

RATIO COMPUTERS iDive Free

User Manual

ver. 4.2



Warning! OS 4.x.x for iDive is required. Avantgarde edition



Warning!

To receive all updates of this manual and notice of future updates of the "iDive" by e-mail, please send a message writing "iDive"

to the following address: update@ratio-computers.com This service is highly recommended and it is completely free of charge.

For further support, have a look at the tutorial videos soon available on www.ratio-computers.com

For assistance by mail write to support@ratio-computers.com









This Manual **DOES NOT** replace an adequate diving training and should be used only by those divers who have been appropriately trained by a certified diver training organization.

To completely understand the terminology used in this manual and the functions of the dive computer a proper diving training is required.



Think Green

If possible do not print this manual. Use your tablet or your PC to consult it .







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Update your iDive



Introduction

Thank you for having purchased the RATIO® computer.

RATIO®, with the quality of its products, always stands by you to guarantee comfort, leisure and safety when diving.

Check periodically the presence of possible updates of this manual on web site www.ratio-computers.com The manual version (e.g. 4.0) is shown on its cover.



Important Warnings

General Warnings



It is necessary to read this manual carefully before using the computer RATIO[®]. A wrong use of this computer or its accessories will nullify the warranty and could cause permanent damages to the device and/or its accessories.

• The diving computer DOES NOT replace an adequate diving training and should be used only by those divers who have been opportunely trained.

• The RATIO[®] computer is an auxiliary instrument to the dive, so it is compulsory having always an appropriate diving chart in order to carry out the decompression phase in case the device is malfunctioning.

• Diving involves risks relating to decompression sickness, Oxygen toxicity and other risks relating to the diving itself. Even a careful reading of this manual and the use of this device don't prevent possible dangers. Anyone who doesn't know or doesn't accept consciously these risks, must not dive with iDive computer.

• Diving has some intrinsic risks which cannot never be completely eliminated.

No computer or diving chart can guarantee that the risk of Decompression Sickness (DCS) or Oxygen toxicity to the central nervous system don't exist, even if the diver follows meticulously and accurately the indications given by the computer or the diving chart.

• The computer cannot take into consideration the individual physiological variations which might change day by day. For this reason it is good practice to use the device in a conservative and preventive way, remaining within the limits indicated by the computer, to minimize the risks of DD and Oxygen toxicity to the central nervous system.



• The computer doesn't replace the learning of the diving decompression charts which we recommend to have always as backup along with a depth gauge and a watch.

• Never share a unique computer for two divers while diving; every diver must have his/her device at his/her wrist, which can give information to him/her only.

• Never dive with a computer which has not taken into consideration the previous dives a diver made; the computer calculation CANNOT use unknown data or take into consideration dives which it has not done.



Danger Warning

The computer IS NOT meant for a PROFESSIONAL use. The computer is meant exclusively for a sport, recreational or technical use.



• A use which is not compliant to what has been said above, could expose the diver to an increasing risk of incurring in the Decompression Sickness (DCS). For this reason we discourage its use in case of professional or commercial dives, unless it is used as an operator's further support device.

• Before diving it is necessary to check the battery autonomy. DO NOT dive if the battery level is at 30% or at lower percentages; make sure that the screen doesn't show malfunctioning signs. It must be read clearly.

• Check always that settings are the ones desired. Don't let the computer be manipulated by someone else before diving. In this case, check that settings are the ones you desire.

• Consider that our body experience changes everyday. The computer cannot take into consideration all these changes. If you don't feel at your best physical conditions or if you feel physical problems, don't dive.

• Avoid all behaviours increasing the risks connected to the DD such as rapid ascents, yo-yo dives, violation of compulsory decompressive stops, dives with too close surface intervals and any behaviour which is contrary to the common sense and to the training received.

• This device doesn't allow its use without having the due skill, given by a specific training.

The failure to comply with the basic rules of diving exposes the diver at death danger.



- We recommend to do dives within the safety curve, to reduce the risks inherent to the Decompression Sickness (DCS).
- We recommend dives not deeper than 40 mt or according to the oxygen percentage contained inside the tank. Maximum PPO2 1,4 BAR
- Respect the ascent speed recommended by the device; an excessive ascent speed exposes the diver to death danger.
- The computer calculates the total ascent time but this could be longer than the one visualised, according to some parameters calculated by the computer during the whole dive. Trying to ascend at the correct speed and respect the visualised depth of the stops helps to respect this time.
- Respect always the No FLY Time: never take a plane if the No FLY Time icon is still visible on the screen. Remember to plan the last dive of the series taking into consideration the advices given by DAN (Divers Alert Network).
- Even respecting all expected intervals, the current Hyperbaric Medicine cannot exclude the onset of the Decompression Sickness in a plane after diving .



Diving with Mixes



The safety approximation of the Mix has to be decided by the diver.

If you are not sure about the EAN safety approximation to be set for your dive, ask your diving instructor or your diving certification agency

- Check the setting of the max PpO2 and never exceed the value of 1,4 BAR.
- DO NOT DIVE without having checked the tank content with instruments that have been declared as trustworthy.

Ensure that the gas set on the computer matches with the one contained inside the tank you are going to use for diving.

The Nitrox-Trimix-CCR dives need a specific training, DO NOT dive without having received the due training.

Passing the PPO2 set and advised maximum limit imposes an ascent at minor depths and in case the CNS (Central Nervous System) has values very close to the maximum limit, a reduction to O2 exposure is recommended.

• Use the diving computer only after having read the User's Manual in all its parts making sure to have understood its functioning.

In case of doubts or questions, address yourself to your instructor or to your dealer before diving.

• It is essential to know that every diver is fully responsible of his/her safety.

• Diving with gas mixes involves different risks in comparison with those made with standard air. A suitable training is necessary to learn to identify and avoid these risks, which are not immediately recognisable. Such risks concerns serious injuries or death.



Limits of dive computers



The computer takes into consideration the most updated safety guide lines, nevertheless, it is always necessary to know that such studies are theoretical and elaborated to reduce, not to avoid, the risk of Decompression Sickness (DCS).

At the moment, the Hyperbaric Medicine doesn't allow to eliminate totally the risk of DD.

Care and Maintenance

• Keep the computer clean and dry. DO NOT expose the computer to chemical agents, alcohol included. To clean the computer, use exclusively fresh water, removing all salt sediments. Leave the computer dry naturally, without using cold or warm air jets.

• Do not expose the computer to the sun directly or to heat sources higher than 50°C. Store the computer in a fresh (5°C-25°C) and dry place.

- Do not attempt to open, modify or repair the computer by yourself. You must always address to a RATIO dealer.
- Do not put the computer inside a hyperbaric chamber.

The computer is designed for a reading precision of +/-2% (the precision level required by the EC laws is +/-3.5%.)



The EC laws require that the unit is checked periodically from the reading precision, depth and time point of view.

• Warranty is voided if the computer is opened by a not authorised assistance centre.

• The RATIO iDive computer is designed to be waterproof in sea water but, at the end of every dive, it must be well rinsed in fresh water and it must not be dried exposing it at the direct sun light or at heat sources.

• Make sure that there is no humidity signs inside the screen.

ATTENTION: Do not try to open the computer for any reason. Any problem, turn to a RATIO[®] authorised center or to RATIO[®] directly.





Computer's Technical Characteristics

Hardware

The computer is made in composite material - stainless steel and mineral glass (Sport Edition) or completely in stainless steel with sapphire glass (Avantgarde Edition).

The screen is provided with a 100% matrix display with 80x80 pixel resolution and "Superbright" backlight each Led.

Particular dedication has been put in developing a navigation system allowing the diver to have access to the different settings in an easy and intuitive way.

- Sensor's guaranteed precision: 130 mt.
- Maximum depth: 150mt / 500ft (Sport Edition) 220mt / 721 ft (Avantgarde Edition)
- Absolute Pressure Measurement precision

	min	max
p = 0 5bar	-20 mbar	+20 mbar
p = 0 10bar	-40 mbar	+20 mbar
p = 0 14bar	-100 mbar	+20 mbar

- Sensor's maximum error margin in measuring Temperature: -2 / +6°C

If worn at wrist the temperature measurement in air is conditioned by body's heat. For an accurate temperature measurement, put the device in water or leave it far from heat sources for some minutes.

Certification

The computer's hardware is CE and EN13319 certified.



Software

Algorithm: The computer uses the Bühlmann ZHL-16B model for scuba diving. Free diving algorithm: The computer uses the iPTM model (Individual.Protection.Taravana.Model) for free diving.

Summary of Technical Charachteristics

RATIO [®]	iDive Free
Taravana Algorithm	Yes (iPTM)
Hemoptysis Algorithm	Yes
Free Dive Data	Suggested recovery time by Algorithm, Recovery time Countdown, Surf time, Depth, dive time, dive number, speed, Max Depth, water temperature, Time, graphic profile last dive in session, Session summary with average data.
Alarms	Fixed Depth goal notify Fixed Step goal notify, Dive-time notify Hydration notify
Alarms type	Acoustic + visual

Compass	3D Compass, 1° resolution
Outdoor fun- ctions	Altimeter, Barometer, temperature, Weather forecast
Pedometer	Yes
Fitness Functions	Number of steps, distance, speed, calories burned.

SCUBA mode	Yes (scuba and Gauge)
Mix	1 (air or EAN) 21%-50%
Personal Adjustmen	Yes , 6 levels
Decompression model	Buhlmann ZHL-16 B
RDM (Repetitive Dives Manag.)	Yes
Safety Stop adjustmen	Yes, Time and depth
Deep Stop	Yes
Last deco stop adjustment	Yes
Dive Planner	No Deco Limit + DECO PLANNER

Backlight type	Led SuperBright
Backlight activation mode	Duration timer, Manual On&Off, Always-On in water
Display	100% matrix 80x80 pixel
Bezel material	Stainless steel
Case material:	Avantgarde: Stainless Steel Sport Edition: Composite
Glass material	<i>Avantgarde</i> : Sapphire <i>Sport Edition:</i> Mineral
Extension Strap:	Included
Battery	USB Rechargeable Li-ion ~ 40 hr (diving) ~ 2-3 months (Watch-mode) ~ 6-7 months (Stand-by)
Logbook	~18 hr freedive (samp. rate 1 sec) ~ 600 dives in freedive mode ~160 hr scuba (samp. rate10 sec)
Max Depth	<i>Avantgarde</i> : 220 mt / 721 ft <i>Sport Edition</i> : 150 mt / 500 ft
PC/Mac Connect.	Yes, USB cable included
Updates	Yes (interface included)



How to recharge the battery

The iDive has a rechargeable Li-Ion battery without memory effect, the given autonomy data may change of +/-15% depending on the environment temperature. The autonomy may also change according to the device's settings, the installed applications, operative system version, backlight settings and use.

ATTENTION: Charge the computer completely before using it for the first time.

The recharge can be done by plugging the iDive and the provided USB cable to an USB wall charger (not included).



We recommend to use an USB wall charger (as the one of your mobile phone/tablet) to recharge the iDive. In case of use of a PC USB charger (not recommended), make sure that the PC doesn't interrupt the electricity feeding when in stand-by. Recharge the iDive with a PC is however not recommended because there is the risk to carry out only a partial recharge cycle.

Even if the iDive new generation Li-Ion battery hasn't the memory effect, it is however recommended to recharge it completely.

The average recharge time is 3-5 hours, depending on the battery residual charge level.

Attention: Do not dive when the computer indicates 30% of charge or less.

When plugging the USB cable to recharge, the symbol => indicating the recharge in progress appears in the watch screen



in 45 seconds.

The charging process is finished when the battery symbol disappears from the watch screen and the sleep mode is activated.

Once the battery is completely charged, even if the device remains connected to electricity, the iDive interrupts the electricity feeding automatically. If you leave your device in charge longer than necessary (for ex. all night long) you could find the iDive in Sleep Mode. You can check your iDive charge % by pressing any button in the watch screen.

If the charging cycle is not completed the battery indicator could not be precise until the next complete recharge.

After having installed an APP or an Operative System update, we recommend to recharge your device completely.

Attention: Do not leave the iDive completely without charge for a long period (for ex. 4-5 months). This may damage the battery. The iDive registers an alarm if left without charge for long time. This event is not covered by warranty.





Diving in cold or freezing waters

The RATIO Computers can be used even in case of dives in cold or freezing waters (<3°C); however, the exposure at particularly low temperatures, may affect negatively on the battery residual voltage.

When diving in cold or freezing waters, the battery voltage may decrease more rapidly than normal. So, we recommend to recharge the battery before diving in extreme conditions.

ATTENTION: when diving in cold or freezing waters (<3°C) recharge the device at 100% or make sure that there is at least 50% of battery power.

ATTENTION: Diving in cold or freezing waters (<3°C) requires a specific training.





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DAN DL7

The RATIO iDive is 100% compatible with the program for gathering data DAN DL7 of DSL Level 5

The DAN DL7 is a format owned by DAN, which summarizes all necessary information which are needed for the studies, arranging them to be sent directly to DAN Europe's central database. All these data include, besides the diving profile, also information relating to the diver (fitness excercices, the medicines he/she ingested etc) and to the dive itself (possible problems, thermal conditions etc).

Contributing to the data gathering is easy: you just have to fill in all fields relating to the program DAN DSL (Diving Safety Laboratory) inside the Divelogger, export them in the format DAN DL7 and send them by e-mail to: dsl@daneurope.org

Give your diving profiles to the Research!

The profile of a dive made with a self breathing device contains extremely important information, such as the time spent in the depth, the ascent speed, how many dives enter in decompression, how many dives contain deep stops etc.

Giving our own diving profiles to the Research means to give a great help to DAN's scientists who, with great dedication and passion, are trying to render the diving activity more and more safe.

Privacy

Unless you send your data, neither the RATIO iDive nor the Divelogger will send anything automatically.



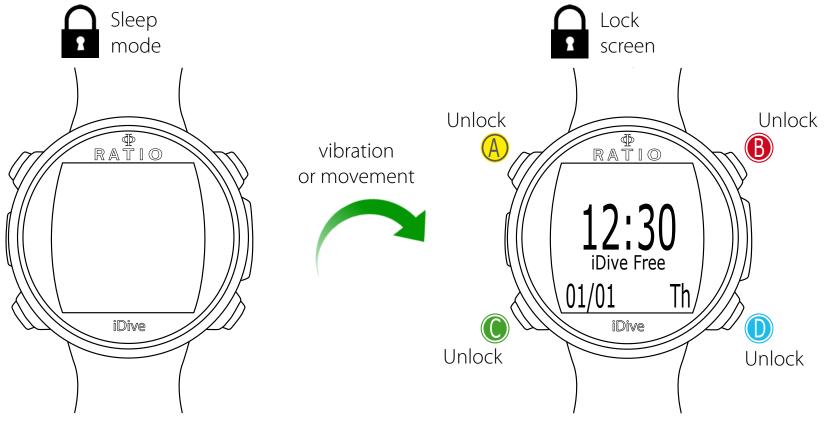
The iDive outside water: The Sleep Mode

The iDive is provided with the Sleep Mode function.

After 1 minute of complete stillness (for ex. when putting it on a night table during the night) to save battery the iDive display is switched off automatically. All iDive functions go on functioning regularly (alarm clock, possible desaturation, time etc.).

Thanks to the integrated accelerometer the screen is switched on automatically once the iDive perceives a vibration or a movement (it is not necessary to press a button to switch the screen on).

You can deactivate the Sleep Mode (not recommended) from the DISPLAY menu (see dedicated section in this manual)



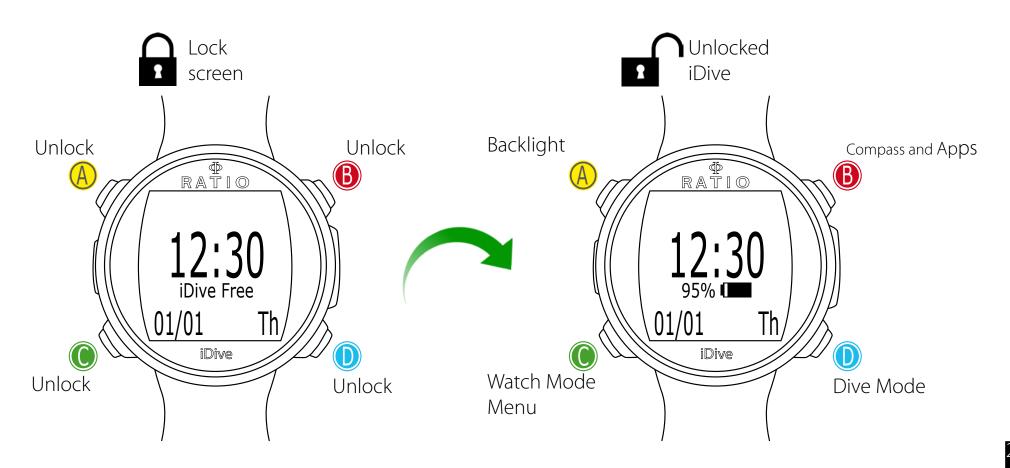


Lock Screen

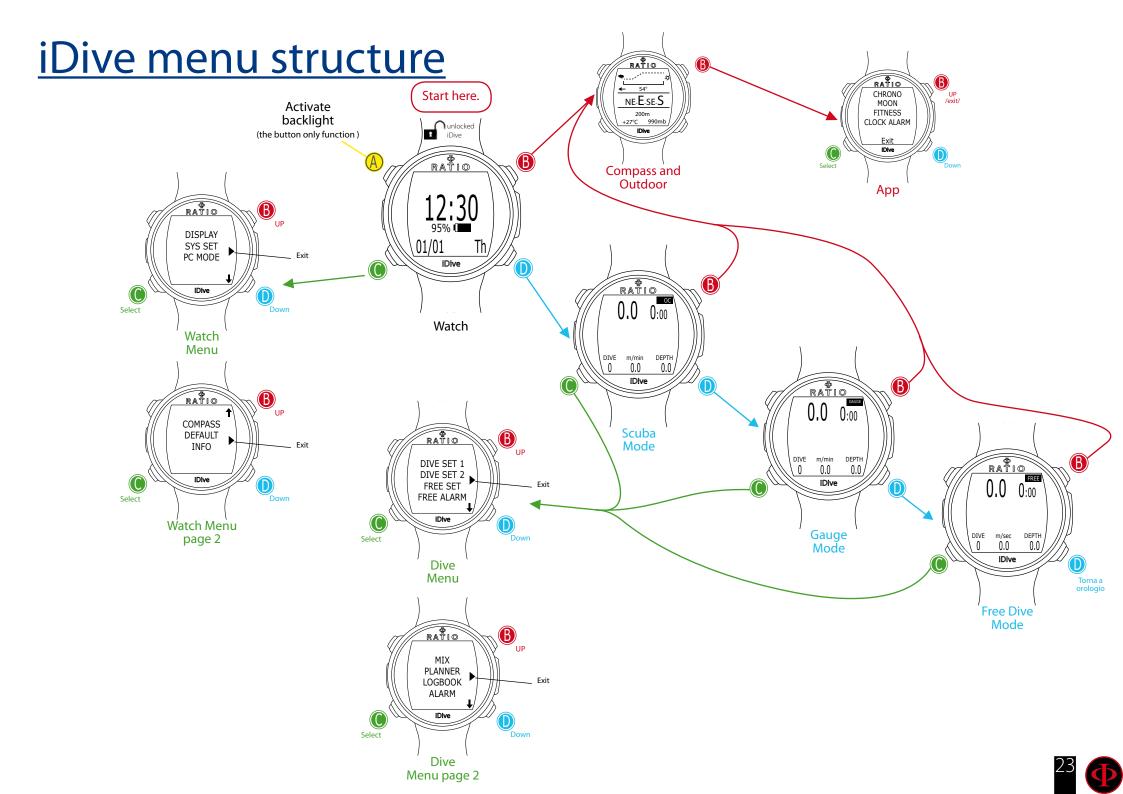
After 3 seconds of stillness in Watch mode the iDive goes in "block" mode automatically. After 60 seconds from the lock screen activation, the iDive model name is displayed under the time.

Press any button to unlock the iDive.

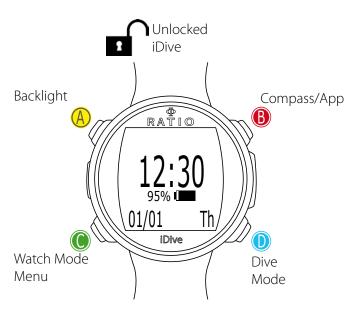
The iDive is unlocked when the battery % is displayed under the time screen, in the same position of the model name.











The watch screen

When not in Dive Mode, the watch screen is considered to be the iDive main screen. During the navigation among the different menu the iDive will come back to the watch screen automatically if any button is not pressed for over 60 seconds.

In watch screen there is displayed:

In the centre in big types: Time in 24 hrs or 12 hrs format (it is possible to change the date format in the SYS SET menu)

In the centre in small types: Battery % ("Model Name" in the Lock screen). ATTENTION: Do not dive if the battery % is less than 30%

On the bottom left side: date in dd/mm format (it is possible to change the date format in mm/dd on the DIVE SET 1 menu setting the imperial system).

On the bottom right side: Name of the day.

Mo => Monday Tu => Tuesday We => Wednesday Th => Thursday Fr => Friday Sa => Saturday Su => Sunday

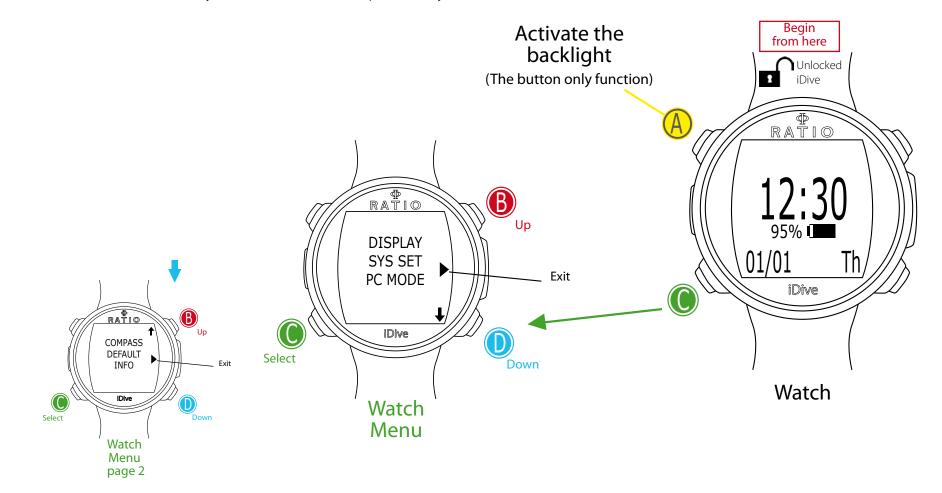


Watch Menu

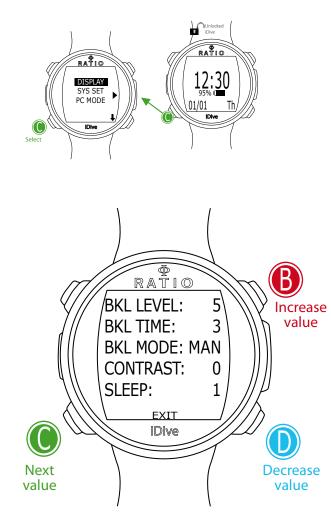
The Watch Menu contains all settings not directly associated with the dive.

To have access to the Watch Menu unlock the iDive pressing any button and press **C** button in Watch Mode. Press buttons **B** and **D** to browse the menu entries rapidly and press **C** button to select the desired entry.

Keep on pressing **D** to enter the menu second page. To exit the menu select the symbol **▶** or do not press any button for 60 seconds.







DISPLAY (Screen settings)

The DISPLAY menu allows to change the iDive screen settings. Make reference to the picture at the side to navigate the DISPLAY menu.

BKL LEVEL: (0-10). It regulates the backlight intensity. ATTENTION: setting a very high intensity will reduce the iDive autonomy.

BKL TIME: (0-60). It regulates the backlight duration for the AUTO mode.

BKL MODE: (AUTO-MAN-DIVE). It sets the backlight mode.

AUTO: The back light deactivates itself automatically after some minutes (BKL TIME) MAN: The backlight is managed manually (press once to activate, press once again to deactivate)

DIVE: The backlight activates itself automatically and remains active all dive long. When not in Dive Mode it uses the AUTO settings.

ATTENTION: In watch screen, no matter if in BKL MODE or BKL TIME, the backlight deactivates itself after 3 seconds.

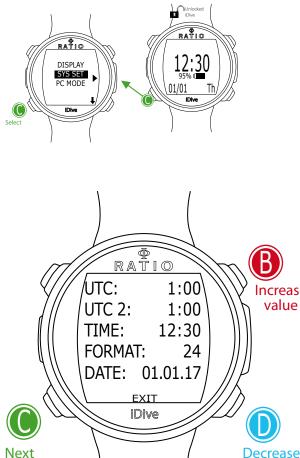
CONTRAST: (0-7) It sets the types contrast intensity. ATTENTION: setting a very high value will reduce the iDive autonomy.

SLEEP: (0-60) In minutes, it indicates the time after which the iDive activates the Sleep Mode when it remains static. (the value 0 deactivates the Sleep mode)

ATTENTION: Deactivating the Sleep mode reduces the iDive autonomy drastically.

To exit select EXIT (or wait 60 seconds without pressing any button)





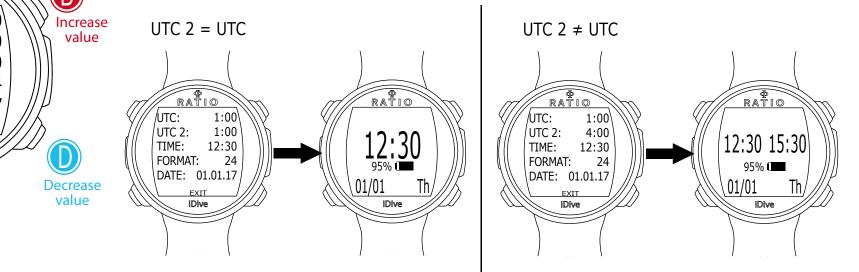
value

SYS SET (date and time)

The Menu SYS SET allows to change the settings relating to the date and the time.

UTC (Coordinated Universal Time): It regulates the first time zone "home".

UTC 2 (Coordinated Universal Time): It regulates the second time zone. Set UTC e UTC 2 with two different values to display the double time zone in the iDive watch screen. Set the same UTC value to display a unic time.

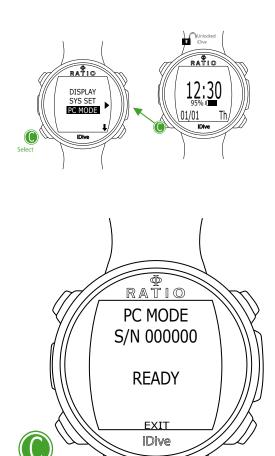


TIME: To set the time (24hr format)

FORMAT: To set the time format of the displayed time (24hr or 12hr)

To exit select EXIT (or wait 60 seconds without pressing any button)





Exit

PC MODE (connection to PC/Mac)

The PC MODE is used to connect the iDive to a PC/Mac by the DiveLogger.

To download the DiveLogger RATIO[®] and connect your iDive to a PC/Mac to download your dives and carry out the updates log on the following address:

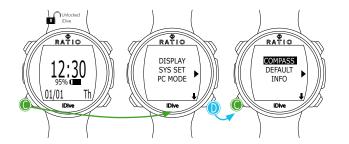
http://www.ratio-computers.com/it/support/

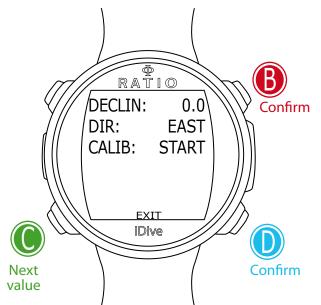
On the web site you will find a step-to-step tutorial to connect your iDive to the Divelogger. To download the program and and the updates a connection to Internet is necessary.

ATTENTION: The DiveLogger and the updates are completely free of charge. However, to work properly they need a connection to Internet; in case you use a consumption connection, your provider might debit you the costs for the traffic generated. It is always recommended to use an ADSL Flat connection to Internet. For further information refer to your Internet provider.

To exit press **C** button (the automatic exit after 60 seconds is not **is not active** in PC MODE)







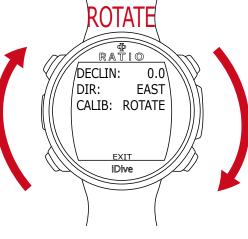
COMPASS (Compass settings)

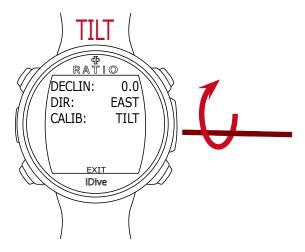
The COMPASS menu allows to set the compass.

DECLIN: The declination is used to compensate the difference between the geographic and the magnetic north. This data can be obtained visiting specific web sites. (If you don't know how to set the DECLIN value, leave it at 0.0)

DIR: (EAST or WEST) The direction is used to indicate the Earth magnetic field's declination direction. (If you don't know how to set the DIR value, leave it at EAST)

CALIB: (Calibration) Press B or D to start the compass calibration. For a correct calibration ensure to be far from magnetic field sources (PC, TV, street lights etc.)



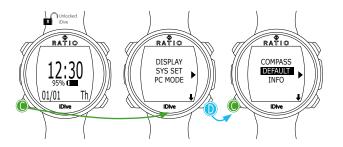


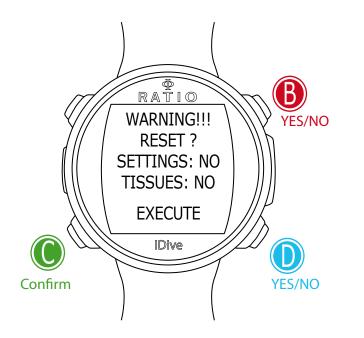
Rotate slowly and constantly on a flat surface.

Rotate slowly and constantly on the horizontal axis.

To exit select EXIT (or wait for 60 seconds without pressing any button)







Reset to Default

To navigate this menu follow the instructions shown in the picture on the left.

SETTINGS: Yes/No. To reset all menu entries to the default settings. The SETTING command resets all menus and settings (MIX, Alarms, etc.). It doesn't reset the diver's tissue saturation.

TISSUES: Yes/No. To reset the diver's tissue saturation.

Attention: NEVER reset the tissue saturation if the device is always used by the same person! This doesn't allow the iDive to make a correct decompression calculation!

EXECUTE: To reset the entries set as YES.

Select the EX(ECUTE function and press C to carry out the reset)



DO NOT carry out the tissue saturation reset (TISSUES=YES) if the device will be always used by the same person !!! This may cause the risk of accidents, even lethal.

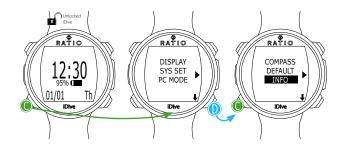
It is possible to reset tissues only in case the device is used by a person who has not made dives during the previous 48 hours.

ATTENTION!

A possible tissue reset is registere indelibly in the iDive dive Logbook

The user is completely responsible of the tissues saturation Reset.







INFO (iDive Information)

The Menu INFO displays the information relating to the iDive.

Complete model name (RATIO - iDive "model name") S/N: the unit's serial number. APOS: Operative system version installed in the unit

To exit select **C** (or wait for 120 seconds without pressing any button)



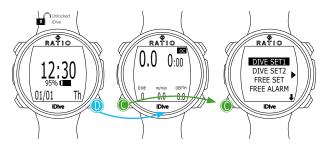
Dive Menu

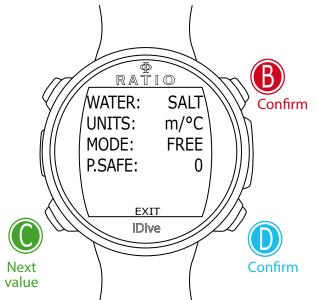
The dive Menu contains all settings directly connected to the dive.

To enter the Dive Menu unlock the iDive pressing any buttons and from the watch screen press **D** button to enter the dive screen, thenpress C button to enter the Dive Menu. Press buttons **B** and **D** to browse the menu entries and press **C** button to select the desired entry.

Keep on pressing **D** to display the menu second page.

To exit the menu select the symbol ▶ or don't press any button for 60 seconds Begin from here. iDive unlocked \mathbb{P} RATIO RATIO RATIO OC UP $\mathbf{U}:00$ DIVE SET1 DIVE SET2 FREE SET 95% FREE ALARM DIVE DEPTH 01/01 Th 0.0 0.0 iDive iDive iDive RATIO Select Dive DOWN MIX Menu PLANNER LOGBOOK ALARM Dive Watch iDive Menu Select DOWN Page1 Dive Menu Page 2





DIVE SET 1

The DIVE SET 1 menu displays the first part of the iDive dive settings.

WATER: (SALT/FRESH): It selects the kind of water (SALT= Salty, FRESH= fresh)

Did you know?

The dive computers measure the pressure and convert it depth using the water density as constant. Without the SALT/FRESH setting the depth reading might be altered (If you dive in fresh water with WATER=SALT setting the depth detected by the iDive will be lower than the real one, vice versa if you dive in salt water with WATER=FRESH setting the depth detected will be higher than the real one.)

UNITS: It selects the kind of unit of measurement you want to use:

m/°C = decimal metric system

(Metres | temperature in °Celsius | date dd/mm/yy | pressure in Bar | volume in Litres)

ft/°F = American habituals system

(Feet | temperature in ° Fahrenheit | date mm/dd/yy | pressure in Psi | volume in cubic feet)

MODE: It sets your favourite kind of dive which will be activated by the iDive when entering water. **ATTENTION** always check that the kind of dive matches with the one actually carried out.

SCUBA: the iDive begins a dive with tanks GAUGE: the iDive begins a dive in Gauge mode FREE: the iDive begins a free dive (without tanks).

Did you know?

If you want to use a different mode without changing the MODE parameter, you can enter the desired mode pressing the **D** button in the watch screen and make a dive deeper than 2 m. This way, the iDive will activate the mode you have selected without changing the MODE value for that dive only.

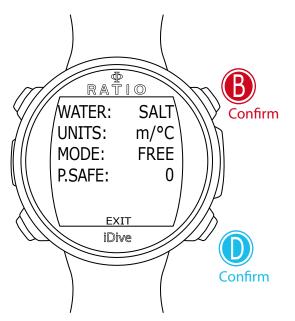
Warning: For safety reasons, it is NOT possible to set the FREE mode as main mode if at least 12 hours have passed from the last SCUBA or GAUGE dive. The iDive reset the SCUBA mode automatically if you try to force your dive with the main mode set on FREE.





P.SAFE: Protection Level (OC = Open Circuit Dive) RATIO The iDive Free (in OC mode) uses the **Bühlmann ZHL-16 B** algorithm for DIVE SET1 decompression calculation. DIVE SET2 FREE SET FREE ALARM iDive The iDive conservatism can be changed on pre-set levels from 0 to 5.

The levels match with the following values:



RATIO

0.0 0:00

iDive

RATIO

12:30

Th. iDive

01/01

Bühlmann ZHL-16 B (gradient)

- GFL/GFH
- 0 = 93/93 standard conservatism
- 1 = 90/90
- 2 = 80/80
- 3 = 75/75 max linear conservatism
- 4 = 30/90
- 5 = 20/89

Did you know?

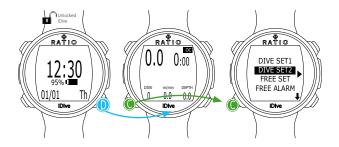
A higher conservatism will allow the computer to make calculations in a more precautionary way, decreasing the time to be spent at a given depth without going beyond the safety curve (or increasing the decompression duration in case of dives made beyond the safety curve)

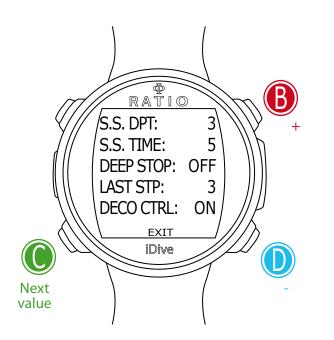
In general it is recommended to increase the conservatism if you feel tired after your last dive.

A hyperbaric doctor can advice how to set the conservatism depending on your clinic situation.









DIVE SET 2



The DIVE SET 2 Menu displays the second part of the iDive dive settings.

S.S. DPT: (Safety Stop Depth) (3-9): The depth at which you want to carry out the Safety Stop

S.S. TIME: (Safety Stop Time) (OFF-9): Safety Stop time in minutes Even if it is always recommended to carry out the Safety Stop in all dives made inside NDLs, it is possible to deactivate the Safety Stop setting the S.S. Time value on OFF

DEEP STOP (OFF/STD): If activated, it inserts a further not mandatory stop with the Standard method (STD) (The maximum depth's half for 2,5 minutes)

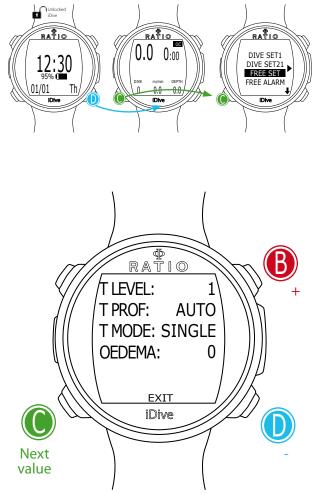
LAST STP: (Last Stop) (1-10): The depth at which you want to carry out the last decompression stop (if the dive is outside NDLs and expects decompression stops)

DECO CTRL: (ON/OFF): If activated (ON) the iDive will not allow to carry out a new dive during the 12 hrs after a dive in which there have been several deco violations. The DECO CTRL deactivation (OFF) is not recommended and will remain permanently in the iDive Logbook.

ATTENTION: The Safety Stop is NOT considered to be mandatory in those dives carried out within the safety curve. The Safety Stop violation doesn't entail penalties in decompression during your next dives and it is not considered to be a "deco violation". So DO NOT deactivate the DECO CTRL if you don't want to carry out the Safety Stop.

ATTENTION: The Safety Stop is automatically omitted if the decompression profile goes outside NDLs. Even if the accumulated decompression is assimilated before the safety stop depth, the dive is not considered to be "inside NDLs" any more, so the iDive will not recommend the Safety Stop.





FREE SET (Free diving settings)

Used in free dive mode only FREE

The FREE SET menu displays the iDive free diving settings.

T LEVEL: (Taravana Protectionism Level)(0-9): It changes the personal protectionism coefficient to calculate the minimum recommended recover time to reduce the Taravana risk. Increasing the T LEVEL factor entails a longer minimum recommended recover time between a free dive and the other.

- 1 = Minimum conservatism
 9 = Maximum conservatism
 0 = Function deactivated
- Set the conservatism taking into consideration your own athletic conditions.

T PROF: (Kind of dive) (AUTO - V- U): It indicates the kind of dive you want to carry out to optimize the algorithm reducing the Taravana risk.

- V (V shape) = Dive with a short bottom time and diver in constant movement (typical for free diving athlets)
- \mathbf{U} (U shape) = Dive with an extended bottom time and static body.

(typical for free diving fishermen)

AUTO = Automatic survey of every single dive's shape (recommended)

T MODE (Taravana Mode) (SINGLE - MULTI):

SINGLE: The recommended recovery time is based on the last dive only. MULTI: The recommended recovery time is based on the last dive; it expects an increase or recommended recovery time if during the previous dives it hasn't been respected.

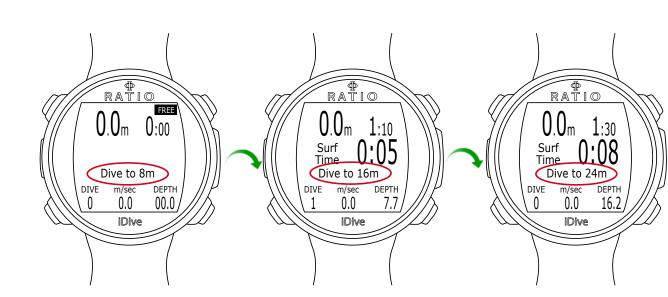


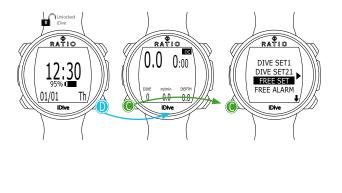
OEDEMA: (Pulmonary Oedema): The depth you want to reach or the depth you can reach without particular effort, according to which the computer will calculate the necessary dives to reduce at minimum the pulmonary oedema risk.

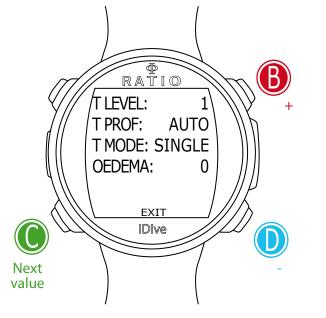
If 0 = deactivated

If the OEDEMA fuction is activated the first three warm-up dives are not considered in the average session calculation.

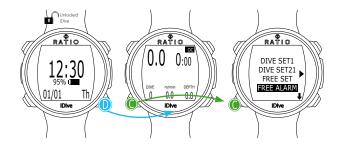


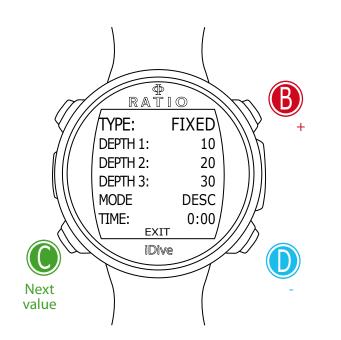












FREE ALARM (Acoustic alarms)



The FREE ALARM Menu allows to set the acoustic alarms in free diving mode.

TYPE: (OFF - FIXED - STEP - TIME) Set the desired alarm.

If TYPE = OFF No alarm is activated

If TYPE = FIXED An acoustic alarm is activated when reaching each of the 3 stages manually set by the user.

DEPTH 1: Depth at which you have activated the first alarm DEPTH 2: Depth at which you have activated the second alarm DEPTH 3: Depth at which you have activated the third alarm

MODE: (DESC - ASC - BOTH): to change your preferences for alarm activation
 DESC = Alarm activation at the stage you set only during descent.
 ASC = Alarm activation at the stage you set only during ascent.
 BOTH = Alarm activation at the stage you set during both descent and ascent.

((+))

(((**+**))

((+))

((+))

ROTH

allarme sia in discesa

TIME: A further alarm is activated when reaching the time you set (mm:ss) (if 0:00 time alarm deactivated)



If TYPE = STEP An acoustic alarm is activated every "X" metres.

START: First alarm depth beyond which the STEP alarms are activated

STEP: It indicates after how many metres (feets if the imperial system has been set) the alarm is activated.

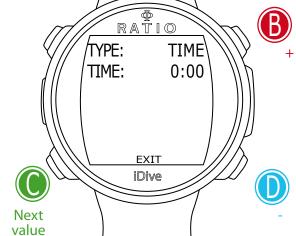
Ex (START=10, STEP= 5) Alarm 1 = 10mt Alarm 2 = 15mt Alarm 3 = 20mt Alarm 4 = 25mt etc. etc.

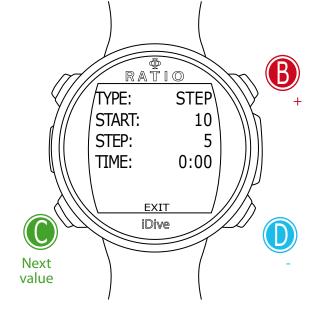
In the STEP mode the alarm is activated only during the descent.

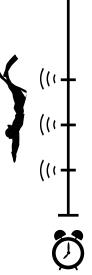
TIME: A further acoustic alarm is activated when reaching the time you have set (mm:ss) (if 0:00 time alarm is deactivated)

If TYPE = TIME An acoustic alarm is activated when reaching the time you have set (mm:ss) (if 0:00 Time alarm is deactivated)

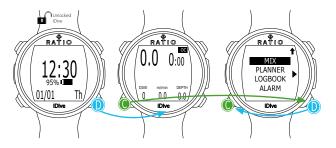
RATIO TYPE: TIME TIME: 0:00 EXIT iDive













MIX (Mix settings during dive)



The MIX menu displays the settings of the mix which will be used during the dive.

The iDive Free in OC (open circuit) function can use 1 Mix with oxygen % from 21% to 50%

ATTENTION: To change these settings it is necessary a specific training to use the enriched breathing mixes. If you don't have carried out such training do not dive using enriched breathing mixes!

Do not dive using breathing mixes which are different from the ones set in your own dive computer. The use of different mixes from the ones you have set does NOT allow a correct decompression calculation!

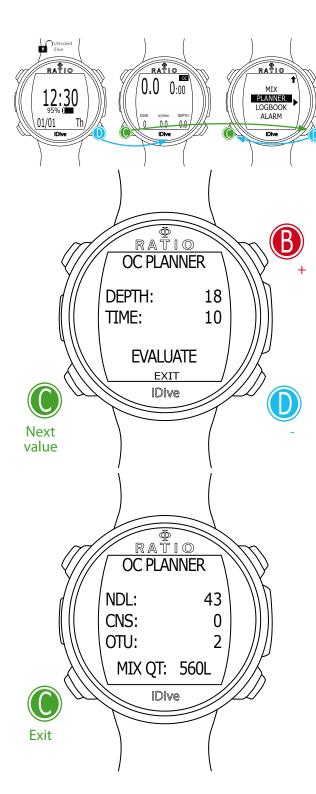
MIX: (21-50): It indicates the oxygen % inside the mix in your tank.

PPO2: (Partial O2 pressure) (1.20 - 1.60): It indicates the maximum PPO2 whith which you intend to use the mix.

MOD: Maximum depth to which the mix created can be used. The MOD is re-calculated automatically every time the MIX or the PPO2 value are changed. It is not possible to change the MOD manually.

During the dive an acoustic alarm will be activated if MOD value is passed.





PLANNER (inside NDLs)

The iDive integrates a complete planner (both for no-deco and deco dives) Attention: To change the dive parameters set on the iDive through the DIVE SET and MIX menu, the iDive will simulate a dive using the current settings.

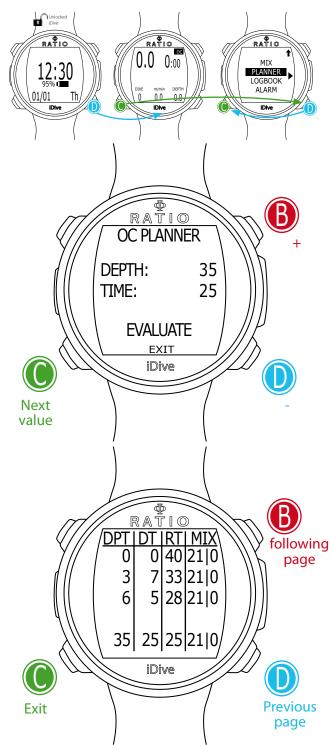
DEPTH: Insert the dive's maximum depth planned. TIME: Insert the dive's bottom time in minutes. EVALUATE: Start the dive's simulation. (Select with C and press D)

If the dive is inside NDLs (deco stops are not contemplated)

NDL: Residual non decompression time (after the set bottom time). CNS: Accumulated CNS % (after the set bottom time). OTU: Accumulated OTU % (after the set bottom time).

MIX QT: Mix volume expected to be necessary for the dive. ATTENTION: The gas quantity used is purely approximate and referred to a standard consumption. Take into consideration the indications provided by your diver certification agency to concernting the necessary gas quantity during a dive!





PLANNER (deco planner)

The iDive integrates a complete planner for squares dives . Attention: To change the dive parameters set on the iDive through the DIVE SET and MIX menu, the iDive will simulate a dive using the current settings.

For DEPTH, Time and Evaluate make reference to "Planner inside NDLs" (previous page)

If the dive is OUTSIDE NDLs (Deco stops are contemplated)

DPT: Deco stop depth in metres (in feet is imperial unit is set)DT: Stop time expressed in minutesRT: Time passed from the dive beginning to the deco stop.MIX: Mix used during the deco stop.

ATTENTION: Besides the deco stops, also the info concerning the bottom time end are always stated as last value (in the example on the left side 35 | 25 | 25 | 21/0)

ATTENTION: Press buttons **B** and **D** to browse the pages in case there are more than 3 deco stops

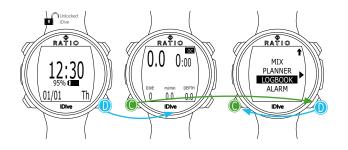
ATTENTION: For carry out the decompressive calculations, the planner takes as descent speed 18m/min and a ascent speed 9m/min.

ATTENTION: The Planner function does not carry out the profile "validation", that is it does not take into consideration a possible CNS excess, limits in the mix volumetric availability, a possible isobaric counterdiffusion due to a mix change or the MOD of a possible mix used.

To plan a technical dive properly, a suitable training is necessary. Make reference to your Instructor or to your diver certification agency to in case of doubts about planning a dive.

For Planner's graphic formatting reasons, the maximum visualized DT is 99 minutes. In case the single deco stop is longer than 99 minutes, in the Planner it is displayed as "99"; instead, during the dive the recommended stop is expressed with the the real time needed (e.g. 120 min)



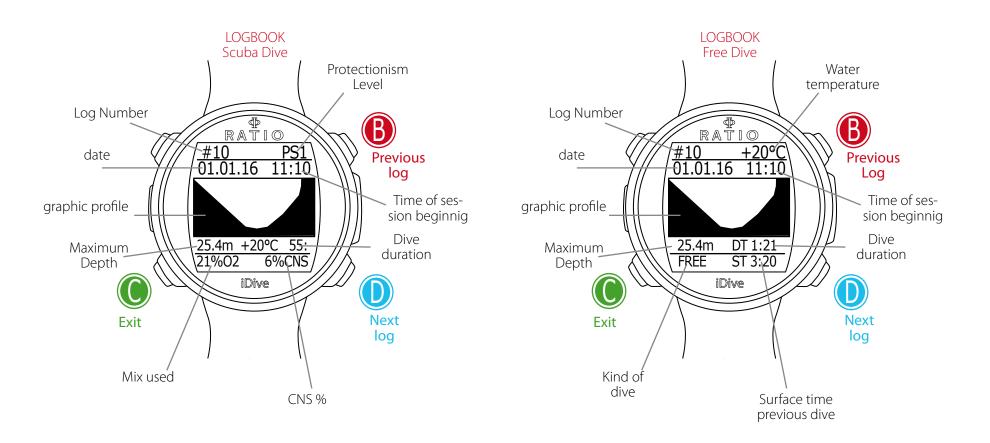


LOGBOOK

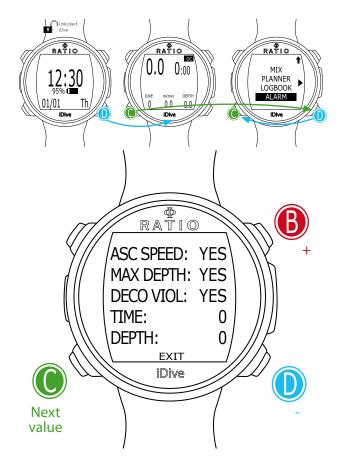
In the Logbook the iDive can memorize about 18 hous of dives in free dinving mode (about 600 dives) with a sample rate of 1 second, or about 160 hours of dive in Open Circuit mode (sample rate 10 seconds).

The data memorized in the iDive Logbook can be downloaded on PC or Mac using the USB cable included in the package and the DiveLogger software that can be downloaded from the website ratio-computers.com

(see the dedicated chapter in this manual).







ALARM (Allarms Open Circuit)



The ALARM menu allows to activate (YES) or deactivate (NO) the iDive acoustic alarms in open circuit mode.

ATTENTION: Unless in case of particular needs, it is NOT recommended to deactivate the acoustic alarms. Keeping all values set on YES is highly recommended.

ASC SPEED: (YES/NO): Alarm signalling an excessive ascent speed.

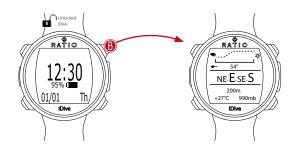
MAX DEPTH: (YES/NO): Alarm signalling you have overtaken the MOD (depth beyond which you shouldn't go according to the PpO2 of the Mix breathed)

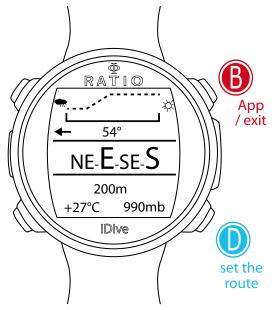
DECO VIOL: (YES/NO): Alarm signalling a violation of a mandatory deco stop. (The Safety Stops and the Deep Stops are not considered to be mandatory. The Safety Stop or Deep Stop violation does not activate the alarm)

TIME: Alarm signalling that the set dive time (in minutes) has been overtaken

DEPTH: Alarm signalling that the set depth (in metres or feet, see the DIVE SET 1 menu) has been overtaken







Graphic compass key:

N: North S: South W: West E: East

NE: North-East NW: North-West SE: South-East SW: South-West

Outdoor Functions

The Compass

To have access to the Compass screen press **B** button, the compass is available also during the dive.

ATTENTION: In case you see the message "CALIBRATE" or if the compass would not be fluid or functioning correctly, it is necessary to calibrate it. To calibrate the compass refer to this manual's COMPASS section.

The iDive compass has 1° resolution and +/- 1° of accuracy. Your arm's grade is compensated automatically until 85°. It might need some seconds after your arm's rotation, to allow the compass to find the correct alignment.

To set the route press the ${\sf D}$ button

During the navigation, the iDive considers the direction "in route" if the desired route is not more than 5° different from the set direction.

To exit the compass screen press the **B** button twice.



(Direction in degrees highlighted in black): Direction in route (+/-5° in comparison to the set one)

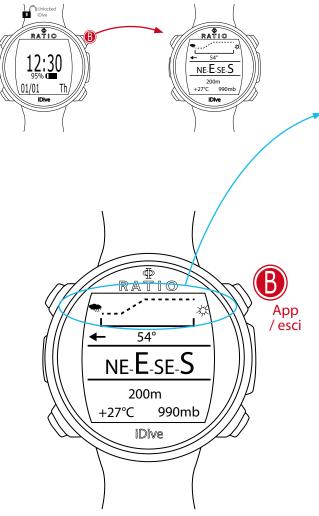


(Direction in degrees not highlighted): It indicates the direction to be followed to found the set route



 $\mathbb{D}^{\mathbf{0}}$ (Direction in degrees not highlighted, no arrow): Exact reciprocal of the set direction





Weather Forecast

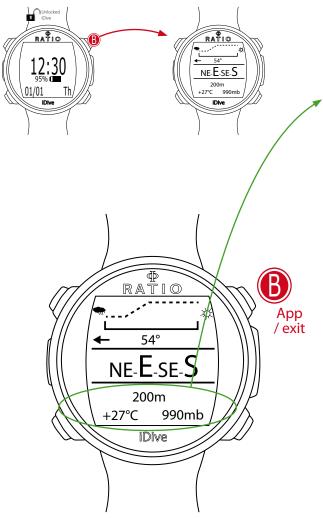
Weather forecasting is based on the monitoring of air pressure in the previous 18 hours thanks to the integrated barometer. In order to have a reliable weather forecasting, it is necessary not to change your altitude, otherwise the variation of the air pressure, due to the change in height, could lead to inaccurancies in the weather forecast.

Warning: after the dive the detected pressure could be less than the actual one, because of the humidity in the area of the sensor and this could compromise a correct weather forecast.

After a variation of almost 50 mt, the weather forecasting will be reliable again after 3/5 hours.







Altimeter, barometer, termometer

Altimeter: (In the middle, stated in metres or feet) indicates the elevation on the sea level.

The value of the elevation on the sea level is calculated on the basis of the barometric pressure. Warning: the accuracy in the measurement of the elevation directly depends on the air pressure as well as on the humidity which is present in the seat of the sensor. Therefore, in case of bad weather conditions or after a dive, the approximation could also reach +/-80mt.

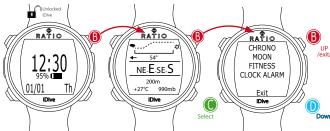
Termometer: (at the bottom left, stated in °C or °F) indicates the temperature of the iDive case.

Therefore, when the clock is wore on the wrist, it will detect a temperature which is higher than the one outside. In order to measure the environment temperature, take the clock off the wrist and wait at least 5-6 minutes. The detection of the temperature in the water will be accurate after 3-4 minutes.

Barometer: (at the bottom right, stated in millibar) indicates the air pressure (the pressure present in any stage of atmosphere of the earth).

Warning: the accuracy in the measurement directly depends on the air pressure as well as on the humidity which is present in the seat of the sensor. Therefore, in case of bad weather conditions or after a dive, the measurement is aproximated.



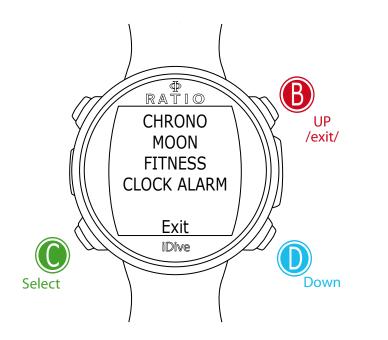


App for iDive Free

The App menu allows you to use the Applications intalled in your iDive Free. Open the menu pressing **B** button from the Compass screen.

A dedicated manual for the Apps is available on:

http://www.ratio-computers.com/support



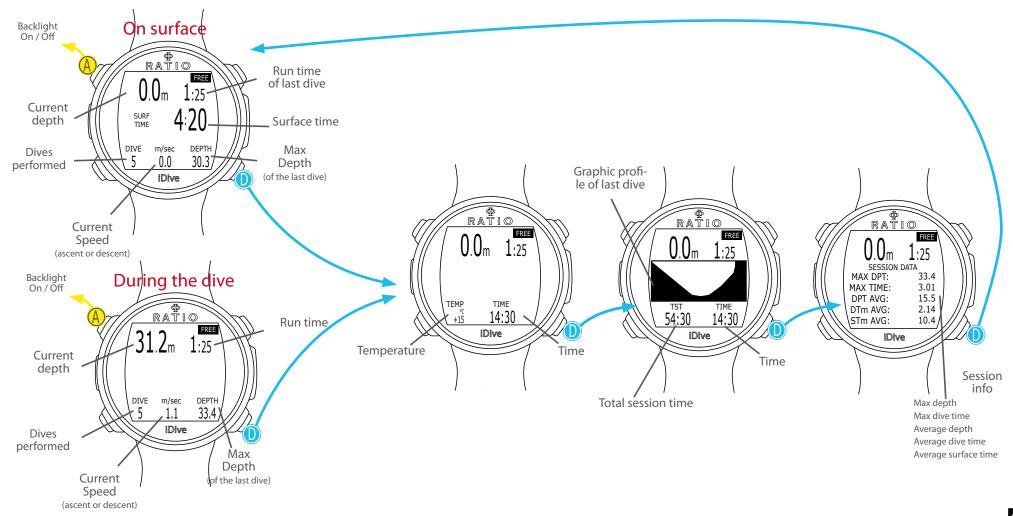


<u>L'iDive during the dive</u>

iDive starts automatically a dive passed 1,5mt of depth. As default setting the iDive Free starts a dive in FREE mode. You can set the default mode (SCUBA, GAUGE, FREE) from the DIVE SET 1 menu (see dedicated section on this manual).

Free diving (FREE)

During a Free diving session the iDive Free shows:





Reducing the risk of Oedema / Hemoptisis

Hemoptysis (or haemoptysis) is the act of coughing up blood or blood-stained mucus from the bronchi, larynx, trachea, or lungs, it is symptom of a Pulmonary Oedema. In free diving the Hemoptisis is usually caused by the braking of the capillaries in the lungs that has been exposed to high stress without warm-up.

In order to reduce the risk of Pulmonary Oedema the iDive Free recommend the depth not to overtake in the first 3 dives to "warm-up" the capillaries in your lungs. Set your "Comfort depth" (the depth that you can achieve with no problem)

In order to activate the Oedema prevention function in the iDive Free you have to set the Comfort Depth (OEDEMA) in the FREE SET menu

In this example the OEDEMA in the FREE SET menu is 35.



The first 3 "warm-up dives" are not considered in the caluculation of the session averages.



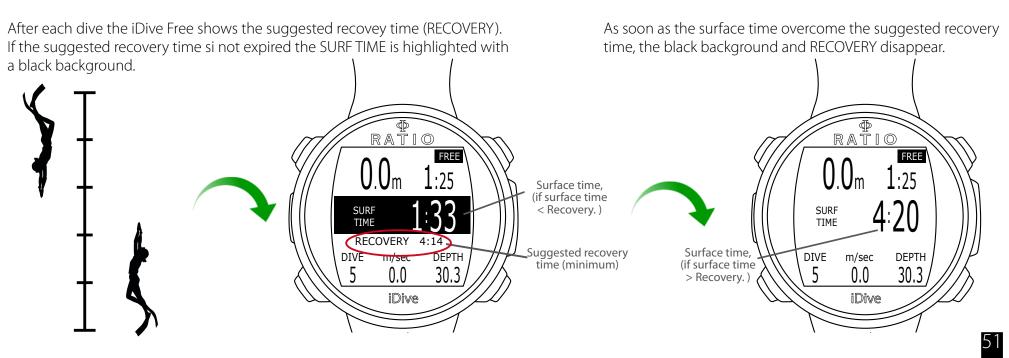
Reducing the risk of Taravana (iPTM Algorithm)

Taravana ("to fall crazily" in Polynesian language) sickness is similar to a DCS (decompression sickness). The symptoms are usually vertigo, nausea and lethargy, paralysis and coma. Hyperbaric medicine is not uninanimous in identifying the underlying causes of the Taravana, however the recognized factors that increase the risk of Taravana are: Long stays at great depth with repeated dives (long sessions 2-4 hours) typical of spearo's activity, in the absence of an adequate recovery time at the surface; Exposure to great depth in the absence of an adequate recovery time at the surface of oxygen in the body) and Dehydration.

The iPTM is the first algorithm to calculate the recommended minimum recovery time between one free dive and the next one, to reduce the risk of Taravana. The iPTM is based on:

- Tissue Saturation Factor: Calculated by using the Buhlmann ZHL-16B compartments considering the dive time, dive depth, descent speed, ascent speed and dive shape.
- Hypoxia Factor: Depth and duration of the previous dive.
- Dehydration Factor: Number of dives done, depth and total dive time.
- Free diver's behaviour: Respect of recovery time from the previous dives and set conservatism.

The conservatism of the iPTM can be set from the FREE SET menu of the iDive (see dedicated chapter in this manual)

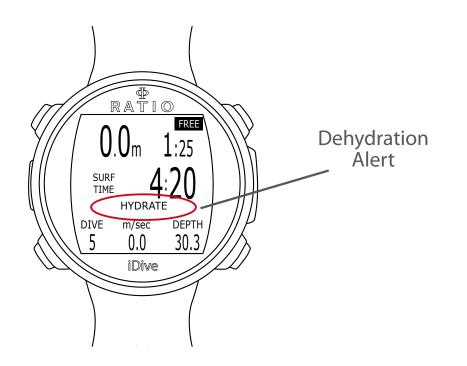


Dehydration Alert

Acording to the number of dives, dive-time and dive depths, the iDive Free will show the aehydration alert (HYDRATE) in the center of the screen in order to remember the freedivers to hydratate (even if that needings if not felt by the freediver).

The alarm will automatically disappear after the next dive, the iDive will assume that the dive has hydrated.

Attention: It is not suggested to ignore the HYDRATE alert.





Diving in Scuba mode (OC)

During a dive in OC (Open Circuit) the iDive will show:

RATIO

m/min

2.1

iDive

RATIO

iDive

 $20.0_{\rm m}$

%02

21

%02

21

OC

MAX

37.4

OC

MAX

37.4

Main Data

Current depth (on the left): In meters or feets Run time (on the right): Elapsed time from the beginning of the dive (minutes:seconds) Dive mode (on the top-right): OC = Open Circuit

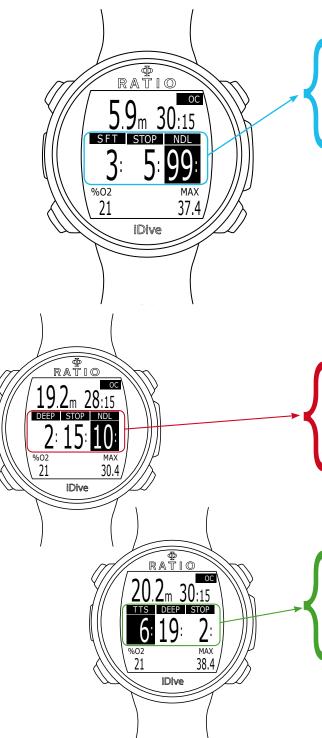
If in No Decompression Limit

NDL: Time in minutes in which it is possible to remain at the current depth without passing the safety parametres, without needing mandatory decompressive stops. In general, we always recommend to remain within the safety parametres.

If mandatory deco stops are needed:

- **TTS:** (Left) Time-to-surface. Total ascent time.
- **STOP:** (Centre) Next mandatory stop depth.
- TIME: (Right) Minutes relating to the next safety stop.





Safety Stop: If the Safety Stop (recommended for any kind of dive) is activated, it will be shown on the computer's central line during the ascent starting from a depth of 9 mt.

(Safety Stop is automatically omitted if the dive required a mandatory deco stop, even if the mandatory deco stop has been elapsed during the ascent the Safety Stop is omitted). You can set depth and time of the Safety Stop in DIVE SET 2 menu.

SFT: (left) Duration of the Safety Stop (minutes)STOP: (center) Depth of the Safety Stop.NDL: (right) No Decompression Limit.

If Deep Stop is enabled: If the function Deep Stop has been activated, this is visualized 5 m before the actual required depth on the screen's central line and will be removed (if not carried out) 5 m after the required depth.

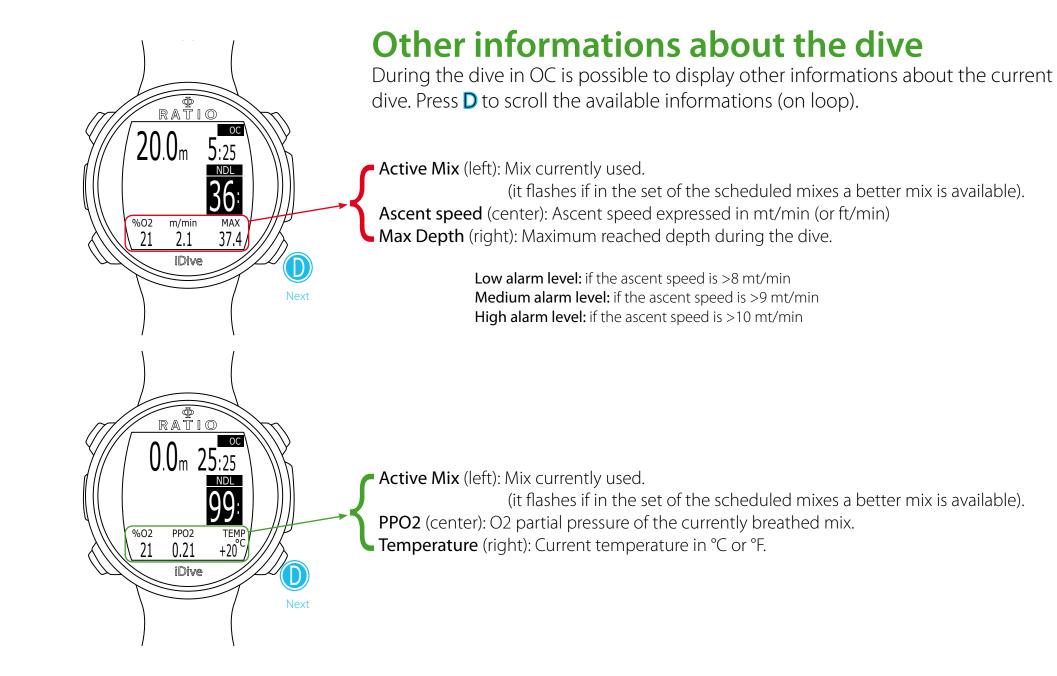
In case the Deep Stop is carried out in NDL dives, the NDL time will remain visible on the screen's right part with black background.

DEEP: Duration of the Deep Stop **STOP**: Depth of the Safety Stop

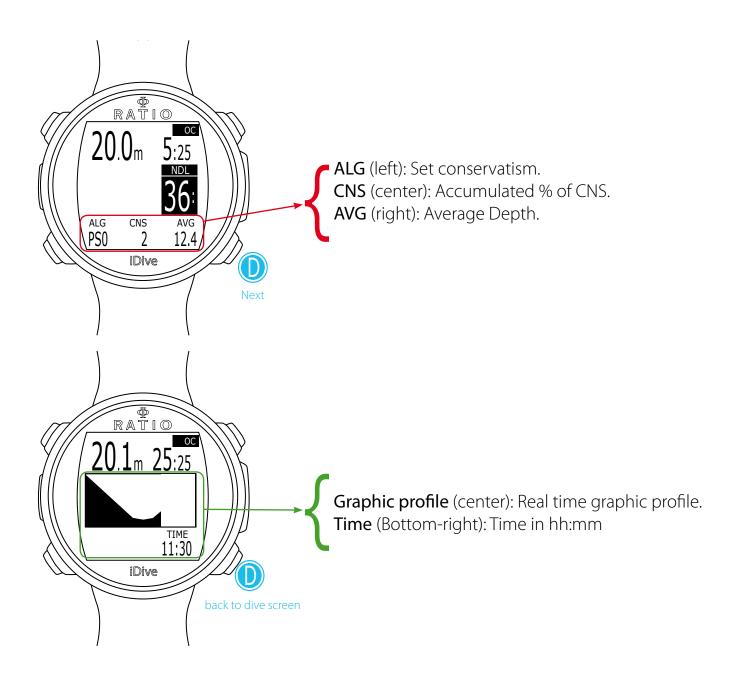
If the Deep Stop is carried out in dives with mandatory decompression stops (not recommended), the Deep Stop information on neutral background are visualized at the place of STOP and TIME data, the TTS will remain visible.

The Deep Stop is not mandatory and in case it is omitted even after having set it, it does not affect on the iDive correct decompressive calculation.











GAUGE Mode

RATIO

TEMP m/min +20°C 0.0

Timer reset

AVG Depth

reset

iDive

RATIO

m/min

0.0

iDive

темр +20°С 37.4

GAUGE

MAX

37.4

Use the Gauge mode as described in the example on the left:

B

Compass

ATTENTION: To use the iDive in GAUGE mode an adequate training is necessary!

During a dive in GAUGE mode the iDive shows:

Current Depth (Top-left): In mt or ft. Run Time (Top-right): Elapsed time from the beginning of the dive

Resettable Timer (center): mm:ss resettable timer (press ℃ to reset) Press ℃ to display AVG Depth and viceversa.

AVG Depth (center): Resettable Average depth (press C to reset)

AVG Depth

Compass

Timer

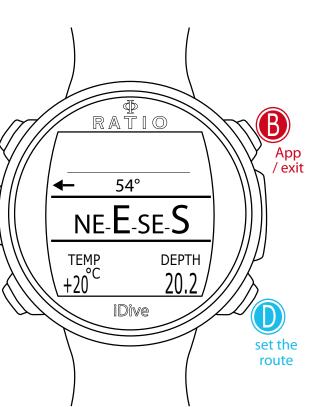
Temperature (bottom-left): Current temperature. Ascent speed (bottom-center): Currnet ascent speed in m/min (or ft/min). Max depth (bottom-right): Maximum reached depth during the dive.

The iDive calculates in background the tissue saturation and desaturation also in GAUGE mode using a "fake mix" with a high inert contents (10/60). This value is registered in the logbook. If after a dive in GAUGE you want to to carry out a dive in OC using the iDive decompressive calculations, the iDive will consider the new dive as the next repetitive of the day.

Please note:

Even if the iDive carries out the decompressive calculation in background, they cannot be visualized on the screen and they don't even affect the GAUGE mode.





Compass when diving

Press **B** to display the Compass. The Compass is available in all dive modes (OC, FREE, GAUGE)

WARNING: If the alert "CALIBRATE" is shown or if the compass is not smooth or if the compass is not working properly you need to calibrate the compass. In order to calibrate the compass see COMPASS chapter in this manual. Is not possible to calibrate the compass when diving.

The Compass of the iDive has 1° of resolution and +/- 1° of accuracy. The tilt of the wrist is automatically compensated up to 85°. It is possible that some seconds are needed in order to let the iDive to compensate the tilt of the wrist.

To set the route press ${\sf D}$

Current depth is shown in the bottom-right corner, the temperature in the bottom-left corner.

Press **B** two times to exit.

Legenda of the Compass:

N: North S: South W: West E: East

NE: North-East NW: North-West SE: South-East SW: South-West



(Direction highlined in black): Direction in route (+/- 5° from the one set with D button)



(Direction to follow to find the route initially set (right or left)



(No Highlines, no arrows): Direction in reciprocal (+/- 5° from the reciprocal of the set route)



The iDive after a dive No-Fly

Flying after scuba diving (OC or GAUGE), increases the risk of DCS because of the decreasing atmospheric pressure as we ascend. You might have only a few tiny bubbles, causing no problems at all, in your body when you reach the surface after a dive. If, however, you go flying, the small bubbles can expand (due to the reduction in pressure with altitude) and could cause DCS symptoms.

In order to reduce this risk the most common suggested guideline are:

RATIO

iDive

Th

NOX

01/01

- Minimum 12 hours pre-flight surface interval after single no-decompression dives.
- Minimum 18 hours pre-flight surface interval after multiple days of no-decompression dives.
- Minimum 24 hours pre-flight surface interval after decompression dives.

The above is for sports diving and should not apply to commercial diving. Because of the complex nature of DCS there can never be a fixed flying after diving rule that can guarantee prevention of bends completely.

WARNING: These indications may vary due to new studies and research. Please check the if there are new research guidelines on this matter. Ask your instructor, your diving / medical association.

After each dive in OC or GAUGE the iDive displays the NO FLY icon. The NO FLY icon is a statistic indication. Make therefore always refer to the most current guidelines about flying after a dive.



After a dive in GAUGE mode the NO FLY icon will show up for 24 hr.





Desaturation info

After 10 minutes from the last dive (OC or GAUGE) the desaturation information will be displayed in DIVE MODE.

Desat: (Desaturation): Time left for (supposed) compleated desaturation.(hh:mm)

No Fly: (No Fly Time): No Fly time left

Surf time: Surface time from your last dive.

RATIO OC :00 Desat: 11:45 11:45 No Fly: 01:24 Surf Time: DEPTH DIVE m/min 0.0 0 0.0 iDive



Connect your iDive to a PC or a Mac

Connect your iDive to your PC/Mac to download your logbook and to perform the updates

To connect your iDive to your PC or Mac the DiveLogger 4 is required.

You can download the DiveLogger 4 from the website: http://www.ratio-computers.com/support/

Tutorials, troubleshootings and FAQ are also available on the website ratio-computers.com

For further assistance: support@ratio-computers.com



Update your iDive

Is very important to keep your iDive always up-to-date. Subscribe the "Update Alerts" service for free following the instruction in the next page.

The iDive can be connected with the USB cable to a Pc or to a Mac in order to update the device.

Attention: During the update a new OS version will replace the old OS version. After an update always:

- Check that your dive settings are the one you need for your next dive (mixes, algorithm settings etc.)
- Consider that you will need to calibrate the compass. (see page COMPASS of this manual)
- Consider that after an update the iDive will be "Reset to Default" (both settings and tissue) (see page "RESET TO DEFAULT" of this manual)
- Consider to perform a complete recharge of your iDive (not mandatory but suggested)

More support and tutorials are available here: http://www.ratio-computers.com/support/troubleshooting.htm



Warning!

To receive all updates of this manual and notice of future updates of the "iDive" by e-mail, please send a message writing "iDive"

to the following address: update@ratio-computers.com This service is highly recommended and it is completely free of charge.

For further support, have a look at the tutorial videos soon available on www.ratio-computers.com

For assistance by mail write to support@ratio-computers.com



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