

# **BHMFitpan**

## Fitting Software

Instructions for use

For fitting of the Hearing System



# CONTENTS

<b>1</b>	<b>INTRODUCTION .....</b>	<b>4</b>
<b>2</b>	<b>SYSTEM REQUIREMENTS .....</b>	<b>4</b>
<b>3</b>	<b>PROGRAM INSTALLATION .....</b>	<b>5</b>
<b>4</b>	<b>CONNECTING THE HEARING SYSTEM WITH THE PROGRAMMING INTERFACE .....</b>	<b>8</b>
<b>5</b>	<b>THE PROGRAM IN SIMULATION MODE .....</b>	<b>9</b>
<b>6</b>	<b>STARTING THE PROGRAM.....</b>	<b>10</b>
<b>7</b>	<b>PROGRAMMING THE HEARING SYSTEM .....</b>	<b>11</b>
7.1	Description of the main window .....	11
7.2	Menu bar.....	12
7.2.1	File.....	12
7.2.2	Programmer .....	12
7.2.3	Communication.....	12
7.2.4	View .....	13
7.2.5	Help .....	13
7.3	Toolbar .....	14
7.3.1	Open session .....	14
7.3.2	Save session .....	14
7.3.3	Store the settings into the hearing system .....	15
7.3.4	Writing the settings to the hearing system .....	15
7.3.5	Reading the settings of the hearing system .....	16
7.3.6	Copying settings .....	16
7.3.7	Transmit settings to another program.....	16
7.3.8	General settings.....	16
7.3.9	Program selection .....	17
7.3.10	FirstFit (fitting suggestion) .....	17
7.3.11	Fitting assistant .....	18
7.3.12	Printing/exporting the session.....	18
7.4	Fitting settings.....	19
7.4.1	Audiogram .....	19
7.4.2	Side selection (right and left hearing system) .....	20
7.4.3	Modes.....	21
7.4.4	View Mode.....	22
7.4.4.1	Output curves.....	22
7.4.4.2	Gain curves .....	22
7.4.4.3	Crossover frequencies .....	23
7.4.5	Filter settings .....	23
7.4.5.1	High Cut .....	23
7.4.5.2	Low Cut .....	24
7.4.5.3	MPO (Maximum Power Output) .....	24
7.4.6	G50 / G80 gain matrix .....	24

7.4.6.1	Gain .....	24
7.4.6.2	Compression .....	26
7.4.7	Equalizer .....	26
7.4.8	Dynamics (attack / release).....	27
7.4.8.1	AGCi.....	27
7.4.8.2	AGCo.....	27
7.4.9	Features .....	28
7.4.9.1	Suppression of acoustic feedback.....	28
7.4.9.2	Noise reduction.....	28
7.4.10	Mute / unmute.....	28
7.4.11	Tinnitus (only for <b>pan Ti</b> hearing systems).....	29
<b>8</b>	<b>DEINSTALLATION .....</b>	<b>30</b>
<b>9</b>	<b>UPDATE.....</b>	<b>31</b>
<b>10</b>	<b>FAQs .....</b>	<b>32</b>

# 1 INTRODUCTION

---

This document was created to help the hearing aid acoustician and authorised specialist to install the BHM-Tech Fitting Software **BHMFitpan**, and consequently to provide information for fitting of the hearing system.

**Reference is made to the fact that modifications to hearing systems may only be carried out by hearing aid acousticians or authorised specialists. Improper adaptation by those without authorisation can cause hearing damage.**

**Adaptations must be carried out with extreme caution so follow the user instruction for the device and note the output level of the device.**

## 2 SYSTEM REQUIREMENTS

---

BHMFitpan is standalone software and not a client version. Server installations are therefore not supported. The following system requirements are a requirement to use the BHMFitpan Fitting Software:

- Windows XP, Windows 7, Windows 8 (32/64-bit)
- DVD drive or USB port
- Approx. 112 MB free hard drive storage
- Minimum of 1024 MB RAM
- Minimum screen resolution of 1024 x 768 pixels
- Programming box: HI-PRO
- Programming cable
- PDF Reader
- Microsoft Word (Export of the fitting protocol)

Approx. 20KB of storage is required to store a hearing system configuration.

## 3 PROGRAM INSTALLATION

---

**Note:**

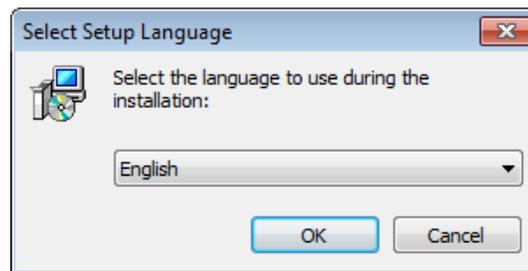
**Administrator rights are required to avoid installation problems.**

Close all running Windows applications before starting the installation. Other running programs or virus scanner could impact or block the installation.

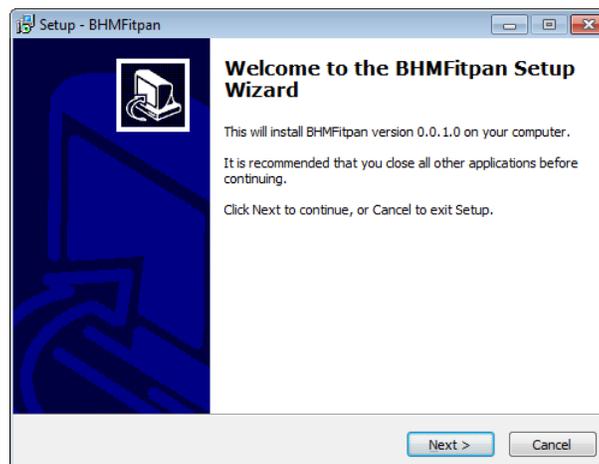
The customer database is stored in the directory "**C:\Documents and Settings\All Users\Application data\BHMFit2\DB**" and is used as the central customer database by all BHM Fitting software versions. Contact your system administrator should you have any questions about this.

Double-clicking "My Computer -> Drive -> Setup" opens the BHM Installer if it does not start automatically. If the Installer fails to open or crashes, the installation medium is probably damaged. Contact your reseller if you have any questions about this.

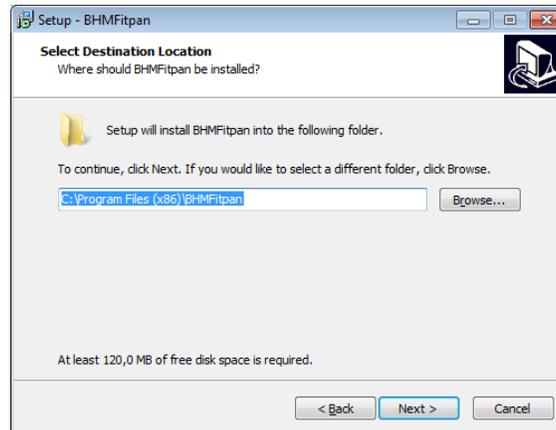
Carry out the following after opening the Installer:



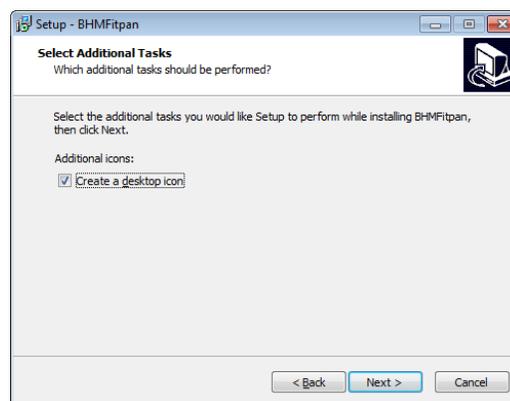
Select the desired language for the installation from the drop-down menu.



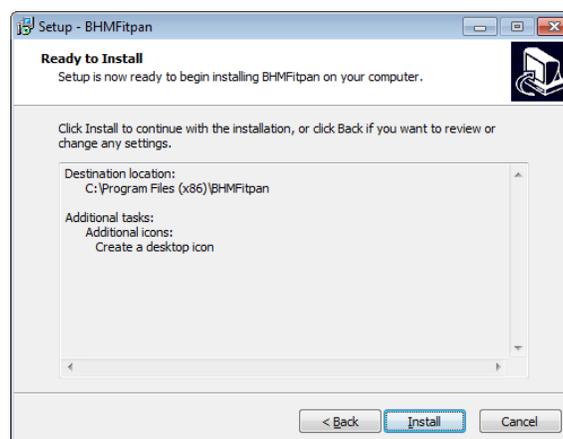
Click "Continue >" to start the installation.



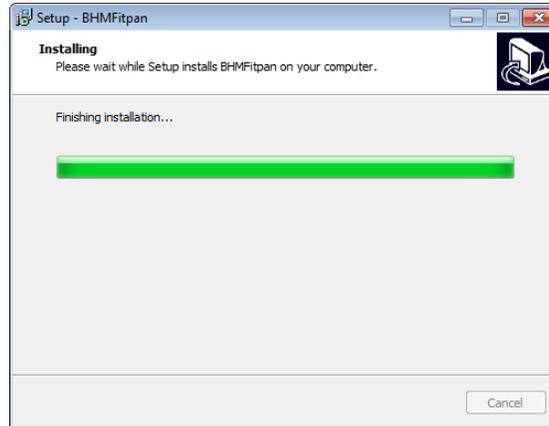
You can also select the default destination folder if required. Click "**Continue >**" to continue with the installation or click "**Browse...**" to change the destination folder. If no changes are made, the Fitting software is installed in "**C:\Program Files\BHMFitpan**". Then click "**Continue >**" again.



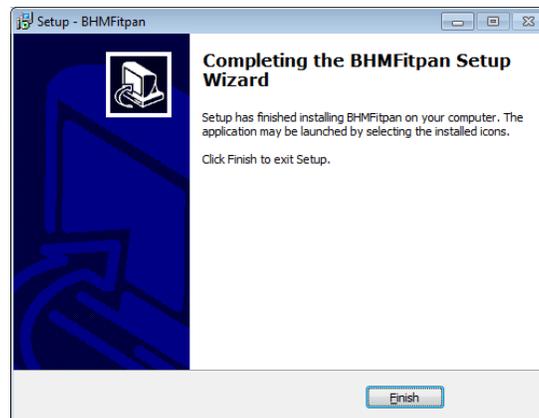
Select here whether a desktop icon is created during the installation. Click "**Continue >**" once you agree with the settings.



The next window allows you to check your selection once again. If you not agree with a selection, you can go back to the previous window with "**< Back**" and change the settings. Please click "**Install >**" once to start the installation process.



The installer now copies all the necessary files and sets up your system to use BHMFitpan.



The installation has been completed successfully. Click "**Finish**" to finalise the installation.

If you made the relevant choice during the installation, the



icon for running the BHMFitpan Fitting Software has been automatically added to your desktop.

## 4 CONNECTING THE HEARING SYSTEM WITH THE PROGRAMMING INTERFACE

---

Only HI-PRO is supported as a programming interface. The programming interface must be installed on your computer. For the installation, please use the documents and software from the manufacturer of the programming interface.

The programming socket on the **pan** is located on the top of the hearing system near the battery compartment and is protected by a protective cap that must be removed before the programming cable is connected.

The protective cap provides protection from dust and moisture and must be reinserted into the programming socket after fitting of the hearing system.

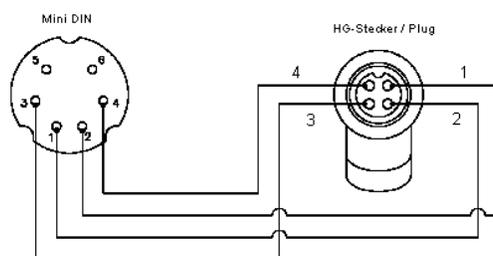
Please refer to the device user instruction for details.

Gently connect the programming cable to the programming interface with the MiniDIN connector and to the hearing system with the 4-pin hearing aid connector. Ensure here that the two dots on the connector and the socket on the hearing system are aligned on top of each other.

**Please remove the battery during the programming process.**

Programming cable:

Use a NOAH-link cable with the standard wiring as per HIMSA specification, or a compatible cable.



*Pin assignment*

The hearing system must always be turned off when connecting and unplugging the programming cable.

Examples of compatible programming cables:

- Beltone 902290769029
- Siemens: Connex 3
- Oticon: No. 3
- BHM: 77733408 (VBK No. 99/150-RED right)
- BHM: 77733409 (VBK No. 99/150-BLUE left)

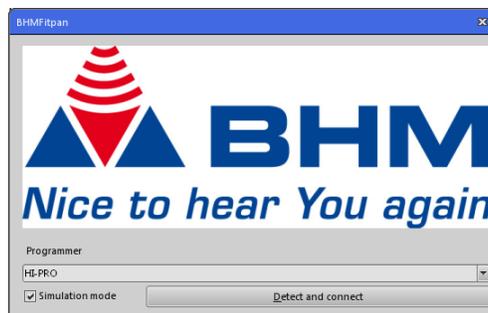
## 5 THE PROGRAM IN SIMULATION MODE

### Starting BHMFitpan

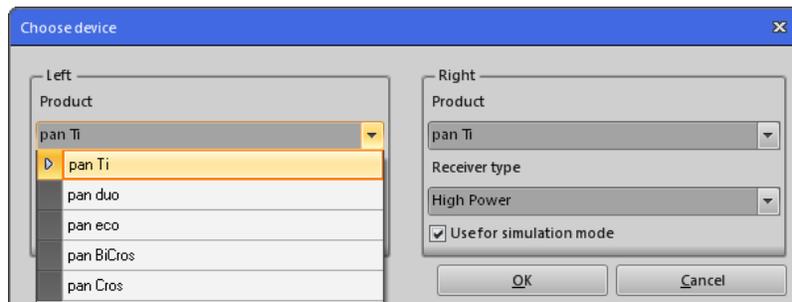


BHMFitpan is started by double-clicking the  icon. BHMFitpan can be opened from the Start menu with **"Start -> All Programs -> BHMFitpan -> BHMFitpan"** if your choice during installation was that no desktop icon is created. Please contact your system administrator if you cannot start BHMFitpan.

The connection window is opened:



Tick the **"Simulation mode"** box. Then click **"Detect and connect"**.



Select the appropriate hearing system and receiver type. Then Click **"OK"** to open the fitting window.

**Connecting a hearing system with the programming interface is not necessary when starting the Fitting software in simulation mode.**

Individual functions of the fitting software can now be tried in simulation mode. The following sections provide further details on the software functions. Simulation mode helps you to become familiar with the fitting software.

The    (Store – Send - Read) icons have no function in simulation mode as no hearing system is connected.

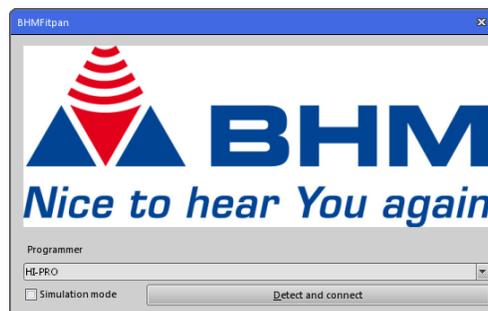
## 6 STARTING THE PROGRAM

### Starting BHMFitpan



BHMFitpan is started by double-clicking the **BHMFitpan** icon. BHMFitpan can be opened from the Start menu with **"Start -> All Programs -> BHMFitpan -> BHMFitpan"** if your choice during installation was that no desktop icon is created. Please contact your system administrator if you cannot start BHMFitpan.

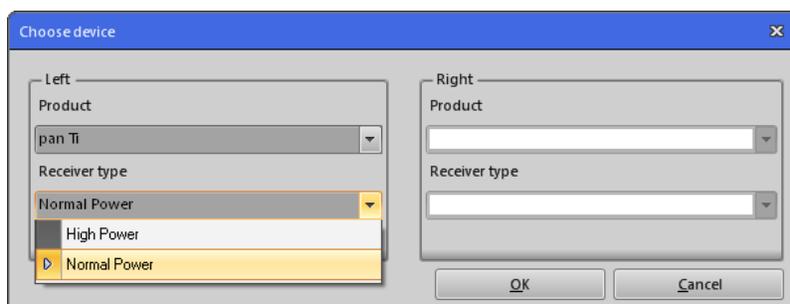
The connection window is opened:



The hearing system must be connected with the programming interface before it can be programmed.

An automatic search for connected devices can be started by clicking **"Detect and connect"**.

**Ensure that the box in front of "Simulation mode" is not ticked (otherwise you will only be in simulation mode and will not be able to program a device).**



Select the receiver type used with the hearing system. You can choose between a normal-power and a high-power receiver. The product cannot be changed (it is automatically detected from the hearing system which is connected). In the example, a **pan Ti** is connected on the left side of the programming interface. Open the fitting window by clicking **"OK"**.

Simulation mode is enabled (Section 5) if BHMFitpan does not find any hearing systems using "Detect and connect".

# 7 PROGRAMMING THE HEARING SYSTEM

## 7.1 DESCRIPTION OF THE MAIN WINDOW

Software version    Customer name & session name    Toolbar    Filter settings / MPO    Hearing system model

Task bar

Side selection, left/right

Serial number of hearing system

Graph of output power / gain

Operation Mode

Tinnitus (only for pan Ti models)

Mute/unmute

View Mode    Features    Equalizer    Dynamics

Output power / gain G50 / G80 curve

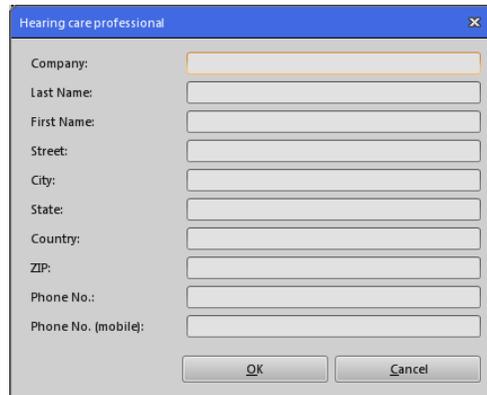
G50 / G80 gain matrix

All	1	2	3	4	5	6	7	8
G80	14	14	14	14	14	14	14	14
G50	18	18	18	18	18	18	18	18
CR	1.15:1	1.15:1	1.15:1	1.15:1	1.15:1	1.15:1	1.15:1	1.15:1

## 7.2 MENU BAR

### 7.2.1 FILE

- *Open session* (Section 7.3.1)
- *Save session* (Section 7.3.2)
- *Hearing care professional data*  
Here the acoustician details can be saved



The screenshot shows a dialog box titled "Hearing care professional" with a close button (X) in the top right corner. The dialog contains the following fields:

- Company:
- Last Name:
- First Name:
- Street:
- City:
- State:
- Country:
- ZIP:
- Phone No.:
- Phone No. (mobile):

At the bottom of the dialog are two buttons: "OK" and "Cancel".

- *Exit*  
Quits the BHMfitpan fitting software

### 7.2.2 PROGRAMMER

- *Send changes immediately*  
Enabling this menu option always transfers settings modifier immediately to the hearing system. See Section 7.3.4.

### 7.2.3 COMMUNICATION

- *Read* (Section 7.3.5)
- *Send* (Section 7.3.4)
- *Store* (Section 7.3.3)
- *Copy* (Section 7.3.6)
- *Transmit settings* (Settings 7.3.7)
- *Reset to factory settings*  
The hearing system is restored to the factory settings
- *Set to RTS mode*  
The hearing system is set to RTS mode (reference test settings).  
If the RTS Mode is activated, a Window is shown. To deactivate the RTS Mode, click the "Close" Button in this window.
- *FirstFit* (Section 7.3.10)

## 7.2.4 VIEW

- *Languages*  
The language required for the Fitting software can be selected here.  
NOTE: The BHMFitpan Fitting software must be restarted after the language is changed.
- *View OSPL90 curve*  
Enabling/disabling of the OSPL90 curve in the output graph
- *Settings* (Section 7.3.8)

## 7.2.5 HELP

- *About ...*  
Information about and contact with BHM-Tech
- *User instruction*  
Opens the user instruction for the BHMFitpan fitting software

## 7.3 TOOLBAR



Icon description from left to right:

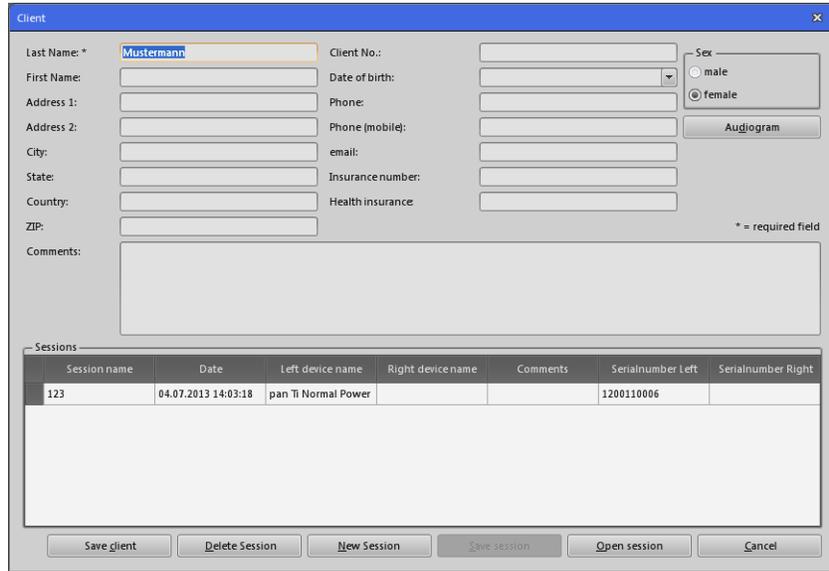
1. Open session
2. Save session
3. Store the settings into the hearing system
4. Send the settings to the hearing system
5. Read the settings of the hearing system
6. Copy the settings to another device
7. Transmit settings to another program
8. General settings
9. Program selection
10. FirstFit (fitting suggestion)
11. Fitting assistant
12. Print/export the session

### 7.3.1 OPEN SESSION

 This is where you can load sessions previously saved. Select the relevant customer and click "**Open customer**". A window opens displaying the sessions saved for the customer selected. Customer details can also be added and changed here. Then select the required session and click "**Open session**". Then you return to the Fitting screen and the settings saved for the session loaded are used automatically.

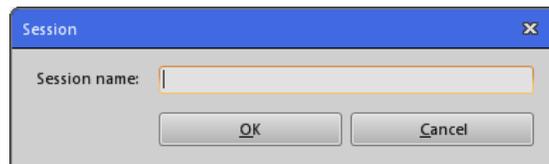
### 7.3.2 SAVE SESSION

 If you find the perfect settings in a fitting session, you can save and reload them as required using this function (see "Open session"). Clicking the "**Save session**" icon takes you directly to your customer database. Here you can either select an existing customer (for whom the session is to be saved) or create a new customer.



Session name	Date	Left device name	Right device name	Comments	Serialnumber Left	Serialnumber Right
123	04.07.2013 14:03:18	pan TI Normal Power			1200110006	

Here you can fill in the customer's details. The last name is a minimum requirement. Customer details and your settings are saved by clicking **"Save session"**. You can now enter another name for the current session:



### 7.3.3 STORE THE SETTINGS INTO THE HEARING SYSTEM

 The settings must be saved in the hearing system after fitting is complete. Click **"Store"** to do this.

Otherwise all the settings transferred to the hearing system are not saved, and are lost on disconnecting (programming cable) or turning off the hearing system. The device then retains the last stored programming. Always turn off the hearing system before unplugging the programming cable.

### 7.3.4 WRITING THE SETTINGS TO THE HEARING SYSTEM

 Clicking the **"Send"** icon sends the current settings of the Fitting software to the hearing system - they can be evaluated by the customer. This process must be carried out after every modification of the settings to test their effectiveness. Once an optimal setting for the customer has been found, it must then be burned in the hearing system. Refer to Section 7.3.3, "Store the settings into the hearing system".

If direct transfer is enabled in the task bar with **"Programmer -> Send changes immediately"**, the settings are always transferred immediately to the hearing system after every change.

NOTE: Storing of the data is still necessary.

### 7.3.5 READING THE SETTINGS OF THE HEARING SYSTEM



Click the **"Read"** icon to read and then display the data saved in the hearing system.

If a hearing system is selected at the beginning of a session, the current setting of the device is automatically read when changing to the fitting screen.

**NOTE:** The data currently SAVED are read. Settings are therefore lost if they have not been saved after modification.

### 7.3.6 COPYING SETTINGS



Clicking the **"Copy"** icon copies the current settings from the active to the passive hearing system provided two identical hearing systems are connected with the programming interface. For a binaural fitting therefore, you can pre-configure the second device accordingly after fitting the first.

**NOTE:** Only the settings currently shown on the screen are copied. The settings are only copied to the device, not stored.

### 7.3.7 TRANSMIT SETTINGS TO ANOTHER PROGRAM



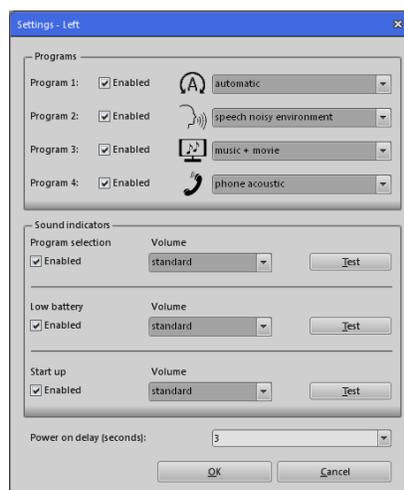
The current settings in the program currently selected can be transferred to another program by clicking the **"Transmit settings"** icon.

### 7.3.8 GENERAL SETTINGS



Clicking the **"Settings"** icon opens a small menu enabling the following advanced settings to be configured:

- Enabling/disabling of individual programs. At least one program must remain active.
- Selection of the mode for each program. See Section 7.4.3, "Modes", for further information on the modes.
- Enabling/disabling of the acoustic signals for program selection, low battery warning and start up. It is also possible to change the volume for the acoustic signals. The volume will be stored in the device if you click the "Test" or "OK" Button.
- Adjustment of the power on delay (in seconds) for the hearing system



### 7.3.9 PROGRAM SELECTION



These buttons enable you to choose the respective programs via the fitting software. Programs available are shown in blue. The program currently selected always has a different colour (orange). Programs not available are shown grey.

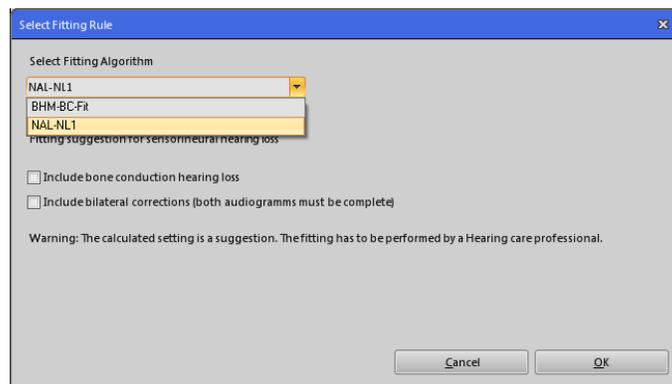
### 7.3.10 FIRSTFIT (FITTING SUGGESTION)



The **"FirstFit"** button enables you to access the automatic fitting suggestion. This function only becomes active once an audiogram has been entered. Please refer to the 7.4.1 "Audiogram" section for more information on the audiogram.

You can choose between two fitting methods:

- NAL-NL1
- BHM-BC-Fit



When choosing the NAL-NL1 fitting method, you can also select whether the bone conduction audiogram or the bilateral corrections are taken into account.

The fitting targets of the algorithms are shown as dashed lines in the display of the output graph in the main window.

**CAUTION: The fitting suggestion is a recommendation based upon the entered audiogram. The decision on whether this recommendation is applicable must be made by you in a manner consistent with the level of hearing loss and the customer.**

### 7.3.11 FITTING ASSISTANT



The fitting assistant helps you to fine tune the hearing system to customer requirements, or to the needs of your customers. Here you will find examples from everyday situations, such as "Traffic noise too loud", and with suggestions for personal optimisation.

**The decision on whether this recommendation is applicable must be made by you in a manner consistent with the level of hearing loss and the customer.**

### 7.3.12 PRINTING/EXPORTING THE SESSION



The **"Print/Export"** button enables you to print or save the fitting session to a document file. **MS Word** and **PDF** formats are available. The storage location is freely selectable. This function is only available in conjunction with saved sessions.

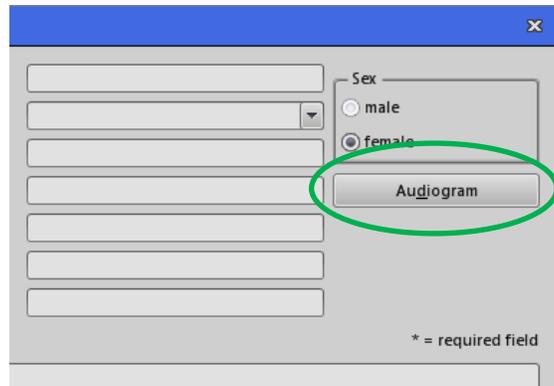
You can also add or change the customer and acoustician details.

**NOTE:** The data changes made in this form only affect the export carried out. The data in the Fitting software remains unchanged.

## 7.4 FITTING SETTINGS

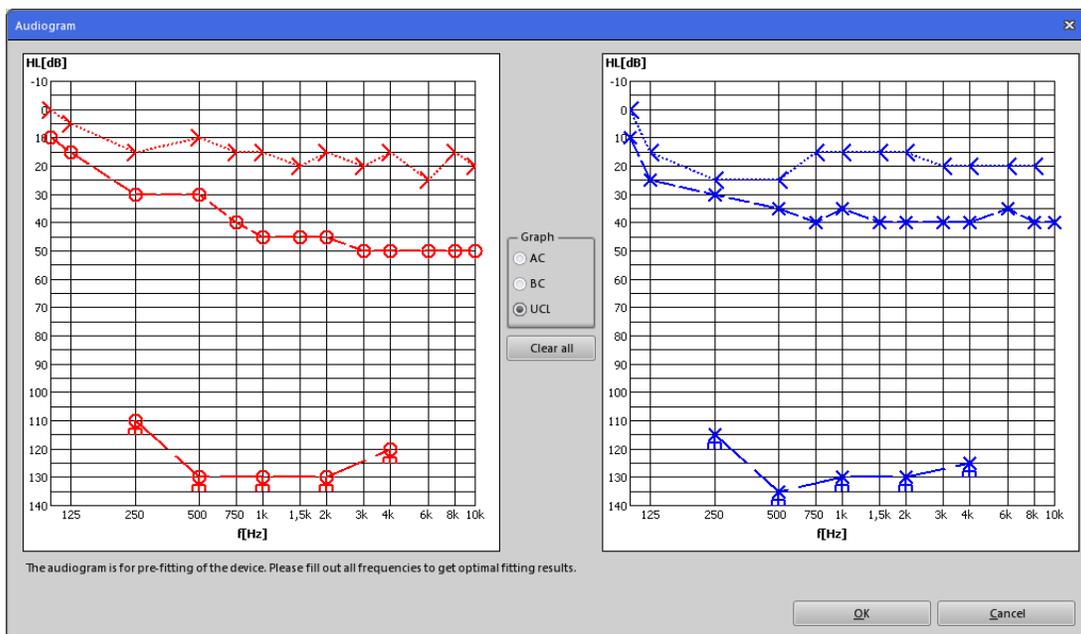
### 7.4.1 AUDIOGRAM

It is possible to enter the customer's audiogram via the customer database. The audiogram can be selected via a button (see diagram) after an existing customer is opened or a new one is created.



The following data can be entered:

- Hearing threshold of air conduction (AC)
- Hearing threshold of bone conduction (BC)
- Uncomfortable Level (UCL)



Selecting AC, BC or UCL in the "**Graph**" box enables data to be entered into the audiogram by clicking the frequency (f [Hz]) and hearing loss (HL [dB]). The data for the right ear (RED) is entered in the graph on the left and the data for the left ear (BLUE) in the graph on the right.

Measuring points can be deleted if necessary by right-clicking them.

The entire audiogram can be deleted by clicking "**Clear all**".

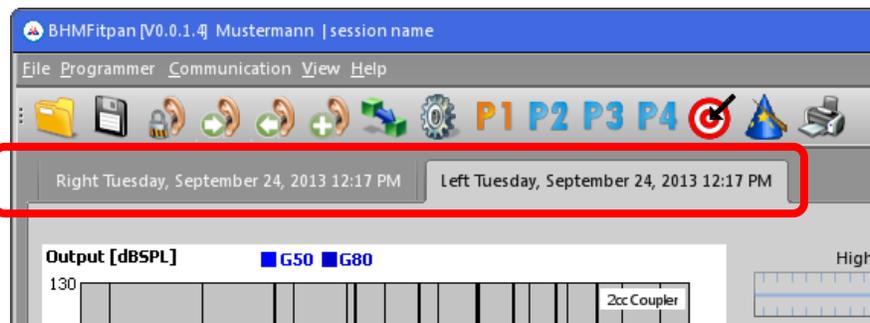
Click the "**OK**" button to save the audiogram.

NOTE: A hearing loss need not be entered for every frequency.

## 7.4.2 SIDE SELECTION (RIGHT AND LEFT HEARING SYSTEM)

If two hearing systems are connected with the programming interface, the tabs under the toolbar enable switching between the right and left hearing system. The selected side is light grey the other side dark grey.

NOTE: The G50 and G80 curves are marked in "red" if the right side is selected. These curves are marked in "blue" if the left side is selected.



### 7.4.3 MODES

The following predefined modes can be selected for the individual programs under **"Settings"** (Section 7.3.8). The mode selected is displayed in the main window.

		pan Ti	pan duo	pan eco
Icon	Mode	Front-End Mode		
	automatic	Automatic	Automatic	Automatic
	music + movie	Microphone omnidirectional	Microphone omnidirectional	Microphone omnidirectional
	comfort	Directional microphone adaptive	Directional microphone adaptive	Microphone omnidirectional
	Speech noisy environment	Directional microphone	Directional microphone	Microphone omnidirectional
	Speech quiet environment	Directional microphone adaptive	Directional microphone adaptive	Microphone omnidirectional
	phone acoustic	Microphone omnidirectional	Microphone omnidirectional	Microphone omnidirectional
	T (inductive)	Induction coil	Induction coil	Induction coil
	MT (inductive)	Microphone + Induction coil	Microphone + Induction coil	Microphone + Induction coil
	tinnitus masking	Automatic	X	X

\*Automatic: In Automatic mode, the signal received by the microphone(s) is analysed and categorised into different hearing situations.

These are:

- Quiet environments
- Speech in quiet environments
- Speech in background noise
- Music and movie
- Background noises
- Wind noises

The parameters of the hearing system are always configured according to this categorisation such that an optimal level of hearing comfort and optimal speech comprehension are attained.

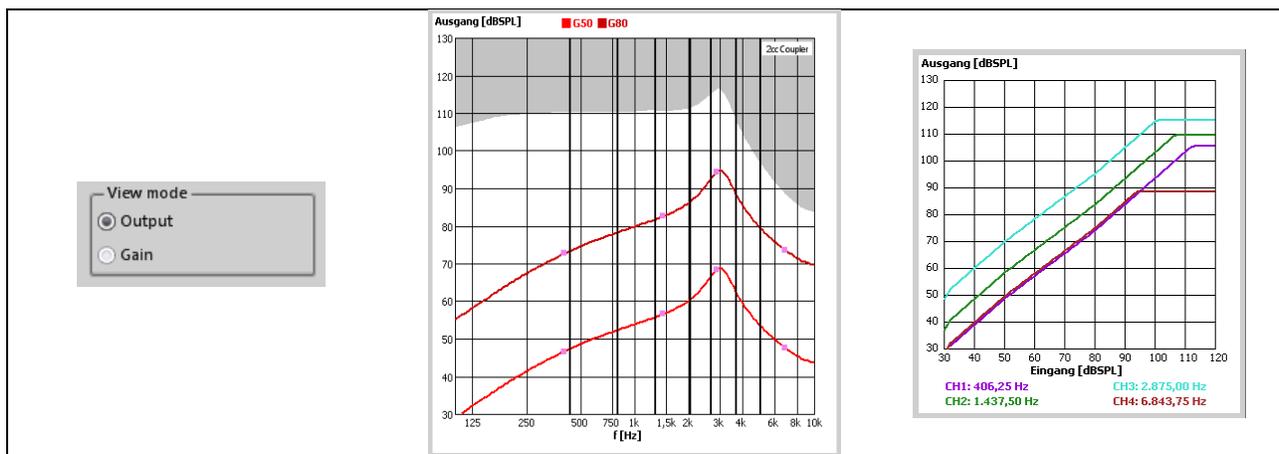
## 7.4.4 VIEW MODE

The curves are shown on two diagrams in the main window. It is possible to switch between the "**Output**" and "**Gain**" curves.

### 7.4.4.1 OUTPUT CURVES

The output sound pressure level [dB SPL] as a function of frequency [Hz] is displayed in the diagram on the left. The curves displayed represent the **G80** and **G50** curves. The maximum output sound pressure level curve (**OSPL90**) is not displayed as a line but as an area extending up to the top border of the graph. This can be enabled and disabled from menu option "**View**" (Section 7.2). The seven black, bolder, vertical lines represent the **crossover frequencies** of the hearing system. Gain and compression can be adjusted separately in the individual channels (frequency bands) of the hearing system - Section 7.4.6. The values for the G80 and G50 curves at the desired frequency can be displayed on the top border by clicking the graph.

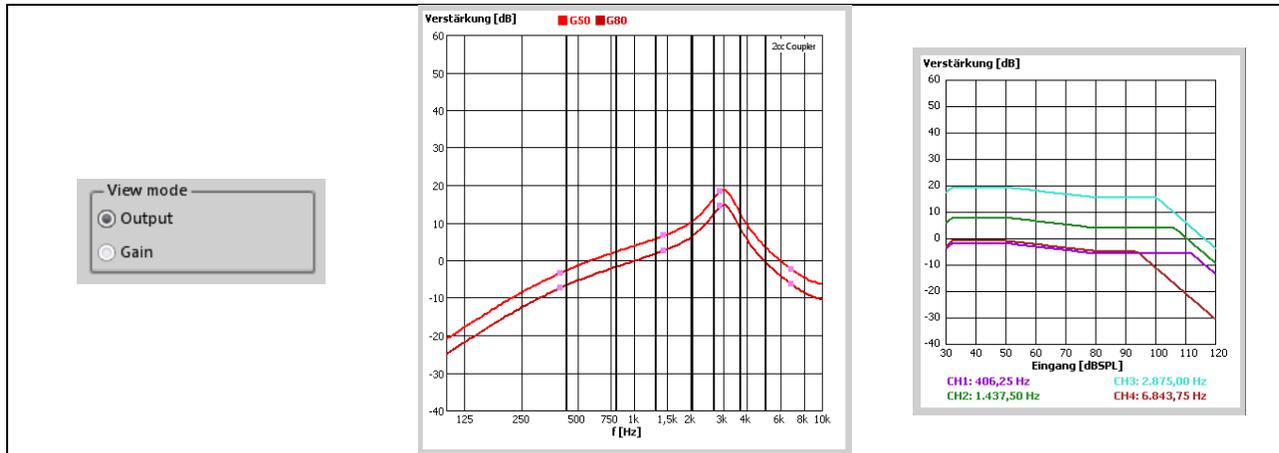
The output sound pressure level [dB SPL] as a function of the input level [dB SPL] at a certain frequency is displayed on the graph on the right. These frequencies are calculated separately depending on the **crossover frequencies** of the frequency bands. The curves displayed are distinguishable with different colours. The current frequencies are displayed at the bottom of the graph.



### 7.4.4.2 GAIN CURVES

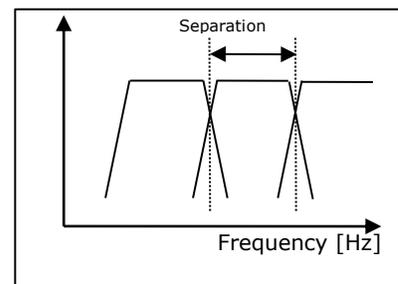
The gain [dB] as a function of frequency [Hz] is displayed on the graph on the left. The curves displayed represent the **G80** and **G50** curves. The seven black, bolder, vertical lines represent the **crossover frequencies** of the hearing system. Gain and compression can be adjusted separately in the individual channels (frequency bands) of the hearing system - Section 7.4.6. Clicking the graph shows on the top border the values for the G80 and G50 curves at the desired frequencies.

The gain [dB] as a function of the input level [dB SPL] at a certain frequency is displayed on the graph on the right. These frequencies are calculated separately depending on the **crossover frequencies** of the frequency bands. The curves displayed are distinguishable with different colours. The current frequencies are displayed at the bottom of the graph. This graph clarifies mainly the settings for MPO (Section 7.4.5) and compression (Section 7.4.6.2).



### 7.4.4.3 CROSSOVER FREQUENCIES

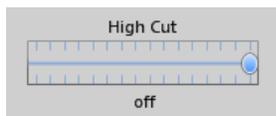
The signal is split into eight separate processing channels. The frequency at which two adjacent channels overlap is known as crossover frequency. These frequencies have a fixed definition and cannot be changed.



### 7.4.5 FILTER SETTINGS

The following filter settings can be configured from the Fitting window. All the effects of the filter settings are displayed instantly in the curve graphs (Section 7.4.4).

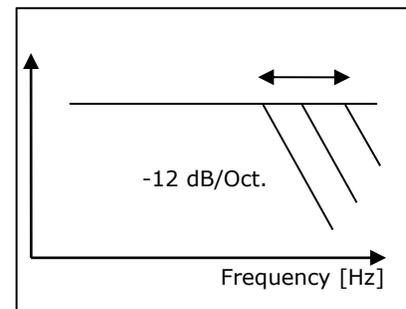
#### 7.4.5.1 HIGH CUT



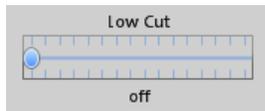
The High Cut filters high frequencies above a selectable frequency with a slope of -12 dB/octave. It is disabled when the slider is on the right.

Otherwise it is possible to select a limiting frequency between 8000 Hz and 1000 Hz. This function has proven very effective in practice at suppressing unwanted, high frequency signal parts and disturbing noises.

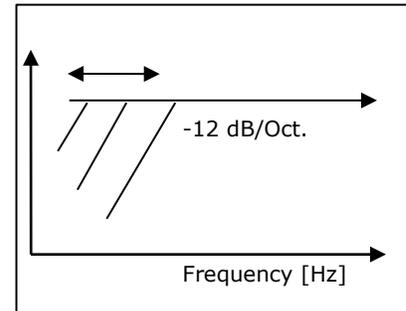
The default setting for the High Cut is **"off"**.



### 7.4.5.2 Low CUT



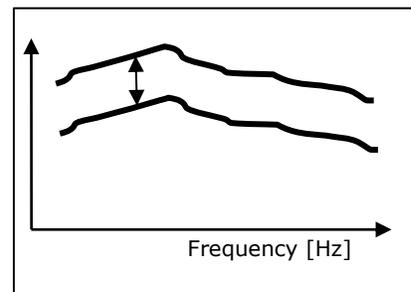
The Low Cut filters low frequencies below a selectable frequency with an slope of -12 dB/octave. It is disabled if the slider is on the left. Otherwise it is possible to select a limiting frequency between 125 Hz and 2000 Hz. This filter reduces the maximum output level at low frequencies. In most cases this results in considerably clearer sound reproduction and improved speech intelligibility. The power consumption of the device is also reduced. The default setting of the Low Cut is **"off"**.



### 7.4.5.3 MPO (MAXIMUM POWER OUTPUT)



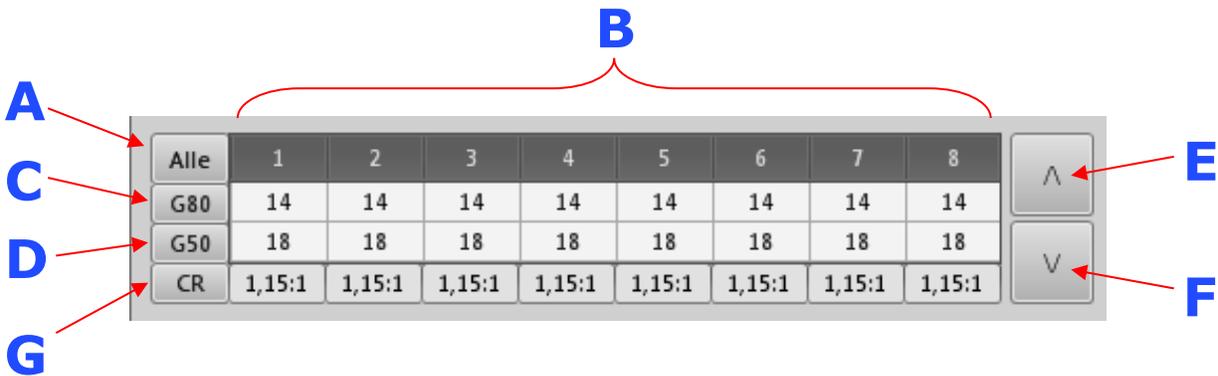
The MPO limits the output sound pressure level of the hearing system. Sound pressure levels exceeding the selected threshold are restricted. This programming option is similar to the familiar *Peak Clipping* function and limits the maximum output sound pressure level. The digital implementation means this function delivers a much-reduced number of distortions as compared to the "hard" peak clipping previously used. This function should be used in particular when the uncomfortable loudness level is easily exceeded. The maximum output signal can be reduced in 2 dB increments with MPO. Values between -30 dB and 0 dB can be selected. This function helps protect hearing and prevents excessively high output levels. This function becomes particularly evident in the Input / Output view (Section 7.4.4).



## 7.4.6 G50 / G80 GAIN MATRIX

### 7.4.6.1 GAIN

The gain for this hearing system can be set for eight frequency bands via a gain matrix. The values of the cells selected can be increased and decreased by the E and F buttons. The gain values of the internal amplifier can be set with the values in the cells. The gain characteristics of the receiver connected and the additional filter are not included in the gain values displayed. Therefore always take the actual gain values from the graph (Section 7.4.4).



Alle	1	2	3	4	5	6	7	8
G80	14	14	14	14	14	14	14	14
G50	18	18	18	18	18	18	18	18
CR	1,15:1	1,15:1	1,15:1	1,15:1	1,15:1	1,15:1	1,15:1	1,15:1

Multiple cells can be selected by clicking A, B, C and D.

### Clicking these causes:

- A** All G50 and G80 cells are selected and the total gain in all channels can now be set with the **E** and **F** buttons
- B** The total gain in the band selected can be changed (with compression ratio staying constant)
- C** The gain for 80 dB can be changed for all channels simultaneously. This changes the compression ratio accordingly in all channels.
- D** The gain for 50 dB can be changed for all channels simultaneously. This changes the compression ratio accordingly in all channels.
- E** The values of the cells selected are increased (PLUS)
- F** The values of the cells selected are decreased (MINUS)
- G** The box displays the current compression ratio

It may be the case that values cannot be increased or decreased when setting the gain via the gain matrix. Possible reasons for this:

1. The minimum or maximum gain has been reached
2. The value for G50 cannot be less than G80
3. The value for G80 cannot be greater than G50
4. The compression inside the channel cannot exceed  $\infty:1$

### 7.4.6.2 COMPRESSION

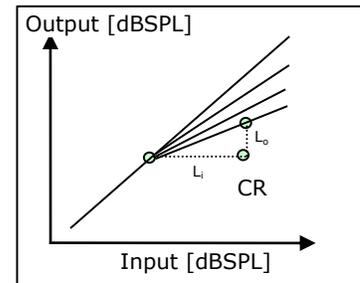
Compression ratio (CR)

The compression ratio is separately adjustable for each frequency band. It represents the ratio of input sound pressure level difference to output sound pressure level difference:

$$CR = \Delta L_i / \Delta L_o$$

**Example: CR=2:1**

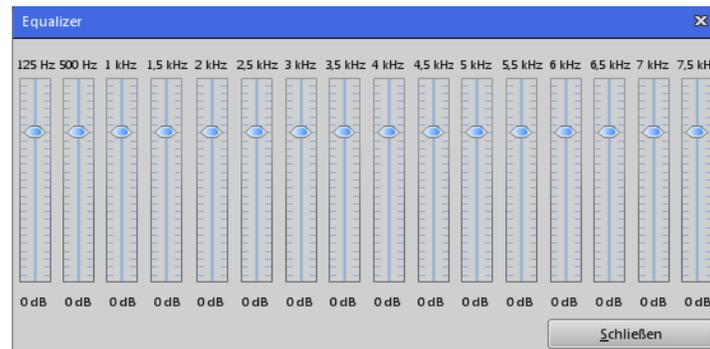
Increasing the input sound pressure by 20 dB increases the output sound pressure by 10 dB  $\Rightarrow 20 \text{ dB} / 10 \text{ dB} \Rightarrow 2:1$ . The higher the CR is selected to be, the stronger the compression and the smaller the dynamic range. CR = 1:1 in the linear range.



### 7.4.7 EQUALIZER



The hearing system has a 16 band equalizer that is divided up within a frequency range between 125 Hz and 7.5 kHz. At these frequencies, the gain is increased or decreased as standard by the value selected.



The acoustician/audiologist can adapt the hearing system accordingly to the audiogram by setting the individual frequency bands. Any potential resonance phenomena can be suppressed. This function can also linearize the frequency characteristics if required.

The default gain setting of each frequency band is 0 dB. It is possible to change the gain in the range -18 dB to +6 dB for every frequency band. The effects of a change to the equalizer are displayed in real-time on the output and gain curves (Section 7.4.4).

## 7.4.8 DYNAMICS (ATTACK / RELEASE)



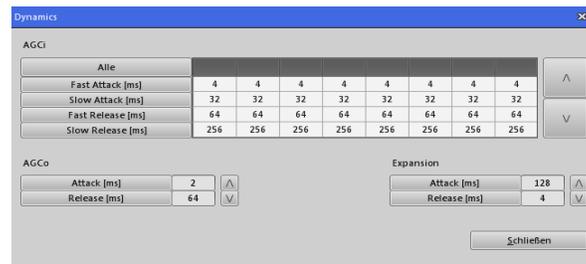
The attack and release times (in milliseconds [ms]) can be set here for the **AGCi**, **AGCo** and **Expansion**. The AGCi has a further division into **Fast/Slow Attack** and **Fast/Slow Release**.

### Fast Attack – Fast Release:

Quick compression for sudden level peaks in the input signal

### Slow Attack – Slow Release:

Slow compression for adaptation of the gain to the acoustic environment



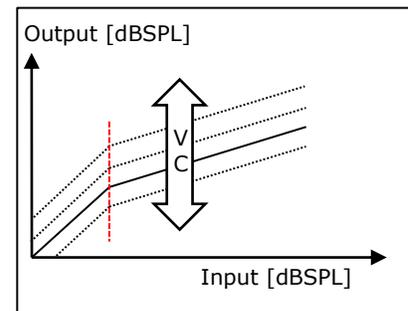
Either individual cells, an entire row or all values can be selected to change the AGCi values. The arrow buttons are used to increase and decrease the values.

On the AGCo and Expansion, individual values can be selected and increased/decreased using the arrow buttons.

### 7.4.8.1 AGCi

#### = Input level controlled regulation

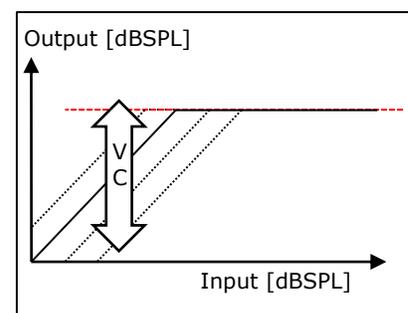
The AGCi regulates the gain of the input level in the different frequency channels (WDRC) at a certain ratio when it falls into a compression range or exceeds a determined input level.



### 7.4.8.2 AGCo

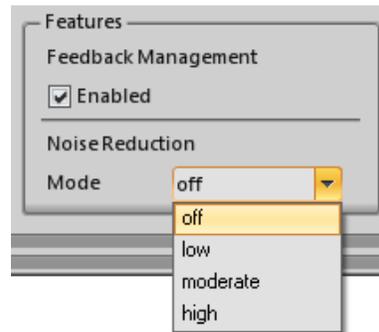
#### = Output level controlled regulation

The AGCo activates regulation when a certain output level is exceeded. The AGCo is used here as a limiting circuit (MPO) and defines the saturation range of the output level.



## 7.4.9 FEATURES

Feedback Management and Noise Reduction can be activated as further features. There are four different levels of Noise Reduction.



### 7.4.9.1 SUPPRESSION OF ACOUSTIC FEEDBACK

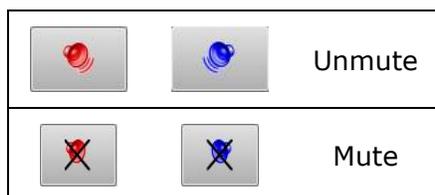
The **pan** hearing system has adaptive acoustic feedback management. Acoustic feedback, whistling, etc. are automatically minimised once the suppression of feedback is enabled. The gain of the hearing system remains unaffected and is not reduced.

### 7.4.9.2 NOISE REDUCTION

The **pan** hearing system is able to reduce irritating noises and artefacts by means of noise reduction. The following levels can be selected:

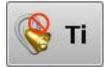
- Off – no noise reduction
- Low – noise reduction of 3 dB
- Moderate – noise reduction of 6 dB
- High – noise reduction of 9 dB

### 7.4.10 MUTE / UNMUTE

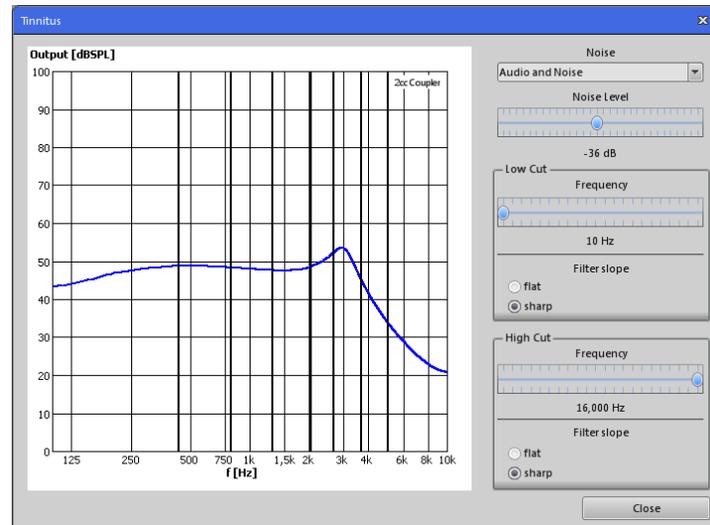


Mute and unmute buttons to activate and deactivate the muting of the hearing system (during the fitting session).

### 7.4.11 TINNITUS (ONLY FOR **pan Ti** HEARING SYSTEMS)



The **pan Ti** hearing system has an integrated noise generator for combating tinnitus. The level of the noise generator can be used as simple noise or be added to a input signal (audio and noise). The customer's tinnitus can be masked by setting an adequate noise level. The noise level is adjustable in range -64 dB to -6 dB. The white noise loaded can be modelled by using Low Cut, High Cut, adjustable Filter slopes and cutoff frequency.



Selecting "Noise only" from the drop-down menu causes only the noise signal to be sent to the ear.

## 8 DEINSTALLATION

---

Before starting to deinstall the Fitting software, backup your database (you can find them in the directory "**C:\Documents and Settings\All Users\Application Data\BHMFit2\DB**") onto storage medium to ensure you do not lose them during the deinstallation process.

**Note:**

**Administrator rights are required to avoid deinstallation problems.**

Close all running Windows applications before starting the deinstallation process. Any active programmes or virus scanner could impact or block the deinstallation.

### **Deinstalling the BHMFitpan Fitting software:**

1st option:

Click "**Start -> Settings-> Control Panel**" in the Windows task bar.  
Click "**Start -> Control Panel**" in the Windows task bar.

Double-click "**Software**" in the Control Panel window.  
Click "**BHMFitpan**" in the list of installed programs.  
Click "**Remove**" and follow the menu recommendations.

2nd option:

Delete the current version of BHMFitpan by selecting "**Start -> All Programs -> BHMFitpan -> Uninstall BHMFitpan**" in the Start menu. The installer now deletes all of the Fitting software (not the customer database).

The destination folders and the databases created are left after deinstallation of the Fitting software.

We recommend leaving these files and folders as they are if you wish to re-install the BHMFitpan Fitting software (otherwise you can delete them yourself at any time).

## 9 UPDATE

---

Before starting to install the new software update, backup your databases (you can find them in directory "**C:\Documents and Settings\All Users\Application Data\BHMFitpan\DB**") onto storage medium to ensure you do not lose them whilst the update is being installed.

Close all running Windows programs. Any active programs or virus scanner could impact or block the update.

Deinstall the current version of BHMFitpan (Section 8). You can then install the new version. Proceed as for a new installation (Section 3, "Program installation"). The BHMFitpan installer installs the necessary files.

## 10 FAQs

---

Below are the answers to some of the frequently asked questions on **BHMFitpan** from BHM-Tech. Please contact BHM-Tech if the question you are interested in is not included here. We will be glad to answer your questions.

Q: "FirstFit" can't be selected

A: To use the "FirstFit" a fitting session must be started

Q: "Print/Export" can't be selected

A: Print/Export can only be used when a fitting session is selected

Q: What does the "Copy" function actually copy?

A: All the settings (excluding the Mode) you can see on the Fitting screen.

Q: Can both devices be adjusted simultaneously during a binaural fitting?

A: No. You can however customise one device and simply copy the settings to the other.

Q: Is the Fitting software also available as a Noah module?

A: No, there is currently no Noah module of BHMFitpan.

Q: Can the Fitting software also be used with Noahlink?

A: No, Noahlink cannot currently be used.

Q: Is programming necessary?

A: Our products are set up in a way that is fine for many customers in most cases. Programming of the device is necessary if your customer is happy with the settings.

Q: What does "factory settings" mean?

A: This function enables the user to restore every hearing system to its original condition as supplied. This is potentially helpful when many settings have been changed and the acoustic pattern is no longer correct. Afterwards you can continue working from defined and well-known settings.

Q: The programming cable is connected to the programming device and the hearing system – but BHMFitpan still does not find a device.

A: Ensure that the hearing system is connected correctly and is supplied with power (feedback whistling). Make sure the connectors are fixed tightly. Try using a different device to find out whether your programming device is working fine.

Q: Why are the output curves different using Normal-Power and High-Power receiver ?

A: Every receiver has its own output characteristics. These are calculated accordingly and shown on the graph.

*We have strived to provide as much detail as possible in writing this document. Any inconsistencies pertaining to wording, fonts and content, and misprints, are unintentional. Please provide us with information should any corrections be necessary. We reserve the right to make changes to the content for the purposes of improvement.*

[www.bhm-tech.at](http://www.bhm-tech.at)