

EN

# SUUNTO D4

USER'S GUIDE





1. WELCOME TO THE WORLD OF SUUNTO DIVING INSTRUMENTS .....	7
2. WARNINGS, CAUTIONS, AND NOTES .....	9
3. SUUNTO D4 AT A GLANCE .....	15
3.1. Navigating in the menus .....	15
3.2. Button symbols and functions .....	16
4. GETTING STARTED WITH YOUR SUUNTO D4 .....	19
4.1. TIME mode settings .....	19
4.1.1. Setting the alarm .....	20
4.1.2. Setting the time .....	21
4.1.3. Setting the dual time .....	21
4.1.4. Setting the date .....	22
4.1.5. Setting the units .....	22
4.1.6. Setting the backlight .....	23
4.1.7. Setting the tones .....	23
4.2. Stopwatch .....	24
4.3. AC water contacts .....	24
5. BEFORE DIVING .....	26
5.1. The Suunto RGBM/Deep Stop Algorithm .....	27
5.2. Emergency ascents .....	27
5.3. Dive computer limitations .....	28
5.4. Nitrox .....	28
5.5. Free diving .....	29
5.6. Audible and visual alarms .....	29
5.7. Error conditions .....	32

5.8. DIVE mode settings .....	33
5.8.1. Setting the depth alarm .....	35
5.8.2. Setting the depth notify alarm (FREE mode) .....	36
5.8.3. Setting the dive-time alarm .....	36
5.8.4. Setting the nitrox values .....	37
5.8.5. Setting the personal/altitude adjustments .....	37
5.8.6. Setting the surface time notify alarm (FREE mode) .....	38
5.8.7. Setting the sample rate .....	38
5.8.8. Setting the Deep Stops .....	39
5.8.9. Setting the RGBM values .....	39
5.9. Activation and pre-checks .....	39
5.9.1. Accessing DIVE mode .....	40
5.9.2. DIVE mode activation .....	40
5.9.3. Battery power indication .....	42
5.9.4. Diving at altitude .....	42
5.9.5. Personal adjustments .....	44
5.10. Safety Stops .....	46
5.10.1. Recommended Safety Stops .....	46
5.10.2. Mandatory Safety Stops .....	47
5.11. Deep stops .....	49
6. DIVING .....	50
6.1. Diving in AIR mode (DIVEair) .....	50
6.1.1. Basic dive data .....	50
6.1.2. Bookmark .....	52

6.1.3. Ascent rate indicator .....	52
6.1.4. Decompression dives .....	53
6.2. Diving in NITROX mode (DIVEnitrox) .....	58
6.2.1. Before diving in NITROX mode .....	58
6.2.2. Oxygen displays .....	59
6.2.3. Oxygen limit fraction (OLF) .....	61
6.3. Diving in FREE mode (DIVEfree) .....	61
6.3.1. Day History .....	62
6.3.2. Free dive time limit .....	64
7. AFTER DIVING .....	65
7.1. Surface interval .....	65
7.2. Dive numbering .....	66
7.2.1. AIR and NITROX .....	66
7.2.2. FREE Dive .....	67
7.3. Repetitive dive planning .....	67
7.4. Flying after diving .....	67
7.5. MEMORY mode .....	68
7.5.1. Dive Planning mode (MEMPlan) .....	69
7.5.2. Dive logbook (MEMLogbook) .....	71
7.5.3. Dive history (MEMHistory) .....	73
7.6. Suunto Dive Manager (SDM) .....	74
7.7. <a href="http://www.suuntosports.com">www.suuntosports.com</a> and Suunto Diving World at <a href="http://www.suunto.com/diving">www.suunto.com/diving</a> .....	76
8. CARE AND MAINTENANCE OF MY SUUNTO DIVING COMPUTER .....	77

9. BATTERY REPLACEMENT .....	82
10. TECHNICAL DATA .....	83
10.1. Technical specifications .....	83
10.2. RGBM .....	86
10.2.1. Suunto RGBM adaptive decompression .....	87
10.2.2. No-decompression limits .....	88
10.2.3. Altitude diving .....	91
10.3. Oxygen exposure .....	91
11. INTELLECTUAL PROPERTY .....	93
11.1. Copyright .....	93
11.2. Trademark .....	93
11.3. Patent notice .....	93
12. DISCLAIMERS .....	94
12.1. User's responsibility .....	94
12.2. CE .....	94
13. SUUNTO LIMITED WARRANTY for Suunto diving computers and Suunto Diving computer accessories .....	95
14. DISPOSAL OF THE DEVICE .....	101
GLOSSARY .....	102

# 1. WELCOME TO THE WORLD OF SUUNTO DIVING INSTRUMENTS

Suunto D4 was designed to help you get the most out of your diving.



Suunto D4 simplifies your diving experience because all the information you need relating to depth, time and decompression status is available on one easy-to-read screen.

To get the most out of your Suunto D4 please read this instruction manual carefully and make sure you understand the use, displays, and limitations of the instrument before using it. To make life easier, we've included a glossary of dive-specific terminology at the back of the manual.



## 2. WARNINGS, CAUTIONS, AND NOTES

Throughout this manual, important safety icons are displayed. Three classifications are used to separate these icons by their order of importance:

**WARNING** *is used in connection with a procedure or situation that could result in serious injury or death*

**CAUTION** *is used in connection with a procedure or situation that could result in damage to the device*

**NOTE** *is used to emphasize important information*

Before you go on to read the manual itself, it is extremely important that you read the following warnings. These warnings are intended to maximize your safety while using Suunto D4 and must not be ignored.

**WARNING** *READ THIS MANUAL! Carefully read this manual in its entirety, paying close attention to all the warnings listed below, including Section 5. BEFORE DIVING. Make sure that you fully understand the use, displays and limitations of the dive computer, because any confusion resulting from neglecting to follow this user's manual or from improper use of this device could cause you to commit errors that may lead to serious injury or death.*

**WARNING**

*NOT FOR PROFESSIONAL USE! Suunto dive computers are intended for recreational use only. The demands of commercial or professional diving may expose the diver to depths and conditions that tend to increase the risk of decompression illness (DCI). Therefore, Suunto strongly recommends that the device is not used for any commercial or professional diving activities.*

**WARNING**

*ONLY DIVERS TRAINED IN THE PROPER USE OF SCUBA DIVING EQUIPMENT SHOULD USE A DIVE COMPUTER! No dive computer can replace the need for proper dive training. Insufficient or improper training may cause you to commit errors that may lead to serious injury or death.*

**WARNING**

*THERE IS ALWAYS A RISK OF DECOMPRESSION ILLNESS (DCI) FOR ANY DIVE PROFILE, EVEN IF YOU FOLLOW THE DIVE PLAN PRESCRIBED BY DIVE TABLES OR A DIVE COMPUTER. NO PROCEDURE, DIVE COMPUTER, OR DIVE TABLE CAN PREVENT THE POSSIBILITY OF DCI OR OXYGEN TOXICITY! An individual's physiological make-up can vary from day to day. The dive computer cannot account for these variations. You are strongly advised to remain well within the exposure limits provided by the instrument to minimize the risk of DCI. As an added precaution, you should consult a physician regarding your fitness before diving.*

- WARNING** *SUUNTO STRONGLY RECOMMENDS THAT SPORT DIVERS LIMIT THEIR MAXIMUM DEPTH TO 40 M/130 FT OR TO THE DEPTH CALCULATED BY THE COMPUTER BASED ON THE SELECTED O<sub>2</sub>% AND A MAXIMUM PO<sub>2</sub> OF 1.4 BAR!*
- WARNING** *DIVES THAT REQUIRE DECOMPRESSION STOPS ARE NOT RECOMMENDED. YOU SHOULD ASCEND AND BEGIN DECOMPRESSION IMMEDIATELY WHEN THE DIVE COMPUTER SHOWS YOU THAT A DECOMPRESSION STOP IS REQUIRED! Note the blinking ASC TIME symbol and the upward pointing arrow.*
- WARNING** *USE BACK-UP INSTRUMENTS! Make sure that you use back-up instrumentation, including a depth gauge, submersible pressure gauge, timer or watch, and have access to decompression tables whenever diving with the dive computer.*
- WARNING** *PERFORM PRE-CHECKS! Always activate and check the device before diving in order to ensure that all Liquid Crystal Display (LCD) segments are completely displayed, that the device has not run out of battery power, and that the oxygen, altitude, personal, Safety/Deep Stop, and RGBM adjustments are correct.*

## **WARNING**

*YOU ARE ADVISED TO AVOID FLYING ANY TIME THE COMPUTER COUNTS DOWN THE NO-FLY TIME. ALWAYS ACTIVATE THE COMPUTER TO CHECK THE REMAINING NO-FLY TIME PRIOR TO FLYING! Flying or traveling to a higher altitude within the no-fly time can greatly increase the risk of DCI. Review the recommendations given by Divers Alert Network (DAN) in Section 7.4. Flying after diving.*

## **WARNING**

*THE DIVE COMPUTER SHOULD NEVER BE TRADED OR SHARED BETWEEN USERS WHILE IT IS IN OPERATION! Its information will not apply to someone who has not been wearing it throughout a dive, or sequence of repetitive dives. Its dive profiles must match that of the user. If it is left on the surface during any dive, the dive computer will give inaccurate information for subsequent dives. No dive computer can take into account dives made without the computer. Thus, any diving activity up to four days prior to initial use of the computer may cause misleading information and must be avoided.*

## **WARNING**

*DO NOT DIVE WITH A CYLINDER OF ENRICHED AIR IF YOU HAVE NOT PERSONALLY VERIFIED ITS CONTENTS AND ENTERED THE ANALYZED VALUE INTO YOUR DIVE COMPUTER! Failure to verify cylinder contents and enter the appropriate O<sub>2</sub>% into your dive computer will result in incorrect dive planning information.*

## **WARNING**

*THE DIVE COMPUTER WILL NOT ACCEPT FRACTIONAL PERCENTAGE VALUES OF OXYGEN CONCENTRATION. DO NOT ROUND UP FRACTIONAL PERCENTAGES! For example, 31.8% oxygen should be entered as 31%. Rounding up will cause nitrogen percentages to be understated and will affect decompression calculations. If you want to adjust the computer to provide more conservative calculations, use the personal adjustment feature to affect decompression calculations, or reduce the PO<sub>2</sub> setting to affect oxygen exposure.*

## **WARNING**

*SELECT THE CORRECT ALTITUDE ADJUSTMENT SETTING! When diving at altitudes greater than 300 m/1,000 ft the Altitude Adjustment feature must be correctly selected in order for the computer to calculate the decompression status. The dive computer is not intended for use at altitudes greater than 3,000 m/10,000 ft. Failure to select the correct Altitude Adjustment setting, or diving above the maximum altitude limit will result in erroneous dive and planning data.*

## **WARNING**

*SELECT THE CORRECT PERSONAL ADJUSTMENT SETTING! Whenever it is believed that factors that tend to increase the possibility of DCI exist, it is recommended that you use this option to make the calculations more conservative. Failure to select the correct Personal Adjustment setting will result in erroneous dive and planning data.*

## **WARNING**

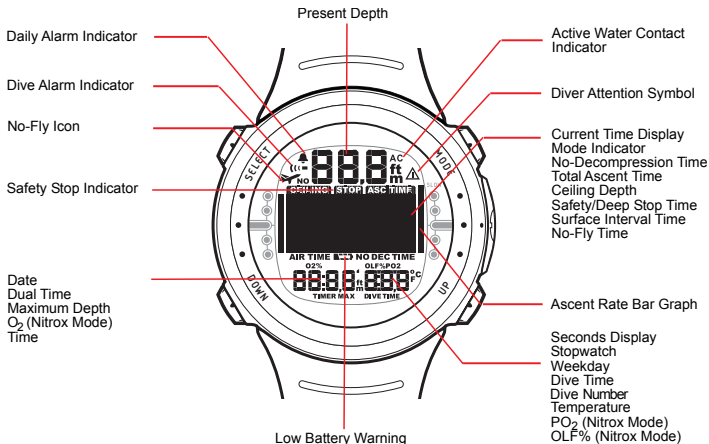
*This device contains a Lithium cell battery. To reduce the risk of fire or burns, do not disassemble, crush, puncture, short external contacts, or dispose of in fire or water. Replace only with manufacturer-specified batteries. Recycle or dispose of used batteries properly.*

## **NOTE**

*It is not possible to change between AIR, NITROX and FREE DIVE modes before the instrument has counted down the no-fly time.*

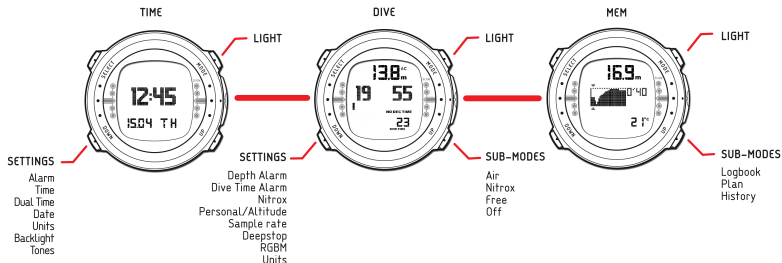
*There is one exception to this: You can change from AIR to NITROX mode even during the no-fly time. When planning both air and nitrox dives during the same dive series, you should set the instrument in NITROX mode and modify the gas mix accordingly.*

### 3. SUUNTO D4 AT A GLANCE



#### 3.1. Navigating in the menus

Suunto D4 has three main operating modes - TIME mode (TIME), DIVE mode (DIVE), and MEMORY mode (MEM). To toggle between the main modes, press the MODE button. To select a submode in DIVE and MEM modes, press the UP/DOWN buttons.









## 3.2. Button symbols and functions

The table below explains the main functions of the dive computer's buttons. The buttons and their use will be explained in more detail in the relevant sections of the manual.



Table 3.1. Button symbols and functions

Symbol	Button	Press	Main functions
	MODE	Short	Switch between main modes Switch from submode to main mode Activate backlight in DIVE mode
	MODE	Long	Activate backlight in other modes
	SELECT	Short	Select a submode Select and accept settings Displays Day History in FREE mode (free dive mode)
	UP	Short	Toggle between alternative displays Change submode Increase values Change shortcuts in TIME and DIVE modes
	DOWN	Short	Toggle between alternative displays Change submode Decrease values Change shortcuts in TIME and DIVE modes

Symbol	Button	Press	Main functions
	DOWN	Long	Enter Setting mode

## 4. GETTING STARTED WITH YOUR SUUNTO D4

To get the most out of your Suunto D4, take some time to personalize it and really make it YOUR computer. Set the correct time and date, as well as the alarms and tones, unit and backlight settings.

Suunto D4 is a very user-friendly dive computer, and you will quickly become familiar with its functions. Make absolutely sure that you know your computer and have it set up as you want it BEFORE getting into the water.

### 4.1. TIME mode settings

The first thing you'll want to do with your Suunto D4, is to set the alarm, time, dual time, date, units, backlight, and tones. In this section, we look at how to do this.

Before that, however, take a look at the figure below, which shows how to toggle between different shortcuts in the TIME mode.



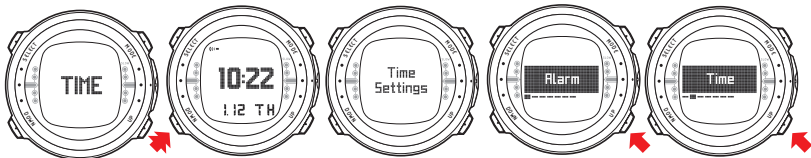
#### NOTE

*The seconds display reverts to date display after 5 minutes in order to save battery power.*

## NOTE

*The display is illuminated by holding down the MODE button for more than 5 seconds.*

Now that you know how to toggle between the shortcuts, you can start to set them. The following figure shows how to enter the TIME SETTINGS menu.



USE UP AND DOWN BUTTONS  
TO TOGGLE BETWEEN ALARM, TIME,  
DUAL TIME, DATE, UNITS, BACKLIGHT  
AND TONES.

### 4.1.1. Setting the alarm

The dive computer has a daily alarm function. When the daily alarm activates, the screen blinks and the alarm sounds for 24 seconds. Press any button to stop the alarm.



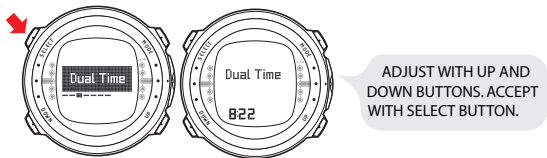
#### 4.1.2. Setting the time

In the TIME SETTING mode, you are able to set the hour, minute, and second, as well as choose between 12 and 24 hour display.



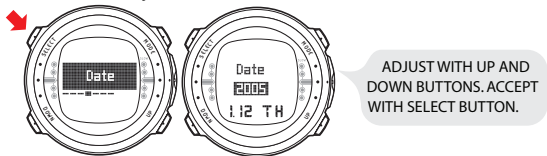
#### 4.1.3. Setting the dual time

In the DUAL TIME SETTING mode you can select the hour and minute of a dual time - useful when traveling to a different time zone.



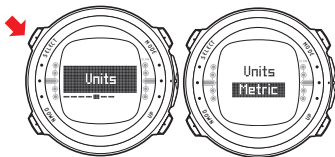
#### 4.1.4. Setting the date

Use the DATE SETTING mode to set the year, month, and day. The day of the week is automatically calculated in accordance with the date.



#### 4.1.5. Setting the units

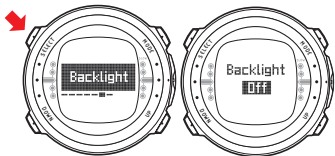
In the UNITS SETTING mode you can choose to have the units displayed in either the metric or imperial system - meters/feet, Celsius/Fahrenheit etc.



ADJUST WITH UP AND DOWN BUTTONS. ACCEPT WITH SELECT BUTTON.

#### 4.1.6. Setting the backlight

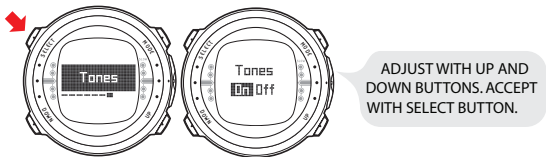
Use the BACKLIGHT SETTING mode to turn the backlight on or off and to define how long it stays on for (5, 10, 20, 30, or 60 seconds). When the backlight is turned off, it does not illuminate when an alarm sounds.



ADJUST WITH UP AND DOWN BUTTONS. ACCEPT WITH SELECT BUTTON.

#### 4.1.7. Setting the tones

The TONE SETTING mode allows you to activate or deactivate the tones.



## NOTE

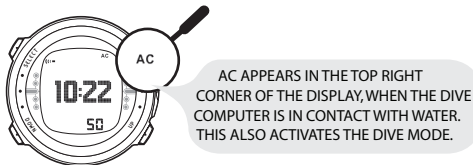
*When the tones are off, there are no audible alarms.*

### 4.2. Stopwatch

The Suunto D4's stopwatch measures elapsed and split times.

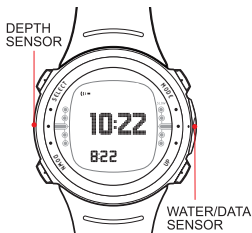
### 4.3. AC water contacts

The water and data transfer contact is located on the side of the case. When submerged, the water contact poles are connected by the conductivity of the water and the “AC” symbol appears on the display. The AC text is shown until the water contact deactivates.





Contamination or dirt on the water contact may prevent this automatic activation. It is therefore important that the water contact is kept clean. The contact can be cleaned with fresh water and a soft brush, for example a tooth brush.



## 5. BEFORE DIVING

Do not attempt to use the dive computer without reading this user's manual in its entirety, including all the warnings. Make sure that you fully understand the use, displays, and limitations of the instrument. If you have any questions about the manual or the Suunto D4 please contact your Suunto representative before diving with the dive computer.

Always remember that **YOU ARE RESPONSIBLE FOR YOUR OWN SAFETY!**

When used properly, Suunto D4 is an outstanding tool for assisting properly trained, certified divers in planning and executing sport dives. It is **NOT A SUBSTITUTE FOR CERTIFIED SCUBA INSTRUCTION**, including training in the principles of decompression.

### **WARNING**

*Diving with enriched air mixtures (nitrox) exposes you to risks that are different from those associated with diving with standard air. These risks are not obvious, and require training to understand and avoid. Risks include possible serious injury or death.*

Do not attempt to dive with any gas mix other than standard air without first receiving certified training in this specialty.

## 5.1. The Suunto RGBM/Deep Stop Algorithm

Suunto's Reduced Gradient Bubble Model (RGBM), utilized in the Suunto D4, predicts both dissolved and free gas in the blood and tissues of divers. It is a significant advance on the classic Haldane models, which do not predict free gas. The advantage of Suunto RGBM is additional safety through its ability to adapt to a variety of situations and dive profiles.



YOU ARE ADVISED TO MAKE A DEEPSTOP AT 12 M. THE SECOND INDICATOR SHOWS THAT YOU HAVE 58 SECONDS LEFT OF YOUR DEEPSTOP.

In order to optimize the response to different increased risk situations, an additional category of stop, referred to as a Mandatory Safety Stop, has been introduced. The combination of stop types depends on the user settings and the specific dive situation. To get the most from the RGBM safety benefits, refer to *Section 10.2. RGBM*.

## 5.2. Emergency ascents

In the unlikely event that the dive computer malfunctions during a dive, follow the emergency procedures provided by your certified dive training agency or, alternatively, follow these steps:

1. Assess the situation calmly and then move promptly to less than 18 m/60 ft.
2. At 18 m/60 ft, slow down your ascent rate to 10 m/33 ft per minute and move to a depth between 3 and 6 m/10 and 20 ft.

3. Stay there for as long as your air supply will safely allow. After reaching the surface, do not dive for at least 24 hours.

### **5.3. Dive computer limitations**

While the dive computer's calculations are based on current decompression research and technology, it is important to realize that the computer cannot monitor the actual physiological functions of an individual diver. All decompression schedules currently known to the authors, including the U.S. Navy Tables, are based on theoretical mathematical models, which are intended to serve as a guide to reduce the probability of decompression illness.

### **5.4. Nitrox**

Diving with nitrox provides you with an opportunity to increase bottom times or reduce the risk of decompression illness by reducing the nitrogen content in the gas mix.

However, when the gas mix is altered, the oxygen content of the mix is generally increased. This increase exposes the diver to an oxygen toxicity risk not usually considered in recreational diving. In order to manage this risk, the dive computer tracks the time and intensity of the oxygen exposure and provides the diver with information to adjust the dive plan in order to maintain oxygen exposure within reasonably safe limits.

In addition to the physiological effects of enriched air on the body, there are operational considerations to be addressed when handling altered breathing mixes. Elevated concentrations of oxygen present a fire or explosion hazard. Consult the manufacturer of your equipment to check its compatibility with nitrox.

## 5.5. Free diving

Free diving, and particularly Free diving in combination with scuba diving, may present risks that have not been researched and are not commonly known.

Anyone who engages in any form of breath hold diving is in danger of shallow-water blackout (SWB), that is, the sudden loss of consciousness caused by oxygen starvation. Any breath hold diving results in some nitrogen build-up in the blood and other fast tissues. Due to the short time spent at depth, this build-up is generally not significant. Therefore, provided the effort involved in Free diving has not been severe, there is little risk in diving after breath hold diving. However, the reverse is more unknown and may significantly increase the risk of DCI. Therefore, **FREE DIVING AFTER SCUBA DIVING IS NOT RECOMMENDED**. You should avoid Free diving, and not exceed 5 m/16 ft, for at least two hours after scuba diving.

### **WARNING**

*Suunto also recommends that you receive training in Free diving techniques and physiology before conducting breath hold dives. No dive computer can replace the need for proper dive training. Insufficient or improper training may cause a diver to commit errors that may lead to serious injury or death.*

## 5.6. Audible and visual alarms

The dive computer features audible and visual alarms that advise when important limits are approached or that prompt you to acknowledge preset alarms. The table below describes the different alarms and their meanings.

Table 5.1. Audible and visual alarm types

<b>Alarm type</b>	<b>Alarm reason</b>
Short single beep	<p>Dive computer is activated.</p> <p>Dive computer automatically returns to the TIME mode.</p>
Three beeps with a three second interval and activated backlight	No-decompression dive turns into a Decompression Stop dive. An arrow pointing upwards and the blinking ascent warning ASC TIME will appear.
Continuous beeps and activated backlight	<p>Maximum allowed ascent rate, 10 m per min/33 ft per min, is exceeded. Ascent rate bar graph blinks and STOP warning appears.</p> <p>Decompression ceiling depth is exceeded. An Error warning (Er) and a downward pointing arrow appear. You should immediately descend to, or below, the ceiling. The instrument will otherwise enter a permanent Error mode within three minutes, indicated by a permanent Er symbol.</p>

You are able to preset alarms before the dive for maximum depth, dive time and time. See also *Section 5.8. DIVE mode settings* and *Section 4.1. TIME mode settings*.

Table 5.2. Preset alarm types

<b>Alarm type</b>	<b>Alarm reason</b>
Continuous beep series for 24 seconds Maximum depth blinks as long as the current depth value exceeds the preset value.	Preset maximum depth has been exceeded.
Continuous beep series for 24 seconds or until any button is pressed. Dive time blinks for one minute.	Preset dive time has been exceeded.
Continuous beep series for 24 seconds or until any button is pressed. Current time blinks for one minute	Preset alarm time is reached.

Table 5.3. Oxygen alarms in NITROX mode

<b>Alarm type</b>	<b>Alarm reason</b>
Continuous beeps for 3 minutes and activated back-light	Set oxygen partial pressure limit is exceeded. The alternative display is replaced with a current blinking PO <sub>2</sub> value. You should immediately ascend above the PO <sub>2</sub> depth limit.  OLF value reaches 80%. The OLF value will start to blink.  OLF value reaches 100%. The OLF value will blink.

**NOTE**

*When the backlight is turned OFF, it does not illuminate when an alarm is activated.*

**WARNING**

*WHEN THE OXYGEN LIMIT FRACTION INDICATES THAT THE MAXIMUM LIMIT IS REACHED, YOU MUST IMMEDIATELY TAKE ACTION TO REDUCE OXYGEN EXPOSURE. Failure to take action to reduce oxygen exposure after the warning is given can rapidly increase the risk of oxygen toxicity, injury, or death.*

**5.7. Error conditions**

The dive computer has warning indicators that alert you to react to certain situations that would significantly increase the risk of DCI. If you do not respond to its warnings, the dive computer will enter an Error mode, indicating that the risk of DCI has greatly increased. If you understand the dive computer and operate it sensibly, it is very unlikely you will ever put the instrument into the Error mode.

**Omitted decompression**

The Error mode results from omitted decompression, i.e. when you stay above the ceiling for more than three minutes. During this three-minute period the Er warning is shown and the audible alarm beeps. After this, the dive computer will enter a permanent Error mode. The instrument will continue to function normally if you descend below the ceiling within this three-minute period.



Once in the permanent Error mode, only the Er warning is shown in the center window. The dive computer will not show times for ascent or stops. However, all the other displays will function as before to provide information for ascent. You should immediately ascend to a depth of 3 to 6 m/10 to 20 ft and remain at this depth until air supply limitations require you to surface.

After surfacing, you should not dive for a minimum of 48 hours. During the permanent Error mode, the Er text will be displayed in the center window and the planning mode will be disabled.

### **5.8. DIVE mode settings**

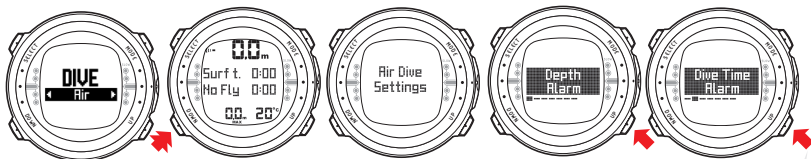
Suunto D4 has several user-definable functions, as well as depth and time-related alarms that you can set according to your personal preferences. The DIVE mode settings are dependent on the dive submode chosen (AIR, NITROX, FREE), so that, for example, nitrox settings are only available in the NITROX submode.

The table below shows what dive settings are available in each DIVE submode.

Table 5.4.

<b>Setting</b>	<b>AIR mode</b>	<b>NITROX mode</b>	<b>FREE mode</b>
Depth alarm	X	X	X
Depth notify alarm			X
Dive time alarm	X	X	X
Surf time notify alarm			X
Nitrox		X	
Personal/Altitude	X	X	
Sample rate	X	X	X
Deep stop	X	X	
RGBM	X	X	
Units	X	X	X

The following figure shows how to enter the DIVE mode settings menu.



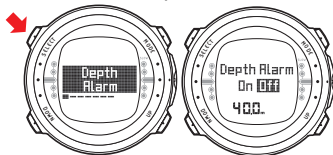
USE UP AND  
DOWN BUTTONS TO  
TOGGLE BETWEEN  
DIVE SETTINGS.

## NOTE

*Some settings cannot be changed until 5 minutes has elapsed after the dive.*

### 5.8.1. Setting the depth alarm

You can set a depth alarm in the dive computer.



ADJUST WITH UP AND  
DOWN BUTTONS. ACCEPT  
WITH SELECT BUTTON.

The depth alarm is factory-set to 30 m/131 ft, but you can adjust it according to your personal preference, or switch it off altogether. The depth range can be set from 3m to 100 m/9 ft to 328 ft.

### 5.8.2. Setting the depth notify alarm (FREE mode)

You can set the depth notify alarm to indicate a certain depth, for example, start of free falling or mouth filling in free diving.

### 5.8.3. Setting the dive-time alarm

The Suunto D4 has a dive-time alarm setting which, when activated, can be used for several purposes to add to your diving safety.



#### NOTE

*With a range of 1 - 999 minutes, the alarm can be set to your planned bottom time, for example.*

#### 5.8.4. Setting the nitrox values

If set to the NITROX mode, the correct oxygen percentage of the gas in your cylinder must always be entered into the computer to ensure correct nitrogen and oxygen calculations. In addition, the oxygen partial pressure limit must be set. When in the NITROX setting mode, the equivalent allowed maximum depth, based on the chosen setting, will also be displayed.

The default oxygen percentage ( $O_2\%$ ) setting is 21% (air) and oxygen partial pressure ( $PO_2$ ) setting 1.4 bar.

#### NOTE

*If the oxygen content of a mix is set to 22% or above, the setting will remain stored until changed; it does not automatically revert back to 21%.*

#### 5.8.5. Setting the personal/altitude adjustments

The current Altitude and Personal Adjustment settings are displayed in the startup screen when entering the DIVE mode. If the mode does not match the altitude or personal conditions (see *Section 5.9.4. Diving at altitude* and *Section 5.9.5. Personal adjustments*), it is imperative that you enter the correct selection before diving. Use Altitude Adjustment to select the correct altitude and use Personal Adjustment to add an extra level of conservatism.



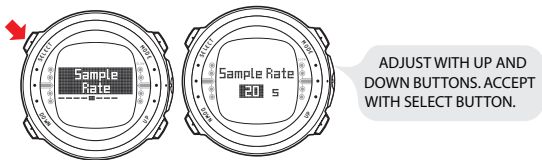
### 5.8.6. Setting the surface time notify alarm (FREE mode)

You can set a surface time notify alarm to indicate the length of the surface time before a new dive. Suunto D4 starts counting the time automatically when you surface (at 0,5 m/1,6 ft).

### 5.8.7. Setting the sample rate

The sample rate controls how often the depth, time, and water temperature is stored in the memory.

You can set the dive profile sample rate in free dive to 1, 2 or 5 seconds. The sample rate for nitrox and air dives is 1, 10, 20, 30 and 60 seconds.



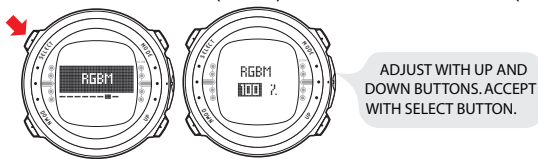
### 5.8.8. Setting the Deep Stops

If set to ON, iterative Deep Stops will be prompted. The length of the individual Deep Stops can be set to 1 or 2 minutes.



### 5.8.9. Setting the RGBM values

For certain divers and diving conditions, it may be desirable to set the attenuated RGBM mode. The selection is displayed during the DIVE mode startup. The options are full RGBM effects (100%), and attenuated RGBM (50%).



## 5.9. Activation and pre-checks

This section describes how to activate the DIVE mode and explains the pre-checks that it is highly recommended you perform before you get into the water.

### 5.9.1. Accessing DIVE mode

The Suunto D4 has three diving modes: AIR mode for diving with standard air only, NITROX mode for diving with oxygen enriched mixtures, and FREE mode for free diving.

The OFF mode disables the DIVE mode, and allows the TIME mode to be used underwater. The chosen dive mode is displayed when the DIVE mode is accessed, and you can toggle between the submodes by pressing the UP/DOWN buttons.



### 5.9.2. DIVE mode activation

The dive computer activates automatically when submerged deeper than 0.5 m/1.5 ft. **However, it is necessary to activate the DIVE mode BEFORE diving to check the altitude and personal adjustment settings, battery condition, oxygen settings etc.**

After activation, all graphical display elements are turned on, and the backlight and the beep are activated. After this, the selected altitude and personal settings are displayed, as well as the RGBM and Deep Stop status. A few seconds later the battery power indicator is shown.





At this time, perform your pre-checks, making sure that:

- the instrument operates in the correct mode and provides a complete display (AIR/NITROX/FREE mode)
- the battery level is ok
- the altitude, personal adjustment, Safety/Deep stops, and RGM settings are correct
- the instrument displays correct units of measurement (Metric/Imperial)
- the instrument displays the correct temperature and depth (0.0 m/0 ft)
- the alarm beeps

And, if set to NITROX mode, make sure that:

- the correct oxygen percentage is adjusted according to the measured oxygen percentage in your cylinder
- the oxygen partial pressure limit is set correctly

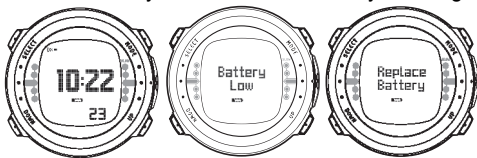
For more information on the NITROX mode, refer to *Section 6.2. Diving in NITROX mode (DIVEnitrox)*.

The dive computer is now ready for diving.

### 5.9.3. Battery power indication

Temperature or internal oxidation of the battery affect the battery voltage. If the instrument is stored for a long period, or used in cold temperatures, the low battery warning may be displayed even though the battery has enough capacity. In these cases, re-enter DIVE mode to receive the battery power indication.

After the battery check, the Low Battery Warning is indicated by the battery symbol.



If the battery symbol is displayed in the Surface mode, or if the display is faded or weak, the battery may be too low to operate the dive computer, and battery replacement is recommended.

#### NOTE

*For safety reasons, the backlight cannot be activated when the low battery warning is indicated by the battery symbol.*

### 5.9.4. Diving at altitude

The dive computer can be adjusted both for diving at altitude and also to increase the conservatism of the mathematical nitrogen model.

When programming the instrument for the correct altitude, you need to select the correct Altitude Adjustment settings according to *Table 5.5, Altitude Adjustment settings*. The dive computer will adjust its mathematical model according to the entered altitude setting, giving shorter no-decompression times at higher altitudes (see *Table 10.1, No-decompression time limits for various depths (m)* and *Table 10.2, No-decompression time limits for various depths (ft)* in *Section 10.2. RGBM*).

Table 5.5. Altitude Adjustment settings

Alt. adjustment value	Altitude range
A0	0 - 300 m / 0 - 1000 ft
A1	300 - 1500 m / 1000 - 5000 ft
A2	1500 - 3000 m / 5000 - 10 000 ft

**NOTE**

*Section 5.8.5. Setting the personal/altitude adjustments describes how the Altitude value is set.*

**WARNING**

*Traveling to a higher elevation can temporarily cause a change in the equilibrium of dissolved nitrogen in the body. It is recommended that you acclimatize to the new altitude by waiting at least three hours before diving.*

### 5.9.5. Personal adjustments

There are personal factors that can affect your susceptibility to DCI, which you can predict in advance, and input into the decompression model. Such factors vary between divers and also for the same diver from one day to another. The three-step Personal Adjustment setting is available if a more conservative dive plan is desired and, for very experienced divers, a two step adjustment for RGBM effect on repetitive dives is available.

The personal factors which tend to increase the possibility of DCI include, but are not limited to:

- cold exposure - water temperature less than 20 °C/68 °F
- below average physical fitness level
- fatigue
- dehydration
- previous history of DCI
- stress
- obesity

This feature is used to adjust the computer to be more conservative, according to personal preference, by entering the suitable Personal Adjustment setting with the help of *Table 5.6, Personal Adjustment settings*. In ideal conditions, retain the default setting, P0. If conditions are more difficult, or any of the factors which tend to increase the possibility of DCI exist, select P1, or even the most conservative P2. The dive computer then adjusts its mathematical model according to the entered Personal Adjustment setting, giving shorter no-decompression times (see *Section 10.2.2. No-decompression limits, Table 10.1, No-decompression time limits for various depths (m) and Table 10.2, No-decompression time limits for various depths (ft)* ).

Table 5.6. Personal Adjustment settings

Personal adjustment value	Condition	Desired tables
P0	Ideal conditions	Default
P1	Some risk factors or conditions exist	Progressively more conservative
P2	Several risk factors or conditions exist	

The Suunto D4 also allows experienced divers who are willing to accept a greater level of risk to adjust the RGBM model. The default setting is 100%, which gives full RGBM effect. Suunto strongly advises you to use full RGBM effect. Statistically, very experienced divers have less incidents with DCI. The reason for this is unknown, but it is possible that some level of physiological and/or psychological accommodation can take place when you are very experienced as a diver. Thus, for certain divers and diving conditions, it may be desirable to set attenuated (50%) RGBM mode. See *Table 5.7, RGBM model settings*.

Table 5.7. RGBM model settings

<b>RGBM setting</b>	<b>Desired Tables</b>	<b>Effect</b>
100%	Standard Suunto RGBM model (Default)	Full RGBM effects
50%	Attenuated RGBM model	Smaller RGBM effects, higher risk!

## 5.10. Safety Stops

Safety Stops are widely considered good diving practice for recreational diving, and are an integral part of most dive tables. The reasons for performing a Safety Stop include: reducing sub-clinical DCI, microbubble reduction, ascent control, and orientation before surfacing.

The Suunto D4 displays two different types of Safety Stops: Recommended Safety Stop and Mandatory Safety Stop.

### 5.10.1. Recommended Safety Stops

With every dive over 10 meters, there is a three minute countdown for the Recommended Safety Stop, to be taken in the 6 - 3 m/10 ft - 20 ft range. This is shown with the STOP sign and a three-minute countdown in the center window instead of the no-decompression time.



WHEN STOP IS DISPLAYED,  
MAKE A RECOMMENDED SAFETY  
STOP FOR 3 MINUTES.

## NOTE

*The Recommended Safety Stop, as the name implies, is recommended. If it is ignored, there is no penalty applied to the following surface intervals and dives.*

### 5.10.2. Mandatory Safety Stops

When the ascent rate exceeds 10 m/33 ft per minute continuously for more than 5 seconds, the microbubble build-up is predicted to be more than is allowed for in the decompression model. The Suunto RGBM calculation model responds to this by adding a Mandatory Safety Stop to the dive. The time of this Mandatory Safety Stop depends on the severity of the ascent rate excess.

The STOP sign appears in the display and when you reach the depth zone between 6 m and 3 m/20 ft and 10 ft, the CEILING label, ceiling depth, and the calculated Safety Stop time also appear in the display. You should wait until the Mandatory Safety Stop warning disappears. The total length of the Mandatory Safety Stop time depends on the seriousness of the ascent rate violation.



WHEN CEILING AND STOP ARE DISPLAYED, MAKE A ONE MINUTE MANDATORY SAFETY STOP IN THE DEPTH ZONE BETWEEN 6 M AND 3 M.

You must not ascend shallower than 3 m/10 ft with the Mandatory Safety Stop warning on. If you ascend above the Mandatory Safety Stop ceiling, a downward pointing arrow will appear and a continuous beeping starts. You should immediately descend to, or below, the Mandatory Safety Stop ceiling depth. If you correct this situation at any time during the dive, there are no effects on the decompression calculations for future dives.



WHEN CEILING AND STOP ARE DISPLAYED, IMMEDIATELY (WITHIN 3 MINUTES) DESCEND TO OR BELOW CEILING.

If you continue to violate the Mandatory Safety Stop, the tissue calculation model is affected and the dive computer shortens the available no-decompression time for your next dive. In this situation, it is recommended that you prolong your surface interval time before your next dive.



### 5.11. Deep stops

Deep Stops are safety stops that occur deeper than traditional stops, with the purpose of minimizing microbubble formation and excitation.

The Suunto RGBM model calculates deep stops iteratively, placing the first stop about halfway between the maximum depth and the ceiling depth. After the first Deep Stop is completed, another Deep Stop will be prompted halfway to the ceiling, and so on until the ceiling depth is reached.

The Deep Stop length can be set to 1 or 2 minutes.

**NOTE**

*With Deep Stops on, the Recommended Safety Stops will still be activated at the end of the dive.*

## 6. DIVING

This section contains instructions on how to operate the dive computer and interpret its displays. You'll find that this dive computer is easy to use and read. Each display shows only the data relevant to that specific diving mode.

### 6.1. Diving in AIR mode (DIVEair)

In this section, we look at how to make the most of the dive computer when diving with standard air. To activate AIR mode, please see *Section 5.9.1. Accessing DIVE mode.*



DIVE HAS JUST BEGUN AND  
AVAILABLE NO-DECOMPRESSION  
TIME IS OVER 99 MINUTES SO NO  
VALUE IS DISPLAYED.

#### NOTE

*The dive computer will remain in the Surface mode at depths less than 1.2 m/4 ft. At depths greater than 1.2 m/4 ft the instrument will go into the DIVE mode automatically. However, it is recommended that you activate the DIVE Mode manually before entering the water in order to perform the necessary dive pre-checks.*

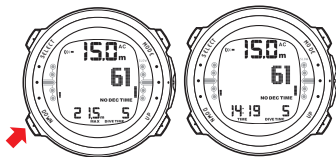
#### 6.1.1. Basic dive data

During a No-decompression dive, the following information is displayed:

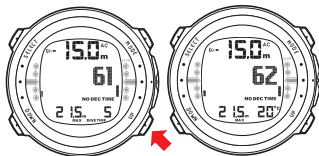
- your present depth in meters/feet
- the available no-decompression time in minutes as NO DEC TIME
- the ascent rate presented as a bar graph on the right side

Alternative displays, by pressing the UP/DOWN buttons, show:

- the elapsed dive time in minutes, shown as DIVE TIME
- the water temperature in °C/°F
- the maximum depth during this dive in meters/feet, indicated as MAX
- the current time, shown as TIME



DOWN BUTTON TOGGLES  
BETWEEN MAXIMUM DEPTH  
AND CURRENT TIME.



UP BUTTON TOGGLES  
BETWEEN DIVE TIME AND  
WATER TEMPERATURE.

### 6.1.2. Bookmark

It is possible to record bookmarks in the profile memory during a dive. These bookmarks are displayed when scrolling the profile memory on the display. The bookmarks will also be shown as annotations in the downloadable Suunto Dive Manager PC software.

The bookmark logs the depth, time and water temperature.

To make a bookmark in the profile memory during a dive, press the SELECT button. A brief confirmation will be given.



### 6.1.3. Ascent rate indicator

#### WARNING

*DO NOT EXCEED THE MAXIMUM ASCENT RATE! Rapid ascents increase the risk of injury. You should always make the Mandatory and Recommended Safety Stops after you have exceeded the maximum recommended ascent rate. If this Mandatory Safety Stop is not completed, the decompression model will penalize your next dive(s). Continuous ascent rate violations will result in Mandatory Safety Stops. When Recommended Deep Stop is enabled, the length is indicated in seconds.*

#### **6.1.4. Decompression dives**

When your NO DEC TIME becomes zero, your dive becomes a decompression dive so you must perform one or more decompression stops on your way to the surface. The NO DEC TIME on your display will be replaced by an ASC TIME, and a CEILING notation will appear. An upward pointing arrow will also prompt you to start your ascent. If you exceed the no-decompression limits on a dive, the dive computer will provide the decompression information required for ascent. After this, the instrument will continue to provide subsequent interval and repetitive dive information.

Rather than requiring you to make stops at fixed depths, the dive computer lets you decompress within a range of depths (continuous decompression).

The ascent time (ASC TIME) is the minimum amount of time needed to reach the surface in a decompression dive. It includes:

- the time needed to ascend to the ceiling at an ascent rate of 10 m/33 ft per minute. The ceiling is the shallowest depth to which you should ascend
- the time needed at the ceiling
- the time needed at the Mandatory Safety Stop (if any)
- the time needed to reach the surface after the ceiling and Safety Stops have been completed

## **WARNING**

*YOUR ACTUAL ASCENT TIME MAY BE LONGER THAN DISPLAYED BY THE INSTRUMENT! The ascent time will increase if you:*

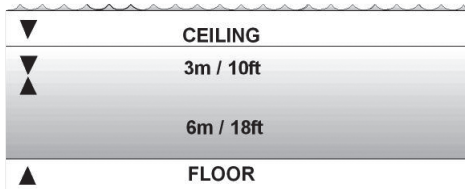
- *remain at depth*
- *ascend slower than 10 m/33 ft per minute*
- *make your decompression stop deeper than at the ceiling*

*These factors will also increase the amount of air required to reach the surface.*

### **Ceiling, ceiling zone, floor and decompression range**

When in decompression, it is important that you understand the meaning of ceiling, floor, and decompression range.

- The ceiling is the shallowest depth to which you should ascend when in decompression. At this depth, or below, you must perform all stops
- The ceiling zone is the optimum decompression stop zone. It is the zone between the minimum ceiling and 1.2 m/4 ft below the minimum ceiling
- The floor is the deepest depth at which the decompression stop time will not increase. Decompression will start when you pass this depth during your ascent
- The decompression range is the depth range between the ceiling and floor. Within this range, decompression takes place. However, it is important to remember that the decompression will be very slow at, or close to, the floor



The depth of the ceiling and floor will depend on your dive profile. The ceiling depth will be fairly shallow when you enter the decompression mode, but if you remain at depth, it will move downward and the ascent time will increase. Likewise, the floor and ceiling may change upwards while you are decompressing.

When conditions are rough, it may be difficult to maintain a constant depth near the surface. In such cases, it is more manageable to maintain an additional distance below the ceiling, to make sure that the waves do not lift you above the ceiling. Suunto recommends that decompression takes place deeper than 4 m/13 ft, even if the indicated ceiling is shallower.

**NOTE**

*It will take more time and more air to decompress below the ceiling than at the ceiling.*

**WARNING**

*NEVER ASCEND ABOVE THE CEILING! You must not ascend above the ceiling during your decompression. In order to avoid doing so by accident, you should stay somewhat below the ceiling.*

## Display below the floor

The blinking ASC TIME and an upward pointing arrow indicate that you are below the floor. You should start your ascent immediately. The ceiling depth is shown on the left side, and the minimum total ascent time on the right side, of the center window. Below is an example of a decompression dive without Deep Stops, below the floor.



UPWARD POINTING ARROW, BLINKING ASC TIME AND AN ALARM TELL YOU TO ASCEND. MINIMUM TOTAL ASCENT TIME INCLUDING SAFETY STOP IS 4 MINUTES. CEILING IS AT 3 M.

## Display above the floor

When you ascend above the floor, the ASC TIME display stops blinking and the upward pointing arrow disappears. Below is an example of a decompression dive above the floor.



UPWARD POINTING ARROW HAS DISAPPEARED AND ASC TIME LABEL HAS STOPPED BLINKING, MEANING YOU ARE IN THE DECOMPRESSION RANGE.

Decompression will now begin, but is very slow. You should therefore continue your ascent.



## Display at the ceiling zone

When you reach the ceiling zone, the display will show you two arrows pointing at each other (the “hour glass” icon). Below is an example of a decompression dive at the ceiling zone.



TWO ARROWS POINT AT EACH OTHER  
“HOUR GLASS”. YOU ARE IN THE OPTIMUM CEILING  
ZONE AT 3 M. AND YOUR MINIMUM ASCENT TIME IS  
8 MINUTES.

During the decompression stop, ASC TIME will count down towards zero. When the ceiling moves upwards, you can ascend to the new ceiling. You may surface only after the ASC TIME and CEILING labels have disappeared, which means that the decompression stop and any Mandatory Safety Stop have been completed. You are advised, however, to stay until the STOP sign has also disappeared. This indicates that the three minute Recommended Safety Stop has also been completed.

## Display above the ceiling

If you ascend above the ceiling during a decompression stop, a downward pointing arrow will appear and a continuous beeping starts.



DECOMPRESSION DIVE, ABOVE CEILING.  
NOTE DOWNWARD POINTING ARROW, ER WARNING  
AND ALARM. YOU SHOULD IMMEDIATELY (WITHIN  
3 MINUTES) DESCEND TO OR BELOW CEILING.

In addition, an Error warning (Er) reminds you that you have only three minutes to correct the situation. You must immediately descend to, or below, the ceiling.

If you continue to violate the decompression, the dive computer will go into a permanent Error Mode. In this mode, the instrument can only be used as a depth gauge and timer. You must not dive again for at least 48 hours. (See *Section 5.7. Error conditions*).

## 6.2. Diving in NITROX mode (DIVEnitrox)

NITROX mode (DIVEnitrox) is the second dive mode available in Suunto D4 and is used when using oxygen-enriched gas mixtures.

### 6.2.1. Before diving in NITROX mode

If set to the NITROX mode, the correct oxygen percentage of the gas in your cylinder must always be entered into the computer to ensure correct nitrogen and oxygen calculations. The dive computer adjusts its mathematical nitrogen and oxygen calculation models accordingly. The dive computer will not accept fractional percentage values of oxygen concentration. Do not round up fractional percentages. For example, 31.8% oxygen should be entered as 31%. Rounding up will cause nitrogen percentages

to be understated and will affect decompression calculations. If you want to adjust the computer to provide more conservative calculations, use the personal adjustment feature to affect decompression calculations, or reduce the PO<sub>2</sub> setting to affect oxygen exposure according to the entered O<sub>2</sub>% and PO<sub>2</sub> values. Calculations based on nitrox use result in longer no-decompression times and shallower maximum depths than diving with air.

As a safety precaution, the oxygen calculations in the computer are made with an oxygen percentage of 1% + set O<sub>2</sub>% .

When the dive computer is set in NITROX mode, the Dive Planning mode calculates using the O<sub>2</sub>% and PO<sub>2</sub> values that are currently in the computer.

To set the nitrox mixes, refer to *Section 5.8.4. Setting the nitrox values*.

### **Default nitrox settings**

In NITROX mode, the Suunto D4 allows you to set a nitrox mix containing 21-50% oxygen.

In the NITROX mode, the default setting is standard air (21% O<sub>2</sub>). It remains in this setting until the O<sub>2</sub>% is adjusted to any other percentage of oxygen (22% - 50%). The default setting for maximum oxygen partial pressure is 1.4 bar, however you are able to set it in the range of 0.5 - 1.6 bar.

### **6.2.2. Oxygen displays**

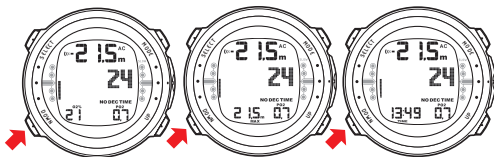
When NITROX mode is activated, the display will show the information in the figure below. In NITROX mode, the maximum operational depth is calculated based on set O<sub>2</sub>% and PO<sub>2</sub> values.



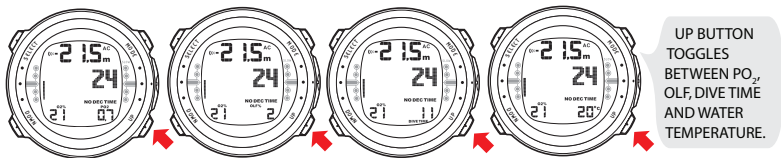
NITROX DIVE MODE ACTIVATION.  
MAXIMUM OPERATIONAL DEPTH BASED ON  
SET  $O_2\%$  (21%) AND  $PO_2$  (1.4 BAR) IS 56.7 M.

If set to NITROX mode, the Suunto D4 will additionally show on the alternative display:

- the oxygen percentage, labeled  $O_2\%$
- the set oxygen partial pressure limit, labeled  $PO_2$
- the current oxygen toxicity exposure, labeled OLF
- maximum depth
- current time
- water temperature
- dive time



DOWN BUTTON  
TOGGLES BETWEEN  
 $O_2\%$ , MAXIMUM DEPTH  
AND CURRENT TIME.



### 6.2.3. Oxygen limit fraction (OLF)

If set to NITROX mode, in addition to tracking the diver's exposure to nitrogen, the instrument tracks the exposure to oxygen. These calculations are treated as entirely separate functions.

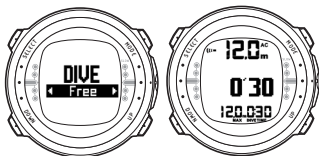
The dive computer calculates separately for Central Nervous System oxygen toxicity (CNS) and Pulmonary Oxygen toxicity, the latter measured by the addition of Oxygen Toxicity Units (OTU). Both fractions are scaled so that the maximum tolerated exposure for each is expressed as 100%.

The Oxygen Limit Fraction (OLF) displays only the value of the higher of the two calculations. The oxygen toxicity calculations are based on the factors listed in *Section 10.3. Oxygen exposure*.

### 6.3. Diving in FREE mode (DIVEfree)

If set to FREE mode, the dive computer can be used as a free diving instrument.

In the FREE mode, the total dive time is always displayed in minutes and seconds (mm:ss) in the center window.



The free dive ends as soon as you surface (at 0,5 m/ 1,6 ft).



**NOTE**

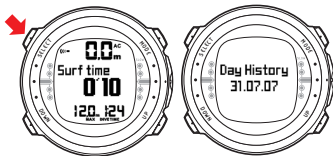
*The FREE mode does not provide decompression information.*

**NOTE**

*There is no ascent rate monitoring in the FREE mode.*

### 6.3.1. Day History

The Day History shows the free dive history of your latest diving day. In the Surface mode you can enter the Day History by pressing the SELECT button.



The Day History shows the average depth of all dives, the deepest depth of the day as well as the time, the longest dive, and the cumulative dive time in hours and minutes, as well as the number of dives made during the day.



# NOTE

*The first dive of the next day will reset the Day History and start a new one.*

### 6.3.2. Free dive time limit

The FREE mode has a time limit of 10 minutes. After 10 minutes, Suunto D4 will automatically change from free dive to scuba bottom timer. After the dive, the no-fly time will countdown from 48 hours. Also, you will not be able to dive in AIR or NITROX modes until the no-fly time has counted down to zero. You can only set the Dive mode to OFF.

#### **NOTE**




*If you want to dive in AIR or NITROX mode after diving in FREE mode, remember to switch to the correct mode. Otherwise, the free dive time limit will activate after 10 minutes.*



## 7. AFTER DIVING

Once back at the surface, Suunto D4 continues to provide post-dive safety information and alarms. Calculations to enable repetitive dive planning also help to maximize diver safety.

Table 7.1. Alarms

Symbol on display	Indication
	Diver Attention Symbol - Extend Surface Interval
	Violated Decompression Ceiling
	Do Not Fly Symbol

### 7.1. Surface interval

An ascent to any depth shallower than 1.2 m/4 ft (0,5 m/1,6 ft in FREE mode) will cause the DIVING display to be replaced by the SURFACE display:



IT IS 6 MINUTES SINCE YOU SURFACED FROM A 35-MINUTE DIVE. THE MAXIMUM DEPTH WAS 21.5 M. THE PRESENT DEPTH IS 0.0 M. THE AIRPLANE SYMBOL AND NO-FLY VALUE INDICATE THAT YOU SHOULD NOT FLY FOR 14 HOURS, 28 MINUTES. THE DIVER ATTENTION SYMBOL INDICATES THAT YOU SHOULD PROLONG YOUR SURFACE INTERVAL TIME.

Or, in the alternative displays, the following information will be shown:

- maximum depth of last dive in meters/feet
- dive time of last dive in minutes, shown as DIVE TIME
- the current time, shown as TIME
- the current temperature in °C/°F

If set to NITROX mode, the following information will also be shown:

- the oxygen percentage labeled O<sub>2</sub>%
- the oxygen partial pressure labeled PO<sub>2</sub>
- the current oxygen toxicity exposure labeled OLF

## **7.2. Dive numbering**

### **7.2.1. AIR and NITROX**

Several repetitive dives are considered to belong to the same repetitive dive series when the dive computer has not counted the no-fly time to zero. Within each series, the dives are given individual numbers. The first dive of the series will be numbered as DIVE 1, the second as DIVE 2, the third as DIVE 3, etc.

If you start a new dive with less than 5 minutes of surface interval time, the dive computer interprets this as a continuation of the previous dive and the dives are considered to be the same. The diving display will return, the dive number will remain unchanged, and the dive time will begin where it left off. After 5 minutes on the surface, subsequent dives are, by definition, repetitive. The dive counter displayed in the Planning mode will increment to the next number if another dive is made.

### 7.2.2. FREE Dive

Dive series is only for one day. The day's dive numbering and latest dive information resets to 0 at midnight, and each day there is a new series of dives that is recorded in the log book.

The dive is completed once you ascend beyond 0.5 m. A new dive will be registered in the log book immediately you descend once again.

### 7.3. Repetitive dive planning

The Suunto D4 includes a dive planner that allows you to review the no-decompression limits on a subsequent dive, taking the residual nitrogen loading of previous dives into consideration. The Dive Planning mode is explained in *Section 7.5.1. Dive Planning mode (MEMPlan)*.

### 7.4. Flying after diving

In DIVE mode, the no-fly time is shown in the center window next to the airplane image. In TIME mode, the airplane image is shown in the top left corner and the no-fly time on the bottom row. Flying or traveling to a higher altitude should be avoided at any time when the computer is counting down the no-fly time.

The no-fly time is always at least 12 hours, or equivalent to the so-called desaturation time (if longer than 12 hours). For desaturation times lower than 70 minutes, no no-fly time is given.

In the Permanent Error mode and FREE mode (if the dive has exceeded 10 minutes) the no-fly time is 48 hours.

The Divers Alert Network (DAN) recommends the following on no-fly times:

- A minimum surface interval of 12 hours would be required in order to be reasonably assured a diver will remain symptom free upon ascent to altitude in a commercial jetliner (altitude up to 2,400 m/8,000 ft)
- Divers who plan to make daily, multiple dives for several days, or make dives that require decompression stops, should take special precautions and wait for an extended interval beyond 12 hours before a flight. Further, the Undersea and Hyperbaric Medical Society (UHMS) suggests divers using standard air cylinders and exhibiting no symptoms of decompression illness wait 24 hours after their last dive to fly in an aircraft with cabin pressure up to 2,400 m/8,000 ft. The only two exceptions to this recommendation are:
  - If a diver has less than 2 hours total accumulated dive time in the last 48 hours, a 12 hour surface interval before flying is recommended
  - Following any dive that required a decompression stop, flying should be delayed for at least 24 hours, and if possible, for 48 hours
- Suunto recommends that flying is avoided until all the DAN and UHMS guidelines, as well as the dive computer's no-fly conditions, are satisfied

## **7.5. MEMORY mode**

The memory options include dive logbook (MEMLogbook), dive history (MEMHistory) and a dive planner (MEMPlan) (in AIR and NITROX modes only). They are accessed from DIVE mode and you can toggle between them by using the UP/DOWN buttons.



The dive time and date are registered in the Logbook memory. Always check before diving that the time and date are correctly set, especially after traveling between different time zones.

#### 7.5.1. Dive Planning mode (MEMPlan)

The Dive Planning mode displays no-decompression times for a new dive, taking into account the effects of previous dives.

When entering the (MEMPlan) mode, the display first briefly shows the remaining desaturation time before going into plan mode.

By pressing the UP/DOWN buttons, you can scroll the no-decompression limits in 3 m/10 ft increments ending at 45 m/150 ft. No-decompression limits longer than 99min are displayed as “—”.



WHEN ENTERING THE MEMPLAN MODE THE DISPLAY FIRST BRIEFLY SHOWS THE REMAINING DESATURATION TIME BEFORE GOING INTO PLAN MODE. USE UP AND DOWN BUTTONS TO SCROLL DIFFERENT NO-DECOMPRESSION LIMITS. NO-DECOMPRESSION LIMITS LONGER THAN 99 MINUTES ARE DISPLAYED AS “-”.

The Planning mode takes into account the following information from previous dives:

- any calculated residual nitrogen
- all dive history for the past four days

The no-decompression times given for different depths will therefore be shorter than before your first “fresh” dive.

You can exit the planning mode by pressing the MODE button.

**NOTE** *The Planning mode is disabled in FREE mode and in Error mode (see Section 5.7. Error conditions).*

Higher Altitude and conservative Personal Adjustment settings will shorten the no-decompression time limits. These limits at different Altitude and Personal Adjustment setting selections are explained in *Section 5.9.4. Diving at altitude* and in *Section 5.9.5. Personal adjustments*.

## Dive numbering shown during dive planning

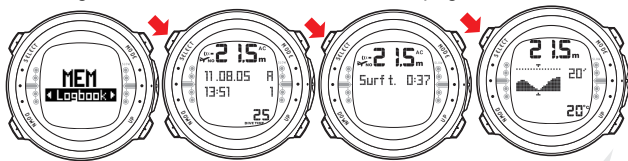
Dives belong to the same repetitive dive series if the instrument was still counting down the no-fly time at the beginning of the dive.

The surface interval must be at least 5 minutes for a dive to be considered a repetitive dive. Otherwise, it is considered a continuation of the same dive. The dive number will not change and the dive time will continue where it left off. (See also *Section 7.2. Dive numbering* ).

### 7.5.2. Dive logbook (MEMLogbook)

The Suunto D4 has a very sophisticated, high capacity Logbook and Profile Memory. The data is recorded in the profile memory based on the selected sample rate.

The END OF LOGS text is displayed between the oldest and most recent dive. The following information will be shown on three pages:



THERE ARE THREE PAGES OF LOGBOOK DIVE INFORMATION. USE SELECT BUTTON TO SCROLL BETWEEN LOGBOOK PAGES I, II, AND III. THE DATA OF THE MOST RECENT DIVE IS SHOWN FIRST.

Page I, main display

- Maximum depth
- date of dive
- type of dive (AIR, NITROX, FREE, bottom timer (G))
- dive start time
- dive number
- oxygen percentage
- total dive time (in minutes in AIR and NITROX modes, and minutes and seconds in FREE mode)

#### Page II

- maximum depth
- surface time before previous dive
- warnings

#### Page III

- graphical dive profile

#### **NOTE**

*The memory will retain approximately the last 80 hours (20 second sample rate) of dive time. After that, when new dives are added, the oldest dives are deleted. The contents of the memory will remain when the battery is changed (providing that the battery has been replaced according to the instructions).*

#### **NOTE**

*Several repetitive dives are considered to belong to the same repetitive dive series if the no-fly time has not ended. See Section 7.2. Dive numbering for further information.*

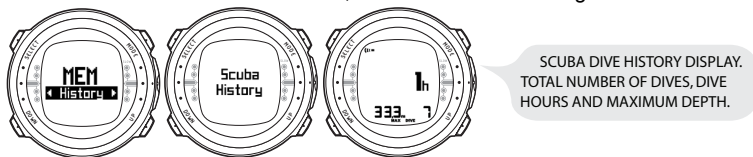


### 7.5.3. Dive history (MEMHistory)

The dive history is a summary of all the dives recorded by the dive computer. You can view both your scuba and free dive history.

#### Scuba History

The Scuba History can hold a maximum of 999 dives and 999 diving hours. When these maximum values are reached, the counters will start again from zero.



#### NOTE

*You can reset the maximum depth of scuba dives to 0.0 m/0 ft with the PC-Interface unit and the downloadable Suunto Dive Manager software.*

#### Free Dive History

The Free Dive History shows the deepest and the longest dives of all free dives, and the cumulative dive time in hours and minutes, as well as the total number of dives. The Free Dive History can hold a maximum of 999 dives and 99 diving hours 59 minutes. When these maximum values are reached, the counters will start again from zero.



The Free Dive history gathers history of the entire sequence of free dives. Unlike the day history, the Free Dive History is not reset.

#### **NOTE**

*You can reset all free dive data within the free dive history with the PC-Interface unit and the downloadable Suunto Dive Manager software.*

### **7.6. Suunto Dive Manager (SDM)**

Suunto Dive Manager (SDM) is optional PC software that greatly enhances the functionality of your Suunto D4.

With the SDM software, you can download dive data from your dive computer to your PC. You can then view and organize all the data recorded with your Suunto D4. You can also plan dives, print copies of your dive profiles and upload your dive logs to share with your friends at SuuntoSports.com.

You can always download the latest version of Suunto Dive Manager from [www.suunto.com](http://www.suunto.com). Please check for updates regularly as new features are constantly being developed.

The following data is transferred to your PC:

- depth profile of the dive
- dive time
- preceding surface interval time
- dive number
- dive start time (year, month, day and time)
- dive computer settings
- oxygen percentage settings and maximum OLF (in NITROX mode)
- tissue calculation data
- real-time water temperature
- additional dive information (e.g. SLOW and Mandatory Safety Stop violations, Diver Attention Symbol, Bookmark, Surfaced Mark, Decompression Stop Mark, Ceiling Error Mark)
- dive computer serial number
- personal information (30 characters)

Using SDM, you are able to enter setup options such as:

- input a personal, 30-character field into the Suunto D4
- reset the Scuba History's maximum depth to zero
- reset all Free Dive History

It is also possible to manually add comments, multimedia and other personal information to the PC-based dive data files.

### **7.7. [www.suuntosports.com](http://www.suuntosports.com) and Suunto Diving World at [www.suunto.com/diving](http://www.suunto.com/diving)**

When you have dived and transferred your dive data to your Suunto Dive Manager, you can share your best experiences with other diving enthusiasts at SuuntoSports.com. It's a free and open Internet community where you can compare your underwater experiences with other Suunto users and learn from each other.

SuuntoSports.com includes three sections.

In My Suunto you can register your dive computer and manage your membership profile. The section also contains a personal event calendar.

The Communities section is meeting a place for smaller groups of SuuntoSports.com members. Here you can create and manage your own communities and search for others. All communities have a home page that lists the latest group activities. Community members can also use group-specific bulletin boards and calendars, create their own link lists and group activities. All registered SuuntoSports.com users automatically become members of the 'World of Suunto Sports' community.

The Sport forums include sport-specific news, bulletin boards, event calendars, ranking lists and discussions. You can also exchange experiences and read travel reports written by other members.

To learn more about SuuntoSports.com's functions and activities, visit the site, try them and, if necessary, use the site Help. The Help is available on the right side of the bar that divides the screen.

## **8. CARE AND MAINTENANCE OF MY SUUNTO DIVING COMPUTER**

The SUUNTO dive computer is a sophisticated precision instrument. Although it is designed to withstand the rigors of scuba diving, you must treat it with the same proper care and caution as any other precision instrument.

- **WATER CONTACTS AND PUSH BUTTONS**

Contamination or dirt on the water contacts/connector or push buttons may prevent the automatic activation of the Dive Mode and cause problems during the data transfer. Therefore, it is important that the water contacts and push buttons are kept clean. If the water contacts are active (AC text remains on display) or the Dive Mode activates on its own, the reason for this is probably contamination or invisible marine growth, which may create an electric current between the contacts. It is important that the dive computer is carefully washed in fresh water after the day's diving is completed. The contacts can be cleaned with fresh water and, if necessary, a mild detergent and a soft brush. Sometimes it might be necessary to remove the instrument from the protective boot for cleaning.

- **CARE OF YOUR DIVE COMPUTER**

- NEVER try to open the case of the dive computer.
- Have your dive computer serviced every two years or after 200 dives (whichever comes first) by an authorized dealer or distributor. This service will include a general operational check, replacement of the battery, and water resistance check. The service requires special tools and training. Therefore, it is advisable to contact an authorized SUUNTO dealer or distributor for the biennial service. Do not attempt to do any servicing that you are not sure of.

- Should moisture appear inside the case, immediately have the instrument checked by your SUUNTO dealer or distributor.
- Should you detect scratches, cracks or other such flaws on the display that may impair its durability, immediately have it replaced by your SUUNTO dealer or distributor.
- Wash and rinse the unit in fresh water after every use.
- Protect the unit from shock, extreme heat, direct sunlight, and chemical attack. The dive computer cannot withstand the impact of heavy objects like scuba cylinders, nor chemicals like gasoline, cleaning solvents, aerosol sprays, adhesive agents, paint, acetone, alcohol, etc. Chemical reactions with such agents will damage the seals, case and finish.
- Store your dive computer in a dry place when you are not using it.
- The dive computer will display a battery symbol as a warning when the power gets too low. When this happens, the instrument should not be used until the battery has been replaced.
- Do not fasten the strap of your dive computer too tightly. You should be able to insert your finger between the strap and your wrist. Shorten the strap by cutting it if you do not expect to need the extra length.
- **MAINTENANCE**

The instrument should be soaked, thoroughly rinsed with fresh water, then dried with a soft towel after each dive. Make sure that all salt crystals and sand particles have been flushed out. Check the display for possible moisture or water. **DO NOT** use the dive computer if you detect any moisture or water inside. Contact an authorized Suunto dealer for battery replacement or other service.

## CAUTION!

- Do not use compressed air to blow water off the unit.
- Do not use solvents or other cleaning fluids that might cause damage.
- Do not test or use the dive computer in pressurized air.
- **WATER RESISTANCE INSPECTION**

The water resistance of the unit must be checked after replacing the battery or after other service operations. The check requires special equipment and training. You must frequently check the display for any sign of leaks. If you find moisture inside your dive computer, there is a leak. A leak must be corrected without delay as moisture will seriously damage the unit, even beyond repair. SUUNTO does not take any responsibility for damage caused by moisture in the dive computer unless the instructions of this manual are carefully followed. In the event of a leak, immediately take the dive computer to an authorized SUUNTO dealer or distributor.

## FAQs

### WHAT CAN I DO TO MY SUUNTO DIVING COMPUTER MYSELF?

#### NOTE

*It is advisable to contact an authorized Suunto service, distributor or retailer for any repairs. Batteries and straps can be replaced by the user when the change is made in a proper manner to avoid any leakage of water into the battery compartment or computer. Original battery replacement and strap kits must be used.*

Batteries can be changed by the user in all diving computers except Stinger, D4, D6 and D9.

Instructions for changing batteries and straps can be found in the user manuals or at [www.suunto.com](http://www.suunto.com) and the user videos there.

## **WHAT ARE ORIGINAL SUUNTO ACCESSORIES?**

Original Suunto accessories are only distributed through Suunto's worldwide network of authorized Suunto distributors and retailers.

Original Suunto accessories are tested to be compatible with Suunto products and can be used safely.

### **NOTE**

*Damage caused by non-original accessories will not be covered by warranty.*

## **HOW TO GET MORE INFORMATION**

You can find service & warranty information in these pages by searching the FAQs.

If you do not find the answer in the FAQs, you can also send a support request. To be able to send a support request you have to register in the system. REGISTER NOW.

You can also contact our European help desk by telephone at +358 2 284 1160. The cost of the call is that of a normal call to Finland. The call center is open Mon-Fri, 24h/day. The service is provided in English all the time. Other languages - French, German, Swedish, Japanese, Spanish and Finnish – are only provided during local business hours. Call center professionals can answer customer questions regarding diving products, outdoor products and compasses.

## **HOW DO I KNOW IF MY SUUNTO PRODUCT IS COVERED BY WARRANTY?**

You can check the proof of purchase, which has to be 2 years or less. You can also check the serial number of your unit.

Does repairing my Suunto product extend the warranty?



As far as the national laws permit, repairing the product does not extend or otherwise affect the warranty period. However, part(s) repaired or replacement product(s) provided during the warranty period will be warranted for the remainder of the original warranty period or for three (3) months from the date of repair or replacement, whichever is longer.

## 9. BATTERY REPLACEMENT

**NOTE** *It is advisable to contact an authorized Suunto representative for battery replacement. It is imperative that the change is made in a proper manner to avoid any leakage of water into the battery compartment or computer.*

**CAUTION** *Defects caused by improper battery installation are not covered by the warranty.*

**CAUTION** *When the battery is changed, all nitrogen and oxygen uptake data is lost. Therefore, the no-fly time shown by the computer should have reached zero or you must wait for 48 hours, or preferably up to 100 hours, before you dive again.*

All history and profile data, as well as the altitude, personal, and alarm settings, will remain in the dive computer memory after the battery change. However, the clock time and time alarm settings are lost. In the NITROX Mode, the nitrox settings also revert back to default settings (MIX1 21 % O<sub>2</sub>, 1.4 bar PO<sub>2</sub>).

## 10. TECHNICAL DATA

### 10.1. Technical specifications

#### **Dimensions and weight:**

- Diameter: 50.0 mm/1.97 in
- Thickness: 16.0 mm/0.61 in
- Weight: 85g/3.0 oz

#### **Depth gauge:**

- Temperature compensated pressure sensor
- Salt water calibrated, in fresh water the readings are about 3% smaller (calibrated in compliance with EN 13319)
- Maximum depth of operation: 100 m/328 ft (complying with EN 13319)
- Accuracy:  $\pm 1\%$  of full scale or better from 0 to 80 m/262 ft at 20°C/68°F (complying with EN 13319)
- Depth display range: 0 to 100 m/328 ft
- Resolution: 0.1 m from 0 to 100 m/1 ft from 0 to 328 ft

#### **Temperature display:**

- Resolution: 1°C/1°F
- Display range: -20 to +50°C/-9 to +122°F
- Accuracy:  $\pm 2^\circ\text{C}/\pm 3.6^\circ\text{F}$  within 20 minutes of temperature change

#### **Calendar clock:**

- Accuracy:  $\pm 25$  s/month (at 20°C/68°F)
- 12/24 h display

**Displays only in NITROX mode:**

- Oxygen %: 21 - 50
- Oxygen partial pressure display: 0.5 - 1.6 bar
- Oxygen Limit Fraction: 1 - 200% with 1% resolution

**Logbook/dive profile memory:**

- Air and Nitrox dive recording rate: default 20 seconds, adjustable 1, 10, 20, 30, 60s
- Free dive recording rate: default 1 second, adjustable 1, 2, 5s
- Memory capacity: approximately 80 hours of diving with 20 second recording interval
- Depth accuracy: 0.3 m/1 ft

**Operating conditions:**

- Normal altitude range: 0 to 3,000 m/10,000 ft above sea level
- Operating temperature: 0°C to 40°C/32°F to 104°F
- Storage temperature: -20°C to +50°C/ -4°F to +122°F

It is recommended that the instrument be stored in a dry place at room temperature.

**NOTE**

*Do not leave the dive computer in direct sunlight!*

### **Tissue calculation model:**

- Suunto Deep Stop RGBM algorithm (developed by Suunto and Bruce R. Wienke, BSc, MSc, PhD)
- 9 tissue compartments
- Tissue compartment halftimes: 2.5, 5, 10, 20, 40, 80, 120, 240 and 480 minutes (on gassing). The off gassing halftimes are slowed down
- Reduced gradient (variable) "M" values based on diving habit and dive violations. The "M" values are tracked up to 100 hours after a dive
- The EAN and oxygen exposure calculations are based on recommendations by R.W. Hamilton, PhD and currently accepted exposure time limit tables and principles

### **Battery:**

- One 3 V lithium battery: CR 2450
- Battery storage time (shelf life): Up to three years
- Replacement: Every two years, or more often depending on dive activity
- Life expectancy at 20°C/68°F:
  - 0 dives/y → 2 years
  - 100 dives/year → 1,5 years
  - 300 dives/year → 1 year

The following conditions have an effect on the expected battery lifetime:

- The length of the dives
- The conditions in which the unit is operated and stored (e.g. temperature/cold conditions). Below 10°C/50°F the expected battery lifetime is about 50-75% of that at 20°C/68°F
- The use of the backlight and audible alarms

- The quality of the battery. (Some lithium batteries may exhaust unexpectedly, which cannot be tested in advance)
- The time the dive computer has been stored until it gets to the customer. (The battery is installed in the unit at the factory)

## NOTE

*Low temperature or an internal oxidation of the battery may activate the battery warning even though the battery has enough capacity. In this case, the warning usually disappears when the DIVE mode is activated again.*

## 10.2. RGBM

The Suunto Reduced Gradient Bubble Model (RGBM) is a modern algorithm for predicting both dissolved and free gas in the tissues and blood of divers. It was developed in co-operation between Suunto and Bruce R. Wienke BSc, MSc, PhD. It is based on both laboratory experiments and diving data, including data from DAN.

It is a significant advance on the classical Haldane models, which do not predict free gas (microbubbles). The advantage of Suunto RGBM is additional safety through its ability to adapt to a wide variety of situations. Suunto RGBM addresses a number of diving circumstances outside the range of dissolved-gas-only models by:

- Monitoring continuous multiday diving
- Computing closely spaced repetitive diving
- Reacting to a dive deeper than the previous dive
- Adapting to rapid ascents which produce high microbubble (silent-bubble) build-up
- Incorporating consistency with real physical laws for gas kinetics

### **10.2.1. Suunto RGBM adaptive decompression**

The Suunto RGBM algorithm adapts its predictions of both the effects of microbubble build-up and adverse dive profiles in the current dive series. It also changes these calculations according to the personal adjustment you select.

The pattern and speed of decompression at the surface is adjusted according to microbubble influence.

On repetitive dives, adjustment may also be applied to the maximum allowable nitrogen overpressure in each theoretical tissue group.

Depending on the circumstances, Suunto RGBM will adapt the decompression obligations by doing any or all of the following:

- Reducing No-decompression Stop dive times
- Adding Mandatory Safety Stops
- Increasing Decompression Stop times
- Advising an extended surface interval (Diver Attention symbol)

#### **Diver Attention Symbol – Advice to Extend Surface Interval**

Some patterns of diving cumulatively add a higher risk of DCI; for example, dives with short surface intervals, repetitive dives deeper than earlier ones, multiple ascents, and substantial multiday diving. When this is detected, in addition to adapting the decompression algorithm, the Suunto RGBM model will in some circumstances also advise, with the Diver Attention Symbol, that you extend your surface interval.

### **10.2.2. No-decompression limits**

The no-decompression limits displayed by the dive computer for the first dive to a single depth (see *Table 10.1, No-decompression time limits for various depths (m)* and *Table 10.2, No-decompression time limits for various depths (ft)* .), are slightly more conservative than those permitted by the U.S. Navy tables.



Table 10.1. No-decompression time limits for various depths (m)

	<b>No-decompression time limits (mins) for various depths (m) for the first dive of a series</b>								
<b>Depth (m)</b>	<b>Personal Mode / Altitude Mode</b>								
	<b>P0/A0</b>	<b>P0/A1</b>	<b>P0/A2</b>	<b>P1/A0</b>	<b>P1/A1</b>	<b>P1/A2</b>	<b>P2/A0</b>	<b>P2/A1</b>	<b>P2/A2</b>
9	--	163	130	163	130	96	130	96	75
12	124	89	67	89	67	54	67	54	45
15	72	57	43	57	43	35	43	35	29
18	52	39	30	39	30	5	30	25	21
21	37	29	23	29	23	20	23	20	15
24	29	24	19	24	19	16	19	16	12
27	23	18	15	18	15	12	15	12	9
30	18	14	12	14	12	9	12	9	7
33	13	11	9	11	9	8	9	8	6
36	11	9	8	9	8	6	8	6	5
39	9	7	6	7	6	5	6	5	4
42	7	6	5	6	5	4	5	4	4
45	6	5	5	5	5	4	5	4	3

Table 10.2. No-decompression time limits for various depths (ft)

	<b>No-decompression time limits (mins) for various depths (ft) for the first dive of a series</b>								
<b>Depth (ft)</b>	<b>Personal Mode / Altitude Mode</b>								
	<b>P0/A0</b>	<b>P0/A1</b>	<b>P0/A2</b>	<b>P1/A0</b>	<b>P1/A1</b>	<b>P1/A2</b>	<b>P2/A0</b>	<b>P2/A1</b>	<b>P2/A2</b>
30	--	160	127	160	127	92	127	92	73
40	120	86	65	86	65	52	65	52	43
50	69	56	41	56	41	34	41	34	28
60	50	38	29	38	29	25	29	25	20
70	36	29	22	29	22	20	22	20	15
80	28	23	19	23	19	15	19	15	11
90	22	18	15	18	15	11	15	11	9
100	17	14	11	14	11	9	11	9	7
110	13	11	9	11	9	7	9	7	6
120	10	9	8	9	8	6	8	6	5
130	9	7	6	7	6	5	6	5	4
140	7	6	5	6	5	4	5	4	4
150	6	5	4	5	4	4	4	4	3

### **10.2.3. Altitude diving**

The atmospheric pressure is lower at high altitudes than at sea level. After traveling to a higher altitude, you will have additional nitrogen in your body, compared to the equilibrium situation at the original altitude. This "additional" nitrogen is released gradually over time and equilibrium is restored. It is recommended that you acclimatize to a new altitude by waiting at least three hours before making a dive.

Before high-altitude diving, the instrument must be set to the Altitude Adjustment mode to adjust the calculations for the new altitude. The maximum partial pressures of nitrogen allowed by the mathematical model of the dive computer are reduced according to the lower ambient pressure.

As a result, the allowed no-decompression-stop limits are considerably reduced.

### **10.3. Oxygen exposure**

The oxygen exposure calculations are based on currently accepted exposure time limit tables and principles. In addition to this, the dive computer uses several methods to conservatively estimate the oxygen exposure. For example:

- the displayed oxygen exposure calculations are raised to the next higher percentage value
- for recreational scuba diving, the recommended upper limit of 1.4 bar  $PO_2$  is used as a default
- the CNS % limits up to 1.6 bar are based on 1991 NOAA Diving Manual limits
- the OTU monitoring is based on the long-term daily tolerance level and the recovery rate is reduced

Oxygen related information displayed by the dive computer is also designed to ensure that all warnings and displays occur at the appropriate phases of a dive. For example, the following information will be shown before and during a dive when the computer is set in NITROX mode:

- the selected O<sub>2</sub>% on the alternative display
- OLF% alternative display for either CNS% or OTU% (whichever is larger)
- audible alarms are given and the OLF value starts to blink when the 80% and 100% limits are exceeded
- audible alarms are given and the actual PO<sub>2</sub> value blinks when it exceeds the preset limit
- in dive planning, the maximum depth according to the O<sub>2</sub>% and maximum PO<sub>2</sub> selected

## **11. INTELLECTUAL PROPERTY**

### **11.1. Copyright**

This user's manual is copyrighted and all rights are reserved. It may not, in whole or in part, be copied, photocopied, reproduced, or translated to any media without prior written consent from Suunto.

### **11.2. Trademark**

Suunto, D4, Consumed Bottom Time (CBT), Oxygen Limit Fraction (OLF), Suunto Reduced Gradient Bubble Model (RGBM), and Continuous Decompression and their logos are all registered or unregistered trademarks of Suunto. All rights are reserved.

### **11.3. Patent notice**

This product is protected by the following patents and patent applications: US 5,845,235 and US11/152,075. Other patents have been applied for.

## **12. DISCLAIMERS**

### **12.1. User's responsibility**

This instrument is intended for recreational use only. Suunto D4 must not be used for obtaining measurements that require professional or industrial precision.

### **12.2. CE**

The CE mark is used to mark conformity with the European Union EMC directive 89/336/EEC

FIOH, Topeliuksenkatu 41 a A, FI-00250 Helsinki, Finland, notified body no.0430, has EC type-examined this type of personal protective equipment.

EN 250 Respiratory equipment - Open circuit self-contained compressed air diving apparatus – Requirements, testing, marking.

EN 13319 "Diving accessories – Depth gauges and combined depth and time measuring devices – Functional and safety requirements, test methods" is a European diving depth gauge standard. The Suunto D4 is designed to comply with this standard.

### **13. SUUNTO LIMITED WARRANTY FOR SUUNTO DIVING COMPUTERS AND SUUNTO DIVING COMPUTER ACCESSORIES**

This Limited Warranty is valid as of January 1st, 2007.

Suunto Oy ("Suunto") provides this limited warranty to those who have purchased the Suunto Diving computer and/or Suunto diving computer accessories ("Product").

Suunto warrants that during the Warranty Period Suunto or a Suunto Authorized Service Center will, at its sole discretion, remedy defects in materials or workmanship free of charge either by a) repairing the Product or the parts, or b) replacing the Product or the parts, or c) refunding the purchase price of the Product, subject to the terms and conditions of this Limited Warranty. Your mandatory legal rights under your applicable national laws relating to the sale of consumer products are not affected by this Limited Warranty.

This Limited Warranty is only valid and enforceable in the country in which you purchased the Product, provided that Suunto has intended the Product for sale in that country. If, however, you purchased the Product in a member state of the European Union, Iceland, Norway, Switzerland or Turkey, and Suunto originally intended the Product for sale in one of these countries, this Limited Warranty is valid and enforceable in all of these countries. The warranty service may be limited due to the possible country-specific elements in the Products.

In countries outside the European Union, Iceland, Norway, Switzerland or Turkey, subject to your agreement to pay a service fee and compensation for the possible shipment costs incurred by Suunto or a Suunto Authorized Service Centre, you can have warranty service other than in the country in which you purchased the Product. Any spare parts will be provided free of charge in this case.

## **Warranty Period**

The Warranty Period starts at the date of retail purchase by the original end-user purchaser. The Product may consist of several different parts, and the different parts may be covered by a different warranty period (hereinafter "Warranty Period"). The different Warranty Periods are:

- a. Two (2) years for the diving computers;
- b. One (1) year for the consumable parts and accessories, including (but not limited to) chargeable batteries, chargers, docking stations, straps, cables and hoses (whether included in the diving computer sales package or sold separately).

To the extent your national laws permit, the Warranty Period will not be extended or renewed or otherwise affected due to subsequent resale, Suunto authorized repair or replacement of the Product. However, part(s) repaired or replaced during the Warranty Period will be warranted for the remainder of the original Warranty Period or for three (3) months from the date of repair or replacement, whichever is longer.

## **Exclusions and Limitations**

This Limited Warranty does not cover:

1. a) normal wear and tear, b) defects caused by rough handling (including, without limitation, defects caused by sharp items, by bending, compressing or dropping, etc.), or c) defects or damage caused by misuse of the Product, including use that is contrary to the instructions provided by Suunto (e.g. as set out in the Product's user guide and/instruction manual), and/or e) other acts beyond the reasonable control of Suunto;



2. user manuals or any third-party software (even if packed or sold with the Suunto hardware), settings, content or data, whether included or downloaded in the Product, or whether included during installment, assembly, shipping or at any other time in the delivery chain or otherwise and in any way acquired by you;
3. defects or alleged defects caused by the fact that the Product was used with, or connected to, any product, accessory, software and/or service not manufactured or supplied by Suunto, or was used otherwise than for its intended use;
4. replaceable batteries.

This Limited Warranty is not enforceable if:

1. the Product has been opened, modified or repaired by anyone other than Suunto or a Suunto Authorized Service Centre;
2. the Product has been repaired using unauthorized spare parts;
3. the Product's serial number has been removed, erased, defaced, altered or made illegible in any way - and this shall be determined at the sole discretion of Suunto;
4. the Product has been exposed to influence from chemical products including (but not limited to) mosquito repellents.

Suunto does not warrant that the operation of the Product will be uninterrupted or error free, or that the Product will work in combination with any hardware or software provided by a third party.

### **Access to Suunto warranty service**

Please access and review the online help resources available at [www.suunto.com](http://www.suunto.com) / customer service or referred to in the Product manual before seeking warranty service.

If a claim under this Limited Warranty appears to be necessary, please contact your local authorized Suunto retailer – for contact information please visit the Suunto website [www.suunto.com](http://www.suunto.com) or call a Suunto Help Desk (national or premium rates may apply) for further details on how to make a claim. You will then be advised on how to bring your Product for warranty service. Should you wish to return the Product by shipping it to your local authorized Suunto retailer, please use prepaid freight. When making a claim under this Limited Warranty you are required to include your name and address, proof of purchase and/or service registration card (Suunto warranty registration at [www.suunto.com](http://www.suunto.com) is considered adequate for this purpose), as required in your country, which clearly indicates the serial number, name and address of the seller, the date and place of purchase, and the product type. The claim will be honored and the Product repaired or replaced at no charge and returned in a reasonable amount of time. This shall be determined at the sole discretion of Suunto or a Suunto Authorized Service Center. If the Product is found not to be covered by the terms and conditions of this Limited Warranty, Suunto or a Suunto Authorized Service Centre reserve the right to charge a handling fee.

Any claim under this Limited Warranty is subject to you notifying Suunto or a Suunto Authorized Service center of the alleged defect within a reasonable time of it having come to your attention, and in any event no later than before the expiry of the Warranty Period.

## **Other important notices**

Please remember to take backup copies of all important content and data stored in your Product because content and data may be lost during repair or replacement of the Product. Suunto or a Suunto Authorized Service Centre is not responsible for any damage or loss of any kind whatsoever resulting from loss of, damage to, or corruption of content or data during repair or replacement of the Product.

When the Product or a part is replaced, any replaced item becomes the property of Suunto. If a refund is given, the Product for which the refund is given must be returned to a Suunto Authorized Service Centre as it becomes the property of Suunto and/or Suunto Authorized Service Centre.

When repairing or replacing the Product, Suunto or a Suunto Authorized Service Centre may use products or parts that are new, equivalent to new or re-conditioned.

## **Limitation of Liability**

TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE MANDATORY LAWS, THIS LIMITED WARRANTY IS YOUR SOLE AND EXCLUSIVE REMEDY AND IS IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED. SUUNTO SHALL NOT BE LIABLE FOR SPECIAL, INCIDENTAL, PUNITIVE OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO LOSS OF ANTICIPATED BENEFITS OR PROFITS, LOSS OF SAVINGS OR REVENUE, LOSS OF DATA, PUNITIVE DAMAGES, LOSS OF USE OF THE PRODUCT OR ANY ASSOCIATED EQUIPMENT, COST OF CAPITAL, COST OF ANY SUBSTITUTE EQUIPMENT OR FACILITIES, DOWNTIME, THE CLAIMS OF ANY THIRD PARTIES, INCLUDING CUSTOMERS, AND INJURY TO PROPERTY RESULTING FROM THE PURCHASE OR USE OF THE PRODUCT OR ARISING FROM BREACH OF THE WARRANTY, BREACH OF CONTRACT, NEGLIGENCE, STRICT TORT, OR ANY OTHER LEGAL OR EQUITABLE THEORY, EVEN IF SUUNTO KNEW OF THE LIKELIHOOD OF SUCH DAMAGES. SUUNTO SHALL NOT BE LIABLE FOR DELAY IN RENDERING SERVICE UNDER THE LIMITED WARRANTY, OR LOSS OF USE DURING THE TIME THE PRODUCT IS BEING REPAIRED.

## 14. DISPOSAL OF THE DEVICE

Please dispose of the device in an appropriate way, treating it as electronic waste. Do not throw it in the garbage. If you wish, you may return the device to your nearest Suunto representative.



# GLOSSARY

Altitude dive	A dive made at an elevation greater than 300 m/1000 ft above sea level.
Ascent rate	The speed at which the diver ascends toward the surface.
ASC RATE	Abbreviation for ascent rate.
Ascent time	The minimum amount of time needed to reach the surface on a decompression stop dive.
ASC TIME	Abbreviation for ascent time.
Ceiling	On a decompression stop dive, the shallowest depth to which a diver may ascend based on computed nitrogen load.
Central nervous system toxicity	Toxicity caused by oxygen. Can cause a variety of neurological symptoms. The most important of which is an epileptic-like convulsion which can cause a diver to drown.
CNS	Abbreviation for central nervous system toxicity.
CNS%	Central nervous system toxicity limit fraction. Also note Oxygen Limit Fraction
Compartment	See "Tissue group".
DAN	Abbreviation for Divers Alert Network.
DCI	Abbreviation for decompression illness.
Decompression	Time spent at a decompression stop, or range, before surfacing, to allow absorbed nitrogen to escape naturally from tissues
Decompression range	On a decompression stop dive, the depth range between the floor and the ceiling within which a diver must stop for some time during ascent.

Decompression illness	Any of a variety of maladies resulting either directly or indirectly from the formation of nitrogen bubbles in tissues or body fluids, as a result of inadequately controlled decompression. Commonly called "the bends" or "DCI".
Dive series	A group of repetitive dives between which the dive computer indicates some nitrogen loading is present. When nitrogen loading reaches zero the dive computer deactivates.
Dive time	Elapsed time between leaving the surface to descend, and returning to the surface at the end of a dive.
EAD	Abbreviation for equivalent air depth.
EAN	Abbreviation for enriched air nitrox.
Enriched air nitrox	Also called nitrox or Enriched Air = EANx. Air that has some oxygen added. Standard mixes are EAN32 (NOAA Nitrox I = NN I) and EAN36 (NOAA Nitrox II = NN II).
Equivalent air depth	Nitrogen partial pressure equivalent table.
Floor	The deepest depth during a decompression stop dive at which decompression takes place.
Half time	After a change in ambient pressure, the amount of time required for the partial pressure of nitrogen in a theoretical compartment to go half way from its previous value to saturation at the new ambient pressure.
Multi level dive	A single or repetitive dive that includes time spent at various depths and whose no decompression limits are therefore not determined solely by the maximum depth attained.

Nitrox	In sports diving, refers to any mix with a higher fraction of oxygen than standard air.
NOAA	United States National Oceanic and Atmospheric Administration.
No decompression time	The maximum amount of time a diver may remain at a particular depth without having to make decompression stops during the subsequent ascent.
No decompression dive	Any dive which permits a direct, uninterrupted ascent to the surface at any time.
NO DEC TIME	Abbreviation for no decompression time limit.
OEA = EAN = EANx	Abbreviations for oxygen enriched air nitrox.
OLF	Abbreviation for oxygen limit fraction.
OTU	Abbreviation for oxygen tolerance unit.
Oxygen tolerance unit	Used to measure the whole-body-toxicity.
Oxygen limit fraction	A term used by Suunto for the values displayed in the oxygen toxicity bar graph. The value is either the CNS% or the OTU%.
O <sub>2</sub> %	Oxygen percentage or oxygen fraction in the breathing gas. Standard air has 21% oxygen.
Oxygen partial pressure	Limits the maximum depth to which the nitrox mixture can be safely used. The maximum partial pressure limit for enriched air diving is 1.4 bar. The contingency partial pressure limit is 1.6 bar. Dives beyond this limit risk immediate oxygen toxicity.
PO <sub>2</sub>	Abbreviation for oxygen partial pressure.
RGBM	Abbreviation for Reduced Gradient Bubble Model.



Reduced Gradient Bubble Model	Modern algorithm for tracking both dissolved and free gas in divers.
Repetitive dive	Any dive whose decompression time limits are affected by residual nitrogen absorbed during previous dives.
Residual nitrogen	The amount of excess nitrogen remaining in a diver after one or more dives.
SURF TIME	Abbreviation for surface interval time.
Surface interval time	Elapsed time between surfacing from a dive and beginning a descent for the subsequent repetitive dive.
Tissue group	Theoretical concept used to model bodily tissues for the construction of decompression tables or calculations.
Whole-body toxicity	Another form of oxygen toxicity, which is caused by prolonged exposure to high oxygen partial pressures. The most common symptoms are irritation in the lungs, a burning sensation in the chest, coughing and reduction of the vital capacity. Also called Pulmonary Oxygen Toxicity. See also OTU.



## **CUSTOMER SERVICE CONTACTS**

Global Help Desk +358 2 284 11 60  
Suunto USA Phone +1 (800) 543-9124  
Canada Phone +1 (800) 776-7770  
Suunto website [www.suunto.com](http://www.suunto.com)

## **COPYRIGHT**

This publication and its contents are proprietary to Suunto Oy.

Suunto, Wristop Computer, Suunto D4 and their logos are registered or unregistered trademarks of Suunto Oy. All rights reserved.

While we have taken great care to ensure that information contained in this documentation is both comprehensive and accurate, no warranty of accuracy is expressed or implied. Its content is subject to change at any time without notice.

[www.suunto.com](http://www.suunto.com)

© Suunto Oy 10/2007