
Hearing Assistive Technology Online Guide

A Resource for Rehabilitation Counselors
and People with Hearing Loss

**Please read *Getting Started*
before printing this guide.**

A Project for
The Michigan Department of Labor & Economic Growth-
Rehabilitation Services
September 2005

Getting Started

This document is designed to help you find exactly what you need, when you need it. There is no need to read the whole thing. There are several options for finding your way around. **The document is designed to be used on your computer, so option 1 below is preferred.** If you need help, contact Julie Eckhardt at (231) 922-2943 or jewel@chartermi.net.

1. Save this document to your computer desktop. Below are directions for navigating in Adobe Acrobat.
 - First read [How to Use this Resource](#) on page 6.
 - Next use the [Level of Hearing Loss](#) section and follow links as instructed AND
 - Use the Adobe Acrobat navigation features described below.
2. You may print this document and use the Table of Contents to look up specific accommodations by page number. Take a minute to browse the Table of Contents to see the range of accommodations that are included.

Navigating in Adobe Acrobat

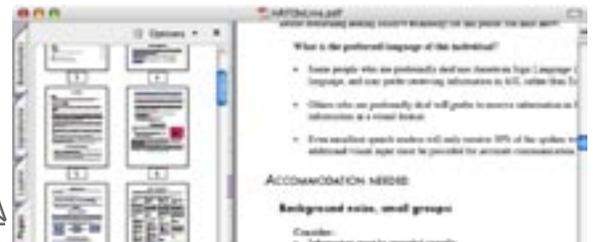
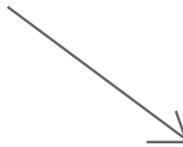
Use **Hyper links** to jump to a page in the document or the Internet. Words that are in blue and underlined are hyper links that go to pages in the document or the Internet (only if you are currently connected to the Internet). Move the cursor to the blue underlined words. When the pointer becomes a finger, click.



In the **Table of Contents**, listings with page numbers are also hyper linked to document pages. Click the title to jump to the page.



Use the **Pages view** (click on the Pages tab on the left hand side of the screen) to find the page you want.



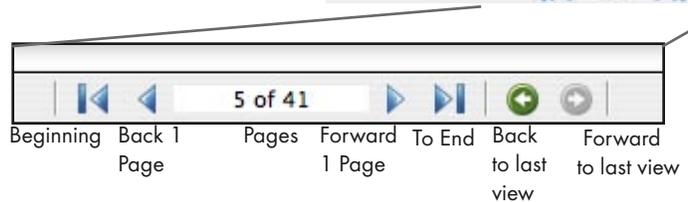
Use the **Search** function to find specific items. Click on the binoculars in the tool bar or choose Search under the Edit menu. Under the question “**Where would you like to search?**” Choose “**In the current PDF document.**” Type the item you are seeking in the box at the top of the search window.



Use the Navigator buttons at the bottom of the window to move forward and back through the document.

Click the first arrow to return to the beginning of the document.
Click the second arrow to go back one page (In the example below, page 4).
Click the third arrow (after the page numbers) to move to the next page. (In the example below, to page 6)

The green arrows jump to the last page viewed, either backwards or forwards in the document. If you followed a hyper link, this will take you back to the page where the hyper link occurred.



For More Help

If you need help using this resource contact Julie Eckhardt at jewel@chartermi.net or 231/922-2943.

If you need help with choosing assistive technology, see [Additional Information](#).

Table of Contents

Getting Started ...	2
Navigating in Adobe Acrobat	
For More Help	
Acknowledgements...	6
How to Use this Guide...	7
Best Practice Principles...	7
Receiving Sound...	8
Funding Sources...	8
Michigan Assistive Technology Loan Fund	
Michigan Association for Deaf, Hearing and Speech Services (MADHS)	
Where to Purchase...	9
Additional Information...	9
Level of Hearing Loss...	10
Uses Speaking & Listening	
Uses Speaking & Listening with Visuals	
Uses speech and Receives visually	
Uses American Sign Language or other visuals	
Mild to Moderate Loss...	11
INFORMATION REQUIRED....	11
ACCOMMODATION NEEDED...	11
Background noise, small groups, environments that require soft voices or removal of hearing aids:	
Large group meetings and classrooms:	
Standard Telephone	
Cellular Phone	
Alert sounds	
Moderate to Severe Loss...	12
INFORMATION REQUIRED....	12
ACCOMMODATION NEEDED...	12
Background noise, small groups, soft voices:	
Large group meetings and classrooms:	
Video Training Materials	
Standard Telephone	
Cellular Phone	
Alert sounds	
Specialty Items	

Severe to Profound Loss...	14
INFORMATION REQUIRED....	14
ACCOMMODATION NEEDED...	15
Background noise, small groups, soft voices:	
One-on-One communication:	
Large group meetings and classrooms:	
Video Training Materials	
Standard Telephone	
Cellular Phone	
Alert sounds	
Specialty Items	
Other Situations	
Deaf...	17
INFORMATION REQUIRED...	17
ACCOMMODATION NEEDED...	17
Background noise, small groups:	
Large group meetings and classrooms:	
Video Training Materials	
Standard Telephone	
Cellular Phone	
Alert sounds	
Other Situations	
Accommodation Solutions...	19
ALARM CLOCKS...	19
ALERTING SYSTEMS...	19
AUDISEE...	20
CAPTIONED MEDIA...	21
EAR PROTECTION...	22
FM SYSTEMS...	22
HEARING DOGS...	23
ICOMMUNICATOR...	24
INDUCTION LOOP SYSTEM ...	25
INFRARED LISTENING SYSTEMS...	25
INTERACTIVE WRITING...	26
INTERPRETERS...	27
INTERPRETYPE...	28
LINK • It...	29
NOTE TAKERS...	29
PERSONAL LISTENING DEVICES (PERSONAL AMPLIFIERS)...	30
SIGN LANGUAGE...	30
STETHOSCOPES...	31
SWEAT BANDS FOR HEARING AIDS OR BEHIND-THE-EAR COCHLEAR IMPLANTS...	31
TIMERS...	32
Speech-to-Text Accommodations ...	32
CART...	32
C-PRINT® AND SIMILAR SPEECH-TO-TEXT ACCOMMODATIONS...	33

Telephone Accommodations...	34
AMPLIFIED TELEPHONES...	34
CAPTEL™...	35
CELL PHONES AND ADAPTERS...	36
Acoustic Amplifiers	
Induction Amplifiers	
TELEPHONE ADAPTERS...	37
Strap-on Amplifiers	
Feedback Reducers	
In-Line Telephone Amplifiers	
TWO-WAY TEXT PAGERS...	38
TTY OR TDD...	39
RELAY SERVICES...	40
VOICE CARRY OVER (VCO)...	41
VIDEO RELAY SERVICE (VRS)...	42
VOICE MAIL TRANSCRIPTION SERVICES...	43

Acknowledgements

The Hearing Assistive Technology Online Guide was developed for the Michigan Department of Labor & Economic Growth, Rehabilitation Services by Julie Eckhardt in collaboration with Chris Hunter and Twyla Niedfeldt from the Michigan Division on Deaf and Hard of Hearing and Nan Asher with the Michigan Association for Deaf, Hearing and Speech Services.

Thank you to the Department of Labor & Economic Growth employees who have reviewed and provided feedback: Roy Delvalle, Todd Sprunger, Don Dees, Cheryl Liss, Paula Brzenski, Rosanne Renauer and Myrtle Gregg-Lefay

Thank you to HARC Mercantile for permission to include photographs from their web site at: www.harcmercantile.com/

Comments, corrections, or additions to this document should be directed to Julie Eckhardt at jewel@chartermi.net.

How to Use this Guide

This guide is intended to be used on a computer. For most effective use DO NOT print. Rather, save on the hard drive and follow the instructions and hyperlinks throughout the document. Note: Use the navigation buttons at the bottom of Acrobat Reader to return to a previous page. See page 2 for instructions.

Step 1:

This Hearing Assistive Technology Online Guide is based on the **Workplace Assessment for Individuals with Hearing Loss**, located at the end of this document. The assessment is designed to help the counselor and person with hearing loss identify and record communication difficulties that have been, or are likely to be, encountered in the workplace by a person who is hard of hearing or late deafened (deafness occurring during adulthood). It may also be useful for some deaf people who communicate primarily through speech. It is recommended that the Workplace Assessment be completed prior to looking up assistive technology in this document.

For individuals who communicate primarily through American Sign Language, the Workplace Assessment will be less useful and need not be administered prior to using this resource. Hearing Assistive Technology for this population is also included in this document.

Step 2:

Next, find the **Level of Hearing Loss** that best describes the person needing accommodations. In this section, common accommodation needs are listed. Click on the links to learn more about specific products and accommodations.

Step 3:

After determining what type of Hearing Assistive Technology may be most useful, contact a vendor for details about models, options, and compatibility. Some vendors are listed in the **Where to Purchase** section.

Throughout this document “user” refers to the person with hearing loss who will be the primary end-user of the hearing assistive technology. Hearing Assistive Technology is also used by those who communicate with people with hearing loss. Their needs should also be considered.

Best Practice Principles

- **Ask the person with hearing loss what works best from his or her experience.** Has he or she tried hearing assistive technology before? What worked, what didn't? Why?
- **One size NEVER fits all.** Because one type of accommodation worked for another person does not mean it will work for this person. Likewise, because a specific accommodation worked in one situation for this person, does not mean the same accommodation will work in a different situation.
- **When purchasing new equipment, try to first borrow and test the equipment or make sure the vendor will permit a trial period of at least 30 days.** Encourage the user to test the equipment in a variety of situations during the borrow or trial period. [Michigan Association for Deaf, Hearing and Speech Services](#) and the [Division on Deaf and Hard of Hearing](#), as well as many vendors, have equipment that can be borrowed.
- **Make sure that the end-user knows how to independently use, maintain, and trouble shoot the equipment.**
- **Manufacturers are continually updating their products.** Therefore, this document cannot be a completely comprehensive resource and should serve only as a guide. Once it is determined that a particular item may be helpful, it is recommended that the vendor be contacted for the most up-to-date model, developments, and accessories.

- A telecoil (also called a T-coil, T-switch, or telephone setting), installed in a hearing aid or cochlear implant processor, will facilitate the use of many hearing assistive devices. This should be considered at the time hearing aids are purchased. With a telecoil, amplified signals pass through the user’s hearing aids. Hearing aids are precisely adjusted for the user’s unique hearing needs and provide better listening than headsets or ear buds. Without a telecoil, a headset or ear buds are required.
- Michigan Rehabilitation Services counselors should refer to related policies and job aids:
 - o 4150 Hearing Impairments
 - o 6075 Assistive Listening Devices
 - o 6225 Hearing Aids
 - o JA-03-02 Postsecondary Hearing Loss Accommodations
 - o JA- 14a and JA 14b Assistive Listening Devices

Receiving Sound

For sound amplification devices, the type of hearing aids or cochlear implant, and whether or not it has a telecoil, will determine the type of receiving equipment required.

- Without hearing aids, sounds are received either through a headset or earbud.
- For hearing aids without telecoils, a headset may be used.
- Hearing aids or cochlear implant with telecoils work best with a neckloop or silhouette, with the telecoil turned ON.



Pocketalker with neckloop



Silhouettes

Neckloop: A neckloop is a small induction loop worn over the head and around the neck. A headset jack plugs into the headphone output in assistive devices, radios, computers, TV’s etc. The telecoil must be turned ON in the hearing aid or cochlear processor to use a neckloop.

Silhouette: A silhouette looks like a flat, behind the ear hearing aid with no ear mold, and is an induction system for hearing aids and cochlear implants with telecoils. It provides a much stronger signal to the hearing aid or cochlear implant than a neckloop (due to the close proximity). This may be the only effective device for someone with a profound loss. Requires the telecoil to be turned ON to function.

Funding Sources

For individuals or situations that are not eligible for assistance from Michigan Rehabilitation Services, consider one of the following resources.

Michigan Assistive Technology Loan Fund

The Michigan Assistive Technology Loan Fund provides low cost loans for hearing assistive technology and other technological accommodations. For more information see: www.mi-atlf.org

Michigan Association for Deaf, Hearing and Speech Services (MADHS)

MADHS, in collaboration with local Lions Clubs, provides TTYs, amplified telephones and hearing aids for qualifying low income people. See www.madhs.org.

Where to Purchase

Most devices may be obtained through a local audiologist or one of the companies below. If a product is only carried by a specific vendor, contact information will be included on the corresponding page. Some vendors have showrooms where equipment can be tested. Please note that audiologists tend to sell a limited number of brands and options. On the other hand, an audiologist will make sure that equipment purchased is fully compatible with the user's hearing aids.

The companies listed below carry a wide range of products. This is not an exhaustive list of vendors and is not to be considered an endorsement or otherwise, either by inclusion or lack of inclusion in this list.

C.A.S./Visions Unlimited
cinshhh@chartermi.net

HITEC Group International
www.hitec.com

Potomac Technology
www.potomactech.com

HARC Mercantile
www.harcmercantile.com

Michigan Association for Deaf, Hearing
and Speech Services
www.madhs.org

Silent Call Communications
www.silent-call.com

Harris Communications
www.harriscomm.com

Additional Information

Besides the web links throughout this document, see the following for additional information.

Michigan Division on Deaf and Hard of Hearing: Toll Free (877) 499-6232

Michigan Association for Deaf, Hearing and Speech Services: Toll Free (800) YOUR EAR

Julie Eckhardt, Consultant to Michigan Rehabilitation Services: 231/922-2943 or jewel@chartermi.net

Access Board Bulletins: www.access-board.gov/publications/bulletins/als-index.htm

E-Michigan Communication Accommodations: www.michdhh.org/assistive_devices/index.html

National Center for Hearing Assistive Technology: hearingloss.org/hat/

What alert sounds need to be replaced by vibration or light?

- Telephone ring
- Carbon Monoxide or Smoke Detector (May require a new unit that uses strobe rather than sound alert)
- Doorbell
- Pager (See [Two-Way Text Pagers](#))
- Baby Cry (see www.michdhh.org/assistive_devices/baby_cry_monitor.html)
- Oven timer (See [Timers](#))
- Universal sounds (Consider a system)

Brands and Models:

Sonic Alert for an alerting system

Silent Call

Good Vibrations

Wheelock phone strobe

TEC Strobe Inline Phone Alert

Ringmax Telephone Signaler

Accessories:

- Receivers are required for some systems.
- Strobe lights or lamp connectors
- Signalers may be sold separately

Price Range:

\$25 - \$500 for an alerting system

Also see: [Alarm Clocks](#)

AUDISEE

What:

An [FM System](#) with a microphone/camera, wireless receiver, and a monitor for viewing speech movements. The monitor may be a 5" screen or a television or computer monitor.

Where:

Most frequently used in educational settings. Also useful in business settings if the user depends on speech reading to facilitate communication. Most suitable when the user is sitting at a desk or table and there is only one speaker at a time.

Considerations:

Is FM alone inadequate?

Is the user adept at speech reading?

Is an FM system available?



AudiSee

- Decoders range from \$30 - \$160.
- Captioning costs depend on the media type, length and purpose.
- The [Caption Media Program](#) accepts recommendations for new media to be captioned and available for loan.

For more information;

National Captioning Institute (NCI) Help Desk
<http://www.ncihelpdesk.org/>

Captioned Media Program
<http://www.cfv.org/>

EAR PROTECTION

What:

It is especially important for people with hearing loss to protect their hearing. This creates additional obstacles to on-the-job communication because hearing aids must be removed and speech is more difficult to understand in loud environments. Even so, hearing protection should be used.

Ear protection is available with special features such as noise activation, which cuts out high impact noise, and high-fidelity that reduces sound levels without voice distortion. Some models incorporate a microphone with sound compressors which may be used with a hearing aid or cochlear implant with telecoil turned ON.



Ear Muffs

Where:

Loud environments such as industrial machinery, loud music, lawn mowing, hunting, car races, etc.

Price Range:

\$.50- \$50

FM SYSTEMS

What:

FM systems are used to amplify sound and overcome background noise, distance from sound source, or reverberations. FM systems function like a personal FM radio. The system sends the auditory message through FM radio waves from a wireless transmitter, directly to a small receiver worn by the user. These systems can be utilized as an independent unit or connected to a public address system. Systems can be very portable or permanently installed.



Listen FM System

Where:

Indoors or outdoors, within range specified by the specific system. FM signals travel through walls and are therefore not appropriate for confidential communication. Match the system to the size of the room requiring transmission (i.e. a large auditorium will require a different system than an average size classroom).

LINK • IT

What:

Link•It is a wireless listening device used with a telecoil equipped hearing aid. It improves speech comprehension in noisy situations by pointing a microphone in the direction the person is looking. The small device fits over the ear and sends a signal directly to the hearing aid.



Link • it

Where:

May provide more benefit than a hearing aid directional microphone in noisy environments (restaurants, meeting rooms, etc.). Link•It will not be as good as other listening devices (FM, infrared, loop) for hearing across a distance. May be better than these others when conversing in crowded rooms or where there is extensive background noise. No need for a separate microphone, the entire unit fits over the ear. May be used with either an in-the-ear or behind-the-ear hearing aid.

Brands and Models:

Link•It is only made by one company but is sold through a number of vendors. It comes in several colors to match hair and skin.

Price Range:

\$675

More Information:

<http://www.etymotic.com/ha/linkit.asp>

NOTE TAKERS

What:

A note taker may be of great assistance to a person with hearing loss in any type of group meeting. Some colleges train and pay note takers. Most frequently, a note taker is a co-worker or peer who volunteers to take notes during a meeting. Notes may be taken with a laptop computer, or paper and pen, then photocopied.

For a person with hearing loss who must look at the speaker or interpreter for comprehension, a note taker provides two benefits. During the meeting, the person with hearing loss should sit next to the note taker. If he or she is unsure of what is spoken, a glance at the note taker's jottings may help to clarify. Secondly, because it is difficult to watch a speaker and write at the same time, the person with hearing loss will need to rely on the notes taken for a record of the meeting.

Where:

A note taker may be beneficial to a person with hearing loss at any meeting, large or small, formal or casual.

Locating note takers:

Most note takers are volunteer co-workers, classmates or peers. The best note takers are willing, have a good grasp of content covered, and are good at organizing and prioritizing information.

PERSONAL LISTENING DEVICES (PERSONAL AMPLIFIERS)

What:

Compact, hand held device that is used to amplify sound and/or reduce interference from back ground noise. A microphone/amplification unit connects to the user's earpiece or neck loop by a wire.

Where:

Use in situations where the speaker and listener are able to remain in close proximity, without a lot of movement between them.

Considerations:

Does the user have hearing aids with telecoils?

- If yes, order the recommended induction neckloop or silhouettes (see page [Receiving Sound](#)).
- If no, specify earbud, over the ear earphone (better with in-the-ear aids), or lightweight headset (can adjust to use with behind the ear aids).

Brands and Models:

Williams Sound Pocketalker Pro
Sonic Super Ear
HPI-Minitech
Sound Wizard
Sound Director

Price Range:

\$30 - \$250 with accessories.

Accessories:

- Directional microphones (Focused sound reception)
- Induction neck loop (For use with telecoil equipped hearing aids)
- Silhouette (For more amplification).
- Microphone extension cord for increased distance between speaker and listener
- Conference microphones can be set in the center of a table for small group gatherings.



Pocketalker with loop

SIGN LANGUAGE

What:

American Sign Language (ASL) is a visual/gestural language used among people who are deaf, their family, and friends. It is a distinct language with its own syntax and grammar.

Where:

Anyone who works frequently with people who use ASL may benefit from learning the language. To sign well enough to convey basic information (perhaps supplemented with [Interactive Writing](#)) is quite feasible. To become truly fluent will require a more significant commitment of time and energy.

Considerations:

Is the user unable to hear telephone conversations with an amplified telephone?

Is CapTel service available?

Brands and Models:

Ultratec CapTel

Price Range:

\$469 when available

For more information:

www.captionedtelephone.com/

CELL PHONES AND ADAPTERS

Cellular phones have revolutionized telephone communication but are often not accessible to people with hearing loss. Recent rulings by the Federal Communication Commission (FCC) require all cell phone manufacturers to make at least two models with telecoils built in. Motorola has a telecoil built into all of their cell phones. The telecoils should make the phone more compatible with hearing aids or cochlear devices with telecoils. However, not all phones work with all hearing aids. Before purchasing a specific make or model it should be tested with the hearing aid or cochlear device telecoil turned 'on.'

Acoustic Amplifiers

What:

For people without hearing aids or whose hearing aids do NOT have a telecoil, the device connects to a cell phone and amplifies the sound level. Many have an attached microphone for hands-free phone use. Hearing aid users may need to remove aids before using an acoustic amplifier.

Brands & Models

ETY•Com

EARWARE

Price Range:

\$45 - \$125

Induction Amplifiers

What:

To improve digital cell phone listening for people with hearing aids fit with a telecoil. Telecoil must be turned ON when using an induction amplifier. Most models have an attached microphone for hands-free phone use. For people with a telecoil, an induction amplifier will provide the best sound. Model chosen may be determined by type of hearing aid (behind-the-ear or in-the-ear) and cell phone headset jack.



Mobile headset amplifier

Brands and Models:

- HATIS- Hearing Aid Telephone Interconnect System
- Some cell phone manufacturers have their own models designed to fit their phones. CHAAMP, for example, is used with Nokia phones

Price Range:

\$49- \$160

Information on cell phones and hearing aids:

www.hearingloss.org/hat/TipsWirelessPhones.htm

TELEPHONE ADAPTERS

What:

A small device that can be attached to a standard telephone to improve listening.

Where:

Can be used with any standard telephone. Strap-on models are suitable for use on multiple phones.

Considerations:**Does the user have hearing aids with telecoils?**

- If user has hearing aids, with or without telecoils, and needs a boost to sound that can be used with any telephone see [Strap-on Amplifier](#) below.
- If user has hearing aids without telecoil: Is the telephone earpiece, next to the hearing aid, creating feedback (a whistling or squealing sound)? See [Feedback Reducers](#).
- If the user needs more amplification on a telephone that is used frequently, consider an [amplified telephone](#) or [in-line amplifier](#).

Strap-on Amplifiers

What:

Induction models create stronger induction field for improved listening using telecoil equipped hearing aids. Simple amplifiers increase volume about 25 dB above normal level. A strap temporarily attaches the amplifier to the ear piece of a standard telephone.

Where:

Use with any telephone. Device is portable and comes with carrying case.

Brands and Models:

Phonear Induction Strap-on Amplifier
Ameriphone Strap-On Phone Amplifier

Price Range:

\$24 - \$49



Strap-on Amplifier

