EN

ray

MANUAL

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1 | Warnings and notices

ATTENTION:
The electronic locating system **BlueLocar RAY** serves the purpose of supporting the tracking of divers **at the surface**. It increases the safety when diving, but it is no replacement for other rescue and signal systems.It is only a reasonable addition to those systems.
The **BlueLocar RAY** system supports navigation, but can neither replace proper orientation nor expertise. Therefore do not rely on a single tool for location and navigation during a rescue operation
It is strongly recommended to agree on common procedures and behavioural rules in case of SOS or HOME signal reception.

CAUTION:
The displayed distance and direction to another device on a **BlueLocar RAY** is always a representation of the shortest and direct route. The system does not consider any shoals, vessels, rocks, reefs or other obstacles. You should therefore always perform an additional examination of the displayed path, since it can contain barriers and risks.

IMPORTANT:
The electronic locating system **BlueLocar RAY** should only be operated by persons that are familiar with the proper handling and operation of this system. The company **BlueLocar** advises all Users to read the manual carefully and to contact other expert persons or the manufacturer in case of any questions .

The **BlueLocar Basestation** is operating on a radio frequency that complies with the radio regulations of the FCC (USA), IC Canada (Canada). The operation of the system in these countries is license-free and does not have to be reported.
Using a **BlueLocar Basestation** outside of the mentioned countries is not license-free and the operation of the device has to be reported to the responsible authorities of the respective country. The relevant departments of different countries can be obtained from the manufacturer.

ATTENTION:
The electronic locating system **BlueLocar RAY** is solely to be used for the intended purpose for which it was designed and manufactured. The Manufacturer distances himself from any misuse and other purposes that do not comply with the intended regulations.

To ensure the proper and safe operation of the electronic emergency and location system **BlueLocar RAY** it is not allowed to make any modifications. Only unaltered and original parts that are intact can provide a reliable operation of the system.

The electronic emergency and location system **BlueLocar RAY** is using the Global Positioning System (GPS) that is operated and maintained by the governement of the United States. Solely this government is responsible for function, accurancy and service of the GPS system.

Take into account that the position determination based on GPS, which is the foundation for the system's locating service, can be affected by weather conditions and the position of the GPS receiver of the **BlueLocar RAY**. The GPS signals are transmitted by satellites with high frequencies. These signals can only be received, if there is visual contact with the satellite. Therefore being under water, below deck on a boat or being inside a building it is not possible to receive the satellite signals. Thus the location service cannot operate. So the GPS antenna, located in the upper left corner of the **BlueLocar RAY** case, should not be covered and should be positioned towards the sky, if possible (upright position of the device).

2 | The BlueLocar RAY - Range of functions

- Locating other **BlueLocar RAYs** via GPS (direction and distance)
- License-free and free of charge radio network
- SOS function: emergency signal
- HOME function: pickup signal
- Reception and location of emergency and pickup signals

- Digital compass
- Precise position determination via GPS
- Sunlight-readable display
- Acoustic signal under water

- Communication via messages
- Dive depth gauge with integrated dive log functionality
- Transmission range up to 10 km
- Water proof housing up to 100 m dive depth
- Compatible with base station for boats
- Up to 15 hours of transmission in emergency mode

2.1 | Abstract

Congratulations for buying your new BlueLocar RAY!

The **BlueLocar RAY** is a compact system for communication and location of divers. The **RAY** automatically establishes a communication network with all other **RAYs** in range. Thus you can locate all surrounding devices, if they call for help by sending a SOS signal. Additionally it is possible to create groups of devices (e.g. for diving classes).Inside a group you can locate each other at any time without previous setup and you can send predefined text messages to group members. Within a group it is also possible to send a pickup (HOME) signal (e. g.: A diver aborts the dive early and wants to be picked up by the boat).

The dive mode of the **RAY** provides divelog functionality, which records all the important data of the dive. The log data can be transfered to a computer (Windows, MAC, Linux) to be analysed afterwards. An additional digital compass provides orientation guidance for above and under water use cases.

The transmission range of the **BlueLocar RAY** depends on environmental conditions. The radio signals can be disrupted by high waves, ships, reefs and other surrounding objects. As a basis rule: the higher two communicating devices are above water, the better they can receive signals from each other. But the system was designed that messages can be routed through the network from any device. So even if two devices are out of range to each other it is possible that other devices in between forward their messages to establish a communication for these two nodes.

2.2 | Start-up

When the **BlueLocar RAY** is completely switched off, it can only be activated by attaching an external power supply. On this occasion it is nessecary to connect the external power supply for at least 10 seconds (until the boot screen is displayed). Thus when using the device on a regular basis, it should not be switched off, but instead be put into standby mode (see chapter 5.3).

The **RAY** was designed in the way that solely the user is able to shut down the device completely (unless the batteries are empty). So even after a system crash the device will reboot and continue operation!

3 | Display

The 2,7 inch display of the **BlueLocar RAY** remains readable even in strong direct sunlight. The additional backlight enables utilization in dark environments and can be activated within the settings menu (see chapter „11.1 | Settings – Backlight“).

3.1 | Key symbols and functions

The **BlueLocar RAY** has six pressure sensitive keys. These keys are used to select different device functions. Operating the device with gloves works also very well.

The following list describes the individual keys and their functions:

„ ✓ “ - OK key/selection key
① To select or verify the current menu entry.

„ x “ - Back key/deselect key
② To leave the current submenu or to deselect the current menu entry.

„ + “ - Continue key
③ To switch from the current to the next menu entry.

„ - “ - Back key
④ To switch from the current selection to the previous menu selection.

„ SOS “ – Emergency key
⑤ To send an emergency to all surrounding devices.

„ HOME “ – HOME key
⑥ To send a pickup signal to all devices of your group.

3.2 | Navigation within the menu

The main menu of the **BlueLocar RAY** is displayed as symbols on a tile-shaped background.
By using the „Continue“ key („**+**“) or the „Back“ key („**-**“) the selected area can be changed. In this case, the currently selected area will have a black background, while all other areas will be bright.

By activating the „Selection“ key („ ✓ “), the current selection from the menu, and all functions associated with it, will be activated. With the „Back“ key („ **x** “) you can then switch back to the previous menu.

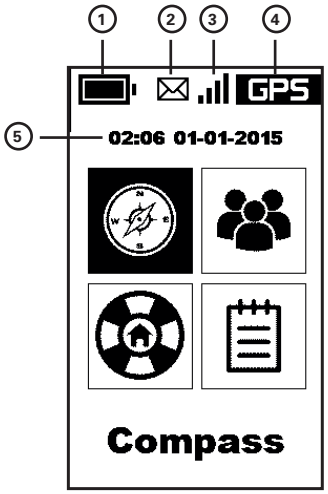
By pressing the „SOS“ key („**SOS**“) followed by a confirmation the **RAY** starts sending a SOS signal to all surrounding devices. By pressing the „HOME“ key („**HOME**“) followed by a confirmation the **RAY** starts sending a HOME signal to all devices inside your group. When activating the „SOS“ or „HOME“ key the **RAY** is set into SOS or HOME mode (see chapter „6 | SOS and HOME signals).

3.3 | Keylock in main menu and returning from the Standby mode

Inside the main menu you can activate a keylock by double pressing the „Back“ key („ **x** “). When performing a double press of the „Back“ key („ **x** “) with active keylock it can be deactivated again.

This double press of the „Back“ key („ **x** “) also applies to return from an activated Standby mode.

3.4 | Status symbols



The **BlueLocar RAY** provides all nessecary device status information by displaying symbols in the top of the Display.

Battery
(1) Displays the battery life indicator (see chapter 3.4.).

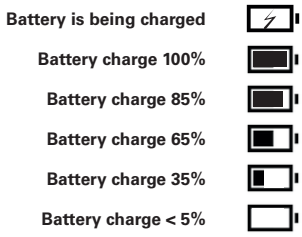
Message
(2) The message symbol is diplayed when there is at least one unread message inside the inbox.

Radio signal strength
(3) This symbol is displaying the signal strength of the current radio connection to the closest **RAY**.

GPS
(4) The GPS symbol is displayed when the device has received an updated position in the last 40 seconds from the GPS module. Please take into account that a proper GPS signal requires a direct visual contact with the satellites. Inside closed spaces or beneath covered areas it is very difficult to receive an accurate position or even not possible.

Time
(5) In the main menu the **RAY** is displaying the current time. As soon as a GPS signal is present the time will be synchronized with the GPS satellite accurate time informations. Therefore it does not has to be adjusted by the user. Only adjusting the time zone and activating the summertime can be done by the user (see chapter 11.5).

3.5 | Battery



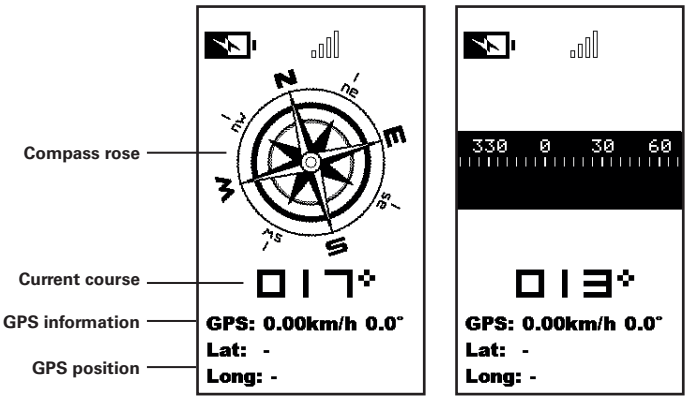
Your **BlueLocar RAY** is equipped with a rechargeable battery, which can be recharged with the provided power supply unit or on any USB connection. The battery charge indicator is on the upper left corner of your **BlueLocar RAY's** display screen.

NOTE: review the battery charge of your BlueLocar Ray before every use to ensure that you have enough power for emergencies.

CAUTION: Only the provided power supply unit or a USB charger with 5V and 1A/1000mA specifications is to be used as an external charger

4 | Compass

The **BlueLocar RAY** has a digital compass for navigation and bearing. The Compass is displayed while in dive mode and can be selected from the compass icon in the main menu while on the surface.



Compass rose | Compass scale

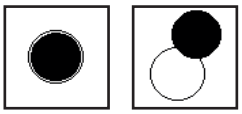
4.1 | Compass display

Depending on the orientation of the **RAY**, information will be displayed in a compass rose format or in azimuth.
If the **RAY** is lying down with an upward facing display the compass is displayed in rose format. When the device is held upright, the display will switch to a scale view. Below the compass view, the current direction will be displayed numerically by degrees. This displayed values depend upon the orientation of the device. The given direction is represented by the antenna when lying down and by the backside of the device in the upright position.

For the best results, hold the device either horizontally or vertically. If you hold the device at an angle, the angle indicator will display an exclamation mark „!“. This indicates that the shown direction is only a close approximation.

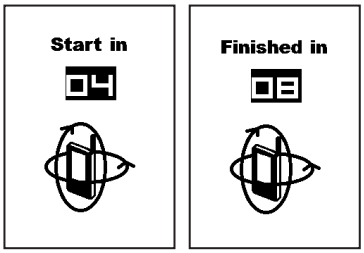
4.2 | Calibrating the compass

To ensure accuracy, the digital compass must be calibrated. This has to be done after every change of location (earth magnetic field is location based). The compass calibration can be started inside the compass's settings menu (Main menu –> Settings –> Compass –> Compass calibration). Choosing "compass calibration" activates the calibration process. This procedure is divided into three steps.

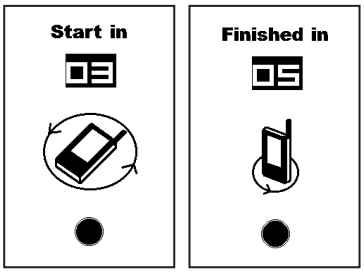


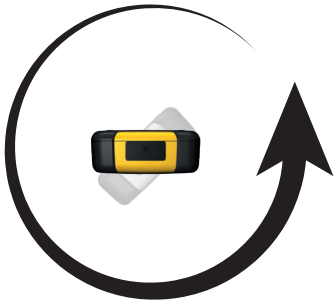
A counter at the beginning of every calibration step is displaying the time to prepare until the actual calibration process starts. During step 2 and step 3 the angle of the device is observed to ensure a more accurate calibration. The more you hold the device at an angle, the more the black circle moves away from the white circle. Thus the goal is to hold the device during the calibration in the way shown on the screen and that the black circle is perfectly placed inside the white circle. Individual steps for calibration of the compass are described in detail below:

Movement in all possible directions:
During this step, you will rotate the device randomly in different directions for 15 seconds. A timer displayed on the screen will track the time, and a tone will indicate when the process is complete.

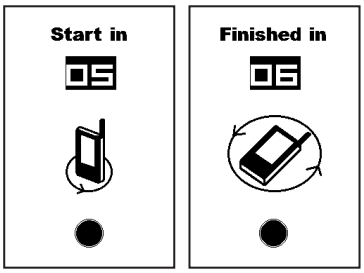


Movement around the Z-Axis: Hold the-device in a horizontal position with the display facing up. Rotate the device in a circular motion (so the backside of the device is always facing the ground) until the counter has run out after 15 seconds. You may also place the device on a horizontal, flat and non metal surface for higher precision. A tone will indicate when the process is complete.

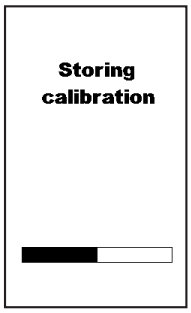




Movement around the X-Axis: Hold the-device in a vertical position with the USB connector facing the ground (the antenna is pointing upwards). Then rotate the device in a circular motion until the counter has run out after 15 seconds (the USB connector is constantly facing the ground). You may also place the device on a horizontal, flat and non metal surface for higher precision. A tone will indicate when the process is complete.



As soon as the calibration data has been collected, the calibration will be calculated and saved in the device.



If an error should occur during the calibration process, an error tone will sound accompanied by a message on the display of your **BlueLocar RAY**.

IIf this should occur, please repeat the calibration process.

Make sure that the magnetic field is not disturbed by any metal parts or other magnetic components during the calibration process. During operation, the digital compass can also be affected by scuba tanks and other magnetic materials.

NOTE: The compass will remain calibrated even after a period of inactivity or a restart.

NOTE: The compass will need to be recalibrated when your location changes. This will balance any interference or location-dependent idiosyncrasies.

5 | Operating modes

The **BlueLocar RAY** has five different modes of operation. Those modes differ especially in available functionalities and in energy consumption.

5.1 | Standard mode

When in standard mode the **RAY** is able to send and receive SOS and HOME signals. In addition to that you can change settings, manage groups, send messages, switch to the digital compass and browse the divelog.

5.2 | Dive mode

The dive mode is displaying the digital compass for orientation, the temperature, the dive depth and the duration of the dive. Additionally you can set up a divelog for all dives. The dive mode is started fully automatically when the device is below the water surface **at least 2 seconds and more than 1,2m deep**. A dive is terminated after **4 minutes at the surface**.

The USB connection to charge and update the device is deactivated during the dive mode. Furthermore the radio connection and the GPS for the location service are deactivated, since these services can not be provided under water.

The USB connector of the device should be covered by the provided protection cap during each dive.

Additional information regarding the dive mode can be found in chapter „9 | Dive mode".

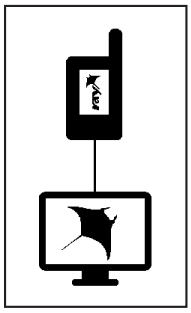
5.3 | Standby mode

With the **Standby mode** the device is able to save power and prolong the battery life of the system. Therefore the radio communication, the position determination with GPS and all other funtions of the **BlueLocar RAY's** will be disabled. In Addition, a key lock will be activated, so all keys are deactivated, except the „Back" key(„**x**").

You can activate the Standby mode by using the „Standby" icon inside the main menu. As a result the Standby screen will be displayed. By shortly double press the „Back" key („**x**") the **RAY** will return from the Standby mode.

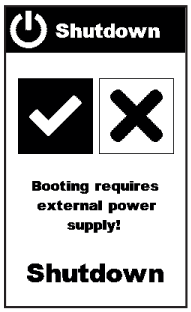
By Default, the **BlueLocar RAY** will switch from the Standby mode to the dive mode, as soon as you reach a dive depth of at least 1,2m. To save more battery life you can deactivate this behaviour inside the menu „Settings –> Diving –> Dive mode".

Moreover, it is possible to charge the battery of the **RAY** while in Standby mode by connecting the USB cable to an external power source. This is displayed by the battery indicator on the Standby screen.



5.4 | PC mode

As soon as you connect the **BlueLocar RAY** with a computer and the „BlueRay Communicator“ software is running, the device will switch to the update PC mode. This will deactivate all functions at the device. The BlueLocar Ray must never be unplugged until the connection to the computer was disabled!



5.5 | Off-state

In case of a longer storage period of the **BlueLocar RAY** without usage or connected power supply, it is recommended to switch off the device. This will prevent the battery from any low charge state and eliminates the possibility of any hardware damage to the device. By selecting the „Shutdown“ icon inside the menu „Settings“ you can switch off your **RAY**.

CAUTION: When the BlueLocar RAY is shut down, it can only be reactivated by connecting an external power supply. Therefore, the device has to be connected to a power supply or a computer for at least 10 seconds.

6 | SOS and HOME signals

The main feature of the **BlueLocar RAY** is the transmission of your current GPS position using SOS and HOME signals. This enables all devices, which received the signal, to locate your position that has been sent. These SOS and HOME signals will be sent constantly until the transmission is cancelled (this should only be done upon successful pick up). The current GPS position is updated and transmitted constantly.

6.1 | SOS signal

The SOS signal is sent with the highest priority to all surrounding **RAY's** in range. It is recommended to use this signal type only in exceptional cases, because every available device will receive a popup window along with an acoustic alert.

6.2 | HOME signal

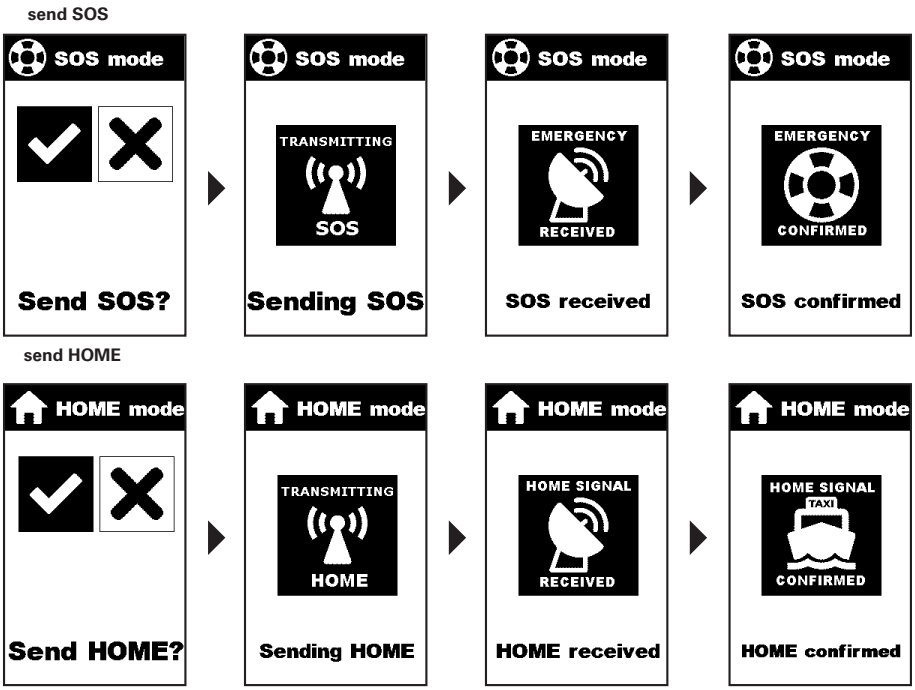
The HOME signal is only sent to the devices assigned to the same group (for more information see chapter 7). All group members will receive a popup window, same as the SOS signal window. A HOME signal serves the purpose of a pick up notification. For example, a diver of the group wants to be fetched early by the boat.

6.3 | Sending SOS/HOME signals

The SOS and HOME signals are triggered by pressing the keys on the side of the device. Afterwards, the transmission of the signals has to be additionally confirmed with the „OK" key („ ✓ "). The intended broadcast can be cancelled by using the „Back" key („ **x** "). The HOME signal can only be transmitted, if the device is assigned to a group (see chapter „7 | Managing groups"). While sending one of these signals, information regarding the current signal status is displayed. There are three different information status screens.

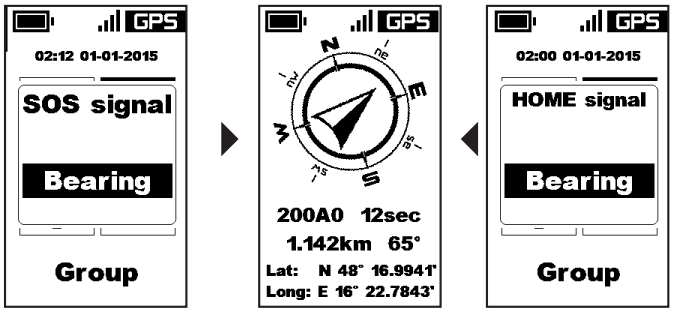
- The signal is being sent, **but no other device has received it yet**.
- The signal was received by another **RAY** device, but **the user has not yet confirmed the request**.
- The signal was received by a **RAY** device and the request **was confirmed by the other user with the OK key.**

To cancel the transmission of a SOS or HOME signal, the „Back" key („ **x** ") has to be pressed, followed by a confirmation with a press on the „OK" key („ ✓ ").

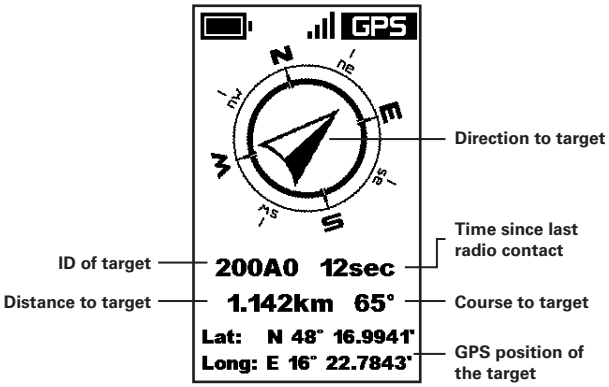


6.4 | Receipt and locating

Upon the receipt of a SOS or HOME signal, the **RAY** displays a popup windows along with generating an acoustic alert. When pressing the „OK“ key („ ✓ “), the SOS or HOME signal will be confirmed. **Anybody who is confirming an emergency signal is obligated to ensure localization and rescue immediatly**. Along with the transmission of the confirmation of a SOS or HOME signal, a locating screen is displayed. This screen shows the course of the device in degrees, its distance (linear distance) in meters or miles, its GPS coordinates and the time since the last radio contact to this device.



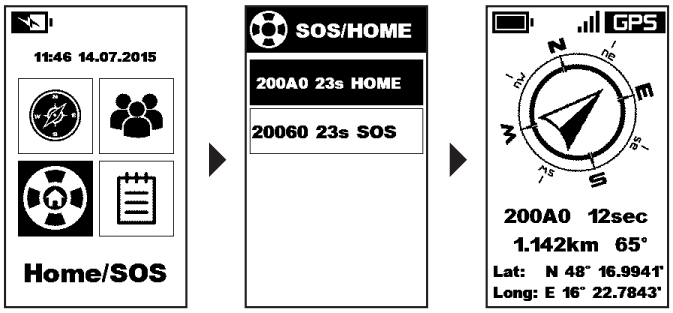
An additional arrow indicates the direction to the device that is requesting support.



By pressing the „Back“ key („ **x** “), the received SOS or HOME signal will be ignored. Nevertheless, the incoming SOS or home information will be stored inside the SOS and-HOME inbox. So the emergency or pick up request will be catalogued and can be confirmed later by selecting the signal inside the inbox menu to start locating the other device (see chapter 6.5).

6.5 | SOS and HOME inbox

The SOS and HOME inbox is listing all surrounding devices that have recently sent a SOS or HOME signal and need assistance. Each device inside this list can be selected and located seperately. Keep in mind, when selecting a list entry to locate the distant device, that you transmit a confirmation and are thereby obligated to support.



6.6 | Behaviour while sending a SOS or HOME signal

While sending a SOS or HOME signals, it is recommended to follow some important rules to ensure the optimal operation of the **BlueLocar RAY**.

- To enhence the transmission range of the **BlueLocar RAY**, it is necessary to hold the device as high as possible above the water surface. Thereby pointing the antenna of the device in an upward direction. This should be done at least until the receipt of the signal was confirmed.

- To prevent all interference by surrounding objects, it is recommended to position the device, if possible, at a stable place with an unobstracted view to potential receiver.

- To prolong the battery life, it is recommended to limit the use of the display backlight of the **BlueLocar RAY** while transmitting a SOS or HOME signal.

- The transmission of a SOS or HOME signal should not be cancelled to use other features of the **RAY**, like the digital compass. This can lead to misunderstanding by the users of the receiving devices. As long as the device is in SOS or HOME signal mode, the emergency and pickup signals will be sent constantly. So it is not required to cancel and reactivate the SOS or Home signal mode to ensure correct transmission and receipt.

6.7 | Behaviour while locating a SOS or HOME signal

Also while locating a SOS or HOME signals, it is recommended to follow some important rules:

- The guidelines from the above chapter 6.6 „**Behaviour while sending a SOS or HOME signal**“ also apply for to the locating of devices. To ensure an optimal radio signal strength for receipt, the **BlueLocar RAY** should be held as high as possible and should be operated in an ubobstracted area. In addition to that, it is recommended to use an external light source instead of the internal back lighting to prolong the battery life.

- The **BlueLocar RAY** is a locating system that will always display the direct course to the target. This course can contain obstacles and other dangerous or disruptive objects along the way. It is important and recommended to always perform an additional examination of the route to prevent unexpected difficulties.

- In case of an emergency rescue situation it is recommended to co-ordinate with other surrounding ships in your area.

7 | Managing groups

All **BlueLocar RAY** devices connect to each other automatically and form a network to share their position and SOS signals.

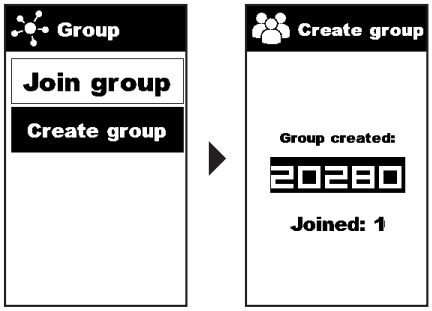
In addition, it is possible to create device groups (e.g. devices of a diving center, of a boat or the dive buddy team) or to join available groups. Being assigned to a group enables the feature of HOME signals. These signals can be sent by the diver, if he wants to be picked up by the boat, but it is no emergency. Therefore it is nessecary to press the HOME key on the side of the **BlueLocar RAY** and to confirm the transmission of the signal, afterwards.

Furthermore, can group members send text messages to each other. These messages will be signed with the members nickname (defined with the PC software) or the device ID (see chapter „12 | RAY Communicator software"). It is also possible to locate other group members even without a previously received SOS or HOME signal.

The „**Group**" icon in the main menu is providing the service to join available groups or to create a new group.

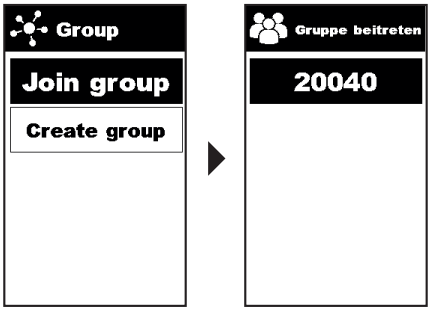
7.1 | Create a new group

When selecing the „**Create group**" menu, a new group will be generated. The ID of the group and the number of already joined group members will be displayed afterwards. The created group can be found by other devices with the given ID, if they want to join.



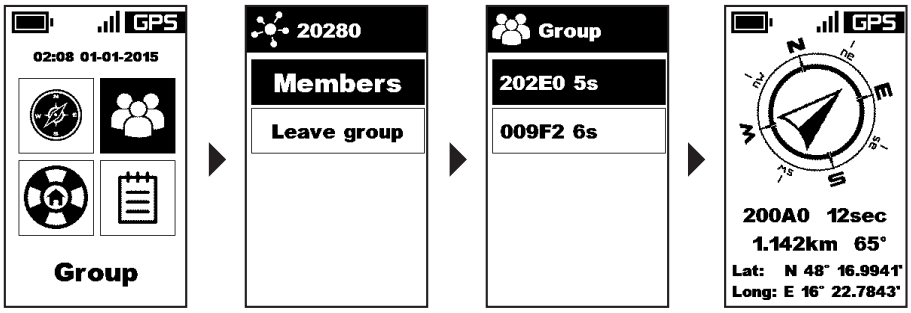
7.2 | Join a group

When selecting the „**Join Group**" menu, the **RAY** enter an available group. Afterwards, a list of all surrounding groups within reach is displayed and the preferred group can be selected. The list of available groups will be constantly refreshed until a group is selected or the menu is left. Due to a higher number of active devices, it may take a bit longer to display a newly opened group.



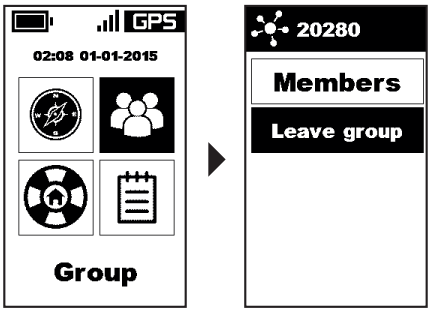
7.3 | Group members

Each member of a group can access a list of all other devices of the same group within reach by entering the „**Group member**“ menu. Each list entry contains the nickname of the device (only if defined, otherwise device ID) on the left and the time since the last radio contact to the device on the right. Due to a higher number of active devices, it may take a bit longer to display a newly joined group member. By selecting a group member with the „OK“ key („ ✓ “), you are able to locate the other device, if a valid GPS position of the other and your own device is available.



7.4 | Leave a group

If the **RAY** is currently assigned to a group, instead of the „**Create group**“ and the „**Join group**“ buttons, the device will display the „**Leave group**“ button. By activating this operation you will remove your device from the current group and you are able to create a new group or join another group again.



NOTE: If you leave the current group, all stored information of the other group members will be deleted..

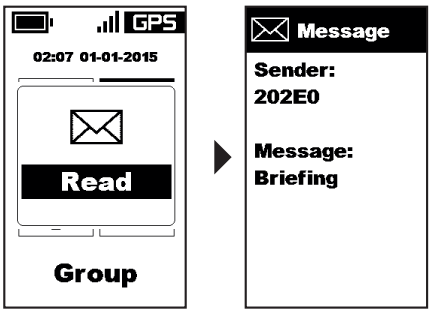
8 | Text messages

Your **BlueLocar RAY** provides a text message functionality to send short predefined text messages inside the current group. (This feature is not available, if your device is not connected to a group, since then, there are no receiving devices present.)

The different texts for the messages can be defined by using the „**RAY Communicator**“ software (see chapter „12 | RAY Communicator software“). The receipt of a message is not guaranteed, since the effort to generate receipt comfirmation is reserved for SOS and HOME signals.

8.1 | Receiving a message

A received text message will be automatically display with a pop-up on the screen of the receiving device. By pressing the „OK“ key („ ✓ “) you can read the received message. When pressing the „Back“ key(„ **x** “), the message will be ignored for now and can be read later inside the message inbox.

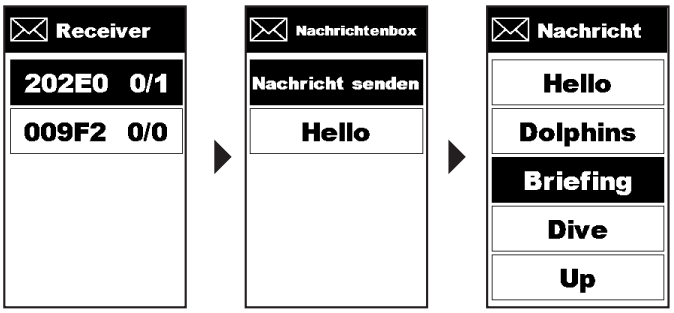


8.2 | Inbox and sending a message

The message inbox can be accessed with the „**Messages**“ icon inside the main menu. Inside this submenu you find a list of all available group members. The number of received messages from a listed group member is displayed right next to his nickname.

In this context, the first number is representing the unread messages received by this group member and the second number is displaying all received text messages from this other device. Only the last 5 text messages of a partner will be stored.

By selecting the group member with the „OK“ key („ ✓ “), the content information of the text message will be displayed. In addition to that you can send a message to the selected group member, by choosing the „**Send message**“ icon. Followed by picking the preferred message, also done with the „OK“ key („ ✓ “), the text will be sent.



NOTE: For text messages you will not get any notification, if the message was successfully received. Because only SOS and HOME signals are handled with high priority and notify upon successful receival. In case of a poor radio connection it is possible that text messages will get lost. .

9 | Dive mode

The **dive mode** of the **BlueLocar RAY** provides a digitale compass for navigation under water, a display of current and maximum dive depth. It also features a bottom timer functionality and is able to record the entire progress of the dive.

9.1 | Start and quit the dive mode

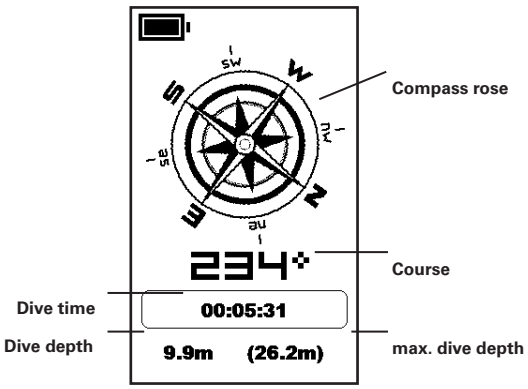
The dive mode will be activated automatically as soon as the device is **lower than 1,2m under water for at least 2 seconds**. The dive timer will be stopped when emerging to a depth **higher than 1,2m**. If the diver starts descending again **within 4 minutes**, the current dive will be continued. When the diver stays **longer than 4 minutes** at the surface, the device will leave the dive mode automatically and the dive data will be stored to the divelog.

It is possible to quit the dive mode at any time by pressing the „Back" key („ **x** ") as long as the device is **not lower than 1,2m** unter water. In this case again, will the data collection and the entry into the divelog not be finished until the device is **at least 4 minutes at the surface**!

Within the menu „Settings –> Diving –> Dive mode" you can configure the **BlueLocar RAY** to switch from the Standby mode to the dive mode automatically by selecting the „**Autostart**" setting. As long as the dive mode is not quit after the dive by using the „Back" key („ **x** "), the **RAY** will return to the Standby mode after at least 4 minutes at the surface.

9.2 | Dive mode display

The dive mode is displaying the digital compass for orientation, the temperature, the maximum dive depth and the duration of the dive.



At the upper area of the screen you can see the compass rose, which is displaying the current orientation of the device. Directly beneath the compass, the time duration under water is displayed. In the lower area of the screen you can see the current dive depth as well as the maximum dive depth of the dive.

10 | Divelog

The dive mode of the **BlueLocar RAY** provides the option to generate divelogs from the measurement data collected during dives. This data can be stored and exported for later analysis. There are three different data collection modes, which differ in forms of information detail and storage consumption. Your preferred collection mode can be selected within „**Settings** –> **Diving** –> **Divelog**".

The „**Summary only**" storage mode will only save data in the following format without any temporal progress:

- Surface pause of the dive
- Date & time of the dive start
- Duration of the dive
- Maximum dive depth
- Average dive depth
- Minimal temperature

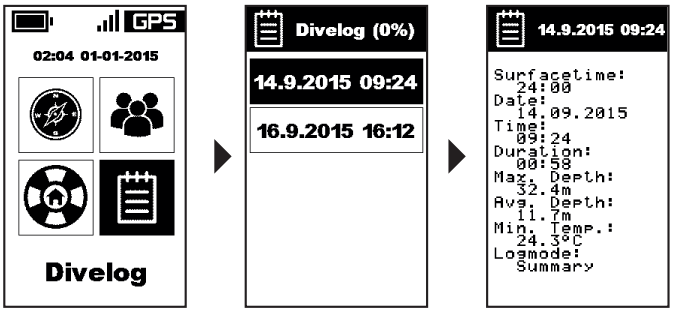
This mode is recommended, if you want to save storage space to collect a maximum number of dives.

With the „**Log everything**" storage mode, the device will save the temporal progress (10 second interval) of dive depth and temperature along with the data of the „**Summary only**" mode. In addition to that, the last valid GPS position of the device will be stored. This mode is using more space, but it provides a detailed survey of the dive. Each dive with up to 5 hours of duration can be stored.

With the „**Log nothing**" storage mode, no data will be stored in the divelog!

10.1 | Display the divelog on your BlueLocar RAY

The data of the stored dives can be accessed and displayed directly at your **BlueLocar RAY**. The list of available dives can be found inside the „**Divelog**" menu and is sorted by date and time. Keep in mind that displayed data will always be a summary of the logged information regardless of the configured detail within the divelog settings. Furthermore, the UTC time of the data will be adjusted to fit the configured timezone settings. Within the title of the divelog you can see how much storage is already used by the dive data represented in %.



10.2 | Export the divelog to a computer

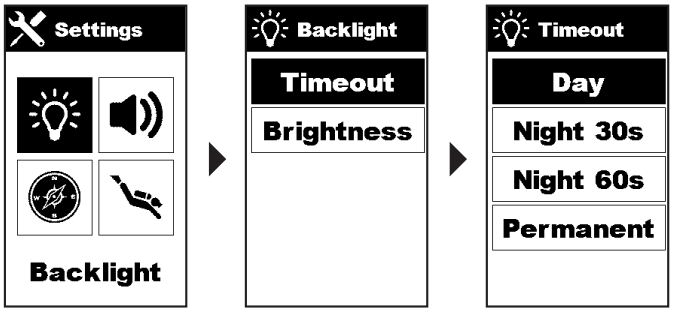
To export the data and access the dive profil of the stored dives, it is nessecary to connect your RAY to a computer, running the „**RAY Communicator**" software(see chapter 12 | RAY Communicator software).

11 | Settings

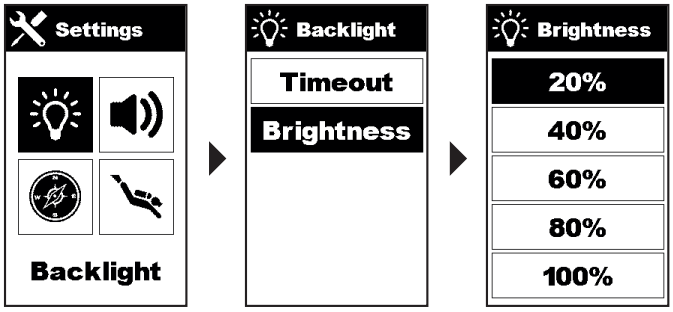
Inside the „**Settings**“ menu you may adjust your **BlueLocar RAY** according to your personal preferences.

11.1 | Backlight

Inside the „**Backlight**“ menu you can find all settings regarding the backlight of the Display. You can adjust the brightness and the duration of the lighting.



With the „**Timeout**“ icon you can either deactivate the backlight, activate it permanently or set a period of 30 to 60 seconds after the last key stroke.

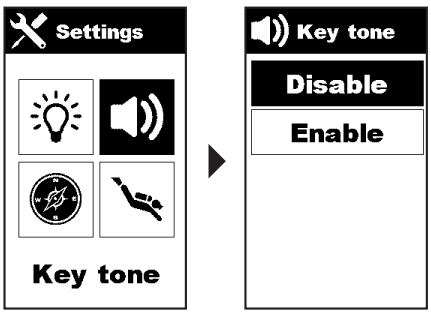


With the „**Brightness**“ icon you can change the intensity for the display lighting from 20 to 100 percent.

CAUTION: By activating the backlight of the device, the battery life of your BlueLocar RAY will decrease distinctly.

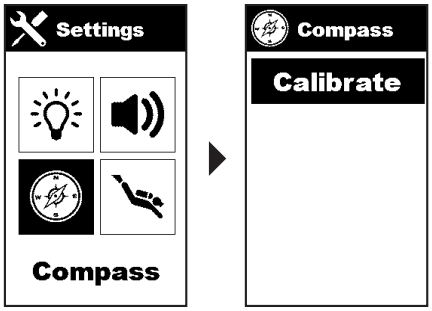
11.2 | Key tones

Inside the „**Key tones**“ settings, it is possible to enable an acoustic feedback when pressing a key. You can either enable or disable it.



11.3 | Compass

Inside the **„Compass“** settings menu you can activate the compass calibration process as mentioned earlier **(see chapter 4.2: Compass calibration)**.

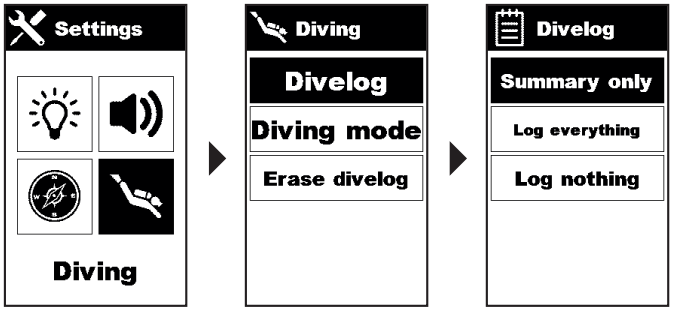


11.4 | Diving

Within the „**Diving**“ settings menu you can change the configuration for the divelog, containing the stored data from your dives, along with the trigger settings of the dive mode. Additionally, you can clean the divelog inside this menu.

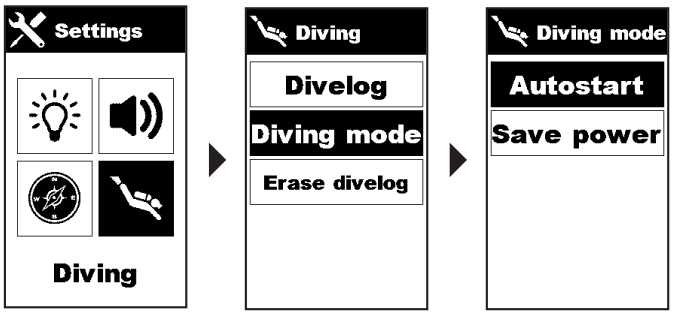
11.4.1 | Divelog

The divelog provides 3 different storage modes, which differ in the amount and thedetail of the data that will be saved. You can set either the „Summary only“, the „Log everything“ or the „Log nothing“ format. The different storage modes are explained with more detail in chapter 10.



11.4.2 | Dive mode

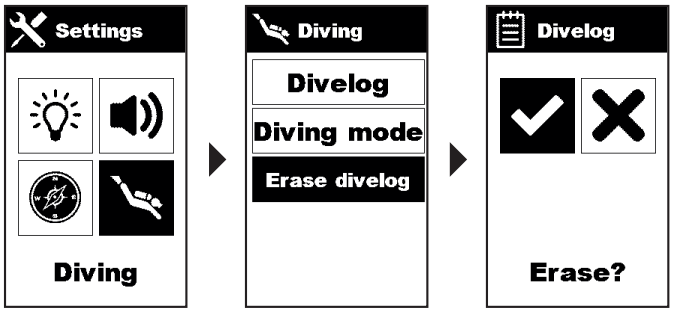
Inside this submenu of the „**Diving**“ settings you can configure the trigger for the dive mode of the **BlueLocar RAY**. With the mode „**Autostart**“ selected, the device will switch to the dive mode even when the Standby mode is active (power saving mode). The device will log the measurement data of the dive and the digital compass is displayed. (As long as the dive mode is not canceled by using the „Back“ key („ **x** “), the **RAY** will return to Standby mode after at least 4 minutes at the water surface.)



When activating the „**Power saving**“ option, the **RAY** will not switch from the Standby mode to the dive mode. This will increase the runtime of your **BlueLocar RAY** in Standby mode and saves battery.

11.4.3 | Clean divelog

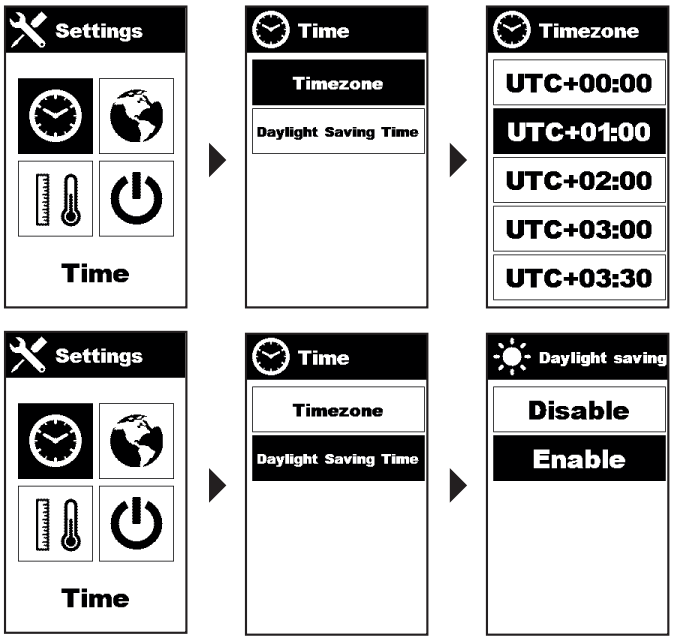
By activating the „**Clean divelog**“ setting, all stored data of your dives will be deleted. It is recommended to export your divelog with the „**RAY Communicator**“software before performing this operation (see chapter 12). Otherwise you will lose all stored data of your dives.



11.5 | Time

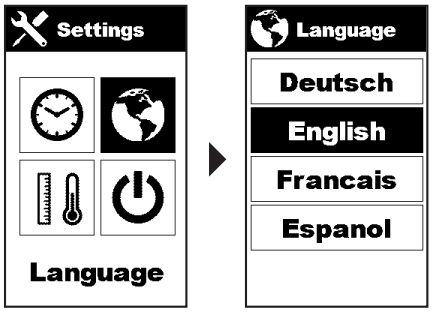
Within the „**Time**“ settings menu you can configure the timezone and the summertime.
Inside the „**Timezone**“ settings you can shoose between all the available timezones. And inside the „**Daylight Saving Time**“ settings menu you can enable and disable the mostly common daylight saving time, which will shift the time by one hour.

IMPORTANT: All log data will be stored in the „UTC+0“ format regardless of the configured timezone. This helps to provide comformity for all divelog data especially when changing locations.



11.6 | Language

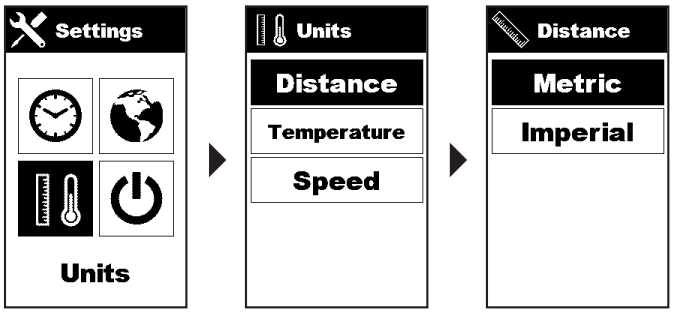
The **BlueLocar RAY** supports 4 different languages for text to be displayed. After choosing your preferred language the entire menu texts will be switched to this language.



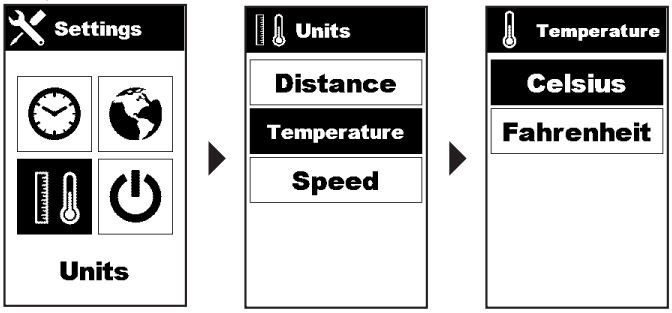
11.7 | Units

Inside this menu you can change the **units** for every displayed **distance**, **temperature** and **velocity** that may differ due to national standards.

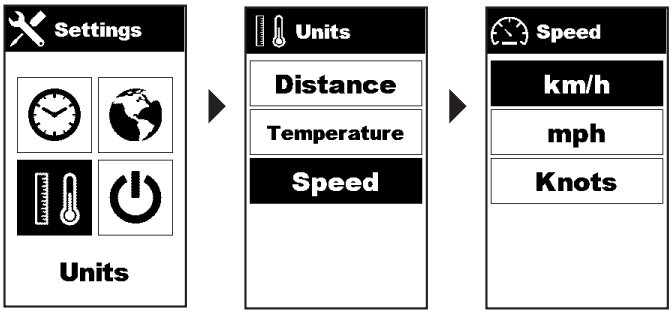
Distance is either displayed using the **metric** (Meter, Kilometer) or the **imperial** (Fuß, Meilen) format.



Temperature is available in either „**°Celsius**“ or „**°Fahrenheit**“format .



To display the velocity on the screen, you can choose between the „**kilometers per hour**“ (**kmh**), the„**miles per hour**“ (**mph**) as well as the „**knots**“ (**kn**) format.



11.8 | Shutdown

By selecting the „**Shutdown**“ icon followed by a confirmation the **BlueLocar RAY** will be switched off completely.

CAUTION: When the BlueLocar RAY is shut down, it can only be reactivated by connecting an external power supply to the device! Therefore, the device has to be connected to a power supply or a computer for at least 10 seconds!

11.9 | Restart

By selecting the „**Restart**“icon the **BlueLocar RAY** will reboot.

12 | RAY Communicator software

The „**RAY Communicator**“ software (available for Windows, MAC and Linux) is enhencing the functionality of the **BlueLocar RAY** by adding several additional features, like:

- Export the divelog data in different formats - Universal Dive Data Format (.uddf) and DAN DL7 (.zxu)
- Change the device name
- Define personal text messages
- Backup your **RAY** settings
- Update the firmware of your **RAY**

All features of the software „**RAY Communicator**“ are described in the corresponding manual. The manual is available along with the software for download at www.bluelocar.com.

13 | Service and cleaning

The **BlueLocar RAY locating system** is a sophisticated instrument. Despite being developed to endure all strain of sport diving, it has to be handeled with care
.

Cleaning after contact with water
The **RAY** should be washed up with fresh water after every use (especially after salt water usage). For this it is necessary to remove the **RAY** from any protective housing or from any carrying bags. The **RAY** should be handled with a soft canvas for drying after the cleaning process.

Pressure sensitive keys and antenna area
Due to impurity and dirt on the keys and the upper area around the antenna there is the possiblity of problems to arise. These parts of the **RAY** should be kept clean at any time.

Storage
The **Ray** should be stored at a dry and cool place, if it is not in use.

Storage over long period of time
In case of an intended longer storage time, it is necessary to fully charge the batteries and to completely shut down the **BlueLocar RAY** (see chapter 11.8). The storage should provide a cool place and the device should be charged every 3 months to prevent damages due to deep charging states.

Impact and fall
If the **BlueLocar RAY** is being dropped, it could damage the electronical parts of the device. Thus, the device should be handled with care. All consequential damages introduced to the device by fall and impact are not covered by the provided warranty.

Contact with dangerous substances
The **BlueLocar RAY locating system** can be damaged by impacts from heavy objects like scuba tanks. Also the contact to gasoline, dertergents, aerosol spray, adhesives, paint, acetone, alcohol and other substances can cause harm to the device. Chemical reactions with these substances can damage the sealing, the housing and the surfaces of the device.

Opening the device
It is not intended to open the device. The warranty will expire immediatly, if there is proof of any attempt to open the device. In addition, the device is no longer guaranteed to be water proof.

Firmware update
NEVER disconnect the **BlueLocar RAY** from your computer during any firmware updating process.

14 | Technical data

Case:	synthetic, pressure resistant to 100m dive depth
Dimensions (WxLxH):	7,5 x 17 x 2,5 cm
Weight:	390g
Screen:	2,7" LCD with background lighting
Temperature	
Storage:	-20°C to 70°C
Operation:	-5°C to 65°C
GPS:	integrated
Radio module	
Frequency:	915 to 917MHz
Transmitting power:	500 mW
Battery:	4,8V NiMh Akku

All values are subject to common measurement tolerances.

15 | Declaration of conformity

We, BlueLocar GmbH
Autokaderstraße 29/Bt2
A-1210 Vienna
AUSTRIA

declare under our sole responsibility that the product to which this declaration relates is in conformity with the requirements of the following specifications:

FCC Statement for USA

The above product complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) this device must accept any interference received,
including interference that may cause undesired operation.
Changes or modifications made to this equipment not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

IC Canada Statement for Canada

This device complies with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions:
(1) This device may not cause interference; and
(2) This device must accept any interference, including interference that may cause undesired operation of the device.
Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :
(1) l'appareil ne doit pas produire de brouillage;
(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

16 | Limited warranty of BlueLocar

BlueLocar guarantees that BlueLocar will, at their own discretion, either a) repair, b) replace, or c) reimburse the purchase price of a product found to have material or manufacturing defects during the warranty period according to the general terms and conditions of this limited warranty.This limited warranty is only valid in the country of purchase. Different local legislation may apply.

16.1 | Warranty period

The limited warranty period starts with the original purchase date. The warranty period for display devices is two (2) years. The warranty period for accessories and consumable parts including, but not limited to, batteries, charging units, docking stations, belts, cables and hoses is one (1) year.

16.2 | Exclusions from liability and liability restrictions

This limited warranty does not apply to:

1. a) normal wear and tear, b) damage caused by improper handling, and c) damages caused by misuse of the product or through nonobservance of the instructions for use of the product;
2. Instruction manuals or items from other manufacturers or providers;
3. Actual or alleged damages caused by use or connection of the product with products, accessories, software and/or services not manufactured or provided by BlueLocar;
4. DThis limited warranty is not enforceable if the device
5. was opened for purposes contrary to the designated use;
6. was repaired and/or modified with the use of non-approved spare parts and/or by a non-authorized service center;
7. has a serial number that has, in any way, been removed, modified or made unreadable. The final decision in this case rests solely with the discretion of BlueLocar;
8. has been exposed to chemicals.

BlueLocar cannot be held liable for downtime or disruptions in the use of the product. BlueLocar cannot be held liable if the product does not operate when connected with software or hardware from another provider.

17 | Disposal of the device

Protect the environment.

Act responsibly when disposing of the device and handle it as electronic waste. Do not throw it in the household garbage. You can return your device to the authorised local BlueLocar retailer.

BlueLocar GmbH
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1210 Vienna, Austria

office@bluelocar.com
www.bluelocar.com