



[GPS]
edition


RATIO
COMPUTERS
iX3M
iX3M Easy, iX3M Deep,
iX3M Tech+, iX3M Reb

User Manual
ver. 4.03

Warning!
This manual is valid only for iX3M
updated to OS 4.0.58 or above.



[Pro]
edition

ATTENTION: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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

Contains Transmitter Module FCC ID: QOQWT12



Made in Italy

Warning!

To receive all updates of this manual and notice of future updates of the “iX3M” by e-mail, please send a message writing “iX3M”

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



Warning!



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.

The dive computer is an auxiliary instrument to the dive, it is compulsory having always an appropriate diving chart in order to carry out the decompression phase in case the device is malfunctioning for any reason.

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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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.

The RATIO® computer that you have purchased is extremely innovative, with a software allowing you to carry out both recreational and technical dives.

The RATIO® iX3M computer includes decompressive algorithms supporting, according to the different models, Air Nitrox (iX3M Easy), Normoxic Trimix dives (iX3M DEEP), Trimix and CCR (iX3M TECH + and iX3M REB) and its processor calculates in real time your dive's specific deco profile; all this ensures calculation flexibility and your personal safety.

Check periodically the presence of possible updates of this manual on web site www.ratio-computers.com

The manual version (e.g. 1.0) is shown on its cover.

Important Warnings



General Warnings

It is necessary to read this manual carefully before using the computer RATIO®. Wrongful 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 won't prevent possible dangers. Anyone who doesn't know or doesn't accept consciously these risks, must not dive with iX3M computer.
- Diving has some intrinsic risks which can 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 behaviors 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 behavior 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 (130ft) 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 visualized 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 Mix



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 recognizable. Such risks concerns serious injuries or death.

Limits of diving 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, Hyperbaric Medicine doesn't totally eliminate 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. Let 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(120°F). Store the computer in a fresh (5°C-25°C / 40°F-75°F) 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 an unauthorized assistance center.
- The RATIO iX3M 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 fully built in POM C with Makrolon cover, allowing an extreme resistance to hits and to corrosion.

The screen is provided with a Display TFT 100%; its matrix has 320x240 pixel resolution

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

- Weight: 260gr
- Sensor's precision warranty: 130 mt (426 ft)
- Maximum Depth: 300 mt (984 ft)
- Absolute Pressure Measure precision

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

- Maximum altitude: 5000 mt (16404 ft)
- Sensor's maximum error in measuring the temperature: -2 / +6°C
- Recharge the iX3M using a PS1 category (EN 62368) (not included)
- Supply voltage: 5V c.c. +/-0.2V 500mAh

Certification

The computer's hardware comply with CE EN13319, ETSI EN 301 489-3, EN 61000-6-1, EN 61000-6-3 requirements.

Software

(see the table)

Summary of Technical Characteristics

(See the table)

RATIO®	iX3M Easy	iX3M Deep	iX3M Tech+	iX3M Reb
Dive Modes	Air / Nitrox Gauge / Freedive	Air / Nitrox / Trimix ^(normoxic) Gauge / Freedive	Air / Nitrox / Trimix / CCR Gauge / Freedive	Air / Nitrox / Trimix / Gauge CCR + Sensor Board / Freedive
Mix	2 Mix (O ₂ : 21% - 99%)	3 Mix (O ₂ : 18% - 99% / He: 0% - 50%)	10 Mix (+ 3 Diluents) (O ₂ : 05% - 99% / He: 0% - 95%)	10 Mix (+ 3 Diluents) (O ₂ : 05% - 99% / He: 0% - 95%)
Deco model (Algorithm)	Buhlmann ZHL-16 B	Buhlmann ZHL-16 B and VPM-B	Buhlmann ZHL-16 B and VPM-B	Buhlmann ZHL-16 B and VPM-B
Algorithm adjustment	6 User Settable protection Levels.	6 User Settable protection Levels.	User settable Gradient Factors User settable Bubble Radius	User settable Gradient Factors User settable Bubble Radius
Sensor Board	No	No	No	Yes (optional)
Repetitive Dives management	Yes	Yes	Yes	Yes
Gas switch and Gas break	Yes	Yes	Yes	Yes
PO2	1.2 - 1.6	1.0 - 1.6	0.4 - 1.6	0.4 - 1.6
CNS Calculation	Yes	Yes	Yes	Yes
Altitude adjustment	Automatic	Automatic	Automatic	Automatic
Water type	Salt / Fresh	Salt / Fresh	Salt / Fresh	Salt / Fresh
Deep Stop	Yes	Yes	Yes (Standard+Pyle)	Yes (Standard+Pyle)
Safety Stop adjustment	Yes, Time and depth			
Last deco stop adjustment	Yes	Yes	Yes	Yes
Deco Steps manual adjustment	No	No	Yes	Yes
Alarms	Vibration + acoustic + visual			
Dive Planner	No Deco Limit + Full Deco Planner	No Deco Limit + Full Deco Planner	No Deco Limit + Full Deco Planner	No Deco Limit + Full Deco Planner
Wireless Air Integration	Yes up to 2 transmitters	Yes up to 3 transmitters	Yes up to 10 transmitters	Yes up to 10 transmitters
Compass	3D Compass, 1° resolution			
Outdoor functions	Altimeter, Barometer, temperature, Weather forecast			
Bluetooth	iX3M [Gps] edition: Yes iX3M [Pro] edition: No	iX3M [Gps] edition: Yes iX3M [Pro] edition: No	iX3M [Gps] edition: Yes iX3M [Pro] edition: No	iX3M [Gps] edition: Yes
Satellite (Global positioning)	iX3M [Gps] edition: Yes iX3M [Pro] edition: No	iX3M [Gps] edition: Yes iX3M [Pro] edition: No	iX3M [Gps] edition: Yes iX3M [Pro] edition: No	iX3M [Gps] edition: Yes
Other Functions	Gas Blender, Luxmeter, Magnetometer, Stopwatch, Pitch&Roll, Moon calendar			
Oxygen Analyser	Yes (optional)	Yes (optional)	Yes (optional)	Yes (optional)
Color Display	IPS, 2.8-Inch, 320x240 pixel, 144 dpi, 100% matrix			
View angle	over 150° (IPS Technology)			
Backlight level	Auto (light sensor) / manual			
Top Glass	Mackrolon	Mackrolon	Mackrolon	Mackrolon
Straps	Redundant Stretch-Belts (Bungees included)	Redundant Stretch-Belts (Bungees included)	Redundant Stretch-Belts (Bungees included)	Redundant Stretch-Belts (Bungees included)
Battery:	USB Rechargeable Li-ion ~ 40 hr of diving			
Logbook	~160 hr scuba (sampling 10 sec)			
Max Depth	300 mt / 984 ft			
PC/Mac Connect.	Yes, USB cable included			
Updates	User updatable	User updatable	User updatable	User updatable

How to recharge the Battery

The RATIO iX3M has a Li-Ion rechargeable battery without memory effect, with an autonomy of 20-40 diving hours. The autonomy data which are shown can change of +/- 15% depending on the environmental temperature, the device settings, the installed applications, the operative system version, the back light setting and the use of its inner (GPS - Bluetooth) or external (Analyser, Transmitter) peripheral devices.

ATTENTION: A complete charge cycle is necessary before the device first use.

The recharge is to be carried out by connecting the device to your PC by its USB cable or connecting it at any USB port



To recharge the RATIO iX3M we recommend to use a wall USB plug (like the one of your mobile/tablet).

If you decide to use a PC USB plug (deprecated), make sure that the PC doesn't interrupt the electricity flow once in stand-by.

Even if the RATIO iX3M has a new generation battery without memory effect, we recommend to recharge the battery completely, anyway.

The average recharge time is 4-5 hours depending on the residual charge level.

Attention: It is suggested to not dive if the computer shows <30% of battery.

Do not dive if the computer shows <20% battery.

When connecting the USB cable to recharge the device, the symbol => will appear in the watch screen within 45 seconds. It means that recharging procedure is in progress. When the recharge is finished the symbol => will disappear.

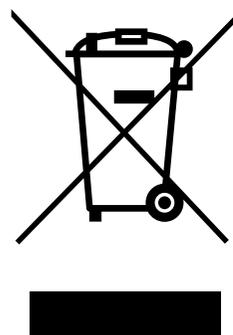
Once the battery charge is finished, even if the device remains connected to the plug, the computer automatically interrupts the electricity flow. In case the device is left in charge more than necessary (e.g. all night long), you could find it switched off. You can check the computer charge level pressing any button; the battery percentage can be visualized on the screen's left upper corner.

If the device is in charge and no button is pressed for more than 10 minutes, the back light is reduced to the minimum, to allow a faster recharge cycle.

If the recharge cycle is not completed, the battery indicator might not be precise until the next complete recharge cycle is carried out.

After having installed one APP or having updated the operative system, we recommend to carry out a complete battery charge cycle. After every update the RATIO iX3M always shows the sentence "battery out of power, recharge".

Attention: Do not leave the iX3M completely without charge for a long period (e.g. 4-5 months). This may damage the battery. The iX3M 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 iX3M can be used even in case of dives in cold or freezing waters ($<3^{\circ}\text{C}$ / $<37^{\circ}\text{F}$); however, the exposure at particularly low temperatures, may negatively affect the residual battery 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 ($<3^{\circ}\text{C}$ / $<37^{\circ}\text{F}$) recharge the device at 100% or make sure that there is at least 50% of battery power.

ATTENTION: Diving in cold or freezing waters ($<3^{\circ}\text{C}$ / $<37^{\circ}\text{F}$) requires a specific training.



DAN DL7

The RATIO iX3M 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 exercises, 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 iX3M nor the Divelogger will send anything automatically.

The RATIO iX3M outside the Water:

The main screen

To switch the RATIO iX3M on, press any button.

The RATIO iX3M switches off automatically after 10 minutes of total inactivity.

After diving the RATIO iX3M activates the Sleep mode modality: after 10 minutes of inactivity it switches the screen off and deactivates all processes which are not useful for the post-diving de-saturation calculation .



First line:

In the first line of the introductory screen the RATIO iX3M shows:

- Battery indicator (on the top left side)

the RATIOiX3M uses a colour code to advise you on its battery status

Green colour (100%->50%): Everything is ok

Yellow colour (50%->20%): Alert (do not make extremely demanding dives or in cold or freezing waters)

Red colour (<20%): Battery almost dead, recharge as soon as possible.



ATTENTION: It is suggested to not dive if the computer shows <30% of battery. Do not dive if the computer shows <20% battery.

- Time (on the top right side)

While diving the RATIO iX3M shows the current time.

Once outside the water the computer shows the second time zone you have set on top right side (if different from the main one)

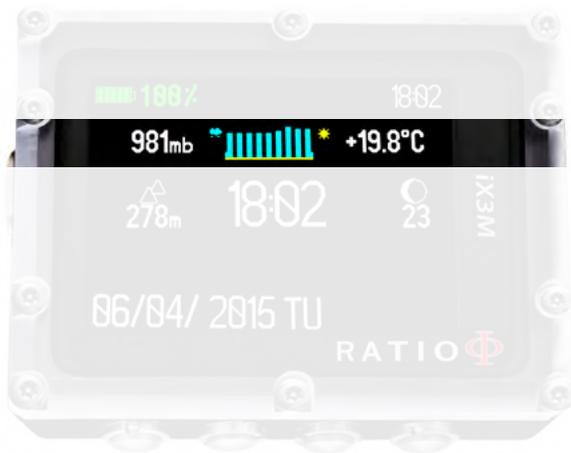
The RATIO iX3M can run up to 2 different time zones..

(eg. if we are in a country with a different time zone of our homeland's, it is possible to set both times on the RATIO iX3M)

Second line:

- Atmospheric Pressure expressed in millibar (on the left)

The Atmospheric pressure is the one present in any point of the terrestrial atmosphere. It is measured in millibar (mbar)
Attention: after diving, owing to the humidity on the sensor's location, the read pressure might be slightly lower than the real one.



- **Weather forecast (in the middle):** the blue lines indicate the atmospheric pressure, the higher they are, the higher is the atmospheric pressure shown, so the best weather is supposed to be. The weather forecast is based on the monitoring of the atmospheric pressure during the previous 18 hours. The altitude changes involve an atmospheric pressure change. An altitude change (+/- 50 mt) may cause inaccuracies in the weather forecast.

After an altitude change of +/- 50 mt, the weather forecast will be reliable again after 3/5 hours at the new altitude.

Attention: after diving, the humidity in the sensor's area may compromise the weather forecast.

Temperature (on the right): the temperature measured by the RATiO iX3M is the device's case temperature itself. For this reason, when wearing it at your wrist, it will measure a higher temperature than the environmental one.

To measure the temperature outside the water, take off the computer and wait at least 20 minutes.
When diving, up to 5 minutes might be necessary to measure the correct temperature.

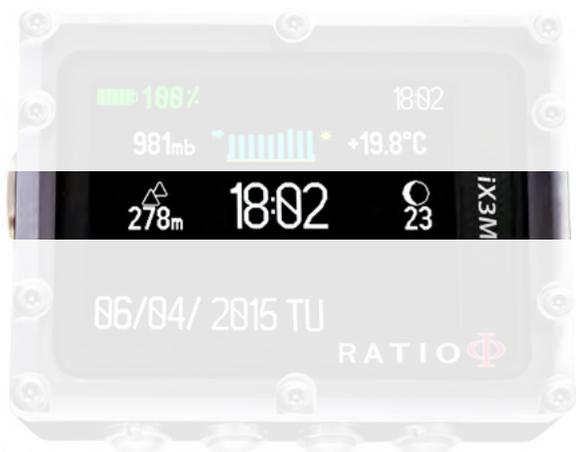
Third line:

- Barometric altimeter (on the left)

The height above the sea level is calculated on the basis of the barometric pressure.

Attention: The altitude detection through the barometer can be affected by the presence of humidity in the sensor area.

In case of case of bad weather or after diving, the error might also be of +/-80m.



For more precise altitude measurements, use the RATIO iX3M's "GPS" application.

- **Main time (in the middle):** Expressed in hh:mm in 24 hrs format

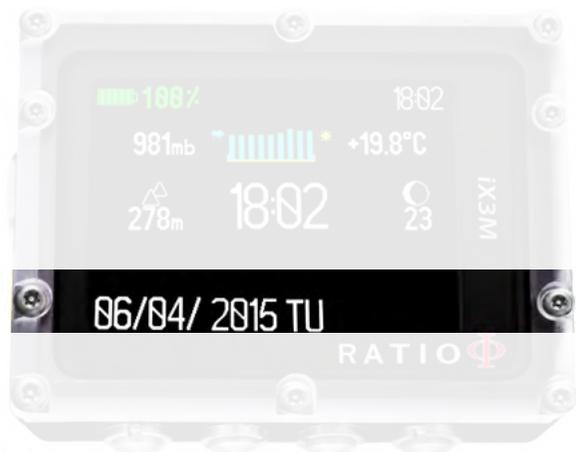
- **Current Lunar phase (on the right):** Expressed in figures, it indicates the days passed from the last new moon. The visible moon is indicated by an icon.

The lunar phases are the same all over the world.

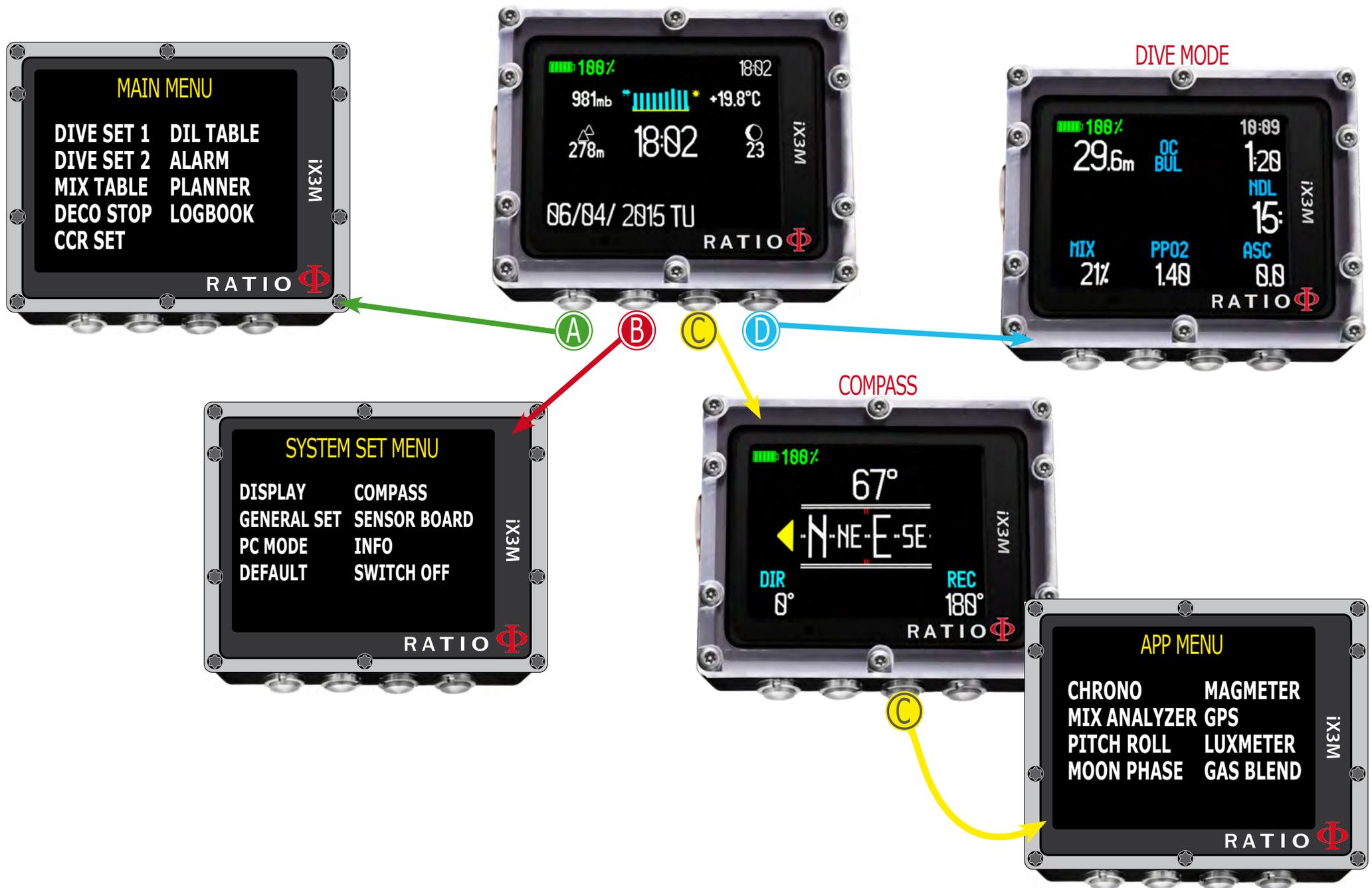
Fourth line:

- **Date (on the left):** expressed in day/month/year

- **No fly, Desat, Surf time (on the right):** These data disappear only when 48 hours have passed after the last dive.



The RATIO iX3M Menu



MAIN MENU



From the main screen, press button A to have access to the menu.

Use buttons A-B-C-D as described in the picture to navigate in the menu.

The selected entry is indicated in red.

(According to your RATIO iX3M model, some entries might not be visualized.)



Do you know what?:

You can change the RATIO iX3M's menu colour, titles and data from the menu DISPLAY.

DIVE SET 1

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 iX3M 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.)

DIVE MODE: It sets your favorite kind of dive which will be activated by the iX3M when entering water. **ATTENTION** always check that the kind of dive matches with the one actually carried out.

SCUBA: the iX3M begins a dive with tanks

GAUGE: the iX3M begins a dive in Gauge mode

FREE: the iX3M begins a free dive (without tanks).

it is **NOT** possible to set the FREE mode as main mode if at least 12 hours have passed from your last SCUBA or GAUGE dive. The RATIO iX3M sets automatically the SCUBA mode if trying to force the dive with the main mode set on FREE.

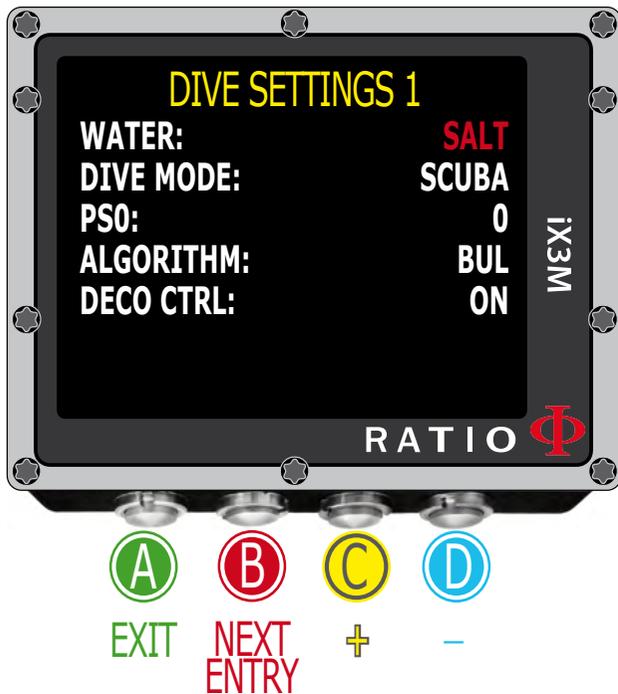
Did you know?

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 iX3M will activate the mode you have selected without changing the MODE value for that dive only.

PS0, GFL/GFH or R0: See following pages

DECO CTRL: (ON/OFF): If activated (ON) the iX3M will not allow you 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 iX3M 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.



DIVE SET 1 for RATIO iX3M Easy and iX3M Deep

To navigate the menu, follow the clues in the picture.

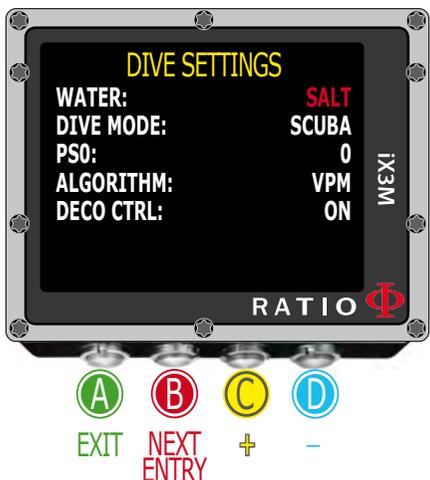
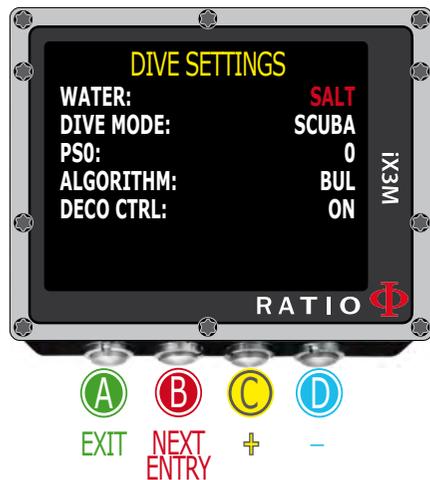
Algorithm: Select the decompressive algorithm you want to use for your dive.

BUL: Bühlmann ZHL-16 B (for iX3M Easy and iX3M Deep)

VPM: VPM-B (not available for iX3M Easy)

Attention: if you have a RATIO iX3M Tech+ or a RATIO iX3M Reb go to the next page.

PS: The RATIO iX3M Easy and iX3M Deep conservatism can be changed on pre-set levels from 0 to 5. The levels matches with the following tables:



Bühlmann ZHL-16 B (gradients)

GFL/GFH

0 = 93/93	minimum conservatism
1 = 90/90	
2 = 80/80	
3 = 75/75	max linear conservatism
4 = 30/90	
5 = 20/89	

VPM -B (Critical bubble radius)

0 = 0.5	minimum conservatism
1 = 0.55	
2 = 0.6	
3 = 0.7	
4 = 0.8	
5 = 0.9	max linear conservatism

Do you know what?:

A higher conservatism will make the device makes its calculation in a more precautionary way . Generally speaking, it is recommended to increase the conservatism if you feel an excessive tiredness after your last dive.

A hyperbaric doctor can advice you on how to set the conservatism according to your clinic status.

Bühlmann Lv4 and Lv5 are usually suggested for tech dives, a proper training is required.

For iX3M Tech+ iX3M Reb

DIVE SET 1 for RATIO iX3M Tech+ & iX3M Reb

To navigate this menu follow the clues in the picture on the left.

Algorithm: Select the decompressive algorithm you want to use for your dive.

BUL: Bühlmann ZHL-16 B

VPM: VPM-B (next page of this manual)

If the chosen Algorithm is BUL:

GFL/GFH: set the Gradient Factor Low (GFL) e Gradient Factor High (GFH).

Attention: The GFL can NEVER be higher than the GFH.

It is possible to set the GFH from 20% to 100% (20% < GFH < 100%)

It is possible to set the GFL from 20% to GFH (20% < GFL < GFH)

Do you know what?: You can keep pressed the buttons C or D to change the iX3M data more rapidly.

ATTENTION: To change the Gradient Factor's value a suitable theoretical knowledge is needed.

DO NOT CHANGE THE GRADIENT FACTOR WITHOUT HAVING RECEIVED A SUITABLE TRAINING.

The RATIO iX3M is not responsible for damages to people or objects due to a wrong setting of such parameters.

For suggested protection levels refer to the previous page of this manual.

Do you know what?:

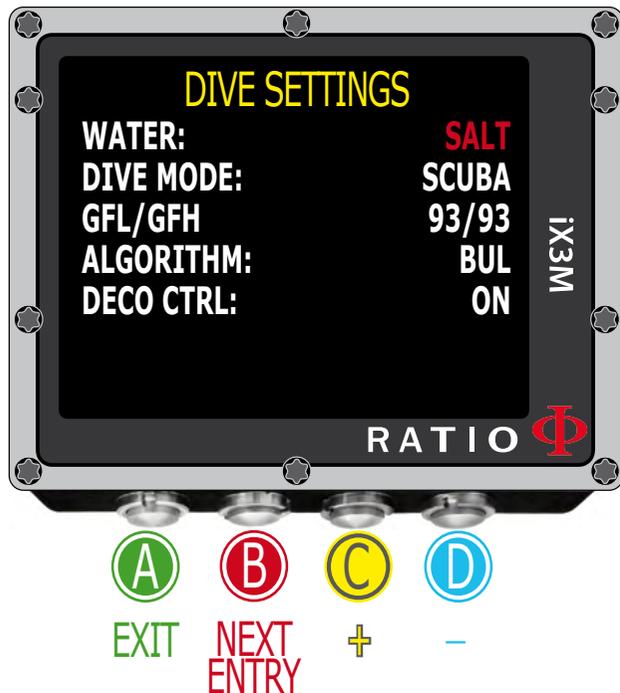
If you have any doubts on your device's setting, you can set the company's parameters from the menu DEFAULT

Do you know what?:

Generally speaking, reducing the GFH involves a computer increasing conservatism. The GFL's reduction involves a shift towards a major depth of the first compulsory decompressive stop.

Do you know what?:

With the RATIO iX3M it is possible to change the value GFL/GFH while diving, to manage possible emergencies.



If the chosen Algorithm is VPM:

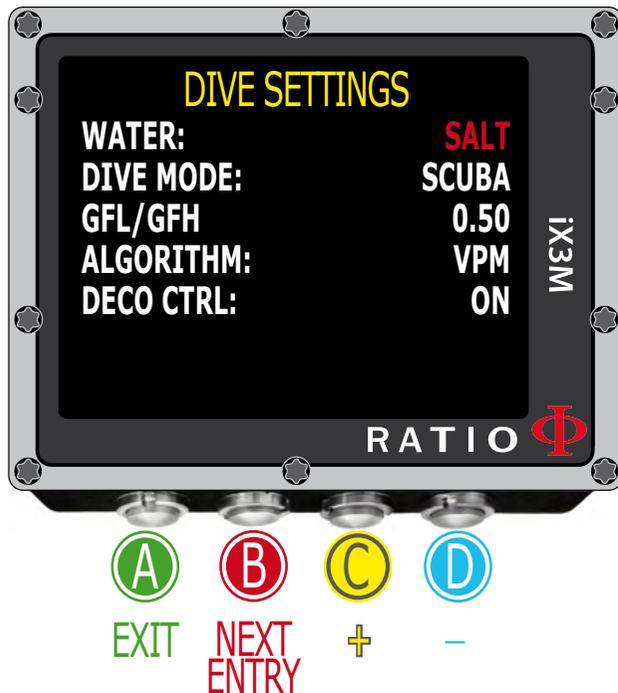
R0: sets the Critical Bubble Radius' value.

It is possible to set R0 from 0.4 to 1.0

Do you know what?: You can keep pressed the buttons C or D to change the iX3M data more rapidly.

ATTENTION: To change the Critical Bubble Radius' value a suitable theoretical knowledge is needed.

DO NOT CHANGE THE CRITICAL BUBBLE RADIUS WITHOUT HAVING RECEIVED A SUITABLE TRAINING.



The RATiO iX3M is not responsible for damages to people or objects due to a wrong setting of such parameters.

For suggested protection levels refer to the previous pages of this manual.

Do you know what?:

If you have any doubts on your device's setting, you can set the company's parameters from the menu DEFAULT

Do you know what?:

Generally speaking, the increasing of the R0 involves your computer's conservatism increase.

Do you know what?:

With the RATiO iX3M it is possible to change the value R0 while diving, to manage possible emergencies.

DIVE SET 2

S. STOP TIME: It sets the Safety Stop's time in minutes.

You can set the time from 0 to 9 minutes (if 0 the Safety Stop is omitted)

Do you know what?:

The different diving agencies can recommend different times for the Safety Stop.

Ask your Instructor or your diving certification agency for the value they suggest.

S. STOP DEPTH: It sets the Safety Stop's depth.

You can set the Safety Stop's depth between 3mt (10ft) and 9mt (30ft).

The Safety Stop is carried out 1 mt (3ft) deeper, than the depth you have set .
(eg. if S.STOP DEPTH= 5 the stop is carried out from 5.9 metres)

The Safety Stop is recommended only for dives deeper than 9mt (60ft).

The timer is re-set if the depth of 9mt (60ft).is passed again.

Do you know what?:

If in the dives with deco, a deco stop is set between 10mt (33ft) and 1 mt (3ft), the Safety Stop is automatically omitted.

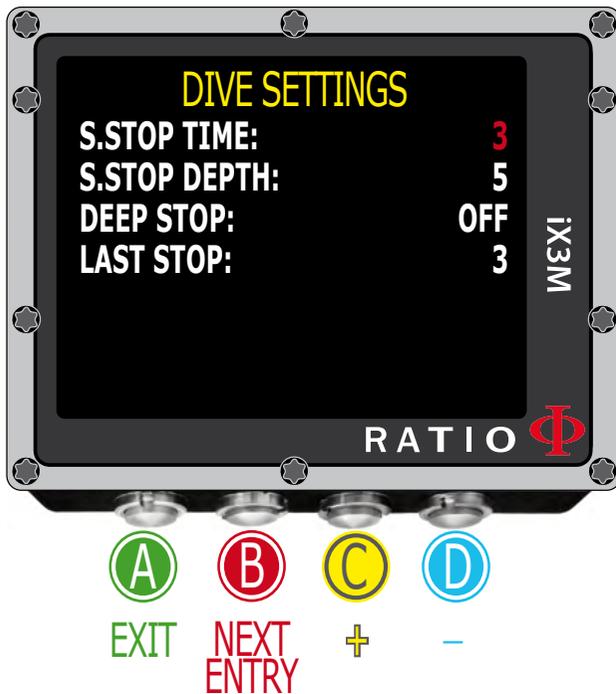
DEEP STOP: It selects if use the Deep Stops and which algorithm is to be used to calculate the DEEP STOPS:

OFF: No Deep Stop

STD: Standard Method (half of the max. depth for 2,5 minutes)

PYLE: Pyle Method (ask your instructor for the Pyle Method)

LAST STOP: (1-10): The depth at which you want to carry out the last decompression stop (if the dive is outside NDLS and requires decompression stops)



For iX3M Tech+ iX3M Reb

Deco Stop for RATIO iX3M Tech+ & iX3M Reb

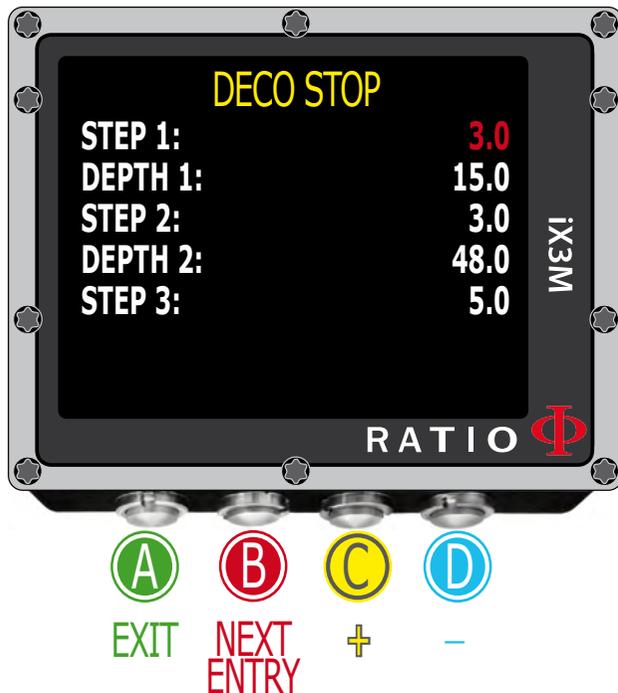
To navigate the menu follow the instructions in the picture on the left.

The whole dive profile is divided in 3 depth zones.

First Zone: from the surface to depth DEPTH1.

Second Zone: from DEPTH1 to DEPTH 2.

Third Zone: from DEPTH2 to the maximum depth reached during the dive



For every depth zone it is possible to specify which decompression step to use to calculate the different stops in that zone by the parameters STEP1, STEP2, STEP3.

example:

<-- see the settings in this picture

With this settings, for depths below 48mt the stops will be spaced out of 5 mt between them; the stops included between 48 mt and 15 mt will be spaced out of 3 mt while the stops between 15 mt and the surface will be spaced out of 3 mt.

Do you know what?: To force the last stop to a preset depth (eg. 6mt) you can set STEP1=6mt and DEPTH1=6mt

Do you know what?: You can keep pressed the buttons C or D to change the iX3M data more rapidly.

STEP parameters can be modified with step of 1.0mt.

DEPTH parameters can be modified with step of 1.0mt.

Do you know what?:

If you have any doubts on your device's setting, you can set the company's parameters from the menu DEFAULT

For iX3M Tech+ iX3M Reb

CCR Settings for RATIO iX3M Tech+ & iX3M Reb

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

CCR MODE: ON= CCR enabled in scuba mode. /// OFF= Deactivated.

SETPOINT LOW: Range 0.40 a 1.60. It is the starting setpoint.

DEPTH 1: Automatic switch from SETPOINT LOW to SETPOINT MID and vice versa.

SETPOINT MED: Range 0.40 a 1.60 (Step 0.05)

DEPTH 2: Automatic switch from SETPOINT MID to SETPOINT HIGH and vice versa.

SETPOINT HIGH: Range 0.40 a 1.60 (Step 0.05)

SETPOINT MODE:

AUTO = During the dive the iX3M will automatically switch from SETPOINT **LOW** to SETPOINT **MID** at **DEPTH 1**, from SETPOINT **MID** to SETPOINT **HIGH** at **DEPTH 2** and (during the ascending) from SETPOINT **HIGH** to SETPOINT **MID** at **DEPTH 2** and from SETPOINT **MID** to SETPOINT **LOW** at **DEPTH 1**.

MAN= The Set Point have to be managed manually during the dive.
(See "Change the set point during a dive" on this manual)

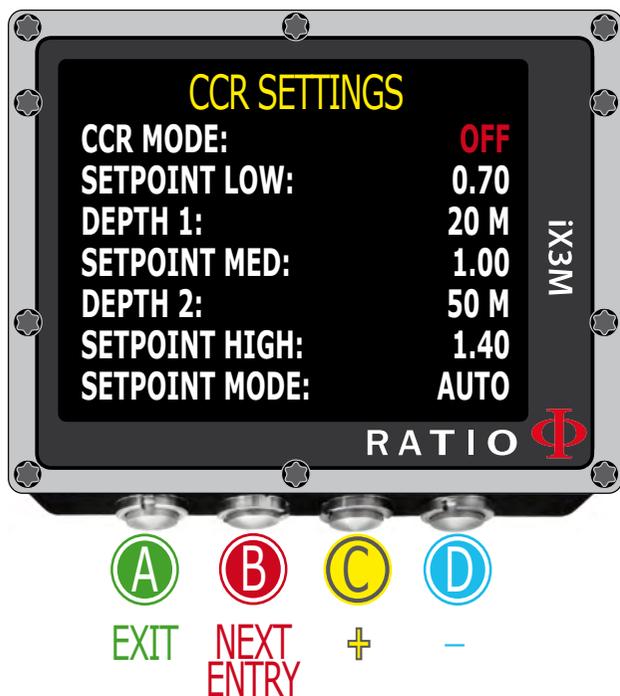
During the dive you can switch from AUTO to MAN,
During the dive you can NOT switch from MAN to AUTO.
(See "Change the set point during a dive" on this manual)

Attention: Enable the Rebreather mode (CCR) only for dives with rebreather. **The CCR mode is not suitable for dives in open circuit!**

Attention: Diving with Rebreather requires a specific training !!!

Diving with Rebreather without a suitable training or without the due caution can cause injuries or death.

Refer to your Rebreather instructor to get instructions on how to set the SET POINT.



MIX Table

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

According to your iX3M model you can set:

iX3M Easy: up to 2 mixes Oxygen % from 21% to 99%

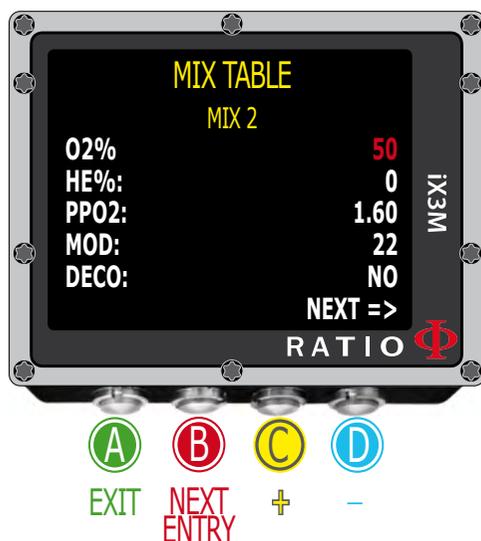
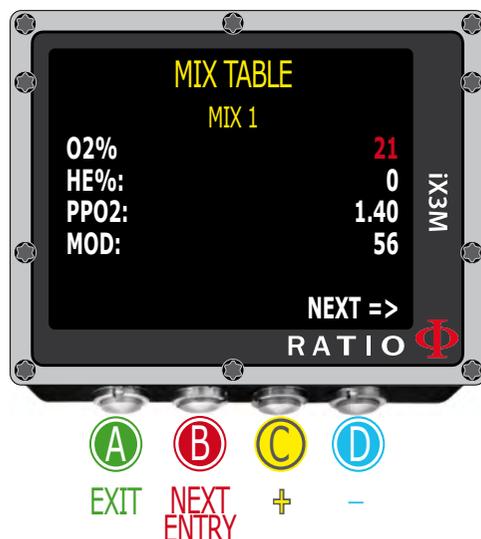
iX3M Deep: up to 3 mixes

Mix 1: %O₂ from 18% to 99% %He from 0% to 50%

Mix 2-3: %O₂ from 18% to 99%

iX3M Tech+: up to 10 mixes (%O₂ from 05% to 99%; %He from 0% to 95%)

iX3M Reb: up to 10 mixes (%O₂ from 05% to 99%; %He from 0% to 95%)



WARNING: Diving with Enriched air mixes or with Trimix requires a specific training. Diving with EAN or Trimix without a suitable training or without the due cautions is dangerous! If you have not received the specific training do not change the MIX settings and do not dive with EAN or Trimix!

Set mixes are considered in the decompression calculations. Do not set mixes that are different from the mixes that you will use in your dive!

O2%: It Indicates the Oxygen % contained inside the mix.

HE%: It Indicates the Helium % contained inside the mix.

ATTENTION: The mix cannot be higher than 100%

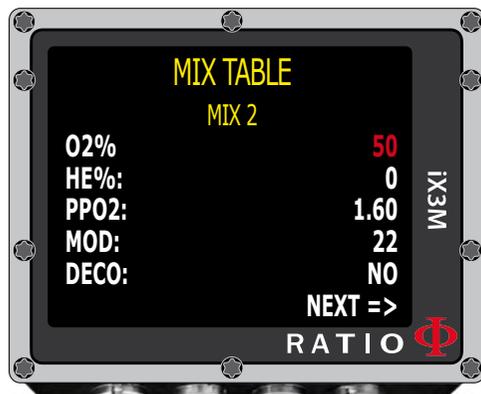
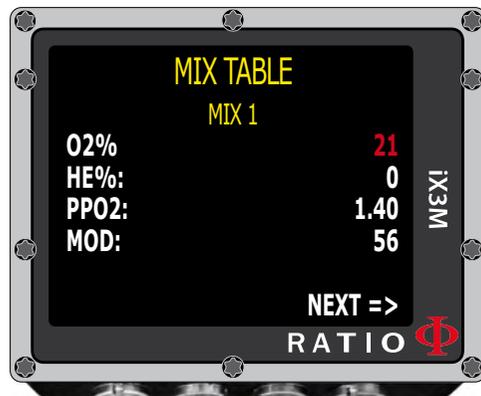
(e.g. if He% is 0 press **D** if you set He% at 95% the O2% will be automatically set at 5%)

PpO2: (Partial O₂ pressure): It indicates the maximum PPO₂ with which you intend to use the mix.

Select the command NEXT => and press **D** to go to the next MIX

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

During the dive an acoustic alarm will be activated if MOD value is passed (see "ALARM" on this manual)



DECO: It indicates if the mix has to be used as decompressive or not. If set on YES the device considers the mix change in the calculation of decompression at the depth indicated by the MOD. If set on NO the Mix table is deactivated.

Do you know what?: With the iX3M you can enable/deactivate the MIX while diving. This is particularly useful in case of loss of one decompressive gas or if you forgot to set the device correctly before diving!

Do you know what?: You can keep pressed the buttons C or D to change the iX3M data more rapidly.

Diving with more than 1 mix

ATTENTION: Mix 1 is always the starting one.

The iX3M will automatically suggest a mix as soon as a best deco mix is available considering the MOD of the set mixes regardless the label of the mix (Mix 2, Mix 3 etc.)

The iX3M suggest the "best mix" during the ascent and during the descent. If you don't want to use the best mix during the descent phase ignore the suggestion. The iX3M will adjust the deco calculations automatically.

WARNING: The iX3M will calculate the TTS considering all the active mixes (DECO=YES), double check the MIX TABLE before each dive!

Select the command NEXT => and press D to go to the next MIX

For iX3M Tech+ iX3M Reb

Diluent Table for RATIO iX3M Tech+ & iX3M Reb

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

ATTENTION: The diluents are active ONLY if the CCR mode is ON

ATTENTION: The diluent 1 is always the starting one.

It is possible.

Use the command NEXT => to pass to the next diluent

O2%: It Indicates the Oxygen % contained inside the mix.

Min. 7% Max. 100%

HE%: It Indicates the Helium % contained inside the mix.

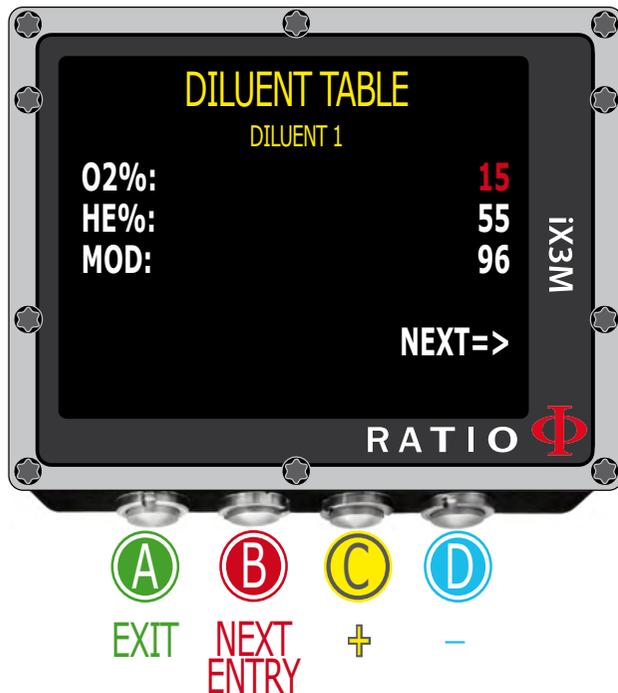
Min. 0% Max. 95%

MOD: It indicates maximum depth for the mix you have created.

The MOD is automatically calculated anytime that the O2% or HE% are modified

Attention: Enable the Rebreather mode (CCR) only for dives with rebreather. The CCR mode is not suitable for dives in open circuit!

Attention: Diving with Rebreather requires a specific training. Diving with Rebreather without a suitable training or without the due caution can cause injuries or death.



Select the command NEXT =>
and press **D** to go to the next MIX

Refer to your Rebreather instructor to get instructions on how to set the correct diluents.

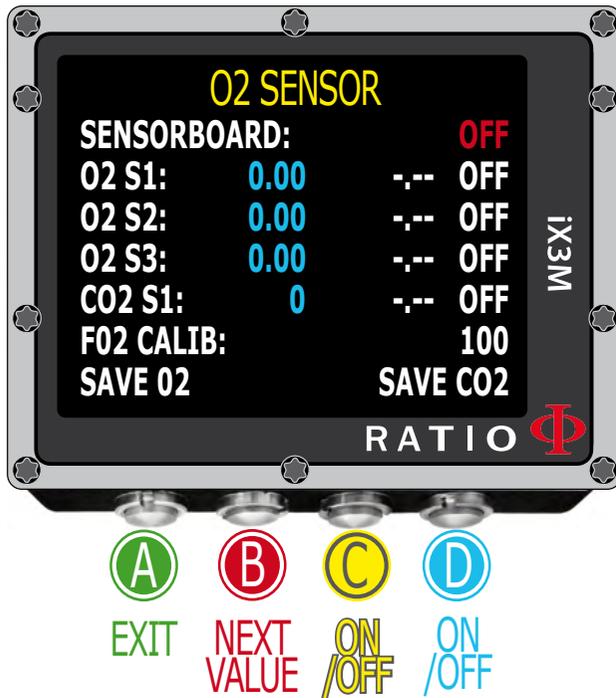
For iX3M Reb only

SENSE BOARD (Sensor Board)

The iX3M Reb can use the Sensor Board (sold separately) to monitor up to 3 oxygen sensors.

The RATIO® Sensor Board dedicated manual (how to plug, how to calibrate, how to use, etc.) is available on:

<http://www.ratio-computers.com/support/>
(manuals section)



ALARM (Dive Alarms)

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

The RATIO iX3M is equipped with colour visual, acoustic and vibrating alarms

Do you know what?: The RATIO iX3M is the first dive computer in the world with a vibrating alarm

Do you know what?: You can change the visual alarm colour from the menu DISPLAY

Acoustic: It activates/deactivates the acoustic alarm. ("beep")

Vibe: It activates/deactivates the vibrating alarm. ("buzz")

Do you know what?: The hearing of some people is more sensitive to high frequencies (beep), while the hearing of some other is more sensitive to low frequencies (buzz); the vibration, apart from the "physical vibration" itself, has also the aim of creating a low-frequency sound. It is then common that some people are more sensitive to piercing sounds produced by the beeper and some others to the one produced by the vibration.

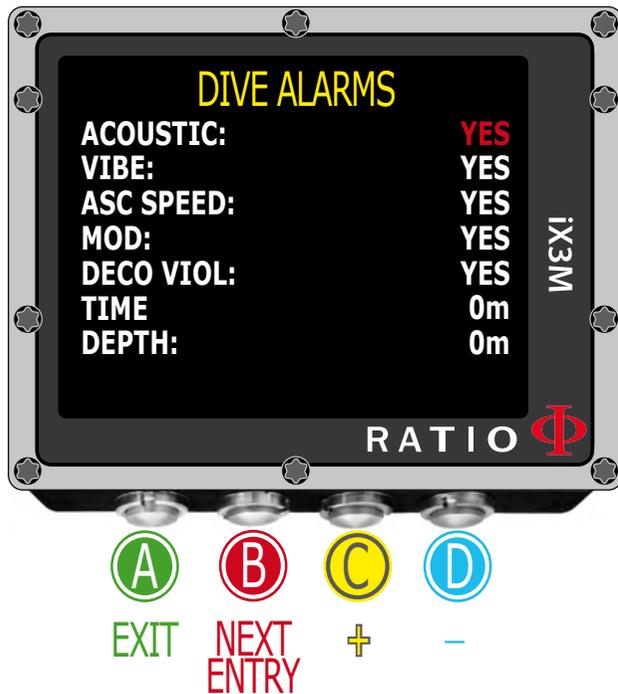
ASC Speed: It activates/deactivates the alarm in case of too fast ascent.

MOD: It activates/deactivates the alarm in case of passing the MOD of the mix you are currently breathing

Deco Viol: It activates/deactivates the alarm of violation of a compulsory decompression stop. if a DEEP STOP or a SAFETY stop is violated the alarm is not activated since they are not compulsory.

Time: It indicates the time in minutes (max. 360 minutes) that once it is passed either the acoustic or vibrating alarm is activated. (Attention: for this kind of alarm it is not possible to activate the visual one). If it is set at 0 the alarm is deactivated.

Depth: It indicates the depth in meters (max. 300 mt) that once it is passed either the acoustic or vibrating alarm is activated. (Attention: for this kind of alarm it is not possible to activate the visual one). If it is set at 0 the alarm is deactivated.

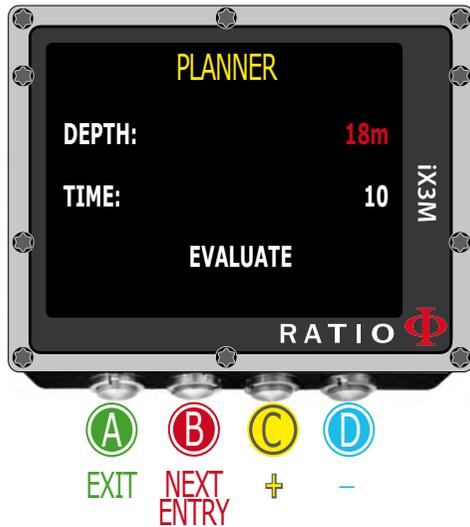


NDL (Non Decompression Limit) Planner

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

The RATIO iX3M integrates a complete planner for square dives for both BUL & VPM

Attention: To modify the dive parameters set the device as desired entering the menu DIVE SET and the menu MIX



DEPTH: Set the dive's maximum depth.

TIME: Set the desired bottom time.

EVALUATE: Select Evaluate and press **D** to process

Do you know what?: You can keep pressed the buttons C or D to change the iX3M data more rapidly.

Evaluate: it starts the simulation (wait until the word "processing" disappears)

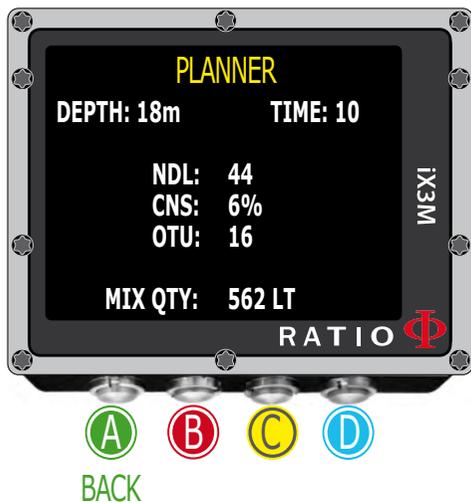
If the dive is within the safety parameters:

NDL: Remaining non decompression time (after the time you have set).

CNS: % of accumulated CNS.

OTU: % of accumulated OTU.

MIX QTY: Mix value expressed in litres which is presumably needed for the dive.



ATTENTION: The gas used quantity is purely approximate and referred to a standard use. Take into consideration the information given by your diver certification agency to about the quantity of gas to be used.

Decompression Planner

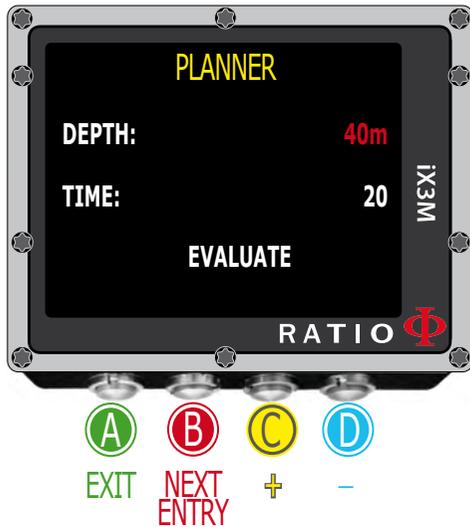
To navigate the menu follow the instructions in the picture on the left.

The RATIO iX3M integrates a complete planner for square dives for both BUL & VPM

Attention: To modify the dive parameters set the device as desired entering the menu DIVE SET and the menu MIX

For DEPTH, TIME and EVALUATE make reference to “NDL Planner” (previous page)

Do you know what?: You can keep pressed the buttons C or D to change the iX3M data more rapidly.



If the dive is outside safety parameters:

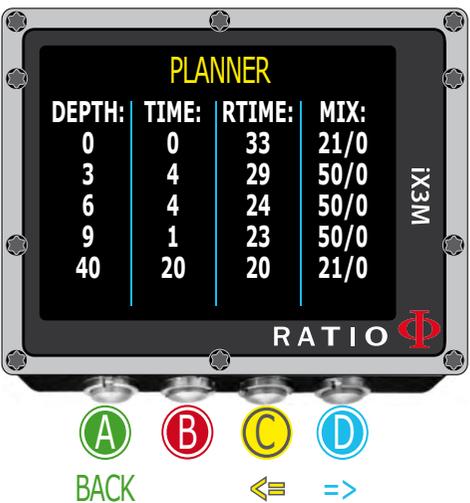
DEPTH: It indicates the decompression stop depth (in meters if not modified)

TIME: It indicates the decompression stop duration (in minutes)

RTIME: It indicates the run time (time from the dive’s beginning) to the decompression stop

MIX: It indicates the mix used to calculate the decompression (to be set in menu MIX)

Press **D** to pass to the next screen to visualize CNS e OTU.



ATTENTION: the planner uses 18 mt/min as descent speed and 9 mt/min as ascent speed for the decompression calculations .

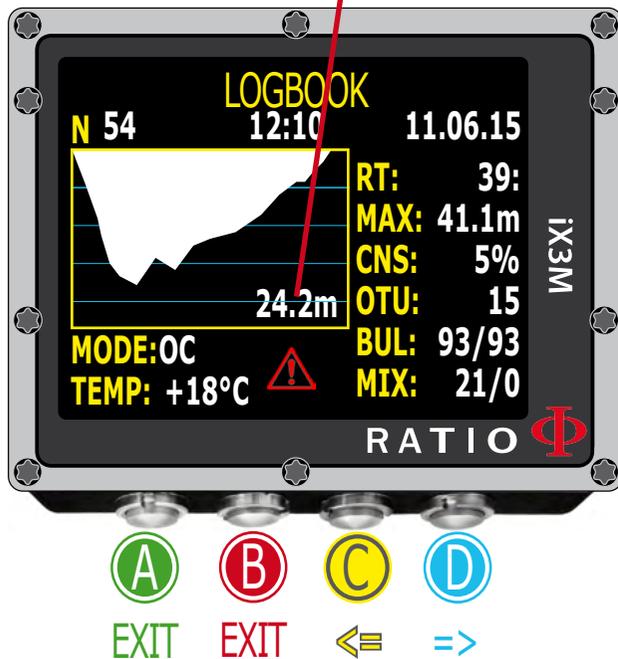
The iX3M will highlight in red a deco stop if the planned PpO2 is above maximum threshold.

ATTENTION: The function Planner doesn’t carry out the profile “validation”, i.e. it doesn’t consider a possible excess of CNS, limits on mixes’ volumetric availability, a possible isobaric counter diffusion due to a mix change.

To plan a technical dive properly, a suitable training is necessary.

Make reference to your instructor or to your diving certification agency you belong to in case of doubts about planning a dive.

Average depth of the current dive.
(only for dives performed with OS
4.0.38 or higher installed)



Logbook

To navigate the menu follow the instructions in the picture on the left.
The first visualized dive is the most recent one.

Do you know what?: The dive diagram shown in the RATIO iX3M's Logbook is in HD and exploits at maximum the device screen's definition.

N: Dive's number, start time and date.

RT: RunTime (dive's duration)

MAX: Maximum reached depth

CNS: Accumulated CNS %

OTU: Accumulated OTU

BUL(/VPM): Selected algorithm and Conservatism factor

MIX: Main used mix (bottom mix)

MODE: Dive mode (OC= Open Circuit, CC=Rebreather)

TEMP: Minimum recorded temperature



Special Records: In some cases the iX3M will record special events happened before the dive in the logbook.

The special records are identified by a number following this legenda:

! 1 = A tissue reset has been performed before the dive

! 2 = An user settings reset has been performed before the dive

! 3 = A tissue reset and a user setting reset has been performed before the dive

! 128 = The deco violation control has been disabled

! 129 = The deco violation control is disabled & a tissue reset has been performed before the dive

! 130 = The deco violation control is disabled & an user setting reset has been performed before the dive

! 131 = The deco violation control is disabled & a tissue reset and user settings reset have been performed before the dive.

SYSTEM SETTINGS



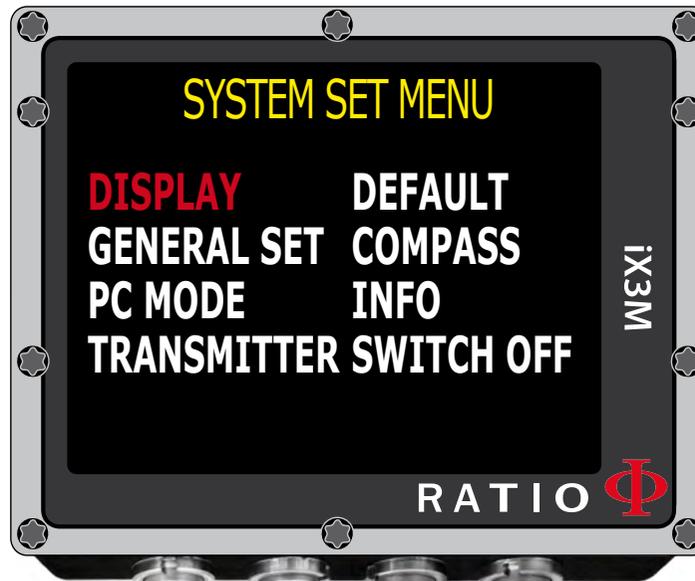
From the main screen press **B** buttons to have access to the menu.

Use buttons **A-B-C-D** as described in the picture to navigate the menu.

The selected entry is indicated in red colour.

(According to your RATiO iX3M model some entries might not be visualized)

B



A

B

C

D

EXIT

ENTER

UP

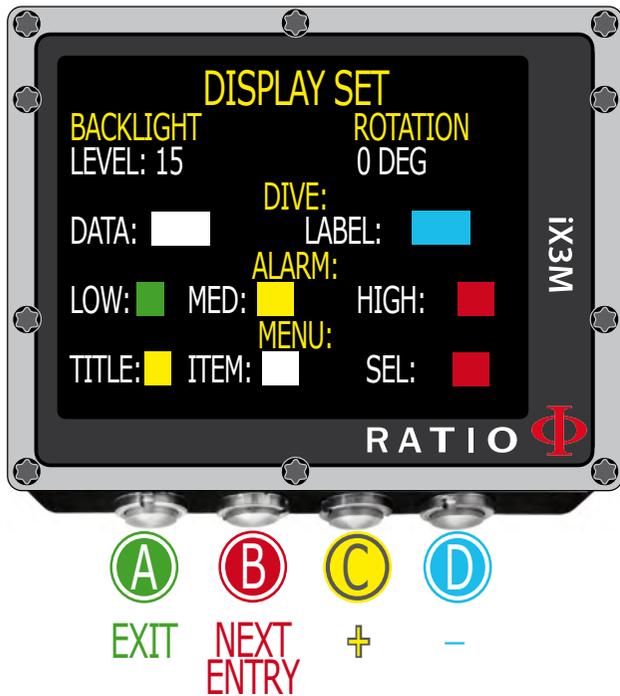
DOWN

Do you know what?:

You can change the RATiO iX3M menu, headlines and data colours from the menu DISPLAY.

Display Set

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



BACKLIGHT: Display luminous intensity. From 1 to 15 (manual set) or AUTO (set to AUTO to let the iX3M automatically change the backlight level according to the ambient light.)

ROTATION: (0 or 180 degrees) activates/deactivates the the flip screen. (the flip screen does not change the functions of the buttons, see picture)

ATTENTION: the light sensor is located in the screen's left lower corner. Do not cover it.

ATTENTION: the screen's brightness affects considerably the device's battery run time. We recommend to set AUTO.

COLOR CODE: The RATIO iX3M allows you to change the colour of the screen data .

DATA: Dive data colour.

LABEL: Dive parameters labels' colour.

LOW: the colour for the low priority or low risk warnings.

MED: the colour for the medium priority or medium risk warnings.

HIGH: the colour for the high priority or high risk warnings..

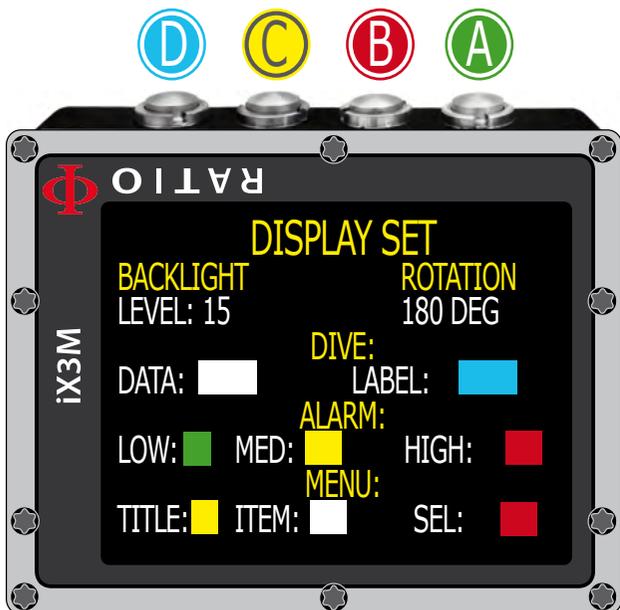
TITLE: the Menu headlines colour.

ITEM: the different menu's parameters colour.

SEL: the colour of the selected parametre inside a menu.

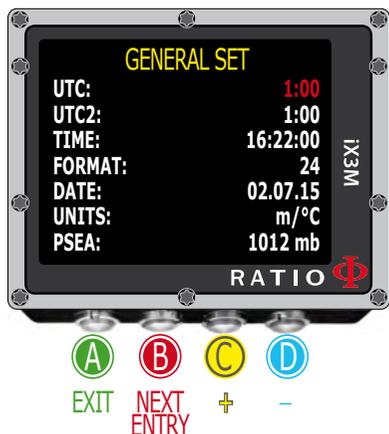
Do you know what?:

If you have any doubts on your device's setting, you can set the company's parameters from the menu DEFAULT



General Set (time, date, sea pressure)

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



UTC: Main time zone (0:00 Greenwich)

UTC2: Secondary time zone

Attention: in the Logbook only the UTC is registered, not the UTC2

TIME: It changes the time hh:mm:ss (seconds can be only reset)

FORMAT: It sets the time format (24hr o 12hr)

DATE: It sets the date

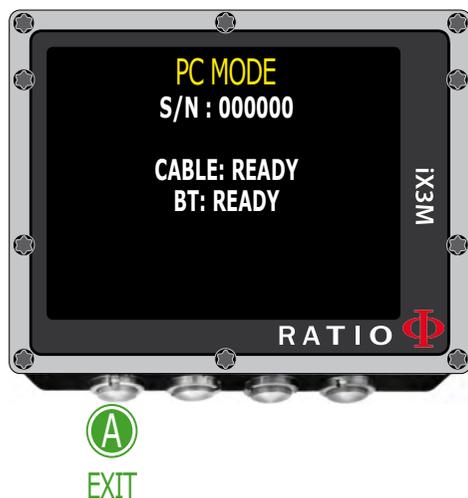
UNITS: it sets the metric or imperial unit of measure .

PSEA: Set the reference mbar value above the sea level according to the current position. The best way to get the reference mbar is to browse:

<https://www.sailwx.info/wxobs/pressure.phtml> (or to refer to the national air force) and set the measured value of the weather station closest to your location

PC Mode (connect the iX3M to a PC/Mac)

To connect the iX3M to the PC install the DiveLogger (available free of charge in the web site www.ratio-computers.com/support)



1. Open the DiveLogger on a PC or MAC and select the iX3M model

2. Activate the PC mode on the iX3M

3. Connect the USB cable to the iX3M and to the PC or Mac

4. Press "Settings" in the DiveLogger and select the COM port
(usually the PC gives COM the higher value)

5. Press "Connect"

In case of connectivity problems, see the video tutorial available in the "Support" section of the web site www.ratio-computers.com

Reset to Default (reset the factory data)

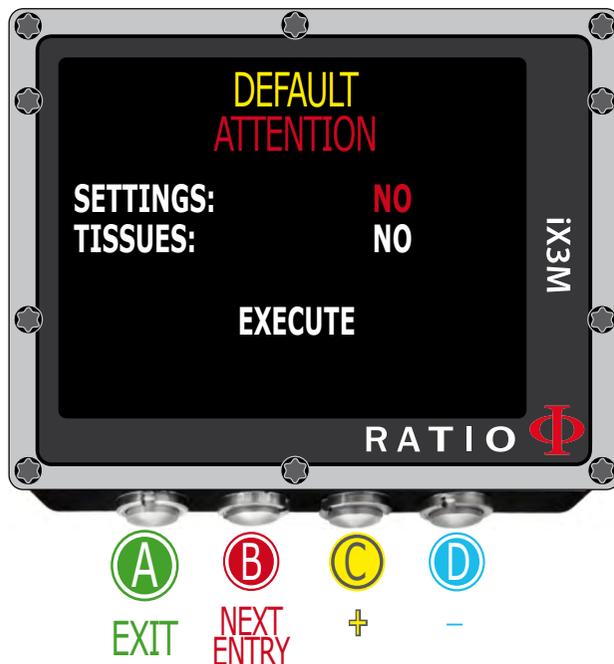
To navigate the menu follow the instructions in the picture on the left.

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

TISSUES: Yes/No. It resets the diver's tissues saturation. .

Attention: NEVER EVER reset the tissue saturation if the device is always used by the same person! This doesn't allow the computer to carry out a correct decompressive calculation. !

EXECUTE: It carries out the reset of the entries set as YES.
(Select the command EXECUTE and press **D** to process)



WARNING - DANGER



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

It is possible to reset the tissue saturation only if the iX3M device will be used by a person who does not have carried out dives during the previous 48 hours .

ATTENTION!

A possible tissue saturation reset is recorded permanently in the RATiO iX3M Logbook (see "Logbook" on this manual). The user will be fully responsible of the tissue saturation reset.

iX3M after a Tissue Reset

After performing a tissue saturation reset the alarm "TISSUE RESET" is shown on the iX3M's main screen.

It warns the user that a Tissue Reset has been performed on the device.
The device have to be used only by a person who does not have carried out dives during the previous 48 hours.

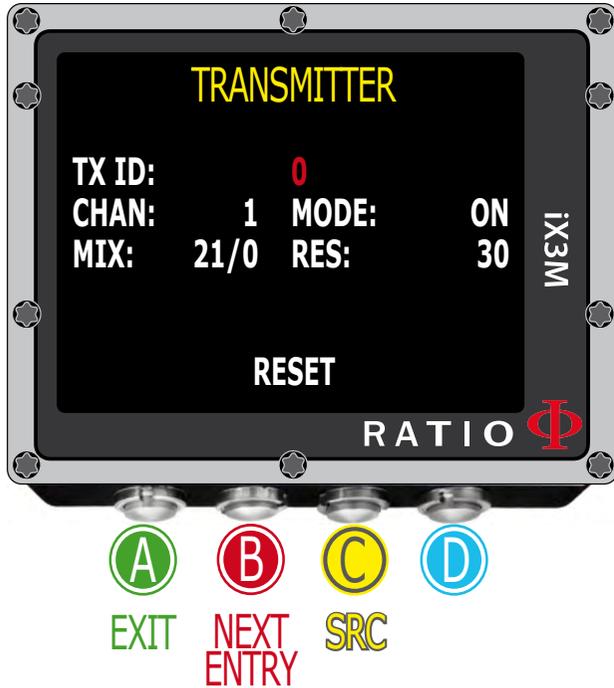
You can ignore the message if you have NOT carried out any dive during the previous 48 hours.

The alarm will be displayed until the next dive.



TRANSMITTERS

If your iX3M is compatible with the RATIO® CC Wireless Transmitter (CC Wireless Transmitter sold separately) the TRANSMITTER menu will show up.



If the iX3M is updated to OS 4.0.44 or above the iDive is able to handle more than one transmitter at the time (multi transmitter).

The iX3M Tech+ and the iX3M Reb can handle up to 10 transmitters,
The iX3M Deep can handle up to 3 transmitters,
The iX3M Easy can handle up to 2 transmitters,

The RATIO® CC Transmitter dedicated manual (how to pair, how to use, etc.) is available on:

<http://www.ratio-computers.com/support/>
(manuals section)

Compass settings (Compass)

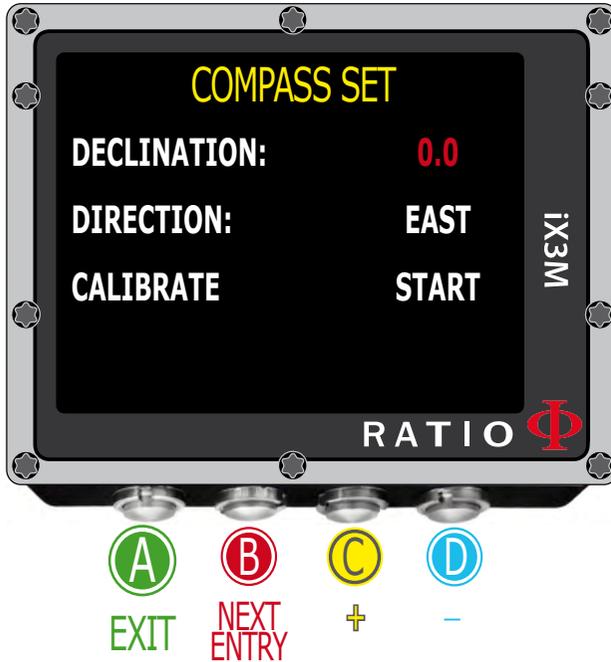
To navigate the menu follow the instructions in the picture on the left

DECLINATION: The declination is meant to compensate the difference between the geographic and the magnetic north; this factor can be found visiting dedicated web sites.

DIRECTION: EAST/WEST. The direction is meant to indicate the direction of the magnetic field's declination.

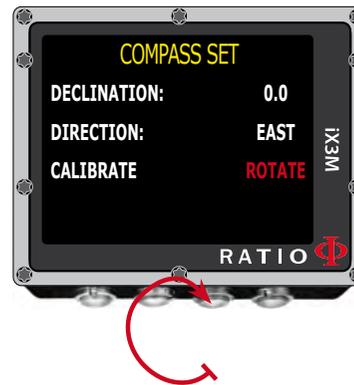
Do you know what?:

You can deepen your knowledge about the compass' Direction and Declination on: https://en.wikipedia.org/wiki/Magnetic_declination



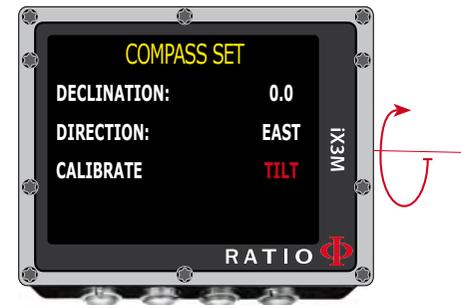
CALIBRATE: Calibrate the compass. (see pictures below)

ROTATE



Turn slowly and constantly on a flat surface .

TILT



Turn the iX3M slowly and constantly on its vertical axis.

For a correct survey, carry out the calibration far from magnetic field sources i (PC, TV, light poles etc.)

Model, serial number and operative system

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

In this page you can visualize: Model name, serial number (S/N) and the installed operative system version (OS).

In case you need assistance for your RATIO iX3M these data are important.



SWITCH OFF (Manual switching off)

The RATIO iX3M switches off automatically after a certain inactivity period.. However, you can also switch the device off manually.

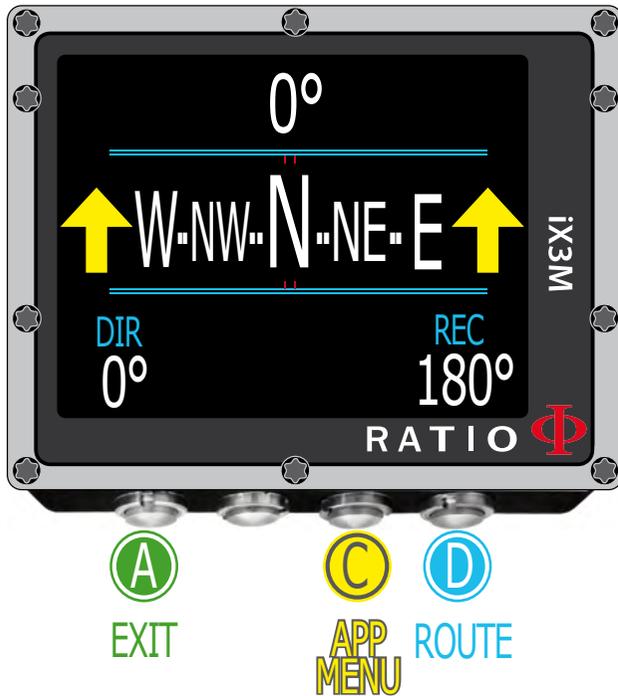
If the device is in charge, the command will be executed only once the charge is finished.

If the device is still carrying out the tissue desaturation after a dive, the command "switch off" deactivates all systems which are not essential.

Nevertheless, the device goes on to carry out the desaturation calculation.



To reach this menu from the main screen press in sequence:



ATTENTION:

The Compass works correctly only if its calibration has been done correctly.

See paragraph: COMPASS

Compass

To navigate the menu follow the instructions in the picture on the left

Compass resolution: 1°

Compass accuracy: +/-1°

Do you know what?:

The RATIO iX3M is provided with the most innovative compass. Check always a compass' resolution and accuracy before entrusting it your route .

Press **D** Button to set the current Route

When in "Compass" mode the iX3M shows:

DIRECTION (on the top centre): the current direction expressed in degrees (°)

GRAPHIC COMPASS (on the centre): graphic compass with route indications.

 Direction in route (+/- 5° in comparison with the one set with **D**)

 It indicates the direction to follow to find the route you have set

 Reciprocal direction (+/- 5° in comparison with the set reciprocal route)

DIR: Current set route

REC: Reciprocal of the set route

Do you know what?:

The RATIO iX3M's 3D compass is compensated by 2 accelerometers. The iX3M can compensate your arm's grade automatically up to an angle of 85° from the horizontal position.

The RATIO iX3M during the dive

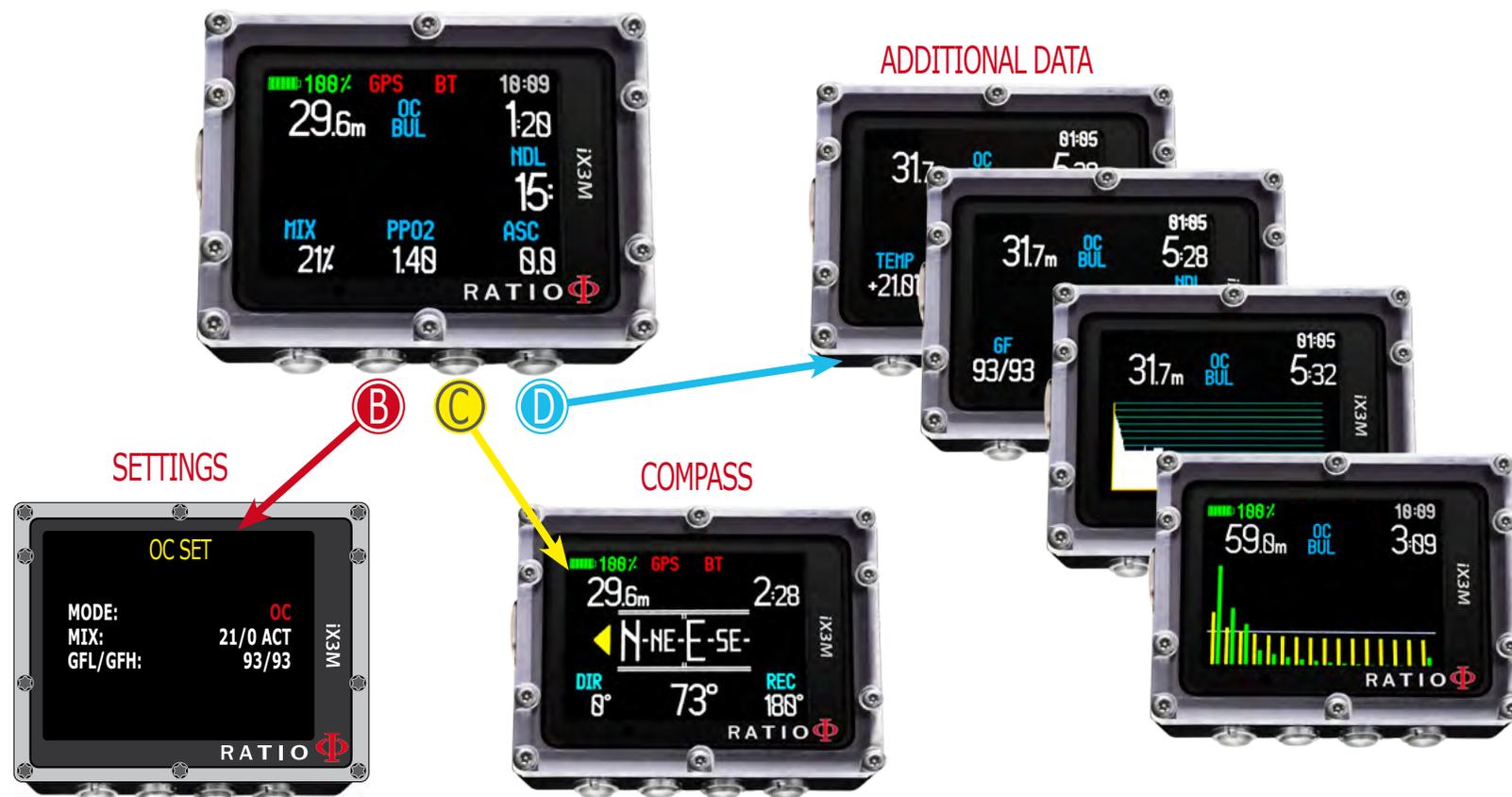
To navigate the menu follow the instructions in the picture on the left.

When the iX3M is in the main screen or if it is switched off, it activates the dive mode automatically, once a certain depth is passed.

To dive in GAUGE or FREE mode, select the desired mode with button D before starting your dive.

Do you know what?:

With the iX3M you can set the default mode that the device must activate automatically before starting to dive, by selecting either Dive with tank (default), or Diving with Rebreather (for iX3M TECH+ and iX3M REB only), or GAUGE or FREE from the menu DIVE SET.



Dive Screen

Main Data

TRANSMITTER: If you are using the wireless transmitter the values RBT and BAR are shown. In this case refer to the transmitter dedicated manual available at www.ratio-computers.com/support



BATTERY: (on left top) residual battery % .
TIME: (on right top) main time zone time.

Current depth: (left) With colour alarm code when passing the gas MOD, mandatory stop and depth alarm.

Dive Mode: (centre) Type of dive and used algorithm:
 OC= Open Circuit, CCR=Rebreather
 BUL= Bühlmann ZHL-16 B, VPM= VPM-B

Dive Time: (right) Runtime in minutes:seconds



If in Non Decompression Limit

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

If in Decompression:

TTS: (Left) Time-to-surface. Total ascent time.

STOP: (Centre) Next mandatory stop depth.

TIME: (Right) Minutes relating to the next safety stop.

If Safety Stop is activated:

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 m.

Do you know what?:

You can customize the Safety Stop's duration and depth from the menu DIVE SET

If Deep Stop is activated:

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.

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

The Deep Stop is not mandatory and in case it is omitted even after having set it, it does not affect on the iX3M correct decompressive calculation.

Do you know what?:

Thanks to its Real Time algorithm, the iX3M can adjust itself to the diver's behavior automatically, in case the Deep Stop is carried out, not carried out at all or even partially carried out.



Pressing the button **D** you will visualize

MIX: Mix currently used (it flashes in red if in the set of the scheduled mixes a better mix is available)

PP02: O2 partial pressure of the currently breathed mix

GASES: How many mixes has been set to be used in the next dive
(as "GASES" is intended to be used to check how many mixes are active before the dive, "GASES" is hid during the dive)

MAX: Maximum reached depth

ASC: Ascent or descent speed expressed in mt/min (or ft/min)

Low alarm level: if the ascent speed is >8 mt/min

Medium alarm level: if the ascent speed is >9 mt/min

High alarm level: if the ascent speed is >10 mt/min

TEMP: Current water temperature

AVG: Average dive's depth

GF (R0)(PS): Set conservatism (Gradients, Critical Bubble Radius or livels)

OTU: accumulated OTU

CNS: accumulated CNS



Current dive's profile:




FOLLOWING
DATA

Current depth: (left) with coloured alarm code when passing the gas MOD, the mandatory stop and the depth alarm.

Dive Mode: (centre) Kind of dive and used algorithm:
OC= Open Circuit, CCR=Rebreather
BUL= Bühlmann ZHL-16 B, VPM= VPM-B

Dive Time: (right) Runtime in minutes:seconds

Diagram: Current dive profile in HD

Tissues saturation when diving:

The diagram represents the 16 tissues which are taken into consideration by the two decompressive algorithms (BUL or VPM).

The yellow lines represent the nitrogen levels .

The green lines represent the helium levels (if present)

The blue line represents the environment pressure in the surface at the dive's beginning.

The different tissues' saturation, represented by the yellow/green lines, represents the inertial partial pressure in comparison to the environment pressure on the surface .

In case of deco, the "pilot" tissue of that precise moment is highlighted by a red rectangle .




FOLLOWING
DATA

Decompression Chart:

This menu is available only if during diving you have accumulated decompression.

In this menu it is possible to visualize all decompression stops and the Mix that can be used among the ones expected for the current dive status.

The Decompressive Stops are updated in Real Time.

For every mandatory Decompressive Stop the iX3M shows: :




FOLLOWING
DATA

Stop Depth	Stop Time	Suggested Mix
12m	1:	50/0

The possible Safety Stop and Deep Stop, since they are not mandatory, are not shown in the Decompressive Chart, even if they will be suggested to the diver during his/her dive.

To reach this menu from the main screen press in sequence:



ATTENTION:

For a correct compass functioning it must be calibrated correctly.

See chapter: COMPASS

Compass when diving

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

Compass resolution: 1°

Compass accuracy: +/-1°

Do you know what?:

The iX3M has a highly innovative compass. Check always a compass' resolution and accuracy before entrusting it your route.

When in Compass mode, the iX3M shows:

Current depth (on top left): Expressed in meters (or feet if ft)

RunTime (on top right): Expressed in Minutes : Seconds

Direction (on bottom centre): Current direction expressed in degrees (°)

Graphic Compass (on centre): Graphic compass with route indication.



Direction in route (+/- 5° from the one set with **D**)



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



Direction in reciprocal (+/- 5° from the reciprocal of the set route)

DIR: Route currently set

REC: Reciprocal of the route that has been set.

Do you know what?:

The iX3M electronic 3D compass is compensated with 2 accelerometers. The iX3M can compensate automatically your arm's inclination until an angle of 85° from the horizontal position.

To reach this menu from the main screen press in sequence:



Applications when diving

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

When diving, it is possible to use the following Applications:

CHRONO (Cronometer)

PITCH&ROLL (Level)

MOON PHASE (Moon's calendar)

MAGMETER (Magnetometer)

LUXIMETER (Luximeter)

GPS (for iX3M [GPS] series only) (It is necessary to come to surface to allow the iX3M to link to satellites; the GNSS signal doesn't cross the water's surface.)

GAS BLENDER (Gas Blender)

Do you know what?:

The iX3M is provided with a GNSS receiver with "hot start" which can download automatically the map of the satellites in orbit allowing the iX3M to check only the part of sky where the satellite is located.. Thanks to this peculiarity, the iX3M needs only 5 seconds to connects itself to the satellite after the previous connection.

Do you know what?:

GNSS means Global.Navigation:Satellite.System and indicates all satellite systems available at the moment (GPS; GLONASS; QZSS; SBAS; BEIDOU).

Do you know what?:

In the iX3M the GPS acronym has been used for communication and intuitivity reasons, however, the satellite system used by the iX3M is better in comparison with the one of GPS alone..

It is not possible to use during diving:

MIX ANALYSER

The manual of the single applications is available on the web site

<http://www.ratio-computers.com/support/manual.htm>

To reach this menu from the main screen press in sequence:

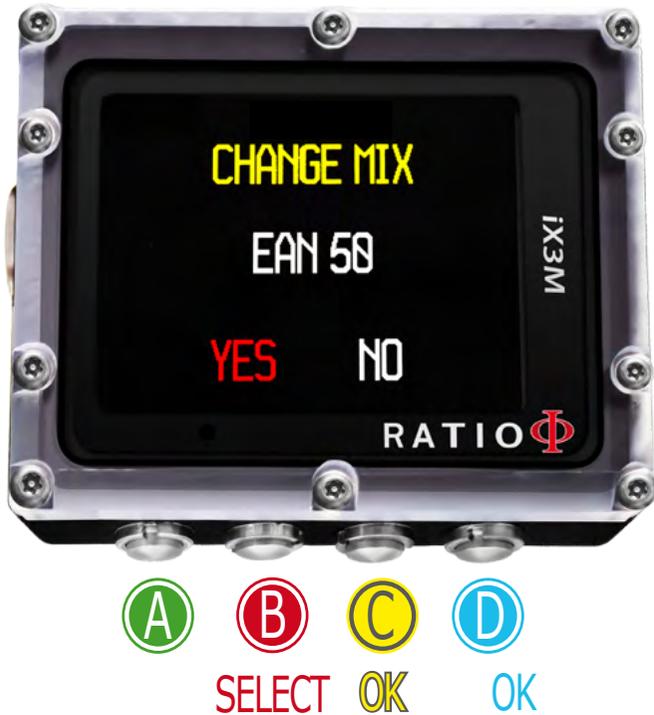
B ATTENTION: possible only if a better mix is available.

Mix change during the dive

If besides the bottom mix in the mix chart, decompressive mixes are set as well, the computer will warn the user when it's the right moment to change the mix, making the MIX area (on bottom left of the main screen) flash in red.

Pressing the button **B** you have access to the screen CHANGE MIX (only if a better mix is available and the MIX parameter flashes)

To confirm the mix change select YES (in red) and press **C**
To refuse the mix change select NO (in red) with **B** and press **C** or **D**



To confirm the mix change press in sequence from the dive screen *when the word MIX flashes*

B **C**

To refuse the mix change press in sequence from the dive screen *when the word MIX flashes*

B **B** **C**

Do you know what?:

It's possible to "refuse" the mix change simply ignoring the change notice given by the iX3M

To reach this menu from the main screen press in sequence:

B

Settings change during the dive

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

MODE: OC/CCR (only for iX3M Tech+ and iX3M Reb)

MIX: Mix percentage %O2/%He and mix' status.

ACT: Mix that we are currently breathing

YES: Active mix but that we are not currently breathing

NO: Deactivated mix

GFL/GFH (R0 se VPM): It modifies the gradients Low and High if BUL or the Critical Bubble radius if VPM.
(if iX3M Deep PS: if modifies the conservatism level)

Press button **A** any time to save the modifications and go back to the Dive mode .

To know how to modify the parameters MIX and GFL/GFH (R0)(PS) make reference to the section DIVE SET of this manual.

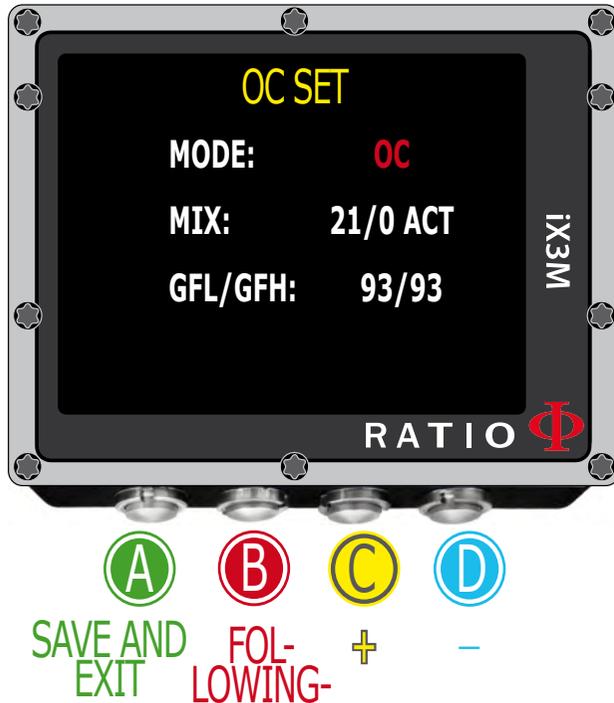
Attention: in the following pages we will explain how to modify the MIX and the algorithm settings during the dive.

However remember always that:

To modify the Gradients and the Critical Bubble Radius a suitable training is necessary!

To use more than one Mix when diving a suitable training is necessary!

DO NOT modify these parameters if you have not received such training!



ATTENTION: The use of more mixes requires a suitable training.
DO NOT use mixes without having received a suitable training!

Mix change during the dive

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

Press button **B** to select the MIX (the selection is in red)

Press button **C** to browse the Mixes previously set

Press button **B** to browse the menu (ACT, YES, NO)

Press button **C** to set the selected gas (in the example 50/0):

Set the MIX as **ACT** to FORCE the Gas change
(in the example to pass from 21/0 a 50/0)

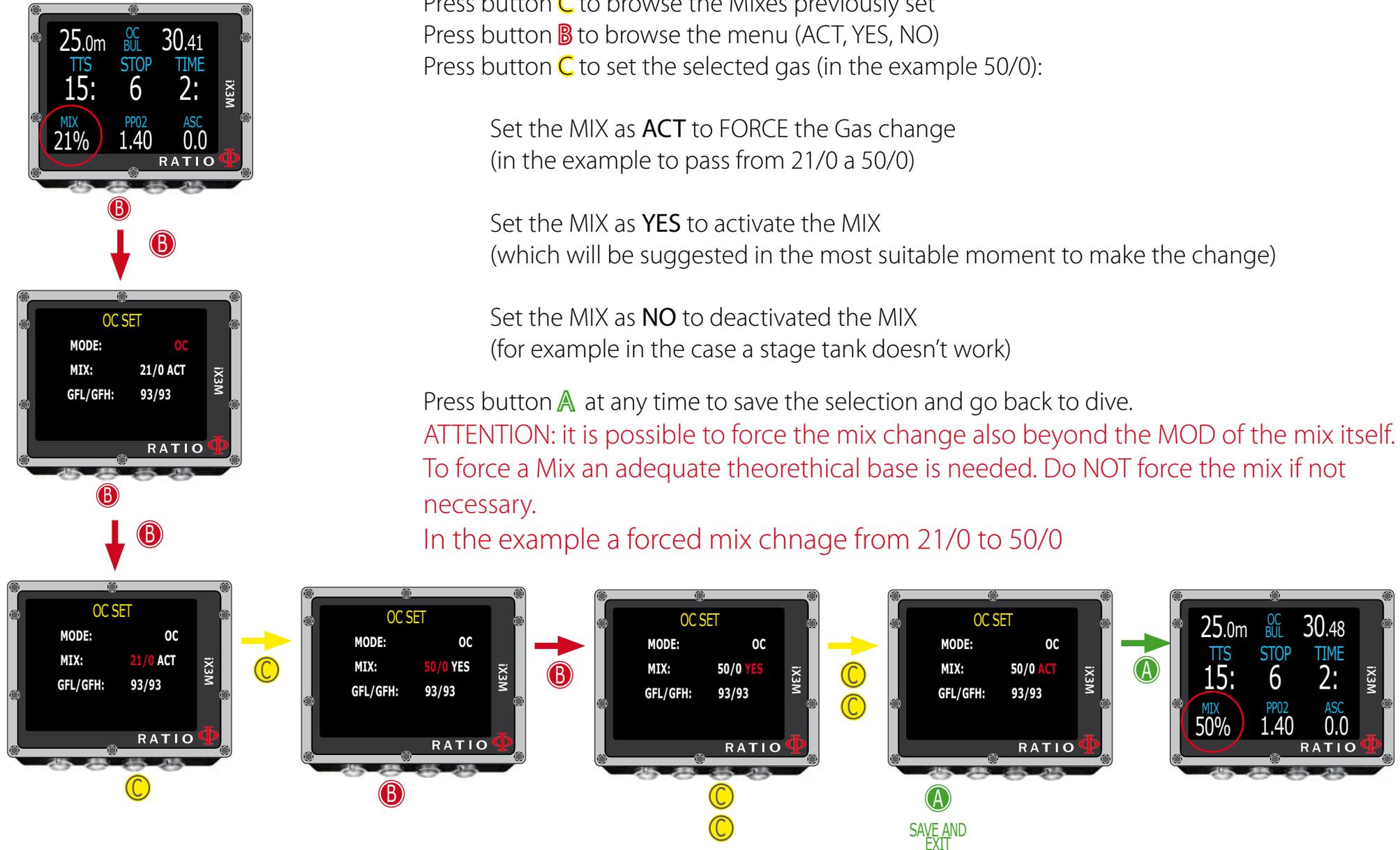
Set the MIX as **YES** to activate the MIX
(which will be suggested in the most suitable moment to make the change)

Set the MIX as **NO** to deactivated the MIX
(for example in the case a stage tank doesn't work)

Press button **A** at any time to save the selection and go back to dive.

ATTENTION: it is possible to force the mix change also beyond the MOD of the mix itself.
To force a Mix an adequate theoretical base is needed. Do NOT force the mix if not necessary.

In the example a forced mix change from 21/0 to 50/0



ATTENTION: To modify the GF or the R0 an adequate training is necessary. Do NOT modify hte GFor the R0 if you don't have received it!!

Change Conservatism during the dive

To navigate this menu follow the instructions shown in the picture on the left. In the example it is shown the value GFL/GFH; if you have chosen the VPM algorithm sarà the R0 will be visualized (for the iX3M Deep you'll visualize the conservatism levels). The procedure to modify the parameters is the same:

Press button **B** to select the GFL

Press button **C (+)** or **D (-)** to set the desired GFL

(Remember that the GFL must never ever be higher than GFH)

Press button **B** to select the GFH and press button **C (+)** or **D (-)** to set the desired GFH.

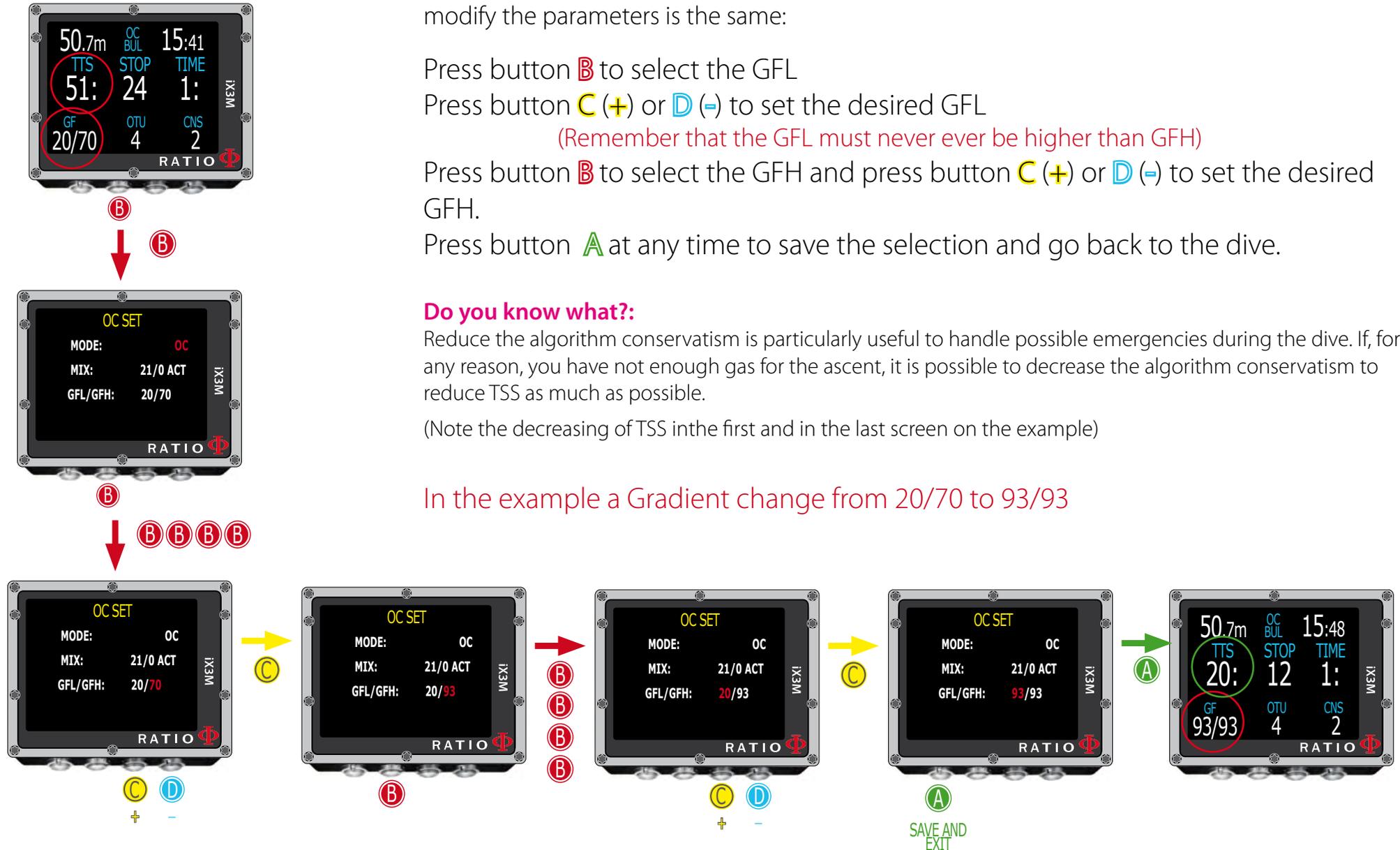
Press button **A** at any time to save the selection and go back to the dive.

Do you know what?:

Reduce the algorithm conservatism is particularly useful to handle possible emergencies during the dive. If, for any reason, you have not enough gas for the ascent, it is possible to decrease the algorithm conservatism to reduce TSS as much as possible.

(Note the decreasing of TSS in the first and in the last screen on the example)

In the example a Gradient change from 20/70 to 93/93



ATTENTION: In order to use CCR and Set Point a proper training is required!
If you have not received that special training DO NOT use CCR mode !!!

Change the set point during a dive

iX3M Reb and iX3M Tech+ allow to manually change the SET POINT during the dive:

ATTENTION: Refer to “CCR Settings” on this manual to know how to Set the SETPOINTS on your iX3M Tech+ or iX3M Reb.

During the dive you can switch between SETPOINT LOW, MID and HIGH. You can not set the value of a SETPOINT during the dive.

In order to switch the SETPOINT during a CCR dive:

Press button **B** to access the CCR SET MENU

Press **D** to set the desired SETPOINT (LOW, MID or HIGH)
(the value of the SETPOINT will be shown)

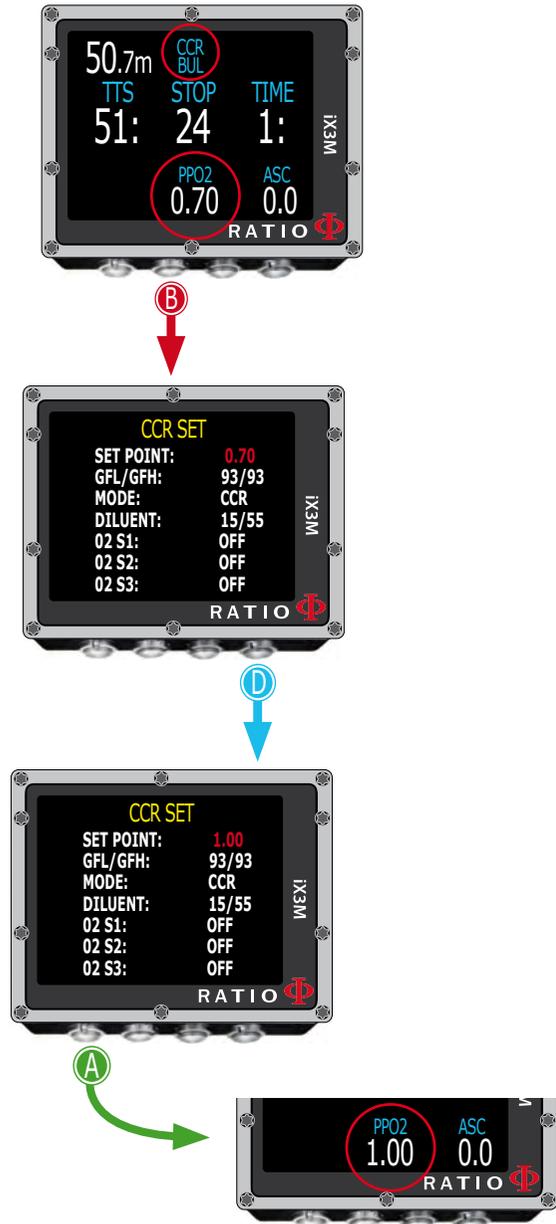
Press button **A** at any time to save the selection and go back to the dive.

If the SETPOINT MODE was set to AUTO, it will be switched to MAN (manual) once you manually switch a SET POINT during the dive.

**Attention: Enable the Rebreather mode (CCR) only for dives with rebreather.
The CCR mode is not suitable for dives in open circuit!**

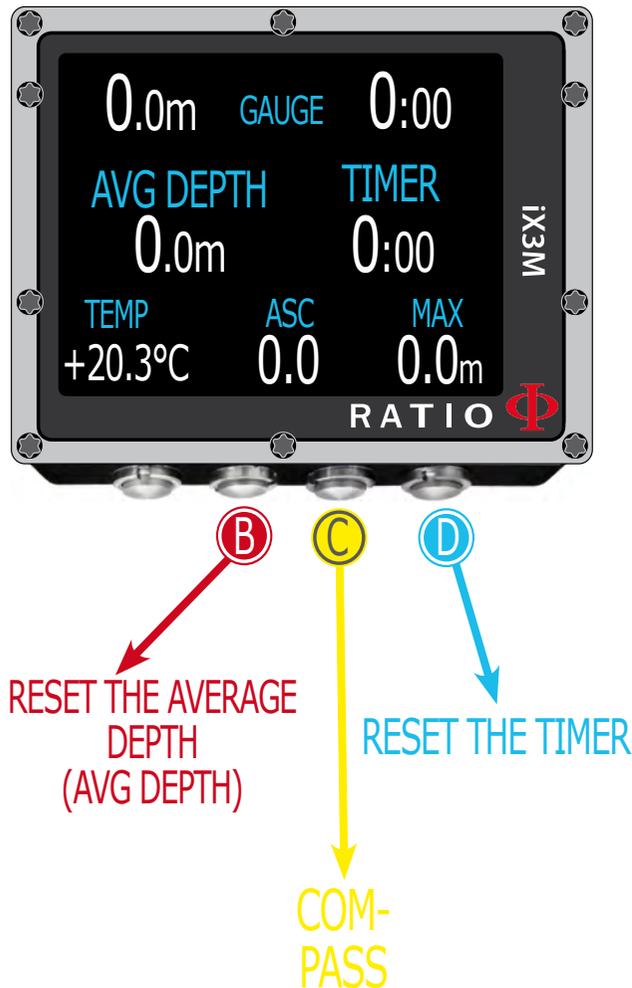
**Attention: Diving with Rebreather requires a specific training !
Diving with Rebreather without a suitable training or without the due caution can cause injuries or death.**

Refer to your Rebreather instructor to get instructions on how to set the SET POINT.



The iX3M in GAUGE mode

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



ATTENTION: To use the iX3M in GAUGE mode an adequate training is necessary!

To start the dive in GAUGE mode select the desired mode with button **D** and start the dive.

If you want that the iX3M recognize the GAUGE mode as default (and start the dive in GAUGE mode even if we start diving with the computer switched off) see the DIVE SET section of this manual.

Do you know what?:

With the iX3M you can set the default mode that the device activates automatically when entering water. See DIVE SET 1 on this manual

Do your know what?:

The iX3M calculates in background the tissue saturation and desaturation also in GAUGE mode using a .fake Mix (10/60) with a high inert contents. This value is registered in the logbook. If after a dive in GAUGE you want to carry out a dive in OC using the iX3M decompressive calculations, the iX3M will consider the new dive as the next repetitive of the day.

Well note:

Even if the iX3M carries out the decompressive calculation in background, they cannot be visualized on the screen and they don't even affect the GAUGE mode.

The iX3M 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:

- 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.

Connect your iX3M to a PC or a Mac

The iX3M can be connected to a Pc or to a Mac in order to download the dive data and to update the device.

To connect the iX3M to your PC or Mac follow step-by-step the tutorial available here:

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

Need more help? Write an email to support@ratio-computers.com

Update your iX3M

Is very important to keep your iX3M always up-to-date.

Subscribe the “Update alerts” service for free following the instruction in the next page.

The iX3M can be connected with the USB cable to a Pc or to a Mac in order to update the device.

To connect the iX3M to your PC or Mac follow step-by-step the tutorial available here:

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

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 iX3M 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 iX3M (not mandatory but suggested)

Warning!

To receive all updates of this manual and notice of future updates of the “iX3M” by e-mail, please send a message writing
“iX3M”

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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