



MANUAL *PIEPS* **DSP** | *PIEPS* **DSP TOUR**
PREMIUM ALPINE PERFORMANCE



www.pieps.com



DEAR WINTER SPORTS ENTHUSIAST!

Congratulations on having purchased a PIEPS DSP/DSP Tour.

The PIEPS DSP/DSP Tour is a digital 3-antenna transceiver for easiest use in a companion rescue. Equipped with DSP technology (digital signal processing) and a triple-antenna-system, the PIEPS DSP/DSP Tour not only offers a maximum circular range, but also simplifies the rescue, especially in case of multiple burials.

IMPORTANT! *A transceiver cannot protect you against avalanches! A close study of avalanche prevention techniques is equally essential as is regular practicing for the event of an avalanche rescue. The procedures and instructions described refer solely to specific applications in connection with PIEPS DSP/DSP Tour. 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
- 3 OFF-SEND-SEARCH
- 4 Lock
- 5 Button SCAN

- 5 Button MARK
- 6 Button ENTER
- 7 Direction Indicator
- 8 Numeric Information
- 9 Temperature *

- 10 Number of Burials
- 11 Altimeter *
- 12 Compass *
- 13 Battery Level

* Only for DSP with Option Pack

SWITCHING ON | SELF-CHECK

Press the main switch lock and push the main switch to the position „SEND“ or „SEARCH“. The PIEPS DSP/DSP Tour is now in send- or search-mode.

During power-on the PIEPS DSP/DSP Tour will carry out a unique self-check lasting approx. 5 seconds. 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 to other beacons and electronic and magnetic interferences should be maintained.

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/DSP Tour is not fully functional. Bring your PIEPS DSP/DSP Tour to an authorized service center.

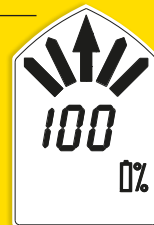
IMPORTANT!

Additional to the complex self-check the beacon-group-check is strongly recommended before each tour!

SEND-MODE

Press the main switch lock and push the main switch to the „SEND“ position. The display indicates the send-symbol and the remaining battery capacity in %. Additionally an LED indicator light flashes simultaneous with the transmitter bit timing.

When you are on tour, make sure the „SEND“ mode is selected throughout. The PIEPS DSP/DSP Tour will transmit a continuously defined signal, that can be picked up from all other beacons (according EN300718).



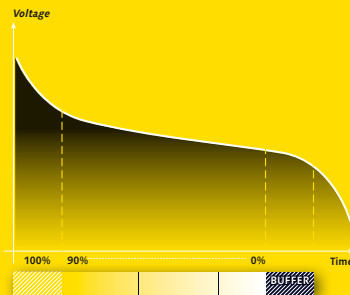
BATTERIES

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 (in %) 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.

If your PIEPS DSP/DSP Tour shows 1%, then you still have the energy reserve for 20 hours in SEND-mode (at +10°C) followed by 1 hour in SEARCH-mode (at -10°C). As long as the PIEPS DSP/DSP Tour shows >1%, you still can do a full 1-day-tour!

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



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: 15 cm • Minimum distance in SEARCH-mode: 1,5 m; More information: <http://www.ikar-cisa.org>

IN CASE OF EMERGENCY

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 **STAY CALM**, **OBSERVE**, 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 off non-searching avalanche transceivers.
- (6) Depth measurement:** Check the search results. Leave probe in place. Deactivate the avalanche transceiver using iPROBE by means of iPROBE Support.
- (7) Dig:** Start digging at a distance from the probe equal to the indicated depth of burial. Dig over a large area. Watch out for any breathing cavity (air pocket) by the victim.
- (8) Rescue and first aid:** First clear the face and airways. Protect from cold.

IMPORTANT! Ensure that, during search, there are no electronic devices (e.g. mobile phones, radio equipment etc.) or massive metal items in the immediate vicinity. The fundamental rules for the procedure in the event of an accident, in line with relevant technical publications and material from avalanche training courses, must be complied with.

SEARCH-MODE

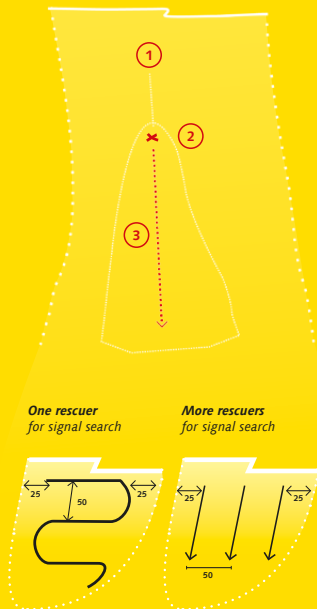
Press the main switch lock and push the main switch to the „SEARCH“ position.

SIGNAL SEARCH: Observe the course of the avalanche and make an exact mental note of where the victim was hit by the avalanche **(1)** and was last seen **(2)**. The extension of these points indicates the flow direction **(3)** of the avalanche! The primary search area is to the left and right of this.

You are now beginning with the search for initial detection. The PIEPS DSP/DSP Tour 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 50 m.

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.

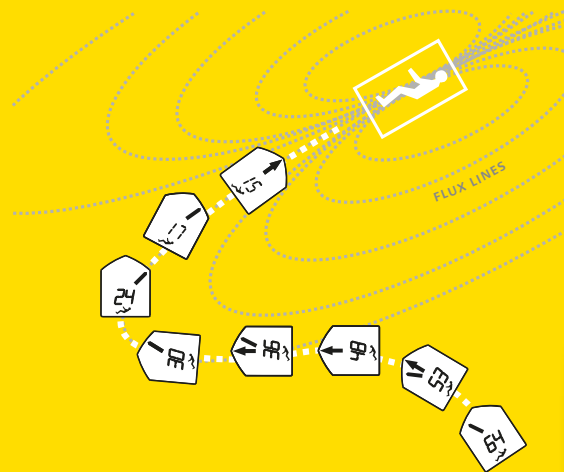
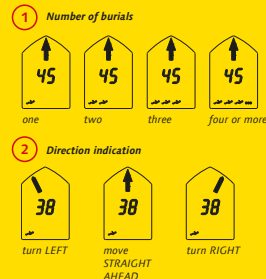
- 1 Point of impact
- 2 Point of disappearance
- 3 Flow direction



COARSE SEARCH

(1) As soon as the PIEPS DSP/DSP Tour 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/DSP Tour. 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.



IMPORTANT!
When working in the SEARCH-mode, remain calm and concentrated, and avoid hasty movements!



FINE SEARCH

- (1) When you are closer than 5m to the burial, it's strongly recommended to reduce your moving speed to max. 1 footstep per reading update (depends on the type of buried beacons, approx. 0,5 - 1,3 sec.). Keep the PIEPS DSP/DSP Tour 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 2m. Following your last known direction, move ahead until the distance reading starts increasing again. Return to the point with the minimum distance reading.
- (3) Starting at this point, try to get the lowest distance reading, using cross-like movements.
- (4) On indication of further reduced distance readings, tracking on one of the four possible directions, follow this direction until the distance reading starts increasing again. At this point repeat the cross-like approach as long as no increasing distance reading can be determined. Independent of the position of the transmitting beacon, the PIEPS DSP/DSP Tour only shows one minimum!

IMPORTANT! It's strongly recommended to avoid hasty movements (move approx. 20-40 cm/sec). The dynamic acoustic signal (the nearer the faster) supports the fine search.



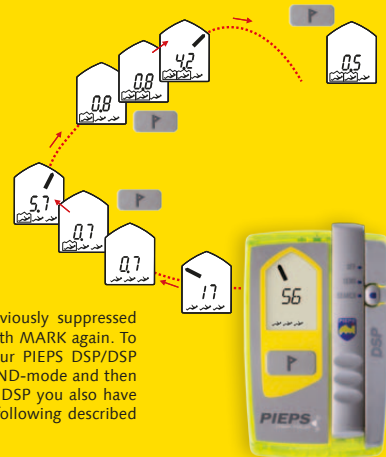
MULTIPLE BURIALS

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/DSP Tour will automatically search for the strongest signal.
- (3) Once the position of the first burial has been located, press the button MARK for approx. 3 seconds 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/DSP Tour will automatically search for the second strongest signal.
- (5) Now continue the search as described above and repeat the procedures until all transmitters are located.

IMPORTANT! In case of multiple burials involving older analogue devices, faults may at worst occur which impair the efficiency of the digital signal separation. In such cases, you may find for a short time that more signals are displayed than actually exist. The display „number of burials“ starts flashing. Repeat the procedure.

MARK reset: All information from previously suppressed signals is now reset and you can start with MARK again. To reset the MARK function switch off your PIEPS DSP/DSP Tour for a short time or switch it into SEND-mode and then back to SEARCH-mode. With the PIEPS DSP you also have the possibility to reset MARK with the following described SCAN-function.



ADDITIONAL FUNCTIONS FOR PIEPS DSP

The following additional functions are only valid for PIEPS DSP. The functions cannot be activated at PIEPS DSP Tour.

1. SCAN-FUNCTION

Press the SCAN button while in the SEARCH-mode. The PIEPS DSP 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 the buried devices within the detectable range, classified according to three groups:

- Reading 1: beacons within a distance of approx. 5m
- Reading 2: beacons within a distance of approx. 20m
- Reading 3: beacons within a distance of approx. 50m

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.

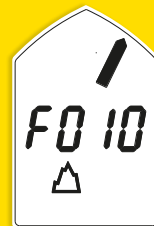
IMPORTANT! Once you have located all burials, move away from their locations in a star shape and use the SCAN function to check the scenario again. That way you can make sure you haven't missed any other burials.



2. FREQUENCY MEASUREMENT

Press the ENTER button while in the SEARCH-mode. The PIEPS DSP 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).

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. SWITCHING FUNCTION TO TX600 SEARCH

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 (Version 8.2). Press the ENTER and SCAN buttons simultaneously while in the SEARCH-mode. The PIEPS DSP switches into the TX600-mode and indicates the direction and distance to the strongest TX600 signal. To activate the search according to the standard EN300718 again, switch the PIEPS DSP to the SEND-mode and then back to the SEARCH-mode.



IMPORTANT! In the standard SEARCH-mode the PIEPS DSP 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).

SECONDARY AVALANCHE

Only if a rescuer wears an active transmitter, is the rescuer perfectly equipped in case of a secondary avalanche. The automatic fall-back function „Search to Send“ or AUTOREVERT on a searching beacon could possibly cause confusion and could potentially extend the time involved in a search. Therefore PIEPS recommends to deactivate the fall-back or AUTOREVERT 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/DSP Tour 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!

More information about the PIEPS Backup can be found on www.pieps.com



CARRYING HARNESS

Carry your PIEPS DSP/DSP TOUR using the supplied carrying harness on your body and outside the innermost layer of clothing. The clasp on the safety line should be connected to the appropriate strap (=recommended and safest option).

There is also the option to carry the PIEPS DSP/DSP Tour in a securely closeable trouser pocket without a protective case, though here it is important to fix the safety line to the clothing in an appropriate way so as to rule out losing the avalanche transceiver.

IMPORTANT! Always carry the PIEPS DSP/DSP Tour with the display towards your body and under as many layers of clothing as possible, as near as possible to your body.



SOFTWARE UPDATE

Every PIEPS DSP/DSP Tour 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/DSP Tour. You can have your PIEPS DSP/DSP Tour checked and its firmware updated at every PIEPS Service Center and PIEPS distributor.

How can you display your firmware?

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



IMPORTANT! For more information to the PIEPS firmware see www.pieps.com.

PIEPS DSP PIEPS DSP TOUR (8.2)	2.8	3.1	4.0	5.0	6.2	8.2
Smart transmitter	—	—	✓	✓	✓	✓
iPROBE Support	—	—	—	✓	✓	✓
iPROBE Support optimized	—	—	—	—	✓	✓
Wattage optimized (iPROBE Support)	—	—	—	—	✓	✓
Frequency measurement (only DSP)	—	✓	✓	✓	✓	✓
Old beacon mode	✓	✓	✓	✓	✓	✓
MARK function optimized	✓	✓	✓	✓	✓	✓
SCAN function advanced (only DSP)	—	—	—	✓	✓	✓
Self Check	—	—	—	✓	✓	✓
TX600 Search (only DSP)	—	—	—	—	—	✓



WARNING CODES

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 your beacon to an authorized service center.
E 04	Transmission field strength too low: Transmitter detuning due to iron, interference due to other electronic equipment, breaking of an antenna	Repeat the process in an interference free area (outdoor). If the warning code is indicated again, bring your beacon to an authorized service center.
E 21	Software error	Bring your beacon to an authorized service center.
E 22	Receiving strength of antennas too low: Antennas detuning due to iron, interference due to other electronic equipment, other beacons in the immediate environment (< 3m)	Repeat the process in an interference free area (outdoor). If the warning code is indicated again, bring your beacon to an authorized service center.
E 23	Receiver amplification too low: Interference due to other electronic equipment, other beacons in the immediate environment (< 3m)	Repeat the process in an interference free area (outdoor). If the warning code is indicated again, bring your beacon to an authorized service center.
E 25	Transmission frequency outside the permissible range: other beacons in the immediate environment (< 3m) transmit with a frequency outside the standard, interference due to other electronic equipment	Repeat the process in an interference free area (outdoor). If the warning code is indicated again, bring your beacon to an authorized service center.
E 27	Processor error	Switch off your beacon, wait for 5 seconds, and switch it on again. If the warning code is indicated again, bring your beacon to an authorized service center.

TECHNICAL DATA

Device designation	PIEPS DSP PIEPS DSP TOUR
Transmission frequency	457 kHz (EN 300718)
Power supply	3 batteries, Alkaline (AAA), IEC-LR03, 1.5V
Battery lifetime	min. 200 h SEND-mode
Maximum range	DSP: 60 meters / DSP Tour: 50 meters
Search strip width	50 meters
Earphone socket	Stereo earphone 3.5 mm, min. 32 Ohm
Temperature range	-20°C to +45°C
Weight	198 g (incl. batteries)
Dimensions (LxWxH)	116 x 75 x 27 mm

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.

PIEPS warranty extension free of charge: Extend the warranty of your PIEPS DSP/DSP Tour from 2 to 5 years: With the PIEPS warranty extension you have the possibility to extend the standard warranty of your PIEPS DSP/DSP Tour free of charge. Simply register online at www.pieps.com and get your warranty certificate for 5 years valid from the date of purchase. You can save on repair costs and valuable time. The warranty can be extended within 3 months from the date of purchase.



Certification: Warning: Any changes or modifications not expressly approved by the manufacturer, responsible for compliance, could void the user's authority to operate this device. **Europe:** Manufacturer: PIEPS GmbH Country of manufacture: Austria Device type: PIEPS DSP; The device conforms to the Standard ETS 300718 WEEE 2002/96/EC **Canada:** IC: 4710A-DSP01 **USA:** FCC ID: REMDSP01 This device conforms to Paragraph 15 of the FCC regulations. 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. **Conformity:** PIEPS GmbH declares hereby, that the product PIEPS DSP 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_pieps_dsp.pdf **Manufacturer, Sales & Service:** PIEPS GmbH, Parkring 4, 8403 Lebring, Austria, office@pieps.com, www.pieps.com





HERSTELLER / MANUFACTURER

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