

TwinCom

User Information

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1. a) Introduction Offshore ear plug EM2140DC-S – custom made ear plugs EN 352-2:2002

Congratulations with your new custom made Offshore earplug! This product is molded to fit your ears and has built in communication used together with a headset AK5850S or AK5850HS.

To ensure correct use and to get all the advantages of the product, please read this manual carefully.

Wrong use can cause hearing damages. The ear-plugs shall be fitted, adjusted and maintained in accordance with the manufacturer's manual. The hearing protection shall be worn at all times in noisy environments. Be aware of that this ear plug is personally molded to fit your ears. Since the shape of the inner ear is changing it is recommended to take new molds every 4th year to achieve the best attenuation and shall be regularly inspected for serviceability.

The Offshore Ear Plug is made of medical grade Flexit (polydimethylsilikosan) and the cable is made of medical grade PUR (polyurethane) which will decrease the danger of allergic reactions.

This model of ear-plugs has satisfied the optional requirements at -40°C to +60°C.

Warning: If the recommendations in this user manual is not adhered to, the protection of this PPE may be severely impaired!

1. b) Before use

Before use, please be sure of that the ear plugs are clean. If necessary, use the enclosed brush or cleaning pin to remove wax and other pollution from the sound opening. A small quantity of Otoferm-cream in the ear can make it easier to make a correct placement of the ear plug.

1. c) Right and left orientation

The Offshore ear plugs are marked with a red dot for right ear and a blue dot for left ear. The small handle on the plug shall be on top side when it shall be slid into the ears. The cable shall point upwards, just in front of the upper ear.



1. d) How to place the earplug into the ear

Seize the small handle on the impression between your index finger and thumb. The cable shall point upwards in front of the ear.

Tread the earplugs sound opening into the ear with rotating motions until it feels comfortable. At last make a light pressure by index finger on the earplug until the plug is thoroughly into the ear. It is important to not use force.

1. e) How to remove the plug from the ear

Seize the small handle on the impression and pull by a slightly forward rotation.

1. f) Correct placement

The Offshore earplug make a tight connection to the ear without being uncomfortable ore make a pressure in the ear.

It may take some weeks to get used to the ear plug.

Please take contact with Safe Sound Audio AS if you get lasting problems.

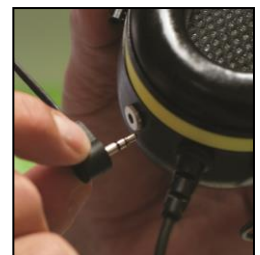
Warning: These ear-plugs should not be used where there is a risk that the connecting cord could be caught up during use.



1. g) How to connect the ear plug into the earmuffs

The Offshore earplug shall preferably be used together with AK5850S earmuffs to get maximum protection.

Connect the ear plugs jack connector into the inlet on the left cup of the earmuffs.



The earplugs may also be used without the earmuffs, but then you need an edition with military Nexus jack plug. This ear plugs have to be connected to an external PTT-unit made for the different brands of UHF/VHF-radios. Ask your supplier for information. **Warning:** Do not connect or disconnect the device to the ear muffs or the PTT unit or switch on/off the radio while the equipment is placed in the ears. It is also important that the interconnecting cable is not damaged. Shortcuts or other disturbance may course high noise that can damage the hearing. **Warning:** The electrical audio output of this hearing protector may exceed the daily limit sound level. Electric input level for which the mean plus one standard deviation. When the offshore Earplug is used alone the A-weighted diffuse-field related sound pressure level is equal to 82 dB at 79,3 dBμV. Be careful with the volume control!

1. h) The complete setup

The earmuffs shall be placed over the ear outside the earplugs. The cables shall be between the ear muffs and the skin, just in front of the upper ear.



1. i) Cleaning and maintenance

This product can deteriorate with use and shall regularly be inspected for serviceability. The Offshore earplug can be cleaned with a brush or cleaning pin. To remove heavy pollution special cleaning clothes are available. Please contact Safe Sound Audio AS (see address below) to get more information.

This product may adversely be affected by certain chemicals. Do never use water, oil or other detergents and cleaning compounds. This may damage the equipment.

Always store the Offshore Ear plug in the carrying bag when it is not in use.

1. j) Sound attenuation

Offshore Ear Plug EN 352-2

Frequency (Hz)	125	250	500	1000	2000	3150	4000	6300	8000
Mean attenuation(dB)	32,3	32,9	31,7	31,6	35,4	41,2	38,2	42,3	41,3
St.dev. (dB)	4,0	3,8	4,2	3,6	4,0	3,3	3,3	5,5	6,8
APV (84%)	28,3	29,1	27,5	28,2	31,4	37,9	34,8	36,8	34,5

H₈₄ 32 dB

M₈₄ 29 dB

L₈₄ 29 dB

SNR₈₄ 32 dB

1. k) ATEX and CE certification

This product is ATEX Certified under certificate no. Nemko 12ATEX1277, 03ATEX1351 and IECEx PRE 15.0063 (Ui:9.0V, Ii:300mA, Pi:0.6W, Ci:Negligible, Ri:828Ω, Li=3.497mH, Li/Ri: 4.22μH/Ω), and CE approved as PPE under CE type examination certificate no. 12188PFS01, 12151RHS01 and 12132LGS01 according to EN 352-1:2002, EN 352-2:2002 and EN 352-3:2002 by SGS, Fimko, Finland.

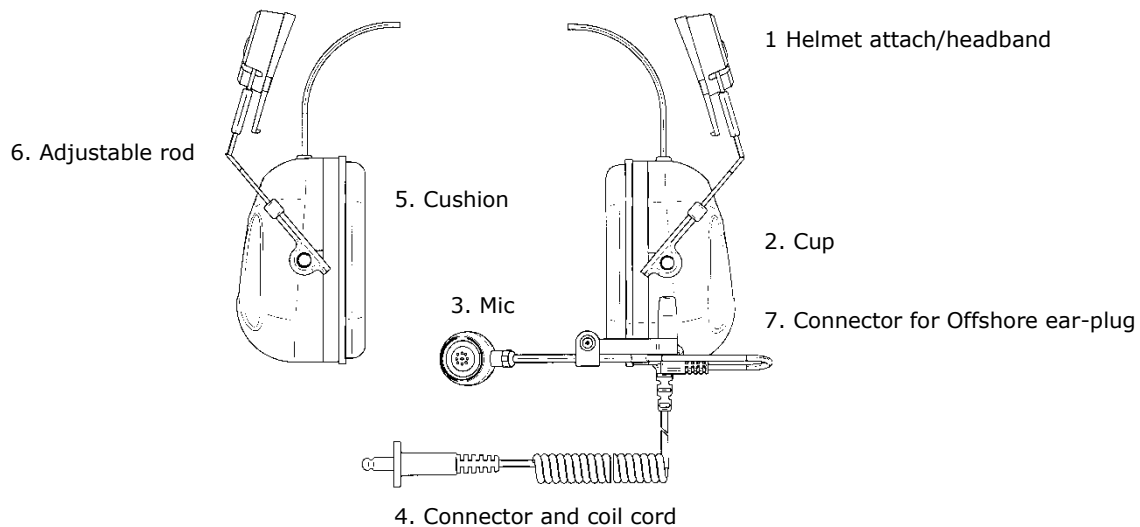


II 2 G EX ib IIC T4 Gb

0470 Nemko

0598 SGS

2. Headset AK5850S (helmet attachment) EN 352-3:2002 AK5850HS EN 352-1 (headband) both with audio communication EN 352-6:2002 and connection to ear-plug EN352-2:2002.



2. a) Introduction

The headset AK5850S is made for use in noisy areas. It can be used together with helmet (AK5850S, helmet attachment) or without helmet (AK5850HS, headband). To achieve the best attenuation it is recommended to use the AK5850S/AK5850HS together with the Offshore ear plug. The hearing protection shall be worn at all times in noisy environments. The headset cups are made of ABS. The parts in contact with the skin (ear cushions) are made of PVC and the helmet attachment is made of stainless steel supported by nylon plastic sleeves. **Warning:** If the recommendations in this user manual is not adhered to, the protection of this PPE may be severely impaired!

2 b) How to mount and adjust the headset before use

The headset shall be fitted and adjusted according to the manual to achieve maximum protection. Use of glasses, beard or other items that can course leakage between the skin and the ear cushions may impair the attenuation.

For AK5850S: Place the helmet attachment (1) into the slots on the helmet and put the helmet on to your head. The helmets approved for use is Peltor G22C/D, OBX and Balance AC. The AK5850HS headband version can be put directly over the top of your head. For AK5850HS: Place the headband over the center of the head. There is no mandatory left and right direction for placement of the cups. However. To be connected to audio communication with duplex communication the microphone has to be in the front of the mouth within a distance of 1 cm. to achieve the best noise reduction.

Adjust the moving steel rods (6) up and down until the cups are perfectly covering your ears.

Ear-muffs complying with EN 352-1 and EN 352-3 are of "medium size range" or "small size range" or "large size range". "Medium size range" ear-muffs will fit the majority of wearers. "Small size range" or "large size range" ear-muffs are designed to fit wearers for whom "medium size range" ear-muffs are not suitable.

Warning: AK5850S is in the medium and large size range and the AK5850HS is for large size range.

The cups can be set in rest position by pulling them straight out from the ears. This shall only be done in areas without noise since it will be a gap between the earmuffs and the ears. The normal position can be maintained by pressing the cups back again towards the ears.

Adjust the microphone (3) to a position straight in front of the mouth. The distance shall not exceed 10 mm. to achieve the optimal noise attenuation

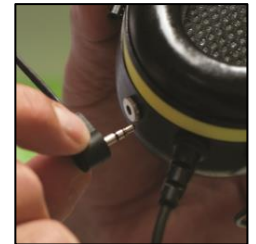
2 c) How to connect the headset to a radio

The headset can be connected to a 2-way radio by connecting the connector (4) into a PTT-unit made for the different radios. The headset cannot be connected directly to the radio. Ask your supplier for the right PTT-unit made for each radio brand. This headset is provided with electrical audio input. Check correct operation before use. **Warning:** Do not connect or disconnect the device to the PTT unit or turn on/off the radio while the equipment is placed over the ears. It is also important that the interconnecting cord is not damaged.

Short cuts or other disturbance may course high noise that can damage the hearing. **Warning:** The electrical audio output of this hearing protector may exceed the daily limit sound level. When the earmuffs AK5850S / AK5850HS are used alone the electric input level for which the mean plus one standard deviation A-weighted diffuse-field related sound pressure level is equal to 82 dB is at voltage $U = 208 \text{ mV}$. Be careful with the volume control!

2. d) How to connect the headset to the Offshore Ear Plug

Connect the 3.5 mm. jack plug on the Offshore ear plug into the 3.5 socket on the left cup. This shall be done before the Offshore ear plug is placed into the ears.



2. e) Maintenance and storage

This product can deteriorate with use and shall regularly be inspected for serviceability. Both helmet mounted ear-muffs and the over the head band ear-muffs shall be fitted, adjusted and maintained in accordance with the manufacturers instructions. The headset shall be kept clean and free of damage. Otherwise, the attenuation can be poor. This product may adversely be affected by certain chemicals. The headset can be cleaned by ordinary soap and water and can be disinfected with alcohol or clorehexidine.

Avoid liquids into the headsets foam parts. The headset can be used in temperatures from -40°C to $+60^{\circ}\text{C}$. Keep the headset stored in a temperate and dry place.

Hygienic kits (Article no. AK6501), included foam parts and cushions) and other spare parts can be ordered from your supplier or directly from the factory. The hygienic kits are easy to replace. No tooling is required. Just grab the snap old ear cushion from inside by your fingers and snap it out. Replace the outer foam plate with the new one and push the new ear cushion back in place by hand force. The fitting of the ear cushions may affect the acoustic performance and you shall hear a click when it is in the right position. It shall be no gap between the cushions and the headset cups. Ear-muffs, and in particular cushions, may deteriorate with use and should be examined at frequent intervals for cracking and leakage, for example. The fitting of hygienic covers to the cushions may affect the acoustic performance of the earmuffs. Additional information and ordering of spare parts can be ordered from A-KABEL AS (se contact information below). Under normal use the headset should last for several years. If used at daily basis, renewal after 5 years is recommended.

2. f) Sound attenuation and mass

AK5850HS, EN 352-1

Frequency (Hz)	125	250	500	1000	2000	3150	4000	6300	8000
Mean attenuation(dB)	18,1	20,0	31,2	39,3	31,0	34,8	41,2	42,5	40,8
St.dev. (dB)	3,3	2,3	3,1	3,6	2,3	2,9	3,9	4,9	5,1
APV (84%)	14,7	17,8	28,1	35,8	28,7	31,9	37,4	37,6	35,8

H_{84} 32 dB
 M_{84} 28 dB
 L_{84} 20 dB
 SNR_{84} 30 dB
 Mean mass: 393 g.

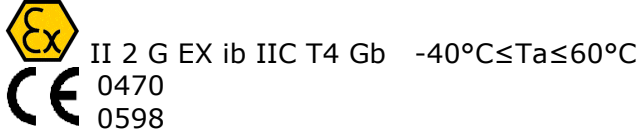
AK5850S, EN352-3

Frequency (Hz)	125	250	500	1000	2000	3150	4000	6300	8000
Mean attenuation(dB)	18,6	19,9	27,5	35,2	32,0	38,1	39,2	36,2	34,6
St.dev. (dB)	3,7	3,3	4,0	3,7	3,4	3,6	4,0	4,1	4,8
APV (84%)	14,9	16,6	23,5	31,5	28,6	34,5	35,2	32,0	29,8

H_{84} 31 dB
 M_{84} 26 dB
 L_{84} 20 dB
 SNR_{84} 29 dB
 Mean mass: 404 g.

2. g) Certificates

These products are certified under certificate no Nemko 03ATEX1351 and IECEx PRE 15.0063. (Ui:9V, Ii:291mA, Pi:1,2W Ci:Negligible, Li=0,9Mh or Li/Ri: 6uH/Ohm) and CE type examination certificate no. 12151RHS01, 25097RES01 and 12132LGS01 issued by SGS.



3. General information for Offshore Ear Plug EM2140DC-S and headset AK5850HS/AK5850S

3. a) Sound attenuation (headset and ear plug used in combination)

AK5850 HS Over-the-head headband TwinCom with custom molded earplug

Frequency (Hz)	125	250	500	1000	2000	3150	4000	6300	8000
Mean attenuation (dB)	35,3	35,0	44,2	43,0	40,0	46,8	49,8	48,6	47,7
St.dev. (dB)	5,6	5,1	4,6	5,0	3,6	4,9	3,8	4,6	4,7
APV (84%)	29,7	29,9	39,6	38,0	36,4	42,0	45,9	44,0	43,0

AK5850S Helmet attached hearing protector TwinCom with custom moulded earplug

Frequency (Hz)	125	250	500	1000	2000	3150	4000	6300	8000
Mean attenuation (dB)	34,3	35,0	41,2	43,2	40,4	47,3	52,6	53,2	50,9
St.dev. (dB)	4,8	3,5	4,9	4,9	4,2	4,9	3,9	3,6	5,0
APV (84%)	29,5	31,5	36,3	38,4	36,2	42,4	48,8	49,5	45,9

	H ₈₄ (dB)	M ₈₄ (dB)	L ₈₄ (dB)	SNR ₈₄ (dB)
Over-the-head headband TwinCom with custom molded earplug	39	37	33	40
Helmet attached hearing protector TwinCom with custom molded earplug	39	37	34	40

If you use the ear plug wrong it may give poor protection and sound quality. Be sure of that the Offshore ear plug always is placed correct and remember to use the hearing protection at all time in noisy environments. After a period of 4 years the shape of the inner ear are changing and the attenuation can be reduced. It will then be necessary to renew the offshore ear plug.

3. b) Maximum auxiliary input (AUX)

When the earmuffs AK5850S / AK5850HS and the Offshore Ear Plug EM2140DC-S is used together the electric input level for which the mean plus one standard deviation A-weighted diffuse-field related sound pressure level is equal to 82 dB at voltage U = 118 mV. Do not connect or disconnect the equipment or turn on/off the radio while the equipment is placed into/over the ears. Be careful with the volume control!

Warning: The electrical audio output of this hearing protector may exceed the daily limit sound level.

3. c) Manufacturer

The products are made in Norway by:

A-KABEL AS

Box 64, 2151 Årnes, Norway

Phone.: +47 63 91 28 20

E-mail: engen@a-kabel.no

and

Safe Sound Audio AS

Auglendsdalen 78, 4017 Stavanger, Norway

Phone: 97 19 02 53 or 95 19 72 48,

E-mail: oystein@safesound.no

3. d) EU Declaration of Conformity

This declaration of conformity is issued under the sole responsibility of the manufacturer.

The TwinCom system - Offshore Ear Plug and headset AK5850S/AK5850HS are manufactured in accordance with the relevant Union harmonisation legislation: PPE Regulation (EU) 2016/425 and the harmonized standards EN 352-1:2002, EN 352-2:2002, EN 352-3:2002 and EN 352-6:2002.

The EU type-examination under certificate no.12132LGS01, rev. 1,12151RHS01 and 12188PFS01 are performed according to module B and the certificates are issued by Notified Body no. 0598 SGS Fimko, Finland. This PPE equipment risk group III are subject to the conformity assessment procedure C2 under surveillance of Notified Body no. 0598 SGS Fimko Ltd., Takomotie 8, FI-00380, Helsinki, Finland.

The manufacturer declares that the equipment is in accordance with the EMC directive 2004/108/EC and standards EN61000-6-2:2005 + AC:2005. Further the equipment is manufactured and tested in accordance with Directive 2014/34/EU and the IECEx scheme. The equipment is manufactured and tested in compliance with the European standards: EN 60079-0:2012 + A11: 2013 & EN 60079-11:2012. After gap analysis A-KABEL AS has found the product in compliance with the European standard EN 60079-0:2018. The equipment is certified under EU-type examination certificate no. Nemko 03ATEX1351 / Nemko 12ATEX1277. Certification body no. 0470 Nemko AS, 1366 Lysaker, Norway.

The manufacturing of this product is in conformity of the RoHS directive 2011/65/EU for restrictions of the use of certain hazardous substances in electrical and electronic equipment and the risk assessment has been conducted according to harmonized standard EN50581:2012.

Årnes, 11.05.2021

A-KABEL AS



Managing Director