Owner's manual

heinrichs weikamp

Welcome!

Thank you for choosing the frog dive computer from heinrichs weikamp

Whilst we have designed the frog to be as intuitive and as easy to use as possible we still recommend that you read these instructions carefully from start to finish prior to using your frog computer for the first time.

For any questions or queries relating to your frog **dive computer please contact your local heinrichs weikamp dealership or we can be contacted directly via the following...**

- ...internet forum:
  www.heinrichsweikamp.com

- ... e-mail:
  info@heinrichsweikamp.com

- ... mail:
  heinrichs weikamp
  Adlerstraße 7
  79098 Freiburg im Breisgau
  Germany

Content

Content

General notes

Technical status

This manual corresponds to the technical status of frog dive computer and its firmware as of May, 2012.

frog, its firmware and the documentation are subject to technical changes without notice.

Customer settings

All information in this manual are related to standard settings if not stated otherwise.

General notes

About this manual

Methods to identify

IMPORTANT: indicates a situation that carries a significant risk of injury..

REMARK: Indicates a situation that carries a risk of injury or damage to the device.

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Safety measures

For your own safety, follow the safety advice given below.

Precautions

The most important factor in diving safely is a competent and well trained diver, diving within their abilities.

This dive computer is intended for experienced divers. That implies:

- Sufficient knowledge about the laws of physics in diving is required.

- Relying on a wrongly configured dive computer might damage your health.

- Do not use this dive computer if you are not familiar with or don't understand the settings and displayed information of frog.

- If necessary, you must be able to finish your dive safely without the aid of a dive computer.

Safety measures

Before every dive

Plan your dive.

Arrange your dive plan independently from the frog and take the plan with you when diving.

Make sure that your frog **is ready for use and correctly configured.**

Always confirm the following questions before diving:

Configured correctly? Check the settings of your frog. If necessary, adjust the settings in accordance to your dive plan and equipment.

Battery full? Check the battery status using the battery status indicator on the display. To ensure reliable performance throughout your dive, the battery condition must be fine. With the display at full brightness, a brand new set of 3.6 Volt LS14500 Saft batteries lasts for more than 60 hours in dive mode.

Usage for diving is prohibited if the battery warning blinks.

Device waterproof? Confirm that the battery compartment lid is securely in

Safety measures

place. Check the body for cracks or damages which might allow water to intrude.

Functioning pressure sensor? Ensure that the opening of the pressure sensor is neither clogged nor soiled nor damaged.

Safely attached? Make sure your frog can be fastened safely using either the wristband or a suitable alternative.

Display messages? Check the display of your frog for warnings or other signals. Do not dive if your frog displays a warn-

ing, e.g. the warning symbol. Check the cause for the warning.

Safety measures

While Diving

Take a backup system with you.

While diving, always carry a backup system to measure duration and diving depth independently from your frog

Take your frog with you on every repeat dive – don't lend it to anyone.

A correct calculation of tissue saturation requires that your frog

- is configured correctly

- is used on every dive

- is only used to record data during **your** personal dives (and not shared with other divers)

Take a sufficiently long surface break before diving again.

The frog does not explicitly indicate how long to wait before the next dive. Please adhere to the guidelines you were taught during your diver's training.

IMPORTANT Saturation data is lost when updating the frog's firmware or in the unlikely event of a failure. In these cases do not dive any further until your tissue saturation has returned to normal.

Safety measures

Safe usage of your frog

Do not modify the hardware.

Modifications to the hardware of the frog can negatively impact its reliability and the water tightness of its body.

Only the lid of the battery compartment can be opened. There is no other way to open the body without destroying the device.

It is imperative that the o-ring on the battery compartment lid is kept clean and free of hair, grit, dirt, lint etc.

Open the battery compartment only when the battery has to be replaced.

Keep your frog **out of children's reach**

Small parts such as the battery lid may represent a choking hazard.

Furthermore the configuration of your frog may be indadvertedly altered without your knowledge.

Safety measures

Environmental Conditions

Store your frog in a cool, dry place.

Permissible temperature range for useage and storage: 0 °C to 40 °C

Maximum water depth: 80 m

IMPORTANT Surpassing the maximum water depth may cause malfunctioning or permanent damage to the device.

Overview

Body

1 Battery compartment
2 Brightness sensor
3 Piezo switches

4 LED indicators
5 Display

Body components

Battery compartment

The frog is powered by 2 x AA size batteries which may be a standard 1.5v versions (which are freely available from most household retailers) or 3.6v lithium variants such as the SAFT LS14500 (supplied). By utilising the 3.6v batteries you may expect the frog to deliver in excess of 60hrs dive time even with the display at full brightness.

Your frog has been supplied ready to dive with two 3.6V SAFT batteries already fitted, however subsequent battery replacements can easily be performed by the user without the need for tools or pressure testing.

REMARK Before every dive check the battery status and confirm that the battery compartment cover is securely in place.

REMARK For more details please refer to battery replacement

Brightness sensor

The TFT display automatically adjusts the brightness to suit the ambient light level in order to prolong the battery life.

Body components

Switches

The frog utilises piezo switches that have no moving parts and therefore eliminate much of the failure potential associated with traditional buttons. These switches are easy to activate even whilst wearing thick gloves.

LED indicators

The LED indicators are only active during maintenance activities and when the frog is connected to a computer via bluetooth.

Display

The frog is built around its bright TFT display which is able to display over 65,000 colours and boasts a resolution of 320x240 pixels. Being TFT the display requires no external light source or back-light to view even in the very darkest conditions.

Setup and user configuration

Your frog was sent to you ready to use.

However prior to diving it is recommended that you make some configuration choices to reflect your personal preferences and your fourthcoming dive.

These configuration steps are described over the following pages.

High altitude diving

The frog automatically adjusts to changes in atmospheric pressure. It always uses the current ambient pressure to determine altitude and make the necessary adjustments to decompression stops when diving at altitude.

Please README!

Familiarize yourself with the frog. It is recommended that you read this manual carefully and entirely.

Start screen

Start screen

Nov 11, 2011
11:11 a.m.

CNS too high

User name or some such

Desat: 11 hours
No fly: 1 hour

11 °C
1111 mbar

< Menu

Last dive >

Start screen

The start screen appears whenever you activate the frog dive computer from sleep mode by briefly pressing on either the left or right switch.

The start screen shows the following information:

1. Date and time *see -> page 23*
2. Profile picture *see -> page 39*
3. Currently active gas *see -> page 24*
4. To the menu *see -> page 24*
5. Quick view of the last dive
   see -> page 33

6. Temperature and current pressure
7. Custom text (user defineable)
   see -> page 38
8. Battery status *see -> page 42*
9. Warnings (if applicable) *see -> page 10*

Main menu
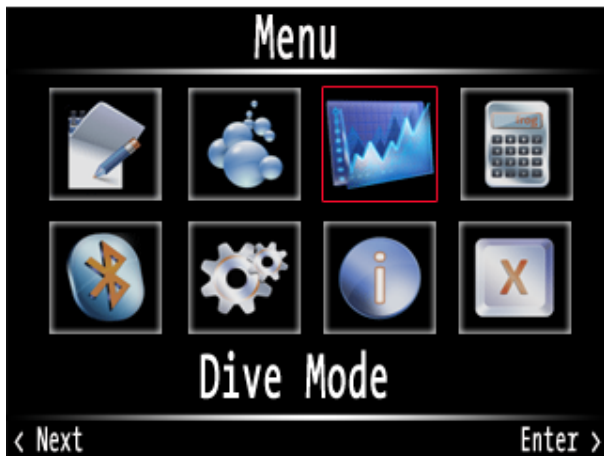
Main menu

Logbook: Logged dives

Gas configuration: Set active gases and gas changes

Dive mode: Type of dive, decompression mode

Deco planner: Simulator and dive planner tool

Bluetooth: Connect to a computer via bluetooth

Settings: Dive settings, system settings

Information: Firmware version, battery status, number of dives, serial number

Settings
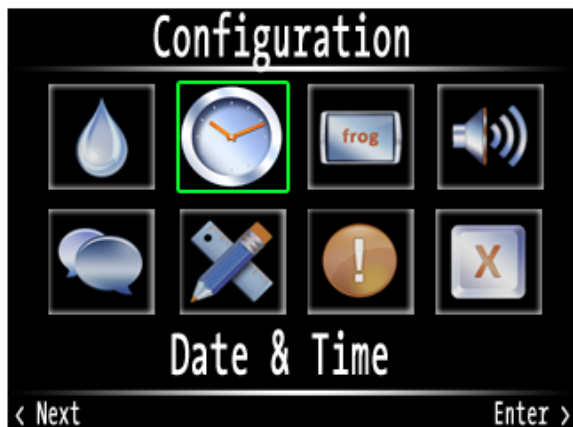
Settings

Menu -> Settings

This menu allows you to adjust the following aspects:

- **Dive Settings:** Maximum pp02 value, detailed / normal display in dive mode, logbook offset (allows to adjust the logbook count of dives to reflect your actual number of dives)

- **Time & Date:** Set time and date

- **Display settings:** Skins, brightness

- **Buzzer:** Switch sounds on/off

-

- **Language:** Change language

- **Units**: Metric / imperial measures

- **Reset:** Restart, reset saturation, restore factory settings (logbook, skins, profile pictures and custom text will be maintained)

Pre-dive setup

Before you begin your dive it is important to define your available breathing gases and to choose which of the frog's decompression algorithms you wish to utilise.

Menu -> Deco Mode

This menu allows for an easy switch between sport diving and apnoe modes. In addition you can select your preferred decompression model: classic Bühlmann (ZH-L16) or ZHL-16 with gradient factors (GF). Via the conservatism option, you can also tell the frog whether to calculate your decompression data conservatively (+2) or aggressively (-2). ***Details about conservatism, see -> page 41***

Menu -> Gas Setup

You may configure up to three gases and then select which ones are enabled for any given dive (you may have one, two or three gases enabled at once). By default gas one is the active starting gas and is defined as air.

To activate additional gases or to edit gases you should follow these steps: Select Gas # (1, 2 or 3). The sub-menu allows you to activate or deactivate the gas and configure it either by manually

Pre-dive setup

configuring the O2 percentage (O2+ / O2-), or by using one of the pre-configured gases (air, Nx28, Nx32, Nx40, Nx75, O2).

When calculating decompression stops the frog assumes you'll dive utilising all of the currently defined and active gases. Therefore it is important that the active gases accurately reflect the gases that you are carrying on your dive. Only once you've missed a planned gas switch underwater will the frog recalculate the decompression schedule.

IMPORTANT Give careful consideration to the configuration of your maximum operating depth (MOD) for each of your active gases as the frog will calculate your decompression schedule on the assumption that you will gas switch as you reach the defined MOD of each gas. The current MOD settings are listed in the first line; if the display shows a different value in red then the partial O2 pressure is outside of the range you have defined in Dive Settings 'Maximum PPo2'. Via "Change depth," you can set the MOD for each gas to a suitable value; the frog will assist you by suggesting a value.

REMARK If you set the maximum operating depth to 0 meters the gas will not factor into the decompression calcula-

tion, but it can still be selected underwater as long as it defined as an active gas. In this instance the frog will only adjust the decompression schedule once you have told the frog that you have made the gas switch.

Menu -> Deco planner

The deco planner offers you two tools for planning your dives.

Simulator:

The simulator lets you simulate a dive and thus helps you get acquainted with the frog's dive mode. The left switch allows you to control your virtual descent, ascent and gas changes. The simulator uses the selected deco options and the active defined gases.

Simulated dives won't show up in the logbook and can last up to 90 minutes.

Preparations for diving

Decompression calculation:

In addition to the simulator the frog has a decompression calculator. Like the simulator, the deco calculator utilises your defined active gases and your chosen decompression model and conservatism settings. First, you need tell the frog if this is a new dive with no residual tissue loading or a repetitive dive using the current remaining saturation. For repeat dives you can tell the frog how much longer your planned surface interval will last in steps of 20 minutes. Then you define the bottom time (no longer than 59 minutes) and the maximum depth (no more than 78 meters). Finally select "Calculate deco" and the frog will calculate a schedule of stops based upon the information provided.

For details see -> page 35

Dive mode

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Dive mode

1. Warning(s)
2. Dive time
3. Time to surface (TTS) / Future TTS (time to surface after an additional five minutes at current depth *see -> page 30*
4. Current gas / change gas gasconfiguration *see -> page 24*, dive mode => gas changes *see -> page 30*
5. Symbol for no deco / deco
6. Decompression-Stops, Preparations for diving -> Deco mode *see -> page 24*
7. Current depth
8. Maximum depth
9. Ascension rate / temperature

Warning(s):

A yellow exclamation alerts you to potential problems. The bottom of the display shows additional information about up to three warnings at once, sorted by priority.

Future TTS:

Future TTS (Total Time to Surface) is the sum of all of your required decompression stops and your ascent travel time if you spend five additional minutes at your current depth. This information is displayed only if you have activated the detailed display mode Menu -> Settings

Dive mode

-> Dive Settings den detaillierten Anzeigemodus aktiviert hat.

Change gas:

Gases can be changed only if you configured more than one gas in advance of your dive. If only one gas is configured switching gases serves no purpose during your dive.

see -> Menu -> Gas Setup

REMARK The frog proactively calculates your decompression schedule. This means it assumes that you will utilise the best available active gas as defined in your gas list and switch as you reach the defined MOD. For safety reasons, you still need to manually inform the frog that the gas switch has occurred, otherwise the frog will revise the decompression plan accordingly.

Example: A pre-configured switch from air to 100% O2 at a depth of 6 metres doesn't happen. The decompression stops thus need to be lengthened; the time displayed by the frog takes significantly longer to count down.

If you prefer for the frog to calculate decompression plan with only the currently active gas you need to configure your

Dive mode

other active gases to have an MOD of 0 metres (*see -> Menu -> Gas Setup*).

Example: After switching from air to 100% O2 at a depth of 6 metres the decompression plan is revised and the stops shorten. The new decompression plan will be shown a few seconds later.

Upon reaching the depth at which a change is planned, you may select the new gas with the left switch and then confirm on the right side. Red font indicates that the ppO2 (partial pressure of O2) is out of the pre-configured range

and changing to that gas is inadvisable. *siehe => Menu => Settings => Dive Settings*

Ascent rate:

Your current ascent rate will appear in m/min (respectively feet/min, if US-imperial units are selected) below the graphic illustration of your ascent rate.

Decompression stops:

The frog shows up to five decompression stops at once, the first (deepest) stop in large font at the top with the subsequent four listed below in order.

Dive mode

REMARK **Safety stops:** The frog shows only the decompression stops that are necessary according to the selected algorithm.

IMPORTANT Dives performed within NDL do not require any stops according to the model, however you should follow the guidance of your chosen training organisation and perform a safety stop on every dive.

Post diving

After you resurface your frog will remain in its dive mode for an additional 4 minutes. Should you descend again within that time it will count it as a continuation of your dive, if not the frog switches to the start screen. Information about your dive can be found either via the shortcut to "Last Dive" or via "Menu"-> "Logbook".

Last Dive

This is the shortest access to the profile data of your last dive. The only difference to the entry in the logbook is that pressing either switch will take you back to the start screen.

Logbook

The logbook lists all dives that you took with your frog. It is able to store a minimum of 250 dives, after that, the oldest dives will be erased to make room for new ones. By default the first dive with the frog will be recorded as number 1; however if you wish to see the actual number of your dives reflected, you may configure an offset under "Menu" -> "Settings" -> "Dive Settings".

The logbook gives you a quick overview of date, maximum depth and duration of the listed dives.

Post diving

If you select a single dive, you will be able to access the detailed information: Date and time, minimum temperature, duration, profile, maximum depth, air pressure at the surface. Changes of gases are shown in the profile in their respective colours

The dive profiles can be transferred into computer software via Bluetooth.

See -> Bluetooth Interface

No fly and desaturation:

The start screen shows the remaining time until your tissues have fully desaturated according to the model. The count down remains until it has cleared.

IMPORTANT   Regardless of the desaturation time that is displayed, you should adhere to the recommendations of your chosen certification agency. Most diving agencies recommend that you allow at least 24Hrs to elapse between the end of your last dive and boarding an aeroplane.

Care and maintenance

Body

Rinse the frog under fresh water after each dive, particularly after salt-water diving.

Don't use cleaning agents or solvents.

IMPORTANT   Never push pointy objects into the opening for the pressure sensor.

Wristband

You can take the wristband off after unfastening the bungee. It can be washed (hand wash only) and you may replace it if required.

Changing the batteries

Open the lid **only** if you need to change the batteries. In order to change the batteries you need to open the lid with a coin. Afterwards close the lid properly and water tight, if necessary, grease the o-ring slightly.

Spare parts

You can order wristbands and batteries via heinrichs weikamp or your local dealership.

Deco planner

In order to quickly compare the dive settings of your frog (decompression model, gas changes) to those of a decompression table, the frog comes with an integrated deco planner tool

REMARK   For deep and long dives this calculation may take a couple of seconds.

Deco planner:

The deco planner calculates (on the basis of your frog's current configuration) decompression stops, TTS and CNS for a square (non-multilevel) profile.

1. Interval: Time remaining until the dive (in minutes)

2. Bot. Time: Bottom time (in minutes)

3. max. Depth: Maximale Tiefe

After activating Calculate deco the decompression schedule is calculated.

Deco planner

Dive plan:

The dive plan lists:

- ZH-L16 and the saturation / desaturation factors dependant on your conservatism settings

- L16-GF and the gradient factors LOW and HIGH dependant on your conservatism settings

- CNS in % for the simulated dive

- TTS: the time to surface at the end of your bottom time

- Up to 21 decompression stops

IMPORTANT The deco planner is not intended to replace dive tables or a PC based deco planning software. In particular for deep and/or decompression dives you should cross reference the results with relevant tables and heed the recommendations of your certifying agency.

Bluetooth interface

The frog's bluetooth interface allows you to:

1. Change the custom text and the picture on the start screen

2. Download the logged dive profiles to a PC

3. Install firmware updates

4. Adjust settings

A connection to a PC requires:

1. A computer or notebook with bluetooth

2. An installed version of the frog companion software (freely available at www.heinrichsweikamp.com)

Before you can connect the frog to your PC or Mac you must first "pair" them. The correct bluetooth PIN is 0000 (four zeros). The precise steps required to pair the frog and your computer will depend upon your operating system; under Windows it's the option "add device" after clicking on the bluetooth symbol in the

Bluetooth interface

tool bar and on Mac OS-X you click on the Bluetooth icon in floating toolbar across the top of he desktop screen and "Setup Bluetooth Device".

After a connection has been established, the computer creates a virtual COM port. The computer software uses this port to communicate with the frog. There is no need for special drivers (SSP protocol).

Before a connection is possible, you need to manually activate the bluetooth option in the frog's menu.

REMARK Profile pictures and custom text may be edited with the freeware "frog Companion". The pictures must be squares of at least 100x100 pixels and come in a common format (.png, .jps or .tif).

Technical data

Connection	Bluetooth
Power supply	2x AA (3,6V or 1,5V)
Battery endurance	60 hours power on with 3,6V Lithium batteries
Controls	Two Piezo-electric switches
Body	Highly shock-resistant ABS body Scratch-resistant borosilicate display window glass
Dimensions	73 mm x 54 mm x 27 mm
Weight	150 g
Max. dive depth	80 meter
PC Software	frog Companion, MacDive, Diving Log
Log book	Memory for more than 250 dives

Scope of delivery	frog, wristband, transport box, batteries (already fitted)

Conservatism

Conservatism

The frog's conservatism can be adjusted in steps of -2 to +2. This equals the following values:

Value	Description	Saturation factors	GF low/GF high	Distance to decompression stop
+2	Very conservative	80%/120%	15/65	1,5m
+1	Conservative	85%/115%	20/70	1,5m
0	Normal	88%/112%	20/75	1,5m
-1	Aggressive	90%/110%	35/80	1,0m
-2	Very aggressive	95%/105%	50/90	0,5m

Changing the batteries

Changing the batteries:

In order to change the batteries you need to open the lid with a coin.

Remove **both batteries** by gently knocking the frog against your hand to shake loose the second battery.

Insert two new identical batteries by inserting the lower of the two batteries at an angle "- pole" first and then dropped in (picture 1). Push it into place with your finger then slide the second battery into place, "+ pole" first (picture 2) and close the lid again.

REMARK The lid closes easily, however take care not to get it jammed when screwing it closed. We recommend that you align the threads by first twisting the cap to the left slightly until you feel it click into place.

REMARK Check the o-ring before closing the lid and, if necessary, grease it slightly.

1

2

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