

AERIS

Personal Dive Computer

Safety & Reference Manual

(cover art provided separately)

THIS MANUAL

The intent of this manual is to consolidate information that is common to the various models of AERIS dive computers.

It is imperative that you read and understand this manual, as well as the OPERATING MANUAL for your specific model dive computer prior to diving with the unit.



NOTE: In the event that information provided in the OPERATING MANUAL varies from information provided in this Safety and Reference Manual, the OPERATING MANUAL shall be the overriding document to refer to.

As you read through this manual, note that the page headers identify information on that page as Safety or Reference material. Warnings and Safety Recommendations are outlined with a dotted box similar to this page.

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AERIS Dive Computer Safety and Reference Manual

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REFERENCE

SYMBOLS

Symbols used in this manual and the dive computer operating manuals to bring your attention to information having various degrees of importance are -



NOTE: Represents important information.



CAUTION: Denotes instances that if not handled properly could result in damage to the dive computer.



WARNING: Emphasizes conditions and procedures that could result in serious injury or death if not corrected or followed properly.



NOTE: Information in this manual relating to nitrox and oxygen features only applies if you are using a dive computer specifically set for dives using nitrox as a breathing gas.

Throughout this manual and the operating manuals, reference is made to the term 'breathing gas'. The rationale being that most AERIS dive computers can be used for 'air' dives or 'nitrox' dives. For clarity these terms are defined as -

Breathing Gas - the gaseous mixture breathed during a dive.

Air - a breathing gas that contains approximately 21% oxygen and 79% nitrogen (nature's common nitrogen-oxygen mixture).

Nitrox - a nitrogen-oxygen breathing gas that contains a higher fraction of oxygen than Air (22 to 99% O₂).

INTRODUCTION

Welcome to AERIS and thank you for choosing one of the finest dive computers available Worldwide !

AERIS dive computers have a wide array of features and functions that are described in detail in the Operating Manual for the specific model that you have.

It is extremely important that you read the Operating Manual and understand it completely before attempting to use your new AERIS dive computer.

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.

While underwater with AERIS dive computers that have Bar Graphs, you can quickly verify that you're not getting too close to the no decompression limit or the limit for exposure to oxygen (accumulation), or ascending too fast.

Remember that 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. Remember also that the dive computer does not actually measure and test the composition of your body tissue and blood.

SAFETY



WARNINGS and SAFETY RECOMMENDATIONS Relating to INTENDED USE

- **AERIS dive computers are intended for use by recreational divers who have successfully completed a recognized course in SCUBA diving, and have knowledge of the potential risks and hazards of SCUBA diving.**
- **Oxygen features are intended for use by divers who have successfully completed a recognized course in diving with enriched nitrogen-oxygen (Nitrox) mixtures, and have knowledge of the potential risks and hazards of diving with Nitrox.**
- **AERIS dive computers are NOT for use by commercial divers.**
- **AERIS dive computers should NOT be utilized for any competitive, or repetitive square wave dives as they are intended solely for recreational use and multilevel diving.**
- **As with all underwater life support equipment, improper use or misuse of AERIS dive computers can result in serious injury or death.**
- **If you do not fully understand how to use the dive computer, or if you have any questions, you should seek instruction in its use from your Authorized AERIS Dealer before diving with it.**

REFERENCE

DECOMPRESSION MODEL

The decompression model used by an AERIS dive computer 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, decompression predictions for AERIS dive computers are based on U.S. Navy theory. Therefore, pay special attention to the Warnings and Safety Recommendations that have been provided in this manual.

The programs within an AERIS dive computer 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 dive computer model is based upon the latest research and experiments in decompression theory. **Still, using an AERIS dive computer, just as using the U.S. Navy (or other) No Decompression Tables, is no guarantee of avoiding decompression sickness.**

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.

MULTIPLE TISSUE TRACKING

An AERIS dive computer tracks twelve tissue compartments with halftimes ranging from 5 to 480 minutes. The Nitrogen Loading Bar Graph provided on most AERIS dive computers always displays the controlling compartment that is the only one important at that time.

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SAFETY



WARNINGS and SAFETY RECOMMENDATIONS relating to ALTITUDE

- 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.
- Altitude compensation provided takes place at 1,000 foot (305 meter) intervals beginning at 2,000 feet (610 meters), or 3,000 feet (915 meters), elevation. Elevation is based upon samples of Ambient Pressure taken every 30 minutes when the computer is not activated and every 15 minutes when it is activated. Samples are not taken and compensation is not provided at any time when the unit is wet.
- When returning to lower altitudes, diving should not be conducted until the dive computer automatically clears of any residual nitrogen, and oxygen, loading and resets to operate at the new altitude.
- Repetitive dives in a series should only be conducted at the same Altitude as that of the first dive of that series. Repetitive dives made at a different Altitude will result in an error equal to the difference in barometric pressure, and possibly a false dive mode with erroneous data.
- If an AERIS dive computer is activated at an elevation higher than 14,000 feet (4,270 meters), it will immediately shutdown or revert to Watch Mode.

REFERENCE

MULTIPLE TISSUE TRACKING (continued) -

Think of the Nitrogen Loading Bar Graph as twelve separate transparent displays laid on top of one another. The tissue compartment that has filled up fastest is the only one the viewer can see from the top.

At any particular point, one tissue compartment may be absorbing nitrogen, while another that was previously higher may be off gassing.



NOTE: This feature of the Decompression Model is the basis of multilevel diving, one of the most important contributions that an AERIS dive computer offers you.

ALTITUDE DIVING

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.

AERIS dive computers automatically compensate for decreased Ambient Pressures for Altitudes between 2,000 feet (610 meters), or 3,000 feet (915 meters), and 14,000 feet (4,270 meters). Their programs contain a high altitude Algorithm that reduces No Decompression and Oxygen Exposure Limits to add a larger zone of caution.

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SAFETY

NO DECOMPRESSION LIMITS

OXYGEN EXPOSURE LIMITS (Nitrox models only)

Depth FT (M)	AERIS		U.S. Navy	Maximum Exposure Time		
	NDL-mins.*		NDL -mins.	PO2 (ATA)	Per Dive (mins.)	Per 24hr (mins.)
30 (9)	260 (283)		---			
35	---		310			
40 (12)	137 (144)		200			
50 (15)	81 (85)		100			
60 (18)	57 (59)		60	0.60	720	720
70 (21)	40 (41)		50	0.70	570	570
80 (24)	30 (32)		40	0.80	450	450
90 (27)	24 (25)		30	0.90	360	360
100 (30)	19 (20)		25	1.00	300	300
110 (33)	16 (17)		20	1.10	240	270
120 (36)	13 (14)		15	1.20	210	240
130 (39)	11 (11)		10	1.30	180	210
140 (42)	9 (9)		10	1.40	150	180
150 (45)	8 (8)		5	1.50	120	180
160 (48)	7 (7)		5	1.60	45	150
170 (51)	7 (6)		5			
180 (54)	6 (6)		5			
190 (57)	5 (5)		5			

* Values may vary slightly. Refer to the Operating Manual for the specific model dive computer.

REFERENCE

NITROGEN LOADING BAR GRAPH

The Nitrogen Loading Bar Graph offers you a convenient way to consistently monitor how close you are coming to the No Decompression Limit. As you use your dive computer and become familiar with the Nitrogen Loading Bar Graph, you will notice that it displays fewer segments for shorter dive times and shallower depths. Use this feature to adjust conservatism to your diving needs. Select models also feature a Setting that allows a Conservative Factor to be added that reduces No Decompression Times.

Use the No Decompression Caution Zone as a visual reference to place a wider margin of protection between you and the No Decompression Limit.

AERIS suggests that the Nitrogen Loading Bar Graph should always be in the No Decompression zone when leaving the water.

NO DECOMPRESSION LIMITS

For most depths, an AERIS dive computer provides somewhat less no decompression times than the U.S. Navy Tables. However, while the No Decompression Limits may be less, you will receive increased allowable dive times as you take advantage of the multilevel dive capabilities offered by the AERIS dive computer.

Refer to the table on page 10 for a comparison of AERIS and U.S. Navy No Decompression Limits for a 'clean dive' (no residual nitrogen in the system from previous dives). Note that AERIS NDLS do not extend beyond 160 FT (48 M), or 190 FT (57 M), the limit to which the Plan Mode Sequence will scroll.

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SAFETY



WARNINGS and SAFETY RECOMMENDATIONS relating to UNIT OPERATION

- Current model AERIS dive computers will activate automatically by immersion in water, unless the Wet Activation feature is set Off. Ensure that you read and understand the Operating Manual for your specific dive computer prior to diving with it.
- An AERIS dive computer that has Wet Activation set ON will not enter Dive Mode on a first dive of a series unless the contacts become wet at 5 FT (1.5 M) during descent. If the contacts become wet at a later time or the button is pressed to activate to unit, it will turn ON then shut OFF.
- If an AERIS dive computer is activated at elevations higher than 14,000 feet (4,270 meters), it will perform a diagnostic check followed by immediate shut-down or revert to Watch Mode.
- During activation and diagnostics, if any display or function varies from the information presented in the Operating Manual, return the unit to an Authorized AERIS Dealer for inspection.
- If a Low Battery condition is indicated , AERIS strongly recommends that you DO NOT dive until the battery is replaced.
- Before each Nitrox dive, the FO₂ Set Point(s) of the dive computer must be verified, or set, to match the percentage of oxygen in the Nitrox mix (or mixes) being used.

REFERENCE

OXYGEN EXPOSURE LIMITS

Predicted exposure limits and oxygen calculations of AERIS Nitrox dive computers are based on maximum exposure durations published by the National AERIS and Atmospheric Administration in the October 1991 NOAA Diving Manual. Refer to the table on page 10.

DIVE TIME REMAINING

One of the most important pieces of information on AERIS dive computers is the 'Dive Time Remaining numeric display'. The dive computer constantly monitors no decompression status and oxygen exposure. Integrated models also monitor the rate of breathing gas consumption.

The Dive Time Remaining* display will indicate the time that is more critical for you at that particular moment (i.e.; whichever time is the least amount available). The specific time being displayed is identified by a representative icon or symbol.

(* 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 (10 or 12, depending on the specific model dive computer). 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 along with the No Decompression Dive icon and graphically as the Tissue Loading Bar Graph.

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SAFETY



WARNINGS and SAFETY RECOMMENDATIONS relating to DIVE PLANNING

- The Plan Mode Sequence provides predicted times for subsequent dives. You may actually have *less time available* than indicated because of breathing gas quantity and consumption, or oxygen accumulation.
- AERIS strongly recommends that you review the Plan Mode Sequence prior to every dive to help you Plan your dive as required to avoid exceeding no decompression or oxygen exposure limits. This is especially important for repetitive dives, when the Plan Mode Sequence will indicate for you the adjusted no decompression dive times that are available to you on your next dive, based on any residual nitrogen or oxygen accumulation (whichever is in control) following your last dive and surface interval.
- To reduce your risk of exposure to decompression sickness, oxygen toxicity, and the effects of excessive ascent rates, you should keep each of the bar graphs (if available) in normal zones throughout your dives.
- Never share or exchange a dive computer with another diver, or use another dive computer for a repetitive dive.
- It is extremely important that you read and understand the Operating Manual completely before attempting to dive using your AERIS dive computer.

REFERENCE

No Decompression Dive Time Remaining (continued) -

As you ascend from depth following a dive that has approached the no decompression limit, the Nitrogen Loading 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.

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 (Nitrox model dive computers only)

Oxygen accumulation (exposure) during a dive, or 24 hour period, appears graphically as the Oxygen Accumulation (O₂) Bar Graph. 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, and/or Air Time Remaining, calculations for that depth will be controlled by oxygen. Oxygen Time Remaining will then appear as the Dive Time Remaining display identified by an O₂ icon or graphic appearing.

As oxygen accumulation continues to increase, the O₂ Bar Graph will enter the Normal/ Caution Zone.

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SAFETY



WARNINGS and SAFETY RECOMMENDATIONS relating to OXYGEN

- **Maximum limits for exposure to oxygen should not be exceeded, and the consequences of CNS (Central Nervous System) oxygen toxicity can be severe, resulting in Gran Mal convulsions and drowning.**
- **Conducting repetitive dives using enriched nitrogen-oxygen mixtures (Nitrox) can lead to oxygen buildup, increasing oxygen saturation and the risk of pulmonary oxygen toxicity.**
- **If you exceed the maximum per dive allowable oxygen exposure limit, it is recommended that you allow a surface interval of at least 2 hours before re-entering the water.**
- **If you exceed the maximum 24 hour period allowable oxygen exposure limit, it is recommended that you allow a surface interval of at least 24 hours before reentering the water.**
- **Allowing the O2 Bar Graph to enter the Danger (alarm) zone greatly increases your risk of CNS oxygen toxicity, and may result in serious injury or death.**
- **It should not be considered that the capabilities built into AERIS dive computers provide any implied approval or consent from AERIS for individuals to exceed the defined limits of recreational dive profiles, as agreed on by all internationally recognized training agencies.**

REFERENCE

Air Time Remaining (integrated model dive computers only)

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

Air Time Remaining is calculated using a patented algorithm that is based on the user's individual breathing gas consumption rate and depth. Tank pressure is measured once each second and an average rate of consumption is calculated over a 90 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 a safe ascent including any required decompression stops.

Air Time Remaining will fluctuate throughout your dive, decreasing as you dive deeper or breath heavier, and increasing as you ascend to shallower depths or relax your breathing efforts.

Air consumption and depth are continuously monitored, and Air Time Remaining reflects any change in your circumstances, such as when a buddy starts breathing from your octopus or you swim against a strong current and begin breathing more rapidly. The dive computer will recognize this change and adjust Air Time Remaining accordingly.

Air Time Remaining appears as the numeric Dive Time Remaining display when it is less than No Decompression Time Remaining and Oxygen Accumulation Time Remaining.



NOTE: Air Time Remaining can be viewed when an Alternate Display is accessed.

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SAFETY

RESPONSIBLE COMPUTER DIVING

- **Always Plan Each Dive**
- **Always Limit Your Dive to the Level of Your Training and Experience**
- **Always Make Your Deepest Dive First**
- **Always Make The Deepest Part of Every Dive First**
- **Check Your Dive Computer Often During the Dive**
- **Do a Safety Stop on Every Dive**
- **Allow an Adequate Surface Interval Between Each Dive**
- **Allow Adequate Surface Intervals Between Each Day of Diving (12 Hours or Until Your Computer Clears)**

THE CODE OF THE RESPONSIBLE DIVER

- **As a Responsible Diver, I understand and assume the risks I may encounter while diving.**

RESPONSIBLE DIVING BEGINS WITH

- **Diving within the Limits of my Ability and Training.**
- **Evaluating the Conditions before every dive and making sure they fit my Personal Capabilities.**
- **Being familiar with and checking my Equipment before and during every dive.**
- **Knowing my Buddy's Ability level as well as my own.**
- **Accepting the Responsibility for my own Safety on every dive.**



REFERENCE

Air Time Remaining (continued) -

When Air Time Remaining decreases to 5 minutes, the tank Pressure numerals will flash and an audible alarm will sound (unless set OFF). This means that only 5 minutes remain before your air supply will be reduced to the minimum level necessary to perform a safe ascent, any required decompression stops, a no decompression safety stop, and still provide a tank pressure reserve upon surfacing.

When the Air Time Remaining decreases to zero minutes, the audible alarm will sound again, indicating the need for an immediate safe ascent to your first decompression stop.

There is no need to panic. The dive computer has allowed for the air you will consume while making a safe controlled ascent, including that required for decompression stops, and still provide the surfacing tank pressure reserve.

Dive Time Remaining is not displayed numerically in Decompression Mode (No Decompression time is zero and in control). An alternate display can be accessed to view Air Time Remaining information.

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SAFETY



WARNINGS and SAFETY RECOMMENDATIONS relating to EXTREMES

- Special training, equipment, and support are necessary for diving deeper than the maximum recommended depth limit for recreational diving, generally agreed to be 130 FT (39 M) by most diving instruction authorities.
- Decompression diving, or diving deeper than 130 FT (39 M), will greatly increase your risk of decompression sickness.
- Decompression diving is inherently hazardous and greatly increases your risk of decompression sickness, even when performed according to the dive computer's calculations.
- Using a dive computer, just as using the U.S. Navy, or other, No Decompression Tables, is no guarantee of avoiding decompression sickness.
- It is extremely important that you read and understand the Operating Manual completely before attempting to dive using your AERIS dive computer.



NOTE: Refer to your Operating Manual for ascent rates and alarm values that pertain to your specific model dive computer.

REFERENCE

ASCENDING TO THE SURFACE

While ascending to shallower depths, the segments that have filled up the Nitrogen Loading Bar Graph will begin to recede, offering a graphic representation of your multilevel diving capability. By 'backing off' on the bar graph (maintaining fewer segments), you can establish a personal level of conservatism and margin of protection.

If you entered Decompression Mode, you must not complete your ascent until the Nitrogen Loading Bar Graph is at least inside the No Decompression Zone. You should make every effort to complete all of your ascents with the Nitrogen Loading Bar Graph inside of the No Decompression Zone.

If you have not entered Decompression Mode, a safety stop made between 10 and 20 FT (3 and 6 M) is strongly recommended as a standard procedure before completing your ascent.

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

Variable Ascent Rate Indicator™

Most AERIS dive computers are configured with a Variable Ascent Rate Indicator (bar graph) that shows how fast you are ascending. When you exceed the maximum ascent rate allowed for the depth you are at, the bar graph will enter the Alarm (Too Fast) zone. You will be alerted by all segments of the bar graph flashing which will stop when your ascent rate is slowed.

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SAFETY



WARNINGS and SAFETY RECOMMENDATIONS relating to DECOMPRESSION

- 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.
- 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.
- Exiting the water with the Nitrogen Loading Bar Graph in the Decompression zone greatly increases the risk of decompression sickness, and may result in serious injury or death.

REFERENCE

DECOMPRESSION

AERIS dive computers are sophisticated instruments designed with capabilities that go beyond the range of recreational diving with compressed air. They can help you to avoid and, if necessary, manage decompression.

Managing Decompression Stops

You should stay slightly deeper than the required stop depth indicated until the next shallower stop depth appears. Then, you can slowly ascend to, but not shallower than, that indicated ceiling stop depth. The amount of decompression credit time that you receive while at a decompression stop is dependent on depth, with slightly less credit given the deeper you are below the stop depth indicated.

Once all required decompression has been completed, the dive computer will switch to the No Decompression Dive Mode, as indicated by Total Ascent Time = 0:00 (mins.), and the Nitrogen Loading Bar Graph receding into the No Decompression Zone.

Dive Time Remaining then appears in place of Total Ascent Time, displaying No Decompression Dive Time remaining, or Oxygen Accumulation Time remaining, or Air Time remaining (whichever time is the least and in control).

VIOLATION MODES

When you exceed certain limits, AERIS dive computers alert you with visual and audible (select models) warnings and operate in special Violation modes.

These are referred to as Conditional, Delayed, and Immediate Violation Modes. Permanent Violation Mode and Gauge Mode are continuations of these.

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SAFETY



WARNINGS and SAFETY RECOMMENDATIONS relating to VIOLATIONS

- An AERIS dive computer 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 dive computer's design. If you are following these dive profiles, AERIS advises that you should not use an AERIS dive computer.
- If you exceed certain limits, the dive computer 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 functions of the unit for 24 hours after the dive in which a violation occurred.
- Select models of AERIS dive computers that feature Free Dive operating mode calculate nitrogen-oxygen while operating in Free Dive Mode. In the event that decompression is entered, the dive computer will enter Immediate Violation, locking out of other operating modes for 24 hours.
- It is extremely important that you read and understand the Operating Manual completely before attempting to dive using your AERIS dive computer.

REFERENCE



WARNING: Displays and alarms associated with Violation Modes are provided in the Operating Manual for your specific dive computer. Read and understand the Operating Manual prior to diving with your dive computer.

Conditional Violation Mode

Conditional Violation Mode is entered during Decompression Mode **if you ascend shallower than the Required Decompression Ceiling** Stop Depth displayed.

If you descend below the Required Stop Depth before 5 minutes have elapsed, the unit will continue to function in Decompression Mode. In this case, no off gassing credit will be given, and for each minute above the ceiling $1\frac{1}{2}$ minutes of penalty time is 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, at which time the unit will revert to the No Decompression Mode.

Delayed Violation Mode

Three conditions cause AERIS dive computers to enter the Delayed Violation Mode:

1. Staying above the Required Deco Stop Depth for more than 5 minutes.

Upon being alerted of this condition, you would need to descend below the Required Stop Depth and follow the Stop Depths and Times indicated toward the surface until the Nitrogen Loading Bar Graph recedes into the No Decompression Zone.

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REFERENCE

#2. Your Decompression requires a Ceiling Stop Depth 'between' 60 FT (18 M) and 70 FT (21 M).

Upon being alerted of this condition, you would need to ascend to just deeper than 60 FT (18 M), staying as close to 60 FT (18 M) as possible without causing the Total Ascent Time display to flash. When the Required Stop Depth indicates 50 FT (15 M), etc., you can then ascend to, but no shallower than those depths and continue decompressing.

The dive computer cannot accurately calculate decompression times for Stop Depths much greater than 60 FT (18M) and offers no indication of how much time spent underwater would result in the need for a greater stop depth.

#3. You exceed the maximum operating depth of 330 FT/99 M.

Upon being alerted of this condition, Current Depth will not be displayed until ascent is made to a depth shallower than 330 FT (99 M). Max Depth will not be displayed for the remainder of that dive.

Immediate Violation Mode

Five minutes after reaching the surface from a dive in which a Delayed Violation occurred, the dive computer will enter an Immediate Violation Mode.

It will also enter into an Immediate Violation Mode during a dive, if a ceiling stop depth much greater than 60 FT (18M) is required. This situation would be preceded by entering Delayed Violation Mode. The unit would then operate with limited functions in Violation Gauge Mode during the remainder of that dive and for 24 hours after surfacing.

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REFERENCE

Violation Gauge Mode

Underwater, the Violation Gauge Mode is a continuation of the Immediate Violation Mode that turns the dive computer into a digital instrument without any decompression or oxygen monitoring functions. Also, Dive Time Remaining will not be displayed.

After surfacing, Violation Gauge Mode does not provide the FO₂, Pre Dive Planning Sequence, or Time to Fly features. A countdown timer is provided to inform you of the time remaining before normal unit operation can resume with full features/functions.

Permanent Violation

Entering the Immediate Violation Mode, then Violation Gauge Mode, will result in loss of all decompression and oxygen monitoring functions for 24 hours after that dive. This condition is considered a Permanent Violation.

A surface interval of 24 consecutive hours must be served before the all functions are restored. If a dive is made during the 24 hour period, the countdown will reset to 24 hours.

UNEXPECTED LOSS OF DISPLAY

If your dive computer stops working for any reason, it is important that you have anticipated this possibility and are prepared for it. If not, wait 24 hours prior to using another dive computer.

If you dive in situations where your trip would be ruined or your safety would be jeopardized by losing the use of your dive computer, a backup instrument system (used side-by-side with the dive computer), or use of standard air (or nitrox) tables is highly recommended.

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REFERENCE

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* that 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).

* excerpted from "The UHMS Flying After Diving Workshop"

The 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.

Since the 1990 UHMS guidelines were introduced, data from 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).

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

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".

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REFERENCE

FLYING AFTER DIVING (continued) -

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 (305 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. Land travel to higher elevations after diving must also be considered as an exposure to altitude.

MAINTENANCE AND SERVICE

A dive computer must be protected from shock, excessive thermal conditions, chemical attack, and tampering. The housing, made of an impact resistant resin, is extremely shock resistant but susceptible to chemical attack and scratches. Protect the lens against scratches with a transparent AERIS Instrument Lens Protector or Gauge Guard. Small scratches will naturally disappear underwater.

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SAFETY



WARNINGS and SAFETY RECOMMENDATIONS relating to FLYING AFTER DIVING

- The longer you wait to fly (or travel to higher elevations) after diving, the more you will reduce your exposure to (risk of) decompression sickness.
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WARNINGS and SAFETY RECOMMENDATIONS relating to MAINTENANCE and SERVICE

- Never, under any circumstances, poke any object through any slots or holes of the module. Doing so may damage the depth sensor, possibly resulting in erroneous depth and/or dive time remaining displays.
- If you are in doubt about the accuracy of your unit's depth readings, DO NOT attempt to dive with it until it has been inspected by AERIS.
- Never pressure test the module in an air environment. Doing so may damage the depth sensor, possibly resulting in erroneous depth or time readings.
- Never spray aerosols of any kind on, or near, an AERIS instrument. The propellants may chemically attack the plastic.
- When a Low Battery condition is displayed prior to a dive, DO NOT attempt to dive with the dive computer until the battery is replaced.

REFERENCE

Operating Temperature

AERIS dive computers will operate in environments having air temperatures of 20 to 140°F (-6 to 60°C) and water temperatures of 28 to 95°F (-2 to 35°C). It is possible to damage the electronics if left exposed to intense direct sunlight, or in a hot confined space (like a car trunk). After the dive, cover the module and keep it out of the hot sun.

If inadvertently left in the direct sunlight for a long period, the LCD display may become totally black. If this occurs, immediately immerse the module in water. The display should recover its normal appearance after a few minutes. Damage from excess heat, or cold, is not covered by the product's limited warranty.

Cleaning

Soak and rinse your dive computer in fresh water at the end of each day of diving. Also, check the low pressure sensor guard cap, data port, and buttons to ensure they are free of any debris or obstructions.

Use lukewarm water, or a 50% solution of white vinegar and water, to soak and dissolve any salt crystals. After removal from the bath, place the module under gently running fresh water and towel dry before storing. Transport cool, dry, and protected.

Annual Inspections

Your dive computer 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).

(continued on page 32)

REFERENCE

Annual Inspections (continued) -

AERIS recommends that you continue to have this inspection performed every year to ensure your dive computer is working properly. The costs of annual inspections are not covered under the terms of the 2 year limited warranty.

To Obtain Service

Take your dive computer to an Authorized AERIS Dealer or send it to the nearest Regional Facility listed in the Operations Manual.

When shipping your unit be sure to:

- Record data in the Log or download it to your PC. All data will be erased when your unit receives factory service.
- Send only the dive computer. Do not attempt to remove the hose if it is an integrated model.
- Package it using a protective cushioning material.
- Include a legible note stating the specific reason for return, your name, street 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 if warranty service is being requested.
- Non-warranty service must be prepaid (call for an estimated cost).
- If you are sending the unit to AERIS USA, call or Email AERIS Customer Service to obtain a Return Authorization (RA) number.

REFERENCE

GLOSSARY

Air Dive - A dive conducted using air (approximately 21% oxygen & 79% nitrogen) as the breathing gas.

Air Time Remaining - A graphic display of remaining dive time based on a calculation of cylinder pressure and the diver's breathing rate and depth.

Algorithm - A step-by-step mathematical formula designed to accomplish a particular result (i.e., Dive Time Remaining).

Altitude Dive - A dive made at an elevation above sea level (> 2,000 feet / 610 meters, or 3,000 feet / 915 meters) 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.

Caution Zone (CZ) - The sections of the bar graphs that give a visual indication of a diver's proximity to respective limits.

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".

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.

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 Log Mode - A computer display of previous dive information.

Dive Time Remaining - A display of the time before a diver must surface based on no-decompression status or oxygen accumulation status or Air Time Remaining.

(continued on page 34)

REFERENCE

GLOSSARY (continued) -

Elapsed Dive Time - The total time spent underwater during a dive between 5 FT (1.5 M) on initial descent to 2 FT (0.6 M) on final ascent.

FO₂ - The fraction (percent / 100) of oxygen (O₂) in the breathing gas mixture.

Graphic Diver Interface™ - Feature of AERIS dive computers that indicate the diver's status (bar graphics, icons, graphic displays).

Icon - a small pictorial representation of an operational mode or information.

Integrated Dive Computer - A dive computer that monitors and displays cylinder pressure in addition to no decompression information.

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 Loading 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 99% O₂) as the breathing gas.

No Deco Time Remaining - The amount of dive time remaining based on no-decompression status.

No Decompression (No Deco) - 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.

Oceanglo® - An AERIS name for an instrument backlight feature.

OceanLog™ - An AERIS name for a PC interface hardware/software package.

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.

Pre Dive Planning Sequence™ (PDPS) - A display of available dive times at 10 FT (3 M) intervals from 30 to 160 FT (9 to 48 M) used when dive planning.

REFERENCE

GLOSSARY (continued) -

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.

Smart Glo® - An AERIS name for an instrument backlight feature sensitive to light intensity.

Square Wave Dive - A type of dive profile where the entire dive is spent at one depth between descent and ascent.

Tissue (or 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 to 2 FT (0.6 M) from a dive.

Variable Ascent Rate Indicator™ (VARI)- A display that shows ascent rate as a bar graph (part of the Graphic Diver Interface).



AERIS

Dive Computer

Safety & Reference Manual

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(cover art provided separately)