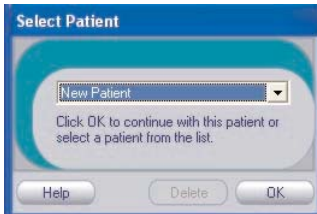
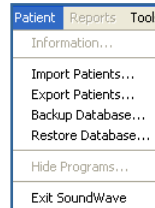


Patient Selection



Displays each time you launch SoundWave or close a patient file. Use this window to:

- Create a New Patient File.
- Delete a Patient File.
- Open an Existing Patient File.



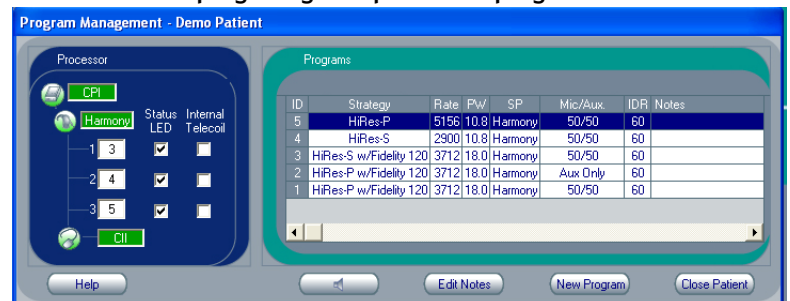
Use the Patient Menu to:

- Edit patient info/case history.
- Import or Export individual patient files.
- Backup or Restore your patient database.
- Hide Programs listed in the Program Management window.

Program Management

- Create new programs** Click on the New Program button.
- Open programs** Click on a program row.
- Download programs, set alarms, enable LED, and Internal Telecoil** Drag to download programs to the slot; click the checkbox to enable feature. Alarms (PSP only); Status LED or Internal Telecoil (Harmony only).
Note: The Program's Audio-mixing ratio must also include an Aux setting to use the Internal Telecoil.

Each row in the program grid represents a program.



- Compare programs** Highlight a program then click on the Stimulation button.
- Add notes to programs** Click on the Edit Notes button to add or edit a note for the highlighted program.

- Print program report** Highlight a program, click on the Reports menu and then select Program Details.
- Close patient file** Click on the Close Patient button.

Definitions

Auto-T

Auto T refers to the automatic setting of threshold levels during programming. T levels are set at 1/10 M across each electrode. It is not necessary to set T levels on a electrode-by-electrode basis, saving time and preventing patient fatigue.

Automatic Pulse Width

SoundWave automatically adjusts pulse width during programming to maintain fast rates at the narrowest pulse width. The algorithm takes into account each patient's unique physiology and M levels and performs all the necessary computations each time M levels are changed.

Clinical Units (CU)

Loudness growth is controlled by pulse amplitude and pulse duration. This relationship may be expressed as pulse amplitude x pulse width. The product is referred to as charge. In SoundWave, clinical units represent constant charge (amplitude x pulse width x k, where k = an arbitrary scaling constant .013) on a scale of 0-6000 CU.

Electrode Conditioning

Electrode Conditioning prepares the electrodes for stimulation (removes protein or air bubbles) prior to programming.

Electrode Conditioning is only necessary for a patient's first fitting in SoundWave or when turning on an electrode which had been turned off.

Fidelity 120 for HiRes-S and HiRes-P

HiResolution with Fidelity 120 delivers 120 channels through active current steering. Active current steering delivers channels between adjacent pairs of electrodes through accurately weighted stimulation of each electrode in the pair simultaneously. The HR90K employs 16 electrodes to create 15 adjacent pairs. Each adjacent pair of electrodes is used to deliver 8 channels for a total of 120 channels along the array. The captured acoustic spectrum (100-8000 Hz) is transparently assigned across the array by pairs so that each electrode defines a frequency boundary for the pair.

HiRes®

Advanced sound processing strategies that are designed to more accurately detail sound and enhance temporal resolution. Two options are currently available, HiRes-S and HiRes-P.

Power Economy Mode (Harmony only)

Power Economy Mode provides a significant increase in battery life. This option is the default setting. Only deactivate if you have difficulty maintaining lock during programming. This is a processor specific parameter.

Power Estimator (PoEM)

PoEM represents an advanced approach for transparent management of RF. PoEM improves lock stability across listening environments, for changes in patient skin flap thickness that naturally occur over time, and between various hardware configurations (that is when you change cables, headpieces or processors).

Speech Bursts

Speech Bursts are the stimulation used to set M levels. Speech Bursts are delivered to 3 to 4 electrodes simultaneously, depending on the number of active electrodes. Using Speech Bursts reduces the number of active loudness judgments required by the patient, and is more representative of dynamic live speech stimulation delivered during daily device operation.

Overview of the Program Window and Fitting Procedures

- 1. Set Ms with Speech Bursts** Click on the Speech Bursts option (it is the default for new programs), turn on stimulation and then press or click on the up/down arrows to change levels. Press or click on the left or right arrows to advance across array.
- 2. Select Strategy** Select either HiRes-P or HiRes-S and enable Fidelity 120 for selected HiRes strategy if desired.
- 3. Program in Live Speech** Click on the Live Speech option, (located directly above the Stim button) turn on stimulation and then globally adjust Ms. To adjust Ms or Gains individually, disable Global Selection, and then click on individual M or Gain and use up or down arrow on keyboard or screen. To adjust Ts globally or individually, select Manually Set Ts using Options.
- 4. Volume** **All processors:** As the processor Volume dial is adjusted, the Volume control on the screen displays the changes in real-time. **Platinum and CII BTE:** The clinician can also use the Volume control on the screen to adjust the processor's volume. **All processors:** Volume range default -50(Min) 50(Max). Clinician sets according to patient's need.
- 5. Sensitivity** **PSP:** As the processor Sensitivity dial is adjusted, the Sensitivity control on the screen displays the changes in real-time. **Harmony/Auria/BTE:** Clinician uses the Sensitivity control on the screen to select/set sensitivity. The sensitivity value displayed on the screen when the program is saved will be the default sensitivity used for that program.
- 6. Change/Monitor Program Parameters** Enable Fidelity 120 with HiRes-P or HiRes-S in Live Speech. (Turn volume down before turning stimulation on.) Click on the Filters pull-down menu to select Standard or Extended Low (default) options. Click on the IDR (default is 60) arrows (up or down) to widen or narrow dynamic range. Click on the Gain profile buttons to shape gain changes to acoustic input. Click on the Audio-Mixing pull-down menu to change the mixing ratio from 50/50 - Mic/Aux (default) to other mixing options. (Must include an Aux option to activate Internal Telecoil or T-Mic when program is downloaded to the processor). Show or hide tNRI using the Preference Menu.
- 7. Save the Program.** Saved programs can be edited. Programs can be hidden from view, but not deleted.

Note: The Edit button is available when you open a saved program. Click on Edit to make changes to an existing program.

The screenshot shows the 'Working Program' window with the following components and labels:

- Impedance Indicators:** A row of colored diamonds (green, purple, red) above the array.
- Clinical Units Scale:** A vertical scale from 0 to 500.
- tNRI Grouped Ms:** A series of blue and green triangles representing grouped Ms values.
- Frequency (Freq):** A row of frequency values: 333, 455, 540, 642, 762, 906, 1076, 1278, 1518, 1803, 2142, 2544, 3022, 3590, 4264, 6665 Hz.
- M/T Array:** A grid of 'M' and 'T' values for each frequency.
- Volume Control:** A vertical slider with 'Max 50' and 'Min 50' labels. Labels: 'Set Volume Range', 'Displays Volume and Sensitivity settings (PSP)', 'Adjust Volume settings (CII/Platinum BTE)'. Below it is a 'Sensitivity' control with 'Max' and 'Min' labels. Label: 'Adjust Sensitivity settings (Harmony/Auria/BTE)'.
- Global Selection Tool:** A four-way arrow button. Labels: 'Increase levels', 'Global Selection Tool', 'Decrease levels'.
- Stimulus Options:** Radio buttons for 'Speech Bursts' and 'Live Speech'. Label: 'Choose Stimulus Options Speech Bursts or Live Speech'.
- Stimulation Button:** A speaker icon button. Label: 'Stimulation button turns stim on and off'.
- Strategies Panel:** Radio buttons for 'HiRes-P' (selected), 'HiRes-S', and a checkbox for 'Fidelity 120'. Labels: 'Select HiRes-P, HiRes-S, Fidelity 120', 'Displays current Rate and Pulse Width'. Fields: 'Rate [pulses/sec] Channel 5156 Total 82496', 'Pulse Width 10.8 uS'. Buttons: 'Help', 'Options', 'Notes'.
- Input Panel:** 'IDR (dB) 60' with up/down arrows. Labels: 'Input Dynamic Range', 'Displays real-time sound from microphone'. 'Gains' buttons: 'Display Input', 'Filters Extended Low'. Label: 'Select Filter option'. 'Audio Mixing 50/50 - Mic/Aux' pull-down menu. Label: 'Adjust Audio Mixing ratios'. Buttons: 'Cancel', 'Save', 'Edit'.
- Bottom Labels:** 'Access infrequently used program options', 'Enter/edit Program Notes', 'Input Dynamic Range', 'Save your program', 'Gain pre-set tools', 'Adjust Audio Mixing ratios'.

Initial Fitting Guidelines

Get Started

1. Launch SoundWave by double-clicking on the desktop icon.
2. Connect the sound processor.

Select Patient

1. From the Select Patient window, verify New Patient option in menu, and then click OK.
2. Enter the patient's information, select the type of implant, and then click OK.

Initialize Processor

1. From the Tools menu, click on the Initialize Processor option.
Note: Power Economy Mode is the default for the Harmony. Retain this setting to maximize battery life, deselect only as needed to maintain lock.

Condition Electrodes

1. From the Tools menu, click on the Run Conditioning option.

Create Programs

Recommended initial programs*:

- Slot 1: HiRes-S with Fidelity 120
- Slot 2: HiRes-P with Fidelity 120
- Slot 3: HiRes-S

** for children or persons who cannot make a choice for preference or performance, start with one strategy, HiRes-S with Fidelity 120, and monitor progress on which to base programming changes.*

Create HiRes-S and/or HiRes-P Program

1. Select HiRes-P (default) or HiRes-S in the "Strategies" panel.
2. Select Speech Bursts in the "Stimulus" panel, start stimulation, and raise M levels (using up arrow key or arrow above globe) until loudness is most comfortable for the highlighted group of electrodes. Assess M levels for all groups of electrodes.
3. Turn stimulation off.
4. Click on the Live Speech option button and adjust programs as needed.

Note: Globally reduce M levels or turn down the processor volume before turning on stimulation.

Note: HiRes-P generally requires lower M-levels than HiRes-S. Therefore, you can easily create a HiRes-S program by editing an existing HiRes-P program and globally increasing M levels in Live Speech. No need to re-measure Speech Burst M.

5. Click on the Save button.

Create Fidelity 120 Channel Program

1. Determine if patient has a preference for HiRes-P or HiRes-S. If patient does not have a preferred strategy, base Fidelity 120 program on HiRes-S. (The rate does not change between HiRes-S and HiRes-P for Fidelity 120).

Note: You can try Fidelity 120 in both HiRes-S and P as desired to determine preference

2. Open the program created in the preferred strategy and select Edit.
3. With stimulation off, enable Fidelity 120 by clicking on the checkbox in the "Strategies" panel.
4. Globally reduce M levels or turn down the processor volume before turning on stimulation.
5. In Live Speech, enable Fidelity 120 for the preferred strategy.
6. Adjust M levels in Live Speech with Fidelity 120 (be sure processor volume is returned to recommended user setting).

Note: You can only stimulate using Live Speech with Fidelity 120.

7. Click on Save Program.

Download Programs

1. Drag and drop programs one at a time to the slot on the Processor side of the Program Management window.

Recommended initial programs:

- Slot 1: HiRes-S with Fidelity 120
- Slot 2: HiRes-P with Fidelity 120
- Slot 3: HiRes-S

2. Click on the check box to the right of the program slot to: enable alarms (PSP only), or toggle Status LED and Internal Telecoil options (Harmony only).

Note: These options are program specific. Once a patient has selected a "preferred" strategy, set the internal telecoil for a program on a designated slot as desired (Harmony only).

Print Reports

1. From the Reports menu, click on the report type.
Note: You must highlight desired program in the program management screen to print a program report.
2. For Impedance and Visit History reports, select from the list of available reporting dates.

Transitioning to HiRes with Fidelity 120 for existing HiRes-S and HiRes-P users

- 1) Open preferred HiRes program.
- 2) Select Edit.
- 3) Select Fidelity 120 and adjust M levels globally as needed.
Note: Globally reduce M or turn down the processor volume control before turning on stimulation
- 4) If desired try both HiRes-S and -P with Fidelity 120.
- 5) Save program and monitor for performance and progress.

Tips for Fitting

Balancing and Pitch Ranking

Balancing and Pitch Ranking can be accomplished by manually toggling between groups of electrodes (Speech Bursts) or with single electrodes (Tone Bursts). Tone Bursts of very narrow pulse width have very poor correlations with live speech stimulations levels. Therefore you may not be able to balance at Speech M with single electrode stimulation.

Programming CIS or MPS

SoundWave currently does not permit the analog stimulation required for SAS but does permit you to emulate a CIS or MPS strategy type by reducing the number of electrodes, using wider pulse widths and slower rates.

To emulate an MPS or CIS program:

1. Select HiRes-P strategy to emulate an MPS strategy; Select HiRes-S to emulate a CIS strategy.
2. Turn off every other electrode (most patients use the Odds in SCLIN).
3. Click on Options, and then manually set Pulse Width to 75 uS.
Note: This disables Automatic Pulse Width (APW).
4. Program M levels with Speech Bursts or in Live Speech.
5. Save Program.

Live Speech Programming

You can skip Speech Bursts entirely and begin programming in Live Speech. To program in Live Speech:

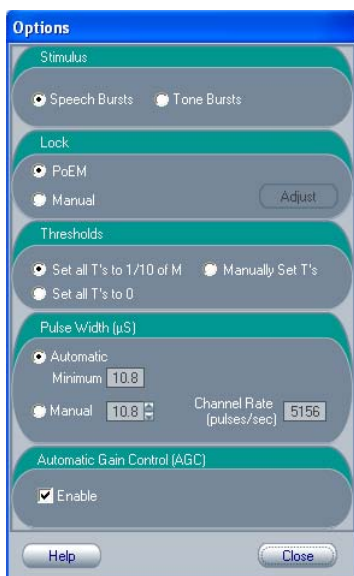
1. Open a new program and select a strategy.
2. Select Live Speech.
3. Set processor controls to the midpoint setting (12:00).
4. Turn on Live Speech.
5. Globally increase M levels.

Note: For very young children, it is optimal to have them playing with a quiet toy. Then watch for them to be interrupted by the stimulation, that is, a speech awareness level. This level is typically audible but below M. You can use this level to train a conditioned response to variousling sounds or other acoustic inputs.

6. Adjust levels in response to Live Speech inputs (Ling Sounds or other inputs across the spectrum).
7. Save the program.

Note: In Live Speech you can start a fitting with Fidelity 120 for a selected strategy. Speech bursts or tone bursts stimulation is unavailable when Fidelity 120 is selected. To assess individual electrode psychophysics you must deselect Fidelity 120.

Program Options



Stimulus: Select Speech Bursts or Tone Bursts stimulation.

Note: This setting controls which of these options is available for selection in the Program window.

Lock

The RF power setting needed to achieve successful communication between processor and implant. Contact Advanced Bionics before making a change to this option.

Thresholds:

Select how SoundWave manages Ts.

Pulse Width uS:

Select how SoundWave manages Pulse Width. Note that selecting manual here disables the APW algorithm. When Fidelity 120 is selected, the minimum PW is 18 uS.

Automatic Gain Control (AGC):

Enable or disable Automatic Gain Control (AGC).