

INTRODUCTION

The AVI H2 Headset Monitor (or H2 unit) is a straightforward means of measuring the noise exposure of any headset wearer at any time the headset is in use. It is simple to connect, has no effect on the headset wearer or the signals to and from the headset, and provides a complete log of the noise exposure experienced by the headset user both in the ear and in their local environment.

The H2 Headset Monitor is battery powered to ensure complete isolation from all other systems, and needs to be linked to a computer to set up and initiate measurements and to download the gathered data for analysis, but operates alone during the monitoring process.

METHOD OF OPERATION

The H2 Headset Monitor is designed to measure the noise levels in the ear of the headset wearer due to the headset signals, and computes the user's exposure to noise in 1 minute periods throughout the entire monitoring session. At the same time a microphone located in the H2 unit measures the sounds in the immediate vicinity of the headset wearer and computes the noise exposure of this sound as well. **The noise levels measured in the ear are translated in real time into the equivalent levels that a person exposed to open air noise sources would receive**, so that the levels are compatible both with the ambient monitoring microphone in the H2 unit and with all noise legislation which assumes an unobstructed ear.

The H2 unit has no operational controls on it but relies on a link to a computer for all its activities. The computer requires the AVI LOGGER programme to be loaded and a calibration file of data relevant to the make and model of headset in use to be uploaded into this programme. More details about this file will be found later.

Communication between the computer and the H2 unit is via an RS-232 serial data link. A cable is supplied to make this connection. When the cable is connected to the H2 unit, the Headset Monitor switches on automatically and is ready to receive commands from the computer. To initiate measurements, a file of information is sent from the computer to the H2 unit, and this sets the unit to monitor the headset type connected to it. Monitoring commences a few seconds later, after which the computer can be disconnected and the H2 unit left to monitor for as long as required.

When monitoring is complete, the computer should be reconnected to the H2 unit, and a STOP LOGGING command is sent, after which all data gathered can be downloaded to the computer for analysis and storage. Data is retained in the H2 unit unless intentionally erased after download on command from the computer. (Note that all stored data is erased when a new measurement is started).

Using the H2 Headset Monitor Unit

FIRST TIME USE ONLY

Before the H2 unit can be set to monitor, the computer used to control the unit must first be set up with the AVI LOGGER programme. This is supplied on CD. The program is compatible with Windows 95, 98, 2000, ME, NT and XP versions

- Insert the CD and select RUN from the START menu. Type D:/Setup where D is the CD drive letter, press enter and follow the instructions on screen. When complete this should create a SHORTCUT TO LOGGER icon on the Startup screen.

The system needs to have two data files selected before the programme proper will run correctly.

- Double-click on the LOGGER icon. A "CONFIRM DSP FILES" window will open showing the two files that are selected. As supplied these will be set to :_

DSP Boot file – C:\Program Files\logger\H2_monitor.prg
Calibration Data File – C:\Program Files\logger\demo.cal

Alongside each is a BROWSE box. If either of these files needs to be changed in the future, click this box and a list of alternative files will be displayed. Double-click on the one required.

Under normal conditions, the DSP BOOT FILE will not need changing unless there are new functions added to the monitor.

- The CALIBRATION DATA FILE **must** be matched to the make and model of headset to be monitored. This file will be supplied by AVI for each type of headset specified at time of purchase. The file demo.cal does NOT represent any specific headset and should not be used for real monitoring purposes, but does enable the monitor to be tested for correct operation.

New Calibration Data files can be added at any time, and instructions for doing this will be found at the end of this handbook.

- When the required files are displayed, click on OK for the main programme to appear.

The computer is now ready for use with the H2 unit. To check the communication settings are correct, click on SETTINGS/COM PORT at the top of screen and select required Com port for the serial data link. The baud rate should be set to 19200. No first-time actions are required on the H2 unit itself.

STANDARD USE

Prepare the H2 Headset Monitor for use

1. Remove the headset to be monitored from its standard connection socket and plug it into the same socket on either of the cables attached to the H2 unit. (This monitor should have been supplied with the correct cables to suit the site, but contact AVI if this is not the case).

- 2 Plug the remaining cable into original headset socket. Any volume or other level controls in between the H2 unit and the headset should be set to maximum at this point and not adjusted during monitoring.
- 3 Fit 2 fresh AA-size (LR6) alkaline batteries to the H2 unit, negative terminal inserted first. A coin is most suitable for opening the battery cover.

The H2 unit is now fully prepared for use. Locate near to the headset wearer, ensuring that the local-area monitoring microphone is not covered or likely to receive knocks during normal working practices.

Start the Monitoring Process

- 4 Run the LOGGER programme on the PC and select the required DSP BOOT FILE and CALIBRATION DATA FILE as prompted. Click OK.
- 5 Connect PC serial interface port to the H2 Headset Monitor jack socket using cable provided. The red LED on the front of the H2 unit should start to flash once per second when the unit detects the PC
- 6 Select LOAD DSP/START LOGGING and click on OK to initiate. The red LED should be on all the time during this operation.
- 7 Once the H2 unit has been loaded with the file, it will automatically start to monitor. The red LED

will flash once every 3 seconds to show the unit is logging.

- 8 Remove PC cable from H2 unit and leave the unit as long as required to measure the noise exposure of the headset wearer being monitored.

NOTE The PC may be left connected to the H2 unit if preferred. Clicking on CONTINUOUS UPDATE will show the levels being measured, updated every 1 second. For further information, see later in handbook.

Retrieve the data

- 9 To retrieve information, with the LOGGER programme running, plug PC cable into jack socket and select STOP LOGGING. If required, enter SELECT ANALYSIS APPLICATION in the SETTINGS option at the top of the screen, and choose the required option. Then select GET LOGGING DATA, enter a file name for the data, and let the download complete. Do not interrupt the download process otherwise errors may result.
- 10 Analyse the file as required. At the end of download the user may erase the file from the monitor or leave it there. It can be downloaded as many times as is required, but is erased when a fresh "LOAD DSP/START LOGGING" file is sent to the monitor.
- 11 To use the monitor for another set of measurements, repeat from instruction 5.

H2 Headset Monitor unit additional information

The LED indicator on the front panel has 6 modes, to show the functioning of the monitor. These are:

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| OFF ALL THE TIME | The H2 unit is switched Off. |
| OFF MOST OF THE TIME, FLASHING OCCASIONALLY (Normal) | The H2 Unit is On, monitoring and logging OK |
| FAST FLASH (approx. 5 times per sec.) (Error) | Memory full (so logging stopped), OR low battery OR a Fault condition |
| ON ALL THE TIME | The H2 Unit is On, not logging, and no data is available for download. It will also be in this state when a DSP/START LOGGING file is being loaded. |
| ON MOST OF THE TIME, TURNING OFF OCCASIONALLY | The H2 Unit is On, not logging, data is available for download. |
| EVEN, MEDIUM RATE FLASH (approx. once per sec) | The H2 Unit is switched On, not logging, data being downloaded |

Under normal usage, the H2 unit will give an occasional flash when monitoring to show all is well, and will flash rapidly if something is wrong. The

headset wearer should be aware of these states and report the unit if fast flashing occurs. Unless a PC is connected to the monitor, no other states should occur during monitoring.

Typical battery life will be 12 – 15 hours. Battery voltage is shown on the PC when logging starts. New batteries will show around 3.0 V. The H2 unit will cease to log if battery voltage is less than 1.8 V. When battery voltage is too low, the H2 unit will automatically stop logging, save all data measured up to that point, and turn off. The batteries should have sufficient power remaining to enable the H2 unit to be downloaded without the need to replace the batteries first, but the batteries can be replaced prior to download without risking data loss. Alkaline AA/LR6 size batteries are recommended. Zinc-carbon or rechargeable types will give much shorter battery life.

The H2 Headset Monitor has an inbuilt microphone to measure the ambient noise levels in the vicinity of the headset wearer. The sensitivity of this should be checked for correct readings periodically, preferably at least annually. Consult AVI for details of this process.

LOGGER program additional information

All files relating to LOGGER will be found in C:\Program Files\Logger.

Any additional headset calibration files (or DSP Boot files if required) should be moved to this location using Windows Explorer when required. This will automatically add the files to the list of choices available when LOGGER is started up.

The headset calibration files can be generated in several ways.

- 1 Contact AVI for the file. This can be supplied directly if already measured.
- 2 Supply AVI with one or more samples of the headset type and request its measurement.
- 3 Purchase the headset calibration system from AVI and then measure all headsets on-site as required.

Charges, depending on the option selected, can be quoted if required.

The headset calibration file should represent the performance of a typical sample of the headset type fitted to an average wearer. This will lead to small variations between different samples of the same type and between different wearers of the headset. The H2 system is directed at using one general calibration file for all headsets and wearers of the same type, but if required the headset calibration file can be measured for each headset sample and saved in the Calibration File area as required. This may improve the accuracy of measurement for that particular headset.

The following additional features are provided in the programme:-

FILE OPEN CSV FILE USING EXCEL - quick route to examine all data files downloaded previously with this package

EXIT - closes LOGGER programme directly

SETTINGS SELECT DSP BOOT FILE
SELECT CALIBRATION FILE – these are the same as the options displayed at startup, so changes can be made without restarting the programme

SELECT ANALYSIS APPLICATION –
Choose between Excel and a User specified Application. Only Excel and Notepad are available as standard.

SPECIAL COMMANDS

SLEEP – resets H2 unit to power off with PC still connected. Not normally required.

ABOUT Gives Version number of Logger software installed and running

Under normal use the box marked Load Calibration file with DSP Boot file should be crossed at all times.

Select the CONTINUOUS UPDATE box to change the screen display to update all readings once per second. The 1 minute readings shown are for the last completed minute logged and are the same values as those stored in the monitor. The 1 second values displayed are not saved directly.

It is recommended that the unit is taken out of continuous update mode by deselecting the box prior to disconnection of the monitor from the PC, as this restores control of LOGGER programme to the PC.

The LOAD DSP/START LOGGING, STOP LOGGING AND GET LOGGING DATA buttons have already been discussed and have no further functions available. The UPDATE INSTRUMENT INFO button can be used to give a snapshot of the current state of the H2 unit at any time during the monitoring process without interfering with the measurements. Again the 1 minute information displayed is the last completed minute of monitoring.

TIMING

The H2 unit contains no real-time clock, but does log the time and date when the measurement started. This information is taken from the clock inside the PC at the time when the monitor is loaded up and set running, so the setting of this clock will determine the logged result. Each data point is for a measurement of 1 minute, so the total duration of monitoring, and thus the finishing time, can be computed from the downloaded file. The monitor should be able to store about 45 hours worth of data. The one-minute measurements are controlled by timing functions inside the H2 unit and are not dependant on the PC clock.