



Heart rate monitor  
upgrade for

*Galileo*  
*terra*

**Important notice to individuals with pacemakers, defibrillators or other implanted electronic devices.** Individuals who have a pacemaker use the UWATEC Galileo dive computer at their own risk. Before starting use, we recommend a maximal exercise stress test under a doctor's supervision. The test is to ensure the safety and reliability of the simultaneous use of the pacemaker and the Galileo dive computer.

## TABLE OF CONTENTS

<b>1. Surface display.....</b>	<b>2</b>
<b>2. Polar T31 coded transmitter .....</b>	<b>2</b>
<b>3. Workload menu .....</b>	<b>3</b>
<b>4. Heart rate display during the dive .....</b>	<b>4</b>
<b>5. Logbook.....</b>	<b>5</b>
<b>6. Button function overview .....</b>	<b>6</b>

## 1. Surface display

After upgrading your Galileo Terra to the Heart Rate Monitor feature, the surface display of the computer changes slightly: the heart rate replaces the date as shown in the picture below.



## 2. Polar T31 coded transmitter

When worn properly, the Polar T31 coded transmitter sends Galileo your heart rate information. The transmission does not require any pairing: when Galileo is turned on it hooks onto the first Polar T31 signal it receives. Check your heart rate, and if it appears to be too high compared to normal, please restart the T31 coded transmitter by fitting it one more time. Polar T31 coded transmitters use several unique codes to minimize the possibility of crosstalk, but two transmitters may have the same code, which is understood as one signal by the receiver. For best results, try to stay 2m/6ft away from the nearest diver also using a Polar T31 coded transmitter when turning on Galileo just prior to the dive.

To don the T31 transmitter proceed as follows:

- Attach one end of the transmitter to the elastic strap.
- Adjust the transmitter's strap length to fit snugly and comfortably. Secure the strap around your chest, just below the chest muscles, and buckle the strap to the transmitter.
- When using a dry suit, lift the transmitter off your chest and moisten the two grooved areas on the back.

- Check that the electrode areas are firmly against your skin and that the Polar logo is in a central, upright position.
- Ensure that the transmitter is not displaced when donning a wet suit or a dry suit.



The Polar T31 Coded Transmitter features a battery with a life of approximately 2500 hours. The transmitter is activated by moisture, so leaving it on a wet towel

for instance will consume battery power. If you suspect that the battery has run out, please contact an authorized Polar Service Center for a replacement transmitter. Polar recycles used transmitters.

The Polar T31 Coded Transmitter has a two-year warranty. For service or replacement, please contact an authorized Polar Service Center only. All warranty claims must include a dated proof of purchase.

### 3. Workload menu

After upgrading to the HR Monitor feature, your Galileo will have a new menu called **Workload**. This can be found within the **Personalization** menu.

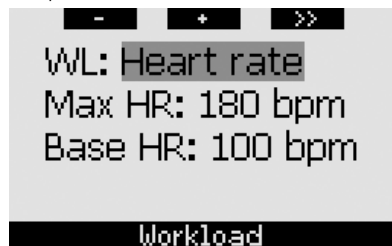
At the base of any decompression calculation there is the transport of nitrogen from the lungs to the blood and from there to the tissues during on-gassing, and the same again in reverse during off-gassing. As such it is obvious that the single most important parameter in a decompression calculation is the rate at which blood travels through the body. During heavy exercise, the total blood flow from the heart can be up to 4 times higher than while at rest. This increase in blood flow is rather unevenly distributed, with some tissues such as the Central Nervous System and the brain being unaffected, while others like the muscles receiving up to ten times more blood than at rest.

UWATEC introduced workload-induced decompression algorithm compensation in 1995 with the Aladin Air X dive computer. The workload estimation was based on changes in the breathing pattern as detected by the hoseless high pressure transmitter, and the decompression calculation in 4 of the 8 compartments in the ZH-L8 ADT model was changed accordingly.

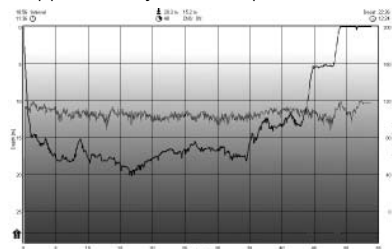
Galileo is the first dive computer to have an integrated heart rate monitor, based on world leading heart rate monitor technology by Polar (for Galileo to receive heart rate information, you must wear the Polar T31 coded transmitter as described in section 2). The heart rate is directly linked

to the pumping action of the heart, and as such it is a more direct indicator of workload than respiration.

With Galileo you can choose between workload (**WL**) estimation based on heart rate (**HEART**, default) or you can turn it **OFF**. If you turn it **OFF**, Galileo will behave like an UWATEC Aladin PRIME dive computer.



If you choose **WL = HEART**, you must personalize the algorithm adaptation by entering your maximum heart rate and your base heart rate while diving. If you do not know your maximum heart rate, a good approximation is given by subtracting your age (in years) from 220. For instance, a 35-year old would have a maximum heart rate of 185 beats per minute. To determine the base heart rate, use Galileo in its default setting on a relaxed, unstressed dive, then look up the average heart rate in the logbook (see section 5) or, better yet, download the dive to a PC using SmartTRAK (described in the main Galileo manual), then observe the heart rate profile during the dive. For the example shown below, the base heart rate is approximately 100-110bpm.



If you choose **OFF**, you can also choose whether you want to keep the heart rate monitor **ON** (to display the heart rate on the

screen and to log it in the memory), or if you prefer to have it **OFF**.



If **WL** is set to **HEART**, the computer display will show **HEART+** instead of just **HEART**. If **WL** is set to **OFF** and the heart rate monitor is set to **OFF**, the computer display will show **HEART OFF**.

If Galileo detects a sufficient increase in workload, no-stop times can suddenly shorten and decompression stops can quickly grow. To alert you of such possibility, upon entering into an increased workload situation, Galileo warns you with an audible sequence while displaying the message **INCREASED WORKLOAD** for 12 seconds. An **INCREASED WORKLOAD** situation is also signaled throughout its duration by the heart rate being displayed in inverted colors (white on a black background).

**NOTE:**

- Galileo analyses your heart rate pattern over time to determine workload and hence algorithm adaptation. Therefore the instantaneous heart rate (the value displayed on the screen) is not indicative of the workload itself.
- Near a decompression stop Galileo does not consider the effect of workload and utilizes always the slowest possible perfusion for each compartment.

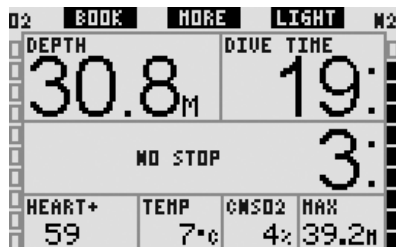
Heart rate information from a dive can be viewed directly in Galileo's logbook (see section 5) or on your PC after downloading the dive via SmartTRAK: the heart rate is logged in 4-second intervals, as all other dive information.

For more information about heart rate technology please visit [www.scubapro-uwatec.com](http://www.scubapro-uwatec.com) and [www.polar.fi](http://www.polar.fi)

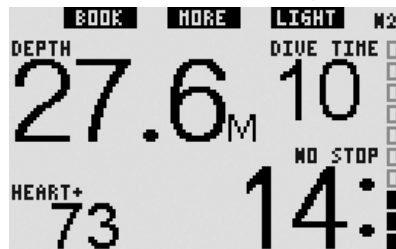
#### 4. Heart rate display during the dive

During the dive, the heart rate is displayed differently depending on the screen configuration.

**CLASSIC:** the heart rate is one of the entries in the **MORE** sequence. It is positioned after the  $O_2\%$  and before the stopwatch.



**LIGHT:** the heart rate is one of the entries in the **MORE** sequence. It is positioned after the  $O_2\%$  and before the temperature.



**FULL:** the heart rate is permanently displayed in place of the temperature. The temperature moves up one position and shares the position with the ascent rate indication.

D2		BOOK	MORE	LIGHT	M2
TIME 10:13		S0:03.25		MB L0	
DEPTH		DIVE TIME		TEMP	
38.8M		3		7°C	
		NO STOP		HEART	
		9		78	
		AUG		20.5M	
D2	CNSO2	PP02	MAX		
21%	2%	1.01	42.3M		

**GAUGE:** the heart rate is shown permanently in place of the time of day. The time of day is not visible any more.

SH		AUG		LIGHT	
DEPTH		DIVE TIME			
27.7M		5			
		STOP WATCH			
		0:05.36			
MAX	TEMP	HEART	AUG		
27.7M	13°C	99	13.7M		

## 5. Logbook

During a dive in which the heart rate monitor is not turned off, Galileo adds a page to the logbook with the heart rate profile superposed to the dive profile.



It also adds a line with the average heart rate during the dive on the same page as the active MB level, the altitude class and the battery level.

<<		>>		EXIT	
MB-level:		L0			
Avg. HR:		71 bpm			
Altitude:		0m..850m			
Battery:		High			
#1: 13.09.06 @ 19:39					

## 6. Button function overview

	LEFT BUTTON		MIDDLE BUTTON		RIGHT BUTTON	
	Press	Press and hold	Press	Press and hold	Press	Press and hold
CLASSIC	Set bookmark and reset stopwatch	-	Access alternate field. In sequence: - O <sub>2</sub> % - Heart rate - Stopwatch - (Active MB level if other than L0) - (Information @ MB L0) - Time of day - ppO <sub>2</sub>	Access alternate display. In sequence (press): - Dive profile (with ascent, dotted) - Individual compartment saturation - Picture 1 - Picture 2 - ...	Activate backlight	Access compass display
	Set bookmark	-	Access alternate field. In sequence: - (Max depth) - O <sub>2</sub> % - Heart rate - Temperature - (Active MB level if other than L0) - (Information @ MB L0) - Time of day - CNS O <sub>2</sub> - Empty space	Access alternate display. In sequence (press): - Dive profile (with ascent, dotted) - Individual compartment saturation - Picture 1 - Picture 2 - ...	Activate backlight	Access compass display
FULL	Set bookmark and reset stopwatch	-	- (Information @ MB L0)	Access alternate display. In sequence (press): - Dive profile (with ascent, dotted) - Individual compartment saturation - Picture 1 - Picture 2 - ...	Activate backlight	Access compass display
COMPASS	Set bookmark and reset stopwatch	-	Set bearing	Erase set bearing	Activate backlight	Manual return to regular display
GAUGE	Set bookmark and reset stopwatch	-	Set bookmark and reset average depth	Access alternate display. In sequence: - Dive profile - Picture 1 - Picture 2 - ...	Activate backlight	Access compass display

