BUD

DIVE COMPUTER

OPERATING MANUAL

Doc. No. 12-5259-r01 (7/21/11)

CONTENTS

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

Welcome

to

OCEANIC

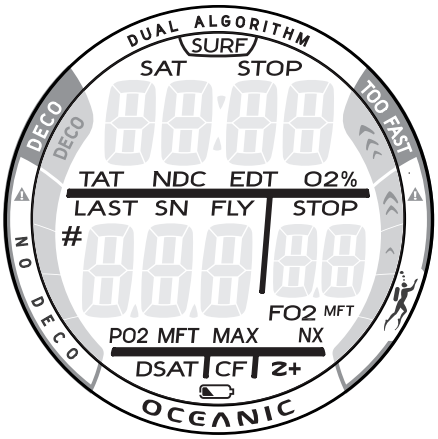
and

THANK YOU

for choosing the

BUD

DISPLAY LAYOUT



Icons:

SURF =	Surface Interval Time
SAT =	Time to Desaturate
STOP =	Time remaining at Stop
TAT =	Total Deco Ascent Time
NDC =	No Deco Time Remaining
EDT =	Elapsed Dive Time
O2 =	O2 Time Remaining
O2% =	% of O2 saturation
LAST =	Data is for the Last dive
SN =	Serial Number
FLY =	Time to Fly
STOP =	Stop Depth required
# =	Dive recently conducted
PO2 =	value is PO2 level
M FT =	Depth units
MAX =	Max Depth
FO2 =	value is FO2 setting
NX =	FO2 is set for Nitrox
DSAT =	Algorithm selected
CF =	Conservation Factor is On
Z+ =	Algorithm selected
Battery =	voltage is low

NOTICES

LIMITED TWO-YEAR WARRANTY
For details, refer to the Product Warranty Registration Card provided.

BUD Operating Manual, Doc. No. 12-5258
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San Leandro, CA USA 94577

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

DECOMPRESSION MODEL
The programs within the BUD 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 BUD dive computer model is based upon the latest research and experiments in decompression theory. **Still, using the BUD, just as using the U.S. Navy (or other) No Decompression Tables, is no guarantee of avoiding decompression sickness, i.e. "the bends."** Every diver's physiology is different, and can even vary from day to day. No machine can predict how your body will react to a particular dive profile.

FEATURES

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DISPLAYS

CONTROL BUTTON (B)
The Control Button (B) allows you to select display options and access specific information when you want to see it.

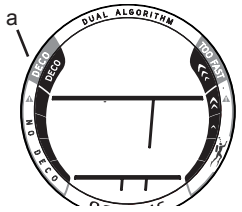

Fig. 1 - TLBG

BAR GRAPHS

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

The TLBG monitors 12 different nitrogen compartments simultaneously and displays the one that is in control of your dive.

It is divided into a No Decompression zone (up to 3 segments displayed), a Caution zone (4 segments displayed, also No Deco), and a Decompression zone (all 5 segments displayed).

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

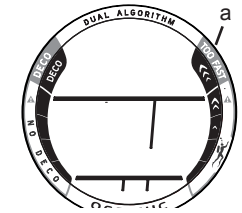

Fig. 2 - VARI

VARI (Variable Ascent Rate Indicator)
The VARI (Fig. 2a) provides a visual representation of ascent speed (i.e., an ascent speedometer).

The segments of the VARI represent two sets of speeds which change at a reference depth of 60 FT (18 M). Refer to the chart for segment values.

⚠ WARNING: At depths greater than 60 FT (18 M), ascent rates should not exceed 60 FPM (18 MPM). At depths of 60 FT (18 M) and shallower, ascent rates should not exceed 30 FPM (9 MPM).

When Ascent is too fast, (i.e., greater than 60/30 FPM, or 18/9 MPM), all segments will flash and the graphic SLOW will be displayed (Fig. 3) until ascent is slowed.

Fig. 3 - ASCENT ALARM

Deeper than 60 FT (18 M)			60 FT (18 M) & Shallower		
VARI	Ascent Rate		VARI	Ascent Rate	
Segments	FPM	MPM	Segments	FPM	MPM
0	0 - 20	0 - 6	0	0 - 10	0 - 3
1	21 - 30	6.1 - 9	1	11 - 15	3.1 - 4.5
2	31 - 40	9.1 - 12	2	16 - 20	4.6 - 6
3	41 - 50	12.1 - 15	3	21 - 25	6.1 - 7.5
4	51 - 60	15.1 - 18	4	26 - 30	7.6 - 9
5	60 +	18 +	5	30 +	9 +

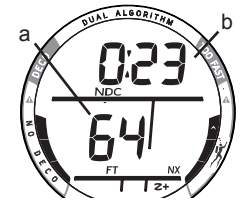

Fig. 4 - CURRENT DEPTH

ALPHA / NUMERIC DISPLAYS

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.

Current Depth is displayed on the Main Dive screens (Fig. 4a).

While at a No Deco Safety or a Deco Stop, the required Stop Depth is displayed on the Main (Fig. 5a).

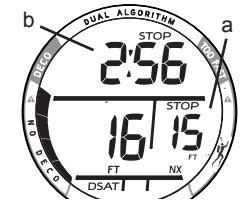

Fig. 5 - STOP DEPTH

Max Depth is displayed on Alternate Dive screens (Fig. 6a).

Times are shown in various formats.

- Hour:Minute - Dive Time Remaining (Fig. 4b), Elapsed Dive Time (Fig. 6b), Surface Interval, Fly, Sat.
- Minute:Second - Safety Stop Time (Fig. 5b).

Fig. 6 - MAX DEPTH

Altitude is displayed as a range from L2 to L7 on the Surface Main when at elevations above 3,000 feet. It is not displayed at Sea level, which extends up to 3,000 feet elevation. Refer to the table on page ??.

POWER SUPPLY
The BUD utilizes (1) type CR 2430 Lithium 3 volt cell. Expected use life is approximately 100 hours if (1) 1 hour dive per day is conducted each time the unit is activated, up to 300 hours if (3) 1 hour dives per day are conducted.

Low Battery
Voltage level is checked upon activation and every minute during operation on the surface.

- When voltage decreases to the warning level (2.75 volts), the icon is displayed solid on the Surface Main (Fig. 7a).
- Upon decreasing to a voltage level that will no longer sustain proper operation (2.50 volts), the icon will flash 5 times and the unit will shut off.
- If a low battery condition exists when the unit is activated (by pressing the button), the graphic bAT and the icon will appear flashing for 5 seconds and the unit will shut off.
- If the button is not pressed to activate the unit prior to a dive, and a low battery condition exists, the icon will appear flashing as a warning upon descent to 5 FT (1.5 M) and no other information will be displayed.
- If a low battery condition occurs during a dive, there will be sufficient battery power to maintain operation for the remainder of that dive. Upon entry into Surface Mode, the Battery icon will appear (shell only with no inner bar) with the graphics CHG BAT flashing (Fig. 8).

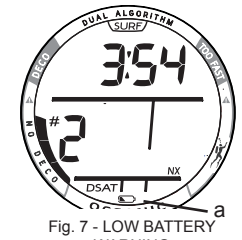

Fig. 7 - LOW BATTERY WARNING

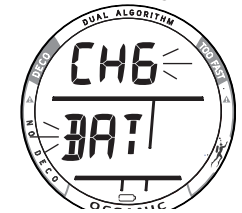

Fig. 8 - LOW BATTERY (occurred during dive)

ACTIVATION

&

SETUP

ACTIVATION

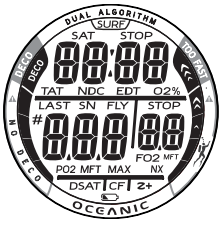

Fig. 9 - DIAGNOSTIC

To Activate the BUD, press and release B (the button).

- The unit will enter Diagnostic mode (Fig. 9), displaying all segments of the LCD as 8's, followed by dashes (- -), then a countdown from 9 to 0, checking the display and battery voltage to ensure that everything is within tolerance and functioning properly.
- After manual activation, it will also check the ambient barometric pressure, and calibrate its present depth as zero. Beginning at elevations of 3,001 feet (916 meters), it will recalibrate depth and adjust calculations every 2,000 feet (610 meters).

The BUD will also automatically activate by water contact. This is accomplished by bridging the gap between contacts located on the button and case.

If no dive is made within 2 hours after initial activation, the unit will automatically deactivate. If the wet contacts are still bridged, the unit will reactivate.

⚠ **WARNING: If the unit is activated at elevations higher than 14,000 feet (4,267 meters), it will perform a diagnostic check and immediately shutdown.**

SURF MAIN, information includes (Fig. 10):

> Surface Interval time (hr:min) with SURF icon; if no dive yet, this is time since activation.
> Dive number with # icon, up to 12 for that operating period (0 if no dive made yet).
> NX icon, if FO2 is set for Nitrox
> DSAT (or Z+) icon, Algorithm selected.> TLBG with icon, if any after a dive.
> Battery icon, if voltage is low.

- B (< 2 sec) to access ALT 1.
- B (2 sec) to access FLY/SAT, then step forward through other Surface selections.

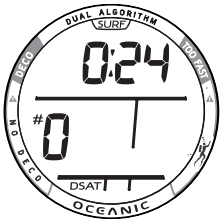

Fig. 10 - SURFACE MAIN
(no dive yet)

Upon surfacing from dives, the Dive Main will remain on display for the first 10 minutes with Surface Interval in place of NDC and the SURF icon flashing (Fig. 11).

After 10 minutes, the Surface Main will be displayed.

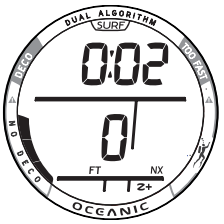

Fig. 11 - DIVE MAIN
(< 10 min on surface)

SURF ALT 1 (Last), information includes (Fig. 12):

> Elapsed Dive Time (hr:min) of dive previously made while still activated with EDT icons.
> LAST icon.
> Max Depth with FT (or M) and MAX icons, of dive previously made while still activated (3 dashes if MOD exceeded).

- B (< 2 sec) to access ALT 2*.
- Reverts to Main in 5 seconds if B is not pressed.

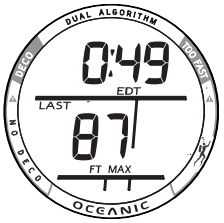

Fig. 12 - SURFACE ALT 1
(Last dive's data)

SURF ALT 2*, information includes (Fig. 13):

> Current %O2 saturation with SAT and O2% icons.
> PO2 Alarm setting (fixed at 1.40) with PO2 icon.
> FO2 setting with FO2 and NX icons.

- B (< 2 sec) to revert to Main.
- Reverts to Main in 5 seconds if B is not pressed.

**ALT 2 is not displayed if FO2 was set for AIR.*

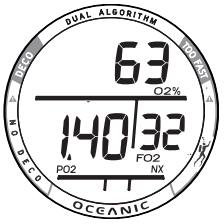

Fig. 13 - SURFACE ALT 2

SURFACE SEQUENCE

Separate from the ALT screens, there is a sequence of selections in which you can -

> view Time to Fly/Desaturate.
> set FO2.
> select Algorithm.
> set Conservative Factor.
> view Plan NDLs.
> set Units.
> view Serial Number.

Press B repeatedly (2 sec each time), to access and step through the sequence then return to the Surface Main.

While in the sequence, operation will revert to the Surface Main if B is not pressed within a period of 2 minutes.

The sequence cannot be accessed during the first 10 minutes on the surface following a dive.

FLY/DESAT TIME
Time to Fly is a timer that counts down from 23:50 to 0:00 (hr:min) beginning 10 minutes after surfacing from a dive.

Time to Desaturate provides calculated time for tissue desaturation at sea level. It also begins counting down 10 minutes after surfacing from a dive, counting down from a maximum of 23:50 to 0:00 (hr:min).

It generally starts at times much lower than 23:50 and reaches 0:00 before the Fly countdown reaches 0:00.

> When other screens are displayed while on the surface, the countdowns continue in the background.
> Desat Time is not displayed after a Violation dive.
> In the event that Desat Time still remains at the end of 24 hours, any remaining time will be cleared.

Fig. 14 - FLY/DESAT TIMES

Fly/Desat, information includes (Fig. 14):
> Time to Desaturate (hr:min) with SAT icon, - : - - if no dive yet, 0:00 if no time remaining.
> Time to Fly (hr:min) with FLY icon, - : - - if no dive yet.

- B (2 sec) to access Set FO2.

SET FO2, information includes (Fig. 15):
> Graphic SET.
> Graphic AIR flashing with FO2 icon; or -
> Max Depth allowed for the PO2 alarm setting (1.40) with FT (or M) and MAX icons, and FO2 Set Point value flashing with FO2 and NX icons.

- B (< 2 sec), repeatedly, to step upward through Set Points one at a time from Air to 21 through 50 (%) in increments of 1(%).
- B (2 sec) to save the setting and access Set Algorithm.

The BUD does not feature an FO2 50% Default selection. FO2 remains at the setting saved until changed.

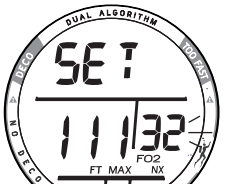

Fig. 15 - SET FO2

SET ALGORITHM, information includes (Fig. 16):
> Graphics SET and ALGO.
> Z+ (or DSAT) icon flashing.

- B (< 2 sec) to toggle between Z+ and DSAT.
- B (2 sec) to save the setting and access Set CF.

This feature allows selection of the algorithm to be used for nitrogen and oxygen calculations for Plan and DTR values. The setting locks in for 24 hours after dives.

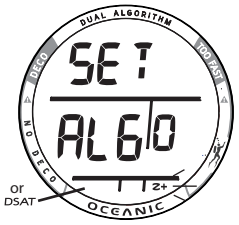

Fig. 16 - SET ALGORITHM

SET CONSERVATIVE FACTOR, information includes (Fig. 17):
> Graphic SEt.
> Graphic OFF (or ON) flashing with CF icon.

- B (< 2 sec) to toggle between OFF and ON.
- B (2 sec) to save the setting and access Plan.

When CF is set On, NDLs are reduced to values equivalent to those that would be available at the next higher 3000 foot (915 meter) Altitude. Refer to tables in the back of this manual.

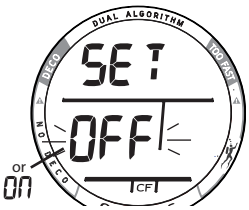

Fig. 17 - SET CF

PLAN MODE
No Deco Dive Times (NDLs/OTLs) in Plan Mode are based on the algorithm selected (DSAT or Z+), the FO2 set, and any residual nitrogen or oxygen remaining from previous dives.

Plan Lead-in, information includes (Fig. 18):
> Graphic PLAN.
> Graphic AIR with FO2 icon; or -
> Max Depth allowed for the PO2 alarm setting (1.40) with FT (or M) and MAX icons, and FO2 Set Point value with FO2 and NX icons.
> DSAT (or Z+) icon, algorithm selected.

- B (< 2 sec) to access PDPS.
- B (2 sec) to step forward to Set Units.

Fig. 18 - PLAN LEAD-IN

PDPS (Pre Dive Planning Sequence)
The PDPS displays Depths and allowable No Deco Dive Times, NDC (nitrogen) or O2 time, whichever is in control. It is a sequence of screens displaying Depths from 30 to 190 FT (9 to 57 M) with Plan times* based upon the previous dive profiles in a series of repetitive dives, taking into account descent and ascent rates of 60 FPM (18 MPM).

*If less then 1 minute time is available, dashes will be displayed for time, and Depth values will flash.

PDPS, information includes (Fig. 19):
> Dive Time allowed (hr:min) with NDC (or O2) icon.
> Plan Depth with FT (or M) icon.
> DSAT (or Z+) icon, and NX icon if Nitrox.

- B (< 2 sec), repeatedly, to step through screens one at a time from 30 to 190 FT (9 to 57 M) in increments of 10 FT (3 M), then repeat the step through.
- B (2 sec), at any time, to exit the PDPS and revert to the Plan Lead-in screen.

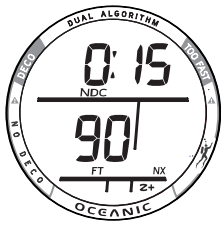

Fig. 19 - PLAN LEAD-IN

SET UNITS, information includes (Fig. 20):
> Graphic SEt.
> Graphic IMP (Imperial) or MET (Metric) flashing with FT (or M) icons.

- B (< 2 sec) to toggle between IMP and MET.
- B (2 sec) to save the setting and access SN.

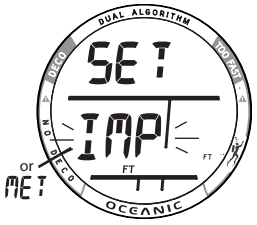

Fig. 20 - SET UNITS

SERIAL NUMBER
Information displayed on this screen should be recorded and kept with your sales receipt, it will be required in the event that your unit requires factory service.

Serial Number, information includes (Fig. 21):
> Graphic R1A (or higher), indicating the revision level of the unit's Firmware (operating software).
> Factory programmed serial number with SN icon.

- B (2 sec) to revert to Surface Main.

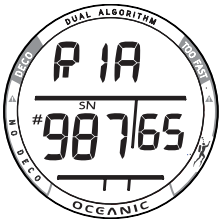

Fig. 21 - SN

DIVE MODE

FEATURES

ALGORITHM

The BUD is configured with 2 algorithms which allows you to choose which set of NDLs (No Deco Limits) will be used for nitrogen/oxygen calculations and displays relating to Plan and DTR (Dive Time Remaining).

You can select to use either the DSAT or the Z+. The selection will lock in for 24 hours after the last dive.

DSAT features NDLs that are based on exposures and test data which also formed validation for the PADI RDP. It imposes restrictions for repetitive Deco dives, considered more risky.

Z+ (Pelagic Z+) performance is based on Buhlmann ZHL-16c. It features NDLs that are considerably more conservative especially at shallower depths.

To create even greater margins of safety with respect to decompression a No Deco Safety Stop can be performed for No Deco dives.

SAFETY STOP (SS), No Deco only

Upon ascent to 20 FT (6 M) for 1 second on a No Deco dive in which Depth exceeded 30 FT (9 M) for 1 second, a SS to be taken at 15 FT (4.5 M) will appear on the Main display with a countdown beginning at 3:00 (min:sec).

- In the event that you descend 10 FT (3 M) below the SS Depth for 10 seconds during the countdown, or the countdown reaches 0:00; the No Deco Main will replace the SS Main which will reappear upon ascent to 20 FT (6 M) for 1 second.
- In the event that you enter Deco during the dive, complete the Deco obligation, then descend below 30 FT (9 M); the SS Main will appear again upon ascent to 20 FT (6 M) for 1 second.
- If you surface during the SS countdown, the SS will be canceled for the remainder of that dive.
- There is no Penalty if you surface prior to completing the SS or ignore it.

DTR (DIVE TIME REMAINING)

The BUD constantly monitors No Deco status and O2 accumulation, and will display whichever Time is the least amount available as DTR on the No Deco Dive Main screen. The Time being displayed will be identified by the NDC or O2 icon.

NDC (No Deco DTR)

NDC is the maximum amount of time that you can stay at your present Depth before entering Deco. It is calculated based on the amount of nitrogen absorbed by hypothetical tissue compartments.

The rates each of these compartments absorb and release nitrogen is mathematically modeled and compared against a maximum allowable nitrogen level.

Whichever one is closest to this maximum level is the controlling compartment for that Depth. Its resulting value (NDC) will be displayed as DTR and the TLBG.

As you ascend, the TLBG segments 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 dive computers offer.*

OTR (O2 TIME REMAINING)

When set for Nitrox operation, O2 during a dive is displayed on an ALT screen as a % of allowed saturation.

The limit for O2 exposure (100%) is set at 300 OTU (oxygen tolerance units) per dive or 24 hour period. As time before reaching the limit decreases, % O2 increases and OTR (time allowed) decreases.

When OTR (time) becomes less than the NDC (time), calculations for the dive will be controlled by O2 and OTR will be displayed as DTR on the Dive Main.

NO DECO MAIN, information includes (Fig. 22) -
> DTR (hr:min) with NDC (or O2) icon.
> Current Depth with FT (or M) icon.
> Max Depth with MAX and FT (or M) icons
> EDT (Elapsed Dive Time) with DIVE and min icons
> NX, CF, DSAT (or Z+), icons - those that apply.
> TLBG.
> VARI, while ascending.

- B (< 2 sec) to access ALTs.

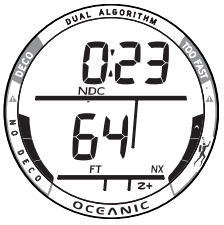

Fig. 22 - NO DECO MAIN

Upon ascending to 2 FT (0.6 M) during a dive, Surface Interval time will be displayed with the SURF icon flashing for the first 10 minutes with Current Depth displayed as 0 (Fig. 23).

- B (< 2 sec) to access Dive ALTs.

If a descent is made to 5 FT (1.5 M) for 5 seconds during that first 10 minutes, the dive will be continued. Surface time will not be added to Elapsed Dive Time.

After 10 minutes elapse on the surface, operation will revert to the Surface Main with full access given to the other surface items.

Fig. 23 - NO DECO MAIN
(on surface < 10 min)

NO DECO ALT 1, information includes (Fig. 24) -
> EDT (hr:min) with EDT icon.
> Max Depth with FT (or M) and MAX icons.

- B (< 2 sec) to access ALT 2 if NX, or revert to Main if Air.
- Revert to Main in 5 sec, if B not pressed.

Fig. 24 - NO DECO ALT 1

NO DECO ALT 2 (if Nitrox), information includes (Fig. 25) -
> O2 saturation (accumulation) with O2% icon.
> Current PO2 value (ATA) with PO2 icon.
> FO2 Set Point with FO2 and NX icons.

- 5 sec or B (< 2 sec) to revert to Main.

Fig. 25 - NO DECO ALT 2

SAFETY STOP MAIN, information includes (Fig. 26) -
> Stop Time (min:sec) with STOP icon, counting down.
> Current Depth with FT (or M) icon.
> Stop Depth with STOP and FT (or M) icons.
> NX, CF, DSAT (or Z+), icons - those that apply.
> TLBG.

- B (< 2 sec) to access ALTs**.

*** The SS features up to 3 ALT displays which are similar to the No Deco Main, ALT1, and ALT2 displays, respectively.*

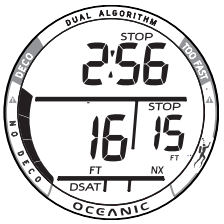

Fig. 26 - SS MAIN

DECOMPRESSION
Decompression mode activates when theoretical No Decompression time and depth limits are exceeded.

Upon entry into Deco, the full TLBG will flash (Fig. 27) for 10 seconds. The Stop Depth digits will flash while 10 FT (3 M) below the required Stop Depth.

> Once within 10 FT (3 M) below the required Stop Depth (stop zone), the Stop Depth digits will stop flashing.

To fulfill your decompression obligation, you should make a safe controlled Ascent to a depth slightly deeper than, or equal to, the required Stop Depth indicated and decompress for the Stop Time indicated.

The amount of decompression credit time that you receive is dependent on Depth, with slightly less credit given the deeper you are below the Stop Depth indicated.

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 Stop Depth.

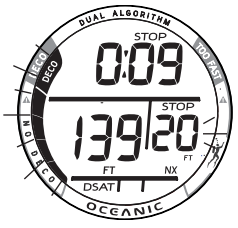

Fig. 27 - DECO ENTRY

DECO STOP MAIN, information includes (Fig. 28) -
> Stop Time (hr:min) with STOP icon.
> Current Depth with FT (or M) icon.
> Stop Depth with STOP and FT (or M) icons.
> NX, CF, DSAT (or Z+), icons - those that apply.
> Full TLBG.

- B (< 2 sec) to access ALT 1.

Fig. 28 - DECO STOP MAIN

DECO STOP ALT 1, information includes (Fig. 29) -
> TAT* (hr:min) with TAT icon.
> Current Depth with FT (or M) icon.

- B (< 2 sec) to access ALT 2.
- Revert to Main in 5 sec, if B not pressed.

**TAT is Total Ascent Time which includes calculated Times at all required Deco Stops plus vertical Ascent Time to the surface based on the max ascent rate allowed.*

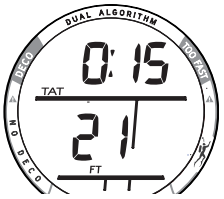

Fig. 29 - DECO STOP ALT 1

DECO STOP ALT 2, information includes (Fig. 30) -
> Elapsed Dive Time (hr:min) with EDT icon.
> Max Depth with FT (or M) MAX icons.

- B (< 2 sec) to access ALT 3 (if Nitrox).
- Revert to Main in 5 sec, if B isnot pressed.

Fig. 30 - DECO STOP ALT 2

DECO STOP ALT 3 (if Nitrox), information includes (Fig. 31) -
> O2 saturation (accumulation) with O2% icon.
> Current PO2 value (ATA) with PO2 icon.
> FO2 Set Point with FO2 and NX icons.

- 5 sec or B (< 2 sec) to revert to Main.

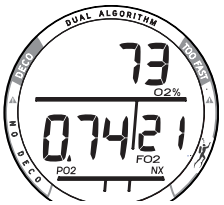

Fig. 31 - DECO STOP ALT 3

CV (CONDITIONAL VIOLATION)
Upon ascent above the required Deco Stop Depth, operation will enter CV during which no off gassing credit will be given.

While above the Sop, the graphic DOWN alternates with the Stop Time digits while the Stop Depth digits flash (Fig. 32).

If you descend deeper than the required Deco Stop before 5 minutes elapse, Deco operation will continue with no off gassing credit given for time above the Stop. Instead, for each minute above the Stop 1-1/2 minutes of penalty time will be added to required Stop Time.

> The added penalty (Deco) time will have to be worked off before obtaining off gassing credit.
> Once the penalty time is worked off, and off gassing credit begins, required Deco Stop Depths and Time will decrease toward zero. The TLBG will recede into the No Deco zone and operation will revert to No Deco mode.

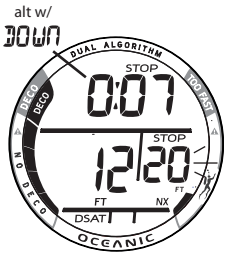

Fig. 32 - CV MAIN

DV 1 (DELAYED VIOLATION 1)
If you remain shallower than a Deco Stop Depth for more than 5 minutes, operation will enter DV 1* which is a continuation of CV with penalty time still being added.

The graphic DOWN will alternate with Stop Time while the full TLBG and Stop Depth digits flash (Fig. 33), until descent is made to below the Stop Depth indicated.

**The difference is that 5 minutes after surfacing from the dive, operation will now enter Violation Gauge Mode.*

After 5 minutes on the surface following a DV1, operation enters Violation Gauge Mode.

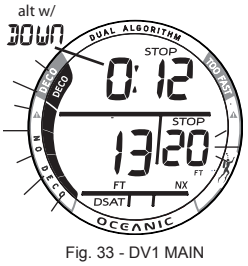

Fig. 33 - DV1 MAIN

DV 2 (DELAYED VIOLATION 2)
If the calculated Deco obligation requires a Stop Depth between 60 FT (18 M) and 70 FT (21 M), operation will enter DV 2.

The full TLBG and Stop Depth digits will flash (Fig. 34) for 10 seconds.

After 5 minutes on the surface following a DV2, operation enters Violation Gauge Mode.

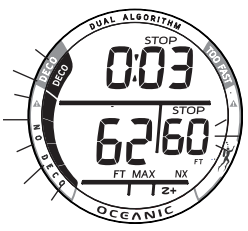

Fig. 34 - DV2 MAIN

CV, DV1, & DV2 ALTs are similar to those for Deco.

DV 3 (DELAYED VIOLATION 3)
If you descend deeper than the MOD*, DTR and Current Depth will be displayed as with the Depth ones flashing (Fig. 35).

Max Depth on the ALT will also be displayed as 3 dashes.

**MOD is the Max Operating Depth at which the BUD can properly perform calculations or provide accurate display information. Refer to the Specifications in the back.*

Upon ascending above the MOD, Current Depth will be restored, however, Max Depth will continue to be displayed as dashes for the remainder of that dive.

DTR will be restored if it is accurate, or remain as dashes if not.

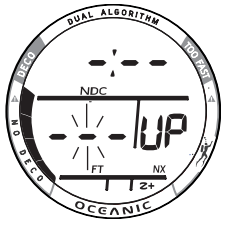

Fig. 35 - DV3 MAIN

VGM (VIOLATION GAUGE MODE)
During NORM dives, operation will enter VGM when Deco requires a Stop Depth greater than 70 FT (21 M).

Operation would then continue in VGM during the remainder of that dive and for 24 hours after surfacing. VGM turns the BUD into a digital instrument without any decompression or oxygen related calculations or displays.

Upon activation of VGM, the full TLBG with the graphics VIO and UP flash for 10 seconds as a warning (Fig. 36).

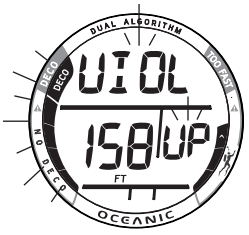

Fig. 36 - VGM ACTIVATION

VGM Dive Main, after 10 sec information includes (Fig. 37) -
> Graphic VIO (in place of DTR) solid.
> Current Depth with FT (or M) icon.
> Graphic UP, flashing until on surface
> VARI while ascending

- B (< 2 sec) to access ALT (EDT & Max Depth).

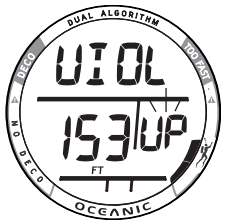

Fig. 37 - VGM DIVE MAIN

VGM on Surface
Upon surfacing, the graphic VIO will alternate with Surface Interval time until the unit shuts off after 24 hours.

The SURF icon will flash during the first 10 minutes (Fig. 38).

Operation will also enter VGM 5 minutes after surfacing from a dive in which a Delayed Violation occurred.

> A full 24 hour continuous surface interval must then be served before all functions are restored.

Fig. 38 - VGM SURFACE

HIGH PO2
Warning >> at 1.20 (ATA).
Alarm >> at 1.40 (ATA), except in Deco then at 1.60 only.

During No Deco -
When PO2 (partial pressure of oxygen) increases to the Warning level; the PO2 value will alternate with Current Depth for 10 seconds with the graphic UP displayed (Fig. 39).

After 10 seconds, Current Depth is restored. The graphic UP remains on solid until PO2 decreases below 1.20.

If PO2 continues to increase and reaches the Alarm level (1.40), the PO2 value will again alternate with Current Depth and the graphic UP will flash (Fig. 40) until PO2 is < 1.40.

Fig. 39 - PO2 WARNING

alternate

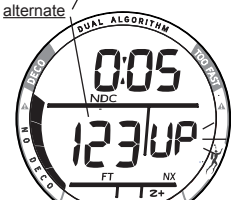

Fig. 40 - PO2 ALARM

During Deco -
If PO2 reaches 1.60 while in Deco, the PO2 value (=> 1.60) with icon will alternate with Current Depth (Fig. 41).

When PO2 decreases below 1.60, Current Depth will restored.

No indication is given to ascend (graphic UP), you control action to be taken according to your expertise and training.

Fig. 41 - PO2 ALARM DECO

HIGH O2

Warning >> when 80 to 99% (240 OTU).
Alarm >> at 100% (300 OTU).

When O2 reaches the Warning Level; the O2 value will flash (in place of DTR or Deco Stop Time) for 10 seconds (Fig. 42).

After 10 seconds, DTR will be restored.

If O2 reaches the Alarm level; the O2 value (100) will flash (in place of DTR or Deco Stop Time) and the graphic UP will flash (Fig. 43) until on the surface.

Upon surfacing, the the O2 value (100) will alternate with Surface Interval time (Fig. 44).

O2 will be removed when it decreases below 100%.

> If you surface due to 100% O2 without having completed the Deco obligation, the full TLBG and O2 value (100) will flash for the first 10 minutes, then operation will enter VGM for 24 hours.

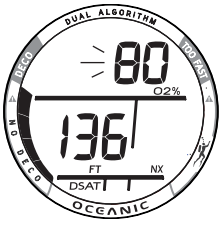

Fig. 42 - O2 WARNING

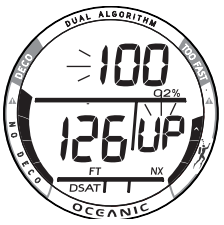

Fig. 43 - O2 ALARM

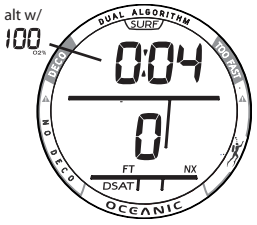

Fig. 44 - O2 ALARM
(on surface)

GENERAL

CARE AND CLEANING

Protect your BUD from shock, excessive temperatures, exposure to chemicals, and tampering. Protect the lens against scratches with a Instrument Lens Protector. Small scratches will naturally disappear underwater.

- Soak and rinse the BUD in fresh water at the end of each day of diving, and check to ensure that the areas around the Low Pressure (Depth) Sensor (Fig. 45a) and button are free of debris or obstructions.
- To dissolve salt crystals, use lukewarm water or a slightly acidic bath (50% white vinegar/50% fresh water). After removal from the bath, place the BUD under gently running fresh water and towel dry before storing.
- Transport your BUD cool, dry, and protected.

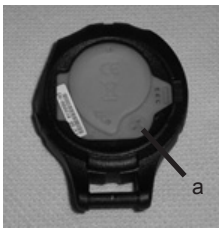

Fig. 45 - CASE BACK

INSPECTIONS AND SERVICE

Your BUD 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 an inspection performed every year to ensure it is working properly. The costs of annual inspections, or inspections relating to water tight integrity, are not covered under the terms of the 2 year limited warranty.

To Obtain Service:

Take your BUD to your local Authorized Oceanic Dealer.

If required to return your BUD to the Oceanic USA factory:

- Obtain an RA (Return Authorization) number by contacting Oceanic USA at 510/562-0500 or send an e-mail to service@oceanicusa.com.
- Record all dive data in the Log. All data will be erased during factory service.
- Package it using a protective cushioning material.
- Include a legible note stating the specific reason for return, your name, address, daytime phone number, serial number(s), and a copy of your original sales receipt and Warranty Registration.
- Send freight prepaid and insured using a traceable method.
- Non-warranty service must be prepaid. COD is not accepted.
- Additional information is available on the Oceanic web site OceanicWorldwide.com or on the local Oceanic web site that serves your global region.

The procedures that follow must be closely adhered to. Damage due to improper battery replacement is not covered by the BUD's warranty.

When the battery is removed, settings and calculations for repetitive dives are retained in the unit's memory while a new battery is installed.

BATTERY REPLACEMENT

The Battery Compartment should only be opened in a dry and clean environment with extreme care taken to prevent the entrance of moisture or dust.

As an additional precautionary measure to prevent formation of moisture in the Battery Compartment, it is recommended that the Battery be changed in an environment equivalent to the local outdoor temperature and humidity (e.g., do not change the Battery in an air conditioned environment then take it outside during a hot sunny day).

Inspect the Buttons, Lens, and Housing to ensure they are not cracked or damaged. If there is any sign of moisture in the BUD, DO NOT attempt to use it for diving until it receives proper service by an authorized Oceanic facility.


Fig. 46A - COVER REMOVAL (using tool)


Fig. 46B - COVER REMOVAL (using thumbs)

Battery Removal

- Locate the Battery Compartment on the back of the unit.
- Rotate the Battery Cover clockwise 10 degrees using the special Battery Cover Tool (Fig. 46A), or by pushing the lower portion to the left while pushing the upper portion to the right using your thumbs (Fig. 46B).
- Lift the Cover with O-ring up and away from the Housing.
- Using care not to damage the Contact (Fig. 47a), slide the Battery up and out of the left side of the Compartment.
- Discard the Battery according to local regulations governing disposal of Lithium batteries.

⚠ **CAUTION: DO NOT allow a metal object to short circuit the top of the Battery, which is positive (+), to the negative (-) contact of the Battery Compartment.**

Inspection

- Closely check all of the sealing surfaces for any signs of damage that might impair proper sealing.
- Inspect the Buttons, Lens, and Housing to ensure they are not cracked or damaged.
- Remove the Battery Cover O-ring and inspect it for any signs of deterioration or deformity. DO NOT use tools to remove the O-ring.
- To ensure proper sealing, O-ring replacement is highly recommended each time the Battery is replaced.
- Closely examine the threads of the Battery Cover and Housing for any signs of damage that might prevent proper threading.
- Closely examine the inside of the Battery Compartment for any signs of corrosion indicating entrance of moisture into the unit.
- If it is necessary to clean the Battery Compartment, flush it thoroughly with a solution of 50% white vinegar and 50% fresh water. Rinse with fresh water, and allow to dry overnight or blow dry with a hair dryer set at no heat.

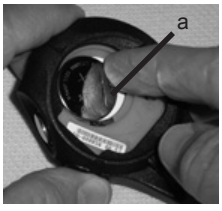

Fig. 47 - BATTERY REMOVAL

⚠ WARNING: If damage, moisture, or corrosion is found, return your BUD to an Authorized Oceanic Dealer, and DO NOT attempt to use it until it has received factory prescribed service.

Battery Installation

- Slide a new 3 volt type CR2430 Lithium Battery, negative side down into the Battery Compartment. Slide it in from the left side (Fig. 48) and ensure that it slides under the contact clip on the lower/right rim of the cavity.
- Lightly lubricate the new Cover O-ring* with silicone grease and place it on the inner rim of the Battery Cover. Ensure that it is evenly seated (Fig. 49).

**The O-ring must be a genuine Oceanic part that can be purchased from an Authorized Oceanic Dealer. Use of any other O-ring will void the warranty.*

- Carefully place the Battery Cover (with O-ring) into position on the rim of the Battery Compartment, then press it evenly and completely down into place.
- Maintain the Battery Cover securely in place and turn it counter clockwise 10 degrees using the special Battery Cover tool (Fig. 50A), or by pushing the lower portion to the right while pushing the upper portion to the left (Fig. 50B).

Testing

- Observe the LCD display to ensure it is consistently clear and sharp in contrast throughout the screen.
- Set the Date and Time.
- Verify all Set Points prior to diving.

If any portions of the display are missing or appear dim, or if a Low Battery Condition is indicated, return your BUD to an Authorized Oceanic Dealer for a complete evaluation before attempting to use it.


Fig. 48 - BATTERY INSTALL


Fig. 49 - COVER O-RING


Fig. 50A - COVER INSTALL (using tool)

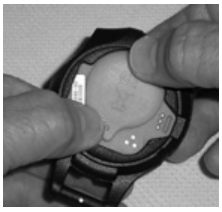
Fig. 50B - COVER INSTALL (using thumbs)

ALTITUDE SENSING AND ADJUSTMENT

Altitude (i.e., ambient pressure) is measured upon activation and every 15 minutes until a dive is made.

> Measurements are only taken when the unit is dry.
> Two readings are taken, the second reading 5 seconds after the first. The readings must be within 1 foot (30 cm) of each other to record that ambient pressure as the current Altitude.
> No adjustments are made during any time that the Wet Contacts are bridged.
> When diving in high altitude waters from 3,001 to 14,000 feet (916 to 4,270 meters), the BUD automatically adjusts to these conditions providing corrected Depth, and reduced No Deco and O2 Times at intervals of 1,000 feet (305 meters).
> At Sea Level, calculations are based upon an Altitude of 6,000 feet.
> All adjustments for Altitudes greater than 11,000 feet (3,355 meters) are then made to allowable dive times for 14,000 feet (4,270 meters).
> The BUD will not function as a Dive Computer above 14,000 feet (4,270 meters).

Z+ ALGORITHM >> NDLS (HR:MIN) AT ALTITUDE (IMPERIAL)

Altitude (feet)	0 to 3000	3001 to 4000	4001 to 5000	5001 to 6000	6001 to 7000	7001 to 8000	8001 to 9000	9001 to 10000	10001 to 11000	11001 to 12000	12001 to 13000	13001 to 14000
Depth (FT)												
30	3:17	2:30	2:21	2:14	2:08	2:02	1:57	1:52	1:47	1:39	1:34	1:29
40	1:49	1:21	1:15	1:11	1:08	1:05	1:02	1:00	0:57	0:55	0:53	0:51
50	1:05	0:53	0:51	0:49	0:47	0:44	0:42	0:39	0:37	0:35	0:34	0:33
60	0:48	0:37	0:35	0:33	0:32	0:30	0:28	0:26	0:24	0:23	0:22	0:21
70	0:35	0:26	0:24	0:23	0:21	0:20	0:19	0:18	0:17	0:16	0:16	0:14
80	0:26	0:19	0:18	0:17	0:16	0:15	0:14	0:13	0:12	0:11	0:11	0:10
90	0:19	0:15	0:14	0:13	0:12	0:11	0:10	0:10	0:09	0:09	0:08	0:08
100	0:16	0:11	0:10	0:10	0:09	0:09	0:08	0:08	0:07	0:07	0:07	0:07
110	0:12	0:09	0:08	0:08	0:08	0:07	0:07	0:07	0:06	0:06	0:06	0:05
120	0:10	0:08	0:07	0:07	0:07	0:06	0:06	0:06	0:05	0:05	0:05	0:05
130	0:08	0:07	0:06	0:06	0:06	0:05	0:05	0:05	0:05	0:05	0:04	0:04
140	0:07	0:06	0:05	0:05	0:05	0:05	0:05	0:04	0:04	0:04	0:04	0:04
150	0:06	0:05	0:05	0:05	0:05	0:04	0:04	0:04	0:04	0:04	0:04	0:03
160	0:06	0:05	0:05	0:04	0:04	0:04	0:04	0:04	0:04	0:03	0:03	0:03
170	0:05	0:04	0:04	0:04	0:04	0:04	0:03	0:03	0:03	0:03	0:03	0:03
180	0:05	0:04	0:04	0:04	0:03	0:03	0:03	0:03	0:03	0:03	0:03	0:03
190	0:04	0:04	0:04	0:03	0:03	0:03	0:03	0:03	0:03	0:03	0:03	0:00

Z+ ALGORITHM >> NDLS (HR:MIN) AT ALTITUDE (METRIC)

Altitude (meters)	0 to 915	916 to 1220	1221 to 1525	1526 to 1830	1831 to 2135	2136 to 2440	2441 to 2745	2746 to 3050	3051 to 3355	3356 to 3660	3661 to 3965	3966 to 4270
Depth (M)												
9	3:37	2:41	2:31	2:23	2:16	2:10	2:04	1:59	1:54	1:50	1:43	1:37
12	1:55	1:27	1:21	1:15	1:12	1:08	1:05	1:03	1:00	0:58	0:55	0:54
15	1:08	0:55	0:53	0:51	0:49	0:47	0:44	0:42	0:39	0:37	0:36	0:34
18	0:50	0:39	0:37	0:35	0:33	0:32	0:30	0:28	0:26	0:24	0:23	0:22
21	0:36	0:28	0:26	0:24	0:23	0:21	0:20	0:19	0:18	0:17	0:16	0:16
24	0:27	0:20	0:19	0:18	0:17	0:16	0:15	0:14	0:13	0:12	0:11	0:11
27	0:20	0:16	0:15	0:13	0:12	0:11	0:11	0:10	0:09	0:09	0:09	0:08
30	0:16	0:12	0:11	0:10	0:09	0:09	0:09	0:08	0:08	0:07	0:07	0:07
33	0:13	0:09	0:09	0:08	0:08	0:07	0:07	0:07	0:07	0:06	0:06	0:06
36	0:10	0:08	0:07	0:07	0:07	0:06	0:06	0:06	0:05	0:05	0:05	0:05
39	0:09	0:07	0:06	0:06	0:06	0:06	0:05	0:05	0:05	0:05	0:05	0:04
42	0:08	0:06	0:06	0:05	0:05	0:05	0:05	0:05	0:04	0:04	0:04	0:04
45	0:06	0:05	0:05	0:05	0:05	0:04	0:04	0:04	0:04	0:04	0:04	0:04
48	0:06	0:05	0:05	0:04	0:04	0:04	0:04	0:04	0:04	0:03	0:03	0:03
51	0:05	0:04	0:04	0:04	0:04	0:04	0:04	0:03	0:03	0:03	0:03	0:03
54	0:05	0:04	0:04	0:04	0:04	0:03	0:03	0:03	0:03	0:03	0:03	0:03
57	0:05	0:04	0:04	0:03	0:03	0:03	0:03	0:03	0:03	0:03	0:03	0:03

DSAT ALGORITHM >> NDLS (HR:MIN) AT ALTITUDE (IMPERIAL)

Altitude (feet)	0 to 3000	3001 to 4000	4001 to 5000	5001 to 6000	6001 to 7000	7001 to 8000	8001 to 9000	9001 to 10000	10001 to 11000	11001 to 12000	12001 to 13000	13001 to 14000
Depth (FT)												
30	4:20	3:21	3:07	2:55	2:45	2:36	2:28	2:21	2:15	2:10	2:04	1:58
40	2:17	1:43	1:36	1:30	1:25	1:20	1:16	1:12	1:09	1:06	1:03	1:01
50	1:21	1:03	1:00	0:58	0:55	0:52	0:48	0:45	0:43	0:41	0:39	0:37
60	0:57	0:43	0:40	0:38	0:36	0:34	0:33	0:31	0:30	0:29	0:28	0:27
70	0:40	0:31	0:30	0:28	0:27	0:26	0:24	0:23	0:22	0:20	0:19	0:18
80	0:30	0:24	0:23	0:21	0:20	0:19	0:18	0:17	0:16	0:16	0:14	0:13
90	0:24	0:19	0:18	0:17	0:16	0:15	0:14	0:13	0:12	0:11	0:10	0:10
100	0:19	0:15	0:14	0:13	0:12	0:11	0:10	0:10	0:09	0:09	0:08	0:08
110	0:16	0:12	0:11	0:10	0:09	0:09	0:08	0:08	0:08	0:07	0:07	0:07
120	0:13	0:09	0:09	0:08	0:08	0:08	0:07	0:07	0:07	0:06	0:06	0:06
130	0:11	0:08	0:08	0:07	0:07	0:07	0:06	0:06	0:06	0:06	0:05	0:05
140	0:09	0:07	0:07	0:06	0:06	0:06	0:06	0:05	0:05	0:05	0:05	0:05
150	0:08	0:06	0:06	0:06	0:05	0:05	0:05	0:05	0:05	0:04	0:04	0:04
160	0:07	0:06	0:05	0:05	0:05	0:05	0:05	0:04	0:04	0:04	0:04	0:04
170	0:07	0:05	0:05	0:05	0:04	0:04	0:04	0:04	0:04	0:04	0:04	0:03
180	0:06	0:05	0:05	0:04	0:04	0:04	0:04	0:04	0:04	0:03	0:03	0:03
190	0:05	0:04	0:04	0:04	0:04	0:04	0:04	0:03	0:03	0:03	0:03	0:03

DSAT ALGORITHM >> NDLS (HR:MIN) AT ALTITUDE (METRIC)

Altitude (meters)	0 to 915	916 to 1220	1221 to 1525	1526 to 1830	1831 to 2135	2136 to 2440	2441 to 2745	2746 to 3050	3051 to 3355	3356 to 3660	3661 to 3965	3966 to 4270
Depth (M)												
9	4:43	3:37	3:24	3:10	2:58	2:48	2:39	2:31	2:24	2:18	2:12	2:07
12	2:24	1:52	1:44	1:37	1:30	1:25	1:21	1:17	1:13	1:10	1:07	1:04
15	1:25	1:06	1:03	1:00	0:57	0:55	0:52	0:49	0:46	0:43	0:41	0:39
18	0:59	0:45	0:42	0:40	0:38	0:36	0:34	0:32	0:31	0:30	0:29	0:28
21	0:41	0:33	0:31	0:29	0:28	0:27	0:26	0:24	0:23	0:21	0:20	0:19
24	0:32	0:26	0:24	0:22	0:21	0:20	0:19	0:18	0:17	0:16	0:15	0:14
27	0:25	0:19	0:18	0:17	0:16	0:16	0:14	0:13	0:12	0:12	0:11	0:10
30	0:20	0:16	0:15	0:13	0:12	0:12	0:11	0:10	0:10	0:09	0:09	0:08
33	0:17	0:12	0:11	0:11	0:10	0:09	0:09	0:08	0:08	0:08	0:07	0:07
36	0:14	0:10	0:09	0:09	0:08	0:08	0:07	0:07	0:07	0:06	0:06	0:06
39	0:11	0:08	0:08	0:07	0:07	0:07	0:06	0:06	0:06	0:06	0:05	0:05
42	0:09	0:07	0:07	0:07	0:06	0:06	0:06	0:05	0:05	0:05	0:05	0:05
45	0:08	0:06	0:06	0:06	0:06	0:05	0:05	0:05	0:05	0:05	0:04	0:04
48	0:07	0:06	0:06	0:05	0:05	0:05	0:05	0:04	0:04	0:04	0:04	0:04
51	0:06	0:05	0:05	0:05	0:05	0:04	0:04	0:04	0:04	0:04	0:04	0:04
54	0:06	0:05	0:05	0:04	0:04	0:04	0:04	0:04	0:04	0:03	0:03	0:03
57	0:05	0:04	0:04	0:04	0:04	0:04	0:04	0:03	0:03	0:03	0:03	0:03

SPECIFICATIONS

CAN BE USED AS
- Dive Computer (Air or Nitrox)

DIVE COMPUTER PERFORMANCE
- Buhlmann ZHL-16c based Z+, or DSAT based, algorithm
- No Deco limits closely follow PADI RDP
- Decompression in agreement with Buhlmann ZHL-16c and French MN90
- No Deco Deep Stops - Morroni, Bennett
- Deco Deep Stops (not recommended) - Blatteau, Gerth, Gutvik
- Altitude - Buhlmann, IANTD, RDP (Cross)
- Altitude corrections and O2 limits based on NOAA tables

OPERATIONAL PERFORMANCE

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

Dive Counter:
- Displays Dives #1 to 12
- Resets to Dive #1, upon diving (after 24 hours with no dives)

Altitude:
- Operational from sea level to 14,000 feet (4,270 meters) elevation
- Measures ambient pressure every 30 minutes when inactive, upon activation, every 15 minutes while activated.
- Does not measure ambient pressure when Wet.
- Compensates for Altitudes above sea level beginning at 3,001 feet (916 meters) elevation and every 1,000 feet (305 meters) higher.

Power:
- (1) 3 vdc, CR2430, Lithium battery (Panasonic or equivalent)
- Shelf life Up to 5 years (dependent on battery manufacturer)
- Replacement User (annual recommended)
- Use Life 100 dive hours if (1) 1 hour dives per dive day to 300 hours if (3) 1 hour dives per day

Battery Icon:
- Warning - icon on solid at 2.75 volts, Battery change recommended
- Alarm - icon on flashing at 2.50 volts, change the Battery

Activation:
- Manual - push button (recommended).
- Automatic - when wet.
- Cannot be manually activated deeper than 4 FT (1.2 M).
- Cannot operate at elevations higher than 14,000 feet (4,270 meters)

Operating Temperature:
- Out of the water - between 20 °F and 140 °F (-6 and 60 °C).
- In the water - between 28 °F and 95 °F (-2 and 35 °C).

TLBG	segments
• No Deco Normal zone	1 to 3
• No Deco Caution zone	4
• Decompression zone	5 (all)

VARI	60 FT (18 M) & Shallower			Deeper than 60 FT (18 M)		
	segments	FPM	MPM	segments	FPM	MPM
	0	0 - 10	0 - 3	0	0 - 20	0 - 6
• Normal zone	1	11 - 15	3.5 - 4.5	1	21 - 30	6.5 - 9
Normal zone	2	16 - 20	5 - 6	2	31 - 40	9.5 - 12
Normal zone	3	21 - 25	6.5 - 7.5	3	41 - 50	12.5 - 15
• Caution zone	4	26 - 30	8 - 9	4	51 - 60	15.5 - 18
• Too Fast zone (flashing)	5 (all)	> 30	> 9	5 (all)	> 60	> 18

NUMERIC DISPLAYS:	Range:	Resolution:
• Dive Number	0 to 12	1
• Surface Interval Time	0:00 to 23:59 hr:min	1 min
• Time to Fly & Desat	23:50 to 0:00 hr:min* (* starting 10 min after the dive)	1 min
• FO2 Set Point	Air, 21 to 50 %	1 %
• PO2 Value	0.00 to 5.00 ATA	.01 ATA
• Depth	0 to 330 FT (100 M)	1 FT (.1/1 M)
• Elapsed Dive Time	0:00 to 9:59 hr:min	1 min
• Dive Time Remaining	0:00 to 9:59 hr:min	1 min
• Safety Stop Time	0:00 to 3:00 min:sec	1 sec
• Deco Stop Time	0:00 to 9:59 hr:min	1 min
• Total Ascent Time	0:00 to 9:59 hr:min	1 min
• Violation Countdown Timer	23:50 to 0:00 hr:min	1 min

MOD (Max Operating Depth): 330 FT (100 M)

INSPECTION / SERVICE RECORD

Serial Number: _____

Firmware Rev: _____

Date of Purchase: _____

Purchased from: _____

Below to be filled in by an Authorized Oceanic Dealer:

Date	Service Performed	Dealer/Technician

OCEANIC WORLD WIDE

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NOTES

BUD

DIVE COMPUTER

OPERATING MANUAL