

PERSONAL DIVE COMPUTER

SAFETY & REFERENCE MANUAL



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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 Dive Computer Clears of residual nitrogen).**

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.**



THIS MANUAL

The intent of this manual is to consolidate information that is common to the various models of Oceanic PDCs (PDC = Personal Dive Computer).

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



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.

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Manufacturer:
Oceanic USA
1540 North 2200 West,
Salt Lake City, UT 84116
U.S.A.
Tel: 888/270-8595
www.OceanicWorldwide.com

EU Importer:
Oceanic (Huish Outdoors LLC, BARE Sports)
Factory BLB019C, Bulebel Ind Estate
Zejtun, ZTN 3000 Malta
sales@huishoutdoors.com

UK Importer:
Sea & Sea Limited
Philip House, Aspen Way,
Paignton, Devon,
TQ4 7QR, UK
Tel: +44 (0)1803 663012
david.millin@sea-sea.com

SYMBOLS

Symbols used in this manual and the PDC 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 PDC.



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 PDC 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 Oceanic PDCs 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 Oceanic and thank you for choosing one of the finest dive computers available Worldwide !

Oceanic PDCs 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 Oceanic PDC.

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 Oceanic PDCs 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 PDC only provides the person using it with data, not the knowledge to use it. Remember also that the PDC does not actually measure and test the composition of your body tissue and blood.



WARNINGS and SAFETY RECOMMENDATIONS Relating to INTENDED USE

- Oceanic PDCs 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.
- Oceanic PDCs are NOT for use by commercial divers.
- Oceanic PDCs 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 Oceanic PDCs can result in serious injury or death.
- If you do not fully understand how to use the PDC, or if you have any questions, you should seek instruction in its use from your Authorized Oceanic Dealer before diving with it.

DIVE COMPUTER PERFORMANCE

- Algorithm - Pelagic Z+ and/or Pelagic DSAT.
- No Deco Limits - closely follow PADI RDP.
- Decompression - in agreement with Buhlmann ZHL-16c and French MN90.
- No Deco Deep Stops - Morroni, Bennett.
- Deco Stops (not recommended) - Blatteau, Gerth, Gutvik.
- Altitude - Buhlmann, IANTD, RDP (Cross).
- Altitude corrections and Oxygen limits - based on NOAA tables.

DUAL ALGORITHM

Most current Oceanic PDCs feature both the Pelagic Z+ and the DSAT algorithms, which allows you to choose which set of NDLs (No Deco Limits) will be used for Ni/O₂ calculations and displays relating to Plan and DTR (Dive Time Remaining).

DSAT* has been the standard used by Oceanic in all of its PDCs until this time. It features NDLs that are based on exposures and test data which also formed validation for the PADI RDP. Data consists primarily of No Deco, multi level, repetitive dives at sea level. It imposes restrictions for repetitive Deco dives, considered more risky.

Z+ performance is based on Buhlmann ZHL-16c. It affords an increase in conservatism for No Deco multi level, repetitive dives at sea level. Data consists primarily of repetitive Deco dives at altitude.

**DSAT - published and protected by Diving Science and Technology (subsidiary of PADI).*



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. Oceanic 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 1000 foot (305 meter) intervals beginning at 3001 feet (916 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 Oceanic PDC is activated at an elevation higher than 14,000 feet (4,270 meters), it will immediately shutdown or revert to Watch Mode.**

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.

Oceanic PDCs automatically compensate for decreased ambient pressures for Altitudes between 3,000 (915 meters) and 14,000 feet (4,270 meters). Their programs compensate for high altitudes by reducing No Decompression and Oxygen Exposure Limits (times), thus adding a larger zone of caution.

DECOMPRESSION MODEL

The decompression models used are based on no decompression multi level repetitive dive schedules successfully tested and validated.

Using an Oceanic PDC, just as using the U.S. Navy (or other) 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.



WARNINGS and SAFETY RECOMMENDATIONS relating to OPERATION

- **Ensure that you read and understand the Operating Manual for your specific PDC prior to diving with it.**
- **Current model Oceanic PDCs will automatically activate Dive Mode upon descent to 5 FT (1.5 M), unless the Wet Activation feature is set OFF.**
- **If a PDC is activated at a depth deeper than 5 FT (1.5 M) or at an elevation higher than 14,000 feet (4,270 meters), it will perform a diagnostic check followed by immediate shutdown 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 Oceanic Dealer for inspection.**
- **If a Low Battery condition is indicated, Oceanic 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.**

TLBG (TISSUE LOADING BAR GRAPH™)

The TLBG 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 TLBG, 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 Deco Caution Zone as a visual reference to place a wider margin of protection between you and the No Deco Limit.

Oceanic suggests that the TLBG should always be in the No Decompression zone when leaving the water.

MULTIPLE TISSUE TRACKING

An Oceanic PDC tracks 12 tissue compartments with halftimes ranging from 5 to 480 minutes. The TLBG displays the controlling compartment, the one important at that time.

Think of the TLBG as 12 separate transparent displays laid on top of one another. The tissue compartment that has filled up fastest is the only one the diver 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 is the basis of multilevel diving, one of the most important contributions that an Oceanic PDC offers you.

NO DECOMPRESSION LIMITS



WARNINGS and SAFETY RECOMMENDATIONS relating to DIVE PLANNING

- The Pre Dive Planning Sequence provides predicted times for subsequent dives. You may actually have less time available than indicated because of breathing air quantity and consumption, or oxygen accumulation.
- Oceanic strongly recommends that you review the PDPS 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 PDPS 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 Oceanic PDC.

Refer to the tables in the Operating Manual provided with your specific PDC for No Decompression Limits for various altitudes. Note that the NDLs do not extend beyond the limit to which the range of the specific PDC's Pre Dive Planning Sequence, a maximum of either 160 FT (48 M), or 190 FT (57 M).

When the Conservative Factor feature is set On, the NDLs which are based on the algorithm selected and used for Ni/O₂ calculations and displays relating to Plan and DTR, will be reduced to the values available at the altitude level that is 3,000 feet (915 meters) higher. Refer to the NDL charts in the back of the Operating Manual.

OXYGEN EXPOSURE LIMITS

Predicted exposure limits and oxygen calculations associated with the PDCs' Nitrox modes are based on maximum exposure durations published by the NOAA (National Oceanic and Atmospheric Administration) in the NOAA Diving Manual.

DIVE TIME REMAINING* (DTR)

One of the most important features of Oceanic PDCs is the DTR numeric display. The PDCs constantly monitor no decompression status and oxygen exposure. Integrated models also monitor the rate of air consumption.

The DTR display will indicate the time that is calculated to be 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 an icon or graphic.

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



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 reentering 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 O₂ to reach or exceed allowable limits 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 Oceanic PDCs provide any implied approval or consent from Oceanic for individuals to exceed the defined limits of recreational dive profiles, as agreed on by all internationally recognized training agencies.**

No Decompression Time Remaining (NDC)

NDC is the maximum amount of time that you can stay at your present depth before entering de-compression. It is calculated based on the amount of nitrogen absorbed by hypothetical tissue compartments. The rates each of the 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 identifying icon and graphically as the TLBG.

As you ascend from depth following a dive that has approached the no decompression limit, the TLBG 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 Oceanic PDCs offer.

Oxygen Time Remaining (OTR)

Oxygen accumulation (exposure) during a dive, or 24 hour period, appears graphically as the O2 Bar Graph (O2BG) or numerically as %O2. As time remaining before reaching the oxygen exposure limit decreases, segments are added to the O2BG or %O2 increases.

When OTR becomes less than the NDC, and/or Air Time Remaining, calculations for that depth will be controlled by oxygen. OTR will then appear as the DTR display.

As oxygen accumulation continues to increase, the O2BG will enter the Caution Zone.

Air Time Remaining (ATR) - integrated model PDCs only

ATR is the time you can remain at your present depth and still surface with the tank pressure reserve (End Gas Alarm Set Point) that you set prior to the dive.

ATR is calculated using a patented algorithm that is based on the diver's individual air 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 air required for a safe ascent including any required decompression stops.

ATR 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.

Since air consumption and depth are continuously monitored, ATR 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 PDC will recognize this change and adjust ATR as required.

Depending on the configuration of your model PDC, ATR may be displayed on the Main Dive screen* together with NDC, as DTR in place of NDC, or only on an Alternate Display accessed for several seconds.

**During Deco, ATR may be moved from the Main to an Alternate screen to allow the space on the Main to be used for more critical information.*

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When ATR decreases to 5 minutes, an alarm strikes which means that only 5 minutes remain before your air supply will be reduced to the minimum level necessary to perform a safe ascent, including any planned (Deep and Safety) stops and required (Deco) stops, and still provide a tank pressure reserve upon surfacing.

When ATR decreases to 0 (min), an alarm will strike again. There is no need to panic, calculations allow for the air you will consume while making a safe controlled ascent, including that the stops, and still provide the surfacing tank pressure reserve.

ASCENDING TO THE SURFACE

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

By backing off on the TLBG (maintaining fewer segments), you can establish a personal level of conservatism and margin of protection.

If you entered Decompression, you must not complete your ascent until the TLBG is inside the No Decompression Zone. You should make every effort to complete all of your ascents with the TLBG inside of the No Decompression Zone.

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.

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No Deco Deep Stop

Most all current Oceanic PDCs are configured with a Deep Stop feature that can be set On or Off prior to your dives.

When it is set On, it will trigger during No Deco dives when you descend to 80 FT (24 M) and calculate (and continually update) a Stop Depth equal to $1/2$ the Max Depth.

While 10 FT (3 M) deeper than the calculated DS, you will be able to access a Preview screen that will display the current Deep Stop Depth (calculated) and Stop Time.

Upon initial ascent to within 10 FT (3 M) below the calculated Stop Depth, a Stop Depth screen will appear with a Timer counting down from 2:00 (min:sec) to 0:00.

If you descend 10 FT (3 M) below, or ascend 10 FT (3 M) above, the calculated Stop Depth during the countdown, the No Deco Main will replace the Stop screen and the Deep Stop feature will be disabled for the remainder of that dive.

In the event that you enter Deco, exceed 190 FT (57 M), or a High O₂ condition ($\Rightarrow$ 80%) occurs, the Deep Stop will be disabled for the remainder of that dive. The Deep Stop is also disabled during a High PO₂ Alarm condition ($\Rightarrow$ Set Point).

There is no Penalty if a Deep Stop is terminated or not taken.

No Deco Safety Stop

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

Depending on the model PDC that you have, the Safety Stop feature could provide a fixed Stop Depth and Time, or you may be able to set them for a preferred depth and Time. Some current models also allow you to select a Timer for use at a depth convenient to your activities such as aboard a charter vessel.

Fixed or set Stop Depth/Time:

Upon ascent to within 5 FT (1.5 M) deeper than the Stop Depth, on a No Deco dive in which Depth exceeded 30 FT (9 M), Stop at the Depth set will be displayed with Stop Time counting down to 0:00 (min:sec).

If you descend 10 FT (3 M) deeper than the Stop Depth during the countdown, or the countdown reaches 0:00, the No Deco Main screen will replace the Stop screen which will reappear upon ascent to within 5 FT (1.5 M) deeper than the Safety Stop Depth.

If you enter Deco during the dive, complete the Deco obligation, then descend below 30 FT (9 M); the Stop screen will appear again upon ascent to within 5 FT (1.5 M) deeper than the Stop Depth.

If you ascend 2 FT (0.6 M) shallower than the Stop Depth prior to completing it, the Stop will be canceled for the remainder of that dive.

Timer use set On:

Upon ascending to 20 FT (6 M) on a No Deco dive in which Depth exceeded 30 FT (9 M), a Run

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Timer will appear displaying 0:00 (min:sec) until started.

If you descend deeper than 30 FT (9 M), the No Deco Main will replace the Timer screen which will reappear upon ascent to 20 FT (6 M).

If you ascend above 10 FT (3 M), or enter Deco, or a High O₂ alarm condition occurs (100%), while the Timer is active, the Timer will be disabled for the remainder of that dive.

There is no Penalty if you surface prior to completing the Safety Stop.

VARI (Variable Ascent Rate Indicator™)

Most all Oceanic PDCs are configured with a VARI (bar graph) that shows how fast you are ascending. When you exceed the maximum ascent rate allowed for the depth you are at, the VARI will enter the Alarm (Too Fast) zone and you will be alerted by all segments flashing which will stop when your ascent rate is slowed.

DECOMPRESSION

Oceanic PDCs 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 Deco Stop Depth indicated until the next shallower Stop Depth appears. Then, you can slowly ascend to, but not shallower than, that indicated Stop Depth. The amount of decompression credit time that you receive while at a decompression

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stop is dependent on depth, with slightly less credit given the deeper you are below the stop depth indicated.

ce all required decompression has been completed, the PDC will switch to the No Decompression Dive Mode, as indicated by Total Ascent Time = 0:00 (min), and the TLBG receding into the No Decompression zone.

DTR then appears, displaying NDC, or OTR, or ATR, whichever applies depending on the configuration of your PDC.

VIOLATION MODES

When you exceed certain limits, Oceanic PDCs alert you with visual and/or audible warnings and operate in special Violation modes.



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

Conditional Violation Mode (CV)

CV is entered during Deco if you ascend shallower than the Required Deco 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.

While above the Stop Depth, no off gassing credit will be given. Once off gassing credit begins (you descend below the Stop Depth), required Deco Stop Depths and Time will decrease toward zero, then operation will revert to the No Deco Mode.

Delayed Violation # 1 - above a 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 TLBG recedes into the No Deco zone.

Delayed Violation # 2 - Deco Stop between 60 FT (18 M) and 70 FT (21 M) is required.

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 PDC cannot accurately calculate Deco 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.

Delayed Violation # 3 - exceeding Max Operating Depth (MOD).

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

Violation Gauge Mode (VGM)

Five minutes after reaching the surface from a dive in which a Delayed Violation occurred, operation will enter VGM.

It will also enter VGM during a dive, if a Deco Stop of 70 FT (21 M) or greater is required. This situ-

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ation would be preceded by entering Delayed Violation. The PDC would then operate only as a digital depth gauge/timer without any nitrogen or oxygen calculations or displays. After surfacing, VGM does not provide the FO2, PDPS, Time to Fly, and Desat features. A countdown timer is provided to inform you of the time remaining before normal operation can resume with full features/functions.

A surface interval of 24 contiguous 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 PDC 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 PDC.

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

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).

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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).

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 (305 meters) above sea level, or greater.

* Excerpted from "The UHMS Flying after Diving Workshop".

** Excerpted from "Dan's Position on Recreational Flying after Diving".

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.

Time to Fly is a basic countdown timer that begins counting down from 23:50 to 0:00 (hr:min) 10 minutes after surfacing from a dive.

TISSUE DESATURATION

Time to Desaturate (Desat Time) is a display of calculated time for tissue desaturation of nitrogen at sea level taking into consideration the Conservation Factor setting. It also begins counting down 10 minutes after surfacing from a dive, counting down from 23:50 (maximum) to 0:00 (hr:min).

Desat Time is not displayed after a Gauge or Violation dive.

Desaturation requiring times greater than 24 hours will display 24 (or 23:50)*. until the time decreases to the maximum the display will allow depending on the configuration of the model PDC being used.

Generally, the Desat countdown will reach 0:00 prior to the Fly countdown reaching 0:00. In the event that Desat Time still remains at the end of 24 hours, when Time to Fly becomes 0:00, the unit will shut off and any remaining Desat time will be cleared.

**We do not go beyond 24 hours since there is not a realistic set of repetitive dive profiles on SCUBA for which the 480 minute tissue exceeds 8 FSW, which clears at 24 hours. All other tissues with a half time of 160 minutes or less will have desaturated in less than 12 hours.*

MAINTENANCE AND SERVICE

A PDC 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 an Oceanic Instrument Lens Protector. Small scratches will naturally disappear underwater.

Operating Temperature

Oceanic PDCs 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 PDC 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 unit 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 PDC in fresh water at the end of each day of diving. Also, check the low pressure sensor guard cap, PC Interface data port, and buttons to ensure they are free of any debris or obstructions.

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

Annual Inspections

Your PDC should be inspected annually by an Authorized Oceanic 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).

Oceanic 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 PDC to an Authorized Oceanic Dealer or send it to the nearest Regional Facility listed in the Operating 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 PDC. 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.
- 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 Oceanic USA, call or email Oceanic Customer Service to obtain a Return Authorization (RA) number.



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 PDC'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 Oceanic PDC.



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



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 TLBG in the Deco zone greatly increases your risk of decompression sickness, and may result in serious injury or death.**



WARNINGS and SAFETY RECOMMENDATIONS relating to VIOLATIONS

- **An Oceanic PDC enters a Violation Mode when a situation exceeds its capacity to predict an ascent procedure. These dives represent excursions into decompression that are beyond the boundaries and spirit of the PDC's design. If you are following these dive profiles, Oceanic advises that you should not use an Oceanic PDC.**
- **If you exceed certain limits, the PDC will not be able to help you 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 Oceanic PDCs 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 Violation Gauge Mode, 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 Oceanic PDC.**



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.
-



WARNINGS and SAFETY RECOMMENDATIONS relating to MAINTENANCE and SERVICE

- Never, under any circumstances, poke any object through any slots or holes of the PDC. 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 PDC's depth readings, DO NOT attempt to dive with it until it has been inspected by Oceanic.
- Never pressure test the PDC 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 Oceanic PDC. The propellants may chemically attack the physical components.
- When a Low Battery condition is displayed prior to a dive, DO NOT attempt to dive with the PDC until the battery is replaced.

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 (> 3,000 feet / 915 meters elevation) with NDLs adjusted.

Ascent Rate - The speed that a diver ascends toward the surface.

ATR - An Oceanic abbreviation for Air Time Remaining.

Audible Alarm - A computer emitted tone that alerts the diver to potential danger.

Caution Zone (CZ) - The sections of a bar graph that indicate a diver's proximity to limits.

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 Oceanic PDCs have no direct relation to human tissues).

DCS - Abbreviation for decompression sickness, i.e., "the bends".

Decompression Stop - The depth(s) at which a diver must pause during ascent to allow absorbed nitrogen to escape naturally from the tissues.

Deep 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.

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 display of previous dive information.

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

DTR - An Oceanic abbreviation for Dive Time Remaining.

(continued on page 35)

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 Oceanic 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).

NDC - An Oceanic abbreviation for No Decompression Dive Time Remaining.

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.

O2BG - An Oceanic abbreviation for O2 Bar Graph.

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

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

OTR - An Oceanic abbreviation for O2 Time Remaining.

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.

(continued on page 36)

GLOSSARY (continued) -

Partial Pressure - The proportion of the total pressure contributed by a single gas in a mixture of gases.

PDC - An Oceanic abbreviation for Personal Dive Computer.

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 up to 190 FT (9 up to 57 M) used when dive planning.

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 Oceanic 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.

Tissue Loading Bar Graph[™] - A graphic display of simulated nitrogen absorption on Oceanic dive computers.

TLBG - An Oceanic abbreviation for Tissue Loading Bar Graph

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[™] - A graphic display that represents ascent rate as a bar graph (part of the Graphic Diver Interface).

VARI - An Oceanic abbreviation for Variable Ascent Rate Indicator.

EUROPEAN UNION PERSONAL PROTECTIVE EQUIPMENT DIRECTIVES

In European markets, certain product categories are required to pass rigorous testing standards. All Oceanic products that require testing have surpassed the CE standards.

- Products marked with EN250 or EN250 O2 (EN13949 standard) have undergone EU type examination conducted by: SGS Fimko Oy, Takomotie 8 Helsinki, 00380 Finland Notified Body No. 0598.
- HP gas pressure sensing components are in conformity with EN250:2014 - Respiratory equipment - open-circuit self-contained compressed air diving apparatus - requirements, testing and marking – clause 6.11.1 Pressure Indicator. EN 250:2014 is the standard describing certain minimum performance requirements for SCUBA regulators to be used with air only sold in EU. EN250:2014 testing is performed to a maximum depth of 50 M (165 FSW). A component of self-contained breathing apparatus as defined by EN250:2014 is: Pressure Indicator, for use with air only. Products marked EN250 are intended for air use only. Products marked O2 (EN13949 standard) are intended for use with gases containing more than 22% oxygen and must not be used for air.
- Depth and time measurements are in conformity with EN13319:2000 - Diving Accessories - depth gauges and combined depth and time measuring devices
- Air only (EN250) computers or accessories must use gas that complies with Grade E or EN 12021 breathing air a standard that specifies the allowable contaminants and component gases that make up compressed air.
- The breathing gas used with computers or accessories marked "O2" should be oxygen-compatible, condensed hydrocarbons ≤ 0.1 mg/m³. Grade E or EN 12021 breathing air does not necessarily meet this criterion, and it can pose a risk of combustion in the presence of elevated oxygen content. If a transmitter and regulator have been used with Grade E or EN 12021 breathing air, they should be returned to your Oceanic dealer for overhaul service and oxygen cleaning before continued nitrox/oxygen use.
- Electronic instruments are in compliance with Directive 2004/108/EC Electromagnetic compatibility (EMC) EN 61000 part 6-1: Generic Standards - immunity for residential, commercial and light-industrial environments
- In accordance with EU regulation 2016/425 of 9 March 2016, may it be known that Oceanic as manufacturer of this product issues a Declaration of Conformities, available here www.huishoutdoors.com/eu-declarations/.

UKCA (U.K. CONFORMITY ASSESSED) PERSONAL PROTECTIVE EQUIPMENT DIRECTIVES

- Products marked with UKCA have undergone UK type examination conducted by: SGS UK Ltd, Rossmore Business Park, Ellesmere Port, Cheshire CH65 3EN, UK, Notified Body No. 0120.
- In accordance with UK regulation 2016/425, may it be known that Oceanic as manufacturer of this product issues a Declaration of Conformities available here www.huishoutdoors.com/eu-declarations/.

RISK ASSESSMENT

Air Integrated Dive Computers

The air integrated dive computer is intended to address the risk of breathing gas loss. This is accomplished by monitoring the level of remaining gas in the UBA (Underwater Breathing Apparatus) and providing the diver with a continuous readout of the remaining gas supply and user set alarms.

The digital pressure indicator has several user defined alarms. Alarms are addressed in the user manual

- Audible - feature allows the diver to set audible alarms to ON or OFF.
- Turn Press - set a pressure to alarm at designated turn pressure 70 to 205 BAR (1000 to 3000 PSI)
- End Press - To emphasize a low gas situation, the End Pressure Alarm allows you to set an alarm for when you reach a designated end pressure. Dependent on metric or imperial units, the default setting is 50 bar or 800 psi.
- DTR (Dive Time remaining) - can be set for a specific reserve of dive time remaining, dive time is calculated based on air time and no deco time.

All Dive Computers

Recreational diving requires that the diver be fully trained in order to acquire filled gas cylinders or access many diving venues. Diver training focuses on the proper use of the pressure indicator and dive planning. This is to assure that the diver is able to correctly use the pressure indicator to complete the dive with a reserve supply of breathing gas

SOME OCEANIC PRODUCTS CONTAIN FCC ID: MH8A

FCC COMPLIANCE:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Any changes or modifications to the device could void your authority to operate the equipment.

FCC INTERFERENCE STATEMENT:

This equipment has been tested and found to comply with the limits for an Intentional Radiator, a Class B Digital Device, pursuant to Part 15 of FCC Rules, Title 47 of the Code of Federal Regulations. These rules are designed to provide reasonable protection against harmful interference in a commercial or residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

There is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or

more of the following measures:

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



CAUTION: Changes or modification to this unit not expressly approved by Oceanic could void the user's authority to operate the equipment.

OCEANIC

1540 North 2200 West
Salt Lake City,
Utah, 84116
USA

888-270-8595
OceanicWorldwide.com

EU IMPORTER

Oceanic
(Huish Outdoors LLC, BARE
Sports)
Factory BLB019C, Bulebel Ind
Estate
Zejtun, ZTN 3000 Malta

sales@huishoutdoors.com

UK IMPORTER

Sea & Sea Limited
Philip House, Aspen Way,
Paignton, Devon,
TQ4 7QR, UK

david.millin@sea-sea.com

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