INVISIO T7 Headset's Patent-Pending Technology

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Submersible. Rugged. Comfortable.

INVISIO T7

Introduction

INVISIO's new T7 headset is a military-grade over-the-ear headset designed for use in extreme conditions. With interchangeable wearing styles, ergonomic ear cushions, 28dB of SNR hearing protection and total water protection, T7 provides a balance of versatility, comfort, safety, and ruggedness.

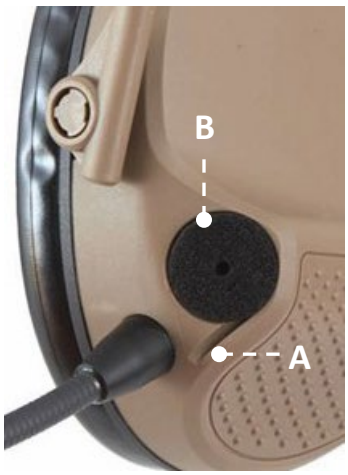
INVISIO has been designing military grade communications systems for 20 years. Military personnel, special forces, and police worldwide rely on the company's personal equipment and intercom systems to provide hearing protection and full situational awareness when connected to an INVISIO Control Unit. With the T7 headset, INVISIO engineers took safety, comfort and versatility to new levels with three patent-pending features:

- **Submersible capabilities** to 10 meters
- **3D ear cushions** for improved comfort
- **Hear-thru microphone drainage** for immediate situational awareness after water contact

Internal and external tests of each feature ensure that the headset can tolerate real-life combat situations including aviation exercises, naval drills, and on-ground conflicts.

Hear-thru microphone drainage

T7's hear-thru microphone is an external microphone designed to pick up surrounding sound, while providing hearing protection, and transfer it to the headset's speakers. This microphone is vital for communication and situational awareness.



T7's patent-pending hear-thru microphone allows water to run out of the headset quickly and effectively.

What makes T7's microphone unique is its ability to work immediately after contact with water. In standard headsets, hear-thru can be distorted if the wind protection foam is wet.

The T7's hear-thru microphone's drainage slit (A) and the centre hole in the wind foam (B) allow the microphone to work without any user interaction. A simple push on the foam also dries the microphone instantly.

INVISIO engineers created several concepts before discovering the hear-thru microphone's final design. Field tests for the microphone included pressure chamber tests, submersion tests and test for explosive shock waves. Wind noise was field tested in RIB boats going 50 knots (90 kph).

1,000 MRI cranial scans were analyzed to create the new ergonomically shaped 3D cushion.

The results of these tests were clear: T7's patent-pending hear-thru microphone allows water to run out of the headset as quickly and effectively as possible while at the same time balancing wind protection, noise protection, and near-instant communication upon resurfacing.

Ergonomic 3D Ear Cushions

Each person's ear shape is unique, so much so that research[1] suggests that ear prints can be a more reliable identification tool than fingerprints or facial recognition tools.

Because of the diversity of head and ear contours, ear cushion comfort is a common issue for headset users. Standard cushions can cause uneven pressure on the ear and jaw area, leading to discomfort. When designing the INVISIO T7 headset, engineers created an ergonomic 3D cushion that mimics the shape of the most common ear and head shape.

To create the shape, engineers analyzed 1 000 MRI cranial scans and created a 3D cushion that accommodates the most common pressure points and contours found in those scans.

Submersible down to 10 meters

Designing a headset that offers ear, wind and water protection requires unique design, robust materials, and cutting-edge technology. The INVISIO T7 is the first headset of its kind to withstand both high altitudes and diving environments.

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In standard headsets, a speaker will be damaged by taking in water when submerged below one meter. High altitudes can also destroy speakers due to air expansion. This poses a unique challenge for those designing headsets for extreme military and police environments – like parachuting from a plane or diving into deep water.

[1] "Ears: The New Fingerprints?" Yale Scientific Magazine, Yale Scientific Magazine - http://www.yalescientific.org, 12 May 2011, www.yalescientific.org/2011/05/ears-the-new-fingerprints/.

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The INVISIO T7 headset can withstand extreme underwater and aviation conditions from 10 meters below the surface to more than 12 000+ meters / 40 000+ feet altitude due to a patent-pending speaker system. These features combined allow the speaker to compress underwater and return to normal almost instantly upon surfacing. For high altitudes, the breathable membrane consistently releases air to prevent expansion, with a very low decompression time.

T7's speaker system includes:

- **Waterproof speaker membrane** that can withstand high water pressure
- **Breathable membrane** that allows air to be released
- **Secondary membrane** that allows the speaker membrane to operate by releasing audio pressure for high audio performance

INVISIO engineers put T7's new speaker system through a variety of tests regarding temperature, explosive decompression, and submersion. All are designed to comply or exceed with the 810G military standard.

Tests included the creation of a shock tube, an instrument that replicates direct blast waves and emulates explosions. The system also performed well in a pressure chamber when exposed to rapid decompression.

Overall, the tests showed that the headset does not just survive extreme conditions – it is immediately functional after exposure to them.

Conclusion

INVISIO T7's patent-pending technology makes it the world's first headset to perform in all mission environments.

A combination of robustness, ear comfort and battlefield-proven communication capabilities allow the headset to be worn in diverse settings and under extreme conditions.

Overall, this rugged, submersible, and lightweight over-the-ear hearing protection headset can provide military-grade communication capabilities for anyone, anywhere.

Key Questions

How submersible is the INVISIO T7?
The headset has been immersion tested to 10 meters.

What is the highest altitude level that INVISIO T7 can be used at?
The headset is proven operational at altitudes of up to 12 000+ meters / 40 000+ feet.

Do the 3D ear cushions come with the INVISIO T7?
There are three options for T7 ear cushions: 3D, gel, and standard.

What level of hearing protection does the INVISIO T7 headset provide?
The hearing protection results are as follows:

- EN352-1:2003: SNR 28 dB

Does the new speaker system add weight to the headset?
No. The headset weighs 348g.

Which wearing style is the INVISIO T7?
The T7 allows users to quickly swap between three wearing styles: headband mount, neckband mount, and helmet mount. No tools are required, and the swap takes approximately 2 minutes.

Related Links and Resources

INVISIO T7 landing page

INVISIO T7 Video

INVISIO Communication Systems

headsets.at

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About INVISIO
INVISIO offers cutting-edge personal communication and hearing protection systems. The systems enable users to operate and communicate safely and clearly in all environments, even under extreme conditions, such as loud noise, heat, and underwater. INVISIO systems consist of headsets and advanced control units that interface to a wide range of communication devices. The systems provide hearing protection while maintaining the natural level of situational awareness. Sales are made via the headquarter in Copenhagen and sales offices in the USA, France, Italy as well as a global network of partners. INVISIO is listed on Nasdaq Stockholm (IVSO).

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