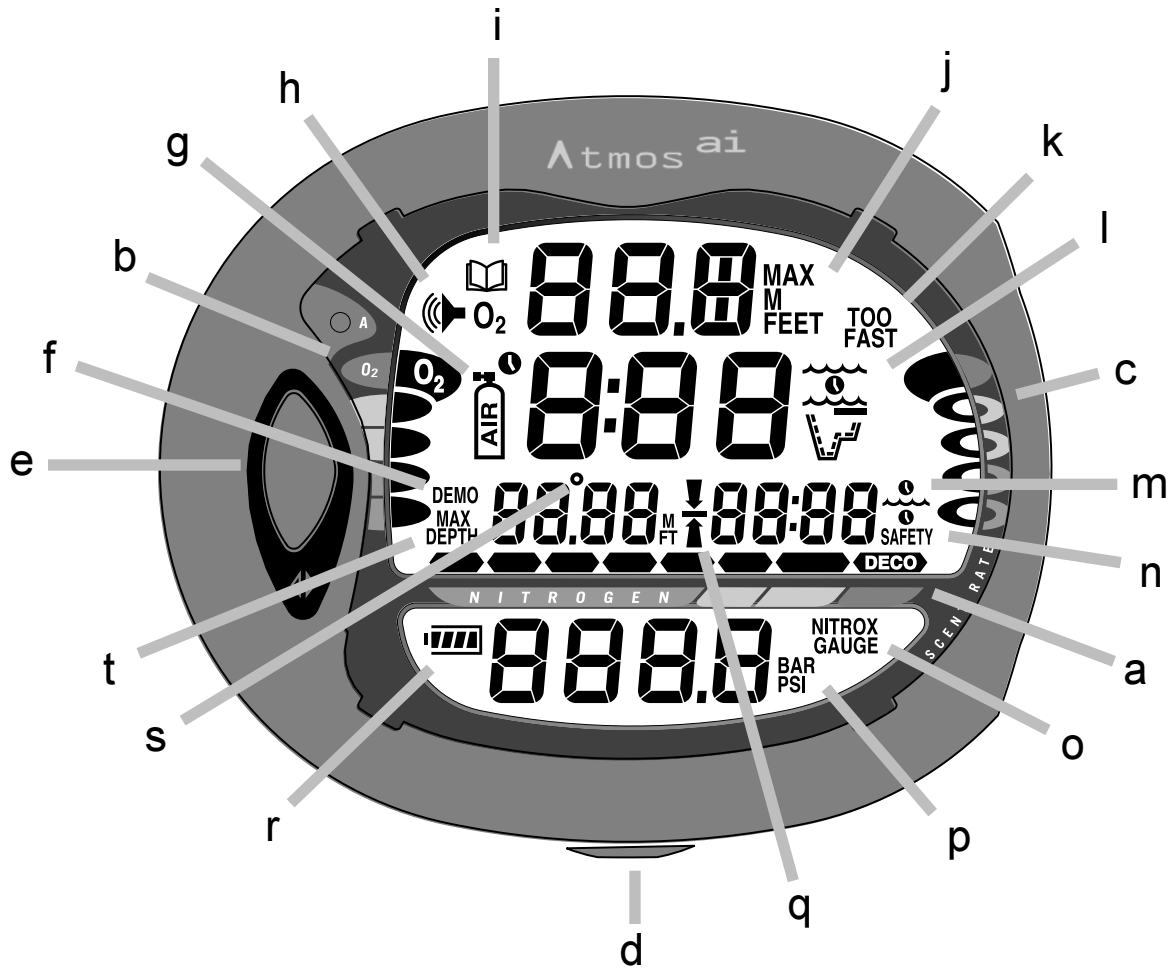
- It should not be considered that the capabilities built into the ATMOS ai provide an implied approval or consent from AERIS for individuals to exceed the defined limits for recreational diving, as agreed on by all internationally recognized training agencies.

- The oxygen features of the ATMOS ai are intended for use by recreational divers trained for nitrox diving by an instructor certified by a recognized training agency to teach diving with nitrox.

- Conducting repetitive dives using enriched nitrogen-oxygen mixtures can lead to oxygen buildup, reducing oxygen tolerance while increasing the risk of pulmonary oxygen toxicity.

- The ATMOS ai provides information based upon a personal dive profile, and therefore must not be shared between divers. It is impossible for two divers to stay precisely together underwater, and your computer's dive profile tracking of previous dives will be pertinent to you only. Nitrogen and oxygen loading of a second user may be significantly different and swapping dive computers could lead to inaccurate and dangerous predictions of decompression and oxygen accumulation status.

LCD LAYOUT



Components:

a. Nitrogen Loading Bar Graph
b. Oxygen Accumulation Bar Graph
c. Variable Ascent Rate Indicator
d. Select (bottom) Button
e. Advance (front) Button
f. Graphic - Demo Mode
g. Icon - Air Time Remaining
h. Icon - Set Alarm
i. Icon - Log Mode
j. Graphic - Depth
k. Graphic - Ascent Too Fast
l. Icon - Operating Mode
m. Icon - Time
n. Icon - Safety Stop
o. Graphic - Operating Mode
p. Graphic - Pressure
q. Icon - Ascend Arrow
   Icon - Decompression Ceiling Bar
   Icon - Descend Arrow
r. Battery Consumption Indicator
s. Icon - Temperature
t. Graphic - Maximum Depth

WARNING: During Activation and Diagnostics, if any display or function varies from the information presented here, return the ATMOS ai to your Authorized AERIS Dealer for inspection.

ACTIVATION and SETUP

ACTIVATION

To Activate the ATMOS ai - press and release Advance (Front) button.

Backup Activation (only functional if the Water Activation feature is set ON)
As a backup, the ATMOS ai will also automatically activate by water contact. This is accomplished by bridging the gap between contacts located on the stems of the control buttons and back of the module. The H2O graphic that will be displayed as an indication is described later. If the Water Activation feature (a user setting) is set OFF, the ATMOS ai will only activate by push button and only if shallower than 4 feet (1.2 meters) depth.

- Upon manual activation, the unit will enter Diagnostic Mode (Fig. 13), displaying all segments of the LCD (as 8's), followed by dashes, then a countdown from 9 to 0. The Backlight will be on.
- Diagnostic Mode checks the display and battery voltage to ensure that everything is within tolerance and functioning properly. The Battery icon will be displayed during Diagnostic Mode.
- It will also check the ambient barometric pressure and at elevations of 2,000 feet (610 meters) or higher, it will recalibrate itself to measure depth in feet of fresh water instead of feet of sea water.
- If values are acceptable, the unit will enter Surface Mode. If any value is not acceptable, the unit will shut down in 5 seconds.
- If no dive is made within 2 hours after initial activation, the unit will automatically deactivate. If the wet contacts are still bridged, the unit will then reactivate and display the H2O graphic.

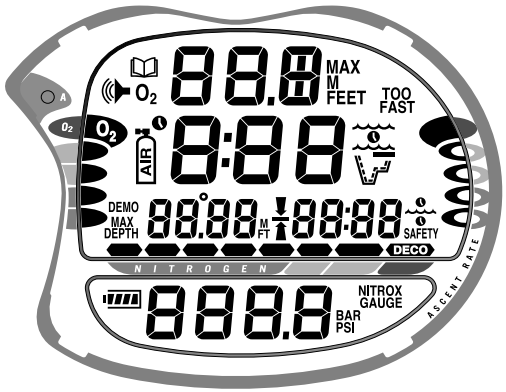


Fig. 13 - Diagnostic Mode

SURFACE MODE

Surface Mode, identified by the Surface Time icon (Fig. 14a), follows Diagnostic Mode after Activation. Information includes Dive Number '0' (no dive made yet), Surface Time (with flashing colon), Temperature (and icon), Time of Day (with icon), the Battery Indicator, and Tank Pressure.

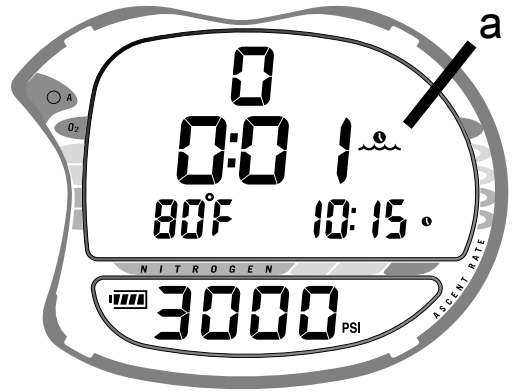


Fig. 14 - Surface Mode

NOTE: If the wet contacts are bridged, the graphic 'H2O' will appear in place of the dive number '0' (Fig. 15). After the unit is rinsed and dried, 'O' will replace 'H2O'.

WARNING: If a Low Battery condition is displayed after diagnostics (icon flashing), DO NOT dive with the ATMOS ai until the Battery is changed.

While in the Surface Mode you can access various other Modes that are described in detail throughout this manual.

- Press the Advance (Front) button to access a sequence that includes Plan, Fly, DeSaturate, and Log Modes .
- Press the Select (Bottom) button to activate the Backlight.
- Press Both buttons (simultaneously) to access Set and Simulator Modes.

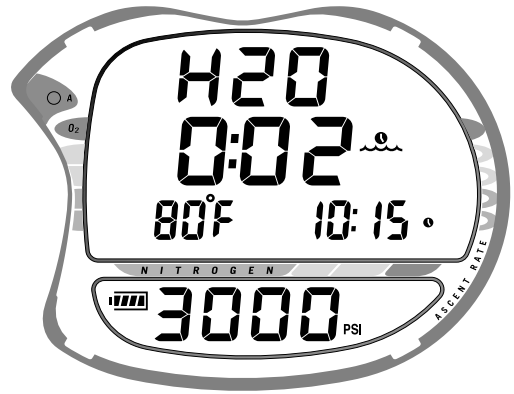


Fig. 15 - Surface Mode
(rinse and dry the unit)

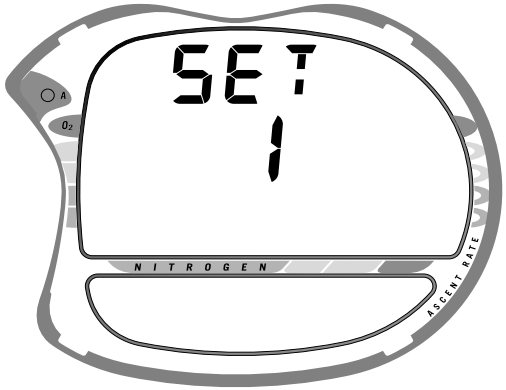


Fig. 16 - Set Mode 1

SET MODES

To help simplify the operations you might perform at the dive site, settings are divided into 2 categories. Set Mode #1 includes several settings that you would change more often and Set Mode #2 includes those items not likely to change once you set them. Set Mode 2 can be accessed by first entering settings in Set Mode 1, or by bypassing Set Mode 1.

After gaining access to Set Mode 1 or Set Mode 2, settings can be made in sequence one after the other, or you can access a specific item that you want to set by bypassing others. The descriptions that follow describe access to each setting from Surface Mode.

Set Mode Access Timing

While in Surface Mode, press Both buttons simultaneously and hold -

- after 2 seconds, SET: 1 appears (Fig. 16)
- after 4 seconds, SET: 2 appears (Fig. 17)
- Access is gained to Set Modes by releasing the buttons during the 2 second window in which SET: 1 or SET: 2 appears, then pressing the Advance (Front) button.
- If the buttons are held longer and SET 1 and 2 are both bypassed, the unit will go to Simulator Mode which is described on page 71.
- While in the Set Mode, if neither button is pressed during a period of 2 minutes, the unit will revert to Surface Mode.

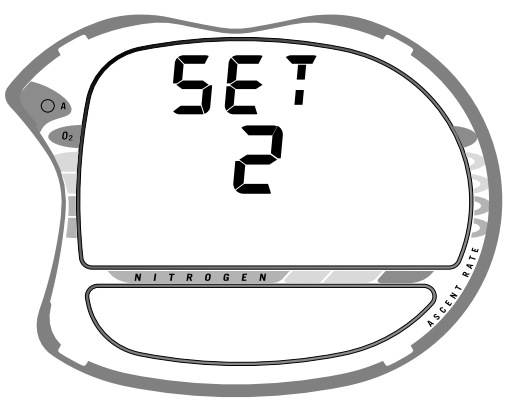


Fig. 17 - Set Mode 2

ENTERING SETTINGS -SET MODE #1

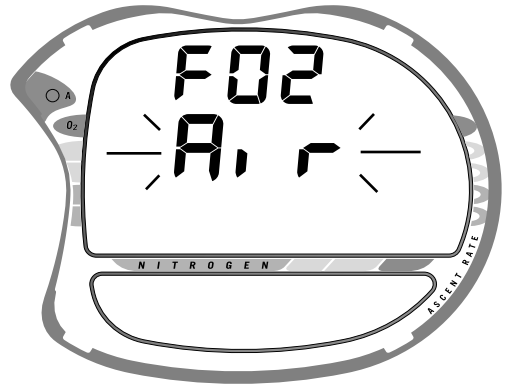


Fig. 18 - Set FO2

TO SET - FO2 (while in the Surface Mode)
Factory set for Air, FO2 can also be set to values between 21 and 50% in increments of 1%. FO2 defaults to the Air setting whenever the ATMOS ai shuts off.

- Press Both buttons simultaneously, release when **SET: 1** appears.
- Press and release the Advance (Front) button, **FO2** appears with the value flashing (Fig. 18).
- Press and release the Select (Bottom) button repeatedly to increase the FO2 value 1% per press from 21 to 50%, then display 'Air' again; - or - Press and hold the Select (Bottom) button to scroll directly to 32%, then press/hold again to scroll to 50% and back to Air, release at desired value.
- For each FO2 value that appears, the lower portion of the display indicates the Maximum Depth that can be achieved for a PO2 of 1.60 ATA (Fig. 19). If FO2 is set for Air, depth is not displayed.
- Press the Advance (Front) button to accept the setting and advance to Set Depth Alarm, or press and hold Both buttons for 2 seconds to revert to Surface Mode. The unit will automatically revert to Surface Mode after 2 minutes of no button action.

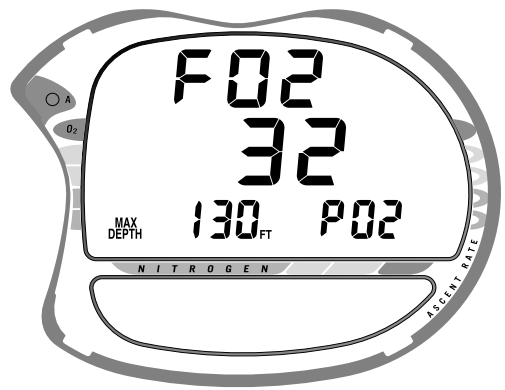


Fig. 19 - FO2 = 32%

TO SET - MAX DEPTH ALARM (while in the Surface Mode) Factory set for 330 feet, the Maximum Depth Alarm can be set to values between 30 feet (9 meters) and 330 feet (99 meters) in increments of 10 foot (3 meters).

- Press Both buttons simultaneously, release when **SET: 1** appears.
- Press and release the Advance (Front) button, **FO2** appears with the value flashing.
- Press the Advance (Front) button **1 more time.**
- The graphics **MAX FEET** (or M) and **dEEP,** and Alarm icon appear with the **Max Depth** value flashing (Fig. 20).
- Press and release the Select (Bottom) button until the desired Alarm value appears, or press and hold to scroll through the set points.
- Press the Advance (Front) button to accept the setting and advance to Elapsed Dive Time Alarm, or press and hold Both buttons for 2 seconds to revert to Surface Mode.
- The unit reverts to Surface Mode after 2 minutes if neither button is pressed.

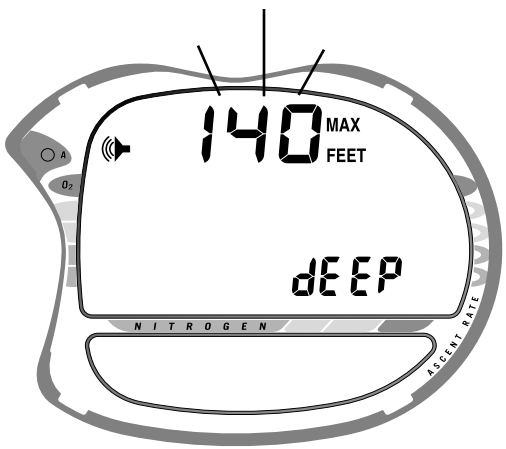


Fig. 20 - Set Depth Alarm

TO SET - ELAPSED DIVE TIME ALARM

(while in the Surface Mode)

Factory set for 0:00 hr:min, the Alarm can be set to values between 0:10 and 3:00 hr:min in increments of 0:05 hr:min.

- Press Both buttons simultaneously, release when **SET: 1** appears.
- Press and release the Advance (Front) button, **FO2** appears with the value flashing.
- Press the Advance (Front) button **2 more times.**
- The graphic **EdT**, and Alarm and Dive Time icons appear with the **Elapsed Dive Time** value flashing (Fig. 21).
- Press and release the Select (Side) button until the desired Alarm value appears, or press and hold to scroll through the set points.
- Press the Advance (Front) button to accept the setting and advance to PC Interface, or press and hold Both buttons for 2 seconds to revert to Surface Mode.
- The unit reverts to Surface Mode after 2 minutes if neither button is pressed.

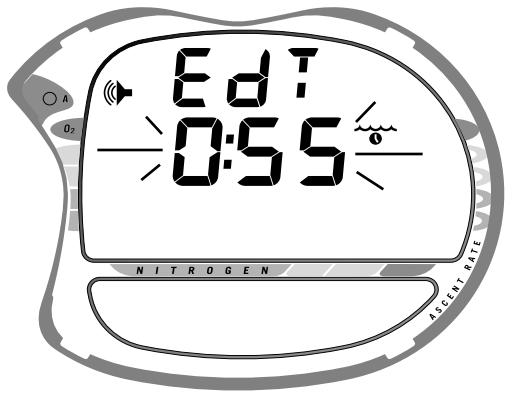


Fig. 21 - Set Elapsed Time Alarm

PC INTERFACE

NOTE:

For more information regarding PC Interface, refer to page 78 of this manual and to documents provided with the download product.

PC Interface is not a setting, it is included in the Set 1 menu for easy access when data in the unit's memory is to be downloaded (copied) to the PC download software program for storage and viewing.

To download data (while in the Surface Mode) -

- Press Both buttons simultaneously, release when **SET: 1** appears.
- Press and release the Advance (Front) button, **FO2** appears with the value flashing.
- Press the Advance (Front) button **3 more times.**
- The graphic **PC** appears with a 120 second countdown (Fig. 22). Download must be initiated before the countdown reaches 00.
- Download is initiated by the external device requesting data transfer (i.e., the PC download program).
- Press the Advance (Front) button to revert to Surface Mode.
- The unit reverts to Surface Mode after completion of the Download operation, or after 2 minutes if neither button is pressed.

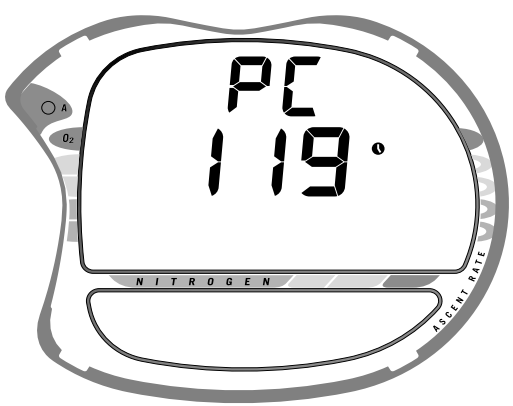


Fig. 22 - PC Interface

ENTERING SETTINGS -SET MODE #2

△ **NOTE: To return to Surface Mode at any time while in Set Mode, press and hold Both buttons for 2 seconds. The unit will automatically revert to Surface Mode after 2 minutes if no button is pressed.**

<u>TO SET - UNITS OF MEASURE</u> (while in the Surface Mode)

Factory set for Imperial, Units of Measure can also be set for Metric.

- Press Both buttons simultaneously, release when SET: 2 appears.
- Press and release the <u>Advance (Front)</u> button, the Units screen appears with the graphics **FT** (or M), and the Temperature icon and letter **F** (or C), and **PSI** (or BAR) appear flashing (Fig. 23).
- Press and release the <u>Select (Bottom)</u> button to toggle between Imperial (FT and F) and Metric (M and C) units.
- Press the <u>Advance (Front)</u> button to accept the setting and advance to Set Hour Format, or press and hold Both buttons for 2 seconds to revert to Surface Mode.

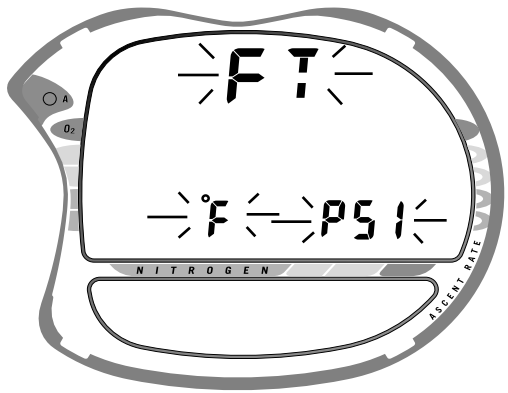


Fig. 23 - Set Units of Measure

<u>TO SET - HOUR FORMAT</u> (while in the Surface Mode)

Factory set for 12 Hour (12: AM to 11: PM), the Format can also be set for 24 Hour (0: to 24: hours).

- Press Both buttons simultaneously, release when **SET: 2** appears.
- Press and release the <u>Advance (Front)</u> button, the Units screen appears with the set point flashing.
- Press the Advance (Front) button **<u>1 more time.</u>**
- The graphic **Hour** appears with **12** (or 24) flashing (Fig. 24).
- Press and release the <u>Select (Bottom)</u> button to toggle between 12 and 24
- Press the Advance (Front) button to accept the setting and advance to Set Time of Day, or press and hold Both buttons for 2 seconds to revert to Surface Mode.

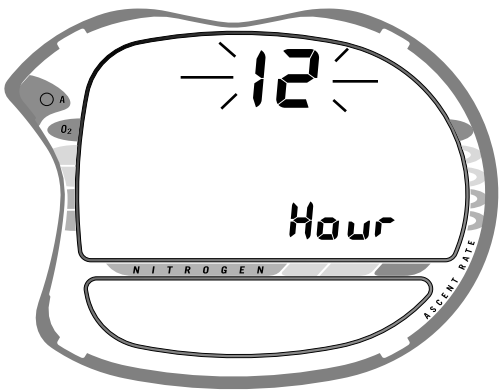


Fig. 24 - Set Hour Format

TO SET - TIME OF DAY (while in the Surface Mode)
Factory set for factory local time, the Time can be set to values between 01:00 to 12:59 (AM/PM) or 0:00 to 23:59 (24 Hr Format).

- Press Both buttons simultaneously, release when **SET: 2** appears.
- Press and release the Advance (Front) button, the Units screen appears with the set point flashing.
- Press the Advance (Front) button **2 more times.** The Time of Day appears with the **Hour** value flashing (Fig. 25).
- Press and release the Select (Bottom) button to advance the Hour value in increments of one hour, or press and hold to scroll.
- Press the Advance (Front) button to accept the setting. The **Minute** value flashes (Fig. 26),
- Press and release the Select (Bottom) button to advance the Minute value in increments of one minute, or press and hold to scroll.
- Press the Advance (Front) button to accept the setting and advance to Set Date, or press and hold Both buttons for 2 seconds to revert to Surface Mode.

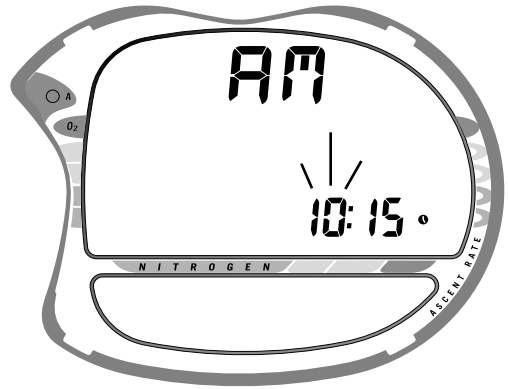


Fig. 25 - Set Hour

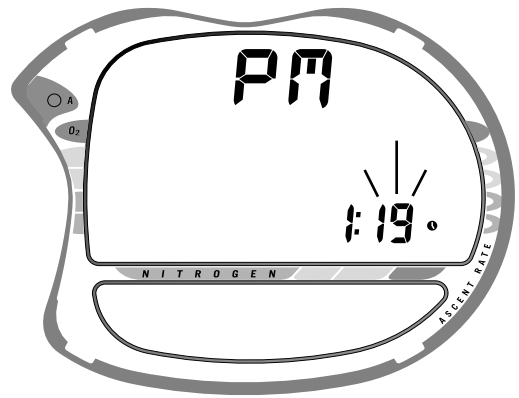


Fig. 26 - Set Minute

Fig. 27 - Set Year

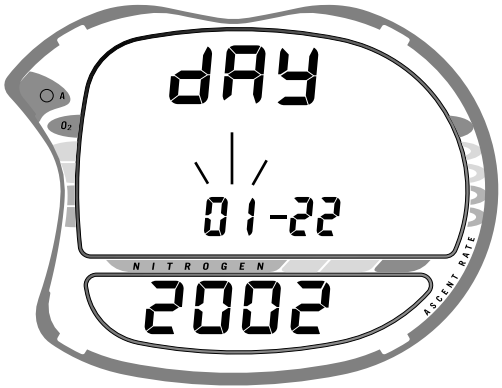


Fig. 28 - Set Month

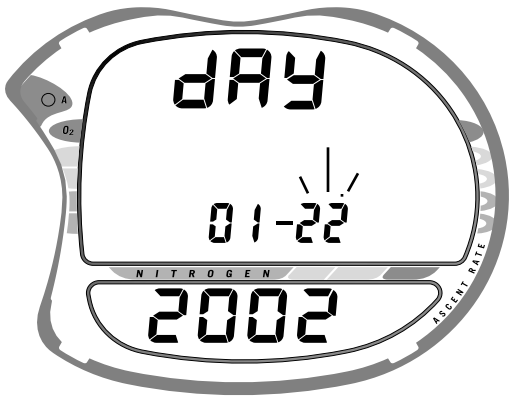


Fig. 29 - Set Day

TO SET - DATE (while in the Surface Mode)
Factory set for the factory local Date, the Date can be set to values between 01 - 01 2002 and 12 - 31 2039.

- After having set and accepted the Time of Day, the Date appears with the graphic **dAY,** and **Year** value flashing (Fig. 27).
- Press and release the Select (Bottom) button to advance the Year value in increments of one Year, or press and hold to scroll.
- Press the Advance (Front) button to accept the Year setting. The **Month** value flashes (Fig. 28).
- Press and release the Select (Bottom) button to advance the Month value in increments of one Month, or press and hold to scroll.
- Press the Advance (Front) button to accept the setting. The **Day** value flashes (Fig. 29).
- Press and release the Select (Bottom) button to advance the Day value in increments of one Day, or press and hold to scroll.
- Press the Advance (Front) button to accept the setting and advance to Set Audible Alarm, or press and hold Both buttons for 2 seconds to revert to Surface Mode.

TO SET - AUDIBLE ALARM (while in the Surface Mode)

Factory set for ON, the Audible Alarm can be also be set to OFF. This setting also applies to the LED Warning Indicator that is synchronized with the Audible Alarm.

When set OFF, the Alarm will not sound during the conditions described on page 13.

- Press Both buttons simultaneously, release when **SET: 2** appears.
- Press and release the Advance (Front) button, the Units screen appears with the set point flashing.
- Press the Advance (Front) button **7 more times.**
- The graphic **ALM** and Alarm (speaker) icon appear with the graphic **ON** (or OFF) flashing (Fig. 30).
- Press the Select (Bottom) button to toggle between ON and OFF.
- Press the Advance (Front) button to accept the setting and advance to Set Max Nitrogen Bar Graph Alarm, or press and hold Both buttons for 2 seconds to revert to Surface Mode.

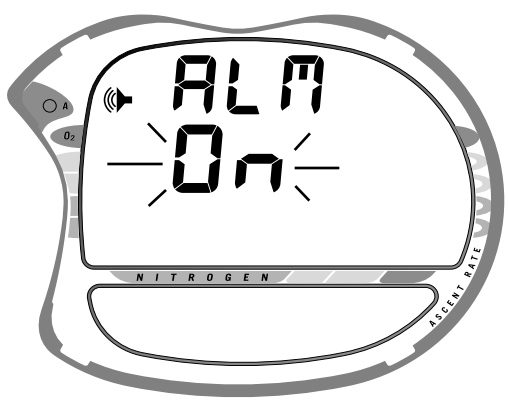


Fig. 30- Set Audible Alarm

TO SET - MAX NITROGEN BAR GRAPH ALARM

(while in the Surface Mode)

Factory set for DECO (all 8 segments), the Maximum Nitrogen Bar Graph (NiBG) Alarm can be set to values between DECO (8 segments) and 1 segment.

- Press Both buttons simultaneously, release when **SET: 2** appears.
- Press and release the Advance (Front) button, the Units screen appears with the set point flashing.
- Press the Advance (Front) button **8 more times.**
- The graphic **ndc** and Alarm icon appear with the full **Nitrogen Bar Graph** flashing (Fig. 31).
- Press and release the Select (Bottom) button to decrease the number of segments one at a time.
- Press the Advance (Front) button to accept the setting and advance to Set Turn Pressure Alarm, or press and hold Both buttons for 2 seconds to revert to Surface Mode.

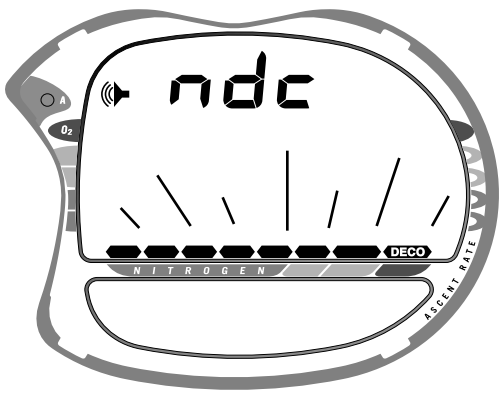


Fig. 31 - Set Max Nitrogen Bar Graph Alarm

TO SET - TURN PRESSURE ALARM

(while in the Surface Mode)

Factory set for 00 PSI/BAR (disabled), the Turn Pressure Alarm can be set to values between 1000 and 3000 PSI (69 to 205 BAR) in increments of 250 PSI (17 BAR).

- Press Both buttons simultaneously, release when SET: 2 appears.
- Press and release the Advance (Front) button, the Units screen appears with the set point flashing.
- Press the Advance (Front) button **9 more times.**
- The graphic **trn** and Alarm (speaker) icon appear with the **Turn Pressure Alarm** value flashing (Fig. 34).
- Press and hold the Select (Bottom) button to scroll through the Alarm values.
- Press the Advance (Front) button to accept the setting and advance to Set End Pressure Alarm, or press and hold Both buttons for 2 seconds to revert to Surface Mode.

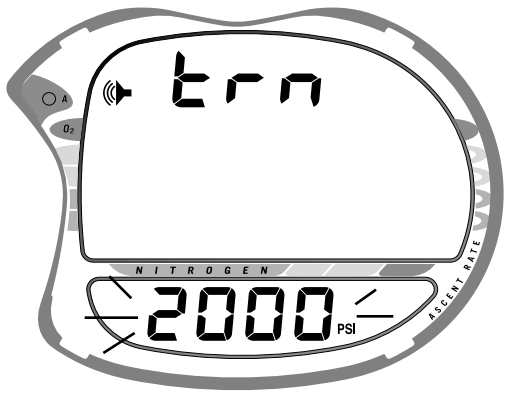


Fig. 32 - Set Turn Pressure Alarm

TO SET - END PRESSURE ALARM

(while in the Surface Mode)

Factory set for 00 PSI/BAR (disabled), the End Pressure Alarm can be set to values between 300 and 1500 PSI (20 to 104 BAR) in increments of 100 PSI (7 BAR).

- Press Both buttons simultaneously, release when SET: 2 appears (4 seconds).
- Press and release the Advance (Front) button, the Units screen appears with the set point flashing.
- Press the Advance (Front) button **10 more times.**
- The graphic **End** and Alarm (speaker) icon appear with the **End Pressure Alarm** value flashing (Fig. 33).
- Press and hold the Select (Bottom) button to scroll through the Alarm values.
- Press the Advance (Front) button to accept the setting and advance to Set Dive Time Remaining Alarm, or press and hold Both buttons for 2 seconds to revert to Surface Mode.

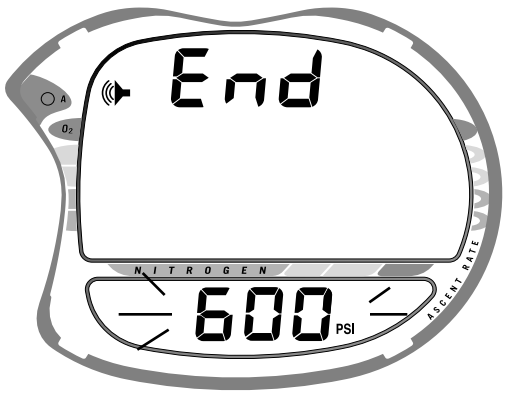


Fig. 33 - Set End Pressure Alarm

TO SET - DIVE TIME REMAINING ALARM

(while in the Surface Mode)

Factory set for 0:00 (minutes), the Dive Time Remaining Alarm can be set to values between 0:00 and 0:20 (minutes) in increments of 1 minute.

- Press Both buttons simultaneously, release when **SET: 2** appears.
- Press and release the Advance (Front) button, the Units screen appears with the set point flashing.
- Press the Advance (Front) button **11 more times.**
- The graphic **dtr** and Alarm and Dive Mode icons appear with the **Dive Time Remaining** value flashing (Fig. 34).
- Press and hold the Select (Bottom) button to scroll through the Alarm values.
- Press the Advance (Front) button to accept the setting and advance to Set Max PO2 Alarm, or press and hold Both buttons for 2 seconds to revert to Surface Mode.

Fig. 34 - Set Dive Time Remaining Alarm

<u>TO SET - MAXIMUM PO2 ALARM</u> (while in the Surface Mode)

Factory set for 1.60 (ATA), the Maximum PO2 Alarm can be set to values between 1.20 and 1.60 (ATA) in increments of .10 (ATA).

- Press Both buttons simultaneously, release when **SET: 2** appears.
- Press and release the <u>Advance (Front)</u> button, the Units screen appears with the set point flashing.
- Press the <u>Advance (Front) button</u> **<u>12 more times.</u>**
- The graphics **PO2** and **MAX**, and Alarm icon appear with the **PO2 value** flashing (Fig. 35).
- Press and release the <u>Select (Bottom)</u> button to advance the Alarm value .10 (ATA) for each press of the button.
- Press the <u>Advance (Front)</u> button to accept the setting and advance to Set FO2 50% Default, or press and hold Both buttons for 2 seconds to revert to Surface Mode.

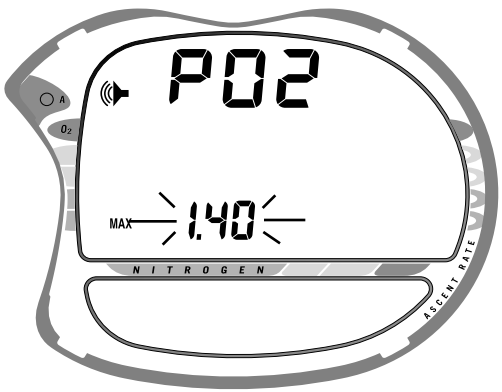


Fig. 35 - Set Max PO2 Alarm

TO SET - FO2 50% DEFAULT ON/OFF

(while in the Surface Mode)

Factory set ON, the FO2 50% Default feature can be set to OFF. The effects of this feature being set ON or OFF are described on page 17.

- Press Both buttons simultaneously, release when **SET: 2** appears.
- Press and release the Advance (Front) button, the Units screen appears with the set point flashing.
- Press the Advance (Front) button **13 more times.**
- The graphics **FO2** and **50** appear with the **ON** (or OFF) flashing (Fig. 36).
- Press the Select (Bottom) button to toggle between ON and OFF.
- Press the Advance (Front) button to accept the setting and advance to Set Units of Measure, or press and hold Both buttons for 2 seconds to revert to Surface Mode.

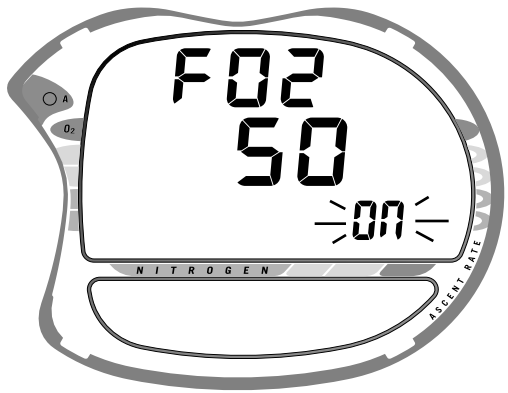


Fig. 36 - Set FO2 Default

TO SET - BACKLIGHT DURATION

(while in the Surface Mode)

Factory set for 7 (seconds), the Backlight Duration can be set to values of 0 (button time only), 3, or 7 seconds. This is the length of time the Backlight will stay on after the button is released.

- Press Both buttons simultaneously, release when **SET: 2** appears.
- Press and release the Advance (Front) button, the Units screen appears with the set point flashing.
- Press the Advance (Front) button **14 more times.**
- The graphic **GLO** and Time icon appear with the Duration **value** flashing (Fig. 37).
- Press and release the Select (Bottom) button to advance the Duration from :00 to :03 to :07 (seconds)
- Press the Advance (Front) button to accept the setting and advance to Set Sampling Rate, or press and hold Both buttons for 2 seconds to revert to Surface Mode.

Fig. 37 - Set Backlight Duration

TO SET - SAMPLING RATE (while in the Surface Mode)

Factory set for 15 (seconds), the Sampling Rate can be set to values of 2, 15, 30, or 60 (seconds), or 2, 5, 10 feet (.5, 1.5, 3 meters).

Sampling Rate is the interval at which data samples are recorded during a dive for subsequent download to the PC program. This setting has no effect on displayed data or data in the unit's Log.

- Press Both buttons simultaneously, release when **SET: 2** appears.
- Press and release the Advance (Front) button, the Units screen appears with the set point flashing.
- Press the Advance (Front) button **15 more times.**
- The graphics SR and SECS (or FEET/METERS) appear with the Sampling Rate **value** flashing (Fig. 38).
- Press and release the Select (Bottom) button to advance the Rate one selection at a time.
- Press the Advance (Front) button to accept the setting and advance to Set Digital Gauge Mode, or press and hold Both buttons for 2 seconds to revert to Surface Mode.

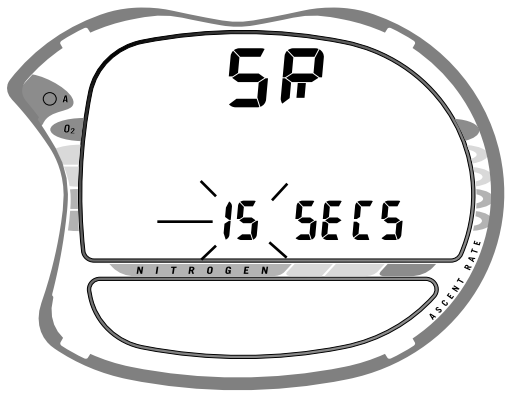


Fig. 38 - Set Sampling Rate

TO SET - DIGITAL GAUGE MODE ON/OFF

(while in the Surface Mode)

Factory set OFF, User Set Digital Gauge Mode can also be set ON. This feature is also described on page 67.

NOTE: Once a dive is made with this feature set ON, the setting will be locked ON for 24 hours after the dive. Set Digital Gauge Mode will not appear as a selection for 24 hours after the dive.

- Press Both buttons simultaneously, release when **SET: 2** appears.
- Press and release the Advance (Front) button, the Units screen appears with the set point flashing.
- Press the Advance (Front) button **16 more times.**
- The graphic **GAU** appears with **OFF** (or ON) flashing (Fig. 39).
- Press and release the Select (Bottom) button to toggle between ON and OFF.
- Press the Advance (Front) button to accept the setting and advance to Set Water Activation, or press and hold Both buttons for 2 seconds to revert to Surface Mode.

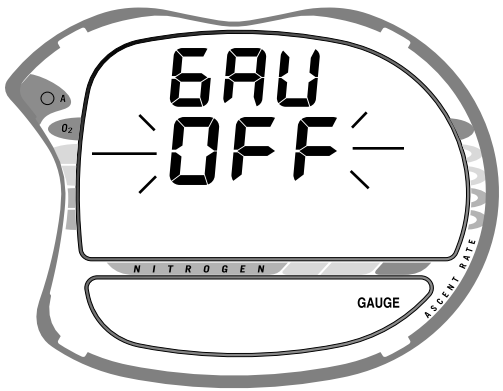


Fig. 39 - Set Digital Gauge Mode

<u>TO SET - WATER ACTIVATION</u> (while in the Surface Mode)

Factory set ON, this feature can also be set OFF (disabled). When set ON, the ATMOS^{ai} will automatically Activate and enter Dive Mode upon immersion in water and descent to 5 feet (1.5 meters).

⚠ WARNING: If the Water Activation feature is set OFF, the ATMOS^{ai} <u>must be</u> manually (push button) activated prior to commencing a dive.

- Press Both buttons simultaneously, release when **SET: 2** appears.
- Press and release the <u>Advance (Front)</u> button, the Units screen appears with the set point flashing.
- Press the <u>Advance (Front) button</u> **<u>17 more times</u>** (16 more times if a dive was made with Digital Gauge Mode set ON).
- The graphics **ACT** and **H2O** appear with **On** (or OFF) flashing (Fig. 40).
- Press and release the <u>Select (Bottom)</u> button to toggle between On and OFF.
- Press the <u>Advance (Front)</u> button to accept the setting and revert to Surface Mode.

Fig. 40 - Set Water Activation

⚠ WARNINGS AND SAFETY RECOMMENDATIONS

- There are few legitimate excuses for making unplanned Decompression dives, and the consequences of this type of diving can be severe. By making an unplanned Decompression dive without the necessary preparation and training, you will have placed yourself in an unnecessarily dangerous situation. Allow a surface interval of at least 24 hours before reentering the water in the event a dive requires emergency decompression.
- By entering decompression, you automatically impose a ceiling above you which you cannot immediately ascend beyond, denying you free access to the surface.
- Exiting the water with the Nitrogen Bar Graph in the red DECO zone greatly increases the risk of decompression sickness, and may result in injury or death.
- Existing data for making planned decompression dives is extremely limited, and virtually nonexistent for repetitive decompression diving. Decompression diving greatly increases your risk of decompression sickness.
- Special training, equipment, and support are necessary for planned decompression diving and diving deeper than the recommended sport diving limit(s).
- Decompression diving will greatly increase your risk of decompression sickness.
- If your ATMOS ai stops working for any reason, it is important that you have anticipated this possibility and are prepared for it. This is an important reason for not pushing the no decompression and oxygen accumulation limits, and a critical reason to avoid entering decompression.
- If you dive in situations where your trip would be ruined or your safety would be jeopardized by losing the use of your ATMOS ai, an analog or digital backup instrument system and use of standard air (or nitrox) tables is highly recommended.

PRE DIVE PLAN MODE

DIVE PLANNER

WARNING: The available dive times provided by the Dive Planner are only predictions. Depending on cylinder size, breathing gas consumption, and oxygen accumulation you may have less time available than indicated because of breathing gas quantity or other limitations.

Depth feet (meters)	NDL hours:mins
30 (9)	4:20 (4:43)
40 (12)	2:17 (2:24)
50 (15)	1:21 (1:25)
60 (18)	:57 (:59)
70 (21)	:40 (:41)
80 (24)	:30 (:32)
90 (27)	:24 (:25)
100 (30)	:19 (:20)
110 (33)	:16 (:17)
120 (36)	:13 (:14)
130 (39)	:11 (:11)
140 (42)	:09 (:09)
150 (45)	:08 (:08)
160 (48)	:07 (:07)
170 (51)	:07 (:06)
180 (54)	:06 (:06)
190 (57)	:05 (:05)

No Decompression Limits
(no dive made yet)
(at sea level)

The Dive Planner should be reviewed prior to every dive to help you plan your dive as required to avoid exceeding no decompression or oxygen exposure limits. For repetitive dives, the Planner indicates adjusted dive times that are available for the next dive, based on residual nitrogen or oxygen accumulation (whichever is in control) following the last dive and surface interval.

To access the Dive Planner (while in Surface Mode) -

- Press the Advance (Front) button **1 time**.
- Press and release the Select (Bottom) button to advance through the Depths/Times available one screen at a time.
- Press the Advance (Front) button to access Fly Mode.
- The unit will revert to Surface Mode after 2 minutes if no button is pressed.

The Dive Planner provides a sequence of theoretical Dive Times available for Depths ranging from 30 feet (9 meters) to 190 feet (57 meters) in 10 foot (3 meter) increments.

No decompression times are only displayed for depths where there is at least 3 minutes of theoretical dive time available at the depth, taking into account a descent rate of 60 feet (18 meters) per minute. Depths greater than the maximum depth that can be achieved with a PO2 of 1.60 ATA will not be displayed.

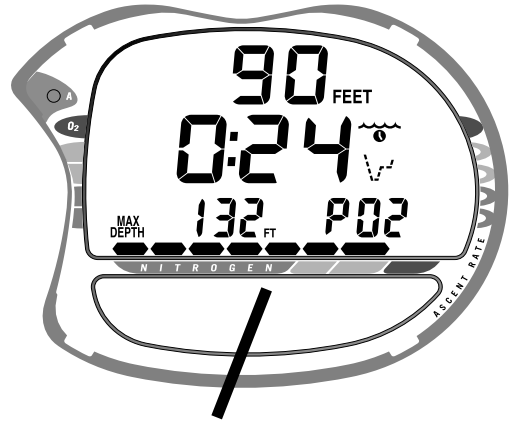


Fig. 41 - Nitrogen Control

With each depth displayed by the Dive Planner, you will see either predicted no decompression limits (NDLs) based upon your previous dive profiles (if calculated to be nitrogen controlled), or predicted oxygen tolerance limits (OTLs) based upon either a single dive exposure or your 24 hour accumulation of oxygen (if calculated to be oxygen controlled).

If the Nitrogen Bar Graph is displayed (Fig. 41), that next dive is controlled by nitrogen loading calculations. If the O2 Bar Graph and O2 symbol are displayed (Fig. 42), it is controlled by oxygen loading calculations.

NOTE: The ATMOS ai will store oxygen accumulation calculations for up to 10 dives conducted during a 24 hour period. If the maximum limit for oxygen loading has been exceeded for that day (24 hour period), all of the segments of the O2 Bar Graph will be displayed flashing . Depth/ Time values will not appear until the O2 Bar Graph recedes into the green (normal) zone (i.e., your daily oxygen dosage decreases an amount equivalent to the amount accumulated during the latest dive completed).

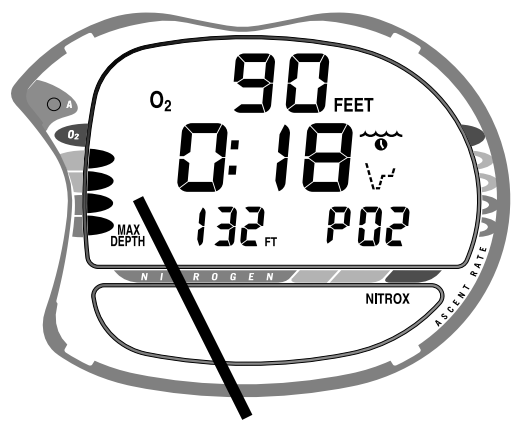


Fig. 42 - Oxygen Control

⚠ WARNINGS AND SAFETY RECOMMENDATIONS

- **The percentage of oxygen (FO2) in the nitrox mix being used must be 'set before each nitrox dive', unless the FO2 50% Default feature is set OFF (a user setting).**

- **The Dive Planner provides predicted times for subsequent dives. Depending on cylinder size, breathing gas consumption, and oxygen accumulation, you may have less time available than indicated because of breathing gas quantity or other limitations.**

- **Until it has shut itself off, you must not use the ATMOS ai at a different Altitude than the Altitude at which it was activated. Doing so will result in an error equal to the difference in barometric pressure, and possibly a false dive mode with erroneous data.**

- **The ATMOS ai cannot sense changes in ambient pressure while it is wet.**

- **Use the Yellow Caution Zone of the Nitrogen Bar Graph as a visual reference to provide a greater margin of protection between you and the No Decompression Limits.**

- **Every effort should be made to keep each of the Bar Graphs in the green throughout your dives to reduce your risk of exposure to decompression sickness, oxygen toxicity, and the effects of excessive ascent rates.**

DIVE MODES

DIVE MODE BAR GRAPHS

As your depth and elapsed dive time increase, the **Nitrogen Bar Graph** (Fig. 43a) will fill with segments (green toward red) to represent the absorption of nitrogen.

While ascending to shallower depths, the segments that have filled the Nitrogen Bar Graph will begin to recede, offering a graphic representation of your multilevel diving capability.

If FO2 was set for a numerical value (nitrox), the **O2 Bar Graph** (Fig. 43b) will fill with segments (green toward red) to represent oxygen accumulation for that dive or 24 hour period, whichever amount is greater.

The **Variable Ascent Rate Indicator** (Fig. 43c) shows how fast you are ascending. When you exceed the maximum recommended ascent rate for the depth you are at, it will enter the red (Too Fast) zone and you will be alerted by all segments of the bar graph flashing, the graphic TOO FAST,and an Audible alarm (unless set OFF). The warnings will stop when your ascent rate is slowed.

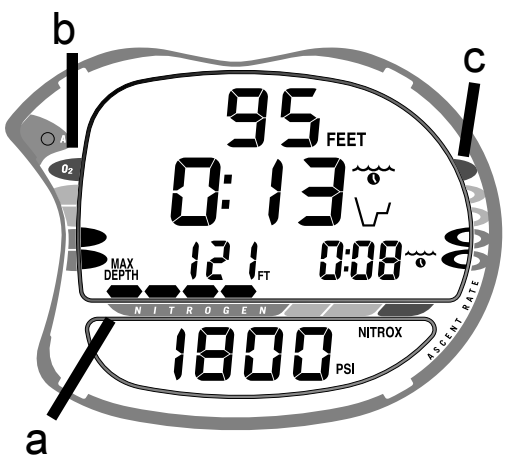


Fig. 43 - Bar Graphs

CONTROL OF DISPLAYS

During No Decompression conditions, various displays of information (up to 3) are available. Each provides Depth, Dive Time Remaining, and additional information. The intent of this feature is to provide the diver control of how much information is on display at any given time during the dive. The diver can change from one display to another as often as desired by pressing the Advance (Front) button, otherwise it does not change.

During conditions in which cautionary type information is displayed (e.g., Decompression, High PO2, etc.), there is a Main Display of important information relevant to the specific condition. The diver can access another display, but it will automatically revert to the Main Display after 3 seconds.

To activate the Backlight during dive modes, press the Select (Bottom) button.

- The displays will be illuminated as long as the button is depressed, plus the Backlight Duration time that has been set (0, 3, or 7 seconds).
- The Backlight will not activate during a Low Battery condition.

NO DECOMPRESSION DIVE MODE

The ATMOS ai will enter the No Decompression Dive Mode when you descend deeper than 4 feet (1.2 meters). If set for Nitrox, the NITROX graphic will be displayed in the lower window.

No Decompression Dive Mode - Display #1 (Fig. 44)

Information includes Current Depth, Dive Time Remaining (and Mode icon), Maximum Depth for that dive (and MAX DEPTH graphic), Elapsed Dive Time (and icon), Tank Pressure, and applicable bar graphs.

- press/release the Advance (Front) button to view Display #2.
- press and hold the Advance (Front) button for 2 seconds to view the Secondary Display (Air Time Remaining).

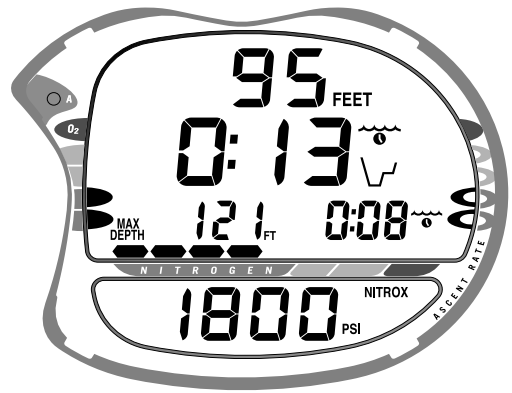


Fig. 44 - No Deco #1

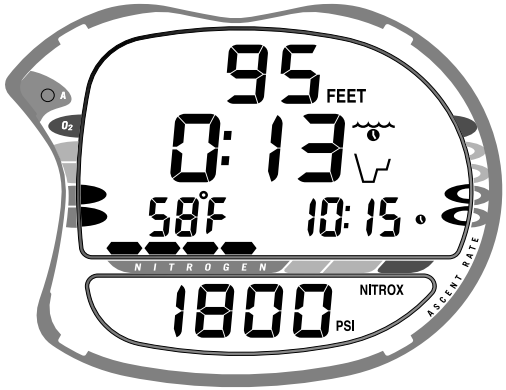


Fig. 45- No Deco #2

No Decompression Dive Mode - Display #2 (Fig. 45)

Information includes Current Depth, Dive Time Remaining (and Mode icon), Temperature, Time of Day, Tank Pressure, and applicable bar graphs.

- press/release the Advance (Front) button to view Display #3 (only if FO2 is set for a numerical value - Nitrox), or Display #1 (if FO2 is set for Air).
- press and hold the Advance (Front) button for 2 seconds to view the Secondary Display (Air Time Remaining).

No Decompression Dive Mode - Display #3 (Fig. 46)

Information includes - Current Depth, Dive Time Remaining (and Mode icon), current value of PO2 and PO2 graphic (if a nitrox dive), Tank Pressure, and applicable bar graphs.

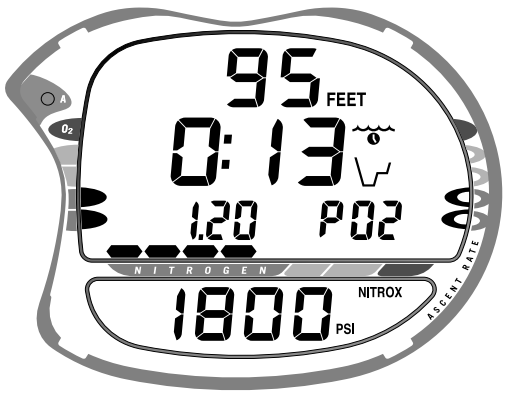


Fig. 46- No Deco #3

- press/release the Advance (Front) button to view Display #1.
- press and hold the Advance (Front) button for 2 seconds to view the Secondary Display (Air Time Remaining).

No Decompression Dive Mode - Secondary Display (Fig. 47)

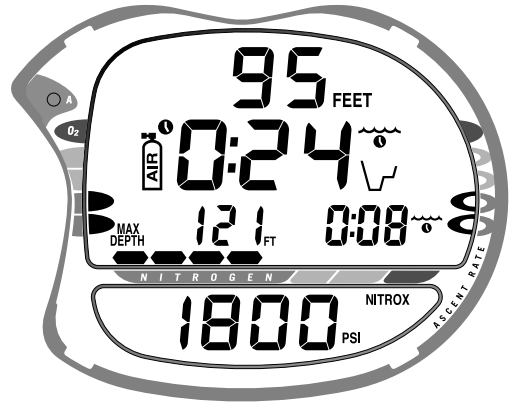


Fig. 47 -Secondary Display

To view, press the Front (Advance) button for 2 seconds.

Information includes Current Depth, Air Time Remaining (and Cylinder icon), Max Depth, Elapsed Dive Time, Tank Pressure, and applicable bar graphs.

The Display will remain on the screen for 3 seconds after the button is released, then revert to the Main Display previously selected (#1, 2, 3).

No Decompression Dive Mode - SAFETY STOP (Fig. 48)

Upon ascending to 20 feet (6 meters) on any No Decompression dive in which depth exceeded 30 feet (9 meters), a short beep will be emitted and a Safety Stop at 15 feet (4.5 meters) will appear on the display with a 3 minute countdown timer that counts down from 3:00 to :00 (min:sec).

The Safety Stop will be displayed until the countdown times out, or the diver descends below 30 feet (10 meters), or the diver surfaces. There is no Penalty if the diver surfaces prior to completing the Safety Stop.

Information includes Current Depth, Dive Time Remaining, Stop Depth (15 feet or 4.5 meters), Stop Bar icon, Countdown Timer, Tank Pressure, NITROX graphic (if a nitrox dive), and applicable bar graphs.

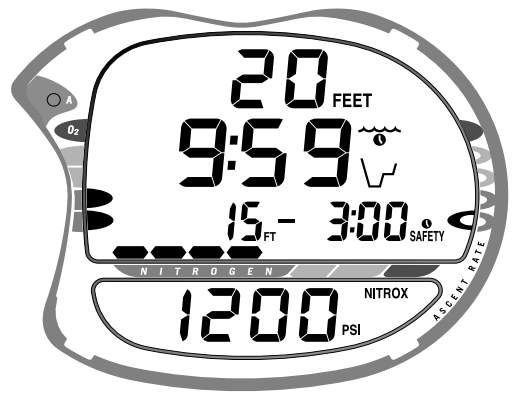


Fig. 48 -Safety Stop

DECOMPRESSION DIVE MODE

The ATMOS ai is designed to help you by providing a representation of how close you are to entering decompression. Decompression Dive Mode activates when theoretical No Decompression time/depth limits are exceeded.

Entry into Decompression Dive Mode (Fig. 49)

Upon entering Decompression Mode, the Audible Alarm will sound and the red LED Warning Indicator will flash for 10 seconds (unless set OFF), or until acknowledged.

At that time, you should begin a safe controlled ascent to a depth slightly deeper than, or equal to, the Required Stop Depth indicated (Fig. 49a) and decompress for the Stop Time indicated (Fig. 49b).

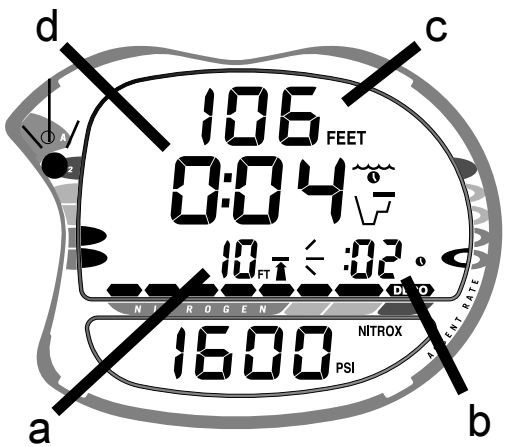


Fig. 49 -Entry into DECO

- The UP Arrow and Deco Bar will flash if you are greater than 10 feet (3 meters) deeper than the Required Ceiling Stop Depth.
- While within 10 feet (3 meters) of, and below, the Stop Depth, both Arrows and the Bar appear solid.

Other information includes:
- Current Depth (Fig. 49c).
- Total Ascent Time (Fig. 49d) - which includes Stop Times required at all ceilings and vertical Ascent Time calculated at 60 feet (18 meters) per minute for depths deeper than 60 feet (18 meters), and 30 feet (9 meters) per minute for depths of 60 feet (18 meters) and shallower.

Managing Decompression Stops

The amount of decompression credit time that you receive is dependent on depth, with slightly less credit given the deeper you are. You should stay slightly deeper (Fig. 50a) than the Required Stop Depth indicated (Fig. 50b) until the next shallower Stop Depth appears. Then, you can slowly ascend to, but not shallower than that indicated ceiling Stop Depth.

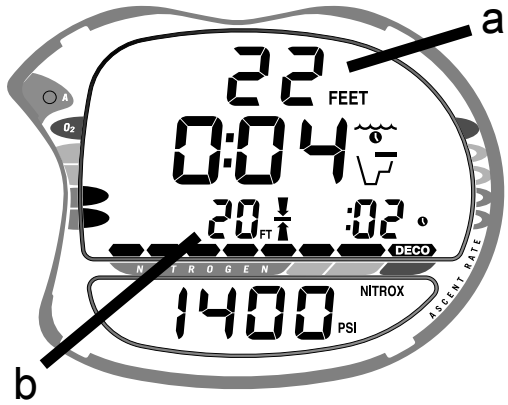


Fig. 50 -Deco #1 (Main)

Decompression Dive Mode - Main Display #1 (Fig. 50)

Information includes - Current Depth, Total Ascent Time (and Mode icon), required decompression Stop Depth and Time, both Arrows and the Deco Bar, Tank Pressure, and applicable bar graphs.

- press/hold the Advance (Front) button for 2 seconds to acknowledge and silence the Audible Alarm (unless set OFF).
- press/release the Advance (Front) button to view Display #2.

Decompression Dive Mode - Display #2 (Fig. 51)

Information includes - Current Depth, Total Ascent Time, Maximum Depth for that dive (and graphic), Elapsed Dive Time (and icon), Tank Pressure, and the applicable bar graphs.

- press/release the Advance (Front) button to view Display #3.

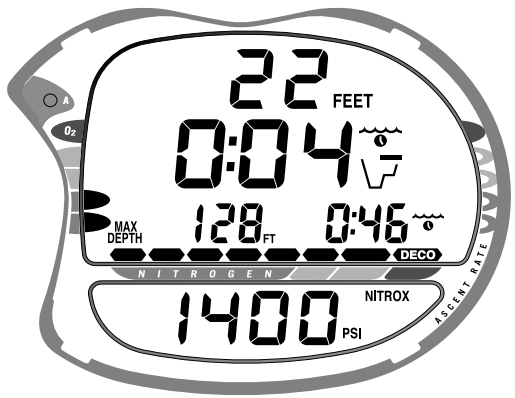


Fig. 51 -Deco #2

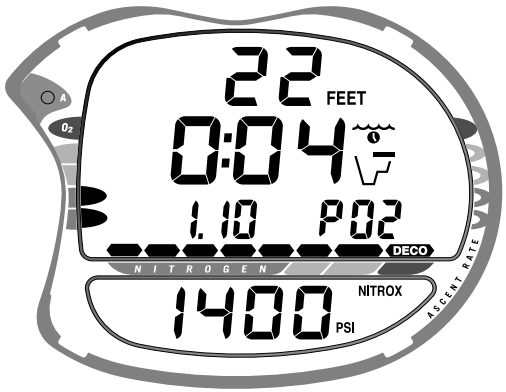


Fig. 52 -Deco #3

Decompression Dive Mode - Display #3 (Fig. 52)

This display is only available during nitrox dives.

Information includes - Current Depth, Total Ascent Time, PO2 value (and graphic PO2), Tank Pressure, and applicable bar graphs.

- press/release the Advance (Front) button to view Display #1.

NOTE: While in Decompression Mode, the ATMOS ai will automatically revert to the Main Display (#1) after 3 seconds unless the Advance (Front) button is pressed to view another display of information.

WARNING: If you exceed certain limits, the ATMOS ai will not be able to tell you how to get safely back to the surface. These situations exceed tested limits and can result in loss of some ATMOS ai functions for 24 hours after the dive in which a Violation occurred.

VIOLATION MODES

Violation Modes that the ATMOS ai can enter are termed - Conditional, Delayed, and Immediate. Permanent Violation Mode and Gauge Mode are continuations of these.

WARNING: It is important to understand each different Violation Mode and how to carry out emergency procedures in the event that you enter one.

NOTE: Upon entry into certain Violation Modes, the Audible Alarm will emit a 10 second continuous beeping tone. The Alarm will sound even <u>if it is user Set OFF.</u> It also cannot be turned off (acknowledged) by pressing the Advance (Front) button.

While in Violation Modes, the Alternate Displays previously described can be accessed using the Advance (Front) button, and the Backlight can be activated using the Select (Bottom) button.

NOTE: While in Violation Modes, the ATMOS ai will automatically revert to the Main Display after 3 seconds unless the Advance (Front) button is pressed to view another display of information.

Conditional Violation Mode

The ATMOS ai will enter the Conditional Violation Mode **if you ascend to a depth shallower (Fig. 53a) than the Required Decompression Ceiling** Stop Depth displayed (Fig. 53b).

- Unless set OFF (a user setting), the Audible Alarm will emit a continuous tone for 10 seconds, or until acknowledged by pressing the Advance (Front) button.
- The Down Arrow, Deco Bar, and the Total Ascent Time display will flash until you descend below the Required Stop Depth.
- Also displayed will be Current Depth, Tank Pressure, and applicable bar graphs.

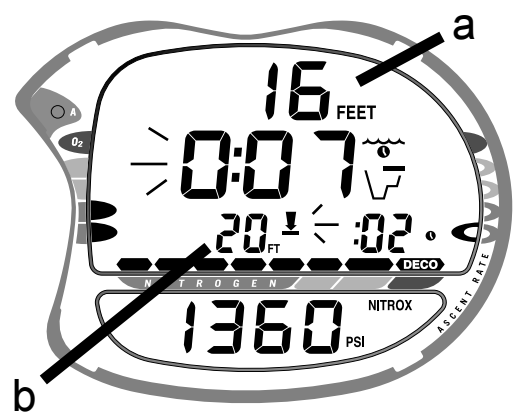


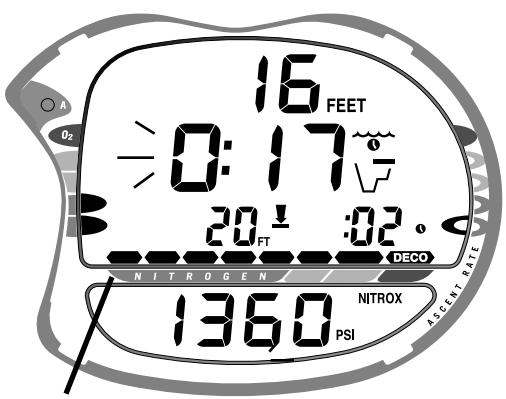
Fig. 53 - Conditional Violation

If you descend below the required decompression ceiling before 5 minutes have elapsed, the ATMOS ai will continue to function in Decompression Dive Mode. In this case, no off-gassing credit will be given, and for each minute above the ceiling $1^{1}/_{2}$ minutes of **Penalty Time** will be added to Required Stop Time.

The added Penalty (decompression) Time will have to be 'worked off' first, before obtaining off-gassing credit.

Once the Penalty Time is worked-off, and off-gassing credit begins, required decompression Stop Depths and Time will decrease toward zero, then the Nitrogen Bar Graph will recede into the yellow Caution Zone and the ATMOS ai will revert to the No Decompression Dive Mode.

NOTE: Upon entry into Delayed Violation Modes, the Audible Alarm will sound for 10 seconds, <u>even if it is user Set OFF.</u> It cannot be turned off (acknowledged) by pressing the Advance (Front) button.



Full BG Flashing

Fig. 54 - Delayed Violation #1

Delayed Violation Mode #1 (Fig. 54)

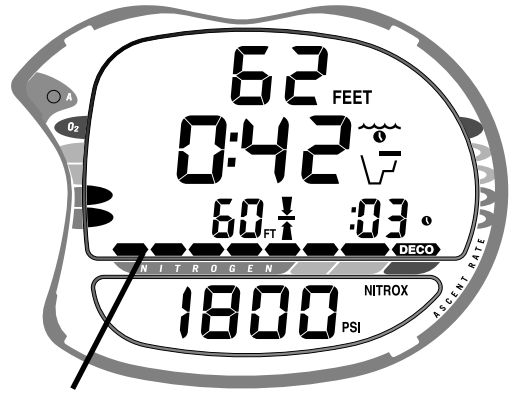
If you remain above the Required Ceiling Stop Depth for 'more than 5 minutes', the Nitrogen Bar Graph and Total Ascent Time display will flash until you descend below the Required Stop Depth.

This is a continuation of a Conditional Violation.

Delayed Violation Mode #2 (Fig. 55)

The ATMOS ai cannot calculate decompression times for Stop Depths much greater than 60 feet (18 meters) and offers no indication of how much dive time would result in the need for a greater Stop Depth.

If your Decompression obligation requires a Ceiling Stop Depth 'between' 60 feet (18 meters) and 70 feet (21 meters), the Nitrogen Bar Graph will flash. Total Ascent Time will still be displayed.



Full BG Flashing

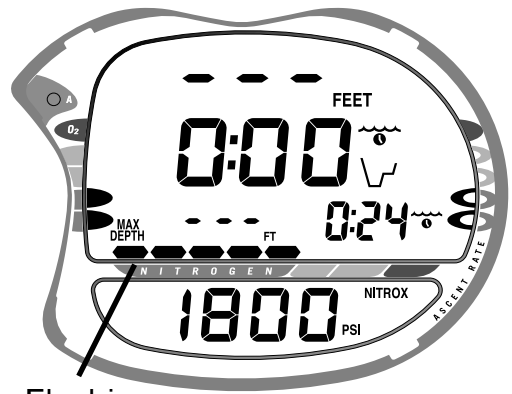
Fig. 55 - Delayed Violation #2

You must ascend to just deeper than, and stay as close as possible to, 60 feet (18 meters) without causing the Total Ascent Time display to flash. When the Required Stop Depth indicates 50 FT/ 15 M, etc., you can ascend to those depths and continue decompressing.

Delayed Violation Mode #3 (Fig. 56)

If you descend deeper than 330 feet (100 meters), the accumulated Nitrogen Bar Graph segments will flash, and the Current Depth and Max Depth displays will only indicate 3 dashes (- - -).

Upon ascending above 330 feet (100 meters), the Current Depth display will be restored, however Max Depth will only display 3 dashes for the remainder of that dive. The Log for that dive will also only indicate 3 dashes as the Max Depth achieved.



Flashing

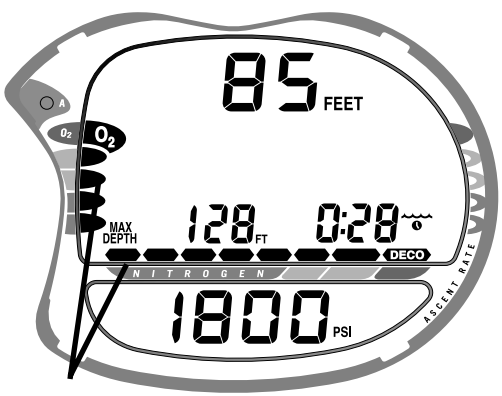
Fig. 56 - Delayed Violation #3

Immediate Violation Mode and Violation Gauge Mode

WARNING: The ATMOS ai enters Immediate Violation Mode when a situation totally exceeds its capacity to predict an ascent procedure. These dives represent gross excursions into decompression that are beyond the boundaries and spirit of the ATMOS ai design, and an ATMOS ai should not be used for the dives.

During a Dive, if a ceiling much greater than 60FT (18M) is required, an **Immediate Violation Mode** will be entered. This situation would be preceded by entering Delayed Violation Mode #2, previously described.

The ATMOS ai would then operate with limited functions in **Violation Gauge Mode** during the remainder of that dive and for 24 hours after surfacing.



Full BGs Flashing

Fig. 57 - Immediate Violation/ Gauge Mode (underwater)

Violation Gauge Mode turns the ATMOS ai into a digital instrument without any decompression or oxygen monitoring functions.

Displayed will be Current Depth, Elapsed Dive Time, Max Depth, Time of Day, Tank Pressure, and the Ascent Rate Indicator (Fig. 57).

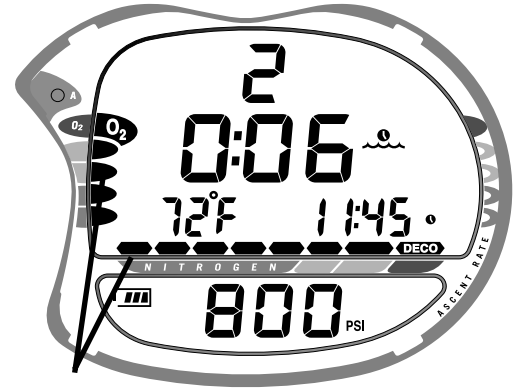
The full Nitrogen Bar Graph and O2 Bar Graph will both flash as a warning of this condition.

- To activate the Backlight - press the Select (Bottom) button.

The ATMOS ai will also enter an **Immediate Violation Mode** 5 minutes after reaching the surface from a dive in which a Delayed Violation occurred.

On the surface, **Violation Gauge Mode** displays the Dive Number, Surface Interval, Temperature, Time of Day, and Tank Pressure. The full Nitrogen and O2 Bar Graphs continue to flash (Fig. 58).

FO2, the Dive Planner, and the Time to Fly and Desaturate features will not be available. The countdown timer that appears when you try to access Time to Fly does not represent 'Time to Fly'. It is only provided to inform you of the time remaining before normal operation can resume with full ATMOS ai features and functions.



Full BGs Flashing

Fig. 58 - Immediate Violation/ Gauge Mode (after surfacing)

NOTE: This condition is considered a Permanent Violation, and in the event that a dive is made during the 24 hour period, a full 24 hour surface interval must then be served before all functions are restored.

HIGH PO2 DIVE MODE

WARNING: In the event that you enter High PO2 Dive Mode, you must immediately focus on reducing the partial pressure of oxygen by slowly ascending to a shallower depth at a safe rate in accordance with your nitrox training. If you continue the dive at your current depth, or descend deeper, your exposure to CNS oxygen toxicity will increase.

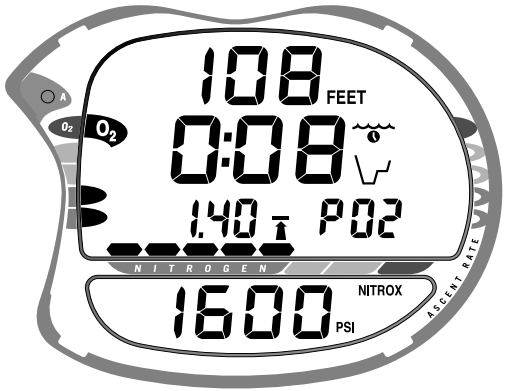


Fig. 59 - PO2 Warning

As depth increases during a dive, the partial pressure of oxygen (PO2) increases. When PO2 becomes equal to, or greater than, **1.40 ATA, or 0.2 ATA less than the PO2 Alarm set point (a user setting);** the red LED will flash, Audible Alarm will sound (unless set OFF), and the current PO2 value, PO2 symbol, O2 segment of the O2 Bar Graph, and UP Arrow will appear on the Main Display as a warning until PO2 decreases. Current Depth and Dive Time Remaining will also be displayed (Fig. 97).

If PO2 continues to increase, the value displayed will increase toward a maximum value of 5.00 ATA in increments of .01 ATA. When it reaches a value of **1.60 ATA**, **or the PO2 Alarm set point (a user setting),** the red LED will flash, the Audible Alarm will sound (unless set OFF) again, and the current PO2 value, PO2 symbol, O2 segment of the O2 Bar Graph, and UP Arrow will flash as a warning until PO2 decreases (Fig. 60).

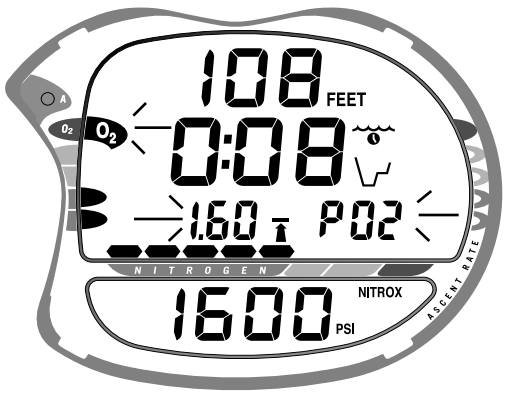


Fig. 60 - PO2 Alarm

While in High PO2 Mode, the Alternate Displays previously described can be accessed using the Advance (Front) button, and the Backlight can be activated using the Select (Bottom) button.

NOTE: While in High PO2 Mode, the ATMOS ai will automatically revert to the Main Display after 3 seconds unless the Advance (Front) button is pressed to view another display of information.

HIGH OXYGEN ACCUMULATION

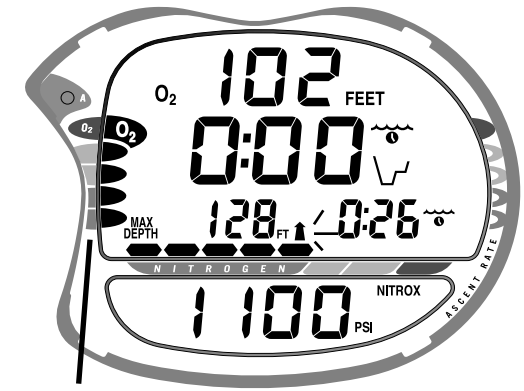
It is important that you understand that conducting repetitive dives using enriched nitrogen-oxygen (nitrox) mixtures can lead to oxygen buildup, reducing oxygen tolerance while increasing the risk of pulmonary oxygen toxicity.

AERIS strongly recommends that you avoid exceeding oxygen exposure limits, and reminds you that nitrox diving requires special training and understanding of the effects of oxygen toxicity.

The O2 Bar Graph provides a graphic representation of your oxygen accumulation, displaying either oxygen accumulated during that dive, or during the repetitive dives you conduct during that 24 hour period, whichever of the two is greater at that time.

The yellow **Caution Zone** of the O2 Bar Graph offers you a convenient way to consistently monitor how close you are coming to the limits of oxygen exposure. **Use it as a visual reference to place a wider margin of protection between you and the Limits.**

If the theoretical amount of oxygen accumulated equals, or exceeds, the limit for a single exposure, or the exposure limit for a 24 hour period, Oxygen Dive Time Remaining becomes zero (0:00) and the O2 Bar Graph will enter the red **O2 (Danger) Zone** (Fig. 61). The red LED will flash, the Audible Alarm will sound (unless set OFF) and the UP Arrow and the full O2 Bar Graph will flash as a warning until the level of oxygen decreases below the limit.



Full BG Flashing

Fig. 61 - High O2

You must immediately focus on making a safe controlled ascent to the Surface to prevent further exposure. As your accumulation (dose) decreases during your surface interval, the O2 Bar Graph will gradually recede into the yellow (caution) zone and green (normal) zone.

⚠ **WARNING: In the event that you exceed the maximum per dive allowable oxygen exposure (dose), it is recommended that you allow a surface interval of at least 2 hours before reentering the water. If you exceed the maximum 24 hour period allowable oxygen exposure (dose), you must allow a surface interval of at least 24 hours before reentering the water.**

While in High O2 Mode, the Alternate Displays previously described can be accessed using the Advance (Front) button, and the Backlight can be activated using the Select (Bottom) button.

△ **NOTE: While in High O2 Mode, the ATMOS ai will automatically revert to the Main Display after 3 seconds unless the Advance (Front) button is pressed to view another display of information.**

USER SET DIGITAL GAUGE MODE

(also refer to page 44)

When Digital Gauge Mode is set for ON, the ATMOS ai will operate as a Digital Depth Gauge/Timer without performing nitrogen and oxygen calculations.

While in Digital Gauge Mode, the range of the Current and Max Depth displays are extended to 399 feet (120 meters) to accommodate activities involving diving with advanced breathing gas mixtures or free diving beyond the normal depth limit of the unit.

Information displayed (Fig. 62) includes Current Depth, Elapsed Dive Time, Maximum Depth, Time of Day, Tank Pressure (if in use), and graphic GAUGE.

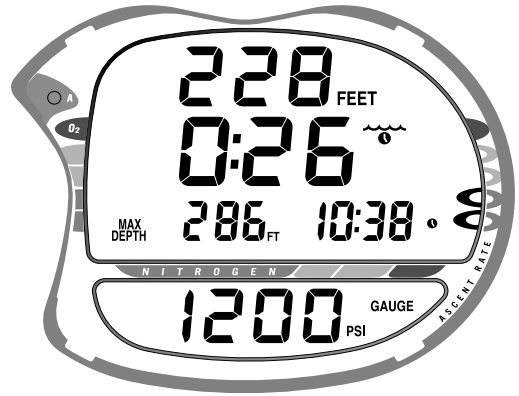


Fig. 62 - Digital Gauge Mode

To view the Secondary Display (Air Time Remaining, Temperature, and Time of Day - Fig. 63) for 3 seconds, press/release the Advance (Front) button.

To activate the Backlight, press the Select (Bottom) button.

△ **NOTE: Once a dive is made with this feature set ON, it will remain locked ON for 24 hours after the dive. Set Digital Gauge Mode will not appear as a selection for 24 hours after the dive.**

Fig. 63 -Secondary Display

WARNINGS:

Making decompression dives without the proper preparation and training will place you in an unnecessarily dangerous situation.

Existing data for making planned decompression dives is extremely limited, and virtually non-existent for repetitive decompression diving.

Decompression diving greatly increases your risk of decompression sickness.

Special training, equipment, and support are necessary for diving deeper than the maximum recommended sport diving depth limit(s).

Be a -
RESPONSIBLE DIVER
at all times.

POST DIVE MODES

POST DIVE SURFACE MODE

When you ascend to 3 feet (1 meter) or shallower, the ATMOS ai will enter Surface Mode and begin counting your surface interval.

Transition Period

The **first 10 minutes** is, in affect, a Transition Period during which time the following information is displayed (Fig. 64):

- 'Number' of that dive (during that activation period)
- Surface Interval time (colon flashing) and icon (flashing)
- Temperature (ambient)
- Time of Day and icon
- Battery Indicator
- Tank Pressure and graphic
- Nitrogen Bar Graph indicating current nitrogen loading
- O2 Bar Graph indicating current oxygen accumulation (if nitrox dive)

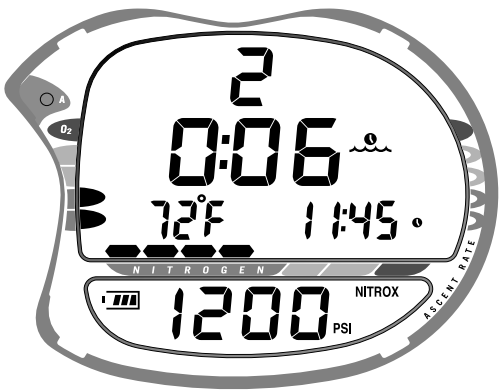


Fig. 64 - Transition Period

During the Transition Period, Log Mode can be accessed. No other modes (e.g., Plan, Fly, Desat, Set, PC, Sim) are accessible.

To activate the Backlight, press the Select (Bottom) button.

To view that dive's Log (Fig. 65) -

Refer to page 74 for a description of the Log Mode and displays.

- press the Advance (Front) button **1 time**
- press the Select (Bottom) button **1 time** to view the Nitrogen data screen
- press the Select (Bottom) button **again** to view the Oxygen data screen (if a nitrox dive)
- press Both buttons simultaneously for 2 seconds to return to Surface Mode
- the unit will automatically revert to Surface Mode after 2 minutes if no button is pressed

Log Data will not be stored in the unit's memory until the 10 minute Transition Period on the surface is completed.

Once 10 minutes have elapsed, the Surface Mode icon and Surface Interval time display colon stop flashing indicating that the Dive and Transition Period are completed, and a subsequent descent will be considered a new dive.

If you descend during the 10 minute Transition Period, time underwater will be considered a continuation of that dive. The time at the surface (if less than 10 minutes) will not be added as Dive Time.

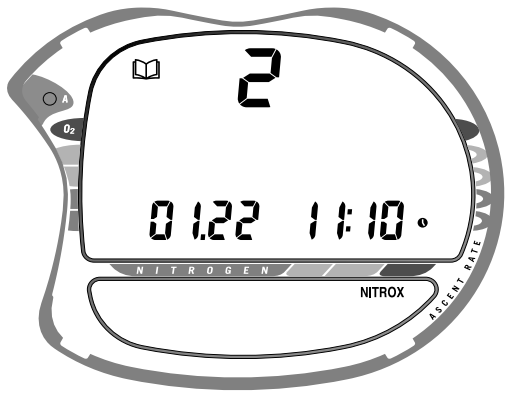


Fig. 65 - Log Mode

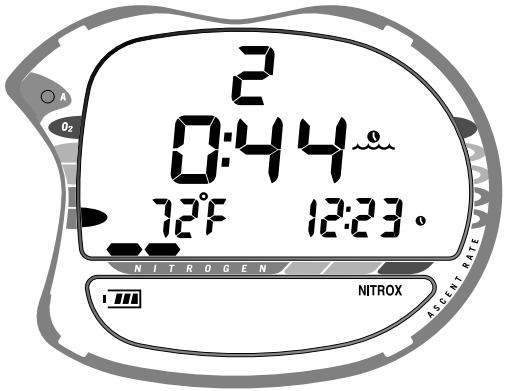


Fig. 66 - Surface Mode

AFTER THE TRANSITION PERIOD (THE FIRST 2 HOURS)

For the remainder of the **first 2 hours after surfacing**, information will continue to be displayed as Surface Mode (Fig. 66) and you will have full access to other modes (e.g., Plan, Fly, Desat, Log, Set, PC, Sim).

To activate the Backlight, press the Select (Bottom) button.

To access the Dive Planner (Plan Mode) -
(Also refer to page 48)

- press the Advance (Front) button 1 time (while in Surface Mode)
- press/release the Select (Bottom) button to advance through the sequence of available depths/times one screen at a time.
- The unit will revert to Surface Mode after 2 minutes, unless the Advance (Front) button is pressed to access the Fly Mode.

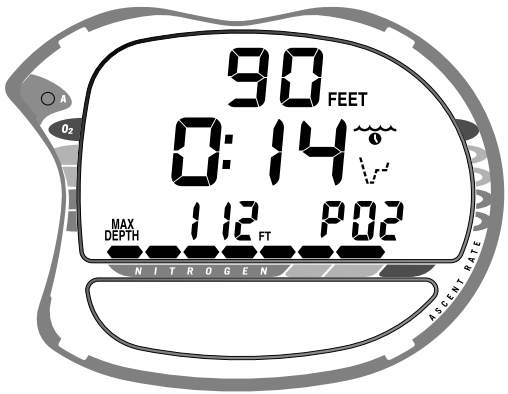


Fig. 67 - Plan Mode

The Dive Planner now shows 'adjusted' No Decompression Limits (Fig. 67) based on residual nitrogen and accumulated oxygen calculated to be remaining from the previous dives.

NOTE: The Planning Sequence will only advance to the maximum depth allowed by the nitrogen or oxygen limit, whichever is in control. The NiBG or O2BG will indicate which is in control.

To access the Time to Fly Countdown -

- press the Advance (Front) button **2 times** (while in Surface Mode)
- The unit will revert to Surface Mode after 2 minutes, unless the Advance (Front) button is pressed to access the Desat Time Countdown.
- If a Violation occurred during the dive a single dash (-) will appear instead of the graphic FLY.

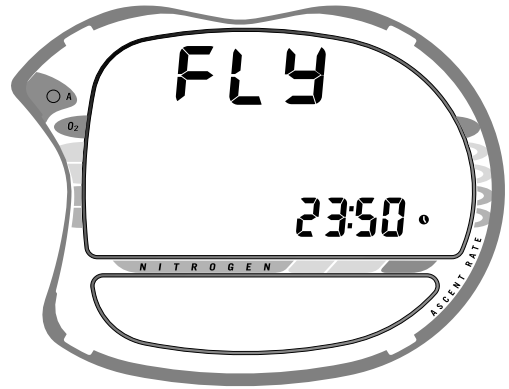


Fig. 68 - Time to Fly

The Time to Fly counter (Fig. 68) is provided to assist you with deciding when enough surface time has elapsed to Fly (or travel to higher elevations). It begins counting down 10 minutes after surfacing from a dive (after the 10 minute Transition Period) displaying the graphic **FLY** and a countdown that begins at 23:50 (hr:min) and counts down to 0:00 (hr:min).

To access the Time to Desaturate Countdown -

- press the Advance (Front) button **3 times** (while in Surface Mode)
- The countdown starts 10 minutes after surfacing at 23:50 (hr:min) maximum and counts down to 0:00 (hr:min). The Time to Desaturate Countdown displays the graphic SAT and a counter (Fig. 69) that provides calculated time for tissue desaturation (release of nitrogen loading) at sea level.
- If a Violation occurred during the dive, Desaturation Time will not be displayed.

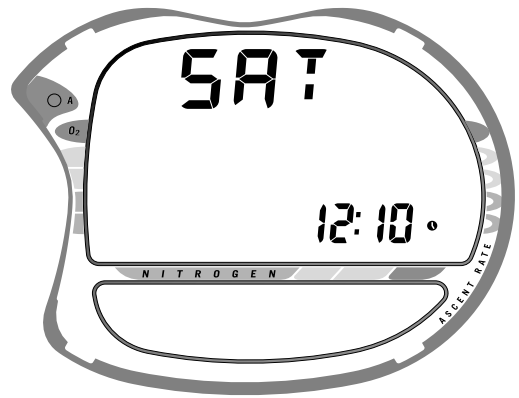


Fig. 69 - Time to Desaturate

- The unit will revert to Surface Mode after 2 minutes, unless the Advance (Front) button is pressed to access the Log Mode.

Two hours after the last dive, the Time to Fly and Desaturation countdowns will be displayed alternately for 3 seconds each until they Both count down to 0:00 or another dive is made. Access to other modes is gained by pressing Either button to return to Surface Mode.

After a surface interval of 12 hours, you may choose to Fly (or travel to higher elevations), provided that your dive profile(s) did not enter Decompression. If your diving involved decompression or a repetitive, multi day profile, it is strongly recommended that you wait a full 24 hours after your last dive to add a greater degree of protection.

As you should be aware from your own training, the longer you wait to Fly (or travel to higher elevations) after diving, the more you will reduce your exposure to decompression sickness.

LOG MODE

Information from your latest 24 dives is stored in the **Log** for viewing. The first dive of a new Activation Period will be #1, then #2, etc.

After 24 dives are accumulated, each subsequent dive will overwrite the oldest dive in the Log (i.e., the most recent dive deletes the oldest). Log information will not be lost when the battery is removed, but factory service will delete data.

Dives are displayed in a reverse sequence that starts with the dive most recently recorded back to the oldest of the 24 dives stored. Thus, your most recent dive will always be the first shown in the sequence. Log screens are Date/Time started, Nitrogen data, and Oxygen data (if a Nitrox dive).

Button Control in Log Mode -

- The Advance (Front) button is used to access a specific dive's Log.
- The Select (Bottom) button is then used to view the second and third screens (Nitrogen and Oxygen related data) for that dive.
- To return to Surface Mode at any time while in Log Mode, press Both buttons simultaneously for 2 seconds.
- The unit will automatically revert to Surface Mode after 2 minutes if no button is pressed while in the Log Mode.

△ **HINT: To bypass a dive's Log and search for another in the sequence, press the Advance (Front) button repeatedly. Do not press the Select (Bottom) button until you find the dive Log you wish to view. Dives are identified by the Date/Time started and 'number' for that Activation Period.**

To access the Log Mode and view the First Screen (Fig. 70) -

- press the Advance (Front) button **4 times** (while in Surface Mode)
- the first screen of the most recent dive will appear displaying -
  - the Log Mode icon
  - Dive Number
  - Date (Month. Day) and Time of Day that the dive started

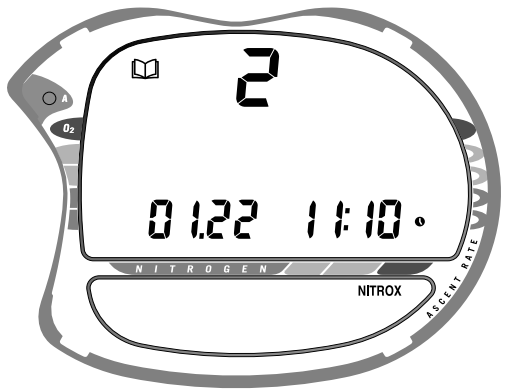


Fig. 70 - Log (1st screen)

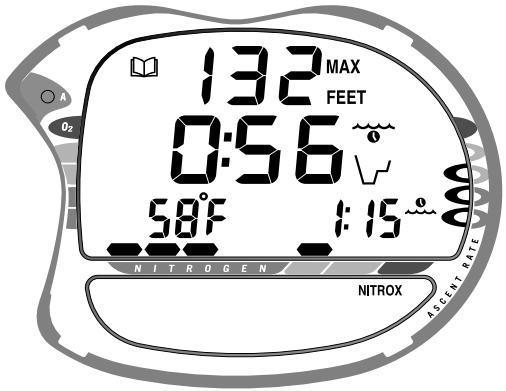


Fig. 71 - Log (2nd screen)

<u>To view the Second Screen of the Log (Nitrogen data)</u> (Fig. 71) -

- press the <u>Select (Bottom)</u> button **1 time** (while viewing screen 1).

Displayed will be -

- Log Mode icon
- Maximum Depth - reached during the dive (and graphic)
- Elapsed Dive Time (and icon)
- Temperature - minimum during that dive (and icon)
- Surface Interval - prior to that dive (and icon)
- Variable Ascent Rate Indicator - showing the maximum ascent rate maintained for 4 consecutive seconds during the dive.
- Nitrogen Bar Graph - showing tissue nitrogen loading at the time you surfaced at the end of the dive. Also, the segment that reflects the maximum loading will appear flashing.

<u>To view the Third Screen of the Log (Oxygen data)</u> (Fig. 72) -

- press the Select (Bottom) button 1 time (while viewing screen 2).

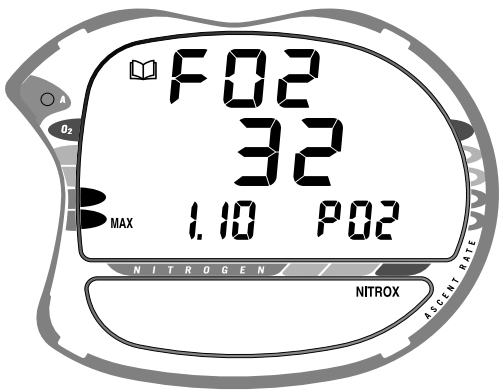


Fig. 72 - Log (3rd screen)

Displayed will be -

- Log Mode icon and FO2 graphic
- FO2 value - set for that dive
- Maximum PO2 level - reached during the dive (and PO2 graphic)
- O2 Bar Graph - showing oxygen loading at the end of the dive.

<u>To access the first screen of the previous dive's Log -</u>

- press the <u>Advance (Front)</u> button **1 time**

AFTER THE FIRST 2 HOURS

Two hours after the last dive Surface Mode will no longer be displayed, the Time to Fly and Desaturation countdowns will be displayed alternately for 3 seconds each until they count down to 0:00 or another dive is made.

Fig. 73 - Fly Mode
(Activation Contacts Wet)

<u>To access other modes or enter settings -</u>

- press Either button to return to Surface Mode.
- the unit will again revert to the Time to Fly and Desaturation countdowns after 2 hours, if no button is pressed.

Wet Contacts

If the graphic **H2O** appears during the Fly Mode (Fig. 73) and Desaturation Mode (Fig. 74) countdowns, it is an indication that the water activation contacts are bridged (still wet) and the unit must be rinsed in fresh water and thoroughly dried.

- Once the unit is dry, the graphic **H2O** will disappear.
- If the unit is not cleaned and dried prior to the countdowns reaching 0:00 (hr:min), or making another dive, it will shut off then automatically reactivate.
- The graphic H2O would then appear in place of Dive Number when Surface Mode is displayed during the Surface Mode.
- If no dive is made, the unit would shut off after 2 hours, then automatically reactivate again, repeating the action until cleaned and dried.

Fig. 74 - Desaturation Mode
(Activation Contacts Wet)

DOWNLOADING DATA TO A PC

NOTE:

Ensure that the Download product that you acquire is compatible with the ATMOS ai and the PC equipment that you will be using.

Using special linking hardware, dive data can be downloaded (copied) from your ATMOS ai to an IBM compatible PC program running on a Windows® operating system.

Compatibility requirements and instructions are provided with the optional download package that is available from your Authorized AERIS Dealer.

The software program provides tabular and graphic profile data sampled throughout the dives. See page 43 for setting Sampling Rate.

The Interface Cable will be connected to the Data Port located on the side of the ATMOS ai housing.

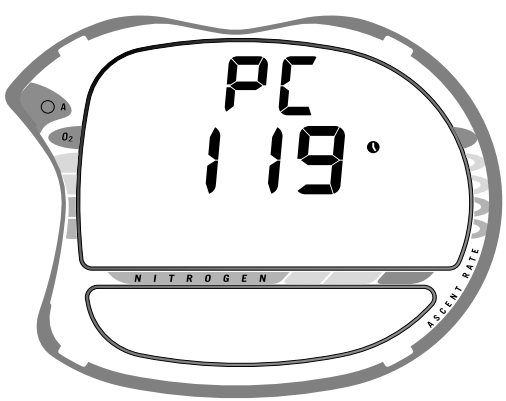


Fig. 75 - PC Interface

Prior to attempting to download data from your ATMOS ai, refer to the instructions provided in the User Manual that is incorporated into the CD for the download hardware/software package.

Refer to page 30 of this manual for instructions regarding access to PC Interface (Fig. 75).

SIMULATOR (DEMO) MODE

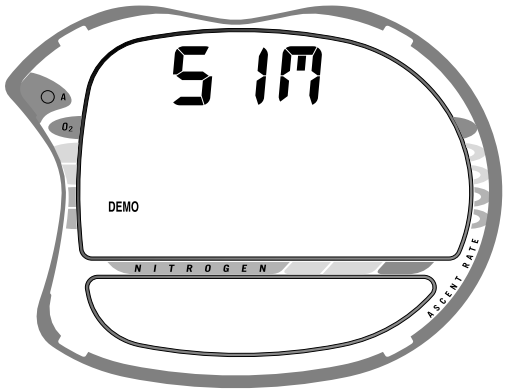


Fig. 76 - Simulator Mode

SIMULATOR MODE

This mode provides you with the ability to practice various dive mode scenarios and computer functions while observing the various displays.

- The Backlight functions as it normally does.
- At any time while in Simulator Mode, pressing and holding both buttons simultaneously for 2 seconds shall revert operation to real Surface Mode.
- The real set points entered into the ATMOS ai do not affect the operation of the Simulator which has its own settings that allow Digital Gauge Mode to be set ON or OFF, calculations to be cleared, and FO2 to be set.

Access and Setup (while in real Surface Mode)

- Press and hold Both buttons for 6 seconds.
- Release the buttons during the 2 second window when **SIM** and **DEMO** appear (Fig. 76).
- Press and release the Advance (Front) button to access SIM MODE. The graphics **GAU** and **DEMO** will appear with **OFF** (or ON) flashing (Fig. 77).
- When set **ON**, the SIMULATOR will operate as the unit would in User Set Digital Gauge Mode only displaying Depth and Elapsed Dive Time. When set **OFF**, it operates as it would as an Air or Nitrox computer.

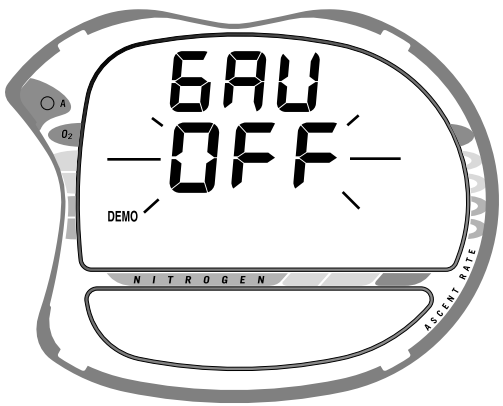


Fig. 77 - Set Demo Gauge

- Press and release the Select (Bottom) button to toggle between Gauge **ON** and **OFF**.

- Press and release the Advance (Front) button to accept the setting and advance to **DEMO: NI-O2** with **CUR** (or **NEW**) flashing (Fig. 78).
- When set for **NEW**, calculations are based on zero residual nitrogen and oxygen loading (a clean dive).
- When set for **CUR**, calculations take into consideration any residual nitrogen and oxygen remaining from previous 'actual' dives.
- Subsequent (repetitive) Simulated dives do not take into consideration previous Simulated dives.
- Press and release the Select (Bottom)) button to toggle between **NEW** and **CUR**.
- Press and release the Advance Front) button to accept the setting and advance to **DEMO: PSI** (or **bAr**) with OFF, CYL, **3000** psi (206.5 bar), or 4000 psi (275.5 bar) flashing (Fig. 79).
- When set for **OFF**, no calculations are made and no displays appear relating to tank pressure.
- When set for **CYL**, Air Time Remaining is calculated based upon actual pressure of the tank that the ATMOS ai is connected to.
- When set for **3000** or **4000** psi (206.5/275.5 bar), Air Time Remaining is calculated based upon a simulated tank pressure of that value.
- Press and release the Select (Bottom) button to advance through the set points **OFF > CYL > 3000 > 4000** (206.5 > 275.5).

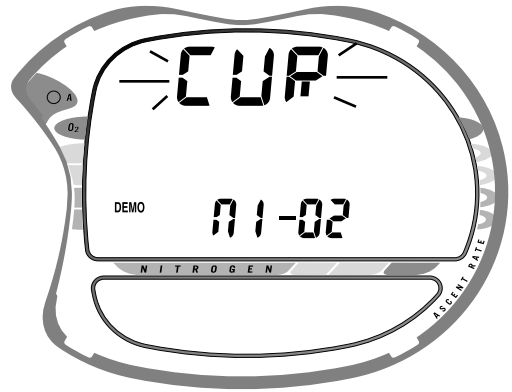


Fig. 78 - Set Demo Calibration

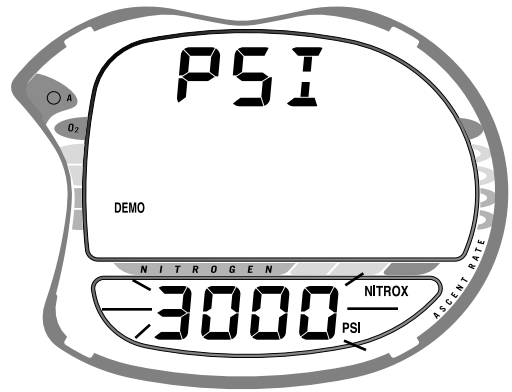


Fig. 79 - Demo Surface Mode

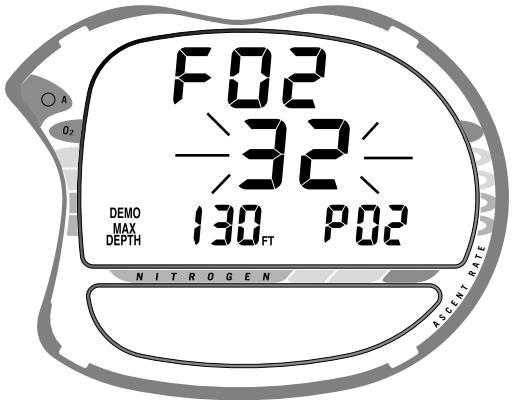


Fig. 80 - Set Demo FO2

- Press and release the Advance (Front) button to accept the setting and revert to **Demo Surface Mode** with the DEMO icon flashing.

- Press and release the Advance (Front) button to access **DEMO: FO2** with the DEMO icon and **Air** (or a numerical value) flashing (Fig. 80).
- Press and hold the Select (Bottom) button to scroll from **Air** to **21**% through **32**% in 1% increments. The scroll will stop when the button is released, or at **32**% (Fig. 80).
- Press and hold the Select (Bottom) button again to scroll from 32% through 50% in 1% increments, then to Air. The scroll will stop when the button is released, or at Air.
- Note that pressing and releasing the Select (Bottom) button advances the FO2 setting from **AIR** to **21** through **50**, in increments of 1% per button depression (no scroll).
- The Maximum Depth allowed for the PO2 Alarm Set Point will be displayed for each value of FO2.
- Press and release the Advance (Front) button to accept the setting and revert to **Demo Surface Mode** with the DEMO icon flashing.

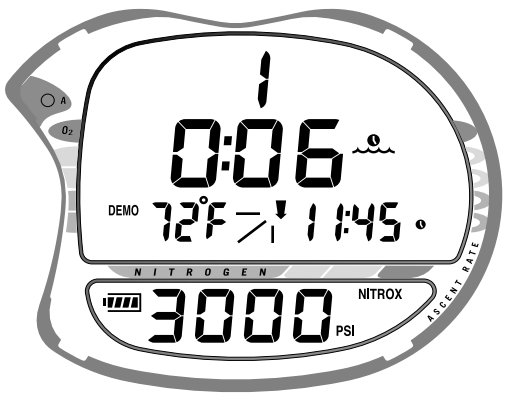


Fig. 81 -Simulated Descent

Demo Dive Mode

- Press and hold the Select (Bottom) button for 2 seconds to access **Demo Dive Mode**. The **DOWN Arrow** will appear flashing (Fig. 81).
- Press and release the Select (Bottom) button to increase Elapsed Dive Time 1 minute per real time second.

Descending

Hint: Quick taps (<2 seconds) of the Select (Bottom) button starts/ stops Descents and Time Acceleration. Quick taps of the Advance (Front) button accesses Alternate displays.

- While the Down Arrow is flashing, tap (press/release) the Select (Bottom) button to begin a **Descent** at a rate of 5 feet (1.5 meters) per real second.
- Tap (press/release) the Select (Bottom) button during the Descent to stop the Descent.
- Tap (press/release) the Advance (Front) button during the Descent, or stopped, to access the Alternate Displays.
- Press and hold the Select (Bottom) button for 4 seconds to access **Time Acceleration**. The small clock icon begins flashing (Fig. 82).
- Tap (press/release) the Select (Bottom) button to increase Elapsed Dive Time 1 minute per real time second.
- Tap (press/release) the Select (Bottom) button during Time Acceleration to restore normal time rate of 1 second per real second.
- To start an Ascent, tap (press/release) the Select (Bottom) button to stop a Descent.

- To revert operation to real Surface Mode, press and hold Both buttons simultaneously for 2 seconds.

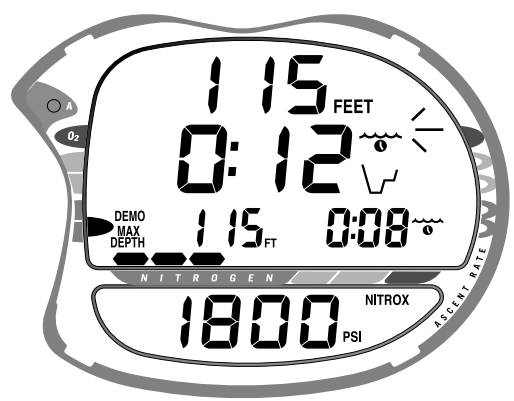


Fig. 82 -Time Acceleration (descending)

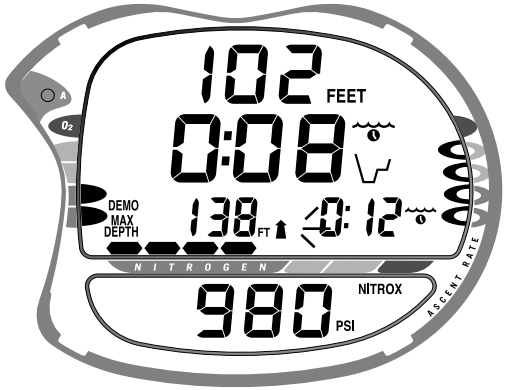


Fig. 83 - Ascent set for 1 fps

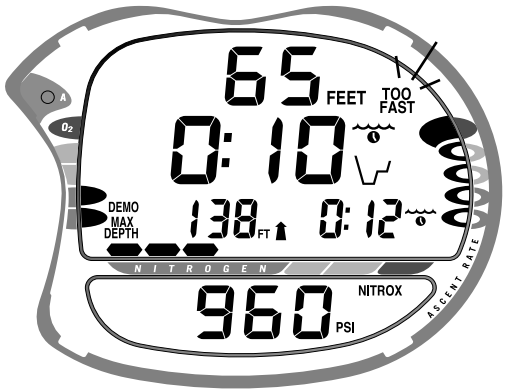


Fig. 84 - Ascent set for 3 fps (Too Fast)

Ascending

Rate of Ascent can be set for 1 or 3 feet per seconds (fps) prior to start of the Ascent. To change the Rate during an Ascent, it must first be stopped.

- Pressing and holding the Advance (Front) button for 2 seconds will access an **Ascent Rate** of **1 fps**. The green and yellow segments of the VARI and **UP Arrow** will appear with the Arrow flashing (Fig. 83).
- To set the Rate at **3 fps** (Too Fast), press and hold the Advance (Front) button for 2 seconds. The red segment of the VARI will appear together with the graphic TOO FAST (Fig. 84). The Alarm will sound and the red LED will flash.
- Pressing and holding the Advance (Front) button for 2 seconds will return the Rate to 1 fps.
- Tap (press/release) the Advance (Front) button while the Arrow is flashing to begin an Ascent at the Rate set.
- Tap (press/release) the Advance (Front) button during the Ascent to stop the Ascent.
- Tap (press/release) the Advance (Front) button while the Ascent is stopped to access Alternate displays.
- Press and hold the button for 2 seconds while the Ascent is stopped to restart the Ascent.
- Pressing and holding both Buttons simultaneously for 2 seconds will revert operation to real Surface Mode.

Surfacing from a Simulated Dive

The Simulator will enter **Demo Surface Mode** (Fig. 85) upon ascending to 3 feet (1 meter) or shallower.

- Press and hold the Select (Bottom) button for 4 seconds to access Time Acceleration. The small Time Clock icon will begin flashing.
- Tap (press/release) the Select (Bottom) button to increase Surface Interval Time 1 minute per real time second.
- Tap (press/release) the Select (Bottom) button during the Time Acceleration to restore the time rate to normal.

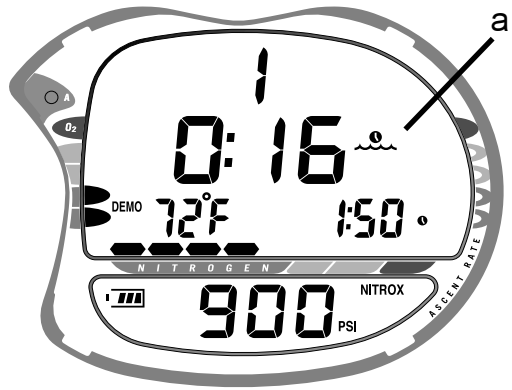


Fig. 85 - Demo Surface Mode

- FO2 can be set 10 minutes after surfacing.
- Tap (press/release) the Advance (Front) button to access FO2 Set Mode. The FO2 graphic and value previously set will appear with the value flashing.
- Press/release the Select (Bottom) button to increase the FO2 value in increments of 1%, or press and hold it to scroll.
- Tap (press/release) the Advance (Front) button to accept the FO2 setting and return to Demo Surface Mode.
- To make another dive, press and hold the Select (Bottom) button for 2 seconds to access Dive Mode.
- To revert operation to real Surface Mode (Fig. 86), press and hold Both buttons simultaneously for 2 seconds.

Fig. 86 - Real Surface Mode

RESPONSIBLE COMPUTER DIVING

Since the advent of dive computers, it is a common mistake to assume that the old traditional rules of diving no longer apply, but the truth is just the opposite. Keep these basic rules in mind:

- **Plan each dive, and dive your plan - Your computer was not designed to make decisions for you, only to provide you with the information you need to make responsible decisions for yourself. This begins with a dive plan that will help you avoid a low air or decompression situation.**
- **Do not plan any dive that exceeds your training or experience level.**
- **Inspect your computer before every dive - If it shows any signs of damage or abnormal function, DO NOT dive with it until it has received factory service.**
- **Make your deepest dive first - When making repetitive dives, it is imperative to ensure that each consecutive dive is shallower than the one before. This will allow your body's slower tissues to continue outgassing nitrogen.**
- **Make the deepest part of your dive first, and gradually work your way to the surface using a "staircase" profile - The ability to perform multilevel diving is one of the most important contributions of a dive computer, and you should take advantage of it. It will increase your bottom time and at the same time decrease your risk of decompression sickness.**
- **Ascend slowly by following an ascent line whenever possible, or by ascending diagonally toward the surface - Watch the Ascent Rate Indicator closely while you ascend, and keep it in the green zone as much as possible.**
- **Make a safety stop at 15 feet (4.5 m) at the end of every dive. A safety stop of 3 minutes has been shown to have a dramatic effect on the bubble formation in divers. It's important. Don't forget it.**
- **You should make every effort to complete all of your ascents with the Nitrogen Bar Graph inside the green zone.**
- **If you inadvertently entered Decompression Mode, you must not complete your ascent until the Nitrogen Bar Graph is at least inside the yellow Caution Zone.**
- **While you cannot provide a guarantee against the occurrence of decompression sickness, you may choose your own personal zone of caution based upon your individual age, physique, excessive weight, training, experience, etc. to reduce the statistical risk. By 'backing off' on the bar graph (maintaining fewer segments) and not pushing the limits, you can establish and adjust your personal level of conservatism and margin of safety.**

CARE, MAINTENANCE, and SERVICE

CARE AND CLEANING

Protect your ATMOS ai from shock, excessive temperatures, chemical attack, and tampering. Protect the lens against scratches with an Aeris Instrument Lens Guard. Small scratches will naturally disappear underwater.

⚠ CAUTION: Never spray aerosols of any kind on, or near, the instrument. The propellants may chemically attack the plastic.

- Soak and rinse the ATMOS ai in fresh water at the end of each day of diving, and check to ensure that the areas around the low pressure (depth) sensor (Fig. 87a), download interface Data Port (Fig. 87b), and buttons are free of debris or obstructions.
- To dissolve salt crystals, use lukewarm water or a slightly acidic white vinegar/water bath.
- After removal from the bath, place the unit under gently running water and towel dry before storing.
- Transport your unit cool, dry, and protected.

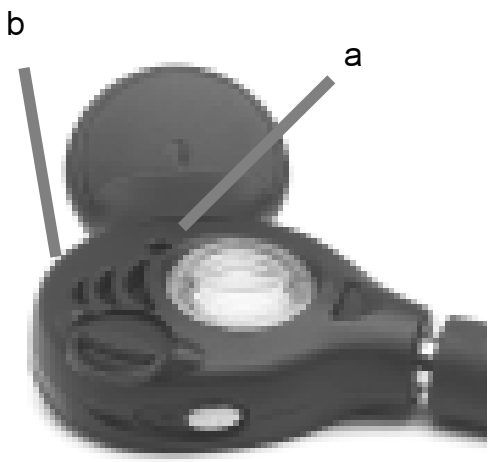


Fig. 87 -Case Back

⚠ WARNING: Never force any object through any slots or holes of the Housing. Doing so may damage the depth sensor, possibly resulting in erroneous depth and/or dive time remaining displays.

WARNING: If a Low Battery Condition is indicated prior to a dive, DO NOT attempt to dive with the ATMOS ai until the Battery is replaced.

INSPECTIONS AND SERVICE

Your ATMOS ai should be **inspected annually** by an Authorized AERIS Dealer who will perform a factory prescribed function check and inspection for damage or wear. To keep the 2 year limited warranty in effect, this inspection must be completed one year after purchase (+/- 30 days).

AERIS recommends that you continue to have this inspection performed every year to ensure it is working properly.

The costs of annual inspections are not covered under the terms of the 2 year limited warranty.

WARNING: If you are in doubt about the accuracy of your ATMOS ai's depth readings, DO NOT attempt to dive with it until it has been inspected by AERIS Customer Service.

It is possible to damage the depth sensor of the ATMOS ai if it is not pressure tested properly. Ensure that the Dealer adheres to the following warning.

WARNING: Ensure that the ATMOS ai is never pressure tested in an air environment. Doing so may damage the depth sensor, possibly resulting in erroneous depth or time readings.

To Obtain Service

Take you ATMOS ai to an Authorized AERIS Dealer or send it to the nearest AERIS Regional Distributor Facility.

To return your ATMOS ai to AERIS:

- Record all dive data in the Log and/or download the data in memory. All data will be erased when it receives factory service.
- Package it using a protective cushioning material.
- Include a legible note stating specific reason for return, your name, address, daytime phone number, serial number, and a copy of your original sales receipt and Warranty Registration Card.
- Send freight prepaid and insured using a traceable method to the nearest AERIS Regional Service Facility, or to AERIS.
- Non-warranty service must also be prepaid (call for an estimate). COD is not accepted.
- If you have any questions regarding service, call AERIS Customer Service at (510) 346-0010, 8 to 5 PST, or E-mail them to info@diveaeris.com.

NOTE: The procedures that follow must be closely adhered to. Damage due to improper Battery replacement is not covered by the ATMOS ai's 2 year warranty.

BATTERY REPLACEMENT

The Battery Compartment should only be opened in a dry and clean environment with extreme care taken to prevent the entrance of moisture or dust. As an additional precautionary measure to prevent formation of moisture in the Battery Compartment, it is recommended that the Battery be changed in an environment equivalent to the local outdoor temperature and humidity (e.g., do not change the Battery in an air conditioned environment then take it outside during a hot sunny day).

- Inspect the Buttons, Lens, and Housing to ensure they are not cracked or damaged.
- If there is any sign of moisture in the module, DO NOT use the ATMOS ^{ai} until it receives proper service by an Authorized Aeris Dealer, or the Aeris factory.

WARNING: If damage, moisture, or corrosion is found, it is recommended that you return your ATMOS^{ai} to an Authorized AERIS Dealer, and DO NOT attempt to use it until it has received factory prescribed service.

NOTE: If the old battery can be removed and the new one inserted within 8 seconds, nitrogen and oxygen calculations ,and settings, will be retained for repetitive dives.

Battery Removal

Examine the Case Back to locate the Battery Hatch (Fig. 88a).

- Apply a coin (not a screwdriver) to the slot of the Battery Hatch and turn counter clockwise to remove it from the Housing.
- Inspect the O-ring for any signs of deterioration. If found, remove the O-ring by pressing the sides with your finger tips to cause it to protrude slightly from the grooves of the Battery Hatch and discard. DO NOT use tools to remove.

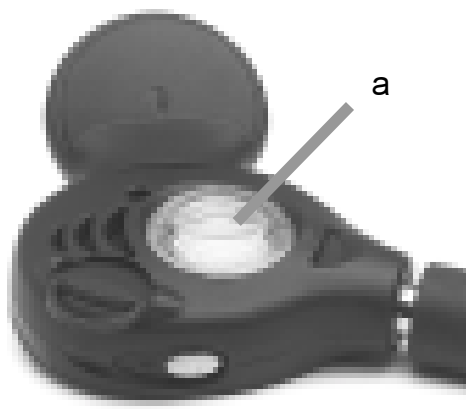


Fig. 88 - Battery Hatch

- Closely check the threads of the Battery Hatch and the Housing for any signs of damage that might impair proper threading. If found, return your module to your Authorized Aeris Dealer, and DO NOT attempt to use it until it has received factory service.

WARNING: DO NOT attempt to disassemble any other portion of the module. Doing so may cause a dangerous malfunction, resulting in possible injury or death. Indication of tampering with the module will void the unit's warranty.

- Turn the unit over to drop out the Battery. Discard of properly.
- Check the metal contacts inside the Battery Compartment (Fig. 89a) for any signs of stress (bending or breakage) and any signs of corrosion indicating entrance of moisture. If found, return the module to your Authorized Aeris Dealer for inspection.

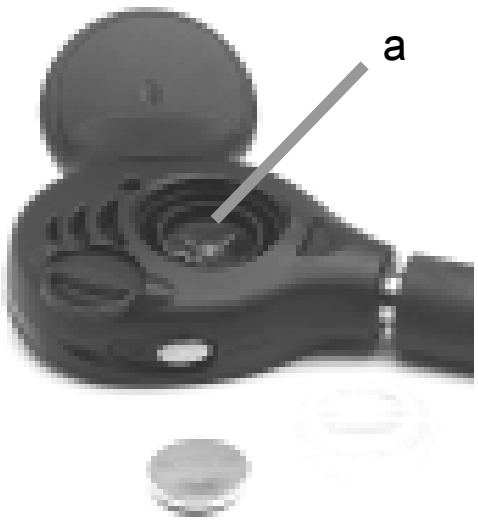


Fig. 89 - Battery Compartment

If water or corrosion is found, and you are attempting a repair in the field, proceed as follows:

- Inspect the Lens, Case, and Button areas to ensure there is no damage or cracks.
- Check the O-ring seating surfaces for nicks, cuts, or divots.
- Flush the Battery Hatch and Compartment with a solution of 50% white vinegar and 50% fresh water. Rinse thoroughly with fresh water and allow to air dry overnight, or blow dry with a hair dryer set at No Heat.

O-Ring Installation

- Lightly lubricate a **new** (recommended) Hatch O-ring with silicone grease, then stretch it slightly to work it over the slotted top of the Battery Hatch. DO NOT roll it over the treads.
- Ensure that it is evenly seated.

NOTE: This O-ring must be a genuine AERIS part that can be purchased from an Authorized AERIS Dealer. Use of any other O-ring will void the warranty.

CAUTION: Avoid touching the Battery Contacts or flat surfaces of the Battery, skin oil will impair correct contact.

- Insert a **new** 3 volt type CR2450 Lithium Battery, negative (-) side down into the Battery Compartment (Fig. 90).
- Carefully insert the Battery Hatch into the Housing and turn it slowly clockwise by hand to ensure correct threading.
- Apply a coin and tighten the Battery Hatch until secure (Fig. 91).

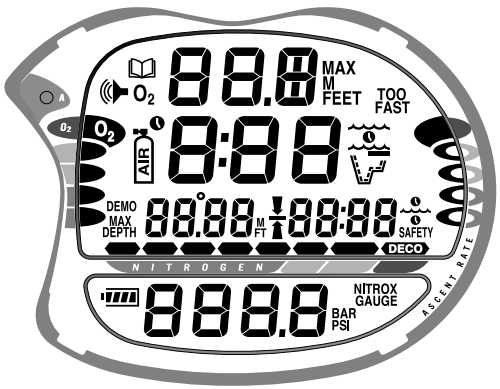
Fig. 90 - Battery Installation

Fig. 91 -Hatch Installed

Inspection

- Activate the unit and watch carefully as it performs a full diagnostic and Battery check, and enters Surface Mode.
- Observe the LCD display to ensure it is consistently clear and sharp in contrast throughout the screen.

WARNING: If any portions of the display are missing or appear dim, or a Low Battery Condition is indicated, return your ATMOS^{ai} to an Authorized AERIS Dealer for a complete evaluation before attempting to use it.



Diagnostic Mode

REFERENCE

DECOMPRESSION MODEL

The Decompression Model used by the ATMOS ai is based on the no decompression multilevel repetitive dive schedules successfully tested by Dr. Ray Rogers and Dr. Michael Powell. These tests did not include repetitive dives deeper than 90 feet (27 meters) or decompression dives. Due to the present unavailability of statistical data, ATMOS ai decompression predictions are based on U.S. Navy theory.

TISSUE COMPARTMENT CONTROL

The ATMOS ai tracks twelve tissue compartments with halftimes ranging from 5 to 480 minutes. The Nitrogen Bar Graph always displays the controlling compartment that is the only one important at that time. Think of the Nitrogen Bar Graph as twelve separate transparent displays laid on top of one another. The compartment that has filled up fastest is the only one the viewer can see from the top.

At any particular point, one compartment may be absorbing nitrogen, while another that was previously higher may be off-gassing. Figure 92 illustrates one compartment "handing over" control to another compartment at a different depth. **This feature of the Decompression Model is the basis of multilevel diving, one of the most important contributions the ATMOS ai offers you.**

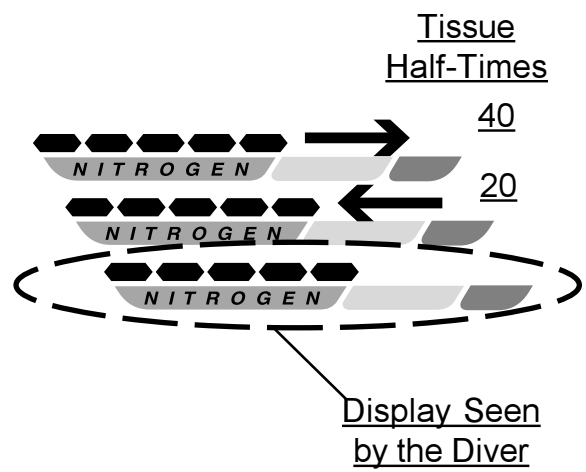


Fig. 92 - Tissue Compartment Control Hand Over

NO DECOMPRESSION LIMITS (NDLS)

Note how the No Decompression Limits for the ATMOS ai are contrasted with the U.S. Navy limits (Fig. 93). The ATMOS ai'S Dive Planner does not scroll past 190 feet (57 meters), or to depths at which projected dive time is less than one minute .

WARNINGS:

Using the ATMOS ai, just as using the U.S. Navy (or other) No Decompression Tables, is no guarantee of avoiding decompression sickness (i.e., the bends).

AERIS advocates responsible diving practices . Decompression diving is inherently hazardous and greatly increases your risk of decompression sickness - even when performed according to the computer's calculations.

In the event that you must make an emergency decompression dive, you must not make another dive for at least 24 hours.

ATMOS ai Depth feet	(meters)	NDL-mins. Eng (Metric)	U.S.N. NDL mins.
30	(9)	260 (283)	- - -
35		- - -	310
40	(12)	137 (144)	200
50	(15)	81 (85)	100
60	(18)	57 (59)	60
70	(21)	40 (41)	50
80	(24)	30 (32)	40
90	(27)	24 (25)	30
100	(30)	19 (20)	25
110	(33)	16 (17)	20
120	(36)	13 (14)	15
130	(39)	11 (11)	10
140	(42)	9 (9)	10
150	(45)	8 (8)	5
160	(48)	7 (7)	5
170	(51)	7 (6)	5
180	(54)	6 (6)	5
190	(57)	5 (5)	- - -

Fig. 93 - NDL Comparison

OXYGEN EXPOSURE LIMITS (OTLS)

Predicted exposure limits and oxygen calculations of the ATMOS ai are based on maximum exposure durations published by the National Oceanic and Atmospheric Administration in the October 1991 NOAA Diving Manual (Fig. 94).

Both central nervous system (CNS) oxygen toxicity and pulmonary oxygen toxicity were taken into consideration when the limits were published by NOAA.

Although CNS oxygen toxicity is considered the primary constraint for higher levels of PO2, there are circumstances in which pulmonary oxygen toxicity can limit exposures.

CNS oxygen toxicity is not considered likely at PO2 levels below 1.30 ATA. It is however related to the diver's work level. Performing strenuous tasks could cause the symptoms of oxygen poisoning to occur at PO2 levels lower than they normally would appear during casual recreational diving.

⚠ WARNING: The nitrox features of the ATMOS ai are intended for use only by recreational divers trained for nitrox diving by an instructor certified by a recognized training agency to teach diving with nitrox.

PO2 (ATA)	Maximum Exposure Time Per Dive (Min)	Maximum Exposure Time Per 24hr (Min)
0.60	720	720
0.70	570	570
0.80	450	450
0.90	360	360
1.00	300	300
1.10	240	270
1.20	210	240
1.30	180	210
1.40	150	180
1.50	120	180
1.60	45	150

Fig. 94 - OTLS

Diving with enriched nitrogen-oxygen (nitrox) mixtures requires special knowledge of the variations imposed upon divers, their activities, and their equipment by the increased percentage of oxygen. AERIS recommends completion of a specialized Nitrox training course by a recognized training agency prior to diving with any enriched nitrogen-oxygen (nitrox) mixtures.

⚠ **WARNING: In the event that you exceed the maximum limit of per dive allowable oxygen exposure, it is recommended that you allow a surface interval of at least 2 hours before reentering the water. If you exceed the maximum limit of 24 hour period allowable oxygen exposure, you should allow a surface interval of at least 24 hours before reentering the water.**

ALTITUDE DIVING

Diving at high Altitude requires special knowledge of the variations imposed upon divers, their activities, and their equipment by the decrease in atmospheric pressures. AERIS recommends completion of a specialized Altitude training course by a recognized training agency prior to diving in high Altitude lakes or rivers.

Atmospheric pressure decreases as Altitude increases above sea level. Weather systems and ambient temperature also affect barometric pressures. Consequently, depth reading instruments that do not compensate for the decrease in ambient pressure indicate depth readings shallower than the depth they are actually at.

The ATMOS ai automatically compensates for decreased ambient pressures for Altitudes between 2,000 (610 meters) and 14,000 feet (4,267 meters). Its program contains a high altitude algorithm that reduces no decompression and oxygen exposure limits to add a larger zone of caution.

The ATMOS ai senses ambient pressure when it is activated, every 15 minutes while it is activated, or every 30 minutes when it is not activated. At an Altitude of 2,000 feet (610 meters), it will automatically recalibrate itself to measure depth in feet of fresh water rather than feet of sea water. It will then readjust the no decompression and oxygen limits at additional intervals of 1,000 feet (305 meters). Therefore, when returning to lower Altitudes, diving should not be conducted until the unit automatically clears of any residual nitrogen and oxygen loading and resets to operate at the new lower Altitude.

⚠ **WARNING: The ATMOS ai will not sense ambient pressures or provide Altitude compensation when it is wet. DO NOT dive at any different Altitude until the unit shuts off and is reactivated at the new Altitude.**

If the unit is activated at elevations higher than 14,000 feet (4,267 meters), it will perform a diagnostic check followed by immediate shutdown.

FLYING AFTER DIVING

In 1990 the Undersea and Hyperbaric Medical Society (UHMS) published a set of guidelines aimed at minimizing the possibility of decompression sickness due to **flying** too soon **after diving**. The UHMS suggests* divers using standard air cylinders and exhibiting no symptoms of decompression sickness wait 24 hours after their last dive to fly in aircraft with cabin pressures up to 8,000 feet. (2,440 meters). The two exceptions to this recommendation are:

- If a diver had less than 2 hours total accumulated dive time in the last 48 hours, then a 12 hour surface interval before flying is recommended.
- Following any dive that required a decompression stop, flying should be delayed for at least 24 hours, and if possible, for 48 hours.

* excerpted from "The UHMS Flying After Diving Workshop"

Since the 1990 UHMS guidelines were introduced, data from the Diver's Alert Network (DAN) was introduced that resulted in DAN's position** that "A minimum surface interval of only 12 hours would be required in order to be reasonably assured a diver will remain symptom free upon ascent to altitude in a commercial jet airliner (altitude up to 8,000 feet/2,440 meters). Divers who plan to make daily, multiple dives for several days, or make dives that require decompression stops, should take special precautions and wait for an extended surface interval beyond 12 hours before flight".

Both the UHMS and DAN agree that "There can never be a flying after diving rule that is guaranteed to prevent decompression sickness completely. Rather, there can be a guideline that represents the best estimate for a conservative . . . surface interval for the vast majority of divers. There will always be an occasional diver whose physiological makeup or special diving circumstances will result in the bends".

To reduce the risk of developing decompression sickness after a single no decompression dive, current guidelines suggest waiting 12 hours prior to exposure to atmospheric pressures equivalent to 1,000 feet (330 meters) above sea level, or greater. When repetitive dives are conducted during the same day, or period of days, it is suggested that the interval be increased to a minimum of 24 hours. Note that land travel to higher elevations after diving must also be considered as an exposure to altitude.

** excerpted from "DAN's Position on Recreational Flying After Diving"

CONCLUSION

The ATMOS ai is an informational tool whose entire worth depends on understanding all of its features and functions, and using it correctly.

Learn how to use it and use it wisely. Be a Responsible Diver!

SPECIFICATIONS

CAN BE USED AS

- Air Computer
- Nitrox Computer
- Digital Depth Gauge/Timer

NO DECOMPRESSION MODEL

Basis:

- Modified Haldanean Algorithm
- 12 tissue compartments

Data Base:

- Diving Science and Technology (DSAT) - Rogers/Powell

Performance:

- Tissue compartment halftimes (mins.) Spencer's "M" values
  5, 10, 20, 40, 80, 120, 160, 200, 240, 320, 400, 480
- Reciprocal subsurface elimination
- 60 minute surface credit control for compartments faster than 60 minutes
- Tissue compartments tracked up to 24 hours after last dive

Decompression Capabilities:

- Decompression stop ceilings at 10, 20, 30, 40, 50, 60 ft (3, 6, 9, 12, 15, 18 m)

Altitude Algorithm:

- Based on NOAA tables

Oxygen Exposure Limits:

- Based on NOAA tables

OPERATIONAL MODES

- Activation/Diagnostic
- Surface
- Dive Planner
- Time to Fly Countdown
- Desaturation Countdown
- Dive Log (Date / Time, Nitrogen, Oxygen)

- Set Mode 1:
  - FO2 (Air, 21 - 50 %)
  - Max Depth Alarm (30 - 330 ft /9-99 m)
  - Elapsed Dive Time Alarm (0:10 - 3:00 hr:min)
  - PC Interface (to Download data)

- Set Mode 2:
  - Units of Measure (Imperial / Metric)
  - Hour Format (12 / 24)
  - Time (Hour, Minute)
  - Date (Year, Month, Day)
  - Audible Alarm / LED Warning (On/Off)
  - Max Nitrogen Bar Graph Alarm (1 - 8 segments)
  - Turn Pressure Alarm (1000 - 3000 psi/69 - 205 bar)
  - End Pressure Alarm (300 - 1500 psi/20 - 104 bar)
  - Dive Time Remaining Alarm (0 - 20 min)
  - Max PO2 Alarm (1.20 - 1.60 ATA)
  - FO2 50% Default (On/Off)
  - Backlight Duration (0 / 3 / 7 sec)
  - Sampling Rate (2/15/30/60 sec; 2/5/10 ft; .5/1.5/3 m)
  - Digital Gauge Mode (On / Off)
  - Water Activation (On / Off)

- Simulator (Demo) Mode

SPECIFICATIONS (CONTINUED)

OPERATIONAL MODES (continued)

- No Decompression Dive:
  - #1 - Current Depth, Dive Time Remaining, Max Depth, Elapsed Dive Time, Tank Pressure, Bar Graphs
  - #2 - Current Depth, Dive Time Remaining, Temperature, Time of Day, Tank Pressure, Bar Graphs
  - #3 - (only if a nitrox dive) - Current Depth, Dive Time Remaining, Current PO2, Tank Pressure, Bar Graphs
  - Secondary - Current Depth, Air Time Remaining, Max Depth, Elapsed Dive Time, Tank Pressure, Bar Graphs
  - Safety Stop - Current Depth, Dive Time Remaining, Stop Depth/Time, Tank Pressure, Bar Graphs
- Decompression Dive:
  - #1 - Current Depth, Total Ascent Time, Stop Depth / Time, Tank Pressure, Bar Graphs
  - #2 - Current Depth, Total Ascent Time, Max Depth, Elapsed Dive Time, Tank Pressure, Bar Graphs
  - #3 - (only if a nitrox dive) - Current Depth, Total Ascent Time, Current PO2 value, Bar Graphs
  - Secondary - Current Depth, Air Time Remaining, Stop Depth/Time, Tank Pressure, Bar Graphs
- Violation types - Conditional, Delayed, and Immediate/Gauge
- High PO2 (1.20 - 1.60 ATA)
- High Oxygen Accumulation (allowed per dive or 24 hour period)

DISPLAY RANGE/RESOLUTION

Numeric Displays:	Range:	Resolution:
• Dive Number	0 - 24	1
• Depth	0 - 399 ft (0 - 120 m)	1 ft (.1 m / 1 m > 99.9 m)
• Maximum Depth	399 ft (120 m)	1 ft (.1 m / 1 m > 99.9 m)
• FO2 Set Point	Air, 21 - 50 %	1 %
• PO2 Value	0.00 - 5.00 ATA	.01 ATA
• Dive Time Remaining	0:00 - 9:59 hr:min	1 minute
• Total Ascent Time	0:00 - 9:59 hr:min	1 minute
• Decompression Stop Time	0:00 - 9:59 hr:min	1 minute
• Elapsed Dive Time	0:00 - 9:59 hr:min	1 minute
• Surface Time	0:00 - 23:59 hr:min	1 minute
• Dive Log Surface Interval	0:00 - 23:59 hr:min	1 minute
• Temperature	0 to 99 F (-10 to 60 C)	1 degree
• Cylinder Pressure	0 - 5000 psi (345 bar)	10 psi (.5 bar)

SPECIFICATIONS (CONTINUED)

DISPLAY RANGES/RESOLUTION (continued)

Numeric Displays:	Range:	Resolution:
• Time to Fly	23:50 - 0:00 hr:min* (* starting 10 min after the dive)	1 minute
• Time to Desaturate	23:50 - 0:00 hr:min* (* starting 10 min. after the dive)	1 minute
• Temperature	0 to 99°F (-9 to 60°C)	1°

Special Displays:	Occurrence
• Diagnostic Display	After Manual Activation
• Out of Range (- - -)	>330 feet (>99.9 meters)
• Gauge Mode Countdown Timer	23:50 to 0:00 hr:min (after violation)

BAR GRAPHS

Nitrogen Bar Graph:	segments
• No Decompression zone (green)	5
• No Deco Caution zone (yellow)	2
• Decompression Warning zone (red)	1

Oxygen (O2) Bar Graph:	segments
• Normal zone (green)	3
• Caution zone (yellow)	1
• Danger zone (red)	1

Ascent Rate Indicator:	60 feet (18 m) and Shallower			Deeper than 60 feet (18 m)		
	segments	feet/min	meters/min	segments	feet/min	meters/min
	0	0 - 10	0 - 3	0	0 - 20	0 - 6
• Normal Zone (Green)	1	11 - 15	3.5 - 4.5	1	21 - 30	6.5 - 9
• Normal Zone (Green)	2	16 - 20	5 - 6	2	31 - 40	9.5 - 12
• Normal Zone (Green)	3	21 - 25	6.5 - 7.5	3	41 - 50	12.5 - 15
• Caution Zone (Yellow)	4	26 - 30	8 - 9	4	51 - 60	15.5 - 18
• Too Fast Zone (Red - flashing)	5	> 30	> 9	5	> 60	> 18

SPECIFICATIONS (CONTINUED)

OPERATIONAL PERFORMANCE

Function:	Accuracy:
• Depth	±1% of full scale
• Timers	1 second per day

Dive Counter:
- Displays Dives #1 to 24, 0 if no dive made yet
- Resets to Dive #1, upon reactivation after shutdown

Dive Log Mode:
- Stores 24 most recent dives in memory for viewing
- After 24 dives, adds 25th dive in memory and deletes the first dive

Altitude:
- Operational from sea level to 14,000 feet (4,267 meters) elevation
- Compensates for Altitude at elevations higher than 2,000 feet (610 meters) elevation
- No adjustments are made while it is wet

Power:

• Battery	1 - 3 vdc, type CR2450 Lithium battery
• Shelf life	Up to 5 years
• Replacement	User replaceable (annual recommended)
• Life expectancy	100 dive hours (if 1 - 1 hour dive per dive day) to over 300 dive hours (if 3 - 1 hour dives per dive day)

SPECIFICATIONS (CONTINUED)

OPERATIONAL PERFORMANCE (continued)

Activation:
- Manual - push button (recommended)
- Automatic - by immersion in water (as a backup, if set ON)
- H2O graphic indicates Wet Contacts are bridged (unit must be dried prior to transport or storage).
- Cannot be manually activated deeper than 4 feet (1.2 meters), if the Water Activation feature is set OFF.
- Cannot be activated at elevations higher than 14,000 feet (4,267 meters)

Shutoff:
- Automatically shuts off if no dive is made within 120 minutes after initial activation. Reactivation required.
- Automatically shuts off 24 hours after last dive (will reactivate if the H2O graphic is displayed).
- Cannot be shut off manually.

Setting FO2:
- Automatically set for 'Air' upon activation
- Remains set for Air unless an FO2 numerical value is set
- Nitrox set points of Air and from 21 to 50 %
- If set for 21%, remains set for 21% until changed
- If set for >21%, it reverts to 50% 10 minutes after the dive, if the FO2 Default is ON. If the FO2 Default is OFF, the value will remain at the value set. Defaults to Air upon shutdown.

Operating Temperature:
- In Water - between 28 and 95 °F (-2 and 35 °C)
- In Air - between 20 and 140 °F (-6 and 60 °C)

ACCESSORIES (optional items available from your Authorized AERIS Dealer)
- Lens Guard
- PC download package (hardware and software)
- Battery Kit - includes 1 battery, 1 battery hatch o-ring, silicone grease

GLOSSARY

Air Dive - A dive conducted using air (approximately 21% oxygen & 79% nitrogen) as the breathing gas.
Algorithm - A step-by-step mathematical formula designed to accomplish a particular result (i.e. Dive Time Remaining in the ATMOS ai).
Alternate Display - Additional information accessible by pressing a control button.
Altitude Dive - A dive made at an elevation above sea level (2,000+ ft. / 610+ m.) where a different set of no decompression tables is used .
Ascent Rate - The speed that a diver ascends toward the surface.
Audible Alarm - A computer emitted tone that alerts the diver to potential danger.
Battery Indicator - An icon displayed while in Surface Mode, flashes to indicate a Low Battery Condition.
Caution Zone - The yellow sections of the Nitrogen Bar Graph , O2 Bar Graph, and Variable Ascent Rate Indicator that give a visual warning of a diver's proximity to decompression limits, oxygen tolerance limits, and ascent rate, respectively.
Ceiling - See decompression ceiling.
Clean Dive - A dive preceded by 24 hours of no diving activity.
CNS - Abbreviation for the Central Nervous System of the body.
Competitive Dive - A dive conducted for profit or prize.
Compartment - A term applied to the hypothetical modeling of nitrogen absorption in the tissues (more accurate than the term "tissue" because dive computer models have no direct relation to human tissues).
DCS - Abbreviation for decompression sickness, i.e., "the bends".
DECO - Abbreviation for Decompression.
Decompression Ceiling - The shallowest depth a diver may reach upon ascent without risking decompression sickness.
Decompression Stop - The depth(s) at which a diver must pause during ascent to allow absorbed nitrogen to escape naturally from the tissues.
Depth Sensor - an electro-mechanical device that converts water pressure into an electrical signal, that is converted to a visual depth display.
DEMO - Abbreviation for demonstration, a variety of modes that display sample dives.
Diagnostic Mode - The first display seen on dive computers after initial activation during which time a self–check for internal faults is performed.
Display - A visual readout of information.
Dive DownLoader - An AERIS name for a PC interface hardware/software package.
Dive Log Mode - A computer display of previous dive information.
Dive Planner - A display of available dive times at 10 foot (3 meter) intervals from 30 to 160 feet. (9 to 48 meters) used when dive planning.
Dive Time Remaining - A display of the time before a diver must surface based on no decompression status.

GLOSSARY (CONTINUED)

Elapsed Dive Time - The total time spent underwater during a dive between 5 feet (1.5 meters) on initial descent to 3 feet (1 meter) on final ascent.
FO2 - The fraction (percent / 100) of oxygen (O2) in the breathing gas mixture.
Icon - a small pictorial representation of an operational mode
LCD - Abbreviation for liquid crystal display, an easily viewed low voltage display usually found on dive computers
Maximum Depth - The deepest depth attained during a dive.
Mode - A specific set of functions in a dive computer.
Multi-level Dive - A type of dive profile where the diver spends various times at different depths (opposite of a "Square Wave" dive profile).
Nitrogen Bar Graph - A graphic display of simulated nitrogen absorption on AERIS dive computers.
Nitrox - A nitrogen-oxygen breathing gas mixture that contains a higher fraction of oxygen than air.
Nitrox Dive - A dive conducted using nitrox (22 to 50 % O2) as the breathing gas.
NOAA - Abbreviation for National Oceanic and Atmospheric Administration.
No Deco - Abbreviation for No Decompression.
No Deco Time Remaining - The amount of dive time remaining based on no-decompression status.
No Decompression - Any part of a dive where the diver can surface without requiring a decompression stop.
O2 Bar Graph - A visual representation of oxygen accumulation on a dive computer display.
OTU - Abbreviation for oxygen tolerance unit. A Hamilton's Repex method term for oxygen dose.
Out of Range - The point at which a dive computer can no longer supply correct dive information.
Oxygen Tolerance - Dose or exposure to the physiological affects of elevated levels of oxygen.
Oxygen Toxicity - The adverse physiological affects of exposure to elevated levels of oxygen.
Partial Pressure - The proportion of the total pressure contributed by a single gas in a mixture of gases.
PO2 - Partial pressure of oxygen. The proportion of total pressure of a gas mixture contributed by oxygen.
Repetitive Dive - Any dive that takes place within 12 hours of a previous dive.
Safety Stop - A depth at which a diver may choose, but is not required, to pause during ascent to allow absorbed nitrogen to escape naturally from the tissues.
Square Wave Dive - A type of dive profile where the entire dive is spent at one depth between descent and ascent.
Tissue - See Compartment.
Tissue Compartment - See Compartment.
Transducer - An electro-mechanical device in a dive computer that acts as a depth or pressure sensor.
Transition Period - The first 10 minutes of surface time after ascending above 3 feet (1 meter) from a dive.
Variable Ascent Rate Indicator - A display that shows ascent rate as a bar graph alongside a color coded indicator.

INSPECTION / SERVICE RECORD

Serial Number _____

Date of purchase _____

Purchased from _____

Below to be filled in by an Authorized AERIS Dealer:

Date	Inspection / Service Performed	Dealer / Technician

NOTES

RESET FEATURE

This dive computer is configured with a RESET feature that allows data to be cleared, including Nitrogen and Oxygen calculations, FO2 set point, Log Mode entries, and Download data.

WARNING: Reset after a dive and subsequent use for a repetitive dive conducted by the same diver could result in serious injury to or death.

RESET PROCEDURE

- While in SURFACE MODE (new activation period or greater than a 10 minute post dive surface interval), press the Advance (Front) button one (1) time to access PLAN MODE.
- While 30 feet (or 9 meters) is displayed in the PLAN MODE, press and hold Both buttons until SET 2 appears, then release the buttons.
- Press and release the Advance (Front) button to display the first 2 digits of the KEY CODE, flashing as 00.
- Press and release the Select (Bottom) button to increase the digits to **01**.
- Press and release the Advance (Front) button again to display the second 2 digits of the KEY CODE, flashing as 00.
- Press and release the Select (Bottom) button to increase the digits to **01**.
- Press and release the Advance (Front) button to complete the RESET operation and turn the unit OFF.

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