

# mares®



LIBRETTO D'ISTRUZIONI

USER'S GUIDE

BEDIENUNGSANLEITUNG

MANUEL D'UTILISATION

MANUAL DE INSTRUCCIONES

MANUAL DE INSTRUÇÕES

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## M1 DIVE COMPUTER

Congratulations. The dive computer which you have purchased is the result of the latest MARES technology, and has been designed to ensure maximum safety, efficiency, reliability and long life.

This computer is further enhanced by certain innovative features, which place it at the top of the MARES product range.

- ▶ Operating modes: "Air", "Nitrox", "Bottom Time".
- ▶ "Bottom Time" with seconds display.
- ▶ Optical port for uploading data to a PC.
- ▶ Increased Logbook capacity (approximately 38 hours of profiles, with points at 20 sec intervals).
- ▶ Timer-controlled or permanent backlighting.

In this manual you will discover all the other functions that make M1 one of the most complete computers available on the market today. You will find all the instructions for learning how to use the M1 computer and its functions.

MARES thanks you for your choice and urges you to always practice safe and responsible diving.

### WARNINGS, CAUTIONS AND SAFETY RULES

Important:

Any critical information or warnings that might affect the performance or result in the injury of the technician, COMPUTER M1 owner, or other persons are highlighted with the following symbols:

#### CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

#### WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

#### DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

Before diving, make sure you have read and understood the entire instruction manual.

#### WARNING

The M1 computer is designed exclusively for recreational sports use and not for professional applications.

#### WARNING

The dive computer cannot prevent possible decompression problems.  
The dive computer cannot take into account the physical conditions of the individual diver, which may vary from one day to the next.  
For your safety, have a general medical check-up before undertaking a dive.

#### WARNING

In addition to the dive computer, also use a depth gauge, a submersible pressure gauge, a timer or watch, and dive tables.

#### WARNING

Before the dive, check that the units of measurement have been set correctly. Incorrect settings might cause confusion resulting in underwater behavior errors.

#### WARNING

Do not dive if the instrument display seems anomalous or unclear.

#### WARNING

Check the battery power level before starting your dive.  
Do not dive if the <battery> icon indicates that the battery is low. Replace the batteries.

#### WARNING

Do not dive in mountain lakes without having first checked that the appropriate altitude program is enabled.

#### WARNING

M1 may be used with oxygen-rich mixtures (nitrox) ONLY by suitably trained and certified divers. Attempting to dive without adequate nitrox training might result in serious injury.

**⚠ WARNING**

The use of oxygen-rich mixtures exposes the diver to different hazards from those associated with compressed air. The diver must be aware of these risks and understand how to avoid them.

**⚠ WARNING**

Before starting a "Nitrox" dive, check that the dive computer is set to "Nitrox" mode, then check the composition of the breathing mix you will be using and enter its oxygen percentage in the appropriate SET function.

Entering an incorrect oxygen percentage will lead to errors in the readouts for:

- no-decompression time remaining;
- decompression stop times;
- alarm for exceeding the maximum permitted O<sub>2</sub> partial pressure.

The safety of a dive can only be assured by adequate preparation.

MARES recommends taking a specialist training course before diving with a dive computer.

MARES recommends scrupulous observance of the simple safe diving rules set out in the paragraph on "responsible diving practices".

**RESPONSIBLE DIVING PRACTICES**

- ▶ Always plan your dives in advance.
- ▶ Never exceed the limits of your skill and experience.
- ▶ Go to the deepest planned depth at the beginning of the dive.

- ▶ Check your computer frequently during the dive
- ▶ Comply with the ascent rate indicated by the computer.
- ▶ Always do a safety stop at 10 - 16 feet (3 - 5 meters) for at least 3 minutes.
- ▶ After the safety stop, ascend very slowly to the surface.
- ▶ Avoid yo-yo dives (repeatedly ascending and descending underwater).
- ▶ Avoid strenuous activity during the dive and for half an hour after surfacing.
- ▶ When diving in cold water or in the case of a strenuous dive, start ascending well before reaching the NO DEC limits.
- ▶ If it is a decompression dive, prolong the decompression stop nearest to the surface by several minutes.
- ▶ Repetitive dives should be separated by a surface interval of at least 2 hours.
- ▶ Your deepest dive should be the first one of the day.
- ▶ Avoid diving until the computer memory has cleared from the preceding day's dive.
- ▶ When doing repetitive dives for several consecutive days, take at least one day off from diving every week. In the case of decompression-stop diving, it is recommended to take one day off from diving every three days.
- ▶ Avoid planned decompression dives and do not dive deeper than 130 feet (40 meters) unless you have been specifically trained in this type of technical diving.
- ▶ Avoid repetitive "square profile" dives (dives to a single depth) deeper than 60 feet (18 meters).
- ▶ Always wait as long as possible before flying after a dive (at least 12 and preferably 24 hours), in

accordance with the recommendations of the Divers' Alert Network.

**⚠ WARNING**

Recreational divers should NOT dive deeper than 40m (130 ft). Although this computer will continue to provide information for compressed-air dives deeper than 40m (130 ft.), the risk of nitrogen narcosis and decompression sickness (DCS) is greatly increased; therefore this information should be treated as only approximate.

MARES recommends that divers never exceed the maximum permitted depth for their qualification. Diving below 130 feet (40 meters) or outside the no-decompression limits significantly increases the risk of decompression sickness.

Always ascend several minutes before going into DEC mode, and allow yourself even more time in the case of cold water conditions, repetitive dives deeper than 60 feet (18 m), or for any dive involving unusually high exertion. Failure to do this will increase your risk of decompression sickness.

 **WARNING**

NEVER dive deeper than 130 feet (40 m) or do planned decompression dives with the COMPUTER unless you are a trained and certified technical diver (IANTD, TDI, ANDI, PSA, etc.) familiar with the skills and risks of deep air diving, and licensed at least to the level of Deep Air diving for depths beyond 130 feet (40 m). Even with this level of certification and experience, this type of technical dive entails a much higher risk of DCS, regardless of the dive table or computer used. You must be aware of and willing to accept these risks before attempting such a dive.

 **WARNING**

NEVER dive alone. M1 cannot replace the assistance provided by a diving buddy.

 **WARNING**

NEVER use your COMPUTER or any other dive computer for repetitive "square profile" dives (dives to the same or nearly the same depth) deeper than 60 feet (18 m). This is an unsafe diving practice which will greatly increase your risk of DCS, regardless of what your COMPUTER reads.

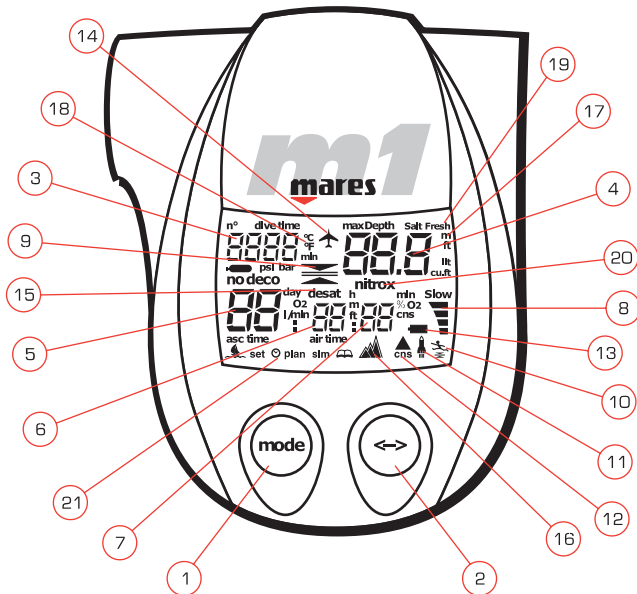
 **WARNING**

Never fly within 24 hours of your last dive, or in any case wait until the M1 <no-fly> indication disappears.

Do not compress your M1 computer in a hyperbaric chamber. The instrument can be seriously damaged if it is not submerged in water.

## QUICK GUIDE

- 1 <MODE> BUTTON.
- 2 <-> BUTTON.
- 3 DIVE - dive time.  
DIVE - temperature.  
CLOCK - year.  
LOGBOOK - dive n°.
- 4 DIVE - depth.  
DIVE - maximum depth.  
CLOCK - month.
- 5 DIVE - no decompression time remaining.  
DIVE - duration of the specified.  
decompression stop.  
DIVE - total ascent time.  
CLOCK - date.  
Bottom Time Indicator, "Bt".
- 6 Decompression stop depth.  
CLOCK - hour.
- 7 DIVE - % CNS O<sub>2</sub>.  
DIVE - % O<sub>2</sub>.  
CLOCK - minutes.
- 6+7 SURF - surface time.  
SURF - "no fly" time.  
SURF - desaturation time.  
Stop Mode indication, "StoP".
- 8 % ascent rate.
- 9 Decompression stop depth indicators.
- 10 Omitted decompression stop indicator.
- 11 Uncontrolled ascent indicator.
- 12 Max % CNS O<sub>2</sub> error indicator.
- 13 Low battery indicator.
- 14 "No fly" indicator.
- 15 "Desat" indicator.
- 16 Altitude level.
- 17 Unit of depth measurement.
- 18 Unit of temperature measurement.
- 19 Fresh / seawater program selection.
- 20 Nitrox dive indicator.
- 21 Active mode indicator.



## TECHNICAL/FUNCTIONAL CHARACTERISTICS

### TECHNICAL CHARACTERISTICS

#### DEPTH MEASUREMENT:

- ▶ Maximum displayed depth: 150 m (495 ft).
- ▶ Measurement resolution: 10 cm in the 0-100 m range / 1 m in the 100-150 m range.
- ▶ Temperature compensation of the measurement.
- ▶ Measurement accuracy: from 0 to 80 m,  $\pm 1\%$  of full scale.
- ▶ Calibration in fresh water.
- ▶ Difference in sea water: 2.5%.

#### TEMPERATURE MEASUREMENT:

- ▶ Measurement range:  $-10 / +50$  °C (14/122°F).
- ▶ Measurement resolution: 1°C.
- ▶ Measurement accuracy:  $\pm 2$ °C ( $\pm 2$ °F).

#### ALGORITHM:

- ▶ 11 tissues from 2.5 to 480.
- ▶ Deterministic-exponential algorithm, with M values (low bubble) derived from the Rogers and Powell studies conducted using Doppler methods (modified Haldanean).
- ▶ Display backlight: timer-controlled and permanent
- ▶ Power supply: 2 alkaline 1.5 V batteries (type AAA) easily replaceable by the user.
- ▼ Battery life:
  - ▶ Approximately 12 months with 50 dives and occasional use of the backlight.
  - ▶ Approximately 10 dives with the backlight always on.
- ▶ Operating temperature: from  $-10$  to  $+50$ °C (14/122°F).

- ▶ Storage temperature: from  $-20$  to  $+70$ °C ( $-4 / +158$ °F).

### FUNCTIONAL CHARACTERISTICS

#### ▼ Operating modes:

- ▶ "Air".
- ▶ "Nitrox".
- ▶ "Bottom Time".

- ▼ Stop Mode: lockout in case of omitted stop and/or uncontrolled ascent (unless disabled by the user).

- ▶ Depth display: meters/feet.
- ▶ Temperature display: °C/°F.
- ▶ Fresh/sea water selection: manual.

#### ▼ Altitude programs:

- ▶ P0 (0-700 m) (0-2300 ft).
- ▶ P1 (700-1500 m) (2300-4900 ft).
- ▶ P2 (1500-2400) (4900-7900 ft).
- ▶ P3 (above 2400 m) (above 7900 ft).

- ▶ Decompression stops: up to 24 meters (79 feet).
- ▶ Differentiated ascent rate: from 10 to 18 m/min (33 to 59 ft/min).

#### ▼ Audible alarms, which can be disabled:

- ▶ Low battery.
- ▶ Deco stop depth violation.
- ▶ Excessive ascent rate.
- ▶ No decompression limits reached.
- ▶ Maximum permitted depth for the programmed value of max PPO<sub>2</sub>.

#### ▶ Simulator mode.

- ▶ Scrolling of no-decompression limits: from 12 to 48 meters (39 to 157 feet).

- ▶ Calendar clock: Year, month, date, hour, minutes (leap year management).

- ▶ PC Interface: Optical, with RS232 serial adapter.

- ▼ User programmable parameters (via the buttons or the PC interface):

- ▶ "Air"/"Nitrox"/"Bottom Time".
- ▶ Percentage Oxygen in Breathing Mix (from 21% to 50% in increments of 1%).
- ▶ Max PPO<sub>2</sub>: (from 1.2 to 1.6 bar) (from 17.4 to 23.2 psi).
- ▶ Altitude program.
- ▶ Temperature measurement unit: °C / F.
- ▶ Depth measurement unit: meters / feet.
- ▶ Fresh/sea water.
- ▶ Audible alarms (on/off).
- ▶ Stop mode on uncontrolled ascent (on/off).
- ▶ Calendar clock settings.
- ▶ Clear residual nitrogen memory.

#### ▼ History:

- ▶ Total number of dives logged.
- ▶ Total dive hours and minutes logged.
- ▶ Greatest depth logged.
- ▶ Coldest temperature logged.

- ▶ Dives stored in logbook: 50 with profile for a maximum of approximately 38 hours.

- ▶ Profile point interval: 20 Sec.

#### ▼ Data stored in logbook:

- ▶ Start date and time of the dive (year, month, date, hour and min).

#### ▼ Dive settings:

- ▶ Operating mode: "Air", "Nitrox", "Bottom Time".
- ▶ Salt/Fresh.
- ▶ Altitude program.
- ▶ % O<sub>2</sub> in the breathing mix.
- ▶ Maximum permitted O<sub>2</sub> partial pressure setting (PPO<sub>2</sub> max).

#### ▼ Technical data:

- ▶ Dive duration.
- ▶ Max depth (resolution 10 cm).
- ▶ Min temperature.
- ▶ % CNS O<sub>2</sub> at start of dive.

- ▶ % CNS O<sub>2</sub> at end of dive.
- ▼ Underwater behavior errors:
  - ▶ Temporary overshoot of deco stop.
  - ▶ Omitted deco stop.
  - ▶ Excessive ascent rate.
  - ▶ Uncontrolled ascent.
  - ▶ Exceeded maximum permitted partial pressure of O<sub>2</sub>.
  - ▶ Exceeded max permitted % CNS O<sub>2</sub>.
- ▼ Profile points at 20 second intervals:
  - ▶ max depth reached within each interval (resolution 10 cm).
  - ▶ excessive ascent rate.
  - ▶ omitted deco stop.
  - ▶ Deco / no deco.

## OPERATING MODES

The nine operating modes of the M1 dive computer are listed below:

1. OFF mode.
2. DIVE mode.
3. SURF mode.
4. SET mode.
5. CLOCK mode.
6. PLAN mode.
7. SIMUL mode.
8. LOGBOOK mode.
9. PC mode.

As shown in Fig. A, it is possible to advance from one mode to the next by pressing <Mode>, or to go back to the preceding mode by pressing <->.

## UTILITY FUNCTIONS

### MONITORING OF THE BATTERY

#### POWER LEVEL

The M1 periodically monitors the battery power level. If the battery power is found to be low (level 1), an audible alarm is sounded, the battery icon appears and the display backlight function is disabled.

If battery power level 1 is reached during a dive, the battery icon appears but the audible alarm is inhibited.

From the time when the battery icon first appears, it is possible to do 5 more dives (see chapter FAQ).

When the battery reaches its lowest power level (level 2), the "off bAt" message appears, Fig. 1, and the M1 is disabled.



FIG. 1

Even if the dive computer is not used, the batteries should be replaced at least every 12 months.

#### AUTOMATIC SWITCH-OFF

If the M1 is ON but no buttons are pressed for a certain amount of time, it will automatically switch itself OFF. The delay before automatic switch-off varies depending on the current operating mode.

DIVE - PreDive	10 min
DIVE - Dive	NEVER
SIMUL - Dive, PostDive and Surface	15 min
LOGBOOK - automatic scrolling of the profile	10 min
Under all other conditions	3 min

The switch-off delay timer is cleared whenever a button is pressed, and in PC mode it is cleared at each transmission.

After a dive, if the no-fly time is not zero, the M1 switches to OFF mode but the display remains active, showing some information. When the no-fly time goes to zero the display switches off.

#### DISPLAY BACKLIGHT

The illumination of the backlight is enabled in DIVE Mode and can be activated in two ways:

##### PRE-DIVE

- ▶ 15 sec timer-controlled: press the <-> button for approximately 2 sec.

##### DIVE

- ▶ 15 sec timer-controlled: press and release the <-> button.
- ▶ Always on: press the <-> button for approximately 2 sec; the backlight can then be switched off by pressing the <-> button again.



## SETUP OF TECHNICAL PARAMETERS

SET mode can be accessed, as shown in Fig. A, by pressing the <Mode> button from DIVE or SURF mode, or by pressing the <-> button from CLOCK mode.

SET mode is subdivided into five function groups, SET1.... SET5, as shown in Fig. B. It is possible to navigate through the different SET function groups in the following manner:

- ▶ To enter a given SET function group, press the <Mode> button for approximately 2 sec.
- ▶ Alternatively, press and immediately release the <Mode> button to skip to the next SET function.
- ▶ Press and immediately release the <-> button to go back to the preceding SET function.

From SET5, pressing the <Mode> button saves any changes made to the settings and goes on to CLOCK mode. The parameters within a given SET function group are modified using the <-> button.

### SET1 - SETUP OF "AIR", "NITROX", "BOTTOM TIME" OPERATING MODE AND ASSOCIATED PARAMETERS

The display initially shows the following parameters, (fig. 2):

- ▶ "Nitrox" icon.
- ▶ "Air".
- ▶ "Bt".



FIG. 2

To enter SET1 press the < Mode > button for approximately 2 sec. Alternatively, to advance to SET2, press and immediately release the <Mode> button .

#### ▼ OPERATING MODE SETUP: "AIR", "NITROX", "BOTTOMTIME"

The display shows the currently active operating mode. Press the <-> button to change the setting. If 'Nitrox' mode is selected, pressing the <Mode> button will advance to the setup of % O<sub>2</sub> and then of max PPO<sub>2</sub>. Otherwise, if "Air" or "Bt" mode is selected, pressing the <Mode> button advances to SET2.

#### ▲ WARNING

If you have completed a NITROX dive and are planning a repetitive dive using compressed air, set your dive computer for NITROX mode with a % O<sub>2</sub> of 21%. In this way, the monitoring of the % CNS O<sub>2</sub> will remain active.

#### ▼ "NITROX" BREATHING MIX SETUP

The percentage of O<sub>2</sub> in the breathing mix can be entered in the range between 21% - 50%, in increments of 1% (fig. 3). Press the <-> button to increase the percentage. Press the <Mode> button to save the percentage value and advance to the next parameter.



FIG. 3

#### ▲ WARNING

Do not use mixes with an O<sub>2</sub>% greater than 50%.

#### ▲ WARNING

It is essential to correctly set the oxygen percentage in the breathing mix to ensure correct readouts of:

- no decompression time remaining;
- decompression stop times;
- alarm for exceeding maximum permitted PPO<sub>2</sub>.

#### ▼ MAXIMUM O<sub>2</sub> PARTIAL PRESSURE SETUP

The maximum partial pressure of O<sub>2</sub>, which triggers an alarm if exceeded, can be programmed between a minimum of 1.2 bar (17.4 psi) and a maximum of 1.6 bar (23.2 psi) in increments of 0.1 bar (1.45 psi) (fig. 4). Increase the value by pressing the <-> button. Press the <Mode> button to save the changes made and advance to SET2.



FIG. 4

#### SET2 - MAIN PARAMETER SETUP

The display initially shows the various parameters which can be programmed in the SET2 function group (fig. 5):

- ▶ Altitude program.
- ▶ "°C" or "°F" temperature units.
- ▶ "m" or "ft" depth units.
- ▶ "salt" or "fresh" water.



FIG. 5

To enter SET2 press the < Mode > button for approximately 2 sec.

To skip to SET3 press and immediately release the <Mode> button.

To go back to SET1 press and immediately release the <-> button.

#### ▼ ALTITUDE PROGRAM

On entering this setup, the currently selected altitude program (P0, P1, P2, P3) is displayed; press the <-> button to select the next altitude program. Press the <Mode> button to skip to the next parameter.

#### ▼ TEMPERATURE UNIT SETUP

On entering this setup, the currently selected unit of measurement will start blinking; use the <-> button to change the setting. Press the <Mode> button to skip to the next parameter.

#### ▼ DEPTH UNIT SETUP

On entering this setup, the currently selected unit of measurement will start blinking; use the <-> button to change the setting. Press the <Mode> button to skip to the next parameter.

#### ▼ FRESH/SEA WATER SETUP

On entering this setup, the currently selected option (fresh or seawater) will start blinking. Use the <-> button to change the setting. Press the <Mode> button to skip to SET3.

#### SET 3 - OPTIONAL PARAMETER SETUP

The display initially shows the indications of the parameters which can be programmed in the SET3 function group (fig. 6):

- ▶ "BEEP".
- ▶ Ascent rate icons.

To enter SET3, press the <Mode> button for approximately 2 sec.

To skip to SET4, press and immediately release the <Mode> button.

To go back to SET2, press and immediately release the <-> button.



FIG. 6

#### ▼ BEEPER SETUP

This function is used for inhibiting or enabling the audible alarms.

On entering this setup, the 'beep' message appears together with the current setting (ON or OFF).

Press the <-> button to change the setting. Press the <Mode> button to skip to the uncontrolled ascent setup.

**⚠ WARNING**

The audible alarms should only be disabled by expert divers who take full responsibility for the consequences of this operation.

▼ **UNCONTROLLED ASCENT SETUP**

This function disables or enables the "stop" in case of uncontrolled ascent. It can be useful for instructors when practicing emergency ascents, to prevent the dive computer from locking out. On entering this setup, the ascent rate indicator and the currently selected option (ON or OFF) will appear. Press <-> to change the setting. Press <Mode> to skip to SET4.

**⚠ WARNING**

This function should only be used by highly experienced divers who take full responsibility for the consequences of disabling the "stop" in case of uncontrolled ascent.

**SET 4 - CALENDAR CLOCK SETUP**

The display initially shows the various parameters which can be programmed in the SET4 function group (Fig. 7):

- ▶ "Clock" icon.



FIG. 7

To enter SET4, press <Mode> for approximately 2 sec. To skip to SET5, press and immediately release the <Mode> button.

To go back to SET3, press and immediately release the <-> button.

The display shows the current date and time, with the date digits blinking. The blinking value can be incremented by pressing <-> (hold down the button for rapid increment); when the desired value is reached, press <Mode> to save the new setting and go on to the next value (month). After setting the minutes, M1 checks the compatibility of the date and month settings, taking leap years into account. If the date and month are incompatible with each other, pressing the <Mode> button returns to the date setting instead of advancing to SET5, prompting the user to correct the date. In this way it is not possible to enter inexistent dates such as April 31 or February 29 2001.

**SET 5 - CLEAR RESIDUAL NITROGEN MEMORY**

This set function is used for clearing the residual nitrogen memory.

The display initially shows the "desat" icon. To enter SET5, press the <Mode> button for approximately 2 sec (fig. 8).



FIG. 8

Alternatively, to exit SET mode and advance to CLOCK mode, press and immediately release the <Mode> button. To go back to SET4, press and immediately release the <-> button.

To clear the residual nitrogen memory, press and hold down the <-> button for at least 6 seconds. The clearing of the nitrogen memory is confirmed as shown in fig. 9.



FIG. 9

**⚠ WARNING**

This function should only be used by expert divers. A diver who clears the residual nitrogen memory cannot use the instrument for repetitive dives. After clearing the residual nitrogen memory, wait at least 24 hours after your last dive before using the M1 again.

**DIVING WITH THE M1****ACTIVATING DIVE MODE**

DIVE mode is activated by means of the buttons. When the <Mode> button is pressed in OFF mode, the M1 performs the autozero procedure (depth calibration) and the low battery check. Then it illuminates the display and backlight for approximately 2 seconds and, if everything is working correctly, the instrument goes into PreDive mode.

If a dive is started with the M1 in OFF mode, or in any state other than DIVE mode, the periodic monitoring of ambient pressure will automatically activate DIVE mode within a maximum delay of 30 sec after the diver has descended below 1.5 meters.

If, during the first few meters of a descent, the diver notices that the M1 is off, he can press the <Mode> button to switch it on, pre-empting the automatic switch-on which would in any case take place after a maximum delay of 30 sec.

If, during the first few meters of the descent, the user notices that the M1 is in some mode other than DIVE, he can use the buttons to activate DIVE mode, pre-empting the automatic switch to DIVE mode

which would in any case take place after a maximum delay of 30 sec.

In dives with very rapid descents it is preferable to switch on the computer using the buttons.

**AIR DIVE**

The various operating phases of DIVE mode are described below.

**DIVE - WAITING TO START DIVE, PreDIVE (FIG. 10)**

This phase persists until the depth reading exceeds 1.5 m (4.9 ft). If the PreDive state lasts longer than 15 min without any button being pressed, the M1 switches to OFF mode.



FIG. 10

**DIVE - "NO DECOMPRESSION" DIVE**

When the depth reading exceeds 1.5 m (4.9 ft), the dive begins and the dive timer starts measuring its duration. Recording of the dive data in memory (LogBook) begins if this phase persists for more than 20 seconds.

The dive parameters are shown in two display layouts: WIN1 and WIN2.

WIN1 shows the following parameters (fig. 11):

- ▶ Sea/fresh.
- ▶ No deco icon.
- ▶ current depth (in "m" or "ft").

- ▶ Duration of the dive in minutes.
- ▶ No decompression time remaining in minutes.



FIG. 11

Pressing the <Mode> button switches over, for approximately 8 seconds, to the WIN2 display layout which shows (fig. 12):

- ▶ Salt/fresh.
- ▶ No deco icon.
- ▶ Maximum depth reached (in "m" or "ft").
- ▶ Water temperature (in "C" or "F").
- ▶ No decompression time remaining expressed in minutes.

After 8 seconds, or when the <Mode> button is pressed, the display automatically reverts to the WIN1 layout.



FIG. 12

When the no decompression time remaining is 1 min, an audible alarm is sounded to indicate that the diver is about to exceed the no decompression limits.

#### DIVE - "DECOMPRESSION STOP" DIVE

If the diver does not ascend when the above alarm is sounded, the M1 will start calculating a "decompression stop" dive, indicated by the appearance of the "deco" message and an audible alarm.

The dive parameters are displayed in the WIN1 and WIN2 layouts as follows:

WIN1 shows the following information (fig. 13):

- ▶ Seal/fresh.
- ▶ "Deco" icon.
- ▶ Current depth (in "m" or "ft").
- ▶ Duration of the dive expressed in minutes.
- ▶ Depth of deepest decompression stop.
- ▶ Duration of the decompression stop in question.



FIG. 13

Pressing the <Mode> button switches over, for approximately 8 seconds, to the WIN2 layout which shows (fig. 14):

- ▶ Salt/fresh.
- ▶ "Deco" icon.
- ▶ maximum depth reached (in "m" or "ft").
- ▶ measured temperature (in "°C" or "°F").

- ▶ ascent time, i.e. the total time necessary for surfacing.



FIG. 14

After the 8 seconds have elapsed, or when the <Mode> button is pressed, the display automatically reverts to the WIN1 layout.

The ascent time is given by the sum of:

- ▶ the durations of the various decompression stops (excluding the Safety Stop time, which is always recommended).
- ▶ the time required to ascend at an average speed of 15m/min (49ft/min).

The M1 will also check that the decompression stops are performed correctly: two icons (fig. 15), graphically indicate what action the diver should take:

- ▶ 2 triangles: correct decompression stop depth;
- ▶ upward triangle: diver below decompression stop depth, ascend;
- ▶ downward triangle: diver has ascended above decompression stop depth, descend!!



FIG. 15

#### ⚠ WARNING

Never ascend above the correct decompression stop depth.

If the diver overshoots the decompression stop depth by more than 30 cm (11.8 in), the "downward triangle" icon starts blinking; if the overshoot exceeds 1 m (3.28 ft), an audible alarm is sounded in addition to the blinking icon. These warnings remain active until normal conditions are restored.

#### ⚠ WARNING

When the omitted deco stop alarms are triggered, desaturation of the simulated tissues is halted; it resumes when the diver returns to the correct decompression stop depth.

If the decompression stop overshoot exceeds 1 meter (3.28 ft) and lasts more than 3 minutes, the computer switches to Omitted Stop mode. In this case, the corresponding icon appears (fig. 16).



FIG. 16

If, after surfacing, the diver attempts a repetitive dive, the M1 will function only as a depth gauge (Stop Mode).

#### DIVE - ASCENDING

A reduction in depth activates an ascent rate monitoring algorithm. The dive computer shows a graphic indication of the diver's ascent rate as a percentage of the optimal value, given in the table below:

Depth	Optimal ascent rate
Less than 10 m (32.8 ft)	10 m/min (32.8 ft/min)
Between 10 m and 20 m (32.8 and 65.6 ft)	12 m/min (39.4 ft/min)
More than 20 m (65.6 ft)	18 m/min (59 ft/min)

If the diver's speed of ascent reaches 60% of the maximum permitted ascent rate for the current depth, the corresponding graphic indicator will appear.

The correspondence between the bars and the percentage of the optimal ascent rate is as follows:

1 bar (14.5 psi)	60 < % speed < 80
2 bars (29 psi)	80 < % speed < 95
3 bars (43.5 psi)	95 < % speed < 105
4 bars (58 psi)	105 < % speed < 120
4 bars (58 psi) + "Slow"	% speed > 120

If the "Slow" message appears, an audible alarm is sounded which persists until the diver's speed of ascent drops below 120%.

#### **⚠ DANGER**

An excessive speed of ascent increases the risk of decompression sickness.

If the diver's ascent rate is sufficiently fast to trigger the audible alarm, the computer begins monitoring an uncontrolled ascent.

An ascent is considered to be "uncontrolled" when the maximum ascent rate is exceeded (SLOW with audible alarm) for a stretch equal to at least 2/3 of the depth at which the audible alarm started sounding. This criterion only applies to alarms triggered below a depth of 12 meters (39.4 feet).

In the event of an uncontrolled ascent (fig. 17), if the user attempts a repetitive dive after surfacing, the M1 will function only as a depth gauge (Stop Mode). The "STOP after uncontrolled ascent" function can be disabled in SET3.



FIG. 17

#### **⚠ WARNING**

The above option is intended only for highly experienced divers, who take full responsibility for the consequences of disabling the function which locks out the computer in case of an uncontrolled ascent.

#### DIVE - SAFETY STOP

If the maximum depth of a dive exceeds 10 meters (32.8 feet) a "Safety Stop" is activated for the ascent; the M1 will then suggest a 3 minute safety stop at a depth between -2.5 and -5 meters (-8.2 and -16.4 feet), replacing the no-dec time of 99 min with the message "St 3 min...2min...1min" (fig. 18). If the diver moves outside the above mentioned depth range, the no-dec time reappears on the display, and the safety stop timer is stopped. When the diver re-enters the safety stop depth range, the safety stop timer resumes from where it left off. If the diver returns below 10 meters (32.8 feet), the safety stop timer ignores the aborted stop and will subsequently start counting down from 3 minutes again.

In the case of decompression-stop dives, the computer will extend the duration of the stop at 3 meters (9.8 feet) by an additional 3 minutes, displaying the safety stop information as described above.



FIG. 18

### DIVE - SURFACING

When the measured depth is less than 1 meter (3.28 feet), the dive is suspended and the dive timer is stopped. If the diver does not return below 1.5 meters (4.9 feet) within the next 10 minutes, the M1 considers dive to be completed and records its data in the LogBook; otherwise the dive continues and the M1 resumes the dive timer count.

The display shows (fig. 19):

- ▶ Duration of the dive.
- ▶ Maximum depth.



FIG. 19

After 10 minutes, the M1 switches from DIVE mode to OFF mode, and shows the following data (fig. 20):

- ▶ The airplane icon until the no-fly time goes to zero;
- ▶ Desaturation time and icon, until the desaturation time goes to zero;
- ▶ Any icons for underwater behavior errors (omitted stop, uncontrolled ascent).



FIG. 20

### ⚠ WARNING

Do not fly while the no-fly icon is illuminated.

### DIVE - STOP MODE

In the event of an omitted stop and/or uncontrolled ascent, the M1 will lock out and function only as a depth gauge for any subsequent dives.

The WIN1 display shows (fig. 21):

- ▶ Depth.
- ▶ Dive time.
- ▶ "Stop".



FIG. 21

Pressing the <Mode> button switches over, for approximately 8 sec, to the WIN2 display which shows (fig. 22):

- ▶ Maximum depth of the dive which triggered Stop Mode.
- ▶ Duration of the dive which triggered Stop Mode.
- ▶ "Attn".



FIG. 22

After the 8 seconds have elapsed, or when the <Mode> button is pressed, the computer automatically reverts to the WIN1 display. If the user attempts to dive while the computer is in Stop Mode, the profile will nevertheless be recorded in the logbook.

Stop Mode lasts for 24 hours. The M1 can be released from this condition by clearing the residual nitrogen memory.

### WARNING

This function should only be used by highly experienced divers. Users who clear the residual nitrogen memory cannot use the instrument for repetitive dives. Do not dive with the M1 after clearing the nitrogen memory if you have already dived within the previous 24 hours.

## "NITROX" DIVE

Due to the lower percentage of nitrogen in the breathing mix, diving with oxygen-rich mixtures carries a lower risk of decompression sickness than diving with compressed air. However, the higher oxygen content of the mix exposes the diver to oxygen toxicity hazards which do not generally occur in recreational diving with compressed air. The M1 monitors the dive time and depth and, on the basis of the oxygen percentage entered in the SET function, provides indications which allow the diver to remain within the safety limits for oxygen exposure. To do a Nitrox dive, it is necessary to choose the NITROX option in SET1.

### WARNING

Before the dive, check that the Nitrox dive parameters have been correctly set up: the percentage of oxygen in the mix and the partial pressure of oxygen partial pressure which determines the maximum permitted depth for the dive.

### WARNING

Do not use breathing mixes with % of O<sub>2</sub> higher than 50%

### WARNING

Correctly setting the percentage of oxygen in the breathing mix is indispensable for ensuring correct readouts of:

- no decompression time remaining;
- decompression stop times;
- alarm for exceeding the maximum permitted PPO<sub>2</sub>.

The M1 handles "Nitrox" dives in a similar manner to compressed air dives, with the same phases and procedures for activating DIVE mode. The only differences between compressed-air and Nitrox dives concerns the monitoring of critical "Nitrox" dive parameters, and the display of these parameters in addition to the normal air dive parameters (described in the preceding chapter).

The following section describes the critical "Nitrox" dive parameters monitored by the M1, and the differences in the data display layouts.

### WARNING

Before reading the "Nitrox Dive" chapter, the user is advised to carefully read the "Air Dive" chapter.

## CHECKING THE CRITICAL NITROX DIVE PARAMETERS

### OXYGEN PARTIAL PRESSURE

When the diver reaches a depth at which the PPO<sub>2</sub> exceeds the maximum permitted value entered in the corresponding SET, (from 1.2 to 1.6 ATM), an alarm condition is triggered indicated by:

- ▶ Blinking depth indication.
- ▶ Audible alarm.

The alarm persists until the diver ascends sufficiently for the oxygen partial pressure to return within the acceptable limits.

### WARNING

When this alarm occurs, ascend immediately until the alarm condition ceases.

### EFFECTS ON THE CENTRAL NERVOUS SYSTEM

Oxygen toxicity exposure is monitored by means of a CNS (Central System Calculation), based on currently accepted recommendations for exposure limits. This toxicity is expressed as a percentage value, % CNS O<sub>2</sub>, ranging from 0% to 120%. The percentage value of CNS O<sub>2</sub> is shown on the display, and an alarm is triggered when it exceeds 75%, signaled by blinking of the value.

Fig. 23-29 show the data that is displayed during the various phases of the dive:

Fig. 23- PreDive, on activating DIVE mode, the display shows the % O<sub>2</sub> and the % CNS O<sub>2</sub> if it is greater than zero.





FIG. 23

Fig. 24 - "No decompression" dive, the WIN1 display layout shows:

- ▶ Nitrox icon.
- ▶ Sea/fresh.
- ▶ No deco icon.
- ▶ Current depth (in "m" or "ft").
- ▶ Dive duration in minutes.
- ▶ No decompression time remaining in minutes.
- ▶ % CNS O<sub>2</sub>.



FIG. 24

Fig. 25 - Pressing the <Mode> button switches, for approximately 8 seconds, to the WIN2 display layout which shows:

- ▶ Nitrox icon.
- ▶ Sea/fresh.
- ▶ No deco icon.
- ▶ Maximum depth (in "m" or "ft").
- ▶ Measured temperature (in °C or °F).
- ▶ No decompression time remaining expressed in minutes.
- ▶ Value entered for % O<sub>2</sub> in the breathing mix.

After the 8 sec have elapsed, or when the <Mode> is pressed, the display automatically reverts to the WIN1 layout.



FIG. 25

Fig. 26 - "Decompression stop" dive, the WIN1 display layout shows:

- ▶ Nitrox icon.
- ▶ Sea/fresh.
- ▶ "Deco" icon.
- ▶ Current depth (in "m" or "ft").
- ▶ Dive duration expressed in minutes.
- ▶ Depth of deepest decompression stop.
- ▶ Duration of the decompression stop in question.
- ▶ % CNS O<sub>2</sub>.



FIG. 26

Fig. 27 - Pressing the <Mode> button switches, for approximately 8 seconds, to the WIN2 display layout which shows:

- ▶ Nitrox icon.
  - ▶ Salt/fresh.
  - ▶ "Deco" icon.
  - ▶ Maximum depth reached (in "m" or "ft").
  - ▶ Measured temperature (in °C or °F).
  - ▶ Ascent time, i.e. the total time required to return to the surface.
  - ▶ Programmed value of % O<sub>2</sub> in the breathing mix.
- After the 8 sec have elapsed, or when the <Mode> is pressed, the display automatically reverts to the WIN1 layout.



FIG. 27

Fig. 28- Surfacing, the display shows:

- ▶ the duration of the dive.
- ▶ the maximum depth.
- ▶ % CNS O<sub>2</sub>.
- ▶ % O<sub>2</sub>.



FIG. 28

Fig. 29 - After 10 minutes M1 switches from DIVE mode to OFF mode, and shows:

- ▶ Blinking airplane icon until the no-fly time goes to zero.
- ▶ Desaturation time and icon until the desaturation time goes to zero.
- ▶ % CNS O<sub>2</sub>.
- ▶ Icons for any underwater behavior errors (omitted stop, uncontrolled ascent, % CNS O<sub>2</sub>).



FIG. 29

## "BOTTOM TIME"

Only the dive timer (with seconds display) and depth gauge functions are active.

WIN1 shows the following information (fig. 30):

- ▶ Depth.
- ▶ Dive time in minutes and seconds.
- ▶ "Bt" message.



FIG. 30

Pressing the <Mode> button switches, for approximately 8 seconds, to the WIN2 layout which shows:

- ▶ Maximum depth.
- ▶ Measured temperature (in °C or °F).
- ▶ "Bt" message.

After the 8 seconds have elapsed, or when the <Mode> button is pressed, the display automatically reverts to the WIN1 layout.

The profiles of any dives in "bottom time" mode will be stored in the logbook together with the other dives. If, after a "Bt" dive, the user attempts to set "Air" or "Nitrox" mode using SET1, the M1 will lock out in Stop Mode for the next 24 hours.

## SURFACE MODE

### POST DIVE SURFACE TIME

Fig. A shows the different ways for accessing SURF mode, i.e. by pressing the <Mode> button from DIVE mode or by pressing the <-> button from SET mode. M1 keeps SURF mode visible for as long as the no-fly icon is active.

To enter SURF mode, press the <Mode> button for 2 seconds (fig. C).

- ▶ The display shows the surface time in hours and minutes (fig. 31). In the case of a "Nitrox" dive, the displayed value is replaced for approximately 3 sec by the value of % CNS O<sub>2</sub>.



FIG. 31

Pressing the <-> button displays the desat time. Pressing the <-> button again switches displaying to the no-fly time.

Pressing the <-> button again reverts to showing the surface time.

Pressing the <Mode> button exits SURF mode and goes on to SET mode.

#### RELATIONSHIP BETWEEN DESATURATION TIME AND NO-FLY TIME

	DESATURATION TIME	NO-FLY TIME
no decompression dive	0 ÷ 12 hours	12 hours
	> 12 hours	= Desaturation time
stop dive or repetitive dive	0 ÷ 24 hours	24 hours
	> 24 hours	= Desaturation time

#### CALENDAR AND CLOCK

Fig. A shows the different ways for accessing SURF mode, i.e. by pressing the <Mode> button from SET mode or by pressing the <-> button from PLAN mode. The display (fig. 32) shows:

- ▶ Year (4 digits).
- ▶ Date.
- ▶ Month.
- ▶ Hour and minutes (in 24 h format).



FIG. 32

#### SCROLLING OF NO DECOMPRESSION LIMITS

Fig. A shows the different ways for accessing SURF mode, i.e. by pressing the <Mode> button from CLOCK mode or by pressing the <-> button from SIMUL mode. This function allows the user to scroll through the no decompression limits, automatically taking into account the current residual saturation of his body tissues from the preceding dive.

If a "Nitrox" dive is selected, the computer also takes into account the percentage of O<sub>2</sub> and the max PPO<sub>2</sub> settings.

To enter PLAN mode, press the <Mode> button for 2 seconds (fig. D).

Scrolling is started by pressing the <Mode> button, the computer displays (fig. 33):

- ▶ Depth.
- ▶ No decompression time remaining expressed in minutes.



FIG. 33

Repeatedly press and release the <-> button to increase the depth by three meters (9.8 feet) each time, up to a maximum of 48 m (157.4 ft). For each depth, the display shows the corresponding no decompression time remaining expressed in minutes.

Instead, if the two buttons are pressed simultaneously, the computer exits PLAN mode.

If "Nitrox" mode is active, the display shows the programmed % of O<sub>2</sub> (fig. 34).



FIG. 34

The maximum permitted depth will vary depending on the values entered for % O<sub>2</sub> and maximum PPO<sub>2</sub>. In "Bottom Time" mode, scrolling of the no decompression limits is inhibited (fig. 35).



FIG. 35

In "Air" or "Nitrox" mode, scrolling of the no decompression limits is inhibited if the Stop condition is active (fig. 36).



FIG. 36

## DIVE SIMULATOR

Fig. A shows the different ways for accessing SURF mode, i.e. by pressing the <Mode> button from PLAN mode or by pressing the <-> button from LOG mode.

The M1 can simulate dives taking into account the current residual saturation of the diver's tissues. In the case of "Nitrox" dives, the simulation also takes into account the settings for % O<sub>2</sub> in the breathing mix and for maximum PPO<sub>2</sub>.

If the M1 is in "Bottom Time" mode, the dive simulator function is inhibited. In "Air" or "Nitrox" mode, the dive simulator function is inhibited if the Stop condition is active.

To enter SIMUL mode, press the <Mode> button for 2 seconds (fig. E). This simulation mode phases are:

### SIMUL - WAITING TO START DIVE (FIG. 37)

Press the <-> button to start simulating the dive.



FIG. 37

### SIMUL - DIVE

The simulation time runs 5 times faster than real time. In other words, after 12 seconds of real time, one minute will have passed in the simulated dive. The M1 displays the data in the same way as for a real dive, again dividing it into two display layouts. At approximately 20 seconds intervals, the WIN1 display layout is replaced by the WIN2 which shows the maximum depth and the ascent time; after approximately 4 seconds the display reverts to showing the WIN1 layout.

Button functions:

Press and release the <-> button to increase the depth by 1 meter (3.28 feet) each time. Repeatedly press and release this button to simulate a descent rate of 12 m/minute (39.3 ft/minute). Keep it pressed to simulate a descent rate of 24 m/min (78.7 ft/min). Press and release the <Mode> button to decrease the depth by 1 meter (3.28 feet) each time. Repeatedly press and release this button to simulate an ascent rate of 12 m/min (39.3 ft/min). Keep the <Mode> button pressed to simulate an ascent rate of 18 m/min (59 ft/min).

Press <Mode> and <-> simultaneously to exit SIMUL mode.

### SIMUL - SURFACING

When the depth is less than one meter (3.28 feet), the M1 considers the diver to be at the surface. The display shows the maximum depth reached and the duration of the simulated dive.

Press the <-> button to resume the dive.

Press <Mode> and <-> simultaneously to exit SIMUL mode.

### SIMUL - POST DIVE SURFACE TIME

On surfacing from the simulated dive, the M1 switches to surface mode and displays the surface time. This value increases quickly because the simulation time runs even faster than during dive mode (one real-time second = one minute in the simulated surface time). Press <Mode> to switch to a display of the "desat time".

### SIMUL - REPETITIVE DIVE

To simulate a repetitive dive, wait until the desired "surf-time" has elapsed in the simulation, then press the <-> button to start the new descent. If a decompression stop is omitted during the simulated dive, it will not be possible to do a repetitive dive because the M1 will lock out, going into Stop mode.

To exit SIMUL mode, press <Mode> and <-> simultaneously.

## LOGBOOK

LOGBOOK mode enables the user to view the data recorded for the last 50 dives, organized like the pages of a "logbook", with the number "1" assigned to the most recent dive, "2" to the preceding dive, and so forth up to dive number "50". For the 50 most recent dives, and with a maximum limit of approximately 38 hours, it is possible to view the individual profile points of each recorded dive. When the LogBook memory is full and the user dives

again, the oldest dive record is deleted to free up memory for the new data.

Fig. A shows the different ways for accessing SURF mode, i.e. by pressing the <Mode> button from SIMUL mode or by pressing the <-> button from PC mode.

The display shows the history data (fig. 38), i.e.:

- ▶ Total number of logged dives.
- ▶ Total dive hours logged.
- ▶ Maximum logged depth.



FIG. 38

Pressing the <Mode> button for approximately 2 minutes (fig. F), activates scrolling of the dives. The display shows the following details for the most recent dive (fig. 39):

- ▶ Sequential number of the dive (1 = most recent).
- ▶ Start dive date and time.



FIG. 39

Pressing the <Mode> button scrolls through the dives in memory.

Pressing the <-> button displays page 2, which contains the summary details of the currently selected dive. These are:

- ▶ Dive mode: Air (fig. 40), "Nitrox" (fig. 41) or "Bottom Time" (fig. 42).



FIG. 40



FIG. 41



FIG. 42

- ▶ Indication of "Stop Mode" dive.
- ▶ Fresh or Sea water.
- ▶ In case of a "Nitrox" dive.
- ▶ Percentage of O<sub>2</sub> in the breathing mix.
- ▶ % CNS O<sub>2</sub> Max setting.
- ▶ Maximum logged depth during the dive.
- ▶ Total duration of the dive.
- ▶ Maximum ascent rate reached.
- ▶ Decompression stop violation.
- ▶ "No deco" icon for no decompression dive.
- ▶ "Deco" icon for decompression-stop dive.

To exit LOGBOOK mode, press the <Mode> and <-> buttons simultaneously.

Pressing the <Mode> button for 2 seconds enters profile viewing mode. There are three ways for scrolling through the profile points:

- ▶ Press and release the <Mode> button to scroll through the profile points one at a time.
- ▶ Press <Mode> for 2 seconds and then release it to activate automatic scrolling of the profile points.
- ▶ Press and hold down the <Mode> button to activate automatic scrolling three times faster than above.

During automatic scrolling of the profile points, press <Mode> to revert to scrolling the points one at a time.

During viewing of the profile points, the display shows the following information (fig. 43):

- ▶ Depth.
- ▶ Interval (20 Sec) to which the depth is referred.
- ▶ Speed of ascent, if any.
- ▶ Decompression stop violation, if any.
- ▶ "Deco" or "no deco" icon.
- ▶ "Nitrox" - indication in any intervals where the max PPO<sub>2</sub> was exceeded.



FIG. 43

To exit the profile viewing mode, press the <Mode> and <-> buttons simultaneously. The display will go back to the preceding general data view.

## INTERFACING TO A PC

Using a special interface unit and a dedicated Windows software application, it is possible to transfer data from the LogBook of an M1 to a personal computer, and to configure the various SET parameters from a personal computer.

The communication between the M1 and the PC is optical, and takes place via an RS232 serial port of the PC and the special interface unit which converts the optical signals into electrical signals and vice versa.

The data transfer procedure is as follows:

The user selects PC mode (fig. 44). In this condition, the transmission will be managed by the interface program running on the personal computer.

Fig. 4 shows the different ways for accessing PC mode:

By pressing the <Mode> button from LOGBOOK mode.

By pressing the <-> button from OFF mode.

By pressing the <-> button from DIVE mode.



FIG. 44

## FAQ

- Q: If the level 1 low-battery indication appears (i.e. the battery icon illuminates) when the computer is in use, for example during a dive: how many dives can I still do before replacing the batteries?
- A: Approximately 5 dives. However it is good practice to replace the batteries as soon as possible.
- Q: If the level 1 low-battery indication appears (i.e. low battery icon and audible alarm) when the computer is switched on after it has not been used for some time, how many dives can I still do before replacing the batteries?
- A: Because the computer has not been used for some time, it is impossible to know when the battery charge first dropped below level. Replace the batteries before your next dive.
- Q: When I replace the batteries, will my LogBook dive data be lost?
- A: No.
- Q: When I replace the batteries, will I lose the data of my last dive?
- A: No, provided you do NOT replace the batteries within the 10 minutes after the end of your dive.
- Q: What happens if I replace the batteries after a dive, before the desaturation time has gone to zero?
- A: The tissue desaturation calculation will be aborted, and when you put in the new batteries the tissues will be completely desaturated. Do not use the computer for at least 24 hours.
- Q: How do I use the backlight when I am on the surface?
- A: From DIVE mode, press the <-> button for approximately 2 seconds. The backlight will illuminate in timer-controlled mode.
- Q: What happens if I start a dive with the M1 switched off or in some mode other than DIVE mode?
- A: The M1 will switch to DIVE mode and indicate the correct depth, automatically within 30 seconds, or immediately on pressing the buttons.
- Q: If I select "Air" or "Nitrox" mode after completing a dive in "Bottom Time" mode, how will the dive be managed?
- A: M1 does not allow you to do an "Air" or "Nitrox" dive within the 24 hours immediately following a "Bottom Time" dive. In this case, the M1 will switch to "stop mode".
- Q: After replacing the batteries, the display illuminates and some numbers appear: what do they mean?
- A: They are the serial number.

## MAINTENANCE

### REPLACING THE BATTERIES

Replacing the batteries is a very simple operation which can be performed directly by the user. Unscrew the water-tight cover by rotating it through a  $\frac{1}{4}$  turn in the anticlockwise direction and replace the batteries, being careful to insert them with the correct polarity.

The correct polarity is indicated on the back of the instrument.

The battery compartment is watertight and non-communicating with the core of the instrument.

If water leaks inside the battery compartment, just dry it carefully to remove all moisture before re-installing the batteries.

#### WARNING

BEFORE CLOSING THE BATTERY COVER, CHECK THE CONDITION OF THE O-RING, MAKE SURE IT IS PERFECTLY CLEAN AND CORRECTLY POSITIONED WITHIN ITS SEAT IN THE COVER, AND LUBRICATE LIGHTLY WITH SILICONE GREASE.

#### WARNING

TO CLOSE THE COVER AGAIN, FIRST PUSH IT ALL THE WAY IN, THEN ROTATE THE COVER BY A  $\frac{1}{4}$  TURN IN THE CLOCKWISE DIRECTION. WARNING: BEFORE ROTATING THE COVER TO LOCK IT IN THE CLOSED POSITION, MAKE SURE IT HAS BEEN PUSHED ALL THE WAY IN, COMPLETELY UP AGAINST THE COMPUTER BODY.

AFTER CLOSING THE BATTERY COMPARTMENT, DOUBLE-CHECK THAT THE COVER HAS BEEN CLOSED CORRECTLY, AND IS PERFECTLY INSERTED IN ITS SEAT.

#### CAUTION

Do not replace the battery within the 10 minutes immediately following a dive. Replacing the battery too soon after the dive will result in loss of the data for that dive.

In any case, remember that replacing the battery causes the residual nitrogen, desaturation time and no-fly time data to be lost. It is therefore advisable to make a note of this information before replacing the battery. Do not replace the battery between repetitive dives.

Do not throw the old batteries away at sea!

You can adapt the length of the strap to your wrist, by cutting it to size along the special grooves, (fig. 45).

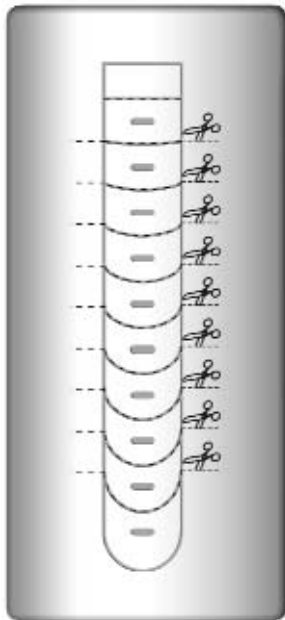


FIG. 45

**LEGENDA**

- Pressione a rilascio tasto <Mode>
- Pressione per 2" tasto <Mode>
- Pressione continua tasto <Mode>
- Pressione a rilascio tasto <>
- Pressione per 2" tasto <>
- Pressione continua tasto <>
- Evento non legato a pressione tasto

**COMMANDES**

- Appuyez sur le bouton <Mode> et le relâcher
- Appuyez sur le bouton <Mode> pendant 2 s.
- Appuyez sur le bouton <Mode> et le maintenir enfoncé
- Appuyez sur le bouton <> et le relâcher
- Appuyez sur le bouton <> pendant 2 s.
- Appuyez sur le bouton <> et le maintenir enfoncé
- Opération ne nécessitant pas de pression sur un bouton

**KEY**

- Press and release the <Mode> button
- Press the <Mode> button or 2 secs.
- Press and hold down the <Mode> button
- Press and release the <> button
- Press the <> button for 2 secs.
- Press and hold down the <> button
- Event. no associated with a button press

**LEYENDA**

- Presión al soltar la tecla <Mode>
- Presión para 2" tecla <Mode>
- Presión continua tecla <Mode>
- Presión al soltar la tecla <>
- Presión para 2" tecla <>
- Presión continua tecla <>
- Evento no relacionado con la presión de la tecla

**TASTENBEDIENUNG**

- <Mode> Taste kurz drücken
- <Mode> Taste 2 Sek. lang gedrückt halten
- <Mode> Taste gedrückt halten
- <> Taste kurz drücken
- <> Taste 2 Sek. lang gedrückt halten
- <> Taste gedrückt halten
- Vorgang steht nicht mit dem Betätigen einer Taste in Verbindung

**LEGENDA**

- Pressão rápida do botão <Mode>
- Pressão por 2" do botão <Mode>
- Pressão continua do botão <Mode>
- Pressão rápida do botão <>
- Pressão por 2" do botão <>
- Pressão continua do botão <>
- Evento não ligado ao acionamento do botão.



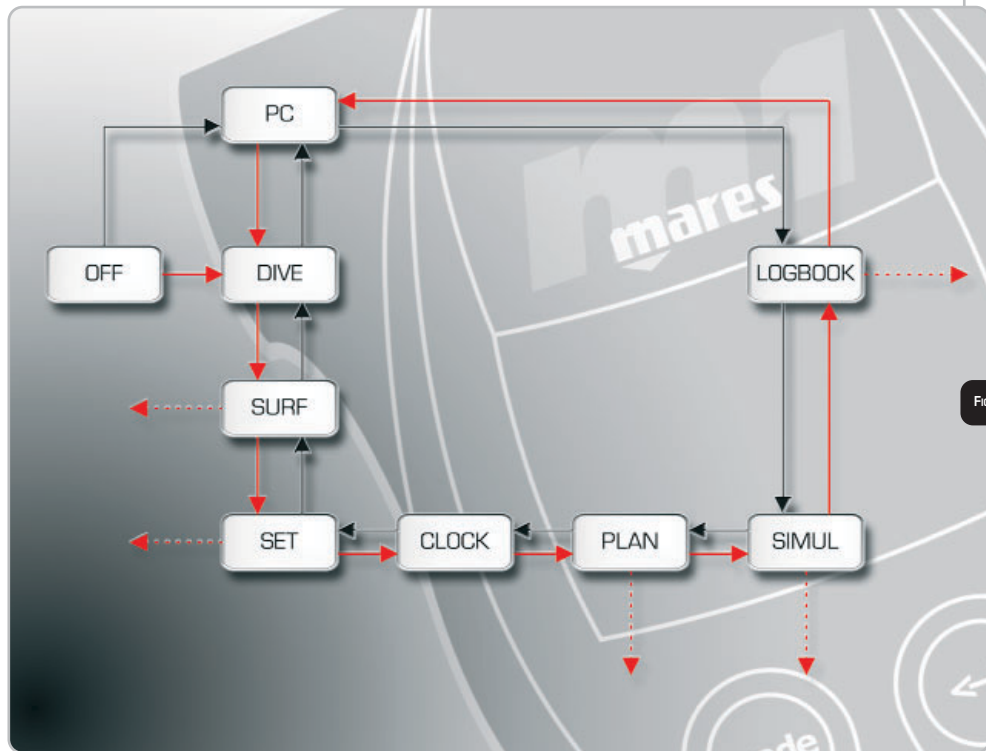
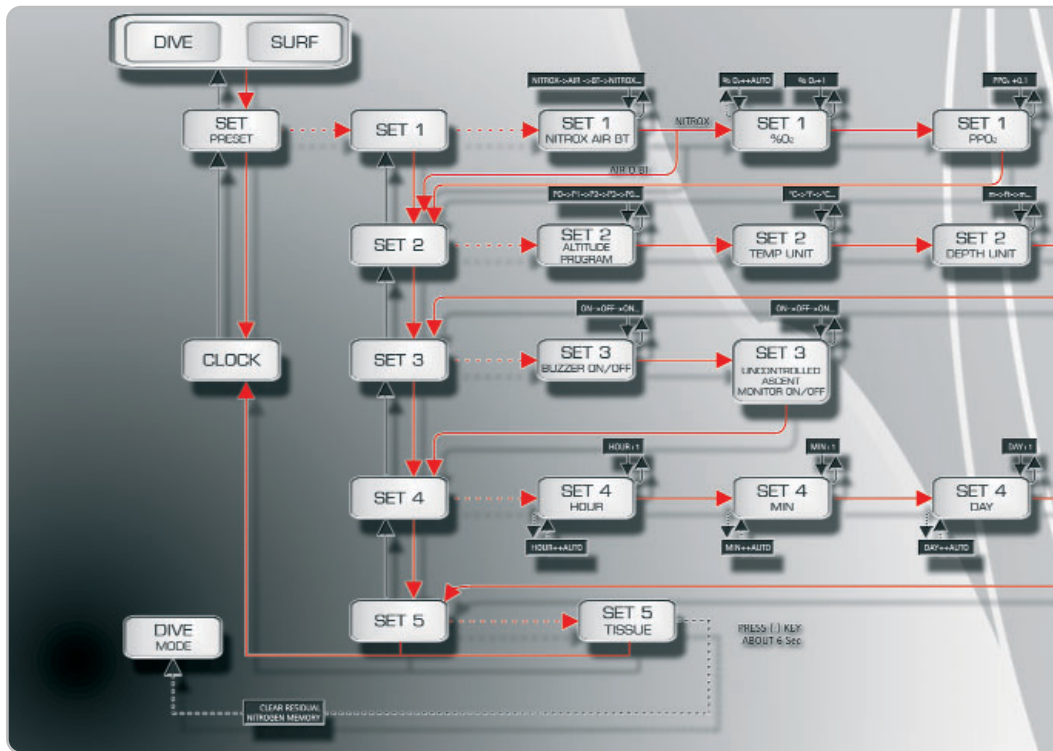


FIG. A



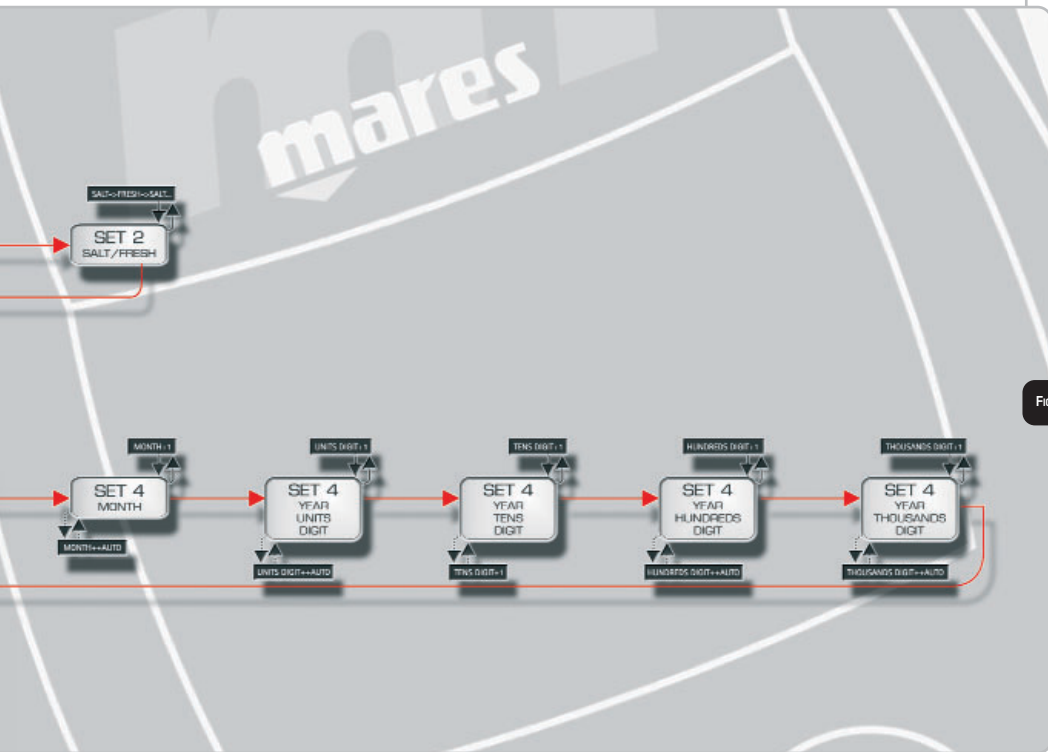


Fig. B

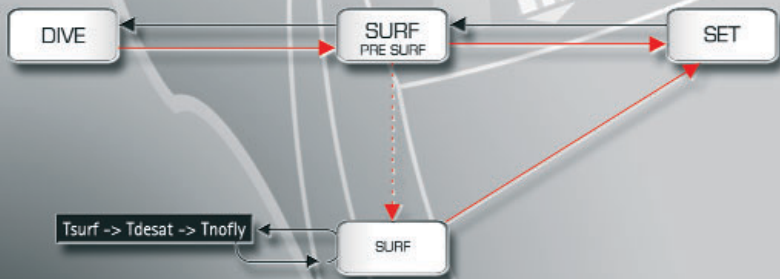


Fig. C



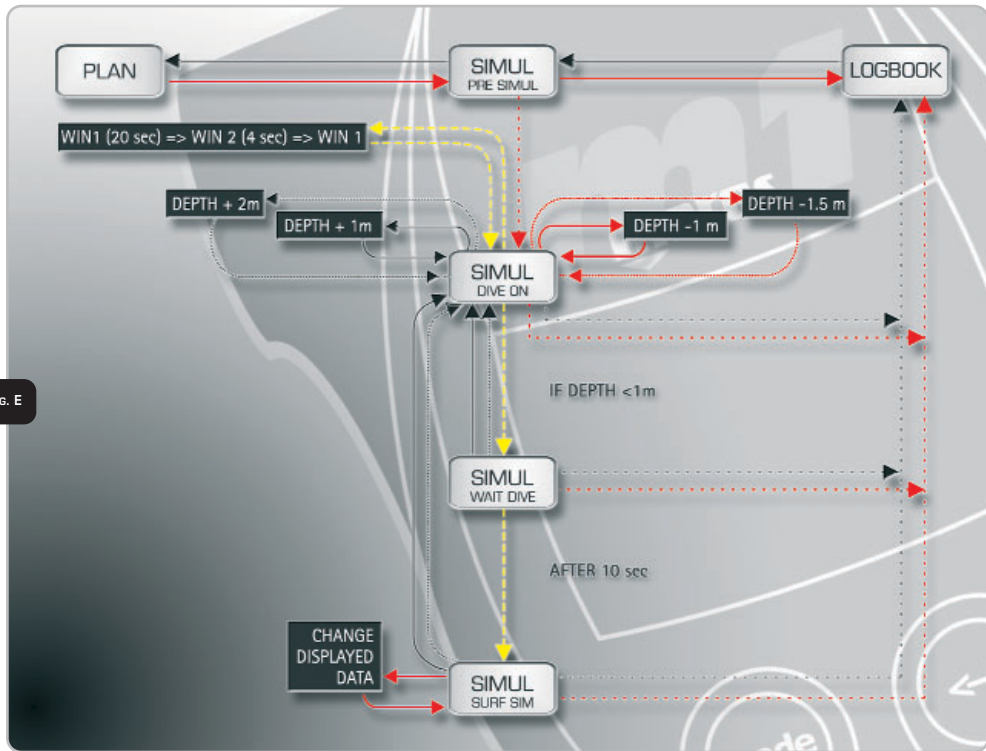


FIG. E



**mares<sup>®</sup>**



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