• TABLE OF CONTENTS

• IMPORTANT WARNINGS

Mares adopts a policy of continuing improvement, and therefore reserves the right to make changes and enhancements to any of the products described in this manual without notice.

Under no circumstances shall Mares be held responsible for any loss or damage sustained by third parties deriving from the use of this instrument.

— WARNING

A dive computer is an electronic instrument and as such it is not immune to failure. To protect yourself against the unlikely event of a failure, in addition to the dive computer, also use a depth gauge, a submersible pressure gauge, a timer or watch, and dive tables.

— WARNING

Do not dive if the display appears unusual or unclear.

— WARNING

The dive computer must not be used in conditions that preclude its use (e.g.: low or no visibility, making it impossible to read the gauge).

— WARNING

The dive computer cannot ensure against possible decompression sickness.

DISCLAIMER

This manual describes how to operate an instrument and it describes the information provided by the instrument during a dive.

Neither this manual nor the instrument are a substitute for dive training, common sense and good diving practices.

How the information provided by the instrument is interpreted and put to use by the diver is not the responsibility of Mares. Read the manual carefully and make sure you understand completely how the instrument works and the information it provides during a dive, including information on depth, time, decompression obligations and all warnings and alarms. Unless you fully understand how the instrument works and the information it displays and unless you accept full responsibility for using this instrument, do not dive with it.

- **PART I**

- 1. INTRODUCTION

1.1. GLOSSARY

AGF:	Alternate gradient factor
AIR:	Air dive
ASC:	Total ascent time, the time it takes to perform the ascent from your current depth to the surface in a decompression dive, including all decompression stops and assuming an ascent rate of 10m/min or 33ft/min.
ASC + X:	The overall ascent time inclusive of all decompression stops if the dive is extended by X minutes at the current depth.
AVG:	Average depth, calculated from the beginning of the dive.
CNS:	Central Nervous System. CNS% is used to quantify toxic effects of oxygen.
D-TIME:	Dive time, the whole time spent below a depth of 1.2m/4ft.
DESAT:	Desaturation time. The time needed for the body to eliminate the nitrogen taken up during diving.
Gas integration:	The feature in CXR-I to include tank pressure information in its calculations and to display it on the computer screen.
Gas switching:	The act of changing from one breathing gas to another.
GF:	Gradient factor
Gradient Factor:	Percentage of Bühlmann's original value of maximum allowed supersaturation
Heliox:	A breathing gas containing Oxygen and Helium.
Max depth:	Maximum depth attained during the dive.
MOD:	Maximum Operating Depth. This is the depth at which the partial pressure of oxygen (ppO_2) reaches the maximum allowed level (ppO_2max). Diving deeper than the MOD will expose the diver to unsafe ppO_2 levels.
Multigas:	Refers to a dive in which more than one breathing gas is used (air and/or Nitrox).
Nitrox:	A breathing mix made of oxygen and nitrogen, with the oxygen concentration being 22% or higher.
No deco time:	This is the time that you can stay at the current depth and still make a direct ascent to the surface without having to perform mandatory decompression stops.
NO-FLY:	Minimum amount of time the diver should wait before taking a plane.
O_2:	Oxygen.
O_2%:	Oxygen concentration used by the computer in all calculations.
Pairing:	The act of establishing a coded RF communication between CXR-I and a dedicated device, such as a tank module.
ppO_2:	Partial pressure of oxygen. This is the pressure of the oxygen in the breathing mix. It is a function of depth and oxygen concentration. A ppO_2 higher than 1.6bar is considered dangerous.
ppO_2max:	The maximum allowed value for ppO_2. Together with the oxygen concentration it defines the MOD.
RGT:	Remaining Gas Time, it is the time that a diver can spend at the current depth before having to ascend in order to reach the surface with the tank reserve still available.
SURF INT:	Surface interval, the time that has elapsed since the end of the dive.
Switch depth:	The depth at which the diver plans to switch to a higher oxygen concentration mix while using the multigas option.
Trimix:	A breathing gas containing Oxygen, Nitrogen and Helium.
TTR:	Time To Reserve, it is the time that a diver can spend at the current depth before reaching the tank reserve.

1.2. OPERATING MODES

The functions of the CXR-I computer can be grouped into three categories, each corresponding to a specific mode of operation:

- **surface** mode: the computer is dry on the surface. In this mode you can change settings, review your logbook, use the dive planner, see remaining desaturation after a dive, download to PC and much more;
- **dive** mode: the computer is at a depth of 1.2m/4ft or more. In this mode, CXR-I monitors depth, time, temperature and performs all decompression calculations; dive mode itself can be broken down into 4 sub categories:
  - **pre-dive** (CXR-I is on the surface but actively monitoring ambient pressure, so that it can begin to calculate a dive the instant it is submerged below 1.2m/4ft);
  - **dive**
  - **surfacing** (CXR-I is on the surface at the end of a dive; dive time calculation is halted but if the diver submerges within three minutes the dive is resumed including the time spent on the surface; this for instance would allow a diver to surface momentarily to set a bearing towards the boat, then submerge again and swim towards the boat);
  - **post-dive** (after the three minutes of surfacing mode, CXR-I closes the logbook and reverts to a display showing desaturation time, no-fly time and surface interval; this lasts until the desaturation and the no-fly time both have been reduced to zero);
- **sleep** mode: the computer is on the surface after 3 minutes without operation (10 minutes from **pre-dive** mode). Though the computer appears to be turned off completely, it is still active. CXR-I computes tissue desaturation and checks the ambient pressure once every 20 seconds for uninterrupted monitoring of the environment.

1.3. TURNING ON CXR-I AND MAIN MENU

To start the computer, press the left button. This brings up the home display, shown in Figure 1. The home display provides at-a-glance information about time, temperature, battery status, settings of the algorithm and, when paired to an active transmitter, tank pressure. From the home display you can call up the main menu with all available settings and functions, but you can also directly reach certain useful functions such as logbook, dive planner, gas and algorithm settings, bluetooth connection.

Once in the main menu, you will see the familiar look of an icon-based user interface. From the top left, in sequence, there are:

SET DIVE: here you can review and set all parameters relating to a dive;

SET COMPUTER: set the language, the clock, display brightness and more;

COMPASS: from within this menu you can use the compass while on the surface, for instance to set a bearing which you will call up later on in the dive to navigate towards a wreck;

INFO: find information about the hardware and firmware of your CXR-I;

MAPS: view all maps uploaded to your CXR-I;

PHOTOS: view all images uploaded to your CXR-I;

BLUETOOTH: establish a bluetooth connection to a device such as a smartphone;

BUTTON LOCK: lock the buttons so that the battery is not accidentally drained during travel.

1.4. RECHARGEABLE BATTERY

CXR-I uses a lithium-ion rechargeable battery. A full charge allows you up to 40 hours of diving, depending on the usage of the high intensity on the backlight and the temperature of the water. The display alerts you of the status of the battery. The four possible situations are described as follows:

- A solid green battery symbol means CXR-I has between 65 and 100% charge;
- A partially filled green battery symbol means CXR-I has between 30 and 65% charge;
- A partially filled yellow battery symbol means CXR-I has between 20 and 30% charge.
- A partially filled red battery symbol means CXR-I has between 0 and 20% charge. This is not sufficient to ensure a safe dive.

In the event that the charge drops below 30% during a dive, the message **LOW BATTERY** appears on the display. In the event that the charge drops below 20%, the message **ABORT DIVE** appears on the display. When you see this message, you must start a safe ascent as there may not be enough charge to continue diving.

— WARNING

- Starting a dive with less than 20% charge can cause the computer to fail during the dive.
- In sleep mode CXR-I uses up the battery at a a very slow rate. If you haven't used CXR-I in several weeks there may be a noticeable drop in battery level, so you may have to recharge it before diving.
- Leaving CXR-I unattended for long periods of time such that the battery will be completely discharged does not harm neither the battery nor CXR-I. Logbook data and all settings will be saved. After charging you must however set the time and date again.
- When the battery in CXR-I is completely discharged, it may take up to 20 minutes from the moment it is connected to a power source before CXR-I reacts.
- Temperature can noticeably affect battery performance. A low battery warning may appear when diving in cold waters even if you think that the battery should have sufficient charge.
- It is advised that you charge the battery if you intend to dive in cold water.

The rechargeable battery has a life time of approximately 500 charging cycles. Please contact your authorized Mares dealer if you need to replace it.

1.4.1. CHARGING THE BATTERY

The battery takes about 4 hours to charge from completely empty to completely full when using the adapter that came with the computer. It can take up to 8 hours when using a standard adapter as not all adapters feed the same current to the USB port. To charge the battery, use the special clip and the USB cable, connecting it either directly to a power supply or to the USB port of a PC.

1.5. COMMUNICATING VIA USB CABLE OR BLUETOOTH

CXR-I can communicate via low power bluetooth directly to a smartphone, a PC or a Mac. The data transfer is such that only logbook information can be transferred via bluetooth while firmware upgrades and image or map uploads have to be carried out via PC or Mac.

To connect CXR-I to a PC or Macintosh computer, use the dedicated clip and the USB cable. Once connected, CXR-I will show the USB symbol on the display.

To initiate a bluetooth connection, press and hold the BT button from the home display or select the icon from the main menu, then start the MySSI app on your smartphone and follow the instructions.

1.6. BUTTON OPERATION

CXR-I has four buttons. These buttons allow you to access menus and change settings while in surface mode. During the dive they switch displays, call up the compass or the map function, and allow to display further information on the computer screen. The function of each button is identified by a set of letters or an icon placed just above the button itself. In certain circumstances, for instance when erasing a set bearing in the digital compass or when calling up the gas switch function during a multigas dive, a button can perform two tasks, depending on whether it is pressed and released or pressed and held for one second.

In such case, there will be two groups of letters or icons above a button: the left one corresponds to the press-and-release action, the right one to the press-and-hold action.

From the home display you have the following possible operations (press/press and hold) for the buttons from left to right (Fig. 1):

- PRE/POST: enters PRE dive mode/enters POST DIVE mode (only if there is remaining desaturation in the computed tissues);
- LOG/PLAN: enters the logbook/enters dive planner mode;
- GAS/GF: enters oxygen and helium setting menu/displays gradient factor settings table;
- MENU/BT: goes to main menu/starts bluetooth connection.

During a dive, icons are used to define the button function. From left to right you will see (Fig. 2):

- enter compass mode/enter underwater menu
- switch to graphic display/call up list of stops
- change field in lower right corner/initiate gas switch
- change field in top right corner/ call up tissue saturation graph.

The dive display is described in more detail in section 9.

Other icons that might appear during a dive are:

AGF: allows you to switch between the main set of GF and the alternate set

- calls up deco summary table.
- allows to set a bearing (press) or erase a set bearing (press and hold) (COMPASS)
- makes stopwatch appear (COMPASS)
- makes stopwatch disappear (COMPASS)
- restarts stopwatch (COMPASS and DIVE, only if stopwatch on screen)
- exit from predive mode
- return to standard display (COMPASS, TISSUE GRAPH, MAP, GAS TABLE).

1.7. IN CASE OF EMERGENCY (ICE)

CXR-I allows you to enter information about yourself, such as name, contact information, emergency number, insurance policies and allergies. This information is entered via the PC software Dive Organizer. Alternatively, it can also be entered via the Divers' Diary Mac software. The first two lines of the ICE are displayed in the home display.

1.8. MOUNTING AND PAIRING OF THE TANK MODULE (OPTIONAL)

CXR-I features an exclusive two-way communication technology through which it can communicate with up to 5 tank modules regarding tank pressure and gas consumption information via patented interference-free communication. Each tank module needs to be mounted on a high pressure port of a first stage regulator.

In order for CXR-I to display tank pressure and gas consumption information, you must first establish a channel of communication between the tank module and CXR-I. This is called **pairing**. This operation needs to be performed only once and ensures a permanent and interference-free link between the two devices.

NOTE
To perform the pairing operation, the tank module must be pressurized to at least 15bar/220psi. Hence it must be mounted on a first stage regulator, which is itself mounted on a full scuba tank and the valve opened.

To mount the tank module on the first stage regulator, first remove the high pressure port plug, then screw in the tank module gently by hand until you feel a minimum of resistance, then use a 19mm wrench to tighten it (Fig. 3).

NOT
- Do not force the tank module while holding it by the plastic cap.
- Do not overtorque while using the wrench: the o-ring seal is assured as soon as you feel the first resistance. The only reason for using a wrench to tighten a bit more is to prevent the tank module from unscrewing itself over time.

The Mares tank module communicates via radio frequency with CXR-I. For best transmission, we recommend positioning the tank module as described in Figure 4.

To pair the tank module with the CXR-I, proceed as follows:

- Open the tank valve to pressurize the tank module. **You now have two minutes to perform all steps listed below;**
- Go into SET DIVE/GAS INTEGRATION/PAIR DEVICES
- Choose the channel that you wish to assign to the device (if this is your only tank module for single gas diving, choose **G1**. **G2** through **G5** are used for multigas dives. More information on this in section 11);
- Place CXR-I at about 15 cm / 6 inches from the tank module as shown in Figure 5.
- Push **SELECT** and wait until the progress bar advances to the end. You will either see the message **PAIRING SUCCESSFUL** or **PAIRING NOT SUCCESSFUL**. In the first case you have successfully established a connection, in the second you need to repeat the operation, **but you must turn off the valve and depressurize the first stage completely, then wait 1 minute before attempting again.**

NOT
- When diving with more than one gas mixture, tanks **G1** through **G5** must be set to increasing oxygen levels. Refer to section 11 for more information on multigas diving.
- A tank module can only be paired to one channel on one CXR-I. If you pair the same tank module to a second channel on the same CXR-I or to a second CXR-I, the first one will be erased.

After a successful pairing of **G1** to CXR-I, the home and the pre-dive display will show the tank pressure in either **bar** or **psi**. If tank **G1** has not been paired, CXR-I will show an empty field instead of a pressure value. If **G1** has been paired but CXR-I is not receiving any signal, it will show - - - instead of a pressure value.

NOT
- The Mares tank module has a range of approximately 1.5m/5ft.
- If a tank module battery is weak, CXR-I alerts you with a screen message referencing the channel designation assigned to the tank module in question.
- During a dive, you can ask CXR-I to display the battery status of the tank module. More information about this in section 8.5.6 and 9.

Refer to the dedicated tank module manual for information on how to replace the battery in the tank module.

NOTE
- You do NOT need to repeat the pairing procedure after a battery replacement in the tank module.
- You do NOT need to repeat the pairing procedure if the battery in CXR-I is completely empty.
- You do NOT need to repeat the pairing procedure after upgrading the firmware in your CXR-I.

1.9. TURNING OFF CXR-I

CXR-I turns off automatically after 3 minutes without operation when in surface mode and after 10 minutes without operation when in pre-dive mode. From the main menu, you can also turn it off manually by selecting the **BUTTON LOCK** icon.

• 2. SET DIVE

MENU	*Description*
SET DIVE	
MODE	Allows you to choose between air, nitrox, trimix and bottom timer mode.
ALGORITHM	Allows you to set main and alternate gradient factors, personalization levels, and more.
GAS INTEGRATIO	Allows you to synchronize your CXR-I with optional tank modules and to define all parameters concerning gas integration (tank volume, operating tank pressure, tank reserve and more).
WARNINGS	Allows you to define and activate certain warnings individually.
MULTIGAS	Allows you to define parameters relating to multigas dives.
FUTURE DECO	Allows you to set the parameters for the future deco prediction. Please refer to section 2.6 for more details on this.
WATER	Allows you to choose between salt and fresh water.
NIGHT MODE	Allows you to choose the night mode display (white numbers on black background) as default display.
DEEP STOP	Allows you to activate or deactivate the visualization of deep stops.
DECO STOP	Allows you to choose the depth of the shallowest stop among 3m/10ft, 4.5m/15ft, 6m/20ft.
SECONDS	Allows you to show the dive time in minutes and seconds.
LINKED MAP	Allows you to select a map which you can call up on the display during the dive.
ERASE DESAT	Allows you to reset the inert gas saturation to zero, thereby erasing the effects of a previous dive. This is only for people who plan to lend their computer to another diver who has not performed a dive within the last 24 hours.
ALL SILENT MODE	Allows you to silence the dive computer.
ASCENT VIOLATION	Allows you to turn off the dive violation due to uncontrolled ascent. This is for dive instructors only, who may find themselves in such a situation because of their teaching requirements.

2.1. MODE

In this menu you define the type of gas you will be breathing during the dive (**AIR** as **SINGLE GAS, NITROX** as **SINGLE GAS, NITROX** as **MULTIGAS, TRIMIX** as **MULTIGAS**). You can also set CXR-I to **BOTTOM TIMER**, in which case CXR-I will show only time, depth and temperature: it will not carry out any decompression calculation and it will not show any warnings and alarms.

Use ▲ and ▼ to highlight your choice, then press **SELECT** to activate it. **AIR** is the equivalent of setting **NITROX** to 21% and a ppO_2max of 1.4bar.

When selecting **NITROX**, you are taken to a submenu in which you can define the percentage of oxygen in the mixture (O_2%) and the maximum value of oxygen partial pressure (ppO_2max) for up to three breathing mixes. The maximum possible value for the ppO max is 1.6bar. Most training agencies recommend not to exceed a value of 1.4bar.[2]

Once inside this menu, use + and − to change the O_2%, and watch how this affects the maximum operating depth (MOD). Then press **NEXT** to move on to the ppO_2max and use + and − to change the value, again noticing how this affects the MOD. Press **SET** to save and exit the menu. Note that you can press **BACK** after having set the O_2% to save and exit skipping the ppO_2max setting.

— WARNING

- Diving with Nitrox may only be attempted by experienced divers after proper training from an internationally recognized agency.
- Before every dive and after changing the tank, you must make sure that the set oxygen concentration in CXR-I corresponds to the oxygen concentration in the tank. Setting the wrong oxygen concentration can lead to serious injury or death.

This is also the menu where you would be setting your decompression gases if you dived with more than one gas. See chapter 11 for more information about diving with more than one gas or for dives with trimix.

2.2. ALGORITHM

CXR-I employs the unmodified Bühlmann ZH-L16C algorithm with gradient factors. Gradient factors are used to lower the maximum tolerated supersaturation in the tissues with respect to Bühlmann's original values. This results in less nitrogen in the body at the end of the dive, which under normal circumstances makes the dive safer. Gradient factors are expressed in pairs: the first value, also called **GF low**, represents the percentage of the original Bühlmann value that defines the beginning of the final ascent (relevant only in decompression dives); the second value, also called **GF high**, represents the percentage of the original Bühlmann value that defines the residual nitrogen at the surface at the end of a dive. As an example GF 50/85 will get you to the surface with a 15% additional margin with respect to Bühlmann's original maximum tolerated supersaturation and, if this was a decompression dive, your first decompression stop would have been at a depth such that you would not have exceeded 50% of Bühlmann's original value at that depth.

For more information about gradient factors, please refer to www.mares.com/sports/diving/gradientfactor

From the home display, press and hold the third button from the left (**GF**) to display a table listing all settings (Fig. 6).

2.2.1. MAIN GF

This is where you set the conservatism level of the ZH-L16C algorithm via gradient factors. We use Bühlmann's original values reduced by 15% as a starting point, and you can make the algorithm more conservative from there. There are four predefined sets of gradient factors with increasing conservatism from **R0 (85/85)** to **R3 (50/60)** for recreational dives and from **T0 (30/85)** to **T3 (25/40)** for tech dives. You can also enter the GF low and GF high values directly via the **CUSTOM** setting. The default value is **R0 (85/85).**

2.2.2. ALTERNATE GF (TO BE INTRODUCED VIA FREE FIRMWARE UPGRADE SOON)

CXR-I allows you to define an alternate set of gradient factors, to use when you need to cut your decompression short in case of an emergency. The set of alternate gradient factors cannot be more conservative (i.e. lower) than the main set of GF values. The default value is **R0 (85/85).**

2.2.3. PERSONALIZATION

This menu allows you to define additional conservatism in a way similar to going from R0 to R1, R2 or R3 but in a more personal way. It comprises two submenus, labelled **MAIN** and **ALTERNATE**, each of which has three submenus, called **PHYSIO, DIVE, I TODAY**. The values set in each menu are subtracted from the respective **MAIN GF** and **ALTERNATE GF** value yielding the values used by CXR-I for the decompression calculations.

PHYSIO allows you to define an additional conservatism based on how you feel about yourself and diving overall. Each step from **LOW** to **MEDIUM** to **HIGH** incrementally reduces both gradient factor values by 10. There is also a setting called **ADVANCED**, which increases the gradient factor by 5 so that a maximum of 90/90 can be achieved. This is only for experienced divers who have accumulated enough experience to know they can tolerate such levels of inert gas. We do not recommend doing this since it increases the risk of decompression sickness thus CXR-I requires that you insert a code (**1234**) to allow the setting.

The value set in **PHYSIO** remains stored until you manually change it. The default value is **OFF**.

DIVE allows you to define an additional conservatism based on how you feel about the dive conditions. Each step from **LOW** to **MEDIUM** to **HIGH** incrementally reduces both gradient factor values by 3. If you think there will be much current or the water will be very cold, pick one of these settings. Since conditions can actually be different from what you expected, this parameter can be edited also DURING the dive (via the underwater menu). The default value is **OFF**.

The value set in **DIVE** resets automatically to **OFF** at midnight.

I TODAY allows you to define an additional conservatism based on how you feel about yourself today, for instance to account for a restless night or not having hydrated sufficiently. Each step from **LOW** to **MEDIUM** to **HIGH** incrementally reduces both gradient factor values by 5.

The default value is **OFF**. Also the value set in **I TODAY** resets automatically to **OFF** at midnight.

2.2.4. REPETITIVE DIVES

The original Bühlmann algorithm assumes normal offgassing of inert gas via diffusion after a dive. This seems to work well for most people and indeed most dive computers available today compute repetitive dives like this. There is evidence however that some people produce bubbles after a dive, or produce more bubbles than others, and these bubbles though harmless slow down the offgassing process. Surface intervals of three hours or longer are known to dissipate most if not all bubbles. CXR-I allows you to account for this by applying an additional conservatism to repetitive dives, reducing both gradient factor values by 8 upon surfacing from a dive and then increasing it again by 1 every 15 minutes of surface interval. When setting **REP DIVE** to **ON** you will have recovered the full gradient factor values after a two-hour surface interval. Any dive started before such surface interval will carry an automatic additional gradient factor reduction. If you set the value to **OFF**, the GF values are not modified during a surface interval.

The setting can be applied independently to the MAIN GF and ALTERNATE GF values. The default values are **OFF** for MAIN GF and **OFF** for ALTERNATE GF.

2.2.5. MULTIDAY

Increasing inert gas load on your tissues over several days of diving has effects that are not fully understood and are different from person to person. Most dive computers available today do not account for this and compute simple inert gas offgassing by diffusion. CXR-I allows you to increase the conservatism automatically for each day of diving with less than 24-hours of surface interval by reducing both gradient factor values by 2 on the second day, an additional 2 on the third day and an additional 2 on the fourth day up to a maximum of 6.

Default values are **OFF** for MAIN GF and **OFF** for ALTERNATE GF.

2.3. GAS INTEGRATION

This menu contains seven submenus. The first one allows you to pair the tank modules to the CXR-I. Please refer to section 1.8 for the description of the pairing process.

The second menu, **GAS SUPPLY ESTIMATE** allows you to choose between two concepts of available gas supply estimate:

- **TTR** (time to reserve) is the time, in minutes, before you will reach the tank reserve at the current depth and at the current breathing rate;
- **RGT** (remaining gas time) (TO BE INTRODUCED VIA FREE FIRMWARE UPGRADE SOON) is the time you can still spend at the depth you are at, based on the current gas consumption, before you must initiate an ascent in order to arrive at the surface without going below the tank reserve. This calculation accounts for all existing and upcoming decompression obligations.

When using **TTR**, you have a clear idea of when you will reach the tank reserve, but you must use it carefully to gauge when to initiate the ascent in order to arrive at the surface with the tank reserve. This is a good method when you don't have decompression obligations, but is less powerful when doing decompression dives.

The **RGT** is very useful when doing decompression dives since it accounts for additional decompression incurred during the RGT itself.

The third menu, **TANK VOLUME**, allows you to set the size of the volume of the tank, individually for **G1** through **G5**. This parameter is important for a correct evaluation of your gas consumption in l/min or cu ft /min. Default setting is **12l** for metric system and **80 cubic feet** in imperial. For the imperial setting it is paramount that you also set the correct operating tank pressure, since the size of the tank is referenced to this pressure.

The fourth menu, **OPERATING TANK PRESSURE**, is where you define the nominal fill pressure of your tanks. This can be set individually for each tank (**G1** through **G5**). This value is used to scale the graphic tank representation but also to define the pressure ranges for color coding (described in section 2.3.1). When the units are set to ft/°F/psi, this value is important because together with the tank volume it allows CXR-I to correctly evaluate your gas consumption in cu ft/min. Default values are **200bar** and **3000psi.**

The fifth menu, **MID TANK WARNING**, is the value at which CXR-I triggers a half tank warning. This can be set individually for each tank (**G1** through **G5**). This value is also used in the definition of the pressure ranges for color coding as described below. Default values are **100bar** and **1500 psi**.

The sixth menu, **TANK RESERVE**, is the value at which an alarm is triggered because you should always be at the surface before reaching this level. Furthermore, this value is used to calculate the **TTR** and **RGT** values (see section 8.5.5 and 9.1). This can be set individually for each tank (**G1** through **G5**). Default values are **50bar** and **750psi**.

The seventh and last menu is called **AUTOZERO RESET** and it allows you to set the ambient pressure reading on the tank module in the unlikely event of a drift of the zero value. You would perform this operation if you noticed a significant difference between the read-out of CXR-I and a calibrated pressure gauge also connected to the same first stage.

Due to the potential of introducing an error in the tank module measurement, please contact your Mares Authorized Service Center before performing this operation.

2.3.1. COLOR CODING FOR PRESSURE RANGES

In addition to a numeric value for the tank pressure, CXR-I uses color coding for an immediate at-a-glance tank pressure visualization. The color is applied to the inside of the tank pictogram. The pressure range from operating tank pressure to empty tank is split into 4 ranges, from **BLUE** to **GREEN** to **YELLOW** to **RED**. The ranges are so defined:

BLUE: the upper half between **OPERATING TANK PRESSURE** and **MID TANK WARNING**

GREEN: lower half between **OPERATING TANK PRESSURE** and **MID TANK WARNING**

YELLOW: between **MID TANK WARNING** and 50bar/750psi.

RED: below 50bar / 750psi

2.4. WARNINGS

2.4.1. MAX DEPTH

CXR-I allows you to set an alarm at a depth independent of the MOD. The default value is **OFF**. Using the + and − buttons you can set it between 10m / 30ft and up to just shy of the MOD, in 1m / 5ft increments. Upon reaching the depth defined in this alarm, the message **MAX DEPTH REACHED** appears on the screen and stays there until you ascend above the set limit.

2.4.2. DIVE TIME

CXR-I allows you to set a time alarm, triggering also a warning at half of the set time limit. The default value is **OFF**. Using the + and − buttons, you can set the value between 20 and 90 minutes in 2-minute increments. Upon reaching half of the set limit, the message **TURN AROUND** appears and stays on the display until you hit any button to acknowledge it. Upon reaching the set time limit, the message **TIME LIMIT** appears and stays on the display until you hit any button to acknowledge it.

2.4.3. NO STOP (TO BE INTRODUCED VIA FREE FIRMWARE UPGRADE SOON)

When this is set to **ON**, a warning will alert you when the NO STOP time reaches 2 minutes.

2.4.4. ENTERING DECO (TO BE INTRODUCED VIA FREE FIRMWARE UPGRADE SOON)

When this is set to **ON**, a warning will alert you when a mandatory decompression stop has been calculated by CXR-I.

2.4.5. RGT (TO BE INTRODUCED VIA FREE FIRMWARE UPGRADE SOON)

In multigas dives, when this is set to **ON**, a warning will alert you when the RGT reaches 3 minutes. For single gas dives this is an ALARM and is always **ON**.

2.5. MULTIGAS

2.5.1. PREDICTIVE

When set to **ON**, CXR-I will consider all gases in the decompression calculation, with switches carried out at the MOD of each gas. When set to **OFF**, the decompression calculation will consider the currently breathed gas only. See Section 11 for more information about the **PREDICTIVE** feature.

The default value is **ON**.

2.5.2. ALLOW SWITCH BELOW MOD (TO BE INTRODUCED VIA FREE FIRMWARE UPGRADE SOON)

When set to **ON**, CXR-I will allow a switch to a gas at a depth deeper than the MOD of the gas (resulting in an immediate MOD alarm).

The default value is **ON**.

2.6. FUTURE DECO

In this menu you can define the parameters of the future deco prediction and of the runaway deco alarm. Refer to section 9.3 for more information.

2.7. WATER

You can set the computer to **fresh** water, **salt** water or **EN13319** calibration, depending on where you intend to dive. Setting the wrong water type entails an error in depth measurement of maximum 3% (i.e. at a depth of 30m/100ft, a computer set to salt water will show 29m/97ft in fresh water whereas a computer set to fresh water will show 31m/103ft in salt water). Note that this does not affect the proper functioning of the computer, since the computer performs all of the calculations based purely on pressure measurements. **EN13319** corresponds to a water density of 1.0197kg/l and it is used in European Norm 13319.

2.8. NIGHT MODE

In this menu you can select the **NIGHT MODE** as the default display. You can also switch between the two display modes during a dive using the Underwater Menu described in section 9.9.

2.9. DEEP STOP

CXR-I calculates a deep stop for air and nitrox dives only. The depth is defined as that at which the 5th compartment (27-minute half time) switches from ongassing to offgassing. Stopping at this depth during an ascent allows the first four tissues to offgas at a relatively high ambient pressure (theoretically preventing microbubble formation) without causing excessive nitrogen uptake in the other tissues. The deep stop, when calculated, is shown in the top right corner of the display, next to the current depth. The deep stop is optional, not carrying it out does not introduce any penalties and its duration is NOT included in the total ascent time.

This menu allows you turn off the calculation and display of the deep stop. The default setting is **OFF**.

2.10. DECO STOP (TO BE INTRODUCED VIA FREE FIRMWARE UPGRADE SOON)

This menu allows you to choose the depth of the shallowest stop among 3m/10ft, 4.5m/15ft and 6m/20ft. Decompression times increase when the shallowest stop is deeper.

2.11. SECONDS (TO BE INTRODUCED VIA FREE FIRMWARE UPGRADE SOON)

If set to **ON**, this menu allows you to add seconds to the dive time. Due to space limitations, this implies a size reduction of the information to the right of the dive time.

2.12. LINKED MAP

In this menu, you can select a map which you can later on call up during the dive.

2.13. ERASE DESATURATION

CXR-I allows you to reset the desaturation in the computer. Any tissue saturation information from a recent dive will be reset to zero and the computer treats the next dive as a non-repetitive dive. This is useful when the computer is loaned to another diver who has not dived in the last 24 hours.

— WARNING

Diving after having reset the desaturation is extremely dangerous and is very likely to cause serious injury or death. Do not reset the desaturation unless you have a valid reason to do so.

Once inside the menu, you will see a graphic representation of the loading in all tissues of the decompression calculation. To prevent accidental desaturation reset, you must enter the security code once you decide to proceed with the reset. The security code is **1234**.

After entering the security code you will get a confirmation of the successful completion of the operation.

2.14. ALL SILENT MODE

In this menu you can disable audible alarms.

— WARNING

Disabling audible alarms can lead you into potentially dangerous situation and could result in serious injury or death.

2.15. ASCENT VIOLATION

If the ascent rate exceeds 120% of the allowed value over a depth change of more than 20m/66ft, due to the potential of harmful bubble formation, CXR-I locks the computer for 24 hours in order to prevent you from diving again. In this menu, you have the option to disable the locking up of the computer in the event of an uncontrolled ascent.

— WARNING

- An uncontrolled ascent increases your risk of decompression sickness (DCS)
- This feature is intended for very experienced divers only, such as dive instructors, who take full responsibility for the consequences of turning off this function.

• 3. SET COMPUTER

MENU	*Description*
SET COMPUTER	
LANGUAGE	Allows you to set the language for the user interface, all menus and warning messages during the dive.
UNITS	Allows you to choose between metric (m, °C, bar) and imperial (ft, °F, psi) units.
CLOCK	Allows you to set the date, time, time zone shift when travelling, and a wake-up alarm.
BRIGHTNESS	Allows you to set the maximum brightness of the backlight.
COMPASS DECLINATION	Allows you to compensate between magnetic north and geographic north in the digital compass.
COMPASS CALIBRATION	Allows you to recalibrate the compass.

3.1. LANGUAGE

In this menu you can set the language for the user interface and for alarm messages during the dive.

3.2. UNITS

You can choose between metric (depth in meters, temperature in °C, tank pressure in bar) and imperial (depth in feet, temperature in °F, tank pressure in psi).

3.3. CLOCK

This menu allows you to set the time format, time, date, time zone shift and wake-up alarm.

3.4. BRIGHTNESS

This menu allows you to change the brightness of the display to adapt to various levels of light conditions. Upon entering this menu, a sliding bar appears across the display. Use ◀ and ▶ to set the brightness level.

3.5. COMPASS DECLINATION

Depending on the exact location on the planet, there can be a deviation between true North and magnetic North. Any compass will always show magnetic North, so via this menu you can set a value for the so-called declination that will make the compass show true North instead.

3.6. COMPASS CALIBRATION

The digital compass in CXR-I is calibrated from the factory and does not require, under normal circumstances, any further maintenance.
In certain instances, however, such as after exposure to extremely intense magnetic fields, it may be necessary to recalibrate the compass to ensure its accuracy. If you notice an obvious deviation in the indication of the compass, access this menu and perform the calibration as described below.

First you must enter the security code, **1234**. Then the image shown in Figure 7 appears on the display.

Now hold CXR-I horizontal to the surface and perform one slow counter clockwise circle. Once you have finished the circle, the calibration is completed.

• 4. DIGITAL COMPASS

CXR-I has a tilt-compensated digital compass which can be used at almost any inclination. The compass can be called up at any moment during the dive and it can also be used on the surface. This menu allows you to use the compass on the surface and also to set a bearing for reference during your next dive.

The number shown in the middle of the compass rose represents the bearing, between 0 (North) and 359.

4.1. SETTING A BEARING

With ▣ you can set a reference bearing. This is useful for instance if you are on a boat and there is a landmark on the shore that you can use for alignment to reach a specific spot on that dive site. Press ▣ and a dot will appear to indicate the set bearing. Additional symbols will appear as well: squares at 90 degrees, triangles at 120 degrees and two parallel lines at 180 degrees, as an aid in navigation for square, triangular and reciprocal courses. The number at the bottom represents the deviation of the direction you are pointing at with reference to the set bearing.

Once underwater, align the dot with the arrow and start swimming in that direction. If you press ▣ again, the new bearing will override the one in memory. If you press and hold ▣ you erase the bearing.

• 5. INFO

This submenu provides various information about the hardware and software of your CXR-I. It also lists information about the use of the dive computer, such as longest dive, deepest dive, total number of dives and total dive time. These can be individually reset to 0 by pressing the right button (**RESET**). In addition, you can revert to the original settings configuration via the **FACTORY RESET** option (this option is not available while there is remaining desaturation in the computer). The option **FACTORY MAINTENANCE** is for use by authorized personnel only.

• 6. MAPS AND PHOTOS

These menus allow you to view all the maps and pictures that have been uploaded via Dive Organizer to your CXR-I. Any file in JPEG format can be uploaded to CXR-I. Note that only the files listed as maps can be selected for the **LINKED MAP** function described in section 2.12.

The memory of CXR-I can hold approximately **100** between maps and pictures.

• 7. BUTTON LOCK

This function allows you to lock the buttons so that the computer is not turned on inadvertently. This is very useful for instance while travelling to a dive site, since otherwise CXR-I might unintentionally drain the battery before the dive.

To lock the buttons, press and hold **SELECT** for one second from the main menu, or press it normally when the **BUTTON LOCK** icon is highlighted. This will blacken the display.

To unlock the buttons, press the left button followed by pressing the right button. The home display now reappears.

- **PART II**

- 8. DIVING WITH CXR-I

8.1. A FEW WORDS ABOUT NITROX

Nitrox is the term used to describe breathing gases made of oxygen-nitrogen mixes with an oxygen percentage higher than 21% (air). Because Nitrox contains less nitrogen than air, there is less nitrogen loading on the diver's body at the same depth as compared to breathing air.

However, the increase in oxygen concentration in Nitrox implies an increase in oxygen partial pressure in the breathing mix at the same depth. At higher than atmospheric partial pressures, oxygen can have toxic effects on the human body. These can be lumped into two categories:

- Sudden effects due to oxygen partial pressure over 1.4bar. These are not related to the length of the exposure to high partial pressure oxygen, and can vary in terms of the exact level of partial pressure they happen at. It is commonly accepted that partial pressures up to 1.4bar are tolerable, and several training agencies advocate maximum oxygen partial pressures up to 1.6bar.
- Long exposure effects to oxygen partial pressures over 0.5bar due to repeated and/or long dives. These can affect the central nervous system, cause damage to lungs or to other vital organs.

CXR-I keeps you safe with respect to these two effects in the following ways (as long as it is set to either **AIR** or **NITROX**):

- Against sudden effects: CXR-I has an MOD alarm set for a user-defined ppO_2max. As you enter the oxygen concentration for the dive, CXR-I shows you the corresponding MOD for the defined ppO_2max. The default value of ppO_2max from the factory is **1.4bar**. This can be adjusted to your preference between **1.2** and **1.6bar**. Please refer to section 2.1 for more information on how to change this setting. If CXR-I is set to **AIR**, the ppO_2max is set to **1.4bar** by default.
- Against long exposure effects: CXR-I "tracks" the exposure by means of the CNS % (Central Nervous System). At levels of 100% and higher there is risk of long exposure effects, and consequently CXR-I will activate an alarm when this level of CNS% is reached. CXR-I also warns you when the CNS level reaches 75%. Note that the CNS% is independent of the value of ppO_2max set by the user.

8.2. ALTITUDE

Atmospheric pressure is a function of altitude and of weather conditions. This is an important aspect to consider for diving, because the atmospheric pressure surrounding you has an influence on uptake and subsequent release of nitrogen. Above a certain altitude, the decompression algorithm has to change in order to account for the effect of the change in atmospheric pressure. CXR-I automatically adapts the algorithm by sensing the ambient pressure every 20 seconds even when it is turned off.

NOTE
We do not recommend diving at altitudes above 3700m / 12100ft. If you do, set CXR-I to **BOTTOM TIMER** and find appropriate altitude dive tables.

8.3. LOGBOOK

From the home screen, press the **LOG** button to access the logbook.

CXR-I can record the profiles of over 1000 hours of diving, at a sampling rate of 5 seconds. The information can be transferred to a Smartphone (MySSI app, via bluetooth), PC (Dive Organizer software, Bluetooth or USB cable) or Mac (DiversDiary software, Bluetooth or USB cable). In addition, CXR-I can show most of the information directly on the display. On the main page of the logbook you will see a listing of all dives, including date, time the dive started, depth and dive time.

By pressing **SELECT** you will access the details of the dive, and from here you can view the depth profile with either the temperature or tank pressure data by pressing **PROFILE**.

8.4. DIVE PLANNER

From the home screen, press and hold the **PLAN** button to access the dive planner.

This function allows you to plan your next dive. In case you dived recently, you can enter an additional surface interval between now and when you intend to dive: the residual nitrogen load will be adapted accordingly. CXR-I will consider all active gases and set gradient factors, listed for reference at the top of the screen. Hit the **SELECT** button then use the ✚ and ▬ buttons to define the additional surface interval in 15-minute increments. Next hit **BACK** and use the ▲ and ▼ buttons to scroll through the no decompression limits for all depths, in 3m / 10ft increments, up to the MOD for the gas in use. If you wish to see what would happen if for a given depth you extended your dive time beyond the no decompression limit, press the right button, labelled **DECO**. Use the ✚ to increase your dive time and see what your corresponding decompression obligation would be. Press **BACK** to return to the no decompression limits.

8.5. ALARMS

CXR-I can alert you of potentially dangerous situations. There are six different alarms:

- Ascent rate alarm;
- Exceeding a safe ppO_2/MOD;
- CNS =75%;
- Missed decompression stop;
- Low tank pressure/RGT < 3 min;
- Low battery during the dive.

— WARNING
When in bottom timer mode, all warnings and all alarms are **OFF** aside for the low battery alarm.

NOTE
- Alarms are both visual and audible, as described in detail below.
- If you are in any graphic display mode (compass, dive profile, map viewing or tissue graph) when an alarm is triggered, you will be kicked out of that mode and back to the standard numeric display.
- Ascent rate alarm has priority over other alarms if they are triggered simultaneously.

8.5.1. ASCENT RATE

As soon as depth decreases CXR-I activates the ascent rate control algorithm and displays the calculated value both numerically and graphically.

— WARNING
A rapid ascent increases the risk of decompression sickness.

If CXR-I determines an ascent rate higher than set limits, the fast ascent alarm is triggered: an audible alarm goes off, the arrows on the left side bar turn red and the message **SLOW DOWN** is displayed in the middle of the screen of the screen (Fig. 8). This persists until the ascent rate is reduced to below the pertinent limit. The limits are dependent on the current depth as follow:

Depth in m	Speed in m/min	Depth in feet	Speed in ft/min
> 50 m	20	> 165 ft	60
30 – 50 m	15	100 – 165 ft	45
10 – 30 m	10	30 – 100 ft	30
< 10m	5	< 30ft	15

— WARNING

If the ascent rate exceeds 120% of the allowed value over a depth change of more than 20m/66ft, due to possible harmful bubble formation, CXR-I locks the computer for 24 hours in order to prevent you from diving again. You can disable this function in the menu **ASCENT VIOLATION**. This should only be done by highly experienced divers, who take full responsibility for the consequences of this action.

8.5.2. MOD/ppO$_2$

— WARNING

- The MOD should not be exceeded. Disregarding the alarm can lead to serious injury or death.
- Exceeding a ppO$_2$ of 1.6bar can lead to sudden convulsions resulting in serious injury or death.

When the diver reaches a depth at which the ppO$_2$ of the inspired gas exceeds the maximum limit entered in the corresponding setting (from 1.2 to 1.6bar), an audible alarm goes off, the depth is shown in red and the message **MOD EXCEEDED** is shown at the bottom of the display (Fig. 9).

The alarm persists until the diver has ascended enough for the ppO$_2$ to return within the set limit. While the alarm is active, the map function is disabled and the compass can only be called up for 10 seconds, after which the default display with the alarm message is shown again. The gas switch menu can be called up for 20s before the display switches back to the alarm message.

— WARNING

When the MOD alarm is triggered, ascend immediately until the alarm stops. Failure to do so could result in serious injury or death.

8.5.3. CNS = 75%

— WARNING

When the CNS reaches 100% there is danger of oxygen toxicity. CXR-I starts alerting you when you reach 75%.

Oxygen toxicity exposure is tracked on CXR-I by means of the CNS% based on currently accepted recommendations for exposure limits. This toxicity is expressed as a percentage value which ranges from 0% to 100%. When the value exceeds 75%, it turns red and the warning message **CNS > 75%** appears on the display until you hit any button to acknowledge having seen it. Furthermore, the field which can be selected via the ✚ button shows the CNS value in red. If you push the ✚ button to view any other value, it will remain for 4s only, and then return to the CNS value (Fig. 10).

If the oxygen toxicity level reaches 75%, ascend to shallower depth to decrease oxygen loading and consider terminating the dive.

— WARNING

Diving with oxygen toxicity at levels of 75% or greater may put you into a potentially hazardous situation, which could result in serious injury or death.

8.5.4. MISSED DECOMPRESSION STOP

— WARNING

Violating a mandatory decompression obligation may result in serious injury or death.

If you ascend above the decompression stop depth by more than 0.3m (1ft), an audible alarm goes off and the message **BACK TO STOP DEPTH** is displayed at the bottom of the screen (Fig. 11). This alarm remains active until you return to the correct depth. Note that while the alarm is active, it is not possible to consult the map, and the compass can be viewed only for 10 seconds before the screen returns to the default display.

— WARNING

Never ascend above the displayed decompression stop depth.

8.5.4.1. MISSED DECO STOP MODE

If the stop depth is exceeded by less than 1m (3ft) for more than three minutes or by more than 1m (3ft) for more than 1 minute, CXR-I considers it a dive violation and the display will show **VIOLATION - DECO**.

In this case, if the diver attempts a repetitive dive after surfacing, CXR-I will function only as a depth gauge and timer (bottom timer mode), and it will display the message **LOCKED BY PREVIOUS DIVE**.

8.5.5. LOW TANK PRESSURE / RGT < 3 MIN

If **GAS SUPPLY ESTIMATE** in 2.3 is set to **TTR**: When during a decompression dive CXR-I calculates a **TTR** which is inferior to the total ascent time, the message **LOW TANK PRESSURE** appears on the bottom of the display and remains there until you hit any button to acknowledge having seen it (Fig 12a). We strongly suggest initiating an ascent when this situation arises, in order to avoid running out of breathing gas during the decompression stop.

If **GAS SUPPLY ESTIMATE** in 2.3 is set to **RGT**: When during a decompression dive CXR-I calculates an **RGT** of 3 minutes or less, the message **RGT < 3 min** appears at the bottom of the display and remains there until you hit any button to acknowledge having seen it (Fig. 12b). We strongly suggest initiating an ascent when this situation arises.

Additionally, when the tank pressure reaches the value specified under **TANK RESERVE**, the message **TANK RESERVE REACHED** is displayed until you hit any button to acknowledge having seen it (Fig. 13).

8.5.6. LOW BATTERY

— WARNING

If before a dive the battery power level is 20% or less, the message **DO NOT DIVE - CHARGE BATTERY** appears on the display. Do not start a dive in such a situation. The computer may fail to function during the dive and this could lead to serious injury or death.

When the battery power level reaches 30%, CXR-I will show the message **LOW BATTERY** on the display until you hit any button to acknowledge having seen it. Furthermore, the lower right corner shows the battery information in red (Fig. 14). If you push the ✚ button to view any other value, it will remain for 4s only, and then return to the battery value. If the battery power level reaches 20%, CXR-I will show the message **ABORT DIVE - CHARGE BATTERY**.

— WARNING

When the **ABORT DIVE** warning appears, you should stop the dive, safely, without delay.

— WARNING

If the battery is completely drained during or right after a dive, CXR-I will lose the nitrogen loading information in the tissues, and hence it will calculate the next dive wrongly. Do not dive for 24 hours following a dive during or after which the battery was completely drained.

In addition to monitoring the status of its own battery, CXR-I also monitors the status of the battery in all tank modules paired to it, and alerts you when a battery is low and should be replaced. The message **G1** (or **G2** through **G5**) **LOW BATTERY** is displayed until you hit any button to acknoweldge having seen it. Furthermore, the lower right corner shows the tank module battery information in red (Fig. 15). If you push the **!!** button to view any other value, it will remain for 4s only, and then return to the tank module battery information.

• 9. DISPLAY INFORMATION

From the home menu, press the left button to enter PRE-DIVE mode. This will ensure that CXR-I starts to monitor the dive as soon as a depth of 1.2m/4ft is reached. If you start the dive without putting CXR-I into pre-dive mode, CXR-I will switch into dive mode automatically but with a delay of up to 20 seconds from immersion.

NOT

- If you remain in pre-dive for longer than 10 minutes without pressing any button, CXR-I will switch off.
- It is recommended to put CXR-I into pre-dive before submerging. Not doing so can lead to a delay of up to 20s in CXR-I monitoring the dive.

Upon immersion, if CXR-I was set to pre-dive, it will immediately start monitoring the

dive. Otherwise, it will turn on automatically within 20 seconds of having reached a depth of 1.2m/4ft.

With CXR-I you have a choice of how the information is presented on the display.

The standard display presents dive information in a prevalently numerical format. More specifically, the following information is displayed (Fig. 16):

- current depth and temperature in top row
- no deco time in middle row (depth of deepest stop, time at deepest stop and total ascent time in case of decompression dives)
- dive time and active gradient factors in bottom row
- description of gas in use, tank pressure in bar / psi, graphic representation of tank pressure using the 4 color ranges described in section 2.3.1, time to reserve (**TTR**) or remaining gas time (**RGT**) along the right edge of the display
- nitrogen bar graph along the left edge of the display
- ascent speed: in case of an ascent, the value in m/min or ft/min is displayed in lieu of the dive time, while graphically it is shown in lieu of the nitrogen bar graph (each arrow representing 20% of the allowed limit).

Upon pressing +, the field to the right of the current depth is modified in the following sequence:

- max depth
- average depth
- MOD of gas in use
- deep stop if active and calculated
- ASC + X
- ceiling. (TO BE INTRODUCED VIA FREE FIRMWARE UPGRADE SOON)

Upon pressing +, the field to the right of the dive time is modified in the following sequence:

- current gradient factor/gradient factor at the surface if the diver ascends now
- stopwatch
- CNS (Nitrox only)
- ppO_2 (Nitrox only)
- time of day
- battery status of CXR-I
- battery status of tank module in use
- gas consumption in l/min or cuft/min.

NOTE
if you set CXR-I to AIR, the information on MOD, CNS and ppO_2 are not displayed in order to simplify the display. The CNS value is however calculated in the background and both the CNS alarm and MOD alarm are triggered if the circumstances require it. If you are diving air but would anyway like to see the MOD, CNS and ppO_2, set CXR-I to Nitrox 21%.

The battery in the tank module is shown as a battery outline with either 3 (battery ok), 2 (battery ok for now but you should consider replacing it) or 1 (battery could fail any time) segments inside of it. The 3-segment situation is green, the 2-segment situation is yellow, and the 1-segment situation is red.

9.1. DETAILED DESCRIPTION OF DISPLAYED DATA

The **depth** is given in 10cm resolution until 99.9meters, after which it is given in 1m resolution. When the depth is displayed in feet, the resolution is always 1 foot. At a depth shallower than 1.2m/4ft, the display shows ---. Maximum possible depth is 150m/492ft.

The **dive time** is displayed in minutes. If during the dive you ascend to the surface, the time spent on the surface will only be counted if you descend again below 1.2m/4ft within 3 minutes. This allows for brief periods of orientation. While on the surface, the time will not show as progressing but it is running in the background. As soon as you submerge, the time will resume, including the time spent on the surface.

The **no deco** time is calculated in real time and updated continuously. Maximum displayed no deco time is 99 minutes. If you remain at depth beyond a no deco time of zero minutes, you will enter into decompression: you can no longer make a direct ascent to the surface and CXR-I displays a **MANDATORY** decompression stop. Instead of a no deco time, it shows you the depth of the deepest stop, the time at the deepest stop, and the **total ascent time** (**ASC**), which includes each decompression stop and the time required to travel the vertical distance to the surface at the allowed rate (Fig. 17). **ASC** does **NOT** include the duration of deep stops.

Deep stops are **NOT** mandatory so you can skip them without incurring any penalty in the decompression calculation.

Once there is a mandatory decompression stop, the second button from the left features a new label: . Pressing and holding it will display the details of all stops computed by CXR-I, up to a maximum of 4, starting from the deepest (Fig. 18).

The **tank pressure** is based on the signal from the tank module. The tank module has a range of 1.5m/5ft. In addition to showing the numeric value, CXR-I employs color coding to identify a range in tank pressure, as described in section 2.3.1

— WARNING

- If CXR-I receives no signal from the tank module for 45 seconds, the pressure value is replaced by ---. Check the position of CXR-I with respect to the tank module. Start ascending if you don't get a tank pressure reading unless you have a spare pressure gauge.
- If the tank pressure reaches 10bar/145psi, the tank module will turn off and CXR-I will not show tank pressure any longer.

NOTE
CXR-I needs approximately 2 minutes to analyze your breathing pattern, thus the **TTR** or **RGT** is not displayed at the very beginning of the dive.

The **nitrogen bar graph** is on the left side of the display. It represents nitrogen supersaturation (any amount in excess of the equilibrium state at the surface) in the leading tissue compartment. The bar graph is made of ten segments, which gradually switch from green to red during the dive. The more red segments you see, the closer to the no deco limits you are. As you enter a situation of mandatory decompression stop, all segments will be red.

During a surface interval, the segments will gradually turn off as CXR-I tracks the offgassing of your tissues.

Ascent rate: in presence of a depth change in excess of 80cm / 3ft, CXR-I calculates the corresponding ascent speed and displays both numerically (in lieu of the dive time) and via an arrow bar which, for the duration of the ascent, replaces the nitrogen bar graph. Each arrow in the arrow bar represents 20% of the allowed rate. These arrows turn red for speeds in excess of the allowed limit described in section 8.5.1.

The **current gradient factor (GF NOW)** is the highest value of inert gas supersaturation among all 16 tissues of the algorithm at the present moment. The **gradient factor at the surface if the diver ascends now (GF @ SURF)** is the value of supersaturation that at least one tissue will reach if you were to ascend now at the allowed ascent rate disregarding any deco and safety stop (Fig. 19).

The **ceiling** is the depth at which you would exceed the gradient factor. As you clear a stop and begin the next one, the ceiling is the same as or very close to the stop depth itself. As the duration of the stop decreases, so does the ceiling until it reaches the depth of the next stop.

The **stopwatch** can be reset by pressing and holding when the stopwatch is displayed. This will also set a bookmark in the dive profile memory.

9.2. DEEP, DECO AND SAFETY STOPS

DEEP stops are generated as you approach the no deco limit. **DEEP** stops are **NOT** mandatory but rather suggestions which attempt to minimize bubble production by offgassing some nitrogen at high ambient pressure. Deep stops are shown to the right of the current depth (Fig. 20).

DECO stops are generated progressively as you stay at depth beyond the no deco time. **DECO** stops are **MANDATORY** As you approach the depth of a stop, the duration of the stop is gradually reduced. The duration itself is always shown in minutes, and is calculated as a function of the pressure gradient achieved at the stop depth itself. Hence the farther you are from the exact depth of the stop, the longer it will take for each minute to tick off.

A **SAFETY** stop is generated as soon as the depth of the dive exceeds 10m / 33ft. It has a duration of 3 minutes and it is carried out between depths of 6m / 20ft and 3m / 10ft at the end of a dive prior to surfacing. Such stop is **NOT** mandatory but **HIGHLY RECOMMENDED**. A safety stop is always shown as a 3-minute countdown in minutes and seconds (Fig. 21).

— **WARNING**

During all dives, perform a safety stop between 3 and 5 meters/10 and 15 feet for 3 minutes, even if no decompression stop is required.

9.3. FUTURE DECOMPRESSION

In case of a decompression dive, the + sequence also features **ASC+5**. The value shown represents the total ascent time if you were to remain at the current depth for an additional 5 minutes. This is very useful since it allows you to estimate how your decompression will be affected by remaining at the current depth a while longer (Fig. 22).

It is also very useful because, as the slower tissues start accumulating nitrogen, you could find yourself in a situation in which the decompression time grows very quickly, so much so that you may find yourself with insufficient gas to finish the dive.

NOTE
Associated to a large difference between the current **ASC** and the **ASC+5** value, CXR-I will alert you with the **RUNAWAY DECO** warning: since the **ASC+5** calculation runs in the background and is permanently updated, CXR-I monitors this value and, if it is calculated to be greater than 10 minutes beyond the current **ASC**, CXR-I will trigger the alarm **RUNAWAY DECO**. This remains on the display until you press any button to acknowledge having seen it (Fig. 23).

NOTE
The prediction of **ASC** can be set between 3 and 10 minutes in advance via the **ASC+X** menu within **FUTURE DECO** in **SET DIVE**. The value of **X** can be set between 3 and 10 minutes.

Likewise, the trigger point of the **RUNAWAY DECO** alarm can be set between 2 and 4 times the value of **X**. As an example, if you set the prediction of **ASC** to a value of +6 and the **RUNAWAY DECO** to a value of 3, the alarm will be triggered when the difference between the current **ASC** and the predicted one 6 minutes later is **6*3=18** minutes or greater.

9.4. DIVE PROFILE

During the dive you can view the depth profile performed so far by pressing . The profile is updated every 20 seconds. The top row now shows current depth and no deco time (or total ascent time in case of decompression dives, in which case the profile shows also all decompression stops) so that you can keep the profile on the display and still have all the major information about the dive (Fig. 24).

With the + button you can call up one additional piece of information but, unlike in the standard display, you can also remove it (by clicking through the whole sequence) in case it overlaps with the dive profile.

NOTE
The display remains in dive profile mode until you press or until an alarm is triggered, in which case the display reverts to the standard display.

9.5. COMPASS

During the dive you can access the compass by pressing . In **COMPASS** mode, the top row of the display shows current depth and no deco time (or total ascent time in the case of decompression dives), so that you can keep the compass on the display and still have all the major information about the dive (Fig. 25).

With , you can set a reference bearing. A dot will appear to indicate the set bearing. Additional symbols will appear as well: squares at 90 degrees, triangles at 120 degrees and two parallel lines at 180 degrees, as an aid in navigation for square, triangular and reciprocal courses. The number at the bottom represents the deviation of the direction you are pointing at with reference to the set bearing. If you press again, the new bearing will override the one in memory. If you press and hold you erase the bearing.

By pressing , the top row is split in two and a stop watch appears in the lower row. Use to activate the stop watch. Every time you press , the stop watch restarts from 00:00. By pressing , the top row goes back to full size but the stop watch keeps running in the background (Fig. 26).

NOTE
The display remains in compass mode until you press or until an alarm is triggered, in which case the display reverts to the standard display.

9.6. TISSUE SATURATION GRAPH

By pressing and holding the right button ( ) a complete description of the current tissue saturation fills the space underneath the top row. The top row itself shows current depth and no deco time (or total ascent time in case of decompression dives) so that you can keep the tissue saturation graph on the display and still have all the major information about the dive (Fig. 27). The graph itself is updated continuously.

The graph shows the tissue tension in each of the 16 compartments simulated by the algorithm, together with red segments representing the maximum tolerated supersaturation values at the surface and, in presence of decompression stops, at the depth of all calculated stops. The vertical axis represents pressure. As long as a tissue remains below the red segments, that particular tissue does not require decompression. When a tissue pushes past the lower red segment, a decompression stop will be required (failure to meet the safe ascent criterion). If a tissue were to push past the second red segment, there would be a 6m / 20ft stop required in addition to a 3m / 10ft stop.

For air and nitrox dives, on the graph there is also a horizontal black line: this represents, on the same pressure scale, the partial pressure of nitrogen in the inhaled gas. The distance between the line and top of a bar represents the pressure difference driving gas in or out of a tissue and is thus indicative of the speed of on or offgassing. As long as the line is above the bar, the tissue in question is taking on gas and the bar is depicted in yellow.

Once the line descends into the bar, the tissue in question is offgassing and the bar becomes green.

9.7. DECO SUMMARY TABLE (TO BE INTRODUCED VIA FREE FIRMWARE UPGRADE SOON)

From the tissue saturation graph, press to view the DECO SUMMARY TABLE. This shows the following four decompression calculations (Fig. 28):

- the predictive multigas decompression schedule for the MAIN GF values (not available for single gas dives)
- the decompression calculation assuming the dive is finished with the gas currently active, for the MAIN GF values
- the predictive multigas decompression schedule for the ALTERNATE GF values (not available for single gas dives)
- the decompress ion calculation assuming the dive is finished with the gas currently active, for the ALTERNATE GF values.

This gives you an overview of all the alternatives available to you in case you ran out of one or more gases and/or you decided to switch to the alternate GF values.

9.8. VIEWING MAPS DURING A DIVE

To call up the map selected under **SET DIVE/LINKED MAP**, press ⊛ from the decompression summary table. The map will remain on the display for 10 seconds, after which the screen reverts to dive information. You can press ◀ to return to the main screen before the 10 seconds have elapsed (Fig. 29).

NOTE
- In the event of an alarm, CXR-I automatically switches back to the standard display.
- The map is static, and does not change as you swim during the dive.

9.9. UNDERWATER MENU

By pressing and holding the left button (▭) you can call up a menu which allows you to change certain settings during the dive. These are described in detail in section 2 although some names have changed a bit due to the limited length available in the UW menu (Fig. 30).

BOOKMARK - allows you to set a bookmark which you can later review in the downloaded dive profile

AIR (or G1) - corresponds to MODE in 2.1. This is meant for those occasions when you forgot to update the oxygen percentage setting in the computer after a change of nitrox, a switch from air to nitrox or viceversa, which would force you to abort the dive or at least go to the surface, wait three minutes to exit the dive and then perform the change. This menu is active only during the first minute of the dive and only if the depth has not exceeded 6m / 20ft.

NOTE
This menu is not meant for switching to a high oxygen content decompression gas.

GF DIVE - as described in 2.2.3

LINKED MAP - as described in 2.12

NIGHT MODE - as described in 2.8

FUTURE DECO - as described in 2.6

MAX DEPTH - as described in 2.4.1

DIVE TIME - as described in 2.4.2

BRIGHTNESS - as described in 3.4

TANK VOLUME - as described in 2.3

MAX PRESSURE - corresponds to OPERATING TANK PRESSURE in 2.3

HALF TANK - corresponds to MID TANK WARNING in 2.3

TANK RESERVE - as described in 2.3

WATER - as described in 2.7

• 10. AFTER THE DIVE

Upon returning to the surface, CXR-I first goes into the so-called **surfacing** mode. This mode allows you to resume your dive after a brief period of orientation. The screen shows a 3-minute countdown, a profile of the dive, your maximum depth, dive time, average depth and, for nitrox dives, the CNS% at the end of the dive. When used with the optional tank module, the screen shows the tank pressure as well (Fig. 31).

If you submerge again before the 3-minute countdown is over, the dive time will resume from where it left off, including the time spent on the surface. If you do not submerge before the end of the countdown, CXR-I considers the dive finished, records the data to the logbook and reverts to the so-called **post-dive** mode.

The post-dive screen shows the following information (Fig. 32):

- The remaining desaturation time **(DESAT)**: this is calculated by the decompression model in the computer. Any dive started while there is remaining desaturation on your computer is considered a repetitive dive, meaning that CXR-I accounts for the pre-existing nitrogen load in your body.
- The no-fly time **(NO-FLY TIME)**: this is the time during which an exposure to the reduced pressure inside the cabin of an airplane could cause decompression sickness. CXR-I employs, as recommended by NOAA, DAN and other agencies, a standard 12-hour (no-deco non-repetitive dives) or 24-hour (deco and repetitive dives) countdown.

The DESAT TIME could be shorter than the NO-FLY TIME, which would imply that you cannot fly although you are desaturated. This is simply the consequence of the desaturation time being calculated by the algorithm based on the actual dive profile, while the no-fly time is an accepted standard in the diving industry. Since the real effect of flying after diving has never been fully investigated, this approach fits with our philosophy.

— WARNING

Flying while CXR-I displays **NO-FLY** can result in serious injury or death.

- The surface interval **(SURF. INT.)**: this is displayed from the moment the dive is closed (3 minutes after surfacing) for as long as there is remaining desaturation or no-fly time on the computer.
- CNS: this allows you to track how the CNS load from the previous dive is gradually reduced during the surface interval.

The screen also shows the main data of the last dive: max depth, temperature, dive time, initial and final tank pressure.

In addition, the supersaturation with respect to ambient pressure at the surface in all 16 compartments of the algorithm is shown discretized in ten segments. The tallest bar is also reproduced along the left edge in the same fashion as it is also during the dive. You can use this to gauge your progress in getting rid of nitrogen as the surface interval grows. CXR-I continues to perform decompression-related calculations (inert gas release), for as long as there is desaturation or no-fly time left.

• 11. DIVING WITH MORE THAN ONE GAS MIXTURE

— WARNING

- Diving with more than one gas mixture represents a much higher risk than diving with a single gas mixture, and mistakes by the diver may lead to serious injury or death.
- During dives with more than one gas mixture, always make sure you are breathing from the tank that you intend to breathe from. Breathing from a high oxygen concentration mix at the wrong depth can kill you instantly.
- Mark all your regulators and tanks so that you cannot confuse them under any circumstance.
- Before each dive and after changing a tank, ensure that each gas mixture is set to the correct value for the corresponding tank.

CXR-I enables you to use up to three gas mixtures during the dive (air and Nitrox only). The three mixtures are labeled **G1**, **G2** and **G3** and must be in ascending order of oxygen content, i.e. **G1** has the lowest oxygen concentration, **G2** an intermediate value, and **G3** has the highest oxygen concentration of the three. Two or more tanks can also be set to the same oxygen concentration. If you are diving with only two mixtures, you will be utilizing tanks **G1** and **G2**.

CXR-I can be set to consider all active gases in the decompression calculation, or it can be set to consider only the gas currently in use. In the first case (**PREDICTIVE = ON** in 2.5.1), when you switch gas when prompted to do so during an ascent, you will not see a change in the decompression calculation: CXR-I considered that you were going to switch gas and already considered the effect of this on the decompression. In the second case (**PREDICTIVE = OFF** in 2.5.1) you will see a reduction in the total ascent time as you switch to a gas with higher oxygen content and CXR-I considers this for the decompression calculation.

CXR-I can show the tank pressure of each tank if the corresponding first stage regulator is equipped with a Mares tank module, paired as described in section 1.8. Note that CXR-I can be programmed and used for diving with more than one gas mixture whether you use tank modules for each or not.

NOTE
You can set all the gases to the same oxygen percentage.

11.1. SETTING MORE THAN ONE GAS

The characteristics of the gases must be entered in the computer before the dive. It will then be your responsibility to tell CXR-I which gas is currently being used during the various phases of the dive.

NOTE
- If you dive using just one gas, select **G1** and deselect the other two.
- For dives with two gases, select **G1** and **G2** and deselect the third.
- When enabling **G2** and **G3**, you must first define **G2** and then **G3.**
- You cannot activate **G3** without first having activated **G2.**
- **G2** cannot have an oxygen percentage higher than **G3.**
- If you set **G2** to **OFF**, **G3** will automatically be set to **OFF** also.
- The MOD for **G2** and **G3** is the switch depth for the corresponding gas. This is what CXR-I uses for its calculation, alarms and suggested switch points.
- Setting a tank to **OFF** does not affect the pairing of the corresponding tank module.

To use multiple gases, you will need to enable the gases and set the oxygen percentage and the ppO_2max for each one, as described in Figure 33. Keep in mind that the MOD for **G2** and **G3** is the depth at which CXR-I will prompt you to perform the gas switch (see section 11.2 below).

11.2. SWITCHING GAS

During Nitrox dives with the gas switching function enabled, the third button from the left has two functions, indicated by a double icon:

- Press: scrolls through the sequence of information to the right of the dive time.
- Press and hold: displays the gas switch screen.

CXR-I always begins the dive with **G1**, which has the lowest percentage of oxygen. When during the ascent you reach the depth corresponding to the MOD of **G2**, CXR-I sounds an audible signal and displays the message **SWITCH TO GAS G2** below the top row (Fig. 34). The left button now has label **NO** while the second and the third button have label **OK**. Press or press and hold either of the **OK** buttons to perform the switch, at which point CXR-I shortly displays the message **GAS SWITCH OK**; press or press and hold the **NO** button to stay on the current gas, at which point CXR-I shortly displays the message **GAS NOT SWITCHED**. If you don't perform any action within 30 seconds, CXR-I shows **GAS NOT SWITCHED** and returns to the normal display. If set to **PREDICTIVE = ON** and the gas was not switched, CXR-I will show the message **EXCLUDING GAS G2** prior to changing the decompression calculation to reflect the exclusion of G2.

If you drop again below the MOD for G2, CXR-I will show the message **INCLUDING GAS G2 AGAIN** and changes the decompression calculation accordingly.

NOTE
The same process is repeated when you approach the MOD for G3 with the message SWITCH TO GAS G3

You can always perform a manual switch, by pressing and holding. This will make the gas switch screen appear, which shows all active gases (Fig. 35).

NOTE
You can reach this screen at any time during the dive, for instance to check on the tank pressure and the planned switch point of **G2** and **G3**.

Press to scroll through the available gases, then press to activate it. The decompression calculation will reflect the switch in breathing gas. In addition, the display will now show the symbol of the new gas and its oxygen concentration. In profile view, the area below the MOD of the deco gas is depicted in red.

NOTE
- You can select another gas using, if permitted at that depth.
- You can exit this mode without changing the gas by pressing.
- If there is only one gas set, the computer will not enter this menu.

11.3. SPECIAL SITUATIONS

11.3.1. SWITCHING BACK TO A GAS MIXTURE WITH LOWER OXYGEN CONCENTRATION

There may be situations in which you have to switch back to a gas with lower oxygen concentration than what you are currently breathing. This can happen for instance if you want to descend deeper than the MOD for the current gas, or if for instance you have run out of gas in G3 during the decompression. To do so, simply press and hold to call up the gas switch screen. Use to choose another gas, then press to activate it. The decompression calculation will reflect the switch in breathing gas.

11.3.2. SUBMERGING BELOW THE MOD AFTER A GAS SWITCH

If after having switched to a gas mixture with a higher oxygen concentration you inadvertently drop again below the MOD for that mixture, the MOD alarm will immediately go off. Either switch back to a gas mixture suited for that depth, or ascend above the MOD for the gas mixture you are breathing from.

11.3.3. RGT WHEN DIVING WITH MORE THAN ONE GAS MIXTURE

CXR-I determines the **RGT** based on your breathing pattern, the tank pressure for the gas you are currently breathing, and the decompression time calculated for that gas only. It does not account for tanks other than what you are currently breathing from, hence your actual autonomy may be higher. For this reason when diving with more than one gas mixture the **RGT = 3 min** is a soft warning and not an alarm.

11.3.4. LOGBOOK FOR DIVES WITH MORE THAN ONE GAS MIXTURE

For dives carried out with more than one gas mixture, CXR-I adds information on oxygen concentration, initial, final and differential pressure for all gases used. On the dive profile, switch points are shown on the time line.

11.4. DIVING WITH MORE THAN ONE GAS MIXTURE – TRIMIX OR HELIOX (TO BE INTRODUCED VIA FREE FIRMWARE UPGRADE SOON)

CXR-I allows you to set up to 5 gases in which in addition to the oxygen percentage you can also set the helium percentage. In the tissue saturation graph you will see bars for the nitrogen partial pressure and for the helium partial pressure. Everything else is the same as with multigas nitrox diving with the addition of OTUs (Oxygen Toxicity Units) in the sequence.

• 12. BOTTOM TIMER MODE

When CXR-I is set to **BOTTOM TIMER** mode, it will only monitor depth, time, tank pressure and temperature, and will not carry out any decompression calculation. You can only switch to bottom timer mode if the computer is completely desaturated. All audible and visual alarms, other than the low battery alarm, are turned off.

— WARNING
Dives in gauge mode are performed at your own risk. After a dive in bottom timer mode you must wait at least 24 hours before diving using a decompression computer.

During a dive in gauge mode, the following information is displayed (Fig. 36):

- current depth
- max depth
- average depth
- stopwatch
- dive time
- temperature
- time of day
- battery status
- tank pressure
- in case of an ascent: ascent speed (in m/min or ft/min).

The stop watch is reset by means of. Upon pressing and holding the same button, the gas switch display is called up. The only result of switching gas mixtures in bottom timer mode is that the pressure of the newly chosen tank is displayed instead of the current one.

12.1. DIVE VIOLATION INDUCED BOTTOM TIMER MODE

The following violations can occur during an Air, Nitrox or Trimix dive:

- Ascent violation.
- Missed deco stop violation.

In case of a violation, CXR-I will restrict the use for 24 hours, and will only allow operation in Bottom Timer mode, continuously displaying the message **LOCKED BY PREVIOUS DIVE**.

• 13. TAKING CARE OF CXR-I

13.1. TECHNICAL INFORMATION

Pressure gauge function

The pressure gauge integrated with the CXR-I dive computer has been tested and CE certified by RINA, notified body 0474, located in Genova, Italy.
The pressure gauge is a Category III device as defined under European Regulation 2016/425, and complies with the specifications set out in the harmonized European Standard EN250 for use with air compliant with Standard EN 12021 (oxygen content of 21%).
The EC certification process and verification of the operating performance of the pressure gauge in the CXR-I dive computer under standards EN250 and EN 13949 are understood to be applicable to a maximum depth of 50 m below the surface.
The CXR-I dive computer can be used in cold water (water at temperatures below 10°C).

Marking

The instrument markings are located on the tank module, and consist of the following:

- working pressure rating: 300 bar / 4,350 psi;
- reference standard: EN250;
- reference marking: CE 0474.

The conformity marking indicates compliance with the essential health and safety requirements as per European Regulation 2016/425. The number alongside CE identifies RINA, notified body 0474, located in Genova, Italy, authorized to inspect the finished product under Module D of European Regulation 2016/425.

Operating altitude:

- with decompression – sea level to approximately 3700m/12100ft
- without decompression (gauge mode) – at any altitude

Decompression model: Bühlmann ZH-L16C with gradient factors (16 tissues)

Depth measurement:

- Max displayed depth: 150m/492ft
- Resolution: 0.1m until 99.9m and 1m at depth deeper than 100m. Resolution in ft is always 1ft
- Temperature compensation of the measurement between -10 °C to +50 °C / 14 °F to 122 °F
- Accuracy from 0 to 80m/262ft: 1% ±0.2m/1ft

Temperature measurement:

- Measurement range: -10 °C to +50 °C / 14 °F to 122 °F
- Resolution: 1 °C / 1 °F
- Accuracy: ± 2 °C / ± 4 °F

Digital compass:

- **resolution:** 1°
- **accuracy:** ± 1° + 5% of tilt angle (example: at 50° tilt, accuracy is ±3.5°)
- **tilt angle:** up to 80°
- **refresh rate:** 1s

Clock: quartz clock, time, date, dive time display up to 999 minutes

Oxygen concentration: adjustable between 21% and 99%, ppO_2max range between 1.2 and 1.6bar

Logbook memory: over 1000 hours of dive profile at 5-second sampling rate

Operating temperature: -10 °C to +50 °C / 14 °F to 122 °F

Storage temperature: -20 to 70 °C / -4 to 158 °F

Display:

- Diagonal: 2.7" Technology:
- TFT Resolution: QVGA
- 320*240
- Colors: 256000
- Brightness 420cd/m²
- Mineral glass

Power supply:

- CXR-I:
  - lithium-ion rechargeable battery, with battery charge indicator
  - operating temperature
  - discharging: from -10 to +50 °C / 14 to 122 °F
  - charging: from 0 to 45 °C / 32 to 113 °F
  - battery duration from one charge: approx 40 hours of diving. Actual battery duration depends on the usage of the high intensity backlight and the water temperature
  - lifetime of the battery: approx 500 charging cycles

Bluetooth:

EU

This device is in compliance with the essential requirements and other relevant provisions of RED Directive (2014/53/EU).

FCC Warnings/ISED (Canada) Warnings -

Model: CXR-I FCC ID: 2AIKS -CXR
IC:XXXXXXX

- 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.

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.
- Responsible party's contact located in the United States: MARES USA, Congress Corporate Plaza II 902 Clint Moore Road Suite 208, 33487 Boca Raton, Florida. www.mares.com
- This device contains license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's license exempt RSS(s). Operation is subject to the following two conditions: (1) This device may not cause interference. (2) This device must accept any interference, including interference that may cause undesired operation of the device.

L'emetteur/recepteur exempt de licence contenu dans le present appareil est conforme aux CNR d'Innovation, Sciences et Developpement economique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisee aux deux conditions suivantes : (1) L'appareil ne doit pas produire de brouillage; (2) L'appareil doit accepter tout brouillage radioelectrique subi, meme si le brouillage est susceptible d'en compromettre le fonctionnement.

ICES-003 Class B Notice -Avis NMB-003 Classe B :

This Class B digital device complies with Canadian ICES-003

Cet appareil numerique classe B est conforme à la norme Canadien NMB-003.

CAN ICES-3(B) /NMB-3(B)

- Responsible party's contact located in the Canada: Head Canada Inc, 935A Southgate Dr, Guelph on N1L 0B9 Ontario, Canada, www.head.com.
- Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Others

This product uses a module which obtained a certification of construction type issued by Japan Radio Act.

13.2. MAINTENANCE

The tank pressure gauge and the parts of this product used to measure tank pressure should be serviced by an authorized Mares dealer every other year or after 200 dives (whichever comes first). In addition, the depth accuracy should be verified every two years. Aside from that, CXR-I is virtually maintenance free. All you need to do is rinse it carefully with fresh water after each dive (avoid any chemical products) and charge the battery when needed. To avoid possible problems with your CXR-I, the following recommendations will help assure years of trouble free service:

- avoid dropping or jarring your CXR-I;
- do not expose CXR-I to intense, direct sunlight;
- do not store CXR-I in a sealed container, always ensure free ventilation.

NOTE
If you notice signs of moisture on the inner wall of the mineral glass, take your CXR-I immediately to an authorized Mares service center.

— **WARNING**

The mineral glass is not exempt from scratches resulting from improper use.

— **WARNING**

Do not blow compressed air onto CXR-I, because it could damage the pressure sensor area.

13.2.1. REPLACING THE BATTERY IN CXR-I

CXR-I uses a rechargeable battery, and it may be necessary to replace it after approximately 500 charging cycles. The battery should only be replaced in a center authorized by Mares. Mares declines all responsibility for any damage caused by replacing the battery.

NOTE
Dispose of the old battery properly. Mares adopts a policy of respect for the environment, and urges use of the appropriate separated waste collection services.

• 14. WARRANTY

Mares products are guaranteed for a period of two years subject to the following limitations and conditions:

The warranty is non-transferable and applies strictly to the original purchaser.

Mares products are warranted free from defects in materials and workmanship: components that, upon technical inspection, are found to be defective, will be replaced free of charge.

Mares S.p.A. declines all responsibility for accidents of any kind that result from tampering or incorrect use of its products.

Any products returned for overhaul or repairs under warranty, or for any other reason, must be forwarded exclusively via the vendor and accompanied with a proof of purchase slip. Products travel at the risk of the sender.

14.1. WARRANTY EXCLUSIONS

Damage caused by water seepage resulting from improper use (e.g. dirty seal, battery compartment closed incorrectly, etc.).

Rupture or scratching of the case, glass or strap as a result of violent impact or blows.

Damage resulting from excessive exposure to elevated or low temperatures.

Damage caused by the use of compressed air to clean the dive computer.

14.2. HOW TO FIND THE PRODUCT SERIAL NUMBER AND ELECTRONIC ID

The serial number is laser-engraved on the back side of CXR-I, in front of the front attachment point of the strap.

To see the electronic ID, enter the **INFO** menu.

Both serial number and electronic ID can be found on the warranty card inside the box and also on the label outside the box.

• 15. DISPOSAL OF THE DEVICE

Dispose of this device as electronic waste. Do not throw it away with regular rubbish.

If you prefer, you can return the device to your local Mares dealer.

SURFACE MODE

DIVE MODE

(Se Stop List lunga)

code 44201490 – 0.000- 09/18 - Artbook 14884/18

CE

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www.mares.com

2016/425: www.mares.com/declarations