

INVISIO

Tactical Communication and Hearing Protection Systems

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Increasing Mission Success

Efficient Communication

On todays military battlefield, efficient communication is essential for reducing risk for the soldier and ensuring mission success.

INVISIO systems support full radio functionality for different mission scenarios, for both the mounted and dismounted soldier. Radio communication and hear-thru

are separate with continuous and unimpeded hear-thru in both ears, even when transmitting. Transmission using the radio’s internal push-to-talk or wireless remote push-to-talk is possible as well as radio sidetone, radio warning tones, full duplex and multi net functionality.

Preventing Hearing Damage

Intelligent Hearing Protection

For soldiers, the ability to communicate clearly in high noise environments while protecting their hearing and still retaining situational awareness, is a tactical advantage and can be a life saver. Soldiers in the field often experience very high noise levels that can impede mission critical communication and damage the soldier’s hearing. Hearing impairment is the most common injury of soldiers

returning from active duty. Combine this with the risk of short term hearing damage due to explosions and the risk of mission failure increases. The INVISIO systems provide certified hearing protection solution rated at *SNR 32 dB and *NRR 29 dB to meet the needs of demanding users in high noise environments.

*Hearing Protection Results - p. 23

Reducing the Burden

Size, Weight and Power

The modern soldier is faced with a significant burden - both cognitively and physically. The soldier’s mobility, sustainability and ability to communicate are adversely affected by this burden.

INVISIO systems addresses today’s soldier system’s challenges of size and weight reduction, integration, power optimisation and battlefield situational awareness by simplifying the system down to what the soldier needs

and only what he needs. The user interface is reduced to face the real issue of mission critical communication and supplying state-of-the-art hearing protection to the soldier. As a consequence of this simplification, size and weight are significantly reduced, and the power supply is centralised. Soldier efficiency, safety and mobility increases.

The INVISIO Solution Is Unique

Improving Safety and Efficiency

INVISIO Comfort and Fit

Soldier safety and efficiency is severely reduced by inadequate fit and uncomfortable equipment. INVISIO hearing protection headsets are established as the headset of choice for future soldier programs today, due to comfort, reliability, hearing protection and superior audio quality that gives natural sounding situational awareness and accurate directionality. All INVISIO headsets offer unsurpassed performance, comfort and fit to soldiers and are available as both in-the-ear and over-the-ear headsets.

INVISIO in-the-ear headsets are compatible with helmets, eyewear, breathing apparatus and ear muffs. The headset adapts perfectly to the contours of any ear offering maximum comfort and a secure fit. INVISIO over-the-ear hearing protection headsets pose a significant improvement over traditional cup headset design, as it removes weight and complexity from the headset by centralising operation of the headset to the INVISIO control unit.

Enhancing Situational Awareness

INVISIO 360° Hear-Thru

Full situational awareness with the ability to communicate and hear the surroundings at all times is critical. Soldiers need to maintain natural hearing and still have protection from potentially damaging impulse noises, such as gunshots or explosions, as well as continuous noise from vehicles and aircrafts. INVISIO systems use advanced digital signal processing, miniaturised audio components and ergonomic headset design to provide the most natural hearing possible - even in extreme conditions.

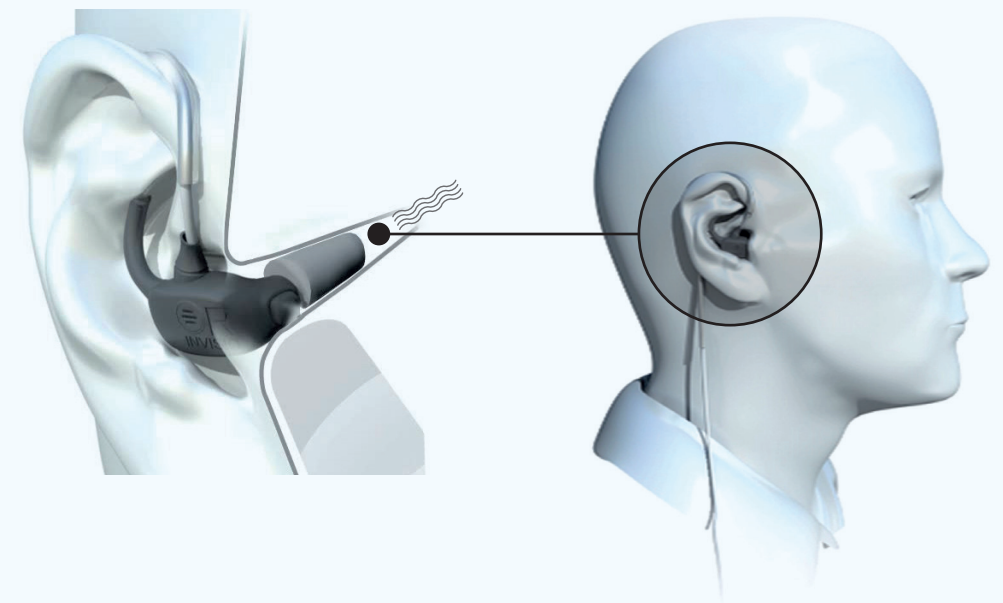
INVISIO in-the-ear headsets have hear-thru microphones positioned within the external contours of the outer ear, utilizing the outer ear capability of detecting the origin of sounds and providing full 360 degree situational awareness. Advanced miniaturised speakers and microphones reproduce the sound naturally. Digital signal processing improves hear-thru quality and situational awareness, but also protects the user against audio signals that exceed a dangerous threshold.

Enabling Crystal Clear Communication

INVISIO Bone Conduction Technology

Clear communication in the heat of battle can mean the difference between life and death. INVISIO in-the-ear headset systems utilise the INVISIO Bone Conduction Technology. Instead of traditional sound wave technology, a small, comfortable in-the-ear microphone

picks up vibrations from the user's jawbone. The vibrations are converted into speech, delivering crystal clear communication under extreme and noisy conditions, even when whispering.



MIL-Standard Compliant Battle Proven

INVISIO systems have been tested extensively to meet MIL-standards and has total EMC shielding from the metalised housing and connectors.

INVISIO systems use breakaway connectors to improve safety especially for the dismounting soldier or in case of entanglement.

Intuitive and Intelligent

Advanced Comms Made Simple



Open Microphone

In-ear headset with hot-mic

INVISIO systems can operate with all radio communication microphone lines open at all times – even to multiple com sources. This makes it possible to maintain full radio functionality like full-duplex communication, radio sidetone, priority voice, VOX and keying the radios onboard PTT buttons.



Independent Audio Streams

Four separate audio streams

INVISIO systems have up to four separate and independent input audio (Rx) streams that can be directed to either ear with different audio amplification. Up to three output audio streams (Tx) are also separate and independent with different audio amplification for each device connected.



Split Ear Audio

Dynamic assignment to both ears

INVISIO systems feature split ear received audio so that different talk groups can be assigned between left and right ear to improve intelligibility and battlefield situational awareness. Received audio is automatically and dynamically assigned when connecting or disconnecting a radio.



Advanced Mode Settings

User configurable

INVISIO systems can be configured to meet different operational requirements through preset key combinations, enabling users to set up the system as required for their mission.

INVISIO

Communication System



Automatic Start-Up

Starts with radio - no calibration

INVISIO systems start automatically when the first connected radio is turned on and then shuts down again when the last connected radio is turned off. Once the system is turned on, the communications and hear-thru are fully functional and there is no need for any calibration of the system.



Centralized Power

Simplified with no internal battery

INVISIO systems require no internal battery and can power directly from an attached radio, intercom system or other central power supply. This not only reduces the size and weight of the system, it also reduces the system's complexity, and the number of batteries to be changed during or after missions.



Hear-Thru Control

Simplified volume control

INVISIO control units use a single button volume control for hear-thru that reduces the number of buttons required and makes it simpler to get the amplification required for a situation. The hear-thru starts automatically when the radio is turned on and can be turned off by pressing and holding the hear-thru controller. A short press of the hear-thru controller then scrolls between different hear-thru levels.



Reduced Size and Weight

Reducing the burden on the soldier

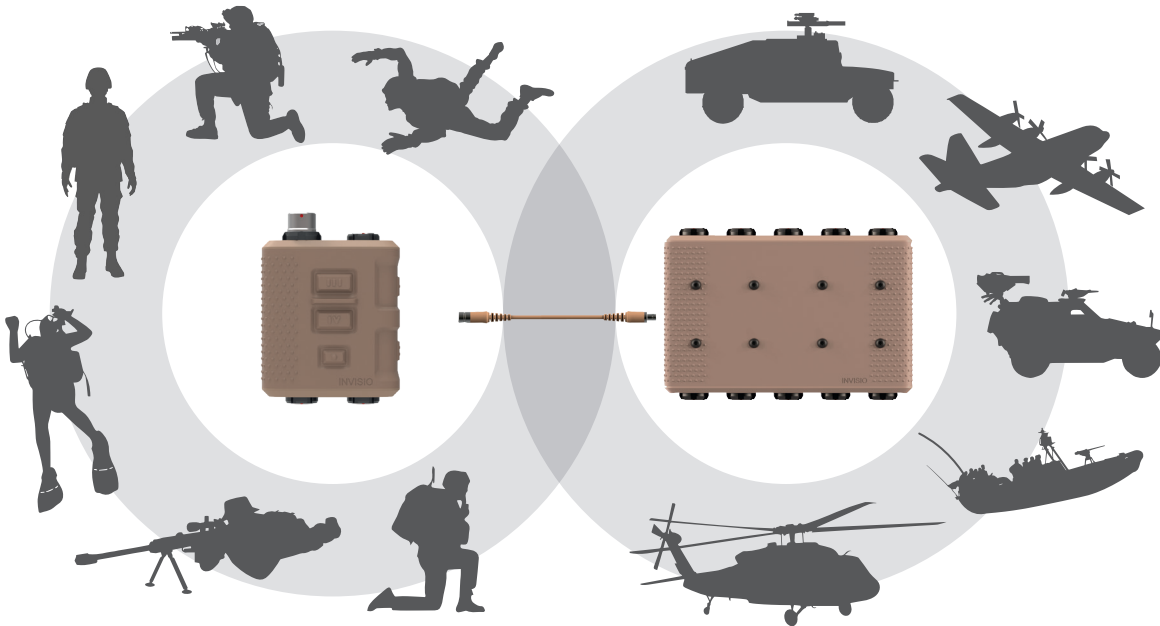
INVISIO control units are the world's smallest and lightest, with volumes and weights reduced by more than half compared to most other multi-com control units on the market. The V20 control unit measures 64 x 40 x 25 mm and weighs 99 grams.

INVISIO

Communication System

INVISIO Soldier and Intercom Systems are based on simplicity, modularity and flexibility to fit the communication needs of both the mounted and dismounted soldier, regardless of operational requirements.

The INVISIO Soldier System is based on a range of control units and headsets that are fully interchangeable. All INVISIO control units allow for communication on multiple talk-groups on a single radio, as well as multiple audio inputs to enable full compatibility with modern team and combat net radios. INVISIO offers headset options that include in-the-ear and over-the-ear hearing protection, 20 meters submersible and lightweight patrol headsets. The provided hearing protection is industry leading and offers state of the art situational awareness.



Multi-Headset Interface

Adapts to legacy and future headsets

INVISIO systems have the ability to operate multiple types of headsets including dual in-ear, submersible in-ear, ear-cups with boom mics, lightweight and throat mics. Multiple adapter cables are available so an existing installed base of headsets can be utilised.

INVISIO IntelliCable™

Automated exchange

INVISIO systems enable automatic detection of hot-swap devices such as radios, intercom systems, mobile phones, computers and remote PTTs to set the audio and system parameters instantaneously. A key benefit is being able to deploy new equipment without having to reprogram the INVISIO system.

The INVISIO Intercom System bridges the gap between the mounted and dismounted soldier, making it possible for multiple users and radios to connect simultaneously using their existing dismounted soldier system. The soldier can access all vehicle communications directly from their INVISIO control unit, so there is no need to disconnect or connect other equipment when entering or exiting a vehicle. Allowing for a safe and seamless connection to the vehicle intercom system.

Seamless plug and play integration between control units, intercoms, headsets and interface cables is key to the versatility of the INVISIO system, as it allows for deployment of new equipment without the need for updating existing INVISIO equipment. All INVISIO systems feature INVISIO IntelliCable™, a unique identification that enables all equipment to be interchangeable across current and future INVISIO systems.

INVISIO

Communication System

Headsets

Control Units

Cables

Intercom

Multi-Com Interface

From Single to Tri com

Connect either a radio, intercom system, mobile phone, computer, remote PTT or power supply to any of the com ports and the system will automatically sense it and change the settings. Control units are available with one to three com ports to meet any operational requirement.

Submersible to 20 Meters

Resistant to water, dirt and sand

INVISIO systems are submersible to 20 meters. The control units and in-ear headsets can be cleaned in fresh water to remove dust, dirt and sand. The INVISIO V60 is so light it even floats.

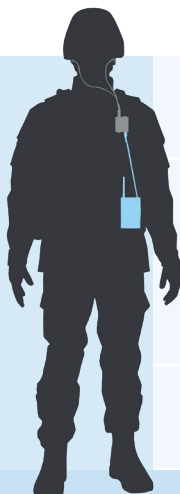
INVISIO V10

Single Com Control Unit



INVISIO V10

The INVISIO V10 control unit is a rugged, single com PTT designed for soldiers with one radio. The INVISIO V10 features a large exchangeable PTT button and can be oriented for left or right handed PTT. The control unit is fully compatible with other INVISIO systems and combined with the INVISIO X5 headset the system provides clear communication, situational awareness and market leading hearing protection.



Available Colors: ● ●

1 Com Port

Powers From Comms

1 PTT Button

Multiple Headsets

122 Grams

Com Auto-Sensing

69 x 40 x 27 mm

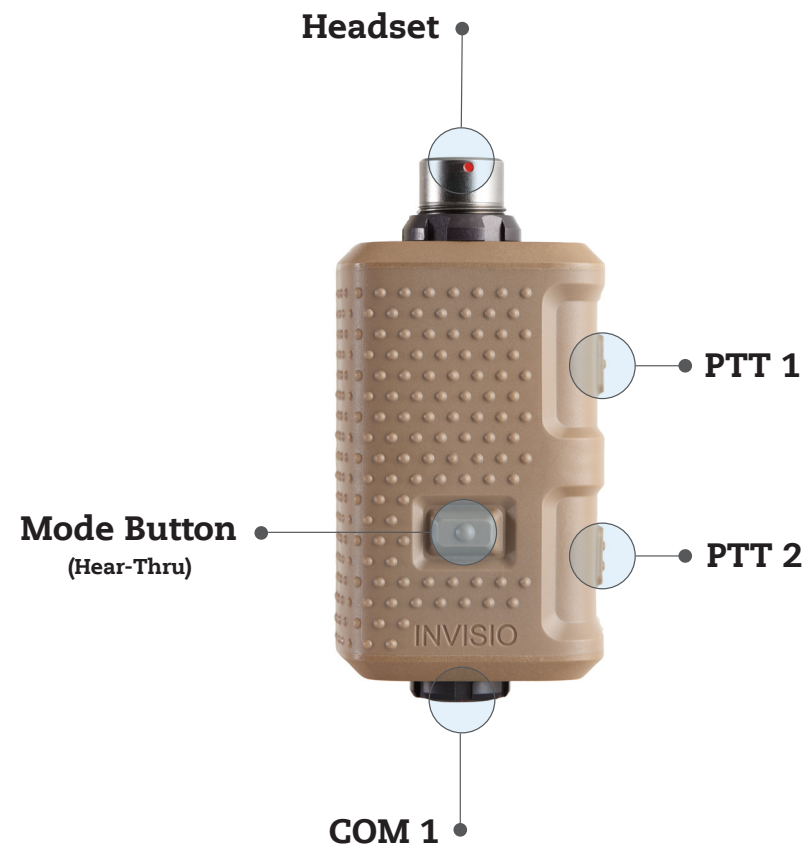
20 Meters Submersible

Lightweight and rugged

control unit with a large exchangeable PTT button.

INVISIO V20

Single Com Control Unit



INVISIO V20

The INVISIO V20 control unit is designed for soldiers with a single radio with one or two talk-groups. It is the smallest and lightest control unit available and powers from the connected radio. The INVISIO V20 is very intuitive and simple to use. The control unit is fully compatible with other INVISIO systems and offers state of the art situational awareness and integration to other communication devices.



Available Colors: ● ●

1 Com Port

Powers From Comms

2 PTT Buttons

Multiple Headsets

99 Grams

Com Auto-Sensing

64 x 40 x 25 mm

20 Meters Submersible

Simple and lightweight

control unit for soldiers with a single or dual net radio.

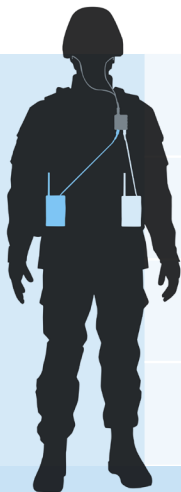
INVISIO V50

Dual Com Control Unit



INVISIO V50

The INVISIO V50 control unit is designed for soldiers and commanders that require an internal power supply and two communication devices, such as team radio, combat net radio or vehicle intercom system. The control unit can handle multiple talk-groups and can also power from any of the connected communication devices. Lightweight and small, the control unit offers state of the art situational awareness and is fully compatible with other INVISIO systems.



2 Com Ports

4 PTT Buttons

167 Grams

70 x 63 x 30 mm

Powers From Battery or Comms

Multiple Headsets

Com Auto-Sensing

20 Meter Submersible

Scalable soldier communication hub with built-in power.

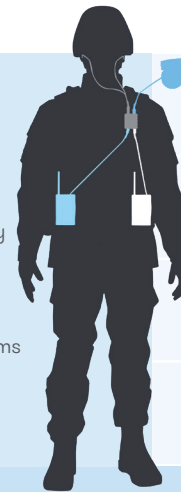
INVISIO V60

Tri Com Control Unit



INVISIO V60

The INVISIO V60 control unit is designed to be the ultimate communications hub. With 3 com ports and 4 PTT buttons, the control unit is capable of connecting into practically any type of communication device, such as multiple net radios, smart phones, a broad range of audio devices, headsets (tactical, covert and commercial) and intercom systems for land, sea and air vehicles.



3 Com Ports

4 PTT Buttons

145 Grams

70 x 63 x 25 mm

Powers From Comms

Multiple Headsets

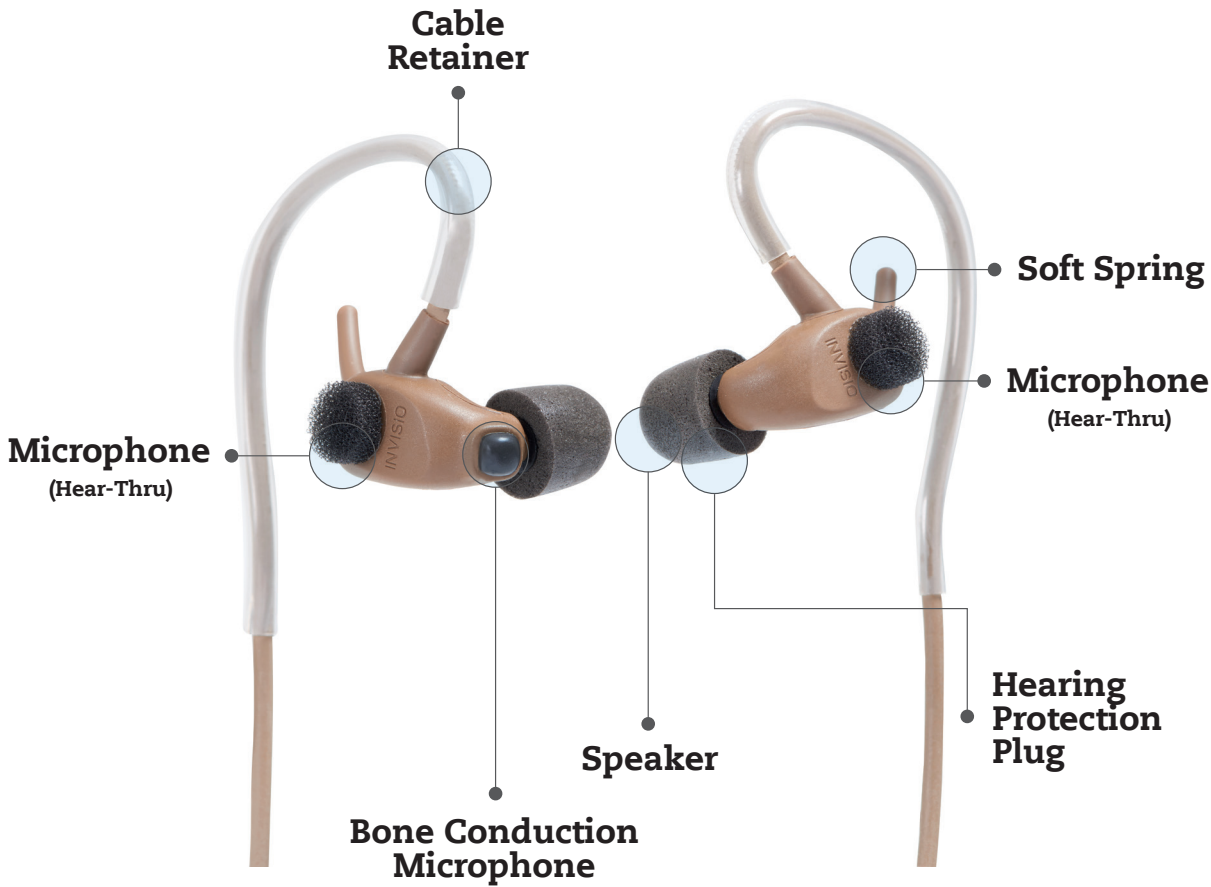
Com Auto-Sensing

20 Meters Submersible

Ultimate tactical communication hub for the soldier to specialist user.

INVISIO X5

Dual In-Ear Headset



Available Colors:

In-Ear Headset	2 Meters Submersible	INVISIO X5 The INVISIO X5 in-ear headset is designed exclusively for INVISIO’s range of advanced control units and is fundamental to the INVISIO hearing protection system. It is a dual sided in-ear hearing protection headset with state of the art external microphones for natural hear-thru and six sizes of exchangeable foam plugs for market leading hearing protection and comfort. The INVISIO X5 is the in-ear headset of choice for future soldier programs today. The headset is fully compatible with other INVISIO systems.
Hearing Protection 32 dB SNR/29 dB NRR	Dual Sided	
Bone Conduction Microphone	54 Grams	

Market leading in-ear
hearing protection headset with natural situational awareness.

INVISIO T5

Over-the-Ear Headset



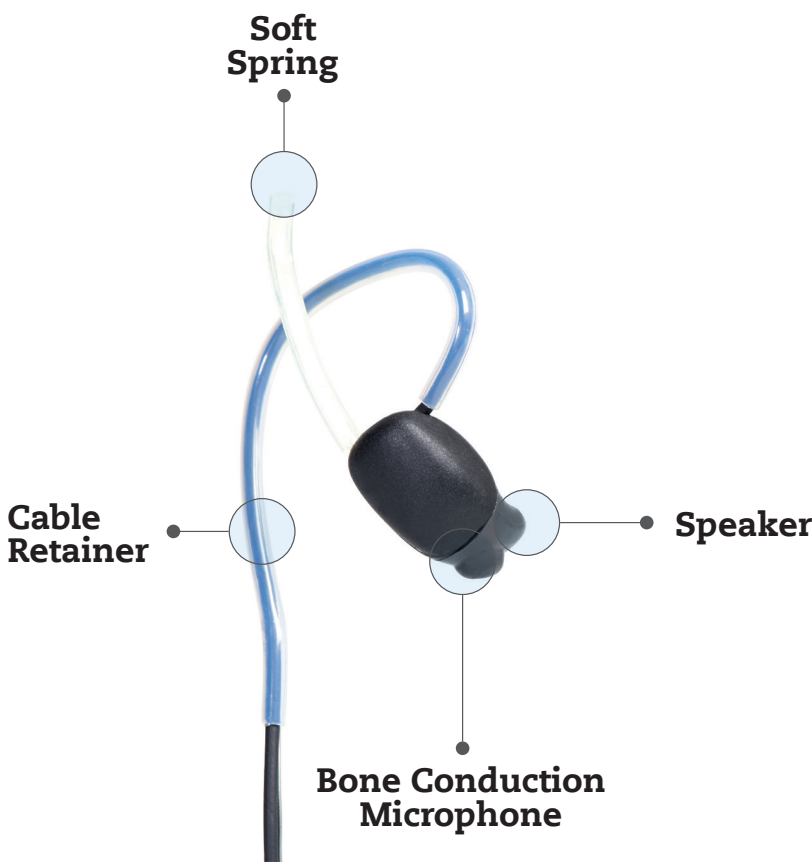
Available Colors:

Over-the-Ear Headset	1 Meter Submersible	INVISIO T5 The INVISIO T5 over-the-ear hearing protection headset is powered and controlled by an INVISIO control unit, making it easy to use and lightweight without the need of internal battery or buttons. With an on head weight of less than 360 grams, the INVISIO T5 significantly reduces the burden on the mounted or dismounted soldier whilst featuring industry leading situational awareness.
Hearing Protection 24 dB SNR	Dual Sided	
Boom Microphone	360 Grams	

Lightest and simplest
tactical over-the-ear hearing protection headset.

INVISIO M3s

In-Ear Submersible



Available Colors:

In-Ear Headset	20 Meters Submersible	INVISIO M3s The INVISIO M3s in-ear headset enables the INVISIO system to be submersible to 20 meters. This lightweight headset is ideal for use as both a dive solution under the water and for land operations where a lightweight and comfortable single sided patrol headset is required. The entire INVISIO M3s headset is encased with no openings, making it extremely robust and easy to maintain.
No Hearing Protection	Left or Right Version	
Bone Conduction Microphone	18 Grams	

Dive headset
that allows for use whilst submerged to 20 meters.

INVISIO S10

Personal Role Radio (PRR) Control Unit



Available Color:

INVISIO S10

The INVISIO S10 is an in-ear communication system for use on a Personal Role Radio (PRR) that includes electronic hear-thru and impulse noise protection. The system consists of an in-ear hearing protection headset with a cable mounted control unit housing the electronics for hear-thru and impulse noise protection. The PRR remains as the push-to-talk, with the INVISIO S10 controlling the hear-thru only.

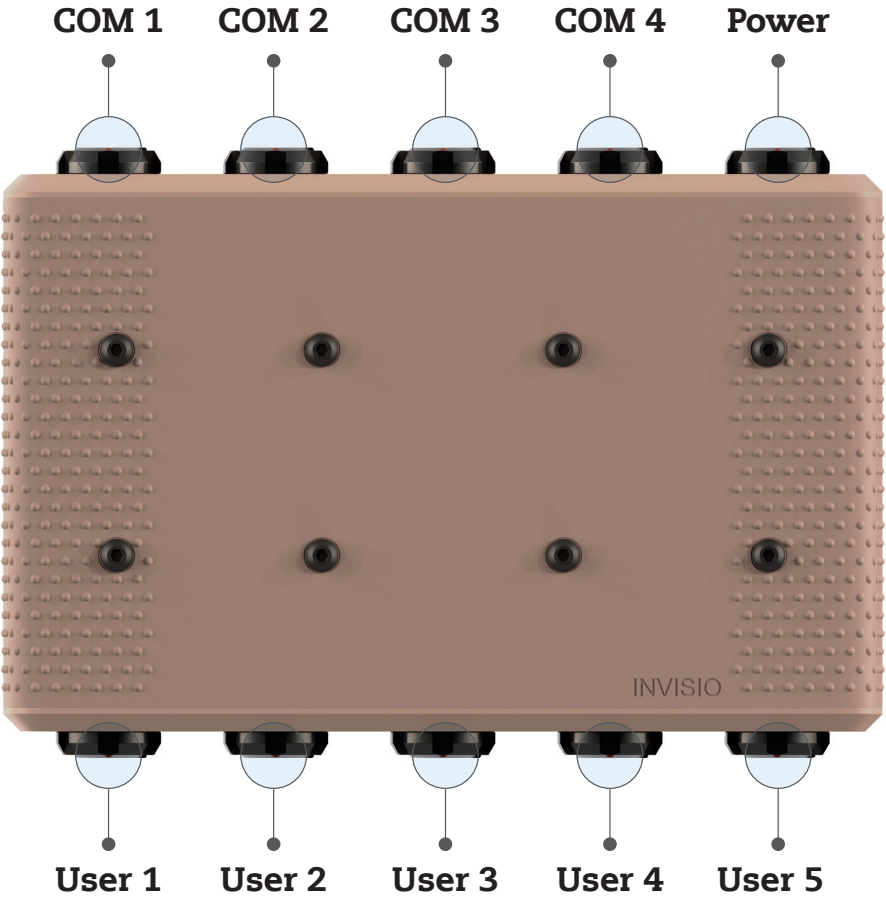


1 Com Port	AA Battery
No PTT Buttons	Hardwired Headset
150 Grams	Hardwired Radio
65 x 58 x 20 mm	2 Meters Submersible

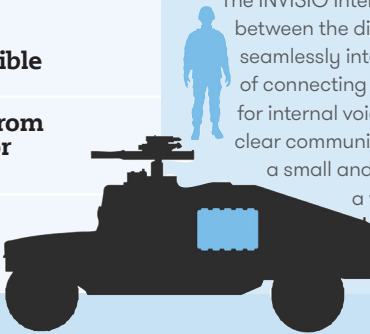
Simple and easy
to use control unit where team radio controls Tx.

INVISIO Intercom System

Bridging The Gap



Available Color: ●

4 Com Ports	Cable Auto-Sensing	 INVISIO Intercom The INVISIO Intercom is designed to bridge the gap between the dismounted and mounted soldier, by seamlessly integrating to the INVISIO system. Capable of connecting up to 4 combat net radios, and 5 users for internal voice communication, the Intercom provides clear communication in the noisiest of environments. It is a small and light system that can be powered from a vehicle or common combat radio battery. The Intercom is a highly mobile system that can either be mounted in the vehicle or carried on the go between vehicles.
5 User Ports	2 Meters Submersible	
1 Power Port	Powers from Battery or Vehicle	
150 x 95 x 26 mm	500 Grams	

Seamless Integration

between the dismounted and mounted soldier.



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Connectivity Options



Radio

Connect to any radio, including full-duplex and multiple networks simultaneously.



Mine Sweeper

The mine sweeper audio response is heard in the headset and not transmitted to the surroundings.



Computer

Allows situational awareness information from soldier-worn computer.



Music Player

Audio playback from audio devices for mission notes. Alternatively music playback for headset training.



Smart Phone

Use mobile or smart phone simultaneously with tactical communication equipment.



Medic Cable

Medic to soldier cable for direct and unimpeded communication.



Intercom System

Connect to any platform intercom, with full operation of the intercom's platform radio.



Power Supply

Use a centralised power supply or an optional INVISIO power pack, connected to the control unit.



Other Headsets



Intricon LV39 Headset

20 meter dive headset with noise cancelling boom microphone and bone conduction speakers.



OTTO Diver 20m Headset

20 meter dive headset with noise cancelling boom microphone designed to fit under a helmet.



Leonardo Light Patrol Headset

Single-sided, low profile and lightweight headset with a high comfort ear pad.



Peltor ComTac XPi Headset

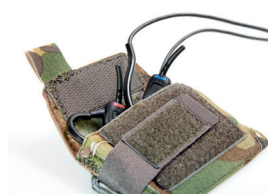
Hearing protection headset with situational awareness. Fully independent dual earphone system for talk through and external radio signals.

Accessories



Kit Pouch

Storage system for complete INVISIO system.



Headset Pouch

Molle pouch for any in-ear headset.



Headset Case

Hard protective case for any in-ear headset.



Ear Fitting Tool

Used to measure the correct foam plug size.



Foam Tips

There are six foam plug sizes:

- Two lengths - Original & Short
- Three diameters - Slim, Standard & Large.



PS30 Power Supply

Power supply for mounting on radio cable or direct connection. Uses AA battery.



M30 Finger Mounted PTT

Remote PTT for finger mounting. Submersible down to 2 meters.



M80 Remote Wireless PTT

Remote wireless PTT for rifle mounting. Submersible down to 2 meters.

Technical Specifications

Headsets	M3s	X5	T5
			
Style	In-The-Ear (ITE)	In-The-Ear (ITE)	Over-The-Ear (OTE)
Hearing Protection	None	Yes	Yes
(Tx) Microphone	Bone Conduction	Bone Conduction	Boom
Size (Earpiece only)	13 × 11 × 24 mm	13 × 11 × 24 mm	84 × 110 × 45 mm
Weight (Incl. connector)	18 grams	54 grams	360 grams
Colour	Black or Tan	Black or Tan	Black or Tan
Immersion	20 meters	2 meters	1 meter

Control Unit	S10	V10	V20	V50	V60
					
COM Ports	1	1	1	2	3
PTT Buttons	0	1	2	4	4
Hear-Thru Button	1	1	1	1	1
Size	65 × 57.5 × 20 mm	69 × 40 × 27 mm	64 × 40 × 25 mm	70 × 63 × 30 mm	70 × 63 × 25 mm
Weight	218 grams (incl. X5 headset & cable)	122 grams	99 grams	167 grams	145 grams
Colour	Tan	Black or Tan	Black or Tan	Black or Tan	Black or Tan
Immersion	2 meters	20 meters	20 meters	20 meters	20 meters
Power	Internal Battery	From Comms	From Comms	From Internal battery or Comms	From Comms

Test Standards and Results

Test	Method	Procedure
Low Pressure Storage and Air Transport	500.5	I
Low Pressure Operation and Air Carriage	500.5	II
Low Pressure Rapid Decompression	500.5	III
High Temperature Storage	501.5	I, A1 (Hot Dry)
High Temperature Operation	501.5	II, A1 (Hot Dry)
High Temperature Tactical standby to operation	501.5	III, A1 (Hot Dry)
Low Temperature Storage	502.5	I, C3 (Severe Cold)
Low Temperature Operation	502.5	II, C2 (Cold)
Low Temperature Manipulation	502.5	III
Temperature Shock High	503.5	I-D
Temperature Shock Low	503.5	I-D
Contamination by fluids Chemical Resistance	504.1	II

Test	Method	Procedure
Solar Radiation Sunshine, Heating effect	505.5	I, A1
Solar Radiation Sunshine, Actinic effects	505.5	II
Rain	506.5	I
Humidity Induced, Storage & Transit	507.5	I, B2
Fungus	508.6	
Salt Fog Corrosion and mist	509.5	
Sand and Dust	510.5	I, II
Immersion Fresh Water	512.5	I
Vibration Transportation	514.6	II, Annex C 2.2 Category 5
Drop Transit Drop	516.6	IV
Shock Functional Shock	516.6	I
Icing and Freezing Rain	521.3	General conditions, light loading

INVISIO X5 Hearing Protection Results

EN 352-2:2002

L=27 dB, M=29 dB, H=34 dB & SNR 32 dB

Frequency (Hz)	125	250	500	1000	2000	4000	8000
Sound Attenuation (dB)	30	32	33	34.7	36.2	40.8	44.7
Standard Deviation (dB)	7.3	6.1	6.6	5.9	3.5	3.6	5.4
Assumed Protection Value (dB)	23	26	26	28.8	32.7	37.2	39.3

ANSI S3.19-1974

NRR 29 dB

Frequency (Hz)	125	250	500	1000	2000	4000	8000
Sound Attenuation (dB)	31.2	29.7	36	37.5	38.5	40.9	47.4
Standard Deviation (dB)	5.2	3.2	4.2	4.1	3	3.4	4.9
Assumed Protection Value (dB)	26	26.5	31.8	33.4	35.5	37.5	42.5

AS/NZS 1270:2002

SLC80: 26 dB (Class 5 hearing protector)

Frequency (Hz)	125	250	500	1000	2000	4000	8000
Sound Attenuation (dB)	23.4	25.8	25.8	27.8	32.7	34.9	40.8
Standard Deviation (dB)	6.4	5.8	5.5	5	3	4.6	4.4
Assumed Protection Value (dB)	17	20	20.3	22.8	29.7	30.3	36.4



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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. Customers are mainly from the public sector. Sales are made via a global network of partners and to some extent directly to end customers. INVISIO is listed on Nasdaq Stockholm [IVSO].

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INVISIO®

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