



BARRYVOX®

EXTENDED REFERENCE GUIDE



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Congratulations on the purchase of your new Barryvox®.

The Extended Reference Guide manual explains the functionality and use of the Barryvox®. The Barryvox® is a revolutionary, sensor-controlled avalanche transceiver, which is very easy to use.

Register your Barryvox® and get a 3 year warranty extension!

Register your Barryvox® today at www.Barryvox.com, to get important information such as announcements about the availability of software updates.

After a successful registration your device is covered for 5 years by warranty.

Barryvox® Transceivers – Made in Switzerland

Our heritage is compelling. Mammut and Barryvox® follow the time-honored tradition of world-class precision products made in Switzerland. From its design to its engineering and production, this device is completely made in Switzerland.

This device is compatible with all avalanche transceivers that comply with the EN 300718 standard and operate on a frequency of 457 kHz.

The following documents for the Barryvox® transceivers are available at www.Barryvox.com:

Barryvox® User Manual

This user manual describes the SEND and group check functions as well as the standard search mode.

In addition, you will find all information regarding basic maintenance, warranty and repair as well as the technical specifications.

Barryvox® Extended Reference Guide

The Extended Reference Guide is a comprehensive resource of information for your Barryvox®. It includes additional information that augments the user manual concerning search and rescue techniques. It is an important and valuable resource for all educators.

Approval / Conformity

All information concerning approval and conformity is available at the very end of this booklet.

Like all transceivers, the Barryvox® contains shock sensitive ferrite antennas. Therefore, you should handle it with utmost care!

Store the device and the carrying system in a dry spot that is protected from extreme cold or heat and direct sunshine.

Always check the result of the self- and battery test, pay attention to alert messages and carry out the group check.

It is your responsibility to frequently check your Barryvox® for mechanical damage of the casing, proper function of the main switch, battery compartment cover as well as cleanliness and mechanical integrity of the battery contacts.

To ensure the proper performance of the transceiver, it is highly recommended that you send your device to an official Barryvox® service center once every three years for a functional test. The recommended date of the next check can be viewed under «Maintenance» in the shut down sequence of the device. (See „[Periodic check by a Barryvox® Service Center](#)“ in chapter “Additional Information”).

Interferences

Always avoid having other electronic devices (e.g. mobile phones, radios, headlamps, cameras), metal objects (pocket knives, magnetic buttons), or other transceivers close to (20 cm in SEND; 50 cm in SEARCH) your running avalanche transceiver.

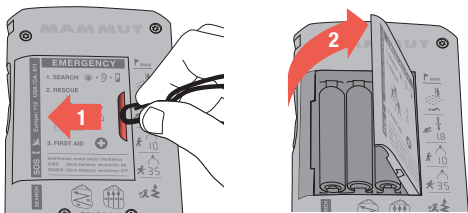
You should not wear clothing with magnetic buttons! Users of pacemakers are advised to carry the device in a secure pants pocket (no vital data detection). Consult the manufacturer's instructions with regard to the impact on pacemakers.

► **BarryTip:** When searching, hold the device at a minimum of 50cm away from these objects and turn off any electronic devices, if possible. It is highly recommended to turn OFF mobile phones!

INITIAL SETUP

Batteries

Only use alkaline (LR03/AAA) batteries of the same type. Always insert 3 new batteries of the same type. In case these batteries need to be removed, the same 3 batteries or 3 new batteries must be reinserted. Never use rechargeable batteries and always replace all the batteries at the same time. Make sure the lid is properly closed and that the device and the batteries stay dry.



Use a fingernail or the leash clip to slide battery door to the left, and it will swing open.

Periodically inspect the battery compartment. Clean or dry it, if needed, since moisture can cause corrosion. Avoid touching the contacts with your hands, use a clean cloth. A reliable power supply is crucial for safe operation.

When storing or not using the transceiver for an extended period of time (summer, travelling, shipping), remove alkaline batteries. The warranty becomes void if batteries have leaked!

► **Caution: Risk of damage if you use batteries of the wrong type.**

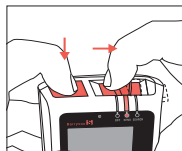
Main Switch OFF / SEND / SEARCH

The main switch is located on the top side of the device. In the left position OFF, the device is turned off, in the center position SEND the device is in SEND mode and in the right position SEARCH, the device is in SEARCH mode. For safety reasons, it is required to press the hinged unlock button to leave the SEND mode. To return from SEARCH to SEND, simply push the main switch sideways.

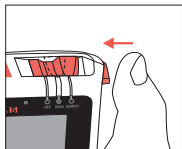
Always make sure that the switch locks into position mechanically to avoid an undesired change of mode.



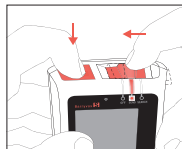
OFF -> SEND



SEND -> SEARCH






SEARCH -> SEND



SEND -> OFF

User Interface and Use of Buttons

The use of the Barryvox® is easy and straightforward. All user interaction is done with the  button on the front side. To confirm your selection, use the orange  button. The action triggered by pressing the  button is shown at the bottom left of the screen.

Samples:

Press the  button to...

...activate the group check.



SELF- AND BATTERY TEST

Start-Up / Self- and Battery Test

While starting, the device conducts a self test. The result of the self-test is shown the first time the device enters a SEND mode.

If the battery power falls below 30% (alkaline) or the battery icon is displayed, the batteries must be replaced as soon as possible!



Battery Test and Battery Level Indicator

The following table gives you average values for the battery levels. The remaining battery level can only be displayed correctly if batteries are used according to the chapter „Batteries“. Low temperatures, age, and brand can have a negative impact on the battery life and the accuracy of the battery level indication.

- ▶ **BarryTip:** As the risk of a battery failure increases towards end of the battery life, we recommend to replace the batteries already 10% before reaching the emergency reserve of the normative requirement. Please replace batteries at 40%.

100%:

Normative requirement (=minimum requirement):
min 200hrs SEND at 10°C followed by 1hr SEARCH at -10°C

Typical values for the Barryvox® with alkaline batteries:
300 hrs SEND at 10°C (measured with PULS Power).

less than: 30%  / 0% 

The batteries must be replaced as soon as possible!

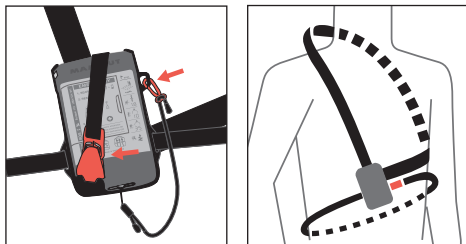
Emergency reserve at 30%:

Max. 20 hrs in SEND mode at 10°C and max. 1 hr in SEARCH mode at -10°C left.

The transceiver sounds a warning if the battery level is running on emergency reserve at startup.

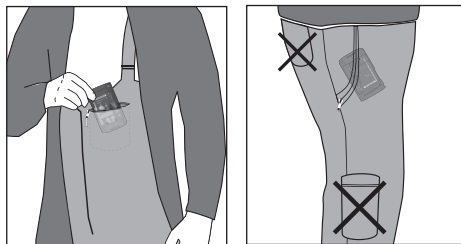
BarryMount (Recommended Carrying Position)

The BarryMount should be put on over your innermost layer of clothing prior to beginning the trip (see illustration) and must be worn on your body for the duration of the trip. The transceiver must always remain covered by one layer of clothing. The device itself is inserted into the BarryMount according to the illustration. It should always remain attached to the holster using the clip of the BarryLeash.



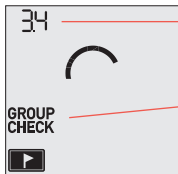
Carrying the Transceiver in a Pocket

If you carry the Barryvox® in a pants pocket, the zipper must remain closed for the duration of the trip. Always use a secured pocket (see illustration). The wrist loop should be secured to your pants or around your belt.



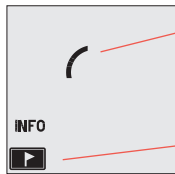
COCKPIT – OVERVIEW OF FUNCTIONS

Turning the Device ON and OFF



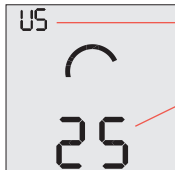
Firmware Version (BarryHeart)

Group Check: enter group check by pressing the  key.



The device shuts down 2 seconds after the main switch has been moved to the OFF position.

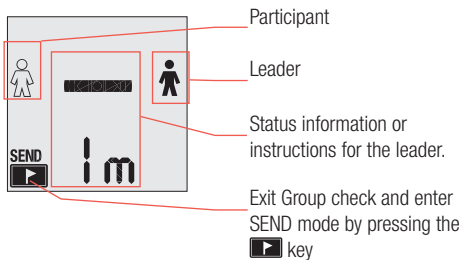
Press the  key to access device and maintenance info.



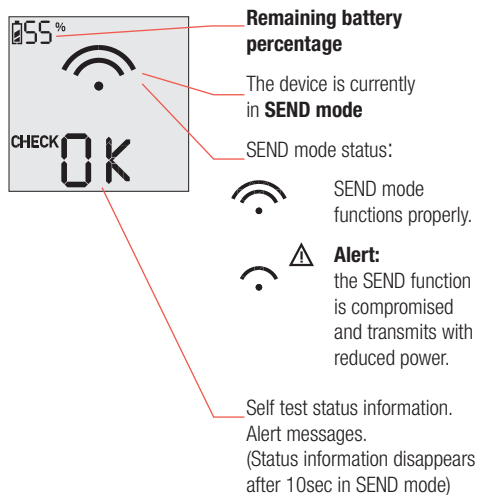
W-Link Region (see chapter „Additional Information“)

Year of the next periodic check (see chapter „Handling the Barryvox®“)

Group Check

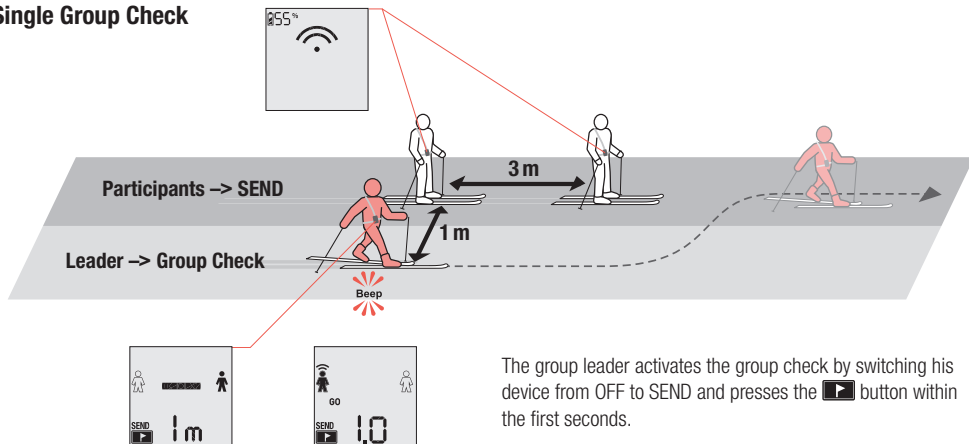


SEND




GROUP CHECK

Single Group Check



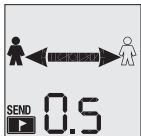
Before a party takes off, the transceivers of all party members must be checked. The participants switch their device to SEND mode.

The group leader activates the group check by switching his device from OFF to SEND and presses the  button within the first seconds.

The test is successful if you can clearly hear beep sounds from each participant's transceiver within the range indicated on the display.



The members of the party must be spread out appropriately to avoid mutual interference.



The indicated test distance must not be shortened, or the group check becomes very unreliable.

Once all the participant's devices are tested, the group check is concluded. The group leader's transceiver must be switched to the SEND mode.

If no tone is heard within the indicated range, the device must not be used.

Further procedure:

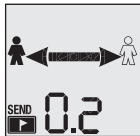
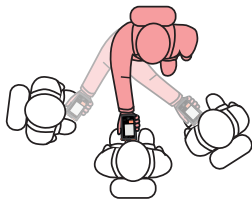
1. Check if the device is switched to SEND.
2. Replace the batteries.
3. Have the device checked by the manufacturer.

See „[Maintenance and Repair](#)“.



If your Barryvox® detects that the transmit frequency of the tested device is out of tolerance, a warning message will be shown. Such devices must be checked by the manufacturer.

SEND Confirmation



In case a regular group check is impossible due to limited space, it is possible to perform a basic verification if the transceivers of all participants are turned on.

The leader holds his transceiver in group check as close as possible to the transceiver of each participant.

By doing so, the distance indication must decrease to the point where it is impossible to mix-up the result due to close proximity presence of other participants.

As the test distance is too short for a regular group check, there is no affirmative confirmation. Apply a regular group check the next time you check your group to confirm the proper function of the transceivers of the participants.

In case the indicated distance in immediate proximity to the transceiver of a participant does not decrease to a value which excludes with certainty the possibility to mix-up the result with the one of other participants in close proximity, the proper function of the device must be checked by a regular group check.

SEND

The SEND mode is the normal operating mode outdoors or in all other situations in which there is a risk of avalanches.




Each time the SEND mode is activated, this is confirmed by an ascending triple beep sound.

Each individual signal pulse is tested. If the test is successful, this is confirmed by a blink of the red SEND-Control LED.



If the device detects that the SEND function is compromised, the red SEND-Control LED stops flashing and screen shows an alert message.

To save battery power, the LCD screen is automatically deactivated in the SEND mode, but can be activated any time by pressing the button .

SEARCH

Although the avalanche transceiver is easy to use, its effective use requires proper training. We recommend that you practice transceiver searches regularly.

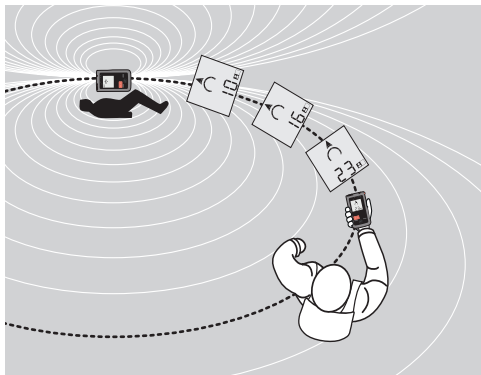
Be aware that electronic devices including mobile phones used by other rescuers may disturb the search. Therefore it is highly recommended to switch off phones which are not absolutely required!

At the beginning and during the search, pay close attention that the rescuer's transceivers are not transmitting and do not switch to SEND unintentionally. It does not make sense to remove your backpack and assemble the shovel and probe at the edge of the avalanche debris. Keep your backpack with all the equipment on you! The assembled shovel and probe is only a hindrance during signal and coarse search. Only remove your pack to assemble probe and shovel once you have successfully concluded the fine search.

Elementary understanding of transceiver search

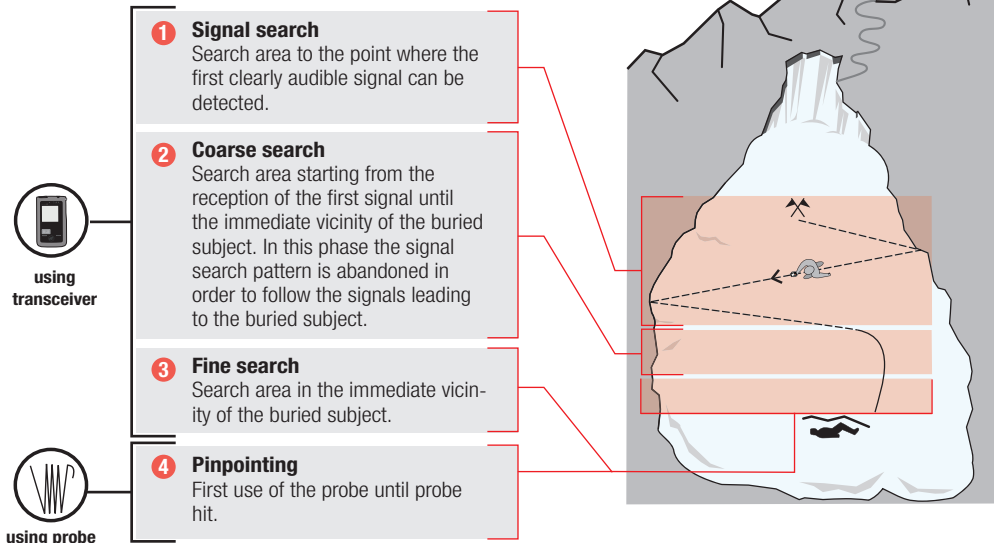
The 457kHz transmitter of the transceiver has a kidney shaped transmit distribution, which is visualized with field lines in the illustration below. The searching transceiver's arrow leads the rescuer along the field lines and therefore usually in a curved line to the buried subject.

Search Along the Field Line: Flux Line Search



Search Phases

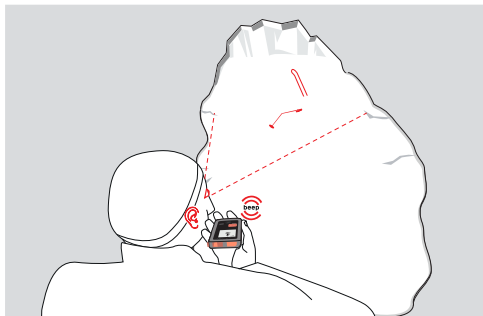
In an avalanche search, the following phases are distinguished:



1 Signal Search



- ▶ **BarryTip: Move swiftly.**
- ▶ Emergency plan, search strategies and search strip widths: please see back side of device.
- ▶ Search avalanche surface systematically.
- ▶ During signal search, the rescuer has his visual focus on the surface of the debris in order to look for visual clues on the snow surface. The first signal is indicated by a distinct double beep sound.



The avalanche surface is searched systematically until you pick up a signal. During the acoustic signal search, the rescuer has the visual focus on the surface of the debris in order to be able to see body parts or objects protruding the snow surface.

From the start of the search until you clearly hear the first tone, you are in signal search.

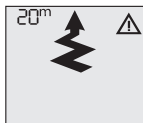
If your Barryvox® detects an increase of complexity in the search, it reduces the signal search strip width in order to ensure that the buried subjects may be found efficiently and reliably. Interference from other electronics, transmitters transmitting outside the standard frequency, old transmitters with very long pulse duration as well as a high number of buried subjects are all factors leading to additional complexity in a search.



Reduced signal search strip width due to interference.



Reduced signal search strip width due to a device transmitting outside the standard frequency.

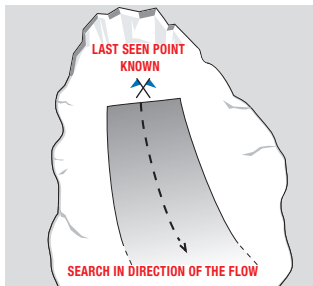


Reduced signal search strip width due to a high number of buried subjects, old transmitters with very long pulse duration or devices transmitting outside the standard frequency.

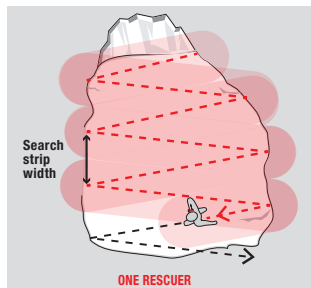
Regardless of the operating mode, the following search strategies apply:

Search strategy if the last seen point is known.

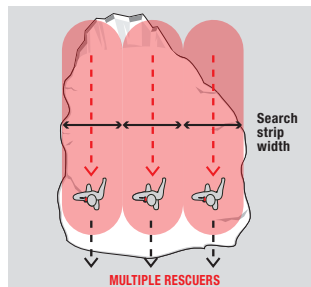
The signal search strip extends downhill from the last seen point in the direction of the slide.



Search strategy if the last seen point is unknown.



Last seen point unknown, one rescuer.



Last seen point unknown, multiple rescuers.

2 Coarse Search



- ▶ **BarryTip:** Move swiftly, move in the direction of the arrow.
- ▶ Hold the transceiver with the extended arm horizontally in front of you.
- ▶ If the distance increases, then you are moving away from the victim. Continue the search in the opposite direction.



Distance below 10



- ▶ **BarryTip:** Reduce search speed, precisely follow the arrow.



3 Fine Search



- **BarryTip:** Follow the arrow! Step slowly forward and backwards until you have found the point of lowest distance indication. Hold the device at knee height.



During this search phase hold the transceiver at knee height! The Barryvox® indicates you the first axis of the fine search, referred to as the “runway” in the “Airport Approach” teaching model.

For novice companion rescuers, it is usually faster to proceed with the probe once they have found to lowest distance indication on the first axis.

For intermediate and advanced users, it is advised to apply a classic grid search pattern.

Searching in a strictly perpendicular cross shortens the search time and increases the search precision, thus always try to keep the device and your body in the same orientation during fine search.

The greater the remaining distance to the buried subject (burial depth), the more repetitions of fine search crosses may be required to reach sufficient search-precision. Systematically fine search until you have found the point with the lowest distance indication.

Immediately place an indicator, i.e. a ski pole at this spot as an important reference when applying the probing spiral. Open your backpack now and assemble probe and shovel. It is recommended to put your backpack immediately back on your shoulders, in particular if you use a back pack with an airbag. In the unusual case of a secondary avalanche, this allows you to take advantage of the safety gear. By strictly keeping the equipment (i.e. first aid kit, radio or mobile phone) with you in your back pack, you will always have it available when you need it while rescuing the subsequent buried subjects.

4 Pinpointing

► **BarryTip:** Place a visual reference at the point where you have found the lowest distance indication. The visual reference is important to probe in a systematic pattern.

► If the buried subject is hit with the probe, leave the probe in the snow.



Mark

Mark the buried subject as «found» by pushing the  button after you have successfully located it with a probe strike!

Stash the device in search mode on your body (i.e. pocket) in order to have both hands available to probe. Begin probing in a spiral at a 90° angle to the snow surface. In particular if the debris is hard, guide the probe with two hands, one pushing from the top, the other guiding the probe closer to the snow surface in order to avoid bending the probe. Keep in mind that the remaining distance shown on the screen indicates the maximum possible distance to the buried subject. I.e. if you see 1.1 on the screen, the buried subject must be within 1.1m probing depth and spiral probe radius. In case there is no probe hit within this area, you have missed the buried subject. Repeat probing with a slightly offset probing pattern.

Automatic Revert to SEND

For the safety of the rescuers, the device automatically switches into SEND mode after 4 minutes without user interaction or motion.

Leaving SEARCH Mode



After 4 seconds the device automatically switches into SEND mode.

Multiple Burials



The marking feature allows to continue the search for further buried subjects by marking the previously located ones as found. Excavate the buried subjects already found while the search continues, unless the burial depth is particularly deep.

In Complex Situations Slow Down The Search





If the signal of the buried subject you are currently searching for temporarily overlaps with another signal, the device tries to guide you along the optimal search path. If the signals overlap for a long period of time, reliable guidance is limited. The device indicates this with a flashing distance indication. Radically slow the search until the distance indication stops flashing, indicating the signal overlap has cleared.

Search for Multiple Buried Subjects

The transceiver attempts to analyze all the detectable signals and to determine the number of buried subjects. This is possible because the signals from each transmitter have characteristics which are distinguishable from the signals of other transmitters. The more unique the signal characteristics are, the more accurately the signals can be distinguished and separated (pattern recognition). By automatically associating the signals with their respective sources, multiple burial situations can be solved without applying special search tactics. Transceivers which also transmit W-Link information can be detected particularly fast and reliably. The W-Link information includes a unique identification as well as the transmit pattern.

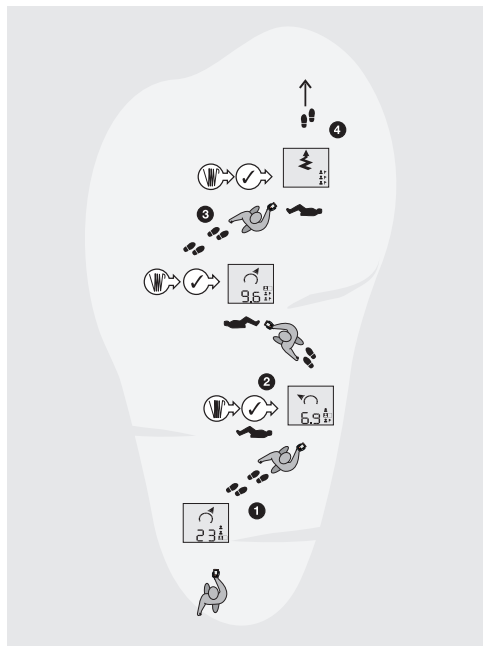
List of Buried Subjects

The buried subjects whose transmit patterns can be identified are inserted in the list of buried subjects based on their signal strength, usually corresponding with distance. The closest buried subject on the avalanche is shown at the bottom, the furthest at the top of the list. The list of buried subjects can show no more than 3 buried subjects at the time. In case the amount of recognized buried subjects is greater, arrow symbols indicate that the list contains further down or further up in the list additional entries. Usually, the device guides you so that the list is processed from bottom to top. The lower, already hidden part of the list of buried subjects , contains therefore the buried subjects which have already been marked as found, and the upper, not yet visible part of the list , the buried subjects which are not found yet and still ahead of you on the avalanche.

Independently of the position of a buried subject in the list, the device will always try to guide you as quickly as possible until all recognized buried subjects are found.

Procedure for Multiple Burials

1. The device favors the closest subject first. Locate the various buried subjects using the transceiver and probe pole.
2. As soon as you mark an individual subject, the transceiver takes you to the next closest, unmarked buried subject.
3. Continue this procedure until all subjects are located and marked.
4. The rescuer now searches for additional buried subjects while the display shows the symbol for the signal search phase to indicate that the rest of the avalanche surface must be searched (Chapter „[Signal Search](#)“).



Problem Solving

Transceiver doesn't turn on No self-test at startup

1. Check and replace batteries.
2. If this doesn't help, have the device checked by the manufacturer.

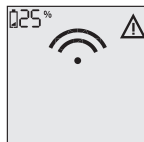
Alert Messages

Batteries are weak!

The batteries must be replaced as soon as possible. Refer to the instruction in the chapters „[Batteries](#)“ and „[Battery Test and Battery Level Indicator](#)“.

Sensor failure!

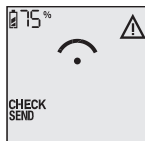
1. Turn the transceiver off and turn it back on after it has properly shut down.
2. If this doesn't help, have the device checked by the manufacturer.



Alert «Check SEND»!

SEND LED doesn't blink

1. This alert message is usually triggered by external interference. Make sure that no metal objects or electronic devices are close to the transmitter.
2. Check and replace batteries.
3. Turn the transceiver off and turn it back on after it has properly shut down.
4. If this doesn't help, have the device checked by the manufacturer.



Alert «Check Search»!

1. Make sure that no metal objects or electronic devices are close to the transmitter.
2. Turn the transceiver off and turn it back on after it has properly shut down.
3. If this doesn't help, have the device checked by the manufacturer. In case of emergency, try to search anyway, but with reduced search strip width.



Maintenance and Repair

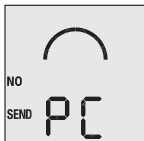
Barryvox transceivers, which do not function correctly, despite full and properly inserted batteries (e.g. no signal during the group check, mechanical defects) must be sent to a service center listed at the beginning of this manual.

Maintenance

The year of the next check can be viewed under «Info» in the shut down sequence of the device.

Use in combination with the Barryvox® Maintenance Software

The Barryvox® Maintenance Software allows to efficiently manage and maintenance transceiver fleets with a computer. The Barryvox® automatically connects to a service device (Barryvox® tester, W-Link Adapter/Stick) with in w-link range (approx. 50m). While in service mode, the SEND mode is deactivated and the red SEND-control LED is double flashing.



Periodic check by a Barryvox® Service Center

To check the proper function of the device it is highly recommended that the device be sent to a Barryvox® service center every 3 years, or when reaching 3000 hours of operation or have it checked by a Barryvox® service point (service charge will apply). The functional test is much more comprehensive and precise than the self and group check. As part of this service the electronics and the mechanical components such as the case, the main switch and the lateral key, the battery contacts, the battery compartment and cover as well as the wrist strap will be checked. In case the check shows abnormal wear and tear due to incorrect or long, very intense use, the service center may recommend that you replace the device.

We recommend that you have your device checked during the summer months so that your Barryvox® is tested and ready to use at the start of the next winter season. The year of the next check can be viewed under «Info» in the shut down sequence of the device.

Warranty

There is a 2 year warranty on the Barryvox® transceiver (excluding the batteries, the carrying system and the leash) from the date of purchase shown on the purchase receipt. If you register your device on www.Barryvox.com by completely filling in the required information, the existing warranty duration, starting from the date of purchase shown on the purchase receipt, will be prolonged by an additional 3 years of warranty. In case of a warranty claim, all parts that can be shown to have material or production defects will be replaced free of charge. Damage that can be traced to incorrect handling or normal wear and tear is excluded.

The warranty is voided if the buyer or any non-authorized third party opens the device. This is also the case for devices that have been used with spare parts or accessories which are not original and are not recommended by the manufacturer. A fee will be charged for the diagnostic test of a transceiver not needing any repair. Warranty repairs do not extend the duration of the warranty. There is a six month warranty on replaced spare parts. Warranty repairs will only be conducted if the device is sent in along with the receipt. The owner will be charged for the shipping. No other warranty shall exist. Any liability for any kind of loss or damage including but not limited to any direct, indirect or consequential damage is explicitly excluded.

Technical Data

Device: Digital three antenna device.

Transmit frequency

Transceiver: 457 kHz (International Standard).

W-Link Region A: 869.85MHz (Europe)

W-Link Region B: 915 ... 926 MHz (North America)

Field strength / Transmitting power

Transceiver: max. 7 dB μ A/m (2,23 μ A/m) at a distance of 10 m

W-Link Region A: max. 5mW / E.R.P.

W-Link Region B: max. 5mW / E.R.P.

Power supply: 3 x LR03 1.5 V Alkaline (AAA)

Battery life:

typical 300 h SEND, min 200 h in SEND mode followed by 1 h in SEARCH mode.

Maximum range: up to 70 m

Search strip width: 70 m.

Operating temperature range: -25° to +45° C.

Dimensions (L x W x H): 115 x 67 x 27 mm.

Weight: 210 g (incl. batteries).

Disposal Information

At the end of its lifetime, this product may not be disposed with regular waste. It must be recycled by a specialized facility for recycling electronic devices.



All information is provided without liability.
Status September 2021.

Technical data and specifications are subject to change without notice.

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