



# TOOLS for SCHOOLS



## Platinum Sound Processor (PSP) Product Guide

For Educators, Therapists, and Families

### Platinum Series™ Sound Processor

The PSP is uniquely designed with children in mind. The PSP stands up to the challenge of a child's busy life, with a lightweight, pager-style design and a durable aluminum case for greater protection. It offers an integrated headpiece and microphone, so nothing is worn on small ears. This sound processor is universally compatible with all generations of Advanced Bionics implants and sound processing strategies, including HiResolution® Sound and Fidelity 120.



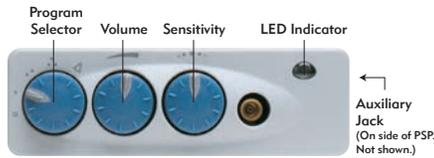
This guide provides information on the features, accessories, and use of the Platinum Sound Processor. Should you need support beyond this document, please contact us at 877.829.0026, Monday through Friday, 5 a.m. to 5 p.m. PST, and ask to speak with an audiologist, or you can visit our website at [www.BionicEar.com](http://www.BionicEar.com).



## Quick-Start Guide and System Checks:

- Step 1:** Verify that the **Program Selector/Switch** is in the off position (O).
- Step 2:** Slide a fully charged **Battery** or AA Battery Pack into position on the **Processor**. Check to ensure that the Battery is secure.
- Step 3:** Make sure that the **Cable** is plugged into both the Processor and the Headpiece. Check that the Cable is not twisted or frayed. The connections should be stable, not loose.
- Step 4:** Adjust the **Volume Control** so that the indicator notch is all the way to the left.
- Step 5:** Verify that the **Sensitivity** control notch is in the 12 o'clock position.
- Step 6:** Place the **Headpiece** over the internal implant (there is magnetic attraction between the Headpiece and internal stimulator).
- Step 7:** Turn on the Processor by switching the **Program Selector** from off to the desired program location (•, ••, •••). The **LED** (light emitting diode) will flash **RED** to indicate PowerCel charge. A fully charged battery will flash three to four times.
- Step 8:** Verify that the LED stops flashing once successful communication or “lock” is established between the Processor and internal implant.
- Step 9:** Slowly turn up the volume to the recommended position (based on the audiologist or parent report). *NOTE: The LED will flash **GREEN** in response to loud sound, such as a clap or voicing near the Microphone.*
- Step 10:** Perform a behavioral listening check, using the Ling Six sounds or another listening activity.

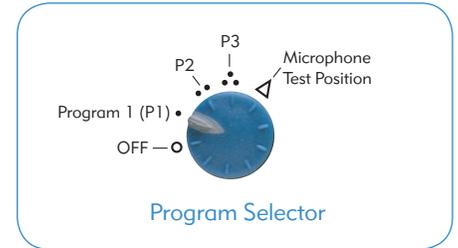
# PSP Features



PSP control features

## Program Selector

The PSP can store up to three (3) programs. In the off position (O), there is no sound. As the Program Selector is rotated clockwise, the Processor is activated, and one of three programs can be selected (•, ••, •••). The final position (Δ) is reserved for a microphone test (see *Troubleshooting/Microphone Test* for more information). It is important that the team of individuals working with the child know which programs are on the Processor and when to use these programs. When the Processor is not in use, setting this dial to the off position will deactivate the Processor.



## Volume Control

The Volume Control allows the loudness level to be adjusted. Turning the control in a clockwise direction increases the loudness; turning the control counterclockwise decreases the loudness. The volume position is indicated by the raised line on the dial, which typically is set to the 12 o'clock position.



The audiologist has the ability to restrict or limit the Volume Control dial. Although the dial will continue to work, a restricted range will limit the actual decrease or increase to sound as the dial is moved. Programming the Volume Control in this manner prevents accidental changes in loudness (either too soft or too loud), which could compromise the child's hearing. This is an important feature to discuss with the team of individuals supporting the child at school.

## Sensitivity Control

The Sensitivity Control determines the quietest level of sound that will be picked up from the environment by the Microphone. The dial is typically set between 11 and 12 o'clock. Turning the Sensitivity Control in a clockwise direction increases the Microphone's sensitivity for softer, more distant sounds. Turning the Sensitivity Control counterclockwise decreases the sensitivity so that softer and more distant sounds are not picked up by the Microphone. This may help in the presence of background noise, for example in a cafeteria or gym.



*NOTE: Increasing the Sensitivity (clockwise) beyond the 12:00 position will increase the Green LED response. Conversely, decreasing the Sensitivity (counterclockwise) will decrease the response and require louder sounds to be present in order to activate this feature.*

## Auxiliary Input Jack

The Auxiliary Input Jack, located on the side of the Processor, can be used to connect external auditory input sources, such as an FM System. There are several points to consider in connecting an audio device to the Sound Processor:

1. An interface cable may be required.
2. The PSP must contain a program set up for auxiliary input (see *Audio-Mixing*). Consult the audiologist or family regarding the program settings.
3. Only battery-powered devices should be plugged into the Sound Processor, unless a patch cable with special electronics is used.



Advanced Bionics Customer Service is available to discuss questions regarding connecting to external auditory devices and the equipment needed, at 1.877.829.0026.

*NOTE: The Auxiliary Input Jack on the PSP is 3.5 mm in size and was designed for mono input. Plugging a stereo device (like an iPod or FM System) into the mono jack may degrade the sound quality. A stereo-to-mono adapter will allow connection of these devices and is available at most electronics stores.*

## Dual-Color LED (Light Emitting Diode) Indicator

The PSP is equipped with a built-in LED Status Indicator. The LED is a diagnostic light that provides parents and teachers with information regarding Processor function. It is located next to the Headpiece Jack and becomes active when the Processor is turned on. The chart below describes the LED functions.

*NOTE: Under very rare conditions, the programming audiologist may have set the Processor so that the Green LED may not illuminate. Check with the programming audiologist to see if this feature has been de-activated.*

<b>Battery Charge Status</b>	<p>When the Processor is first turned on, the LED will indicate the following:</p> <ul style="list-style-type: none"><li>• Three (3) to four (4) quick <b>RED</b> blinks indicate the battery is fully charged.</li><li>• Two (2) quick <b>RED</b> blinks indicate the battery is sufficiently charged to power the system.</li><li>• One (1) quick <b>RED</b> blink indicates that the battery charge is nearly depleted. The battery should be replaced.</li></ul>
<b>Lock Status</b>	<ul style="list-style-type: none"><li>• Refers to the successful communication between the external device (Headpiece) and internal device.</li><li>• After the battery charge status is complete, the <b>RED</b> LED will continue to flash, approximately once per second, until the Headpiece is properly positioned over the implant and successful communication is established.</li><li>• If the device is not transmitting sound to the implant, such as when the Headpiece falls off, the LED will flash <b>RED</b>.</li></ul>
<b>Microphone/System Status</b>	<ul style="list-style-type: none"><li>• Once the battery and lock status LED sequences are complete, the LED should flash <b>GREEN</b> in response to your speech patterns as you talk closely into the Headpiece Microphone.</li></ul>

## Audible Alarm

The Audible Alarm is a programmable feature and is program specific. The Alarm is designed primarily for children, in order to alert parents and teachers when the device needs attention. Once the problem has been rectified, the PSP will resume normal function.

The Alarm will emit a slow beeping tone, and the LED will flash **RED** if any of the following occur:

1. Headpiece falls off.
2. A communication problem between the Processor and implant (loss of lock).

If the battery is near depletion, the alarm will emit a slow beeping tone until the battery dies or is replaced.

## Platinum Headpiece & Cable

The Platinum Headpiece integrates the Microphone and transmitter for sending sound information to the implant. The Microphone is located behind the opening in the color cap. There are two types of Headpieces: The curved bottom style is provided for the 90K implant, which is the most current technology. Children with implants placed before 2003 (CII Bionic Ear, Clarion 1.0 and 1.2) will utilize a flat-bottom Headpiece. The audiologist or family will know which type of implant is in use.

There is a magnet housed within the Headpiece, which is designed for the implant system. This magnet will attract the internal stimulator magnet under the skin. Placing the Headpiece over the implant area should result in sufficient attraction to hold the system in place and allow the Processor and implant to communicate. The strength of the magnet is determined by the audiologist and should not be changed without a consultation. If Headpiece retention is a problem, or irritation/skin redness is noted, the programming center should be notified immediately.

The Cable connects the Headpiece to the Processor. It is the pathway for relaying information between the external and internal implant components. Cables are available in multiple lengths and in two colors: beige or brown. At one end of the Cable is a two-prong plug, which is inserted into the Headpiece. The pins are of different diameters and must be correctly inserted. A small coaxial plug is located at the other end of the Cable and connects to the Headpiece jack of the Processor. Removing and replacing the Cable continuously will weaken the connection, so only remove the Cable when it needs to be replaced.



*NOTE: Be sure to turn off the Processor before removing the Cable from the Headpiece.*

*NOTE: Make sure that no debris is blocking the microphone opening on the Headpiece.*

## Power Options

A custom-designed, rechargeable lithium-ion battery powers the Processor. The battery slides on and is held in place by a latch. As an alternative to the rechargeable batteries, a AA Battery Compartment can be used. The AA Battery Compartment uses three (3) AA batteries.

### How to Replace the Rechargeable Battery or Battery Pack

1. Depress the small latch on the side of the PSP in an upward motion.
2. At the same time, gently slide the battery off of the Processor tracks.
3. A newly charged battery can then be placed on the tracks, sliding until the latch clicks into place—the battery is now secure.

*NOTE: The battery contacts should be gently cleaned at least once a month with a clean cotton swab or a hearing-aid brush.*

*NOTE: Educators/therapists may want to keep on hand the AA Battery Pack as a backup power source in case additional rechargeable batteries are not available.*



Rechargeable Lithium-ion Battery



AA Battery Pack

## Audio-Mixing

Audio-Mixing refers to the amplification ratio between the Headpiece Microphone and an auxiliary input device. Audio-Mixing allows the child's Headpiece Microphone to remain on when connected to an auxiliary input, such as an FM System or iPod. This allows the child to hear his own voice and sounds around him in addition to the input from the auxiliary device. The Audio-Mixing is set for each program on the Sound Processor by the audiologist during programming. The default Audio-Mixing recommendation is 50/50. For a description of the Audio-Mixing options, refer to the table below.

Audio-Mixing Options	Processor Microphone	Auxiliary Input (i.e. FM System)
Mic Only	On	Off
50/50 - Mic/Aux*	On	On
30/70 - Mic/Aux**	On (-10dB)	On
Aux Only (Atten.)	Off	On (-20dB)
Aux Only	Off	On

\*For classroom use and the default programming setting

\*\*For noisy environments where greater input is needed from the FM (i.e., theatre, church, noisy restaurant, etc.)

# Accessories for the PSP

## Auxiliary Microphone

The Auxiliary Microphone, also called a lapel microphone, is an additional Microphone that can be used in a number of ways. The Auxiliary Microphone plugs into the PSP's Auxiliary Input Jack. The Auxiliary Microphone is for use:

- During therapy or in noisy environments, as it improves the signal-to-noise (S/N) ratio.
- As a way to troubleshoot the child's Processor. In the event that the child stops responding to sound with what looks like a functional Processor, plug in the Auxiliary Microphone and perform a simple listening check with the child.
- As a secondary microphone, in the event that the child's Processor Microphone is not working.



## Microphone Test Earphones

Microphone Test Earphones plug into the Auxiliary Input Jack to allow subjective assessment of the Headpiece Microphone quality. This allows the parent or educator to listen for any static or distortion in the Microphone as well as any intermittency in the Cable.

To perform a Microphone test, complete the following steps:

- Remove the PSP from the child.
- Plug the Microphone Test Earphones into the Auxiliary Input Jack located on the side of the PSP.
- Turn the program dial to microphone test position ( $\Delta$ ).
- Put on the Microphone Test Earphones.
- Speak into the Headpiece normally and monitor the output through the Earphones.
- Move the Cable around to listen for any intermittencies.



*NOTE: During the testing of the Microphone, changing the Volume and Sensitivity Controls will not affect the overall output of sound.*



## System Sensor

The System Sensor is for use with the Auria, Platinum BTE/CII BTE, PSP, and S-Series Sound Processors. It is a handheld device that performs a system functionality check. The System Sensor is powered by a lithium battery and will need to be replaced approximately every two years.



### To Use:

Place the Sensor over the Headpiece at a distance of approximately one (1) to two (2) inches, then gently press the button. The Sensor will display its status.

- **ORANGE** light indicates that the System Sensor itself is functioning properly.
- No **ORANGE** light indicates that the System Sensor battery is depleted. You will need to obtain a new System Sensor.

Once you have verified the Sensor status (**ORANGE** light), slowly move the Sensor toward the Headpiece and observe the system-transmitting status as follows:

- Solid **GREEN** light means that the system is functioning properly.
- Flashing **GREEN** light means that the Processor is not communicating with the implant. The Processor battery is charged, but the system is not successfully transmitting a signal to the implant. Stop and proceed to *Troubleshooting*.
- No **GREEN** light indicates that the Processor battery is discharged and needs to be changed.

## PSP Troubleshooting

If you notice a problem with your child's implant, take the following steps before proceeding to the *Troubleshooting* chart below:

- Make sure the child's Processor is set to his/her user settings.
- Verify that the Processor is on.
- Verify that the Volume and Sensitivity controls are in the correct position.
- Visually inspect the child's equipment.
- Verify that the battery is in place and the LED flashes **GREEN** with voicing into the Microphone.
- Visually inspect the Cable for any signs of twisting, fraying, or breaks.
- Check the Headpiece for damage.
- Check battery status and/or replace battery.

## PSP Troubleshooting Situations:

Problem	Action
<p><b>Child cannot hear</b></p>	<ol style="list-style-type: none"> <li>1. Make sure PSP is on.</li> <li>2. Check Volume and Sensitivity to ensure they are in the correct positions.</li> <li>3. Check LED to make sure it is flashing <b>GREEN</b> to loud input.</li> <li>4. Check battery charge status by turning the processor off and on again and noting the number of <b>RED</b> flashes. Three to four <b>RED</b> flashes means that the battery is fully charged.</li> <li>5. Replace battery with backup rechargeable battery or AA battery pack.</li> <li>6. Replace Cable.</li> <li>7. Check the Microphone functionality with Microphone Test Earphones.</li> <li>8. Replace Headpiece.</li> <li>9. Contact programming center and/or child's parent for further troubleshooting.</li> </ol>
<p><b>RED LED is not blinking when the PSP is first turned on or there is only one blink</b></p>	<ol style="list-style-type: none"> <li>1. Replace battery with another rechargeable battery or AA battery pack.</li> <li>2. Clean battery contacts with an alcohol swab.</li> </ol>
<p><b>RED LED continuously blinks at one-second intervals and/or Audible Alarm (if activated) sounds at one second intervals</b></p>	<ol style="list-style-type: none"> <li>1. Make sure the Headpiece is on the child's head and positioned over the implant site.</li> <li>2. Check Cable.</li> <li>3. Determine if the Microphone is working by following the Microphone Test Procedures. (Refer to page 7 of this guide for instructions.)</li> <li>4. Replace Headpiece if during the Microphone Test the Microphone seems faulty.</li> <li>5. Contact the programming center and/or child's parent for further troubleshooting.</li> </ol>
<p><b>GREEN LED does not illuminate to loud speech close to Microphone</b></p>	<ol style="list-style-type: none"> <li>1. Make sure PSP is on and set to a program.</li> <li>2. Check Volume and Sensitivity settings to ensure they are set correctly.</li> <li>3. Check battery status by turning off the PSP and then on again. If the battery is near depletion, change battery.</li> <li>4. Check the Microphone functionality, using the Microphone Test Procedures.</li> <li>5. Replace Cable if no sound heard.</li> <li>6. Replace Headpiece if no sound heard after replacing the Cable.</li> <li>7. Contact the programming center and/or the child's parent for further troubleshooting.</li> </ol>
<p><b>Child reports hearing sounds that are distorted or static</b></p>	<ol style="list-style-type: none"> <li>1. Ensure Cable is not damaged (kinked or frayed) and inserted into the PSP.</li> <li>2. Try alternative program.</li> <li>3. Listen for static with the Microphone Test Earphones.</li> <li>4. Verify that the cable is not twisted or frayed.</li> <li>5. Replace Headpiece if static is heard and cable appears to be in good condition.</li> <li>6. Contact the programming center and/or the child's parent for further troubleshooting.</li> </ol>

# Using Personal FM Systems with the PSP

## What is an FM System?

An FM (Frequency Modulated) system is a wireless communication technology commonly used in the classroom to overcome the adverse effects of distance and competing noise.

### Connecting the Child's PSP to an FM System:

1. Ensure that you have obtained the appropriate FM Adapter Cable to use with the FM System. If you are not sure please contact the FM manufacturer.
2. Ensure that the FM System is functioning appropriately by listening to the FM System through an amplified speaker or Walkman-style earphones.
3. Keeping the FM System and Sound Processor in the "off" position, connect the Sound Processor and FM receiver through the Auxiliary Input Jack via the adapter cable.
4. Set any gain, output, or tone controls on the FM receiver per the child's audiologist or FM manufacturer's recommendations (as applicable).
5. Ensure that the volume on the FM receiver and the Volume and Sensitivity Controls on the PSP are both set to the minimum level.
6. Turn on the transmitter, receiver, and Sound Processor in that order.

*NOTE: It is important that you turn on the equipment in the proper order to prevent the child from hearing any adverse sound percepts.*

7. Gradually increase the Volume and Sensitivity on the student's Sound Processor to their everyday settings or as specified by the child's audiologist.
8. Gradually increase the volume on the FM receiver to a comfortable listening level or as specified by child's audiologist or the FM manufacturer.
9. Complete a functional listening check:
  - Administer a listening task that you know the user can perform at 100%, such as the Ling Six Sound Test and/or common phrases.
  - Perform these listening tasks in an auditory-only condition and in close proximity to the child. Repeat the task at a distance of several meters, noting that no changes in performance are observed with the FM in quiet.
  - The functional listening check can also be repeated in noise to assess the effects of the cochlear implant + FM.

### Tips to Reduce Interference:

1. Ensure that the FM Adapter Cable does not wind around the Headpiece Cable.
2. Ensure that the transmission range is not exceeded. The broadcast range between FM transmitters and receivers may begin to break up at distances greater than 40 feet indoors and 120 feet outdoors.
3. Observe areas in the classroom, or other environments, that can cause "dead spots" in transmission. Complete a listening check with the FM System in the classroom to listen for any problem areas and avoid seating the child in these problem areas.



## Troubleshooting the FM System and Cochlear Implant

Keep in mind that you are working with two separate systems, an FM System and a cochlear implant Sound Processor. The best way to complete troubleshooting is to begin by separating the two systems and troubleshoot them separately.

### Troubleshooting the FM System:

1. Disconnect the FM System from the child's Sound Processor
2. Verify the FM System is working by listening to the FM System. To do this, plug the FM receiver into a small speaker (RadioShack) or a Headset FM checker and verify that the signal is being received and is clear.
3. If the FM System is not working, complete troubleshooting for the FM System as recommended by the FM manufacturer. Ask the following questions:
  - Are the FM transmitter and receiver on the same channel?
  - Are the cables on the FM transmitter or receiver frayed or kinked?
  - Has the transmitting distance been exceeded?
  - Do the batteries for the FM transmitter and/or receiver need to be replaced?
  - Is the microphone on the transmitter working?
  - Are the FM settings set appropriately?

### Troubleshooting the Sound Processor:

1. Can the child hear clearly with the cochlear implant alone?
2. If the child cannot hear with the cochlear implant alone, complete troubleshooting for the Sound Processor as directed by the *PSP Troubleshooting Situations* listed previously in this document.

## FM Troubleshooting Situations:

Problem	Action
<b>Child cannot hear when the FM System is connected</b>	<ol style="list-style-type: none"> <li>1. Verify that the PSP is on and at user settings.</li> <li>2. Verify that the FM System is working, check battery and settings.</li> <li>3. Verify that your connections are secure.</li> <li>4. Verify that you are using the proper FM Adapter Cable for the FM System and PSP (Contact Advanced Bionics and FM manufacturer if you are unsure if the appropriate adapter cable is in use).</li> <li>5. Verify that the Audio-Mixing ratio has been set for FM use (50/50 is recommended for classroom use).</li> <li>6. Replace the FM Adapter Cable.</li> <li>7. If problem cannot be determined, contact Advanced Bionics for support.</li> </ol>
<b>Child reports noise, static, or distortion with the FM System</b>	<ol style="list-style-type: none"> <li>1. Verify that you are using the proper FM Adapter Cable for the FM System and PSP. (Contact Advanced Bionics and FM manufacturer if you are unsure if the appropriate adapter cable is in use).</li> <li>2. Ensure the Headpiece Cable and FM cable are not intertwined.</li> <li>3. Increase the physical distance between the FM receiver and PSP.</li> <li>4. Ensure that the Headpiece Cable and FM cable are not intertwined.</li> <li>5. Try a different transmitting frequency.</li> <li>6. Reduce the volume and/or gain on the FM receiver.</li> <li>7. Ensure that the transmission range is not exceeded—the broadcast range between FM transmitters and receivers may begin to break up at distances of 40 feet indoors; 120 feet outdoors.</li> <li>8. Ensure that there are no “dead spots” in the classroom.</li> <li>9. Ensure that the transmitter is worn properly.</li> <li>10. Try a different FM channel.</li> <li>11. Replace the FM Adapter Cable.</li> <li>12. If problem cannot be determined, contact Advanced Bionics for support.</li> </ol>
<b>GREEN LED on PSP flashes constantly</b>	<ol style="list-style-type: none"> <li>1. Reduce the volume and/or gain on the FM receiver.</li> <li>2. Reduce the volume on the PSP.</li> </ol>
<b>Listening responses are poorer with the FM System and PSP than with the PSP alone</b>	<ol style="list-style-type: none"> <li>1. Verify that the PSP is set to the appropriate program.</li> <li>2. Verify the PSP volume is set to the user settings.</li> <li>3. Verify the Audio-Mixing ratio has been set for FM use (50/50 is recommended for classroom use).</li> <li>4. Increase the gain on the FM receiver (this may need to be completed by the audiologist as there is special software to adjust the parameters of the FM receiver).</li> <li>5. Try a 30/70 mixing ratio. You may need to consult with the child’s programming audiologist or parent to determine current program settings.</li> <li>6. If problem cannot be determined, contact Advanced Bionics for support.</li> </ol>
<b>Child cannot hear his/her own voice or other’s voices in the environment</b>	<ol style="list-style-type: none"> <li>1. Verify the Audio-Mixing setting (should be set to either a 50/50 or 30/70 mixing ratio).</li> <li>2. Verify the Processor and FM are at user settings.</li> <li>3. Verify that the child isn’t experiencing any other complaints.</li> </ol>

## FM Manufacturer Resource Information

### Oticon

Oticon, Inc.  
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Somerset, NJ 08873  
Fax: 732.560.0029  
contact-us@oticon.com  
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[www.BionicEar.com/TFS](http://www.BionicEar.com/TFS)

Tools for Schools is a free program designed by Advanced Bionics to help children with cochlear implants succeed in the classroom. The program provides education, support, and tools to educators, therapists, and families!