OPERATING MANUAL

UWATEC®

CE

English

Active Light

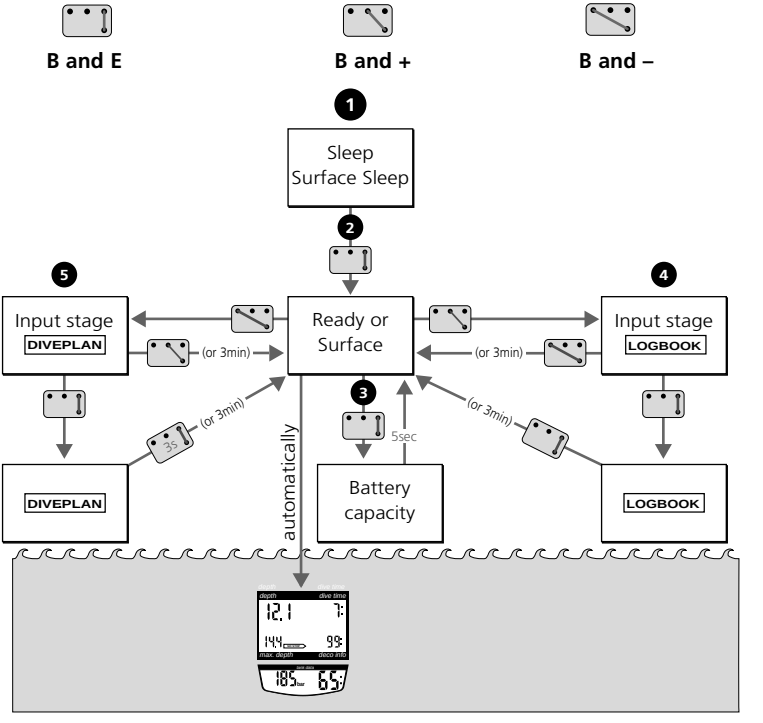
English

ALADIN® AIR 2

SWISS MADE BY UWATEC AG

Operating scheme

Operating scheme for surface functions



Important remarks concerning signal words and symbols

This operating manual makes use of the following icons to indicate especially important comments:

Remarks:  Informations and tips which are important for optimal use of the functions of your Aladin® Air Z.

Attention!  Information which draws your attention to situations and special features important for your diving comfort and the early avoidance of risk situations.

Danger! 

Alarms which indicate risk situations and dangers. Ignoring these warnings can lead to situations involving danger to life and limb. These alarms must be obeyed!

The following symbols are used in the operating manual:

 Flashing display

 Acoustic alarm signal

Operating instruction for manual input
Example: bridging contacts B and E

Safety considerations

You must carefully read this entire manual before using your Aladin® Air Z.

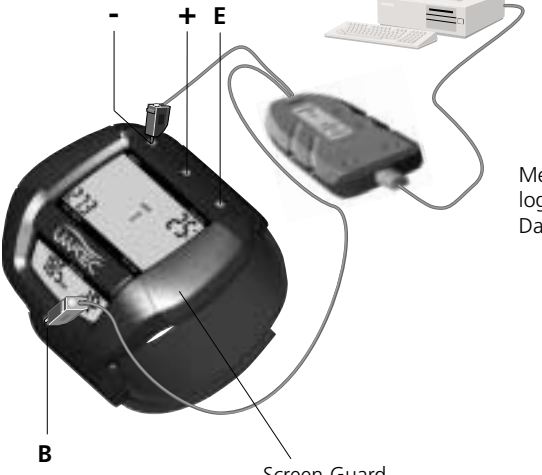
Diving has many inherent risks. Decompression sickness is among the most serious of those risks. Even if you follow the instructions of this manual in a careful manner, it is still possible that you may be seriously injured or die from decompression sickness or some other inherent risk of scuba diving. Unless you are fully aware of these risks and are willing to personally accept and assume responsibility for those risks, do not use the Aladin® Air Z!

The Aladin® Air Z is a sophisticated dive computer to assist a trained and certified diver in making decisions concerning dive planning and execution. As with any tool, the Aladin® Air Z may be misused if the following safety and operational precautions are not strictly followed. If they are followed, careful use of the Aladin® Air Z can increase your diving enjoyment and reduce your risk of decompression sickness. If they are not, you will be placing yourself at serious risk for decompression sickness.
While the Aladin® Air Z is a technically advanced tool based on a mathematical model of decompression sickness, neither it nor any other diving computer (or table) can exactly monitor the physiological changes that occur in your body as you dive. In addition, each diver will vary in his or her susceptibility to decompression sickness and each diver will vary in his or her susceptibility to decompression sickness. In addition to this, each individual diver's own susceptibility may vary from day to day. Combined with the fact that decompression modelling is an inexact science, and must be based to some extend on certain unproven assumptions, it is emphasis on you, the individual diver, to dive responsibly and to carefully follow all standard safe diving practices as well as the recommendations contained in this manual.

Guidelines for the use of Aladin® Air Z:
The following guidelines for using Aladin® Air Z are derived from the latest medical research for diving with diving computers. Following these guidelines will greatly increase your safety while diving, but cannot guarantee that decompression sickness will not occur.
– The Aladin® Air Z is designed for dives made with compressed air only. Do not use the Aladin® Air Z for dives made with nitrox or other mixed gases.
– Due to the danger of nitrogen narcosis do not dive deeper than 40 m. Aladin® Air Z does not warn you in this respect.
– On all dives with the Aladin® Air Z, make a safety stop for at least one to three minutes within the 3 to

5 metre zone.
- Always make the deepest dive of the day first when repetitive dives are planned, and for each successive dive make sure that the deepest portion of that dive is done at the beginning of the dive.
- If your diving cylinder is equipped with a reserve or "J"-type valve, make certain that the reserve is in an open (down) position. Failure to keep the reserve open will result in the improper calculation of dive data depending on tank pressure.
- All divers using dive computers to plan dives and indicate or determine decompression status must use their own computer which they take with them on all dives.
- Repetitive dives after exchanging the dive computer: Wait at least 24 hour before you start with the repetitive dive.
- If the Aladin® Air Z fails at any time during the dive, the dive must be terminated, and appropriate surfacing procedures should be initiated immediately.
- On any given dive, all divers in a buddy group must follow the most conservative dive computer for that particular dive.
- Always observe the optical and acouctic alarm signals of the Aladin® Air Z. Avoid situations of increased risk for decompression sickness which are marked with a warning sign in this operating manual.
- You MUST follow the ascent rates as indicated by the Aladin® Air Z and if the computer should fail for any reason, you must ascend at a rate of no greater than 10 metres per minute.
- You MUST be familiar with all signs and symptoms of decompression sickness before using the Aladin® Air Z! Seek IMMEDIATE treatment for decompression sickness should any of these signs or symptoms occur after a dive! There is a direct correlation between the effectiveness of treatment and the delay between the onset of symptoms and the treatment for decompression sickness.
- Ensure that you have enough Air for the Ascent. Do not use the RBT to the limit if prolonged ascents or an increased rate of breathing (currents…) are expected.
- See also page 54-55 and 84.

Transmitter
(Option)



MemoMouse and
logbook software
DataTrak (Option)

Dive Computer
Aladin® Air Z

Screen Guard
(Optional: Several colours)

List of chapters

English

List of chapters

I Introduction

English

1 Aladin® Air Z – More Safety in Diving

What can further increase your diving pleasure? The good feeling of having the greatest possible freedom of movement plus the highest possible safety. A dive computer which constantly monitors the data of your dive and your individual conduct meets these requirements. Aladin® Air Z watches over the gas saturation of your body without interruption. With Aladin® Air Z you dive
more safely than ever before, although you can make more of your diving time thanks to the exact calculation of the air-supply. In addition, Aladin® Air Z offers unmatched comfort and ease of operation. Aladin® Air Z gives you increased safety due to the new calculation model.

All the information necessary for safe diving are combined in one instrument.

2 Aladin® Air Z – Your Personal Companion

By considering your individual conduct, workload and temperature changes, Aladin® Air Z is your personal control instrument. Aladin® Air Z relies on the latest results of medical and physiological research for the calculation of decompression. This research has helped in the development of an adaptive calculation model unique to the present day.
Aladin® Air Z was exclusively developed for diving with compressed air and distinguishes itself from other commercial diving computers by a number of new functions:

- The new calculation model ZH-L8 ADT considers for the first time 8 body tissues, the diver's conduct and the ambient conditions. Therefore, a more precise decompression indication is possible for risk situations, which increases safety in these cases.

- The measurements of scuba tank pressure are transmitted to Aladin® Air Z by means of a transmitter. Faulty transmission of data between transmitter and Aladin® Air Z is prevented by a number of precautions. Tank pressure can easily be checked at any time. In addition, the pressure rates allow calculation of the diver's air consumption and a prediction of the remaining air time at the current depth. The calculation for RBT (Remaining Bottom Time) – the time left to the diver until he must start the ascent according to the calculated decompression programme – therefore includes consideration of tank pressure and the individual diver's rate of air consumption.

Where a reserve valve is used in order to get correct air-time-calculations diving has to be done with an open reserve valve!

- Alarms are given optically and acoustically. The reason for the acoustic alarm can be distinguished by the characteristics of the sound.

- By means of the logbook, the diver can directly call up the information of the last 19 dives. Via interface to the PC, 37 dives and 200 minutes of precise dive-profile in intervals of 20 seconds can be read out.

- The dive planner allows the advance planning of no-stop dives and decompression dives with freely determinable surface intervals.

- The proven way of carrying the dive computer on one's wrist, giving maximum freedom of movement and easy operation, plus a clearly arranged display of the data, are the prominent points of comfort of Aladin® Air Z.

3 Calculation Model ZH-L8 ADT

3.1 Description

The Model ZH-L8 ADT (8 compartments with a nominal half-time period from 5 to 640 minutes) differs considerably from other models by the consideration of additional physiological processes:

1. Blood perfusion of the organs is not constant. Skin and muscles in particular are subject to considerable changes of blood perfusion depending on temperature and workload. A change in blood perfusion also causes a change of the saturation tolerance. The model takes these effects into account. Therefore, skin and muscle compartments show variable half-time periods and saturation tolerances.
   The necessary decompression times are calculated according to the diver's workload and the decreasing skin temperature. The decrease of skin temperature is estimated based on the water temperature and the dive time. At the surface, the diver's physical performance is lower than during the dive. By considering the differences in physical performance the no fly time becomes considerably longer.

2. The model considers inert gas not only in the dissolved state, but also in the gaseous phase (microbubbles). Formation of microbubbles is calculated with allowance for the different influences in arterial and venous blood. With normal ascents gas bubbles mainly form in venous blood, with fast ascents also in arterial blood and on ignoring decompression stops in the tissues. As the model calculates microbubbles, those physiological processes are reconstructed which actually occur.
   The bubbles on the venous side of the circulation are carried into the lungs where they change the arterial nitrogen pressure. This influences mainly repetitive dives, dives with very long decompression times and the no fly time.

- Gross disregard of the ascent rate, exceeding the decompression depth and repeated ascents to the surface (yoyo dives), can all cause microbubbles to form on the arterial side and in tissues. Where the bubbles partially impair circulation, the rate of gas diffusion and the saturation tolerance are changed. Decompression time, and if necessary decompression depth, are adjusted so that existing bubbles stop growing. In addition, altered decompression assures that the tissue desaturates sufficiently if microbubbles impair circulation locally.
- The calculation of the gas bubbles results in a new ascent instruction. The ascent rate near the surface is reduced down to 7m/min. This prevents with high reliability the formation of microbubbles in the arterial circulation and minimizes the formation of microbubbles in the venous circulation after the dive.

3.2 Advantages

On first dives with correct diving technique and avoiding risk situations, there are no extended decompression times. On the other hand, it is possible to react correctly in risk situations due to the realistic simulation of the physiological processes in the body. This increases safety considerably. Risk situations are, for example:

- Repetitive dives (especially with short intervals) and dives on several successive days
- Dives in cold water
- Dives with increased workload (currents, exertion)
- Yoyo dives
- Flying after the dive
- Excessive ascent rate.

In case of mistakes on the part of the diver, actual prevention of decompression sickness is possible for the first time due to the reconstruction of the bubble formation and its consequences. The correction of the decompression must not be confused with a real recompression, which serves as therapy of existing damage.

4 Safety in Diving

With its new decompression model and with the calculation of air-time Aladin® Air Z offers a so far unreached level of safety. However, responsibility for the dive finally remains with the diver as before. The usual diving caution is still absolutely necessary when diving with Aladin® Air Z.

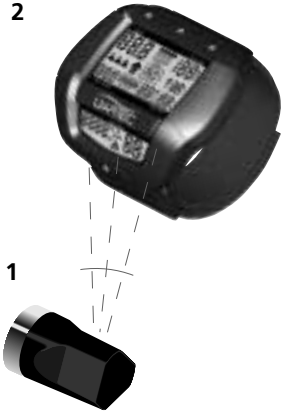
In case of diver mistakes (ignoring decompression stops, excessive ascent rate etc.) Aladin® Air Z can calculate a corrected ascent instruction immediately which minimizes the occurrence of decompression sickness. The prevention of barotrauma and nitrogen narcosis still lies in the hands of the diver.
Aladin® Air Z is a highly developed technical instrument of high reliability. Despite this the user of the Aladin® Air Z is to have an understanding of the physiological interrelations, to know the use of decompression tables and to have them on every dive.

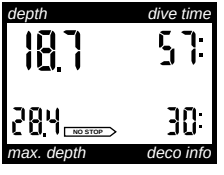
Should an incident occur, the detailed previous history of the incident is stored in the dive computer. The evaluation of these records allows better diagnosis and the most effective treatment for the diver.

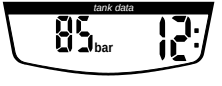
II Aladin® Air Z – The System

1 Description

1.1 System hardware





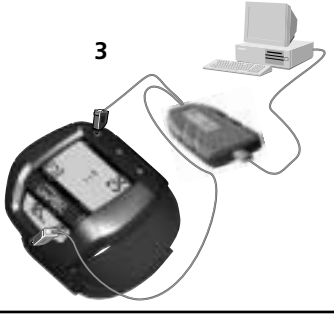


The Aladin® Air Z system consists of three units:

1 The transmitter is installed at the high pressure outlet of the regulator. It measures tank pressure and radio-transmits the results to the dive computer, where they are also used for the calculation of air consumption and dive data.

2 The dive computer displays only the important dive data. The 2 part display shows general dive- and decompression data in the upper part; data calculated on the basis of the measured tank pressure are displayed in the lower part.

3 The dive computer has a data memory which stores the dive data. The data can be downloaded out into a MemoMouse from where they can be transmitted to a Windows® personal computer with the logbook program DataTrak. MemoMouse and DataTrak are available as an option.



It is possible to use Aladin® Air Z as a conventional dive computer. In this case calculations depending on air data are not possible and the lower part of the display does not show air data.

1.2 Safety of transmission

Data transmission from transmitter to receiver is supported by various levels of safety in order to ensure continuous and reliable reception:

1. Each transmitter works with an allocated address. This address is communicated to the dive computer on pairing. There are more than 60,000 addresses. This assures that no two transmitters send on the same channel. The pairing of transmitter and receiver is also carried out by a process with various safety levels in order to prevent faulty pairing.

2. Data are transmitted with an average interval of 5 seconds. The exact point in time of the transmission is variable. This prevents two transmitters from disturbing each other for longer periods.

3. Together with the pressure data additional informations are transmitted. This allows reconstruction of faulty data and, on the other hand, where this is no longer possible, recognition of useless data.

By means of these safety measures, faulty transmission is almost impossible. In spite of that, the transmitted measurements are subjected to an additional plausibility check. Only such data are used which are sensible in the current situation.

2 Transmitter

2.1 Operating modes and functions

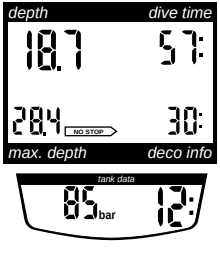
Off-mode: When the regulator is unpressurised the transmitter is in the off-mode. In that case, air pressure is measured every 5 seconds. When pressure increases (on opening the valve), the transmitter leaves the off-mode automatically. When the tank valve is closed and the regulator inlet pressure is reduced to below 8 bar, the transmitter falls back into off-mode.

Pair-mode: After switching on (opening of the tank valve), the transmitter sends its address to the dive computer for a short time. This is the code in order that the dive computer can be paired to the transmitter.

Transmission-mode: As long as tank-pressure is decreasing (during normal breathing) the pressure is transmitted to the dive computer on average every 5 seconds.

Standby-mode: If there is no decrease in tank-pressure (no breathing), the transmission is stopped after 3 minutes in order to save energy. Pressure measuring continues.
As soon as breathing is resumed, the transmission also starts again – the transmitter returns to transmission-mode.

The transmitter starts working if the tank valve is opened or when air is consumed on breathing.



with transmitter

without transmitter

The transmitter does not work if the regulator is unpressurised or if there is no air consumed for 3 minutes.

The dive computer can only receive data from the transmitter if the computer and transmitter are paired. If the pairing has not been carried out, there are no air data displayed by the dive computer and Aladin® Air Z works as a conventional dive computer.

3.1 Operation

Switching on display: – automatically, on submerging in water or when adaptation to atmospheric pressure is necessary.

– manually by operating contacts on housing.

Switching off display: – automatically, after three minutes without operation.

Aladin® Air Z has 4 operating contacts B, E, +, – on the outside of the housing. For manual operation touch base contact B and any one of the other three contacts above the display with moistened fingers.

Contact B:
Base contact, which has to be touched for all operations.

Contact E:
Enter contact. It serves to switch on the computer, to activate the logbook and dive-plan mode and to switch between no-stop and decompression planning. It is also used to confirm inputs and is therefore comparable to the ENTER- or RETURN-key of a computer.

+ / – contacts:
They serve to select the logbook and dive-plan as well as to set values (time, depth, dive-number etc.).

English

Active backlight

The display of the Aladin® Air Z can be illuminated both on the surface and underwater.
The backlight can be switched on by pressing the unit above the display.
The light will turn off automatically after 7 seconds.
The backlight can only be activated if the computer display is on.

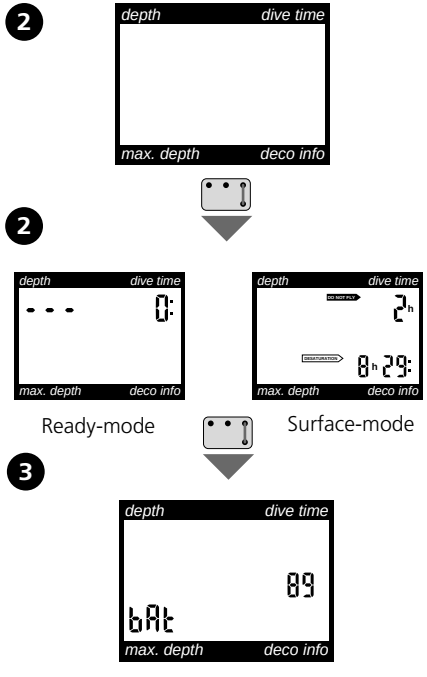
- The active backlight is no substitute for a dive torch. When diving at night or at increased depth we recommend the use of a dive torch.
- Replace the battery if the battery warning appears.

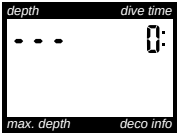
On page 2 of the English manual you will find a reference guide.
On page 3 of the German manual you will find an openable operating scheme.

1. Aladin® Air Z is in a state of rest; no information is displayed (—>sleep-mode or —>surface-sleep-mode).

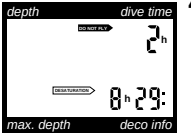
2. Bridging B and E activates the computer —>ready-mode or —>surface-mode.

3. A second bridging of contacts B and E activates the display of the remaining battery capacity for approximately 5 seconds. As soon as the battery capacity is 0%, a battery alarm is sent. There is still a small reserve left at bAt 0%.





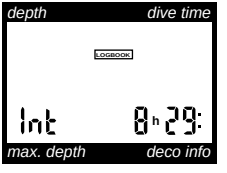
Ready-mode

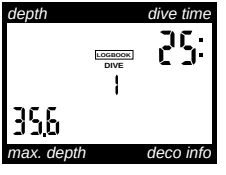


Surface-mode

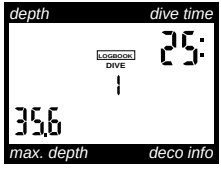
4a Selecting the logbook function:
B and +
Cancel: B and –
or automatically after three minutes without operation

4

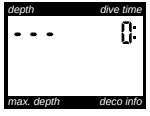




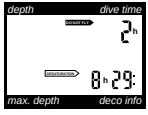
4b Activating the logbook:
B and E. Aladin® Air Z shows the most recent dive.



4c Leaving the logbook:
B and E
or automatically after three minutes without operation.



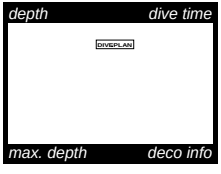
Ready-mode



Surface-mode

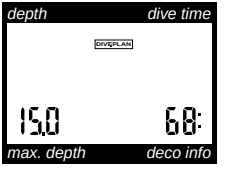
5

or after 3 minutes

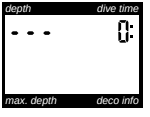


5a Selecting the dive-plan function:
B and –.
Cancel: B and +
or automatically after three minutes without operation.

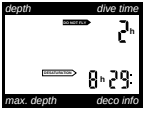
English



or after 3 minutes



Ready-mode



Surface-mode

5b Activating the dive-plan

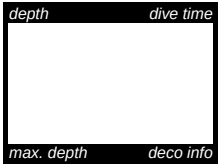
B and E. Der Aladin® Air Z starts by listing no-stop times. If the dive-plan is activated out of the surface-mode, first enter the desired interval by B and + or B and –. Confirmation with B and E.

5c Leaving the dive-plan:

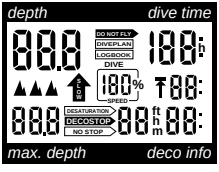
B and E for approx. 3 seconds
or automatically after three minutes.

3.2 Operating modes

Aladin® Air Z works in various operating modes:

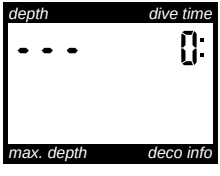


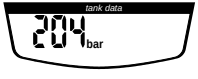
Sleep-mode:
Activation: automatically
When Aladin® Air Z is not used it is in the so called sleep-mode.
In this case, the electronics are «sleeping» for the most part, the display does not show any information. The computer is briefly activated once every minute to measure atmospheric pressure. The display remains switched off. If a change in altitude is recognized, Aladin® Air Z switches to —> surface-mode for 3 minutes.



Ready-mode:
Activation: By touching contacts B and E from sleep-mode.
To check the display, all signs light up for 5 seconds.
Aladin® Air Z switches into ready-mode afterwards. In ready-mode, the display is switched on and in certain circumstances altitude sections are also displayed. If the paired transmitter is switched on and located within transmitting distance, the tank-pressure is displayed, in other cases only <--->.

On touching contacts B and E in ready-mode once more, Aladin® Air Z displays the remaining battery capacity in percent. Three minutes after activating ready-mode, Aladin® Air Z falls back into —> sleep-mode.



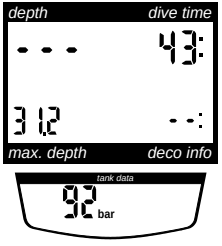


with transmitter

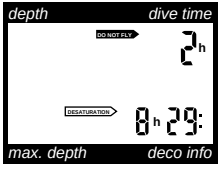
without transmitter

English

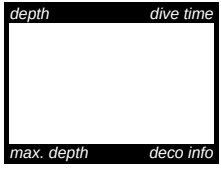
Dive-mode:
Activation: automatically, when depth more than 0.5 m.
In dive-mode all diving functions are monitored: i. e. depth and dive time are displayed, maximum depth is stored, saturation of tissues is calculated with allowance for performance and temperature, no-stop time or decompression prognosis is determined, ascent rate is controlled and displayed and the correctness of the decompression procedure is supervised.



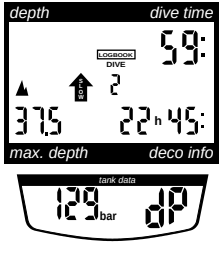
Wait-mode:
Activation: automatically on reaching the surface.
The wait-mode is activated when the surface is reached after a dive. At the surface, the dive is not closed and entered into the logbook for an interval of 5 minutes. This allows a short surfacing for the purpose of orientation.



Surface-mode:
Activation: automatically after a dive or when changing altitude.
After a dive has been closed, Aladin® Air Z is in surface-mode. All data belonging to the surface interval are calculated: Calculations are made on microbubble formation, on state of saturation of tissues after allowing for skin temperature and the assumed diver performance on the surface, on desaturation time and on no fly interval time.

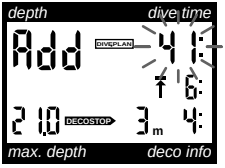


In order to save energy, Aladin® Air Z falls into the so called surface-sleep after 3 minutes. The functions of surface-mode are then carried out in the background. The atmospheric pressure is measured in surface-sleep once every minute. If the atmospheric pressure decreases, for example because of change of altitude, Aladin® Air Z automatically switches from sleep-mode or from surface-sleep into surface-mode and displays the adaptation time. The adaptation time is the time after which all body tissues have adapted to the ambient pressure (= desaturation time).

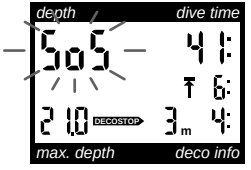


Logbook-mode:
Activation: manually by contacts
Data of 19 past dives can be called up in the logbook-mode. It shows maximum depth, dive time, preceding interval*, altitude sections and, where appropriate, alarms. A dive is entered in the logbook if it has lasted more than 2 minutes. When the dive was a repetitive dive then it also shows the interval which has passed since the last dive or a preceding change of altitude. The last 37 dives and the last 200 minutes of dive-profiles can be downloaded out into a MemoMouse and later from there into a personal computer (Windows®).

* Preceding interval is only shown when the computer calculated that there was a residual nitrogen uptake at the beginning of the logged dive.



Diveplan-mode:
Activation: manually by contacts
The diveplan-mode assists the planning of a future dive. It allows planning of no-stop and decompression dives with freely determinable depth and dive time. On repeat dives, the surface interval time can also be chosen at will. Calculations are based on the temperature data of the last dive and assume a normal workload.



SOS-mode:
Activation: automatically
If the diver remains above a depth of 0.5 metres for more than three minutes without observing the prescribed decompression, the computer switches into SOS-mode after the dive and displays <SOS> instead of the depth. The computer is locked from use for the next 24 hours. Desaturation is further calculated including microbubbles in the tissues. Diving is again possible after 24 hours, but the SOS-mode can influence the calculations of Aladin® Air Z for three days after the incident due to the possible presence of microbubbles.

If a diver using Aladin® Air Z experiences a diving accident resulting in decompression sickness, the dive can be analyzed by means of the MemoMouse and DataTrak-software.
An automatic program transmits the logbook data – after connecting the dive computer via MemoMouse with a PC – once a minute from the locked dive computer to the personal computer. Dive computer, MemoMouse and PC need to be connected. The PC has to be ready for receiving data and the DataTrak „download-procedure" has to be activated.

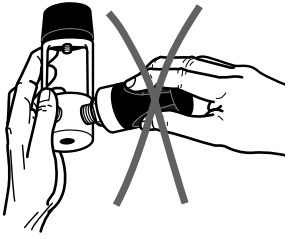
Serious injury or death may result if a diver does not seek immediate treatment at a recompression chamber should any signs or symptoms of decompression sickness occur after a dive.

4 Setting Up (Transmitter and Dive Computer)

4.1 Mounting of transmitter

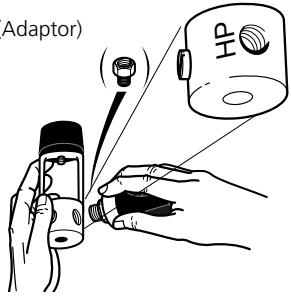
The transmitter is mounted at the high pressure (HP) outlet of the regulator's first stage before the first dive.

Procedure:

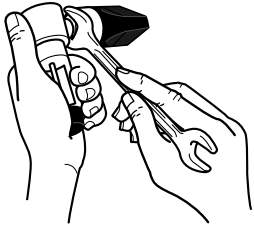


Do not hold the transmitter by its plastic part.

(Adaptor)



Fit the transmitter to the HP outlet. If the threads do not match, get an adaptor from your diving retailer.

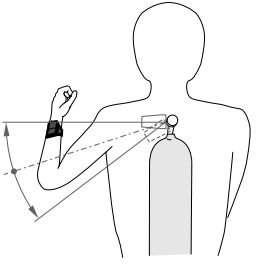


Tighten the transmitter by means of a size 19 wrench.

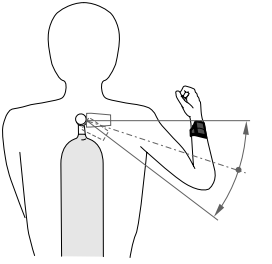
– The transmitter is best mounted laterally on the regulator.

4 Setting Up (Transmitter and Dive Computer)

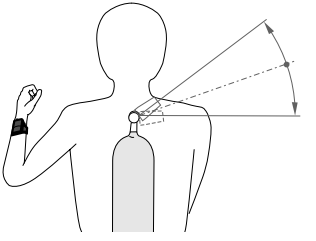
It is advisable to mount the transmitter on that side of the regulator on which the diver wears the dive computer on his wrist. This is the optimal position for transmission.



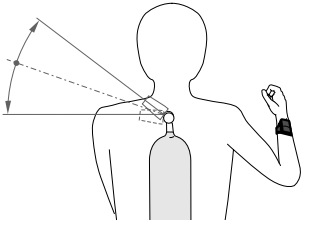
Position of the transmitter for left-handers.



Position of the transmitter for right-handers.



Position of the transmitter for left-handers, if there is no connection possible on the left hand side.



Position of the transmitter for right-handers, if there is no connection possible on the right hand side.

4.2 Pairing (tuning) of transmitter and dive computer

The computer and transmitter must be tuned to each other in order to be sure that Aladin® Air Z receives and uses the data of its own transmitter. Pairing is necessary

- before the first use of Aladin® Air Z with the transmitter.
- if you use a new transmitter or a new computer.
- after changing the battery.

How to check that transmitter and computer are paired correctly:

pairing ok

1. Switch on the computer manually (B and E) and bring it into transmitting range of the transmitter.
2. Open the tank valve while the regulator is closed. The transmitter switches on automatically.
3. Check the display in the lower part of Aladin® Air Z: Pairing has been carried out correctly if the pressure is displayed within 5-10 seconds.

pairing not correct

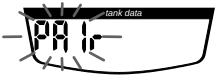
If there is no pairing of transmitter and computer, <---> is displayed instead of the pressure. In that case, transmitter and computer have to be paired.

Pairing of transmitter and dive computer:

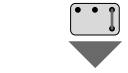
1. Shut the valve, depressurise the regulator and wait for 15 seconds.
2. Switch on the dive computer (contacts B and E) and move it into the position shown below.

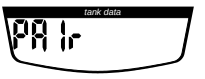
Transmitter and dive computer must be in physical contact during the entire pairing procedure.

3. Open the tank valve. The transmitter briefly sends a pairing sequence to the computer.



4. The dive computer shows a flashing <PAIr> in the display-position of tank pressure shortly after the valve has been opened.





5. In order to confirm the pairing the B- and E- contacts have to be bridged. A bleep confirms the input and <PAIr> is displayed permanently. The computer and transmitter must remain in physical contact until the confirmation has been done.

6. Tank pressure is displayed after approximately 10 seconds.

7. In case of faulty pairing, the display <FAIL> appears instead of <PAIr>. In that case, completely depressurise the regulator and repeat the pairing procedure. This is only possible after at least 15 seconds.

– Pairing of transmitter and dive computer remains valid until a new pairing procedure is carried out. Pairing of transmitter and dive computer can therefore be carried out at home and need only be executed once, before the first use. A new pairing procedure is always necessary when a new transmitter or a new dive computer is used and after changing the battery.
– Tank pressure shown in the lower part of the display of the dive computer should be checked prior to every dive.

III Diving with Aladin® Air Z

English

1 Terminology/Symbols

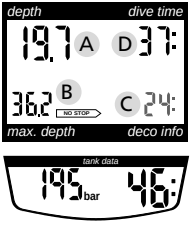
The information display of the Aladin® Air Z varies depending on the kind of dive and the dive phase.

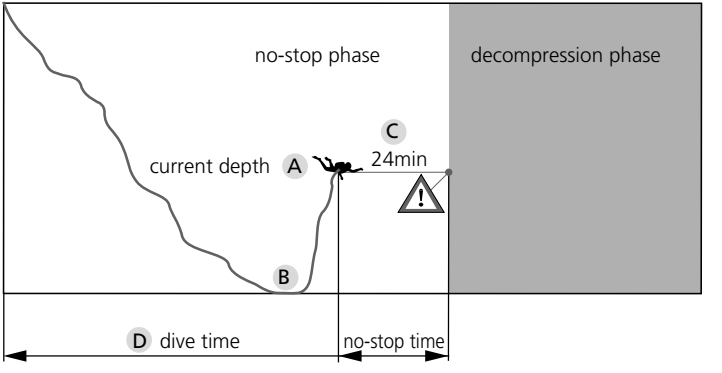
1.1 Display during no-stop phase

No-stop phase: Dive phase, during which ascent is allowed without decompression stops.

Dive time: Time of the dive below depth of 1.2 m.

RBT: (Remaining Bottom Time) Time, for which the air supply is sufficient at the current depth, until ascent must be started.





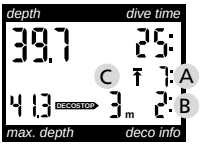
1.2 Display during decompression phase

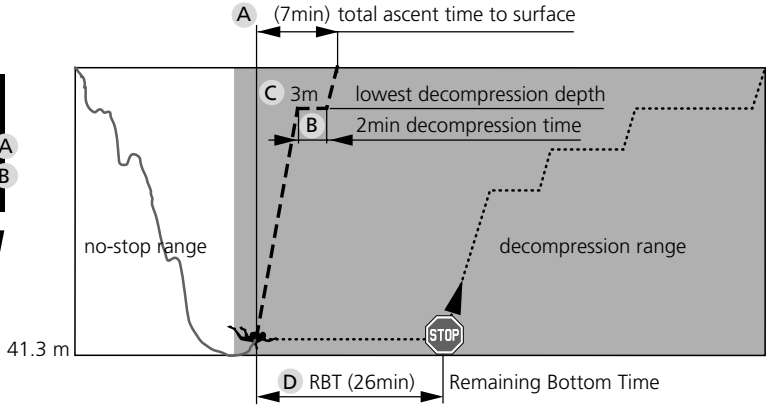
RBT: (Remaining Bottom Time) Time, for which the air supply is sufficient at the current depth, until ascent must be started.

Decompression depth: Lowest stage is displayed.

Decompression time: Prescribed duration of the decompression stop at the displayed decompression stage.

Total ascent time to surface: Total ascent time including decompression stops.





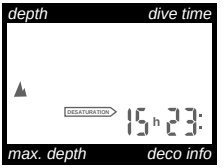
2 Attention Messages and Alarms

Aladin® Air Z draws the diver's attention to certain situations and also warns him of wrong actions. Attention messages and alarms are always optical and mostly acoustic under water, only optical at the surface except the decompression alarm.

The acoustic attention messages (but not the alarms) can be switched off (see chapter VII Interface page 74).

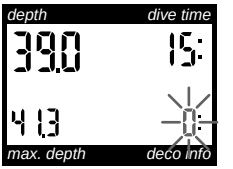
2.1 Attention messages

Attention messages are communicated to the diver optically by lit up symbols, letters or flashing figures. In addition, two short acoustic sequences can be heard (in an interval of 4 seconds) in two different frequencies. Attention messages come up in the following situations:



Dive in mountain lake.
On a change of altitude, the altitude section (0 - 3) and adaptation time is shown.
See page 50/51.

•))4 sec •))



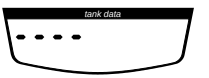
End of no-stop phase.
In order to prevent a decompression dive ascend a few metres.

•))4 sec •))

Remaining Bottom time less than 3 minutes. Start ascent.

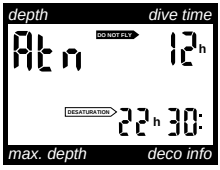
•))4 sec •))

•))4 sec •))



No reception of air-data (interruption of transmission). If this message becomes frequent, check the position of the transmitter. See «Mounting of transmitter» on page 29-30.

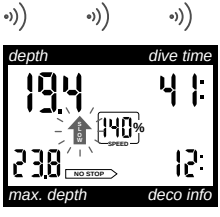
Out of breath warning (increased air consumption). Breathe more quietly, relax.



Warning of bubbles. Extension of the surface interval is recommended.
See pages 49 and 68.

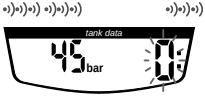
2.2 Alarms

Alarms are given to the diver optically by flashing symbols, letters or figures and symbols. In addition, an acoustic sequence in one frequency can be heard during the whole duration of the alarm.
An alarm occurs in the following situations:



STOP

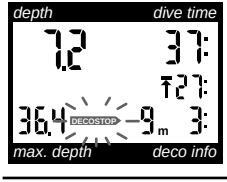
Excessive ascent rate.
Reduce ascent rate.



STOP

Remaining bottom time zero (air too scarce) Amount of reserve air at the surface no longer certain.
Start ascent at once!

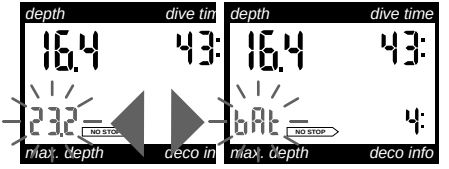
Ignoring decompression stop



STOP

Descend to the prescribed decompression depth at once!

2.3 Alarm low battery



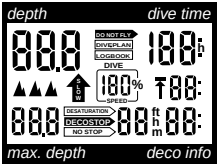
Battery of computer low:
In dive-mode, <bAt> is indicated by flashing display and alternating with the display of maximum depth, as soon as battery capacity is 0%.
In ready-mode and surface-mode, <bAt> is shown instead of maximum depth. Have the batteries changed by your retailer!

Battery of transmitter low:
<bAt> flashing and alternating with the display of the tank pressure. Have the batteries changed by your retailer!

3 Preparation for the Dive

The following description of the preparation of a dive is based on the assumption that the transmitter is fitted correctly to the HP-outlet of the regulator (see pages 29 - 30) and that it is paired with Aladin® Air Z (see page 31).

1. Mount regulator with transmitter on tank.



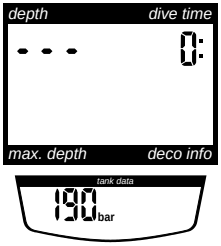
2. If you have one, check the reserve valve of your tank. The reserve valve must be open.

3. Switching on Aladin® Air Z manually: Bridge contacts B and E with moistened fingers. Check test display: are all displays lit?

4. Open valve (transmitter switches on automatically).

5. Check transmission from transmitter to dive computer.

Check tank pressure (after approx. 10 seconds), if not enough pressure is indicated, change tank.



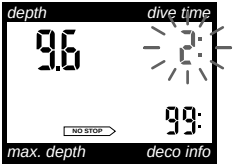
6. The Aladin® Air Z is now in ready-mode.

It switches on automatically on being submerged in water and activates dive-mode, when a depth of more than 0.5 metres is reached. The first indication of the depth may be a little delayed.

In extremely pure freshwater, it may occur that automatic activation of dive-mode does not work. In such cases, Aladin® Air Z must be switched on manually.

4 Functions during the Dive

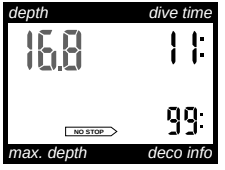
4.1 Dive time

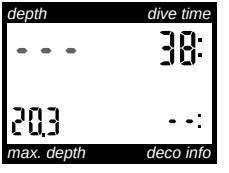


The whole time spent below a depth of 1.2 metres is displayed as dive time in minutes. While the dive time is running, the colon on the right of the figures is flashing up at 1 second intervals. Maximum dive time displayed is 199 minutes.

If a dive lasts longer than 199 minutes, dive time starts again at 0 minutes.

4.2 Current depth

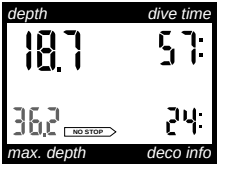




Current depth is given in 10 cm increments. On switching on and at a diving depth of less than 0.5 m the void display <---> appears.

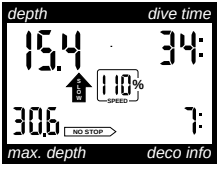
Depth measurement is based on freshwater. Therefore, Aladin® Air Z shows a slightly greater depth than actually true when diving in salt water, depending on the salinity of the water.

4.3 Maximum depth



The maximum depth is only displayed if it exceeds the current depth by more than one metre. This is to prevent the display changing very frequently when diving in the vicinity of the maximum depth.

4.4 Ascent rate



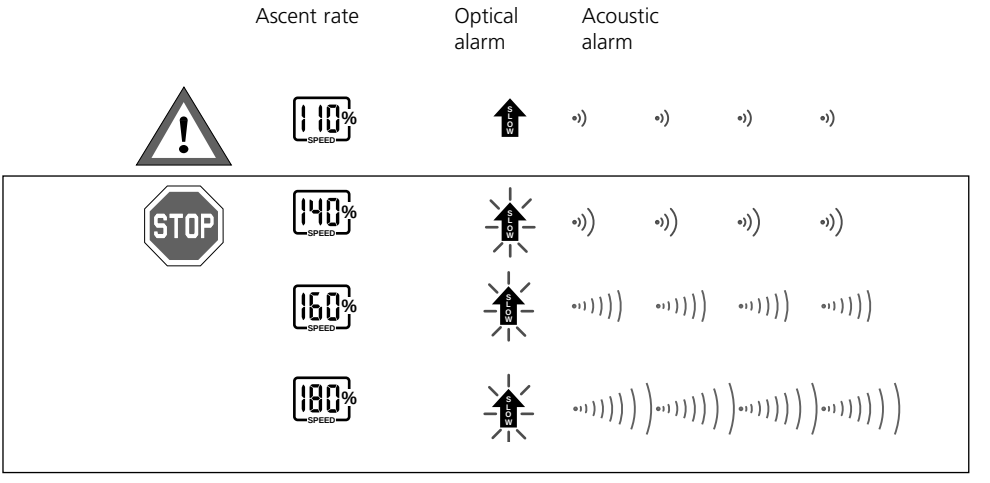
Optimal ascent rate varies between 7 and 20 m/min dependent on the depth. It is displayed in percent of the set value. If the ascent rate is bigger than 100% of the set value, the black arrow <SLOW> appears. If the ascent rate exceeds 140%, the arrow starts flashing.
An acoustic alarm occurs from 110%, its intensity depending on the amount of excess.

The prescribed ascent rate must be observed at all times! Exceeding the prescribed ascent rate can lead to microbubbles in the arterial circulation which can lead to serious injury or death due to decompression sickness.

- It is possible that Aladin® Air Z demands a decompression stop within the no-stop phase because of the danger of the formation of microbubbles.
- Decompression time necessary for the prevention of microbubbles can increase massively, if the ascent rate is exceeded.
- From great depth, too slow an ascent causes super-saturation of tissues and an extension of decompression time and total ascent time. From little depth, shortening of decompression times is possible because the tissues already start desaturating during the ascent.

English

Messages:

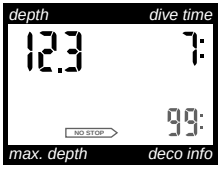


Excessive ascent rates of longer periods are entered in the logbook.

Action: Reduce ascent rate

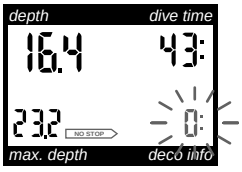
4.5 Decompression information

No-stop time is displayed, if no decompression stops are necessary yet. The arrow (NO STOP) is visible. The figures indicate no-stop time in minutes.



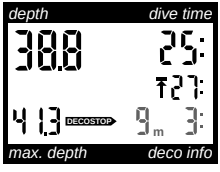
– No-stop display <99:> means remaining time of 99 minutes or more.
– No-stop time is calculated assuming normal workload and current water temperature.

Messages: There is an acoustic alarm, if no-stop time is less than 1 minute. In this last minute, the no-stop display shows the flashing value <0>.

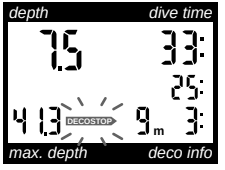


Action: In order to prevent a decompression dive, you have to ascend a few metres after this message.

Decompression values



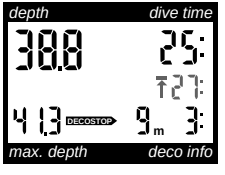
On entering the decompression phase, the arrow <NO STOP> extinguishes. The arrow <DECOSTOP> appears. Right beside the arrow, the lowest decompression stage in metres is displayed. Beside the decompression depth, the decompression time of the displayed stage in minutes appears. The display <9m 3:> means that a decompression stop of 3 minutes at a depth of 9 m has to be made.
When a decompression stop has been finished, the next higher is displayed. When all decompression stops have been made, the arrow <DECOSTOP> extinguishes and the arrow <NO STOP> reappears. The indication of time on the lower right shows the no-stop time again.



Messages: The decompression alarm is activated if the decompression stop is ignored. Arrow <DECOSTOP> flashes and an acoustic alarm is initiated. Due to the formation of microbubbles decompression can increase massively while a decompression stop is ignored. If the surface is reached during the decompression alarm, the arrow <DECOSTOP> continues flashing, in order to point to the risk of a decompression accident. The SOS-mode is activated after 3 minutes after the dive.
If the total (cumulative) duration of the decompression alarm is longer than a minute it is entered in the logbook.

Action: Descend to the prescribed decompression depth at once!

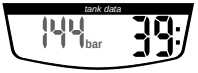
Total time of ascent



As soon as decompression stops are necessary, Aladin® Air Z shows the total time of ascent. The time of ascent to the first decompression stage and all decompression stops are included.

The time of ascent is calculated on the basis of the prescribed ascent rate and a normal workload. Total time of ascent can be subject to change, if the ascent rate is not ideal (100%) or with higher workload.

4.6 Tank pressure (only with transmitter)



Tank pressure is indicated in the lower display.

The tank pressure transmitted to the computer by the transmitter is also used for the calculation of the remaining bottom time (RBT) and the physical performance.

Messages: In case of increased air consumption, Aladin® Air Z displays a lung symbol in the lower display and an acoustic alarm occurs.

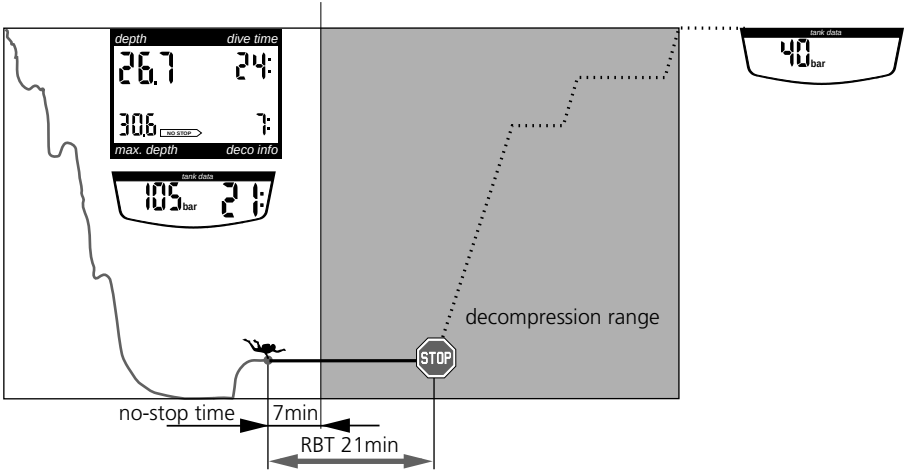
Action: To prevent super-saturation, reduce exertion and breathe more quietly.

Interruption of transmission: If no data are received, the display of Aladin® Air Z shows the interruption of the transmission (antenna warning, alarm signal) 30 seconds after the last transmission. Without a sensible transmission in the following 40 seconds <---> appears instead of the tank pressure and the RBT (remaining bottom time) is no longer displayed (alarm signal). In this case, either transmitter or receiver do not work properly or the position of dive computer and transmitter is very disadvantageous. As soon as data are transmitted again, the computer restarts to display tank pressure and RBT.

English

4.7 Remaining bottom time RBT (only with transmitter)

RBT is the time left at the current depth until the point of time when the ascent must be started. The RBT is shown in the lower display in figures (minutes). The RBT is calculated on the basis of the current tank pressure, the temperature and the dive data so far registered. The RBT is based on the assumption that the tank pressure should amount to at least 40 bar at the end of the dive. Alterations are possible (see page 74).



Ensure that you have enough Air for the Ascent. Do not use the RBT to the limit if prolonged ascents or an increased rate of breathing (currents…) are expected.

– The RBT must never reach <0:> (alarm signal), because a minimal reserve pressure at the surface would not be guaranteed. Danger of insufficient air supply for the ascent!

– Correct calculation of the RBT is only possible if the valve of any reserve function is open during the dive.

– The acoustic alarm on exceeding the RBT is suppressed at depths less than 7 m if Aladin® Air Z is in the no-stop phase.

Messages:

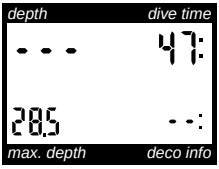
– If the RBT drops below three minutes, an acoustic attention signal is activated and the RBT (only figures) starts flashing.

– When the last minute has passed (RBT=0) an acoustic alarm is activated every 4 seconds. The RBT is flashing.

Procedure: Start ascent at once.

5 Surface Functions

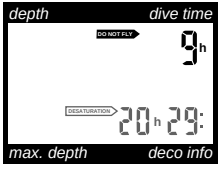
5.1 End of a dive



After reaching the surface, Aladin® Air Z switches into wait-mode automatically for five minutes. This is the time span necessary to recognize the end of the dive.
The delay allows for coming to the surface for orientation and the resumption of the dive afterwards.
When the dive is closed after 5 minutes in wait-mode, it is entered into the logbook and Aladin® Air Z switches into surface-mode.

In surface-mode, Aladin® Air Z shows desaturation time and no fly time.

5.2 Desaturation time

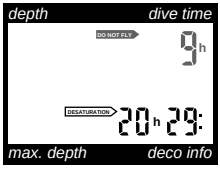


Aladin® Air Z is in surface-mode. The arrow DESATURATION appears; beside it desaturation time in hours and minutes is displayed. Desaturation time is continually indicated until the next dive or until it reaches zero. The display is switched off to save energy 3 minutes after the last manipulation (surface-sleep-mode). Desaturation calculations continue to be made in the background.

– In some cases, desaturation times of Aladin® Air Z are considerably longer than those of other models, because the calculation model assumes reduced physical activity at the surface and calculates with shorter half-time periods.

– If desaturation time reaches the value 0, all tissues are desaturated. Aladin® Air Z switches into sleep-mode.

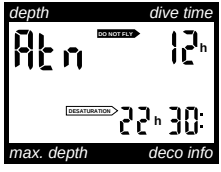
5.3 No fly time



The waiting period until the next flight is indicated as follows: <DO NOT FLY>; beside, time in hours.
In some cases the no fly time is longer than with other models (reason: see desaturation time).

The no fly time must be strictly observed because of the danger of the formation of gas bubbles.

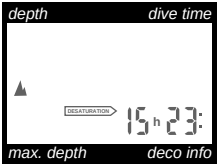
5.4 Warning of bubbles



Through repetitive dives microbubbles accumulate in the lungs if the surface interval is not long enough. Ignoring decompression or an excessive ascent rate can also lead to bubbles in tissues. In certain circumstances, in order to reduce the risk through further repetitive dives, an extended surface interval should be planned. The prognosis on the formation of bubbles during the surface interval allows Aladin® Air Z to advise the diver to extend the surface interval. If the display <Atn> (=attention) is visible instead of the depth during the surface interval (surface-mode), the diver should not undertake another dive. The extension of the interval prevents a high concentration of bubbles in the lungs during the planned dive and avoids a risk situation.

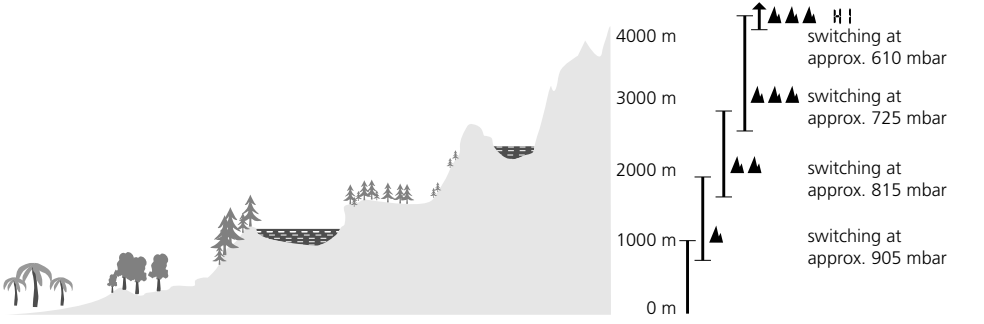
- If the dive has to be made during <Atn> time, the <Atn> time of the following dive can increase considerably.
- If the dive is made in spite of the display <Atn>, the diver must cope with a clearly shorter no-stop time and an extension of decompression.

6 Diving in Mountain Lakes

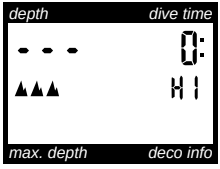


Aladin® Air Z also measures the atmospheric pressure in sleep-mode. If the computer detects a higher altitude section, it switches into surface-mode automatically. Desaturation time indicated at this moment refers to adaptation time at this altitude. If diving starts within this adaptation time, Aladin® Air Z treats it as a repetitive dive, since the body still has a higher saturation.

The entire altitude range is divided into four sections which are influenced by meteorological circumstances. That is why the following altitude sections overlap on their fringes. The altitude section is indicated at the surface, in the logbook and in the dive planner by stylized mountains, if a mountain lake altitude is reached. Section 0 is not indicated. In the following, you can see the approximate altitude ranges of the four sections:



In order to assure optimal decompression also at higher altitudes, the 3 m decompression stage is divided into a 4 m stage and a 2 m stage (the prescribed decompression depths are in consequence 2 m, 4 m, 6 m, 9 m...).



Aladin® Air Z can be used as decompression computer up to an altitude of 4000 m. If atmospheric pressure is below 620 mbar (higher altitude than 4000 m above sea level), no decompression information is displayed any more. The indication of the RBT is also impossible, since decompression data are necessary for its calculation (tank pressure is still displayed, of course). Dive-plan-mode can no longer be started, since no decompression information is available. Beside the display of the altitude section 3, <HI> (=high) appears to tell the diver that he will not get any decompression information for the dive.

Very small differences in the pressure sensors can cause an indication of different altitude sections of two dive computers at the same altitude on the fringes of the altitude ranges. These differences are not meaningful and do not interfere with the safety of Aladin® Air Z. But if an altitude section is displayed at sea level or the altitude informations of two computers differ by more than one altitude section (e.g. section 2 instead of 0), there may be a defect of the computer. In this case, send your computer back to your retailer for checking.

IV Diving at Low Risk with Aladin® Air Z

1 Diving at Low Risk with Aladin® Air Z

1.1 Dive at low risk

Aladin® Air Z recognizes and reacts "intelligently" to certain risk situations, although of course it is much better that each individual diver avoid these higher risk situations altogether. If a decompression accident does occur, the optional MemoMouse and DataTrak software allows the analysis of the dive profile and certain risk parameters to provide for more complete information for treatment purposes.

Analysis of the most recent results of decompression research and statistical analysis of diving accidents involving decompression sickness supports the following guidelines for diving with a reduced risk of decompression sickness.

The following suggestions are highly recommended:

Neither the Aladin® Air Z nor any other diving computer or decompression table can guarantee that decompression sickness will not occur even if the computer or table is used correctly and all of the following precautions are followed.

1.2 Minimizing risk on first dives

The risk can be diminished on first dives by avoiding risk situations and by the selection of a dive profile 'low in bubbles'. This leads to the following recommendations:

– Due to the danger of nitrogen narcosis do not dive deeper than 40 m. Aladin® Air Z does not warn you in this respect.
– On all dives with the Aladin® Air Z, make a safety stop for at least one to three minutes within the 3 to 5 metre zone.
– Always make the deepest dive of the day first when repetitive dives are planned, and for each successive dive make sure that the deepest portion of that dive is done at the beginning of the dive.
– The Aladin® Air Z is designed for dives made with compressed air only. Do not use the Aladin® Air Z for dives made with nitrox or other mixed gases.
– If your diving cylinder is equipped with a reserve or "J"-type valve, make certain that the reserve is in an open (down) position. Failure to keep the reserve open will result in the improper calculation of dive data depending on tank pressure.
– All divers using dive computers to plan dives and indicate or determine decompression status must use their own computer which they take with them on all dives.

– On any given dive, all divers in a buddy group must follow the most conservative dive computer for that particular dive.
– If the Aladin® Air Z fails at any time during the dive, the dive must be terminated, and appropriate surfacing procedures should be initiated immediately.
– You MUST follow the ascent rates as indicated by the Aladin® Air Z and if the computer should fail for any reason, you must ascend at a rate of no greater than 10 metres per minute.
– You MUST be familiar with all signs and symptoms of decompression sickness before using the Aladin® Air Z! Seek IMMEDIATE treatment for decompression sickness should any of these signs or symptoms occur after a dive! There is a direct correlation between the effectiveness of treatment and the delay between the onset of symptoms and the treatment for decompression sickness.
– Always observe the visual and acoustic alarm signals of the Aladin® Air Z. Avoid situations of increased risk which are marked with a warning sign in this operating manual.
– Avoid repeated ascents and descents (yo-yo diving).
– Avoid exertion at depth
– Plan shorter duration for dives in cold water
– After completion of the decompression or at the end of no-stop dives, ascend the last metres to the surface very slowly.
– Ensure that you have enough Air for the Ascent. Do not use the RBT to the limit if prolonged ascents or an increased rate of breathing (currents…) are expected.

1.3 Minimizing risks on repetitive dives

There is still excess nitrogen in the body due to the history of the preceding dives. Depending on the duration of the surface interval, there may even be gaseous nitrogen (microbubbles). You can minimize the risk by observing certain rules:

– observe the same rules for repetitive dives as on your first dive
– plan repetitive dives at a smaller depth than the first dive
– plan a sufficient duration of the surface interval (min. 3 - 4 hours)
– only go on repetitive dives, if no indication <Atn> is visible on the display
– plan a day without diving once a week
– repetitive dives after exchanging the dive computer: Wait at least 24 hour before you start with the repetitive dive.

1.4 Action in risk situations

If the dive includes a risk situation, Aladin® Air Z reacts automatically and appropriately to the situation. A change of decompression is indicated if it is actually necessary to minimize the risk. The diver can further reduce the risk through sensible conduct on the next dive and at the same time prevent long decompression stops.

A few examples on the following pages:

Situation 1: **The diver ascends much too rapidly:**

Reaction of computer: The model calculates the formation of bubbles due to the excessively rapid ascent. No-stop time is shortened or a longer (and eventually at greater depth) decompression prescription is displayed in order to assure sufficient decompression.

Recommended action of the diver

During the dive: Observe the new decompression instruction of Aladin® Air Z.

After the dive: Watch out for symptoms of an arterial gas embolism and decompression sickness.

Before the next dive, plan a sufficiently long interval (display <Atn> should have disappeared).

Situation 2: **The diver disregards the prescribed decompression depth for some time.**

Reaction of computer: The model calculates the formation of bubbles due to ignoring decompression. A longer (and eventually at lower depth) decompression is displayed in order to assure sufficient time for desaturation.

Recommended action of the diver

During the dive: Descend to the prescribed decompression depth at once.
Do not descend to greater depths any more.
Observe the decompression instruction of Aladin® Air Z.

After the dive: Watch out for symptoms of arterial gas embolism and decompression sickness.

Before the next dive, plan a sufficiently long interval (display <Atn> should have disappeared).

Situation 3: **The diver is exposed to exertion for a long period (e.g. in a current).**

Reaction of computer: An extension of the decompression is indicated, if the muscle tissues are relevant for the decompression of the dive.

Recommended action of the diver

During the dive: Avoid further physical exertion if possible. Make a break for relaxation.
Check the decompression information and the RBT frequently on your Aladin® Air Z. Decompression time can increase and RBT can decrease considerably.

After the dive: Refrain from intense physical exertion on your next dive.
In addition, a longer surface interval can shorten the decompression of the next dive.

Situation 4: **It is impossible to have a sufficient surface interval so that the indication <Atn> would extinguish prior to the next dive (e.g. on organized diving trips from a boat).**

Reaction of computer: Aladin® Air Z calculates a more conservative no-stop time or decompression prescription in order to allow nitrogen in the vicinity of bubbles enough time for desaturation.

Recommended action of the diver

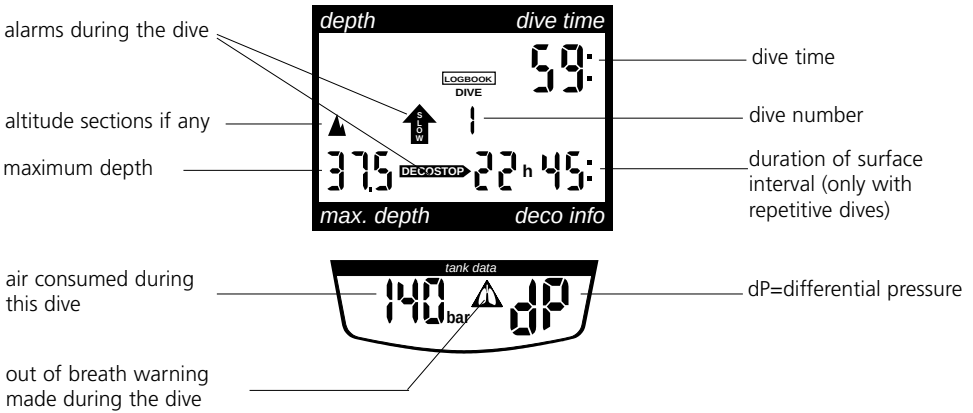
During the dive: Be careful to have a profile 'low in bubbles' on your next dive (limit depth to 25 m max., slow ascent).

After the dive: Before the next dive, plan a sufficiently long interval (display <Atn> should have disappeared).

V Logbook V

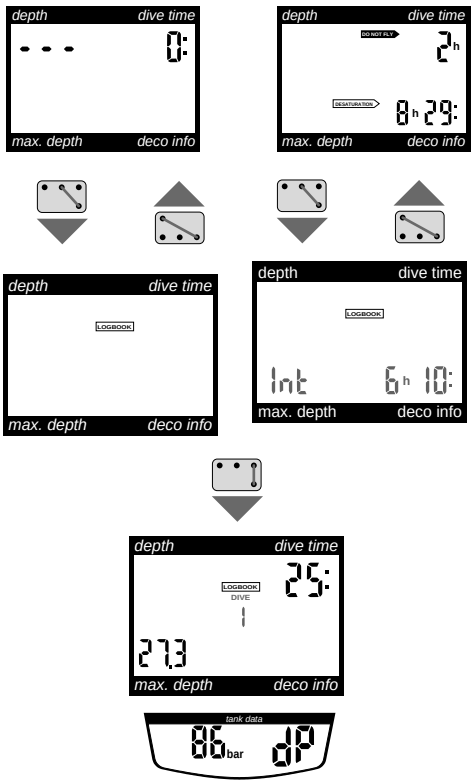
1 Survey

The Aladin® Air Z records the last 37 dives and the dive profiles of the last 200 minutes of diving (see „Output on PC“ page 64). The last 19 dives can be displayed directly on the dive computer. A dive is only entered in the logbook if the dive time is longer than 2 minutes. Displayed information of the dive:



If a dive is started within adaptation time (after a change of altitude), the adaptation time is displayed instead of the surface interval.

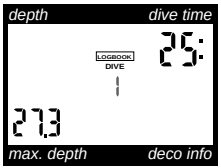
2 Selection and Activation

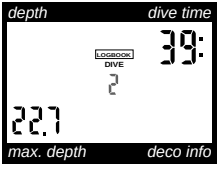


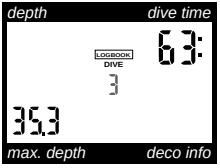
1. The logbook is selected by bridging contacts B and + in ready- or surface-mode. Indication <LOGBUCH> appears. If Aladin® Air Z has been in surface-mode before, the surface interval appears as well. You go back into ready- or surface-mode by B and –.

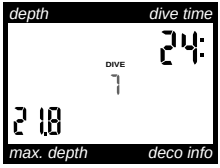
2. In order to activate the logbook, bridge contacts B and E. The most recent dive is displayed (DIVE 1).

3 Selection of Dive









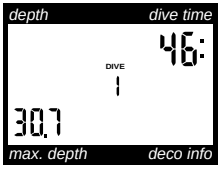
1. Bridge contacts B and + to get the information of the dive preceding the most recent one. Display <DIVE 2> appears.

2. On every further bridging B and + the logbook jumps to the next older dive (DIVE 3).

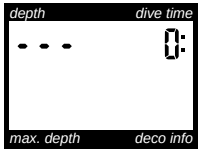
3. On constant bridging of the contacts all dives are displayed successively.

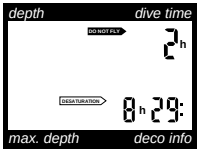
4. Bridging contacts B and – effects switching back from older dives to more recent ones.

4 Leaving the Logbook-Mode



or after 3 minutes





Touch contacts B and E.
Aladin® Air Z switches back into ready- or surface-mode. This also happens 3 minutes after activating logbook-mode.

5 Output on PC

By means of a PC-interface and the DataTrak software, both available as an accessory, the information of the last 37 dives can be read out. In the same way, the dive profiles of the last dives, up to a total of 200 minutes, can be reproduced.

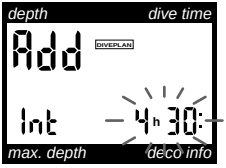
Time and date of the dive are entered automatically, based on the clock of the PC-system when the data are transferred via interface.

The possibilities and the procedure of this data transfer are described in a separate manual.

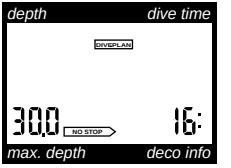
VI Dive Planer

1 Survey / 2 Selection and Activation from Ready-Mode

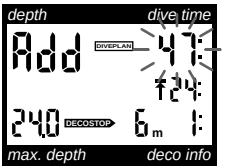
The Aladin® Air Z is equipped with a dive planner which allows the planning of no-stop and decompression dives with freely determinable surface intervals. The water temperature of the most recent dive and altitude sections are incorporated in the calculation.



Presetting the surface interval (only during desaturation)

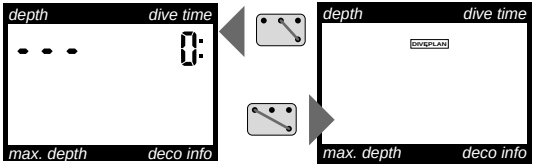


Planning of no-stop dives



Planning of decompression dives

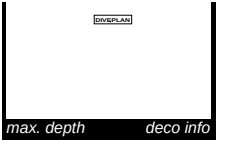
2 Selection and Activation from Ready-Mode



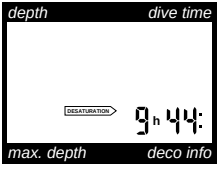
1. From ready-mode, you switch into the dive-plan input stage with contacts B and –.

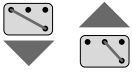
2. The display shows <DIVEPLAN>. You return to ready-mode by B and +.

3. Contacts B and E afterwards activate the planning mode.

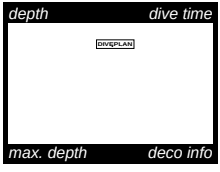


4. The display shows no-stop times for increasing depths (scrolling no-stop times).



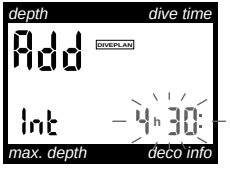


1. From surface-mode, you switch into the dive-plan input stage by B and –.

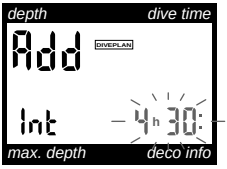


2. The display shows <DIVEPLAN>. You return to surface mode by B and +.

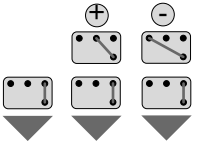
3. After confirming by B and E, the display shows <Add>, <Int> and the interval (flashing). Aladin® Air Z expects your input for the duration of the dive interval.



4 Planning a No-Stop Dive

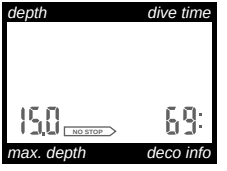


Aladin® Air Z expects your input for the duration of the dive interval.



4a If no surface interval is to be entered, (diving at the present moment), confirm this with contacts B and E, and you switch into no-stop planning.

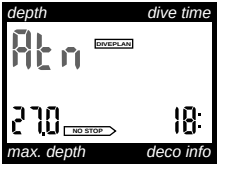
4b You can extend the interval with contacts B and +.
B and – shorten the interval.



5 You confirm the new interval with B and E and get to no-stop planning.

After confirming the surface interval (if possible), no-stop times are displayed in 3-metre-increments. The process starts at the deepest depth where the no-stop time is for the first time less than 99 minutes. The no-stop time for every 3-metre-increment is displayed for about 3 seconds (scrolling no-stop times).

The Aladin® Air Za calculates according to the planned surface interval the expected production of microbubbles. The diver should increase the surface interval if <Atn> (Attention) is displayed. This will reduce the risk of micro bubble production in the pulmonary system.

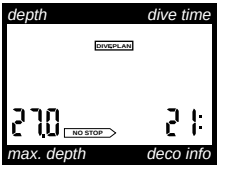


By repeated recalculations of the dive-plan with varying surface intervals the minimum interval can be found out.

– When diving in spite of the display <Atn>, a clear shortening of the no-stop time and an extension of decompression has to be expected.

– If a dive is made during <Atn> -time, the <Atn>-time following the dive can increase considerably.

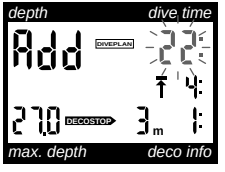
5 Planning a Decompression Dive

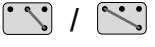


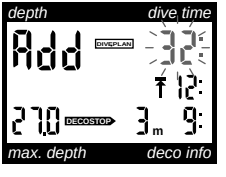
1. In order to plan a dive that requires decompression, wait until the scrolling no-stop time shows the desired depth.

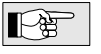
2. By means of contacts B and E you can switch into decompression planning. Dive time is now one minute longer than no-stop time, and the appropriate decompression information appears.

3. <Add> demands that you set the time. This is done with contacts B and +, B and – respectively. As soon as the contacts are no longer bridged, Aladin® Air Z calculates the decompression information for this set time. This calculation takes some time.



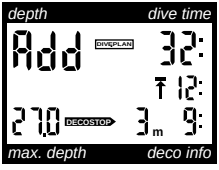






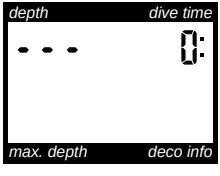
If you wish to plan a dive requiring decompression at another depth, switch from decompression planning to no-stop planning by means of B and E. Aladin® Air Z again shows the scrolling no-stop times. Now you can switch between no-stop planning and decompression planning at will with contacts B and E.

6 Leaving the Dive-Plan-Mode



3 s

or after 3 minutes



If the contacts B and E are touched for about 3 seconds, Aladin® Air Z returns to ready- or surface-mode. This also occurs three minutes after the activation of the dive-plan-mode.

On a short touch of contacts B and E the Aladin® Air Z switches back to the scrolling no-stop times.
In order to completely leave the dive-plan-mode, B and E must be bridged for a longer period and 2 bleeps have to be awaited.

If two or more divers plan a dive, planning has to be based on the dive computer that shows the shorter no-stop times or the longer decompression times.

English

VII Communication Software for Windows®

1 MemoMouse, DataTrak and DataTalk

The Aladin® Air Z is able to communicate with a personal computer. The connection is established by contact sensors and the MemoMouse. The MemoMouse and the PC software DataTrak and DataTalk is available as an option. For the Aladin® Air Z it is only allowed to use DataTalk version 1.6 or higher. Communication with a personal computer (Windows®) has a number of advantages:

1.1 Personal programming of the dive computer (DataTalk)

Several parameters can be set individually by the user, e.g.:

– The physical units of water depth and tank pressure can be selected (Metric/Imperial).
– The calculation of Remaining Bottom Time (RBT) assumes a remaining tank pressure at the surface. This remaining pressure can be adjusted from 30 to 100 bar.
– The acoustic alarm can be switched off for attention messages. Actual alarms are not changed (not enough air, ignoring decompression stop, too rapid ascent).
– The sensitivity of the message «out of breath» can be altered.

- If you switch off the acoustic attention buzzer of the Aladin® Air Z you must pay careful attention to the visual signals on the face of the Aladin® Air Z. Failure to follow all alarms whether audible or not may lead to serious injury or death due to decompression sickness, and/or drowning.

1.2 Analysis and storage of real dives

The last approx. 200 minutes of dive time are stored by the dive computer in increments of 20 seconds and can be transferred to the PC. The DataTrak software allows the representation and analysis of the profiles. By this means all relevant data are examined and displayed for every point in time. The DataTrak releases 1.6 and higher recognize the Aladin® Air Z and display the respective data.

The PC program enables the diver to keep a personal logbook. Apart from the last 200 minutes of diving, 37 dives are recorded in the logbook of Aladin® Air Z. If the data from Aladin® Air Z are transferred regularly into the MemoMouse and then to the PC, all dives will be stored in the PC with their profiles.Time and date of the dives are automatically recorded and the dives can be printed out on a page for the diver-'s logbook.

1.3 Updates

The last versions of DataTrak and DataTalk are available for free from the Internet (http://www.uwatec.com).

VIII Trouble Shooting

VIII

English

VIII Trouble Shooting

symptom	possible reason(s)	procedure(s)
No reception of tank pressure data.	Transmitter and computer are not tuned to each other (paired).	Pair transmitter and computer (see chapter II 4).
	Transmitter or receiver in the computer are defective.	If the pairing is not possible with another transmitter, the receiver in the computer is defective. Have transmitter or dive computer repaired.
	In surface mode if there is no decrease in pressure for 3 minutes the pressure data will not display.	Change the pressure by breathing from the regulator. Tank data will reappear.
Bad reception of tank pressure data.	Transmitter is not mounted correctly.	Mount transmitter correctly (see chapter II 4)
	Transmitter, or receiver in the computer are defective.	If the pairing is not possible with another transmitter, the receiver in the computer is defective. Have transmitter or dive computer repaired.
Displayed tank pressure does not correspond to pressure measured by a manometer (pressure gauge).	By compensating the temperature, the pressure displayed is valid at 20 °C. If air- or water-temperature differ from this value, a difference to the value given by a pressure gauge is possible.	Make comparison at 20 °C or check the tank pressure compensated to the atmospheric pressure for comparison (see appendix, chapter IX).
	Tank and transmitter do not have the same temperature (only possible in air).	Leave the tank with the regulator mounted in the open air for 5 - 10 minutes.
	Manometer/pressure gauge is not accurate (temperature 20 °C).	Measure tank pressure with another manometer/pressure gauge (at 20 °C).

symptom	possible reason(s)	procedure(s)
The logbook does not show any air consumption (dp) for a certain dive.	No tank pressure signal was received at the beginning or end of the dive.	Mount transmitter correctly (see chapter II 4).
	Transmitter and dive computer were not paired before the dive started.	Pair transmitter and computer (see chapter II 4).
Altitude section does not correspond to the current altitude.	Atmospheric pressure is especially high or low.	Check meteorological information.
	Air pressure measured by the computer is wrong.	Send in dive computer for servicing (only if altitude section is wrong by more than one section, see chapter III 6).
Desaturation time and/ or no fly time are very long.	Slow tissue and/or little workload at the surface.	Study chapter III 5 very carefully.
	Many repetitive dives, yoyo-diving or disregard of decompression stops have caused a large number of microbubbles, which have to decrease first.	Plan sufficiently long surface interval and dives at lower risk.
<Atn> appears	Many repetitive dives, too fast ascents, yoyo-diving or disregard of decompression stops have caused a large number of microbubbles, which have to decrease first.	Plan sufficiently long surface interval and dives at lower risk. Study chapters III 5 and IV very carefully.
An unexpected decompression stop appears in place of no-stop time or decompression increases in leaps.	Too rapid ascent or ignoring decompression stops have caused a large number of microbubbles, which leads to an attention message (warning of bubbles).	Plan sufficiently long surface interval and dives at lower risk. Study chapters III 5 and IV very carefully.

symptom	possible reason(s)	procedure(s)
Attention messages are not given acoustically.	The acoustic signal of the attention messages is switched off.	Reactivate these attention messages by means of the interface.
Remaining bottom time (RBT) always very short.	Remaining pressure is set too high (standard setting 40 bar).	Alter the remaining pressure setting by means of the interface. Always open reserve valve when using Aladin® Air Z.

IX Appendix IX

English

1 Maintenance of Aladin® Air Z Dive Computer

Your Aladin® Air Z is virtually maintenance free. All you need to do is to rinse it carefully with fresh water after each use and to have the batteries changed when needed. To avoid possible problems with your Aladin® Air Z, the following recommendations will help assure that it will give you years of trouble free service:

- Avoid dropping or jarring your Aladin® Air Z.
- Do not allow your Aladin® Air Z to be exposed to direct, intense sunlight.
- Rinse your Aladin® Air Z thoroughly with fresh water after each dive.
- Do not store your Aladin® Air Z in an gas mixture-tight area; make sure there is free ventilation.
- If there are problems with operating the contacts, the surface of your Aladin® Air Z housing can be treated with silicone grease. Use soapy water to clean the Aladin® Air Z before using silicone grease and dry it thoroughly.
- Never pressure the Aladin® Air Z out of water.
- There are borings in two of the contacts for the reception of the PC interface connection (MemoMouse). Free these borings from dirt with a needle if necessary.

Take the dive computer or the transmitter to an authorized Uwatec dealer in order to change the batteries. The actual change of the batteries is made at the manufacturer or the importer. The computer is checked for its technical functioning at the same time. Do not attempt to have the batteries changed by anyone other than an authorized dealer.

2 Technical Information

Operating altitude: with decompression information: sea level up to approx. 4000 m
without decompression information: unlimited

Operating depth: no limitation in the permitted range of diving with compressed air
no limit for recreational dives.

Do not dive deeper than 40 m.

Maximum operating pressure: 13 bar

Clock: quartz timer, display up to 199 minutes

Operating temperature: -10°C to +50°C

Power supply: Special battery Uwatec LR07

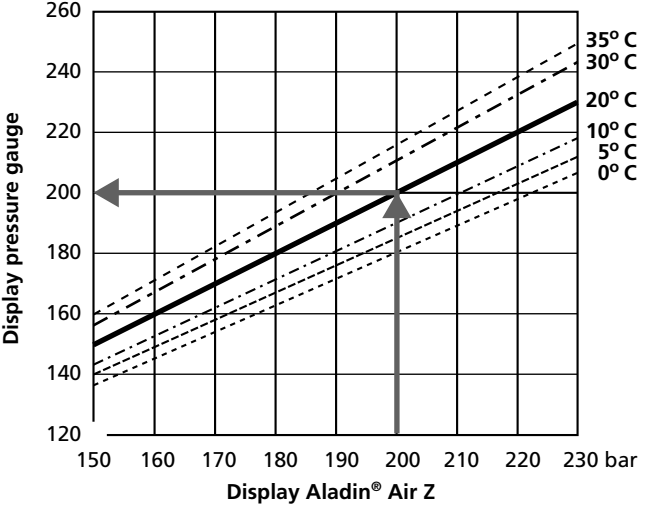
Life of the battery: (standard values)
For an average diving time of 60 minutes and a surface interval of 20 hours after every dive:

Number of dives per year	dive computer (years)	transmitter (years)
50	7	11
100	5.5	9.5
150	4	8
300	2.5	6

3 Conversion of Tank Pressure

Tank pressure indicated in the lower display may diverge from the information given by a manometer/pressure gauge. Aladin® Air Z displays pressure always converted to a temperature of 20°C, whereas the mechanical pressure gauge displays the actual pressure influenced by temperature.

The figure on the right allows you to compare the information given by a conventional pressure gauge and by Aladin® Air Z at six different temperatures.



4 Warranty IX

Please pay attention to the following remarks on warranty claims:

4.1 Recognition of warranty:

The warranty only covers dive computers, which have been provably bought from an authorized retailer or from the manufacturer.

4.2 Scope of the warranty:

The manufacturer undertakes to rectify all defects which are provably traceable to defects of material or faults in production. The manufacturer decides about the qualification of a warranty claim and about the way of mending possible defects. This may be by repair of the computer free of charge, the replacement of faulty parts or replacement of the entire computer.

Excluded are faults or defects which go back to:

- Unqualified operation or strain
- Exterior influences, e.g. transport damages, damages due to bumping and hitting, meteorological influences or other natural phenomena.
- Servicing, repairs or the opening of the dive computer by anybody not authorized by the manufacturer. This especially concerns the change of batteries of both the transmitter and the dive computer.
- Pressure tests which do not take place in water
- Diving accidents

4.3 Warranty period and claim

The warranty is given for a period of 12 months.

Repairs or replacements during the warranty period do not extend the original warranty period.
In order to put forward a warranty claim, send the dive computer together with a dated receipt of the purchase to your authorized retailer or an authorized servicing point.
The manufacturer does not have to accept extensions of the warranty granted by national importers.

5 Safety considerations

The Aladin® Air Z offers a high measure of comfort and safety to the diver but the dive computer does not replace a profound dive training.
Pay strict attention to the optical and acoustic alarm signals emitted by Aladin® Air Z. Avoid risk situations, which are marked ⚠ or STOP in this manual.

Always observe the basic diving rules, which are also valid when diving with Aladin® Air Z:

- Never dive alone – Aladin® Air Z does not replace a diving partner!
- Always dive according to your level or training. Aladin® Air Z does not increase your abilities as a diver!
- Due to the danger of nitrogen narcosis, do not dive lower than 40 metres. Aladin® Air Z does not warn you in this respect.

The safety concept of Aladin® Air Z includes this extensive operating manual. Confirm with your signature below that you have read this operating manual carefully and completely.

Place: _____ Date: _____ Signature: _____

Serial No. of your Aladin® Air Z

Dealer address:

(Dealer to affix stamp)

Printed in Switzerland 1/00