



PREMIUM ALPINE PERFORMANCE



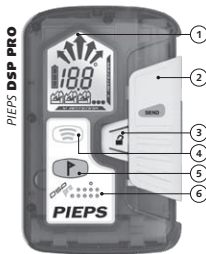
MANUAL PIEPS **DSP PRO** | **DSP SPORT**

## DEAR WINTER SPORTS ENTHUSIAST!

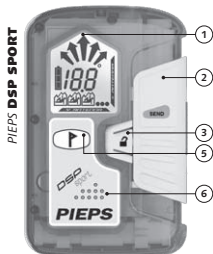
### *Congratulations on having purchased a PIEPS DSP PRO/DSP SPORT.*

The PIEPS DSP PRO/DSP SPORT is a digital 3-antenna transceiver designed to be the easiest to use in a companion rescue. Equipped with DSP technology (Digital Signal Processing) and a triple-antenna-search system, the PIEPS DSP PRO/DSP SPORT not only offers a maximum circular range, but also simplifies the rescue, especially in a case with multiple burials. The new functions of the Intelligent Transmitter also support the user in SEND-mode at a maximum – you will be found faster with your PIEPS DSP PRO/DSP SPORT!

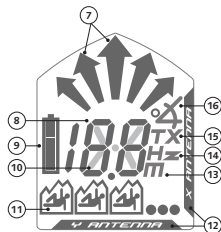
**A transceiver cannot protect you against avalanches!** *Obtaining the proper level of avalanche education, and regular practicing with all avalanche rescue equipment is essential to carry out a safe, and effective rescue. The procedures and instructions described refer solely to specific applications in connection with PIEPS DSP PRO/DSP SPORT. The basic rules of conduct in case of an emergency – as defined in the relevant specialist publications and in training sessions – must be observed without fail.*



- 1 LCD-Display (backlight)
- 2 Main switch  
OFF-SEND-SEARCH
- 3 Lock
- 4 SCAN Button \*
- 5 MARK Button



- 6 Loudspeaker
- 7 Direction Indicator
- 8 Numeric Information
- 9 Battery Level
- 10 Display "SEND"
- 11 Number of Burials



- 12 Current Sending Antenna
- 13 Meter-indication at SCAN \*
- 14 Frequency measurement \*
- 15 TX600-Mode \*
- 16 Inclinometer \*

\* Only for DSP PRO

## QUICKSTART IN 3 STEPS

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Your PIEPS DSP PRO/DSP SPORT is ready to use directly out of the box!

### Step 1:

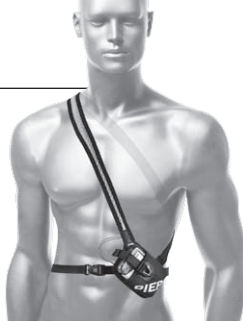
Putting on the carrying harness, place the shoulder strap loop over head and shoulder. Lead the body strap around your back, fix the quick fastener and adjust to the proper length.

### Step 2:

Switch on the PIEPS DSP PRO/DSP SPORT and wait for the results of the self-check.

### Step 3:

Put the PIEPS DSP PRO/DSP SPORT back into the carrying system and enjoy your tour.



**Carrying recommendation:** PIEPS recommends carrying the PIEPS DSP PRO/DSP SPORT using the supplied carrying harness. The neoprene-material is water repellent, and the "Quick-pull-System" enables you to access the PIEPS DSP PRO/DSP SPORT very quickly in case of emergency.








*„Quick-Pull-System“*

There is also the option to carry the PIEPS DSP PRO/DSP SPORT with the supplied hand loop in a securely closeable trouser pocket without a protective case. The hand loop can be fixed around your wrist during the search to rule out losing the PIEPS DSP PRO/DSP SPORT.

## BATTERIES

The battery compartment is located on the backside of the housing. The safety screw connection can be easily opened and closed using a coin. Only use battery type LR03/AAA and always replace all 3 batteries with new ones of the same type. Never use rechargeable batteries and always change all batteries at the same time!

The battery indication is based on measuring the actual battery voltage. Due to the temperature influence the actual battery voltage may vary. A change from cold (outdoor) to warm (mountain hut) the battery capacity obviously recovers.

		DSP PRO	DSP SPORT
	3/3 filled	400–250 h SEND	200–120 h SEND
	2/3 filled	250–120 h SEND	120–60 h SEND
	1/3 filled	120–20 h SEND	60–20 h SEND
	empty	20 h SEND (+10°C) + 1 h SEARCH (-10°C)	
	empty, flashing	last reserve, transceiver can be switched off at anytime	

**IMPORTANT!** During a longer time of no use (e.g. summer) the batteries have to be taken out of the PIEPS DSP PRO/DSP SPORT. Damages because of leaked batteries are not included in the warranty.

### Electromagnetic Compatibility (EMC) and PIEPS Auto-Antenna-Switch:

All beacons are very sensitive against electrical and magnetic interferences. Due to this, it's a recommendation from all manufacturers that minimum distances should be maintained between avalanche beacons and electronic, magnetic or metallic influences (like radios, mobile phones, MP3-players, bunch of keys)!

**PIEPS recommends:** Minimum distance in SEND-mode: 20 cm | SEARCH-mode: 50 cm

### Your PIEPS DSP PRO/DSP SPORT has an Auto-Antenna-Switch included:

If there is an external influence the strongest antenna will begin transmitting. Further information can be found in the chapter "Intelligent Transmitter".

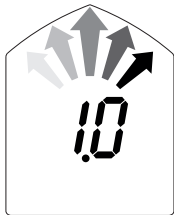
## SWITCHING ON | SELF-CHECK

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Press the main switch lock and push the main switch to the position "SEND" or "SEARCH". The PIEPS DSP PRO/DSP SPORT is now in SEND- or SEARCH-mode.

During power-on, the PIEPS DSP PRO/DSP SPORT will carry out a self-check. The transmitting frequency, all antennas, amplifiers, and processors are tested and the latest firmware is displayed. During the self-check, a minimum distance of 5 meters should be maintained to other beacons, and any electronic or magnetic interference.

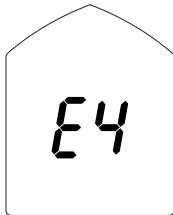
If the self-check is successful, "OK" is indicated on the display. In the event of a device warning, an alert signal sounds and the display indicates "E" in combination with a warning-code (overview table in chapter warning-codes). If the warnings are still shown in an interference-free area the PIEPS DSP PRO/DSP SPORT is not fully functional. Bring your PIEPS DSP PRO/DSP SPORT to a PIEPS authorized service center.



Display  
Firmware-Version



Display  
Self-check OK



Display  
Self-check error

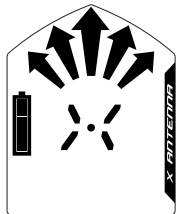
**IMPORTANT!** In Addition to the complex self-check a beacon-group-check is strongly recommended before each tour!

## SEND-MODE

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Press the main switch lock and push the main switch to the "SEND" position. The display indicates the SEND-symbol, the remaining battery capacity, and the transmitting antenna. Additionally an LED indicator light flashes simultaneous with the transmitter bit timing.

When you are on a tour, make sure the "SEND"-mode is selected throughout. The PIEPS DSP PRO/DSP SPORT will transmit a continuously defined signal (457kHz) that can be picked up from all other avalanche beacons (according EN300718).



### The Intelligent Transmitter – Gives maximum support in SEND-mode

In SEND-mode there are functions working in the background of PIEPS DSP PRO/DSP SPORT that help to be found faster and more efficiently in case of an emergency.

#### Auto-Antenna-Switch

The maximum range where a rescuer can locate a PIEPS DSP PRO/DSP SPORT with another beacon depends strongly on the signal strength of the transmitting beacon. If the transmitting antenna is negatively influenced through external devices (i.e. mobile phone), the range of receiving beacons is directly influenced (reduction up to 30% and more).

**The PIEPS DSP PRO/DSP SPORT is always transmitting with the strongest antenna for the maximum range to the receiving beacon!**

#### iPROBE-Support

The PIEPS iPROBE ONE is an electronic probe with an automatic deactivating function and an optical and acoustic target indicator. The PIEPS iPROBE ONE deactivates the strongest signal of all beacons with iPROBE ONE Support\*. Signal overlap is eliminated and the next strongest signal is automatically shown on the display of the receiving beacon (without reduction of range!) **The PIEPS iPROBE Support gives maximum assistance to multiple burial situations!**

\*Beacons with iPROBE ONE Support: PIEPS VECTOR, PIEPS DSP PRO, PIEPS DSP SPORT, PIEPS DSP (with Software version 5.0 or greater), PIEPS DSP Tour, PIEPS FREERIDE

*More information can be found on [www.pieps.com](http://www.pieps.com).*

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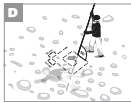
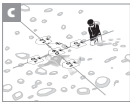
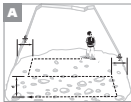
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## IN CASE OF EMERGENCY

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A victim has the best chance of being rescued if the largest possible number of companions in a given group have not been buried and work efficiently as a team to search and rescue their companion. In the event of an accident, the most important considerations are to: **STAY CALM, BE OBSERVEANT, and RAISE THE ALARM.**

- (1) Determine the search area and last point seen:** How many victims are buried? Are there several companions ready to engage in rescue? The most experienced person takes over assignment and management.
- (2) Call emergency services:** Dial 112 (EU) if this is possible without losing time.
- (3) Establish search areas:** Where are the probable burial locations?
- (4) Visual Sweep Search:** Search for the avalanche cone with your eyes and ears.
- (5) Search with avalanche transceiver:** Switch non-searching avalanche transceivers in SEARCH-mode. The search is divided in the following search phases (ICAR 2009): **A** Signal search, **B** Coarse search, **C** Fine search, **D** Pinpointing (Check the search results with a probe. Leave probe in place.)



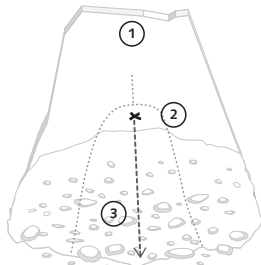
- (6) Dig:** Start digging at a distance downhill from the probe equal to the indicated depth of burial. Dig over a large area.
- (7) Rescue and first aid:** First clear the face and airways. Watch out for any breathing cavity (air pocket) for the victim. Protect from cold.



## SEARCH-MODE | SIGNAL SEARCH

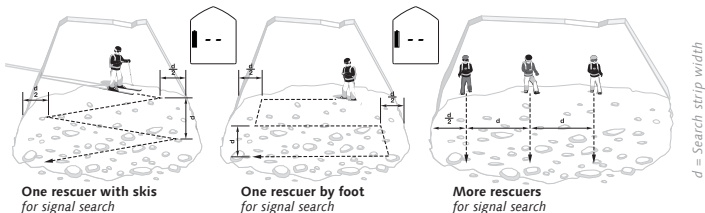
Press the main switch lock and push the main switch to the "SEARCH" position.

Observe the course of the avalanche and make an exact mental note of **(1)** where the victim was impacted by the avalanche, **(2)** the point of disappearance. **(3)** The extension of these points indicates the flow direction of the avalanche! The primary search area is to the left and right of this.



- 1 Point of impact
- 2 Point of disappearance
- 3 Flow direction

You are now beginning with the search for initial detection. The PIEPS DSP PRO/DSP SPORT has a circular receiving range and allows a direction and distance indication from the first signal (no special method of operation necessary). All signals of the burials that are within the maximum receiving range are received at the same time. To find the first signal walk along the defined search area in the stated search-strip width quickly. The recommended search strip width is 60 m for PIEPS DSP PRO / 50 m for PIEPS DSP SPORT.



**IMPORTANT!** All participants (including observers) must switch their devices to receiving (SEARCH) mode. Always make sure there are no electronic devices (e.g. mobiles, radios,) or solid metal items in the direct vicinity of the search.

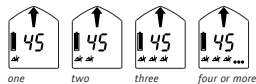


## COARSE SEARCH

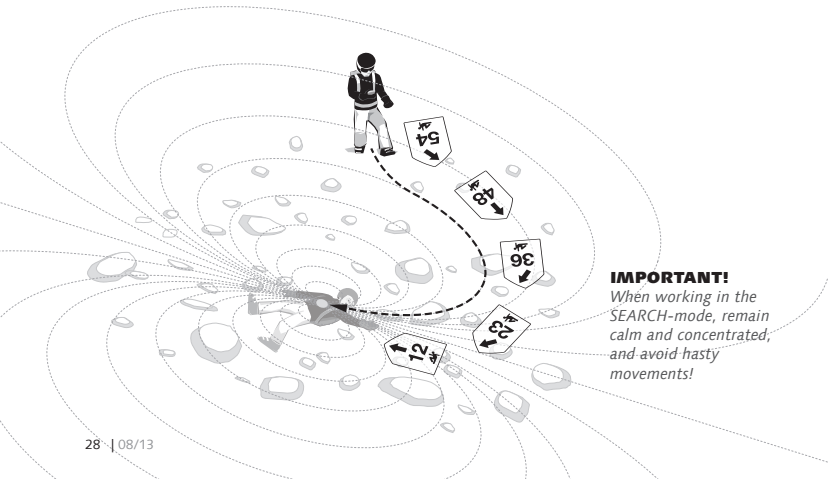
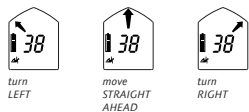
**(1)** As soon as the PIEPS DSP PRO/DSP SPORT picks up signals, the approximate distance and direction appear in the display. Matchstick men represent the number of burials within the range of the device. Using the arrow and distance reading, follow the strongest of the received signals along the field lines.

**(2)** Move in the direction indicated by the PIEPS DSP PRO/DSP SPORT. The distance reading should become progressively smaller. If it gets larger, switch the search direction by 180°, i.e. turn round and follow the opposite direction.

### 1 Number of Burials



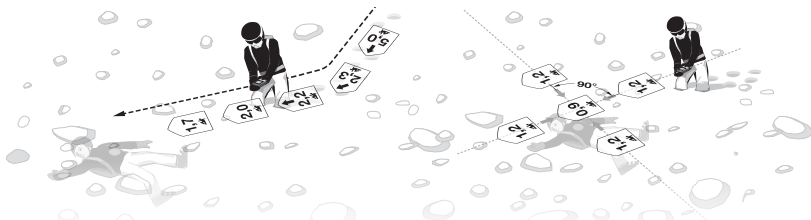
### 2 Direction Indication



## FINE SEARCH

- (1)** When you are closer than 5 m to the burial, it is strongly recommended to reduce your moving speed (50 cm/sec). Keep the PIEPS DSP PRO/DSP SPORT as close as possible to the surface of the snow to have the minimum distance to the transmitting beacon.
- (2)** To avoid confusion, the direction indication is suppressed at distances less than 2 m. Make an exact last direction correction before the directional arrows are suppressed.
- (3)** Reduce your moving speed again (10 cm/sec). Continue in the last displayed direction. If the distance reading starts increasing again, move back to the point with the lowest distance reading. At this point, try to get the lowest distance reading, using cross-like movements (90°). Repeat the cross-like approach as long as no lower distance reading can be determined. Do not rotate your PIEPS DSP PRO/DSP SPORT during the cross-like movements. The PIEPS DSP PRO/DSP SPORT only shows one minimum pertaining to any orientation of the transmitting beacon.

The dynamic acoustic signal supports the fine search:  
the nearer the faster pace/higher pitch.



**Important!** Before the direction arrows are suppressed, the last distance correction has to be done exactly. You are then moving to the transmitting beacon in best coupling position and save time during the cross-like movements. In the case of a deep burial it could happen that the minimum direction indication is higher than 2 m!

**Important!** It's strongly recommended to avoid hasty movements (move approx. 10 cm/sec) and avoid turning and rotating the PIEPS DSP PRO/DSP SPORT.

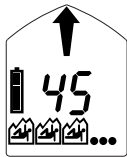
## MULTIPLE BURIALS

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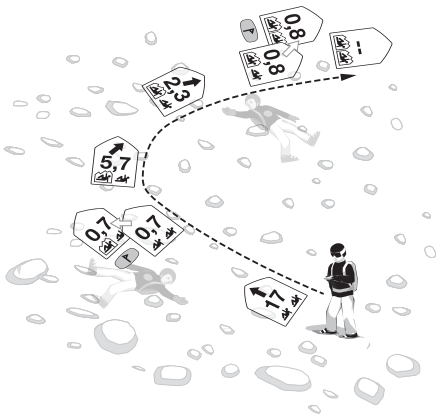
The optimized multiple burial search is based on a separation of signals via the digital signal processor (DSP).

- (1) If there are multiple burials, this is clearly indicated by the number of matchstick men.
- (2) By default, the PIEPS DSP PRO/DSP SPORT will automatically search for the strongest signal.
- (3) Once the position of the first burial has been located (see fine search), press the button MARK without moving away from this point. This signal is now suppressed. Once a signal has been successfully suppressed, an outline appears around the matchstick man.
- (4) The PIEPS DSP PRO/DSP SPORT will automatically search for the next strongest signal.
- (5) Now continue the search as described above, and repeat the procedures until all transmitters are located. If there are no further signals within the receiving range the display indicates "No Signal".

Number of possible marks:



max. 5 transmitters,  
3 are indicated on  
the display



## MULTIPLE BURIALS

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### Mark reset of single suppressed signals:

To reset the MARK function for single signals, press the button MARK for 3 seconds.

### Mark reset of all suppressed signals:

To reset the MARK function switch your PIEPS DSP PRO/DSP SPORT into SEND-mode and then back to SEARCH-mode. With the PIEPS DSP PRO you also have the possibility to reset MARK with the following described SCAN-function. All information from previously suppressed signals is now reset and you can start with MARK again.

### Old device mode:

Older analog transceivers are transmitting a weak continuous signal additional to the digital pulse signal that can have an impact on the digital signal separation. In such cases, you may find for a short time that more signals are indicated than actually exist – the display "number of burials" starts flashing (display of "old device mode"). To suppress (MARK) these transmitters keep a distance of more than 1 m.



### IMPORTANT!

*In the case of multiple burials, an overlapping of signals can occur and especially in small areas can have an impact on the digital signal separation. Results are longer operating times or a limited MARK-function. More information can be found on [www.pieps.com](http://www.pieps.com).*

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## ADDITIONAL FUNCTIONS FOR PIEPS DSP PRO

The following additional functions are only valid for PIEPS DSP PRO. The functions cannot be used or added with the PIEPS DSP SPORT.

### 1. SCAN-FUNCTION

Press the SCAN button while in the SEARCH-mode. The PIEPS DSP PRO will begin scanning the entire receiving range. During the scan, stand still and hold the device steady. This will give you an overview of all buried devices within the detectable range, classified according to three groups:

**Reading 1: Number of beacons within a distance of approx. 5m**

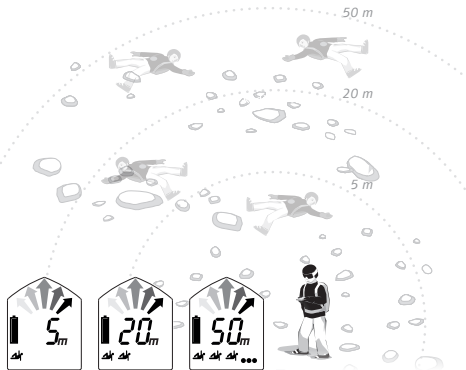
**Reading 2: Number of beacons within a distance of approx. 20 m**

**Reading 3: Number of beacons within a distance of approx. 50 m**

All information from previously suppressed (MARKED) signals will be reset and you can start the suppression again (MARK) or follow the direction indication to the next strongest signal.

Press the button SCAN again to stop the SCAN function.

**IMPORTANT!** *Once you have located all burials, move away from their locations in a star shape and use the SCAN function to check the scenario again. That way you can make sure you haven't missed any other burials.*



- 1 One beacon within 5 m
- 2 One further beacon between 5 and 20 m
- 3 Two or more further beacons between 20 and 50 m

## 2. FREQUENCY MEASUREMENT

Press the SCAN button for more than 3 seconds while in the SEARCH-mode. The PIEPS DSP PRO uses the frequency measurement to check the frequency of all other beacons. The frequency of the strongest (closest) beacon is measured. The deviation from the standardized frequency 457kHz is indicated. The shown number is the deviation in Hz and the arrows indicates + (right) or - (left). The frequency measurement ends when the button SCAN is not pressed any longer.

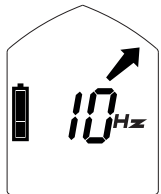
**IMPORTANT!** Check the transmitting frequency of your partners on tour regularly. According the standard EN300718 a beacon must transmit within the range of 457 kHz +/- 80 Hz. Ideal and reasonable technical operation will have a maximum deviation of no more than +/- 30 Hz.

## 3. TX600-SUPPORT

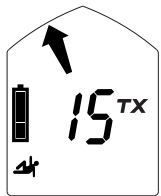
The PIEPS TX600 is a mini-transmitter for dogs and equipment that is transmitting out of the standard, EN300718 and can be received with every PIEPS DSP PRO.

Press the MARK and SCAN buttons simultaneously for 3 seconds while in the SEARCH-mode. The PIEPS DSP PRO switches into the TX600-mode ("TX"-indication on the display) and indicates the direction and distance to the strongest TX600 signal. Also the functions MARK, SCAN and frequency measurement are available in TX600-mode. To activate the search according to the standard EN300718 again, switch the PIEPS DSP PRO to the SEND-mode and then back to the SEARCH-mode.

**IMPORTANT!** In the standard SEARCH-mode the PIEPS DSP PRO does not indicate the TX600. Active search operations are never influenced. A detection of the TX600 without switching to a special mode is only possible in immediate vicinity (<1 m).



*Example: the frequency of the measured signal is 457 kHz + 10 Hz (=457.010 Hz)*



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#### 4. INCLINOMETER



The PIEPS DSP PRO has an integrated three dimensional inclinometer. You can check punctually the angle of a slope:

- 1) Put your ski pole in slope line at that point of the slope you want to measure.
- 2) Press the button SCAN for 3 seconds while in SEND-mode.
- 3) Put your PIEPS DSP PRO next to the ski pole and the angle of the slope is indicated. The display switches back into SEND-mode automatically after 20 seconds.

**Important!** *During the measurement the PIEPS DSP PRO is transmitting. In case of an emergency the beacon can be lost. PIEPS recommends to make measurements in avalanche dangerous areas only in combination with the PIEPS BACKUP!*

#### **SECONDARY AVALANCHE | AUTO-SEARCH-TO-SEND | PIEPS BACKUP**

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The function Auto-Search-to-Send switches the PIEPS DSP PRO automatically from SEARCH into SEND-mode when the beacon is not moving for a certain time (in case of a burial).

**By default, this function is deactivated!** Registered user can activate/deactivate this function online on the PIEPS Service-Portal. Therefore the optional available DSP data cable is necessary. Or bring your beacon to a PIEPS Service Center.

PIEPS advises that the function Auto-Search-to-Send does not help, when the rescuer has lost his/her beacon in the case of a secondary avalanche. Only if a rescuer wears an active transmitter, is the rescuer perfectly equipped in the case of a secondary avalanche.

**PIEPS recommends to deactivate the Auto-Search-to-Send function in every beacon and instead use an emergency transmitter such as the PIEPS BACKUP.**

The PIEPS BACKUP is a mini emergency-transmitter (frequency 457 kHz) that is worn in addition to the PIEPS DSP PRO directly on the body and only starts to transmit in case of an emergency. So PIEPS provides the first 100% solution for locating in case of a possible secondary avalanche!

## TECHNICAL DATA

Device designation	PIEPS DSP PRO	PIEPS DSP TOUR
Transmission frequency	457 kHz (EN 300718)	457 kHz (EN 300718)
Power supply	3 batteries, Alkaline (AAA), IEC-LR03, 1.5V	3 batteries, Alkaline (AAA), IEC-LR03, 1.5V
Battery lifetime	min. 400 h SEND	min. 200 h SEND
Maximum range	60 m	50 m
Search strip width	60 m	50 m
Temperature range	-20°C to +45°C	-20°C to +45°C
Weight	198 g (incl. batteries)	198 g (incl. batteries)
Dimensions (LxWxH)	115 x 74 x 27 mm	115 x 74 x 27 mm

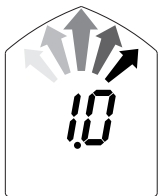
DIFFERENCES	DSP PRO	DSP SPORT
3 Receiving Antennas	✓	✓
Maximum Range	60 m	50 m
Search Strip Width	60 m	50 m
Circular Receiving Shape	✓	✓
Self-check	✓	✓
<b>Intelligent Transmitter</b>		
• Auto-Antenna-Switch	✓	✓
• IProbe-Support		
MARK	✓	✓
SCAN	✓	—
Old Device Mode	✓	✓
Frequency Measurement	✓	—
TX600-Support	✓	—
Auto-Search-to-Send	✓	—
Inclinometer	✓	—
Motion Sensor	✓	—
Battery Lifetime	min. 400 h	min. 200 h
Ergonomic Shape	✓	✓
Hardened Display-Glass	✓	✓
Carrying Harness	yellow printing	green printing
Hand Loop	✓	✓
Updating Possibility	✓	✓



## SOFTWARE UPDATE

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Every PIEPS DSP PRO/DSP SPORT can be tested and updated with the latest PIEPS firmware. With your safety in mind our R&D team is constantly working on improving the firmware to reflect and incorporate all our experiences in the field. Every new firmware is developed to be compatible with any PIEPS DSP PRO/DSP SPORT. You can have your PIEPS DSP PRO/DSP SPORT checked and its firmware updated at every PIEPS Service Center and PIEPS distributor or you can do it on your own online on the PIEPS Service-Portal (DSP update cable needed).



### How can you display your firmware?

When you are switching the beacon on the latest firmware is indicated on the display.

*Further information about the PIEPS firmware can be found on [www.pieps.com](http://www.pieps.com)*

*Optional available: PIEPS DSP-data cable for Firmware-Updates and Online-Function-Check*

## WARNING CODES

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Warning code	Warning description	Warning correction
	No indication on display	Check batteries (polarity and voltage) and replace if required. If there is no indication again, bring beacon to your nearest authorized service center.
<b>E1</b>	<b>The beacon is not fully functional – stop your tour!</b>	Bring beacon to your nearest authorized service center
<b>E2</b> <b>E3</b> <b>E4</b>	<b>The beacon is limited functional. The transmitting and receiving function is reduced.</b>	Repeat the process in an interference free area (outdoor). Check your immediate environment due to external interferences (f.e. transmitting beacons, mobile phones). If the warning is indicated again, bring beacon to your nearest authorized service center.
<b>E8</b>	<b>The beacon is limited functional. The transmitting and receiving function is not reduced.</b>	Bring beacon to your nearest authorized service center.

## WARRANTY & SERVICE

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**PIEPS warranty extension free of charge:** Extend the warranty of your PIEPS DSP PRO/DSP SPORT from 2 to 5 years: With the PIEPS warranty extension you have the possibility to extend the standard warranty of your PIEPS DSP PRO/DSP SPORT free of charge. Simply register online at [www.pieps.com](http://www.pieps.com) and get your warranty certificate for 5 years valid from the date of purchase. The warranty can be extended within 3 months from the date of purchase.

**Warranty Conditions:** The device is guaranteed by the manufacturer against defects in material and workmanship for a period of 2 years from the date of purchase. This warranty does not apply to damage caused by incorrect use, dropping or dismantling of the device by unauthorized persons. Any further warranty or liability for consequential damage is expressly excluded. • Warranty claims should be addressed - enclosing the receipt of purchase - to the relevant sales outlet.

**Service:** To use the advantages of exclusive PIEPS services, you have to register on the PIEPS Service-Portal. Do Firmware Updates on your own. Make an extensive beacon check. Activate/deactivate the function Auto-Search-to-Send. You get a competent support in one of the numerous PIEPS Service Center. An overview of the PIEPS Service Center can be found on [www.pieps.com](http://www.pieps.com). If there are any questions please contact [support@pieps.com](mailto:support@pieps.com).

## CERTIFICATION AND CONFORMITY



**Certification:** Manufacturer: PIEPS GmbH; Country of manufacture: Austria; Model: PIEPS DSP02; The device complies with the Standard ETS 300718 WEEE 2002/96/EC; Canada: IC: 7262A-DSP02; USA: FCC ID: REMDSP02; This device complies with Part 15 of the FCC Rules and IC RSS-210. 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. Warning: Any changes or modifications not expressly approved by the manufacturer, responsible for compliance, could void the user's authority to operate this device. On the device the certification codes and serial number can be found in the battery compartment.

**Conformity:** PIEPS GmbH declares hereby, that the product PIEPS DSP02 fulfils all requirements and regulations of directive 1999/5/EC. The declaration of conformity can be downloaded at the following source: <http://www.pieps.com/certification>

### Manufacturer, Sales & Service

PIEPS GmbH, Parkring 4, 8403 Lebring, Austria, [office@pieps.com](mailto:office@pieps.com), [www.pieps.com](http://www.pieps.com)



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