
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

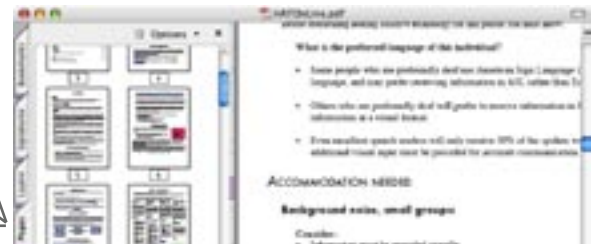
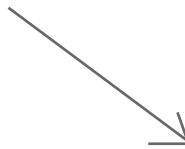
Use **Hyper links** to jump to a page in the document or the Internet. Words that are in blue and underlined are hyper links that go to pages in the document or the Internet (only if you are currently connected to the Internet). Move the cursor to the blue underlined words. When the pointer becomes a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



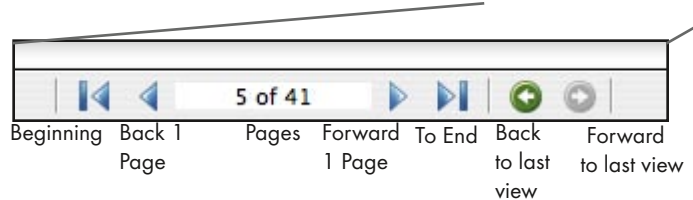
Use the **Search** function to find specific items. Click on the binoculars in the tool bar or choose Search under the Edit menu. Under the question “**Where would you like to search?**” Choose “**In the current PDF document.**” Type the item you are seeking in the box at the top of the search window.



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.

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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/

Level of Hearing Loss

The type of accommodation required depends on the listening situation (see Workplace Assessment at the end of this document), the user's residual hearing and primary communication mode.

Review the four general groups below. Which of the following best describes the person needing hearing assistive technology? Next click the hyperlink at the bottom of the column to jump to that section.

Uses Speaking & Listening

This person communicates **primarily through speaking and listening**. In many situations, there may be no difficulty hearing enough to communicate easily. In other situations, the person may be significantly challenged.

Challenging Situations:

- Background noise such as machinery, people talking, wind, or traffic noise.
- Some telephones, especially cellular phones.
- Environments that require soft voices and whispering.
- High frequency alert sounds.
- Locating the source of a sound.
- Environments that require the removal of hearing aids and/or hearing protection.
- Large group meetings or classrooms, when the speaker does not use a microphone.

May hear in the **25-45 dB** range.

See [Mild to Moderate Hearing Loss](#)

Uses Speaking & Listening with Visuals

This person communicates **primarily through speaking and listening with visual information** to make up for sounds that are not heard accurately.

Challenging Situations:

All those listed in the previous column. In addition:

- Telephone conversations with standard or cellular phones.
- Large group events and classrooms, even when the speaker uses a microphone.
- Environments with poor lighting.
- Phone conferences with more than one person on the line.
- Alarm clocks and other alert sounds.
- Group conversations.
- Speakers who are not facing the listener or are out of visual range.

May hear in the **40-75 dB** range.

See [Moderate to Severe Hearing Loss](#)

Uses speech and Receives visually

This person **receives information visually and uses speech to communicate**. Visual information will be required to understand accurately. This may include someone with a cochlear implant and people who have become deafened during adulthood.

Challenging Situations:

All those at left, as well as:

- All telephone conversations.
- Watching videos or training materials without captions.
- One-on-one conversations in average work or school environments.

May hear in the **70-95 dB** range.

See [Severe to Profound](#)

Uses American Sign Language or other visuals

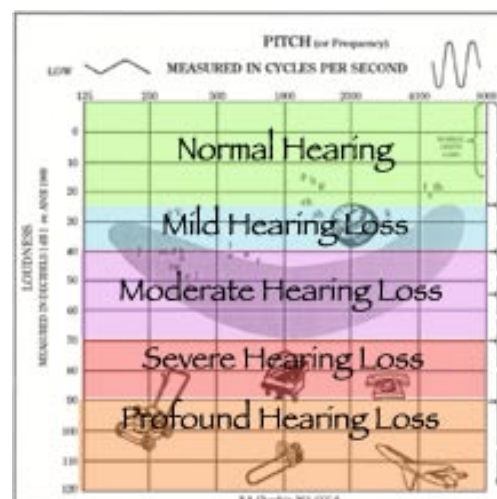
This person communicates **primarily using ASL or other visual language system** and may have been deaf since birth or early childhood. He or she may also use speech, but may be most comfortable with a visual language system such as American Sign Language (ASL).

Challenging Situations:

May require accommodations for all the situations identified for people with a less profound loss, including one-on-one conversations.

May hear in the **80-110 dB** range.

See [Deaf](#)



Mild to Moderate Loss

INFORMATION REQUIRED.

Before researching hearing assistive technology for this person you must know:

Does this person use hearing aids?

- If yes, are the hearing aids in-the-ear or behind the ear?

Does the user have telecoils (T-Coils) installed in his or her hearing aids or cochlear device?

ACCOMMODATION NEEDED

Background noise, small groups, environments that require soft voices or removal of hearing aids:

Consider:

- Hearing aids with directional microphones and noise reduction may make listening in these situations easier.

See:

- [Personal Listening Device](#) (Least expensive, must be close to the speaker)
- [FM System](#) (More expensive but more versatile than a personal listening device)

Large group meetings and classrooms:

Consider:

- Request the speaker use a microphone at all times

See:

- [FM Systems](#)
- [Induction Loop](#)
- [Infrared Listening System](#)

Standard Telephone

Does the user have trouble hearing on a standard telephone?

Consider:

- Hearing aids with telecoils.
- Standard telephone with volume control.

See:

- [Telephone Adapters](#)
- [Amplified Phones](#)

Is there feedback (a whistling noise) from the hearing aid when using a telephone?

See:

- [Feedback reducers](#)

Cellular Phone

See information under [Cellular Phones](#) before purchasing.

Does the person have a hearing aid with telecoil?

If yes, see:

- [Induction Amplifiers](#)

If no, see

- [Acoustic amplifiers](#)

Alert sounds

- [Alarm clocks](#)
- [Alerting systems](#)

Moderate to Severe Loss

INFORMATION REQUIRED.

Before researching hearing assistive technology for this person you must know:

Does this person use hearing aids or a cochlear implant?

- If yes, are the hearing aids in-the-ear or behind the ear?
- Does the user have telecoils (T-Coils) installed in his or her hearing aids or cochlear device?

ACCOMMODATION NEEDED

Background noise, small groups, soft voices:

Consider:

- Programmable hearing aids with directional microphones and noise reduction may make listening in these situations easier.

See:

- [Personal Listening Device](#) (Least expensive, must be close to the speaker)
- [FM System](#) (More expensive but more versatile than a personal listening device)
- [Link•it](#) (For conversations in background noise, not across distance.)
- [Infrared Listening System](#)
- [Note Taker](#)

Large group meetings and classrooms:

Consider

- Request the speaker use a microphone at all times

See:

- [FM Systems](#)
- [Induction Loop](#)
- [Infrared System](#)
- [Note Taker](#)
- [AudiSee](#) (for people who prefer speech reading)

Video Training Materials

Does the user have difficulty hearing television, video, or DVD media?

See:

- [Captioned Media](#)

Standard Telephone

Does the user have trouble hearing on a standard telephone?

Consider:

- Hearing aids with telecoils.

See:

- [Telephone Adapters](#)
- [In-Line amplifiers](#)
- [Amplified Telephones](#)
- [Cap-Tel](#)
- [Voice Mail Transcription](#)

Is there feedback (a whistling noise) from the hearing aid when using a telephone?

See:

- [Feedback reducers](#)

Cellular Phone

See information under [Cellular Phones](#) before purchasing.

Does the person have a hearing aid or cochlear device with telecoil?

If yes, see:

- [Induction Amplifiers](#)

If no, see:

- [Acoustic amplifiers](#)

If amplifiers are not loud enough:

See

- [Two-Way Text Pagers](#)

Alert sounds

- [Alarm clocks](#)
- [Alerting systems](#)
- [Hearing Dogs](#)

Specialty Items

Depending on the job, other devices may be useful. Below is a list of miscellaneous items. More information is on the corresponding pages.

- [Stethoscopes](#)
- Baby Cry Monitors (See [Alerting Systems](#))
- [Timers](#)
- [Ear Protection](#)
- [Sweat bands for hearing aids](#) (when perspiration or moisture interferes with hearing aid functioning.)

Severe to Profound Loss

INFORMATION REQUIRED.

Before researching hearing assistive technology for this person you must know:

Does this person use hearing aids or a cochlear implant?

- If yes, are the hearing aids in-the-ear or behind the ear?

Does the user have telecoils (T-Coils) installed in hearing aids or cochlear device?

How much information does this person receive visually and how much through hearing?

Note: People with a severe to profound hearing loss vary considerably in the ways that they function. Some are able to use their residual hearing much more effectively than others. Some situations make listening almost impossible, while hearing in other situations might be easier. Do not assume that because the person can communicate well in one situation that they will be able to do so in another.

ACCOMMODATION NEEDED

Background noise, small groups, soft voices:

Consider:

- Hearing aids with directional microphones and noise reduction may make listening in these situations easier.
- Telecoils in hearing aids are important for effective use of hearing assistive technology.

See:

- [Personal Listening Device](#) (Least expensive, must be close to the speaker)
- [FM System](#) (More expensive but more versatile than a personal listening device)
- [Link•it](#) (For conversations in background noise, not across distance.)
- [Infrared Listening System](#)
- [Speech-to-Text Accommodations](#)
- [Note Taker](#)

One-on-One communication:

Consider all the items above and:

- [Interactive Writing](#)

Large group meetings and classrooms:

Consider

- Request the speaker use a microphone at all times

See:

- [FM Systems](#)
- [Induction Loop](#)
- [Infrared System](#)
- [Speech-to-Text Accommodations](#)
- [Note Taker](#)
- [AudiSee](#) (for people who prefer speech reading)

Video Training Materials

Is the user unable to hear television, video, or DVD media?

See:

- [Captioned Media](#)

Standard Telephone

Does the user have trouble hearing on a standard telephone?

Consider:

- Hearing aids with telecoils.

See:

- [Telephone Adapters](#)
- [In-Line amplifiers](#)
- [Amplified Telephones](#)
- [Cap-Tel](#)
- [Voice Carry Over](#)
- [TTY](#)
- [Voice Mail Transcription](#)

Is there feedback (a whistling noise) from the hearing aid when using a telephone?

See:

- [Feedback reducers](#)

Cellular Phone

See information under [Cellular Phones](#) before purchasing.

Does the person have a hearing aid or cochlear device with telecoil?

If yes, see:

- [Induction Amplifiers](#)

If no, see

- [Acoustic amplifiers](#)

If amplifiers are not loud enough:

See

- [Two-Way Text Pagers](#)
- [TTY](#)

Alert sounds

- [Alarm clocks](#)
- [Alerting systems](#)
- [Hearing Dogs](#)

Specialty Items

Depending on the job, other devices are available. Below is a list of miscellaneous items. More information is on the corresponding pages.

- [Stethoscopes](#)
- Baby Cry Monitors (See [Alerting Systems](#))
- [Timers](#)

- [Ear Protection](#)
- [Sweat bands for hearing aids](#) (when perspiration or moisture causes hearing aids to stop functioning.)

Other Situations

Is the person sometimes startled by visitors to the work station?

- A 'rear-view' mirror strategically placed in the work station will alert to visitors entering the work space.
- Move the desk so that visitors enter the work space from the side of the person rather than from behind.
- Consider an [alerting system](#) that responds to a knock with a flashing light.

Deaf

INFORMATION REQUIRED

Before researching hearing assistive technology for this person you must know:

What is the preferred language of this individual?

- Some people who are profoundly deaf use American Sign Language (ASL) as their primary language, and may prefer receiving information in ASL rather than English.
- Others who are profoundly deaf will prefer to receive information in English, and will require the information in a visual format.
- Even excellent speech readers will only receive 30% of the spoken word visually. Therefore, additional visual input must be provided for accurate communication.

ACCOMMODATION NEEDED

Background noise, small groups:

Consider:

- Information must be provided visually

See:

- [Interpreters](#)
- [Speech-to-Text Accommodations](#)
- [Interactive writing](#)
- [Sign language](#)
- [Note Taker](#)
- [AudiSee](#) (for people who prefer speech reading)

Large group meetings and classrooms:

Consider

- What is the preferred language mode?

See:

- [Interpreters](#)
- [Speech-to-Text Accommodations](#)
- [Note Taker](#)

Video Training Materials

Is the user unable to hear television, video, or DVD media?

See:

- [Captioned Media](#)

Standard Telephone

Is the user unable to use a standard telephone?

See:

- [TTY](#)
- [Relay Services](#)
- [Voice Carry Over](#)
- [Video Relay Service \(VRS\)](#)
- [Voice Mail Transcription](#)

Cellular Phone

- [Two-Way Text Pagers](#)

Alert sounds

- [Alarm clocks](#)
- [Alerting systems](#)
- [Hearing Dogs](#)

Other Situations

Is the person sometimes startled by visitors to the work station?

- A 'rear-view' mirror strategically placed in the work station will alert to visitors entering the work space.
- Move the desk so that visitors enter the workspace from the side of the person rather than from behind.
- Consider an [alerting system](#) that responds to a knock with a flashing light.

Accommodation Solutions

ALARM CLOCKS

What:

Alarm clocks that use either a vibrating device (placed under the pillow or mattress), a flashing light, an extra loud alarm or some combination of these.

Where:

Models are available for use at home or for travel.

Considerations:

Is it necessary to wake up during daylight hours or in a well-lit room?

- Choose a vibrating or loud alarm model.

Is it desirable to awaken without disturbing another sleeper?

- Ask the other sleeper about preference, then choose a model with an under-pillow vibrator or flashing light.

Brands and Models:

Sonic Boom
Sonic Alert
Shake Awake
Wake Assure

Price Range:

\$28 - \$99



Alarm clock with vibrator

ALERTING SYSTEMS

What:

Ranging from a vibrating wristwatch to a whole-house installation, alerting systems notify the user of events and sounds using visual, tactile, or extra loud signals.

Where:

Alerting devices may be worn on the body, connected to a single device, or installed in a building to alert to a variety of sounds and events. Devices may be portable or permanently installed. Some systems depend on wire connections, others use wireless transmission.

Considerations:

Are there one or two alerts required or should a more systematic approach be considered?

- Integrated systems alert to sounds such as doorbells, baby cry, smoke detector, telephone etc., using a central receiving unit.



Door Knock Signaler

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

- AudiSee is compatible with many FM systems used in educational settings.

Brands and Models:

AudiSee is made by AudiSoft

www.audisoft.net

Price Range

Price varies depending on configuration, \$4,000 - \$6,000.

More Information

- E-Michigan Article www.michdhh.org/assistive_devices/audisee.html
- Audisoft www.audisoft.net/en/index.htm
- Michigan Association for Deaf, Hearing, and Speech Services is the distributor for Michigan. Call 1-800- YOUR EAR or www.madhs.org.

CAPTIONED MEDIA

What:

A running text of spoken/audible content on video, DVD, and film media that is displayed along the bottom of the viewing screen.

Broadcast television programming is usually captioned, as is cable. Problems exist with quality of captions and some live broadcasts are not captioned.

Recorded media may be either open captioned (visible at all times) or closed caption (requiring special decoding equipment).

Since 1994, all televisions (13" or larger) have a built in decoder for closed captions. Projection and plasma televisions do not have this feature, so a separate caption decoder is required. A separate decoder is also required for projection machines connected to video players.

Where:

Classrooms, employee training, and other settings where visual media is utilized. Decoders must be compatible with the TV or video source connections. Look for RCA inputs (audio and video in and out) or RF (cable) connections.

Look for the Closed Caption symbol on media packaging (CC, CC within a television shape, or a television shape with a tail) to determine if a media is captioned.

Considerations:

Is the program or media already captioned?

- Captioned programs can be borrowed from the Caption Media Program www.cfv.org/.
- If important video material needs captions added this can be accomplished by a professional company. See your area telephone book or do a web search for 'captioning.'

Price Range

- No additional cost for previously captioned media viewed on decoder equipped television.



Close Captioned by
NCI

- 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).

Considerations:

Does the user have hearing aids or cochlear device with telecoils?

- **If yes**, order the recommended induction neckloop if one does not come with the unit, or try silhouettes for better reception.
- **If no**, specify earbud (will need to remove hearing aids), over the ear earphone (better with in-the-ear aids), or lightweight headset (can adjust to use with behind the ear aids).

Will the unit be used in only one location or should it be portable?

- Most individuals will prefer a portable model that can be used anywhere. Permanently installed systems are most frequently used in large auditoriums and theatres.

Will the listener comprehend more if able to speech read while listening?

- Have the listener sit close to the speaker or consider [Audisee](#) in situations where there is only one speaker.

Portable Brands and Models:

Phonak MicroLink Personal FM Systems

Comtek FM System

William Sound Hearing Helper

Listen FM System

Sensheimer

Easy Listener

Phonic Ear

Price Range

\$600 - \$2200

Accessories:

- Induction neck loop (For use with hearing aids that have telecoils)
- Boot receiver that connects directly to the behind-the-ear aids (Phonak)
- Silhouette for improved reception with behind-the-ear aids.
- Conference microphones can be set in the center of a table for small groups
- Directional microphones for focused sound reception
- Omni-directional environmental microphone allows the person with hearing loss to hear his or her own voice through the system. Consider for someone with severe to profound hearing loss.
- Accessories for connections to CD players, stereo, television, etc.

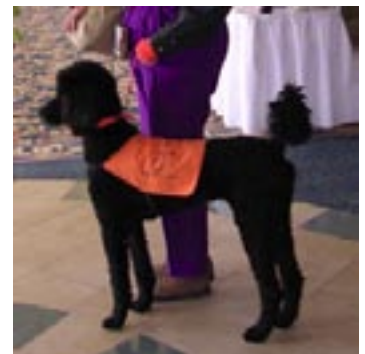
HEARING DOGS

What:

Specially trained dogs that alert a person with hearing loss to sounds in the environment. The assistance dog will usually take the individual to the source of the sound. Dogs and owners must complete a training and be certified for use in public places. Dogs can be trained to respond to alert sounds, telephones, door bells or knocks, baby cries, visitors, etc.

Where:

Service dogs are permitted in places of public accommodation according



Hearing Dog at Work

to the American's with Disabilities Act. Working dogs must wear a special harness and vest to be clearly identifiable. Dogs can be used in the workplace as long as they do not cause a hazard.

Considerations:

Will a dog or electronic device serve better for the range of sounds requiring notification?

Will a dog be in danger in the work environment, or increase risk to others?

Is the individual alone in the home or workplace?

- Hearing dogs provide companionship and will alert to intruders, although they are not trained as guard animals.

For more information:

- Paws with a Cause: <http://www.pawswithacause.org/>
- E-Michigan on Hearing Dogs: www.michdhh.org/assistive_devices/hearing_dogs.html

iCOMMUNICATOR

What:

A software package that automatically translates spoken language into text or American Sign Language. This package uses automatic speech recognition software. Speakers must first create a speech/voice profile.

Where:

In environments where spontaneous communication needs to occur more frequently than an interpreter or CART provider can be arranged. Must be in environments that are fairly quiet and where computers are feasible. Not appropriate for use with multiple speakers, as creating a voice profile is a time consuming process that must be completed for each individual speaker.



iCommunicator on Laptop

Brands

iCommunicator is a brand name. See the web site: www.mycommunicator.com/

Price Range:

\$3689 - 3999 for software kit. Computer sold separately.

Caution: Automatic Speech Recognition software is continually improving. However, it is important to assess the accuracy of this technology prior to purchase.

iCommunicator uses ASL signs in English word order. Therefore, the translation may NOT provide accurate meaning.

INDUCTION LOOP SYSTEM

What:

A wire loop may be permanently installed around the perimeter of a room and connected to the PA system. Portable units are also available. The loop sends an audio signal directly to the telecoil on the user's hearing aid. Without a telecoil in the hearing aid or cochlear device, another type of telecoil receiving device is required.

Where:

Most frequently, induction loop systems are installed temporarily or permanently in meeting places. An office or work station can be looped as well as a large auditorium. The Portable InfoLoop can be used table top, if speakers and listeners are within 4 feet of the unit. Because sound is only transmitted within the loop range, it is more private than an FM system.

Considerations:

Should the loop be installed by a facility or organization for ADA compliance?

- Because loop systems may be permanently installed, the purchase is usually the responsibility of the organization using the building and does not become the individual's personal equipment.

Does the user have hearing aids with telecoils?

- If yes, no additional equipment is required.
- If no, an induction loop receiver with headphones or earbuds will be required.

Brands and Models:

- Echo MegaLoop Induction System (May be appropriate for a home or office installation.)
- Portable InfoLoop (Table-top with a 4 foot range)
- Centrum Sound, Oval Window and many others for large installations.

Price Range:

\$300 for a personal unit to \$4300 or more depending on installation requirements in a large facility.

Accessories:

- Receivers for listeners who do not have telecoils.

For more info:

HearingLoop.org

INFRARED LISTENING SYSTEMS

What:

Listening system to overcome background noise, reverberation, or distance from the sound source. Uses infrared light to send a sound signal that is transmitted through a receiver worn by the listener.

Where:

Use infrared systems indoors, especially where confidentiality is important. Because light cannot travel through walls, infrared provides more confidentiality than FM systems. Some movie theaters and other public places have infrared systems installed. Cannot be used in bright sun light.

Considerations:

Is confidentiality critical?

- Infrared signals stay within the room.

Will the device be used in bright light?

- Infrared signals are defused by bright daylight.
- Under bright florescent lights, a 450 KHz bandwidth must be used instead of the standard 95 KHz.

Is an infrared system already installed in the facility where listening will take place?

- A personal receiver should be compatible with most public installations.

Does the user have hearing aids or cochlear device with telecoils?

- **If yes**, order the recommended induction neckloop if one does not come with the unit, or try silhouettes for better reception.
- **If no**, specify earbud (will need to remove hearing aids), over the ear earphone (better with in-the-ear aids), or lightweight headset (can adjust to use with behind the ear aids).

Brand and Models:

Audiolink

Williams SoundPlus

Price Range:

\$100 to \$200 for personal size units

Accessories

- Induction neckloop for use with telecoil equipped hearing aids
- Battery charger
- Additional headsets

INTERACTIVE WRITING

What:

Writing a word, phrase, or complete sentences on paper or a computer may be used to facilitate communication with a person who is deaf or hard of hearing. Writing can be done by both parties or one, depending on communication needs. Interactive writing may be as simple as a word or phrase jotted on a handy piece of paper and may include e-mail or instant messaging.

Where:

Paper and pen may be used anywhere. Computers or other keyboard communication options are most often used indoors and are more stationary. A computer or other keyboard may facilitate more in-depth conversations. Instant messaging and e-mail may also be used with a [two-way text pager](#).

Considerations:

What is the English reading competency of the individual?

- Use short phrases and simple concepts if you do not know the other person well.

Is this a group event or one-on-one conversation?

- Interactive writing is more appropriate for one-on-one communication that is relatively brief. For group meetings, consider an interpreter or speech-to-text accommodation.

Is a computer handy?

- Using a large font on a standard computer with word processor is a readily available means of conducting interactive writing.
- For more frequent interactive writing where a computer is not feasible see [Interpretype](#).

Is reliance on e-mail or instant messaging taking the place of face to face communication?

- Human interaction, including facial expressions and body language, is important to the development of good relationships. While interactive writing by computer may make communication easier and more precise, face to face interaction should not be avoided.

Price Range:

The cost depends the materials used for writing.

INTERPRETERS

What:

Interpreters are trained professionals who translate between two distinct languages. Interpreting is a very complex process that requires extensive training, practice and continuing education. Interpreters listen to spoken words, inflection, and intent, and render the meaning in a visual manner for people who are deaf or hard of hearing. Likewise, they translate visual language into spoken English (or other language as appropriate).



Interpreter Symbol

Interpreters for American Sign Language are most common. However, some people prefer oral interpreters or another visual system such as cued speech. People who are DeafBlind will require someone with DeafBlind interpreting skills.

Where:

Interpreters can go anywhere there is communication between two or more people. Frequently used for public meetings and in classrooms, interpreters play an important role in one-on-one communications when the two people speak different languages.

Dark environments, such as a theatre or photographic developing room, will require special lighting arrangements.

Locating Interpreters:

Interpreter referral agencies assist in matching interpreters with the specific client and situation. Many interpreters work independently and may be contacted directly.

- The Michigan Division on Deaf and Hard of Hearing publishes an interpreter directory for Michigan (www.mcddc-dodhh.org).
- A list of Michigan interpreter referral agencies is at: www.michdhh.org/interpreters/more_information.html

Price Range:

- Plan on a 2 hour minimum charge.
- Interpreters often charge for travel time and mileage.
- Cost dependent on interpreter's certification, type of assignment, and time of day.

Additional Information:

- Online or remote interpreting is a recent development. Interpreters are at one location, and provide interpretation via video conferencing to people in another location. Most do not have a 2 hour minimum and charge in 15 minute increments.

See www.cacdhh.org/video_interpreting_services.html and www.csdinterpretingonline.com

- For more interpreter information and resources see: www.michdhh.org/interpreters/index.html

INTERPRETYPE

What:

Two portable keyboards with small display screens, linked by a secure serial connection.

Where:

Situations where frequent, or extensive, interactive writing is required and English reading level is average or above. Interprettype can run on batteries or AC power.



Interpretype

Considerations:

Does the person with hearing loss have a need for frequent communication with others?

Are hearing people frequently communicating with people with hearing loss, such as bank tellers or other public service positions?

Will it be helpful to link the Interprettype to a computer?

- Software is available for computer communication. If this is not needed, purchase the Peer-to-Peer package.

Brand and Models

Interpretype is currently the only maker of this device.

Price Range:

\$1350 - \$2995 depending on software options

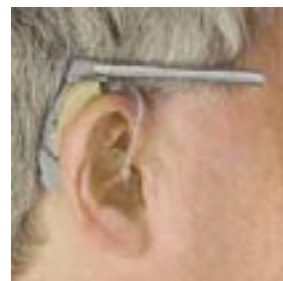
Additional Information:

<http://www.interpretype.com/>

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 it necessary to communicate complex information?

- An interpreter should be hired for complex and/or high-stakes communication, rather than reliance on someone with basic sign language skills.

How long does it take to learn?

- The length of time to learn the basics of ASL depends on the learner's natural ability, the amount of interaction with deaf people while learning, and amount of time devoted to practice. A good grounding can be established in about 9 months.

Where to learn?

- A deaf employee may be willing to give sign language classes to co-workers.
- Many community colleges and organizations offer sign language classes. For a list of programs and classes in Michigan see: www.michdhh.org/asl_deaf_culture/asl_training.html

STETHOSCOPES

What:

Stethoscopes designed for health professionals with hearing loss either amplify sounds, use electronics, or interface with a PDA for a visual display. Some stethoscopes can be used with a patch cord for a cochlear implant. Some have filters to isolate specific sounds. The stethoscope chosen should match degree of amplification required and job requirements.



Amplified Stethoscope

Considerations:

- Make sure hearing aids or cochlear processor are adjusted to emphasize lower frequencies.

Where:

Medical environments.

Brands and Models:

Many brands. See the web site below for details.

Price Range:

\$299- \$460

Information from the Association for Medical Professionals with Hearing Losses:

<http://www.amphl.org/stethinfo.html>

SWEAT BANDS FOR HEARING AIDS OR BEHIND-THE-EAR COCHLEAR IMPLANTS

What:

Small cotton sleeves that fit over behind-the-ear hearing aids or cochlear implant devices. Reduce moisture and dirt that can seep into the hearing aids, interfering with the delicate circuitry. Washable and reusable.

Where:

Hearing aid sweat bands are especially important if the user is working in humid or dirty environments, or for people who perspire heavily.

Considerations:

Come in different sizes and colors. Indicate make and model of hearing aid when ordering. A cochlear device will require an XL size.

Price Range:

\$17 for a package of two.



Hearing Aid Sweat Bands

TIMERS

What:

Timers that use flashing light or vibrations instead of an audible alarm. Models include table top, body-worn, or pocket models. There are also watches with vibrating timers built in.

Where:

Use when background noise or hearing loss make it difficult to hear an audible timer. Consider for a noisy kitchen or other environments where a timer is needed.

Brands and Models:

- Triple Tell Timer
- Invisible Clock II
- VibraLITE Vibrating Alarm watch
- Silent Alarm
- Vibrating Key Chain



Pocket Clock/Timer

Speech-to-Text Accommodations

Speech-to-Text accommodations convert spoken communication into readable text within moments of the utterance. The text is displayed for the user to read. The two primary forms of speech-to-text accommodations are described below.

CART

What:

CART (Computer Aided Realtime Transcription) is a service provided by a court reporter using a stenographic machine linked to a computer. CART provides a verbatim transcription of all spoken language. Of the speech-to-text accommodations, CART provides the most complete and accurate text reproduction of spoken proceedings.

Where:

CART is most often used at conferences and large group events (projecting on a large screen). CART is frequently used in college classrooms and for meetings. It is not appropriate in environments where the

user must move around frequently so that the screen is not always visible.

Considerations:

Does the user have average or better reading comprehension?

- Because CART transcriptions are verbatim, there is a great deal of text to read, and not all is essential to understanding the concepts. This may be overwhelming to some with less developed reading skills.

Is precise information important?

- CART transcriptionists are highly skilled professionals, rendering a word-for-word transcript with a high degree of accuracy.

Finding a CART provider:

There are several companies who provide CART in Michigan. There are also Internet companies that provide remote CART. See the web site below for Michigan resources.

Price Range:

\$60- \$150 per hour including travel time, transcript editing, and mileage.

For more information see:

www.michdhh.org/assistive_devices/cart.html

C-PRINT® AND SIMILAR SPEECH-TO-TEXT ACCOMMODATIONS

What:

C-Print and similar speech-to-text accommodations seek to provide a meaning-for-meaning transcript of spoken communication. These systems were designed to meet the needs of deaf and hard of hearing students in educational settings. As such, they provide additional features and services such as voicing for the user, study aids, and two-way communication between the captionist and the user.

C-Print does not attempt to provide a verbatim transcription. The advantage is that the text produced is more accessible for those with less developed reading skills, and the transcript is not as cumbersome when used for study purposes. On the other hand, for those using the transcription to augment hearing, the difference in exact words used may be confusing.

Where:

Designed for classroom use, C-Print may also be used in business settings. Because much less training is required, a co-worker with good typing skills can be trained to caption rather quickly. Like CART, these services require the user to view a screen, so environments with a great deal of movement or outdoor venues may not work (e.g. physical education class or construction site.)

Remote captioning is becoming available in some areas. Using the Internet and a phone line, the captionist may be in a different location than the person receiving the captioning service.

Considerations:

Does the user need to have the captionist voice questions?

- If the user does not have intelligible speech and will need to ask questions or dialog with others, C-

Print may be preferred over CART. C-Print software provides for interaction between captionist and user, and the captionist can voice questions or comments typed by the user.

Does the user have average or lower reading comprehension?

- The abbreviated text of C-Print will provide meaning without extraneous content, which is preferred by some.
- Not an appropriate accommodation for non-reading ASL users.

Brands:

C-Print

Typewell

Finding a captionist:

- There are very few C-Print captionists in Michigan. Contact Michigan Career and Technical Institute, Dave Porter for information about training at (269) 664-9219.
- C-Print training is available on-line and takes about 2 months to complete.

More Information:

- See the C-Print web site: <http://www.ntid.rit.edu/CPrint/>
- Contact Julie Eckhardt: jewel@chartermi.net or 231/922-2943

Telephone Accommodations

AMPLIFIED TELEPHONES

What:

Amplified telephones are used in place of standard phones. Models have a variety of features including tone adjustment, volume boost, loud ringer, visual signalers, memory buttons, capacity for multiple lines, and power adapters.

Where:

Anywhere a standard phone is used. Not all models are compatible with all office phone systems. Be sure to arrange for a 30-day trial period prior to purchase.

Terminology:

“Hearing Aid Compatible” means the phone has a telecoil built into the phone.

“Volume control” does NOT mean amplified, but volume can be adjusted.

“Amplified” means that the phone amplifies at least 18 dB.

Considerations:

How much amplification is needed?

- Phones range in amplification boost from 20 dB to 55 dB.
 - o Mild to moderate loss: 20-30 dB boost
 - o Moderate to severe: 30-40 dB boost
 - o Severe hearing loss: 40-55 dB boost

Are multiple lines required, such as in most office settings?

If other people need to use the same phone, can volume boost be easily turned on and off?

Are lighted keypad or large size buttons needed?

Is the phone or phone system digital or analog?

- Not all phones or amplifiers work with all systems. Find out if the phone or phone lines are digital or analog before researching accommodations.

How will the person be alerted to incoming calls? How will a loud ringer or flashing light impact co-workers and others?

- Most amplified phones have a flashing light or loud ringer. However, some situations will require a more visible alert, such as a table lamp that flashes when the phone rings or a strobe mounted on the wall. See [Alerting Systems](#).

Is a cordless phone, built in answering machine, caller ID or other feature required?

- Models are available that are equipped with these special features.

Models and Brands:

Ameriphone

Teletalker by Williams Sound

Walker Clarity

ClearSounds

Ultratec Crystal Tone

Price Range:

\$49 - \$350

Accessories:

- Some phones have cochlear patch cord for use with a cochlear implant.
- Induction neck loop works with telecoils.



Amplified Cordless Phone

CAPTEL™

What:

CapTel is a telephone that displays text captioning of the speaker's words. The person with hearing loss uses hearing and speech to communicate. A relay service provides text of all words spoken by the other party to enhance comprehension. This text is viewed on a small screen built into the CapTel phone.

Where:

CapTel is only available in states that provide CapTel service through a relay center. Michigan is expected to have CapTel service in 2005. The service is available nationwide to Federal employees (active or retired), veterans, and US Tribal members. For mor information see the CapTell web site below.



CapTel

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

Feedback Reducers

What:

Foam cushion attaches to the earpiece of a standard telephone. The cushion creates a buffer between the hearing aid and phone earpiece to reduce feedback.

Where:

Any standard telephone in home or office. A cell phone model is available.

Brands and Models:

Telear Adapter
Universal Foam Phone Pad
Telephone Receiver Acoustic Coupler
Cell-U-Hear

Price Range:

\$3 - \$15



Feedback Reducer

In-Line Telephone Amplifiers

What:

In-Line amplifiers plug in between the handset and the base of the telephone. Boosts sound up to 40 dB. Some models have volume, tone, and frequency adjustments. Provide a higher quality of amplification than strap-on amplifiers but are less portable.

Where:

Home or office telephone. Not suitable for portable phones or those with the dial in the handset. Some models work better with digital and electronic phones than others. Ask the vendor for recommendations and a trial period.

Brand and Models:

Plantronics
Ameriphone
Walker Clarity
Adjust-a-Tone

Price Range:

\$24 - \$149



In-line amplifier

TWO-WAY TEXT PAGERS

What:

Two-way text pagers are a communication alternative for people unable to hear on a cellular phone. These small, light, devices have a QWERTY keyboard and LED screen for e-mail based communication. Text pagers are used to reach anyone, anytime, from almost anywhere. They communicate to other

paggers, computers, or through [IP Relay](#) to telephones. A vibrator alerts the user when a message arrives. Some paggers have extra service features such as sending fax, live TTY chat, instant message chat, voice to text or text to voice, Web access, direct connection to AAA motor club or organizational tools.

Where:

These totally portable devices are only restricted by service range, as they are small enough to be carried in a pocket or purse. Similar to cell phones, not all companies service all areas. Make sure that the service is available in the area needed. Most metropolitan areas have service coverage, some rural areas do not.



T-Mobile Sidekick

Considerations:

Is hearing on a cell phone too difficult or impossible?

Does the area required have text messaging service available?

What options are available for monthly service plans and membership?

Is a 14-30 day trial period permitted?

Brands and Models:

- Rim
- T-Mobile
- Motorola
- Treo

Price Range:

- Prices and packages vary widely.
- Pagers cost between \$39-\$399 depending on features and service contract.
- Monthly service fees are between \$15 and \$60/ month.
- Activation fees may apply.

For more info see the web site below or contact a local wireless phone provider:

www.michdhh.org/assistive_devices/two_way_pagers.html

TTY OR TDD

What:

A TTY is used instead of a voice telephone by people unable to hear on the phone. A small QWERTY keyboard and display screen plugs directly into a conventional phone line or can be used along with a standard phone. The user types a messages which can only be received by another TTY.



TTY with Telephone

A [relay service](#) may be used when desiring to call someone who does not have a TTY.

TDD is another name for the same device.

Where:

A TTY is most often used at a stationary location like a home or office. Portable devices are available, which can fit in a purse or brief case.

Considerations:

Is a portable unit required?

Is a record of conversations needed or are there likely to be interruptions during a call, requiring a record?

- Some units come with a printer.

Is an answering machine required?

- A built in answering machine will decode TTY signals.

Will the person want to speak while reading the other person's message?

- Some TTY models may be used with [VCO](#) without additional equipment.

Is mobile use required?

- Some models can be connected to a cellular phone. You will need to know if the cellular service is analog or digital before choosing a TTY.

Would a computer, with the ability to retrieve messages from multiple locations, be more convenient than a TTY?

- Nextalk is a service that allows TTY calls to be made via computer and Internet.
See www.nextalk.net.

Brands and Models

Ultratec

Krown

TextLink Mobile

Ameriphone

Price Range:

\$199 - \$600

Accessories:

- External mini printer
- Large visual display
- Cigarette lighter power cable
- TTY- Voice Amplified answering machine

RELAY SERVICES

What:

A service that enables people who use a TTY, Internet connected computer, or text messaging to

communicate with any conventional telephone through a relay operator. See [Video Relay Services](#) for another form of relay service.

Where:

Relay Services are available throughout the United States. Confidential calls can be made anywhere through the relay operator, at any time, for any purpose.

Access Telephone Relay Services by dialing 711.

Internet Protocol Relay (also called IP Relay) is accessed via the Internet address of the provider (see below).

Considerations:

Does the caller prefer to use voice while seeing the other party's words in text?

- See [Voice Carry Over \(VCO\)](#)

Telephone Relay Provider

Michigan Relay Center is a service of SBC providing telephone/TTY relay for calls initiated in Michigan.

Internet Protocol Relay Providers

MCI IP-Relay: <http://www.ip-relay.com/index.htm>

Hamilton Internet Relay: <http://www.hiprelay.com/>

Sprint IP Relay: <http://www.sprintrelayonline.com/>

Sorenson Relay: <http://www.siprelay.com/>

Price Range:

There is no charge for using the relay service. Telephone callers will be responsible for normal long distance charges to the party called. There is no charge for Internet Protocol Relay.

Information:

For Michigan Relay see: www.michiganrelay.com/basicrelay.htm

FCC Fact Sheet on IP-Relay: www.fcc.gov/cgb/consumerfacts/iprelay.html

VOICE CARRY OVER (VCO)

What:

VCO is a relay service that allows a person with hearing loss to use their own voice on the telephone, while receiving the other party's communication via the relay center and text.

VCO requires either a special VCO phone, a VCO/TTY combination, or a VCO adapter for a telephone.

Where:

Anywhere a telephone is used, as long as the special equipment is available. Requires an intermediary relay service, accessed by dialing 711.

Considerations:

Does the person prefer using their own voice to typing a message?

Is the person with hearing loss unable to hear voices on an amplified telephone?

Does the person already own a TTY?

- A TTY can be used with a standard telephone without further equipment.

Is cell phone use desired?

- Some adapters work with cell phones.

Brands & Models

Ameriphone

Uniphone

Krown PocketComm

Pocket VCO Adapter

Price Range:

\$189 - \$249

More Information:

www.michiganrelay.com/vco.htm

Training videos can be purchased from most vendors or borrowed from [Michigan Association for Deaf, Hearing and Speech Services](#).

VIDEO RELAY SERVICE (VRS)

What:

A relay service that uses the Internet and video equipment to allow deaf persons to make phone calls using American Sign Language (ASL).

A call is placed to a VRS operator/interpreter, who places the call to a standard telephone user. The deaf caller signs the message, the operator interprets the ASL message into spoken English to the other party. When the hearing person speaks, the interpreter signs, using the video equipment, to the deaf caller.



Chris Hunter using CAC VRS

VRS requires a high speed Internet connection, special video equipment and a TV monitor or computer . Some VRS companies supply equipment that can be used with a television and Internet connection.

Where:

The deaf caller must have appropriate equipment installed at home or work site, or may use a public call booth.

This service is not offered by the Michigan Relay Center. See below for providers.

Considerations:

VRS allows for more natural and often, more fluid conversation than with TTY Relay Services.

Is the person unable to read and write proficiently?

- VRS allows the caller to use ASL.

Can a suitable Internet connection be maintained?

- For home use, plan on \$50 - \$60/ month for high speed Internet.
- In a business, other people using the LAN Internet connection will slow down video transmission which may make the ASL unclear.

VRS Providers

Communication Access Center

www.cacdhh.org/video_relay_interpreting_services.html

Sorenson: www.sorensonvrs.com/

Hamilton: www.hipvrs.com/

For more information:

www.michdhh.org/assistive_devices/video_relay_svcs.html

VOICE MAIL TRANSCRIPTION SERVICES

What:

A service that retrieves and transcribes voice mail messages, forwarding a text version of the message via e-mail. The e-mail message may be received on a computer or by two-way text pager.

Where:

Anywhere that voice mail services are required.

Considerations:

Does the business traditionally use voice mail as a primary mode of information sharing?

- Voice mail transcription services make broadcast messages and any other voice mail messages accessible to workers with hearing loss.

What type of phone systems is used by the business and how accurate must messages be?

- Not all transcription services are compatible with all voice mail systems. Check with the provider's technical support staff to determine compatibility.
- Some systems use automated voice recognition. Others use human transcribers. Automated voice recognition may not provide the same level of accuracy as a human transcriber, especially if callers have an accent or speak softly.

Providers:

Timberline www.voicemailtools.com/txn.asp

Phonewire www.phonewire.com/voicemail/

Dictomail www.dictomail.com

WORKPLACE ASSESSMENT *For Individuals with Hearing Loss*

Introduction and directions:

The *Workplace Assessment for Individuals with Hearing Loss, MRS Version* was developed for the State of Michigan by Ann Liming for the Division on Deaf and Hard of Hearing and Julie Eckhardt for Michigan Rehabilitation Services. It may be used without permission. However, feedback regarding the assessment is welcome to either Ann Liming at: AL3641@aol.com or Julie Eckhardt at: jewel@chartermi.net

The Workplace Assessment is designed for use with people who are hard of hearing or late-deafened (experienced a significant hearing loss during adulthood). The Workplace Assessment will be less useful for individuals who communicate primarily through American Sign Language, especially those with limited English reading proficiency.

The Workplace Assessment may be completed independently by a person with hearing loss or by a counselor or other professional in an interview/dialogue process. The latter may provide additional information to the counselor.

The goal of the Workplace Assessment is to identify workplace communication barriers that interfere with the individual's success on the job. Information gathered should be helpful in determining accommodation needs.

For assistance in Michigan contact:

Michigan Division on Deaf and Hard of Hearing
Phone: 877-499-6232
Fax: 517-334-6637
Website: www.mcddc-dodhh.org

Julie Eckhardt, MA, LPC,
Phone: (231) 922-2943 Voice/TTY
Fax: (231) 922-2943
jewel@chartermi.net

Michigan Association for Deaf, Hearing, and Speech Services
Phone: 1-800- YOUR-EAR
www.madhs.org

Michigan Self Help for Hard of Hearing People
www.mi-shhh.org

E-Michigan Deaf and Hard of Hearing People
www.michdhh.org

WORKPLACE ASSESSMENT *For Individuals with Hearing Loss*

Name		Date Completed	
Employer Name		Your Position	

The following questions are about your hearing loss and your experience in the workplace related to your hearing loss. The information will be used to determine accommodations, adjustments, or assistive equipment that will help you do your job more effectively and with less stress and fatigue. **Your answers to these questions are confidential and will NOT be shared without your permission.**

Please answer the following questions related to your hearing loss:

1. What type of hearing loss do you have?

Conductive Sensorineural (nerve deafness) Mixed Don't know
2. Is your hearing loss: Unilateral (1 ear) Bilateral (both ears)
3. What is the cause of your hearing loss? _____
4. How long have you had a hearing loss? _____
5. Mark below:
 - How would you describe your hearing loss when you were first diagnosed (use a ✓)?
 - Currently, how do you describe your hearing loss *without hearing aids* (use a ✕)?

mild severe
 mild to moderate severe to profound
 moderate profound
 moderate to severe don't know
6. When was your last audiogram? _____
7. Do you understand how to read your audiogram? Yes No
8. Do you have a Cochlear Implant? Yes No If **Yes**, do you have one or two? _____
 Is your processor? ear level body worn
9. Do you use one or two hearing aids? ____ If **Yes**, how long have you worn them? _____
10. Are your hearing aid(s): Analog (Traditional) Analog Programmable Digital
11. What type hearing aid(s) do you wear?
 Behind-The-Ear In-The-Ear In-The-Canal
12. How old are your current hearing aids? _____
13. Do you wear your hearing aid(s) All of the time Part of the time
14. Do you have any related physical conditions that add to the communication difficulties you experience?
 Explain: *E.g. headaches, balance disturbances, dizziness, ringing or other sounds in the ears (tinnitus), or other problems.* _____

On-the-Job Communication Demands

If you are not currently working, please answer the following according to your experience on your last job.

15. Describe the type of work that you do: _____
16. Describe your primary worksite: _____
17. Does your job involve travel? Yes No How often? _____
18. Do you work: Part time Full time
19. How do you most often communicate with people at work? Check all that apply.
- sign language
 - fingerspelling
 - speaking and listening
 - speechreading
 - explaining to people how to talk to me
 - writing (e-mail, notes, etc.)

20. Describe communication situations at your work using the table below.

- a. **People:** Who do you communicate with? *E.g., bosses, supervisors, coworkers, employees, supervisees, clients, customers, contractors, trainers, security, custodians, other.*
- b. **Place:** Where does the communication with each of these people usually occur? *E.g., at your worksite, someone else's office, meeting rooms, coffee area, car, etc.*
- c. **Method:** How does the communication occur? *E.g., face-to-face, one-on-one, small group, large group, telephone, computer, memo.*
- d. **Frequency:** How frequently does communication with each person occur? *E.g., several times a day, daily, once a week, month, or year.*
- e. **Duration:** What is the estimated duration of these contacts? *E.g., constant, several minutes, a half-hour, hour, several hours, day or days.*

People	Place	Method	Frequency	Duration

Meetings

21. Describe meeting situations you are involved in at work: *E.g., how many people attend, seating arrangement, who does the talking, etc.* _____

Telephone Communication (If not currently working, describe home telephone use.)

22. How many times a day do you use the telephone? _____

23. Do you use the telephone with your hearing aids? Yes No
If **No**, explain why: _____
If **Yes**, do you have a telecoil (T-switch) on your hearing aid? Yes No

24. Does your hearing aid squeal when you use the telephone? Yes No

25. Describe any difficulty you have using the phone: _____

26. Describe the make and features of the phone you currently use: _____

Warning & Alert Sounds

27. Describe the warning sounds you **must** be aware of while at work _____

28. Are there warning or alert sounds that are difficult for you to hear? _____

Barriers to Understanding

Please check (√) the barriers to understanding communication that you experience in the workplace.

29. **Noise:** People talking around me Mechanical equipment Electronic equipment
 Telephones ringing Radios Fans Traffic Others: _____
30. **Lighting:** Too bright Too dim Light behind the speaker Reflecting light
Others: _____
31. **Distractions:** Lights flashing Sudden sounds Sudden movements
 Interruptions, Background noise Others: _____
32. **Communication Behavior of Others:** Not getting your attention before speaking
 Speaking too softly Speaking too rapidly Not facing you when speaking
 Foreign accent Other: _____
33. **Location of Work Area:** Workstation faces away from others Poor acoustics in work area
 Too much sound from other workstations Cubicles walls prevent seeing faces of speakers
Others: _____
34. List the listening situations that you feel affect your job performance or cause you the most stress:

Aids to Understanding

Check the answers that apply to your work place or your previous employment.

35. Which of the following Hearing Assistive Technology devices are in your workplace?
 Amplified telephone Visual or tactile alerting devices FM system Infrared System
 Induction Loop Standard Microphone TTY Relay system

36. Do you use assistive listening devices in any of the following situations?
Where there is noise? Yes No
Where there is a distance between you and those who are talking? Yes No
In meeting situations? Yes No In training situations? Yes No
Comments: _____

37. Do you use any of the following types of video display of spoken language?
Computer Assisted Real-Time Captioning (CART)? Yes No
Videoconferencing? Yes No Captioned videotapes? Yes No

38. Do you use any alerting devices on the job?
Telephone ringers? Yes No Light flashers? Yes No
Vibrating devices? Yes No Vibrating or flashing alarm clock? Yes No

39. Has the work environment been modified in any way to accommodate your hearing loss? *E.g., moving your desk, changing the lighting, removing or installing physical barriers.* _____

40. Have you had speechreading training? Yes No

41. What communication strategies (*E.g., changes in communication behaviors*) do you use to help you understand communication with your employer(s), co-workers and customers?

42. Would you like to receive assistance or training in any of the following topic areas?

	<u>would like training</u>	<u>no interest</u>
Assistive technology	_____	_____
Coping skills	_____	_____
Hearing aid use and care	_____	_____
Support/networking	_____	_____
Speechreading	_____	_____

43. Is there other information that you would like to share to provide further understanding of the difficulties you experience in the workplace?

