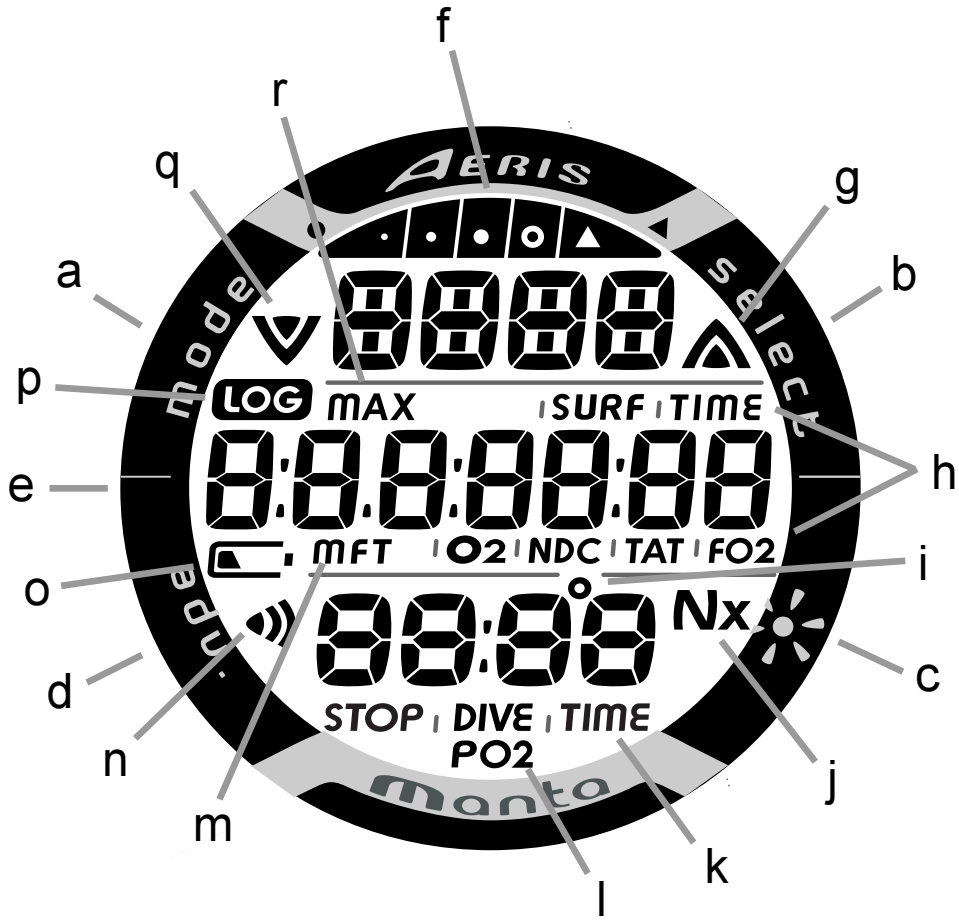
AERIS®

Manta

WATCH / DIVE COMPUTER

OPERATING MANUAL



Components:

a. Mode (M) Button
b. Select (S) Button
c. Light (L) Button
d. Advance (A) Button
e. LED Warning Light
f. Bar Graph
g. Icon - Ascend
h. Icon - Surface Interval
   O2 Time Remaining
   No Deco Time Remaining
   Total Ascent Time
   FO2 Set Point
i. Icon - Degrees
j. Icon - Nitrox
k. Icon - Stop Time Required
   Elapsed Dive Time
l. Icon - PO2
m Icon - Depth Units
n. Icon - Daily Alarm set
o. Icon - Low Battery
p. Icon - Log Mode
q. Icon - Descend
r. Icon - Max Depth

FULL LCD

CONTENTS

CONTENTS (continued)

CONTENTS (continued)

CONTENTS (continued)

Pay special attention to items marked with this Warning symbol.

LIMITED TWO-YEAR WARRANTY

For details, refer to the Product Warranty Registration Card provided. Register on-line at www.diveaeris.com

COPYRIGHT NOTICE

Manta Operating Manual, Doc. No. 12-7213
© 2002 Design, 2006
San Leandro, CA USA 94577

TRADEMARK, TRADE NAME, AND SERVICE MARK NOTICE

PATENT NOTICE

U.S. Patents have been issued, or applied for, to protect the following design features:
Data Sensing and Processing Device (U.S. Patent no. 4,882,678). Other patents pending.
User Setable Display (U.S. Patent no. 5,845,235) is owned by Suunto Oy (Finland).

DECOMPRESSION MODEL

The programs within the Manta 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 Manta dive computer model is based upon the latest research and experiments in decompression theory. **Still, using the Manta, 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.

NOTICE

STORAGE and INITIAL ACTIVATION

Manta Watch/Dive Computers are placed in a Deep Sleep mode prior to being shipped from the factory. The intent is to extend storage life of the Battery for up to 7 years, before the unit is initially placed in service.

In this mode, Date and Time are updated as they normally would be. However, they are not displayed. Upon waking the Manta up, the correct Date and U.S. Pacific Time will be displayed and it will be ready to operate with full functions.

To wake the Manta up from Deep Sleep mode, simultaneously depress the upper/right (S) and lower/left (A) buttons for 2 to 3 seconds until the display comes full ON displaying the MAIN TIME screen, then release them.

△ **NOTE: Once the Manta is brought out of the Deep Sleep mode, it can only be placed back in it by the factory.**

WARNING: Prior to diving with the Manta, you must also read and understand the AERIS Dive Computer Safety and Reference Manual, Doc. No. 12-7203, which provides Important Warnings and Safety Recommendations as well as general product information.

INTRODUCTION AND GENERAL FEATURES AND DISPLAYS

INTRODUCTION

Welcome to AERIS and thank you for choosing the Manta !

It is extremely important that you read this Operating Manual in sequence and understand it completely before attempting to use the Manta as a dive computer.

It is equally important that you read the AERIS Dive Computer Safety and Reference Manual (Doc. No. 12-7203) provided with your Manta. It contains information that you must become familiar with prior to diving with your Manta.

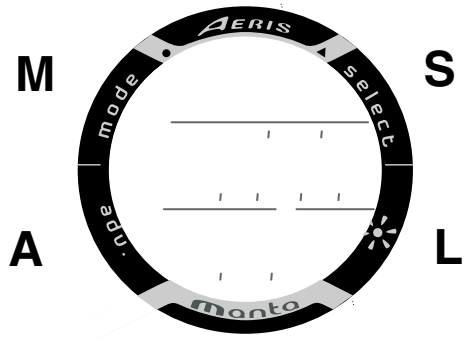
Remember that technology is no substitute for common sense, and a dive computer only provides the person using it with data, not the knowledge to use it.

INTERACTIVE CONTROL CONSOLE

The Interactive Control Console consists of four Control Buttons that allow you to select mode options and access specific information. They are also used to link the Transmitter(s), enter Settings, activate the Backlight, and acknowledge the Audible Alarm.

Throughout this manual they will be referred to as the M, S, L, and A buttons.

- Upper/Left - Mode (M) button
- Upper/Right - Select (S) button
- Lower/Right - Light (L) button
- Lower/Left - Advance (A) button



OPERATING MODE STRUCTURE

Unless it is operating in Dive Computer mode, the Manta will be ON in the default WATCH MAIN TIME (home time) mode (Fig. 1), like a standard WATCH, until the Mode is changed.

The M button is used to access 4 other Modes that include Alternate Time Mode, Countdown Timer, Chronograph (stop watch/lap timer), and Daily Alarm. It is also used to revert to the Local Default Time display and access Computer Modes.

The screens of the Main Modes and Sub Modes will remain on display until a button is pressed to access another screen or Mode, activate a sequence, or for 2 minutes if no button is pressed. The Chronograph remains on display as long as it is running unless another Mode is accessed.

When Wet Activation is set On, the Manta will enter selected Dive Mode upon descent to 5 FT (feet)/1.5 M (meters) for 5 seconds, regardless of what operating Mode it is in.

Main Sequence
(while at home)
Main Time
Alternate Time
Countdown Timer
Chronograph
Daily Alarm
Alternate Sequence
(at a travel location)
Alternate Time
Main Time (home)
Countdown Timer
Chronograph
Daily Alarm

⚠ **WARNING: When Wet Activation is set OFF, the Manta must be in Dive Surface Mode (NORM< GAUG, or FREE prior to the first dive of a new series. Commencing a dive while in Watch modes will not activate Dive Mode unless Wet Activation is set ON.**

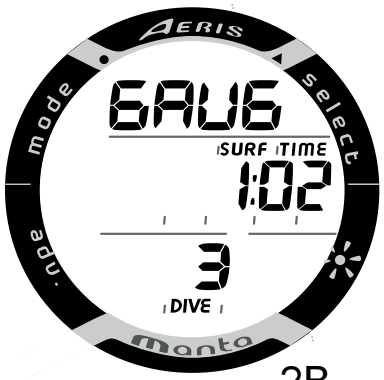
Fig. 1 - MAIN TIME

2A

OPERATION AS A DIVE COMPUTER

The Manta features 3 Dive Computer (DC) Operating Modes, NORM (Fig. 2A) which is used for Air and Nitrox dives, GAUG (Fig. 2B) used for dives in which Nitrogen-Oxygen calculations are not performed, and FREE (Fig. 2C) used for activities that do not use SCUBA.

Entering Settings and Plan Mode are only available in NORM SURF Mode which also allows access to Fly, Desat, Log, and History Modes.



2B

GAUG Mode only allows access to Fly, Log, and History Modes.

Once a dive is made in GAUG Operating Mode, the Manta is locked into that Mode for 24 hours after the dive.

ACI (AERIS COMPUTER INTERFACE)

Interface with a PC is accomplished by connecting the Manta to a PC USB Port using the ACI USB Interface Cable. The same Cable is used for Upload and Download.

2C

The software program is on the ACI CD, together with a USB Driver. The program's Help serves as the user manual and can be printed for personal use. The Settings Upload program is used to check the Manta's existing Settings and for entering Time, Alarm, and Dive Computer settings into the Manta.

Fig. 2 - DC MODES

The Data Download program is used to retrieve Data that was sampled during dives and stored in the Manta's memory.

The Manta checks for an External Access request once every second while in the Watch Main Time. Checks are not made if the unit is wet. For a connection to be made, the Interface Cable is clipped onto the Manta's Data Port and plugged into a PC USB Port. To establish the connection, the ACI PC program must be running. When the connection is made, all segments of the LCD appear on the display until completion of the Upload or Download operation.

- The Manta reverts to the Watch Main Time screen after completion of the Upload or Download operation, or after 2 minutes if no PC action was taken.

SYMBOLS AND ALPHA NUMERIC GRAPHICS

The upper line of digits on the LCD screen is used to convey alpha Messages such as Day of the Week, Operating Modes, items being Set, Altitude level, and Alarm identification. At times, the second line is also used to display alpha numeric graphics such as FO2 and On/Off. The PO2 values during Nitrox dives will appear in the lower line.

AUDIBLE ALARM

Most warning situations that activate the Audible Alarm while operating in NORM or GAUG Mode cause the Manta to emit 1 beep per second for 10 seconds, or until the situation is corrected, or it is acknowledged by momentarily pressing and releasing the S button (less than 2 seconds). After being acknowledged and the situation corrected, the Alarm will sound again upon reentry into the warning situation, or entry into another type of warning situation.

FREE Dive Mode has its own set of Alarms which emit 3 short beeps either 1 or 3 times which cannot be acknowledged or set Off.

A red LED Warning Light, located on the left side of the housing, is synchronized with the Audible Alarm. It will flash as the Audible Alarm sounds. It will turn Off when the Alarm is acknowledged or the situation is corrected. The Audible and LED will not be active if the Alarm is Set OFF (a group A setting).

Situations that will activate the NORM/GAUG 10 second Alarm include -

- Descent deeper than the Max Depth Set Point selected.
- Dive Time Remaining at the Set Point selected.
- Elapsed Dive Time at the Set Point selected.
- High PO2 at the Set Point selected.
- High O2 of 300 OTU (single or daily exposure).
- Nitrogen Bar Graph at the segment Set Point selected.
- NORM/GAUG Ascent Rate exceeds 60 FPM (18 MPM) when deeper than 60 FT (18 M), or 30 FPM (9 MPM) at 60 FT (18 M) and shallower.
- Entry into Decompression Mode (Deco).
- Conditional Violation (above a required Deco Stop Depth for less than 5 minutes).
- Delayed Violation (above a required Deco Stop Depth for more than 5 minutes).
- Delayed Violation (a Deco Stop Depth greater than 60 FT/18 M is required).
- Delayed Violation (Maximum Operating Depth of 330 FT/100 M is exceeded).
- Watch Daily Alarm reaches time set (disabled during Dive Modes).
- Watch Mode Countdown Timer reaches 0:00.

A single short beep (which cannot be disabled) is emitted for the following -

- Upon completion of a Hot Swap battery change.
- Change from Delayed to Full Violation 5 minutes after the dive.

3 short beeps (which cannot be disabled) are emitted for the following -

- NORM/GAUG Ascent Rate is 51 to 60 FPM (15.1 to 18 MPM) when deeper than 60 FT (18 M), or 26 to 30 FPM (7.5 to 9 MPM) at 60 FT (18 M) and shallower.
- FREE Elapsed Dive Time Alarm (3 beeps every 30 seconds if set On).
- FREE Depth Alarms 1/2/3 (set sequentially deeper) - each 3 beeps 3 times.
- FREE NIBG Alarm (Caution zone, 4 segments) - 3 beeps 3 times.
- Entry into Deco during a FREE Dive (Permanent Violation) - 3 beeps 3 times.
- Free Dive Mode Countdown Timer reaches 0:00 - each 3 beeps 3 times.

During the following NORM Dive situations, the 10 second continuous tone will be followed by a 5 second steady beep that will not turn off when acknowledged -

- Ascending above a required Decompression Ceiling Stop Depth for more than 5 minutes (referred to as a Delayed Violation).
- Decompression requires a Ceiling Stop Depth of 70 FT/21 M or deeper.
- Being on the Surface for 5 minutes after a Conditional Violation (Permanent Violation).

BACKLIGHT

To activate the Backlight - press the L button.

- The Backlight will activate and illuminate the display for button depression time (10 seconds maximum) plus the user set Duration time of 0, 5, or 10 seconds, for a maximum of 20 seconds.
- Press the button again to activate as desired.

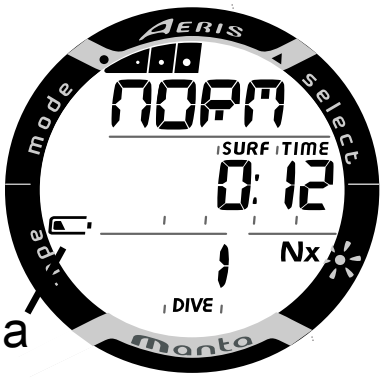


Fig. 3 - LOW BATTERY WARNING

NOTE: Extensive use of the Backlight reduces estimated Battery life. Also, the Backlight does not operate during a Low Battery Condition or when the Manta is connected to a PC.

POWER SUPPLY

The Manta utilizes one 3 volt CR2430 Lithium Battery. When used as a Dive Computer, the battery should operate normally for 1 year or 300 dive hours if 2 dives are conducted during each dive period. The Manta checks its battery voltage every 2 minutes during surface operation.

- If voltage decreases to the Warning level (2.75 volts), the Battery icon will appear on Surface display screens (fig. 3a) as an indication that the Battery should be changed prior to commencing a series of dives.
- If voltage decreases to the Alarm level (2.50 volts), the Battery icon will flash and the message CHNG > BATT will scroll at the top of the display (Fig. 4). Operation will automatically revert to Main Time Mode. The Manta would then only operate in Watch modes until the Battery becomes completely depleted.
- Low Battery Warning/Alarm conditions are not displayed during Dive Modes.
- If a Low Battery Condition was not displayed prior to starting a Dive, and a Low Battery Condition occurs during the dive, there will be sufficient Battery power to maintain operation for the remainder of that dive.

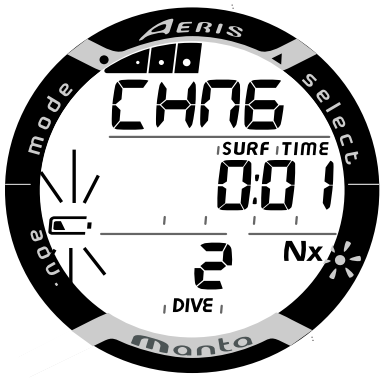


Fig. 4 - LOW BATTERY ALARM

WARNING: Prior to diving with the Manta, you must also read and understand the AERIS Dive Computer Safety and Reference Manual, Doc. No. 12-7203, which provides Important Warnings and Safety Recommendations as well as general product information.

WATCH FEATURES AND DISPLAYS

Fig. 5 - MAIN TIME

LOCAL DEFAULT TIME

Watch Main Time (Fig. 5) is the current Time at your home location and is normally selected as the Local Default Time.

The normal Watch screen sequence accessed with momentary presses (less than 2 seconds each) of the M button is -

Main Time > Alternate Time > Countdown Timer > Chronograph > Daily Alarm

TIME for the Remote Location will display Am (or Pm). Local Default TIME will not.

Watch Alternate Time (Fig. 6), which is set by Hour Differential, is the current Time at a remote travel location. Upon arrival at the location, Alternate Time can be interchanged with Main Time to make it the Local Default Time while visiting the travel location.

The M button will then access the screens in this sequence -

Alternate Time > Main Time > Countdown Timer > Chronograph > Daily Alarm

Fig. 6 - ALTERNATE TIME

While viewing Alternate Time, depressing and holding the S button for 2 seconds will replace Main Time with Alternate Time that will then become the Local Default Time until changed.

While viewing any of the Watch Mode displays, pressing and holding the M button for 2 seconds or if no button is pressed for 2 minutes, operation will revert to the Watch Time screen selected to be the Local Default Watch Time (Main or Alternate).

MAIN TIME, information displayed includes:

> Nitrogen Bar Graph, if any after NORM/FREE dives.
> Alarm icon - if the Daily Alarm is set On (Fig. 7a)
> Day of the Week graphic MON (or TUE, WED, THU, FRI, SAT, SUN), or the graphic WET (if the unit is wet).
> Battery icon - if a Low Battery Condition exists.
> Month and Day (Day and Month if set for Metric)
> Time of Day (hours, minutes, seconds) (Fig. 7b)

- Pressing and releasing the M button momentarily and repeatedly (< 2 seconds each time) will step through the Main Modes.
- Pressing and releasing the S button (< 2 seconds) will silence and acknowledge the Daily Alarm (if set On and it sounds).
- Pressing the L button will activate the Backlight.
- Pressing both the A and S buttons simultaneously for 2 seconds will access the SET MAIN TIME Mode.

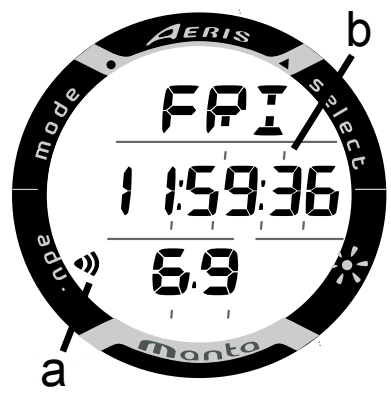


Fig. 7 - MAIN TIME
(May 31)

SET MAIN TIME

This Mode allows the Date and Time of Day to be set which will also serve as the basis for ALTERNATE TIME values.

There are 3 Time Set screens - Set Hour Format, Set Time of Day, and Set Date.

NOTE: MAIN TIME must be selected as the Local Default Time in order to set the Time and Date.

Sequence of Time/Date settings:
Hour Format > Hour > Minute > Year > Month > Day

Day of the Week is set automatically when the Date is set.

- Depressing and holding the M button at any time for 2 seconds or if no button is pressed during a period of 2 minutes, the unit will revert to the MAIN TIME screen.

Fig. 8 - SET HOUR FORMAT

While the MAIN TIME screen is being displayed, pressing the A and S buttons simultaneously for 2 seconds will access the Set Hour Format screen displaying the graphic HOUR, symbol TIME, and the Hour Format Set Point 12 or 24 flashing (Fig. 8).

- Pressing and releasing the S button momentarily (< 2 seconds) will toggle the setting between 12 and 24.

- Pressing the A button momentarily (< 2 seconds) will save the Hour Format Set Point and access the SET TIME screen with the HOUR Set Point flashing (Fig. 9).
- HINT - Pressing the A button repeatedly (< 2 seconds each time) will step through the Time/Date Settings, bypassing those that don't require setting.

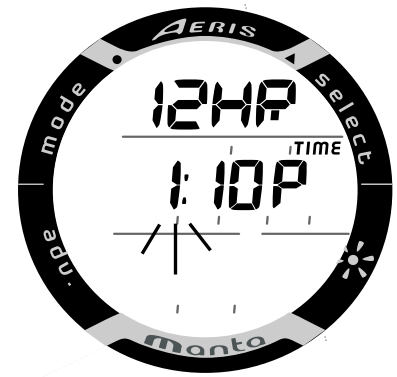


Fig. 9 - SET HOUR

Set Hour and Minute

The graphic A (= Am) or P (= Pm) is displayed when Time is in 12 Hour Format.

- Depressing and holding the S button while the HOUR Set Point is flashing will scroll through the Set Points in 1 Hour increments at a rate of 4 per second from 12: A to 11: P (or 0: to 23: if set for 24 Hour Format).
- Pressing and releasing the A button momentarily (< 2 seconds) will save the Hour Set Point and/or advance to SET MINUTE with the MINUTE Set Point flashing (Fig. 10).
- Depressing and holding the S button while the MINUTE Set Point is flashing will scroll through the Set Points in 1 minute increments at a rate of 4 per second from :00 to :59.
- Pressing and releasing the A button momentarily (< 2 seconds) will save the Minute Set Point and/or advance to the SET DATE screen with the YEAR Set Point flashing.

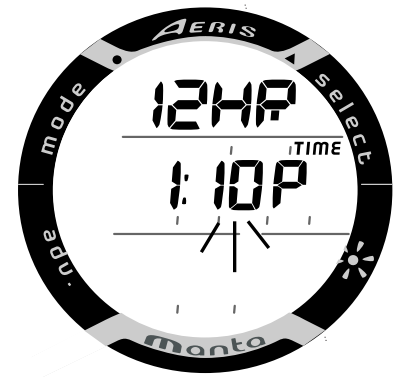


Fig. 10 - SET MINUTES

Fig. 11 - SET YEAR

Displayed on the **SET DATE** screen will be the graphic YEAR, Month and Day (or Day and Month if set for metric) with the **YEAR** Set Point flashing (Fig. 11).

- Depressing and holding the S button while the YEAR Set Point is flashing will scroll through the Set Points in 1 year increments at a rate of 4 per second from 2006 to 2049 (with leap year corrections).
- Pressing and releasing the A button momentarily (< 2 sec) will save the Year Set Point and/or advance to **SET MONTH** with the Set Point flashing and the graphic MNTH (Fig. 12).

Fig. 12 - SET MONTH

△ **NOTE: The YEAR will not be displayed in any Mode other than SET DATE. The DATE will reset to 1.1 2006 when the Battery is replaced.**

- Depressing and holding the S button while the MONTH Set Point is flashing will scroll through the Set Points in 1 month increments at a rate of 4 per second from 1 to 12.
- Pressing and releasing the A button momentarily (< 2 seconds) will save the Month Set Point and/or advance to **SET DAY** with the Set Point flashing and the graphic DAY (Fig. 13).
- Depressing and holding the S button while the **DAY** Set Point is flashing will scroll through the Set Points in one day (01) increments at a rate of 4 per second from 1 to 31 (or the highest Day for the Month set).

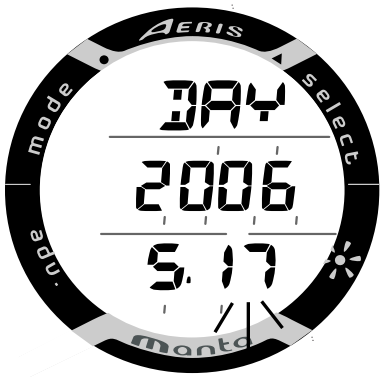


Fig. 13 - SET DAY

- Pressing and releasing the A button momentarily (< 2 seconds) will save the Set Point and/or advance to the MAIN TIME screen.

NOTE: DAY of the WEEK is set automatically based upon the Date that has been set.

Main Time/Date can also be set using the PC Settings Upload program which is on the ACI program CD.

Prior to shipment from the factory, any error of the Main Time is determined and corrected.

ALTERNATE TIME

- Pressing and releasing the M button momentarily (< 2 seconds) while the MAIN TIME screen is displayed will access the ALTERNATE TIME screen.

Information provided includes (Fig. 14):

> Nitrogen Bar Graph, if any after NORM/FREE dives.
> Alarm icon (solid) - if the Daily Alarm is set On.
> Lazy 8 symbol (Fig. 14a) identifies Time as Alternate Time.
> Day of the Week graphic MON (or TUE, WED, THU, FRI, SAT, SUN), or WET (if the unit is wet).
> Battery icon, if a Low Battery Condition exists.
> Month and Day (Day and Month if set for Metric).
> Time of Day (hr:min:sec).

- Pressing and releasing the M button momentarily and repeatedly (< 2 seconds) will step through the other Main Watch Modes.
- Pressing and releasing the S button (< 2 seconds) will silence and acknowledge the Daily Alarm (if its set On and it sounds).

Fig. 14 - ALTERNATE TIME

- Depressing the S button for 2 seconds will interchange ALTERNATE TIME with MAIN TIME making ALTERNATE TIME the Local Default Time screen.
- Pressing the L button will activate the Backlight.
- Depressing both the A and S buttons simultaneously for 2 seconds will access the SET ALTERNATE TIME Mode with the Set Point flashing.
- Depressing and holding the M button for 2 seconds will revert to the MAIN TIME screen.

SET ALTERNATE TIME

- ALTERNATE TIME can be set OFF, or to an Hour based numeric time Differential ranging from + 1 through +23 through - 23 through -1 (hours).
- Once the Differential is selected and saved, ALTERNATE Time/Date values will be based upon the MAIN TIME Set Points plus/minus the Differential.

Displayed will be the Lazy 8 symbol and graphic OFF, or the +/- numeric Hour Differential Set Point flashing (Fig. 15).

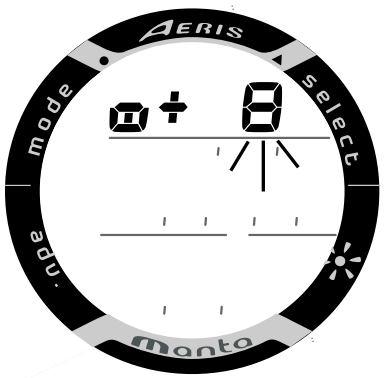


Fig. 15 - SET ALTERNATE TIME

- Depressing and holding the S button while the Set Point is flashing will scroll through the Set Points in increments of 1 Hour at a rate of 4 per second.
- Pressing and releasing the A button momentarily (< 2 seconds) will save the Set Point and/or advance to the ALTERNATE TIME screen.
- Depressing and holding the M button for 2 seconds will revert to the MAIN TIME screen.

If no button is pressed during a period of 2 minutes, the unit will revert to the MAIN TIME screen.

FREE Mode has separate COUNT-DOWN TIMER

WATCH COUNTDOWN TIMER (HR:MIN)

Pressing the M button momentarily 2 times (< 2 seconds each) while the Local Default Time screen is displayed will access the Countdown TIMER screen, displaying the remaining Count-down Time (hr:min) if running, or OFF flashing (Fig. 16) and the previously set Countdown Time (hr:min) if the set Count-down started and has ended, or OFF (solid) and 0:00 if no time was previously set.

Once set ON, a Countdown will run in the background until it counts down to 0:00, or it is set OFF, or a Dive is made at which time it will default to OFF and the value previously set.

When a set Countdown Time reaches 0:00, the Audible Alarm will beep 10 times and the red LED warning light will flash.

- Pressing and releasing the S button (< 2 seconds) will acknowledge and silence the Alarm.
- Pressing and releasing the S button (< 2 seconds) will silence and acknowledge the Daily Alarm (if its set and it sounds).
- Pressing the L button will activate the Backlight.
- Depressing and holding the M button for 2 seconds will revert to the Local Default Watch Time screen (MAIN or ALTERNATE TIME).

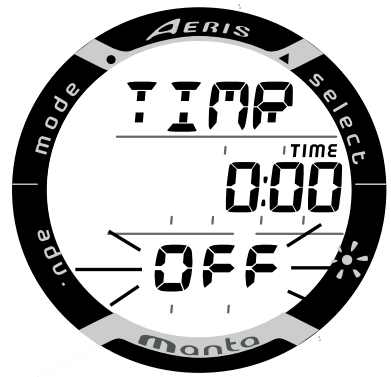


Fig. 16 - WATCH COUNTDOWN TIMER

Fig. 17 - SET WATCH CDT

- Depressing both the A and S buttons simultaneously for 2 seconds will access the SET WATCH COUNT DOWN TIMER screen indicated by the graphics TIMR and SEt, symbol TIME, and HOUR Set Point flashing (Fig. 17).

> If no button is pressed during a period of 2 minutes, the unit will revert to the Local Default Watch Time screen.

- Depressing and holding the S button while the HOUR Set Point is flashing will scroll through the Set Points in 1 hour increments at a rate of 4 per second from 0: to 23: (hr).
- Pressing and releasing the A button momentarily (< 2 seconds) will save the HOUR Set Point and/or advance to SET MINUTES with the MINUTES Set Point flashing.
- Depressing and holding the S button while the MINUTES Set Point is flashing will scroll through the Set Points in 1 minute increments at a rate of 4 per second from :00 to :59 (min).
- Pressing and releasing the A button momentarily (< 2 seconds) will save the MINUTES Set Point and/or advance to the COUNTDOWN TIMER screen indicated by the graphic OFF (flashing) in place of the graphic SEt.
- Pressing and releasing the S button momentarily (< 2 seconds) will toggle from OFF to ON and Start the Timer (Fig. 18).
- Depressing and holding the M button for 2 seconds will revert to the Local Default Watch Time screen.

> If no button is pressed during a period of 2 minutes, the unit will revert to the Local Default Watch Time screen.

Fig. 18 - CD TIMER STARTED

CHRONOGRAPH (Stop Watch/Lap Timer)

- Pressing and releasing the M button momentarily 3 times (< 2 seconds each) while the MAIN TIME screen is displayed will access the CHRONOGRAPH displaying the elapsed time if previously started or 0:00:00.00 (hr:min:sec.1/100th sec), flashing (Fig. 19).
- Pressing and releasing the S button momentarily (< 2 seconds) will start the TIMER which will begin counting up from 0:00:00.00 to 9:59:59.99 (hr:min:sec.1/100th sec) in increments of .01 (1/100th sec).

> During the first 4 seconds the 1/100th second values will be displayed, then 2 dashes (. - -) will be displayed. The 1/100th values will be recorded and displayed when LAPs are frozen and when later recalled.

- Subsequent pressing and releasing of the S button (< 2 seconds each) will freeze Lap Times (LAP1 through LAP9). After 9 Laps are recorded, additional LAPs will replace LAP9, shift the others to lower LAP numbers, while discarding LAP1.

> If the time reaches 9:59:59.99 hr:min:sec.1/100 sec, it will stop and save that number as a LAP. Subsequent presses of the S button will then have no effect.

- Pressing and releasing the A button momentarily (< 2 seconds) will Stop the Timer and Recall LAP1, displaying the graphic LAP1 (flashing) and the LAP 1 Time. Repeat presses will display other LAPs/Times (Fig. 20).
- Depressing and holding the A button for 2 seconds will stop the Timer and reset the Time to 0:00:00.00 (flashing).

Fig. 19 - CHRONO-GRAPH

Fig. 20 - LAP RECALL

- Pressing and releasing the M button momentarily (< 2 seconds) will advance to DAILY ALARM.
- Depressing and holding the M button for 2 seconds will revert to the Local Default Watch Time screen.

While the Chronograph is running, it will remain on the screen until a button operation is performed. If another screen is accessed, it will then continue to run in the background. Upon descending on a dive, the Chronograph operation will be terminated and reset to 0:00:00.00.

DAILY ALARM

When set ON, the DAILY ALARM will sound the Audible Alarm and flash the Red LED at the Time set every day.

- Pressing the M button momentarily 4 times (< 2 seconds each time) while the MAIN TIME screen is displayed will access the DAILY ALARM STATUS screen.

DAILY ALARM STATUS, information provided includes (Fig. 21):

> Alarm icon
> Graphics ALRM and ON (or OFF), flashing.
> Alarm Time Set Point (hr:min).

- Pressing and releasing the S button momentarily (< 2 seconds) will toggle between ON and OFF.

Fig. 21 - DAILY ALARM STATUS

> Upon being toggled to ON, the Alarm will be set to sound every day at the Time indicated.

- Depressing both the A and S buttons simultaneously for 2 seconds will access the SET DAILY ALARM screen allowing a new Time to be set.
- Depressing and holding the M button for 2 seconds will revert to the Local Default Watch Time screen.
- Pressing the L button will activate the Backlight.

> If no button is pressed during a period of 2 minutes, the unit will revert to the Local Default Watch Time screen.

SET DAILY ALARM, information provided includes (Fig. 22):

> Alarm icon
> Graphics ALRM and SEt.
> Alarm Time previously set (hr:min) with the HOUR Set Point flashing.

- Depressing and holding the S button while the HOUR Set Point is flashing will scroll through the Set Points in 1 hour increments at a rate of 4 per second from 12: A (= Am) to 11: P (= Pm), or 0: to 23: if 24 hour format. The graphic A (= Am) or P (= Pm) will be displayed when setting Time in 12 Hour Format.
- Pressing and releasing the A button momentarily (< 2 seconds) will save the HOUR Set Point and/or advance to SET MINUTE with the Set Point flashing.

Fig. 22 - SET DAILY ALARM

- Depressing and holding the S button while the MINUTE Set Point is flashing will scroll through the Set Points in 1 minute increments at a rate of 4 per second from :00 to :59.
- Pressing and releasing the A button momentarily (< 2 seconds) will save the MINUTE Set Point and/or advance to the DAILY ALARM screen indicated by the graphic ON (or OFF) flashing.
- Depressing and holding the M button for 2 seconds will revert to the Local Default Watch Time screen.

WARNING: Prior to diving with the Manta, you must also read and understand the AERIS Dive Computer Safety and Reference Manual, Doc. No. 12-7203, which provides Important Warnings and Safety Recommendations as well as general product information.

DIVE COMPUTER FEATURES AND DISPLAYS

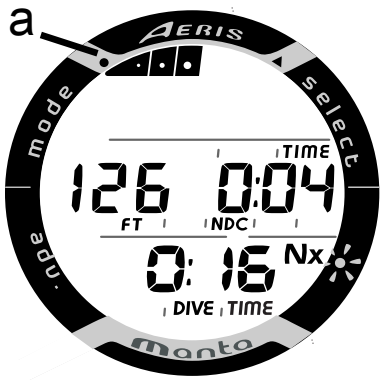


Fig. 23 - NIBG

BAR GRAPH

The Manta features one shared Bar Graph that represents either nitrogen loading, or when accessed, oxygen accumulation. By default, the Bar Graph (Fig. 23a), referred to as the Nitrogen Bar Graph (NIBG), represents your relative no decompression or decompression status.

As your Depth and Elapsed Dive Time increase, segments will add to the NIBG, and as you ascend to shallower depths, the segments of the NIBG will begin to recede, indicating that additional no decompression time is allowed.

The Nitrogen Bar Graph monitors 12 different nitrogen compartments simultaneously and displays the one that is in control of your dive. It consists of 5 segments, the left 4 represent No Decompression status and the fifth at the right indicates a Decompression condition.

When the Manta is set to operate in NORM Nitrox mode, the Bar Graph will represent oxygen accumulation when the O2 data screen (Alternate Display) is accessed temporarily. The graphic O2BG will appear as an indication (Fig. 24a).

Regardless of which parameter the Bar Graph is representing at the time, nitrogen (if NORM or FREE) and oxygen (if NORM) calculations will continue to be performed in the background.

Fig. 24 - O2BG

Displays associated with oxygen and the O2 Bar Graph will be displayed if FO2 has been set at a value other than 'Air' (e.g., a numerical value) and the Alternate screen that displays oxygen related data is accessed.

When the oxygen data screen is accessed during a NORM dive, the Bar Graph will show the maximum of either per dive accumulated oxygen or 24 hour period accumulated oxygen.

As your oxygen exposure (accumulation) increases during a NORM dive, segments will add to the O2 Bar Graph, and as saturation decreases, it will begin to recede, indicating that additional exposure is allowed for that dive and 24 hour period.

The Manta will store oxygen accumulation calculations for up to 10 dives conducted during a 24 hour period. If the maximum limit for NORM dive oxygen loading has been exceeded for that day (24 hour period), all of the segments of the O2 Bar Graph will be displayed flashing (Fig. 25).

Depth/Time values will not appear in Plan Mode until the O2 Bar Graph recedes into the normal zone (4 segments) indicating that your daily oxygen dosage has decreased an amount equivalent to the amount accumulated during the latest dive completed.

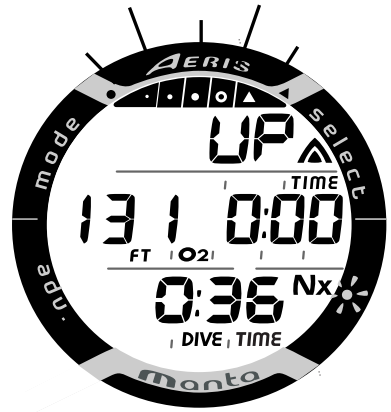


Fig. 25 - O2 EXCEEDED

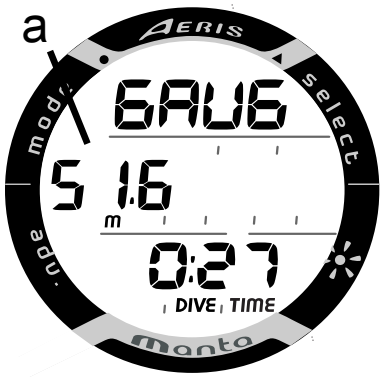


Fig. 26 - CURRENT DEPTH

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.

Within the available NORM Mode parameters that can be set (described later) are a NIBG Alarm and a Conservative Factor which if set ON reduces No Decompression times allowed.

ALPHA / NUMERIC DISPLAYS

Depth Displays (all Modes)

During dives, the Current Depth display (Fig. 26a) and Maximum Depth which is accessed as an Alternate Display (Fig. 27a) indicate Depths from 0 to 330 FT (100 M) in increments of 1 FT (0.1 M).

During a No Decompression Safety Stop, the set Stop Depth is displayed and during a Decompression condition, the required Ceiling Stop Depth is displayed.

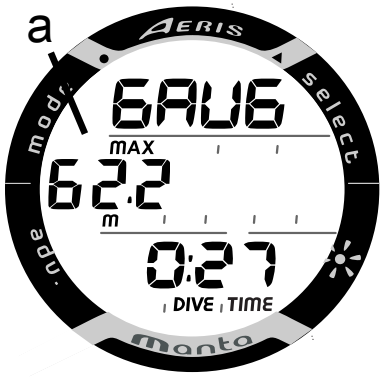


Fig. 27 - MAX DEPTH

Time and Date Displays

Time of Day and NORM/GAUG Mode displays are shown in hour:minute format (i.e., 1:16 represents 1 hour and 16 minutes, not 116 minutes!).

FREE Dive Mode times are shown in minute:second format.

The colon that separates hours and minutes (minutes and seconds) blinks once per second when the display is indicating real time (e.g., Surface Interval, Elapsed Dive Time), and is solid (non-blinking) when times are calculated projections (e.g., Time to Fly, Plan).

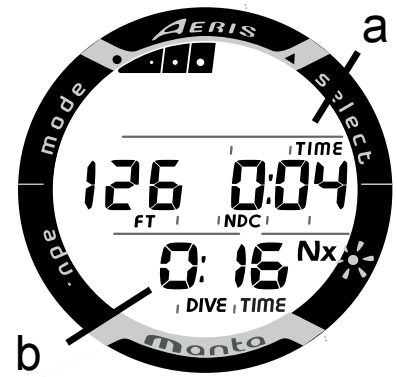


Fig. 28 - TIMES

The Primary Time display is located in the middle row of the display (Fig. 28a). Another time display (Fig. 28b) is located in the lower row. Both displays are identified by the symbol TIME.

When the Manta is operating in Dive Computer mode, Date is displayed only to identify dives when they are accessed in the LOG Mode.

Fig. 29 - DATE

When Units of Measure are set for Imperial, Month appears to the left of Day (Fig. 29a) separated by a decimal point (month.day). When set for Metric units, the Month appears to the right of Day (day.month).

Temperature Display

Ambient Temperature can be viewed on the surface and during dives by accessing a Secondary Display (Fig. 30a).

The lowest Temperature recorded during each NORM/GAUG dive is recorded in the LOG for that dive.

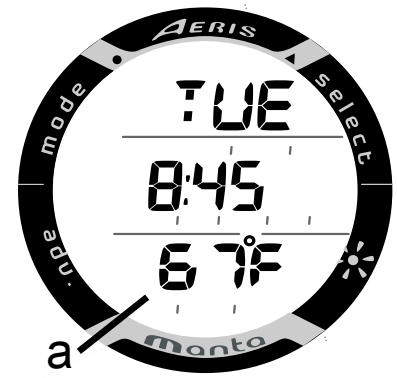


Fig. 30 - TEMPERA-TURE

NOTE:
Each display represents unique pieces 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.

You must also understand the icons, symbols, and alpha/numeric messages presented.

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

WARNING: Prior to diving with the Manta, you must also read and understand the AERIS Dive Computer Safety and Reference Manual, Doc. No. 12-7203, which provides Important Warnings and Safety Recommendations as well as general product information.

DIVE COMPUTER SURFACE SEQUENCE AND OPERATING MODES

DIVE COMPUTER (DC) OPERATING MODES

The Manta features 3 selectable DC Operating Modes -

- NORM - for Normal Air or Nitrox dives
- GAUG - for dives with no Nitrogen/Oxygen calculations (Once a dive is made in GAUG Mode, dive computer operation is locked into Gauge Mode for 24 hours after the dive.
- FREE - for dives with no SCUBA

SURFACE MODE

Depressing and holding the M button for 2 seconds while the Local Default Watch TIME screen is displayed (Main Time or Alternate Time, whichever was selected as the Default) accesses the previously selected Dive Mode SURFACE screen (NORM, GAUG, or FREE).

If no dive has been taken within the past 24 hours, the NORM SURF MAIN screen will appear as the default display indicated by the graphic NORM (solid) (Fig. 31).

Fig. 31 - NORM SURF MAIN
(no dive made)

- The GAUG or FREE SURF MAIN screens can be accessed by subsequent 2 second presses of the M button. Their graphics will flash indicating that they can be 'selected' as the Operating Dive Mode.
- To select a Mode for diving, press/release the M button while that graphic is flashing. When the graphic becomes solid, that Mode is then selected for the type of dives to be conducted.

- The Operating Mode selected (NORM, GAUG, or FREE) will remain on display for 2 hours until a dive is made or Watch Mode is selected.

If a dive has been conducted within the past 24 hours, the SURF MAIN screen for that Operating Mode (NORM, GAUG, or FREE) will be displayed.

At any time while operating in Surface Modes, the Manta will enter Dive Mode upon descent to 5 FT (1.5 M) for 5 seconds.

- During the 2 hour pre dive surface period, if the M button is pressed to access other screens in the Watch Mode sequence, Surface Mode must again be accessed prior to the first dive of a series (if Wet Activation is set OFF).
- When Wet Activation is set ON, the Wet Contacts will activate the selected Dive Mode regardless of what Mode the Manta is operating in at the time of the descent.

The Manta will enter POST DIVE SURFACE MODE following a dive upon ascent to 2 FT (0.6 M) for 1 second. The SURF icon will flash during the first 10 minutes after a NORM/GAUG dive (Fig. 32), or 1 minute after a FREE dive.

During the first 10 minutes after a dive, the SURF MAIN screen for the Operating Mode selected prior to the dive (NORM, GAUG, or FREE) remains on display as the Default SURF MAIN screen.

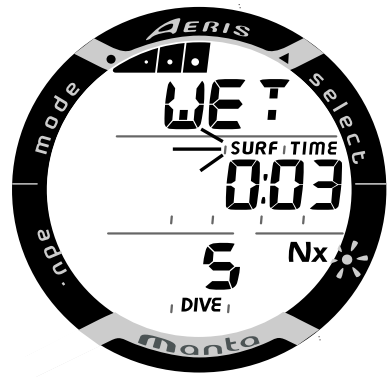


Fig. 32 - NORM SURFACE MODE (Post Dive Wet)

When the 10 minute Surface Time has elapsed, the Local Default Watch TIME screen (Main or Alternate Time) will replace the Surface Mode display. The SURF MAIN screen can then be accessed by pressing the M button for 2 seconds.

NORM SURF MAIN, information provided includes (Fig. 33):

- > Nitrogen Bar Graph (NIBG), if any after a NORM or FREE dive.
- > Graphic NORM alternating with the Altitude Level graphic SEA (or EL2 through EL7) and WET (if the unit is wet), each On 3 seconds then 1/4 second blank.
- > Surface Interval Time (hr:min) with SURF and TIME icons.
- > Battery icon if a Low Battery Warning Condition exists, flashing if Too Low
- > Number of that dive (0 if no dive has been made yet) with DIVE icon.
- > Nx icon, if FO2 is set for a Nitrox dive.

Fig. 33 - NORM SURF MAIN

NORM SURF MAIN - Button Operations:

- Pressing the L button will activate the Backlight.
- Repeat press/release of the A button (< 2 seconds each time) will step through the Surface Sequence -

SURF MAIN > PLAN > FLY > SAT > LOG > HISTORY

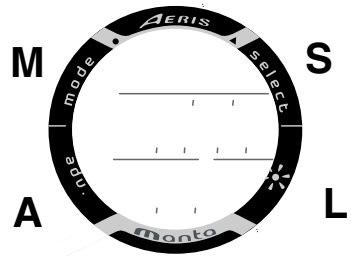
- Depressing and holding the A button for 2 seconds will access the NORM SURF ALT screen, which will revert to the Main Display after 5 seconds unless A is pressed.
- Pressing and releasing the A button (< 2 seconds), while viewing the ALT screen, will access the Secondary Display which will revert to the Main Display after 5 seconds or if A is pressed and released again.
- Depressing both the A and S buttons simultaneously for 2 seconds will access the SET Menu (F > A > U) and Serial Number screen.

SURF MAIN > SET FO2 > SET Alarms > SET Utilities > SN

- Depressing and holding the M button for 2 seconds will access the GAUG SURF MAIN screen, then another 2 second press will access the FREE SURF MAIN screen.

NORM SURF > GAUG SURF > FREE SURF

- Pressing and releasing the M button momentarily (< 2 seconds) will revert to the Watch TIME screen.



Upper/Left - Mode (M)
Upper/Right - Select (S)
Lower/Right - Light (L)
Lower/Left - Advance (A)

BUTTON LOCATIONS

Fig. 34 - NORM SURF ALTERNATE

NORM SURF ALTERNATE, information includes (Fig. 34):

> Bar Graph with the graphic O2BG, representing Oxygen accumulation.
> FO2 Set Point with FO2 icon.
> Nx icon.

- The display will revert to the NORM SURF MAIN screen after 5 seconds unless the A button is pressed.
- Pressing and releasing the A button momentarily (< 2 seconds) will access the SECONDARY screen.
- Pressing the L button will activate the Backlight.

NORM SURF SECONDARY, information includes (Fig. 35):

> Day of the Week graphic (SAT, SUN, MON, TUE, WED, THU, FRI).
> Time of Day (hr:min).
> Temperature with degree icon and graphic F (or C)

- The display will revert to the NORM SURF MAIN screen after 5 seconds unless the A button is pressed.
- Pressing and releasing the A button momentarily (< 2 seconds) will revert to the NORM SURF MAIN screen.
- Pressing the L button will activate the Backlight.

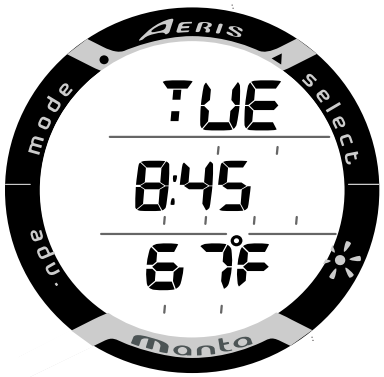


Fig. 35 - NORM SURF SECONDARY

NORM AND GAUG SURFACE SET MODES

NORM/GAUG Set Mode Sequence:
SURF MAIN > SET F > SET A > SET U > Serial Number.

Access and step through of the sequence is gained by repeated simultaneous 2 second presses of the A and S buttons.

SET A (Alarms) and SET U (Utilities) Set Points can also be set/changed using the PC Settings Upload program. SET F (FO2) entries must be made using only the push buttons.

SET F GROUP (FO2)

Set F Sequence:

SET F > Set FO2 > Set FO2 50% Default.

- > Depressing the A and S buttons simultaneously for 2 seconds while the NORM or GAUG SURF MAIN screen is displayed will access the SET F screen identified by the graphic SETF (Fig. 36).
- > Pressing and releasing the A button momentarily (< 2 seconds) while SET F is displayed will access SET FO2 with the Set Point flashing.

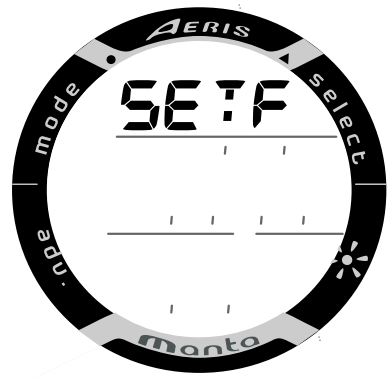


Fig. 36 - SET F

Setting FO2 for NORM Nitrox Dives:

For each value of FO2, the Maximum Operating Depth (MOD) that can be achieved for the PO2 Alarm Set Point limit previously set will be displayed.

When the FO2 50% DEFAULT is set ON and FO2 is set for a numerical value, 10 minutes on the surface after that dive, FO2 will be displayed as 50 and further dives will be calculated based on 50% O2 for oxygen calculations and 21% O2 for Nitrogen calculations (79% Nitrogen) unless FO2 is set before the dive.

FO2 continues to reset to the FO2 50% DEFAULT after subsequent repetitive dives until 24 hours elapse after the last dive, or the FO2 50% DEFAULT is set OFF.

When the FO2 50% DEFAULT is set OFF, FO2 will remain set at the last Set Point selected for that series of repetitive dives.

The default FO2 for each new dive Period (no dive made in 24 hours) is AIR.

When FO2 is set for AIR, the calculations are the same as when it is set to an FO2 of 21%. When FO2 is set to AIR, it remains set for AIR until it is set for a numerical FO2 value (21 to 50%).

When FO2 is set for AIR, the O2 Bar Graph is not displayed at any time during a dive or on the surface. PO2 values and/or warnings will not be displayed during the dive.

FREE Dive nitrogen calculations are based on AIR and not affected by these FO2 Settings.

Maximum Operating Depths affected by the PO2 limit set will not be displayed when FO2 is set for AIR.

Fig. 37 - SET FO2
(AIR setting)

Internally, the Manta keeps track of the oxygen loading so that if FO2 is subsequently set for a numerical value, the oxygen accumulation for previous AIR dives will be accounted for in the next Nitrox dive (during that dive period and series of repetitive dives).

Once FO2 is set for a numerical value (21 to 50%) and a dive is made, the AIR option is disabled until 24 hours elapse after the last dive. The AIR option will not be displayed in Set FO2 selections until a full 24 hour Surface Interval has elapsed.

If FO2 is set for 21%, it will remain set for 21% for that series of dives until set for a higher numerical value.

SET FO2, information provided includes (Fig. 37/38):

- > Graphic FO2
- > Max Depth allowed for the PO2 Alarm Set, if FO2 is set for 21 to 50% (Nitrox).
- > FO2 Set Point value flashing, graphic Air or numerical value with FO2 icon.
- > PO2 Alarm Set Point with PO2 icon, for Nitrox Set Points.
- > Nx icon, for Nitrox Set Points.

Fig. 38 - SET FO2
(32% O2 setting)

- Pressing and releasing the S button will advance FO2 in increments of 1% per press of the button.

- Depressing and holding the S button while the Set Point is flashing will scroll through the Set Points from AIR to 21 through 50% in 1% increments, at a rate of 8 per second.
- The scroll will stop when the button is released, or momentarily at 32% (even if the button is held depressed).
- Depressing and holding the S button again will resume the scroll from 32 through 50%, then stop at AIR (or 21%).
- Pressing and releasing the A button momentarily (< 2 seconds) will save the setting and/or advance to SET FO2 DEFAULT with the Set Point flashing.
- Depressing the A and S buttons simultaneously for 2 seconds will save the setting and revert back to the SET F screen.
- Depressing and holding the M button for 2 seconds, or if no button is pressed for a period of 2 minutes, operation will revert to the NORM or GAUG SURF MAIN screen.

SET FO2 50% DEFAULT, information includes (Fig. 39):

> Graphics DFLT and 50 with FO2 icon.
> Set Point graphic OFF (or ON) flashing, with FO2 icon.
> Nx icon.

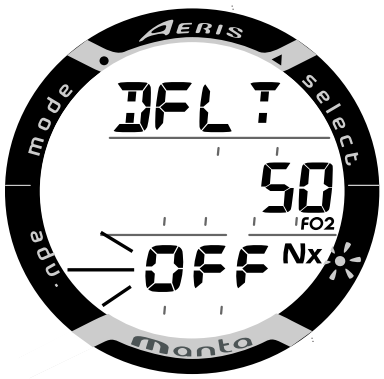


Fig. 39 - SET FO2 50% DEFAULT

- Pressing and releasing the S button (< 2 seconds) will toggle between OFF and ON.
- Pressing and releasing the A button momentarily (< 2 seconds) will save the setting and revert to the SET F screen.
- Depressing and holding the M button for 2 seconds or if no button is pressed for a period of 2 minutes operation will revert to the NORM or GAUG SURF MAIN screen.

SET A GROUP (NORM/GAUG ALARMS)

Fig. 40 - SET A

Set A Sequence:

SET A > Audible > Depth > EDT > NIBG > DTR > PO2

The SET A Group can also be set/changed using the PC Settings Upload program.

- > SET A Settings remain at the values set until changed.
- > Depressing the A and S buttons simultaneously for 4 seconds while NORM or GAUG SURF MAIN is displayed will access SET A identified by the graphic SETA (Fig. 40).
- > Pressing and releasing the A button momentarily (< 2 seconds) while SET A is displayed will advance to SET AUDIBLE ALARM with the Set Point flashing.

SET NORM/GAUG AUDIBLE ALARM

This option allows the Audible Alarms and the associated red warning LED function to be disabled.

Some cautionary situations will cause the Audible alarm to sound and the LED to flash even if this feature is set to OFF.

SET NORM/GAUG AUDIBLE ALARM, information includes (Fig. 41):

- > Graphic AUD
- > Set Point graphic ON (or OFF) flashing.

Fig. 41 - SET AUDIBLE

- Pressing and releasing the S button (< 2 seconds) will toggle between ON and OFF.
- Pressing and releasing the A button momentarily (< 2 seconds) will save the setting and/or advance to the SET DEPTH ALARM screen with the Set Point flashing.
- Pressing and releasing the A button momentarily and repeatedly (< 2 seconds each time) will step through the other SET A screens.
- Depressing the A and S buttons simultaneously for 2 seconds will save the setting and revert back to the SET A screen.
- Depressing and holding the M button for 2 seconds or if no button is pressed for a period of 2 minutes operation will revert to the NORM or GAUG SURF MAIN screen.

FREE Mode has separate Depth Alarms.

SET NORM/GAUG DEPTH ALARM, information includes (Fig. 42):

> Graphic DPTH

> Depth Set Point value flashing, with MAX and FT (or M) icons.

Fig. 42 - SET DEPTH ALARM

- Pressing and releasing the S button momentarily (< 2 seconds) will step through the Set Points from 30 to 330 FT (10 to 100 M) in 10 FT (1 M) increments at a rate of 1 Set Point per press of the button.
- Depressing and holding the S button will scroll through the Set Points at a rate of 4 Set Points per second until it is released.

- Pressing and releasing the A button momentarily (< 2 seconds) will save the setting and/or advance to the SET EDT ALARM screen with the Set Point flashing.
- Pressing and releasing the A button momentarily and repeatedly (< 2 seconds each time) will step through the other SET A screens.
- Pressing the A and S buttons simultaneously for 2 seconds will save the setting and revert back to the SET A screen.
- Depressing and holding the M button for 2 seconds or if no button is pressed for a period of 2 minutes operation will revert to the NORM or GAUG SURF MAIN screen.

FREE Mode has a separate EDT Alarm.

SET NORM/GAUG EDT (ELAPSED DIVE TIME) ALARM, information includes (Fig. 43):

> Graphic EDT
> Set Point value (hr:min), flashing, with DIVE and TIME icons.

- Pressing and releasing the S button momentarily (< 2 seconds) will increase the Set Point from 0:10 to 3:00 (hr:min) in 5 minute (:05) increments.
- Depressing and holding the S button will scroll through the Set Points at a rate of 4 Set Points per second until it is released.
- Pressing and releasing the A button momentarily (< 2 seconds) will save the setting and/or advance to the SET NIBG ALARM screen with the Set Point flashing.

Fig. 43 - SET EDT ALARM

- Pressing and releasing the A button momentarily and repeatedly (< 2 seconds) will step through the other SET A screens.
- Depressing the A and S buttons simultaneously for 2 seconds will save the setting and revert back to the SET A screen.
- Depressing and holding the M button for 2 seconds or if no button is pressed for a period of 2 minutes operation will revert to the NORM or GAUG SURF MAIN screen.

FREE Mode has a separate NIBG Alarm.

SET NORM NIBG (NITROGEN BAR GRAPH) ALARM, information includes (Fig. 44):

> Graphic NIBG
> NIBG Set Point (Bar Graph segments) flashing.

- Pressing and releasing the S button momentarily (< 2 seconds) will decrease the Set Point from all 5 segments (Deco) to 1 in decrements of 1 segment.
- Depressing and holding the S button will scroll through the Set Points at a rate of 4 Set Points per second until it is released.
- Pressing and releasing the A button momentarily (< 2 seconds) will save the setting and/or advance to the SET DTR ALARM screen with the Set Point flashing.
- Pressing and releasing the A button momentarily and repeatedly (< 2 seconds each time) will step through the other SET A screens.

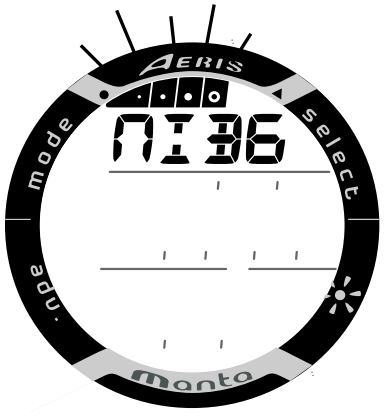


Fig. 44 - SET NIBG ALARM

- Depressing the A and S buttons simultaneously for 2 seconds will save the setting and revert back to the SET A screen.
- Depressing and holding the M button for 2 seconds or if no button is pressed for a period of 2 minutes operation will revert to the NORM or GAUG SURF MAIN screen.

Whichever Time (NDC or O2) decreases to the Alarm Set Point will activate the Alarm.

SET NORM DTR (DIVE TIME REMAINING) ALARM, information includes (Fig. 45):

> Graphic DTR
> Set Point value (hr:min) flashing, with TIME, O2, and NDC icons.

- Pressing and releasing the S button momentarily (< 2 seconds) will increase the Set Point from 0:00 to 0:20 (:minutes) in 1 minute (0:01) increments.
- Depressing and holding the S button will scroll through the Set Points at a rate of 4 Set Points per second until it is released.
- Pressing and releasing the A button momentarily (< 2 seconds) will save the setting and/or advance to the SET PO2 ALARM screen with the Set Point flashing.
- Pressing and releasing the A button momentarily and repeatedly (< 2 seconds each time) will step through the other SET A screens.
- Depressing the A and S buttons simultaneously for 2 seconds will save the setting and revert back to the SET A screen.

Fig. 45 - SET DTR ALARM

Setting the PO2 Alarm to activate before reaching the Max allowed limit of 1.60 ATA is highly recommended.

- Depressing and holding the M button for 2 seconds or if no button is pressed for a period of 2 minutes operation will revert to the NORM or GAUG SURF MAIN screen.

SET NORM PO2 ALARM, information includes (Fig. 46):

> Graphics PO2 and AtA with MAX icon.
> Set Point value (x.xx ATA) flashing, with PO2 icon.

- Pressing and releasing the S button momentarily (< 2 seconds) will increase the Set Point from 1.20 (ATA) to 1.60 (ATA) in 0.10 (ATA) increments.
- Pressing and releasing the A button momentarily (< 2 seconds) will save the setting and/or advance to the SET A screen.
- Depressing the A and S buttons simultaneously for 2 seconds will save the setting and revert to the SET A screen.
- Depressing and holding the M button for 2 seconds or if no button is pressed for a period of 2 minutes operation will revert to the NORM or GAUG SURF MAIN screen.

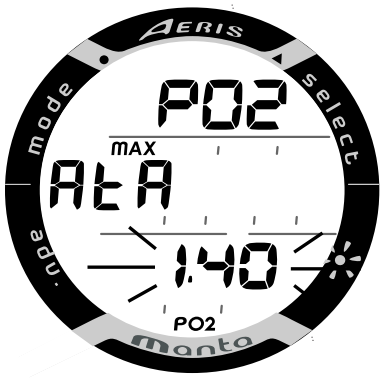


Fig. 46 - SET PO2 ALARM

SET U GROUP (UTILITIES)

Set U Sequence:
SET U > Wet Activation > Units > Safety Stop > Conservative Factor > Backlight Duration > Sampling Rate.

The SET U Group can also be set/changed using the PC Settings Upload program.

The settings for Wet Activation, Units, Conservative Factor, and Backlight Duration also apply to FREE Mode. To change the settings while operating in FREE Mode, first access the NORM Surface Mode.

FREE Mode Sampling Rate is fixed at a 1 second interval and is not affected by the SET U setting.

- > SET U Settings remain at the values set until changed.
- > Depressing the A and S buttons simultaneously for 6 seconds while the NORM or GAUG SURF MAIN screen is displayed, will access SET U identified by the graphic SETU (Fig. 47).
- > Pressing and releasing the A button momentarily (< 2 seconds) while SET U is displayed will advance to SET WET ACTIVATION with the Set Point flashing.

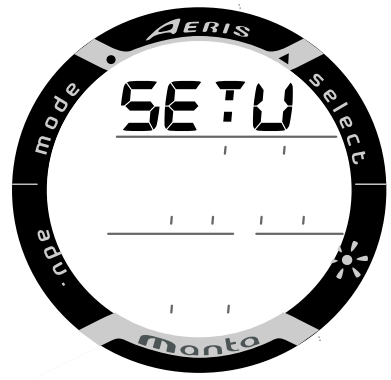


Fig. 47 - SET U

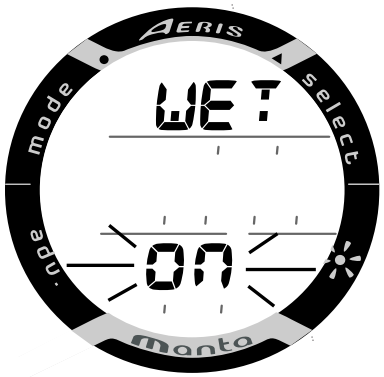


Fig. 47 - SET WET ACTIVATION

SET WET ACTIVATION, information includes (Fig. 48):

> Graphic WET
> Set Point graphic ON (or OFF) flashing.

- Pressing and releasing the S button will toggle between ON and OFF.
- Pressing and releasing the A button momentarily (< 2 seconds) will save the setting and/or advance to the SET UNITS screen with the Set Point flashing.
- Pressing and releasing the A button momentarily and repeatedly (< 2 seconds each time) will step through the other SET U screens.
- Depressing the A and S buttons simultaneously for 2 seconds will save the setting and revert back to the SET U screen.
- Depressing and holding the M button for 2 seconds or if no button is pressed for a period of 2 minutes operation will revert to the NORM or GAUG SURF MAIN screen.

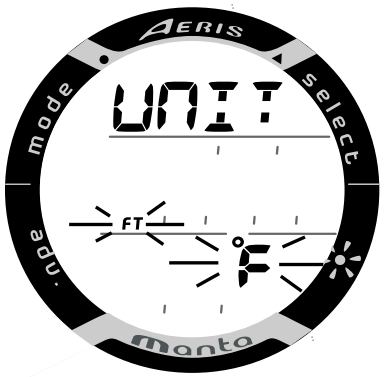


Fig. 48 - SET UNITS

SET UNITS, information includes (Fig. 48):

> Graphic UNIT
> Set Point, FT icon and F graphic (or M icon and C graphic) flashing, with degrees icon.

- Pressing and releasing the S button will toggle between Imperial (FT, F) and Metric (M, C).

- Pressing and releasing the A button momentarily (< 2 seconds) will save the setting and/or advance to the SET SAFETY STOP screen with the Time Set Point flashing.
- Pressing and releasing the A button momentarily and repeatedly (< 2 seconds each time) will step through the other SET U screens.
- Depressing the A and S buttons simultaneously for 2 seconds will save the setting and revert back to the SET U screen.
- Depressing and holding the M button for 2 seconds or if no button is pressed for a period of 2 minutes operation will revert to the NORM or GAUG SURF MAIN screen.

SET NORM SAFETY STOP information includes (Fig. 49):

> Graphic SAFE
> Safety Stop Depth Set Point with FT (or M) icon.
> Safety Stop Time Set Point (min:sec) flashing, with STOP and TIME icons.

- Pressing and releasing the S button momentarily (< 2 seconds each time) will step through the Stop Time Set Points of OFF, 3:00, and 5:00 (min:sec).
- Pressing and releasing the A button momentarily (< 2 seconds) will save the Stop Time setting and the Stop Depth Set Point will flash, or if Stop Time is set OFF advance to the SET CONS (Conservative Factor) screen with the Set Point flashing.
- Pressing and releasing the S button momentarily (< 2 seconds each time) will step through the Stop Depth Set Points of 10, 15, and 20 FT (or 3, 4, 5, and 6 M).

Fig. 49 - SET SAFETY STOP

- Pressing and releasing the A button momentarily (< 2 seconds) will save the Safety Stop settings and/or advance to the SET CONS screen with the Set Point flashing.
- Pressing the A button momentarily and repeatedly (< 2 seconds) will step through the other SET U screens.
- Depressing the A and S buttons simultaneously for 2 seconds will save the settings and revert back to the SET U screen.
- Depressing and holding the M button for 2 seconds or if no button is pressed for a period of 2 minutes operation will revert to the NORM or GAUG SURF MAIN screen.

SET NORM/FREE CONSERVATIVE FACTOR, information includes (Fig. 50):

> Graphic CONS
> TIME and NDC icons.
> Set Point ON (or OFF) flashing.

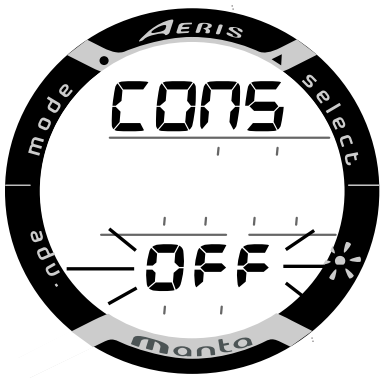


Fig. 50 - SET CONSERVATIVE

- Pressing and releasing the S button (< 2 seconds) will toggle between ON and OFF.
- Pressing and releasing the A button momentarily (< 2 seconds) will save the setting and/or advance to the SET BACKLIGHT DURATION screen with the Set Point flashing.
- Pressing and releasing the A button momentarily and repeatedly (< 2 seconds each time) will step through the other SET U screens.
- Depressing the A and S buttons simultaneously for 2 seconds will save the setting and revert back to the SET U screen.

- Depressing and holding the M button for 2 seconds or if no button is pressed for a period of 2 minutes operation will revert to the NORM or GAUG SURF MAIN screen.

△ **NOTE: When the Conservative Factor is set ON, No Deco Limit times are reduced to values equivalent to those that would be available at the next higher 3000 foot (915 meter) Altitude. Refer to the tables at the back.**

SET BACKLIGHT DURATION information includes (Fig. 51):

> Graphics GLOW (meaning Backlight) and SEC
> Set Point (seconds), flashing, with TIME icon.

- Pressing and releasing the S button momentarily (< 2 seconds each time) will step through the Set Points of 0, 5, and 10 (seconds).
- Pressing and releasing the A button momentarily (< 2 seconds) will save the setting and/or advance to the SET SAMPLING RATE screen with the Set Point flashing.
- Depressing the A and S buttons simultaneously for 2 seconds will save the setting and revert back to the SET U screen.
- Depressing and holding the M button for 2 seconds or if no button is pressed for a period of 2 minutes operation will revert to the NORM or GAUG SURF MAIN screen.

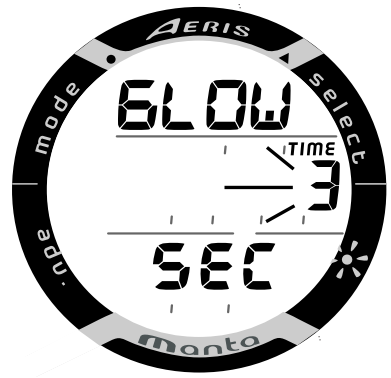


Fig. 51 - SET BACKLIGHT DURATION

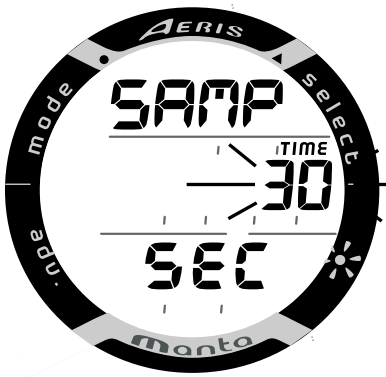


Fig. 52 - SET SAMPLING RATE

SET NORM/GAUG SAMPLING RATE, information includes (Fig. 52):

> Graphics SAMP and SEC
> Set Point (seconds), flashing, with TIME icon.

- Pressing and releasing the S button momentarily (< 2 seconds) will step through the Set Points of 2, 15, 30, 60 (seconds).
- Pressing and releasing the A button (< 2 seconds) will accept the setting and/or advance to the SET U screen.
- Depressing and holding the M button for 2 seconds or if no button is pressed for a period of 2 minutes operation will revert to the NORM or GAUG SURF MAIN screen.

SERIAL NUMBER (SN)

- Depressing the A and S buttons simultaneously for 8 seconds while viewing the NORM (or GAUG) SURF MAIN screen will access the SN screen displaying (Fig. 53):

Fig. 53 - SERIAL NUMBER

> Graphic SN
> Factory programmed Serial Number of the Manta.
> Firmware revision number (e.g., graphic r1A).

- Depressing the A and S buttons simultaneously for 2 seconds will revert to the NORM (or GAUG) SURF MAIN screen.

- Depressing and holding the M button for 2 seconds or if no button is pressed for a period of 2 minutes operation will revert to the NORM or GAUG SURF MAIN screen.

△ **NOTE: The Serial Number and Firmware Revision will be requested in the event that you contact AERIS regarding the Manta. Enter them in the Records section provided in the back of this Manual.**

NORM PLAN MODE

AERIS strongly recommends that you review the PDPS (Pre Dive Planning Sequence) prior to every NORM 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 indicates adjusted dive times that are available for the next dive, based on residual nitrogen or oxygen accumulation (whichever is in control) following the last dive and surface interval.

△ **NOTE: Calculated No Decompression Dive Times in PLAN MODE are based on the FO2 setting selected.**

- Pressing and releasing the A button momentarily (< 2 seconds) 1 time while the NORM SURF MAIN screen is displayed will access the PLAN MODE LEAD-IN screen.

NORM SURF > PLAN LEAD-IN

- While the PLAN LEAD-IN screen is displayed, pressing and releasing the S button momentarily and repeatedly (< 2 seconds each time) will increase the Planned Depth in increments of 10 FT (3 M), displaying the information one Depth screen at a time.

Information provided includes Depths and allowable No Decompression Dive Times. The PDPS will step through Depths from 30 to 190 FT (9 to 57 M), or to the Maximum Depth that will allow theoretical No Decompression Dive Time of at least 1 minute based upon the previous dive profiles in a series of repetitive dives and taking into account descent and ascent rates of 60 FPM (18 MPM).

△ **NOTE: When the Conservative Factor is set ON, No Decompression Dive times are reduced to the values of the next 3000 foot (915 meter) higher Altitude.**

- Prior to the first dive of a series, pressing and releasing the A button momentarily (< 2 seconds) will advance to LOG MODE.

PLAN Lead-In > LOG

- After a dive is made, it will advance to FLY MODE.

PLAN Lead-In > FLY

- Depressing and holding the M button for 2 seconds or if no button is pressed during a 2 minute period operation will revert to the NORM SURF MAIN screen.

PLAN MODE LEAD-IN, information includes (Fig. 54):

> Graphic PLAN
> FO2 Set Point with FO2 icon
> PO2 Alarm Set Point (x.xx ATA) with Nx and PO2 icons, when numerical values are displayed.

- Press and release the S button momentarily (< 2 seconds) to access the first screen (30 FT/9 M) of the PDPS.

Fig. 54 - PLAN LEAD-IN

PDPS, information includes (Fig. 55):

> Plan Depth value with F (= feet) or M (= meters) graphic.
> Max Depth allowed for the PO2 Alarm value set with MAX and FT (or M) icons, if FO2 is set for Nitrox.
> Dive Time allowed (hr:min) for the FO2 value set with TIME and NDC (or O2 if Oxygen controlled) icons.
> PO2 Alarm Set Point (x.xx ATA) with Nx and PO2 icons, if FO2 is set for Nitrox.

- Press and release the S button momentarily and repeatedly (< 2 seconds each time) to step through the Planned Depths in increments of 10 FT (3 M), displaying the information one screen at a time.
- Depress and hold the M button for 2 seconds to exit the PDPS and revert to the NORM SURF MAIN screen.

Fig. 55 - PDPS

FLY MODE

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

Ten minutes after surfacing from a NORM, GAUG, or FREE dive, operation reverts to the Watch Mode Time screen with the Time to Fly Countdown running in the background. Access to the FLY screen can then be gained by first accessing the NORM (or GAUG) SURF MAIN screen.

- Pressing and releasing the A button 2 times momentarily (< 2 seconds each time) while the SURF MAIN screen is displayed will access FLY MODE.

  NORM SURF > PLAN > FLY

- Pressing and releasing the A button 1 time momentarily (< 2 seconds) while the GAUG SURF MAIN screen is displayed will access FLY MODE.

  GAUG SURF > FLY

- After a FREE Dive, access is gained by first accessing NORM SURF MAIN.

Fig. 56 - TIME TO FLY

TIME TO FLY, information includes (Fig. 56):

> Graphic FLY
> Countdown Time (hr:min) with TIME icon.
> Battery icon if a Low Battery Warning Condition exists, flashing if Too Low.

- Pressing and releasing the A button momentarily (< 2 seconds) will advance to SAT MODE.
- Depressing and holding the M button for 2 seconds will revert to the NORM (or GAUG) SURF MAIN screen.
- If no button is pressed during a 2 minute period, operation will revert to the NORM (or GAUG) SURF MAIN screen.
- Pressing the L button will activate the Backlight.

DESAT MODE

The Time to Desaturate counter provides calculated time for Tissue Desaturation at sea level taking into consideration the Conservation Factor setting. It begins counting down 10 minutes after surfacing from a NORM (or FREE) dive, counting down from 23:50 max to 0:00 (hr:min).

When the Countdown reaches 0:00, which will generally occur prior to the FLY countdown reaching 0:00, the SAT screen remains in the sequence of accessible screens displaying 0:00 until the FLY counter shuts the Dive Computer operations Off 24 hours after a last dive.

> The SAT screen is not displayed after a Violation Dive.
> DESAT Times greater than 24 hours will be displayed as 23: - -
> In the event that DESAT Time still remains at the end of the 24 hours countdown, the added time will be zeroed.
> Ten minutes after surfacing from a dive, operation reverts to the Watch Mode Time screen at which time the DESAT Countdown continues in the background. Access to the SAT screen can then be gained by first accessing the NORM SURF MAIN screen.

- Depressing and releasing the A button momentarily and repeatedly 3 times (< 2 seconds each time) while viewing the NORM SURF MAIN screen will access SAT MODE.

NORM SURF > PLAN > FLY > SAT

DESAT TIME, information includes (Fig. 57):

> Graphic SAT
> Countdown Time (hr:min) with TIME icon.
> Battery icon, if a Low Battery Warning Condition exists, flashing if Too Low

- Pressing and releasing the A button momentarily (< 2 seconds) will advance to LOG MODE.
- Depressing and holding the M button for 2 seconds will revert to the NORM SURF MAIN screen.
- If no button is pressed during a 2 minute period, the unit will revert to the NORM SURF MAIN screen.
- Pressing the L button will activate the Backlight.

Fig. 57 - DESAT TIME

NORM/GAUG LOG MODE

LOG MODE displays information from the latest 24 NORM/GAUG dives sequentially in reverse order (the most recent first). LOG information is retained until deleted by another dive. Battery removal will not affect the LOG data stored for viewing.

After exceeding 24 dives, the most recent Dive completed will be added to the LOG and the oldest deleted.

Dives will be numbered 1 to 24 starting at #1 each time a new series of dives begins. After it shuts Off 24 hours after a dive, the first dive of the next new series will be #1.

- During the first 10 minutes after a dive, pressing and releasing the A button momentarily (< 2 seconds) 1 time while the NORM (or GAUG) SURF MAIN screen is displayed will access LOG MODE.

  NORM (or GAUG) SURF > LOG

- 10 minutes after a Non Violation NORM Dive, pressing and releasing the A button momentarily and repeatedly 4 times (< 2 seconds each time) while the NORM SURF MAIN screen is displayed will access the LOG MODE.

  NORM SURF > PLAN > FLY > SAT > LOG

- 10 minutes after a GAUG or Violation Dive, pressing and releasing the A button momentarily and repeatedly 2 times (< 2 seconds each time) will access LOG MODE. PLAN and SAT screens will not be available after a GAUG or Violation Dive.

  NORM (or GAUG) SURF > FLY > LOG

Upon entering LOG MODE the most recent dive's LOG PREVIEW screen will be displayed.

LOG PREVIEW, information includes (Fig. 58):

> Graphic **No** with the dive number (1 to 24) for that series.
> Log icon.
> Time of Day the dive began (hr:min) with TIME icon, and graphic A (= Am) or P (= Pm) if set for 12 Hour Format. This will be the Local Default Time selected, either Main or Alternate (with lazy 8 symbol if Alternate).
> Date (month.day, or day.month if set for metric).
> Nx icon, if FO2 was set for Nitrox.

- Depressing the S button for 2 seconds will display the previous dive's PREVIEW screen. Subsequent 2 second presses of the S button, or holding it depressed, will step/scroll through other previous dives' PREVIEW screens.
- Pressing and releasing the S button momentarily (< 2 seconds) while viewing a PREVIEW screen will display that dive's LOG DATA 1 screen.
- Pressing and releasing the A button momentarily (< 2 seconds) will advance to the HISTORY 1 screen.
- Depressing and holding the M button for 2 seconds or if no button is pressed during a 2 minute period operation will revert to the NORM (or GAUG) SURF MAIN screen.
- Pressing the L button will activate the Backlight.

Fig. 58 - LOG PREVIEW

LOG DATA 1, information includes (Fig. 59):

> NIBG with the maximum accumulation segment flashing, others fixed up to end-of-dive accumulation. All segments flashing if a Violation occurred.
> Graphic NO-D, DECO, GAUG, or VIOL indicating the type of dive when completed.
> Log icon.
> Pre dive Surface Interval time (hr:min) with SURF and TIME icons, 'blank' for Dive #1 of a series.
> Elapsed Dive Time (hr:min) with DIVE and TIME icons.
> Nx icon, if FO2 was set for Nitrox.

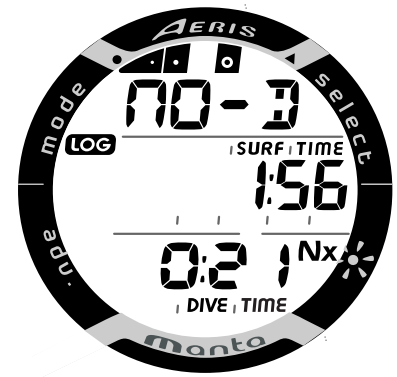


Fig. 59 - LOG DATA 1

- Pressing and releasing the S button momentarily (< 2 seconds) button will advance to the LOG DATA 2 screen.
- Depressing and holding the M button for 2 seconds or if no button is pressed during a 2 minute period operation will revert to the NORM (or GAUG) SURF MAIN screen.
- Pressing the L button will activate the Backlight.

LOG DATA 2, information includes (Fig. 60):

> Log icon.
> Maximum Depth achieved with MAX and FT (or M) icons.
> Temperature (minimum recorded that dive) with degrees icon and graphic F (or C).
> Nx icon, if FO2 was set for Nitrox.

Fig. 60 - LOG DATA 2

- Pressing and releasing the S button momentarily (< 2 seconds) button will advance to the LOG DATA 3 screen.

- Depressing and holding the M button for 2 seconds or if no button is pressed during a 2 minute period operation will revert to the NORM (or GAUG) SURF MAIN screen.
- Pressing the L button will activate the Backlight.

LOG DATA 3, information includes (Fig. 61):

This screen will only be displayed for NORM Nitrox dives, bypassed for AIR, GAUG, and Violation dives.

> O2BG, segments representing Oxygen accumulated at the end of the dive with graphic O2.
> Log icon.
> FO2 (%) set for that dive with FO2 icon.
> Value of Max PO2 achieved (x.xx ATA) with PO2 icon.
> Nx icon.

- Pressing and releasing the S button momentarily (< 2 seconds) button will advance to the previous dive's LOG PREVIEW screen.
- Depressing and holding the M button for 2 seconds or if no button is pressed during a 2 minute period operation will revert to the NORM (or GAUG) SURF MAIN screen.
- Pressing the L button will activate the Backlight.

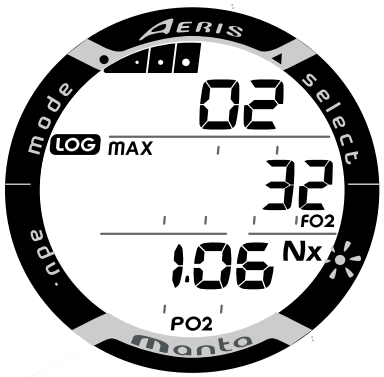


Fig. 61 - LOG DATA 3

NORM/GAUG HISTORY MODE

HISTORY Mode displays accumulative information for up to 9999 Dives, 9999 Dive Hours, and the Maximum Depth achieved. HISTORY information is retained indefinitely. Battery removal will not affect the HISTORY data stored for viewing.

- 10 minutes after a Non Violation NORM Dive, pressing and releasing the A button momentarily and repeatedly 5 times (< 2 seconds each time) while the NORM SURF MAIN screen is displayed will access the HISTORY MODE .

  NORM SURF > PLAN > FLY > SAT > LOG > HIST

- 10 minutes after a GAUG or Violation Dive, pressing and releasing the A button 3 times will access LOG MODE. PLAN and SAT screens will not be available after a GAUG or Violation Dive.

  NORM (or GAUG) SURF > FLY > LOG > HIST

HISTORY 1, information includes (Fig. 62):

> Graphic HIST
> Graphic Hr and TIME icon with the Total Hours of Elapsed Dive Time (1 to 9999).
> Total number of dives recorded up to 9999 with DIVE icon. Includes No Deco, Deco, GAUG, and VIOL.

- Pressing and releasing the S button momentarily (< 2 seconds) button will advance to the HISTORY 2 screen.

Fig. 62 - HISTORY 1

- Pressing and releasing the A button momentarily (< 2 seconds) will advance to the NORM (or GAUG) SURF MAIN screen.
- Depressing and holding the M button for 2 seconds or if no button is pressed during a 2 minute period operation will revert to the NORM (or GAUG) SURF MAIN screen.
- Pressing the L button will activate the Backlight.

HISTORY 2, information includes (Fig. 63):

> Graphic SEA (or EL 2 through EL 7), representing the maximum Altitude at which a dive was conducted.

> Maximum Depth achieved during all dives with MAX and FT (or M) icons.

> Temperature (lowest recorded of all dives) with degrees icon and graphic F (or C).

- Pressing and releasing the S button momentarily (< 2 seconds), or depressing and holding the M button for 2 seconds, or if no button is pressed during a 2 minute period, operation will revert to the NORM (or GAUG) SURF MAIN screen.
- Pressing the L button will activate the Backlight.

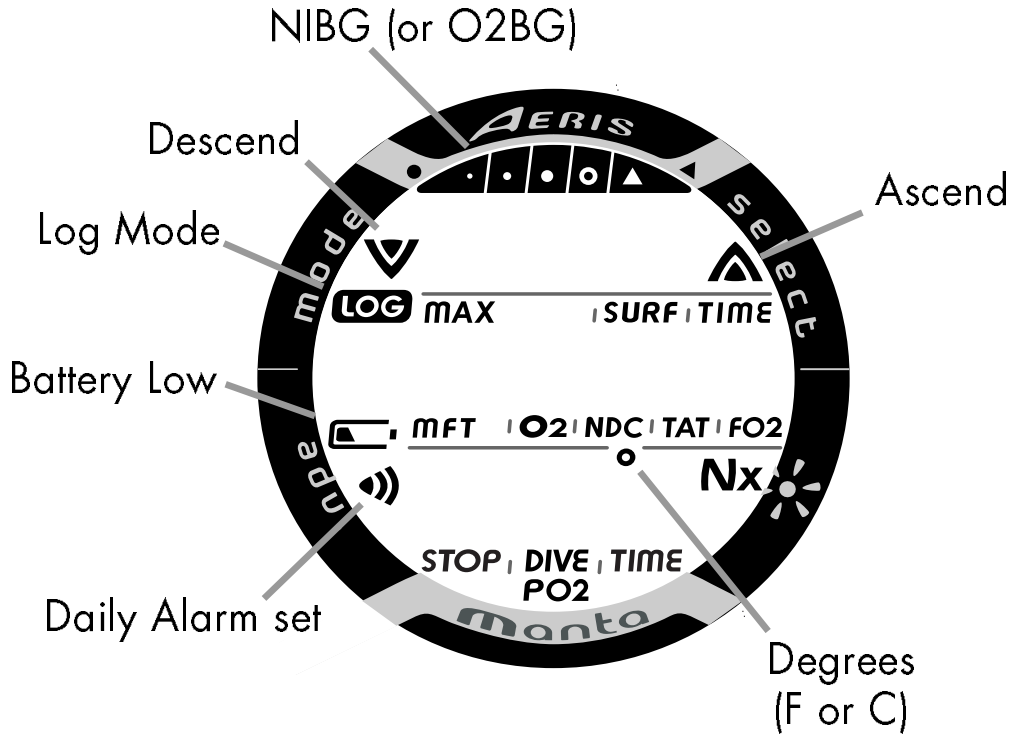
Fig. 63 - HISTORY 2

WARNING: Prior to diving with the Manta, you must also read and understand the AERIS Dive Computer Safety and Reference Manual, Doc. No. 12-7203, which provides Important Warnings and Safety Recommendations as well as general product information.

OVERVIEW OF DIVE MODE INFORMATION

OVERVIEW OF DISPLAYED SYMBOLS AND ICONS

SYMBOLS	MEANING
MAX	Maximum Depth (or PO2)
FT (or M)	Depth Units (Feet or Meters)
SURF TIME	Surface Interval Time, NORM/GAUG (hr:min) or FREE (hr:min:sec)
TIME O2	O2 Dive Time Remaining (hr:min)
TIME NDC	No Decompression Dive Time Remaining (hr:min)
TIME TAT	Total Ascent Time Deco Stops plus vertical ascent Times (hr:min)
FO2	FO2 Set Point
STOP TIME	Deco Stop Time (hr:min) or No Deco Safety Stop Time (min:sec)
DIVE TIME	Elapsed Dive Time, NORM/GAUG (hr:min) or FREE (min:sec)
Nx	FO2 is set at a numerical value (21 to 50%)



DIVE TIME REMAINING (DTR)

One of the most important pieces of information on AERIS dive computers is the Dive Time Remaining numeric display.

The Manta constantly monitors No Decompression status and Oxygen Accumulation.

The Dive Time Remaining display will indicate the No Deco Time or O2 Time, whichever Time is the least amount available.

No Decompression Dive Time Remaining (NDC)

NDC is the maximum amount of time that you can stay at your present Depth before entering a Decompression situation. It is calculated based on the amount of Nitrogen absorbed by hypothetical tissue compartments. The rates each of these compartments absorb and release Nitrogen is mathematically modeled and compared against a maximum allowable Nitrogen level. Whichever one is closest to this maximum level is the controlling compartment for that Depth. Its resulting value will be displayed numerically along with the TIME and NDC icons (Fig. 64a) and graphically as the NIBG (Fig. 64b).

As you ascend from Depth following a dive that has approached the No Decompression Limit, the NIBG 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 features that AERIS dive computers offer.

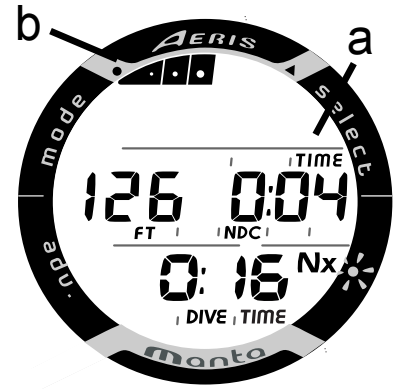


Fig. 64 - NO DECO DIVE TIME REMAINING

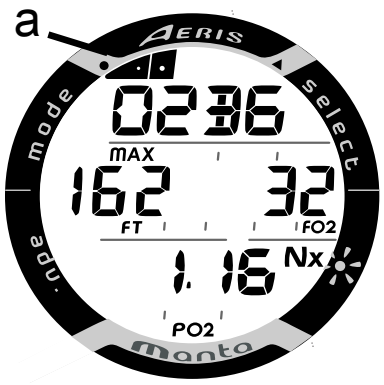


Fig. 65 - O2BG

The algorithm used is based upon Haldane's theory using maximum allowable nitrogen levels developed by Merrill Spencer.

Repetitive diving control is based upon experiments designed and conducted by Dr. Ray Rogers and Dr. Michael Powell in 1987. Diving Science and Technology® (DSAT), a corporate affiliate of PADI®, commissioned these experiments.

Oxygen Accumulation Time Remaining (OTR)

When FO2 is set for Nitrox, Oxygen Accumulation (saturation or exposure) during a dive, or 24 hour period, appears graphically as the O2 Bar Graph (Fig. 65a) when the Alternate (O2) screen is accessed.

As time remaining before reaching the Oxygen Exposure Limit decreases, segments are added to the O2 Bar Graph.

When the amount of time remaining before reaching the O2 Limit becomes less than NDC (No Deco Dive Time Remaining), calculations for that Depth will be controlled by O2. O2 Time Remaining will then appear as Dive Time Remaining (Fig. 66a) identified by the TIME and O2 icons.

As Oxygen Accumulation continues to increase, segments will add to the O2 Bar Graph.

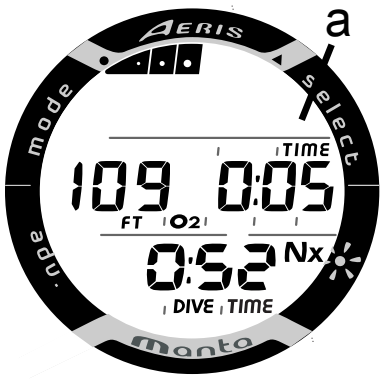


Fig. 66 - O2 DIVE TIME REMAINING

VARIABLE ASCENT RATE

Alerts associated with Ascent Rate are based upon 2 sets of speeds which change at a reference depth of 60 FT (18 M).

⚠ 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, Rates should not exceed 30 FPM (9 MPM).

Ascent Rate Warning

At depths deeper than 60 FT (18 M), a Warning (Fig. 67) will be given when Ascent Rates exceed 50 FPM (15 MPM). The message SLOW > SLOW will scroll until the Ascent is slowed. At 60 FT (18 M) and shallower, the Warning will be given when Ascent Rates exceed 25 FPM (7.5 MPM).

Ascent Rate Alarm

At depths deeper than 60 FT (18 M), an Alarm will sound when Ascent Rates exceed 60 FPM (20 MPM).

At 60 FT (18 M) and shallower, the Alarm will sound when Ascent Rates exceed 30 FPM (10 MPM).

The Audible will sound, the red LED will flash, and the message SLOW > SLOW will scroll on/off at the top of the screen. The Audible and LED will stop when acknowledged with the S button or when the Ascent is slowed. After acknowledged, the message SLOW > SLOW will continue to scroll until the Ascent is slowed below the Alarm rate.

Fig. 67 - ASCENT WARNING/ALARM

ELAPSED DIVE TIME

The maximum duration that Elapsed Dive Time will be displayed is 9 hours and 59 minutes (9:59). In the event that the Manta is at depth for a greater time, it will cease operation as a Dive Computer and revert to operation as a Watch, displaying the Main Time screen.

CONTROL OF DISPLAYS

During Dive Modes, there is a Main (Default) Display of important information relevant to the specific mode that the Manta is operating in (No Deco, Deco, GAUG, FREE, etc.).

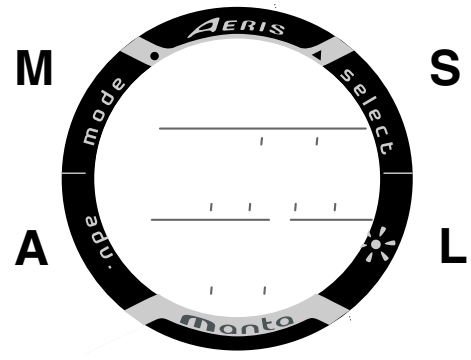
Alternate and Secondary Displays can be accessed by pressing and releasing the **A** button (Lower/Left) to view additional information. They will automatically revert to the Main Display after 5 seconds unless the A button is pressed again.

- Dive Main > Alternate > Secondary

The **S** button (Upper/Right) is used to acknowledge and silence Alarms.

The **L** button (Lower/Right) is used to activate the Backlight.

- The display will be illuminated as long as the L button is depressed, plus the Backlight Duration time set (0, 5, or 10 seconds) for a maximum of 20 seconds
- The Backlight will not activate during a Low Battery condition.



WARNING: Prior to diving with the Manta, you must also read and understand the AERIS Dive Computer Safety and Reference Manual, Doc. No. 12-7203, which provides Important Warnings and Safety Recommendations as well as general product information.

NORM TYPE DIVE MODES

Fig. 68 - WATCH TIME

WET ACTIVATION CONTACTS

The Wet Contact Dive Mode Activation feature is active any time WET ACTIVATION is set ON.

The Manta is configured with contacts that will automatically activate Dive Mode when the space between the contacts is bridged by a conductive material (immersed in water) and it senses a Depth of 5 FT (1.5 M) for 5 seconds.

The contacts are the pins of the PC Interface Data Port and the stems of the Push Buttons.

As long as the contacts are bridged on the Surface, the graphic WET will alternate with the Day of Week graphic (MON - SUN) on the Watch Main and Alternate Time screens (Fig. 68), and the graphics NORM and SEA (or EL2 to EL13) on the NORM, GAUG, and FREE Surface Main screens (Fig. 69).

Upon removing the bridge between the contacts (drying the Manta), the graphic WET will no longer be displayed.

The Manta will continue checking for Depth, until a dive is made or it reverts to the Watch Time screen after 2 hours.

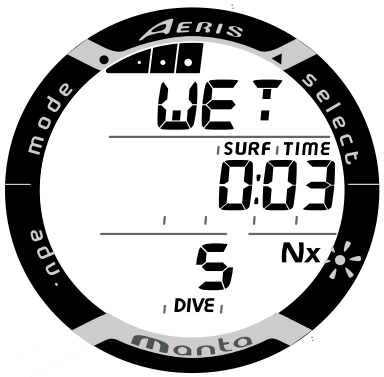


Fig. 69 - DIVE COMPUTER MAIN

NORM NO DECOMPRESSION DIVE MODE

When the Wet Activation feature is set ON, the Manta will enter the NORM No Decompression Dive Mode any time a descent is made to 5 FT (1.5 M) for 5 seconds.

When the Wet Activation feature is set OFF, the Manta will not enter Dive Mode upon descent unless it is operating in one of the NORM Dive Computer modes (menus) at that time. Modes such as Surface Mode, Plan, Fly, etc.

At any time during the dive -

- Press the L button to activate the Backlight.
- Press/release the S button to acknowledge/silence Alarms.

NORM NO DECO DIVE MAIN Display (Default), information provided includes (Fig. 70) -

> NIBG, loaded segments representing Nitrogen loading.
> Current Depth with FT (or M) icon.
> Dive Time Remaining (hr:min) with TIME and NDC (or O2) icons.
> Elapsed Dive Time (hr:min) with DIVE and TIME icons.
> Nx icon, if FO2 is set for Nitrox.

- Press/release the A button (< 2 sec) to view the NORM Dive Alternate (ALT) Display.
- While the NORM Dive ALT screen is displayed, press/release the A button (< 2 sec) to view the common Secondary Display (Temperature, Time).

Fig. 70 - NORM NO DECO MAIN

Fig. 71 - NORM NO DECO ALT

NORM NO DECO DIVE ALT DISPLAY, information provided includes (Fig. 71) -

> Bar Graph representing O2 Accumulated with graphic O2BG, if FO2 is set for Nitrox.
> Max Depth with MAX and FT (or M) icons.
> FO2 Set Point with FO2 icon, if FO2 is set for Nitrox.
> PO2 (x.xx ATA) with PO2 icon, if FO2 is set for Nitrox.
> Nx icon, if FO2 is set for Nitrox.

- The display will revert to the MAIN Display after 5 seconds unless the A button is pressed.
- Press/release the A button to view the Secondary Display.

SECONDARY DISPLAY, information includes (Fig. 72) -
The Secondary Display shown here is common to all Modes during dives. Its description will not be repeated, although access to it will be described.

> Day of the Week graphic (MON, TUE, etc.)
> Time of Day (hr:min). This will be the Watch Time selected (MAIN or ALTERNATE).
> Temperature with degrees icon and graphic F (or C)

- The display will revert to the MAIN Display after 5 seconds or if the A button is pressed/released.

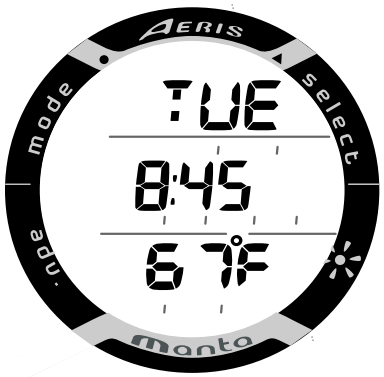


Fig. 72 - SECONDARY

NORM DIVE NO DECO SAFETY STOP

Upon ascending to 5 FT (1.5 M) below the Safety Stop Depth set on any No Decompression dive in which Depth exceeded 30 FT (9 M), a short beep will be emitted and a Safety Stop at the Depth set will appear on the display with a countdown timer that begins at the Safety Stop Time set.

The Safety Stop will be displayed until the countdown times out (0:00 min:sec), or you descend below 30 FT (10 M), or you breach the surface. There is no Penalty if you surface prior to completing the Safety Stop.

If the Safety Stop was set to OFF, the screen will not appear during the ascent.

NO DECO SAFETY STOP MAIN DISPLAY, information includes (Fig. 73)

- > NIBG representing Nitrogen loading.
- > Graphics SAFE, STOP, and xxF (or xxM), scrolling, indicating the Stop Depth set.
- > Current Depth with FT (or M) icon.
- > Dive Time Remaining (hr:min) with TIME and NDC (or O2) icons.
- > Safety Stop Countdown Time set/remaining (min:sec) with STOP and TIME icons.
- > Nx icon, if FO2 is set for Nitrox.

Fig. 73 - NO DECO SAFETY STOP MAIN

- Press/release the A button to view the ALT 1 Display.

Fig. 74 - NO DECO SAFETY STOP ALT 1

NO DECO SAFETY STOP ALT 1 DISPLAY, information includes (Fig. 74)

> NIBG representing Nitrogen loading.
> Graphics SAFE, STOP, and xxF or xxM (value of the Stop Depth set) scrolling at the top.
> Current Depth with FT (or M) icon.
> Dive Time Remaining (hr:min) with TIME and NDC (or O2) icons.
> Elapsed Dive Time (hr:min) with DIVE and TIME icons.
> Nx icon, if FO2 is set for Nitrox.

- The display will revert to the MAIN Display after 5 seconds unless the A button is pressed.
- Press/release the A button to view the ALT 2 Display.

NO DECO SAFETY STOP ALT 2 DISPLAY, information provided includes (Fig. 75) -

> Bar Graph representing O2 Accumulated with graphic O2BG, if FO2 is set for Nitrox.
> Max Depth with MAX and FT (or M) icons.
> FO2 Set Point with FO2 icon, if FO2 is set for Nitrox.
> PO2 (x.xx ATA) with PO2 icon, if FO2 is set for Nitrox.
> Nx icon, if FO2 is set for Nitrox.

- The display will revert to the MAIN Display after 5 seconds unless the A button is pressed.
- Press/release the A button to view the Secondary Display.

Fig. 75 - NO DECO SAFETY STOP ALT 2

DECOMPRESSION DIVE MODE

The Manta is designed to help you by providing a representation of how close you are to entering Decompression.

Fig. 76 - DECO ENTRY

Decompression Dive Mode activates when the theoretical No Decompression time and depth limits are exceeded.

Upon Entry into DECO Mode, the Audible Alarm will sound, the red LED Warning Light will flash, and the graphic message DECO > STOP will scroll each 3/4 second On and 1/4 second Off, until acknowledged or for 10 seconds.

Once silenced, the graphics DECO > STOP > xxF (or xxM) will scroll each 2 seconds On 2 seconds blank.

- Press/release the S button to acknowledge/silence the Audible Alarm (unless it was set Off).
- The UP Arrow will flash (Fig. 76) if you are greater than 10 FT (3 M) deeper than the Required Stop Depth.
- Once you are within 10 FT (3 M) of, and below, the Required Stop Depth, the UP Arrow will extinguish.

Managing Decompression Stops

To fulfill your decompression obligation, you should make a safe controlled Ascent to a depth slightly deeper than (Fig. 77a), or equal to, the Required Stop Depth indicated (Fig. 77b) and decompress for the Stop Time indicated (Fig. 77c).

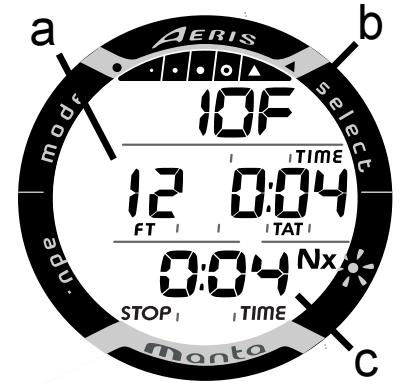


Fig. 77 - DECO STOP

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.

DECO STOP MAIN DISPLAY (Default), information provided includes (Fig. 78) -

> NIBG, all 5 segments indicating DECO.
> Graphic message DECO > STOP > xxF (or xxM), scrolling, indicating the Stop Depth required.
> Current Depth with FT (or M) icon.
> Total Ascent Time (hr:min) with TIME and TAT icons.
> Stop Time (hr:min) required with STOP and TIME icons.
> Nx icon, if FO2 is set for Nitrox.

Fig. 78 - DECO STOP MAIN

- Press/release the A button (< 2 sec) to view the Deco Stop ALT 1 screen.

TAT (Total Ascent Time):
TAT (Fig. 78a) includes Stop Times required at all required DECO Stop Depths plus vertical Ascent Time calculated at 60 FPM (18 MPM) for depths deeper than 60 FT (18 M), and 30 FPM (9 MPM) for depths of 60 FT (18 M) and shallower.

DECO STOP ALT 1 DISPLAY, information provided includes (Fig. 79) -

> NIBG, all 5 segments indicating DECO.
> Graphic message DECO > STOP > xxF (or xxM), scrolling, indicating the Stop Depth required.
> Current Depth with FT (or M) icon.
> Total Ascent Time (hr:min) with TIME and TAT icons.
> Elapsed Dive Time (hr:min) with DIVE and TIME icons.
> Nx icon, if FO2 is set for Nitrox.

Fig. 79 - DECO STOP ALT 1

- The display will revert to the MAIN Display after 5 seconds unless the A button is pressed.
- Press/release the A button (< 2 seconds) to view the Deco Stop ALT 2 screen.

DECO STOP ALT 2 DISPLAY, information provided includes (Fig. 80) -

> Bar Graph representing O2 Accumulated with graphic O2BG, if FO2 is set for Nitrox.
> Max Depth with MAX and FT (or M) icons.
> FO2 Set Point with FO2 icon, if FO2 is set for Nitrox.
> PO2 (x.xx ATA) with PO2 icon, if FO2 is set for Nitrox.
> Nx icon, if FO2 is set for Nitrox.

Fig. 80 - DECO STOP ALT 2

- The display will revert to the MAIN Display after 5 seconds unless the A button is pressed.
- Press/release the A button to view the Secondary Display.

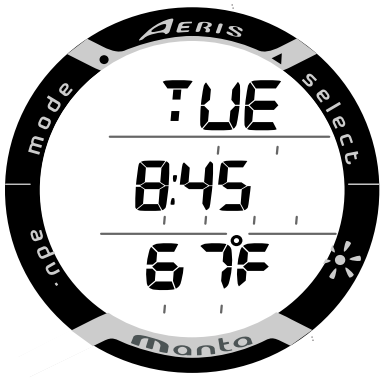


Fig. 81 - SECONDARY

SECONDARY DISPLAY, information includes (Fig. 81) -

> Day of the Week graphic (MON, TUE, etc.)
> Time of Day (hr:min). This will be the Watch Time selected (MAIN or ALTERNATE).
> Temperature with degrees icon and graphic F (or C).

- The display will revert to the MAIN Display after 5 seconds or if the A button is pressed/released.

VIOLATION MODES

While in Violation Modes, the Alternate and Secondary Displays previously described can be accessed using the A button, the Backlight can be activated using the L button, and Alarms can be acknowledged/silenced with the S button.

CONDITIONAL VIOLATION

If you ascend shallower (Fig. 82a) than a Required Decompression Stop Depth (Fig. 82b), the Audible Alarm will sound, and the red LED and Down Arrow will flash until you descend below the Required Stop Depth.

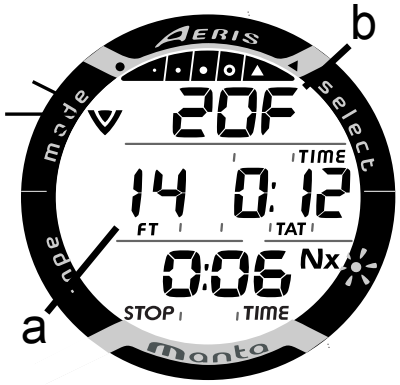


Fig. 82 - CONDITIONAL VIOLATION MAIN

The graphic message DOWN > DOWN will scroll at the top of the display until the Alarm is acknowledged/silenced, then the message DOWN > TO > xxF (or xxM) will scroll.

If you descend below the required Stop Depth before 5 minutes have elapsed, the Manta will continue to function in Decompression Dive Mode.

No off gassing Credit will be given while above a Required Stop Depth, and for each minute above it $1^{1}/_{2}$ minutes of **Penalty Time** will be added to Required Stop Time and TAT (Total Ascent Time).

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

Once the Penalty Time is worked off, and off gassing Credit begins, required Deco Stop Depths and Time will decrease toward zero. The NIBG will recede into the No Deco Zone and the Manta will revert to the No Deco Dive Mode.

△ **NOTE: Upon entry into the following Delayed Violation Modes, the Audible Alarm will sound and the red LED will flash <u>even if Set OFF.</u> When these events occur, the Alarm cannot be acknowledged/silenced by pressing the S button.**

DELAYED VIOLATION #1 (Fig. 83)
If you remain <u>above the Required DECO Stop Depth for more than 5 minutes</u>, the full NIBG and DOWN Arrow will flash until you descend below the Required Stop Depth. Also, the graphic message DOWN > TO > xxF (or xxM) will continue to scroll. This is a continuation of a Conditional Violation.

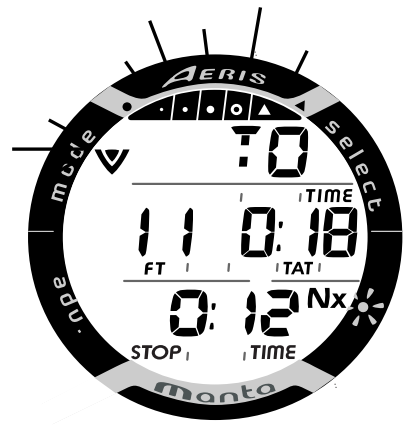


Fig. 83 - DELAYED VIOLATION #1 MAIN

Fig. 84 - DELAYED VIOLATION #2 MAIN

DELAYED VIOLATION #2 (Fig. 84)

The Manta cannot calculate Decompression times for Stop Depths much greater than 60 FT (18 M) and offers no indication of how much time spent underwater would result in the need for a greater Stop Depth.

If the Decompression obligation requires a Deco Stop Depth between 60 FT (18 M) and 70 FT (21 M), the NIBG will flash and the graphic message DECO > STOP > 60F (18M) will scroll at the top of the display.

When this occurs, you must make a controlled Ascent to just deeper than, and stay as close as possible to, 60 FT (18 M) without causing the NIBG to flash.

When the Required Stop Depth indicates 50 FT/ 15 M, etc., you can ascend to those Stop Depths and continue decompressing.

Fig. 85 - DELAYED VIOLATION #3 MAIN

DELAYED VIOLATION #3 (Fig. 85)

If you descend deeper than the MOD (Maximum Operating Depth) of 330 FT (100 M), the UP Arrow will flash, and the Current Depth and Max Depth displays will only indicate 3 dashes (- - -) signifying that you are Out of Range.

The graphic message TOO > DEEP will scroll at the top of the display until Ascent is made above 330 FT (100 M).

Upon ascending above 330 FT (100 M), the Current Depth display will be restored, however Max Depth will only display 3 dashes for the remainder of that dive. Also, the Log for that dive will display 3 dashes as the Max Depth achieved.

IMMEDIATE VIOLATION AND VIOLA GAUGE MODE

If a Decompression Ceiling Stop Depth much greater than 60 FT (18 M) is required, an Immediate Violation Mode will be entered. This situation would be preceded by entering Delayed Violation Mode #2.

The Manta would then operate in Violation Gauge Mode during the remainder of that dive and for 24 hours after surfacing.

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

VIOLATION GAUGE DIVE MAIN DISPLAY (Default), information provided includes (Fig. 86) -

- > Full NIBG and UP Arrow, flashing.
- > Message UP > VIOL, scrolling.
- > Current Depth with FT (or M) icon.
- > Dive Time Remaining as 0:00 (hr:min) with TIME and NDC icons.
- > Elapsed Dive Time (hr:min) with DIVE and TIME icons.
- > Nx icon, if FO2 is set for Nitrox.

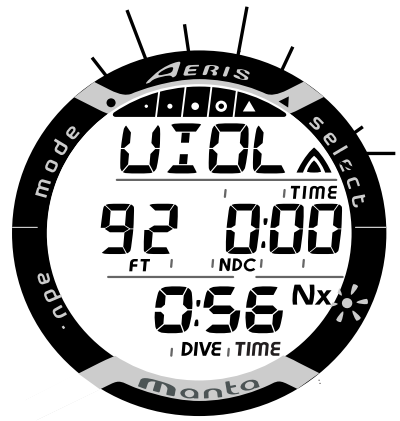


Fig. 86 - VIOLATION GAUGE MAIN

The Manta will also enter an Immediate Violation Mode (Violation Gauge Mode) 5 minutes after surfacing from a dive in which a Delayed Violation occurred.

Violation Gauge Mode on the Surface does not allow access to the SET F, PLAN, FLY, and SAT features/screens.

The countdown timer that appears when you try to access Time to Fly does not represent Time to Fly. It is only provided to inform you of the time remaining before normal Dive Computer operation can resume with full features and functions.

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

VIOLATION GAUGE SURF MAIN DISPLAY (Default), information provided includes (Fig. 87) -

- > Full NIBG, flashing
- > Graphic VIOL alternating with the graphics NORM, SEA (or EL 2 - EL 7), and WET (if wet).
- > Surface Interval Time (hr:min) with SURF and TIME icons.
- > Symbols TIME and SURF with Surface Interval Time (hr:min)
- > Dive Number with DIVE icon.
- > Nx icon, if FO2 is set for Nitrox.

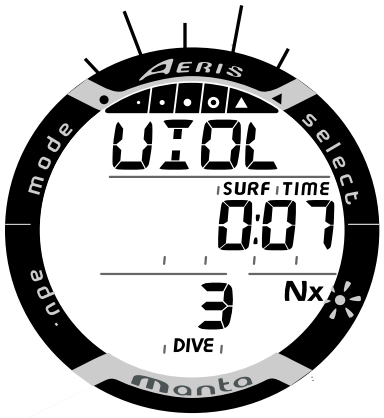


Fig. 87 - VIOLATION GAUGE SURFACE

HIGH PO2

When partial pressure of oxygen (PO2) becomes equal to, or greater than, 0.20 ATA less than the PO2 Alarm Set Point (a SET A Group setting); the Audible Alarm will sound, the red LED warning light will flash, and the message HIGH > PO2 will scroll until the Alarm is acknowledged/silenced.

- The graphic PO2 and UP Arrow will appear solid on the MAIN Display (Fig. 88) as a warning until PO2 decreases.
- After the Alarm is silenced, the graphic message UP > HIGH > PO2 will scroll.

If PO2 continues to increase, the value displayed will increase toward a maximum value of 5.00 ATA in increments of 0.01 ATA.

When PO2 reaches the PO2 Alarm Set Point, the red LED warning light will flash and the Audible Alarm will sound again.

> The graphic PO2 and UP Arrow will flash as a warning until PO2 decreases below the Alarm Set Point.

> The message UP > HIGH > PO2 will continue to scroll.

- The value of PO2 can be viewed by accessing the ALT Display by pressing/releasing the A button.
- The ALT will revert to the MAIN Display after 5 seconds.

Fig. 88 - HIGH PO2 MAIN

HIGH OXYGEN ACCUMULATION

The O2 Bar Graph displays either oxygen accumulated during that nitrox dive, or during the repetitive nitrox dives you conduct during that 24 hour period, whichever of the two is greater at that time. The O2 Bar Graph allows you to monitor how close you are coming to the limits of oxygen exposure.

If the theoretical amount of oxygen accumulated equals, or exceeds, the limit for a single exposure, or the exposure limit for a 24 hour period (300 OTU), Oxygen Dive Time Remaining becomes 0:00 (hr:min), the graphic O2BG appears and the full O2 Bar Graph and UP Arrow will be displayed flashing (Fig. 89).

The Audible Alarm will sound, the red LED will flash, and the message HIGH > O2 will scroll at the top of the display. When the Alarm is acknowledged/silenced, the message UP > HIGH > O2 will scroll until the level of oxygen decreases below the limit.

Fig. 89 - HIGH O2 MAIN

- Press/release the A button to view the Alternate, then Secondary Displays.
- They will revert to the MAIN Display after 5 seconds.

Upon surfacing, operation will lock in to NORM Mode until the O2BG recedes to 4 segments. Access to Watch Mode is allowed but access to GAUG and FREE is blocked.

SUMMARY OF NORM/GAUG WARNING AND ALARM MESSAGES

MESSAGE	MEANING
DECO > STOP > xxF (M)	Entry into Decompression Mode.
DOWN > TO > xxF (M)	Above a Required Decompression Stop Depth.
DECO > STOP > 60F (18M)	Deco Stop greater than 60 FT (18 M) required.
UP > HIGH > PO2	High PO2 alarm while in No Deco Mode.
HIGH > PO2	High PO2 alarm while in Deco Mode.
UP > HIGH > O2	High O2 alarm.
TOO > DEEP	Depth alarm.
UP > VIOL	Deco Stop greater than 70 FT (21 M) required.
SLOW > SLOW	Ascent Rate Too Fast alarm.
LOW > DIVE > TIME	Dive Time Remaining alarm.
TIME > TOO > LONG	Elapsed Dive Time alarm.
UP > HIGH > NI	NIBG alarm.

(This page intentionally left blank.)

WARNING: Prior to diving with the Manta, you must also read and understand the AERIS Dive Computer Safety and Reference Manual, Doc. No. 12-7203, which provides Important Warnings and Safety Recommendations as well as general product information.

NORM POST DIVE MODES

POST DIVE SURFACE MODE

When you ascend to 2 FT (0.6 M), the Manta will enter Surface Mode and begin counting your Surface Interval.

TRANSITION PERIOD

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

Transition Period information on the surface includes (Fig. 90):

- > NIBG, representing Nitrogen loading.
- > Graphic NORM alternating with the graphics SEA (or EL 2 through EL 7) and WET (if wet). If a Low Battery condition occurs during a dive, the message CHNG > BATT will scroll upon surfacing.
- > Battery icon if a Low Battery Warning Condition exists, flashing if Too Low.
- > Surface Interval Time (hr:min) with SURF and TIME icons.
- > Dive Number with DIVE icon.
- > Nx icon, if FO2 is set for Nitrox.

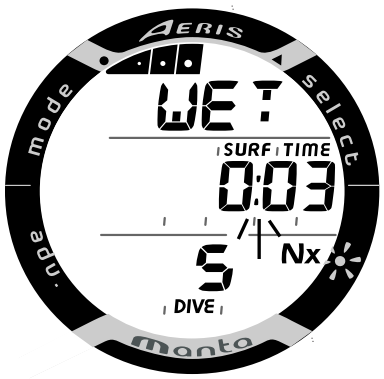


Fig. 90 - TRANSITION PERIOD

During the Transition Period, Alternate displays and the Log for that dive can be accessed. Other modes (e.g., Plan, Fly, Sat, Hist, Set) will be accessible after 10 minutes on the surface.

<u>To view that dive's Log during the Transition Period</u> -

- Press/release the A button (< 2 seconds) to access the Preview screen (Fig. 91).
- Press/release the S button (< 2 seconds) to view the Log Data 1 screen.
- Press/release the S button (< 2 seconds) again to view the Log Data 2 screen.
- Press/release the S button (< 2 seconds) again to view the Log Data 3 screen.
- Press/release the S button (< 2 seconds) again to return to the NORM Surface Main screen.
- The screen will revert to the NORM Surface Main after 2 minutes if the S button is not pressed.

Fig. 91 - LOG PREVIEW (during Transition Period)

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

Once 10 minutes have elapsed, the SURF icon will stop flashing indicating that the Dive and Transition Period are completed, and a subsequent descent will be considered a new dive. Operation will then revert to the Watch TIME Display.

AFTER THE TRANSITION PERIOD

Once the Transition Period has ended, the NORM Surface Main screen (Fig. 92) can be accessed from the Watch TIME screen by pressing the M button for 2 seconds. You will then have full access to other NORM DC modes/displays).

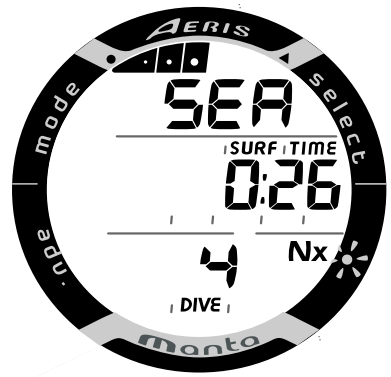


Fig. 92 - NORM SURF MAIN (after Transition Period)

To activate the Backlight -

- Press the L button at any time.

To access NORM PLAN Mode (refer to page 59) -

- Press/release the A button.

The Planning Sequence now displays adjusted No Decompression Limits based on residual nitrogen and accumulated oxygen calculated to be remaining from the previous dives.

To access the FLY Mode (refer to page 62) -

- Press/release the A button 2 times.

To access the DESAT Mode (refer to page 63) -

- Press/release the A button 3 times.

> If a Violation occurred during the dive, the SAT screen will not be displayed.
> The Time to Desaturate counter provides calculated time for tissue desaturation at sea level.

To access the NORM/GAUG LOG Mode (refer to page 64) -

- Press/release the A button 4 times.

To access the NORM/GAUG HISTORY Mode (refer to page 69) -

- Press/release the A button 5 times while NORM SURF MAIN is displayed.

UPLOADING SETTINGS AND DOWNLOADING DATA

The Manta is configured with a Data Port located on the back of the left side that enables it to be connected to a PC through a USB port using a special Interface Cable.

A USB Driver is provided on the program CD as part of the Interface System.

The Settings Upload portion of the program can be used to set/change the Main Time, Date, Set A group (Alarms), and Set U group (Utilities) using the same Interface System. The Set F group (FO2) and FREE Mode Alarms must be entered using the button controls.

Information available for retrieval (DownLoad) to the PC Download portion of the program includes dive number, surface interval time, maximum depth, elapsed dive time, start date, start time, lowest temperature under water, sampling rate, dive profile, Set Points, OTU, OTS, NIBG, O2BG, and FO2.

The Manta checks for the presence of an interface device connection to the Data Port once every second while in Watch Main Time Mode. Checks are not made if the Wet Activation contacts are wet. Upon sensing an interface connection, the requesting device (PC) connects to the Manta and is prepared for Upload of settings or Download of data which are then initiated using the PC programs.

Prior to attempting to Download data from your Manta or Upload Settings to it, review the HELP section of the interface program. Recommended is to print those sections of HELP that you consider appropriate for your Interface activities.

PC compatibility requirements:

- IBM®, or compatible, Personal Computer with USB Port
- Intel® Pentium 200 MHz or better microprocessor
- Microsoft® Windows® 98 Second Edition, ME, NT, 2000, or XP
- Super VGA card or compatible video graphics adaptor (256 color or greater) with a minimum 800 X 600 pixel screen area of display settings
- 16MB of available RAM
- 20MB of available hard drive storage
- Mouse
- CD Rom drive
- Printer

For software updates, refer to the AERIS web site.

www.diveaeris.com

For support, call ACI (AERIS Computer Interface) Support toll free at -

(866) 732-7877, 8 Am to 5 Pm Pacific time.

WARNING: Prior to diving with the Manta, you must also read and understand the AERIS Dive Computer Safety and Reference Manual, Doc. No. 12-7203, which provides Important Warnings and Safety Recommendations as well as general product information.

GAUGE OPERATING MODE

GAUGE MODE

When Gauge Mode (GAUG) is selected as the Dive Computer Operating Mode, the Manta will operate as a Digital Depth Gauge/Timer without performing nitrogen and oxygen calculations.

- To access GAUG Operating Mode while Watch MAIN TIME is displayed, press the M button 2 times (2 seconds each time); or while the NORM SURF MAIN screen is displayed, press the M button 1 time for 2 seconds.
- The graphic GAUG will flash indicating that GAUG can be selected as the Operating Dive Mode.
- To select GAUG for diving, press/release the M button while the GAUG graphic is flashing. When the graphic becomes solid, GAUG Mode is selected for the type of dives to be conducted.
- If no GAUG dive has been conducted, press the M button for 2 seconds to advance to the FREE SURF MAIN Display.

WATCH MAIN TIME > NORM SURF > GAUG SURF > FREE SURF

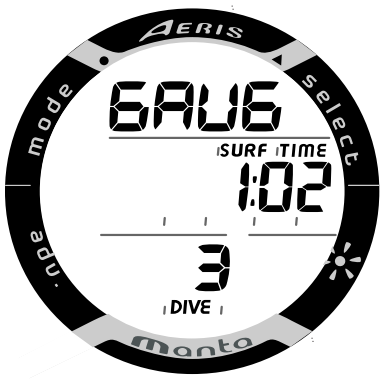


Fig. 93 - GAUG SURF MAIN

GAUG SURF MAIN DISPLAY (Default), (Fig. 93) -

> Graphic GAUG alternating with the Altitude Level graphic SEA (or EL 2 through EL 7) and WET (if wet).
> Surface Interval Time (hr:min) with SURF and TIME icons.
> Battery icon if a Low Battery Warning Condition exists, flashing if Too Low.
> Dive Number with DIVE icon.

- Press/release the A button to access Fly, Log, and History.
- Depress/hold the A button for 2 seconds to view the Secondary Display.
- Depress/hold the A and S buttons simultaneously for 2 seconds to access the SET menu (F > A > U > T).
- Press the L button to activate the Backlight.

When GAUG Operating Mode is selected and upon descending to 5 FT (1.5 M) for 5 seconds, the Manta will enter GAUG DIVE Mode.

△ **NOTE: Once a dive is made in GAUG Mode, you must wait 24 hours after surfacing before the Manta resets and will operate as an Air or Nitrox dive computer in NORM Mode or FREE Dive Mode.**

GAUG DIVE MAIN DISPLAY (Default), information provided includes (Fig. 94) -

> Graphic GAUG.
> Current Depth with FT (or M) icon.
> Elapsed Dive Time (hr:min) with DIVE and TIME icons.

- Press/release the A button to access the GAUG ALT display.

Fig. 94 - GAUG DIVE MAIN

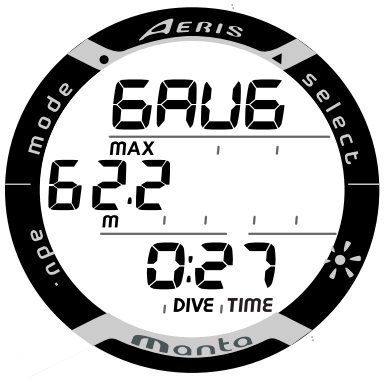


Fig. 95 - GAUG DIVE ALT

GAUG DIVE ALT DISPLAY, information provided includes (Fig. 95) -

> Graphic GAUG.
> Max Depth with MAX and FT (or M) icons.
> Elapsed Dive Time (hr:min) with DIVE and TIME icons.

- Press/release the A button to access the Secondary display.
- The display will revert to the MAIN Display after 5 seconds unless the A button is pressed/released.

SECONDARY DISPLAY, information includes (Fig. 96) -

> Day of the Week graphic (MON, TUE, etc.)
> Time of Day (hr:min). This will be the Watch Time selected (MAIN or ALTERNATE).
> Temperature with degrees icon and graphic F (or C).

- The display will revert to the MAIN Display after 5 seconds or if the A button is pressed/released.

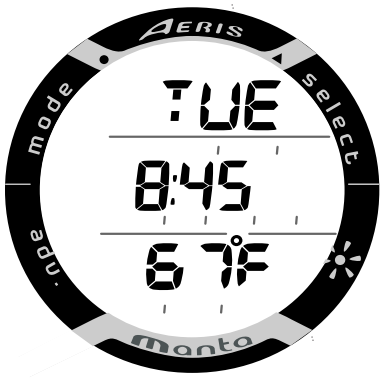


Fig. 96 - SECONDARY

WARNING: Prior to diving with the Manta, you must also read and understand the AERIS Dive Computer Safety and Reference Manual, Doc. No. 12-7203, which provides Important Warnings and Safety Recommendations as well as general product information.

FREE DIVE OPERATING MODE

FREE DIVE MODE

When FREE (Free Dive Mode) is selected as the Operating Mode, the Manta will operate as a Digital Depth Gauge with select features. Nitrogen calculations are based upon a default FO2 of AIR and the amount remaining during 24 hours is carried over between FREE and NORM Operating Modes.

- To access FREE Operating Mode while Watch MAIN TIME is displayed, press the M button 3 times (2 seconds each time), or while the GAUG SURF MAIN screen is displayed (and no GAUG dive was made), press the M button 1 time for 2 seconds. The graphic FREE will flash indicating that FREE can be selected as the Operating Dive Mode.
- To select FREE for diving, press/release the M button while the FREE graphic is flashing. When the graphic becomes solid, FREE Mode is selected for the type of dives to be conducted.

WATCH TIME > NORM SURF > GAUG SURF > FREE SURF

Fig. 97 - FREE SURF MAIN

FREE SURF MAIN DISPLAY, information includes (Fig. 97) -

> NIBG representing nitrogen loading, if any.
> Graphic FREE alternating with the Altitude Level graphic SEA (or EL 2 through EL 7) and graphic WET (if wet), each 3 seconds On then 1/4 second Off.
> Surface Interval Time (min:sec up to 59:59, then hr:min) with SURF and TIME icons.
> Battery icon if a Low Battery Warning Condition exists, flashing if Too Low.
> Total number of repetitive FREE Dives conducted in that series with DIVE icon.

- Press the L button to activate the Backlight.
- Depress the A button for 2 seconds to access the FREE SURF ALT Display from which you can access the Secondary Display .
- Press/release the A button momentarily (< 2 seconds) to access the FREE SURF CDT (Countdown Timer) Status Display allowing you to Set/Start/Stop the CDT.
- Depress both the A and S buttons simultaneously for 2 seconds to access the SET FREE EDT (Elapsed Dive Time) ALARM Display from which you can then access the SET FREE DEPTH ALARM 1, 2, and 3 Displays.

FREE Mode uses the NORM/GAUG settings for -

>> Time/Date
>> Wet Activation
>> Units
>> Conservative Factor

FREE SURF ALT DISPLAY, information includes (Fig. 98) -

> Graphic LAST, indicating that information relates to the last FREE dive conducted.
> Maximum Depth of the FREE dive previously made while still in FREE MODE with MAX and FT (or M) icons.
> Battery icon if a Low Battery Warning Condition exists, flashing if Too Low.
> Elapsed Dive Time (min:sec) of the FREE dive previously made while still in FREE MODE with DIVE and TIME icons. Resets to 0:00 after 24 hours.

- Press the L button to activate the Backlight.
- Press/release the A button momentarily (< 2 seconds) to access the Secondary Display.

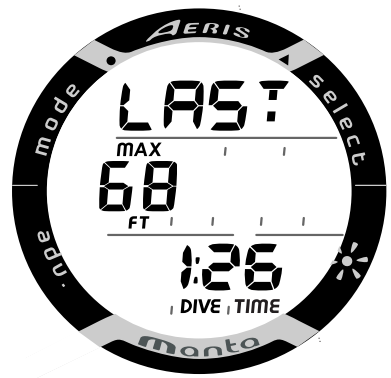


Fig. 98 - FREE SURF ALT

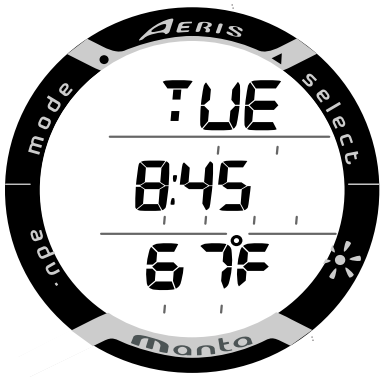


Fig. 99 - SECONDARY

The display will revert to the FREE SURF MAIN screen after 5 seconds if the A button is not pressed.

SECONDARY DISPLAY, information includes (Fig. 90) -

> Day of the Week graphic (MON, TUE, etc.)
> Time of Day (hr:min). This will be the Watch Time selected (MAIN or ALTERNATE).
> Temperature with degrees icon and graphic F (or C).

- The display will revert to the MAIN Display after 5 seconds or if the A button is pressed/released.

Fig. 100 - CDT ON/ RUNNING

FREE MODE CDT (COUNTDOWN TIMER)

Press/release the A button momentarily (< 2 seconds) while viewing the FREE SURF MAIN screen to access the FREE SURF CDT STATUS screen.

FREE SURF CDT STATUS DISPLAY, information provided includes (Fig. 100/101) -

> Graphic TIMR
> Remaining Countdown time (min:sec) and the TIME icon, if ON and a CD is in progress.
> 0:00 will be displayed, if the CD Timer is ON and no time is remaining.
> If the CD Timer is OFF, the CD Time (min:sec) previously set will be displayed.
> Graphic OFF (or ON), flashing

Fig. 101 - CDT OFF

- Press/release the S button momentarily (< 2 seconds) to toggle between ON and OFF.

> If a Time has been set, a toggle from OFF to ON will Start the CD Timer indicated by the colon flashing.

> An ON/OFF toggle is prevented when S is operated to acknowledge/silence the Watch Daily Alarm.

The Set Point for the Watch CDT does not affect the FREE CDT.

- Pressing the A button momentarily (< 2 sec), or depressing the M button for 2 seconds, or if no button is pressed during a period of 2 minutes, the Display will revert to the FREE SURF MAIN screen.
- Depressing both the A and S buttons simultaneously for 2 seconds while viewing the CDT Status screen when the CD Timer is OFF will access the SET CDT screen with the MINUTE Set Point flashing.

△ **NOTES: Once the CD TIMER has been Set and Started (by selecting ON), it will continue to run in the background while on the surface until turned OFF (stopped) or the Time reaches 0:00 at which time the Alarm will strike (3 short beeps 3 times), the message TIMR will be displayed, and the CDT will revert to OFF.**

Upon descending to 5 FT/1.5 M (i.e., entry into FREE DIVE Mode), CDT operation will continue, if in progress.

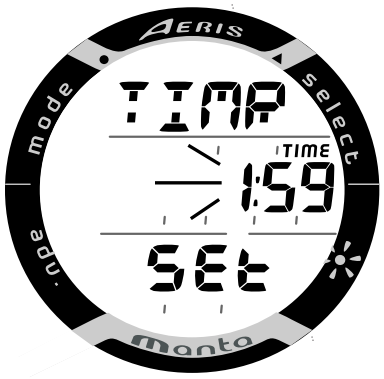


Fig. 101 - SET FREE CDT

NOTE: During a dive, the CDT can be turned OFF (stopped) and ON (started), but not Set.

SET FREE CDT STATUS DISPLAY (SURFACE ONLY), information provided includes (Fig. 101) -

> Graphic TIMR, solid.
> Timer setting (min:sec) with the TIME icon, colon solid, MINUTE Set Point flashing.
> Graphic SEt, solid.

- Depressing/holding the S button while the MINUTE Set Point is flashing will scroll through the Set Points at a rate of 4 per second from 0: to 59: in 1 Minute (1:) increments.
- Pressing/releasing the A button momentarily (< 2 seconds) will save the MINUTE Set Point displayed and advance to Set SECONDS with the Set Point flashing.
- Depressing/holding the S button while the SECONDS Set Point is flashing will scroll through the Set Points at a rate of 4 per second from :00 to :59 in 1 Second (:01) increments.
- Pressing/releasing the A button momentarily (< 2 seconds) will save the CDT Set Point indicated by the graphic OFF flashing (Fig. 102) in place of the graphic SEt.
- Pressing/releasing the S button momentarily (< 2 seconds) will toggle to ON and Start the CDT.

Fig. 102 - FREE CDT SET/READY

- Pressing the A button momentarily (< 2 sec), or depressing the M button for 2 seconds, or if no button is pressed during a period of 2 minutes, the display will revert to the FREE SURF MAIN screen.

The Set Point for the NORM/ GAUG EDT Alarm does not affect the FREE EDT Alarm.

FREE EDT (ELAPSED DIVE TIME) ALARM

The FREE EDT Alarm is factory set for 30 seconds. When set ON, the Alarm will sound 3 short beeps and the message TIME will be displayed momentarily every 30 seconds while the Manta is operating underwater in FREE DIVE Mode.

- Depressing both the A and S buttons simultaneously for 2 seconds while the FREE SURF MAIN screen is displayed, will access the SET FREE EDT ALARM screen with the Set Point flashing.

△ **NOTE: The FREE EDT Alarm can only be Set (turned OFF or ON) while on the Surface and can not be changed during a Dive.**

SET FREE EDT ALARM DISPLAY, information provided includes (Fig. 103) -

> Graphic EDT
> Pre set interval :30 (:sec) with TIME icon.
> Set Point graphic OFF or ON, flashing.

Fig. 103 - SET FREE EDT ALARM

- Pressing/releasing the S button momentarily (< 2 seconds) will toggle the Set Point between OFF and ON.
- Pressing/releasing the A button momentarily (< 2 sec) will accept the setting and access the SET FREE DEPTH ALARM 1 screen.
- Depressing the M button for 2 seconds, or if no button is pressed during a period of 2 minutes, the display will revert to the FREE SURF MAIN screen.

FREE DEPTH ALARMS (FDA)

The Manta features 3 FREE DEPTH Alarms that can be Set at progressively deeper Depths and turned OFF/ON.

> If Alarm 1 is set OFF, then Alarms 2 and 3 will be disabled.
> If Alarm 2 is set OFF, Alarm 3 will be disabled.

When each of the Depths are reached during a dive, 3 short beeps will sound 3 times and the message DPTH will be displayed 3 times.

- Pressing/releasing the A button momentarily (< 2 seconds) while the SET FREE EDT ALARM screen is displayed will access SET FREE DEPTH ALARM 1 with the Set Point flashing.

<u>Sequence of FREE Mode Alarm Setting Access:</u>

FREE SURF MAIN • depress A and S 2 seconds >>
SET FREE EDT AL • press A less than 2 seconds >>
SET FREE DEPTH AL 1 • press A less than 2 seconds >>
SET FREE DEPTH AL 2 • press A less than 2 seconds >>
SET FREE DEPTH AL 3 • press A less than 2 seconds >>
FREE SURF MAIN

SET FREE DEPTH ALARM 1 (FDA1) DISPLAY, information provided includes (Fig. 104) -

> Graphic FDA1.
> Depth Alarm value, flashing if ON is displayed, with MAX and FT (or M) icons.
> Set Point ON or OFF, flashing.

The Set Point for the NORM/ GAUG Depth Alarm does not affect the FREE Depth Alarms.

- Pressing/releasing the S button momentarily (< 2 seconds) will toggle the Set Point between ON and OFF.
- Pressing/releasing the A button momentarily (< 2 seconds) will accept the ON/OFF settings.

> If OFF is selected/accepted, Set FDA 2 and 3 will be bypassed and the display will revert to the FREE SURF MAIN screen.
> If ON is selected/accepted, the Depth value displayed will flash.

- Pressing/releasing the S button momentarily and repeatedly (< 2 seconds each time) will step through the Set Points from 30 to 330 FT (10 to 100 M) in increments of 10 FT (1 M) at a rate of 1 Set Point per press of the button.
- Pressing and holding the S button will scroll through the Set Points at a rate of 4 Set Points per second until released.
- Pressing the A button momentarily (< 2 sec) will accept the Depth Setting and advance to SET FDA 2.

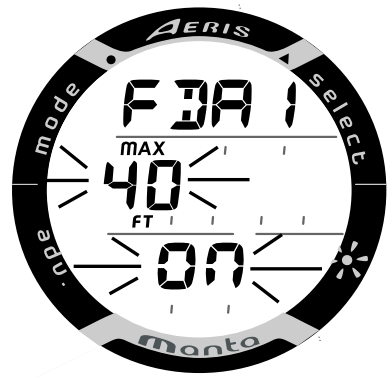


Fig. 104 - SET FREE DEPTH ALARM 1

The range of available FDA 2 Set Points begins at the next FT/M value greater than the FDA 1 Alarm Set Point.

- Depressing the M button for 2 seconds, or if no button is pressed during a period of 2 minutes, the display will revert the FREE SURF MAIN screen.

SET FREE DEPTH ALARM 2 (FDA2) DISPLAY, information provided includes (Fig. 105) -

> Graphic FDA2.
> Depth alarm value, flashing if ON is displayed, with MAX and FT (or M) icons.
> Set Point ON or OFF, flashing.

- Pressing/releasing the S button momentarily (< 2 seconds) will toggle the Set Point between ON and OFF.
- Pressing/releasing the A button momentarily (< 2 seconds) will accept the ON/OFF settings.

> If OFF is selected/accepted, Set FDA 3 will be bypassed and the display will revert to the FREE SURF MAIN screen.
> If ON is selected/accepted, the Depth value displayed will flash.

- Pressing/releasing the S button momentarily and repeatedly (< 2 seconds each time) will step through the Set Points from 40 to 330 FT (11 to 100 M) in increments of 10 FT (1 M) at a rate of 1 Set Point per press of the button.

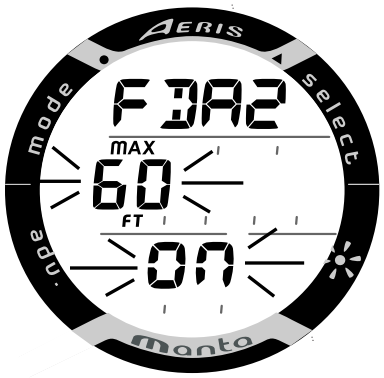


Fig. 105 - SET FREE DEPTH ALARM 2

- Pressing and holding the S button will scroll through the Set Points at a rate of 4 Set Points per second until released.
- Pressing the A button momentarily (< 2 sec) will accept the Depth Setting and advance to SET FDA 3.
- Depressing the M button for 2 seconds, or if no button is pressed during a period of 2 minutes, the display will revert the FREE SURF MAIN screen.

The range of available FDA 3 Set Points begins at the next FT/M value greater than the FDA 2 Alarm Set Point.

SET FREE DEPTH ALARM 3 (FDA3) DISPLAY, information provided includes (Fig. 106) -

> Graphic FDA3.
> Depth alarm value, flashing if ON is displayed, with MAX and FT (or M) icons.
> Set Point ON or OFF, flashing.

- Pressing/releasing the S button momentarily (< 2 seconds) will toggle the Set Point between ON and OFF.
- Pressing/releasing the A button momentarily (< 2 seconds) will accept the ON/OFF settings.

> If OFF is selected/accepted, the display will revert to the FREE SURF MAIN screen.
> If ON is selected/accepted, the Depth value displayed will flash.

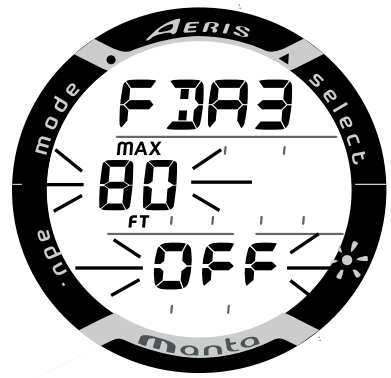


Fig. 106 - SET FREE DEPTH ALARM 3

- Pressing/releasing the S button momentarily and repeatedly (< 2 seconds each time) will step through the Set Points from 50 to 330 FT (12 to 100 M) in increments of 10 FT (1 M) at a rate of 1 Set Point per press of the button.
- Pressing and holding the S button will scroll through the Set Points at a rate of 4 Set Points per second until released.
- Pressing the A button momentarily (< 2 sec) will accept the Depth Setting and the display will revert the FREE SURF MAIN screen.
- Depressing the M button for 2 seconds, or if no button is pressed during a period of 2 minutes, the display will revert the FREE SURF MAIN screen.

FREE DIVE MAIN DISPLAY (Default**),** information provided includes (Fig. 135) -

> NIBG, if any Nitrogen is remaining from previous NORM or FREE Dives conducted within the previous 24 hours.
> Graphic FREE
> Current Depth with FT (or M) icon.
> No Deco Dive Time remaining (hr:min) with TIME and NDC icons.
> Elapsed Dive Time (min:sec) with DIVE and TIME icons.

Fig. 107 - FREE DIVE MAIN

- Press/release the A button momentarily (< 2 seconds) to access the FREE CDT (Count Down Timer) STATUS screen.
- Press the L button to activate the Backlight.

FREE DIVE CDT STATUS DISPLAY, information provided includes -

> Graphic TIMR
> Remaining Countdown time (hr:min:sec) with the TIME icon; and colon flashing if ON and a CD is in progress, 0:00 with the colon flashing if ON and no time is remaining. If OFF, the CD Time previously set will be displayed with the colon solid (Fig. 108).
> Graphic ON (or OFF), flashing

Fig. 108 - FREE CDT STATUS (OFF/READY)

- Pressing/releasing the S button momentarily (< 2 seconds) will toggle between ON and OFF. If a Time has been set, a toggle from OFF to ON will Start the CD TIMER indicated by the colon flashing (Fig. 109).
- Pressing the L button will activate the Backlight.
- Depressing the M button for 2 seconds or if no button is pressed during a period of 10 seconds, the display will revert to the FREE DIVE MAIN screen.

FREE DIVE ALARMS

All FREE Dive Alarms will sound 3 short beeps (1 or 3 times) and a Message will be displayed as an indication that an event is occurring and as a reminder to view the display to identify the event.

After the beeps have sounded, the message will be replaced with the graphic FREE.

Fig. 109 - FREE CDT STARTED

Fig. 110 - FREE CDT ALERT

FREE CDT (Count Down Timer) Alert

When the FREE CDT decreases to 0:00 (min:sec), 3 short beeps will sound 3 times and the message TIMR will appear on the display 3 times momentarily (Fig. 110), then revert to the message FREE.

Fig. 111 - FREE DEPTH ALARM

FREE DEPTH Alarm(s)

When Depth reaches the FREE DEPTH ALARM 1 Set Point selected, 3 short beeps will sound 3 times, the red LED will flash, and the message DPTH will appear on the display 3 times momentarily (Fig. 111), then revert to the message FREE.

> The beeps and message will be repeated when Depth reaches the FREE DEPTH ALARM 2 and 3 Set Points selected, if set ON.
> If Ascent is made above a FREE DEPTH ALARM Set Point and then a descent is made to a Depth below it, the respective Alarm (FDA) will sound again.

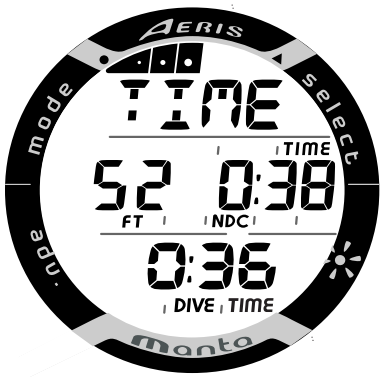


Fig. 112 - FREE EDT ALARM

FREE EDT (Elapsed Dive Time) Alarm

When the FREE EDT Alarm is set ON prior to commencing a Free Dive, 3 short beeps will sound, the red LED will flash, and the message TIME will appear on the display momentarily (Fig. 112), then revert to the message FREE.

> This Alarm is factory set to repeat every 30 seconds during FREE DIVE Mode, when it is set ON.

FREE NIBG (Nitrogen Bar Graph) Alarm

While diving in FREE DIVE Mode, nitrogen accumulation from the FREE Dives and any previous NORM SCUBA Dives conducted within 24 hours is displayed as the NIBG.

When Nitrogen Loading increases to the Caution level indicated by 4 segments displayed as the NIBG, the UP Arrow appears solid, 3 short beeps will sound 3 times, the red LED will flash, and the message UP > HIGH > NI will appear on the display (Fig. 113).

Fig. 113 - FREE NIBG ALARM

After the beeps, the message will continue to scroll until the NIBG recedes to 3 segments at which time the message will change to FREE and the UP Arrow will be removed.

Entry into DECO During a FREE Dive

In the event that Nitrogen Loading increases to the DECO level indicated by all 5 segments of the NIBG displayed flashing, the UP Arrow will flash, 3 short beeps will sound 3 times, the red LED will flash, and the message UP > VIOL will appear on the display (Fig. 114).

After the beeps, the message UP > VIOL will continue to be displayed scrolling until you surface, then the graphic VIOL will alternately be On/Off for 10 minutes after the dive.

Fig. 114 - FREE DIVE VIOLATION (DECO)

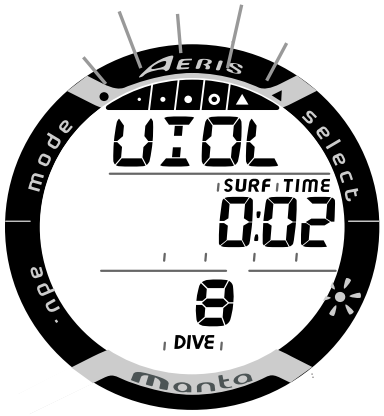


Fig. 115 - FREE SURF VIOLATION (DECO)

Upon surfacing, the UP Arrow will be removed, however, the Full NIBG will continue to flash for 24 hours and dive computer operation will revert to FREE Permanent Violation Mode (Fig. 115) until a full 24 hours elapse with no diving. Access to Watch Mode will be allowed, but access to NORM or GAUG will be blocked.

ADDITIONAL INFORMATION PERTAINING TO FREE DIVE MODE:

Although breathing apparatus is not utilized for FREE Dive activities, nitrogen tissue loading remains a factor. Nitrogen loading is calculated based upon a fixed FO2 of AIR. Since a user has the option of alternating between NORM (SCUBA) and FREE Dive activities within a 24 hour period, nitrogen calculations and the displayed value of No Deco Dive Time Remaining (NDC Time) are carried over from one operating mode to the other, which permits the user to maintain awareness of nitrogen absorption and offgasing status.

The mathematical model currently used in the Manta is based on no decompression/decompression multilevel repetitive dive schedules. This algorithm does not take into account the physiological changes associated with the high pressures that competitive type Free diving can expose a diver to.

WARNING: Prior to diving with the Manta, you must also read and understand the AERIS Dive Computer Safety and Reference Manual, Doc. No. 12-7203, which provides Important Warnings and Safety Recommendations as well as general product information.

REFERENCE

CARE AND CLEANING

Protect your Manta 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 Manta 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. 116a), PC Interface Data Port (Fig. 116b), and Buttons 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 Manta under gently running water and towel dry before storing.
- Transport your Manta system cool, dry, and protected.

INSPECTIONS AND SERVICE

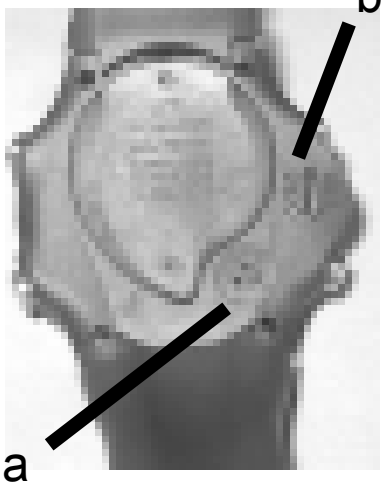


Fig. 116 - CASE BACK

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

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

To Obtain Service:
Take your Manta to an Authorized AERIS Dealer.

To return your Manta to AERIS:

- Record all dive data in the Log and/or download the data in memory. 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 Card.
- Send freight prepaid and insured using a traceable method to AERIS.
- If shipping to AERIS, obtain an RA (Return Authorization) number by contacting AERIS at 510/346-0010 or send an e-mail to service@diveaeris.com.
- Non-warranty service must be prepaid. COD is not accepted.
- Additional information is available at the AERIS web site diveaeris.com

BATTERY REPLACEMENT

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

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.

Fig. 117 - BATTERY HATCH REMOVAL (using tool)

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 Manta, DO NOT attempt to use it for diving (NORM, GAUG, or FREE) until it receives proper service by the AERIS factory.

Hot Swap

If the new Battery can be inserted within 8 seconds after the old one is removed (referred to as a Hot Swap), settings and Ni-O2 calculations for repetitive dives will be retained.

Fig. 118 - BATTERY HATCH REMOVAL (without tool)

⚠ **CAUTION: Damage due to improper Battery replacement is not covered by the limited 2 year warranty.**

Battery Removal

- Locate the Battery Compartment on the back of the unit.
- Rotate the Battery Hatch clockwise 10 degrees using the special Battery Hatch Tool provided (Fig. 117), or by pushing the lower portion to the left while pushing the upper portion to the right (Fig. 118).

- Lift the Hatch with O-ring up and away from the Housing.
- Using care not to damage the Contact (Fig. 119a), slide the Battery up and out of the Left side of the Battery 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.

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

- Remove the Battery Hatch 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.

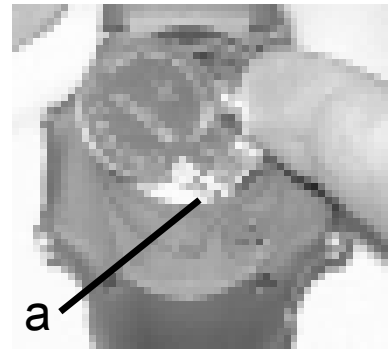


Fig. 119 - BATTERY REMOVAL

Fig. 120 - BATTERY INSTALLATION

- Closely examine the threads of the Battery Hatch 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 corrosion is found, return the Manta to an Authorized AERIS Dealer, and DO NOT attempt to use it until it has received factory service.
- If moisture is found, it is best to have the unit inspected and cleaned by an Authorized AERIS Dealer.
- If it is necessary to clean the Battery Compartment, flush it and all components 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.

Battery Installation

- Slide a new 3 volt type CR2430 Lithium Battery, negative side down into the Battery Cavity. Slide it in from the Left side (Fig. 120) and ensure that it slides under the contact clip on the lower/right rim of the cavity.
- Lightly lubricate the new Hatch O-ring with silicone grease and place it on the inner rim of the Battery Hatch. Ensure that it is evenly seated (Fig. 121).

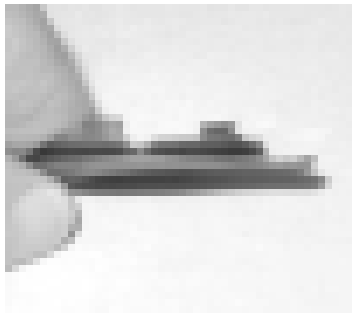


Fig. 121 - BATTERY HATCH O-RING

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

Fig. 122 - HATCH INSTALLATION (using tool)

- Carefully place the Battery Hatch (with O-ring) into position on the rim of the Battery Compartment, then press it evenly and completely down into place.
- Maintain the Battery Hatch securely in place and turn it counter clockwise 10 degrees using the special Battery Hatch tool provided (Fig. 122), or by pushing the lower portion to the right while pushing the upper portion to the left (Fig. 123).

Testing

- Observe the LCD display to ensure it is consistently clear and sharp in contrast throughout the screen.
- Set the Date, Main Time, Alternate Time, and Daily Alarm.
- 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 Manta to an Authorized AERIS Dealer for a complete evaluation before attempting to use it.

Fig. 123 - BATTERY HATCH O-RING (without tool)

ALTITUDE SENSING AND ADJUSTMENT

Prior to the first dive of a series of repetitive dives, ALTITUDE (i.e., Ambient Pressure) is measured upon activation of Dive Surface Mode and every 15 minutes until a dive is made or operation reverts to Main Time after 2 hours.

- > While it is operating in Watch Modes after a dive, measurements are taken every 15 minutes during the 24 hour period after surfacing.
- > 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.

The Mathematical Model in the Manta accounts for the reduced No Decompression dive Time available based on National Oceanic and Atmospheric Administration (NOAA) guidelines.

When diving in high altitude waters from 3,001 to 14,000 feet (916 to 4,270 meters), the Manta automatically adjusts to these conditions providing corrected Depth, reduced No Decompression Times, and reduced Oxygen Accumulation Times at intervals of 1,000 feet (305 meters).

No adjustments are made during any time that the Wet Contacts are bridged.

At an elevation of 3,001 feet, Depth Calibration automatically changes from feet of seawater to feet of fresh water. This is the first adjustment to the Algorithm.

When the Conservative Factor feature is set ON, allowable dive times are calculated based upon the next higher 3,000 foot (915 meter) Altitude. 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). If the Conservative Factor is set ON while at Sea Level, calculations are based upon an Altitude of 3,001 feet.

The Manta will not function as a Dive Computer above 14,000 feet (4,270 meters).

IMPERIAL NO DECOMPRESSION LIMITS (HOURS:MINUTES) AT ALTITUDE

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 (feet)												
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

METRIC NO DECOMPRESSION LIMITS (HOURS:MINUTES) AT ALTITUDE

Altitude (meters) / Depth (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`
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

OXYGEN EXPOSURE LIMITS
(from NOAA Diving Manual)

PO2 (ATA)	Max Duration Single Exposure (min)	Max Duration Single Exposure (hr)	Max Total Duration 24 Hour Day (min)	Max Total Duration 24 Hour Day (hr)
0.60	720	12.0	720	12.0
0.70	570	9.5	570	9.5
0.80	450	7.5	450	7.5
0.90	360	6.0	360	6.0
1.00	300	5.0	300	5.0
1.10	240	4.0	270	4.5
1.20	210	3.5	240	4.0
1.30	180	3.0	210	3.5
1.40	150	2.5	180	3.0
1.50	120	2.0	180	3.0
1.60	45	.75	150	2.0

SPECIFICATIONS

CAN BE USED AS

- Watch
- Dive Computer (Air or Nitrox)
- Digital Depth Gauge/Timer
- Free Dive activity

NO DECOMPRESSION MODEL

Basis:

- Modified Haldanean Algorithm
- 12 tissue compartments

Data Base:

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

Dive Computer Performance:

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

Decompression Capabilities (stop ceilings):

- 10, 20, 30, 40, 50, and 60 FT (3, 6, 9, 12, 15, and 18M)

Altitude Algorithm and Oxygen Exposure Limits:

- Based on NOAA tables

WATCH MODES

- Main Time (home)
  - > Set Time/Date
- Alternate Time (remote location)
  - > Set Alternate Time (hour differential)
- Countdown Timer
  - > Set/Start/Stop
- Chronograph (Stop Watch/Lap Timer)
  - > Start/Stop/Lap Recall/Reset
- Daily Alarm (Watch Mode)
  - > Set Time, On/Off

DIVE COMPUTER SURFACE SEQUENCE/MODES

- NORM/GAUG/FREE Surface Mode
- Plan (30 to 190 FT/9 to 57 M) - NORM only
- Time to Fly Countdown - NORM/GAUG
- Time to Desaturation Countdown - NORM only
- Dive Log - NORM/GAUG
- History - NORM/GAUG
- Oxygen Data (after Nitrox dives)
- Set FO2, Alarms, Utilities - NORM/GAUG

NORM/GAUG SET MODES

	Factory Settings:
• Set F Group (FO2 items):	
FO2 (Air, 21 to 50%)	Air
FO2 Default (On/Off)	On
• Set A Group (Alarms):	
Audible Alarm (On/Off)	On
Depth (30 to 330 FT /10 to 100 M)	330 FT
EDT (:10 to 3:00 hr:min)	3:00 (hr)
NIBG (1 to 5 segments)	5 (Deco)
DTR (:00 to :20 min)	:20 (min)
PO2 (1.20 to 1.60 ATA)	1.60 ATA

SPECIFICATIONS (CONTINUED)

• Set U Group (Utilities):	Factory Settings:
Wet Activation (On/Off)	On
Units (Imperial / Metric)	Imperial
Safety Stop Time, Depth (Off/3/5 minutes, 10/15/20 FT, 3/4/5/6 M)	3:00 (min:)
Conservative Factor (On/Off)	Off
Backlight Duration (0/5/10 seconds)	:05 (sec)
Sampling Rate (2/15/30/60 seconds)	15 (sec)

• Serial Number	
Factory set	actual

NORM No Decompression Dive Displays:
- Main (default) - NIBG, Elapsed Dive Time (hr:min), Dive Time Remaining (hr:min), Current Depth
- Alternate - O2BG, Max Depth, Current PO2, FO2 Set Point
- Secondary - Day of Week, Temperature, Time of Day (hr:min)
- Safety Stop Main (default) - NIBG, Stop Depth, Stop Time (min:sec), Dive Time Remaining (hr:min), Depth

NORM Decompression Dive Displays:
- Main (default) - NIBG, Stop Depth, Stop Time (hr:min), Total Ascent Time (hr:min), Current Depth
- Alternate #1 - NIBG, Stop Depth, Elapsed Dive Time (hr:min), Total Ascent Time (hr:min), Current Depth
- Alternate #2 - O2BG, Max Depth, Current PO2, FO2 Set Point
- Secondary - Day of Week, Temperature, Time of Day (hr:min)

NORM Violation Modes (displays similar to Deco) - Conditional, Delayed, and Immediate/Violation Gauge

NORM High PO2 (1.20 to 1.60 ATA)

NORM High Oxygen Accumulation (300 OTU per dive / 24 hr)

GAUG Dive Displays:
- Main (default) - Mode graphic GAUG, Elapsed Dive Time (hr:min), Current Depth
- Alternate - Mode graphic GAUG, Elapsed Dive Time (hr:min), Max Depth
- Secondary - Day of Week, Temperature, Time of Day (hr:min)

SPECIFICATIONS (CONTINUED)

FREE Dive Displays:

- Main (default) - Mode graphic FREE, Elapsed Dive Time (min:sec), Dive Time Remaining (hr:min), Depth
- CDT Status - graphic TIMR (Timer), Timer Setting (On/Off), Countdown Time Remaining (min:sec)
- Secondary - Day of Week, Temperature, Time of Day (hr:min)

NUMERIC DISPLAYS:	Range:	Resolution:
• Dive Number	0 to 24	1
• Current Depth	0 to 330 FT (100 M)	1 FT (.1 M)
• Maximum Depth	330 FT (100 M)	1 FT (.1 M)
• FO2 Set Point	Air, 21 to 50 %	1 %
• PO2 Value	0.00 to 5.00 ATA	.01 ATA
• Dive Time Remaining	0:00 to 9:59 hr:min	1 minute
• Total Ascent Time	0:00 to 9:59 hr:min	1 minute
• No Deco Safety Stop Time	5:00 to 0:00 min:sec	1 second
• Decompression Stop Time	0:00 to 9:59 hr:min	1 minute
• Norm/Gaug Elapsed Dive Time	0:00 to 9:59 hr:min	1 minute
• Free Elapsed Dive Time	0:00 to 59:59 min:sec	1 second
• Surface Interval Time	0:00 to 23:59 hr:min	1 minute
• Free Surface Interval Time	0:00 to 59:59 min:sec	1 second
	1:00 to 23:59 hr:min	1 minute
• Dive Log Surface Interval	0:00 to 23:59 hr:min	1 minute
• Time to Fly	23:50 to 0:00 hr:min* (* starting 10 min after the dive)	1 minute
• Time to Desaturate	23:50 max to 0:00 hr:min* (* starting 10 min. after the dive)	1 minute
• Temperature	0 to 140°F (-9 to 60°C)	1°
• Watch Time of Day	0:00:00 to 23:59:59 hr:min:sec	1 second
• Dive Computer Time of Day	0:00 to 23:59 hr:min	1 minute
• Watch Countdown Timer	23:59 to 0:00 hr:min	1 minute
• Free Countdown Timer	59:59 to 0:00 min:sec	1 second
• Chronograph	0:00:00.00 to 9:59:59.99 hr:min:sec.1/100 sec	1/100 second

- Out of Range (- - -) => 330 FT (100 M)
- Violation Countdown Timer 23:50 to 0:00 hr:min (after violation)

SPECIFICATIONS (CONTINUED)

BAR GRAPH

Nitrogen Bar Graph:	segments
• No Decompression zone	1 to 4
• Decompression zone	5 (all)

Oxygen (O2) Bar Graph:	segments
• Normal zone	1 to 4
• Danger zone	5 (all)

OPERATIONAL PERFORMANCE

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

Dive Counter:
- NORM/GAUG numbers/displays Dives #1 to 24, FREE numbers Dives #1 to 99, 0 if no dive made yet
- Resets to Dive #1, upon diving (after 24 hours with no dives)

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

Altitude:
- Operational from sea level to 14,000 feet (4,270 meters) elevation
- Measures ambient pressure every 30 minutes in Watch Mode and when Dive Computer Mode is accessed, every 15 minutes while in NORM/GAUG/FREE Surface Modes.
- 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.

Conservative Factor:
- Reduces NORM/FREE NDLs to those for the Altitude 3,000 feet (915 meters) higher.

SPECIFICATIONS (CONTINUED)

Power:

• Battery	1 - 3 vdc, CR2430, Lithium battery
• Shelf life	Up to 7 years (when shipped from factory in Deep Sleep mode)
• Replacement	User replaceable (annual recommended)
• Use Life	1 year or 300 dive hours if 2 - 1 hour dives per dive day

Battery Indicator:

- Warning - icon on solid < 2.75 volts >2.50 volts, Battery change recommended
- Alarm - icon on flashing at <= 2.50 volts, change the Battery, will not function as a DC

Dive Computer Mode Activation:

- Manual - push button (recommended), required if Wet Activation is set OFF.
- Automatic - by immersion in water (if set ON)
- Graphic WET indicates Activation Contacts are Wet (unit must be dried prior to transport or storage)
- Cannot be manually activated deeper than 4 FT (1.2 M), if Water Activation is set OFF.
- Cannot operate as a Dive Computer at elevations higher than 14,000 feet (4,270 meters)
- Reverts to Main Time if no dive is made within 2 hours after entry into a Surface Mode.
- Reverts to Main Time 10 minutes after surfacing from dives.

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).
- At extremely low temperatures, the LCD may become sluggish, but this will not affect it's accuracy. If stored or transported in extremely low temperature areas (below freezing), you should warm the unit and its battery with body heat before diving.

Storage Temperature:

- Out of the water (in storage case provided) - between 14 °F and 158 °F (-8 and 70 °C).

WARNINGS:

- **Ensure that you know which Operating Mode is selected (NORM, GAUG, or FREE) prior to commencing any dive.**
- **Conducting Free dives within a 24 hour period after conducting SCUBA dives, combined with the effects of multiple rapid Free Dive ascents, increases your risk of decompression sickness. Such activities may result in accelerated entry into decompression which could cause serious injury or death.**
- **Combining competitive type Free dive activities that involve multiple descents/ascents with activities utilizing SCUBA during the same 24 hour period is not recommended. Presently, there is no data relating to such activities.**
- **It is highly recommended that anyone planning to become involved in competitive type Free dive activities obtain proper instruction and training from a recognized Free Diving trainer. It is imperative that the physiological affects be understood and the diver is physically prepared.**
- **If your Manta stops working for any reason while operating as a Dive Computer, it is important that you have anticipated this possibility and are prepared for it. <u>This is an important reason for not pushing the no decompression and oxygen exposure limits, and a critical reason to avoid entering decompression.</u> If you dive in situations where your trip would be ruined or your safety would be jeopardized by losing the use of your Manta, a backup instrument system is highly recommended.**

ERROR (RESET DURING A DIVE)

If for any reason, the Manta shuts Off then turns On again for any reason during any Dive, the message **ERR (Error)** will be displayed with the Up Arrow and current Depth (Fig. 124).

Fig. 124 -ERROR WHILE DIVING

If this occurs, it is highly recommended that you terminate the dive and begin a safe ascent to the surface.

Upon surfacing, and any time thereafter, when access to Dive Computer Operating Mode is attempted from Watch Mode, only the message **ERR** will be displayed (Fig. 125).

No Dive Computer Modes/screens will be inaccessible.

If this occurs, the Manta must be returned to the factory for evaluation/service prior to any further use for diving activities.

Fig. 125 -SURFACE AFTER ERROR DURING A DIVE

INSPECTION / SERVICE RECORD

Serial Number: _____

Firmware Revision: _____

Date of Purchase: _____

Purchased from : _____

Below to be filled in by an Authorized AERIS Dealer:

Date	Service Performed	Dealer / Technician

NOTES

AERIS
2002 Davis Street
San Leandro, CA 94577
Tel: 510/346-0010
Fax: 510/346-0015
Web site: http://www.diveaeris.com
E-mail: info2@diveaeris.com

Doc. No. 12-7213-r02 (11/2/07)