

SOTAS IHS

ANR INTEGRATED HELMET SYSTEM (ETT125-TA Series)

- > Fully compatible with SOTAS harness
- > Universal, one size ventilated helmet
- > Reconfigurable for mission profiling
- > Choice of Chestbox and Switching
- > Ballistic protection
- > Noise reduction technologies
- > Future enhancement capability

ETT125-TA SOTAS INTEGRATED HELMET SYSTEM



The SOTAS Integrated Helmet System combines a universal, one size soft helmet with an advanced communications headset offering a range of high technology features.



In "closed-down" combat situations, the soft helmet provides excellent bump protection together with good ventilation, noise protection and clear communications, yet still allows unimpeded access to weapon sights.

Integrated Helmet System

As a result of the rapid evolutionary changes in battlefield technology, the adoption of technologically advanced equipment is of paramount importance if combat effectiveness and military superiority are to be maintained. If the threat or the operational scenario changes, however, or if new technologies become available, equipment which was designed for a specific role may no longer be as effective or even appropriate to the new situation. Recognising the importance of this problem, Thales has developed a new Integrated Helmet System, which is reconfigurable, to follow changes in operational role and can be upgraded in the event of technological changes. The helmet system has been specifically designed for compatibility with the SOTAS vehicle harness.

The system comprises three major elements; the soft ventilated helmet, the ballistic protective shell and the communications headset, each of which is easily separable to facilitate reconfiguration and maintenance. Both the headset and the helmet can be worn as separate items, if required.

Function

The Active Noise Reduction (ANR) headset, based on a ventilated tank headset construction, provides excellent communications facilities with full hearing protection, both passive and active, intended for noisy Armoured Fighting Vehicle (AFV) applications. The user is able to activate directly either the radio or intercom functions with the 3-position toggle switch fitted on the earshell. More sophisticated type of chest boxes, fitted with volume controls, are also available.

Ventilated Soft Helmet

The soft ventilated helmet is a universal, one size helmet easily adjustable to suit any user. Its unique construction combines comfort with maximum bump protection and demonstrates excellent ventilation properties for hot environments. The soft helmet, which is completely detachable, is an excellent bump protector and can be worn on its own. For additional protection a clip-on hard outer shell offering ballistic protection is provided.

Ballistic shell

The ballistic shell is a one size, green, protective hard top which attaches to the soft helmet with Velcro straps and clips to provide a greater degree of protection. The basic fragmentation shell is intended to provide protection against low velocity effects up to 130m/s. In the event that the operational threat level changes, a medium or high velocity ballistic shell can be interchanged. This provides an upgrade path giving V50 protection levels of up to 670m/s.

PRODUCT DESCRIPTION

Communications Headset

The headset provides full communications facilities with outstanding speech intelligibility. The provision of an adjustable sprung neckband and overhead strap allows the headset to be worn separate from the helmet. The earshells are designed for optimum passive noise attenuation properties. In addition, to limit the high level of noise, Active Noise Reduction (ANR) modules are fitted in the earshells. The ANR - see illustration overleaf - is a technique of cancelling noise by the generation of an identical sound which is 180 degrees out of phase. The modules also comprise fail safe conventional earphones. The flexible boom arm is fitted with a noise cancelling microphone and muffler, specifically suited for operation in noisy environments. For future enhancement an optional voice switching module is available which is activated only when the crewman speaks. This provides a "hand-free" communications facility and minimises crew noise exposure during "live microphone" operations.

Operation

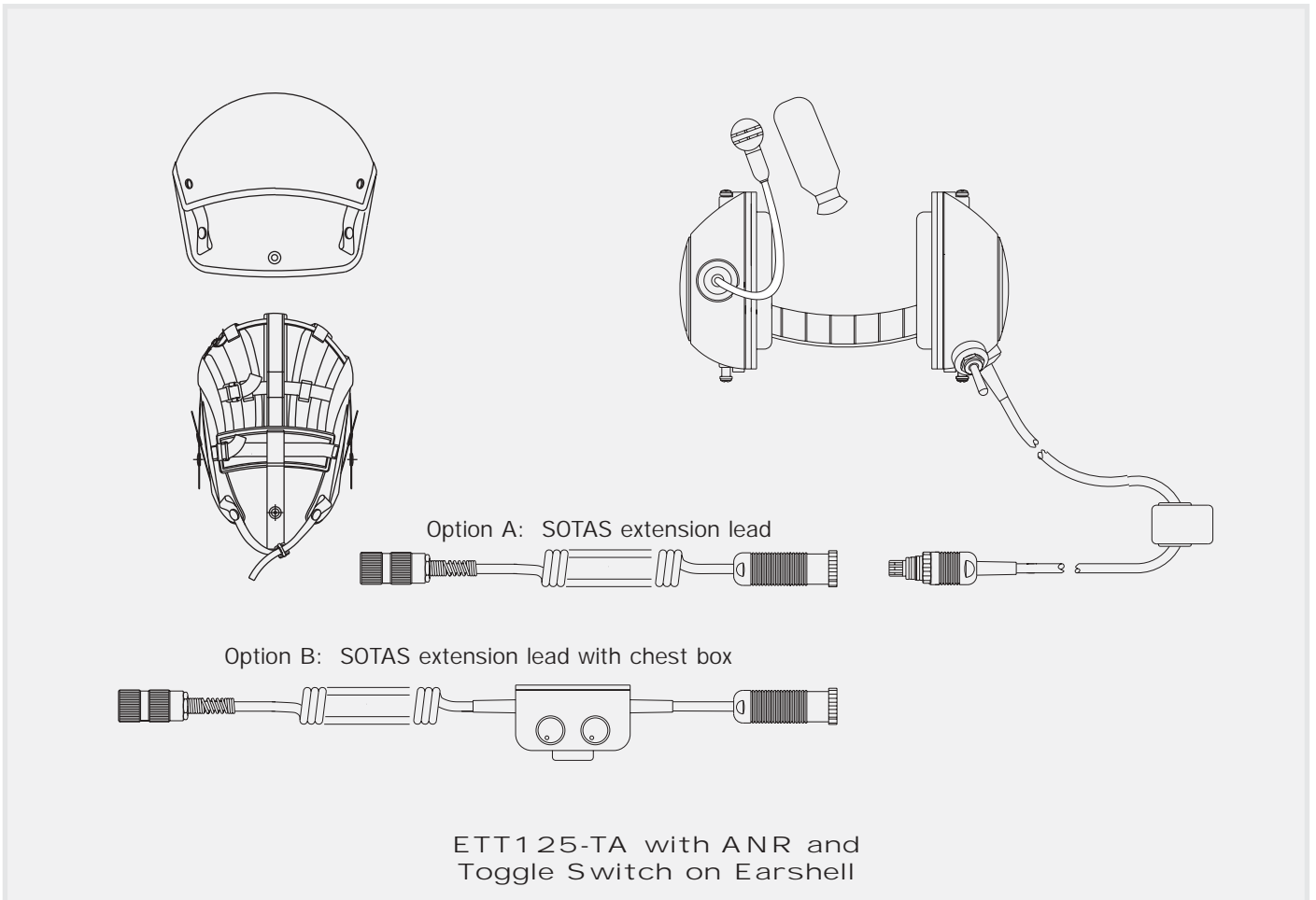
This equipment is provided with a noise cancelling microphone, especially designed for operation in noisy environments. For best performance with this type of microphone it is recommended that the operator speaks close to the microphone so that the speech is dominant with respect to the ambient noise.

Harness Interface

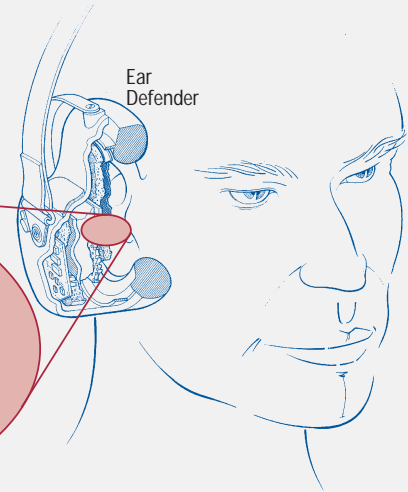
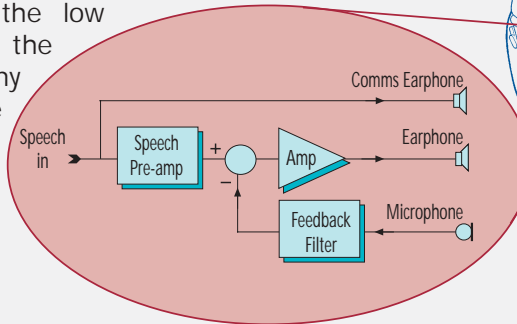
The helmet system has been specifically designed for complete compatibility with the SOTAS vehicle harness and is fully approved for this application. All electrical connections to the headset are made via the standard SOTAS connector fitted on the extension lead.

Switches

The switch mechanism for the headset can be operated via a simple toggle switch fitted on the earshell (option A). Alternatively, a chestbox can be mounted on the downlead cable. For particular applications, volume controls or rotary switches can be added on the box (option B)



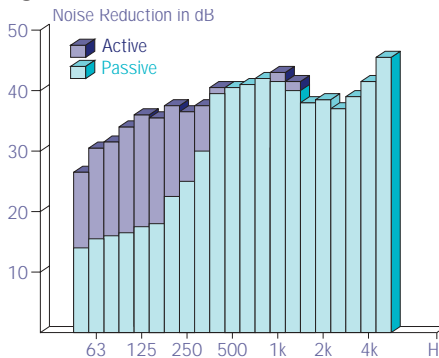
The principle of ANR is based upon the concept of cancelling a signal by superimposing upon it an identical signal which is in antiphase. Noise within the earshell is detected by a small sensor microphone and this signal is then inverted in phase and driven back into the earshell via the earphone. In this way more than 97% of the low frequency noise energy entering the earshell will be cancelled. Any speech signals detected by the sensor microphone are electronically processed and are not affected by the cancellation.



TECHNICAL SPECIFICATIONS

HEADSET ATTENUATION DATA

Typical Headset Performance Figures



Noise Reduction

The semi-subjective attenuation characteristics of the ANR Headset, when properly fitted, are typically as shown below:-

Frequency Hz	Attenuation dB		
	Passive	Active	Total
63	15.5	14.5	30.0
125	17.5	18.5	36.0
250	25.0	11.5	36.5
500	39.5	1.0	40.5
1k	41.5	-	41.5
2k	38.0	-	38.0
4k	45.5	-	45.5

Power supply: 15Vdc to 28Vdc regulated
Quiescent current: typically 30mA at 20Vdc

Normal Operating Current: typically 50mA at 20Vdc

Peak Current: 150mA at 28Vdc

ELECTRO-ACOUSTIC DATA

Earphone and microphone measurements are made as described in publication no. 9022.

Earphones

Transducer type: moving coil with a Mylar diaphragm

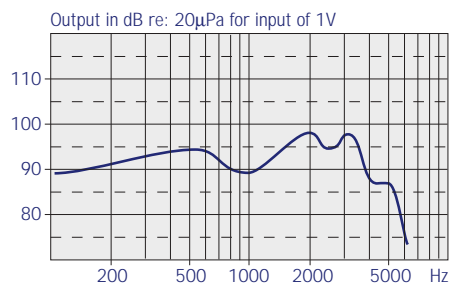
Impedance at the plug: 600 ohms \pm 10% 1kHz

Overload: 3dB max. change in sensitivity relative to the original response curve after 8 hours with 100mW drive at 1kHz

Power rating: 100mW rms

Sensitivity (nominal): 88dB SPL/mW at 1kHz (headset measured on a B&K artificial ear with flat plate coupler)

Typical frequency response:



Total harmonic distortion: typically 15% at 1kHz (drive=10mW) (headset measured on a B&K artificial ear with flat plate coupler)

Intelligibility: Speech Transmission Index STI>0.78

Boom Microphone

Transducer type: magnetic noise cancelling (rain proof)

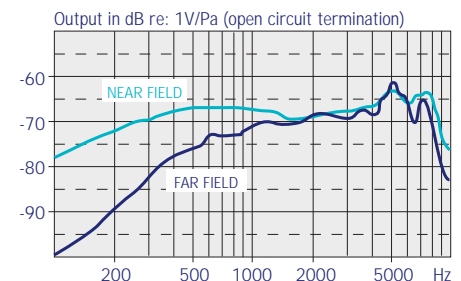
Impedance: 200 ohms \pm 10%

Noise cancelling performance: 25dB at 100Hz, 8dB at 500Hz, 0dB at 1kHz

Sensitivity (nominal): -64dB re 1V/Pa, at 1kHz (unloaded)

Typical frequency response:

Total harmonic distortion: <5% for an acoustic input of 104dB SPL, 200Hz to 3.5kHz



External field susceptibility: no adverse effect

Linearity: better than \pm 3dB from 74dB SPL to 114dB SPL at 1kHz

Intelligibility: speech transmission index STI>0.7

PHYSICAL DATA

Environmental

Usage temperature: -30°C to +55°C

Storage temperature: -40°C to +70°C

Humidity range: Up to 95% RH

Helmet Protection

Fragmentation shell: 130m/s

[Authorized Distributor](#)

THALES

Thales Acoustics

Waverley Industrial Park, Hailsham Drive, Harrow, Middlesex HA1 4TR, U.K.

Tel: (+44)020-8515 6200 - Fax: (+44)020-8427 0350 - Internet: <http://www.thales-acoustics.com>