

SOUND ENGINEERING SOLUTIONS

bhi

**NES10-2**  
**NESCB**

Noise Eliminating Speakers  
Operating Manual



1030-103D Issue D 09/02

## Important Information

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## 1. Overview

### 1.1 bhi

bhi Ltd are specialists in the design, development and manufacture of noise cancelling products and other specialist electronics.

### 1.2 Introduction

The bhi noise eliminating speakers greatly improve the clarity and intelligibility of speech in radio communications. They are suitable for use in many applications where high background noise and interference mean that you cannot clearly hear what is being said. The NES10-2 and NESC enable the user to listen and concentrate “**stress-free**”.

Suitable applications where the speakers will be of great benefit to the user include radio amateur base stations, CB radios, two-way radios, HF radios, marine communications, scanners, taxi base stations and hands-free car kits.

The NES10-2 and NESC are compact and easy to install. They incorporate new Digital Signal Processing technology (DSP) and are fully adaptive to any change in noise levels and interference.

On the NES10-2 the noise cancelling can be switched on or off and there are 8 user selectable noise cancellation levels, whilst the NESC is a plug and go model which has a fixed level of noise cancellation.

The speakers mount like any standard external speaker and are powered by any 12 – 28 vdc unregulated power source. You can use the optional bhi external power supply or in-vehicle adapter.

The NES10-2 and NESCB come as standard with a 2m audio lead terminated with a 3.5mm mono jack plug ready for immediate use.

### 1.3 Unpacking

Check that the following items are included in the package:

NESCB Noise eliminating speaker  
or  
NES10-2 Noise eliminating speaker

2 fixing screws  
4 self adhesive rubber feet  
Customer feedback card

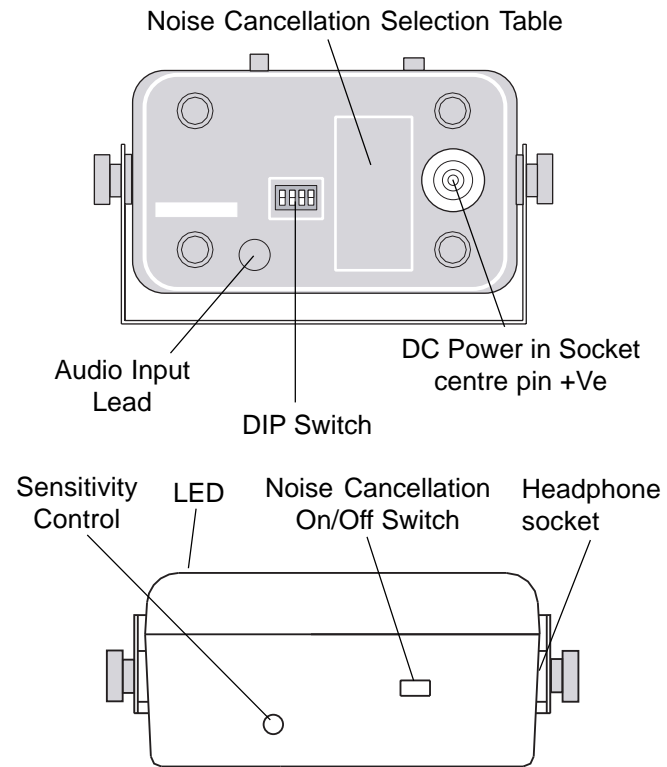
Optional extras if ordered (see section 4):

For NES10-2 turn to page 7

For NESCB turn to page 16

## 2. NES10-2

### 2.1 Controls



## 2.2 Description

1. The noise cancellation level DIP switch allows the user to select one of 8 different settings, level 1 giving the least amount of noise cancellation, level 8 providing the most. The unit is factory set to level 6.  
DIP switch settings are shown on the rear of the speaker.
2. The power-in socket allows the user to switch on the NES10-2 by using the bhi power supply (optional extra) or a suitable 12 –28V dc power source (min 500mA), with a suitable 2.1mm power connector, centre pin positive (fused at 3A).
3. 2 metre audio input lead terminated with a 3.5mm mono jack plug. This lead connects to the external speaker socket or earphone socket of your equipment.
4. Sensitivity control . This controls the input level to the electronics of the NES10-2, and is adjusted depending on the input level from the radio communication equipment being used. The optimum level is a combination of the output from the equipment and the sensitivity level of the NES10-2, so that there is no distortion and the speaker is not being overdriven.

Once set the controls do not normally require any further adjustments.

5. LED indicator. The LED illuminates red when power is applied and changes to green when the noise cancellation is active.

LED Colour	Off	Red	Green
Description	No Power connected	Power on Noise cancellation off	Power on Noise cancellation on

6. Noise cancellation ON/OFF switch. This switch turns the noise cancellation on and off, and should be in the “OFF” position prior to using the speaker.
7. Headphone socket. This allows the user to listen in private using a standard mono earpiece or stereo headphones using one of the optional audio adaptors (see section 4) .

## 2.3 Specification

Noise attenuation	- 20 dB (typical)
Number of attenuation levels	- 8
Audio input power	- 5W rms max
Audio output power	- 2.5W rms max

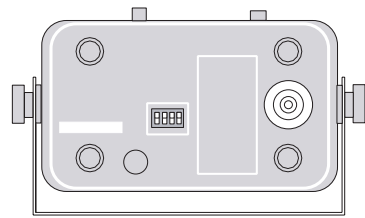
- Audio connection - 3.5mm mono jack plug, 2m lead.
- Headphone connection -3.5mm mono jack socket
- DC power - 12-28V dc. 500mA
- Size - 110 x 65 x 55mm
- Weight - 200gms

## 2.4 NES10-2 basic connection diagram

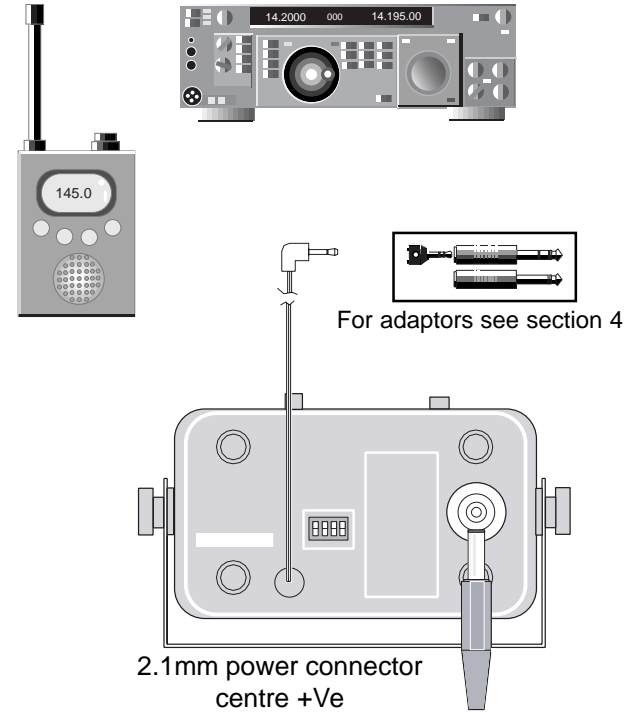
For use with standard radio communication equipment, follow the diagrams and procedures on page 11. For in vehicle use, fit the speaker in a suitable location using the bracket and fixing screws supplied.



Note: It is recommended that this is carried out by a qualified vehicle technician.

Also supplied are four rubber feet. These can be attached to the bottom of the mounting plate to prevent it from marking surfaces.



Rubber feet  Screws 



Optional Mains Power Adaptor   
 Optional In-vehicle power lead   
 NES10-2 connections

## 2.5 NES10-2 basic set-up procedure and operation

1. Connect the bhi power supply or a suitable 12 to 28 Vdc power supply to the power socket at the back of the NES10-2.

Note: Make sure the centre pole of your power supply connector is connected to the positive rail (+ve).

2. Switch the noise-cancelling switch off. The front panel LED should be illuminated red.
3. Turn the sensitivity control fully anticlockwise, and then back a quarter of a turn.
4. Connect the audio lead to your external speaker socket using the 2m audio lead with 3.5mm jack plug. If your external speaker socket is not a 3.5mm jack socket, then audio lead adapters are available from bhi. A 2 metre audio extension lead is available if your equipment is more than 2m away from the NES10-2.
5. Set the noise cancellation level DIP switch to level 6 to start with using the table on the following page or on the label on the rear of the speaker for the correct switch setting. **Note: Switch 4 is NOT used.**

SW1	SW2	SW3	Level
ON	ON	ON	1
ON	ON	OFF	2
ON	OFF	ON	3
ON	OFF	OFF	4
OFF	ON	ON	5
OFF	ON	OFF	6
OFF	OFF	ON	7
OFF	OFF	OFF	8

*Minimum level*

**Note:**

The switches may be adjusted using a blunt implement such as ballpoint pen.

*Maximum level*

6. Turn the radio equipment on and set the audio volume to your own personal taste, making sure that you are not over driving the speaker and causing distortion. Adjust the sensitivity control knob on the top of the speaker if required to obtain your optimum setting.
7. Tune into the station or channel you require.
8. Turn the noise cancelling on, the front panel LED changes from red to green indicating the noise cancellation is active.
9. Adjust the filter level setting if required to remove higher levels of noise and improve the intelligibility and clarity of the signal.

## 2.6 Troubleshooting/FAQs.

### **Speaker doesn't work at all, no sound from the speaker:**

- Check that the power connector on your power supply is suitable for the power socket on the NES10-2 (2.1mm, centre positive).
- Check that you have switched your radio communication equipment on and that you have a signal for the speaker to process. To verify this, remove the audio connector from the external speaker socket on your equipment.
- Check that the LED on the front of the NES10-2 is illuminated green, when the noise cancellation is on.

### **The speaker works but the noise cancellation doesn't appear to improve the audio quality of the signal:**

- Check that the LED on the front of the NES10-2 changes from red to green when the noise cancellation is switched off and on.

Now switch the noise cancellation on, you should clearly hear the difference now.

- With the noise cancellation switch in the off position, make sure that you have the sensitivity control on the NES10-2 fully counter clockwise or thereabouts. Now tune your radio communications equipment until you have a good clear signal with good volume.

### **The volume from the speaker is low and cannot be increased:**

- The NES10-2 is designed to work with the external speaker sockets of radio communications equipment, and although it will work with some earphone and headphone sockets, there may be occasions where the signal output from these types of output sockets is not enough for the NES10-2 electronics to process the signal effectively. bhi have another product that will work with these sort of signal levels, the NEIM1031 (Noise eliminating In-line Module). Please contact bhi for more information. See end of operating manual for contact information.

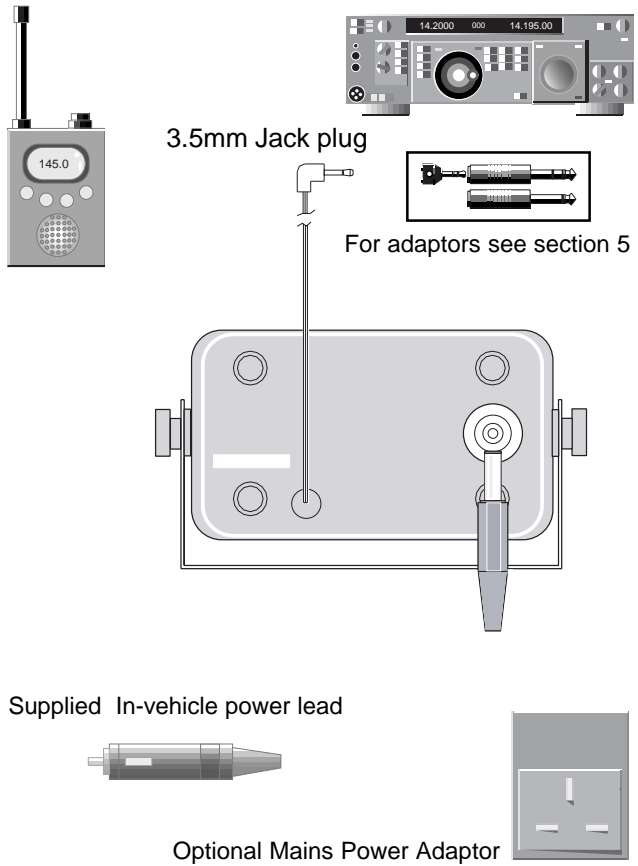
### **Sometimes there is a short delay before the noise cancellation is active.**

- This is due to the time the DSP takes to start processing the signals. This gives the opportunity to check that the DSP is not taking out any detail from the signal.



### 3. NESCB

#### 3.1 NESCB Connections



#### 3.2 Description

1. The power-in socket allows the user to switch on the NESCB by using the bhi power supply (optional extra) or a suitable 12 –28V dc power source (min 500mA), with a suitable 2.1mm power connector, centre pin positive (fused at 3A).
2. 2 metre audio input lead terminated with a 3.5mm mono jack plug. This lead connects to the external speaker socket or earphone socket of your equipment.

#### 3.3 Specification

Noise attenuation	- 20 dB (typical)
Audio input power	- 5W rms max
Audio output power	- 2.5W rms max
Audio connection	- 3.5mm mono jack plug, 2m lead.
DC power	- 12-28V dc. 500mA
Size	- 110 x 65 x 55mm
Weight	- 200gms

### 3.4 NESCIB basic set-up procedure and operation

1. Connect the supplied in vehicle power lead, bhi power supply or a suitable power adaptor to the power socket at the back of the NESCIB.

Note: Make sure the centre pole of your power supply connector is connected to the positive rail (+ve).

2. Connect the audio lead to your external speaker socket using the 2m audio lead with 3.5mm jack plug. If your external speaker socket is not a 3.5mm jack socket, then audio lead adapters are available from bhi (see section 4). A 2 metre audio extension lead is available, If your equipment is more than 2m away from the NESCIB.
3. Switch on and the NESCIB will automatically remove unwanted noise and interference.

### 3.5 Troubleshooting

#### **Speaker doesn't work at all, no sound from the speaker:**

- Check that the power connector on your power supply is suitable for the power socket on the NESCIB (2.1mm, centre positive).
- Check that you have switched your radio communication equipment on and that you have a signal for the speaker to process. To verify this, remove the audio connector from the external speaker socket on your equipment.

#### **Sometimes there is a short delay before the noise cancellation is active.**

- This is due to the time the DSP takes to start processing the signals. This gives the opportunity to check that the DSP is not taking out any detail from the signal.

## 4. Accessories

### Optional Extras

The following items are available from bhi as optional extras. If you would like to order any of these items then please contact us ( see the back page of this document for contact details):

#### Power:

1030-UKPA	UK mains power adapter
1030-EUPA	European mains power adaptor
1030-VEPL	Vehicle power adapter
1030-2WVA	2 Way vehicle power adaptor
1030-FPL	2M free power lead

#### Audio:

1030-EXLE	Audio Extension lead (2M)
1030-MOEP	Mono Earpiece
1030-STHDP	Stereo headphones

#### Audio Adaptors:

See tables on following page for details.

Other types available on request.

### Adaptors for connecting NES10-2 to equipment

Radio connector	Adaptor required	Order Number
6.35mm (1/4") mono socket	6.35mm mono plug - 3.5mm mono socket	ADP-P001
6.35mm (1/4") Stereo socket	6.35mm Stereo plug - 3.5mm mono socket	ADP-P002
3.5mm Jack Stereo socket	3.5mm Stereo plug - 3.5mm mono socket	ADP-P003
3.5mm Jack Mono socket	None	N/A
Phono socket	phono plug - 3.5mm mono socket	ADP-P004
2.5mm mono socket	2.5mm mono plug - 3.5mm mono socket	ADP-P005
2.5mm Stereo socket	2.5mm Stereo plug - 3.5mm mono socket	ADP-P006

### Adaptors for connecting ear/headphones to NES10-2

Headphone connector	Adaptor required	Order number
3.5mm jack mono plug	None	N/A
3.5mm Jack Stereo plug	3.5mm stereo socket -3.5mm mono plug	ADP-S001
6.35mm (1/4") Mono plug	6.35mm mono socket - 3.5mm mono plug	ADP-S002
6.35mm (1/4") Stereo plug	6.35mm stereo socket -3.5mm mono plug	ADP-S003
2.5mm Stereo plug	2.5mm Stereo socket - 3.5mm mono plug	ADP-S004
2.5mm mono plug	2.5mm mono socket - 3.5mm mono plug	ADP-S005

## 5. bhi support

Every noise-eliminating speaker comes with a 12 month guarantee against defective materials and workmanship.

If you do have a problem then please refer to the troubleshooting section 2.6(NES10-2) or section 3.5(NESCB). If you have not resolved your problem then please contact us.

Before you make your call please have the following to hand:

- √ Your serial number (found at the back of the speaker)
- √ Details of when and where you purchased the noise eliminating speaker
- √ Your address

Most queries can be sorted out over the telephone, if not we will arrange with you to have your speaker sent back to us for analysis, repair or replacement (if within 12 months from date of purchase, if outside the guarantee period an estimate of the cost of repair will be given).

For contact details please refer to back cover of this manual.

If you have any suggestions for improvements please complete and return the customer feedback form.

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## 6. Approvals

### European conformity information

- A sample of this product has been tested and found to conform to the following European Directives:

73/23/EEC – Low Voltage (safety) Directive  
89/336/EEC – EMC Directive

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